

Source Assigned Campylobacteriosis in New Zealand Study (SACNZS)

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Scientific Interpretive Summary

This SIS is prepared by MPI risk assessors to provide context to the following report for MPI risk managers and external readers.

SOURCE ASSIGNED CAMPYLOBACTERIOSIS IN NEW ZEALAND STUDY (SACNZS)

New Zealand has a high level of foodborne campylobacteriosis. Despite an initial 50% decline in human notified rates following the implementation of poultry food chain-focused interventions between 2006 and 2008, the annual incidence has been relatively static in recent years. Knowledge of the overall risk factors for human campylobacteriosis in New Zealand is out of date, being based on epidemiological data from the mid-1990s.

To better inform a comprehensive food-borne campylobacteriosis risk management strategy, New Zealand Food Safety commissioned a year-long (2018 – 19) source-assigned case-control study of notified human cases of campylobacteriosis. The methodology incorporated a case control study and a nested source attribution study to estimate the relative contributions of different reservoirs and exposure pathways to the burden of human illness.

Human cases of notified campylobacteriosis and age matched controls were interviewed in the areas served by Auckland and MidCentral Public Health Services. *Campylobacter jejuni* and *coli* were confirmed in faecal isolates from the cases. Isolates were similarly cultured from poultry, sheep and cattle processors serving these populations. Whole genome sequencing was carried out on the isolates.

Primary study outcomes:

1. *Proportions of human cases of campylobacteriosis that can be associated with individual source reservoirs*

The source assignment models provided estimates of the number of cases that could be assigned to a source:

- Poultry 84%
- Sheep 0%
- Cattle 14%
- Unassigned 2%

The pattern of source assignments for urban and rural cases were different, with about 90% of urban campylobacteriosis cases assigned to poultry sources and less than 75% of rural cases being apportioned to this source; the proportion of poultry source-assigned cases increased as the location of the cases became more urban.

2. *Proportions of human cases of campylobacteriosis that can be attributed to foodborne and other pathways*

Poultry is the most commonly consumed meat type in New Zealand and greater than 80% of people involved in the current study as cases or controls had consumed poultry within the previous 7 days. Specific risk factors associated with consumption of poultry resulted in statistically significantly elevated odds ratios e.g. consumption of undercooked chicken, consumption of chicken outside the home. The overall findings examining the source attribution and specific risk factors indicate that poultry meat remains the dominant pathway for exposure and infection.

3. *Statistically significant risk factor values (e.g. odds ratio estimates) for human campylobacteriosis*

- Significant risk from a number of risk factors associated with poultry handling and preparation in the home
- Eating chicken outside the home
- Raw milk consumption in urban cattle-associated cases
- Eating a vegetarian meal
- Living and/or working on a farm, and direct animal contact, particularly for cattle-associated cases. This includes exposure to chickens
- Rainwater/roof tank as a water source, either in the home or elsewhere
- The use of proton pump inhibitors as a medication
- Contact with another person with gastrointestinal symptoms.

The findings from this study will be of major importance in informing Food Safety New Zealand's future Campylobacter risk management strategy.

SOURCE ASSIGNED CAMPYLOBACTERIOSIS IN NEW ZEALAND STUDY (SACNZS)

Prepared for Ministry for Primary Industries under
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as part of an overall contract for scientific services

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EXECUTIVE SUMMARY

Campylobacteriosis is the most commonly notified enteric disease in New Zealand, having the greatest health burden of food-borne diseases. Sentinel source attribution work demonstrates poultry to be the major reservoir for human infections, with ruminants also being a reservoir.

Despite the initial decline in human campylobacteriosis following the implementation of poultry food chain-focused interventions (disease notifications reduced by 50%, 2006-2008), the annual incidence has been relatively static in recent years. Knowledge of the overall risk factors for human campylobacteriosis in New Zealand is out of date, being based on epidemiological data from the mid-1990s.

So as to better inform a comprehensive food-borne campylobacteriosis risk management strategy, New Zealand Food Safety commissioned a year-long source-assigned case-control study of notified human cases of campylobacteriosis. The methodology incorporated a case control study and a nested source attribution study to estimate the relative contributions of different reservoirs and exposure pathways to the burden of human illness.

The study approach included:

- A case-control study of notified cases sampled in a major urban centre (represented by the region served by Auckland Regional Public Health Services) and a mixed urban/rural area (represented by the region served by MidCentral Public Health Services), between 12 March 2018 and 11 March 2019. Controls were members of the New Zealand Health Survey (NZHS) cohort who had given consent to be approached to participate in further studies.
- Assignment of source reservoir attribution of the human campylobacteriosis cases sampled from these two regions over a year. This was done by Whole Genome Sequencing of *Campylobacter jejuni* and *C. coli* isolates from faecal samples of notified human cases and from relevant sources (poultry, cattle, sheep), and using modelling to assign a probable source for each case.
- A source-assigned case-control study of a subset of the notified cases of campylobacteriosis in the New Zealand population.

Approval for the study was obtained from the Health and Disabilities Ethics Committee on 20 December 2017.

The number of case interviews completed were 598 in Auckland and 258 in Manawatū-Whanganui, giving a total of 856 interviewed cases. A total of 1080 clinical isolates were obtained from cases, including those who were not interviewed. The number of cases who were interviewed, and for which a clinical isolate was obtained, was 666 (Auckland 445, Manawatū-Whanganui 221).

As targeted, 600 controls were recruited and interviewed, with an age distribution that matched the age distribution of cases.

Source isolates recovered across the study were poultry (209), sheep (194) and cattle (172).

All cases were eligible by being notified to the human health notifiable disease surveillance system, while controls were eligible by being members of the NZHS cohort. We attempted to frequency match controls to case by region and age in order to reduce the impact of

confounding by these variables. Residual confounding resulting from imperfect matching was considered by adjusting for these variables in multivariate models.

Presentation to general practitioners by cases may have resulted in selection bias; the cases were a particular subset of all cases in the community and therefore unlikely to be representative of all cases in the population. The effect of this bias could not be determined, but when interpreting the risk factors it needs to be borne in mind that these are risk factors for the subset of cases presented to general practitioners. Efforts were made to minimise the impact of bias by using a standardised approach to interviewing both cases and controls, although the interviews were carried out by different organisations. Using the NZHS cohort reduced the likelihood of refusal to participate, but the fact that the cohort comprises the subset of individuals from the, originally randomly-selected, cohort who are willing to participate in future studies may have introduced bias if this is associated with risk factors considered in the study.

Some degree of recall bias in relation to food consumption is inevitable in a study such and this was minimised by using a study design that limited the time from illness to interview to 48 hours or less, and asked questions relating to the recent past (7 days for food consumption). We note that any recall bias is likely to be similar in cases and controls.

Source isolates were obtained from samples provided by meat and poultry plants that were likely to constitute the main supply to the study regions. However, meat and poultry distribution pathways will always be complex within a country and therefore the source samples would not have been fully representative of the food supply in the Auckland and Manawatū-Whanganui regions.

Primary study outcomes:

- Proportions of human cases of campylobacteriosis that are associated with individual source reservoirs

The source assignment models provided estimates of the number of study cases that could be assigned to a source:

- Poultry 553/656 (84%)
- Sheep 0 (0%)
- Cattle 93/656 (14%)
- Unassigned 10 (2%)

The pattern of source assignments for urban and rural cases are quite different, with about 90% of urban campylobacteriosis cases assigned to poultry sources, while less than 75% of rural cases were assigned to this source. The proportion of poultry source-assigned cases increases as the location of the cases becomes more urban.

- Proportions of human cases of campylobacteriosis that can be attributed to foodborne and other pathways

Poultry meat has been identified as a significant pathway for campylobacteriosis in New Zealand, and the decline in incidence in 2007-2008 has been linked to interventions in broiler meat production. Poultry is the most commonly consumed meat type in New Zealand and greater than 80% of people involved in the current study as cases or controls had consumed poultry within the previous 7 days. Under these study circumstances, differentiation of poultry consumption between cases and controls as a statistically significant overall risk factor would be less likely to be detected. On the other hand, more specific risk factors associated with consumption of poultry did result in statistically significantly elevated odds ratios e.g. consumption of undercooked chicken, consumption of chicken outside the home. Thus the overall findings examining the source attribution and

specific risk factors indicate that poultry meat remains the dominant pathway for exposure and infection.

Direct exposures to poultry birds with significantly elevated odds ratios include: contact with domestic poultry (reported by 6% of cases), contact with chickens (12% of cases) at home (9% of cases) or outside the home (3% of cases). This indicates that while direct contact with poultry presents a significantly elevated risk, it affects only a small proportion of the poultry attributed cases.

While raw milk consumption was a significant risk factor in the univariate analysis, it was reported in only a small proportion (4.1%) of cases.

- Risk factor values (e.g. odds ratio estimates) for human campylobacteriosis

The following is a summary of the risk factor calculation results.

- Living and/or working on a farm, and direct animal contact are significant exposure pathways, particularly for cattle-associated cases. This includes exposure to chickens.
- Raw milk consumption is a significant risk factor for urban cattle associated cases.
- Eating chicken outside the home is a significant risk factor for illness. There are many possible reasons for this, and the result is consistent with the previous case-control study.
- Although chicken consumption is not significant, there is elevated risk from a number of risk factors associated with poultry handling and preparation in the home.
- Eating a vegetarian meal is a significant risk factor, possibly because it contains uncooked foods.
- Rainwater/roof tank as a water source, either in the home or elsewhere, is a risk factor for campylobacteriosis.
- The use of proton pump inhibitors as a medication is a significant risk factor for infection.
- Contact with another person with gastrointestinal symptoms, particularly close contact, is a risk factor.
- Exposure to compost was a risk for infection in the initial univariate analysis, but after selection of actual compost exposures, this was no longer significant.

INTRODUCTION

Campylobacteriosis is the most commonly notified enteric disease in New Zealand. Despite an almost halving in the notified case rate following food-related interventions [1] it still has the greatest health burden of food-borne diseases in New Zealand [2, 3]. Sentinel source attribution work demonstrates poultry to be the major reservoir for human infections, with ruminants also being a reservoir [4-6].

Minimising the risk to consumers of foodborne disease is a primary goal for New Zealand Food Safety (NZFS). While NZFS has responsibility for food safety, the Ministry of Health (MoH) has the broader responsibility of minimising transmission of communicable diseases by non-food pathways to humans.

Despite the initial decline in human campylobacteriosis following the implementation of poultry food chain-focused interventions (disease notifications reduced by 50%, 2006-2008), the annual incidence has been relatively static in recent years [7]. This situation raises a number of risk management questions and key amongst them is determining the relative importance of **all** source reservoirs and their likely exposure pathways. While still focused on minimising poultry meat risks transmitted via the food chain, NZFS and MoH face the additional challenge of identifying and implementing risk management measures for other pathways that will contribute significantly to a reduction in human cases of campylobacteriosis in New Zealand.

Currently, knowledge of the pathways to human infection of non-poultry associated campylobacteriosis in New Zealand is relatively weak [1]. Knowledge of the overall risk factors for human campylobacteriosis in New Zealand is out of date, being based on epidemiological data from the mid-1990s [8, 9]. Generic risk factors such as dietary exposure to fresh poultry meat in different age groups, occupational and recreational exposure, and untreated drinking water have changed over this period. The ability to examine individual risk factors (e.g. raw milk consumption, barbequing chicken during summer) is also inadequate.

So as to better inform a comprehensive food-borne campylobacteriosis risk management strategy, NZFS commissioned a year-long source-assigned case-control study of notified human cases of campylobacteriosis. The methodology incorporated a case control study and a nested source attribution study to estimate the relative contributions of different reservoirs and exposure pathways to the burden of human illness.

This study is the first of its kind, using both whole genome sequencing (WGS) and the novel 'source-assigned case-control' design to achieve study objectives. In addition, the proposed methods are developments in microbiological source attribution encompassing epidemiological and genomic approaches [10, 11].

Purpose

The purpose of the study was to:

- Generate an up-to-date evidence base on the relative contributions of different source reservoirs of food-borne campylobacteriosis in New Zealand so as to inform a refreshed NZFS risk management strategy and action plan.
- Provide a body of information on non-food-borne pathways for human campylobacteriosis in New Zealand so as to inform potential future MoH risk management plans.

The objectives of the study were to estimate:

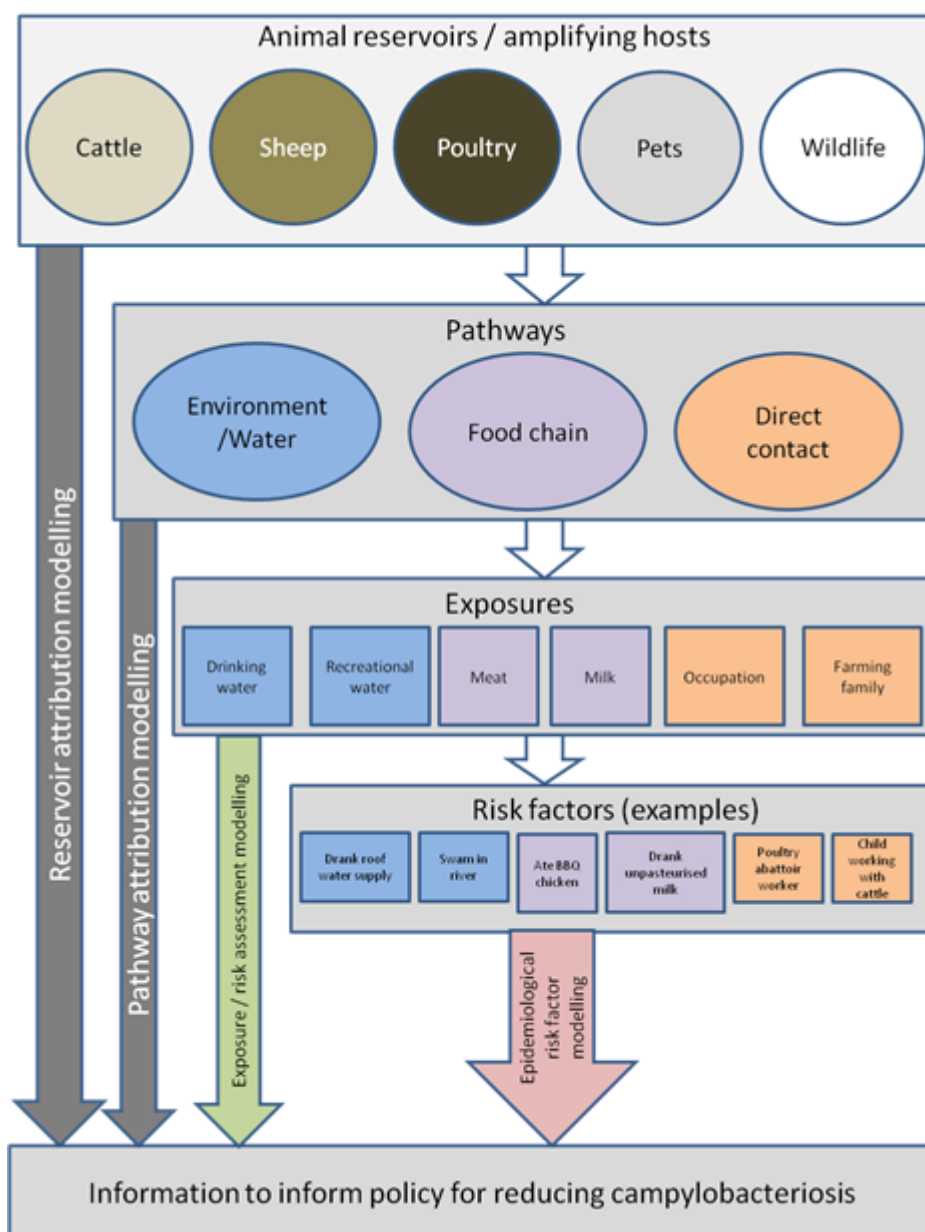
- Proportions of human cases of campylobacteriosis that are associated with individual source reservoirs.
- Proportions of human cases of campylobacteriosis that can be attributed to foodborne and other pathways.
- Proportions of human cases of campylobacteriosis that can be attributed to individual exposures.
- Risk factor values (e.g. odds ratio estimates) for human campylobacteriosis.

METHODS

General approach

Source attribution is the estimation of the relative contributions of different sources to the burden of human illness to inform policies for prevention and control. The different elements of campylobacteriosis source attribution fit within an overall framework [12] as shown in Figure 1. Source: [13].

Figure 1. Framework showing sources of information and modelling approach for the transmission of campylobacteriosis



The study approach included:

- A case-control study of notified cases sampled in a major urban centre (represented by the region served by Auckland Regional Public Health Services) and a mixed urban/rural area (represented by the region served by MidCentral Public Health Services), between 12 March 2018 and 11 March 2019.
- Assignment of source reservoir attribution of the human campylobacteriosis cases sampled from these two regions over a year. This was done by WGS of *Campylobacter jejuni* and *C. coli* isolates from faecal samples of notified human cases and from relevant sources (poultry, cattle, sheep), and using modelling to assign a probable source for each case.
- A source-assigned case-control study [10] of a subset of the notified cases of campylobacteriosis in the New Zealand population.

Participating organisations, accountabilities and timeline

Sponsor and funder: NZFS, Ministry for Primary Industries (MPI)

Study design, planning and execution: Massey University and the Institute of Environmental Science and Research (ESR) in collaboration

Participating Public Health Services (case interviews): Auckland Regional Public Health Services (ARPHS), MidCentral Public Health Services (MCPHS)

Contracted control interview provider: UMR Research

Control population: members of the New Zealand Health Survey (NZHS) cohort resident in the above public health services catchment areas who had given permission to the Survey to be informed of and contacted to request their participation in other health studies.

Participating human diagnostic laboratories: Labtest (Auckland), hospital laboratories at Middlemore, Auckland and North Shore Hospitals, Medlab Central (Palmerston North)

Source samples: provided by poultry processor laboratories suggested by the Poultry Industry Association of New Zealand (PIANZ), and cattle and sheep meat processing plants recommended by the Meat Industry Association (MIA).

Study Setting/Locations

The study was conducted in two public health services (PHS), serving five district health boards (DHBs), distributed around New Zealand, covering approximately 40% of the New Zealand population in 2016:

- Auckland Regional Public Health Services (Auckland, Waitemata and Counties Manukau DHBs)
- MidCentral Public Health Services (MidCentral and Whanganui DHBs).

Population and 2016 notification data for the two PHSs are shown in Table 1.

Table 1. Background data for the two public health services, 2016

Name	District Health Board (DHB) Coverage	Proportion of New Zealand Population Covered ^a	Campylobacteriosis notifications
Auckland Regional Public Health Services (ARPHS)	Auckland, Waitemata, Counties Manukau	34.7%	1799
MidCentral Public Health Services (MCPHS)	MidCentral, Whanganui	5.3%	384

^a Source: http://archive.stats.govt.nz/browse_for_stats/population/estimates_and_projections/subnational-pop-estimates-tables.aspx

For the remainder of this report the two study regions are referred to as Auckland and Manawatū-Whanganui.

Study Population

The study population (cases) was drawn from all laboratory notified cases of campylobacteriosis during the period of the study (one year) aged six months and over with a recorded place of residence in the regions covered by the Auckland and MidCentral PHSs on date of notification.

The PHSs were selected to give a reasonable representation of the New Zealand population, based on current knowledge of human demographics and reservoir sources associated with campylobacteriosis, including:

- geographical location (urban/rural)
- population ethnicity
- farming types – dairy, beef, sheep.

Selection of sample size

It was estimated that case numbers of ~1100 and control numbers of 600 would provide sufficient power to detect odds ratios in the range that would be expected from a case control study into enteric disease. These estimates were supported by the following calculations.

The larger case set of ~1100 cases provided a case:control ratio of ~1.8. The estimated odds ratios that would be detected with 80% power and 5% significance given 1100 cases

and 600 controls for a range of exposure prevalences in cases and controls are shown in Table 2.

Table 2. Odds ratios for varying exposure prevalences, in the larger case control study with ~1,100 cases interviewed

Controls exposed (%)	Odds ratio ^a	Cases exposed (%)
1	3.3	3.2
2.5	2.2	5.3
5	1.8	8.7
7.5	1.7	12.1
10	1.6	15.1
20	1.4	25.9

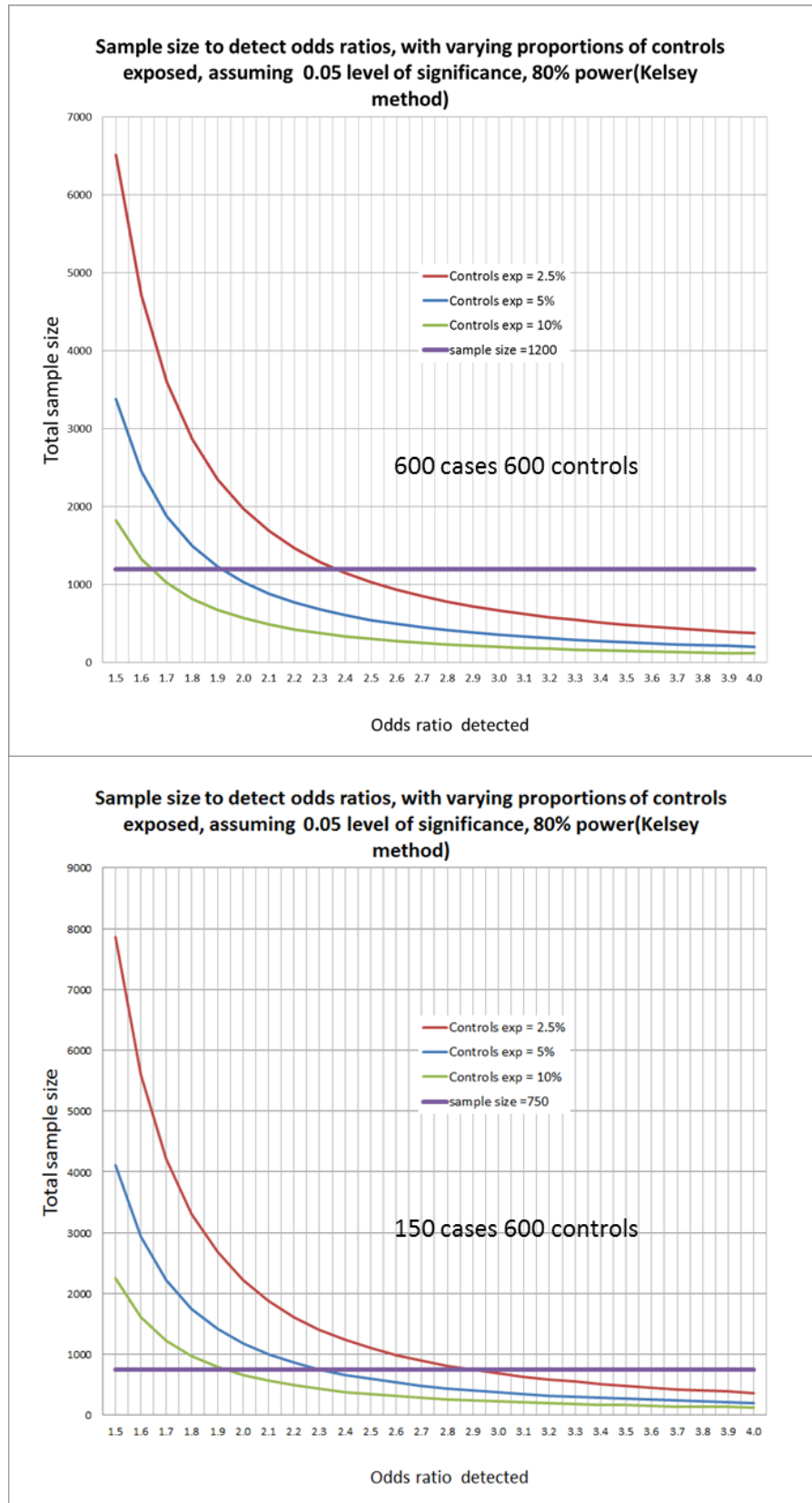
^a Detected with 80% power, assuming a P value of 0.05 (Kelsey method)

For the nested source-assigned case-control study, a 1:1 case:control ratio was targeted, with 600 cases and 600 controls recommended. This target was based on the rationale that a conventional study with at least 600 cases and 600 controls would provide 80% power to detect an odds ratio of ~2.4 at a significance level of 0.05 for an exposure that occurred in 2.5% of the controls (e.g. the estimated proportion of people consuming raw milk in New Zealand). Figure 2 illustrates the relationship between sample size and power using the Kelsey method [14].

For a source assigned subset of 150, such as a ruminant-assigned subset, the same number of controls (i.e. at a 1:4 case:control ratio as there would still be 600 controls) would detect an odds ratio of 3.0 with 80% power at a significance level of 0.05 for an exposure that occurred on 2.5% of the controls. Such a sample size is achievable within a 12 month period in two locations. As source attribution studies have not been conducted in areas other than Manawatū-Whanganui to date, it was difficult to predict how many cases would be assigned to ruminants and poultry in both Auckland and Manawatū-Whanganui. However, a detailed analysis of the Manawatū-Whanganui data, adapting the asymmetric island model to include rurality as a covariate [15], indicated that in highly urban areas approximately 20–25% of cases would be attributed to ruminants. Assuming a similar attribution to urban Auckland, and including the Manawatū-Whanganui cases, an estimate of 150 ruminant associated cases was considered to be reasonable. Further, a study duration of at least 12 months would capture seasonal patterns.

The typing of at least 150 isolates from each source was considered to provide sufficient statistical power, based on a previous analysis of the precision afforded by different sample sizes in source attribution studies [16].

Figure 2. Relationship between sample size, power and the odds ratio detected assuming different ratios between the number of cases and controls



Case selection

Laboratory-confirmed notified cases of campylobacteriosis aged six months or more notified to the participating PHSs from 12 March 2018 to 11 March 2019 were identified and every other case (i.e. half the cases) or their proxies (parent or guardian) were selected in the Auckland region and every case or proxy selected in the Manawatū-Whanganui region.

Cases were individuals notified by a diagnostic laboratory as being positive for *Campylobacter* spp. and, therefore potentially subject to PHS investigation/management.

Study case definition

A case to be entered in the study was a person notified to a participating PHS 12 March 2018 to 11 March 2019 who:

- Had a recent acute illness with symptoms of diarrhoea, abdominal pain and/or cramps, which may have been accompanied by fever and blood in the stool, or who had a medical reason for a clinical sample being submitted.
- Had a *Campylobacter jejuni* or *C. coli* infection culture confirmed by ESR's Public Health Laboratory (PHL).
- Had not been detected by case finding in an enteric disease outbreak investigation.
- Had completed a case interview.

Exclusion criteria for cases

Cases were excluded from the study if, during interview, it was determined that a notified person:

- Was asymptomatic
- Was unable to recall onset date of symptoms.
- Had onset of symptoms(s) more than 14 days prior to date of notification.
- Was not able to communicate (personally or through proxy if child) in English.
- Was resident in an institution or equivalent (i.e. did not have access to a personal phone) at date of notification.
- Had another episode of gastrointestinal illness in the month prior to the current illness.
- Had travelled overseas during the incubation period (7 days prior to illness onset).

Targets for case numbers

In order to determine how many cases needed to be selected for interview, certain assumptions were made:

- There would be similar numbers of notified cases in the two locations from 12 March 2018 to 11 March 2019 as for the 2016 calendar year. The case total was adjusted by excluding cases less than six months of age. In 2016, the numbers of notified cases less than six months were seven and one for Auckland and Manawatū-Whanganui, respectively.
- Approximately 5% of cases would be excluded for not meeting the case definition (asymptomatic, onset >14 days before notification, non English speakers, institutionalised (no phone access)).
- A further 10% of cases would either refuse to participate, or the interview would be incomplete. This estimate was based on the experience from a recent New Zealand STEC case-control study where 93.5% of cases were recruited [17].

Selecting every second case (900 cases) for interview in the Auckland region would generate up to approximately 770 interviewed cases, and every case in the Manawatū-Whanganui region (384 cases) would generate up to approximately 330 interviewed cases, total 1100 cases (See Figure 3).

Control selection

The NZHS is an annual survey of individuals from approximately 14,000 randomly-selected households. The survey collects information about common health conditions and diseases, health services used, and factors that affect New Zealanders' health [18]. Members of the NZHS cohort, who had given consent to be approached to participate in further studies, were the control population.

Study control definition

From the NZHS cohort, controls were defined as; a person who was resident in the participating PHSs from 12 March 2018 to 11 March 2019 who:

- Had not been notified with campylobacteriosis in last 30 days.
- Had not had a recent (within last 30 days) acute illness with symptoms of diarrhoea, abdominal pain and/or cramps, which may be accompanied by fever and blood in the stool.
- Was able to communicate (personally or through proxy if child) in English.
- Was not resident in an institution or equivalent ((i.e. does not have access to a personal phone) at date of notification.
- Was not part of an enteric disease outbreak already identified at date of selection.

Targets for control numbers

NZHS cohort population numbers in relevant areas are shown in Table 3 (Neil Tee, CBG Health Research Ltd., pers. comm., August 2017). Note that this is the population figure including both adults and children; the actual number of households was 3720.

Table 3. NZHS cohort numbers in relevant DHBs.

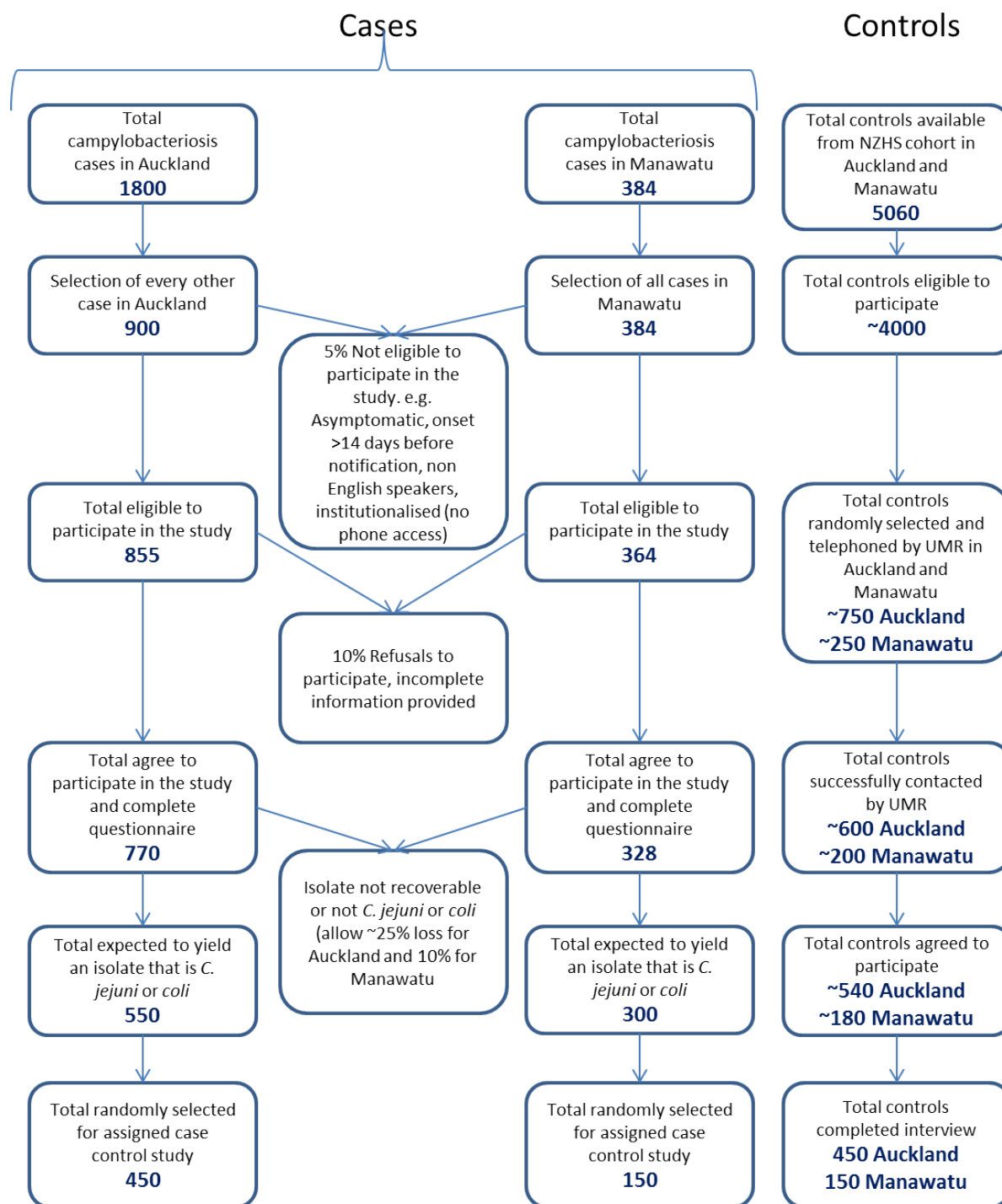
DHB	NZHS Cohort population
Auckland	1100
Counties Manukau	1650
Waitemata	650
MidCentral	1200
Whanganui	460
All	5060

DHB: District Health Board, NZHS: New Zealand Health Survey

The control interview provider advised that this pool of interviewees was sufficient to recruit the 600 control interviews required (Alice Kan, UMR, pers. comm.).

An overview of the study design and target sample sizes is provided in Figure 3.

Figure 3. Design flow diagram showing recruitment of cases and controls and estimated participation rates



The loss to follow-up of controls was difficult to predict as the participants were highly motivated members of an existing cohort. Estimates for control losses were based on this assumption, and case loss estimates were based on a previous STEC case control study [17].

Recruitment of participants

Background

Campylobacteriosis is a notifiable disease under the Health Act 1956 and thereby notified cases are subjected to public health investigation and management as appropriate. Notification to the local medical officer of health of scheduled diseases, including campylobacteriosis, is required by both clinical laboratories and diagnosing clinicians, with laboratory reporting usually occurring first. Laboratories employ a range of detection methods for *Campylobacter*, some being culture-based and others rapid detection.

The case-control element of the study was designed to integrate as fully as possible with standard public health services case investigation and management processes and to make the minimum imposition on cases and controls. Case interviews were required to be carried out as rapidly as possible after notification, to allow for the best exposure/risk factor recall within the disease's incubation time of up to 10 days. There would have been already at least a five-day interval from an individual's exposure to *Campylobacter* to his/her notification as a case of campylobacteriosis due to disease incubation and clinical and/or laboratory diagnosis.

The study data collection occurred over 365 days, both human campylobacteriosis cases and *Campylobacter* in potential exposure sources varying by season [19].

Recruitment of cases

At the time of phone contact by public health staff, all selected notified cases of campylobacteriosis (or their proxy reporters) within the participating PHSs were informed of the study and its details. Cases were asked if they wished to contribute anonymised information to the study. If they gave verbal consent, a questionnaire was administered over the telephone by the public health employee. This gathered both normal public health investigation information and more detailed risk factor and exposure data (see attached questionnaire in Appendix A). Personal identifiers were collected at this stage, as the questionnaire responses fulfilled both public health and study purposes. Cases who chose not to participate in the study were asked to co-operate with standard public health investigation activities.

Following successful interview, cases were sent an information sheet on the study, contact details for further information, and details of how to withdraw their interview information if they had changed their mind (See Appendix B). A website was also established to provide another channel for further information (Appendix C).

The step-by-step process included:

1. PHS receives notification from laboratory or clinician for campylobacteriosis.
2. PHS creates campylobacteriosis case in EpiSurv.
3. Create case process that initiates questionnaire in REDCap¹ for every second case for Auckland and every case for Manawatū-Whanganui.
4. PHS initiates contact with cases, making up to 3 attempts within 2 days.
5. PHS conducts interview with case by using the REDCap questionnaire.

¹ REDCap (Research Electronic Data Capture), a browser-based, metadata-driven electronic data capture (EDC) software solution and workflow methodology for designing clinical and translational research databases.

6. If case agrees and interview is complete, then all data are uploaded to the SACNZS database, and EpiSurv² form is populated.
7. If case declines, for Manawatū-Whanganui only the EpiSurv case report form is populated, while at Auckland the interview is concluded.

Recruitment of controls

The Chief Client Officer, Ministry of Health (MoH) gave permission for members of NZHS cohort, who had given consent to be approached to participate in further studies, to be contacted. ESR sent a letter to all those individuals resident in the DHBs served by the two PHSs, informing them of the study, that it had MoH support and HDEC Ethics Approval (Appendix D) and that they may be contacted and asked to participate.

The MoH's NZHS contractor supplied these persons' contact details to the study. A market research company experienced in public health research was contracted to recruit, by telephone, participants fulfilling the control criteria from this database and carry out interviews with them. Frequency matching occurred to the level of expected individual PHS case proportions and broad population age distributions. Verbal consent was obtained using the identical study description information as for cases, unless inappropriate e.g. where referred to having been notified with campylobacteriosis. The same questionnaire, minus personal identifiers and current campylobacteriosis illness specific questions and subjected to cognitive testing processes by the company, was administered by telephone by trained interviewers.

Measurement tools used

Based on previously published studies, both in New Zealand and overseas, expected risk factors for campylobacteriosis were:

- Living or working on a farm/animal processing
- Direct contact with animals
- Poor personal hygiene (lack of handwashing)
- Occupations that involve working with animals, food, the outdoors, contact with sick people (healthcare/rest home, early childhood)
- Taking gastric treatment that reduces the acidity of the stomach
- Taking immunosuppressive drugs, or having immunosuppressive treatment
- Having a long term gastrointestinal illness
- Overseas travel to certain countries
- Contact with sick people (although person-to-person transmission is considered less likely for campylobacteriosis than other enteric illnesses)
- Consumption of certain foods, particularly poultry, and raw milk products
- Consumption of undercooked foods, particularly poultry (pink in the interior)
- Consumption of uncooked foods, particularly salads, vegetables, fruit
- Handling of certain (contaminated) foods, particularly poultry, during food preparation
- Handling of certain (contaminated) foods, particularly poultry, during food preparation without hygienic handling and cleaning, leading to cross contamination
- Consumption of certain foods in particular settings
- Consumption of untreated water
- Recreational swimming/activities in contaminated water

² EpiSurv is the national notifiable disease surveillance database, operated by ESR on behalf of MoH. It is a secure web-based application based on the Surveillance Information New Zealand (SurvINZ) architecture.

- Handling contaminated materials, especially contaminated with human or animal faeces
- Cross contamination caused by flies.

A purpose designed questionnaire was administered by telephone to cases and controls. It was designed utilising experience and questions from enteric disease attribution studies in both New Zealand and internationally. It was both pretested and piloted and received cognitive testing by the company contracted to conduct the control interviews.

The questionnaire (see Appendix E) covered the following topics:

- Introductory questions
- Consent
- Eligibility
- Demographics
- Illness
- Travel
- Activities
- Exposures
- Food consumption, preparation and kitchen hygiene.

Testing showed it took approximately 20 minutes to administer, although the overall contact time could be longer if the case sought public health advice.

Administration to cases was by public health staff and to controls by market research staff. All interviewers (at the market research unit and PHSs) were trained in both using the tool and data entry.

Case-control study

PHS staff aimed to contact cases within two days of e-notification, making a minimum of three attempts, allowing one day's grace for public holidays.

Consenting cases had a questionnaire administered to them by telephone by public health staff which was directly entered into REDCap and also populated their EpiSurv case record. Cases who chose not to participate in the study were asked to co-operate with standard public health investigation activities at MCPHS (i.e. completion of the EpiSurv questionnaire at MCPHS) or sent information on illness management and prevention (ARPHS).

Cases who, based on their questionnaire responses, did not fulfil the inclusion criteria or met the exclusion criteria were withdrawn from the study and had their REDCap records erased. EpiSurv records of all cases were retained for public health services purposes.

Each case's record in the master data file was then anonymised and assigned a study number to be used as a unique identifier for the overall study dataset.

Controls were contacted using the same introductory text as the cases, and were interviewed by telephone by staff from a contracted market research company using a questionnaire that was aligned with that for cases (excluding questions regarding the illness) (see Appendix E).

Data handling

ESR operates the national notifiable disease surveillance database, EpiSurv, on behalf of MoH. It is a secure web-based application based on the Surveillance Information New Zealand (SurvINZ) architecture. Diagnostic laboratories electronically notify cases of notifiable diseases into EpiSurv, which collates the information on a real-time basis. Case identifiable data is held at the individual's local public health services and the national dataset holds de-identified data. Public health services use EpiSurv as their recording vehicle for case investigations, with data collected including case demographics, clinical features and risk factors.

Eligible cases triggered the initiation of a study interview, using the questionnaire for the participating PHSs. Questionnaire information from consenting cases was directly entered into the questionnaire configured for REDCap. Anonymised control responses were handled similarly, using Qualtrics, the software used by the market research company.

Each case's interview record was given a unique identifier to enable linkage to their laboratory sample. The NHI number from the lab isolate (see below) and the EpiSurv number from the PHS were used to link to the common study identifier, which was used as a unique identifier for the overall study dataset.

Case and control interview information recorded using REDCap or Qualtrics³ software, respectively, was entered into the secure web database by each PHS (cases) and the telephone survey company (controls), using assigned login and password, with access restricted to only those cases or controls that they interviewed. A study identification number was assigned by an ESR staff member with administrator privileges, and the ability to link EpiSurv and NHI numbers.

Address information for notified cases and controls was used to assign a meshblock, after geocoding of address information. The assigned meshblock formed part of the REDCap record. Data analysis was undertaken after the information in REDCap was extracted into an Excel spreadsheet on ESR's secure servers, with access again controlled to relevant staff. To ensure anonymity of study cases and controls was maintained, names and addresses did not form part of the individual records in the extracted dataset for the study. The REDCap interview records were retained in case checking was required until the end of the analysis phase, after which they were deleted.

Once a common study number had been assigned to the case and isolate as part of the study dataset, the NHI and EpiSurv numbers were deleted.

Data Analysis

Interviews

As different software was used for the computer assisted telephone interviewing (CATI) of cases (REDCap) and controls (Qualtrics), a programme was written in R, a language and environment for statistical computing [20], to consolidate, clean and align the two interview datasets. This programme was written by a programmer at ESR, and peer reviewed by another ESR programmer.

Some fields provided free text answers which were not amenable to computer processing and had to be examined manually. These fields were:

³ The UMR CATI system uses Qualtrics software. The REDCap survey was converted for implementation in the UMR CATI system matching question numbering etc. and ensure the data outputs are in the correct format

Q 18 Brands of raw milk or raw milk products consumed

Q 22a Specific illnesses suffered by animals that cases were in contact with

Q 24b Locations where outdoor swimming or other activities took place

Q 25 How/where contact with contaminated materials took place (soil, sand, human poo, manure or compost)

For a few questions, case answers were aggregated due to very small numbers of answers. In particular, the questions about whether product types of meat or poultry were pink on the inside when consumed provided very few 'Yes' answers for each individual product. For this question 'Yes' answers for each product were combined into a single answer for the meat or poultry type as a whole.

All data cleaning was performed in R with the help of libraries that are a part of the tidyverse [21]. Rmarkdown (Rmd) was used throughout the study to provide updates as new data was received.

Geographical classification (urban and rural)

Meshblocks were assigned using case and control residential addresses. The meshblocks were then used to assign a category of urban/rural according to a concordance from 2015 (based on the 2013 census).

The categories of urban/rural were taken from seven categories defined by Statistics New Zealand.⁴ The categories were:

- Main urban areas
- Satellite urban communities
- Independent urban communities
- Rural areas with high urban influence
- Rural areas with moderate urban influence
- Rural areas with low urban influence
- Highly rural/remote areas

These seven categories enabled analysis of the source attribution data with urban/rural as a scale variable across the seven categories.

Where a comparison of urban/rural as a binary variable was undertaken, the three urban and four rural categories were collapsed into urban and rural categories.

These analyses are presented as boxplots later in this report.

Seasonality

In New Zealand seasons are normally defined by the following calendar months:

- Spring: September, October and November
- Summer: December, January and February
- Autumn: March, April and May
- Winter: June, July and August

Results from the study have been tabulated into quarters. These quarters were:

- First: 12 March 2018 to 10 June 2018
- Second: 11 June 2018 to 9 September 2018
- Third: 10 September 2018 to 9 December 2018

⁴ http://archive.stats.govt.nz/browse_for_stats/Maps_and_geography/Geographic-areas/urban-rural-profile/defining-urban-rural-nz.aspx accessed 13 August 2019

- Fourth: 10 December 2018 to 11 March 2019

For the purpose of analysis, these quarters were designated autumn, winter, spring and summer.

Control interviews were provided without a specific date for the interview during each month, consequently for seasonal analysis control data were aggregated into the seasonal months above.

Occupations

Both cases and controls were asked about their occupations.

For cases, as part of the normal EpiSurv report form, occupation is selected from a drop down menu. This menu includes the Australian and New Zealand Standard Classification of Occupations (ANZSCO), 2013, Version 1.2. However, the list in EpiSurv has been augmented with a number of codes for categories not included in the ANZSCO List. Mostly these relate to categories such as mother, student, child, unemployed etc. In addition the ANZSCO coding was not always consistently applied, either for category, or level of specificity.

Consequently the occupation data for cases had to be examined manually, and some reassignments made to improve consistency.

For controls the listed occupations were dominated by the categories “NA” (130/600, possibly retired) and “Currently unemployed” (143/600, possibly also retired). This may reflect the composition of the NZHS cohort. Control occupations were not analysed further.

Univariate and multivariate analysis

Additional code files were written for the univariate logistic regression analysis and multivariate regression analysis. All exploratory data analysis/univariate logit results were then combined into this Rmd document. All code is conducted under Git version control in the R project.

To estimate the importance of exposure pathways, Population Attributable Fraction (PAF) values were calculated from multivariate models, which seek to better represent the multiple risk factors and their interactions than can be achieved with univariate models. Developing multivariate models is an iterative process, driven by specific hypotheses about the epidemiology of campylobacteriosis. Risk factor parameters to be included in the models are chosen based on researcher experience and plausible biological hypotheses.

The PAF gives the maximum proportion of diseased individuals in the population that can be attributed to the risk factor of interest. The adjusted PAF for case-control studies described by Bruzzi *et al.* [22] is defined as:

$$PAF = \frac{P_e (RR - 1)}{1 + P_e (RR - 1)}$$

Where P_e is the probability of exposure in the population to the risk factor being considered. RR is the relative risk which is replaced with the adjusted odds ratio calculated from a logistic regression model.

Several statistical techniques were adopted in order to determine which risk factors appeared most significant according to the data. These methods included:

1. Step-wise logistic regression: Step-wise regression is an approach for determining the ‘best’ model by the addition or removal of variables from the model that results in a reduction in the Akaike information criterion (AIC).

2. Least Absolute Shrinkage and Selection Operator (LASSO) approach. The step-wise logistic regression approach involves using ordinary least squares to fit a linear model that contains a subset of the covariates in the dataset. Rather than selecting a certain subset of covariates to include in the model, the LASSO approach allows us to fit a model which contains all risk factors (covariates), but shrinks some of these covariates coefficients towards zero. The shrinking of these coefficients to exactly zero makes the LASSO approach useful for selecting variables of importance and also helps overcome the difficulties of multi-collinearity faced in the step-wise logistic regression approach.

3. Random forests can be implemented in R using two different approaches. One is the R package `randomForest` [23]. One disadvantage of the `randomForest` package is that splits in trees are often favoured by variables with a large number of categories or numerical variables and that the dataset used must have no missing data. Techniques 1-3 require that there be no missing data, and so were applied to a subset of the full dataset. Another package in R for implementing random forests, the `party` package [24], allows for the incorporation of missing data and accounts for the splitting problem observed in the `randomForest` package. This package was applied to the full dataset.

In addition to these data-driven variable selection techniques, additional variables of importance based on researcher experience or plausible biological hypotheses were incorporated, and some variables that were significant according to the above methods but are not plausible were removed to prevent overfitting, particularly when modelling the cattle assigned cases where we have fewer numbers.

Further details on multivariate modelling are given in Appendix F.

Safety considerations

The risks to participants were minimal. Questions and interviewer's instructions were worded to ensure cases were not led to attribute causality for their illness to an individual, business or source. Should any interviewee demonstrate distress, the study interview was terminated and organisational protocols for such events applied.

The privacy of the research participants was paramount with all data of cases confirmed in the study being anonymised and records of others destroyed. Monitoring of compliance with data protection protocols within participating organisations occurred.

Source assigned case-control study

A source assigned study was nested within the case-control study. To enable source attribution, isolates of *Campylobacter jejuni* or *C. coli* from notified cases and sources (poultry, cattle, sheep) were obtained.

Human *Campylobacter* isolates

As outlined above, the source-assigned case-control study ideally required 600 interviewed cases, for which a *Campylobacter* spp. isolate had been obtained, sequenced and then attributed to potential sources. It was assumed that:

- Human faecal samples from notified cases were stored refrigerated for up to seven days before sending to ESR for processing to recover an isolate. Massey University experience is that up to 10% of samples stored for that period will not yield an isolate (Anne Midwinter, pers. comm.).
- Labtests laboratory in Auckland use a DNA-based test to identify notifiable cases of campylobacteriosis. They advised that for 15-20% of the samples which are positive based on the DNA test, an isolate cannot be recovered (Arlo Upton, Labtests,

personal communication). Labtests provided the large majority of samples from the Auckland region.

- MedLab Central in the Manawatū-Whanganui region use a culture based test and no loss estimates were needed.

Swabs from faecal samples or colonies on plates used to isolate *Campylobacter* spp. from cases that were notified by the human diagnostic laboratories were forwarded to the ESR Public Health Laboratory, for processing to recover the *Campylobacter* spp. isolate and confirmation of the species as *C. jejuni* or *C. coli*. For other sample types (blood, tissue, CSF etc.) a swab from the positive culture plate was sent by the diagnostic laboratory, for the same processing.

Cases whose clinical sample did not confirm as being *C. jejuni* or *C. coli* were withdrawn from the study.

Human isolate estimates

- For an expected 770 interviewed cases from Auckland, it was estimated that an isolate would be recovered from approximately 550 samples.
- For an expected 330 interviewed cases from MidCentral, it was estimated that an isolate would be recovered from 300 samples.
- To generate the required number of 600 cases with interviews and an isolate, the expected Auckland:Manawatū-Whanganui split, based on 2016 notified cases was 494:106. Given the need to enhance the number of rural cases so that risk factors for this population can be determined, it was decided to increase the sampling fraction in Manawatū-Whanganui.
- To provide increased numbers of rural cases the Auckland:Manawatū-Whanganui split was adjusted to 450:150.
- These 600 cases were to be selected at random from the estimated 850 cases who would have both an interview and an isolate.

Human isolate sampling procedures

Auckland Hospital Laboratory (LabPlus), Labtests Auckland, Middlemore Hospital and North Shore Hospital took a sample from the remaining faecal material using a charcoal swab, for cases from Auckland, Counties Manukau and Waitemata regions. Faecal material was taken from every sample processed by the laboratory giving a positive *Campylobacter* result, either by plate culture or polymerase chain reaction (PCR) direct test. Whilst the original sample was likely to be a faecal sample, other samples (blood, tissue etc.) were not excluded. The swabs were collected as soon as possible after receiving a positive result and the swab was placed back in its original container and refrigerated at 4°C for up to a week before sending to ESR. The swabs were identified by the NHI number accompanying the notification. The swabs were couriered weekly to ESR at ambient temperature.

Medlab Central Laboratory took samples from cases from Manawatu and Whanganui regions. Using a charcoal swab, a sample was taken from several *Campylobacter* colonies with identical morphology that appeared on each positive culture plate. The swabs were collected as soon as possible after receiving a positive result and the swab was placed back in its original container and refrigerated at 4°C for up to a week before sending to ESR. The swabs were identified by the NHI number accompanying the notification. The swabs were couriered weekly to ESR at ambient temperature.

Source *Campylobacter* isolates

Concurrently with the 12-month case-control and human isolate parts of the study, a sampling programme was conducted to obtain *Campylobacter* spp. isolates to allow source assignment. Samples were obtained monthly from the same regions as the participating PHSs, and included poultry and ruminant animals (dairy and beef cattle, sheep). Isolates were obtained through standardised sample processing protocols, and purified and confirmed *C. jejuni* and *C. coli* isolates were extracted to provide DNA for WGS. The sampling programme was designed to provide sufficient numbers of isolates (150 from each source, see below) to allow source assignment of the isolates from human cases (Figure 4).

Poultry

Laboratories providing analytical services to companies belonging to PIANZ, as well as poultry plant laboratories, provided culture plate swabs to enable recovery of 150 isolates from their monitoring sampling conducted for the National Microbiological Database (NMD). Recovery rates of isolates from these culture plate swabs was expected to be 90% or better, so it was expected that approximately 170 swabs would be required (Figure 4).

Poultry isolates were provided by processing plants belonging to four major New Zealand poultry processing companies.

Of the poultry plants included in the study, one has its own laboratory, otherwise laboratory testing is carried out by commercial laboratories. Sampling was arranged with these laboratories, having first obtained permission from the relevant poultry processing companies.

Ruminants

The aim was to obtain 150 isolates each from cattle and sheep sources (total 300), obtained from meat plants in the North Island, serving the retail markets in Auckland and Manawatū-Whanganui. Charcoal swabs of faecal material were taken from the recto-anal junction from animals immediately after slaughter. One swab from each of four animals was considered as a single sample (combined in a broth on arrival at ESR).

Assuming a prevalence of 90% in pooled four-animal samples (as found in on-farm sampling in Manawatū-Whanganui), it was estimated that 170 pooled samples from each species over 12 months would be needed (14 per month per species, 4 per plant and 16 animals for slaughter plant sampling) (Figure 4). Sampling was conducted by veterinarians or microbiologists at each plant.

Regular liaison with meat plants was maintained to accommodate seasonal variations in the number and type of animals being processed (especially during bobby calf season). Frequency and numbers of samples were adjusted to manage these variations.

Poultry source sampling procedures

Five poultry plants each provided up to four swabs each month. Using a charcoal swab, a single colony from one of the confirmed positive NMD plates were provided (i.e. one isolate per positive plate). The swabs were collected as soon as possible after receiving a positive result and the swab was placed back in its original container and refrigerated at 4°C for up to a week before sending to ESR. The swabs were couriered weekly to ESR at ambient temperature.

In August 2018, the provision of positive *Campylobacter* swabs for the poultry processing plants were arranged through the Antimicrobial Resistance (AMR) Project funded by NZFS. The AMR project received more positive samples each month than the SACNZ project

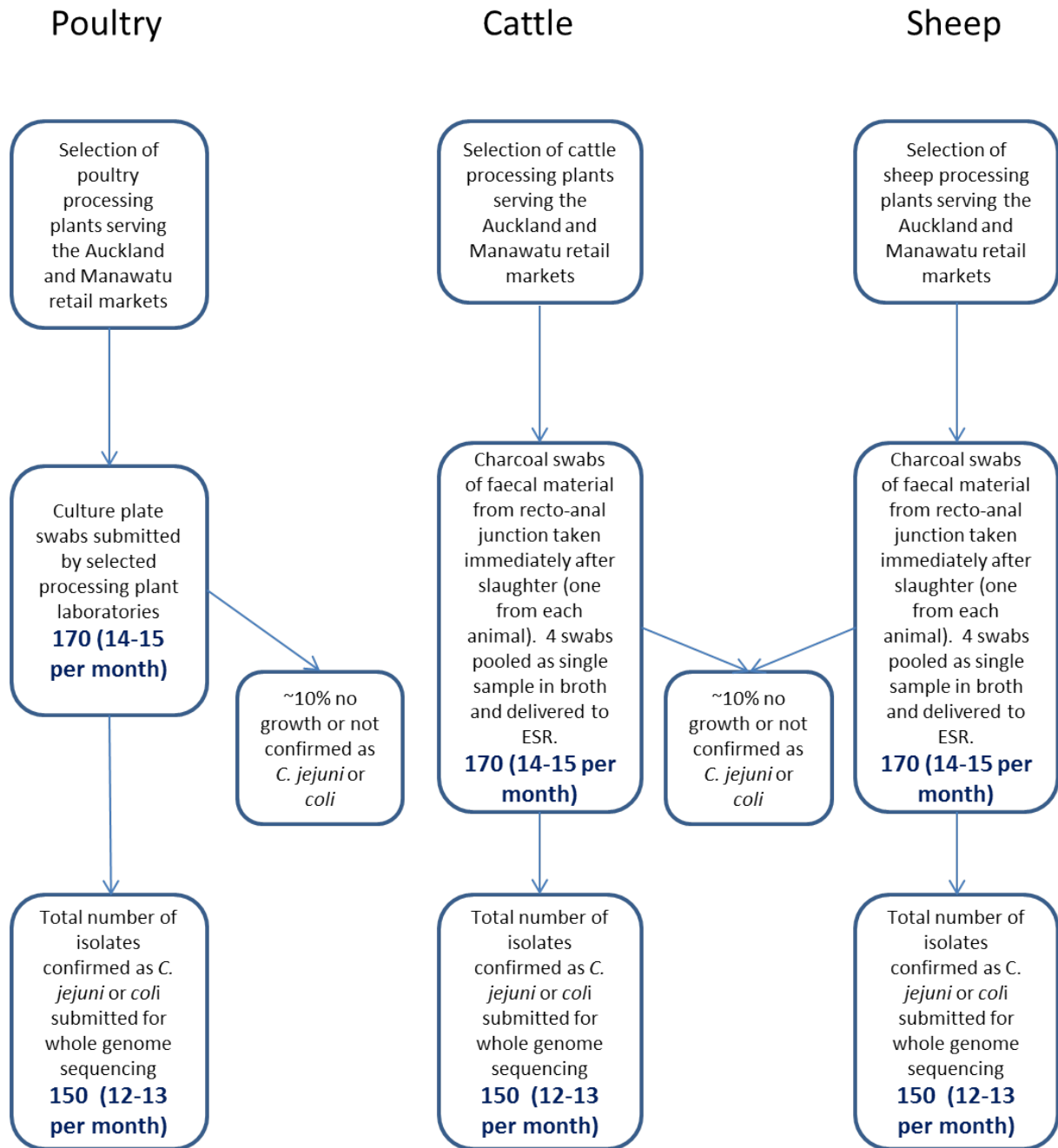
required. Therefore, the first four swabs received from each plant were designated SACNZ samples.

Further detail on microbiological procedures is given in Appendix G.

Ruminant source sampling procedures

Four cattle processing plants and three sheep processing plants each provided 20 faecal swabs each month. Cattle faecal sampling took place on the second Thursday each month and sheep faecal sampling took place on the third Thursday each month, for 12 months. Using a charcoal swab, a recto-anal faecal swab was taken from beef cattle or sheep shortly after slaughter. The swab was placed back in its original container and couriered the same day to ESR at ambient temperature. During times of low *Campylobacter* recovery from the swabs it was necessary to conduct additional sampling with the meat processing plants. Wherever possible, additional swabs were requested in the same month as the low recovery swabs, if this was not possible, additional swabs were requested in the same quarter of the year in order to preserve the seasonality differences of *Campylobacter*.

Figure 4. Source sampling plan



Whole genome sequencing and source attribution analysis

Received isolates were passaged to ensure clonality on Colombia horse blood agar (Fort Richard Laboratories, NZ) in a microaerobic (85% N₂, 10% CO₂, 5% O₂) atmosphere at 42° C in a variable atmosphere incubator (Don Whitley Scientific, UK). DNA was extracted using a QIAamp DNA mini kit (QIAGEN, Germany) following the manufacturer's instructions and sequencing libraries were prepared using a Nextera XT library prep kit (Illumina, USA). Library DNA quantity was checked by Qubit (Invitrogen, USA) quantification before library quality was assayed by Massey Genome Services using a

LabChip analyser (PerkinElmer, USA). Libraries were dispatched by Massey Genome Services to Novogene, China for sequencing via Illumina HiSeq.

Following sequencing, read data were cleaned using Trimmomatic [25]. Draft genomes were assembled using SKESA [26]. Core genome MLST profiles [27] and novel allele sequences were extracted and assigned using the R package 'MLSTar' [28].

Using MLST data, source attribution was performed using the asymmetric Island model via the R package islandR⁵, with three main sources (poultry, cattle, sheep). Covariates for the attribution included location (Auckland, Manawatū-Whanganui) and season with each allowed to vary by rurality, defined using the 2018 geographical classification levels reduced down to an urban/rural binary variable, or using the 2015 designation of a seven level scale from highly rural to highly urban areas.

Assignment of human cases to sources for source-assigned analyses was done by attributing each human case to the most likely source, based on the posterior probability of source given the sequence type with attribution performed without covariates. Human cases were assigned to a source where that source was dominant in at least 2/3 of all posterior samples. Those cases for which the attribution results were mixed (i.e. the dominant source appeared in fewer than 2/3 of samples) were excluded from source-assigned analyses.

⁵ <https://github.com/jmarshallnz/islandR> accessed 20 August 2019

RESULTS

Case and Control Recruitment

The number of case interviews completed were 598 in Auckland and 258 in Manawatū-Whanganui, giving a total of 856 interviewed cases (original targets for case interviews: 770 in Auckland, 328 in Manawatū-Whanganui). A total of 1080 clinical isolates were obtained from cases, including those who were not interviewed. The number of cases who were interviewed, and for which a clinical isolate was obtained, was 666 (Auckland 445, Manawatū-Whanganui 221).

As targeted, 600 controls were recruited and interviewed, with an age distribution that matched the age distribution of cases.

Cases

The number of cases registered in the REDCap system and the outcome of attempts to contact and interview cases are summarised in Tables 4 and 5.

Table 4. Cases created, and result of contact attempts, Auckland

Case Interviews ARPHS	Cases created in REDCap	Cases declined	Cases not eligible	Cases unable to be contacted or other reason	Cases interviewed
Total	1076	91 (8%)	165 (15%)	222 (21%)	598 (56%)
Study Tolerance	50%	10%	5%		85%

Table 5. Cases created, and result of contact attempts, Manawatū-Whanganui

Case Interviews MCPHS	Cases created in REDCap	Cases declined	Cases not eligible	Cases unable to be contacted or other reason	Cases interviewed
Total	387	46 (12%)	39 (10%)	44 (12%)	258 (67%)
Study Tolerance	100%	10%	5%		85%

Week by week data on case interviews are given in Appendix H. Quarterly statistics are summarised in Table 6.

Table 6. Summary of cases for Auckland and Manawatū-Whanganui by Quarter

Quarter	Region	Cases created in REDCap	Cases declined	Cases not eligible	Cases unable to be contacted or other reason	Cases interviewed
First (Wks 1–13)	Auckland	193	21 (11%)	18 (9%)	60 (31%)	94 (49%)
	Manawatū-Whanganui	78	12 (15%)	8 (10%)	10 (13%)	48 (62%)
Second (Wks 14–26)	Auckland	193	17 (9%)	37 (19%)	26 (13%)	113 (59%)
	Manawatū-Whanganui	67	3 (4%)	10 (15%)	6 (9%)	48 (72%)

Quarter	Region	Cases created in REDCap	Cases declined	Cases not eligible	Cases unable to be contacted or other reason	Cases interviewed
Third (Wks 27–39)	Auckland	335	21 (6%)	66 (20%)	50 (15%)	198 (59%)
	Manawatū-Whanganui	125	5(4%)	15 (12%)	16 (13%)	89 (71%)
Fourth (Wks 40–52)	Auckland	355	32 (9%)	44 (12%)	86 (24%)	193 (54%)
	Manawatū-Whanganui	117	26 (22%)	5 (4%)	13 (11%)	73 (62%)
Total		1463	137	203	267	856

Wks: weeks

The PHSs were asked to make up to three contact attempts and conduct case interviews within 48 hours after “case creation” (the date and time at which the PHS creates a case record on the EpiSurv system in response to a laboratory notification of a testing result that identifies *Campylobacter* from a case sample). Examination of timing showed that the median time to interview was under 48 hours, except for one week which coincided with a regional holiday, Auckland Anniversary Day.

Reasons for cases not being eligible for interview are summarised in Table 7.

Table 7. Summary of reasons for cases not being eligible for interview

Not eligible category	Auckland	Manawatū-Whanganui	Total
More than one pathogen	1	11	12
Poor or no English	10	0	10
Already reported as acute gastro	0	1	1
Gastroenteritis in preceding month	39	10	49
In cardiology ward		1	1
Long term illness	4	1	5
Overseas during incubation period	108	9	117
Transferred to another DHB	1	1	2
No symptoms	0	1	1
Under 6 months	2	3	5
Total	165	38	203

Clinical isolates

Although non-faecal samples such as blood or cerebro-spinal fluid were not excluded from the study, a blood sample was received for only one case. A faecal sample was also received from this case and *C. jejuni* was recovered from both samples.

Clinical samples received, and isolate recoveries by quarter for both regions are shown in Table 8.

Table 8. Clinical samples and isolate recoveries

Quarter	Clinical samples	Samples received	Isolates not obtained ^a	Isolates obtained
First (Wks 1–13)	Auckland	181	45	136
	Manawatū-Whanganui	61	2	59
Second (Wks 14–26)	Auckland	188	49	139
	Manawatū-Whanganui	63	7	56
Third (Wks 27–39)	Auckland	319	73	246
	Manawatū-Whanganui	116	7	109
Fourth (Wks 40–52)	Auckland	338	110	228
	Manawatū-Whanganui	109	2	107
Total		1375	295	1080

Wks: weeks

^a Reasons for no isolate include; no swab received, no growth from either direct plating or enrichment, or isolate not *Campylobacter*

Interviews and isolates

Tables 9 and 10 show the results from linking (or otherwise) of isolates with interviewed cases, for the entire study period (Table 9), and by quarter (Table 10).

Table 9. Cases with interview and isolate status; entire study

Region	Cases with interview but no isolate	Cases with isolate but no interview	Cases with no interview or isolate	Cases with both interview and isolate	Total
Auckland	153	304	174	445 (41%)	1076
Manawatū-Whanganui	37	110	19	221 (57%)	387
Total	190	414	193	666 (46%)	1463

Table 10. Cases with interview and isolate status; by quarter

Quarter	Region	Cases with interview but no isolate	Cases with isolate but no interview	Cases with no interview or isolate	Cases with both interview and isolate	Total
First (Wks 1–13)	Auckland	21	63	36	73	193
	Manawatū-Whanganui	11	22	8	37	78
Second (Wks 14–26)	Auckland	30	56	24	83	193
	Manawatū-Whanganui	8	16	3	40	67
Third (Wks 27–39)	Auckland	40	88	49	158	335
	Manawatū-Whanganui	12	32	4	77	125
Fourth (Wks 40–52)	Auckland	62	97	65	131	355
	Manawatū-Whanganui	6	40	4	67	117
Total		190	414	193	666	1463

Wks: weeks

The seasonality of cases and the correlation of cases created within REDCap with cases for which an interview plus isolate were obtained are shown in Figure 5 and Figure 6. The lines show good correlation, suggesting that the seasonal risk factor results associated with the isolate plus interview dataset will apply to the full set of notified cases.

The decrease in the number of cases between the peaks in weeks 39 and 44 is an artefact caused by reduced presentation to GPs over the Christmas/New Year holiday period.

Figure 5. Comparison of number of cases created and cases with both an interview and isolate - Auckland

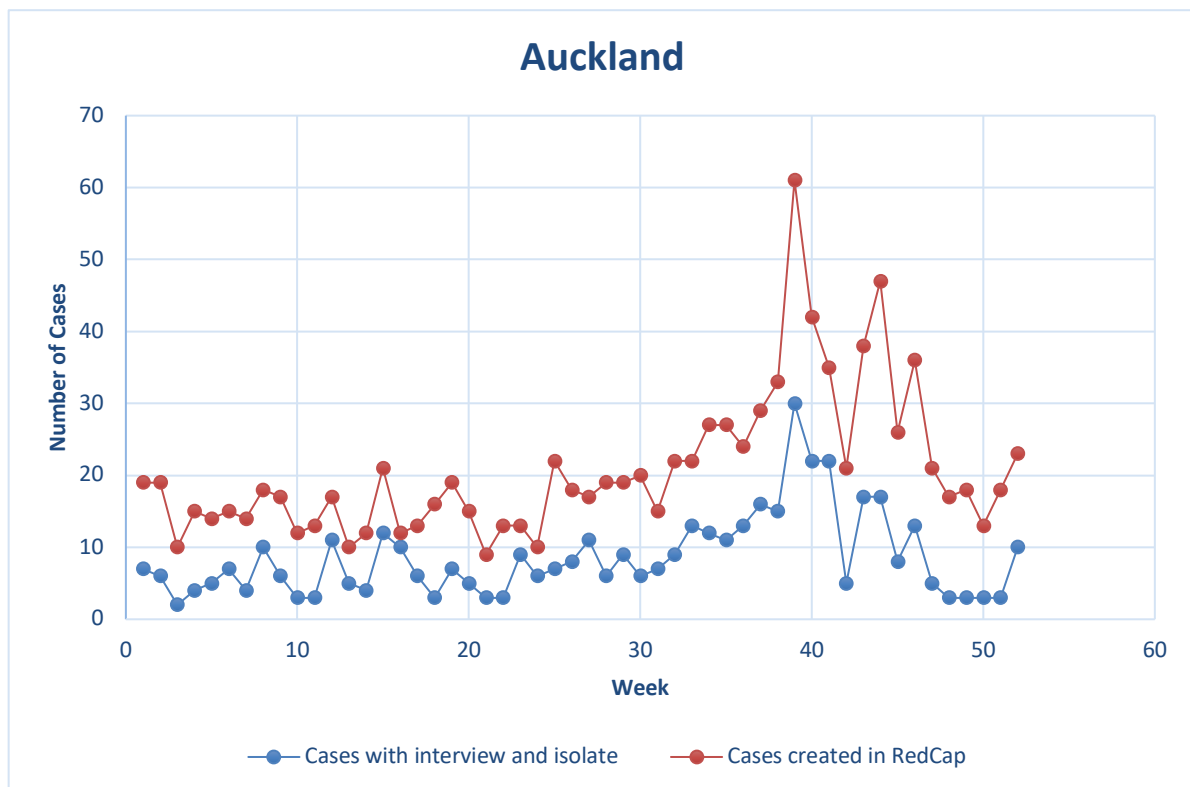
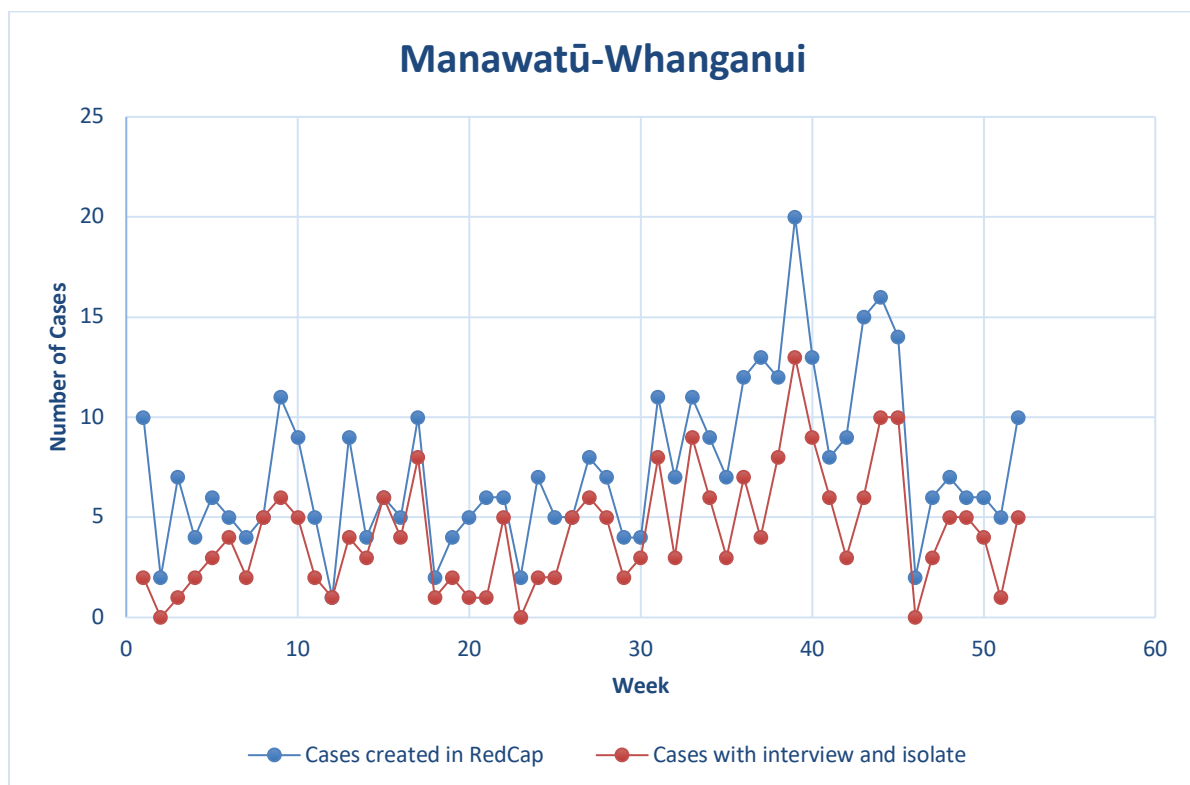


Figure 6. Comparison of number of cases created and cases with both an interview and isolate – Manawatū-Whanganui



Cases: Age Range

The distribution of cases which were interviewed, across age categories, is summarised in Table 11.

Table 11. Age distribution for interviewed cases

Age	6–11 months	1–4 years	5–15 years	16–24 years	25–44 years	45–65 years	65+ years
Case interviews, number (percent of total interviews)	16 (1.9%)	96 (11.2%)	87 (10.2%)	102 (11.9%)	192 (22.4%)	203 (23.7%)	160 (18.7%)

Controls

Control recruitment and interviews were contracted at 50 per month, and an age distribution, but not a gender balance, was specified. The specified age distribution was based on matching the age distribution for notified cases in Auckland and Manawatū-Whanganui in 2016. The age distribution of cases for March 2018 to March 2019 was similar. Table 12 and Table 13 show the gender and age distributions for controls respectively.

Table 12. Gender distribution for controls

Month	Gender		Monthly Total	Monthly target
	Male	Female		
March 2018	17	33	50	50
April 2018	21	29	50	50
May 2018	22	28	50	50
June 2018	24	26	50	50
July 2018	23	27	50	50
August 2018	27	23	50	50
September 2018	14	36	50	50
October 2018	26	24	50	50
November 2018	21	29	50	50
December 2018	25	25	50	50
January 2019	18	32	50	50
February 2019	20	30	50	50
Total	258	342	600	600

Table 13. Age distribution for controls

Age	6–11 months	1–4 years	5–15 years	16–24 years	25–44 years	45–65 years	65+ years
March	1	4	4	7	13	14	7
April	1	3	4	7	12	15	8
May	1	4	5	7	12	14	7
June	1	4	5	7	12	14	7
July	1	4	6	6	12	13	8
August	1	4	4	8	12	13	8
September	1	4	5	6	12	13	9
October	1	4	5	7	11	13	9
November	1	4	5	7	12	13	8
December	1	5	4	6	13	14	7
January	0	4	5	7	12	13	9
February	0	4	5	5	13	14	9
Total (600)	10 (1.8%)	48 (8%)	57 (10%)	80 (13%)	146 (24%)	163 (27%)	96 (16%)
Target	10 (1.7%)	49 (8.2%)	60 (10.0%)	81 (13.5%)	145 (24.2%)	156 (26%)	98 (16.3%)

Demographics for cases for which an interview and an isolate were obtained, and controls

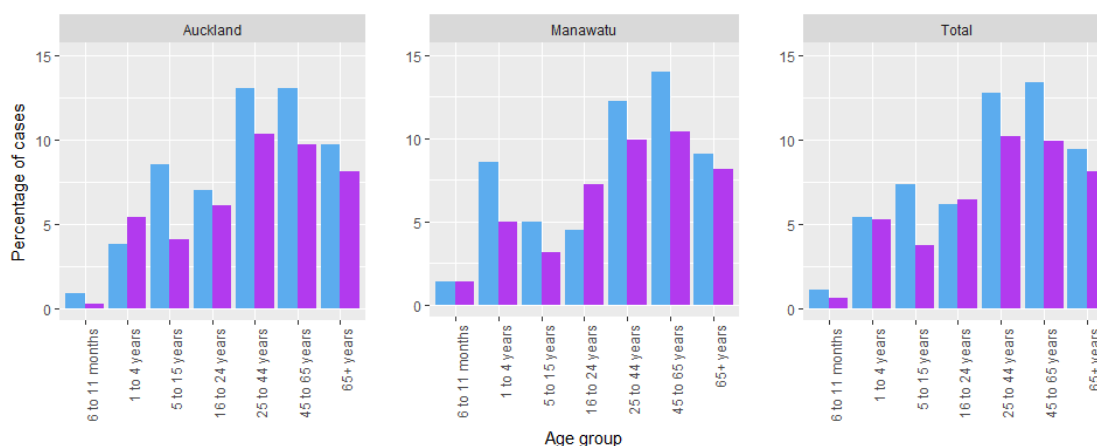
Table 14 shows the demographic details for cases and controls, while Figure 7 shows the age distribution for male and female cases.

Table 14. Demography for cases for which an interview and an isolate were obtained, and controls

	Auckland		Manawatū-Whanganui		Total	
	Case (n = 445)	Control (n = 451)	Case (n = 221)	Control (n = 149)	Case (n = 666)	Control (n = 600)
Gender						
Male	249 (56%)	200 (44%)	121 (55%)	58 (39%)	370 (56%)	258 (43%)
Female	195 (44%)	251 (56%)	100 (45%)	91 (61%)	295 (44%)	342 (57%)
Age group						

	Auckland		Manawatū-Whanganui		Total	
	Case (n = 445)	Control (n = 451)	Case (n = 221)	Control (n = 149)	Case (n = 666)	Control (n = 600)
6-11 months	5 (1%)	7 (2%)	6 (3%)	2 (1%)	11 (2%)	9 (2%)
1-4 years	41 (9%)	36 (8%)	30 (14%)	13 (9%)	71 (11%)	49 (8%)
5-15 years	56 (13%)	51 (11%)	18 (8%)	6 (4%)	74 (11%)	57 (10%)
16-24 years	59 (13%)	66 (15%)	26 (12%)	14 (9%)	85 (13%)	80 (13%)
25-44 years	104 (23%)	124 (27%)	49 (22%)	23 (15%)	153 (23%)	147 (25%)
45-65 years	101 (23%)	107 (24%)	54 (24%)	55 (37%)	155 (23%)	162 (27%)
65+ years	79 (18%)	60 (13%)	38 (17%)	36 (24%)	117 (18%)	96 (16%)
<i>Ethnicity*</i>						
New Zealand European	335 (75%)	272 (60%)	193 (87%)	121 (81%)	528 (79%)	393 (66%)
Maori	26 (6%)	49 (11%)	21 (10%)	36 (24%)	47 (7%)	85 (14%)
Samoan	10 (2%)	19 (4%)	3 (1%)	3 (2%)	13 (2%)	22 (4%)
Cook Island Maori	0 (0%)	12 (3%)	0 (0%)	1 (1%)	0 (0%)	13 (2%)
Niuean	1 (0%)	2 (0%)	0 (0%)	0 (0%)	1 (0%)	2 (0%)
Chinese	33 (7%)	38 (8%)	1 (0%)	1 (1%)	34 (5%)	39 (7%)
Indian	15 (3%)	43 (10%)	0 (0%)	2 (1%)	15 (2%)	45 (8%)
Tongan	2 (0%)	12 (3%)	0 (0%)	1 (1%)	2 (0%)	13 (2%)
Other	63 (14%)	78 (17%)	12 (5%)	7 (5%)	75 (11%)	85 (14%)
*Respondents were able to provide more than one ethnicity so percentages add to more than 100%						

Figure 7: Age distribution of male and female cases for Auckland, Manawatū-Whanganui and Auckland and Manawatū-Whanganui combined. Blue = Male, Purple = Female



Case symptoms and medical treatment

Table 15 shows symptoms and medical treatments by location for cases included in the study.

Table 15. Case symptoms and medical treatments stratified by location

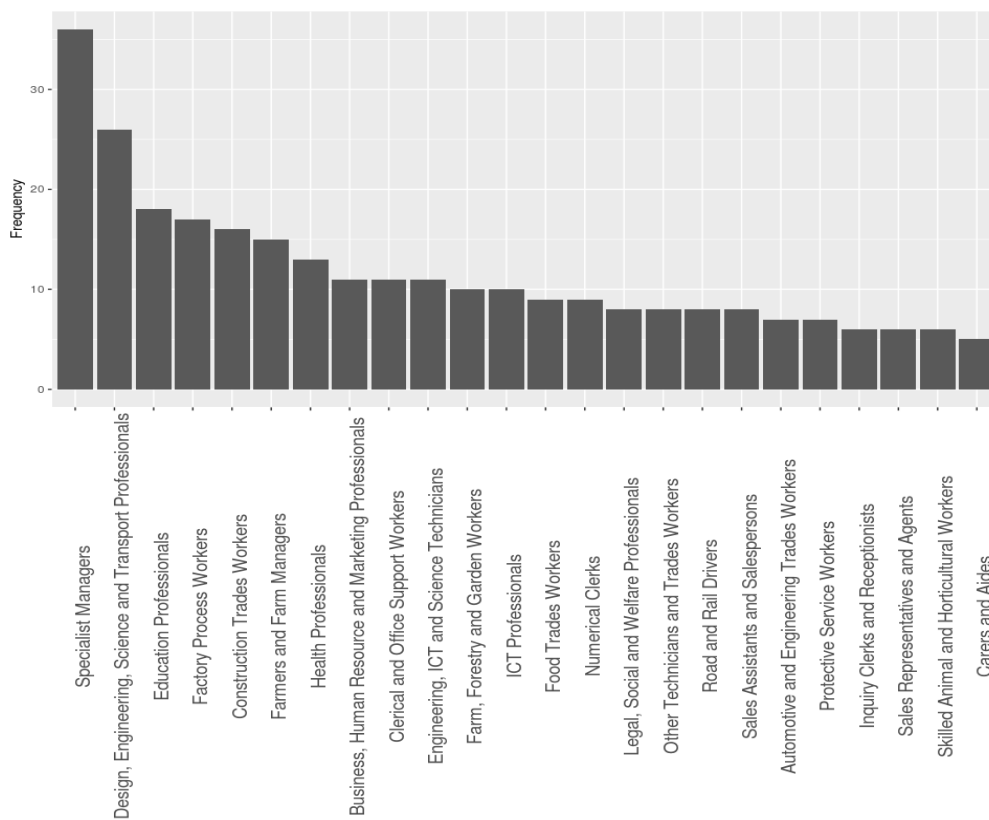
Symptom/treatment	Auckland (%)	Manawatū-Whanganui (%)	Total (%)
Vomiting	130/444 (29.3)	72/221 (32.6)	202/665 (30.4)
Diarrhoea	440/445 (98.9)	219/221 (99.1)	659/666 (99.0)
Fever	303/444 (68.2)	184/221 (83.3)	487/665 (73.2)
Headache	245/444 (55.2)	154/221 (70.0)	399/665 (60.0)
Muscle/body aches	245/441 (55.6)	176/220 (80.0)	421/661 (63.7)
Hospital admission	59/445 (13.3)	36/220 (16.4)	95/665 (14.3)
Antibiotics	159/442 (36.0)	94/217 (43.3)	253/659 (38.4)
Type of antibiotics			
Cipflox	2/147 (1.4)	0/87 (0.0)	2/234 (0.9)
Ciprofloxacin	28/147 (19.1)	11/87 (12.6)	39/234 (16.7)
Ciproxin	2/147 (1.4)	2/87 (2.3)	4/234 (1.7)
E-Mycin	10/147 (6.8)	6/87 (6.9)	16/234 (6.8)
ERA	1/147 (0.7)	0/87 (0.0)	1/234 (0.4)
Erythromycin	53/147 (36.1)	36/87 (41.4)	89/234 (38.0)
Norfloxacin	3/147 (2.0)	2/87 (2.3)	5/234 (2.1)
Other	48/14 (32.7)7	30/87 (34.5)	78/234 (33.3)

Occupations

Figure 8 shows the occupations for 281 cases, where an ANZSCO level 2 code could be determined (excludes mothers, children, students, unemployed, and cases for which no

information was recorded). The categories shown are those for which ≥ 5 cases were allocated.

Figure 8. Predominant case occupations



Geographical classification (Urban/Rural)

Table 16 shows the numbers of cases and controls assigned to each of the seven 2015 urban/rural categories using meshblocks.

Table 16. Urban rural assignment for all cases and controls

Category	Cases (% of total) ^a			Controls (% of total) ^a		
	A	M	Total	A	M	Total
Main urban area	358 (80)	81 (37)	439 (66)	414 (92)	73 (49)	487 (81)
Satellite urban community	21 (5)	18 (8)	39 (6)	21 (5)	10 (7)	31 (5)
Independent urban community	6 (1)	48 (22)	54 (8)	3 (1)	42 (28)	45 (8)
Rural area with high urban influence	27 (6)	19 (9)	46 (7)	5 (1)	11 (7)	16 (3)
Rural area with moderate urban influence	22 (5)	24 (11)	46 (7)	5 (1)	4 (3)	9 (2)
Rural area with low urban influence	8 (2)	24 (11)	32 (5)	2 (0)	9 (6)	11 (2)
Highly rural/remote area	3 (1)	6 (3)	9 (1)	0 (0)	0 (0)	0 (0)
Area outside urban/rural profile	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total^b	445	220	665	450	149	599

A: Auckland, M: Manawatū-Whanganui

^a Due to rounding, percentages may not add to 100 ^b One case and one control had no meshblock assigned

Risk factors: Statistically significant risk factors from univariate analyses, complete case and control datasets

A univariate analysis on the entire dataset of 666 cases and 600 controls was performed. The full set of results are given in Appendix I. Table 17 shows the statistically significant ($p < 0.05$) associations between cases and risk factors.

Variables related to poultry preparation and handling are included as significant risk factors in Table 17. However consuming poultry *per se* did not show a significant association between this variable and being a case or control (Cases 527/664, Controls 491/600, OR 0.92 CI 0.69, 1.24).

Table 17. Univariate risk factor analysis, all cases and controls

Question ^a	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	No, number (%)	Yes, number (%)	No, number (%)	Yes, number (%)		
<i>Gastric treatment in 4 weeks prior</i>	556/664 (83.7)	101/664 (15.2)	540/600 (90)	60/600 (10)	1.84	(1.29,2.65)
<i>Gastro treatment taken?</i>						
Losec		22/656 (3.4)		9/600 (1.5)	2.91	(1.35,6.81)
Omeprazole		52/656 (7.9)		14/600 (2.3)	4.14	(2.29,7.96)
<i>Chronic Illness?</i>	619/663 (93.4)	36/663 (5.4)	590/600 (98.3)	10/600 (1.7)	3.43	(1.73,7.44)
<i>Type of chronic illness?</i>						
Other		17/663 (2.6)		4/600 (0.7)	3.83	(1.38,13.52)
<i>Contact with someone with gastro symptoms</i>	491/665 (73.8)	90/665 (13.5)	539/600 (89.8)	49/600 (8.2)	1.96	(1.35,2.87)
<i>Close contact with someone with gastro symptoms (i.e. same household)?</i>	519/654 (79.4)	51/654 (7.8)	565/600 (94.2)	23/600 (3.8)	2.28	(1.38,3.87)
<i>Did you eat meat?</i>	37/666 (5.6)	617/666 (92.6)	57/600 (9.5)	543/600 (90.5)	1.75	(1.13,2.75)
<i>Chicken deli?</i>	452/484 (93.4)	30/484 (6.2)	512/531 (96.4)	16/531 (3.0)	2.8	(1.5,5.4)
<i>Did you eat chicken which was pink on the inside?</i>	413/442 (93.4)	29/442 (6.6)	471/482 (97.7)	11/482 (2.3)	3.21	(1.6,6.87)
<i>Did you eat chicken which was brought frozen then thawed?</i>		148/459 (32.2)		104/527 (19.7)	1.76	(1.3,2.37)
<i>Did you eat chicken cook with a...</i>						
BBQ		37/666 (5.6)		20/600 (3.3)	1.77	(1.02,3.16)
Grill		130/666 (28.1)		56/600 (10.6)	2.99	(2.13,4.24)
<i>Did you eat poultry outside the home?</i>	390/652 (59.8)	262/652 (40.2)	412/600 (68.7)	188/600 (31.3)	1.57	(1.23,2.00)
<i>Did you eat chicken from...</i>						
Café/restaurant		92/652 (14.1)		62/600 (10.3)	1.59	(1.12,2.27)
Catered event		8/652 (1.2)		1/600 (0.2)	6.09	(1.08,114.5)
Somewhere else		39/652 (6.0)		14/600 (2.3)	2.67	(1.46,5.19)
<i>Did you cook beef using a grill</i>		85/595 (14.3)		57/598 (9.5)	1.62	(1.14,2.33)
<i>Did you cook lamb using a grill</i>		42/666 (6.3)		19/600 (3.2)	2.12	(1.22,3.79)
<i>Did you eat beef from a social BBQ</i>		16/652 (2.5)		4/600 (0.7)	3.22	(1.16,11.36)
<i>Did you eat pork from somewhere else</i>		16/652 (2.5)		5/600 (0.8)	2.90	(1.11,8.99)
<i>Did you eat a chicken meal/snack with vegetables or fruit prepared at Other social occasion (e.g. dinner at friends)</i>		14/666 (2.1)		2/600 (0.3)	5.72	(1.57,36.8)
<i>Did you eat a meat meal/snack with vegetables/fruit prepared at Fast food/takeaway</i>		48/666 (7.2)		20/600 (3.3)	1.85	(1.08,3.28)
<i>Did you eat a vegetarian meal or snack?</i>	187/666 (28.1)	479/666 (71.9)	212/600 (35.3)	388/600 (64.7)	1.43	(1.12,1.82)
<i>Did you eat a vegetarian meal or snack prepared at....</i>						
Home		432/666 (64.9)		355/600 (59.2)	1.29	(1.02,1.63)
Fast food/takeaway		33/666 (5.0)		13/600 (2.2)	2.19	(1.16,4.39)
Cafe/restaurant		37/666 (5.6)		19/600 (3.2)	2.02	(1.15,3.67)
Other social occasion (e.g. dinner at friends)		17/666 (2.6)		5/600 (0.8)	2.68	(1.04,8.3)

Question ^a	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	No, number (%)	Yes, number (%)	No, number (%)	Yes, number (%)		
Somewhere else		38/666 (5.7)		15/600 (2.5)	2.05	(1.11,3.94)
<i>Did you drink raw milk?</i>						
Milk		27/661 (4.1)		10/592 (1.7)	2.11	(1.02,4.69)
<i>Raw meat or poultry handled in household in the last 7 days....</i>						
poultry meat		234/666 (35.1)		173/600 (28.8)	1.59	(1.23,2.06)
other meat		211/666 (31.7)		161/600 (26.8)	1.38	(1.07,1.80)
Someone else handled poultry meat		290/666 (43.5)		202/600 (33.7)	1.43	(1.12,1.83)
<i>Did you handle kitchen items which had contact with raw meats or poultry?</i>	317/662 (47.9)	306/662 (46.2)	389/595 (65.4)	200/595 (33.6)	2.19	(1.7,2.82)
<i>Did you handle the following which had contact with raw meats or poultry?</i>						
Knives		294/623 (47.2)		173/589 (29.4)	2.58	(1.99,3.35)
Chopping boards		290/623 (46.6)		177/589 (30.1)	2.41	(1.86,3.14)
Dish cloths		236/623 (37.9)		102/589 (17.3)	3.22	(2.43,4.3)
<i>Do you use separate chopping boards for raw meats that aren't poultry?</i>	317/655 (48.4)	318/655 (48.6)	348/600 (58.0)	249/600 (41.5)	1.43	(1.14,1.81)
<i>Do you use separate chopping boards for all meats?</i>	317/655 (48.4)	318/655 (48.6)	348/600 (58.0)	249/600 (41.5)	1.43	(1.14,1.81)
<i>Do you use separate chopping boards for vegetables?</i>	201/654 (30.7)	434/654 (66.4)	243/600 (40.5)	355/600 (59.2)	1.48	(1.17,1.88)
<i>Do you live or work on a farm or lifestyle block?</i>	492/663 (74.2)	170/663 (25.6)	568/600 (94.7)	32/600 (5.3)	6.16	(4.13,9.45)
<i>Home/work status?</i>						
Don't live or work on a farm		496/664 (74.7)		568/600 (94.7)	Reference (1.0)	
Live on a farm/lifestyle block		123/664 (18.5)		19/600 (3.2)	7.29	(4.49,12.49)
Work on a farm/lifestyle block		16/664 (2.4)		1/600 (0.2)	18.34	(3.65,333.68)
Live and work on a farm/lifestyle block		23/664 (3.5)		11/600 (1.8)	2.52	(1.21,5.55)
<i>Do you work directly with animals?</i>		62/531 (11.7)		17/485 (3.5)	3.71	(2.12,6.81)
<i>Animals you have contact with at home or work...</i>						
Dairy		38/662 (5.7)		11/600 (1.8)	2.81	(1.44,5.93)
Meat production		61/662 (9.2)		20/600 (3.3)	2.89	(1.7,5.09)
Poultry		44/662 (6.7)		17/600 (3.3)	2.12	(1.19,3.93)
Other		67/662 (10.1)		17/600 (3.3)	3.70	(2.18,6.6)
<i>Are you in contact with the following dairy cows at home/work?</i>		34/662 (5.1)		9/600 (1.5)	3.02	(1.47,6.86)
<i>Are you in contact with the following meat production animals at home/work?</i>						
Cattle		37/662 (5.6)		11/600 (1.8)	3.09	(1.58,6.54)
Sheep		38/662 (5.7)		11/600 (1.8)	2.95	(1.5,6.26)
<i>Are you in contact with domestic poultry at home/work?</i>		41/662 (6.2)		16/600 (2.7)	2.13	(1.18,4.01)
<i>Did you have contact with...</i>						
Chicken		85/666 (12.8)		21/600 (3.5)	3.73	(2.29,6.31)
Cattle		72/666 (10.8)		18/600 (3.0)	3.60	(2.11,6.43)

Question ^a	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	No, number (%)	Yes, number (%)	No, number (%)	Yes, number (%)		
Sheep		62/666 (9.3)		18/600 (3.0)	3.05	(1.79,5.43)
<i>Did you have contact with pets at home?</i>		341/666 (51.2)		245/600 (40.8)	1.57	(1.25,1.98)
<i>How long did you have contact with pets?</i>						
>1yr		12/664 (1.8)		4/600 (0.7)	3.00	(1.02,10.95)
<i>Did you have contact with chickens ...</i>						
At home		64/666 (9.6)		17/600 (2.8)	3.44	(2.01,6.19)
Outside the home		21/666 (3.2)		4/600 (0.7)	3.96	(1.46,13.86)
<i>Did you have contact with cattle...</i>						
At home		48/666 (7.2)		10/600 (1.7)	4.24	(2.17,9.12)
Outside the home		26/666 (3.9)		8/600 (1.3)	2.34	(1.07,5.67)
<i>Did you have occupational contact with cattle?</i>	640/665 (96.2)	25/665 (3.8)	593/600 (98.8)	7/600 (1.2)	2.91	(1.28,7.5)
<i>Did you have contact with sheep...</i>						
At home		44/666 (6.6)		12/600 (2.0)	3.32	(1.77,6.69)
Outside the home		20/666 (3.0)		6/600 (1.0)	2.41	(1.00,6.75)
<i>Did you have occupational contact with sheep?</i>	646/666 (97.0)	20/666 (3.0)	595/600 (99.2)	5/600 (0.8)	3.09	(1.21,9.48)
<i>Did you have contact with other animals at home</i>		39/666 (5.9)		19/500 (3.2)	2.03	(1.16, 3.66)
<i>Does the water to your home come from...</i>						
Private bore/spring water		28/666 (4.2)		7/600 (1.2)	3.33	(1.5,8.46)
Roof/rain water		172/666 (25.8)		43/600 (7.2)	4.44	(3.11,6.44)
<i>Is the private bore water to the home treated or filtered?</i>	643/666 (96.6)	18/666 (2.7)	597/600 (99.5)	3/600 (0.5)	5.13	(1.70,22.22)
<i>Did you drink private bore water to the home which was...</i>						
Boiled		1/661 (0.2)		0/600 (0.0)	Undefined	
Treated in another way		15/661 (2.3)		2/600 (0.3)	5.99	(1.65,38.46)
<i>Is the roof/rain water to the home treated or filtered?</i>	537/666 (80.6)	123/666 (18.5)	575/600 (95.8)	22/600 (3.7)	5.85	(3.71,9.62)
<i>Did you drink roof/rain water to the home which was...</i>						
UV treated		14/660 (2.1)		4/597 (0.7)	3.26	(1.14,11.67)
Filtered		113/660 (17.1)		18/597 (3.0)	6.54	(4,11.3)
<i>Did you drink water from an untreated supply you wouldn't normally in the last 7 days?</i>	573/659 (86.9)	62/659 (9.4)	578/600 (96.3)	20/600 (3.0)	2.98	(1.78,5.19)
<i>Did you drink water from the following untreated supplies you wouldn't normally?</i>						
Roof/rain water		36/642 (5.6)		5/598 (0.8)	6.62	(2.8,19.52)
<i>Did you have contact with compost?</i>	442/657 (67.3)	201/657 (30.6)	503/600 (83.8)	97/600 (16.2)	2.36	(1.77,3.15)

^a Odds ratios for questions/risk factors included in this table are statistically significantly greater than one ($p < 0.05$). The complete risk factor analysis is included in Appendix I

Source isolates

The target for each type of source sample over the study period was 150, evenly spread across the quarters. Due to low rates of isolate recovery, during the third quarter (no reason for this was discovered, sampling and laboratory methods had not changed), additional sampling of cattle and sheep samples was arranged with the meat plants. At the end of the study the target of 150 was exceeded for all source types. Data are shown in Table 18.

Table 18. Source isolate recovery by quarter

Quarter	Source	Samples received	Isolates recovered ^a (%)
First (Wks 1–13)	Poultry	38	33 (87)
	Sheep	45	43 (96)
	Cattle	40	26 (65)
Second (Wks 14–26)	Poultry	58	57 (98)
	Sheep	45	42 (93)
	Cattle	62	44 (71)
Third (Wks 27–39)	Poultry	53	51 (96)
	Sheep	45	30 (67)
	Cattle	84	56 (67)
Fourth (Wks 40–52)	Poultry	68	64 (94)
	Sheep	122	78 (64)
	Cattle	63	46 (73)

^a Total isolates recovered across the study were poultry (209), sheep (194) and cattle (172)

Clinical and source isolate species

As expected, most isolates from both humans and sources were *C. jejuni* (human: 638/666 (95.8%), beef: 140/172 (81.4%), sheep: 126/194 (64.9%), poultry: 176/209 (84.2%)). The remainder were *C. coli*.

Whole Genome Sequencing (WGS) Results

A total of 695 isolates related to the 666 cases were obtained and sent to Massey. The additional 29 isolates came from 24 cases where the diagnostic laboratories sent duplicate, or in a few instances triplicate samples, from the same case. Usually only the first sample from each case was sent for sequencing. For 11 cases more than one isolate was sequenced, and for 8 of these the strain type was identical for each isolate. For three cases a different isolate was obtained from each sample. For these cases the first isolate obtained was used for analyses.

One isolate went missing between ESR and Massey – hence 665 isolates were available for potential sequencing and strain assignment.

All source isolates reported here were either *C. jejuni* or *C. coli*. An additional 5 isolates were obtained from sheep samples, which were identified as thermophilic *Campylobacter*, but not *C. jejuni* or *C. coli*. These were excluded from the analyses.

Table 19 shows the results from processing of human and source isolates sent to Massey during the course of the study.

Table 19. Whole genome sequencing (WGS) results

Isolate source	Isolate numbers	Sequences obtained	Strain types assigned ^a
Human	665	660	656
Poultry	209	208	206
Sheep	194	190	187
Cattle	172	170	169

^a For some sequences strain type could not be determined, due to missing genes or insufficient read depth

Phylogeny of isolates from human cases and sources

Figure 9 shows a Minimum Spanning tree illustrating the relatedness of all isolates according to core genome multilocus sequence typing (cgMLST using 1343 core genes). The top 10 7 gene MLST types are highlighted: ST45, ST6964, ST53, ST48, ST50, ST583, ST61, ST42, ST190 and ST4337.

Figure 10 shows the same tree topology with each isolate coloured according to source (human, poultry, sheep and cattle).

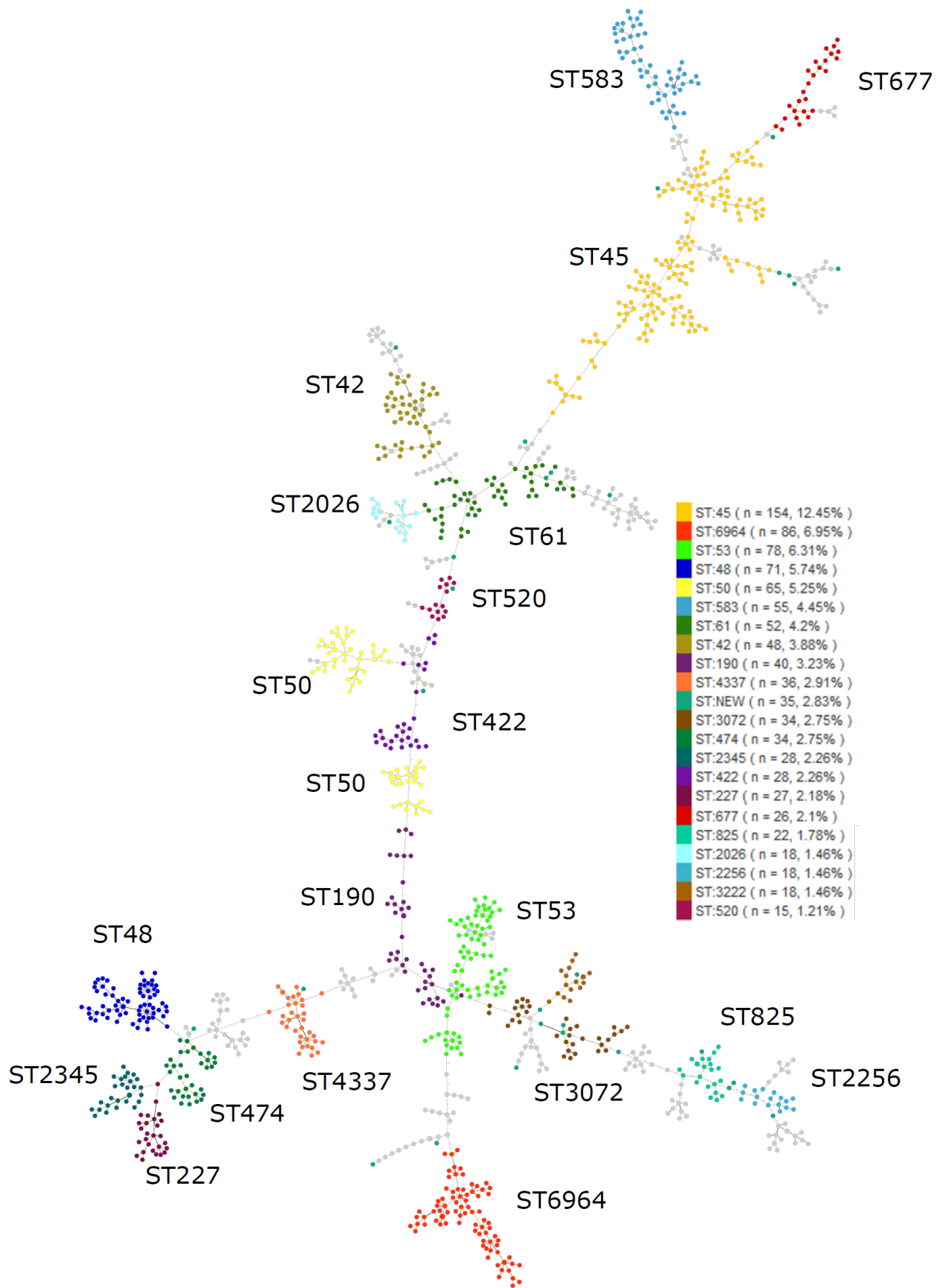


Figure 9. Minimum Spanning Tree showing the relationship between core genome MLST allelic profiles of 1218 *C. jejuni* and *C. coli* isolates. The top ten 7 gene MLST types are shown in colour

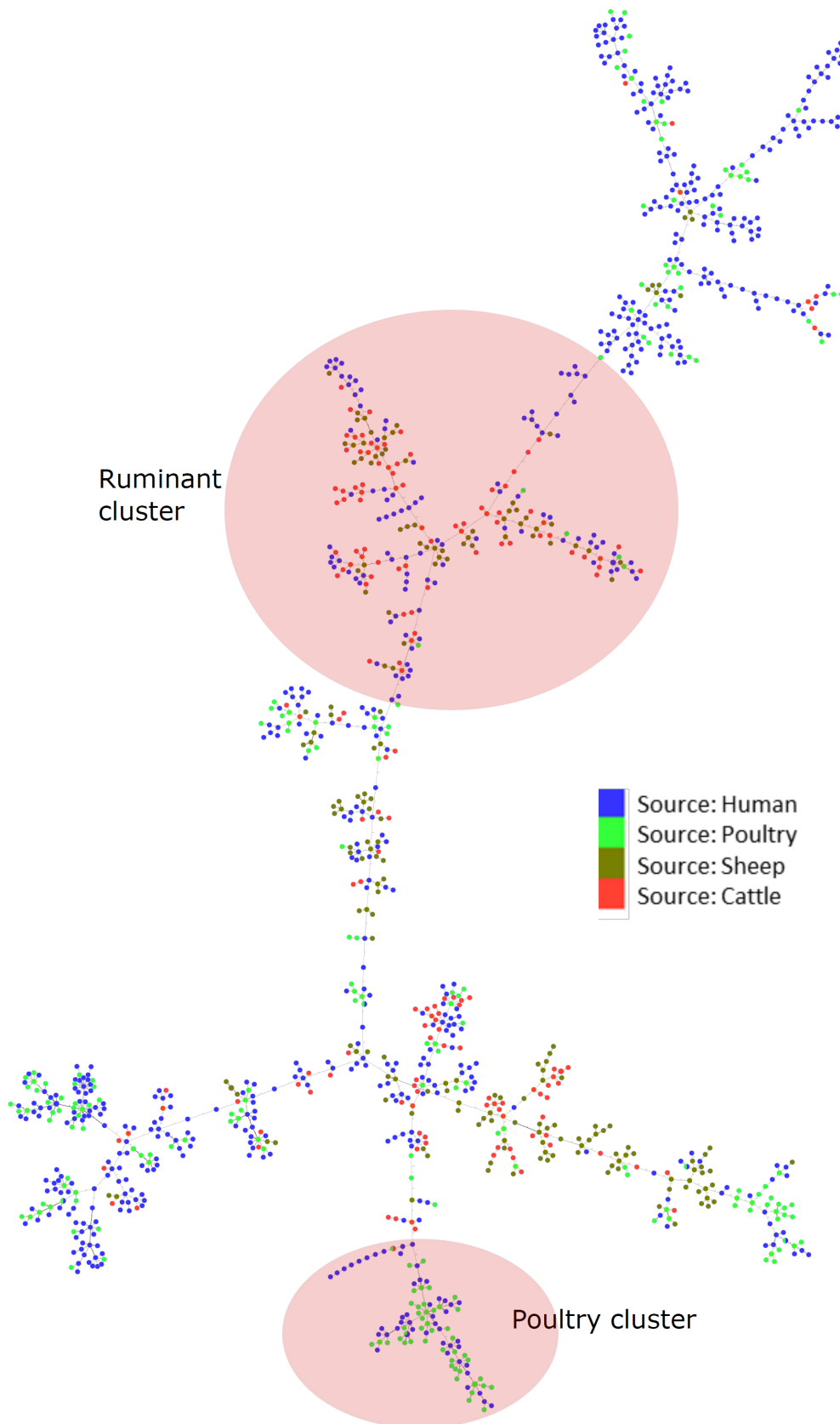


Figure 10. Minimum Spanning Tree showing the relationship between core genome MLST allelic profiles of 1218 *C. jejuni* and *C. coli* isolates. The nodes are coloured according to source

The phylogenetic trees show good concordance between the cgMLST and 7gMLST schemes and illustrate clusters of genotypes associated with particular sources. For example, there are no non-poultry isolates in the ST6964 cluster, whereas there are hardly any poultry isolates in the ST61, 2026 and 42 clusters, which are strongly associated with cattle and sheep.

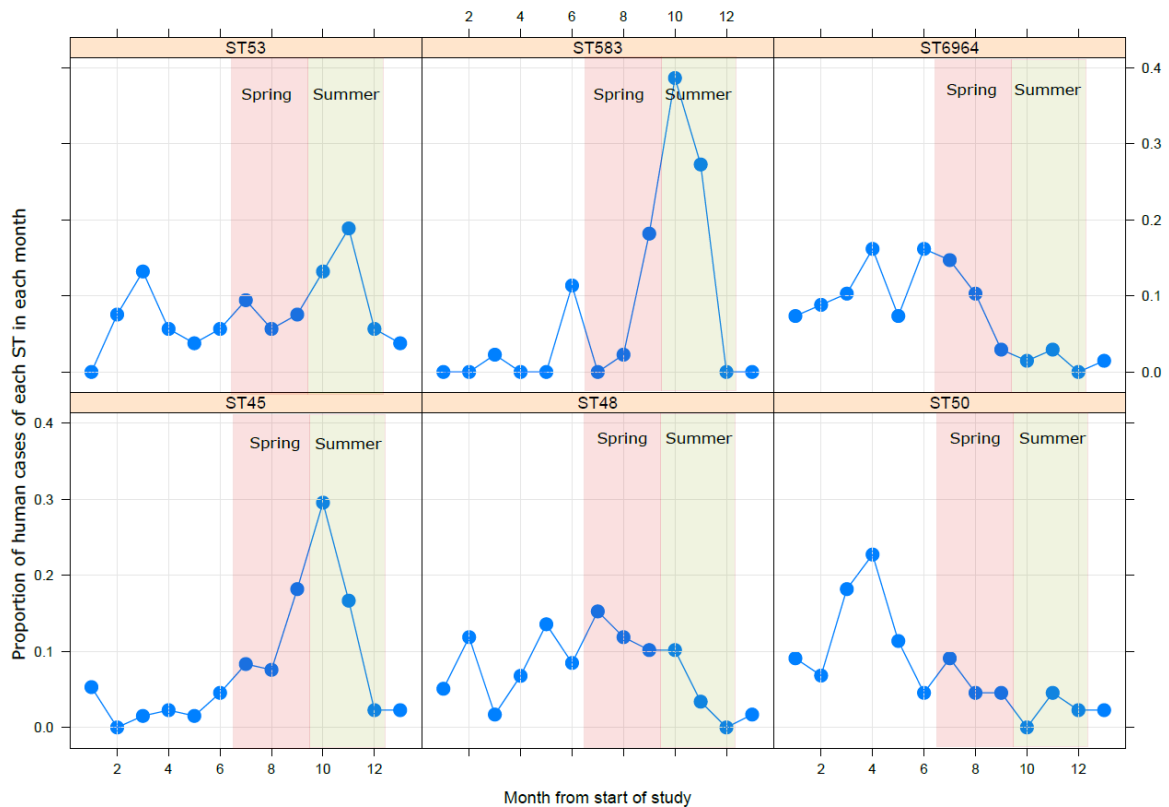
Table 20 shows the distribution of 7gMLST types by host for STs with 5 or more isolates.

Table 20. Distribution of 7gMLST types by host

Sequence type	Number of isolates by source				
	Human	Cattle	Sheep	Poultry	Total
45	119	2	9	24	154
48	46	-	-	24	70
583	42	2	-	8	52
6964	41	-	-	44	85
53	40	22	6	11	79
50	31	7	17	9	64
677	25	-	-	1	26
474	24	4	2	4	34
227	23	-	-	4	27
190	20	2	12	7	41
4337	19	3	6	7	35
2345	18	-	-	10	28
61	14	17	21	-	52
486	12	-	-	2	14
422	11	3	10	4	28
508	11	1	1	-	13
42	9	24	16	-	49
8926	9	-	-	4	13
21	8	4	-	-	12
257	8	2	2	2	14
520	8	4	3	-	15
2026	8	7	3	-	18
25	6	-	-	-	6
38	6	2	-	-	8
538	6	-	-	-	6
3538	5	2	2	1	10

Figure 11 shows the temporal variation in the occurrence of six selected strain types. The predominantly human strain types (ST45, ST583) show patterns of occurrence, which are largely consistent with the pattern of incidence of human campylobacteriosis (Figures 5 and 6). Both ST45 and ST583 belong to clonal complex CC45 and this has previously been identified as highly seasonal in many countries including New Zealand, with the highest rates in summer [19]. There is a notable decline in the occurrence of ST6964 in the latter third of the study.

Figure 11. Variation of frequency of occurrence of selected *Campylobacter* strain types with season



Geographical classification categories for source assigned cases

Table 21 shows the numbers of source assigned cases in each urban/rural category. Of the 666 cases for which an interview and an isolate were obtained, 656 of the isolates could be assigned to a particular source type.

Table 21. Urban and rural categories for source assigned cases

Category	Number of cases
Total Urban	526
Main urban areas	434
Satellite urban communities	38
Independent urban communities	54
Total Rural	130
Rural areas with high urban influence	45
Rural areas with moderate urban influence	44
Rural areas with low urban influence	32
Highly rural/remote areas	9
Total	656

Two cases were excluded from the urban/rural analysis, as their meshblock residential location was outside the Auckland or Manawatū-Whanganui areas. It appeared they had been visiting those areas when they became ill, and had visited the GP there. The interviews for these cases were retained for the risk factor analysis.

Source Attribution Modelling

The dataset of poultry, sheep and cattle isolates was used to assign a source for the 656 strains identified from the human isolates.

Table 22 shows the high level attribution for the entire dataset of 656 cases.

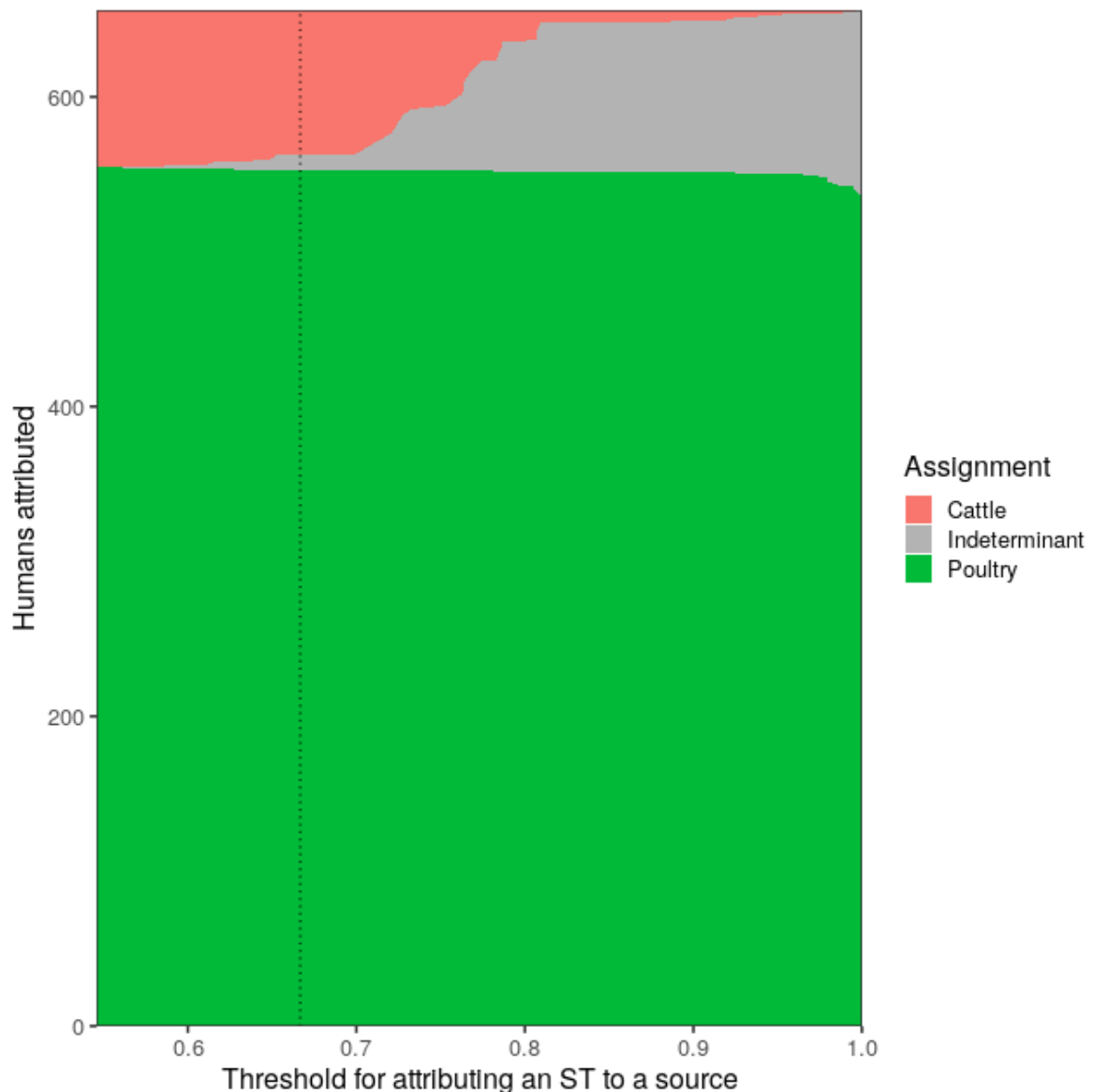
Table 22. Source assignment for cases

Source Assignment	Number of human case isolates
Poultry	553
Sheep	0
Cattle	93
Not assigned*	10
Total	656

*Reason for non assignment is a lack of a clear source attribution result in the model

The results shown in Table 22 use the approach described in the Methods; cases were assigned to a source where that source was dominant in at least 2/3 of all posterior samples. The importance of the 2/3 threshold choice was examined through a sensitivity analysis, as shown in Figure 12. This shows that increasing the threshold results in increasing numbers of cases with indeterminate source assignment.

Figure 12: Sensitivity analysis for source assignment threshold

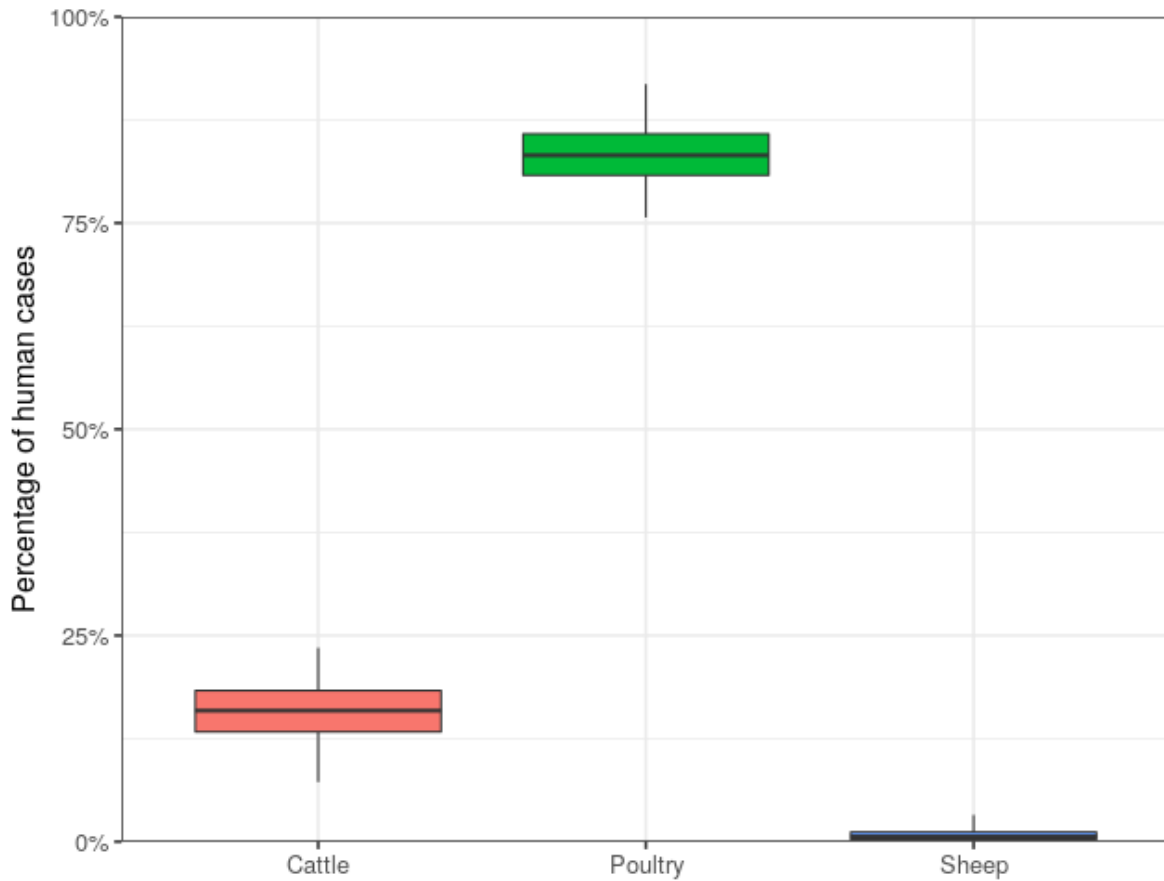


The results of source attribution modelling are presented below, both as overall results, and segmented into Auckland/Manawatū-Whanganui, urban/rural, and seasonal categories. Two additional plots are presented in Appendix J.

The proportion of cases estimated by the asymmetric island model using 7gMLST data show a high attribution to poultry, followed by cattle (Figure 13). The assignment of such a high proportion of cases to poultry, and the lack of overlap for the confidence intervals, gives confidence in this result.

At the individual level no cases are assigned to sheep (Table 22), due to the application of a threshold. However, the source attribution model applied at the population level does attribute a proportion of cases to sheep. It would be implausible to completely discount sheep as a source as the MLST types found in sheep and cattle overlap considerably [29].

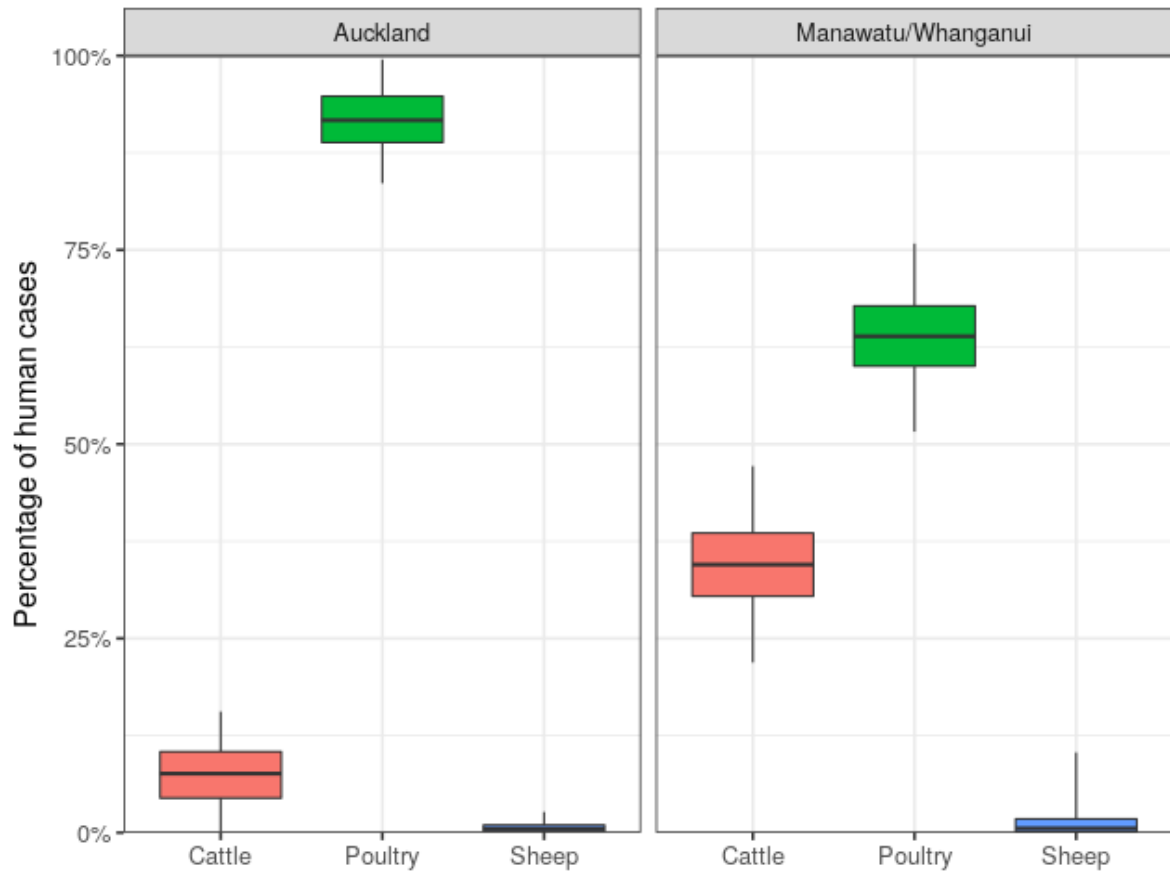
Figure 13. Overall attribution of human cases to each source



Note: The median is posterior median, quartiles are posterior quartiles, and lower/upper tails are 2.5th and 97.5th percentiles (i.e. 95% credible interval)

When the cases are stratified by location it is evident that there are a relatively higher proportion of cases attributable to cattle in the Manawātū-Whanganui region compared to Auckland (Figure 14).

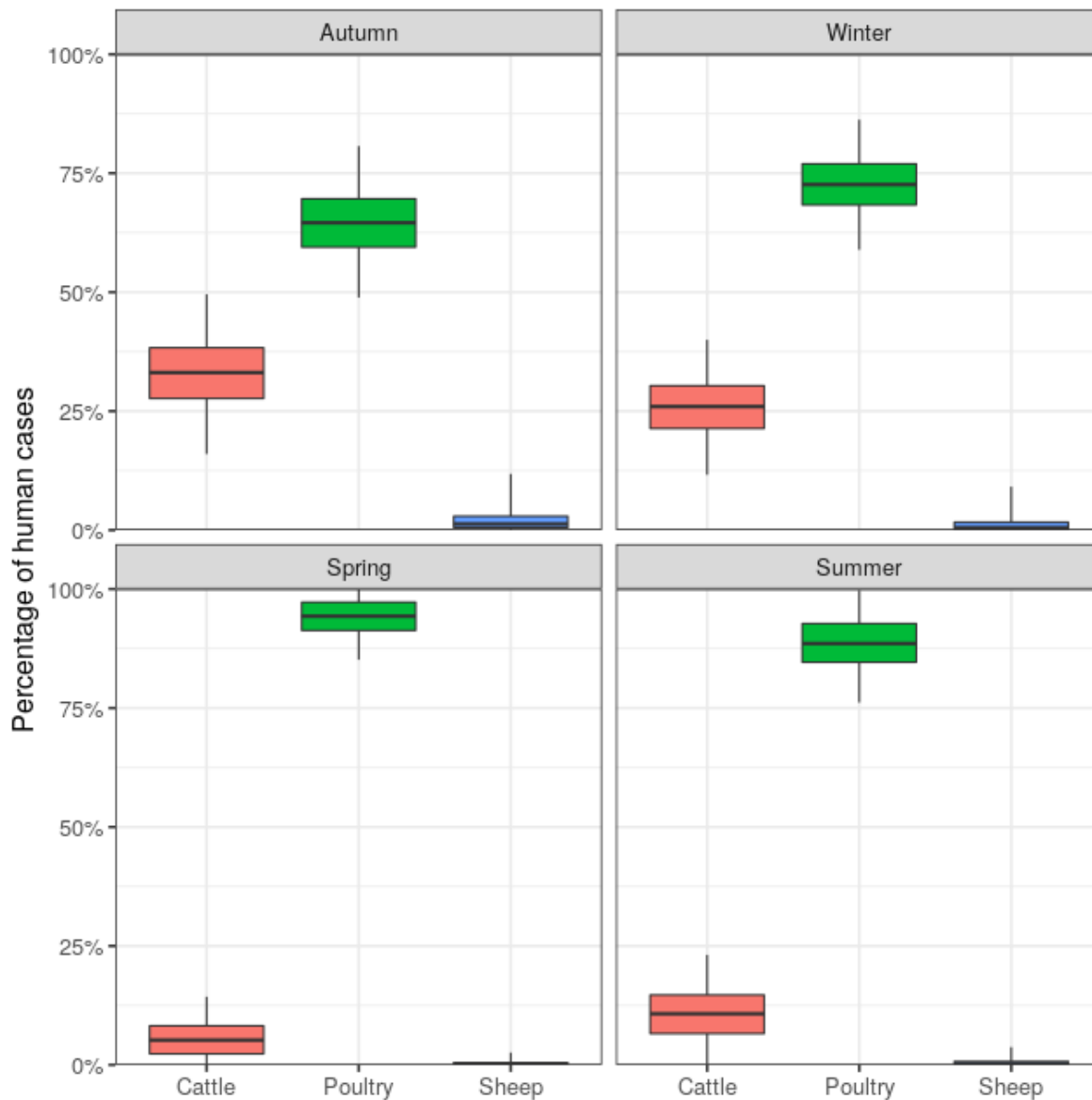
Figure 14. Source assignment for cases in Auckland and Manawātū-Whanganui



Note: The median is posterior median, quartiles are posterior quartiles, and lower/upper tails are 2.5th and 97.5th percentiles (i.e. 95% credible interval)

There are clear seasonal differences in attribution, with a higher proportion of cases attributable to cattle in autumn and winter compared to spring and summer (Figure 15).

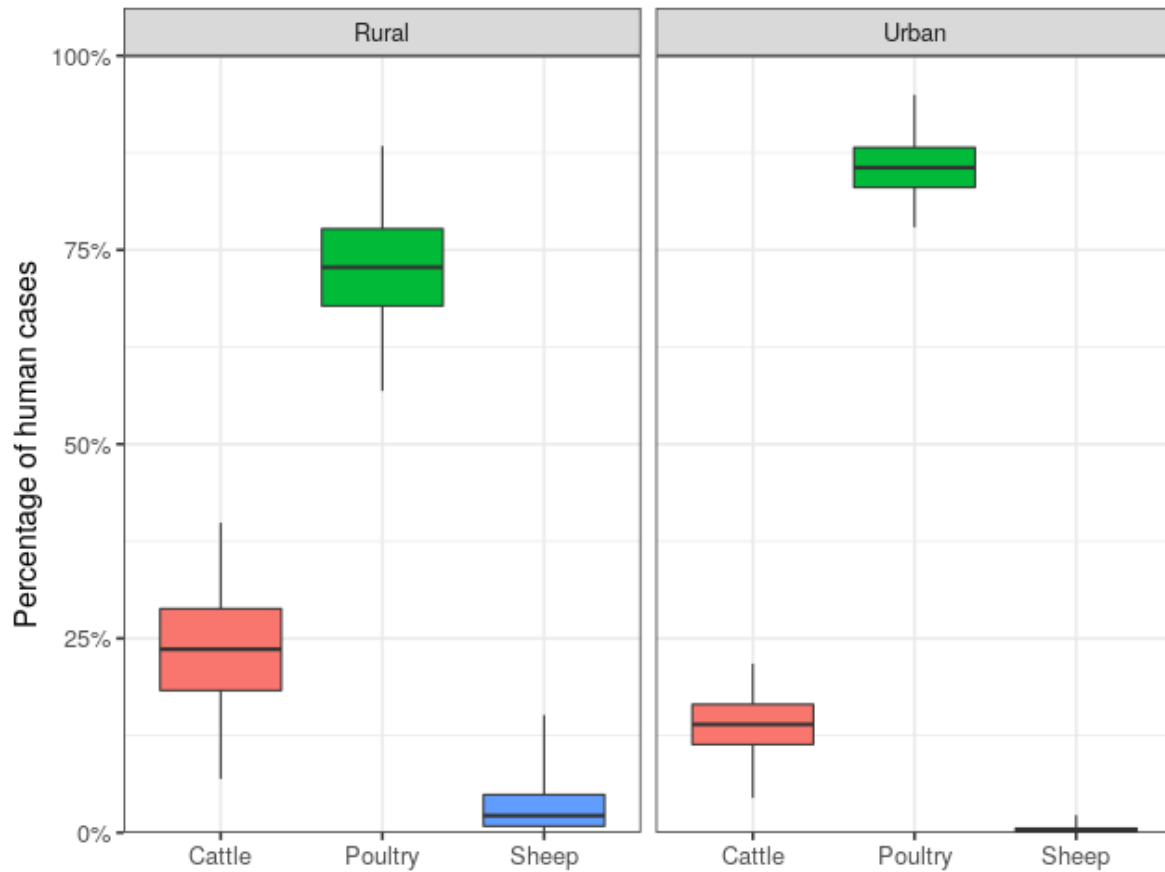
Figure 15. Source assignment by season



Note: The median is posterior median, quartiles are posterior quartiles, and lower/upper tails are 2.5th and 97.5th percentiles (i.e. 95% credible interval)

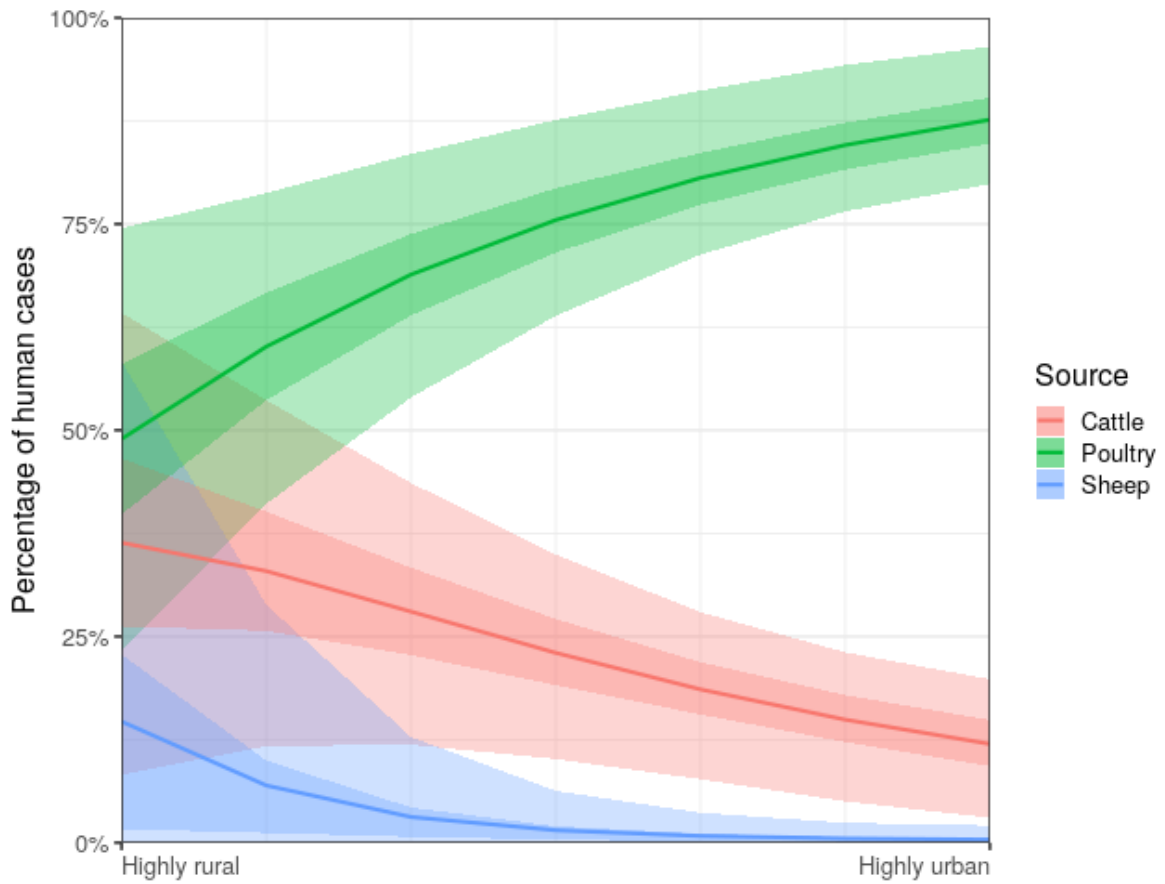
With the aggregated urban and rural areas (Figure 16), the data suggest fewer poultry and more sheep and cattle attributed cases in rural areas compared to urban areas. This difference becomes clearer when urban-rural categories are treated as a seven point scale (Figure 17), where cattle attributed cases increase as rural character increases.

Figure 16. Attribution by urban/rural status (2015)



Note: The median is posterior median, quartiles are posterior quartiles, and lower/upper tails are 2.5th and 97.5th percentiles (i.e. 95% credible interval)

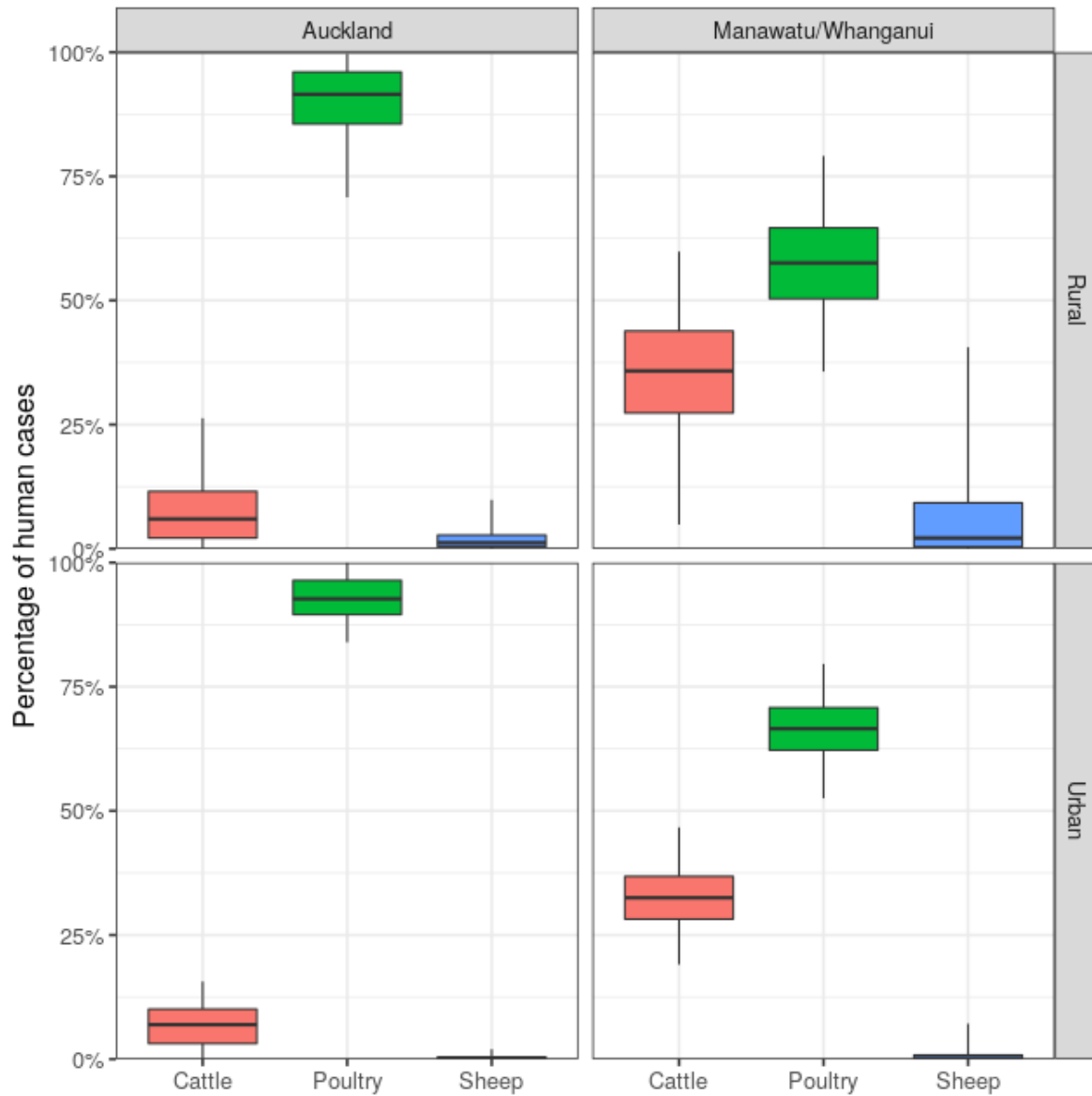
Figure 17. Source assigned cases, modelled attribution according to the rurality scale (2015)



Note: For the line the wider band is 95% credible interval, darker band is 50% credible interval, and line is posterior median

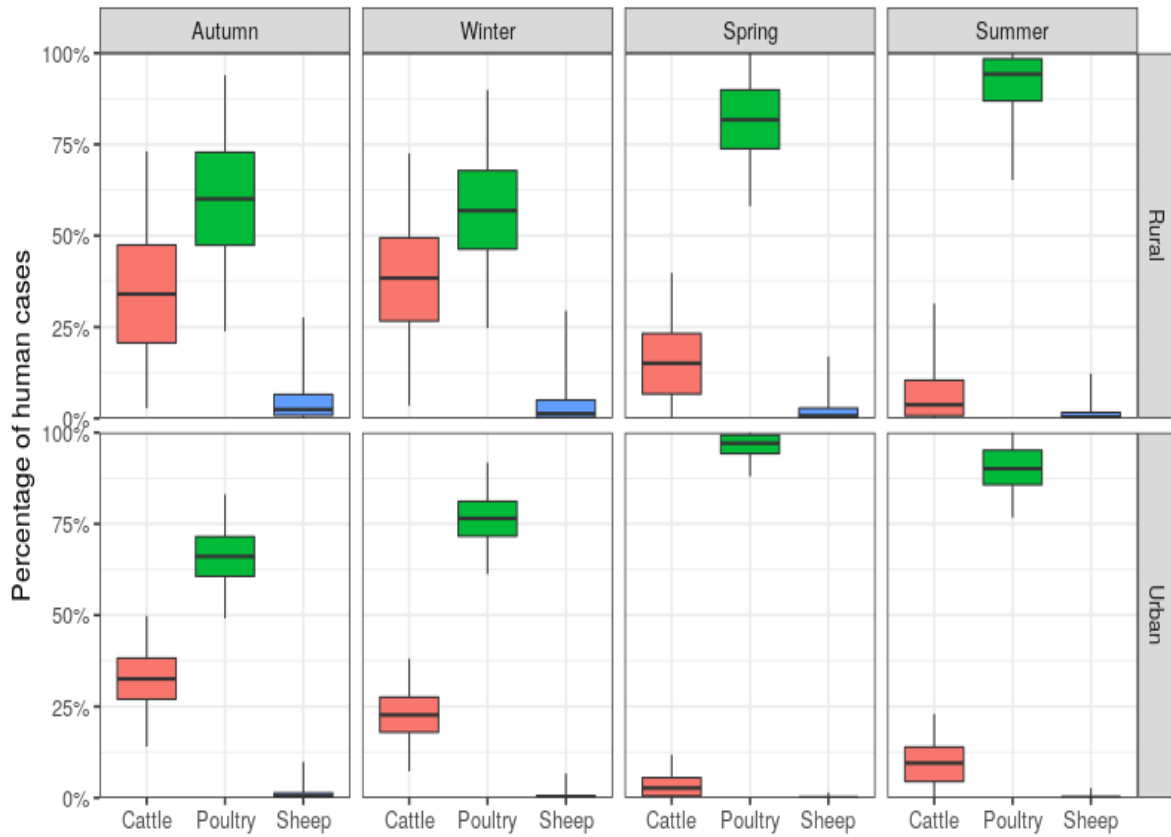
The differences between urban and rural attribution varied according to region (Figure 18) and season (Figure 19).

Figure 18. Source assigned cases, segregated by region and urban/rural (2015)



Note: The median is posterior median, quartiles are posterior quartiles, and lower/upper tails are 2.5th and 97.5th percentiles (i.e. 95% credible interval)

Figure 19. Source assigned cases, segregated by season and urban/rural (2015)



Note: The median is posterior median, quartiles are posterior quartiles, and lower/upper tails are 2.5th and 97.5th percentiles (i.e. 95% credible interval)

Risk factors: Statistically significant risk factors from univariate analyses, partitioned case and control datasets

The univariate analysis was repeated on subsets of cases that were source assigned to poultry or cattle. As most of the human cases were source assigned to poultry the odds ratios were very similar to those for all cases (Table 17) and the data from the poultry analysis are not shown here.

Statistically significant ($p < 0.05$) elevated risk factors for cattle assigned cases are shown in Table 23.

Table 23. Univariate analysis for cases assigned as cattle source (n=93), risk factors with statistically significant elevated risk

Question ^a	Cases (N=93)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	No, number (%)	Yes, number (%)	No, number (%)	Yes, number (%)		
<i>Gastric treatment in 4 weeks prior</i>	75/92 (81.5)	16/92 (17.4)	540/600 (90.0)	60/600 (10.0)	2.12	(1.08,4.02)
<i>Gastro treatment taken?</i>						
Omeprazole		10/91 (11.0)		14/600 (2.3)	5.13	(1.99, 12.12)
<i>Chronic illness?</i>	80/91 (88.0)	11/91 (12.1)	590/600 (98.3)	10/600 (1.7)	6.96	(2.71, 18.06)
<i>Type of chronic illness?</i>						
Irritable bowel syndrome		5/93 (5.4)		5/600 (0.8)	5.93	(1.54, 22.80)
Other		4/93 (4.3)		4/600 (0.7)	4.91	(1.04, 23.12)
<i>Did you eat chicken burger?</i>	60/73 (82.2)	11/63 (17.5)	512/531 (96.4)	16/531 (3.0)	2.56	(1.12, 5.52)
<i>Did you eat chicken which was brought...</i>						
Frozen then thawed		24/69 (34.8)		104/527 (19.7)	2.11	(1.19, 3.68)
Fast food/takeaway		12/93 (12.9)		20/600 (3.3)	3.06	(1.40, 6.37)
<i>Did you eat/drink raw milk products in the last 7 days?</i>	79/92 (85.9)	11/92 (12.0)	579/600 (96.5)	13/600 (2.2)	5.55	(2.26, 13.43)
<i>Did you drink raw milk</i>		11/92 (12.0)		10/592 (1.7)	7.01	(2.70, 18.44)
<i>Raw meat or poultry handled in household in the last 7 days....</i>						
I handled poultry meat		35/93 (37.6)		173/600 (28.8)	1.75	(1.04,2.94)
<i>Did you handle kitchen items which had contact with raw meats or poultry?</i>	43/91 (47.2)	48/91 (52.7)	389/595 (65.4)	200/595 (33.6)	2.93	(1.75, 5.00)
<i>Did you handle the following which had contact with raw meats or poultry?</i>						
Knives		46/88 (52.3)		173/589 (29.4)	3.46	(2.03,6.02)
Chopping boards		43/88 (48.9)		177/589 (30.1)	2.95	(1.73,5.10)
Dish cloths		34/88 (38.6)		102/589 (17.3)	3.39	(1.99, 5.77)
Plate/dish		41/88 (46.6)		114/589 (19.4)	4.41	(2.61, 7.52)
<i>Do you live or work on a farm or lifestyle block?</i>	55/93 (59.1)	38/93 (40.9)	568/600 (94.7)	32/600 (5.3)	10.80	(5.99, 19.73)
<i>Home/work status?</i>						
Live on a farm/lifestyle block		24/93 (25.8)		19/600 (3.2)	10.91	(5.34, 22.72)
Work on a farm/lifestyle block		5/93 (5.4)		1/600 (0.2)	46.58	(6.88, 926.91)
Live and work on a farm/lifestyle block		8/93 (8.6)		11/600 (1.8)	6.93	(2.45, 19.02)
<i>Animals you have contact with at home or work...</i>						
Dairy		13/93 (14.0)		11/600 (1.8)	6.10	(2.47, 15.30)
Meat production		13/93 (14.0)		20/600 (3.3)	3.48	(1.52, 7.77)
Other		16/93 (17.2)		17/600 (3.3)	6.34	(2.93, 13.73)
<i>Are you in contact with dairy cows at home/work?</i>		10/93 (10.8)		9/600 (1.5)	5.42	(1.98, 14.93)

Question ^a	Cases (N=93)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	No, number (%)	Yes, number (%)	No, number (%)	Yes, number (%)		
<i>Are you in contact with the following meat production animals at home/work?</i>						
Beef		9/93 (9.7)		11/600 (1.8)	4.58	(12.67, 12.33)
Sheep		8/93 (8.6)		11/600 (1.8)	2.89	(1.03, 7.84)
<i>Do you work directly with animals?</i>		18/78 (23.1)		17/485 (3.5)	7.35	(3.35, 16.29)
<i>Did you have contact with...</i>						
Chicken		13/93 (14.0)		21/600 (3.5)	3.59	(1.62, 7.73)
Pigs		5/93 (5.4)		6/600 (1.0)	4.27	(1.15, 15.28)
Cattle		24/93 (25.8)		18/600 (3.0)	9.76	(4.65, 21.03)
Sheep		13/93 (14.0)		18/600 (3.0)	4.68	(2.05, 10.53)
Other		11/82 (13.4)		30/600 (5.0)	2.53	(1.14, 5.32)
<i>Were the pets sick?</i>	86/93 (92.5)	7/93 (7.5)	594/600 (99.0)	6/600 (1.0)	4.26	(1.49, 11.35)
<i>Did you have contact with chickens at home</i>		11/93 (11.8)		17/600 (2.8)	3.67	(1.53, 8.47)
<i>Did you have contact with cattle...</i>						
At home		15/93 (16.1)		10/600 (1.7)	8.82	(3.57, 22.86)
Outside the home		9/93 (9.7)		8/600 (1.3)	5.86	(2.05, 17.07)
<i>Did you have occupational contact with cattle?</i>	79/93 (84.9)	14/93 (15.0)	593/600 (98.8)	7/600 (1.2)	11.59	(4.37, 33.42)
<i>How long did you have contact with cattle?</i>						
>1yr		6/92 (6.5)		7/589 (1.2)	6.41	(1.89, 21.37)
<i>Did you have contact with sheep...</i>						
At home		8/93 (8.6)		12/600 (2.0)	3.83	(1.39, 10.12)
Outside the home		6/93 (6.4)		6/600 (1.0)	6.02	(1.69, 21.49)
<i>Did you have occupational contact with sheep?</i>	84/93 (90.3)	9/93 (9.7)	595/600 (99.2)	5/600 (0.8)	9.24	(2.91, 32.60)
<i>How long did you have contact with sheep?</i>						
>1yr		7/89 (7.9)		5/587 (0.9)	7.49	(2.20, 27.32)
<i>Did you have contact with other animals at home</i>		8/93 (8.6)		12/600 (2.0)	3.83	(1.39, 10.12)
<i>Does the water to your home come from...</i>						
Private bore/spring water		10/93 (10.7)		7/600 (1.2)	6.87	(2.38, 20.86)
Roof/rain water		26/93 (28.0)		43/600 (7.2)	4.46	(2.46, 8.01)
<i>Is the private bore water to the home treated or filtered?</i>	86/93 (92.5)	4/93 (4.3)	597/600 (99.5)	3/600 (0.5)	8.44	(1.67, 47.50)
<i>Is the roof/rain water to the home treated or filtered?</i>	75/93 (80.6)	18/93 (19.4)	575/600 (95.8)	22/600 (3.7)	6.39	(3.08, 13.22)
<i>Did you drink roof/rain water to the home which was filtered?</i>		15/93 (16.1)		18/597 (3.0)	6.93	(3.14, 15.29)
<i>Did you drink water from the following untreated supplies you wouldn't normally? (work, preschool/school)</i>						
Roof/rain water		6/93 (6.5)		5/598 (0.8)	7.00	(2.03, 24.39)
<i>Did you have contact with compost?</i>	50/91 (54.9)	40/91 (44.0)	503/600 (83.8)	97/600 (16.2)	3.50	(2.11, 5.79)

^a Odds ratios for questions/risk factors included in this table are statistically significantly greater than one (p < 0.05)

Table 24 compares the adjusted odds ratios for cattle associated cases compared to all cases, for variables identified as significant in both the full dataset and the cattle-associated dataset. The cattle-associated adjusted ORs in **red** are at least twice those in the all-case dataset.

Table 24. Comparison of the estimated univariate adjusted odds ratios for cases assigned as cattle source (n=93) compared to all cases.

Question	Adjusted Odds Ratio All cases	95% Confidence Interval	Adjusted Odds Ratio Cattle associated cases	95% Confidence Interval	Ratio of ORs cattle:all cases
<i>Gastric treatment in 4 weeks prior</i>	1.84	(1.29,2.65)	2.12	(1.08,4.02)	1.2
<i>Gastro treatment taken?</i>					
Omeprazole	4.14	(2.29,7.96)	5.13	(1.99, 12.12)	1.2
<i>Chronic illness?</i>	3.43	(1.73,7.44)	6.96	(2.71, 18.06)	2.0
<i>Type of chronic illness?</i>					
Other	3.83	(1.38,13.52)	4.91	(1.04, 23.12)	1.3
<i>Did you eat chicken which was brought frozen then thawed</i>	1.76	(1.3,2.37)	2.11	(1.19, 3.68)	1.2
<i>Did you drink raw milk</i>	2.11	(1.02,4.69)	7.01	(2.70, 18.44)	3.3
<i>Raw meat or poultry handled in household in the last 7 days....</i>					
I handled poultry meat	1.59	(1.23,2.06)	1.75	(1.04,2.94)	1.1
<i>Did you handle kitchen items which had contact with raw meats or poultry?</i>	2.19	(1.7,2.82)	2.93	(1.75, 5.00)	1.3
<i>Did you handle the following which had contact with raw meats or poultry?</i>					
Knives	2.58	(1.99,3.35)	3.46	(2.03,6.02)	1.3
Chopping boards	2.41	(1.86,3.14)	2.95	(1.73,5.10)	1.2
Dish cloths	3.22	(2.43,4.3)	3.39	(1.99, 5.77)	1.1
<i>Do you live or work on a farm or lifestyle block?</i>	6.16	(4.13,9.45)	10.8	(5.99, 19.73)	1.8
<i>Home/work status?</i>					
Don't live or work on a farm	Reference (1.0)				
Live on a farm/lifestyle block	7.29	(4.49,12.49)	10.91	(5.34, 22.72)	1.5
Work on a farm/lifestyle block	18.34	(3.65,333.68)	46.58	(6.88, 926.91)	2.5
Live and work on a farm/lifestyle block	2.52	(1.21,5.55)	6.93	(2.45, 19.02)	2.8
<i>Animals you have contact with at home or work...</i>					
Dairy	2.81	(1.44,5.93)	6.1	(2.47, 15.30)	2.2
Meat production	2.89	(1.7,5.09)	3.48	(1.52, 7.77)	1.2
Other	3.7	(2.18,6.6)	6.34	(2.93, 13.73)	1.7
<i>Are you in contact with dairy cows at home/work?</i>	3.02	(1.47,6.86)	5.42	(1.98, 14.93)	1.8
<i>Are you in contact with the following meat production animals at home/work?</i>					

Question	Adjusted Odds Ratio All cases	95% Confidence Interval	Adjusted Odds Ratio Cattle associated cases	95% Confidence Interval	Ratio of ORs cattle:all cases
Beef	3.09	(1.58,6.54)	4.58	(12.67, 12.33)	1.5
Sheep	2.95	(1.5,6.26)	2.89	(1.03, 7.84)	1.0
<i>Did you have contact with...</i>					
Chicken	3.73	(2.29,6.31)	3.59	(1.62, 7.73)	1.0
Cattle	3.6	(2.11,6.43)	4.27	(1.15, 15.28)	1.2
Sheep	3.05	(1.79,5.43)	9.76	(4.65, 21.03)	3.2
<i>Did you have contact with chickens at home</i>	3.44	(2.01,6.19)	3.67	(1.53, 8.47)	1.1
<i>Did you have contact with cattle...</i>					
At home	4.24	(2.17,9.12)	8.82	(3.57, 22.86)	2.1
Outside the home	2.34	(1.07,5.67)	5.86	(2.05, 17.07)	2.5
<i>Did you have occupational contact with cattle?</i>	2.91	(1.28,7.5)	11.59	(4.37, 33.42)	4.0
<i>Did you have contact with sheep...</i>					
At home	3.32	(1.77,6.69)	3.83	(1.39, 10.12)	1.2
Outside the home	2.41	(1,6.75)	6.02	(1.69, 21.49)	2.5
<i>Did you have occupational contact with sheep?</i>	3.09	(1.21,9.48)	9.24	(2.91, 32.60)	3.0
<i>Does the water to your home come from...</i>					
Private bore/spring water	3.33	(1.5,8.46)	6.87	(2.38, 20.86)	2.1
Roof/rain water	4.44	(3.11,6.44)	4.46	(2.46, 8.01)	1.0
<i>Is the private bore water to the home treated or filtered?</i>	5.13	(1.7,22.22)	8.44	(1.67, 47.50)	1.6
<i>Is the roof/rain water to the home treated or filtered?</i>	5.85	(3.71,9.62)	6.39	(3.08,13.22)	1.1
<i>Did you drink roof/rain water to the home which was filtered</i>	6.54	(4,11.3)	6.93	(3.14, 15.29)	1.1
<i>Did you drink water from the following untreated supplies you wouldn't normally?</i>					
Roof/rain water	6.62	(2.8,19.52)	7	(2.03, 24.39)	1.1
<i>Did you have contact with compost?</i>	2.36	(1.77,3.15)	3.5	(2.11, 5.79)	1.5

Multivariate modelling

Details of the multivariate modelling are included in Appendix F.

A multivariate model focussing on poultry meat consumption, alongside non-food risk factors, was created. The model included factors associated with poultry meat consumption that had significant elevated odds ratios in the univariate analysis. The model was created using data from all source-assigned cases and controls. Table 25 shows risk factors with elevated odds ratios and statistically significant PAF values.

Table 25. Multivariate model focusing on poultry

Risk Factor	AOR	AOR Ratio 95% CI	PAF	PAF 95% CI
Gastro treatment Losec or Omeprazole	2.63	1.27, 5.64	0.06	0.02, 0.14
Chronic illness	4.63	1.35, 17.88	0.06	0.01, 0.23
Contact with a person with gastro symptoms	2.1	1.12, 3.96	0.08	0.01, 0.18
Living or working on a farm	4.93	2.14, 11.84	0.16	0.07, 0.39
Raw milk consumption (urban cases only)	4.81	1.11, 26.29	0.03	0.00, 0.1
Consumed chicken pink on the inside	3.08	1.21, 8.24	0.05	0.01, 0.15
Consumed poultry outside the home	1.91	1.19, 3.06	0.16	0.06, 0.33
Consumed other food such as salads, vegetables or fruit, as part of a meal that did not contain meat	1.56	1.02, 2.39	0.27	0, 0.51
Someone else in the home handled raw poultry meat	2.1	1.36, 3.26	0.27	0.13, 0.47
Handled items in contact with raw poultry or other meat	2.6	1.61, 4.23	0.36	0.18, 0.56
Uses separate chopping boards for foods other than meat	1.72	1.16, 2.58	0.29	0.1, 0.52
Water source not at home (roof/rain water)	5.2	1.21, 28.79	0.03	0, 0.13

AOR: adjusted odds ratio, PAF: population attributable fraction, 95%CI: 95th percentile confidence interval

The importance of non-poultry pathways was explored using the 93 cattle-assigned cases, where non-poultry pathways were likely to be more significant. The results from a multivariate model are shown in Table 26.

Table 26. Multivariate model for 93 cattle assigned cases.

Risk Factor	AOR	AOR 95%CI	PAF	PAF 95%CI
Gastro treatment Losec or Omeprazole	2.97	1.2, 6.87	0.07	0.01, 0.15
Chronic illness	4.08	1.31, 12.41	0.05	0.00, 0.13
Raw milk consumption (rural cases)	0.65	0.11, 3.53	0	-0.01, 0.02
Raw milk consumption (urban cases)	6.63	1.72, 26.17	0.05	0.00, 0.12
Living or working on a farm	7.19	2.95, 18.08	0.25	0.09, 0.52
Contact with compost (revised)	0.96	0.43, 1.97	-0.01	-0.09, 0.14
Physical contact with animals (chickens)	1.05	0.34, 3.04	0	-0.03, 0.09
Physical contact with animals (pigs)	1.23	0.2, 6.55	0	-0.01, 0.07
Physical contact with animals (cattle)	2.34	0.93, 5.03	0.04	0.00, 0.14
Physical contact with animals (sheep)	1.17	0.4, 3.25	0.01	-0.03, 0.07

AOR: adjusted odds ratio, PAF: population attributable fraction, 95%CI: 95th percentile confidence interval

Analysis of questions with textual responses

Manual review of text answers by cases to several questions follows.

Q 18 Brands of raw milk or raw milk products consumed

Of the 23 responses to the question, most reported that the milk was obtained from their own farm, or from personal farm contacts. Only 6 reported a branded product or specific source.

Q 22a Specific illnesses suffered by animals that cases were in contact with

Of the responses to this question, by far the largest number (23) were from cases reporting illnesses of sick pets they had contact with. Almost all of these reported that the pet had diarrhoea or vomiting.

Q 24b Locations where outdoor swimming or other activities took place

Twenty cases reported swimming at specific freshwater locations, of which 4 were lakes, 2 were hot pools and the rest were a variety of rivers, streams, creeks and swimming holes.

Q 25 How/where contact with contaminated materials took place (soil, sand, human poo, manure or compost)

Of these risk factors, contact with compost had statistically significant elevated odds ratio risk in the univariate analysis. However, examination of the textual responses where contact had occurred showed that while about half of the almost 200 cases who reported

contact with compost did report gardening with compost or using animal manure compost, for the remainder the contact was with animal faeces rather than compost. A number of these cases reported contact with dog, cat and bird faeces for the compost question, while for others general contact with livestock faeces on farms was mentioned. This suggests that contact with compost may not be the relevant risk, but an incidental finding related to the risk of contact with animal faeces.

Individual responses for both cases and controls were reviewed, and those likely to be using actual compost were determined. The revised univariate odds ratio was no longer significant: Cases 91/657, Controls 74/600, OR 0.86 (0.61-1.21).

These revised assignments were also used for the multivariate analyses.

DISCUSSION

Data gathering

Rationale for amendments to study protocol during the 12 March 2018 to 11 March 2019 study period

As described in the project plan, for each study case three contact attempts were made. In the first few weeks many of these contact attempts in Auckland were unsuccessful, and anecdotally it was learned that cases would not answer calls from an unrecognised number on their mobile phone. An alternative approach was adopted from May 2018 (Weeks 7–11), where if the first phone call was unsuccessful, the second contact attempt was by text (SMS) explaining who the caller was and requesting a call back. If that was unsuccessful then a third phone call would be made. A 10–20% increase in successful interviews in Auckland was observed following this change. This approach had been used by MCPHS since the start of the study.

During the third quarter of the study it appeared that targets for cattle and sheep source isolates would not be achieved. Additional sampling was requested and conducted at plants supplying these samples. As a result, by the end of the 12 month study period the number of isolates from each source type was greater than the 150 target. Following discussion amongst the three study partners, it was decided to conduct WGS and include all source isolates in the analysis, to maximise the information available.

Study case numbers

The original plan and target for interviewed case numbers was 1058 across both regions. This result was overly optimistic. An allowance had been made for cases that would not fit the case definition (5%), as well as an allowance for cases who declined to be interviewed (10%). However, no allowance had been made for cases who were unable to be contacted, which was 18% of cases by the end of the study. Anecdotally, from reports by interviewers, it appeared that part of this proportion consisted of people who were contacted by cell phone, and who would not answer a call from a number they did not recognise.

The project plan for this study had a target of 600 cases with both an interview and an isolate, based on statistical power calculations. By the end of the 12-month interview and sampling period, 666 such cases had been recruited. Following discussion amongst the three study partners, it was decided to include all 666 cases in the analysis, to maximise the information available.

Withdrawals

Eight interviewed cases asked to be withdrawn from the study after interview.

Each case that was interviewed was sent a follow-up letter thanking them for their participation. In accordance with the Ethics Approval, this letter advised cases that they could still withdraw from the study. From discussions with the cases who contacted the ESR study lead directly, it appeared that they thought that further involvement with the study was necessary. That the interview was the full extent of their engagement could have been reinforced in the thank you letter, but was not.

Seasonality

After approximately 6 months of the study it appeared that the targets for the number of interviewed cases (and cases with both an interview and an isolate, see Figure 1) would not be met. However, during November 2018 to mid-January 2019 there was a greater than

expected increase in the number of notified cases in the Auckland region over this summer period. This boosted the number of interviewed cases considerably.

The principal investigators were concerned that this increase had been due to a particular risk factor or underlying outbreak. The increase prompted staff at Auckland Regional Public Health Services (ARPHS) to investigate, and extended follow-up interviews were conducted with 185 cases (interview records from the SACNZS study were also provided to ARPHS to assist with the investigation). No single risk factor or common source emerged, and it appeared that the increase was due to a hyper-endemic season (Dr Bruce Adlam, ARPHS and ESR Monthly Notifiable Disease Surveillance Report - January 2019).⁶ A similar increase was observed also in the neighbouring Waikato District Health Board region, and local investigations there did not identify a common source. For this reason, it was considered that the cases over this period could be included in the study.

Repeats

Two people had two episodes of campylobacteriosis that were included in this study, because they were separate notifications occurring more than a month apart. The sequences for the isolates from these episodes were examined, and for one case, each episode involved a different strain type. For the other case, the sequence for the isolates from each episode were the same – but an as yet unassigned strain type.

Risk Factors

For the univariate analysis on all cases and controls, statistically significantly elevated risk factors included:

- Gastric treatment in 4 weeks prior, specifically with Losec or Omeprazole
- Chronic illness (other, not Crohn's disease, irritable bowel syndrome or ulcerative colitis)
- Contact with a person with gastrointestinal symptoms (particularly close contact)
- Eating meat in general (but eating specific meats, including poultry, were not significant risk factors apart from chicken deli)
- Eating chicken that was pink on the inside
- Eating chicken that was frozen, then thawed, cooked on a BBQ or grill, from fast food or takeaway
- Eating poultry outside the home (at a café restaurant, catered event, or elsewhere)
- Cooking beef with a microwave, or at a social BBQ
- Eating pork outside the home, but only from "somewhere else"
- Eating a vegetarian meal at home or places outside the home
- Drinking raw milk (but not other raw milk products)
- Handling raw poultry or other meat, kitchen items in contact with raw meat or poultry, including knives, chopping boards, dish cloth, plates
- Using separate chopping boards for meat, poultry and other foods
- Living and/or working on a farm or lifestyle block
- Working with animals, including dairy (cows only), meat production (beef, sheep, cattle, goat), poultry
- Contact with animals including cattle, sheep, chickens, domestic chickens, pets. and "other"
- Home water supply from a private bore or rainwater tank, even if treated in some way
- Consumption of water from a rainwater tank, even if not main supply
- Contact with compost.

⁶ https://surv.esr.cri.nz/surveillance/monthly_surveillance.php?we_objectID=4917 accessed 9 May 2019

All of these elevated risk factors are consistent with the hypotheses listed in the Methods section (apart from the elevated risk for having separate chopping boards).

The use of a separate chopping board for raw meat is advocated as a food safety measure to prevent bacterial cross-contamination [31] and that use of separate chopping boards for various foods emerged as a significant risk factor was unexpected. This may represent complacency for other cross-contamination routes in the kitchen.

Factors showing statistically significant lower risk in the univariate analysis were:

- Consumption of beef or pork, chicken pieces (possibly pre-cooked)
- Consumption of chicken bought cooked, fresh, or frozen, or cooked in a microwave
- Cooking beef at home, or consuming a beefburger
- Eating fresh or frozen beef
- Eating lamb chop, lamb pieces, lamb bought frozen
- Eating pork in various forms
- Eating a chicken or other meat meal with vegetables or fruit that was prepared at home
- Handling pet food
- Rinsing chicken or other meats before cooking
- Drinking bottled water, or only bottled water
- Being on a town drinking-water supply
- Having contact with sand
- Having a problem with flies in food preparation area
- Usually washing hands when coming in from outside or before consuming food.

Some of these reduced risk factors are at odds with previously published research. Rinsing chicken before cooking has been shown to spread *Campylobacter* contamination in the kitchen [32], while flies have been suggested as a factor for cross-contamination [33]. It should be noted that the assessment of the prevalence of flies in this study was a subjective response on the part of the respondents.

For the poultry source-assigned cases, the statistically significant risk factors, as assessed by significantly elevated odds ratios, were almost identical to those for all cases (Table 17). There was a small increase in the odds ratio for one factor related to chicken consumption (eating chicken at a catered event) and the elevated odds ratio for consumption of raw milk was no longer statistically significant.

For cattle source-assigned cases, the univariate analysis showed elevated odds ratios (compared to the complete case dataset analysis) for factors connected with animal contact: living or working on a farm or lifestyle block, and contact with animals (particularly dairy cows). However, the odds ratio for contact with another sick person was no longer significant, while the odds ratio for consumption of raw milk was higher than that for the full univariate analysis. Risk factors concerning beef consumption as a food did not have statistically significantly elevated odd ratios, which is consistent with New Zealand studies which have found the prevalence and numbers of *Campylobacter* on red meat to be low [34].

Urban/Rural and Location Differences

The pattern of source assignments for urban and rural cases are quite different (Figures 16-19), with about 90% of urban campylobacteriosis cases assigned to poultry sources,

while less than 75% of rural cases were assigned to this source. As shown in Figure 17, the proportion of poultry source-assigned cases increases as the location of the cases becomes more urban. This observation is more pronounced in summer and spring, than in winter and autumn (Figure 21, Appendix J), and for the Auckland region compared to Manawatū-Whanganui (Figure 20, Appendix J).

For rural cases, ruminant source assignment proportions in autumn and winter are similar to the proportion poultry assigned, but in spring and summer poultry sources dominate (Figure 19). While not a major source for either urban or rural populations, sheep-assigned cases were only apparent amongst the rural cases.

As can be seen in Table 16, urban cases and controls dominate the dataset. Univariate odds ratios for risk factors for urban cases were examined separately for Auckland and Manawatū-Whanganui. Interpreting such results needs to be done with caution, due to the smaller case and control numbers, particularly in Manawatū-Whanganui. Many of the significant risk factors were the same for both groups. However, the result for raw milk consumption from this analysis was of interest. The risk was not significant for urban cases in Auckland, but was significant for Manawatū-Whanganui. This partially reflected the proportion of urban raw milk consumers (Auckland 1.1% of cases and 0.7% of controls, Manawatū-Whanganui 10.9% of cases and 1.6% of controls).

Comparison with the MAGIC Study

The previous case-control study of campylobacteriosis in New Zealand is colloquially known as the MAGIC study (Multi-Centre Analysis of Gastroenteritis Induced by *Campylobacter*). This study interviewed primarily urban cases and controls (approximately 85% of subjects were classed as urban) in four centres with high notification rates of campylobacteriosis (Auckland, Hamilton, Wellington and Christchurch) during 1994 and 1995 [9]. The number of cases was 621, matched by the same number of controls.

The strongest associations, as indicated by the largest statistically significant odds ratios, were between campylobacteriosis and undercooked chicken, or consumption of chicken in restaurants. There was no statistically significant association between meats, other than poultry, and campylobacteriosis. Consumption of salads and vegetables appeared to be protective (odds ratios significant less than one). There were no apparent links between food preparation practices in the home and campylobacteriosis.

Amongst the non-food exposures, overseas travel, rainwater as a home water source, and contact with faeces of puppies (in the home) or cattle were associated with campylobacteriosis. Occupational contact with bovine carcasses was also strongly associated with disease.

In the MAGIC study there was no statistically significant association with poultry or chicken consumption in the 10 days prior to illness; it was only “more than one poultry or chicken meal” that was associated. Consumption of raw or uncooked chicken was a strong risk factor; however, it seems remarkable that this type of poultry was consumed by such high numbers of cases (17% in the MAGIC study).

Poultry meals consumed at home were reported by the large majority of cases and controls, and were protective. Both studies also reported statistically significant, elevated risk for poultry meals consumed at a friend’s house.

That contact with an ill person was a risk factor was surprising given that campylobacteriosis is generally thought to be infrequently transmitted person to person. However, such contact was reported by only up to 14% of cases. Other risk factors identified in this study (unpasteurised dairy products, overseas travel, non-city water outside of home, rainwater source of home water, handling calf or puppy faeces, ownership

of puppies or caged birds, occupational contact with cattle or cattle/calf carcasses) also appear biologically plausible, but were reported by relatively small numbers of cases and controls.

The risk factors determined by the MAGIC study are consistent with those found in the SACNZS study. In particular, the finding that chicken consumption itself was not associated with illness, but potentially undercooked chicken and chicken consumption outside the home were associated with illness. Also consistent are the links between occupational contact with cattle, and rainwater as a drinking water source, and illness.

Limitations

This study recruited cases and controls from the Auckland and Manawatū-Whanganui regions of New Zealand. All cases were eligible by being notified to the human health notifiable disease surveillance system, while controls were eligible by being members of the NZHS cohort. We attempted to frequency match controls to case by region and age in order to reduce the impact of confounding by these variables. The age distributions were broadly similar in both cases and controls. However, a higher proportion of controls compared to cases was evident in Auckland (67% of case and 75% of controls), and hence a lower proportion of controls compared to cases in Manawatu (33% of cases and 25% of controls). Residual confounding resulting from imperfect matching was considered by adjusting for these variables in multivariate models.

Presentation to general practitioners by cases may have resulted in selection bias; the cases were a particular subset of all cases in the community and therefore unlikely to be representative of all cases in the population. The effect of this bias could not be determined, but when interpreting the risk factors it needs to be borne in mind that these are risk factors for the subset of cases presented to general practitioners. Selection bias may also have been introduced as a result non-participation in the recruitment of both cases and controls, however the proportion of cases refusing to participate was relatively low (8% in Auckland and 12% in Manawatū-Whanganui) and 12% of controls. Efforts were made to minimise the impact of bias by using a standardised approach to interviewing both cases and controls, although the interviews were carried out by different organisations. Analysis of the distribution of controls showed they were broadly representative of the general population in each region. Using the NZHS cohort reduced the likelihood of refusal to participate, but the fact that the cohort comprises the subset of individuals from the, originally randomly-selected, cohort who are willing to participate in future studies may have introduced bias if this is associated with risk factors considered in the study.

Some degree of recall bias in relation to food consumption is inevitable in a study such and this was minimised by using a study design that limited the time from illness to interview to 48 hours or less, and asked questions relating to the recent past (7 days for food consumption). We note that any recall bias is likely to be similar in cases and controls.

Source isolates were obtained from samples provided by meat and poultry plants that were likely to constitute the main supply to the study regions. However, meat and poultry distribution pathways will always be complex within a country and therefore the source samples would not have been fully representative of the food supply in the Auckland and Manawatū-Whanganui regions.

Outcomes

The primary study outcomes were planned to be estimates of the:

- Proportions of human cases of campylobacteriosis that are associated with individual source reservoirs

The source assignment models have provided estimates of the number of study cases that could be assigned to a source (Table 22):

- Poultry 553/656 (84%)
- Sheep 0 (0%)
- Cattle 93/656 (14%)
- Unassigned 10 (2%)

Source assignment modelling does show a small proportion of rural cases whose *Campylobacter* types were associated with sheep, although no individual cases met the conditions for assignment to sheep as a source. Direct contact with sheep, either through work or domestically, does have an elevated odds ratio in the univariate risk factor analysis.

- Proportions of human cases of campylobacteriosis that can be attributed to foodborne and other pathways

Poultry meat has been identified as a significant pathway for campylobacteriosis in New Zealand, and the decline in incidence in 2007-2008 has been linked to interventions in broiler meat production [1]. Poultry is the most commonly consumed meat type in New Zealand [30] and greater than 80% of people involved in the current study as cases or controls had consumed poultry within the previous 7 days. Under these study circumstances, differentiation of poultry consumption between cases and controls as a statistically significant overall risk factor would be less likely to be detected. On the other hand, more specific risk factors associated with consumption of poultry did result in statistically significantly elevated odds ratios e.g. consumption of undercooked chicken, consumption of chicken outside the home. Thus the overall findings examining the source attribution and specific risk factors indicate that poultry meat remains the dominant pathway for exposure and infection.

Direct exposures to poultry birds with significantly elevated odds ratios include: contact with domestic poultry (reported by 6% of cases), contact with chickens (12% of cases) at home (9% of cases) or outside the home (3% of cases). This indicates that while direct contact with poultry presents a significantly elevated risk, it affects only a small proportion of the poultry attributed cases.

Conversely, despite attribution of a proportion of rural cases to cattle, risk factors associated with consumption of beef were rarely significant. A multivariate model using data from only cases attributed to cattle found that animal contact and living or working on a farm/lifestyle block explained a high proportion of these cases.

For these reasons, a multivariate model focusing on poultry meat, alongside non-food risk factors, was created. The model included factors associated with poultry meat consumption that had significant elevated odds ratios.

The model was created using data from all source assigned cases and controls (Table 25). A number of poultry handling factors are significant, which supports the conclusion that poultry meat consumption is responsible for a high proportion of the cases assigned to poultry as a source.

While raw milk consumption was a significant risk factor in the univariate analysis, it was reported in only a small proportion (4.1%) of cases.

- Proportions of human cases of campylobacteriosis that can be attributed to individual exposures

The importance of non-poultry pathways was explored using the 93 cattle assigned cases, where these other pathways were expected to be significant (Table 26). These results indicate that living or working on a farm is the highest significant risk for these cases. Contact with cattle is also significant, and is likely to be correlated with living or working on a farm. Exposure to compost, using the revised assignments is not significant.

Raw milk consumption is only significant for urban cases. This result appears to be mostly linked to urban cases in Manawatū-Whanganui.

Although raw milk consumption is generally low, raw milk consumers were significantly over represented in urban cases compared to the urban controls. This is biologically plausible as it may reflect immunity to cattle-associated *Campylobacter* in rural areas due to continuous exposure through other pathways. Conversely, a lack of continuous exposure is likely for urban dwellers, which would result in comparative immunological naivety.

- Risk factor values (e.g. odds ratio estimates) for human campylobacteriosis

The odds ratio estimates for the all cases (Table 17), and cattle assigned cases (Table 23) have been presented, while those for poultry assigned cases were almost identical to those for all cases.

The following is a summary of the risk factor calculation results.

- Living and/or working on a farm, and direct animal contact are significant exposure pathways, particularly for cattle-associated cases. This includes exposure to chickens.
- Raw milk consumption is a significant risk factor for urban cattle associated cases.
- Eating chicken outside the home is a significant risk factor for illness. There are many possible reasons for this, and the result is consistent with the previous case-control study [9].
- Although chicken consumption is not significant, there is elevated risk from a number of risk factors associated with poultry handling and preparation in the home.
- Eating a vegetarian meal is a significant risk factor, possibly because it contains uncooked foods.
- Rainwater/roof tank as a water source, either in the home or elsewhere, is a risk factor for campylobacteriosis.
- The use of proton pump inhibitors as a medication is a significant risk factor for infection.
- Contact with another person with gastrointestinal symptoms, particularly close contact, is a risk factor. While this may be due to both the case and the ill contact person being exposed to the same risk factor, it should be noted that this question related to contact with a person with gastrointestinal symptoms before the case became ill.
- Exposure to compost was a risk for infection in the initial univariate analysis, but after selection of actual compost exposures, this was no longer significant.

APPENDIX A: CASE QUESTIONNAIRE

Source attribution of campylobacteriosis in New Zealand study (SACNZS) –
Case questionnaire

Case Details

Record ID	_____
CaseReportGuid	_____
EpiSurv Number	_____
First Name	_____
Last Name	_____
NHI	_____
DOB	_____
Age	_____
Sex	_____
Observation Results	_____

Sacnz Case Questionnaire

SOURCE ATTRIBUTION OF CAMPYLOBACTERIOSIS IN NEW ZEALAND STUDY (SACNZS) - CASE QUESTIONNAIRE

During the reading of this interview, bold typeface represents information or questions to be relayed to the interviewee, while text in italics represents supporting information for the interviewer.

CASE DETAILS

Name: [first_name] [last_name]

NHI: [nhi]

Date of Birth: [dob]

Age: [age]

Sex: [sex]

Laboratory Result: [obx]

Home Phone

Phone (work)

Phone (other)

Kia ora

We are contacting you as part of the follow up of confirmed cases of Campylobacter infection conducted by Public Health Services in New Zealand. You were recently diagnosed with gastroenteritis caused by this infection. The normal follow up involves asking a series of questions to help us understand this disease.

Campylobacteriosis is an illness caused by a bacteria. In New Zealand, every year, an estimated 60,000 people get this infection. The Ministry for Primary Industries is currently conducting a research survey about Campylobacter infections in New Zealand. The Ministry of Health supports this research survey.

As part of this research survey, we would like to ask some questions that are in addition to the normal follow-up questions, or are more detailed versions of them. This will take about an additional ten minutes, compared to the normal follow-up interview.

Your interview record from the research questionnaire will be available to the Public Health Service, to help possible public health response during the study, but be kept confidential by them. Information from your interview record provided to the study researchers will not be identifiable and will be saved in an anonymous format.

Your input is important as it will help to determine how this potentially very serious illness is contracted and what can be done to prevent it.

If you would prefer to only answer the questions we would ask as part of the normal follow up, you are free to say so.

NOTES FOR INTERVIEWER

If case is aged less than 16 years you will need to decide if the child is competent to give consent and to be interviewed directly. This can be done by asking the parental or guardian prior to the interview. If they do not judge the child competent, then parental or guardian consent will be required and the parent or guardian most familiar with the eating and other habits of the child can then answer on behalf of the case.

If the interview is conducted with a parent or guardian, questions relate to the case, not the person being interviewed unless specified in the body of the questionnaire.

Kia ora

We are contacting you as part of the follow up of confirmed cases of Campylobacter infection conducted by Public Health Services in New Zealand. The normal follow up involves asking a series of questions to help us understand this disease.

Campylobacteriosis is an illness caused by a bacteria. In New Zealand, every year, an estimated 60,000 people get this infection. The Ministry for Primary Industries is currently conducting a research survey about Campylobacter infections in New Zealand. The Ministry of Health supports this research survey.

Recently a person in your household under the age of 16 was sick with gastroenteritis caused by Campylobacter. As part of this research survey, we would like to ask that person some questions that are in addition to the normal follow-up questions, or are more detailed versions of them. This will take about an additional ten minutes, compared to the normal follow-up interview.

Because the sick person is under the age of 16 we need to ask you whether you consider that person is capable of understanding the nature of the research survey and answering the questions for themselves, or whether you consider you would need to do this for them.

The interview record from the research questionnaire will be available to the Public Health Service, to help possible public health response during the study, but be kept confidential by them. Information from the interview record provided to the study researchers will not be identifiable and will be saved in an anonymous format.

The input is important as it will help to determine how this potentially very serious illness is contracted and what can be done to prevent it. If you or the sick person would prefer to only answer the questions we would ask as part of the normal follow up, they are free to say so.

Do you think that the sick person would be able to understand the nature of this survey and to answer the questions for themselves?

- Yes
 No

Kia ora

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Campylobacteriosis is an illness caused by a bacteria. In New Zealand, every year, an estimated 60,000 people get this infection. The Ministry for Primary Industries is currently conducting a research survey about Campylobacter infections in New Zealand. The Ministry of Health supports this research survey.

As part of this research survey, we would like to ask some questions that are in addition to the normal follow-up questions, or are more detailed versions of them. This will take about an additional ten minutes, compared to the normal follow-up interview.

Your interview record from the research questionnaire will be available to the Public Health Service, to help possible public health response during the study, but be kept confidential by them. Information from your interview record provided to the study researchers will not be identifiable and will be saved in an anonymous format.

Your input is important as it will help to determine how this potentially very serious illness is contracted and what can be done to prevent it.

If you would prefer to only answer the questions we would ask as part of the normal follow up, you are free to say so.

Kia ora

We are contacting you because you were sick recently and visited the doctor. The laboratory was able to identify the cause of your sickness, and told us, because we are responsible for finding out more about cases like yours, so we can prevent more cases happening in the future.

Normally with cases like yours we ask a series of questions to help us understand the illness you had.

To try and understand the causes of the illness better we are doing a research study into the illness. Part of the study involves asking cases some questions that are in addition to the normal follow-up questions, or are more detailed versions of them. This will take about 20-25 minutes, about ten minutes more than the normal questions we ask.

We have already asked your [parent or guardian] for permission to ask you questions for the research survey.

If you don't know the answers to questions, or can't remember, you should feel free to say so. Also, you can stop the interview at any time.

Your answers will be kept confidential to us and the people doing the research.

Your help is important as it will us find out how people get this illness and what can be done to prevent it.

In that case, are you familiar with their diet and activities, and able to answer questions on their behalf?

yes

Do you give consent for us to use your answers to the research questionnaire as part of the national survey?

- Yes, continue to informed consent
 No, complete Episurv questionnaire

INFORMED CONSENT

Before we start, would you like to ask any questions?

Declaration by member of research team:

I have given a verbal explanation of the research project to the participant, and have answered the participant's questions about it.

- Yes
 No

I believe that the participant understands the study and has given informed consent to participate.

- Yes
 No

Researcher's/Interviewers name: _____

Date _____

ELIGIBILITY QUESTIONS

Cases

These questions seek to establish whether the case has had recent gastroenteritis, other than that related to the diagnosis of campylobacteriosis. If so, they are ineligible for inclusion in the study and the interview will conclude.

A laboratory test found Campylobacter, a bacteria that causes food poisoning, in a sample provided by you to your doctor. Gastroenteritis (commonly known as food poisoning), can cause symptoms such as diarrhoea (runny poo), vomiting (throwing up), or stomach pains.

2.
In
the
month
before
you
got
sick
with
Campylobacter,
did
you/your
child
experience
diarrhoea, vomiting,
or
stomach
pains?

Yes
 No
(If
yes
is
answered,
then
the
interviewee
is
not
eligible
and
you
can
simply
complete
the
EpiSurv
form
or
send
out
usual
letter/questionnaire
and
offer
usual
public
health advice.)

ABOUT THE ILL PERSON

The following questions allow us to examine whether certain types of people are more likely to get campylobacteriosis.

3. What is your/your child's gender?

Male
 Female
 Other

4. What is your/your child's date of birth?

(Interviewer note: Date of birth preferred but if only age available record that in next question)

If not willing to give date of birth request age

Age

(
Interviewer note
:
Please enter
a
number.
If
refuse to answer (Go
to
4a))

4a.
If
you
are
unwilling
to
give
your/your
child's
age,
would
you
be
willing
to
indicate
which
of
the
following
age
groups the
age
is in?

- Yes
 No

Age group

- 0 to 5 months
 6 to 11 months
 1 year
 2 to 4 years
 5 to 17 years
 18 to 44 years
 45 to 74 years
 75 + and over
 Unwilling to answer

5. Which
ethnic group
do
you/your
child
identify
with? (You
can select
more
than one
group)

- New Zealand European
 Maori
 Samoan
 Cook Island Maori
 Niuean
 Chinese
 Indian
 Tongan
 Other

Specify 'other' ethnicity

6.
Do
you
live
or
work
on
a
farm,
lifestyle
block
or
other
premises
that
has
farm
(non-pet)
animals?

- Yes
- No
- Don't know

- Yes I live on a farm/lifestyle block
- Yes I work on a farm/lifestyle block/premises
- Yes I live on a farm/lifestyle block AND I work on a farm/lifestyle block
- Yes I work at another premises that has animals

Please specify the premises

6a. If yes,
please specify type of
animals
at the
types of
farm/lifestyle
block/premises you
live or
work on:

- dairy
- meat production
- poultry
- other

Select dairy animals

- cow
- goat
- sheep

Select meat production

- beef
- sheep
- pig
- cattle
- goat
- deer

Select poultry

- domestic poultry (home use only)
- commercial poultry
- poultry processing
- other poultry

Please specify other poultry

Specify other type of animals

6b.
When
you/your
child
come
inside
from
working/playing, or
consume
food,
do you
wash
your
hands?

- always
- most of the time
- only if visibly dirty
- occasionally
- never

For adult participants only. For children go to 8.

The study is particularly interested in occupations that involve animal, food, environmental or healthcare contact. Occupations of this sort should be probed for a more specific description. For example, 'poultry processor', rather than just 'food processor' or 'factory worker'. Note that the participant may have more than 1 job. The participant may be a student, note this as occupation.

7a. What is your occupation?

Job title 1

- 16 Month Old Child
- A.I. Technician
- Abattoir Worker
- Aboriginal and Torres Strait Islander Education Worker
- Aboriginal and Torres Strait Islander Health Worker
- Abrasive Blaster
- Absailer
- Abseiler
- ACC Justice Centre
- ACC Justice Centre
- Accommodation and Hospitality Managers nec
- Accommodation Manager - Boarding House
- Accountant
- Accountant (General)
- Accountants, Auditors and Company Secretaries
- Accounting Clerk
- Accounting Clerks
- Accounting Clerks and Bookkeepers
- Accounts
- Accounts Administrator
- Accounts Administrator
- Accounts Administrator
- Accounts Clerk
- Accounts Manager
- Accounts Payable Administrator
- Actor
- Actors, Dancers and Other Entertainers
- Actors, Dancers and Other Entertainers nec
- Actuaries, Mathematicians and Statisticians
- Actuary
- Actuary And Consultant
- Acupuncturist
- Admin Manager
- Admin Worker
- Administration
- Administration Manager
- Administration Manager
- Administrative Officer
- Administrator
- Administrator
- Administrator
- Administrator Gisborne Tatapouri Fishing Club
- Administrator.Owner Of Restaurant.
- Admissions Clerk
- Advertising
- Advertising Agency Director
- Advertising and Marketing Professionals
- Advertising and Public Relations Manager
- Advertising and Sales Manager
- Advertising Manager
- Advertising Specialist
- Advertising, Public Relations and Sales Managers
- Advisor
- Aeronautical Engineer
- Aeroplane Pilot
- After School Care
- Aged and Disabled Carers
- Aged Care Worker
- Aged or Disabled Carer
- Agency Nurse
- Agri Business Consultant
- Agricultural and Forestry Scientists
- Agricultural and Horticultural Mobile Plant Operator
- Agricultural Chemical Consultant
- Agricultural Consultant
- Agricultural Contracting
- Agricultural Engineer
- Agricultural Project

- Agricultural Scientist
- Agricultural Sprayer
- Agricultural Technician
- Agricultural Technicians
- Agricultural Worker
- Agricultural, Forestry and Horticultural Plant Operators
- Agricultural, Medical and Science Technicians
- Agriculture Advisor
- Agriculture Research
- Agronomist
- Aid Worker
- Aid worker Carpenter
- Air and Marine Transport Professionals
- Air Assistant
- Air Compressor Technician
- Air COnditioning / Mechanic
- Air Steward
- Air Stewardess
- Air Traffic Control Instructor
- Air Traffic Controller
- Air Traffic Controller
- Air Transport Professionals
- Air Transport Professionals nec
- Airconditioning and Mechanical Services Plumber
- Airconditioning and Refrigeration Mechanic
- Airconditioning and Refrigeration Mechanics
- Aircraft Baggage Handler and Airline Ground Crew
- Aircraft Engineer
- Aircraft Maintenance Engineer (Avionics)
- Aircraft Maintenance Engineer (Mechanical)
- Aircraft Maintenance Engineer (Structures)
- Aircraft Maintenance Engineers
- Aircraft Refueller
- Aircraft Technician
- Airline Manager
- Airport Staff
- Alarm, Security or Surveillance Monitor
- Aluminium Joiner
- Ambulance Driver
- Ambulance Officer
- Ambulance Officers and Paramedics
- Ambulance Paramedic
- Amusement Centre Manager
- Amusement, Fitness and Sports Centre Managers
- Anaesthetic Technician
- Anaesthetist
- Anaesthetist
- Anaesthetists
- Analyst
- Analyst Programmer
- Anatomist or Physiologist
- Anesthesiologist
- Anesthetic Tech Niurse
- Animal Attendants and Trainers
- Animal Attendants and Trainers nec
- Animal Attendants and Trainers, and Shearers
- Animal Carer
- Animal Control
- Animator
- Antique Dealer
- ANZ Bank
- Apiarist
- Apparel Cutter
- Apple Packer
- Apple Picker
- Apple Thinner
- Appliance Works
- Apprentice Builder
- Apprentice Butcher
- Apprentice Carpenter

- Apprentice Electrician
- Apprentice Motor Mechanic
- Apprentice Panelbeater
- Apprentice Plumber
- Apprentice Welder
- Aquaculture Farmer
- Aquaculture Farmers
- Aquaculture Worker
- Aquaculture Worker
- Aquatic Engineer
- Arborist
- Archaeologist
- Architect
- Architects and Landscape Architects
- Architects, Designers, Planners and Surveyors
- Architectural Draftsperson
- Architectural, Building and Surveying Technicians
- Architectural, Building and Surveying Technicians nec
- Archivist
- Archivists, Curators and Records Managers
- Armed Forces
- Armoured Car Escort
- Army
- Army Corporal
- Army Personnel
- Art Director (Film, Television or Stage)
- Art Teacher (Private Tuition)
- Artist
- Artist/Photographer
- Artistic Director
- Artistic Directors, and Media Producers and Presenters
- Arts Administrator or Manager
- Arts and Media Professionals
- Arts Professionals
- Asbestos Labourer
- Assembles Agriculture Machinery
- Asset Manager
- ASSISTANT ACCOUNTANT
- Assistant Manager
- Assistant Manager
- Assistant Principal
- Assistant Teacher
- At home
- at Home Educarer
- At home looking after children
- At Home Mother
- At home not looking after children
- Attendance Officer
- Attending Early Childhood Centre
- Attending ECC
- Attends ESOL Classes
- Au Pair
- Auctioneer
- Auctioneers, and Stock and Station Agents
- Audiologist
- Audiologists and Speech Pathologists/Therapists
- Audiovisual Technison
- Auditor
- Auditor
- Auditors, Company Secretaries and Corporate Treasurers
- Author
- Authors, and Book and Script Editors
- Auto Dismantler
- Auto Technician
- Autoglazier
- Automobile Drivers
- Automobile Drivers nec
- Automobile, Bus and Rail Drivers

- Automotive and Engineering Trades Workers
- Automotive Electrician
- Automotive Electricians
- Automotive Electricians and Mechanics
- Automotive Parts Salesperson
- Automotive Technician
- AV Installer
- Aviation
- Avionics Technician
- Avocado Orchardist
- Baby
- Backer
- Backhoe Operator
- Baker
- Bakers and Pastrycooks
- Bakery Assistant
- Bakery Manager
- Bakery Staff
- Baking Factory Worker
- Banardos In House Child Minder
- Bank Call Centre Worker
- Bank Clerk
- Bank Employee And Student (Finance)
- Bank Manager
- Bank Manager
- Bank Officer
- Bank Teller
- Bank Worker
- Bank Workers
- Banker
- Banking Call Centre Worker
- Bar Attendant
- Bar Attendants and Baristas
- Bar Manager
- Bar Useful or Busser
- Barber
- Barista
- Barrister
- Barristers
- Bartender
- Beauty Therapist
- Beauty Therapists
- Bed and Breakfast Operator
- Bed Maker
- Bee Keeper
- Beef Cattle Farm Worker
- Beef Cattle Farmer
- Beekeeper
- Beer Tap Installer
- Beetham Rest Home Manager
- Behaviour Support Specialist
- Beneficiary
- Berry Farmer
- Betting Agency Counter Clerk
- Betting Agency Manager
- Betting Clerks
- Betting Clerks nec
- Bicycle Mechanic
- Biinder
- Binder
- Binder and Finisher
- Bio Medical Technician
- Biochemist
- Biologist (General)
- Biomedical Engineer
- Biosecurity Officer
- Biotechnologist
- Bird Handler
- Blacksmith
- Boarding Kennel or Cattery Operator
- Boat Builder

- Boat Builder and Repairer
- Boat Builders and Shipwrights
- Boat Skipper
- Boat Worker
- Body Artist
- Boiler Assistant
- Boiler or Engine Operator
- Boilermaker
- Bomb Disposal Person
- Bone Meal Worker
- Bone Meat Worker
- Book or Script Editor
- Bookkeeper
- Bookkeepers
- Bookmaker
- Bookmaker's Clerk
- Bookshop Manager
- Bookshop Owner
- Bookshop Sales Assistant
- Botanist
- Bouncer
- Branch Manager
- Branch Manager
- Branch Manager (ACC)
- Brewery Worker
- Bricklayer
- Bricklayer
- Bricklayers and Stonemasons
- Broadcast Transmitter Operator
- Builder
- Builder
- Builder
- Builder (self Employed)
- Builder And Motorhome Maintenance
- Builder Apprentice
- Builder Apprentice
- Builder's Labourer
- Builder/Hammerhand
- Builder/Hammerhand
- Building and Engineering Technicians
- Building and Engineering Technicians nec
- Building and Plumbing Labourers
- Building Associate
- Building Control Officer
- Building Designer
- Building Inspector
- Building Insulation Installer
- Building Supervisor
- Bulk Materials Handling Plant Operator
- Bulldozer Operator
- Bungy Jump Master
- Bus and Coach Drivers
- Bus Driver
- Business
- Business Administration Manager
- Business Analyst
- Business and Systems Analysts, and Programmers
- Business Broker
- Business Coach
- Business Consultant
- Business Consultant
- Business Director
- Business Intelligence Consultant
- Business Machine Mechanic
- Business Manager
- Business Owner
- Business Owner-Takeaway
- Business Professional
- Business, Human Resource and Marketing Professional
- Businessman
- Butcher

- Butcher Apprentice
- Butcher or Smallgoods Maker
- Butchery Assistant
- Cabinetmaker
- Cabinetmakers
- Cabler (Data and Telecommunications)
- Caf? Worker
- Cafe and Restaurant Managers
- Cafe Manager
- Cafe or Restaurant Manager
- Cafe Owner
- Cafe Worker
- Cafe Workers
- Calf Rearer
- Call or Contact Centre and Customer Service Managers
- Call or Contact Centre Information Clerks
- Call or Contact Centre Manager
- Call or Contact Centre Operator
- Call or Contact Centre Team Leader
- Call or Contact Centre Workers
- Camera Operator (Film, Television or Video)
- Camper
- Canning Operator
- Canvas and Leather Goods Makers
- Canvas Goods Maker
- Car Dealer
- Car Detailer
- Car Detailers
- Car Groomer
- Car groomer
- Car Painter
- Car Park Attendant
- Car Parts Salesperson
- Caravan Park and Camping Ground Manager
- Caravan Park and Camping Ground Managers
- Caravan Park and Camping Ground Owner
- Cardiac Technician
- Cardiologist
- cardiology Registrar
- Cardiothoracic Surgeon
- Care Assistant
- Care Giver
- Careers Advisor
- Careers Counsellor
- Caregiver
- Caregiver (Rest Home)
- Caregiver??
- Caregiver/Cleaner
- Carers and Aides
- Caretaker
- Caretakers
- Cargo Manager
- Carpenter
- Carpenter and Joiner
- Carpet Cleaner
- Carpet/Vinyl Layer
- Cartographer
- Cartographer
- Carton Maker
- Case Manager
- Case Worker
- Cash Van Salesperson
- Cashier
- Casino Worker
- Castings Processor
- Casual Worker
- Cat Breeder
- Categories Manager
- Caterer
- Catering Manager

- Catering Student
- Cattle Farmer
- ceiling Installer
- Celebrant
- Cement and Concrete Plant Worker
- Cement Production Plant Operator
- CEO
- Ceramicist
- Chaplain
- Charge Nurse
- Charity Administrator
- Charter and Tour Bus Driver
- Chartered Director / Consultant
- Chauffeur
- Checkout Operator
- Checkout Operators and Office Cashiers
- Checkout Operators and Office Cashiers
- Checkout Supervisor
- Chef
- Chef
- Chef Student
- Chefs
- Chefs Course
- Chelsea House
- Chemical and Materials Engineers
- Chemical Engineer
- Chemical Plant Operator
- Chemical Plant Worker
- Chemical Processor
- Chemical Production Machine Operator
- Chemical, Gas, Petroleum and Power Generation Plant Operators
- Chemist
- Chemistry Technician
- Chemists, and Food and Wine Scientists
- Chicken Farmer
- Chief Engineer
- Chief Executive
- Chief Executive or Managing Director
- Chief Executives and Managing Directors
- Chief Executives, General Managers and Legislators
- Chief Executives, General Managers and Legislators
- Chief Information Officer
- Child
- Child
- Child - non-resident
- Child 5-15
- Child At Home Only
- Child Care Centre Manager
- Child Care Centre Managers
- Child Care Worker
- Child Care Worker (Home Based)
- Child Carers
- Child Carers
- Child Minder
- Child or Youth Residential Care Assistant
- Child Support Officer
- Child under 16
- Child under 5
- Child under 5 Attends Preschool
- Childcare Teacher
- Childcare Workder
- Childcare Worker
- Chimney Sweep
- Chiropractor
- Chiropractor Assistant
- Chiropractors and Osteopaths
- Chocolate Packer
- Church Worker
- Cinema or Theatre Manager
- Circular Deliverer

- Civil Celebrant
- Civil Engineer
- Civil Engineering Draftsperson
- Civil Engineering Draftspersons and Technicians
- Civil Engineering Professionals
- Civil Engineering Technician
- Civil Servant
- Classified Advertising Clerk
- Clay Processing Factory Worker
- Clay Products Machine Operator
- Clay, Concrete, Glass and Stone Processing Machine Operators
- Clay, Concrete, Glass and Stone Processing Machine Operators nec
- Cleaner
- Cleaner
- Cleaner
- Cleaner
- Cleaner
- Cleaner And Nanny
- Cleaner/caretaker
- Cleaners and Laundry Workers
- Cleaners and Laundry Workers
- Cleaners nec
- Cleaning Company Manager
- Clerical and Administrative Workers nec
- Clerical and Office Support Worker
- Clerical and Office Support Workers
- Clerical and Office Support Workers nec
- Clerk
- Clerk of Court
- Clinical And Corporate Psychologist
- Clinical Coder
- Clinical Nurse
- Clinical Oncologist
- Clinical Psychologist
- Clinical Psychologist
- Clothing Designer
- Clothing Patternmaker
- Clothing Trades Workers
- Clothing Trades Workers nec
- Co-Director
- Co-ordinator Brand
- Co-ordinator Brand
- Co-ordinator Brand
- Co-ordinator Brand
- Coach Builder
- Coach Painter
- Coal Miner
- Coding Clerk
- Coldshelf Assistant
- Coldshelf Assistant
- College Student
- Comedian
- Commercial Cleaner
- Commercial Cleaners
- Commercial Designer
- Commercial Designer
- Commercial Diver
- Commercial fisherman
- Commercial Housekeeper
- Commercial Manager
- Commissioned Defence Force Officer
- Commissioned Fire Officer
- Commissioned Officers (Management)
- Commissioned Police Officer
- Commodities Trader
- Communications Advisor
- Communications Director
- Communications Officer
- Communications Operator

- Communications Technician
- Community
- Community and Personal Service Workers
- Community Arts Worker
- community Support Worker
- Community Support Worker
- Community Worker
- Companion Driving Business
- Company Director
- Company Secretary
- Complementary Health Therapists
- Complementary Health Therapists nec
- Compliance Officer
- Composer
- Computer Analyst
- Computer Engineer
- Computer Network and Systems Engineer
- Computer Network Professionals
- Computer Operator
- Computer Programmer
- Computer Technician
- Concrete Batching Plant Operator
- Concrete Products Machine Operator
- Concrete Pump Driver
- Concrete Pump Operator
- Concreter
- Concreters
- Confectionery Maker
- Conference and Event Organiser
- Conference and Event Organisers
- Conservation Officer
- Conservator
- Construction and Mining Labourers
- Construction Estimator
- Construction Manager
- Construction Project Manager
- Construction Rigger
- Construction Trades Worker
- Construction Worker
- Construction, Distribution and Production Managers
- Consultant
- Consultant Engineer
- Consultant Physician
- Contact Centre
- Contact Centre Manager
- Container Filler
- Contract Administrator
- Contract Worker
- Contract, Program and Project Administrators
- Contract, Program and Project Administrators
- Contractor
- Contractor nfd
- Controller
- Conveyancer
- Conveyancers and Legal Executives
- Cook
- Cookery Student
- Cooks
- Cool Storage Worker
- Coordinator
- Coordinator - About Kids
- Copywriter
- Corporate General Manager
- Corporate Services Manager
- Corporate Services Managers
- Corporate Trainer
- Corporate Treasurer
- Corrections Officer
- Cosmetic Physician
- Cosmetic Researcher
- Cosmetology

- Cost Clerk
- Cotton Grower
- Council Worker
- Counsellors
- Counsellors nec
- Countdown Supervisor
- Courier
- Couriers and Postal Deliverers
- Court and Legal Clerks
- Court Collections Officer
- Court Registry Officer
- Court Worker
- CPH Dialysis Unit
- Crane Chaser
- Crane, Hoist and Lift Operators
- Crane, Hoist or Lift Operator
- Creative Director
- Credit and Loans Officers (Aus)/Finance Clerks (NZ)
- Credit Controller
- Credit or Loans Officer
- Crop Farm Worker
- Crop Farm Workers nec
- Crop Farmer
- Crop Farmer
- Crop Farmers nec
- Crossing Supervisor
- Crowd Controller
- Cruise Ship Crew
- Currently Not Working
- Currently Not Working - Pregnant
- Currently Unemployed
- Custodian
- Customer Business Centre Consultant
- Customer Service Manager
- Customer Service Representative
- Customer Services
- Customs Officer
- Cycalist
- Cycle Courier
- Cycling Coach
- Dairy Cattle Farm Worker
- Dairy Cattle Farm Worker - Share Holder
- Dairy Cattle Farmer
- Dairy Factory Worker
- Dairy Farm Worker
- Dairy Farm Worker
- Dairy Farm Worker
- Dairy Farmer
- Dairy Farmer
- Dairy Farmer
- Dairy Farmer (Carterton)
- Dairy Operator
- Dairy Owner
- Dairy Products Maker
- Dairy Retail Assisstant
- Dairy Retail Assistant
- Dance Teacher (Private Tuition)
- Dancer or Choreographer
- Data Entry From Home
- Data Entry Operator
- Data Processing Analyst
- Database Administrator
- Database and Systems Administrators, and ICT Security Specialists
- Database and Systems Administrators, and ICT Security Specialists
- Day Care Centre Worker
- Daycare Teacher
- Daycare Worker
- Debt Collector
- Debt Collectors

- Deck and Fishing Hands
- Deck Hand
- Deep Fryer
- Deer Farmer
- Defence Force Member - Other Ranks
- Defence Force Members - Other Ranks
- Defence Force Members, Fire Fighters and Police
- Defence Force Senior Officer
- Delivery Driver
- Delivery Drivers
- Delivery Drivers
- Dementia Worker
- Demolition Labourer
- Dental Assistant
- Dental Assistants
- Dental Hygienist
- Dental Hygienists, Technicians and Therapists
- Dental Practitioner
- Dental Prosthetist
- Dental Specialist
- Dental Technician
- Dental Technician
- Dental Therapist
- Dentist
- Department Director General
- Department Of Corrections
- Dept Of Justice
- Deputy Principal
- Deputy Registrar
- Dermatologist
- Deseased
- Design Consultant
- Design, Engineering, Science and Transport Professional
- Designer
- Desk Officer
- Desktop Publisher
- Despatching and Receiving Clerk
- Detailer
- Detective
- Developer
- Developer Programmer
- Diagnostic and Interventional Radiologist
- Diary Farmer
- Diesel Motor Mechanic
- Dietitian
- Different Jobs
- Digger Driver
- Digital Consultant
- Digital Plate Marker
- Diplomat
- Director
- Director (Film, Television, Radio or Stage)
- Director (Food Safety And Quality)
- Director of Photography
- Disabilities Services Officer
- Dish Washer
- Dispatch
- Dispatcher In A Factory
- Dispensing Optician
- Distribution
- District Manager
- District Nurse
- District Nurse
- District Nurse - Keri Keri
- Diver
- Diversional Therapist
- Diversional Therapists
- Diving Instructor (Open Water)
- Doctor
- Doctor-Retired

- Dog Breeder
- Dog Handler or Trainer
- Dog or Horse Racing Official
- Domestic Cleaner
- Domestic Cleaners
- Domestic Housekeeper
- Dominatrix
- Door And Window Fitter
- Door-to-door Salesperson
- Doorperson or Luggage Porter
- Douglas Park School
- Draft Person
- Draftsman
- Drain Layer
- Drain Layer
- Drainage Contractor
- Drainage Engineer
- Drainage Technician
- Drainage, Sewerage and Stormwater Labourer
- Drainlayer (NZ)
- Drama Teacher (Private Tuition)
- Draughtsman
- Dressmaker or Tailor
- Driller
- Driller's Assistant
- Drillers, Miners and Shot Firers
- Driver
- Driver / Road Inspector
- Driving Instructor
- Driving Instructors
- Drug and Alcohol Counsellor
- Drycleaner
- Duty Cliinician
- Duty Manager
- Early Childhood (Pre-primary School) Teacher
- Early Childhood (Pre-primary School) Teacher Reliever
- Early Childhood (Pre-primary School) Teachers
- Early Childhood Centre Leader
- Earth Rig Digger
- Earth Science Technician
- Earthmoving Labourer
- Earthmoving Plant Operator
- Earthmoving Plant Operator (General)
- Earthwork Contractor
- ECC Teacher
- ECEC Teacher
- ECEC Worker
- ECG Technician
- Ecologist
- Economist
- Economists
- Editor
- Education Adviser
- Education Advisers and Reviewers
- Education Aide
- Education Aides
- Education Consultant
- Education Facilitator At NZQA
- Education Managers nec
- Education Professional
- Education Reviewer
- Education Support Worker
- Education Team Leader
- Education, Health and Welfare Services Managers
- Educational Consultant
- Educational Psychologist
- Educator
- Electorate Officer
- Electrical Distribution Trades Workers
- Electrical Engineer

- ELECTRICAL ENGINEER
- Electrical Engineering Draftsperson
- Electrical Engineering Draftspersons and Technicians
- Electrical Engineering Technician
- Electrical Engineers
- Electrical Inspector
- Electrical Line Mechanic
- Electrical Maintainer
- Electrical or Telecommunications Trades Assistant
- Electrical Wholesaler
- Electrician
- Electrician (General)
- Electrician (Special Class)
- Electricians
- Electronic Assistant
- Electronic Engineering Draftsperson
- Electronic Engineering Draftspersons and Technicians
- Electronic Engineering Technician
- Electronic Equipment Trades Worker
- Electronic Instrument Trades Worker (General)
- Electronic Instrument Trades Worker (Special Class)
- Electronics and Telecommunications Trades Workers
- Electronics Engineer
- Electronics Engineers
- Electronics Trades Workers
- Electroplater
- Electrotechnology and Telecommunications Trades Workers
- Emergency Management Technician
- Emergency Medicine Specialist
- Emergency Service Worker
- Employee
- Employment Advisor
- Endocrinologist
- Energy Centre Operator
- Engineer
- engineer
- Engineer Nec
- Engineering Manager
- ENGINEERING MANAGER
- Engineering Manager
- Engineering Managers
- Engineering Patternmaker
- Engineering Production Systems Worker
- Engineering Production Workers
- Engineering Professionals
- Engineering Professionals nec
- Engineering Technologist
- Engineering, ICT and Science Technicians
- Engraver
- Enrolled and Mothercraft Nurses
- Enrolled Nurse
- Entertainer or Variety Artist
- Entrepreneur
- Environment
- Environmental Consultant
- Environmental Consultant
- Environmental Engineer
- Environmental Health Officer
- Environmental Manager
- Environmental Planner
- Environmental Research Scientist
- Environmental Scientist
- Environmental Scientists nec
- Epidemiologist
- Equipment Hire Manager
- ER Specialist
- Event Coordinator
- Event Manager

- Excavator Operator
- Exchange Student
- Executive Assisstant
- Exercise Physiologist
- Exhaust and Muffler Fitter
- Exporting Cattle
- External Auditor
- Eye Surgeon
- Ezibuy Wellington
- Fabric and Textile Factory Worker
- Fabrication Engineering Trades Worker
- Fabricator Installer
- Facilitator
- Facilities Administrator
- Facilities Advisor
- Facilities Manager
- Factory Hand Fibreglass Moulding
- Factory Inghams
- Factory Manager
- Factory Process Worker
- Factory Process Workers nec
- Factory Supervisor
- Factory Worker
- Factory Worker
- Factory Worker
- Factory Worker
- Factory Worker - Mussels
- Factory Worker (food)
- Faculty Head
- Family and Marriage Counsellor
- Family Business Employee
- Family Bussiness
- Family Day Care Worker
- Family Support Worker
- Family Therapist
- Farm Adviser
- Farm Advisor
- Farm Cadet
- Farm Hand
- Farm Manager
- Farm Worker
- Farm Worker
- Farm Worker
- Farm, Forestry and Garden Worker
- Farm, Forestry and Garden Worker
- Farm, Forestry and Garden Workers nec
- Farmer
- Farmer and Farm Manager
- Farmer Self Employed
- Farmer/Farm Hand
- Farmer/stay At Home
- Farmer/Stay At Home Mother
- Farmers and Farm Managers
- Farmkill Slaughterman
- Farmyard Valley Road
- Farrier
- Farrier
- Fashion Designer
- Fashion Store Owner
- Fashion, Industrial and Jewellery Designers
- Fast Food Cook
- Fast Food Cooks
- Fastfood Assistant
- Fastfood Crew
- Father
- Fellmongery Worker
- Fencer
- Fencers
- Fibre Optic Technician
- Fibre Optic Technician
- Fibrous Plasterer

- Field Crop
- Field Crop
- Field Crop Farm Worker
- Field Ranger And Dog Handler
- field Scientist
- field Scientist
- Finance Manager
- Filing and Registry Clerks
- Filing or Registry Clerk
- Filling Assistant - Supermarket
- Film and Video Editor
- Film Producer
- Film Producer/Zumba Instructor
- Film, Television, Radio and Stage Directors
- Film, Television, Radio and Stage Directors nec
- Finance
- FINANCE ACCOUNTANT
- Finance And Permit Officer
- Finance Broker
- Finance Manager
- Finance Manager
- Finance Managers
- Financial Advisor
- Financial and Insurance Clerks
- Financial Auditor
- Financial Brokers
- Financial Brokers and Dealers, and Investment Advisers
- Financial Brokers nec
- Financial Clerk
- Financial Controller
- Financial Dealers
- Financial Dealers nec
- Financial Institution Branch Manager
- Financial Investment Adviser
- Financial Investment Advisers and Managers
- Financial Investment Manager
- Financial Market Dealer
- Fire and Emergency Workers
- Fire Fighter
- Fire Fighter
- Fire Protection Equipment Technician
- First Aid Trainer
- Fish And Chips Worker
- Fish Factory Worker
- Fish N Chip Shop
- Fisheries Officer
- Fisherman
- Fishery Worker
- Fishing Charter
- Fishing Guide
- Fishing Hand
- Fitness Centre Manager
- Fitness Instructor
- Fitness Instructors
- Fitter (General)
- Fitter and Turner
- Fitter-Welder
- Fleet Manager
- Flight Attendant
- Flight Attendant
- Flight Attendant Supervisor
- Flock Caregiver
- Floor Finisher
- Floor Finishers
- Floor Finishers and Painting Trades Workers
- Floor Layer
- Florist
- Florists
- Flower Grower
- flower Packer

- Flying Instructor
- Fonterra
- Food and Drink Factory Workers
- Food and Drink Factory Workers nec
- Food Chemist
- Food Delivery
- Food Factory Worker
- Food Handler
- Food Handler
- Food Preparation Assistant
- Food Preparation Assistants
- Food Process Workers
- Food Safety Officer
- Food Services Manager
- Food Techician
- Food Technician
- Food Technologist
- Food Trades Assistants
- Food Trades Assistants nec
- Food Trades Workers
- Food Trades Workers
- Food Truck Operator
- Food Worker
- Food Worker At McDonalds (Clendon)
- Footballer
- Footwear Factory Worker
- Footwear Production Machine Operator
- Force Mechanic
- Foreign Exchange Officer
- Foreign Worker
- Foreman
- Forest Scientist
- Forestry Consultant
- Forestry Worker
- Forestry, Logging Worker
- Forklift Driver
- Forklift Driver
- Forklift Operator
- Forklift Operator ENZA
- Foster Parent
- Foundry Worker
- Free Lance Photographer / Writer
- Freelance Editor
- Freelance Journalist
- Freelance Work
- Freelance Writer - Works From Home
- Freezing Worker
- Freezing Worker/Processor
- Freight and Furniture Handlers
- Freight Handler (Rail or Road)
- Freight Handlers and Shelf Fillers
- Fruit and Vegetable Factory Worker
- Fruit and Vegetable Packer
- Fruit or Nut Farm Worker
- Fruit or Nut Grower
- Fruit or Nut Picker
- Fruit Packer
- Full Time Mother
- Fulton Hogan - Sewage Contractor
- Fund Manager
- Funeral Director
- Funeral Workers
- Funeral Workers nec
- Furniture Finisher
- Furniture Maker
- Furniture Removalist
- Furniture Remover
- Furniture Restorer
- Futures Trader
- Gallery or Museum Curator
- Gallery or Museum Guide

- Gallery or Museum Technician
- Gallery, Library and Museum Technicians
- Gallery, Museum and Tour Guides
- Game Controller
- Gaming Worker
- Gaming Workers
- Garden and Nursery Labourer
- Garden Labourer
- gardener
- Gardener (General)
- Gardeners
- Gardeners
- Gas or Petroleum Operator
- Gasfitter
- Gastroenterologist
- General Clerical Workers
- General Clerk
- General Clerks
- General Clerks
- General Dental Practice; Clinical Director Maxillo Facial Unit
- General Manager
- General Medical Practitioner
- General Practitioner - Locum
- General Practice (Doctor)
- General Practitioner
- General Practitioners and Resident Medical Officers
- General Worker
- Geologist
- Geologist Engineer
- Geologists, Geophysicists and Hydrogeologists
- Geophysicist
- Geotechnical Engineer
- Geothermal Maintenance Technician
- Gib Fixer
- Glass Blower
- Glass Processing Worker
- Glass Production Machine Operator
- Glazier
- Glaziers
- Glaziers, Plasterers and Tilers
- Goat Farmer
- Golfer
- Government Employee
- Government Service
- Grader Operator
- Grading Supervisor (Food Handler)
- Grain Mill Worker
- Grape Grower
- Graphic and Web Designers, and Illustrators
- Graphic Arts Worker
- Graphic Designer
- Graphic Pre-press Trades Worker
- Graphic Pre-press Trades Workers
- Greenkeeper
- Greenkeeper
- Grocery Store Manager
- Grocery Store Supervisor
- Groundsman
- Grower Liaison
- Guidance Counsellor
- Gunsmith
- Gym Equipment Fixer
- Gym Instructor
- Gymnastics Coach or Instructor
- Haematologist
- Hair Dressing Teacher
- Hair or Beauty Salon Assistant
- Hair or Beauty Salon Manager
- Hair Salon Support
- Hairdresser

- Hairdresser (home-based)
- Hairdressers
- Hairdressers
- Handyman
- Handyperson
- Handypersons
- Harcourts
- Hardware Technician
- Head Nurse
- Health And Safetey
- Health And Safety
- Health And Saftey
- Health And Saftey Co-ordinator
- Health And Welfare Coodinator
- Health and Welfare Services Managers
- Health and Welfare Services Managers nec
- Health and Welfare Support Worker
- Health and Welfare Support Workers
- Health Assistant
- Health Care Assistant
- Health Care Assistant
- Health Diagnostic and Promotion Professionals
- Health Diagnostic and Promotion Professionals nec
- Health Information Manager
- Health Meciation Packing
- Health Practice Manager
- Health Professional
- Health Promotion Officer
- Health Services
- Health Services Manager
- Health Therapy Professionals
- Health Worker
- Health Worker
- Healthcare - Caregiver
- Healthcare Staff
- Healthcare Worker
- Healthline Nurse (Call Centre)
- Helicopter Pilot
- Herald Distributor
- Herbalist
- Herbalist (Western)
- Herd Tester
- HG Group Ltd
- Hide and Skin Processing Machine Operator
- Hide and Skin Processing Worker
- High School PE Teacher
- High School Student
- High School Teacher
- Hire A Hubby
- Historian
- Holiday Park Owner
- Holiday Programme Worker
- Home Care Assistant
- Home Carer For Her Parents
- Home Duty
- Home Econmics Teacher
- Home Executive
- Home Help
- Home Improvement Installer
- Home Kill Butcher
- Home Maintenance Contractor
- Home Teaching
- Homebased Childcare
- Homebased Childcare
- Homecare Assistant
- Homemaker
- Homemaker Painting
- Homestay Owner/Operator
- Homoeopath
- Horse Breeder
- Horse Dentist

- Horse Rider
- Horse Riding Coach or Instructor
- Horse Trainer
- Horticultural Nursery Assistant
- Horticultural Trades Worker
- Horticulturalist
- Horticulture Worker
- Horticulturist
- Hospital Laboratory Technician
- Hospital Nurse
- Hospital Orderly
- Hospital Pharmacist
- Hospital Receptionist
- Hospital Volunteer Worker
- Hospital Worker
- Hospitality Worker
- Hospitality Workers
- Hospitality Workers nec
- Hospitality, Retail and Service Managers
- Hospitality, Retail and Service Managers nec
- Hostel Matron
- Hostel Parent
- Hotel and Motel Managers
- Hotel or Motel Manager
- Hotel or Motel Receptionist
- Hotel Service Manager
- Hotel Service Managers
- Hotel Worker
- Hotel Worker
- Hotelier
- House Husband
- House Painter
- House Wife
- Housekeeper
- Housekeepers
- Housekeeping Manager
- Housewife
- Housewife Occasionally Drives Ambulance
- Housewife, Previously Lab Technician In India
- Housing Inspector
- HR Advisor
- HR Manager
- Human Resource Adviser
- Human Resource and Training Professionals
- Human Resource Manager
- Human Resource Managers
- Human Resource Professional
- Human Resources Clerk
- Human Resources Clerks
- HUMAN RESOURCES MANAGER
- Hunter-Fisher
- Hunter-Trapper
- Hunting Guide
- Hydraulic Hose Fitter
- Hydrogeologist
- Hydrographer
- ICT Account Manager
- ICT and Telecommunications Technicians
- ICT Business Analyst
- ICT Business and Systems Analysts
- ICT Business Development Manager
- ICT Consultant
- ICT Customer Support Officer
- ICT Engineer
- ICT Managers
- ICT Managers
- ICT Managers nec
- ICT Network and Support Professionals
- ICT Professional
- ICT Professional
- ICT Project Manager

- ICT Quality Assurance Engineer
- ICT Sales Assistant
- ICT Sales Assistants
- ICT Sales Professionals
- ICT Sales Representative
- ICT Security Specialist
- ICT Support and Test Engineers
- ICT Support and Test Engineers nec
- ICT Support Engineer
- ICT Support Technicians nec
- ICT Systems Test Engineer
- ICT Technician
- ICT Trainer
- ICT Trainers
- ICU Non Clinical
- Illustrator
- Immigration Consultant
- Immigration Officer
- Implementation Manager
- Import-Export Clerk
- Importer or Exporter
- Importers, Exporters and Wholesalers
- Improvement Officer
- In mental health facility
- In prison
- In-home Care
- Independent Midwife
- Indigenous Health Workers
- Industrial Designer
- Industrial Electrician
- Industrial Engineer
- Industrial Operation Manager
- Industrial Pharmacist
- Industrial Spraypainter
- Industrial Spraypainters
- Industrial, Mechanical and Production Engineers
- Infant
- Information and Organisation Professionals
- Information and Organisation Professionals nec
- Information Officers
- Information Technology
- Inquiry Clerk
- Inquiry Clerks and Receptionists
- Inspectors and Regulatory Officers
- Inspectors and Regulatory Officers nec
- Installer Fireplaces
- Institutionalised
- Instructor
- Insulation and Home Improvement Installers
- Insurance Agent
- Insurance Agents
- Insurance Agents and Sales Representatives
- Insurance Broker
- Insurance Consultant
- Insurance Investigator
- Insurance Investigators, Loss Adjusters and Risk Surveyors
- Insurance Loss Adjuster
- Insurance Risk Surveyor
- Insurance Under Writer
- Insurance, Money Market and Statistical Clerks
- Integration Aide
- Intellectual Disability Support Worker
- Intellectual Property Lawyer
- Intellectually
- Intelligence and Policy Analysts
- Intelligence Officer
- Intensive Care Specialist
- Interior Decorator
- Interior Designer
- Interior Designers

- Intermediate School Student
- Intermediate School Teacher
- Internal Auditor
- Internal Medicine Specialists nec
- International Aid
- International Marketing Director
- International Student
- Interpreter
- Invalid Beneficiary
- Inventory Officer
- Inventory Purchaser
- Investigator
- Investment Advisor
- IRD Coach
- Ironer or Presser
- Irrigation Engineer
- Irrigation Installer
- IT Administrator
- IT Consultant
- IT Consultant
- It Manager
- IT Manager
- IT Professional
- IT Professional Currently Not Working
- IT Project Manager
- IT Sales
- IT Specialist
- IT Support Management
- IT Technician
- IT Worker
- IT Worker
- ITG Group
- Janitor
- Jeweller
- Jeweller
- Jewellers
- Jewellery Designer
- Jewellery Sales Assistant
- JNL
- Job Seeker
- Jockey
- Joiner
- Journalist
- Journalists and Other Writers
- Journalists and Other Writers nec
- Judge
- Judicial and Other Legal Professionals
- Judicial and Other Legal Professionals nec
- Kai
- Kai
- Kai
- Kaiako Kohanga Reo (M
- Kaiako Kura Kaupapa M
- Kaiawhina
- Karate Instructor
- Kayak Builder
- Kennel Hand
- Keyboard Operators
- Keyboard Operators
- Kindergarten Teacher
- Kindergarten Teacher
- Kirwee Model School
- Kitchen Designer
- Kitchen Installer
- Kitchen Worker
- Kitchenhand
- Kitchenhands
- Kiwi Treasures
- Kiwifruit Orchard Worker
- Knitting Machine Operator
- Knitwear Designer

- Kumara Farmer
- Kumara Processor
- Lab Technician - Orthodontist
- Lab Worker
- Laboratory Manager
- Laboratory Receptionist
- Laboratory Technician
- Laboratory Worker
- Laboratory Worker/Chemical Engineer
- Labourer
- Labourer
- Labourer - On Work Visa
- Labourer nfd
- Labourers nec
- Lactation Consultant
- Lagger
- Land Economist
- Land Economists and Valuers
- Land Surveyor
- Landscape
- Landscape Architect
- Landscape Designer
- Landscape Gardener
- Laundress
- Laundromat Worker
- Laundry Assistant
- Laundry Stylist
- Laundry Worker
- Laundry Worker (General)
- Laundry Workers
- Law Clerk
- Lawnmowing Operator
- Lawyer
- Lead Lighter
- Leaflet or Newspaper Deliverer
- Learning And Development Co-ordinator
- Learning Assistant
- Leather Goods Maker
- Lecturer
- Legal Executive
- Legal Professional
- Legal Secretary
- Legal, Social and Welfare Professionals
- Legal, Social and Welfare Professionals
- Legislators
- Legislators nec
- Liaison Officer
- Librarian
- Librarians
- Library Assistant
- Library Assistants
- Library Technician
- Librarian
- Licensed Club Manager
- Licensed Club Managers
- Life Science Technician
- Life Scientists nec
- Life Style Block Owner
- Lifeguard
- Lift Mechanic
- Light Technician
- Lighting Technician
- Line Mechanic
- Line Tech
- Linemarker
- Linesman
- Liquor Merchant
- Livestock Farm Worker
- Livestock Farm Workers nec
- Livestock Farmer
- Livestock Farmers nec

- Livestock Handler
- Livestock Transport
- Livestock Truck Cleaner
- Loader
- Loader Operator
- Local Government Legislator
- Locksmith
- Locomotive Engineer
- Lodge Manager
- Log Buyer
- Log Grader
- Log Painter
- Logging Assistant
- Logging Plant Operator
- Logistician
- Logistics Clerks
- Logistics Management
- Logistics Manager
- Logistics Planner
- Looks After Grandchildren At Home
- Lounge Assistant
- Machine and Stationary Plant Operators
- Machine Operator
- Machine Operator
- Machine Operator
- Machine Operator
- Machine Operators nec
- Machine Shorthand Reporter
- Machinery Operators and Drivers
- Machinist
- Maclean Fish Supply
- Magistrate
- Mail Clerk
- Mail Sorters
- Maintenance Manager
- Maintenance Planner
- Maintenance Worker
- Maitre'D
- Make Up Artist
- Make Up Artist
- Make Up Technician
- Makes Stained Glass Windows
- Management Accountant
- Management and Organisation Analysts
- Management Consultant
- Manager
- Manager
- Manager
- Manager - Open Polytechnic
- Manager At Repco
- Manager Commercial Cleaning Company
- Manager Cooking School
- Manager Of Fisheries
- Manager Of Fitness Unit
- Manager Sales/Marketing
- Managing Director
- Managing Director
- Managing Director
- Managing Director
- Manual Labourer
- Manufacturer
- Manufacturer
- Manufacturing Work
- Maori Health/ Cultural
- Maori Weaving
- Marine Biologist
- Marine Designer
- Marine Engineer
- Marine Surveyor
- Marine Transport Professionals
- Marine Transport Professionals nec
- Maritime Brokerage

- Maritime Brokerage
- Market Garden Worker
- Market Gardener
- Market Research Analyst
- Marketer
- Marketing Manager
- Marketing Specialist
- Marketing Specialist
- Marketing/customer Services
- Martial Arts Instructor
- Massage Therapist
- Massage Therapists
- Master Fisher
- Masters Student
- Mat Maker
- Materials Engineer
- Materials Recycler
- Maternity Leave
- Mathematician
- Mayor
- Meat Boner and Slicer
- Meat Boners and Slicers, and Slaughterers
- Meat Factory Worker
- Meat Inspector
- Meat Packer
- Meat Process Worker
- Meat Worker
- Meat Worker
- Mechanic
- Mechanic / Soldier
- Mechanic Team Leader
- Mechanic's Assistant
- Mechanical Engineer
- Mechanical Engineer
- Mechanical Engineering Draftsperson
- Mechanical Engineering Draftspersons and Technicians
- Mechanical Engineering Technician
- Mechanical Engineering Trades Workers
- Media Producer (excluding Video)
- Media Professionals
- Medic Armed Services
- Medical Diagnostic Radiographer
- Medical Doctor
- Medical Imaging Professionals
- Medical Laboratory Scientist
- Medical Laboratory Scientists
- Medical Laboratory Technician
- Medical Officer
- Medical Practitioner
- Medical Practitioners nec
- Medical Radiation Therapist
- Medical Receptionist
- Medical Receptionist
- Medical Receptionist
- Medical Recruitment
- Medical Registrar
- Medical Student
- Medical Superintendent
- Medical Technicians
- Medical Technicians nec
- Member of Parliament
- Mental Health Worker
- Mental Health Support Worker
- Mental Health Support Worker
- Mental Health Worker
- Mentally Disable
- Merchandiser
- Metal Casting Trades Worker
- Metal Casting, Forging and Finishing Trades Workers
- Metal Engineering Process Worker

- Metal Engineering Process Workers
- Metal Fabricator
- Metal Fitters and Machinists
- Metal Fitters and Machinists nec
- Metal Machinist (First Class)
- Metal Polisher
- Metal Worker
- Metallurgical or Materials Technician
- Metallurgist
- Meteorologist
- Meter Reader
- Microbiologist
- Middle School Teachers (Aus) / Intermediate School Teachers (NZ)
- Midwife
- Midwifery and Nursing Professionals
- Midwives
- Military Rifleman
- Milk Harvester / Calve Rearer
- Milk Tanker Driver
- Milker
- Milking Machine Fitter And Water Pump Technician
- Mine Deputy
- Mine Supervisor
- Miner
- Mining Engineer (excluding Petroleum)
- Mining Engineers
- Mining Support Worker
- Minister of Religion
- Ministerial Lead Advisor
- Ministers of Religion
- Ministry Of Education
- Ministry Of Education
- Ministry Of Justice
- Ministry Of Justice Worker
- Ministry Of Social Development
- Ministry Of Transport
- Miscellaneous Clerical and Administrative Workers
- Miscellaneous Education Professionals
- Miscellaneous Factory Process Workers
- Miscellaneous Hospitality, Retail and Service Managers
- Miscellaneous Labourers
- Miscellaneous Sales Support Workers
- Miscellaneous Specialist Managers
- Miscellaneous Technicians and Trades Workers
- Missionary
- Mixed Crop and Livestock Farm Worker
- Mixed Crop and Livestock Farm Worker
- Mixed Crop and Livestock Farmer
- Mixed Crop and Livestock Farmer
- Mixed Crop Farmer
- Mixed Livedstock Producer
- Mixed Livestock Farm Worker
- Mixed Livestock Farmer
- Mobile Lending Manager
- Mobile Lending Manager (ASB)
- Mobile Plant Operator
- Mobile Plant Operators
- Mobile Plant Operators nec
- Model
- Models and Sales Demonstrators
- Modern Transport Engineer
- Molecular Biologist
- Money Exchange Worker
- Money Market Clerk
- Monk
- Monumental Mason
- Mortgage Broker
- Moss Factory
- Moss Factory Worker

- Moss Worker
- Motel Owner
- Motelier
- Mother
- Mother And Part-time Yoga Teacher
- Mother At Home
- Mothercraft Nurse
- Motion Picture Projectionist
- Motor Mechanic (General)
- Motor Vehicle and Vehicle Parts Salespersons
- Motor Vehicle Licence Examiner
- Motor Vehicle or Caravan Salesperson
- Motor Vehicle Parts and Accessories Fitter (General)
- Motor Vehicle Parts and Accessories Fitters
- Motorcycle Mechanic
- Motorhome And Caravan Maintenance
- Mountain or Glacier Guide
- Moving Weeds
- Multimedia Designer
- Multimedia Specialist
- Multimedia Specialists and Web Developers
- Mum And Farm Worker
- Mushroom Picker
- Music Director
- Music Professionals
- Music Professionals nec
- Music Store Owner
- Music Teacher (Private Tuition)
- Musical Instrument Maker or Repairer
- Musician
- Musician (Instrumental)
- Muster
- Musterer
- NaeTec Limited
- Nail Technician
- Nanny
- Natural and Physical Science Professionals
- Natural and Physical Science Professionals nec
- Natural Health Practitioner
- Natural Remedy Consultant
- Naturopath
- Needs Assessor
- Nelson City Alcohol Licensing Admin
- Neonatal Nurse
- Network Administrator
- Network Analyst
- Network Engineer
- Neurologist
- Neurosurgeon
- Newborn
- Newspaper Clerk
- Newspaper or Periodical Editor
- Night Filler
- No
- No
- No Work Visa
- Not Employed
- Not in the labour force
- Not specified
- Not Stated
- Not Stated
- Not Stated
- Not Stated
- Not Stated Kidney Dialyse Patient At Home
- Not Stated. Bone Marrow Cancer Patient Post Transplant
- Not Working
- Not Working
- Not Working - Disabled
- Not Working At The Moment - Casual Driver

- Note Taker
- Noxious Weeds and Pest Inspector
- Nuclear Medicine Technologist
- Nuclear Physicist
- Numerical Clerks
- Nun
- Nurse
- Nurse
- Nurse Pre/Post Natal
- Nurse Aide
- Nurse Aide/Healthcare Asst
- Nurse Educator
- Nurse Educators and Researchers
- Nurse Manager
- Nurse Managers
- Nurse Practitioner
- Nurse Researcher
- Nurse Specialist
- Nurse Team Leader
- Nurse-Former
- Nurse/Midwife
- Nurseryperson
- Nurserypersons
- Nurses And Midwifery
- Nursing Clinical Director
- Nursing Student
- Nursing Support and Personal Care Workers
- Nursing Support Worker
- Nutrient Specialist
- Nutrition Professionals
- Nutritionist
- NZ Post
- NZ Racing Board
- NZDF
- NZTA
- Obstetrician and Gynaecologist
- Occupational and Environmental Health Professionals
- Occupational Health and Safety Adviser
- Occupational Therapist
- Occupational Therapists
- Odd Job Man
- Office Administrator
- Office Administrator
- Office Administrator
- Office and Practice Managers
- Office Cashier
- Office Manager
- Office Manager
- Office Managers
- Office Managers and Program Administrators
- Office Worker
- Office Worker
- Office Worker
- Office Worker
- Office Worker/Student
- Officer Cadet
- Oil Rigger
- Oncology Worker
- Operating Theatre Technician
- Operations Manager
- Operations Manager
- Operations Research Analyst
- Operator
- Ophthalmologist
- Ophthalmologist
- Optical Assistant
- Optical Mechanic
- Optometrist
- Optometrist Assistant
- Optometrists and Orthoptists
- Orchard Contractor

- Orchard Manager
- Orchard Worker
- Orchardist
- Order Clerk
- Order Clerk
- Order Filler
- Organic Farm Worker
- Organic Farm Worker
- Organisation and Methods Analyst
- Organisational Consultant
- Organisational Psychologist
- Orthopaedic Surgeon
- Orthoptist
- Orthotist or Prosthetist
- Osteopath
- Other
- Other Accommodation and Hospitality Managers
- Other Building and Engineering Technicians
- Other Cleaners
- Other Clerical and Administrative Workers
- Other Clerical and Office Support Workers
- Other Construction and Mining Labourers
- Other Education Managers
- Other Engineering Professionals
- Other Factory Process Workers
- Other Farm, Forestry and Garden Worker
- Other Health Diagnostic and Promotion Professionals
- Other Hospitality Workers
- Other Hospitality, Retail and Service Managers
- Other Information and Organisation Professional
- Other Labourers
- Other Machine Operators
- Other Miscellaneous Clerical and Administrative Workers
- Other Miscellaneous Labourers
- Other Miscellaneous Technicians and Trades Workers
- Other Mobile Plant Operators
- Other Natural and Physical Science Professionals
- Other Personal Service Workers
- Other Sales Support Worker
- Other Sales Support Workers
- Other Spatial Scientist
- Other Specialist Manager
- Other Sports Coach or Instructor
- Other Sports Official
- Other Stationary Plant Operators
- Other Technicians and Trades Workers
- Other Wood Processing Machine Operator
- Otorhinolaryngologist
- Out of School Hours Care Worker
- Out of School Hours Care Worker (Oscar)
- Outdoor Adventure Consultant
- Outdoor Adventure Guide
- Outdoor Adventure Guides nec
- Outdoor Adventure Instructor
- Outdoor Education
- Oyster Farmer
- Oyster Shucker
- Pacific Ambassador
- Pacific Health Advisor
- Packers
- Packers and Product Assemblers
- Packers nec
- Packhouse Worker
- PACT House Patient
- Paediatric Surgeon
- Paediatrician
- Paint Stripper
- Painter
- Painter (Visual Arts)
- Painter/Decorator

- Painting Trades Worker
- Painting Trades Workers
- Pak N Save
- Panelbeater
- Panelbeaters, and Vehicle Body Builders, Trimmers and Painters
- Paper and Pulp Mill Operator
- Paper and Pulp Mill Worker
- Paper and Wood Processing Machine Operators
- Paper Products Machine Operator
- Parasail Skipper
- Park Ranger
- Parking Inspector
- Parole or Probation Officer
- Part Time Cab Driver
- Part time Cab Driver
- Part Time Student /Part Time Retail Assistant
- Part Time Supermarket Worker And High school Student
- Part-time Accountant
- Part-time Construction Worker
- Part-time Construction Worker
- Part-time Driver
- Part-time Farmer
- Parts Manager
- Parts Supervisor
- Passenger Coach Driver
- Pastor
- Pastrycook
- Pastrycook's Assistant
- Patents Examiner
- Pathologist
- Pathology Collector (Aus)/Phlebotomist (NZ)
- Patient Advocate
- Patient Information Officer
- Paving and Surfacing Labourer
- Paving and Surfacing Labourers
- Paving Plant Operator
- Payments Administrator
- Payroll Clerk
- Payroll Clerks
- Peer Support Co Ordinator
- Performing Arts Technicians
- Performing Arts Technicians nec
- Personal Assistant
- Personal Assistants
- Personal Assistants and Secretaries
- Personal Assistants and Secretaries
- Personal Care Assistant
- Personal Care Consultants
- Personal Carers and Assistants
- Personal Service and Travel Workers
- Personal Service Workers nec
- Personal Trainer
- Pest Controller
- Pest Controller And Enviro Schools
- Pest or Weed Controller
- Pet Groomer
- Petfood Worker
- Petrol Garage Worker
- Petroleum Engineer
- PG Wrightson Administrator
- Pharmacist
- Pharmacist
- Pharmaceutical Production Manager
- Pharmacy Sales Assistant
- Pharmacy Sales Assistants
- Pharmacy Technician
- Pharmacy Technician
- PhD Student
- Phlebotomist

- Phlebotomist
- Photographer
- Photographer's Assistant
- Photographers
- Photographic Developer and Printer
- Photographic Developers and Printers
- Phys Ed Officer
- Physi Ed Office
- Physician
- Physicist
- Physio Assistant/Parent
- Physiotherapist
- Physiotherapists
- Piano Teacher
- Picture Framer
- Pig Farmer
- Pilates Teacher
- Pilot
- Pipeline Engineer
- Pizza Delivery
- Plant Nursery Worker
- Plasterer
- Plasterers
- Plastic and Reconstructive Surgeon
- Plastic Cablemaking Machine Operator
- Plastic Compounding and Reclamation Machine Operator
- Plastics and Rubber Factory Workers
- Plastics and Rubber Production Machine Operators
- Plastics and Rubber Production Machine Operators nec
- Plastics Fabricator or Welder
- Plastics Factory Worker
- Plastics Process Worker
- Plastics Production Machine Operator (General)
- Plastics Technician
- Plumber
- Plumber (General)
- Plumber Commercial
- Plumber's Assistant
- Plumbers
- Plumbing and Drainage Inspector
- Plumbing Contractor
- Plumbing Inspector
- Plumbing Retail
- Plunket Nurse
- Podiatrist
- Podiatrists
- Police
- Police Detective
- Police Officer
- Police Officer Trainee
- Police Woman
- Policeman
- Policy Adviser
- Policy Analyst
- Policy and Planning Manager
- Policy and Planning Managers
- Policy Officer
- Politician
- Polytechnic Teacher
- Pool Attendant
- Pool Manager
- Pool Supervisor
- Porse
- Port Worker
- Portfolio Manger
- Possum Trapper
- Possum Trapper
- Post Graduate Student
- Post Mistress

- Post Office Manager
- Postal Delivery Officer
- Postal Delivery Service
- Postal Sorting Officer
- Postman
- Potato Farmer
- Potter or Ceramic Artist
- Pouako Kura Kaupapa M
- Poultry Farm Worker
- Poultry Farmer
- Poultry Process Worker
- Poultry Worker
- Power Generation Plant Operator
- Practice Managers
- Practice Managers nec
- Practice Nurse
- Pre And Afterschool Care
- Pre School Music Group
- Pre-schooler
- Precision Instrument Maker and Repairer
- Precision Metal Trades Workers
- Preschool Aide
- Preschool Co-ordinator
- Preschool Teacher
- Preschooler
- Press Secretary
- Pressure Welder
- Pricing Analyst
- Priest
- Primary Health Organisation Manager
- Primary Products Inspectors
- Primary Products Inspectors nec
- Primary school student
- Primary School Teacher
- Primary School Teacher Aide
- Primary School Teachers
- Primary Teacher
- Principal Adviser
- Principal Policy Planner
- Principal Release
- Print Finishers and Screen Printers
- Print Journalist
- Printer
- Printer
- Printer's Assistant
- Printing Assistants and Table Workers
- Printing Machinist
- Printing Table Worker
- Printing Trades Workers
- Prison and Security Officers
- Prison Guard
- Prison Officer
- Prison Officers
- Prison Program Coordinator
- Prisoner
- Private Investigator
- Private Nanny
- Private Tutors and Teachers
- Private Tutors and Teachers nec
- Process Packer
- Process Worker
- Processing Manager
- Procurement Director
- Procurement Manager
- Produce Worker - Supermarket
- Product Assembler
- Product Assemblers
- Product Controller
- Product Examiner
- Product Grader
- Product Manager

- Product Manager
- Product Quality Controllers
- Product Scanner
- Product Tester
- Production Assistant (Film, Television, Radio or Stage)
- Production Clerk
- Production Designer
- Production Manager
- Production Manager (Forestry)
- Production Manager (Manufacturing)
- Production Manager (Mining)
- Production Manufacturer
- Production or Plant Engineer
- Production Planner
- Production Planner
- Production Worker
- Professional Triathlete
- Professionals
- Professor/Lecturer
- Professor/Lecturer (Retired)
- Program Director (Television or Radio)
- Program or Project Administrator
- Programme Advisor
- Programme And Operations Coordinator
- Programme Manager
- Programmer
- Project Builder
- Project Coordinator
- Project Manager
- Project Manager
- Project Manager In Christchurch
- Project Manager Security
- Proof Reader
- Property Agent
- Property Development Manager
- Property Maintenance
- Property Manager
- Property Valuer
- Prostitute
- Protective Service Workers
- Prothesist
- PSA Organiser
- Psychiatric Nurse
- Psychiatrist
- Psychiatrists
- Psychologist
- Psychologists nec
- Psychotherapist
- Public Health Engineer
- Public Health Nurse
- Public Relations Manager
- Public Relations Professional
- Public Relations Professionals
- Public Servant
- Publications Manager
- Publicist At NZ Film Festival Trust
- Publisher
- Purchasing and Supply Logistics Clerks
- Purchasing Officer
- Quadrant Hotel
- Quality Assurance
- Quality Assurance Manager
- Quantity Surveyor
- Quantity Surveyor
- Quarantine Officer
- Quarry Worker
- R And D Technologist
- Radiation Oncologist
- Radiator Fitter
- Radiator Repair

- Radiator Repairs
- Radio Despatcher
- Radio Journalist
- Radio Presenter
- Radiocommunications Technician
- Radiologist
- Radiology Assistant
- Railway Signal Operator
- Railway Station Manager
- Railway Track Plant Operator
- Railway Track Worker
- Railway Track Workers
- Railways Assistant
- Real Estate Agency Licensee
- Real Estate Agent
- Real Estate Agent
- Real Estate Representative
- Real Estate Sales Agents
- Real Estate Sales Agents
- Realty Estate Agent
- Rec Planner
- Receptionist
- Receptionist (General)
- Receptionists
- Records Manager
- Recreation Clerk
- Recreation Coordinator
- Recruitment
- Recruitment Consultant
- Recruitment Manager
- Recycling and Rubbish Collectors
- Recycling or Rubbish Collector
- Recycling Worker
- Reduced To Clear
- Refinery Worker
- Refrigeration Engineer
- Refrigeration Engineer
- Refrigeration Mechanic
- Refrigeration Specialist
- Refrigeration Technician
- Refuge Worker
- Refugee
- Refugee
- Refuse Collector
- Regional Education Manager
- Registered Nurse
- Registered Nurse
- Registered Nurse (Aged Care)
- Registered Nurse (Child and Family Health)
- Registered Nurse (Community Health)
- Registered Nurse (Critical Care and Emergency)
- Registered Nurse (Developmental Disability)
- Registered Nurse (Disability and Rehabilitation)
- Registered Nurse (Medical Practice)
- Registered Nurse (Medical)
- Registered Nurse (Mental Health)
- Registered Nurse (Paediatric)
- Registered Nurse (Perioperative)
- Registered Nurse (Surgical)
- Registered Nurses
- Registered Nurses nec
- Registrar Wellington High Court
- Rehabilitation Counsellor
- Reinforced Plastic and Composite Production Worker
- Relief Daycare Teacher
- Relief Milker
- Relief Secondary School Teacher
- Relief Teacher
- Religious Assistant
- Renal Medicine Specialist
- Rental Salesperson

- Reporter
- Research Admin
- Research Analyst
- Research and Development Manager
- Research and Development Managers
- Research Assistant
- Research Manager
- Research Technician
- Researcher
- Resident Medical Officer
- Residential Care Officer
- Residual Categories (Operational Codes only)
- Residual Categories (Operational Codes only)
- Resource Developer For Education Programmes
- Response not identifiable
- Response Outside Scope
- Response Outside Scope
- Response Outside Scope/Not Stated
- Response Unidentifiable
- Restaurant Owner
- Restaurant Worker
- Restaurant Worker
- Resthome Nurse
- Resthome Resident
- Resthome Worker
- Resthome Worker - Activity Coordinator
- Retail
- Retail and Wool Buyers
- Retail Assistant
- Retail Buyer
- Retail Investigator
- Retail Loss Prevention Officer
- Retail Manager
- Retail Manager (General)
- Retail Managers
- Retail Pharmacist
- Retail Pharmacist Assistant
- Retail Supervisor
- Retail Supervisors
- Retail Work
- Retail Work
- Retail/Student
- Retailer
- Retailer Shop
- Reticulation Technical Officer
- Retired
- Retired
- Retired (lives In A Resthome)
- Retired Accountant
- Retired Banker
- Retired but working as part-time Teacher
- Retired Church Minister
- Retired Farmer
- Retired Farmer
- Retired Farmer Living On Farm
- Retired GP
- Retired Kindergaten Teacher
- Retired Midwife
- Retired Nurse
- Retired Pharmacist
- Retired/Farming
- Retirement Home Resident
- Retirement Village Manager
- Rheumatologist
- Road and Rail Drivers
- Road Labourer
- Road Marker
- Road Roller Operator
- Road Safety Coordinator
- Road Traffic Controller
- Road Traffic Controller

- Road Worker
- Roof Plumber
- Roof Tiler
- Roof Tilers
- Roofer
- Room Services (Cleaner)
- Rose Breeder
- RSE Supervisor
- Rubber Factory Worker
- Rubber Production Machine Operator
- Rugby Player
- Rural Bank Manager
- Rural Bank Worker
- Safety Inspector
- Safety Inspectors
- Sail Maker
- Sailor
- Sales Administrator
- Sales And Marketing - Other
- Sales and Marketing Manager
- Sales Assistant (General)
- Sales Assistants (General)
- Sales Assistants and Salespersons
- Sales Assistants and Salespersons
- Sales Assistants and Salespersons nec
- Sales Centre Supervisor
- Sales Clerk
- Sales Consultant
- Sales Consutant
- Sales Demonstrator
- Sales Engineer
- Sales Engineer
- Sales Manager
- Sales Manager
- Sales Person
- Sales Person
- Sales Person In Own Home
- Sales Representative
- Sales Representative (Building and Plumbing Supplies)
- Sales Representative (Business Services)
- Sales Representative (Industrial Products)
- Sales Representative (Medical and Pharmaceutical Products)
- Sales Representative (Motor Vehicle Parts and Accessories)
- Sales Representative (Personal and Household Goods)
- Sales Representatives
- Sales Representatives and Agents
- Sales Representatives nec
- Sales Supervisor - Retail
- Sales Support Worker
- Sales Worker
- Sales, Marketing and Public Relations Professionals
- Salesman
- Salesman - Car
- Salesperson
- Salmon Farmer
- Salvation Army
- Sand Blaster
- Saw Maker and Repairer
- Sawmill Engineer
- Sawmill or Timber Yard Worker
- Sawmilling Operator
- Scaffolder
- Schindlers Lifts
- School Aide
- School Care Taker
- School Care Taker
- School Child
- School Counsellor

- School Dental Nurse
- School Girl
- School Laboratory Technician
- School Librarian
- School Photographer
- School Principal
- School Principals
- School Worker
- Schoolboy
- Schoolgirl
- Science Technician
- Science Technicians nec
- Science/tech Professional
- Scientist
- Scrap Metal Dealer
- Scrap Metal Worker
- Screen Printer
- Scrub Cutter
- Sculptor
- Seafarer
- Seafood Packer
- Seafood Process Worker
- Sealords
- Seaman
- Seamstress
- Seasonal Worker
- Secondary school student (over 16)
- Secondary school student (under 16)
- Secondary School Teacher
- Secondary School Teachers
- Secretaries
- Secretary (General)
- Security Assurance Consultant
- Security Consultant
- Security Guard
- Security Guard (Courts)
- Security Officer
- Security Officers and Guards
- Security Officers and Guards nec
- Security Supervisor
- Seed Dresser
- Self - Employed Counsellor
- Self Employed
- Self Employed
- Self Employed
- Self Employed - Construction
- Self Employed - Recruitment
- Self Employed - Retail
- Self Employed Administration For Sports Equipment Company
- Self Employed At Home
- Self Employed Bar Manager
- Self Employed Coach Painter
- Self Employed Coach Painter
- Self Employed Contractor
- Self Employed Contractor
- Self Employed Electrician
- Self Employed Gardener
- Self Employed Logger
- Self Employed Postal Worker
- Self Employed Share Milker
- Self Employed Sharemilker
- Self-employed Cleaning Company
- Self-Employed Contractor
- Self-Employed Painter And Decorator
- Self-Employed Studio Photographer
- Semi Retired
- Semi Retired - Volunteers On Marae
- Semi Retired Farmer
- Senior Central Government Official
- Senior Non-commissioned Defence Force Member

- Senior Non-commissioned Defence Force Members
- Senior Programme Advsor
- Senior Scientist
- Senior Test Analyst
- Septic Tank Cleaner
- Service Administratiion Manager
- Service Consultant
- Service Desk Operator
- Service Manager
- Service Station Attendant
- Service Station Attendants
- Service Support Manager
- Service Technician
- Sewage Contractor
- Sewing Machinist
- Sewing Machinists
- Sex Worker
- Sex Worker or Escort
- Sexual Health Clinician
- Sharemilker
- Shearer
- Shearers
- Shed Hand
- Sheep
- Sheep Farm Worker
- Sheep Farmer
- Sheep Farmer
- Sheep Handler
- Sheetmetal Trades Worker
- Sheetmetal Trades Workers
- Shelf Filler
- Shelf Fillers
- Shepherd
- Ship's Engineer
- Ship's Master
- Ship's Officer
- Ship's Surveyor
- Shipwright
- Shoemaker
- Shop Assistant
- Shop Manager
- Shop Owner
- Shop Owner
- Shop Owner - Manufacture Of Concrete Products
- Short Top And Sides
- Shot Firer
- Shuttle Driver
- Sickness Beneficiary
- Sickness Beneficiary (previously Caregiver In A Resthome)
- Sickness Beneficiary (previously Caregivern In A Resthome)
- Sign Erector
- Signwriter
- Signwriters
- Singer
- Site Manager
- Site Worker
- Ski Instructor
- Skilled Animal and Horticultural Workers
- Skydive Jump Master
- Slaughterer
- Small Engine Mechanic
- Small Offset Printer
- Smith City
- Snowsport Instructor
- Social and Welfare Professionals
- Social Professionals
- Social Professionals nec
- Social Science Researcher
- Social Security Assessor

- Social Worker
- Social Workers
- Software and Applications Programmers
- Software and Applications Programmers nec
- Software Architect
- Software Developer
- Software Developer
- Software Engineer
- Software Tester
- Soldier
- Solicitor
- Solicitors
- Solid Plasterer
- Solutions Architect
- Song Writer
- Sonographer
- Sound Technician
- Sous Chef
- Special Care Worker
- Special Developer
- Special Education Teachers
- Special Education Teachers nec
- Special Needs Occupational Therapist
- Special Needs OT
- Special Needs Teacher
- Specialist Managers
- Specialist Managers nec
- Specialist Physician (General Medicine)
- Specialist Physicians
- Speech Language Therapist
- Sports Administrator
- Sports and Personal Service Workers
- Sports Centre Manager
- Sports Co-ordinator
- Sports Coaches, Instructors and Officials
- Sports Development Officer
- Sports Umpire
- Sportspersons
- Sportspersons nec
- Spray Painter
- St Johns Ambulance Tech
- Stablehand
- Staff Member
- Staff Nurse
- Stage Manager
- Standards NZ
- Stationary Plant Operators
- Stationary Plant Operators nec
- Statistical Clerk
- Statistician
- Stay At Home Dad
- Stay At Home Grandmother
- Stay At Home Mum
- Stay At Home Mum And Florist On Weekend
- Steel Cutter
- Steel Fixer
- Steel Worker
- Sterilisation Technician
- Stevedore
- Stock Agent
- Stock and Station Agent
- Stock Clerk
- Stock Truck Driver
- Stockbroking Dealer
- Stockman
- Stockyard Manager
- Stone Processing Machine Operator
- Stonemason
- Storage/packing
- Store Detective
- Store Manager

- Store Manager - Food
- Storeman
- Storeman
- Storeperson
- Storepersons
- Storepersons
- Storepersons
- Stowage Contractor
- Street Vendor
- Street Vendors and Related Salespersons
- Streetsweeper Operator
- Structural Engineer
- Structural Steel and Welding Trades Workers
- Structural Steel Construction Workers
- Structural Steel Erector
- Student
- student
- Student - Best Pacific Institute Of Education.
- Student - Bible School
- Student - Home Schooled
- Student - Home Schooled
- Student - Language
- Student - Lost To Followup
- Student - Out Of Auckland
- Student - Overseas
- Student - Overseas (Samoa)
- Student - Pharmaceutical
- Student (Biomedical Science)
- Student (Sport
- Student / Part Time Nanny
- Student And Part Time Supermarket Worker
- Student And Youth Worker
- Student Counsellor
- Student Home Schooled
- Student Midwife
- Student Nurse
- Student Nurse
- Student Physiotherapist
- Student Pilot
- Student Teacher
- Student Teacher
- student Wel Tech
- Student- Legal Research
- Student- Legal Researcher
- Student/Caregiver
- Student/Foodcafe Worker
- Student/Foodstacker
- Student/Foodworker
- Student/Grocery Worker
- Student/Part Time Chef
- Student/part-time Nanny
- Student/Restaurant Dishwasher
- Sugar Cane Grower
- Sugar Mill Worker
- Super Market Worker
- Supermarket Worker
- Supervisor
- Supervisor - Operator
- Supervisor Countdown
- Supply and Distribution Manager
- Supply Manager
- Supply, Distribution and Procurement Managers
- Support Person
- Support Services Manager
- Support Worker
- Support Worker (Mental Health)
- Surgeon
- Surgeon (General)
- Surgical Registrar
- Survey Interviewer
- Survey Interviewers

- Surveying or Cartographic Technician
- Surveyor
- Surveyor's Assistant
- Surveyors and Spatial Scientists
- Sustainable Transport Coordinator
- Swimming Pool Attendant
- Swimming Coach or Instructor
- Swimming Pool Construction
- Switchboard Operator
- Switchboard Operators
- Systems Administrator
- Systems Analyst
- Tanker Driver
- Tanker Driver
- Tannery Worker
- Tattoo Artist
- Taxation Accountant
- Taxation Inspector
- Taxi Driver
- Taxidermist
- Teacher
- Teacher
- Teacher - Reliever
- Teacher - Reliver
- Teacher (currently Not Working)
- Teacher Aide
- Teacher Of Adults
- Teacher of English to Speakers of Other Languages
- Teacher Of Music
- Teacher of the Hearing Impaired
- Teacher of the Sight Impaired
- Teacher- Correspondence School
- Teacher/Instructor
- Teachers of English to Speakers of Other Languages
- Teachers' Aide
- Team Leader
- Team Leader Of Club Active
- Team Manager
- Tech Solutions Specialist
- Technical Analyst
- Technical Cable Jointer
- Technical Coodinator
- Technical Director
- Technical Officer
- Technical Sales Representatives
- Technical Sales Representatives nec
- Technical Writer
- Technician
- Technicians and Trades Workers
- Technicians and Trades Workers nec
- Telecommunications Cable Jointer
- Telecommunications Engineer
- Telecommunications Engineering Professionals
- Telecommunications Field Engineer
- Telecommunications Line Mechanic
- Telecommunications Network Engineer
- Telecommunications Network Planner
- Telecommunications Technical Officer or Technologist
- Telecommunications Technical Specialists
- Telecommunications Technician
- Telecommunications Trades Workers
- Telemarketer
- Telemarketers
- Telephone Betting Clerk
- Telephonist - Call Centre
- Television Equipment Operator
- Television Journalist
- Television Presenter
- Teller
- Tennis Coach

- Territory Manager
- Tertiary Education Teacher
- Tertiary student
- Tertiary Student
- Test Engineer
- Textile and Footwear Production Machine Operators
- Textile and Footwear Production Machine Operators nec
- Textile Dyeing and Finishing Machine Operator
- Textile, Clothing and Footwear Mechanic
- Textile, Clothing and Footwear Trades Workers
- Theatre Facilitator
- Theatre Facilitator
- Theatre Nurse
- Therapist
- Therapy Aide
- Therapy Assisstant
- Thermoformer Operator
- Thoracic Medicine Specialist
- Ticket Collector or Usher
- Ticket Salespersons
- Ticket Seller
- Tiler
- Timber and Wood Process Workers
- Toddler
- Toddler
- Toolmaker
- Toolmakers and Engineering Patternmakers
- Tour Guide
- Tourism and Travel Advisers
- Tourist
- Tourist Guide
- Tourist Information Officer
- Tow Truck Driver
- Town Planner
- Tractor Mechanic
- Trade Assistant
- Tradesman
- Traditional Chinese Medicine Practitioner
- Traditional M
- Train and Tram Drivers
- Train Controller
- Train Driver
- Train Examiner
- Trainee Mechanic
- Training and Development Professional
- Training and Development Professionals
- Training Coordinator
- Trainor (ACC)
- Tram Driver
- Transfer Station Operator
- Translator
- Transport and Despatch Clerks
- Transport Company Manager
- Transport Conductor
- Transport Coordinator
- Transport Engineer
- Transport Manager
- Transport Operations Inspector
- Transport Services Manager
- Tranz Rail
- Travel Agency Manager
- Travel Attendant
- Travel Attendants
- Travel Attendants nec
- Travel Consultant
- Travel Coordinator
- Traveller
- Tree Feller
- Trekking Guide
- Tribunal Member

- Trolley Collector
- Truancy Officer
- Truck Driver
- Truck Driver
- Truck Driver
- Truck Driver
- Truck Driver
- Truck Driver (General)
- Truck Driver (Stock)
- Truck Driver's Offsider
- Truck Drivers
- Truck Mechanic
- Trucking Operator
- Trust Officer
- Turf Grower
- Tutor
- Tutor Lecturer
- TV Production
- Typist
- Tyre Fitter
- Tyre Fitter
- Ucol Lecturer
- UN Consultant
- Under 5 Years
- Unemployed
- Unemployed - Visiting NZ
- Unemployed But Part-time Cleaner
- University Academic
- University Lecturer
- University Lecturers and Tutors
- University Professor
- University Student
- University Student, Engineering
- University Tutor
- Unknown
- Unknown - Currently Pregnant
- Unknown - Not At School
- Unknown But Not High Risk
- Upholsterer
- Upholsterers
- Urban and Regional Planner
- Urban and Regional Planners
- Urologist
- Utility And Facilities Support Worker
- Valet Cars
- Valuer
- Vascular Surgeon
- Vegetable Picker
- Vehicle Body Builder
- Vehicle Body Builders and Trimmers
- Vehicle Inspector NZ Police
- Vehicle Painter
- Vehicle Painters
- Vehicle Trimmer
- Vending Machine Attendant
- Vending Machine Attendants
- Vet Student
- Veterinarian
- Veterinarian Technician
- Veterinarians
- Veterinary Epidemiologist
- Veterinary Nurse
- Veterinary Nurses
- Veterinary Sales Consultant
- Video Producer
- Vineyard Manager
- Vineyard Worker
- Vineyard Worker
- Vineyard Worker/Orchard Worker
- Visitor
- Visitor - Working
- Visitor To NZ

- Visual Arts and Crafts Professional
- Visual Arts and Crafts Professionals nec
- Visual Merchandiser
- Visual Merchandisers
- Vocational Education Teachers (Aus) / Polytechnic Teachers (NZ)
- Voluntary Work
- Volunteer
- Volunteer At A Music Pre-School
- Volunteer Driver (occasionally)
- Volunteer Work In 3rd World Countries
- Volunteer Work In 3rd Worls Countries
- Waiter
- Waiters
- Waitress
- Wall and Floor Tiler
- Wall and Floor Tilers
- Ward Clerk
- Warehouse Administrator
- Warehouse Manager
- Warehouse Night Shift Worker.
- Warehouse Online Shopping Clerk
- Warehouse Supervisor
- Warehouse Worker
- Waste Water Management
- Waste Water Operator
- Waste Water or Water Plant Operator
- Watch and Clock Maker and Repairer
- Water Blaster
- Water Inspector
- Water Pump Worker
- Water Tank Cleaner
- Water Treatment Engineer
- Waterside Worker
- Weaving Machine Operator
- Web Administrator
- Web Designer
- Web Developer
- Webdesigner
- Weed Sprayer
- Weigh Bridge Tech
- Weighbridge Operator
- Weight Loss Consultant
- Weightlifter
- Welder
- Welfare Centre Manager
- Welfare Support Worker
- Welfare Worker
- Welfare, Recreation and Community Arts Workers
- Wellington Hospital
- Wharf Worker
- Whitewater Rafting Guide
- Wholesaler
- Window Cleaner
- Wine Maker
- Wine sales Worker
- Wine Stewart
- Winery Cellar Hand
- Winery Worker
- Wintec Student
- WINZ Facilitator
- women's Centre Co-ordnator
- Wood and Wood Products Factory Worker
- Wood Machinist
- Wood Machinists and Other Wood Trades Workers
- Wood Machinists and Other Wood Trades Workers nec
- Wood Processing Machine Operator
- Wood Trades Workers
- Wood Treater
- Wood Turner
- Woofer

- Wool Buyer
- Wool Classer
- Wool Handler
- Wool Technician
- Word Processing Operator
- Work Visa Holder
- Workforce Planner
- Working In Film Industry
- Workplace Relations Adviser
- Works At Abseilers
- Works At Swimming Pool
- Works From Home
- Works From Home - Motor Industry
- Works In A Mashroom Firm
- Works In A Mushroom Firm
- Works In Sewers
- Works Infrastructure
- Works With Natural Medicines
- Writer
- Writer (Library)
- Yard Foreman
- Yardsman
- Yarn Carding and Spinning Machine Operator
- Yoga Teacher
- Youth Worker
- Youth Worker
- Zoo Ranger
- Zookeeper
- Zoologist

Job title 2

- 16 Month Old Child
- A.I. Technician
- Abattoir Worker
- Aboriginal and Torres Strait Islander Education Worker
- Aboriginal and Torres Strait Islander Health Worker
- Abrasive Blaster
- Absailer
- Abseiler
- ACC Justice Centre
- ACC Justice Centre
- Accommodation and Hospitality Managers nec
- Accommodation Manager - Boarding House
- Accountant
- Accountant (General)
- Accountants, Auditors and Company Secretaries
- Accounting Clerk
- Accounting Clerks
- Accounting Clerks and Bookkeepers
- Accounts
- Accounts Administrator
- Accounts Administrator
- Accounts Administrator
- Accounts Clerk
- Accounts Manager
- Accounts Payable Administrator
- Actor
- Actors, Dancers and Other Entertainers
- Actors, Dancers and Other Entertainers nec
- Actuaries, Mathematicians and Statisticians
- Actuary
- Actuary And Consultant
- Acupuncturist
- Admin Manager
- Admin Worker
- Administration
- Administration Manager
- Administration Manager
- Administrative Officer
- Administrator
- Administrator
- Administrator
- Administrator Gisborne Tatapouri Fishing Club
- Administrator.Owner Of Restaurant.
- Admissions Clerk
- Advertising
- Advertising Agency Director
- Advertising and Marketing Professionals
- Advertising and Public Relations Manager
- Advertising and Sales Manager
- Advertising Manager
- Advertising Specialist
- Advertising, Public Relations and Sales Managers
- Advisor
- Aeronautical Engineer
- Aeroplane Pilot
- After School Care
- Aged and Disabled Carers
- Aged Care Worker
- Aged or Disabled Carer
- Agency Nurse
- Agri Business Consultant
- Agricultural and Forestry Scientists
- Agricultural and Horticultural Mobile Plant Operator
- Agricultural Chemical Consultant
- Agricultural Consultant
- Agricultural Contracting
- Agricultural Engineer
- Agricultural Project

- Agricultural Scientist
- Agricultural Sprayer
- Agricultural Technician
- Agricultural Technicians
- Agricultural Worker
- Agricultural, Forestry and Horticultural Plant Operators
- Agricultural, Medical and Science Technicians
- Agriculture Advisor
- Agriculture Research
- Agronomist
- Aid Worker
- Aid worker Carpenter
- Air and Marine Transport Professionals
- Air Assistant
- Air Compressor Technician
- Air COnditioning / Mechanic
- Air Steward
- Air Stewardess
- Air Traffic Control Instructor
- Air Traffic Controller
- Air Traffic Controller
- Air Transport Professionals
- Air Transport Professionals nec
- Airconditioning and Mechanical Services Plumber
- Airconditioning and Refrigeration Mechanic
- Airconditioning and Refrigeration Mechanics
- Aircraft Baggage Handler and Airline Ground Crew
- Aircraft Engineer
- Aircraft Maintenance Engineer (Avionics)
- Aircraft Maintenance Engineer (Mechanical)
- Aircraft Maintenance Engineer (Structures)
- Aircraft Maintenance Engineers
- Aircraft Refueller
- Aircraft Technician
- Airline Manager
- Airport Staff
- Alarm, Security or Surveillance Monitor
- Aluminium Joiner
- Ambulance Driver
- Ambulance Officer
- Ambulance Officers and Paramedics
- Ambulance Paramedic
- Amusement Centre Manager
- Amusement, Fitness and Sports Centre Managers
- Anaesthetic Technician
- Anaesthetist
- Anaesthetist
- Anaesthetists
- Analyst
- Analyst Programmer
- Anatomist or Physiologist
- Anesthesiologist
- Anesthetic Tech Niurse
- Animal Attendants and Trainers
- Animal Attendants and Trainers nec
- Animal Attendants and Trainers, and Shearers
- Animal Carer
- Animal Control
- Animator
- Antique Dealer
- ANZ Bank
- Apiarist
- Apparel Cutter
- Apple Packer
- Apple Picker
- Apple Thinner
- Appliance Works
- Apprentice Builder
- Apprentice Butcher
- Apprentice Carpenter

- Apprentice Electrician
- Apprentice Motor Mechanic
- Apprentice Panelbeater
- Apprentice Plumber
- Apprentice Welder
- Aquaculture Farmer
- Aquaculture Farmers
- Aquaculture Worker
- Aquaculture Worker
- Aquatic Engineer
- Arborist
- Archaeologist
- Architect
- Architects and Landscape Architects
- Architects, Designers, Planners and Surveyors
- Architectural Draftsperson
- Architectural, Building and Surveying Technicians
- Architectural, Building and Surveying Technicians nec
- Archivist
- Archivists, Curators and Records Managers
- Armed Forces
- Armoured Car Escort
- Army
- Army Corporal
- Army Personnel
- Art Director (Film, Television or Stage)
- Art Teacher (Private Tuition)
- Artist
- Artist/Photographer
- Artistic Director
- Artistic Directors, and Media Producers and Presenters
- Arts Administrator or Manager
- Arts and Media Professionals
- Arts Professionals
- Asbestos Labourer
- Assembles Agriculture Machinery
- Asset Manager
- ASSISTANT ACCOUNTANT
- Assistant Manager
- Assistant Manager
- Assistant Principal
- Assistant Teacher
- At home
- at Home Educarer
- At home looking after children
- At Home Mother
- At home not looking after children
- Attendance Officer
- Attending Early Childhood Centre
- Attending ECC
- Attends ESOL Classes
- Au Pair
- Auctioneer
- Auctioneers, and Stock and Station Agents
- Audiologist
- Audiologists and Speech Pathologists/Therapists
- Audiovisual Technison
- Auditor
- Auditor
- Auditors, Company Secretaries and Corporate Treasurers
- Author
- Authors, and Book and Script Editors
- Auto Dismantler
- Auto Technician
- Autoglazier
- Automobile Drivers
- Automobile Drivers nec
- Automobile, Bus and Rail Drivers

- Automotive and Engineering Trades Workers
- Automotive Electrician
- Automotive Electricians
- Automotive Electricians and Mechanics
- Automotive Parts Salesperson
- Automotive Technician
- AV Installer
- Aviation
- Avionics Technician
- Avocado Orchardist
- Baby
- Backer
- Backhoe Operator
- Baker
- Bakers and Pastrycooks
- Bakery Assistant
- Bakery Manager
- Bakery Staff
- Baking Factory Worker
- Banardos In House Child Minder
- Bank Call Centre Worker
- Bank Clerk
- Bank Employee And Student (Finance)
- Bank Manager
- Bank Manager
- Bank Officer
- Bank Teller
- Bank Worker
- Bank Workers
- Banker
- Banking Call Centre Worker
- Bar Attendant
- Bar Attendants and Baristas
- Bar Manager
- Bar Useful or Busser
- Barber
- Barista
- Barrister
- Barristers
- Bartender
- Beauty Therapist
- Beauty Therapists
- Bed and Breakfast Operator
- Bed Maker
- Bee Keeper
- Beef Cattle Farm Worker
- Beef Cattle Farmer
- Beekeeper
- Beer Tap Installer
- Beetham Rest Home Manager
- Behaviour Support Specialist
- Beneficiary
- Berry Farmer
- Betting Agency Counter Clerk
- Betting Agency Manager
- Betting Clerks
- Betting Clerks nec
- Bicycle Mechanic
- Biinder
- Binder
- Binder and Finisher
- Bio Medical Technician
- Biochemist
- Biologist (General)
- Biomedical Engineer
- Biosecurity Officer
- Biotechnologist
- Bird Handler
- Blacksmith
- Boarding Kennel or Cattery Operator
- Boat Builder

- Boat Builder and Repairer
- Boat Builders and Shipwrights
- Boat Skipper
- Boat Worker
- Body Artist
- Boiler Assistant
- Boiler or Engine Operator
- Boilermaker
- Bomb Disposal Person
- Bone Meal Worker
- Bone Meat Worker
- Book or Script Editor
- Bookkeeper
- Bookkeepers
- Bookmaker
- Bookmaker's Clerk
- Bookshop Manager
- Bookshop Owner
- Bookshop Sales Assistant
- Botanist
- Bouncer
- Branch Manager
- Branch Manager
- Branch Manager (ACC)
- Brewery Worker
- Bricklayer
- Bricklayer
- Bricklayers and Stonemasons
- Broadcast Transmitter Operator
- Builder
- Builder
- Builder
- Builder (self Employed)
- Builder And Motorhome Maintenance
- Builder Apprentice
- Builder Apprentice
- Builder's Labourer
- Builder/Hammerhand
- Builder/Hammerhand
- Building and Engineering Technicians
- Building and Engineering Technicians nec
- Building and Plumbing Labourers
- Building Associate
- Building Control Officer
- Building Designer
- Building Inspector
- Building Insulation Installer
- Building Supervisor
- Bulk Materials Handling Plant Operator
- Bulldozer Operator
- Bungy Jump Master
- Bus and Coach Drivers
- Bus Driver
- Business
- Business Administration Manager
- Business Analyst
- Business and Systems Analysts, and Programmers
- Business Broker
- Business Coach
- Business Consultant
- Business Consultant
- Business Director
- Business Intelligence Consultant
- Business Machine Mechanic
- Business Manager
- Business Owner
- Business Owner-Takeaway
- Business Professional
- Business, Human Resource and Marketing Professional
- Businessman
- Butcher

- Butcher Apprentice
- Butcher or Smallgoods Maker
- Butchery Assistant
- Cabinetmaker
- Cabinetmakers
- Cabler (Data and Telecommunications)
- Caf? Worker
- Cafe and Restaurant Managers
- Cafe Manager
- Cafe or Restaurant Manager
- Cafe Owner
- Cafe Worker
- Cafe Workers
- Calf Rearer
- Call or Contact Centre and Customer Service Managers
- Call or Contact Centre Information Clerks
- Call or Contact Centre Manager
- Call or Contact Centre Operator
- Call or Contact Centre Team Leader
- Call or Contact Centre Workers
- Camera Operator (Film, Television or Video)
- Camper
- Canning Operator
- Canvas and Leather Goods Makers
- Canvas Goods Maker
- Car Dealer
- Car Detailer
- Car Detailers
- Car Groomer
- Car groomer
- Car Painter
- Car Park Attendant
- Car Parts Salesperson
- Caravan Park and Camping Ground Manager
- Caravan Park and Camping Ground Managers
- Caravan Park and Camping Ground Owner
- Cardiac Technician
- Cardiologist
- cardiology Registrar
- Cardiothoracic Surgeon
- Care Assistant
- Care Giver
- Careers Advisor
- Careers Counsellor
- Caregiver
- Caregiver (Rest Home)
- Caregiver??
- Caregiver/Cleaner
- Carers and Aides
- Caretaker
- Caretakers
- Cargo Manager
- Carpenter
- Carpenter and Joiner
- Carpet Cleaner
- Carpet/Vinyl Layer
- Cartographer
- Cartographer
- Carton Maker
- Case Manager
- Case Worker
- Cash Van Salesperson
- Cashier
- Casino Worker
- Castings Processor
- Casual Worker
- Cat Breeder
- Categories Manager
- Caterer
- Catering Manager

- Catering Student
- Cattle Farmer
- ceiling Installer
- Celebrant
- Cement and Concrete Plant Worker
- Cement Production Plant Operator
- CEO
- Ceramicist
- Chaplain
- Charge Nurse
- Charity Administrator
- Charter and Tour Bus Driver
- Chartered Director / Consultant
- Chauffeur
- Checkout Operator
- Checkout Operators and Office Cashiers
- Checkout Operators and Office Cashiers
- Checkout Supervisor
- Chef
- Chef
- Chef Student
- Chefs
- Chefs Course
- Chelsea House
- Chemical and Materials Engineers
- Chemical Engineer
- Chemical Plant Operator
- Chemical Plant Worker
- Chemical Processor
- Chemical Production Machine Operator
- Chemical, Gas, Petroleum and Power Generation Plant Operators
- Chemist
- Chemistry Technician
- Chemists, and Food and Wine Scientists
- Chicken Farmer
- Chief Engineer
- Chief Executive
- Chief Executive or Managing Director
- Chief Executives and Managing Directors
- Chief Executives, General Managers and Legislators
- Chief Executives, General Managers and Legislators
- Chief Information Officer
- Child
- Child
- Child - non-resident
- Child 5-15
- Child At Home Only
- Child Care Centre Manager
- Child Care Centre Managers
- Child Care Worker
- Child Care Worker (Home Based)
- Child Carers
- Child Carers
- Child Minder
- Child or Youth Residential Care Assistant
- Child Support Officer
- Child under 16
- Child under 5
- Child under 5 Attends Preschool
- Childcare Teacher
- Childcare Workder
- Childcare Worker
- Chimney Sweep
- Chiropractor
- Chiropractor Assistant
- Chiropractors and Osteopaths
- Chocolate Packer
- Church Worker
- Cinema or Theatre Manager
- Circular Deliverer

- Civil Celebrant
- Civil Engineer
- Civil Engineering Draftsperson
- Civil Engineering Draftspersons and Technicians
- Civil Engineering Professionals
- Civil Engineering Technician
- Civil Servant
- Classified Advertising Clerk
- Clay Processing Factory Worker
- Clay Products Machine Operator
- Clay, Concrete, Glass and Stone Processing Machine Operators
- Clay, Concrete, Glass and Stone Processing Machine Operators nec
- Cleaner
- Cleaner
- Cleaner
- Cleaner
- Cleaner
- Cleaner And Nanny
- Cleaner/caretaker
- Cleaners and Laundry Workers
- Cleaners and Laundry Workers
- Cleaners nec
- Cleaning Company Manager
- Clerical and Administrative Workers nec
- Clerical and Office Support Worker
- Clerical and Office Support Workers
- Clerical and Office Support Workers nec
- Clerk
- Clerk of Court
- Clinical And Corporate Psychologist
- Clinical Coder
- Clinical Nurse
- Clinical Oncologist
- Clinical Psychologist
- Clinical Psychologist
- Clothing Designer
- Clothing Patternmaker
- Clothing Trades Workers
- Clothing Trades Workers nec
- Co-Director
- Co-ordinator Brand
- Co-ordinator Brand
- Co-ordinator Brand
- Co-ordinator Brand
- Coach Builder
- Coach Painter
- Coal Miner
- Coding Clerk
- Coldshelf Assistant
- Coldshelf Assistant
- College Student
- Comedian
- Commercial Cleaner
- Commercial Cleaners
- Commercial Designer
- Commercial Designer
- Commercial Diver
- Commercial fisherman
- Commercial Housekeeper
- Commercial Manager
- Commissioned Defence Force Officer
- Commissioned Fire Officer
- Commissioned Officers (Management)
- Commissioned Police Officer
- Commodities Trader
- Communications Advisor
- Communications Director
- Communications Officer
- Communications Operator

- Communications Technician
- Community
- Community and Personal Service Workers
- Community Arts Worker
- community Support Worker
- Community Support Worker
- Community Worker
- Companion Driving Business
- Company Director
- Company Secretary
- Complementary Health Therapists
- Complementary Health Therapists nec
- Compliance Officer
- Composer
- Computer Analyst
- Computer Engineer
- Computer Network and Systems Engineer
- Computer Network Professionals
- Computer Operator
- Computer Programmer
- Computer Technician
- Concrete Batching Plant Operator
- Concrete Products Machine Operator
- Concrete Pump Driver
- Concrete Pump Operator
- Concreter
- Concreters
- Confectionery Maker
- Conference and Event Organiser
- Conference and Event Organisers
- Conservation Officer
- Conservator
- Construction and Mining Labourers
- Construction Estimator
- Construction Manager
- Construction Project Manager
- Construction Rigger
- Construction Trades Worker
- Construction Worker
- Construction, Distribution and Production Managers
- Consultant
- Consultant Engineer
- Consultant Physician
- Contact Centre
- Contact Centre Manager
- Container Filler
- Contract Administrator
- Contract Worker
- Contract, Program and Project Administrators
- Contract, Program and Project Administrators
- Contractor
- Contractor nfd
- Controller
- Conveyancer
- Conveyancers and Legal Executives
- Cook
- Cookery Student
- Cooks
- Cool Storage Worker
- Coordinator
- Coordinator - About Kids
- Copywriter
- Corporate General Manager
- Corporate Services Manager
- Corporate Services Managers
- Corporate Trainer
- Corporate Treasurer
- Corrections Officer
- Cosmetic Physician
- Cosmetic Researcher
- Cosmetology

- Cost Clerk
- Cotton Grower
- Council Worker
- Counsellors
- Counsellors nec
- Countdown Supervisor
- Courier
- Couriers and Postal Deliverers
- Court and Legal Clerks
- Court Collections Officer
- Court Registry Officer
- Court Worker
- CPH Dialysis Unit
- Crane Chaser
- Crane, Hoist and Lift Operators
- Crane, Hoist or Lift Operator
- Creative Director
- Credit and Loans Officers (Aus)/Finance Clerks (NZ)
- Credit Controller
- Credit or Loans Officer
- Crop Farm Worker
- Crop Farm Workers nec
- Crop Farmer
- Crop Farmer
- Crop Farmers nec
- Crossing Supervisor
- Crowd Controller
- Cruise Ship Crew
- Currently Not Working
- Currently Not Working - Pregnant
- Currently Unemployed
- Custodian
- Customer Business Centre Consultant
- Customer Service Manager
- Customer Service Representative
- Customer Services
- Customs Officer
- Cycalist
- Cycle Courier
- Cycling Coach
- Dairy Cattle Farm Worker
- Dairy Cattle Farm Worker - Share Holder
- Dairy Cattle Farmer
- Dairy Factory Worker
- Dairy Farm Worker
- Dairy Farm Worker
- Dairy Farm Worker
- Dairy Farmer
- Dairy Farmer
- Dairy Farmer
- Dairy Farmer (Carterton)
- Dairy Operator
- Dairy Owner
- Dairy Products Maker
- Dairy Retail Assisstant
- Dairy Retail Assistant
- Dance Teacher (Private Tuition)
- Dancer or Choreographer
- Data Entry From Home
- Data Entry Operator
- Data Processing Analyst
- Database Administrator
- Database and Systems Administrators, and ICT Security Specialists
- Database and Systems Administrators, and ICT Security Specialists
- Day Care Centre Worker
- Daycare Teacher
- Daycare Worker
- Debt Collector
- Debt Collectors

- Deck and Fishing Hands
- Deck Hand
- Deep Fryer
- Deer Farmer
- Defence Force Member - Other Ranks
- Defence Force Members - Other Ranks
- Defence Force Members, Fire Fighters and Police
- Defence Force Senior Officer
- Delivery Driver
- Delivery Drivers
- Delivery Drivers
- Dementia Worker
- Demolition Labourer
- Dental Assistant
- Dental Assistants
- Dental Hygienist
- Dental Hygienists, Technicians and Therapists
- Dental Practitioner
- Dental Prosthetist
- Dental Specialist
- Dental Technician
- Dental Technician
- Dental Therapist
- Dentist
- Department Director General
- Department Of Corrections
- Dept Of Justice
- Deputy Principal
- Deputy Registrar
- Dermatologist
- Deseased
- Design Consultant
- Design, Engineering, Science and Transport Professional
- Designer
- Desk Officer
- Desktop Publisher
- Despatching and Receiving Clerk
- Detailer
- Detective
- Developer
- Developer Programmer
- Diagnostic and Interventional Radiologist
- Diary Farmer
- Diesel Motor Mechanic
- Dietitian
- Different Jobs
- Digger Driver
- Digital Consultant
- Digital Plate Marker
- Diplomat
- Director
- Director (Film, Television, Radio or Stage)
- Director (Food Safety And Quality)
- Director of Photography
- Disabilities Services Officer
- Dish Washer
- Dispatch
- Dispatcher In A Factory
- Dispensing Optician
- Distribution
- District Manager
- District Nurse
- District Nurse
- District Nurse - Keri Keri
- Diver
- Diversional Therapist
- Diversional Therapists
- Diving Instructor (Open Water)
- Doctor
- Doctor-Retired

- Dog Breeder
- Dog Handler or Trainer
- Dog or Horse Racing Official
- Domestic Cleaner
- Domestic Cleaners
- Domestic Housekeeper
- Dominatrix
- Door And Window Fitter
- Door-to-door Salesperson
- Doorperson or Luggage Porter
- Douglas Park School
- Draft Person
- Draftsman
- Drain Layer
- Drain Layer
- Drainage Contractor
- Drainage Engineer
- Drainage Technician
- Drainage, Sewerage and Stormwater Labourer
- Drainlayer (NZ)
- Drama Teacher (Private Tuition)
- Draughtsman
- Dressmaker or Tailor
- Driller
- Driller's Assistant
- Drillers, Miners and Shot Firers
- Driver
- Driver / Road Inspector
- Driving Instructor
- Driving Instructors
- Drug and Alcohol Counsellor
- Drycleaner
- Duty Cliinician
- Duty Manager
- Early Childhood (Pre-primary School) Teacher
- Early Childhood (Pre-primary School) Teacher Reliever
- Early Childhood (Pre-primary School) Teachers
- Early Childhood Centre Leader
- Earth Rig Digger
- Earth Science Technician
- Earthmoving Labourer
- Earthmoving Plant Operator
- Earthmoving Plant Operator (General)
- Earthwork Contractor
- ECC Teacher
- ECEC Teacher
- ECEC Worker
- ECG Technician
- Ecologist
- Economist
- Economists
- Editor
- Education Adviser
- Education Advisers and Reviewers
- Education Aide
- Education Aides
- Education Consultant
- Education Facilitator At NZQA
- Education Managers nec
- Education Professional
- Education Reviewer
- Education Support Worker
- Education Team Leader
- Education, Health and Welfare Services Managers
- Educational Consultant
- Educational Psychologist
- Educator
- Electorate Officer
- Electrical Distribution Trades Workers
- Electrical Engineer

- ELECTRICAL ENGINEER
- Electrical Engineering Draftsperson
- Electrical Engineering Draftspersons and Technicians
- Electrical Engineering Technician
- Electrical Engineers
- Electrical Inspector
- Electrical Line Mechanic
- Electrical Maintainer
- Electrical or Telecommunications Trades Assistant
- Electrical Wholesaler
- Electrician
- Electrician (General)
- Electrician (Special Class)
- Electricians
- Electronic Assistant
- Electronic Engineering Draftsperson
- Electronic Engineering Draftspersons and Technicians
- Electronic Engineering Technician
- Electronic Equipment Trades Worker
- Electronic Instrument Trades Worker (General)
- Electronic Instrument Trades Worker (Special Class)
- Electronics and Telecommunications Trades Workers
- Electronics Engineer
- Electronics Engineers
- Electronics Trades Workers
- Electroplater
- Electrotechnology and Telecommunications Trades Workers
- Emergency Management Technician
- Emergency Medicine Specialist
- Emergency Service Worker
- Employee
- Employment Advisor
- Endocrinologist
- Energy Centre Operator
- Engineer
- engineer
- Engineer Nec
- Engineering Manager
- ENGINEERING MANAGER
- Engineering Manager
- Engineering Managers
- Engineering Patternmaker
- Engineering Production Systems Worker
- Engineering Production Workers
- Engineering Professionals
- Engineering Professionals nec
- Engineering Technologist
- Engineering, ICT and Science Technicians
- Engraver
- Enrolled and Mothercraft Nurses
- Enrolled Nurse
- Entertainer or Variety Artist
- Entrepreneur
- Environment
- Environmental Consultant
- Environmental Consultant
- Environmental Engineer
- Environmental Health Officer
- Environmental Manager
- Environmental Planner
- Environmental Research Scientist
- Environmental Scientist
- Environmental Scientists nec
- Epidemiologist
- Equipment Hire Manager
- ER Specialist
- Event Coordinator
- Event Manager

- Excavator Operator
- Exchange Student
- Executive Assisstant
- Exercise Physiologist
- Exhaust and Muffler Fitter
- Exporting Cattle
- External Auditor
- Eye Surgeon
- Ezibuy Wellington
- Fabric and Textile Factory Worker
- Fabrication Engineering Trades Worker
- Fabricator Installer
- Facilitator
- Facilities Administrator
- Facilities Advisor
- Facilities Manager
- Factory Hand Fibreglass Moulding
- Factory Inghams
- Factory Manager
- Factory Process Worker
- Factory Process Workers nec
- Factory Supervisor
- Factory Worker
- Factory Worker
- Factory Worker
- Factory Worker
- Factory Worker
- Factory Worker - Mussels
- Factory Worker (food)
- Faculty Head
- Family and Marriage Counsellor
- Family Business Employee
- Family Bussiness
- Family Day Care Worker
- Family Support Worker
- Family Therapist
- Farm Adviser
- Farm Advisor
- Farm Cadet
- Farm Hand
- Farm Manager
- Farm Worker
- Farm Worker
- Farm Worker
- Farm, Forestry and Garden Worker
- Farm, Forestry and Garden Worker
- Farm, Forestry and Garden Workers nec
- Farmer
- Farmer and Farm Manager
- Farmer Self Employed
- Farmer/Farm Hand
- Farmer/stay At Home
- Farmer/Stay At Home Mother
- Farmers and Farm Managers
- Farmkill Slaughterman
- Farmyard Valley Road
- Farrier
- Farrier
- Fashion Designer
- Fashion Store Owner
- Fashion, Industrial and Jewellery Designers
- Fast Food Cook
- Fast Food Cooks
- Fastfood Assistant
- Fastfood Crew
- Father
- Fellmongery Worker
- Fencer
- Fencers
- Fibre Optic Technician
- Fibre Optic Technician
- Fibrous Plasterer

- Field Crop
- Field Crop
- Field Crop Farm Worker
- Field Ranger And Dog Handler
- field Scientist
- field Scientist
- Finance Manager
- Filing and Registry Clerks
- Filing or Registry Clerk
- Filing Assistant - Supermarket
- Film and Video Editor
- Film Producer
- Film Producer/Zumba Instructor
- Film, Television, Radio and Stage Directors
- Film, Television, Radio and Stage Directors nec
- Finance
- FINANCE ACCOUNTANT
- Finance And Permit Officer
- Finance Broker
- Finance Manager
- Finance Manager
- Finance Managers
- Financial Advisor
- Financial and Insurance Clerks
- Financial Auditor
- Financial Brokers
- Financial Brokers and Dealers, and Investment Advisers
- Financial Brokers nec
- Financial Clerk
- Financial Controller
- Financial Dealers
- Financial Dealers nec
- Financial Institution Branch Manager
- Financial Investment Adviser
- Financial Investment Advisers and Managers
- Financial Investment Manager
- Financial Market Dealer
- Fire and Emergency Workers
- Fire Fighter
- Fire Fighter
- Fire Protection Equipment Technician
- First Aid Trainer
- Fish And Chips Worker
- Fish Factory Worker
- Fish N Chip Shop
- Fisheries Officer
- Fisherman
- Fishery Worker
- Fishing Charter
- Fishing Guide
- Fishing Hand
- Fitness Centre Manager
- Fitness Instructor
- Fitness Instructors
- Fitter (General)
- Fitter and Turner
- Fitter-Welder
- Fleet Manager
- Flight Attendant
- Flight Attendant
- Flight Attendant Supervisor
- Flock Caregiver
- Floor Finisher
- Floor Finishers
- Floor Finishers and Painting Trades Workers
- Floor Layer
- Florist
- Florists
- Flower Grower
- flower Packer

- Flying Instructor
- Fonterra
- Food and Drink Factory Workers
- Food and Drink Factory Workers nec
- Food Chemist
- Food Delivery
- Food Factory Worker
- Food Handler
- Food Handler
- Food Preparation Assistant
- Food Preparation Assistants
- Food Process Workers
- Food Safety Officer
- Food Services Manager
- Food Techician
- Food Technician
- Food Technologist
- Food Trades Assistants
- Food Trades Assistants nec
- Food Trades Workers
- Food Trades Workers
- Food Truck Operator
- Food Worker
- Food Worker At McDonalds (Clendon)
- Footballer
- Footwear Factory Worker
- Footwear Production Machine Operator
- Force Mechanic
- Foreign Exchange Officer
- Foreign Worker
- Foreman
- Forest Scientist
- Forestry Consultant
- Forestry Worker
- Forestry, Logging Worker
- Forklift Driver
- Forklift Driver
- Forklift Operator
- Forklift Operator ENZA
- Foster Parent
- Foundry Worker
- Free Lance Photographer / Writer
- Freelance Editor
- Freelance Journalist
- Freelance Work
- Freelance Writer - Works From Home
- Freezing Worker
- Freezing Worker/Processor
- Freight and Furniture Handlers
- Freight Handler (Rail or Road)
- Freight Handlers and Shelf Fillers
- Fruit and Vegetable Factory Worker
- Fruit and Vegetable Packer
- Fruit or Nut Farm Worker
- Fruit or Nut Grower
- Fruit or Nut Picker
- Fruit Packer
- Full Time Mother
- Fulton Hogan - Sewage Contractor
- Fund Manager
- Funeral Director
- Funeral Workers
- Funeral Workers nec
- Furniture Finisher
- Furniture Maker
- Furniture Removalist
- Furniture Remover
- Furniture Restorer
- Futures Trader
- Gallery or Museum Curator
- Gallery or Museum Guide

- Gallery or Museum Technician
- Gallery, Library and Museum Technicians
- Gallery, Museum and Tour Guides
- Game Controller
- Gaming Worker
- Gaming Workers
- Garden and Nursery Labourer
- Garden Labourer
- gardener
- Gardener (General)
- Gardeners
- Gardeners
- Gas or Petroleum Operator
- Gasfitter
- Gastroenterologist
- General Clerical Workers
- General Clerk
- General Clerks
- General Clerks
- General Dental Practice; Clinical Director Maxillo Facial Unit
- General Manager
- General Medical Practitioner
- General Practitioner - Locum
- General Practice (Doctor)
- General Practitioner
- General Practitioners and Resident Medical Officers
- General Worker
- Geologist
- Geologist Engineer
- Geologists, Geophysicists and Hydrogeologists
- Geophysicist
- Geotechnical Engineer
- Geothermal Maintenance Technician
- Gib Fixer
- Glass Blower
- Glass Processing Worker
- Glass Production Machine Operator
- Glazier
- Glaziers
- Glaziers, Plasterers and Tilers
- Goat Farmer
- Golfer
- Government Employee
- Government Service
- Grader Operator
- Grading Supervisor (Food Handler)
- Grain Mill Worker
- Grape Grower
- Graphic and Web Designers, and Illustrators
- Graphic Arts Worker
- Graphic Designer
- Graphic Pre-press Trades Worker
- Graphic Pre-press Trades Workers
- Greenkeeper
- Greenkeeper
- Grocery Store Manager
- Grocery Store Supervisor
- Groundsman
- Grower Liaison
- Guidance Counsellor
- Gunsmith
- Gym Equipment Fixer
- Gym Instructor
- Gymnastics Coach or Instructor
- Haematologist
- Hair Dressing Teacher
- Hair or Beauty Salon Assistant
- Hair or Beauty Salon Manager
- Hair Salon Support
- Hairdresser

- Hairdresser (home-based)
- Hairdressers
- Hairdressers
- Handyman
- Handyperson
- Handypersons
- Harcourts
- Hardware Technician
- Head Nurse
- Health And Safetey
- Health And Safety
- Health And Saftey
- Health And Saftey Co-ordinator
- Health And Welfare Coodinator
- Health and Welfare Services Managers
- Health and Welfare Services Managers nec
- Health and Welfare Support Worker
- Health and Welfare Support Workers
- Health Assistant
- Health Care Assistant
- Health Care Assistant
- Health Diagnostic and Promotion Professionals
- Health Diagnostic and Promotion Professionals nec
- Health Information Manager
- Health Meciation Packing
- Health Practice Manager
- Health Professional
- Health Promotion Officer
- Health Services
- Health Services Manager
- Health Therapy Professionals
- Health Worker
- Health Worker
- Healthcare - Caregiver
- Healthcare Staff
- Healthcare Worker
- Healthline Nurse (Call Centre)
- Helicopter Pilot
- Herald Distributor
- Herbalist
- Herbalist (Western)
- Herd Tester
- HG Group Ltd
- Hide and Skin Processing Machine Operator
- Hide and Skin Processing Worker
- High School PE Teacher
- High School Student
- High School Teacher
- Hire A Hubby
- Historian
- Holiday Park Owner
- Holiday Programme Worker
- Home Care Assistant
- Home Carer For Her Parents
- Home Duty
- Home Econmics Teacher
- Home Executive
- Home Help
- Home Improvement Installer
- Home Kill Butcher
- Home Maintenance Contractor
- Home Teaching
- Homebased Childcare
- Homebased Childcare
- Homecare Assistant
- Homemaker
- Homemaker Painting
- Homestay Owner/Operator
- Homoeopath
- Horse Breeder
- Horse Dentist

- Horse Rider
- Horse Riding Coach or Instructor
- Horse Trainer
- Horticultural Nursery Assistant
- Horticultural Trades Worker
- Horticulturalist
- Horticulture Worker
- Horticulturist
- Hospital Laboratory Technician
- Hospital Nurse
- Hospital Orderly
- Hospital Pharmacist
- Hospital Receptionist
- Hospital Volunteer Worker
- Hospital Worker
- Hospitality Worker
- Hospitality Workers
- Hospitality Workers nec
- Hospitality, Retail and Service Managers
- Hospitality, Retail and Service Managers nec
- Hostel Matron
- Hostel Parent
- Hotel and Motel Managers
- Hotel or Motel Manager
- Hotel or Motel Receptionist
- Hotel Service Manager
- Hotel Service Managers
- Hotel Worker
- Hotel Worker
- Hotelier
- House Husband
- House Painter
- House Wife
- Housekeeper
- Housekeepers
- Housekeeping Manager
- Housewife
- Housewife Occasionally Drives Ambulance
- Housewife, Previously Lab Technician In India
- Housing Inspector
- HR Advisor
- HR Manager
- Human Resource Adviser
- Human Resource and Training Professionals
- Human Resource Manager
- Human Resource Managers
- Human Resource Professional
- Human Resources Clerk
- Human Resources Clerks
- HUMAN RESOURCES MANAGER
- Hunter-Fisher
- Hunter-Trapper
- Hunting Guide
- Hydraulic Hose Fitter
- Hydrogeologist
- Hydrographer
- ICT Account Manager
- ICT and Telecommunications Technicians
- ICT Business Analyst
- ICT Business and Systems Analysts
- ICT Business Development Manager
- ICT Consultant
- ICT Customer Support Officer
- ICT Engineer
- ICT Managers
- ICT Managers
- ICT Managers nec
- ICT Network and Support Professionals
- ICT Professional
- ICT Professional
- ICT Project Manager

- ICT Quality Assurance Engineer
- ICT Sales Assistant
- ICT Sales Assistants
- ICT Sales Professionals
- ICT Sales Representative
- ICT Security Specialist
- ICT Support and Test Engineers
- ICT Support and Test Engineers nec
- ICT Support Engineer
- ICT Support Technicians nec
- ICT Systems Test Engineer
- ICT Technician
- ICT Trainer
- ICT Trainers
- ICU Non Clinical
- Illustrator
- Immigration Consultant
- Immigration Officer
- Implementation Manager
- Import-Export Clerk
- Importer or Exporter
- Importers, Exporters and Wholesalers
- Improvement Officer
- In mental health facility
- In prison
- In-home Care
- Independent Midwife
- Indigenous Health Workers
- Industrial Designer
- Industrial Electrician
- Industrial Engineer
- Industrial Operation Manager
- Industrial Pharmacist
- Industrial Spraypainter
- Industrial Spraypainters
- Industrial, Mechanical and Production Engineers
- Infant
- Information and Organisation Professionals
- Information and Organisation Professionals nec
- Information Officers
- Information Technology
- Inquiry Clerk
- Inquiry Clerks and Receptionists
- Inspectors and Regulatory Officers
- Inspectors and Regulatory Officers nec
- Installer Fireplaces
- Institutionalised
- Instructor
- Insulation and Home Improvement Installers
- Insurance Agent
- Insurance Agents
- Insurance Agents and Sales Representatives
- Insurance Broker
- Insurance Consultant
- Insurance Investigator
- Insurance Investigators, Loss Adjusters and Risk Surveyors
- Insurance Loss Adjuster
- Insurance Risk Surveyor
- Insurance Under Writer
- Insurance, Money Market and Statistical Clerks
- Integration Aide
- Intellectual Disability Support Worker
- Intellectual Property Lawyer
- Intellectually
- Intelligence and Policy Analysts
- Intelligence Officer
- Intensive Care Specialist
- Interior Decorator
- Interior Designer
- Interior Designers

- Intermediate School Student
- Intermediate School Teacher
- Internal Auditor
- Internal Medicine Specialists nec
- International Aid
- International Marketing Director
- International Student
- Interpreter
- Invalid Beneficiary
- Inventory Officer
- Inventory Purchaser
- Investigator
- Investment Advisor
- IRD Coach
- Ironer or Presser
- Irrigation Engineer
- Irrigation Installer
- IT Administrator
- IT Consultant
- IT Consultant
- It Manager
- IT Manager
- IT Professional
- IT Professional Currently Not Working
- IT Project Manager
- IT Sales
- IT Specialist
- IT Support Management
- IT Technician
- IT Worker
- IT Worker
- ITG Group
- Janitor
- Jeweller
- Jeweller
- Jewellers
- Jewellery Designer
- Jewellery Sales Assistant
- JNL
- Job Seeker
- Jockey
- Joiner
- Journalist
- Journalists and Other Writers
- Journalists and Other Writers nec
- Judge
- Judicial and Other Legal Professionals
- Judicial and Other Legal Professionals nec
- Kai
- Kai
- Kai
- Kaiako Kohanga Reo (M
- Kaiako Kura Kaupapa M
- Kaiawhina
- Karate Instructor
- Kayak Builder
- Kennel Hand
- Keyboard Operators
- Keyboard Operators
- Kindergarten Teacher
- Kindergarten Teacher
- Kirwee Model School
- Kitchen Designer
- Kitchen Installer
- Kitchen Worker
- Kitchenhand
- Kitchenhands
- Kiwi Treasures
- Kiwifruit Orchard Worker
- Knitting Machine Operator
- Knitwear Designer

- Kumara Farmer
- Kumara Processor
- Lab Technician - Orthodontist
- Lab Worker
- Laboratory Manager
- Laboratory Receptionist
- Laboratory Technician
- Laboratory Worker
- Laboratory Worker/Chemical Engineer
- Labourer
- Labourer
- Labourer - On Work Visa
- Labourer nfd
- Labourers nec
- Lactation Consultant
- Lagger
- Land Economist
- Land Economists and Valuers
- Land Surveyor
- Landscape
- Landscape Architect
- Landscape Designer
- Landscape Gardener
- Laundress
- Laundromat Worker
- Laundry Assistant
- Laundry Stylist
- Laundry Worker
- Laundry Worker (General)
- Laundry Workers
- Law Clerk
- Lawnmowing Operator
- Lawyer
- Lead Lighter
- Leaflet or Newspaper Deliverer
- Learning And Development Co-ordinator
- Learning Assistant
- Leather Goods Maker
- Lecturer
- Legal Executive
- Legal Professional
- Legal Secretary
- Legal, Social and Welfare Professionals
- Legal, Social and Welfare Professionals
- Legislators
- Legislators nec
- Liaison Officer
- Librarian
- Librarians
- Library Assistant
- Library Assistants
- Library Technician
- Librarian
- Licensed Club Manager
- Licensed Club Managers
- Life Science Technician
- Life Scientists nec
- Life Style Block Owner
- Lifeguard
- Lift Mechanic
- Light Technician
- Lighting Technician
- Line Mechanic
- Line Tech
- Linemarker
- Linesman
- Liquor Merchant
- Livestock Farm Worker
- Livestock Farm Workers nec
- Livestock Farmer
- Livestock Farmers nec

- Livestock Handler
- Livestock Transport
- Livestock Truck Cleaner
- Loader
- Loader Operator
- Local Government Legislator
- Locksmith
- Locomotive Engineer
- Lodge Manager
- Log Buyer
- Log Grader
- Log Painter
- Logging Assistant
- Logging Plant Operator
- Logistician
- Logistics Clerks
- Logistics Management
- Logistics Manager
- Logistics Planner
- Looks After Grandchildren At Home
- Lounge Assistant
- Machine and Stationary Plant Operators
- Machine Operator
- Machine Operator
- Machine Operator
- Machine Operator
- Machine Operators nec
- Machine Shorthand Reporter
- Machinery Operators and Drivers
- Machinist
- Maclean Fish Supply
- Magistrate
- Mail Clerk
- Mail Sorters
- Maintenance Manager
- Maintenance Planner
- Maintenance Worker
- Maitre'D
- Make Up Artist
- Make Up Artist
- Make Up Technician
- Makes Stained Glass Windows
- Management Accountant
- Management and Organisation Analysts
- Management Consultant
- Manager
- Manager
- Manager
- Manager - Open Polytechnic
- Manager At Repco
- Manager Commercial Cleaning Company
- Manager Cooking School
- Manager Of Fisheries
- Manager Of Fitness Unit
- Manager Sales/Marketing
- Managing Director
- Managing Director
- Managing Director
- Managing Director
- Manual Labourer
- Manufacturer
- Manufacturer
- Manufacturing Work
- Maori Health/ Cultural
- Maori Weaving
- Marine Biologist
- Marine Designer
- Marine Engineer
- Marine Surveyor
- Marine Transport Professionals
- Marine Transport Professionals nec
- Maritime Brokerage

- Maritime Brokerage
- Market Garden Worker
- Market Gardener
- Market Research Analyst
- Marketer
- Marketing Manager
- Marketing Specialist
- Marketing Specialist
- Marketing/customer Services
- Martial Arts Instructor
- Massage Therapist
- Massage Therapists
- Master Fisher
- Masters Student
- Mat Maker
- Materials Engineer
- Materials Recycler
- Maternity Leave
- Mathematician
- Mayor
- Meat Boner and Slicer
- Meat Boners and Slicers, and Slaughterers
- Meat Factory Worker
- Meat Inspector
- Meat Packer
- Meat Process Worker
- Meat Worker
- Meat Worker
- Mechanic
- Mechanic / Soldier
- Mechanic Team Leader
- Mechanic's Assistant
- Mechanical Engineer
- Mechanical Engineer
- Mechanical Engineering Draftsperson
- Mechanical Engineering Draftspersons and Technicians
- Mechanical Engineering Technician
- Mechanical Engineering Trades Workers
- Media Producer (excluding Video)
- Media Professionals
- Medic Armed Services
- Medical Diagnostic Radiographer
- Medical Doctor
- Medical Imaging Professionals
- Medical Laboratory Scientist
- Medical Laboratory Scientists
- Medical Laboratory Technician
- Medical Officer
- Medical Practitioner
- Medical Practitioners nec
- Medical Radiation Therapist
- Medical Receptionist
- Medical Receptionist
- Medical Receptionist
- Medical Recruitment
- Medical Registrar
- Medical Student
- Medical Superintendent
- Medical Technicians
- Medical Technicians nec
- Member of Parliament
- Mental Health Worker
- Mental Health Support Worker
- Mental Health Support Worker
- Mental Health Worker
- Mentally Disable
- Merchandiser
- Metal Casting Trades Worker
- Metal Casting, Forging and Finishing Trades Workers
- Metal Engineering Process Worker

- Metal Engineering Process Workers
- Metal Fabricator
- Metal Fitters and Machinists
- Metal Fitters and Machinists nec
- Metal Machinist (First Class)
- Metal Polisher
- Metal Worker
- Metallurgical or Materials Technician
- Metallurgist
- Meteorologist
- Meter Reader
- Microbiologist
- Middle School Teachers (Aus) / Intermediate School Teachers (NZ)
- Midwife
- Midwifery and Nursing Professionals
- Midwives
- Military Rifleman
- Milk Harvester / Calve Rearer
- Milk Tanker Driver
- Milker
- Milking Machine Fitter And Water Pump Technician
- Mine Deputy
- Mine Supervisor
- Miner
- Mining Engineer (excluding Petroleum)
- Mining Engineers
- Mining Support Worker
- Minister of Religion
- Ministerial Lead Advisor
- Ministers of Religion
- Ministry Of Education
- Ministry Of Education
- Ministry Of Justice
- Ministry Of Justice Worker
- Ministry Of Social Development
- Ministry Of Transport
- Miscellaneous Clerical and Administrative Workers
- Miscellaneous Education Professionals
- Miscellaneous Factory Process Workers
- Miscellaneous Hospitality, Retail and Service Managers
- Miscellaneous Labourers
- Miscellaneous Sales Support Workers
- Miscellaneous Specialist Managers
- Miscellaneous Technicians and Trades Workers
- Missionary
- Mixed Crop and Livestock Farm Worker
- Mixed Crop and Livestock Farm Worker
- Mixed Crop and Livestock Farmer
- Mixed Crop and Livestock Farmer
- Mixed Crop Farmer
- Mixed Livedstock Producer
- Mixed Livestock Farm Worker
- Mixed Livestock Farmer
- Mobile Lending Manager
- Mobile Lending Manager (ASB)
- Mobile Plant Operator
- Mobile Plant Operators
- Mobile Plant Operators nec
- Model
- Models and Sales Demonstrators
- Modern Transport Engineer
- Molecular Biologist
- Money Exchange Worker
- Money Market Clerk
- Monk
- Monumental Mason
- Mortgage Broker
- Moss Factory
- Moss Factory Worker

- Moss Worker
- Motel Owner
- Motelier
- Mother
- Mother And Part-time Yoga Teacher
- Mother At Home
- Mothercraft Nurse
- Motion Picture Projectionist
- Motor Mechanic (General)
- Motor Vehicle and Vehicle Parts Salespersons
- Motor Vehicle Licence Examiner
- Motor Vehicle or Caravan Salesperson
- Motor Vehicle Parts and Accessories Fitter (General)
- Motor Vehicle Parts and Accessories Fitters
- Motorcycle Mechanic
- Motorhome And Caravan Maintenance
- Mountain or Glacier Guide
- Moving Weeds
- Multimedia Designer
- Multimedia Specialist
- Multimedia Specialists and Web Developers
- Mum And Farm Worker
- Mushroom Picker
- Music Director
- Music Professionals
- Music Professionals nec
- Music Store Owner
- Music Teacher (Private Tuition)
- Musical Instrument Maker or Repairer
- Musician
- Musician (Instrumental)
- Muster
- Musterer
- NaeTec Limited
- Nail Technician
- Nanny
- Natural and Physical Science Professionals
- Natural and Physical Science Professionals nec
- Natural Health Practitioner
- Natural Remedy Consultant
- Naturopath
- Needs Assessor
- Nelson City Alcohol Licensing Admin
- Neonatal Nurse
- Network Administrator
- Network Analyst
- Network Engineer
- Neurologist
- Neurosurgeon
- Newborn
- Newspaper Clerk
- Newspaper or Periodical Editor
- Night Filler
- No
- No
- No Work Visa
- Not Employed
- Not in the labour force
- Not specified
- Not Stated
- Not Stated
- Not Stated
- Not Stated
- Not Stated Kidney Dialyse Patient At Home
- Not Stated. Bone Marrow Cancer Patient Post Transplant
- Not Working
- Not Working
- Not Working - Disabled
- Not Working At The Moment - Casual Driver

- Note Taker
- Noxious Weeds and Pest Inspector
- Nuclear Medicine Technologist
- Nuclear Physicist
- Numerical Clerks
- Nun
- Nurse
- Nurse
- Nurse Pre/Post Natal
- Nurse Aide
- Nurse Aide/Healthcare Asst
- Nurse Educator
- Nurse Educators and Researchers
- Nurse Manager
- Nurse Managers
- Nurse Practitioner
- Nurse Researcher
- Nurse Specialist
- Nurse Team Leader
- Nurse-Former
- Nurse/Midwife
- Nurseryperson
- Nurserypersons
- Nurses And Midwifery
- Nursing Clinical Director
- Nursing Student
- Nursing Support and Personal Care Workers
- Nursing Support Worker
- Nutrient Specialist
- Nutrition Professionals
- Nutritionist
- NZ Post
- NZ Racing Board
- NZDF
- NZTA
- Obstetrician and Gynaecologist
- Occupational and Environmental Health Professionals
- Occupational Health and Safety Adviser
- Occupational Therapist
- Occupational Therapists
- Odd Job Man
- Office Administrator
- Office Administrator
- Office Administrator
- Office and Practice Managers
- Office Cashier
- Office Manager
- Office Manager
- Office Managers
- Office Managers and Program Administrators
- Office Worker
- Office Worker
- Office Worker
- Office Worker
- Office Worker/Student
- Officer Cadet
- Oil Rigger
- Oncology Worker
- Operating Theatre Technician
- Operations Manager
- Operations Manager
- Operations Research Analyst
- Operator
- Ophthalmologist
- Ophthalmologist
- Optical Assistant
- Optical Mechanic
- Optometrist
- Optometrist Assistant
- Optometrists and Orthoptists
- Orchard Contractor

- Orchard Manager
- Orchard Worker
- Orchardist
- Order Clerk
- Order Clerk
- Order Filler
- Organic Farm Worker
- Organic Farm Worker
- Organisation and Methods Analyst
- Organisational Consultant
- Organisational Psychologist
- Orthopaedic Surgeon
- Orthoptist
- Orthotist or Prosthetist
- Osteopath
- Other
- Other Accommodation and Hospitality Managers
- Other Building and Engineering Technicians
- Other Cleaners
- Other Clerical and Administrative Workers
- Other Clerical and Office Support Workers
- Other Construction and Mining Labourers
- Other Education Managers
- Other Engineering Professionals
- Other Factory Process Workers
- Other Farm, Forestry and Garden Worker
- Other Health Diagnostic and Promotion Professionals
- Other Hospitality Workers
- Other Hospitality, Retail and Service Managers
- Other Information and Organisation Professional
- Other Labourers
- Other Machine Operators
- Other Miscellaneous Clerical and Administrative Workers
- Other Miscellaneous Labourers
- Other Miscellaneous Technicians and Trades Workers
- Other Mobile Plant Operators
- Other Natural and Physical Science Professionals
- Other Personal Service Workers
- Other Sales Support Worker
- Other Sales Support Workers
- Other Spatial Scientist
- Other Specialist Manager
- Other Sports Coach or Instructor
- Other Sports Official
- Other Stationary Plant Operators
- Other Technicians and Trades Workers
- Other Wood Processing Machine Operator
- Otorhinolaryngologist
- Out of School Hours Care Worker
- Out of School Hours Care Worker (Oscar)
- Outdoor Adventure Consultant
- Outdoor Adventure Guide
- Outdoor Adventure Guides nec
- Outdoor Adventure Instructor
- Outdoor Education
- Oyster Farmer
- Oyster Shucker
- Pacific Ambassador
- Pacific Health Advisor
- Packers
- Packers and Product Assemblers
- Packers nec
- Packhouse Worker
- PACT House Patient
- Paediatric Surgeon
- Paediatrician
- Paint Stripper
- Painter
- Painter (Visual Arts)
- Painter/Decorator

- Painting Trades Worker
- Painting Trades Workers
- Pak N Save
- Panelbeater
- Panelbeaters, and Vehicle Body Builders, Trimmers and Painters
- Paper and Pulp Mill Operator
- Paper and Pulp Mill Worker
- Paper and Wood Processing Machine Operators
- Paper Products Machine Operator
- Parasail Skipper
- Park Ranger
- Parking Inspector
- Parole or Probation Officer
- Part Time Cab Driver
- Part time Cab Driver
- Part Time Student /Part Time Retail Assistant
- Part Time Supermarket Worker And High school Student
- Part-time Accountant
- Part-time Construction Worker
- Part-time Construction Worker
- Part-time Driver
- Part-time Farmer
- Parts Manager
- Parts Supervisor
- Passenger Coach Driver
- Pastor
- Pastrycook
- Pastrycook's Assistant
- Patents Examiner
- Pathologist
- Pathology Collector (Aus)/Phlebotomist (NZ)
- Patient Advocate
- Patient Information Officer
- Paving and Surfacing Labourer
- Paving and Surfacing Labourers
- Paving Plant Operator
- Payments Administrator
- Payroll Clerk
- Payroll Clerks
- Peer Support Co Ordinator
- Performing Arts Technicians
- Performing Arts Technicians nec
- Personal Assistant
- Personal Assistants
- Personal Assistants and Secretaries
- Personal Assistants and Secretaries
- Personal Care Assistant
- Personal Care Consultants
- Personal Carers and Assistants
- Personal Service and Travel Workers
- Personal Service Workers nec
- Personal Trainer
- Pest Controller
- Pest Controller And Enviro Schools
- Pest or Weed Controller
- Pet Groomer
- Petfood Worker
- Petrol Garage Worker
- Petroleum Engineer
- PG Wrightson Administrator
- Pharmacist
- Pharmacist
- Pharmaceutical Production Manager
- Pharmacy Sales Assistant
- Pharmacy Sales Assistants
- Pharmacy Technician
- Pharmacy Technician
- PhD Student
- Phlebotomist

- Phlebotomist
- Photographer
- Photographer's Assistant
- Photographers
- Photographic Developer and Printer
- Photographic Developers and Printers
- Phys Ed Officer
- Physi Ed Office
- Physician
- Physicist
- Physio Assistant/Parent
- Physiotherapist
- Physiotherapists
- Piano Teacher
- Picture Framer
- Pig Farmer
- Pilates Teacher
- Pilot
- Pipeline Engineer
- Pizza Delivery
- Plant Nursery Worker
- Plasterer
- Plasterers
- Plastic and Reconstructive Surgeon
- Plastic Cablemaking Machine Operator
- Plastic Compounding and Reclamation Machine Operator
- Plastics and Rubber Factory Workers
- Plastics and Rubber Production Machine Operators
- Plastics and Rubber Production Machine Operators nec
- Plastics Fabricator or Welder
- Plastics Factory Worker
- Plastics Process Worker
- Plastics Production Machine Operator (General)
- Plastics Technician
- Plumber
- Plumber (General)
- Plumber Commercial
- Plumber's Assistant
- Plumbers
- Plumbing and Drainage Inspector
- Plumbing Contractor
- Plumbing Inspector
- Plumbing Retail
- Plunket Nurse
- Podiatrist
- Podiatrists
- Police
- Police Detective
- Police Officer
- Police Officer Trainee
- Police Woman
- Policeman
- Policy Adviser
- Policy Analyst
- Policy and Planning Manager
- Policy and Planning Managers
- Policy Officer
- Politician
- Polytechnic Teacher
- Pool Attendant
- Pool Manager
- Pool Supervisor
- Porse
- Port Worker
- Portfolio Manger
- Possum Trapper
- Possum Trapper
- Post Graduate Student
- Post Mistress

- Post Office Manager
- Postal Delivery Officer
- Postal Delivery Service
- Postal Sorting Officer
- Postman
- Potato Farmer
- Potter or Ceramic Artist
- Pouako Kura Kaupapa M
- Poultry Farm Worker
- Poultry Farmer
- Poultry Process Worker
- Poultry Worker
- Power Generation Plant Operator
- Practice Managers
- Practice Managers nec
- Practice Nurse
- Pre And Afterschool Care
- Pre School Music Group
- Pre-schooler
- Precision Instrument Maker and Repairer
- Precision Metal Trades Workers
- Preschool Aide
- Preschool Co-ordinator
- Preschool Teacher
- Preschooler
- Press Secretary
- Pressure Welder
- Pricing Analyst
- Priest
- Primary Health Organisation Manager
- Primary Products Inspectors
- Primary Products Inspectors nec
- Primary school student
- Primary School Teacher
- Primary School Teacher Aide
- Primary School Teachers
- Primary Teacher
- Principal Adviser
- Principal Policy Planner
- Principal Release
- Print Finishers and Screen Printers
- Print Journalist
- Printer
- Printer
- Printer's Assistant
- Printing Assistants and Table Workers
- Printing Machinist
- Printing Table Worker
- Printing Trades Workers
- Prison and Security Officers
- Prison Guard
- Prison Officer
- Prison Officers
- Prison Program Coordinator
- Prisoner
- Private Investigator
- Private Nanny
- Private Tutors and Teachers
- Private Tutors and Teachers nec
- Process Packer
- Process Worker
- Processing Manager
- Procurement Director
- Procurement Manager
- Produce Worker - Supermarket
- Product Assembler
- Product Assemblers
- Product Controller
- Product Examiner
- Product Grader
- Product Manager

- Product Manager
- Product Quality Controllers
- Product Scanner
- Product Tester
- Production Assistant (Film, Television, Radio or Stage)
- Production Clerk
- Production Designer
- Production Manager
- Production Manager (Forestry)
- Production Manager (Manufacturing)
- Production Manager (Mining)
- Production Manufacturer
- Production or Plant Engineer
- Production Planner
- Production Planner
- Production Worker
- Professional Triathlete
- Professionals
- Professor/Lecturer
- Professor/Lecturer (Retired)
- Program Director (Television or Radio)
- Program or Project Administrator
- Programme Advisor
- Programme And Operations Coordinator
- Programme Manager
- Programmer
- Project Builder
- Project Coordinator
- Project Manager
- Project Manager
- Project Manager In Christchurch
- Project Manager Security
- Proof Reader
- Property Agent
- Property Development Manager
- Property Maintenance
- Property Manager
- Property Valuer
- Prostitute
- Protective Service Workers
- Prothesist
- PSA Organiser
- Psychiatric Nurse
- Psychiatrist
- Psychiatrists
- Psychologist
- Psychologists nec
- Psychotherapist
- Public Health Engineer
- Public Health Nurse
- Public Relations Manager
- Public Relations Professional
- Public Relations Professionals
- Public Servant
- Publications Manager
- Publicist At NZ Film Festival Trust
- Publisher
- Purchasing and Supply Logistics Clerks
- Purchasing Officer
- Quadrant Hotel
- Quality Assurance
- Quality Assurance Manager
- Quantity Surveyor
- Quantity Surveyor
- Quarantine Officer
- Quarry Worker
- R And D Technologist
- Radiation Oncologist
- Radiator Fitter
- Radiator Repair

- Radiator Repairs
- Radio Despatcher
- Radio Journalist
- Radio Presenter
- Radiocommunications Technician
- Radiologist
- Radiology Assistant
- Railway Signal Operator
- Railway Station Manager
- Railway Track Plant Operator
- Railway Track Worker
- Railway Track Workers
- Railways Assistant
- Real Estate Agency Licensee
- Real Estate Agent
- Real Estate Agent
- Real Estate Representative
- Real Estate Sales Agents
- Real Estate Sales Agents
- Realty Estate Agent
- Rec Planner
- Receptionist
- Receptionist (General)
- Receptionists
- Records Manager
- Recreation Clerk
- Recreation Coordinator
- Recruitment
- Recruitment Consultant
- Recruitment Manager
- Recycling and Rubbish Collectors
- Recycling or Rubbish Collector
- Recycling Worker
- Reduced To Clear
- Refinery Worker
- Refrigeration Engineer
- Refrigeration Engineer
- Refrigeration Mechanic
- Refrigeration Specialist
- Refrigeration Technician
- Refuge Worker
- Refugee
- Refugee
- Refuse Collector
- Regional Education Manager
- Registered Nurse
- Registered Nurse
- Registered Nurse (Aged Care)
- Registered Nurse (Child and Family Health)
- Registered Nurse (Community Health)
- Registered Nurse (Critical Care and Emergency)
- Registered Nurse (Developmental Disability)
- Registered Nurse (Disability and Rehabilitation)
- Registered Nurse (Medical Practice)
- Registered Nurse (Medical)
- Registered Nurse (Mental Health)
- Registered Nurse (Paediatric)
- Registered Nurse (Perioperative)
- Registered Nurse (Surgical)
- Registered Nurses
- Registered Nurses nec
- Registrar Wellington High Court
- Rehabilitation Counsellor
- Reinforced Plastic and Composite Production Worker
- Relief Daycare Teacher
- Relief Milker
- Relief Secondary School Teacher
- Relief Teacher
- Religious Assistant
- Renal Medicine Specialist
- Rental Salesperson

- Reporter
- Research Admin
- Research Analyst
- Research and Development Manager
- Research and Development Managers
- Research Assistant
- Research Manager
- Research Technician
- Researcher
- Resident Medical Officer
- Residential Care Officer
- Residual Categories (Operational Codes only)
- Residual Categories (Operational Codes only)
- Resource Developer For Education Programmes
- Response not identifiable
- Response Outside Scope
- Response Outside Scope
- Response Outside Scope/Not Stated
- Response Unidentifiable
- Restaurant Owner
- Restaurant Worker
- Restaurant Worker
- Resthome Nurse
- Resthome Resident
- Resthome Worker
- Resthome Worker - Activity Coordinator
- Retail
- Retail and Wool Buyers
- Retail Assistant
- Retail Buyer
- Retail Investigator
- Retail Loss Prevention Officer
- Retail Manager
- Retail Manager (General)
- Retail Managers
- Retail Pharmacist
- Retail Pharmacist Assistant
- Retail Supervisor
- Retail Supervisors
- Retail Work
- Retail Work
- Retail/Student
- Retailer
- Retailer Shop
- Reticulation Technical Officer
- Retired
- Retired
- Retired (lives In A Resthome)
- Retired Accountant
- Retired Banker
- Retired but working as part-time Teacher
- Retired Church Minister
- Retired Farmer
- Retired Farmer
- Retired Farmer Living On Farm
- Retired GP
- Retired Kindergaten Teacher
- Retired Midwife
- Retired Nurse
- Retired Pharmacist
- Retired/Farming
- Retirement Home Resident
- Retirement Village Manager
- Rheumatologist
- Road and Rail Drivers
- Road Labourer
- Road Marker
- Road Roller Operator
- Road Safety Coordinator
- Road Traffic Controller
- Road Traffic Controller

- Road Worker
- Roof Plumber
- Roof Tiler
- Roof Tilers
- Roofer
- Room Services (Cleaner)
- Rose Breeder
- RSE Supervisor
- Rubber Factory Worker
- Rubber Production Machine Operator
- Rugby Player
- Rural Bank Manager
- Rural Bank Worker
- Safety Inspector
- Safety Inspectors
- Sail Maker
- Sailor
- Sales Administrator
- Sales And Marketing - Other
- Sales and Marketing Manager
- Sales Assistant (General)
- Sales Assistants (General)
- Sales Assistants and Salespersons
- Sales Assistants and Salespersons
- Sales Assistants and Salespersons nec
- Sales Centre Supervisor
- Sales Clerk
- Sales Consultant
- Sales Consutant
- Sales Demonstrator
- Sales Engineer
- Sales Engineer
- Sales Manager
- Sales Manager
- Sales Person
- Sales Person
- Sales Person In Own Home
- Sales Representative
- Sales Representative (Building and Plumbing Supplies)
- Sales Representative (Business Services)
- Sales Representative (Industrial Products)
- Sales Representative (Medical and Pharmaceutical Products)
- Sales Representative (Motor Vehicle Parts and Accessories)
- Sales Representative (Personal and Household Goods)
- Sales Representatives
- Sales Representatives and Agents
- Sales Representatives nec
- Sales Supervisor - Retail
- Sales Support Worker
- Sales Worker
- Sales, Marketing and Public Relations Professionals
- Salesman
- Salesman - Car
- Salesperson
- Salmon Farmer
- Salvation Army
- Sand Blaster
- Saw Maker and Repairer
- Sawmill Engineer
- Sawmill or Timber Yard Worker
- Sawmilling Operator
- Scaffolder
- Schindlers Lifts
- School Aide
- School Care Taker
- School Care Taker
- School Child
- School Counsellor

- School Dental Nurse
- School Girl
- School Laboratory Technician
- School Librarian
- School Photographer
- School Principal
- School Principals
- School Worker
- Schoolboy
- Schoolgirl
- Science Technician
- Science Technicians nec
- Science/tech Professional
- Scientist
- Scrap Metal Dealer
- Scrap Metal Worker
- Screen Printer
- Scrub Cutter
- Sculptor
- Seafarer
- Seafood Packer
- Seafood Process Worker
- Sealords
- Seaman
- Seamstress
- Seasonal Worker
- Secondary school student (over 16)
- Secondary school student (under 16)
- Secondary School Teacher
- Secondary School Teachers
- Secretaries
- Secretary (General)
- Security Assurance Consultant
- Security Consultant
- Security Guard
- Security Guard (Courts)
- Security Officer
- Security Officers and Guards
- Security Officers and Guards nec
- Security Supervisor
- Seed Dresser
- Self - Employed Counsellor
- Self Employed
- Self Employed
- Self Employed
- Self Employed - Construction
- Self Employed - Recruitment
- Self Employed - Retail
- Self Employed Administration For Sports Equipment Company
- Self Employed At Home
- Self Employed Bar Manager
- Self Employed Coach Painter
- Self Employed Coach Painter
- Self Employed Contractor
- Self Employed Contractor
- Self Employed Electrician
- Self Employed Gardener
- Self Employed Logger
- Self Employed Postal Worker
- Self Employed Share Milker
- Self Employed Sharemilker
- Self-employed Cleaning Company
- Self-Employed Contractor
- Self-Employed Painter And Decorator
- Self-Employed Studio Photographer
- Semi Retired
- Semi Retired - Volunteers On Marae
- Semi Retired Farmer
- Senior Central Government Official
- Senior Non-commissioned Defence Force Member

- Senior Non-commissioned Defence Force Members
- Senior Programme Advsor
- Senior Scientist
- Senior Test Analyst
- Septic Tank Cleaner
- Service Administratiion Manager
- Service Consultant
- Service Desk Operator
- Service Manager
- Service Station Attendant
- Service Station Attendants
- Service Support Manager
- Service Technician
- Sewage Contractor
- Sewing Machinist
- Sewing Machinists
- Sex Worker
- Sex Worker or Escort
- Sexual Health Clinician
- Sharemilker
- Shearer
- Shearers
- Shed Hand
- Sheep
- Sheep Farm Worker
- Sheep Farmer
- Sheep Farmer
- Sheep Handler
- Sheetmetal Trades Worker
- Sheetmetal Trades Workers
- Shelf Filler
- Shelf Fillers
- Shepherd
- Ship's Engineer
- Ship's Master
- Ship's Officer
- Ship's Surveyor
- Shipwright
- Shoemaker
- Shop Assistant
- Shop Manager
- Shop Owner
- Shop Owner
- Shop Owner - Manufacture Of Concrete Products
- Short Top And Sides
- Shot Firer
- Shuttle Driver
- Sickness Beneficiary
- Sickness Beneficiary (previously Caregiver In A Resthome)
- Sickness Beneficiary (previously Caregivern In A Resthome)
- Sign Erector
- Signwriter
- Signwriters
- Singer
- Site Manager
- Site Worker
- Ski Instructor
- Skilled Animal and Horticultural Workers
- Skydive Jump Master
- Slaughterer
- Small Engine Mechanic
- Small Offset Printer
- Smith City
- Snowsport Instructor
- Social and Welfare Professionals
- Social Professionals
- Social Professionals nec
- Social Science Researcher
- Social Security Assessor

- Social Worker
- Social Workers
- Software and Applications Programmers
- Software and Applications Programmers nec
- Software Architect
- Software Developer
- Software Developer
- Software Engineer
- Software Tester
- Soldier
- Solicitor
- Solicitors
- Solid Plasterer
- Solutions Architect
- Song Writer
- Sonographer
- Sound Technician
- Sous Chef
- Special Care Worker
- Special Developer
- Special Education Teachers
- Special Education Teachers nec
- Special Needs Occupational Therapist
- Special Needs OT
- Special Needs Teacher
- Specialist Managers
- Specialist Managers nec
- Specialist Physician (General Medicine)
- Specialist Physicians
- Speech Language Therapist
- Sports Administrator
- Sports and Personal Service Workers
- Sports Centre Manager
- Sports Co-ordinator
- Sports Coaches, Instructors and Officials
- Sports Development Officer
- Sports Umpire
- Sportspersons
- Sportspersons nec
- Spray Painter
- St Johns Ambulance Tech
- Stablehand
- Staff Member
- Staff Nurse
- Stage Manager
- Standards NZ
- Stationary Plant Operators
- Stationary Plant Operators nec
- Statistical Clerk
- Statistician
- Stay At Home Dad
- Stay At Home Grandmother
- Stay At Home Mum
- Stay At Home Mum And Florist On Weekend
- Steel Cutter
- Steel Fixer
- Steel Worker
- Sterilisation Technician
- Stevedore
- Stock Agent
- Stock and Station Agent
- Stock Clerk
- Stock Truck Driver
- Stockbroking Dealer
- Stockman
- Stockyard Manager
- Stone Processing Machine Operator
- Stonemason
- Storage/packing
- Store Detective
- Store Manager

- Store Manager - Food
- Storeman
- Storeman
- Storeperson
- Storepersons
- Storepersons
- Storepersons
- Stowage Contractor
- Street Vendor
- Street Vendors and Related Salespersons
- Streetsweeper Operator
- Structural Engineer
- Structural Steel and Welding Trades Workers
- Structural Steel Construction Workers
- Structural Steel Erector
- Student
- student
- Student - Best Pacific Institute Of Education.
- Student - Bible School
- Student - Home Schooled
- Student - Home Schooled
- Student - Language
- Student - Lost To Followup
- Student - Out Of Auckland
- Student - Overseas
- Student - Overseas (Samoa)
- Student - Pharmaceutical
- Student (Biomedical Science)
- Student (Sport
- Student / Part Time Nanny
- Student And Part Time Supermarket Worker
- Student And Youth Worker
- Student Counsellor
- Student Home Schooled
- Student Midwife
- Student Nurse
- Student Nurse
- Student Physiotherapist
- Student Pilot
- Student Teacher
- Student Teacher
- student Wel Tech
- Student- Legal Research
- Student- Legal Researcher
- Student/Caregiver
- Student/Foodcafe Worker
- Student/Foodstacker
- Student/Foodworker
- Student/Grocery Worker
- Student/Part Time Chef
- Student/part-time Nanny
- Student/Restaurant Dishwasher
- Sugar Cane Grower
- Sugar Mill Worker
- Super Market Worker
- Supermarket Worker
- Supervisor
- Supervisor - Operator
- Supervisor Countdown
- Supply and Distribution Manager
- Supply Manager
- Supply, Distribution and Procurement Managers
- Support Person
- Support Services Manager
- Support Worker
- Support Worker (Mental Health)
- Surgeon
- Surgeon (General)
- Surgical Registrar
- Survey Interviewer
- Survey Interviewers

- Surveying or Cartographic Technician
- Surveyor
- Surveyor's Assistant
- Surveyors and Spatial Scientists
- Sustainable Transport Coordinator
- Swimming Pool Attendant
- Swimming Coach or Instructor
- Swimming Pool Construction
- Switchboard Operator
- Switchboard Operators
- Systems Administrator
- Systems Analyst
- Tanker Driver
- Tanker Driver
- Tannery Worker
- Tattoo Artist
- Taxation Accountant
- Taxation Inspector
- Taxi Driver
- Taxidermist
- Teacher
- Teacher
- Teacher - Reliever
- Teacher - Reliver
- Teacher (currently Not Working)
- Teacher Aide
- Teacher Of Adults
- Teacher of English to Speakers of Other Languages
- Teacher Of Music
- Teacher of the Hearing Impaired
- Teacher of the Sight Impaired
- Teacher- Correspondence School
- Teacher/Instructor
- Teachers of English to Speakers of Other Languages
- Teachers' Aide
- Team Leader
- Team Leader Of Club Active
- Team Manager
- Tech Solutions Specialist
- Technical Analyst
- Technical Cable Jointer
- Technical Coodinator
- Technical Director
- Technical Officer
- Technical Sales Representatives
- Technical Sales Representatives nec
- Technical Writer
- Technician
- Technicians and Trades Workers
- Technicians and Trades Workers nec
- Telecommunications Cable Jointer
- Telecommunications Engineer
- Telecommunications Engineering Professionals
- Telecommunications Field Engineer
- Telecommunications Line Mechanic
- Telecommunications Network Engineer
- Telecommunications Network Planner
- Telecommunications Technical Officer or Technologist
- Telecommunications Technical Specialists
- Telecommunications Technician
- Telecommunications Trades Workers
- Telemarketer
- Telemarketers
- Telephone Betting Clerk
- Telephonist - Call Centre
- Television Equipment Operator
- Television Journalist
- Television Presenter
- Teller
- Tennis Coach

- Territory Manager
- Tertiary Education Teacher
- Tertiary student
- Tertiary Student
- Test Engineer
- Textile and Footwear Production Machine Operators
- Textile and Footwear Production Machine Operators nec
- Textile Dyeing and Finishing Machine Operator
- Textile, Clothing and Footwear Mechanic
- Textile, Clothing and Footwear Trades Workers
- Theatre Facilitator
- Theatre Facilitator
- Theatre Nurse
- Therapist
- Therapy Aide
- Therapy Assisstant
- Thermoformer Operator
- Thoracic Medicine Specialist
- Ticket Collector or Usher
- Ticket Salespersons
- Ticket Seller
- Tiler
- Timber and Wood Process Workers
- Toddler
- Toddler
- Toolmaker
- Toolmakers and Engineering Patternmakers
- Tour Guide
- Tourism and Travel Advisers
- Tourist
- Tourist Guide
- Tourist Information Officer
- Tow Truck Driver
- Town Planner
- Tractor Mechanic
- Trade Assistant
- Tradesman
- Traditional Chinese Medicine Practitioner
- Traditional M
- Train and Tram Drivers
- Train Controller
- Train Driver
- Train Examiner
- Trainee Mechanic
- Training and Development Professional
- Training and Development Professionals
- Training Coordinator
- Trainor (ACC)
- Tram Driver
- Transfer Station Operator
- Translator
- Transport and Despatch Clerks
- Transport Company Manager
- Transport Conductor
- Transport Coordinator
- Transport Engineer
- Transport Manager
- Transport Operations Inspector
- Transport Services Manager
- Tranz Rail
- Travel Agency Manager
- Travel Attendant
- Travel Attendants
- Travel Attendants nec
- Travel Consultant
- Travel Coordinator
- Traveller
- Tree Feller
- Trekking Guide
- Tribunal Member

- Trolley Collector
- Truancy Officer
- Truck Driver
- Truck Driver
- Truck Driver
- Truck Driver
- Truck Driver
- Truck Driver (General)
- Truck Driver (Stock)
- Truck Driver's Offsider
- Truck Drivers
- Truck Mechanic
- Trucking Operator
- Trust Officer
- Turf Grower
- Tutor
- Tutor Lecturer
- TV Production
- Typist
- Tyre Fitter
- Tyre Fitter
- Ucol Lecturer
- UN Consultant
- Under 5 Years
- Unemployed
- Unemployed - Visiting NZ
- Unemployed But Part-time Cleaner
- University Academic
- University Lecturer
- University Lecturers and Tutors
- University Professor
- University Student
- University Student, Engineering
- University Tutor
- Unknown
- Unknown - Currently Pregnant
- Unknown - Not At School
- Unknown But Not High Risk
- Upholsterer
- Upholsterers
- Urban and Regional Planner
- Urban and Regional Planners
- Urologist
- Utility And Facilities Support Worker
- Valet Cars
- Valuer
- Vascular Surgeon
- Vegetable Picker
- Vehicle Body Builder
- Vehicle Body Builders and Trimmers
- Vehicle Inspector NZ Police
- Vehicle Painter
- Vehicle Painters
- Vehicle Trimmer
- Vending Machine Attendant
- Vending Machine Attendants
- Vet Student
- Veterinarian
- Veterinarian Technician
- Veterinarians
- Veterinary Epidemiologist
- Veterinary Nurse
- Veterinary Nurses
- Veterinary Sales Consultant
- Video Producer
- Vineyard Manager
- Vineyard Worker
- Vineyard Worker
- Vineyard Worker/Orchard Worker
- Visitor
- Visitor - Working
- Visitor To NZ

- Visual Arts and Crafts Professional
- Visual Arts and Crafts Professionals nec
- Visual Merchandiser
- Visual Merchandisers
- Vocational Education Teachers (Aus) / Polytechnic Teachers (NZ)
- Voluntary Work
- Volunteer
- Volunteer At A Music Pre-School
- Volunteer Driver (occasionally)
- Volunteer Work In 3rd World Countries
- Volunteer Work In 3rd Worls Countries
- Waiter
- Waiters
- Waitress
- Wall and Floor Tiler
- Wall and Floor Tilers
- Ward Clerk
- Warehouse Administrator
- Warehouse Manager
- Warehouse Night Shift Worker.
- Warehouse Online Shopping Clerk
- Warehouse Supervisor
- Warehouse Worker
- Waste Water Management
- Waste Water Operator
- Waste Water or Water Plant Operator
- Watch and Clock Maker and Repairer
- Water Blaster
- Water Inspector
- Water Pump Worker
- Water Tank Cleaner
- Water Treatment Engineer
- Waterside Worker
- Weaving Machine Operator
- Web Administrator
- Web Designer
- Web Developer
- Webdesigner
- Weed Sprayer
- Weigh Bridge Tech
- Weighbridge Operator
- Weight Loss Consultant
- Weightlifter
- Welder
- Welfare Centre Manager
- Welfare Support Worker
- Welfare Worker
- Welfare, Recreation and Community Arts Workers
- Wellington Hospital
- Wharf Worker
- Whitewater Rafting Guide
- Wholesaler
- Window Cleaner
- Wine Maker
- Wine sales Worker
- Wine Stewart
- Winery Cellar Hand
- Winery Worker
- Wintec Student
- WINZ Facilitator
- women's Centre Co-ordnator
- Wood and Wood Products Factory Worker
- Wood Machinist
- Wood Machinists and Other Wood Trades Workers
- Wood Machinists and Other Wood Trades Workers nec
- Wood Processing Machine Operator
- Wood Trades Workers
- Wood Treater
- Wood Turner
- Woofer

- Wool Buyer
- Wool Classer
- Wool Handler
- Wool Technician
- Word Processing Operator
- Work Visa Holder
- Workforce Planner
- Working In Film Industry
- Workplace Relations Adviser
- Works At Abseilers
- Works At Swimming Pool
- Works From Home
- Works From Home - Motor Industry
- Works In A Mashroom Firm
- Works In A Mushroom Firm
- Works In Sewers
- Works Infrastructure
- Works With Natural Medicines
- Writer
- Writer (Library)
- Yard Foreman
- Yardsman
- Yarn Carding and Spinning Machine Operator
- Yoga Teacher
- Youth Worker
- Youth Worker
- Zoo Ranger
- Zookeeper
- Zoologist

Job title 3

- 16 Month Old Child
- A.I. Technician
- Abattoir Worker
- Aboriginal and Torres Strait Islander Education Worker
- Aboriginal and Torres Strait Islander Health Worker
- Abrasive Blaster
- Absailer
- Abseiler
- ACC Justice Centre
- ACC Justice Centre
- Accommodation and Hospitality Managers nec
- Accommodation Manager - Boarding House
- Accountant
- Accountant (General)
- Accountants, Auditors and Company Secretaries
- Accounting Clerk
- Accounting Clerks
- Accounting Clerks and Bookkeepers
- Accounts
- Accounts Administrator
- Accounts Administrator
- Accounts Administrator
- Accounts Clerk
- Accounts Manager
- Accounts Payable Administrator
- Actor
- Actors, Dancers and Other Entertainers
- Actors, Dancers and Other Entertainers nec
- Actuaries, Mathematicians and Statisticians
- Actuary
- Actuary And Consultant
- Acupuncturist
- Admin Manager
- Admin Worker
- Administration
- Administration Manager
- Administration Manager
- Administrative Officer
- Administrator
- Administrator
- Administrator
- Administrator Gisborne Tatapouri Fishing Club
- Administrator.Owner Of Restaurant.
- Admissions Clerk
- Advertising
- Advertising Agency Director
- Advertising and Marketing Professionals
- Advertising and Public Relations Manager
- Advertising and Sales Manager
- Advertising Manager
- Advertising Specialist
- Advertising, Public Relations and Sales Managers
- Advisor
- Aeronautical Engineer
- Aeroplane Pilot
- After School Care
- Aged and Disabled Carers
- Aged Care Worker
- Aged or Disabled Carer
- Agency Nurse
- Agri Business Consultant
- Agricultural and Forestry Scientists
- Agricultural and Horticultural Mobile Plant Operator
- Agricultural Chemical Consultant
- Agricultural Consultant
- Agricultural Contracting
- Agricultural Engineer
- Agricultural Project

- Agricultural Scientist
- Agricultural Sprayer
- Agricultural Technician
- Agricultural Technicians
- Agricultural Worker
- Agricultural, Forestry and Horticultural Plant Operators
- Agricultural, Medical and Science Technicians
- Agriculture Advisor
- Agriculture Research
- Agronomist
- Aid Worker
- Aid worker Carpenter
- Air and Marine Transport Professionals
- Air Assistant
- Air Compressor Technician
- Air COnditioning / Mechanic
- Air Steward
- Air Stewardess
- Air Traffic Control Instructor
- Air Traffic Controller
- Air Traffic Controller
- Air Transport Professionals
- Air Transport Professionals nec
- Airconditioning and Mechanical Services Plumber
- Airconditioning and Refrigeration Mechanic
- Airconditioning and Refrigeration Mechanics
- Aircraft Baggage Handler and Airline Ground Crew
- Aircraft Engineer
- Aircraft Maintenance Engineer (Avionics)
- Aircraft Maintenance Engineer (Mechanical)
- Aircraft Maintenance Engineer (Structures)
- Aircraft Maintenance Engineers
- Aircraft Refueller
- Aircraft Technician
- Airline Manager
- Airport Staff
- Alarm, Security or Surveillance Monitor
- Aluminium Joiner
- Ambulance Driver
- Ambulance Officer
- Ambulance Officers and Paramedics
- Ambulance Paramedic
- Amusement Centre Manager
- Amusement, Fitness and Sports Centre Managers
- Anaesthetic Technician
- Anaesthetist
- Anaesthetist
- Anaesthetists
- Analyst
- Analyst Programmer
- Anatomist or Physiologist
- Anesthesiologist
- Anesthetic Tech Niurse
- Animal Attendants and Trainers
- Animal Attendants and Trainers nec
- Animal Attendants and Trainers, and Shearers
- Animal Carer
- Animal Control
- Animator
- Antique Dealer
- ANZ Bank
- Apiarist
- Apparel Cutter
- Apple Packer
- Apple Picker
- Apple Thinner
- Appliance Works
- Apprentice Builder
- Apprentice Butcher
- Apprentice Carpenter

- Apprentice Electrician
- Apprentice Motor Mechanic
- Apprentice Panelbeater
- Apprentice Plumber
- Apprentice Welder
- Aquaculture Farmer
- Aquaculture Farmers
- Aquaculture Worker
- Aquaculture Worker
- Aquatic Engineer
- Arborist
- Archaeologist
- Architect
- Architects and Landscape Architects
- Architects, Designers, Planners and Surveyors
- Architectural Draftsperson
- Architectural, Building and Surveying Technicians
- Architectural, Building and Surveying Technicians nec
- Archivist
- Archivists, Curators and Records Managers
- Armed Forces
- Armoured Car Escort
- Army
- Army Corporal
- Army Personnel
- Art Director (Film, Television or Stage)
- Art Teacher (Private Tuition)
- Artist
- Artist/Photographer
- Artistic Director
- Artistic Directors, and Media Producers and Presenters
- Arts Administrator or Manager
- Arts and Media Professionals
- Arts Professionals
- Asbestos Labourer
- Assembles Agriculture Machinery
- Asset Manager
- ASSISTANT ACCOUNTANT
- Assistant Manager
- Assistant Manager
- Assistant Principal
- Assistant Teacher
- At home
- at Home Educarer
- At home looking after children
- At Home Mother
- At home not looking after children
- Attendance Officer
- Attending Early Childhood Centre
- Attending ECC
- Attends ESOL Classes
- Au Pair
- Auctioneer
- Auctioneers, and Stock and Station Agents
- Audiologist
- Audiologists and Speech Pathologists/Therapists
- Audiovisual Technison
- Auditor
- Auditor
- Auditors, Company Secretaries and Corporate Treasurers
- Author
- Authors, and Book and Script Editors
- Auto Dismantler
- Auto Technician
- Autoglazier
- Automobile Drivers
- Automobile Drivers nec
- Automobile, Bus and Rail Drivers

- Automotive and Engineering Trades Workers
- Automotive Electrician
- Automotive Electricians
- Automotive Electricians and Mechanics
- Automotive Parts Salesperson
- Automotive Technician
- AV Installer
- Aviation
- Avionics Technician
- Avocado Orchardist
- Baby
- Backer
- Backhoe Operator
- Baker
- Bakers and Pastrycooks
- Bakery Assistant
- Bakery Manager
- Bakery Staff
- Baking Factory Worker
- Banardos In House Child Minder
- Bank Call Centre Worker
- Bank Clerk
- Bank Employee And Student (Finance)
- Bank Manager
- Bank Manager
- Bank Officer
- Bank Teller
- Bank Worker
- Bank Workers
- Banker
- Banking Call Centre Worker
- Bar Attendant
- Bar Attendants and Baristas
- Bar Manager
- Bar Useful or Busser
- Barber
- Barista
- Barrister
- Barristers
- Bartender
- Beauty Therapist
- Beauty Therapists
- Bed and Breakfast Operator
- Bed Maker
- Bee Keeper
- Beef Cattle Farm Worker
- Beef Cattle Farmer
- Beekeeper
- Beer Tap Installer
- Beetham Rest Home Manager
- Behaviour Support Specialist
- Beneficiary
- Berry Farmer
- Betting Agency Counter Clerk
- Betting Agency Manager
- Betting Clerks
- Betting Clerks nec
- Bicycle Mechanic
- Biinder
- Binder
- Binder and Finisher
- Bio Medical Technician
- Biochemist
- Biologist (General)
- Biomedical Engineer
- Biosecurity Officer
- Biotechnologist
- Bird Handler
- Blacksmith
- Boarding Kennel or Cattery Operator
- Boat Builder

- Boat Builder and Repairer
- Boat Builders and Shipwrights
- Boat Skipper
- Boat Worker
- Body Artist
- Boiler Assistant
- Boiler or Engine Operator
- Boilermaker
- Bomb Disposal Person
- Bone Meal Worker
- Bone Meat Worker
- Book or Script Editor
- Bookkeeper
- Bookkeepers
- Bookmaker
- Bookmaker's Clerk
- Bookshop Manager
- Bookshop Owner
- Bookshop Sales Assistant
- Botanist
- Bouncer
- Branch Manager
- Branch Manager
- Branch Manager (ACC)
- Brewery Worker
- Bricklayer
- Bricklayer
- Bricklayers and Stonemasons
- Broadcast Transmitter Operator
- Builder
- Builder
- Builder
- Builder (self Employed)
- Builder And Motorhome Maintenance
- Builder Apprentice
- Builder Apprentice
- Builder's Labourer
- Builder/Hammerhand
- Builder/Hammerhand
- Building and Engineering Technicians
- Building and Engineering Technicians nec
- Building and Plumbing Labourers
- Building Associate
- Building Control Officer
- Building Designer
- Building Inspector
- Building Insulation Installer
- Building Supervisor
- Bulk Materials Handling Plant Operator
- Bulldozer Operator
- Bungy Jump Master
- Bus and Coach Drivers
- Bus Driver
- Business
- Business Administration Manager
- Business Analyst
- Business and Systems Analysts, and Programmers
- Business Broker
- Business Coach
- Business Consultant
- Business Consultant
- Business Director
- Business Intelligence Consultant
- Business Machine Mechanic
- Business Manager
- Business Owner
- Business Owner-Takeaway
- Business Professional
- Business, Human Resource and Marketing Professional
- Businessman
- Butcher

- Butcher Apprentice
- Butcher or Smallgoods Maker
- Butchery Assistant
- Cabinetmaker
- Cabinetmakers
- Cabler (Data and Telecommunications)
- Caf? Worker
- Cafe and Restaurant Managers
- Cafe Manager
- Cafe or Restaurant Manager
- Cafe Owner
- Cafe Worker
- Cafe Workers
- Calf Rearer
- Call or Contact Centre and Customer Service Managers
- Call or Contact Centre Information Clerks
- Call or Contact Centre Manager
- Call or Contact Centre Operator
- Call or Contact Centre Team Leader
- Call or Contact Centre Workers
- Camera Operator (Film, Television or Video)
- Camper
- Canning Operator
- Canvas and Leather Goods Makers
- Canvas Goods Maker
- Car Dealer
- Car Detailer
- Car Detailers
- Car Groomer
- Car groomer
- Car Painter
- Car Park Attendant
- Car Parts Salesperson
- Caravan Park and Camping Ground Manager
- Caravan Park and Camping Ground Managers
- Caravan Park and Camping Ground Owner
- Cardiac Technician
- Cardiologist
- cardiology Registrar
- Cardiothoracic Surgeon
- Care Assistant
- Care Giver
- Careers Advisor
- Careers Counsellor
- Caregiver
- Caregiver (Rest Home)
- Caregiver??
- Caregiver/Cleaner
- Carers and Aides
- Caretaker
- Caretakers
- Cargo Manager
- Carpenter
- Carpenter and Joiner
- Carpet Cleaner
- Carpet/Vinyl Layer
- Cartographer
- Cartographer
- Carton Maker
- Case Manager
- Case Worker
- Cash Van Salesperson
- Cashier
- Casino Worker
- Castings Processor
- Casual Worker
- Cat Breeder
- Categories Manager
- Caterer
- Catering Manager

- Catering Student
- Cattle Farmer
- ceiling Installer
- Celebrant
- Cement and Concrete Plant Worker
- Cement Production Plant Operator
- CEO
- Ceramicist
- Chaplain
- Charge Nurse
- Charity Administrator
- Charter and Tour Bus Driver
- Chartered Director / Consultant
- Chauffeur
- Checkout Operator
- Checkout Operators and Office Cashiers
- Checkout Operators and Office Cashiers
- Checkout Supervisor
- Chef
- Chef
- Chef Student
- Chefs
- Chefs Course
- Chelsea House
- Chemical and Materials Engineers
- Chemical Engineer
- Chemical Plant Operator
- Chemical Plant Worker
- Chemical Processor
- Chemical Production Machine Operator
- Chemical, Gas, Petroleum and Power Generation Plant Operators
- Chemist
- Chemistry Technician
- Chemists, and Food and Wine Scientists
- Chicken Farmer
- Chief Engineer
- Chief Executive
- Chief Executive or Managing Director
- Chief Executives and Managing Directors
- Chief Executives, General Managers and Legislators
- Chief Executives, General Managers and Legislators
- Chief Information Officer
- Child
- Child
- Child - non-resident
- Child 5-15
- Child At Home Only
- Child Care Centre Manager
- Child Care Centre Managers
- Child Care Worker
- Child Care Worker (Home Based)
- Child Carers
- Child Carers
- Child Minder
- Child or Youth Residential Care Assistant
- Child Support Officer
- Child under 16
- Child under 5
- Child under 5 Attends Preschool
- Childcare Teacher
- Childcare Workder
- Childcare Worker
- Chimney Sweep
- Chiropractor
- Chiropractor Assistant
- Chiropractors and Osteopaths
- Chocolate Packer
- Church Worker
- Cinema or Theatre Manager
- Circular Deliverer

- Civil Celebrant
- Civil Engineer
- Civil Engineering Draftsperson
- Civil Engineering Draftspersons and Technicians
- Civil Engineering Professionals
- Civil Engineering Technician
- Civil Servant
- Classified Advertising Clerk
- Clay Processing Factory Worker
- Clay Products Machine Operator
- Clay, Concrete, Glass and Stone Processing Machine Operators
- Clay, Concrete, Glass and Stone Processing Machine Operators nec
- Cleaner
- Cleaner
- Cleaner
- Cleaner
- Cleaner
- Cleaner And Nanny
- Cleaner/caretaker
- Cleaners and Laundry Workers
- Cleaners and Laundry Workers
- Cleaners nec
- Cleaning Company Manager
- Clerical and Administrative Workers nec
- Clerical and Office Support Worker
- Clerical and Office Support Workers
- Clerical and Office Support Workers nec
- Clerk
- Clerk of Court
- Clinical And Corporate Psychologist
- Clinical Coder
- Clinical Nurse
- Clinical Oncologist
- Clinical Psychologist
- Clinical Psychologist
- Clothing Designer
- Clothing Patternmaker
- Clothing Trades Workers
- Clothing Trades Workers nec
- Co-Director
- Co-ordinator Brand
- Co-ordinator Brand
- Co-ordinator Brand
- Co-ordinator Brand
- Coach Builder
- Coach Painter
- Coal Miner
- Coding Clerk
- Coldshelf Assistant
- Coldshelf Assistant
- College Student
- Comedian
- Commercial Cleaner
- Commercial Cleaners
- Commercial Designer
- Commercial Designer
- Commercial Diver
- Commercial fisherman
- Commercial Housekeeper
- Commercial Manager
- Commissioned Defence Force Officer
- Commissioned Fire Officer
- Commissioned Officers (Management)
- Commissioned Police Officer
- Commodities Trader
- Communications Advisor
- Communications Director
- Communications Officer
- Communications Operator

- Communications Technician
- Community
- Community and Personal Service Workers
- Community Arts Worker
- community Support Worker
- Community Support Worker
- Community Worker
- Companion Driving Business
- Company Director
- Company Secretary
- Complementary Health Therapists
- Complementary Health Therapists nec
- Compliance Officer
- Composer
- Computer Analyst
- Computer Engineer
- Computer Network and Systems Engineer
- Computer Network Professionals
- Computer Operator
- Computer Programmer
- Computer Technician
- Concrete Batching Plant Operator
- Concrete Products Machine Operator
- Concrete Pump Driver
- Concrete Pump Operator
- Concreter
- Concreters
- Confectionery Maker
- Conference and Event Organiser
- Conference and Event Organisers
- Conservation Officer
- Conservator
- Construction and Mining Labourers
- Construction Estimator
- Construction Manager
- Construction Project Manager
- Construction Rigger
- Construction Trades Worker
- Construction Worker
- Construction, Distribution and Production Managers
- Consultant
- Consultant Engineer
- Consultant Physician
- Contact Centre
- Contact Centre Manager
- Container Filler
- Contract Administrator
- Contract Worker
- Contract, Program and Project Administrators
- Contract, Program and Project Administrators
- Contractor
- Contractor nfd
- Controller
- Conveyancer
- Conveyancers and Legal Executives
- Cook
- Cookery Student
- Cooks
- Cool Storage Worker
- Coordinator
- Coordinator - About Kids
- Copywriter
- Corporate General Manager
- Corporate Services Manager
- Corporate Services Managers
- Corporate Trainer
- Corporate Treasurer
- Corrections Officer
- Cosmetic Physician
- Cosmetic Researcher
- Cosmetology

- Cost Clerk
- Cotton Grower
- Council Worker
- Counsellors
- Counsellors nec
- Countdown Supervisor
- Courier
- Couriers and Postal Deliverers
- Court and Legal Clerks
- Court Collections Officer
- Court Registry Officer
- Court Worker
- CPH Dialysis Unit
- Crane Chaser
- Crane, Hoist and Lift Operators
- Crane, Hoist or Lift Operator
- Creative Director
- Credit and Loans Officers (Aus)/Finance Clerks (NZ)
- Credit Controller
- Credit or Loans Officer
- Crop Farm Worker
- Crop Farm Workers nec
- Crop Farmer
- Crop Farmer
- Crop Farmers nec
- Crossing Supervisor
- Crowd Controller
- Cruise Ship Crew
- Currently Not Working
- Currently Not Working - Pregnant
- Currently Unemployed
- Custodian
- Customer Business Centre Consultant
- Customer Service Manager
- Customer Service Representative
- Customer Services
- Customs Officer
- Cycalist
- Cycle Courier
- Cycling Coach
- Dairy Cattle Farm Worker
- Dairy Cattle Farm Worker - Share Holder
- Dairy Cattle Farmer
- Dairy Factory Worker
- Dairy Farm Worker
- Dairy Farm Worker
- Dairy Farm Worker
- Dairy Farmer
- Dairy Farmer
- Dairy Farmer
- Dairy Farmer (Carterton)
- Dairy Operator
- Dairy Owner
- Dairy Products Maker
- Dairy Retail Assisstant
- Dairy Retail Assistant
- Dance Teacher (Private Tuition)
- Dancer or Choreographer
- Data Entry From Home
- Data Entry Operator
- Data Processing Analyst
- Database Administrator
- Database and Systems Administrators, and ICT Security Specialists
- Database and Systems Administrators, and ICT Security Specialists
- Day Care Centre Worker
- Daycare Teacher
- Daycare Worker
- Debt Collector
- Debt Collectors

- Deck and Fishing Hands
- Deck Hand
- Deep Fryer
- Deer Farmer
- Defence Force Member - Other Ranks
- Defence Force Members - Other Ranks
- Defence Force Members, Fire Fighters and Police
- Defence Force Senior Officer
- Delivery Driver
- Delivery Drivers
- Delivery Drivers
- Dementia Worker
- Demolition Labourer
- Dental Assistant
- Dental Assistants
- Dental Hygienist
- Dental Hygienists, Technicians and Therapists
- Dental Practitioner
- Dental Prosthetist
- Dental Specialist
- Dental Technician
- Dental Technician
- Dental Therapist
- Dentist
- Department Director General
- Department Of Corrections
- Dept Of Justice
- Deputy Principal
- Deputy Registrar
- Dermatologist
- Deseased
- Design Consultant
- Design, Engineering, Science and Transport Professional
- Designer
- Desk Officer
- Desktop Publisher
- Despatching and Receiving Clerk
- Detailer
- Detective
- Developer
- Developer Programmer
- Diagnostic and Interventional Radiologist
- Diary Farmer
- Diesel Motor Mechanic
- Dietitian
- Different Jobs
- Digger Driver
- Digital Consultant
- Digital Plate Marker
- Diplomat
- Director
- Director (Film, Television, Radio or Stage)
- Director (Food Safety And Quality)
- Director of Photography
- Disabilities Services Officer
- Dish Washer
- Dispatch
- Dispatcher In A Factory
- Dispensing Optician
- Distribution
- District Manager
- District Nurse
- District Nurse
- District Nurse - Keri Keri
- Diver
- Diversional Therapist
- Diversional Therapists
- Diving Instructor (Open Water)
- Doctor
- Doctor-Retired

- Dog Breeder
- Dog Handler or Trainer
- Dog or Horse Racing Official
- Domestic Cleaner
- Domestic Cleaners
- Domestic Housekeeper
- Dominatrix
- Door And Window Fitter
- Door-to-door Salesperson
- Doorperson or Luggage Porter
- Douglas Park School
- Draft Person
- Draftsman
- Drain Layer
- Drain Layer
- Drainage Contractor
- Drainage Engineer
- Drainage Technician
- Drainage, Sewerage and Stormwater Labourer
- Drainlayer (NZ)
- Drama Teacher (Private Tuition)
- Draughtsman
- Dressmaker or Tailor
- Driller
- Driller's Assistant
- Drillers, Miners and Shot Firers
- Driver
- Driver / Road Inspector
- Driving Instructor
- Driving Instructors
- Drug and Alcohol Counsellor
- Drycleaner
- Duty Cliinician
- Duty Manager
- Early Childhood (Pre-primary School) Teacher
- Early Childhood (Pre-primary School) Teacher Reliever
- Early Childhood (Pre-primary School) Teachers
- Early Childhood Centre Leader
- Earth Rig Digger
- Earth Science Technician
- Earthmoving Labourer
- Earthmoving Plant Operator
- Earthmoving Plant Operator (General)
- Earthwork Contractor
- ECC Teacher
- ECEC Teacher
- ECEC Worker
- ECG Technician
- Ecologist
- Economist
- Economists
- Editor
- Education Adviser
- Education Advisers and Reviewers
- Education Aide
- Education Aides
- Education Consultant
- Education Facilitator At NZQA
- Education Managers nec
- Education Professional
- Education Reviewer
- Education Support Worker
- Education Team Leader
- Education, Health and Welfare Services Managers
- Educational Consultant
- Educational Psychologist
- Educator
- Electorate Officer
- Electrical Distribution Trades Workers
- Electrical Engineer

- ELECTRICAL ENGINEER
- Electrical Engineering Draftsperson
- Electrical Engineering Draftspersons and Technicians
- Electrical Engineering Technician
- Electrical Engineers
- Electrical Inspector
- Electrical Line Mechanic
- Electrical Maintainer
- Electrical or Telecommunications Trades Assistant
- Electrical Wholesaler
- Electrician
- Electrician (General)
- Electrician (Special Class)
- Electricians
- Electronic Assistant
- Electronic Engineering Draftsperson
- Electronic Engineering Draftspersons and Technicians
- Electronic Engineering Technician
- Electronic Equipment Trades Worker
- Electronic Instrument Trades Worker (General)
- Electronic Instrument Trades Worker (Special Class)
- Electronics and Telecommunications Trades Workers
- Electronics Engineer
- Electronics Engineers
- Electronics Trades Workers
- Electroplater
- Electrotechnology and Telecommunications Trades Workers
- Emergency Management Technician
- Emergency Medicine Specialist
- Emergency Service Worker
- Employee
- Employment Advisor
- Endocrinologist
- Energy Centre Operator
- Engineer
- engineer
- Engineer Nec
- Engineering Manager
- ENGINEERING MANAGER
- Engineering Manager
- Engineering Managers
- Engineering Patternmaker
- Engineering Production Systems Worker
- Engineering Production Workers
- Engineering Professionals
- Engineering Professionals nec
- Engineering Technologist
- Engineering, ICT and Science Technicians
- Engraver
- Enrolled and Mothercraft Nurses
- Enrolled Nurse
- Entertainer or Variety Artist
- Entrepreneur
- Environment
- Environmental Consultant
- Environmental Consultant
- Environmental Engineer
- Environmental Health Officer
- Environmental Manager
- Environmental Planner
- Environmental Research Scientist
- Environmental Scientist
- Environmental Scientists nec
- Epidemiologist
- Equipment Hire Manager
- ER Specialist
- Event Coordinator
- Event Manager

- Excavator Operator
- Exchange Student
- Executive Assisstant
- Exercise Physiologist
- Exhaust and Muffler Fitter
- Exporting Cattle
- External Auditor
- Eye Surgeon
- Ezibuy Wellington
- Fabric and Textile Factory Worker
- Fabrication Engineering Trades Worker
- Fabricator Installer
- Facilitator
- Facilities Administrator
- Facilities Advisor
- Facilities Manager
- Factory Hand Fibreglass Moulding
- Factory Inghams
- Factory Manager
- Factory Process Worker
- Factory Process Workers nec
- Factory Supervisor
- Factory Worker
- Factory Worker
- Factory Worker
- Factory Worker
- Factory Worker
- Factory Worker - Mussels
- Factory Worker (food)
- Faculty Head
- Family and Marriage Counsellor
- Family Business Employee
- Family Bussiness
- Family Day Care Worker
- Family Support Worker
- Family Therapist
- Farm Adviser
- Farm Advisor
- Farm Cadet
- Farm Hand
- Farm Manager
- Farm Worker
- Farm Worker
- Farm Worker
- Farm, Forestry and Garden Worker
- Farm, Forestry and Garden Worker
- Farm, Forestry and Garden Workers nec
- Farmer
- Farmer and Farm Manager
- Farmer Self Employed
- Farmer/Farm Hand
- Farmer/stay At Home
- Farmer/Stay At Home Mother
- Farmers and Farm Managers
- Farmkill Slaughterman
- Farmyard Valley Road
- Farrier
- Farrier
- Fashion Designer
- Fashion Store Owner
- Fashion, Industrial and Jewellery Designers
- Fast Food Cook
- Fast Food Cooks
- Fastfood Assistant
- Fastfood Crew
- Father
- Fellmongery Worker
- Fencer
- Fencers
- Fibre Optic Technician
- Fibre Optic Technician
- Fibrous Plasterer

- Field Crop
- Field Crop
- Field Crop Farm Worker
- Field Ranger And Dog Handler
- field Scientist
- field Scientist
- Finance Manager
- Filing and Registry Clerks
- Filing or Registry Clerk
- Filling Assistant - Supermarket
- Film and Video Editor
- Film Producer
- Film Producer/Zumba Instructor
- Film, Television, Radio and Stage Directors
- Film, Television, Radio and Stage Directors nec
- Finance
- FINANCE ACCOUNTANT
- Finance And Permit Officer
- Finance Broker
- Finance Manager
- Finance Manager
- Finance Managers
- Financial Advisor
- Financial and Insurance Clerks
- Financial Auditor
- Financial Brokers
- Financial Brokers and Dealers, and Investment Advisers
- Financial Brokers nec
- Financial Clerk
- Financial Controller
- Financial Dealers
- Financial Dealers nec
- Financial Institution Branch Manager
- Financial Investment Adviser
- Financial Investment Advisers and Managers
- Financial Investment Manager
- Financial Market Dealer
- Fire and Emergency Workers
- Fire Fighter
- Fire Fighter
- Fire Protection Equipment Technician
- First Aid Trainer
- Fish And Chips Worker
- Fish Factory Worker
- Fish N Chip Shop
- Fisheries Officer
- Fisherman
- Fishery Worker
- Fishing Charter
- Fishing Guide
- Fishing Hand
- Fitness Centre Manager
- Fitness Instructor
- Fitness Instructors
- Fitter (General)
- Fitter and Turner
- Fitter-Welder
- Fleet Manager
- Flight Attendant
- Flight Attendant
- Flight Attendant Supervisor
- Flock Caregiver
- Floor Finisher
- Floor Finishers
- Floor Finishers and Painting Trades Workers
- Floor Layer
- Florist
- Florists
- Flower Grower
- flower Packer

- Flying Instructor
- Fonterra
- Food and Drink Factory Workers
- Food and Drink Factory Workers nec
- Food Chemist
- Food Delivery
- Food Factory Worker
- Food Handler
- Food Handler
- Food Preparation Assistant
- Food Preparation Assistants
- Food Process Workers
- Food Safety Officer
- Food Services Manager
- Food Techician
- Food Technician
- Food Technologist
- Food Trades Assistants
- Food Trades Assistants nec
- Food Trades Workers
- Food Trades Workers
- Food Truck Operator
- Food Worker
- Food Worker At McDonalds (Clendon)
- Footballer
- Footwear Factory Worker
- Footwear Production Machine Operator
- Force Mechanic
- Foreign Exchange Officer
- Foreign Worker
- Foreman
- Forest Scientist
- Forestry Consultant
- Forestry Worker
- Forestry, Logging Worker
- Forklift Driver
- Forklift Driver
- Forklift Operator
- Forklift Operator ENZA
- Foster Parent
- Foundry Worker
- Free Lance Photographer / Writer
- Freelance Editor
- Freelance Journalist
- Freelance Work
- Freelance Writer - Works From Home
- Freezing Worker
- Freezing Worker/Processor
- Freight and Furniture Handlers
- Freight Handler (Rail or Road)
- Freight Handlers and Shelf Fillers
- Fruit and Vegetable Factory Worker
- Fruit and Vegetable Packer
- Fruit or Nut Farm Worker
- Fruit or Nut Grower
- Fruit or Nut Picker
- Fruit Packer
- Full Time Mother
- Fulton Hogan - Sewage Contractor
- Fund Manager
- Funeral Director
- Funeral Workers
- Funeral Workers nec
- Furniture Finisher
- Furniture Maker
- Furniture Removalist
- Furniture Remover
- Furniture Restorer
- Futures Trader
- Gallery or Museum Curator
- Gallery or Museum Guide

- Gallery or Museum Technician
- Gallery, Library and Museum Technicians
- Gallery, Museum and Tour Guides
- Game Controller
- Gaming Worker
- Gaming Workers
- Garden and Nursery Labourer
- Garden Labourer
- gardener
- Gardener (General)
- Gardeners
- Gardeners
- Gas or Petroleum Operator
- Gasfitter
- Gastroenterologist
- General Clerical Workers
- General Clerk
- General Clerks
- General Clerks
- General Dental Practice; Clinical Director Maxillo Facial Unit
- General Manager
- General Medical Practitioner
- General Practitioner - Locum
- General Practice (Doctor)
- General Practitioner
- General Practitioners and Resident Medical Officers
- General Worker
- Geologist
- Geologist Engineer
- Geologists, Geophysicists and Hydrogeologists
- Geophysicist
- Geotechnical Engineer
- Geothermal Maintenance Technician
- Gib Fixer
- Glass Blower
- Glass Processing Worker
- Glass Production Machine Operator
- Glazier
- Glaziers
- Glaziers, Plasterers and Tilers
- Goat Farmer
- Golfer
- Government Employee
- Government Service
- Grader Operator
- Grading Supervisor (Food Handler)
- Grain Mill Worker
- Grape Grower
- Graphic and Web Designers, and Illustrators
- Graphic Arts Worker
- Graphic Designer
- Graphic Pre-press Trades Worker
- Graphic Pre-press Trades Workers
- Greenkeeper
- Greenkeeper
- Grocery Store Manager
- Grocery Store Supervisor
- Groundsman
- Grower Liaison
- Guidance Counsellor
- Gunsmith
- Gym Equipment Fixer
- Gym Instructor
- Gymnastics Coach or Instructor
- Haematologist
- Hair Dressing Teacher
- Hair or Beauty Salon Assistant
- Hair or Beauty Salon Manager
- Hair Salon Support
- Hairdresser

- Hairdresser (home-based)
- Hairdressers
- Hairdressers
- Handyman
- Handyperson
- Handypersons
- Harcourts
- Hardware Technician
- Head Nurse
- Health And Safetey
- Health And Safety
- Health And Saftey
- Health And Saftey Co-ordinator
- Health And Welfare Coodinator
- Health and Welfare Services Managers
- Health and Welfare Services Managers nec
- Health and Welfare Support Worker
- Health and Welfare Support Workers
- Health Assistant
- Health Care Assistant
- Health Care Assistant
- Health Diagnostic and Promotion Professionals
- Health Diagnostic and Promotion Professionals nec
- Health Information Manager
- Health Meciation Packing
- Health Practice Manager
- Health Professional
- Health Promotion Officer
- Health Services
- Health Services Manager
- Health Therapy Professionals
- Health Worker
- Health Worker
- Healthcare - Caregiver
- Healthcare Staff
- Healthcare Worker
- Healthline Nurse (Call Centre)
- Helicopter Pilot
- Herald Distributor
- Herbalist
- Herbalist (Western)
- Herd Tester
- HG Group Ltd
- Hide and Skin Processing Machine Operator
- Hide and Skin Processing Worker
- High School PE Teacher
- High School Student
- High School Teacher
- Hire A Hubby
- Historian
- Holiday Park Owner
- Holiday Programme Worker
- Home Care Assistant
- Home Carer For Her Parents
- Home Duty
- Home Econmics Teacher
- Home Executive
- Home Help
- Home Improvement Installer
- Home Kill Butcher
- Home Maintenance Contractor
- Home Teaching
- Homebased Childcare
- Homebased Childcare
- Homecare Assistant
- Homemaker
- Homemaker Painting
- Homestay Owner/Operator
- Homoeopath
- Horse Breeder
- Horse Dentist

- Horse Rider
- Horse Riding Coach or Instructor
- Horse Trainer
- Horticultural Nursery Assistant
- Horticultural Trades Worker
- Horticulturalist
- Horticulture Worker
- Horticulturist
- Hospital Laboratory Technician
- Hospital Nurse
- Hospital Orderly
- Hospital Pharmacist
- Hospital Receptionist
- Hospital Volunteer Worker
- Hospital Worker
- Hospitality Worker
- Hospitality Workers
- Hospitality Workers nec
- Hospitality, Retail and Service Managers
- Hospitality, Retail and Service Managers nec
- Hostel Matron
- Hostel Parent
- Hotel and Motel Managers
- Hotel or Motel Manager
- Hotel or Motel Receptionist
- Hotel Service Manager
- Hotel Service Managers
- Hotel Worker
- Hotel Worker
- Hotelier
- House Husband
- House Painter
- House Wife
- Housekeeper
- Housekeepers
- Housekeeping Manager
- Housewife
- Housewife Occasionally Drives Ambulance
- Housewife, Previously Lab Technician In India
- Housing Inspector
- HR Advisor
- HR Manager
- Human Resource Adviser
- Human Resource and Training Professionals
- Human Resource Manager
- Human Resource Managers
- Human Resource Professional
- Human Resources Clerk
- Human Resources Clerks
- HUMAN RESOURCES MANAGER
- Hunter-Fisher
- Hunter-Trapper
- Hunting Guide
- Hydraulic Hose Fitter
- Hydrogeologist
- Hydrographer
- ICT Account Manager
- ICT and Telecommunications Technicians
- ICT Business Analyst
- ICT Business and Systems Analysts
- ICT Business Development Manager
- ICT Consultant
- ICT Customer Support Officer
- ICT Engineer
- ICT Managers
- ICT Managers
- ICT Managers nec
- ICT Network and Support Professionals
- ICT Professional
- ICT Professional
- ICT Project Manager

- ICT Quality Assurance Engineer
- ICT Sales Assistant
- ICT Sales Assistants
- ICT Sales Professionals
- ICT Sales Representative
- ICT Security Specialist
- ICT Support and Test Engineers
- ICT Support and Test Engineers nec
- ICT Support Engineer
- ICT Support Technicians nec
- ICT Systems Test Engineer
- ICT Technician
- ICT Trainer
- ICT Trainers
- ICU Non Clinical
- Illustrator
- Immigration Consultant
- Immigration Officer
- Implementation Manager
- Import-Export Clerk
- Importer or Exporter
- Importers, Exporters and Wholesalers
- Improvement Officer
- In mental health facility
- In prison
- In-home Care
- Independent Midwife
- Indigenous Health Workers
- Industrial Designer
- Industrial Electrician
- Industrial Engineer
- Industrial Operation Manager
- Industrial Pharmacist
- Industrial Spraypainter
- Industrial Spraypainters
- Industrial, Mechanical and Production Engineers
- Infant
- Information and Organisation Professionals
- Information and Organisation Professionals nec
- Information Officers
- Information Technology
- Inquiry Clerk
- Inquiry Clerks and Receptionists
- Inspectors and Regulatory Officers
- Inspectors and Regulatory Officers nec
- Installer Fireplaces
- Institutionalised
- Instructor
- Insulation and Home Improvement Installers
- Insurance Agent
- Insurance Agents
- Insurance Agents and Sales Representatives
- Insurance Broker
- Insurance Consultant
- Insurance Investigator
- Insurance Investigators, Loss Adjusters and Risk Surveyors
- Insurance Loss Adjuster
- Insurance Risk Surveyor
- Insurance Under Writer
- Insurance, Money Market and Statistical Clerks
- Integration Aide
- Intellectual Disability Support Worker
- Intellectual Property Lawyer
- Intellectually
- Intelligence and Policy Analysts
- Intelligence Officer
- Intensive Care Specialist
- Interior Decorator
- Interior Designer
- Interior Designers

- Intermediate School Student
- Intermediate School Teacher
- Internal Auditor
- Internal Medicine Specialists nec
- International Aid
- International Marketing Director
- International Student
- Interpreter
- Invalid Beneficiary
- Inventory Officer
- Inventory Purchaser
- Investigator
- Investment Advisor
- IRD Coach
- Ironer or Presser
- Irrigation Engineer
- Irrigation Installer
- IT Administrator
- IT Consultant
- IT Consultant
- It Manager
- IT Manager
- IT Professional
- IT Professional Currently Not Working
- IT Project Manager
- IT Sales
- IT Specialist
- IT Support Management
- IT Technician
- IT Worker
- IT Worker
- ITG Group
- Janitor
- Jeweller
- Jeweller
- Jewellers
- Jewellery Designer
- Jewellery Sales Assistant
- JNL
- Job Seeker
- Jockey
- Joiner
- Journalist
- Journalists and Other Writers
- Journalists and Other Writers nec
- Judge
- Judicial and Other Legal Professionals
- Judicial and Other Legal Professionals nec
- Kai
- Kai
- Kai
- Kaiako Kohanga Reo (M
- Kaiako Kura Kaupapa M
- Kaiawhina
- Karate Instructor
- Kayak Builder
- Kennel Hand
- Keyboard Operators
- Keyboard Operators
- Kindergarten Teacher
- Kindergarten Teacher
- Kirwee Model School
- Kitchen Designer
- Kitchen Installer
- Kitchen Worker
- Kitchenhand
- Kitchenhands
- Kiwi Treasures
- Kiwifruit Orchard Worker
- Knitting Machine Operator
- Knitwear Designer

- Kumara Farmer
- Kumara Processor
- Lab Technician - Orthodontist
- Lab Worker
- Laboratory Manager
- Laboratory Receptionist
- Laboratory Technician
- Laboratory Worker
- Laboratory Worker/Chemical Engineer
- Labourer
- Labourer
- Labourer - On Work Visa
- Labourer nfd
- Labourers nec
- Lactation Consultant
- Lagger
- Land Economist
- Land Economists and Valuers
- Land Surveyor
- Landscape
- Landscape Architect
- Landscape Designer
- Landscape Gardener
- Laundress
- Laundromat Worker
- Laundry Assistant
- Laundry Stylist
- Laundry Worker
- Laundry Worker (General)
- Laundry Workers
- Law Clerk
- Lawnmowing Operator
- Lawyer
- Lead Lighter
- Leaflet or Newspaper Deliverer
- Learning And Development Co-ordinator
- Learning Assistant
- Leather Goods Maker
- Lecturer
- Legal Executive
- Legal Professional
- Legal Secretary
- Legal, Social and Welfare Professionals
- Legal, Social and Welfare Professionals
- Legislators
- Legislators nec
- Liaison Officer
- Librarian
- Librarians
- Library Assistant
- Library Assistants
- Library Technician
- Librarian
- Licensed Club Manager
- Licensed Club Managers
- Life Science Technician
- Life Scientists nec
- Life Style Block Owner
- Lifeguard
- Lift Mechanic
- Light Technician
- Lighting Technician
- Line Mechanic
- Line Tech
- Linemarker
- Linesman
- Liquor Merchant
- Livestock Farm Worker
- Livestock Farm Workers nec
- Livestock Farmer
- Livestock Farmers nec

- Livestock Handler
- Livestock Transport
- Livestock Truck Cleaner
- Loader
- Loader Operator
- Local Government Legislator
- Locksmith
- Locomotive Engineer
- Lodge Manager
- Log Buyer
- Log Grader
- Log Painter
- Logging Assistant
- Logging Plant Operator
- Logistician
- Logistics Clerks
- Logistics Management
- Logistics Manager
- Logistics Planner
- Looks After Grandchildren At Home
- Lounge Assistant
- Machine and Stationary Plant Operators
- Machine Operator
- Machine Operator
- Machine Operator
- Machine Operator
- Machine Operators nec
- Machine Shorthand Reporter
- Machinery Operators and Drivers
- Machinist
- Maclean Fish Supply
- Magistrate
- Mail Clerk
- Mail Sorters
- Maintenance Manager
- Maintenance Planner
- Maintenance Worker
- Maitre'D
- Make Up Artist
- Make Up Artist
- Make Up Technician
- Makes Stained Glass Windows
- Management Accountant
- Management and Organisation Analysts
- Management Consultant
- Manager
- Manager
- Manager
- Manager - Open Polytechnic
- Manager At Repco
- Manager Commercial Cleaning Company
- Manager Cooking School
- Manager Of Fisheries
- Manager Of Fitness Unit
- Manager Sales/Marketing
- Managing Director
- Managing Director
- Managing Director
- Managing Director
- Manual Labourer
- Manufacturer
- Manufacturer
- Manufacturing Work
- Maori Health/ Cultural
- Maori Weaving
- Marine Biologist
- Marine Designer
- Marine Engineer
- Marine Surveyor
- Marine Transport Professionals
- Marine Transport Professionals nec
- Maritime Brokerage

- Maritime Brokerage
- Market Garden Worker
- Market Gardener
- Market Research Analyst
- Marketer
- Marketing Manager
- Marketing Specialist
- Marketing Specialist
- Marketing/customer Services
- Martial Arts Instructor
- Massage Therapist
- Massage Therapists
- Master Fisher
- Masters Student
- Mat Maker
- Materials Engineer
- Materials Recycler
- Maternity Leave
- Mathematician
- Mayor
- Meat Boner and Slicer
- Meat Boners and Slicers, and Slaughterers
- Meat Factory Worker
- Meat Inspector
- Meat Packer
- Meat Process Worker
- Meat Worker
- Meat Worker
- Mechanic
- Mechanic / Soldier
- Mechanic Team Leader
- Mechanic's Assistant
- Mechanical Engineer
- Mechanical Engineer
- Mechanical Engineering Draftsperson
- Mechanical Engineering Draftspersons and Technicians
- Mechanical Engineering Technician
- Mechanical Engineering Trades Workers
- Media Producer (excluding Video)
- Media Professionals
- Medic Armed Services
- Medical Diagnostic Radiographer
- Medical Doctor
- Medical Imaging Professionals
- Medical Laboratory Scientist
- Medical Laboratory Scientists
- Medical Laboratory Technician
- Medical Officer
- Medical Practitioner
- Medical Practitioners nec
- Medical Radiation Therapist
- Medical Receptionist
- Medical Receptionist
- Medical Receptionist
- Medical Recruitment
- Medical Registrar
- Medical Student
- Medical Superintendent
- Medical Technicians
- Medical Technicians nec
- Member of Parliament
- Mental Health Worker
- Mental Health Support Worker
- Mental Health Support Worker
- Mental Health Worker
- Mentally Disable
- Merchandiser
- Metal Casting Trades Worker
- Metal Casting, Forging and Finishing Trades Workers
- Metal Engineering Process Worker

- Metal Engineering Process Workers
- Metal Fabricator
- Metal Fitters and Machinists
- Metal Fitters and Machinists nec
- Metal Machinist (First Class)
- Metal Polisher
- Metal Worker
- Metallurgical or Materials Technician
- Metallurgist
- Meteorologist
- Meter Reader
- Microbiologist
- Middle School Teachers (Aus) / Intermediate School Teachers (NZ)
- Midwife
- Midwifery and Nursing Professionals
- Midwives
- Military Rifleman
- Milk Harvester / Calve Rearer
- Milk Tanker Driver
- Milker
- Milking Machine Fitter And Water Pump Technician
- Mine Deputy
- Mine Supervisor
- Miner
- Mining Engineer (excluding Petroleum)
- Mining Engineers
- Mining Support Worker
- Minister of Religion
- Ministerial Lead Advisor
- Ministers of Religion
- Ministry Of Education
- Ministry Of Education
- Ministry Of Justice
- Ministry Of Justice Worker
- Ministry Of Social Development
- Ministry Of Transport
- Miscellaneous Clerical and Administrative Workers
- Miscellaneous Education Professionals
- Miscellaneous Factory Process Workers
- Miscellaneous Hospitality, Retail and Service Managers
- Miscellaneous Labourers
- Miscellaneous Sales Support Workers
- Miscellaneous Specialist Managers
- Miscellaneous Technicians and Trades Workers
- Missionary
- Mixed Crop and Livestock Farm Worker
- Mixed Crop and Livestock Farm Worker
- Mixed Crop and Livestock Farmer
- Mixed Crop and Livestock Farmer
- Mixed Crop Farmer
- Mixed Livedstock Producer
- Mixed Livestock Farm Worker
- Mixed Livestock Farmer
- Mobile Lending Manager
- Mobile Lending Manager (ASB)
- Mobile Plant Operator
- Mobile Plant Operators
- Mobile Plant Operators nec
- Model
- Models and Sales Demonstrators
- Modern Transport Engineer
- Molecular Biologist
- Money Exchange Worker
- Money Market Clerk
- Monk
- Monumental Mason
- Mortgage Broker
- Moss Factory
- Moss Factory Worker

- Moss Worker
- Motel Owner
- Motelier
- Mother
- Mother And Part-time Yoga Teacher
- Mother At Home
- Mothercraft Nurse
- Motion Picture Projectionist
- Motor Mechanic (General)
- Motor Vehicle and Vehicle Parts Salespersons
- Motor Vehicle Licence Examiner
- Motor Vehicle or Caravan Salesperson
- Motor Vehicle Parts and Accessories Fitter (General)
- Motor Vehicle Parts and Accessories Fitters
- Motorcycle Mechanic
- Motorhome And Caravan Maintenance
- Mountain or Glacier Guide
- Moving Weeds
- Multimedia Designer
- Multimedia Specialist
- Multimedia Specialists and Web Developers
- Mum And Farm Worker
- Mushroom Picker
- Music Director
- Music Professionals
- Music Professionals nec
- Music Store Owner
- Music Teacher (Private Tuition)
- Musical Instrument Maker or Repairer
- Musician
- Musician (Instrumental)
- Muster
- Musterer
- NaeTec Limited
- Nail Technician
- Nanny
- Natural and Physical Science Professionals
- Natural and Physical Science Professionals nec
- Natural Health Practitioner
- Natural Remedy Consultant
- Naturopath
- Needs Assessor
- Nelson City Alcohol Licensing Admin
- Neonatal Nurse
- Network Administrator
- Network Analyst
- Network Engineer
- Neurologist
- Neurosurgeon
- Newborn
- Newspaper Clerk
- Newspaper or Periodical Editor
- Night Filler
- No
- No
- No Work Visa
- Not Employed
- Not in the labour force
- Not specified
- Not Stated
- Not Stated
- Not Stated
- Not Stated
- Not Stated Kidney Dialyse Patient At Home
- Not Stated. Bone Marrow Cancer Patient Post Transplant
- Not Working
- Not Working
- Not Working - Disabled
- Not Working At The Moment - Casual Driver

- Note Taker
- Noxious Weeds and Pest Inspector
- Nuclear Medicine Technologist
- Nuclear Physicist
- Numerical Clerks
- Nun
- Nurse
- Nurse
- Nurse Pre/Post Natal
- Nurse Aide
- Nurse Aide/Healthcare Asst
- Nurse Educator
- Nurse Educators and Researchers
- Nurse Manager
- Nurse Managers
- Nurse Practitioner
- Nurse Researcher
- Nurse Specialist
- Nurse Team Leader
- Nurse-Former
- Nurse/Midwife
- Nurseryperson
- Nurserypersons
- Nurses And Midwifery
- Nursing Clinical Director
- Nursing Student
- Nursing Support and Personal Care Workers
- Nursing Support Worker
- Nutrient Specialist
- Nutrition Professionals
- Nutritionist
- NZ Post
- NZ Racing Board
- NZDF
- NZTA
- Obstetrician and Gynaecologist
- Occupational and Environmental Health Professionals
- Occupational Health and Safety Adviser
- Occupational Therapist
- Occupational Therapists
- Odd Job Man
- Office Administrator
- Office Administrator
- Office Administrator
- Office and Practice Managers
- Office Cashier
- Office Manager
- Office Manager
- Office Managers
- Office Managers and Program Administrators
- Office Worker
- Office Worker
- Office Worker
- Office Worker
- Office Worker/Student
- Officer Cadet
- Oil Rigger
- Oncology Worker
- Operating Theatre Technician
- Operations Manager
- Operations Manager
- Operations Research Analyst
- Operator
- Ophthalmologist
- Ophthalmologist
- Optical Assistant
- Optical Mechanic
- Optometrist
- Optometrist Assistant
- Optometrists and Orthoptists
- Orchard Contractor

- Orchard Manager
- Orchard Worker
- Orchardist
- Order Clerk
- Order Clerk
- Order Filler
- Organic Farm Worker
- Organic Farm Worker
- Organisation and Methods Analyst
- Organisational Consultant
- Organisational Psychologist
- Orthopaedic Surgeon
- Orthoptist
- Orthotist or Prosthetist
- Osteopath
- Other
- Other Accommodation and Hospitality Managers
- Other Building and Engineering Technicians
- Other Cleaners
- Other Clerical and Administrative Workers
- Other Clerical and Office Support Workers
- Other Construction and Mining Labourers
- Other Education Managers
- Other Engineering Professionals
- Other Factory Process Workers
- Other Farm, Forestry and Garden Worker
- Other Health Diagnostic and Promotion Professionals
- Other Hospitality Workers
- Other Hospitality, Retail and Service Managers
- Other Information and Organisation Professional
- Other Labourers
- Other Machine Operators
- Other Miscellaneous Clerical and Administrative Workers
- Other Miscellaneous Labourers
- Other Miscellaneous Technicians and Trades Workers
- Other Mobile Plant Operators
- Other Natural and Physical Science Professionals
- Other Personal Service Workers
- Other Sales Support Worker
- Other Sales Support Workers
- Other Spatial Scientist
- Other Specialist Manager
- Other Sports Coach or Instructor
- Other Sports Official
- Other Stationary Plant Operators
- Other Technicians and Trades Workers
- Other Wood Processing Machine Operator
- Otorhinolaryngologist
- Out of School Hours Care Worker
- Out of School Hours Care Worker (Oscar)
- Outdoor Adventure Consultant
- Outdoor Adventure Guide
- Outdoor Adventure Guides nec
- Outdoor Adventure Instructor
- Outdoor Education
- Oyster Farmer
- Oyster Shucker
- Pacific Ambassador
- Pacific Health Advisor
- Packers
- Packers and Product Assemblers
- Packers nec
- Packhouse Worker
- PACT House Patient
- Paediatric Surgeon
- Paediatrician
- Paint Stripper
- Painter
- Painter (Visual Arts)
- Painter/Decorator

- Painting Trades Worker
- Painting Trades Workers
- Pak N Save
- Panelbeater
- Panelbeaters, and Vehicle Body Builders, Trimmers and Painters
- Paper and Pulp Mill Operator
- Paper and Pulp Mill Worker
- Paper and Wood Processing Machine Operators
- Paper Products Machine Operator
- Parasail Skipper
- Park Ranger
- Parking Inspector
- Parole or Probation Officer
- Part Time Cab Driver
- Part time Cab Driver
- Part Time Student /Part Time Retail Assistant
- Part Time Supermarket Worker And High school Student
- Part-time Accountant
- Part-time Construction Worker
- Part-time Construction Worker
- Part-time Driver
- Part-time Farmer
- Parts Manager
- Parts Supervisor
- Passenger Coach Driver
- Pastor
- Pastrycook
- Pastrycook's Assistant
- Patents Examiner
- Pathologist
- Pathology Collector (Aus)/Phlebotomist (NZ)
- Patient Advocate
- Patient Information Officer
- Paving and Surfacing Labourer
- Paving and Surfacing Labourers
- Paving Plant Operator
- Payments Administrator
- Payroll Clerk
- Payroll Clerks
- Peer Support Co Ordinator
- Performing Arts Technicians
- Performing Arts Technicians nec
- Personal Assistant
- Personal Assistants
- Personal Assistants and Secretaries
- Personal Assistants and Secretaries
- Personal Care Assistant
- Personal Care Consultants
- Personal Carers and Assistants
- Personal Service and Travel Workers
- Personal Service Workers nec
- Personal Trainer
- Pest Controller
- Pest Controller And Enviro Schools
- Pest or Weed Controller
- Pet Groomer
- Petfood Worker
- Petrol Garage Worker
- Petroleum Engineer
- PG Wrightson Administrator
- Pharmacist
- Pharmacist
- Pharmaceutical Production Manager
- Pharmacy Sales Assistant
- Pharmacy Sales Assistants
- Pharmacy Technician
- Pharmacy Technician
- PhD Student
- Phlebotomist

- Phlebotomist
- Photographer
- Photographer's Assistant
- Photographers
- Photographic Developer and Printer
- Photographic Developers and Printers
- Phys Ed Officer
- Physi Ed Office
- Physician
- Physicist
- Physio Assistant/Parent
- Physiotherapist
- Physiotherapists
- Piano Teacher
- Picture Framer
- Pig Farmer
- Pilates Teacher
- Pilot
- Pipeline Engineer
- Pizza Delivery
- Plant Nursery Worker
- Plasterer
- Plasterers
- Plastic and Reconstructive Surgeon
- Plastic Cablemaking Machine Operator
- Plastic Compounding and Reclamation Machine Operator
- Plastics and Rubber Factory Workers
- Plastics and Rubber Production Machine Operators
- Plastics and Rubber Production Machine Operators nec
- Plastics Fabricator or Welder
- Plastics Factory Worker
- Plastics Process Worker
- Plastics Production Machine Operator (General)
- Plastics Technician
- Plumber
- Plumber (General)
- Plumber Commercial
- Plumber's Assistant
- Plumbers
- Plumbing and Drainage Inspector
- Plumbing Contractor
- Plumbing Inspector
- Plumbing Retail
- Plunket Nurse
- Podiatrist
- Podiatrists
- Police
- Police Detective
- Police Officer
- Police Officer Trainee
- Police Woman
- Policeman
- Policy Adviser
- Policy Analyst
- Policy and Planning Manager
- Policy and Planning Managers
- Policy Officer
- Politician
- Polytechnic Teacher
- Pool Attendant
- Pool Manager
- Pool Supervisor
- Porse
- Port Worker
- Portfolio Manger
- Possum Trapper
- Possum Trapper
- Post Graduate Student
- Post Mistress

- Post Office Manager
- Postal Delivery Officer
- Postal Delivery Service
- Postal Sorting Officer
- Postman
- Potato Farmer
- Potter or Ceramic Artist
- Pouako Kura Kaupapa M
- Poultry Farm Worker
- Poultry Farmer
- Poultry Process Worker
- Poultry Worker
- Power Generation Plant Operator
- Practice Managers
- Practice Managers nec
- Practice Nurse
- Pre And Afterschool Care
- Pre School Music Group
- Pre-schooler
- Precision Instrument Maker and Repairer
- Precision Metal Trades Workers
- Preschool Aide
- Preschool Co-ordinator
- Preschool Teacher
- Preschooler
- Press Secretary
- Pressure Welder
- Pricing Analyst
- Priest
- Primary Health Organisation Manager
- Primary Products Inspectors
- Primary Products Inspectors nec
- Primary school student
- Primary School Teacher
- Primary School Teacher Aide
- Primary School Teachers
- Primary Teacher
- Principal Adviser
- Principal Policy Planner
- Principal Release
- Print Finishers and Screen Printers
- Print Journalist
- Printer
- Printer
- Printer's Assistant
- Printing Assistants and Table Workers
- Printing Machinist
- Printing Table Worker
- Printing Trades Workers
- Prison and Security Officers
- Prison Guard
- Prison Officer
- Prison Officers
- Prison Program Coordinator
- Prisoner
- Private Investigator
- Private Nanny
- Private Tutors and Teachers
- Private Tutors and Teachers nec
- Process Packer
- Process Worker
- Processing Manager
- Procurement Director
- Procurement Manager
- Produce Worker - Supermarket
- Product Assembler
- Product Assemblers
- Product Controller
- Product Examiner
- Product Grader
- Product Manager

- Product Manager
- Product Quality Controllers
- Product Scanner
- Product Tester
- Production Assistant (Film, Television, Radio or Stage)
- Production Clerk
- Production Designer
- Production Manager
- Production Manager (Forestry)
- Production Manager (Manufacturing)
- Production Manager (Mining)
- Production Manufacturer
- Production or Plant Engineer
- Production Planner
- Production Planner
- Production Worker
- Professional Triathlete
- Professionals
- Professor/Lecturer
- Professor/Lecturer (Retired)
- Program Director (Television or Radio)
- Program or Project Administrator
- Programme Advisor
- Programme And Operations Coordinator
- Programme Manager
- Programmer
- Project Builder
- Project Coordinator
- Project Manager
- Project Manager
- Project Manager In Christchurch
- Project Manager Security
- Proof Reader
- Property Agent
- Property Development Manager
- Property Maintenance
- Property Manager
- Property Valuer
- Prostitute
- Protective Service Workers
- Prothesist
- PSA Organiser
- Psychiatric Nurse
- Psychiatrist
- Psychiatrists
- Psychologist
- Psychologists nec
- Psychotherapist
- Public Health Engineer
- Public Health Nurse
- Public Relations Manager
- Public Relations Professional
- Public Relations Professionals
- Public Servant
- Publications Manager
- Publicist At NZ Film Festival Trust
- Publisher
- Purchasing and Supply Logistics Clerks
- Purchasing Officer
- Quadrant Hotel
- Quality Assurance
- Quality Assurance Manager
- Quantity Surveyor
- Quantity Surveyor
- Quarantine Officer
- Quarry Worker
- R And D Technologist
- Radiation Oncologist
- Radiator Fitter
- Radiator Repair

- Radiator Repairs
- Radio Despatcher
- Radio Journalist
- Radio Presenter
- Radiocommunications Technician
- Radiologist
- Radiology Assistant
- Railway Signal Operator
- Railway Station Manager
- Railway Track Plant Operator
- Railway Track Worker
- Railway Track Workers
- Railways Assistant
- Real Estate Agency Licensee
- Real Estate Agent
- Real Estate Agent
- Real Estate Representative
- Real Estate Sales Agents
- Real Estate Sales Agents
- Realty Estate Agent
- Rec Planner
- Receptionist
- Receptionist (General)
- Receptionists
- Records Manager
- Recreation Clerk
- Recreation Coordinator
- Recruitment
- Recruitment Consultant
- Recruitment Manager
- Recycling and Rubbish Collectors
- Recycling or Rubbish Collector
- Recycling Worker
- Reduced To Clear
- Refinery Worker
- Refrigeration Engineer
- Refrigeration Engineer
- Refrigeration Mechanic
- Refrigeration Specialist
- Refrigeration Technician
- Refuge Worker
- Refugee
- Refugee
- Refuse Collector
- Regional Education Manager
- Registered Nurse
- Registered Nurse
- Registered Nurse (Aged Care)
- Registered Nurse (Child and Family Health)
- Registered Nurse (Community Health)
- Registered Nurse (Critical Care and Emergency)
- Registered Nurse (Developmental Disability)
- Registered Nurse (Disability and Rehabilitation)
- Registered Nurse (Medical Practice)
- Registered Nurse (Medical)
- Registered Nurse (Mental Health)
- Registered Nurse (Paediatric)
- Registered Nurse (Perioperative)
- Registered Nurse (Surgical)
- Registered Nurses
- Registered Nurses nec
- Registrar Wellington High Court
- Rehabilitation Counsellor
- Reinforced Plastic and Composite Production Worker
- Relief Daycare Teacher
- Relief Milker
- Relief Secondary School Teacher
- Relief Teacher
- Religious Assistant
- Renal Medicine Specialist
- Rental Salesperson

- Reporter
- Research Admin
- Research Analyst
- Research and Development Manager
- Research and Development Managers
- Research Assistant
- Research Manager
- Research Technician
- Researcher
- Resident Medical Officer
- Residential Care Officer
- Residual Categories (Operational Codes only)
- Residual Categories (Operational Codes only)
- Resource Developer For Education Programmes
- Response not identifiable
- Response Outside Scope
- Response Outside Scope
- Response Outside Scope/Not Stated
- Response Unidentifiable
- Restaurant Owner
- Restaurant Worker
- Restaurant Worker
- Resthome Nurse
- Resthome Resident
- Resthome Worker
- Resthome Worker - Activity Coordinator
- Retail
- Retail and Wool Buyers
- Retail Assistant
- Retail Buyer
- Retail Investigator
- Retail Loss Prevention Officer
- Retail Manager
- Retail Manager (General)
- Retail Managers
- Retail Pharmacist
- Retail Pharmacist Assistant
- Retail Supervisor
- Retail Supervisors
- Retail Work
- Retail Work
- Retail/Student
- Retailer
- Retailer Shop
- Reticulation Technical Officer
- Retired
- Retired
- Retired (lives In A Resthome)
- Retired Accountant
- Retired Banker
- Retired but working as part-time Teacher
- Retired Church Minister
- Retired Farmer
- Retired Farmer
- Retired Farmer Living On Farm
- Retired GP
- Retired Kindergaten Teacher
- Retired Midwife
- Retired Nurse
- Retired Pharmacist
- Retired/Farming
- Retirement Home Resident
- Retirement Village Manager
- Rheumatologist
- Road and Rail Drivers
- Road Labourer
- Road Marker
- Road Roller Operator
- Road Safety Coordinator
- Road Traffic Controller
- Road Traffic Controller

- Road Worker
- Roof Plumber
- Roof Tiler
- Roof Tilers
- Roofer
- Room Services (Cleaner)
- Rose Breeder
- RSE Supervisor
- Rubber Factory Worker
- Rubber Production Machine Operator
- Rugby Player
- Rural Bank Manager
- Rural Bank Worker
- Safety Inspector
- Safety Inspectors
- Sail Maker
- Sailor
- Sales Administrator
- Sales And Marketing - Other
- Sales and Marketing Manager
- Sales Assistant (General)
- Sales Assistants (General)
- Sales Assistants and Salespersons
- Sales Assistants and Salespersons
- Sales Assistants and Salespersons nec
- Sales Centre Supervisor
- Sales Clerk
- Sales Consultant
- Sales Consutant
- Sales Demonstrator
- Sales Engineer
- Sales Engineer
- Sales Manager
- Sales Manager
- Sales Person
- Sales Person
- Sales Person In Own Home
- Sales Representative
- Sales Representative (Building and Plumbing Supplies)
- Sales Representative (Business Services)
- Sales Representative (Industrial Products)
- Sales Representative (Medical and Pharmaceutical Products)
- Sales Representative (Motor Vehicle Parts and Accessories)
- Sales Representative (Personal and Household Goods)
- Sales Representatives
- Sales Representatives and Agents
- Sales Representatives nec
- Sales Supervisor - Retail
- Sales Support Worker
- Sales Worker
- Sales, Marketing and Public Relations Professionals
- Salesman
- Salesman - Car
- Salesperson
- Salmon Farmer
- Salvation Army
- Sand Blaster
- Saw Maker and Repairer
- Sawmill Engineer
- Sawmill or Timber Yard Worker
- Sawmilling Operator
- Scaffolder
- Schindlers Lifts
- School Aide
- School Care Taker
- School Care Taker
- School Child
- School Counsellor

- School Dental Nurse
- School Girl
- School Laboratory Technician
- School Librarian
- School Photographer
- School Principal
- School Principals
- School Worker
- Schoolboy
- Schoolgirl
- Science Technician
- Science Technicians nec
- Science/tech Professional
- Scientist
- Scrap Metal Dealer
- Scrap Metal Worker
- Screen Printer
- Scrub Cutter
- Sculptor
- Seafarer
- Seafood Packer
- Seafood Process Worker
- Sealords
- Seaman
- Seamstress
- Seasonal Worker
- Secondary school student (over 16)
- Secondary school student (under 16)
- Secondary School Teacher
- Secondary School Teachers
- Secretaries
- Secretary (General)
- Security Assurance Consultant
- Security Consultant
- Security Guard
- Security Guard (Courts)
- Security Officer
- Security Officers and Guards
- Security Officers and Guards nec
- Security Supervisor
- Seed Dresser
- Self - Employed Counsellor
- Self Employed
- Self Employed
- Self Employed
- Self Employed - Construction
- Self Employed - Recruitment
- Self Employed - Retail
- Self Employed Administration For Sports Equipment Company
- Self Employed At Home
- Self Employed Bar Manager
- Self Employed Coach Painter
- Self Employed Coach Painter
- Self Employed Contractor
- Self Employed Contractor
- Self Employed Electrician
- Self Employed Gardener
- Self Employed Logger
- Self Employed Postal Worker
- Self Employed Share Milker
- Self Employed Sharemilker
- Self-employed Cleaning Company
- Self-Employed Contractor
- Self-Employed Painter And Decorator
- Self-Employed Studio Photographer
- Semi Retired
- Semi Retired - Volunteers On Marae
- Semi Retired Farmer
- Senior Central Government Official
- Senior Non-commissioned Defence Force Member

- Senior Non-commissioned Defence Force Members
- Senior Programme Advsor
- Senior Scientist
- Senior Test Analyst
- Septic Tank Cleaner
- Service Administratiion Manager
- Service Consultant
- Service Desk Operator
- Service Manager
- Service Station Attendant
- Service Station Attendants
- Service Support Manager
- Service Technician
- Sewage Contractor
- Sewing Machinist
- Sewing Machinists
- Sex Worker
- Sex Worker or Escort
- Sexual Health Clinician
- Sharemilker
- Shearer
- Shearers
- Shed Hand
- Sheep
- Sheep Farm Worker
- Sheep Farmer
- Sheep Farmer
- Sheep Handler
- Sheetmetal Trades Worker
- Sheetmetal Trades Workers
- Shelf Filler
- Shelf Fillers
- Shepherd
- Ship's Engineer
- Ship's Master
- Ship's Officer
- Ship's Surveyor
- Shipwright
- Shoemaker
- Shop Assistant
- Shop Manager
- Shop Owner
- Shop Owner
- Shop Owner - Manufacture Of Concrete Products
- Short Top And Sides
- Shot Firer
- Shuttle Driver
- Sickness Beneficiary
- Sickness Beneficiary (previously Caregiver In A Resthome)
- Sickness Beneficiary (previously Caregivern In A Resthome)
- Sign Erector
- Signwriter
- Signwriters
- Singer
- Site Manager
- Site Worker
- Ski Instructor
- Skilled Animal and Horticultural Workers
- Skydive Jump Master
- Slaughterer
- Small Engine Mechanic
- Small Offset Printer
- Smith City
- Snowsport Instructor
- Social and Welfare Professionals
- Social Professionals
- Social Professionals nec
- Social Science Researcher
- Social Security Assessor

- Social Worker
- Social Workers
- Software and Applications Programmers
- Software and Applications Programmers nec
- Software Architect
- Software Developer
- Software Developer
- Software Engineer
- Software Tester
- Soldier
- Solicitor
- Solicitors
- Solid Plasterer
- Solutions Architect
- Song Writer
- Sonographer
- Sound Technician
- Sous Chef
- Special Care Worker
- Special Developer
- Special Education Teachers
- Special Education Teachers nec
- Special Needs Occupational Therapist
- Special Needs OT
- Special Needs Teacher
- Specialist Managers
- Specialist Managers nec
- Specialist Physician (General Medicine)
- Specialist Physicians
- Speech Language Therapist
- Sports Administrator
- Sports and Personal Service Workers
- Sports Centre Manager
- Sports Co-ordinator
- Sports Coaches, Instructors and Officials
- Sports Development Officer
- Sports Umpire
- Sportspersons
- Sportspersons nec
- Spray Painter
- St Johns Ambulance Tech
- Stablehand
- Staff Member
- Staff Nurse
- Stage Manager
- Standards NZ
- Stationary Plant Operators
- Stationary Plant Operators nec
- Statistical Clerk
- Statistician
- Stay At Home Dad
- Stay At Home Grandmother
- Stay At Home Mum
- Stay At Home Mum And Florist On Weekend
- Steel Cutter
- Steel Fixer
- Steel Worker
- Sterilisation Technician
- Stevedore
- Stock Agent
- Stock and Station Agent
- Stock Clerk
- Stock Truck Driver
- Stockbroking Dealer
- Stockman
- Stockyard Manager
- Stone Processing Machine Operator
- Stonemason
- Storage/packing
- Store Detective
- Store Manager

- Store Manager - Food
- Storeman
- Storeman
- Storeperson
- Storepersons
- Storepersons
- Storepersons
- Stowage Contractor
- Street Vendor
- Street Vendors and Related Salespersons
- Streetsweeper Operator
- Structural Engineer
- Structural Steel and Welding Trades Workers
- Structural Steel Construction Workers
- Structural Steel Erector
- Student
- student
- Student - Best Pacific Institute Of Education.
- Student - Bible School
- Student - Home Schooled
- Student - Home Schooled
- Student - Language
- Student - Lost To Followup
- Student - Out Of Auckland
- Student - Overseas
- Student - Overseas (Samoa)
- Student - Pharmaceutical
- Student (Biomedical Science)
- Student (Sport
- Student / Part Time Nanny
- Student And Part Time Supermarket Worker
- Student And Youth Worker
- Student Counsellor
- Student Home Schooled
- Student Midwife
- Student Nurse
- Student Nurse
- Student Physiotherapist
- Student Pilot
- Student Teacher
- Student Teacher
- student Wel Tech
- Student- Legal Research
- Student- Legal Researcher
- Student/Caregiver
- Student/Foodcafe Worker
- Student/Foodstacker
- Student/Foodworker
- Student/Grocery Worker
- Student/Part Time Chef
- Student/part-time Nanny
- Student/Restaurant Dishwasher
- Sugar Cane Grower
- Sugar Mill Worker
- Super Market Worker
- Supermarket Worker
- Supervisor
- Supervisor - Operator
- Supervisor Countdown
- Supply and Distribution Manager
- Supply Manager
- Supply, Distribution and Procurement Managers
- Support Person
- Support Services Manager
- Support Worker
- Support Worker (Mental Health)
- Surgeon
- Surgeon (General)
- Surgical Registrar
- Survey Interviewer
- Survey Interviewers

- Surveying or Cartographic Technician
- Surveyor
- Surveyor's Assistant
- Surveyors and Spatial Scientists
- Sustainable Transport Coordinator
- Swimming Pool Attendant
- Swimming Coach or Instructor
- Swimming Pool Construction
- Switchboard Operator
- Switchboard Operators
- Systems Administrator
- Systems Analyst
- Tanker Driver
- Tanker Driver
- Tannery Worker
- Tattoo Artist
- Taxation Accountant
- Taxation Inspector
- Taxi Driver
- Taxidermist
- Teacher
- Teacher
- Teacher - Reliever
- Teacher - Reliver
- Teacher (currently Not Working)
- Teacher Aide
- Teacher Of Adults
- Teacher of English to Speakers of Other Languages
- Teacher Of Music
- Teacher of the Hearing Impaired
- Teacher of the Sight Impaired
- Teacher- Correspondence School
- Teacher/Instructor
- Teachers of English to Speakers of Other Languages
- Teachers' Aide
- Team Leader
- Team Leader Of Club Active
- Team Manager
- Tech Solutions Specialist
- Technical Analyst
- Technical Cable Jointer
- Technical Coodinator
- Technical Director
- Technical Officer
- Technical Sales Representatives
- Technical Sales Representatives nec
- Technical Writer
- Technician
- Technicians and Trades Workers
- Technicians and Trades Workers nec
- Telecommunications Cable Jointer
- Telecommunications Engineer
- Telecommunications Engineering Professionals
- Telecommunications Field Engineer
- Telecommunications Line Mechanic
- Telecommunications Network Engineer
- Telecommunications Network Planner
- Telecommunications Technical Officer or Technologist
- Telecommunications Technical Specialists
- Telecommunications Technician
- Telecommunications Trades Workers
- Telemarketer
- Telemarketers
- Telephone Betting Clerk
- Telephonist - Call Centre
- Television Equipment Operator
- Television Journalist
- Television Presenter
- Teller
- Tennis Coach

- Territory Manager
- Tertiary Education Teacher
- Tertiary student
- Tertiary Student
- Test Engineer
- Textile and Footwear Production Machine Operators
- Textile and Footwear Production Machine Operators nec
- Textile Dyeing and Finishing Machine Operator
- Textile, Clothing and Footwear Mechanic
- Textile, Clothing and Footwear Trades Workers
- Theatre Facilitator
- Theatre Facilitator
- Theatre Nurse
- Therapist
- Therapy Aide
- Therapy Assisstant
- Thermoformer Operator
- Thoracic Medicine Specialist
- Ticket Collector or Usher
- Ticket Salespersons
- Ticket Seller
- Tiler
- Timber and Wood Process Workers
- Toddler
- Toddler
- Toolmaker
- Toolmakers and Engineering Patternmakers
- Tour Guide
- Tourism and Travel Advisers
- Tourist
- Tourist Guide
- Tourist Information Officer
- Tow Truck Driver
- Town Planner
- Tractor Mechanic
- Trade Assistant
- Tradesman
- Traditional Chinese Medicine Practitioner
- Traditional M
- Train and Tram Drivers
- Train Controller
- Train Driver
- Train Examiner
- Trainee Mechanic
- Training and Development Professional
- Training and Development Professionals
- Training Coordinator
- Trainor (ACC)
- Tram Driver
- Transfer Station Operator
- Translator
- Transport and Despatch Clerks
- Transport Company Manager
- Transport Conductor
- Transport Coordinator
- Transport Engineer
- Transport Manager
- Transport Operations Inspector
- Transport Services Manager
- Tranz Rail
- Travel Agency Manager
- Travel Attendant
- Travel Attendants
- Travel Attendants nec
- Travel Consultant
- Travel Coordinator
- Traveller
- Tree Feller
- Trekking Guide
- Tribunal Member

- Trolley Collector
- Truancy Officer
- Truck Driver
- Truck Driver
- Truck Driver
- Truck Driver
- Truck Driver
- Truck Driver (General)
- Truck Driver (Stock)
- Truck Driver's Offsider
- Truck Drivers
- Truck Mechanic
- Trucking Operator
- Trust Officer
- Turf Grower
- Tutor
- Tutor Lecturer
- TV Production
- Typist
- Tyre Fitter
- Tyre Fitter
- Ucol Lecturer
- UN Consultant
- Under 5 Years
- Unemployed
- Unemployed - Visiting NZ
- Unemployed But Part-time Cleaner
- University Academic
- University Lecturer
- University Lecturers and Tutors
- University Professor
- University Student
- University Student, Engineering
- University Tutor
- Unknown
- Unknown - Currently Pregnant
- Unknown - Not At School
- Unknown But Not High Risk
- Upholsterer
- Upholsterers
- Urban and Regional Planner
- Urban and Regional Planners
- Urologist
- Utility And Facilities Support Worker
- Valet Cars
- Valuer
- Vascular Surgeon
- Vegetable Picker
- Vehicle Body Builder
- Vehicle Body Builders and Trimmers
- Vehicle Inspector NZ Police
- Vehicle Painter
- Vehicle Painters
- Vehicle Trimmer
- Vending Machine Attendant
- Vending Machine Attendants
- Vet Student
- Veterinarian
- Veterinarian Technician
- Veterinarians
- Veterinary Epidemiologist
- Veterinary Nurse
- Veterinary Nurses
- Veterinary Sales Consultant
- Video Producer
- Vineyard Manager
- Vineyard Worker
- Vineyard Worker
- Vineyard Worker/Orchard Worker
- Visitor
- Visitor - Working
- Visitor To NZ

- Visual Arts and Crafts Professional
- Visual Arts and Crafts Professionals nec
- Visual Merchandiser
- Visual Merchandisers
- Vocational Education Teachers (Aus) / Polytechnic Teachers (NZ)
- Voluntary Work
- Volunteer
- Volunteer At A Music Pre-School
- Volunteer Driver (occasionally)
- Volunteer Work In 3rd World Countries
- Volunteer Work In 3rd Worls Countries
- Waiter
- Waiters
- Waitress
- Wall and Floor Tiler
- Wall and Floor Tilers
- Ward Clerk
- Warehouse Administrator
- Warehouse Manager
- Warehouse Night Shift Worker.
- Warehouse Online Shopping Clerk
- Warehouse Supervisor
- Warehouse Worker
- Waste Water Management
- Waste Water Operator
- Waste Water or Water Plant Operator
- Watch and Clock Maker and Repairer
- Water Blaster
- Water Inspector
- Water Pump Worker
- Water Tank Cleaner
- Water Treatment Engineer
- Waterside Worker
- Weaving Machine Operator
- Web Administrator
- Web Designer
- Web Developer
- Webdesigner
- Weed Sprayer
- Weigh Bridge Tech
- Weighbridge Operator
- Weight Loss Consultant
- Weightlifter
- Welder
- Welfare Centre Manager
- Welfare Support Worker
- Welfare Worker
- Welfare, Recreation and Community Arts Workers
- Wellington Hospital
- Wharf Worker
- Whitewater Rafting Guide
- Wholesaler
- Window Cleaner
- Wine Maker
- Wine sales Worker
- Wine Stewart
- Winery Cellar Hand
- Winery Worker
- Wintec Student
- WINZ Facilitator
- women's Centre Co-ordnator
- Wood and Wood Products Factory Worker
- Wood Machinist
- Wood Machinists and Other Wood Trades Workers
- Wood Machinists and Other Wood Trades Workers nec
- Wood Processing Machine Operator
- Wood Trades Workers
- Wood Treater
- Wood Turner
- Woofer

- Wool Buyer
- Wool Classer
- Wool Handler
- Wool Technician
- Word Processing Operator
- Work Visa Holder
- Workforce Planner
- Working In Film Industry
- Workplace Relations Adviser
- Works At Abseilers
- Works At Swimming Pool
- Works From Home
- Works From Home - Motor Industry
- Works In A Mashroom Firm
- Works In A Mushroom Firm
- Works In Sewers
- Works Infrastructure
- Works With Natural Medicines
- Writer
- Writer (Library)
- Yard Foreman
- Yardsman
- Yarn Carding and Spinning Machine Operator
- Yoga Teacher
- Youth Worker
- Youth Worker
- Zoo Ranger
- Zookeeper
- Zoologist

- Yes, animal
- Yes, food
- Yes, outdoor environment
- Yes, healthcare/rest home
- Yes, early childhood centre work
- No

(
Interviewer
note

:
You
may
select
more
than
one.)

7b. Do you work directly with either animals, food, the outdoor environment or in healthcare or an early childhood centre where you are in physical contact with patients or young children?

May or may not be obvious from the job title e.g. carer, or factory worker.

8. For child/student participants.

In the 7 days before your child/you became ill, did they attend:

- Preschool
- School
- Other daycare or educational institution
- Don't Know
- Refuse to answer

Please specify - other daycare or educational institution

INFORMATION ON THE ILLNESS (CASES ONLY)

I would now like to ask you some questions about your/your child's recent illness. It may be useful to have a calendar, diary or smartphone with a calendar function in to remind you of the dates involved.

9. During your/your child's illness, which of the following were experienced:

	Yes	No	Don't know
Vomiting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diarrhoea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fever	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Headache	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Muscle/body aches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Can you remember when these symptoms started?

Note:
This is
the
reference
date that will
be
used
for
subsequent
questions.
Probe them using
date
or
day
of the week
or number
of days
prior
to
interview
until you have
their
best
estimate.
If
they cannot
give a date or
it is
more
than x
days
prior to
interview, then
exclude.

Is this an approximate date?

- Yes
- No

10x. How long did these symptoms last?

(Interviewer note : Days in number)

10a.
Were
you/your
child
admitted
to
hospital due
to
this
illness?

- Yes
- No
- Don't know

Admission
to
hospital
means more than 3 hours of
assessment
and
treatment
whether in the emergency
department or
a
ward - this
can include observation
done as part
of
the
assessment but excludes
waiting
time
before
assessment and triage time

Name of hospital

Date admitted

Date discharged

10b. Blank field for other notes

Eg Episurv information if case died

MEDICATION

11a.
Did
you/your child
take
any
antibiotics as a
result
of
this illness?

- Yes
- No
- Don't know

If yes, can you tell us the name of the antibiotic?

- Erythromycin
- E-Mycin
- ERA (filmtabs or injection)
- Ciprofloxacin
- Cipflox
- Ciproxin
- Topistin
- Cifran
- Norfloxacin
- Other

(
Interviewer
note : Ask
person to
get
the
tablet/medicine
bottle if
possible)

Please specify the name of antibiotic

11b.
In
the
4
weeks
before
you
became
ill,
did
you
take
any
form
of
treatment
for
gastric
acid,
stomach
ulcers
or
acid
reflux?

-
- Yes
 - No
 - Don't know

If yes, can you tell us the name of the treatment?

- mylanta
- quick-eze
- alu-tab
- eno
- gaviscon
- losec
- omeprazole
- nexium
- lanzole
- solox
- lansoprazole
- panzop
- pantoprazole
- zantac
- ranitidine
- peptisoothe syrup
- cimetidine
- Other

Please specify the name of treatment _____

11c. In the 4 weeks before you became ill, did you take:

	Yes	No	Don't know
Prednisone or any other steroid not used on your skin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cyclosporine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Methotrexate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemotherapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Radiation treatment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. Have you/your child been told by your doctor that you suffer from a long-term condition or chronic illness in which diarrhoea or vomiting is a major symptom?

- Yes
- No
- Don't know

If yes, specify

- Crohn's diseases
- Irritable bowel syndrome
- Ulcerative colitis
- Stomach or oesophagus (reflux) problems
- Other

Specify illness _____

Travel in the last 7 days before getting sick

13a.
In the
7 days before getting sick, did you
/
[insert
child's name] travel within New Zealand?

- Yes
 No
 Don't know
 Refused to answer

Travel
means
away
from
your
usual
home
for
one or
more
nights.

13b. Please specify where in New Zealand you/ [insert child's name] had travelled to?

Location 1

Location 2

Location 3

13c. Were
you /
[insert
child's
name]
overseas
in the
7 days
before
getting
sick?

- Yes
 No
 Don't know
 Refused to answer

13d. What
date did
you /
[insert
child's
name] arrive
back in
New
Zealand?

Complete the questions below based on order of countries visited. Dates in these questions should be the same or before the date of arrival in New Zealand.

Last country

- Andorra
- United Arab Emirates
- Afghanistan
- Antigua and Barbuda
- Anguilla
- Albania
- Armenia
- Angola
- Antarctica
- Argentina
- American Samoa
- Austria
- Australia
- Aruba
-

Date entered into last country

Date departed from last country

Second last country

- Andorra
- United Arab Emirates
- Afghanistan
- Antigua and Barbuda
- Anguilla
- Albania
- Armenia
- Angola
- Antarctica
- Argentina
- American Samoa
- Austria
- Australia
- Aruba
-

Date entered into second last country

Date departed from second last country

Third last country

- Andorra
- United Arab Emirates
- Afghanistan
- Antigua and Barbuda
- Anguilla
- Albania
- Armenia
- Angola
- Antarctica
- Argentina
- American Samoa
- Austria
- Australia
- Aruba
-

Date entered into third last country

Date departed from third last country

CONTACT WITH ILL PEOPLE AND ACTIVITIES

In the last 7 days before getting sick:

14.
Did
you/your
child
have
contact
with
anyone
with
symptoms
of
gastroenteritis
(diarrhoea,
vomiting,
stomach
pain
etc.)?

- Yes
 No
 Don't know

14a. If yes was this:

	Yes	No	Don't know
Close personal contact e.g. partner, child, other person/flatmate/lodger at home address	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other close personal contact e.g. looking after friend, relative outside home address, or workplace/school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Indirect contact e.g. touching something a sick person may have touched such as a door handle, crockery, food, object etc	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

RECENT FOOD CONSUMPTION

More than one option can be indicated if relevant (.eg. if you ate the food at home on one occasion and outside the home on another occasion).

Meat Consumption

15. In the 7 days before illness, did you/your child eat any poultry meat, red meat, offal or meat products such as deli meats, sausages or pate?

- Yes
- No
- Don't know

Q 15a. What type of meat did you eat?

- Poultry
- Beef
- Lamb/mutton
- Pork
- Other meats e.g Venison, products including more than one meat type

(Interviewer note

: If seafood answered acknowledge, however there is no tick box)

Please specify other meats (a)

(b)

(c)

(
Interviewer
note
: Use up to
three
boxes
as
needed, one meat
type
per line)

Poultry

Q
15b.
You
mentioned
that
you/your
child
ate
some
poultry
meat.
Was
this
prepared,
cooked
or
eaten at
home?

Yes
 No
(
Interviewer
note

:
Product
list
will
show
for
YES)

Did you eat poultry that was not chicken?

Yes
 No
 Don't know

If Yes, Which type of poultry products did you/your child eat at home?

	Yes	No	Don't know
Chicken burgers/patties/meatballs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chicken pieces (Legs, Wings etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chicken kebabs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chicken fillets (including strips)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chicken mince	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Serving from a whole chicken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chicken offal (liver, kidney etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chicken nuggets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chicken sausages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chicken Deli Meat (precooked)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chicken Pate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other Chicken Product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Duck (any product type)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Goose (any product type)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Turkey (any product type)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other non-chicken poultry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Specify other chicken product type

Specify other "non chicken" poultry

Next there are some questions about the poultry products you ate.

How were the chicken burgers/patties/meatballs bought?

- Bought fresh and used before the 'used by date'
- Previously bought fresh, then frozen, then thawed for this meal
- Bought frozen, then thawed for this meal
- Bought cooked, including takeaways
- Bought some other way,

If other, how were the chicken burger/pattie/meatballs bought?

Did any of the meat inside the chicken burger/pattiemeatballs appear pink when you/your child ate it?

- Yes
- No
- Unknown

Were the chicken burger/pattiemeatballs cooked using a....

- BBQ
- Microwave
- Grill
- (Interviewer note

:
Only high risk cooking methods are listed - not meant to be exhaustive)

How were the chicken pieces bought?

- Bought fresh and used before the 'used by date'
- Previously bought fresh, then frozen, then thawed for this meal
- Bought frozen, then thawed for this meal
- Bought cooked, including takeaways
- Bought some other way,

If other, how were the chicken pieces bought?

Did any of the inside of the chicken pieces appear pink when you/your child ate it?

-
- Yes
 - No
 - Unknown

Were the chicken pieces cooked using a....

- BBQ
- Microwave
- Grill

(
Interviewer
note

:
Only
high
risk
cooking
methods are
listed

-
not
meant
to
be
exhaustive)

How were the chicken kebabs bought?

- Bought fresh and used before the 'used by date'
- Previously bought fresh, then frozen, then thawed for this meal
- Bought frozen, then thawed for this meal
- Bought cooked, including takeaways
- Bought some other way,

If other, how were the chicken kebabs bought?

Did
the
chicken
kebabs
appear pink
on
the
inside
when
you/your child
ate
them?

-
- Yes
 - No
 - Unknown

Was the chicken kebabs cooked using a....

- BBQ
- Microwave
- Grill

(
Interviewer
note

:
Only
high
risk
cooking
methods are
listed

-
not
meant
to
be
exhaustive)

How were the chicken fillets bought?

- Bought fresh and used before the 'used by date'
- Previously bought fresh, then frozen, then thawed for this meal
- Bought frozen, then thawed for this meal
- Bought cooked, including takeaways
- Bought some other way,

If other, how were the chicken fillets bought?

Did
the
chicken
fillets
appear pink
on
the
inside
when
you/your
child ate
them?

-
- Yes
 - No
 - Unknown

Was the chicken fillets cooked using a....

- BBQ
 Microwave
 Grill
 (Interviewer note)

:
 Only high risk cooking methods are listed - not meant to be exhaustive)

How was the chicken mince bought?

- Bought fresh and used before the 'used by date'
 Previously bought fresh, then frozen, then thawed for this meal
 Bought frozen, then thawed for this meal
 Bought cooked, including takeaways
 Bought some other way,

If other, how was the chicken mince bought?

Did the chicken mince appear pink when you/your child ate it?

- Yes
 No
 Unknown

Was the chicken mince cooked using a....

- BBQ
 Microwave
 Grill
 (Interviewer note :nly high risk cooking methods are listed - not meant to be exhaustive)

How was the whole chicken bought?

- Bought fresh and used before the 'used by date'
 Previously bought fresh, then frozen, then thawed for this meal
 Bought frozen, then thawed for this meal
 Bought cooked, including takeaways
 Bought some other way,

If other, how was the whole chicken bought?

Did your portion of the whole chicken appear pink on the inside when you/your child ate it?

- Yes
- No
- Unknown

Was the whole chicken cooked using a....

- BBQ
- Microwave
- Grill

(Interviewer note

: Only high risk cooking methods are listed - not meant to be exhaustive)

How was the chicken offal bought?

- Bought fresh and used before the 'used by date'
- Previously bought fresh, then frozen, then thawed for this meal
- Bought frozen, then thawed for this meal
- Bought cooked, including takeaways
- Bought some other way,

If other, how was the chicken offal bought?

Did the chicken offal appear pink on the inside when you/your child ate it?

- Yes
- No
- Unknown

Was the chicken offal cooked using a....

- BBQ
- Microwave
- Grill

(Interviewer note

: Only high risk cooking methods are listed - not meant to be exhaustive)

How was the deli meat bought?

- Bought fresh and used before the 'used by date'
- Previously bought fresh, then frozen, then thawed for this meal
- Bought frozen, then thawed for this meal
- Bought cooked, including takeaways
- Bought some other way,

If other, how was the deli meat bought?

How was the pate bought?

- Bought fresh and used before the 'used by date'
- Previously bought fresh, then frozen, then thawed for this meal
- Bought frozen, then thawed for this meal
- Bought cooked, including takeaways
- Bought some other way,

If other, how was the pate bought?

Did the pate appear pink on the inside when you/your child ate it?

- Yes
- No
- Unknown

How were the nuggets bought?

- Bought fresh and used before the 'used by date'
- Previously bought fresh, then frozen, then thawed for this meal
- Bought frozen, then thawed for this meal
- Bought cooked, including takeaways
- Bought some other way,

If other, how were the nuggets bought?

Did the nuggets appear pink on the inside when you/your child ate them?

- Yes
- No
- Unknown

Were the nuggets cooked using a....

- BBQ
- Microwave
- Grill

(Interviewer note

: Only high risk cooking methods are listed - not meant to be exhaustive)

How were the sausages bought?

- Bought fresh and used before the 'used by date'
- Previously bought fresh, then frozen, then thawed for this meal
- Bought frozen, then thawed for this meal
- Bought cooked, including takeaways
- Bought some other way,

If other, how were the sausages bought?

Did the sausage appear pink on the inside when you/your child ate it?

- Yes
- No
- Unknown

Were the sausages cooked using a....

- BBQ
- Microwave
- Grill

(Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the [q15c_chick_other_specify] bought?

- Bought fresh and used before the 'used by date'
 - Previously bought fresh, then frozen, then thawed for this meal
 - Bought frozen, then thawed for this meal
 - Bought cooked, including takeaways
 - Bought some other way,
-

If other, how was the [q15c_chick_other_specify] bought?

Did the [q15c_chick_other_specify] appear pink on the inside when you/your child ate it?

- Yes
- No
- Unknown

Was the [q15c_chick_other_specify] cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the turkey bought?

- Bought fresh and used before the 'used by date'
 - Previously bought fresh, then frozen, then thawed for this meal
 - Bought frozen, then thawed for this meal
 - Bought cooked, including takeaways
 - Bought some other way,
-

If other, how was the turkey bought?

Did the turkey appear pink on the inside when you ate it?

- Yes
- No
- Unknown

Was the turkey cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the duck bought?

- Bought fresh and used before the 'used by date'
 - Previously bought fresh, then frozen, then thawed for this meal
 - Bought frozen, then thawed for this meal
 - Bought cooked, including takeaways
 - Bought some other way,
-

If other, how was the duck bought?

Did the duck appear pink on the inside when you ate it?

- Yes
- No
- Unknown

Was the duck cooked using a....

- BBQ
- Microwave
- Grill

(Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the goose bought?

- Bought fresh and used before the 'used by date'
- Previously bought fresh, then frozen, then thawed for this meal
- Bought frozen, then thawed for this meal
- Bought cooked, including takeaways
- Bought some other way,

If other, how was the goose bought?

Did the goose appear pink on the inside when you ate it?

- Yes
- No
- Unknown

Was the goose cooked using a....

- BBQ
- Microwave
- Grill

(Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the [q15c_non_chick_specify] bought?

- Bought fresh and used before the 'used by date'
- Previously bought fresh, then frozen, then thawed for this meal
- Bought frozen, then thawed for this meal
- Bought cooked, including takeaways
- Bought some other way,

If other, how was the [q15c_non_chick_specify] bought?

Did the [q15c_non_chick_specify] appear pink on the inside when you/your child ate it?

- Yes
- No
- Unknown

Was the [q15c_non_chick_specify] cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

15d. Did you/your child eat poultry meat outside of the home?

- Yes
- No

If yes, was it from?

- fast food/take away place
- cafe/lunch bar/restaurant
- catered event
- social occasion involving barbeques food)
- another social occasion (eg dinner at a friends house)
- from somewhere else, please specify

Please specify 'other'

Beef

Q 15e. You mentioned that you/your child ate some beef. Was this prepared, cooked or eaten at home?

- Yes
 - No
- (Interviewer note : Product list will show for YES)

If Yes, Which type of beef products did you/your child eat at home?

	Yes	No	Don't know
Beef burger/pattie/meatballs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beef chop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beef steak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beef pieces	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beef mince	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beef roast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beef offal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beef deli meat (precooked)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beef sausage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beef pate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other beef product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Specify other type of beef product

How were the beef burgers/patties/meatballs bought?

- Fresh
- Frozen
- Ready Cooked

Did the

- Yes
- No
- Don't know

beef burger/pattie/meatball meat appear pink on the inside when you/ your child ate it?

The beef burger/pattie/meatballs

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

were cooked using a....

The beef chops were bought

- Fresh
- Frozen
- Ready Cooked

Did
the

- Yes
- No
- Don't know

beef
chops
meat
appear
pink
on
the
inside
when
you/your
child
ate
it?

Was the beef chops cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the beef steak bought?

- Fresh
- Frozen
- Ready Cooked

Did
the

- Yes
- No
- Don't know

beef
steak
meat
appear
pink
on
the
inside
when
you/your
child
ate
it?

Was the beef steak cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How were the beef pieces/strips bought?

- Fresh
- Frozen
- Ready Cooked

Did
the

- Yes
- No
- Don't know

beef
pieces/strips
meat appear
pink
on
the
inside
when
you/your child
ate them?

Were the beef pieces cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the beef mince bought?

- Fresh
- Frozen
- Ready Cooked

Did the

beef
mince
meat
appear pink

- Yes
- No
- Don't know

when
you/your
child
ate
it?

Was the beef mince cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the beef roast bought?

- Fresh
- Frozen
- Ready Cooked

Did
the

- Yes
- No
- Don't know

roast
beef
meat
appear
pink
on
the
inside
when
you/your
child
ate
it?

Was the beef roast cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How were the beef sausages bought?

- Fresh
- Frozen
- Ready Cooked

Did
the

- Yes
- No
- Don't know

beef
sausages
appear
pink
on
the
inside
when
you/your
child ate
them?

Was the beef sausage cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the beef deli meat bought?

- Fresh
- Frozen
- Ready Cooked

How was the beef pate bought?

- Fresh
- Frozen
- Ready Cooked

Did
the

- Yes
 No
 Don't know

beef
pate
appear
pink
on
the
inside
when
you/your
child
ate
it?

How were the [q15f_beef_other_specify] bought?

- Fresh
 Frozen
 Ready Cooked

Did
the

- Yes
 No
 Don't know

beef
[q15f_beef_other_specify] appear
pink
on
the
inside
when you/your child ate it?

Was the [q15e_beef_other_specify] cooked using a....

- BBQ
 Microwave
 Grill
(Note for interviewer - only high risk cooking
methods are listed - not meant to be exhaustive)

15g. Did you/your child eat beef outside of the home?

- Yes
 No
 Don't know

Did you/your child eat beef at:

- Fast food/take away place
 Cafe
 Catering company
 Social occasion involving barbecued food
 Other social occasion (e.g. dinner at friend's
house)
 Other

Please specify other source of beef

Lamb/Mutton

Q
15e.
You mentioned that you/your child ate some lamb/mutton. Was this prepared, cooked or eaten at home?

Yes
 No
(
Interviewer note

:
Product list will show for YES)

If Yes, Which type of lamb/mutton products did you/your child eat at home?

	Yes	No	Dont Know
Lamb/Mutton burger/pattie/meatballs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lamb/Mutton chops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lamb/Mutton steak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lamb/Mutton pieces/strips	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lamb/Mutton mince	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lamb/Mutton roast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lamb/Mutton offal (liver, kidneys etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lamb/Mutton sausage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lamb/Mutton deli meat (precooked)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lamb/Mutton pate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other Lamb/Mutton product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Specify other type of Lamb/Mutton product _____

How were the lamb/mutton burgers/patties/meatballs bought?

Fresh
 Frozen
 Ready Cooked

Did
the

lamb/mutton
burger/pattie/meatball
meat
appear
pink
on the
inside when you/your child
ate
it?

- Yes
 No
 Don't know

Was
the
lamb/mutton
burger/pattie/meatballs

- BBQ
 Microwave
 Grill
(Note for interviewer - only high risk cooking
methods are listed - not meant to be exhaustive)

cooked
using
a....

How were the lamb/mutton chops bought?

- Fresh
 Frozen
 Ready Cooked

Did
the

lamb/mutton chop
meat
appear
pink
on
the
inside
when
you/your child
ate
it?

- Yes
 No
 Don't know

Were the lamb/mutton chops cooked using a....

- BBQ
 Microwave
 Grill
(Note for interviewer - only high risk cooking
methods are listed - not meant to be exhaustive)

How was the lamb/mutton steak bought?

- Fresh
 Frozen
 Ready Cooked

Did
the

lamb/mutton
steak meat appear
pink
on
the
inside
when you/your
child ate it?

- Yes
 No
 Don't know

Was the lamb/mutton steak cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How were the lamb/mutton pieces/strips bought?

- Fresh
- Frozen
- Ready Cooked

Did the

lamb/mutton pieces/strips appear pink on the inside when you/your child ate it?

- Yes
- No
- Don't know

Were the lamb/mutton pieces/strips

cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the lamb/mutton mince bought?

- Fresh
- Frozen
- Ready Cooked

Did the lamb/mutton mince meat appear pink when you/your child ate it?

- Yes
- No
- Don't know

Was the lamb/mutton mince cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the lamb/mutton roast bought?

- Fresh
- Frozen
- Ready Cooked

Did
the
roast
lamb/mutton

- Yes
- No
- Don't know

meat appear
pink
on
the
inside
when
you/your
child
ate it?

Was the lamb/mutton roast cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How were the lamb/mutton sausages bought?

- Fresh
- Frozen
- Ready Cooked

Did
the
lamb/mutton
sausage meat
appear
pink
on
the
inside
when you/your
child ate
it?

- Yes
- No
- Don't know

Were the lamb/mutton sausages cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the lamb/mutton deli meat bought?

- Fresh
- Frozen
- Ready Cooked

How was the lamb/mutton pate bought?

- Fresh
- Frozen
- Ready Cooked

Did the lamb/mutton pate appear pink on the inside when you/your child ate it?

- Yes
- No
- Don't know

How was the lamb/mutton [q15f_lamb_other_specify] bought?

- Fresh
- Frozen
- Ready Cooked

Did the lamb/mutton [q15f_lamb_other_specify] appear pink on the inside when you/your child ate it?

- Yes
- No
- Don't know

Were the lamb/mutton [q15f_lamb_other_specify] cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

15g. Did you/your child eat lamb/mutton outside of the home?

- Yes
- No
- Don't know

Did you/your child eat lamb/mutton at:

- Fast food/take away place
- Cafe/restaurant
- Catering company
- Social occasion involving barbecued food
- Other social occasion (e.g. dinner at friend's house)
- Other

Please specify the other source of lamb/mutton

Pork

Q
15e.
You
mentioned
that
you/your
child
ate
some
pork.
Was
this
prepared,
cooked or
eaten
at
home?

Yes
 No
(
Interviewer
note

:
Product
list
will
show
for
YES)

If Yes, Which type of pork products did you/your child eat at home?

	Yes	No	Don't Know
Pork burger/pattie/meatballs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pork chops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pork steak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pork pieces/strips	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pork mince	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pork roast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pork offal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pork sausage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pork deli meat (precooked)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pork pate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other pork product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Specify other type of Pork product

How were the pork burgers/patties/meatballs bought?

Fresh
 Frozen
 Ready Cooked

Did
the

pork
burger/pattie/meatball
meat
appear
pink
on
the
inside when you/your child
ate
it?

Yes
 No
 Don't know

Were the
pork
burgers/patties/meatballs
cooked
using
a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How were the pork chops bought?

- Fresh
- Frozen
- Ready Cooked

Did
the

pork
chop
meat
appear
pink
on
the
inside
when
you/your
child
ate
it?

- Yes
- No
- Don't know

Were the pork chops cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the pork steak bought?

- Fresh
- Frozen
- Ready Cooked

Did
the

pork
steak
meat
appear
pink
on
the
inside
when
you/your
child
ate
it?

- Yes
- No
- Don't know

Was the pork steak cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How were the pork pieces/strips bought?

- Fresh
- Frozen
- Ready Cooked

Did the pork pieces/strips meat appear pink on the inside when you/your child ate it?

Yes
 No
 Don't know

Were the pork pieces/strips cooked using a....

BBQ
 Microwave
 Grill
(Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the pork mince bought?

Fresh
 Frozen
 Ready Cooked

Did the pork mince meat appear pink when you/your child ate it?

Yes
 No
 Don't know

Was the pork mince cooked using a....

BBQ
 Microwave
 Grill
(Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the pork roast bought?

Fresh
 Frozen
 Ready Cooked

Did the roast pork meat appear pink on the inside when you/your child ate it?

Yes
 No
 Don't know

Was the pork roast cooked using a....

BBQ
 Microwave
 Grill
(Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the pork sausage bought?

- Fresh
- Frozen
- Ready Cooked

Did
the

- Yes
- No
- Don't know

pork
sausage
meat
appear
pink
on
the
inside
when
you/your
child
ate
it?

Was the pork sausage cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

How was the pork deli meat bought?

- Fresh
- Frozen
- Ready Cooked

How was the pork pate bought?

- Fresh
- Frozen
- Ready Cooked

Did
the

- Yes
- No
- Don't know

pork
pate
appear
pink
on
the
inside
when
you/your
child
ate
it?

How was the pork [q15f_pork_other_specify] bought?

- Fresh
- Frozen
- Ready Cooked

Did the pork [q15f_pork_other_specify] appear pink on the inside when you/your child ate it?

- Yes
- No
- Don't know

Was the pork [q15f_pork_other_specify] cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

15g. Did you/your child eat

- Yes
- No
- Don't know

pork outside of the home?

Did you/your child eat pork at:

- Fast food/take away place
- Cafe/restaurant
- Catering company
- Social occasion involving barbecued food
- Other social occasion (e.g. dinner at friend's house)
- Other

Please specify other source of pork

Non-poultry offal

How was the non-poultry offal bought?

- Fresh
- Frozen
- Ready Cooked

Did the offal (non-poultry) meat appear pink on the inside when you/your child ate it?

- Yes
- No
- Don't know

Was the offal (non-poultry) cooked using a....

- BBQ
 Microwave
 Grill
 (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

15g. Did you eat non-poultry offal outside of the home?

- Yes
 No
 Don't know

Did you eat offal (non-poultry) at:

- Fast food/take away place
 Cafe/restaurant
 Catering company
 Social occasion involving barbecued food
 Other social occasion (e.g. dinner at friend's house)
 Other

Please specify other source of offal (non-poultry)

Other non-poultry meat

Did you eat [q15a_meat_specify_a] at home?

- Yes
 No
 Unknown

How was the [q15a_meat_specify_a] bought?

- Fresh
 Frozen
 Ready Cooked

Did the

- Yes
 No
 Don't know

[q15a_meat_specify_a] appear pink on the inside when you/your child ate it?

Was the [q15a_meat_specify_a] cooked using a....

- BBQ
 Microwave
 Grill
 (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

15g. Did you eat [q15a_meat_specify_a] outside of the home?

- Yes
 No
 Don't know

Did you eat [q15a_meat_specify_a] at:

- Fast food/take away place
- Cafe/restaurant
- Catering company
- Social occasion involving barbecued food
- Other social occasion (e.g. dinner at friend's house)
- Other

Please specify other source of [q15a_meat_specify_a]

Did you eat [q15a_meat_specify_b] at home?

- Yes
- No
- Unknown

How was the [q15a_meat_specify_b] bought?

- Fresh
- Frozen
- Ready Cooked

Did
the

[q15a_meat_specify_b]
appear pink
on
the
inside
when
you/your child ate
it?

- Yes
- No
- Don't know

Was the [q15a_meat_specify_b] cooked using a....

- BBQ
 - Microwave
 - Grill
- (Note for interviewer - only high risk cooking methods are listed - not meant to be exhaustive)

15g. Did
you eat
[q15a_meat_specify_b]
outside of
the home?

- Yes
- No
- Don't know

Did you eat [q15a_meat_specify_b] at:

- Fast food/take away place
- Cafe/restaurant
- Catering company
- Social occasion involving barbecued food
- Other social occasion (e.g. dinner at friend's house)
- Other

Please specify other source of [q15a_meat_specify_b]

Did you eat [q15a_meat_specify_c] at home?

- Yes
- No
- Unknown

How was the [q15a_meat_specify_c] bought?

- Fresh
- Frozen
- Ready Cooked

Did
the

- Yes
 No
 Don't know

[q15a_meat_specify_c]
appear pink
on
the
inside
when
you/your child ate
it?

Was the [q15a_meat_specify_c] cooked using a....

- BBQ
 Microwave
 Grill
(Note for interviewer - only high risk cooking
methods are listed - not meant to be exhaustive)

15g. Did
you eat
[q15a_meat_specify_c]
outside of
the home?

- Yes
 No
 Don't know

Did you eat [q15a_meat_specify_c] at:

- Fast food/take away place
 Cafe/restaurant
 Catering company
 Social occasion involving barbecued food
 Other social occasion (e.g. dinner at friend's
house)
 Other

Please specify other source of [q15a_meat_specify_c]

Meat Handling

15h. In the
7 days before
getting sick,
was raw
poultry meat or
other raw meat
(including
raw pet
food) handled by
anyone in the
household?

- Yes, I/my child handled raw poultry meat
 Yes, I/my child handled other raw meat(s)
 Yes, I/my child handled raw pet food
 Yes, someone else in the home prepared the raw
poultry meat
 Yes, someone else in the home prepared the raw meat
 Yes, someone else in the home handled raw pet food
(
Interviewer
note
:
More
than
one
option
is
possible.)

15i
In
the
7
days
before
getting
sick
did
you/your
child
handle
any
items
that may
have
been
in contact
with
raw
poultry
meat
or
other
meat
(including raw
pet
food)
before
it
was
cooked
such
as
knives,
chopping
boards,
plates
or
dish
cloths

- Yes
- No
- Don't know

If yes, please specify

- knives
- chopping boards
- dish cloths
- plate / dish

Other foods

16. In the 7 days before you became ill did you eat uncooked foods such as salad, vegetables, or fruit?

- Yes - as part of a chicken meal/snack
- Yes - as part of a meat meal/snack
- Yes - as part of a meal/snack that did not contain meat

(
Interviewer
note
:
Can
choose
more
than
one
response)

If
prepared as
a part
of
chicken
meal/snack,
was
this
meal prepared
at

- home
- fast food/take away place
- cafe
- catering company
- social occasion involving barbecued food
- other social occasion (e.g. dinner at friend's house)

other
(
Interviewer
note
:
Can
choose
more
than
one
response)

Please specify 'other'

If prepared as
a part of meat
meal/snack, was this
meal prepared at

-
- home
 - fast food/take away place
 - cafe
 - catering company
 - social occasion involving barbecued food
 - other social occasion (e.g. dinner at friend's house)

other
(
Interviewer
note
:
Can
choose
more
than
one
response)

Please specify 'other'

If prepared as a part of meal/snack that did not contain meat

- home
- fast food/take away place
- cafe/restaurant
- catering company
- social occasion involving barbecued food
- other social occasion (e.g. dinner at friend's house)
- other (Interviewer note : Can choose more than one response)

Please specify 'other'

17. In the 7 days before you/your child became ill can you please tell me how many of your meals were prepared at home compared with the number prepared outside the home, including takeaways eaten at home and meals eaten out (eg caf

Number of dinners prepared at home

_____ (Interviewer note : Specify number out of 7)

Number of lunches prepared at home

_____ (Interviewer note : Specify number out of 7)

Number of breakfasts prepared at home

_____ (Interviewer note : Specify number out of 7)

18. In the 7 days before illness, have you/your child eaten/drank raw (unpasteurised) milk or milk products that have not been cooked or heat treated to 70oC before consumption?

- Yes
- No
- Don't know

Type of product

- Milk
- Yoghurt
- Cheese
- Other

Specify 'other' product _____

Milk brand _____

Where the milk brand obtained _____

Yoghurt brand _____

Where the yoghurt brand obtained _____

Cheese brand _____

Where the cheese brand obtained _____

[q18_product_specify] brand _____

Where the [q18_product_specify] brand obtained _____

KITCHEN HYGIENE

19. Does your kitchen have separate chopping boards for.....

	Yes	No	Don't know
19a. Raw poultry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19b. Other raw meats	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19c. All raw meats and poultry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19c. Other foods such as vegetables, fruits, cooked foods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20a. Do you wash the board between use for raw meat and other foods

Yes
 No
 Don't know

20b. How do you wash your boards?

Wipe with damp cloth
 Rinse with clean water
 Wash with detergent and hot water
 Put through dishwasher cycle
 Another way, please describe

Describe how you wash your boards _____

21. Which of the following foods would you usually rinse in the sink before cooking (eg under a running tap)?

	Yes	No	Don't ever cook it
Raw chicken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Raw meat

CONTACT WITH ANIMALS

The following questions are about the period one week (7 days) before the onset of illness.

22. Have you/your child had physical contact with your own or other people's animals.

- Yes
 No
 Don't know

Notes for interviewer: This can include contact with poo or manure e.g. changing litter boxes, holding, patting, feeding, cleaning up afterwards, touching things that the animals have used.

22a. What animals have you had contact with?

- Pet dog (including working dogs), puppies, cats, kittens or birds
 Chickens or other poultry
 Pigs/swine
 Cattle (cows, etc)
 Sheep
 other

(
 Interviewer
 note :
 Select
 all
 applicable,
 pet
 rabbits,
 rats,
 mice,
 lizards,
 fish all count
 as
 other)

Specify other animal(s)

Were Pets at

- At home
 Outside home

Please
 specify
 where
 outside
 home
 contact
 with
 pets
 occurred?

Were the pets sick?

- Yes
 No

Specify the type of illness

 (eg, diarrhoea)

Was this contact with pets occupational?

- Yes
 No

How
 long have
 you
 been
 working
 with or
 in
 physical
 contact with
 Pets?

- Less than 1 month
 2-3 months
 >3 - 12 months
 Over 1 year

Were chickens or other poultry at

- At home
 Outside home

Please specify
where outside home
contact with
chickens or other
poultry occurred?

Were the chickens or other poultry sick?

- Yes
 No

Specify the type of illness

(Interviewer note : eg, diarrhoea)

Was this
contact with
chickens
or other
poultry
occupational?

- Yes
 No

How long have
you been
working with or
in physical
contact with
chickens or
other poultry?

- Less than 1 month
 2-3 months
 >3 - 12 months
 Over 1 year

Were pigs/swine at

- At home
 Outside home

Please specify
where outside
home contact with
pigs/swine occurred?

Were the pigs/swine sick?

- Yes
 No

Specify the type of illness

(Interviewer note : eg, diarrhoea)

Was this contact with pigs/swine occupational?

- Yes
 No

How long have you been
working with or in physical
contact with pigs/swine?

- Less than 1 month
 2-3 months
 >3 - 12 months
 Over 1 year

Were cattle (cows, etc) at

- At home
 Outside home

Please specify
where outside
home contact
with cattle
occurred

Were the cattle sick?

- Yes
 No

Specify the type of illness

(Interviewer note : eg, diarrhoea)

Was this contact with cattle occupational?

- Yes
- No

How long have you been working with or in physical contact with cattle?

- Less than 1 month
- 2-3 months
- >3 - 12 months
- Over 1 year

Were sheep at

- At home
- Outside home

Please specify where outside home contact with sheep occurred?

Were the sheep sick?

- Yes
- No

Specify the type of illness

(Interviewer note : eg, diarrhoea)

Was this contact with sheep occupational?

- Yes
- No

How long have you been working with or in physical contact with sheep?

- Less than 1 month
- 2-3 months
- >3 - 12 months
- Over 1 year

Were [q22a_specify_animal] at

- At home
- Outside home

Please specify where outside home contact with [q22a_specify_animal] occurred

Were the [q22a_specify_animal] sick?

- Yes
- No

Specify the type of illness

(Interviewer note : eg, diarrhoea)

Was
this
contact
with
[q22a_specify_animal]
occupational?

- Yes
 No

How
long
have you
been
working
with
or
in
physical
contact
with
[q22a_specify_animal]?

- Less than 1 month
 2-3 months
 >3 - 12 months
 Over 1 year

DRINKING WATER CONSUMPTION

Questions refer to the period one week (7 days) before the onset of illness.

23a. Which of the following are sources of water
supply to your/ [insert child's name] home/ house?

- Town supply
 Private bore / spring water
 Tanker truck water
 Roof / rain water
 Creek / stream water
 Other main source of drinking
 Don't know

(
Interviewer
note
:
Read
list
and
select
all
that
apply)

Select a water supply code for the town supply to the cases home

- *** AUCKLAND ***
- A1W001AW : A1 Water
- ART003AR : Artesian and Solway Water
- AUC003AA : Auckland Airport
- AUC003AU : Auckland
- AUC003AZ : Anzac
- AUC003BU : Buckland
- AUC003CB : Central Business Dist.Auckland
- AUC003CL : Clarks/Waiiau Beach
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- AUC003GL : Glenbrook Beach
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- GLE021GL : Glennoel Farms
- HAR005HA : Haranui Whanau
- HEL005HP : Helensville/Parakai
- HUA002HU : Huapai Depot
- HUI006HV : Huia Village
- KAU010WW : Kaukapakapa Water Wagon 1
- KEN005KP : Kensington Park
- KIN002KH : Kingseat Community
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- OKI005OK : Okiwi
- ONE004ON : Onewhero
- PAE008PA : Paerata Elite H2O
- PAP001PC : Papakura City
- PAP001RH : Red Hill
- PAP001TA : Takanini
- PIN003PI : Pine Harbour
- POK001PO : Pokeno
- POR005PW : Port Waikato
- PUR009PU : Pure Az Water
- RIV013RI : Riverhead Park
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- SUN002SU : Sunset Heights Hyland Place
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- VIL001VI : Village Fields Subdivision
- WAI194SP : Waimauku Speedy Enterprises
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- WAI202ON : Waiheke Is Gulf Spring Waters
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- WAI214WA : Waiuku
- WAI217BL : Wai Water Blake St
- WAI217OS : Wai Water Ostend Road
- WAI217TH : Wai Water Trig Hill
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- WAR006WA : Warkworth
- WEL004WE : Wellsford/Te Hana
- WIN007WI : Winterjack Trust
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- LON003LO : Longburn Mainland Meats
- LON006BR : Longburn Brandlines
- MAN001MA : Mangaweka Township
- MAR001MA : Marton Township
- MAS001MA : Massey University
- MAT047MA : Matahiwi Marae
- MAX001MA : Maxwell
- MOA005MO : Moawhango
- MOW001MO : Mowhanau Beach
- NOR002NO : Norsewood
- NOR016NH : Norsewood Heritage
- OHA001OH : Ohakune Township
- OHA002OH : Ohakea
- OHA017BV : Bishops Vineyard
- ORO001OR : Oroua No. 1
- PAH001PA : Pahiatua
- PAL001AO : Aokautere
- PAL001FW : Fitzherbert West
- PAL001KG : Kelvin Grove
- PAL001PC : Palmerston North City
- PAT014PA : Patiarero Marae
- PES001PE : Pescini Brothers
- PLE002PL : Pleckville
- PON001PO : Pongaroa
- RAE001RA : Raetihi Township
- RAN012RA : Ranana
- RAT001RA : Ratana Township
- RON002RO : Rongotea
- RON003WH : Rongotea Wheeler
- SAN001SA : Sanson
- SHA001SH : Shannon
- TAI001TA : Taihape Township
- TOK002TO : Tokomaru
- WAI002WA : Waiouru Township
- WAI022WA : Waituna West
- WAN001AI : Wanganui Airport

- WAN001AR : Aramoho
- WAN001EA : Wanganui East
- WAN001WA : Wanganui City
- WAN005CV : Wanganui Crystal Valley
- WAT004WA : Water 2U Wanganui
- WOO001WO : Woodville

(To be chosen by interviewer , search list or start typing code)

23b.
Do you know if the private bore / spring

water is treated or filtered?

- Yes
- No
- Don't know

Select as many treatment methods as apply

- Treated Chlorinated
- Treated Boiled
- Treated with UV
- Filtered
- Treated (unknown method)
- Don't know

23b. Do you know if the tanker truck water is treated or filtered?

- Yes
- No
- Don't know

Select as many treatment methods as apply

- Treated Chlorinated
- Treated Boiled
- Treated with UV
- Filtered
- Treated (unknown method)
- Don't know

23b.
Do you know if the rain water is treated or filtered?

- Yes
- No
- Don't know

Select as many treatment methods as apply

- Treated Chlorinated
- Treated Boiled
- Treated with UV
- Filtered
- Treated (unknown method)
- Don't know

23b. Do you know if the creek / stream water is treated or filtered?

- Yes
- No
- Don't know

Select as many treatment methods as apply

- Treated Chlorinated
- Treated Boiled
- Treated with UV
- Filtered
- Treated (unknown method)
- Don't know

23b. Do you know if the other main source of drinking water is treated or filtered?

- Yes
- No
- Don't know

Select as many treatment methods as apply

- Treated Chlorinated
- Treated Boiled
- Treated with UV
- Filtered
- Treated (unknown method)
- Don't know

23c. Which of the following are sources of water supply to your/ [insert child's name] work/ preschool/school?

- Town supply
- Private bore / spring water
- Tanker truck water
- Roof / rain water
- Creek / stream water
- Other main source of drinking
- Don't know

(Interviewer note : Read list and select all that apply)

23d.
Do
you
know if
the

town
supply
water
is
treated
or
filtered?

Select as many treatment methods as apply

- Yes
- No
- Don't know

- Treated Chlorinated
- Treated Boiled
- Treated with UV
- Filtered
- Treated (unknown method)
- Don't know

23d. Do you know if the
private bore / spring water
is treated or filtered?

Select as many treatment methods as apply

- Yes
- No
- Don't know

- Treated Chlorinated
- Treated Boiled
- Treated with UV
- Filtered
- Treated (unknown method)
- Don't know

23d. Do you
know if
the tanker
truck
water is
treated or
filtered?

Select as many treatment methods as apply

- Yes
- No
- Don't know

- Treated Chlorinated
- Treated Boiled
- Treated with UV
- Filtered
- Treated (unknown method)
- Don't know

23d. Do you know
if the roof /
rain water is
treated or filtered?

Select as many treatment methods as apply

- Yes
- No
- Don't know

- Treated Chlorinated
- Treated Boiled
- Treated with UV
- Filtered
- Treated (unknown method)
- Don't know

23d. Do you know if the creek / stream water is treated or filtered?

- Yes
 No
 Don't know

Select as many treatment methods as apply

- Treated Chlorinated
 Treated Boiled
 Treated with UV
 Filtered
 Treated (unknown method)
 Don't know

23d. Do you know if the other main source of drinking water is treated or filtered?

- Yes
 No
 Don't know

Select as many treatment methods as apply

- Treated Chlorinated
 Treated Boiled
 Treated with UV
 Filtered
 Treated (unknown method)
 Don't know

23e In the 7 days before you were ill did you/your child use bottled water for drinking?

- Yes
 No
 Don't know

If yes, was bottled water the only drinking water source?

- Yes
 No
 Unknown

23f. In the 7 days before getting sick, did you / [insert child's name] drink any water from untreated supplies that you would not normally drink from? We mean outside of your home, work or school. E.g. bach

- Yes
 No
 Don't know

23g. Specify the type(s) of untreated water supply.

- Town supply
- Private bore / spring water
- Tanker truck water
- Roof / rain water
- Creek / stream water
- Don't know

(
Interviewer
note
:
Read
list
-
select
all
that
apply)

Select
a
town
water supply code for the water
supply
the
case
drank from outside of the home.

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- (To be chosen by interviewer , search list or start typing code)

ENVIRONMENTAL ACTIVITIES

Questions refer to the period one week (7 days) before the onset of illness.

24a. Have you/your child participated in any activity at a indoor or outdoor swimming pool or spa?

Yes
 No
 Don't know

Which types of pool/spa have you/your child visited?

Public Swimming Pool/Spa
 Home Swimming Pool/Spa
 Other pool, eg Motel, Hotel or School

What are the names/locations of the pools/spas you visited?

24b. In the 7 days before the onset of illness did you/your child participate in any of the following outdoor activities (indicate all options that apply): Note: swimming includes playing, paddling and splashing around in the water. (Tick as many as apply)

	Yes	If yes, tick if this was after heavy rainfall?	If yes, tick if there were livestock such as cows, sheep or other farm animals in the area?	No	Don't know
Outdoor freshwater swimming including rivers and lakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outdoor sea-water swimming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other water activities e.g. sailing, kayaking, fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Specify type, location and name of the outdoor freshwater swimming sites

Specify type, location and name of outdoor sea-water swimming sites

Specify type, location and the name of the site of other water activities, as well as the type of activity

You mentioned you (your child) participated in other water activities. What were they?

25. In the 7 days before the onset of illness did you/your child touch with your/their hands any of the following:

Under 'specify' the interviewer should establish under what circumstance the contact occurred. For example, contact with sand could have occurred 'while at the seaside'

	Yes	No	Don't know
soil	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
sand (e.g. sand box, beach)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
human poo (e.g. from changing nappies)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
sewage, stagnant water or flood water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
manure or compost, including pet faeces (poo)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Specify how/where contact with soil occurred _____

Specify how/where contact with sand occurred _____

Specify how/where contact with human poo occurred _____

Specify how/where contact with sewage, stagnant water or flood water occurred _____

Specify how/where contact with manure or compost occurred _____

26. During the last 7 days before your illness were flies a problem in your kitchen or food preparation areas?

Yes
 No
 Don't know

Thank you very much for participating in this study

EthNZEuropean _____

EthMaori _____

EthSamoaan _____

EthCookIslandMaori _____

EthNiuean _____

EthChinese _____

EthIndian _____

EthTongan _____

EthOther _____

ethnicity_specify
 '[ethnicity_specify]' '[ethnicity_specify]'

Farm _____

FarmSpecOption1 _____

FarmSpecOption2 _____

FarmSpecOption3 _____

FarmSpec 'Dairy:[episurv_farmspec1], Meat

n:[episurv_farmspec2],Poultry:[episurv_farmspec3],
 Other:[q6a_specify_other]'

Occupation (must be referenced directly as the original sql field to get the label, if the original field is referenced you will get the value)

OccupationID _____

ChildWorker _____

FoodHandler _____

HealthWorker _____

AttenSch _____

FitClinDes _____

OnsetDt '[symptoms_start_date]'

OnsetDtApprox _____

Hosp _____

HospName '[q10a_hospital_name]'

HospDt '[q10a_date_admitted]'

Overseas _____

DtArrived '[q13d_arrival_date]'

LastCountry	<input type="radio"/> '[q13d_country_1]'
LastDtArrived	<input type="radio"/> '[q13d_date_enter_1]'
LastDtDeparted	<input type="radio"/> '[q13d_date_depart_1]'
SecCountry	<input type="radio"/> '[q13d_country_2]'
SecDtArrived	<input type="radio"/> '[q13d_date_enter_2]'
SecDtDeparted	<input type="radio"/> '[q13d_date_depart_2]'
ThirdCountry	<input type="radio"/> '[q13d_3rd_country]'
ThirdDtArrived	<input type="radio"/> '[q13d_date_enter_3]'
ThirdDtDeparted	<input type="radio"/> '[q13d_date_depart_3]'
OthSym	_____
OthSymCont	<input type="radio"/> 'Close:[q14a_close_contact],Other contact:[q14a_other_contact]'
RwMilk	_____
RwMilkProd1Calc	_____
RwMilkProd1	<input type="radio"/> "Milk:[episurv_rwmilkprod1calc]"
RwMilkBrand1	<input type="radio"/> '[q18_brand_milk]'
RwMilkSce1	<input type="radio"/> '[q18_obtained_milk]'
RwMilkProd2Calc	_____
RwMilkProd2	<input type="radio"/> "Yoghurt:[episurv_rwmilkprod2calc]"
RwMilkBrand2	<input type="radio"/> '[q18_brand_yoghurt]'
RwMilkSce2	<input type="radio"/> '[q18_obtained_yoghurt]'
RwMilkProd3calc	_____
RwMilkProd3	<input type="radio"/> "Cheese:[episurv_rwmilkprod3calc]"
RwMilkBrand3	<input type="radio"/> '[q18_brand_cheese]'
RwMilkSce3	<input type="radio"/> '[q18_obtained_cheese]'
SickAncalc	_____
SickAn	_____
SickAnSpec	<input type="radio"/> 'Pets ill:[q22a_pets_illness],Chicken ill:[q22a_chicken_illness],Pig ill:[q22a_pigs_illness],Cattle ill:[q22a_cattle_illness],Sheep ill:[q22a_sheep_illness]'
CurrentWatersource1	_____
CurrentWatersource1	_____
CurrentWatersource1	_____

CurrentWatersource1

CurrentWatersource1

CurrentWatersource1

CurrWSSpec

'Town supply:[episurv_watersource1], Private bore/spring:[episurv_watersource2],Tanker

episurv_watersource5],Other:[episurv_watersource6]'

CurrWCode is in the main form, as a pull down it must be referenced directly to use the label

WorkWatersource1	_____
WorkWatersource2	_____
WorkWatersource3	_____
WorkWatersource4	_____
WorkWatersource5	_____
WorkWatersource6	_____

WorkWSSpec

'Town supply:[episurv_workwatersource1], Private bore/spring:[episurv_workwatersource2],Tanker

workwatersource5],Other:[episurv_workwatersource6]'

Untreated

UntreatedWatersource1

UntreatedWatersource1

UntreatedWatersource1

UntreatedWatersource1

UntreatedWatersource1

UntreatedWatersource1

UntreatedSource

'Town supply:[episurv_untreatedsource1], Private bore/spring:[episurv_untreatedsource2],Tanker

untreatedsource5],Other:[episurv_untreatedsource6]'

- Pool

- PoolSpec1calc

- PoolSpec1
 "Public:[episurv_poolspec1calc]"
- PoolSpec2calc

- PoolSpec2
 "Home:[episurv_poolspec2calc]"
- PoolSpec3calc

- PoolSpec3
 "Other:[episurv_poolspec3calc]"
- RiverSeaSpec1
 '[q24_outdoor_swim_location]'
- RiverSeaSpec2
 '[q24_other_sea_water_loc]'
- OthRecSpec
 '[q24_other_water_loc]'
- ContFaecal

- ContFaecalSpec
 'Poo contact:[q25_specify_poo], Sewage contact:[q25_specify_sewage], Compost contact:[q25_specify_compost]'

APPENDIX B: PARTICIPANT INFORMATION SHEETS

Ministry for Primary Industries
Manatū Ahu Matua



Source Attribution of Campylobacteriosis in New Zealand Study: Lay Summary for Cases

Thank you for participating in the study by being interviewed about your illness and the factors that might have contributed to it. Your consent was obtained at the commencement of the interview; nevertheless, if you would now like to withdraw from the study that is your right. Please contact Dr Rob Lake at ESR (rob.lake@esr.cri.nz, 03 3516019) if you would like to withdraw, or obtain further information about the study.

This information sheet is intended to provide additional information about the study and its objectives.

Minimising the risk to New Zealand (and overseas) consumers from food is a primary public health goal for the Ministry for Primary Industry (MPI). Similarly, the Ministry of Health is committed to minimising communicable diseases transmitted by non-food pathways.

The number of notified cases of the bacterial infection campylobacteriosis reduced by 50% over the period 2006–2008 following the implementation of interventions for poultry. Since then the number of notified cases has not declined significantly. Having reduced the risk associated with poultry, other causes are becoming relatively more important. We have little information on these other causes and pathways for the illness in New Zealand.

Source attribution is the estimation of the relative contributions of different sources to the burden of human illness to inform policies for prevention and control. The different elements of campylobacteriosis source attribution fit within a wider framework:

- Animal reservoirs/amplifying hosts - poultry, cattle, sheep, pets, wildlife
- Pathways – environment/water, food chain, direct contact
- Exposure – drinking water, recreational water, meat, milk, occupation, farm dwelling
- Risk factors – drank roof supplied water, swam in river, ate BBQ chicken, drank unpasteurised milk, poultry abattoir worker, child rearing pet calf.

For several years MPI has been supporting a sentinel site study conducted by Massey University in Manawatū-Whanganui to provide source attribution information for campylobacteriosis. The information from this geographical region needs to be updated and expanded.

The study in which you were a participant is intended to provide information on risk factors for *Campylobacter* infection amongst the Manawatū/Whanganui and Auckland populations. In particular, this will help us understand risk factors for urban people.

This study will use a case-control comparison approach, where information on activity by cases is compared with controls who do not have the illness. The study will also use new scientific advances which enable us to determine the sequence of the DNA from *Campylobacter* bacteria isolated from ill people. These people are often asked by doctors to provide faecal samples to enable diagnosis of the cause of their illness, and the cases in our study will be those people who do provide a sample and it is found to contain *Campylobacter*. Our study will obtain subsamples of these already provided clinical samples if the illness cause is diagnosed as infection with *Campylobacter*. Note that no additional samples are being taken, and only the bacterial DNA will be studied, no human DNA is involved.

We will also be sampling various foods and animals to isolate *Campylobacter* from these potential sources. By comparing the DNA sequence of the bacteria from cases with those from potential sources, we can develop a more detailed understanding of risk factors.

The plan is to publish the results of this study, as a study report, by the end of 2019 and subsequently as scientific papers. The report and a lay person summary will be available on the website: www.sacnzs.org.nz



Letter for control cohort candidates

Dear XXXX,

I am writing to you as you recently participated in the New Zealand Health Survey, and at the time you agreed that the Ministry of Health could re-contact you for further health research. We are conducting a telephone survey on the bacterial infection campylobacteriosis. This is one of the most common bacterial infections and we want to know how New Zealanders are becoming infected.

As part of the study, we are inviting people from Auckland and Manawatū-Whanganui to take part, who have not had the infection. This letter is to inform you that you **may** be contacted to participate in the study.

Participation is completely voluntary, but we do rely on the goodwill of those selected to make the study a success. If you don't want to take part, you don't have to give a reason. If you do decide to take part now, you can still decide to pull out at any time.

The attached Study Information Sheet will help you decide if you'd like to take part. It explains why we are doing the study, and more about what your participation would involve. We are available to answer any questions you may have. We expect the survey will take up to 25 minutes, depending on how many questions you answer. You may also want to talk about the study with other people, such as family, whānau, friends, or healthcare providers. Feel free to do this.

Thank you for considering this request.

Dr Rob Lake
Manager, Risk and Response Group, ESR
P O Box 29-181
Christchurch 8540
Phone: 03 3516019
Email: rob.lake@esr.cri.nz

Information Sheet

Source Attribution for Campylobacteriosis in New Zealand Study (SACNZS)

Locality: Auckland and MidCentral Public Health Services Regions

Lead investigator: Dr Donald Campbell, Ministry for Primary Industries

What is the survey about?

Campylobacteriosis is an illness caused by a bacteria. In New Zealand, every year, about 60,000 people, and particularly children, become ill from this bacteria and we would like to know why. The information you provide will help us to understand the causes of this illness so that measures can be put in place to reduce the number of people getting sick.

How will the results be used?

The results from the survey will be used to compare the habits and experiences of a group of people who have recently become sick with an infection from the bacteria, with the habits and experiences of a group of people who have **not** recently had this illness. We can then look at these results to determine what aspects of peoples habits and experiences put them at more risk of becoming sick.

The information gathered from this survey will be used to inform and improve policy in order to reduce the number of infections from Campylobacter bacteria nationally in New Zealand.

Who is carrying out the survey?

The Ministry for Primary Industries is leading this research, with participation of Massey University, the Institute of Environmental Science and Research (ESR, a Crown Research Institute), and two Public Health Services covering five District Health Boards.

What sort of questions will be asked?

You will be answering questions during a phone call that will cover aspects of your contact with animals or ill people, travel, food and water you have consumed, and activities you may have taken part in for up to 2 weeks ago. The study will not collect any information about you other than the information provided by you during the interview.

How long will the survey take?

The survey will take 15–25 minutes depending on how many of the questions are relevant to you. We will schedule appointments to call at a time that is convenient. Please let your household members know that UMR Research will be calling to schedule an appointment with you.

Risks and benefits of the study

While there will be no risks to you from participating in this study, unfortunately there will be no immediate benefits to you either. People usually find the questions quite interesting. You do not have to answer any questions you do not wish to answer, and you can stop the interview at any time. The results from our study will help to guide policy efforts in New Zealand at a national level, so we can prevent people from becoming ill in the future. So the anticipated benefits to the scientific community and society are high.

Do I have to take part?

No, participation is completely voluntary, but we would like as many people as possible to take part to ensure the results are reliable. We will only ask you to participate once. You can withdraw from the study at any time.

How will my information be protected?

The information you provide to the interviewer is confidential and the study organisers guarantee that storage of your information will be in accordance with the requirements of the Privacy Act 1993. This is also a requirement of the Health and Disabilities Ethics Committee approval. Like the New Zealand Health Survey, the answers you give in this survey will be added to other people's answers to create an anonymised dataset. This means that your name is not included and no one will be able to identify you by looking at your answers. The dataset will be stored securely at the Institute for Environmental Science and Research Ltd.

Your name and contact details will be kept in another secure file. The purpose of recording these details is to know who has been contacted, and you will not be contacted again for such additional studies.

Participants will not be identifiable in any of the reports or presentations of findings from this survey.

Where can I find the study results?

The plan is to publish the results of this study by the end of 2019 and subsequently as scientific papers. The report will be available on the website: www.sacnzs.org.nz

Who has funded this survey?

The study is being funded by the Ministry for Primary Industries (MPI).

Has the study received ethical approval?

Yes, this project has been reviewed and approved by the Health and Disability Ethics Committee

Where can you go for more information about the study, or to raise concerns or complaints?

If you have any questions, concerns or complaints about the study at any stage, you can contact Dr Rob Lake using the contact details above.

APPENDIX C: SACNZS WEBSITE TEXT

Source Attribution of Campylobacteriosis in New Zealand Study

To find out more about this study, use one of the channels below

[Contact us](#)

[email Rob.Lake@esr.cri.nz](mailto:Rob.Lake@esr.cri.nz)

Every year, about 60,000 people become ill from *Campylobacter* in New Zealand. The Ministry for Primary Industries is investing in a year-long study that will help reduce the number of cases of campylobacteriosis in New Zealand.

The [Ministry for Primary Industries \(external link\)](#) is committed to reducing the incidence of campylobacteriosis. The Source Attribution of Campylobacteriosis in New Zealand Study (SACNZS) is being carried out on MPI's behalf by ESR and Massey University in association within certain North Island district health boards and will look at campylobacteriosis cases over the course of a year to determine the different contributors to the disease. This information will then be used to help manage the risks associated with campylobacteriosis and inform policies for prevention and control.

New Zealand is a world leader in this space, having worked in and published in this field for more than a decade. Previous efforts by MPI and the poultry industry has led to almost a 50 per cent reduction in cases of campylobacteriosis from food (poultry) in recent years but we need to know more about other environmental causes (e.g. animals, water) of Campylobacteriosis. This new study will increase our understanding of these other sources and how to best manage the risk to public health.

The results of this study will be published on this webpage as a study report, by the end of 2019, followed by additional scientific papers.

To find out more about this study, read the background information below, or contact:

Dr Rob Lake, ESR
Phone: 03 3516019
Email: rob.lake@esr.cri.nz



Documents for those participating in the SACNZS

This study is recruiting campylobacteriosis cases in both the Auckland and Manawatu/Whanganui regions, as well as controls, to gather information and help determine the sources of the disease. The documents provided below are for the participants in the study.

[Information sheet for Auckland region cases \[PDF, 109 KB\]](#): Info about the study and contact details for further information and support following the interview.

[Information sheet for Manawatu/Whanganui region cases \[PDF, 64 KB\]](#): Info about the study and contact details for further information and support following the interview.

[Information sheet for controls from the New Zealand Health Survey cohort \[PDF, 100 KB\]](#): Info about the study and advisory regarding a possible interview.

Background to the SACNZS

Campylobacteriosis (infection with *Campylobacter* bacteria) is a very common illness in New Zealand. The infection causes diarrhoea and vomiting, and in a small number of cases, a long term illness or even death.

We know the illness is common in New Zealand because it is notifiable. That means that when a sick person visits their GP, they are often asked to provide a stool sample for analysis. If *Campylobacter* is detected by a laboratory in that sample, the laboratory and GP notify the health surveillance system.

The rate of illness in the New Zealand population did drop by approximately 50% from 2006–2008, as a result of controls in the poultry processing industry, which is a common source of infection. However, since 2008 the rate has stayed much the same, and is still the highest of all the notifiable bacterial infections.

Minimising the risk to New Zealand (and overseas) consumers is a primary public health goal for the Ministry for Primary Industries (MPI). The Ministry of Health (MoH) is committed to decreasing communicable diseases to humans transmitted by non-food pathways.

Another common source of infection with *Campylobacter* is ruminants i.e. cattle (both dairy and beef) and sheep. As with poultry, exposure may occur through meat handling and consumption. However, it is more likely that exposure from ruminants occurs via other pathways e.g. direct contact with livestock, or livestock faecal contamination of the environment. We call ruminant animals “reservoirs” of the bacteria, because their faeces contain large numbers.

As the importance of poultry as a source of *Campylobacter* infection has reduced, the proportion of infections caused by exposure to other sources has increased. This study is designed to tell us more about these other sources and pathways.

The planned study is a year-long case-control study. This means we will be interviewing notified campylobacteriosis cases about their food consumption and other activities, and comparing them with information from interviews with controls i.e. people who have not been sick.

The aims of the study are:

- to estimate the relative contributions of different sources to the burden of human campylobacteriosis in the New Zealand population
- to inform policies for prevention and control of campylobacteriosis in New Zealand

The objectives are to address MPI's food related objectives by estimating:

- what proportions of human cases of campylobacteriosis can be attributed to specific exposures?
- what are the risk factors for human campylobacteriosis (urban and rural cases)?
- what proportions of human cases of campylobacteriosis can be associated with individual source reservoirs?

The benefit expected from this study is evidence to support campylobacteriosis risk analysis (risk management and risk communication) and thereby reduce the disease burden in both the New Zealand population and elsewhere.

In addition to examining the information from cases and controls, we will be obtaining isolates of the bacteria that made the cases sick. These isolated bacteria will be analysed to characterise their genetic background (DNA). This can be compared with the same information from bacteria isolated from potential sources, and tell us about linkages between sources and cases.

Source attribution is the estimation of the relative contributions of different sources to cases of human illness. The different elements of campylobacteriosis source attribution fit within an overall framework⁷:

- Animal reservoirs/amplifying hosts - poultry, cattle, sheep, pets, wildlife
- Pathways – environment/water, food chain, direct contact
- Exposures – drinking water, recreational water, meat, milk, occupation, farm dwelling
- Risk factors – drank roof supplied water, swam in river, ate BBQ chicken, and drank unpasteurised milk, being a poultry abattoir worker, child rearing pet calf.

This study has been approved by the Health and Disabilities Ethics Committee.

APPENDIX D: ETHICS APPROVAL

Ethical Considerations and Approvals

The study was conducted in full conformance with principles of the “Declaration of Helsinki” (2013), and within the laws and regulations of New Zealand.

To assure the quality of the technical aspects of the study, the potential risks and proposed benefits of the study procedures, the priority of the participants’ interests over those of science and how these would be safeguarded, the study design and instrument development was assisted by an independent Advisory Group. In addition, the participating public health services were involved to ensure public health investigation and control are in no way prejudiced.

Case participant consent was sought verbally after the study was described to them by the interviewers using standard wording. All cases were sent a campylobacteriosis information sheet post their interview which contained contact details for seeking further information or withdrawal from the study. All potentially eligible controls were sent material describing the study and how and why they might be contacted and the study contact details. Recruitment and giving of verbal consent was similar to cases.

Children have the highest rate of campylobacteriosis notification, thus it was important that their exposures and risk factors were identified. For those <16 years of age, parental or guardian verbal consent for participation was obtained. In discussion with this person, a decision was made as to the most appropriate responder. If this was the child, their verbal assent was also obtained.

To obtain isolates from notified cases, diagnostic laboratories were asked to provide swabs from faecal samples that test positive for *Campylobacter* and so would be notified. Faecal material is classed as human tissue according to the Human Tissue Act 2008. This use of human tissue was justified on the basis that during the course of the study some participating diagnostic laboratories changing their faecal testing to be conducted by polymerase chain reaction (PCR) only, which does not require culture on a plate. The original plan, to request swabs from culture plates, was amended to cope with this change and allow the study to proceed over the entire 12-month period.

The study dataset consists of:

- REDCap records of case interviews (initially identified by an EpiSurv number and then assigned a study number by ESR Principal Investigator)
- Qualtrics records of control Interviews (supplied by the market research company and identified by a study number assigned by ESR Principal Investigator)
- Isolates from notified cases who were interviewed (linked to a case using an NHI number supplied with the sample matched to the EpiSurv number and then identified by study number assigned by ESR Principal Investigator)
- Isolates from source samples (identified by a study number assigned by ESR Principal Investigator)

Once a study number was assigned to a case or control interview or isolate, any personal identifying information including EpiSurv and NHI numbers was deleted. Each participating PHS retained access to the REDCap interviews they had conducted, for public health purposes.

Selected case isolates (approximately 600) and all source isolates, identified by study number, sent to Massey had WGS carried out. Raw sequence data and interpreted data

(e.g. assigned MLST type) and associated study were shared with ESR for incorporation into the study dataset.

Analysis of the anonymised complete study dataset was conducted jointly by staff from Massey and ESR to fulfil the objectives of the study.

Ethics approval for the study was sought from the Northern B Health and Disability Ethics Committee (HDEC). The application was submitted on 13 October 2017. Provisional approval was granted on 22 November 2017 (Ethics Reference: 17/NTB/206) subject to a number of modifications.

These changes were made (apart from the karakia option for sample disposal, which was impractical as the receiving laboratory would not know the ethnicity of the sample provider) and additional information submitted back to the Committee on 5 December 2017. On 20 December 2017 full approval was given, subject to some minor non-standard conditions.

These conditions were addressed and the revised material sent to the Committee on 21 December, with an acknowledgement of receipt received on 22 December.

The approval letters and receipt for non-standard conditions were circulated to the Research and Māori Committee of each of the five District Health Boards (DHB) involved in the study. All of the five DHBs provided locality approval on the HDEC website, as well as letters from their Research Committees approving the study.

Letters of approval were also provided by the Counties Manukau and MidCentral DHB Māori Research Committees.

A progress report was provided to HDEC on 19 December 2018.

Ethics Approval from District Health Boards (DHBs)

Ethics approvals from committees of DHBs were received from:

Auckland DHB

Auckland DHB Research Review Committee (15 January 2018)

Auckland DHB Māori Research Committee (8 December 2017)

Waitemata DHB

Waitemata DHB Research and Knowledge Centre (8 November 2017)

Waitemata DHB Māori Research Committee (8 December 2017)

Counties Manukau DHB

Counties Manukau Health Research Office (21 December 2017)

Counties Manukau Maori Research Review Committee (10 January 2018)

MidCentral DHB (approvals also include Whanganui DHB):

MidCentral DHB Māori Research Review Group (30 November 2017)

MidCentral DHB Clinical Board (7 December 2017)

APPENDIX E: CONTROL QUESTIONNAIRE

Final 1

ESR Survey – April 2018

QUOTA REG1 FILE='a1'PASS=OK
IF .NOT.OK ASK

Thank you for your time we have reached our quotas for your area.

IF CAGE=99 ASK

INTRO Hello, my name is %INAME%. I'm calling from UMR Research on
behalf of the Ministry for Primary Industries.

I would like to speak to %ANAM% [Person 16+ years identified
from Database]- Is that you?

[If the correct person is on the telephone, go to
Introduction.]-[If

it is not the correct person on the telephone, ask, can I
please

 speak to %ANAM%?

Greeting [When the correct person comes to the telephone - repeat
 and go to Introduction]

[If the correct person is not available, depending on quotas
required:

A) - Thank the person on the telephone and end the call, or..

B) - Arrange a time to call back when the named contact person
is in.

SP

Proceed.....[] GO TO

SKIPINT1

Stop interview, Make Appointment (ARRANGE CALL

BACK).....[]

Don't proceed.....[]

GOTOSMS

SKIPINT1 CONTINUE

We have contacted you because you have previously agreed to take part in research surveys. We are conducting a national survey about Campylobacteriosis in the New Zealand population. This is an illness caused by bacteria and symptoms can include abdominal or stomach pains, fever and diarrhoea (runny poos). New Zealand currently has very high rates of illness and we would like to understand why. Your participation in this study is important as it will help us to understand the potential risk factors, so that measures can be put in place to reduce the number of people who get sick. The survey is approved by the Health and Disability Ethics committee. The interview with you is confidential and may take about 20-25 minutes.

ADULTY Would you be happy to take part in this survey?

[DO NOT READ]

Yes.....1 GO TO

SKIPE1

No.....2

Unsure.....3

GOTOSMS

SKIPE1 CONTINUE

AFTSMS CONTINUE

E1 Before we start, I need to know whether you meet the criteria
for

the survey.

In the 30 days, have you suffered from symptoms of vomiting or
diarrhoea, or had any other stomach or intestinal illness? (We
define diarrhoea as 3 or more loose stools or bowel movements
in any

24-hour period.)

[DO NOT READ]

Yes.....1 GO TO
SKIPE5
No.....2
Unsure.....3

E2 Have you been notified with Campylobacteriosis in the last 30
days.

This would have involved your Doctor or another health official
contacting you to say a stool - pooh - sample that you gave had
tested positive for Campylobacter.

[DO NOT READ]

Yes.....1 GO TO
SKIPE5
No.....2
Unsure.....3

E3 Were you part of a food poisoning outbreak in the last 30 days?
[DO NOT READ]

Yes.....1 GO TO
SKIPE5
No.....2
Unsure.....3

[Verbal consent of selected adult participant]:

To comply with the rules for this survey, specified by the Health and
Disability Ethics Committee, we need to ask you for verbal consent to use
your

answers for research purposes only. Firstly, we must tell you that:

- The answers you give in this survey will be added to other people's answers to create an anonymised dataset. This means your name is not included and no one will be able to identify you by looking at your answers. The dataset will be stored securely at the Institute for Environmental Science and Research Ltd.
- You can quit the survey at any time, even after completing the questionnaire by contacting us.
- You may refuse to answer any questions that you would prefer not to answer.
- The findings from the study will be published in scientific reports, but these do not contain identifiable personal information.
- Information will be stored for 10 years before it is destroyed.

If you have any concerns or questions, you can contact: Rob Lake at ESR at Phone (03)3516019 Email rob.lake(at)esr.cri.nz

E4 Do you consent for your answers to be used for research purposes only?
 [DO NOT READ]

Yes - I consent.....1 GO TO
 SKIPD1
 No.....2
 Unsure.....3

SKIPE5 CONTINUE

E5 I am sorry, but you are not eligible for this survey. Thank you for your time anyway - maybe we will be in touch about another survey in future?

[DO NOT READ]

Respondent Does Not Meet the Criteria for the
Survey.....1

IF CAGE<16 ASK

GINTRO Hello, my name is [%INAME%]. I'm calling from UMR Research on
behalf of the Ministry for Primary Industry.I would like to speak to
[%PTGDN%] - is that you?
If talking to the correct person, go to Introduction.]-[If
talking to the wrong person, ask, can I please speak to [%PTGDN%]-[When
the correct person comes to the telephone - repeat Greeting and go
to Introduction
If the correct person is not available, depending on quotas
required:
A) - Thank the person on the telephone and end the call, or,
B) - Arrange a time to call back when the [%PTGDN%] is in.

SP

Proceed.....[] GO TO

SKIPGI1

Stop interview, Make Appointment (ARRANGE CALL
BACK).....[]
Don't proceed.....[]

GOTOSMS

SKIPGI1 CONTINUE

We have contacted you because you have previously agreed to take part in
research surveys, including surveys on behalf of [%CNAM%].We are
conducting a national survey about Campylobacteriosis in the New Zealand population.
This is an illness caused by bacteria and symptoms can include abdominal
or

stomach pains, fever and diarrhoea (runny poos). New Zealand currently has very high rates of illness and we would like to understand why. Your participation in this study is important as it will help us to understand the potential risk factors, so that measures can be put in place to reduce the number of people who get sick. The survey is approved by the Health and Disability Ethics committee. The interview with you is confidential and may take about 20-25 minutes.

GRD [INTERVIEWER NOTE: If child age is too young, code to NO]
[DB Age:]
Because (%CNAM%) is under the age of 16 we need to ask you whether you consider he / she is capable of understanding the nature of the survey and answering the questions for themselves, or whether you consider you would need to do this for them. Do you think that (%CNAM%) would be able to understand the nature of this survey and to answer the questions for themselves?
Yes - child can complete survey.....1
No - adult to do survey on behalf.....2

IF GRD='Yes - child can complete survey' ASK

CU16Y Can I please speak to (%CNAM%)?
[If the correct person is not available, depending on quotas required:]

SP

Proceed - correct person.....[] GO TO
SKIPG1
Arrange a time to call back when the person is in[]
Thank the person on the telephone and end the
call.....[]

GOTOSMS

SKIPG1 CONTINUE

GRD1 [When the correct person comes to the telephone - explain]
Hello, my name is [%INAME%].I'm calling from UMR Research on
behalf
of the Ministry for Primary Industry. We are conducting a
survey to
try and understand why some people catch an illness which can
give
them stomach pains, fever and diarrhoea (runny poos) and others
don't.(%PTGDN%) has given us permission for you to take part in
the
survey. Would you be happy to do the interview? It is
confidential
(private) and will take about 20 minutes.
[DO NOT READ]

Yes.....1 GO TO
SKIPGE1
No /Unsure [INTERVIEWER: ASK TO SPEAK TO
PARENT/GUARDIAN].....2 GO TO

GRD2

IF GRD='No - adult to do survey on behalf' ASK

GRD2 Can I just confirm that you have a good knowledge of what the
child
has eaten, where they have been and what they have done over
the
last seven days?
Would you be happy to do the interview on [%CNAM%] behalf?
[DO NOT READ]

Yes.....1 GO TO
 SKIPGE3
 No /Unsure.....2 GO TO
 GRD7

ASK ALL

SKIPGE3 CONTINUE

GRD3 Before we start, I need to know whether [%CNAM%] meets the
 criteria
 for the survey.
 In the last 30 days, has [%CNAM%] suffered from symptoms of
 vomiting
 or diarrhoea, or had any other stomach or intestinal illness?
 (We
 define diarrhoea as 3 or more loose stools or bowel movements
 in any
 24-hour period.)

Yes.....1 GO TO
 GRD7
 No.....2
 Unsure.....3

GRD4 Has [%CNAM%] been notified with Campylobacteriosis in the last
 30
 days. This would have involved your Doctor or another health
 official contacting you to say that the stool -pooh- sample
 that
 [%CNAM%] gave had tested positive for Campylobacter.

Yes.....1 GO TO
 GRD7
 No.....2
 Unsure.....3

GRD5 Has [%CNAM%] been part of a food poisoning outbreak in the last
 30
 days?

GRD7 Yes.....1 GO TO
 No.....2
 Unsure.....3

[Verbal consent of Parent of Guardian of respondent aged 15 years or younger]

To comply with the rules for this survey, specified by the Health and Disability Ethics Committee, we need to ask you for verbal consent to use your

answers, on behalf of [%CNAM%] for research purposes only. Firstly, we must

tell you that:

The answers you give in this survey will be added to other people's answers to

create an anonymised dataset. This means your name is not included and no one

will be able to identify you by looking at your answers. The dataset will be

stored securely at the Institute for Environmental Science and Research Ltd.

- You can quit the survey at any time, even after completing the questionnaire

by contacting us.

- You may refuse to answer any questions that you would prefer not to answer.

- The findings from the study will be published in scientific reports, but do

not contain identifiable personal information.

- Information will be stored for 10 years before it is destroyed.

If you have any concerns or questions, you can contact:

Rob Lake at ESR on (03)3516019 or Email [rob.lake\(at\)esr.cri.nz](mailto:rob.lake@esr.cri.nz)

GRD6 Do you consent for your answers, on behalf of [%CNAM%] to be used
 for research purposes only?

G7SKIP Yes - I consent.....1 GO TO

 No.....2

IF GRD6='No' ASK

Thank you for your time

ASK ALL

GRD7 CONTINUE

Thank you for your time, but %CNAM% is not eligible for the survey.

ASK ALL

G7SKIP CONTINUE

SKIPD1 CONTINUE

DEM16U CONTINUE

The following questions are about and are for statistical purposes only.

[ASK PARENT/ GUARDIAN ANSWERING ON BEHALF OF A CHILD:

[Interviewer to stress to respondent that the interview is only about that child and not any other child who live in the household.]

D1 What is gender?

- Male.....1
 - Female.....2
 - Other.....3
-

IF AGE2=0 ASK

D2MTH Would you mind confirming age please?

[RECORD CHILDS AGE IN MONTHS]-[Our database has-.....]

D2QTA SET TO:

GOTO SKIPD3
IF AGE2 NOT 0 ASK

D2A Would you mind confirming age please?
[Our database has-.....]
Yes correct age.....1
No incorrect, specify correct age.....2
Refused.....3

IF D2A='No incorrect, specify correct age' ASK

D2B Would you mind confirming age please?
[RECORD CORRECT AGE IN YEARS]-[SAMPLE DB:.....]

0 TO 99 _____ (42-43)

IF D2A='Refused' ASK

D2C Would you mind telling me which one of the following age groups
..... is in?
[READ LIST]
6-11 months.....1
1-4 years.....2
5-15 years.....3
16-24 years.....4
25-44 years.....5

45-64 years.....6
65+ years.....7
Refused.....8

IF D2C='Refused' ASK

Thank you for your time we have reached our quotas for your area.

ASK ALL

SKIPD3 CONTINUE

QUOTA D2QTA FILE='a2'PASS=OK
IF .NOT.OK ASK

Thank you for your time we have reached our quotas for your area.

ASK ALL

D3 Which of the following ethnic groups belong to? You can
choose
more than one.
[READ LIST]

MP
New Zealand European.....1
Maori.....2
Samoan.....3
Cook Island Maori.....4
Tongan.....5
Niuean.....6
Chinese.....7
Indian.....8
Unwilling to answer.....9
MP
Other (specify) 0

Specified Other

Q1A live or work on a farm, lifestyle block or other premises that has farm (not pet) animals?

Yes.....1 GO TO Q1B
 No.....2 GO TO Q3
 Don't Know.....3 GO TO Q3

Q1B:
 [READ LIST]

Live on a farm/lifestyle block.....1
 Work on a farm/lifestyle block/premises.....2
 Live on a farm/lifestyle block AND I work on a farm/lifestyle block.....3
 Work at another premise that has animals.....4

IF Q1B='Work at another premise that has animals.' ASK

Q1BOTH Please describe the other premise that has animals
 (8-27)

ASK ALL

Q2 Does the farm, lifestyle block or premises that live(s) or work(s) on have..

MP
 Dairy animals.....1
 Meat production animals.....2
 Poultry (e.g. Chickens, ducks).....3

Other animals.....4

IF Q2='<Dairy animals>' ASK

Q2A What kind of Dairy animals?
 [READ LIST]

MP

Cow.....1
Goat.....2
Sheep.....3
[DO NOT READ] None of the above.....4

IF Q2='<Meat production animals>' ASK

Q2B What kind of Meat production animals:
 [READ LIST]

MP

Beef.....1
Sheep.....2
Pig.....3
Cattle.....4
Goat.....5
Deer.....6
[DO NOT READ] None of the above.....7

IF Q2='<Poultry (e.g. Chickens, ducks)>' ASK

Q2C What kind of poultry?
 [READ LIST]

MP

Domestic poultry (home use only).....1
Commercial poultry.....2
Poultry processing.....3
Other poultry.....4

IF Q2='<Other animals>' ASK

Q2D What other farm animals?
 [OPEN ENDED]

(32-51)

ASK ALL

Q3 When come(s) inside from working/playing outside, do

 wash hands?

Always.....1
Most of the time.....2
Only if visibly dirty.....3
Occasionally.....4
Never.....5

IF CAGE=99 ASK

Q4 What is your job or occupation. If you have more than one job,
 please tell me all of them.
 [The study is particularly interested in occupations that
involve
 animal, food, environmental or healthcare contact. Occupations
of
 this sort should be probed for a more specific description. For
 example, .poultry processor., rather than just .food processor.
or
 .factory worker.. Note that the participant may have more than
1
 job.]

	MP
Job title 1:^o.....	1
Job title 2:^o.....	2
Job title 3:^o.....	3
no job/unsure/refused.....	4
Other (specify)	5
	(54-73)
Specified Other	

Q5	Do you work directly: [READ LIST - MULTI-RESPONSE]	MP
	With animals.....	1
	With food.....	2
	With the outdoor environment.....	3
	In healthcare or a rest home, where you are in physical contact with patients.....	4
	In an early childhood centre.....	5
	None of those.....	6

IF AGE2<19 ASK

Q6	In the last seven days, did attend? [DB AGE:]	
	Preschool.....	1
	School.....	2
	Other day care or educational institution.....	3
	Don't know.....	4
	None of these.....	5
	Refuse to answer.....	6

ASK ALL

Q7A	In the last four weeks, take any form of treatment for gastric acid, stomach ulcers or acid reflux?	
	Yes.....	1

No.....2
Unsure.....3

IF Q7A='Yes' ASK

Q7BZ Can you tell me the name of the treatment?
[DO NOT READ PRECODE LIST]

[INTERVIEWER - IF OTHER, PROBE TO CHECK THE TABLET/MEDICINE
BOTTLE]

Mylanta.....1
Quick-eze.....2
Alu-tab.....3
Eno.....4
Gaviscon.....5
Losec.....6
Omeprazole.....7
Nexium.....8
Lanzole.....9
Solox.....0
Lansoprazole.....1
Panzop.....2
Pantoprazole.....3
Zantac.....4
Ranitidine.....5
Peptisoothe Syrup.....6
Cimetidine.....7
Unsure.....8
Other (specify) 9
(42-61)
Specified Other

ASK ALL

Q8 In the last four weeks, taken any of the following medication?

[IF RESPONDENT MENTIONS A STEROID OTHER THAN PREDNISONE, SELECT YES FOR PREDNISONE]

- 1- Prednisone or any other steroid not used on skin
- 2- Cyclosporine
- 3- Methotrexate
- 4- Chemotherapy
- 5- Radiation treatment

	-1- 3/28	-2- (29)	-3- (30)	-4- (31)	-5- (32)
SP					
Yes.....	1	1	1	1	1
No.....	2	2	2	2	2
Don't know.....	3	3	3	3	3

Q9 been told by your doctor that suffer from a long-term or chronic illness in which diarrhoea or vomiting is a major symptom?

[For example, conditions such as Crohn.s diseases, irritable bowel syndrome, ulcerative colitis, stomach or oesophagus (reflux) problems?]

[DO NOT READ]

- Yes.....1
- No.....2
- Don't know.....3

IF Q9='Yes' ASK

Q9B suffer from
[READ LIST - MULTI]

- MP
- Crohn's diseases.....1
 - Irritable bowel syndrome.....2

Ulcerative colitis.....	3
Stomach or oesophagus (reflux) problems.....	4
Another chronic illness^o.....	5
Other (specify)	6
	(35-54)
Specified Other	

ASK ALL

We are now going to ask you some questions about any travelling
 might
 have done, both in NZ and overseas.

Q10A	In last seven days, travel and stay away from usual home	
	for one or more night within New Zealand?	
	Yes.....	1
	No.....	2
	Don't know.....	3
	Refused.....	4

IF Q10A='Yes' ASK

Q10B	Where in New Zealand did travel to?	
		MP
	Location 1:^o.....	1
	Location 2:^o.....	2
	Location 3:^o.....	3
	Other (specify)	4
		(57-76)
	Specified Other	

ASK ALL

Q11A been overseas [OUTSIDE OF NEW ZEALAND] in the last seven
 days?

[DO NOT READ]

Yes.....1
No.....2
Don't know.....3
Refused.....4

IF Q11A='Yes' ASK

Q11B What date arrive back in New Zealand?
 [RECORD DATE IN FOLLOWING FORMAT dd/mm/yyyy]

(8-27)

Q12 How many countries outside of New Zealand visit in the
last
 seven days?

1.....1
2.....2
3 or more.....3

IF Q12='1' OR Q12='2' OR Q12='3 or more' ASK

Q12A Please name the last country visited outside of New
Zealand?

[PRECODE LIST - DO NOT READ]

Australia.....1
England.....2
China.....3
United States.....4
Fiji.....5
Samoa.....6
Tonga.....7
New Caledonia.....8
Thailand.....9
Singapore.....0
Vietnam.....1
Philipines.....2

Malaysia.....3
 Other (specify) 4
 (31-50)
 Specified Other

Q12AI Please state the date that entered that country and the
 date
 that departed from that country.
 [PLEASE ENTER IN THIS FORMAT -Date entered country (dd/mm/yyyy)
 FOLLOWED BY Date departed country (dd/mm/yyyy)
 (51-70)

IF Q12='2' OR Q12='3 or more' ASK

Q12B Please name the second to last country visited outside of
 New Zealand?
 [PRECODE LIST - DO NOT READ]

Australia.....1
 England.....2
 China.....3
 United States.....4
 Fiji.....5
 Samoa.....6
 Tonga.....7
 New Caledonia.....8
 Thailand.....9
 Singapore.....0
 Vietnam.....1
 Philipines.....2
 Malaysia.....3
 Other (specify) 4
 (8-27)
 Specified Other

Q12BI Please state the date that entered that country and the
 date

that departed from that country.

[PLEASE ENTER IN THIS FORMAT -Date entered country (dd/mm/yyyy)
FOLLOWED BY Date departed country (dd/mm/yyyy)

(28-47)

IF Q12='3 or more' ASK

Q12C Please name the third last country visited outside of New Zealand?

[PRECODE LIST - DO NOT READ]

Australia.....1
England.....2
China.....3
United States.....4
Fiji.....5
Samoa.....6
Tonga.....7
New Caledonia.....8
Thailand.....9
Singapore.....0
Vietnam.....1
Philippines.....2
Malaysia.....3
Other (specify) 4

(50-69)

Specified Other

Q12CI Please state the date that entered that country and the date

that departed from that country.

[PLEASE ENTER IN THIS FORMAT -Date entered country (dd/mm/yyyy)
FOLLOWED BY Date departed country (dd/mm/yyyy)

(8-27)

ASK ALL

In this section, we will ask you some questions about any time may have

spent with people who were ill.

Q13A In the last 7 days, have contact with anyone with symptoms of gastroenteritis. By this, we mean they had diarrhoea (runny poos) or stomach pain or were vomiting (throwing up)?

Yes.....1
No.....2
Don't know.....3

IF Q13A='Yes' ASK

Q13B Was this

-1- Close personal contact e.g. with your partner, child or another person/flatmate/lodger at your home address.
-2- Other close personal contact e.g. looking after a friend or relative outside of your home address. Or, at your workplace or school.
-3- Indirect contact e.g. touching something that the sick person may have touched such as a door handle, crockery, food, object etc

	-1- (29)	-2- (30)	-3- (31)
SP			
Yes.....	1	1	1
No.....	2	2	2
Don't Know.....	3	3	3

ASK ALL

Now we are going to ask you some questions about the foods eat(s).

Q14A In the last 7 days, eat any poultry meat, red meat, offal or meat products such as deli meats, sausages or pate (PAT-A?)

Yes.....1
 No.....2
 Don't Know.....3

IF Q14A='Yes' ASK

Q14B eat any?
 [READ LIST]

- 1- Poultry e.g. chicken or turkey
- 2- Beef
- 3- Lamb/Mutton
- 4- Pork
- 5- Other meats besides sea food e.g. venison or products containing more than one meat type

	-1- (33)	-2- (34)	-3- (35)	-4- (36)	-5- (37)
SP					
Yes.....	1	1	1	1	1
No.....	2	2	2	2	2

IF Q14B(5)='Yes' ASK

Q14C What other meats eat?
 [RECORD UP TO THREE OTHER MEATS]

MP

[+F1txt+]^o.....1
 [+F2txt+]^o.....2
 [+F3txt+]^o.....3
 Other (specify) 4
 (40-59)

Specified Other

IF Q14B(1)='Yes' ASK

We are now going to talk about what poultry have eaten.

Q15 Was the poultry meat ate in the last seven days,
prepared,
cooked or eaten at home?
[DO NOT READ]
Yes.....1
No.....2

IF Q15='Yes' ASK

Q16A eat any poultry..

- 1- Burgers, patties, meat-balls
 - 2- Pieces e.g. legs/wings
 - 3- Kebabs
 - 4- Fillet/strips
 - 5- Mince
 - 6- Serving from a whole chicken/turkey
 - 7- Offal (liver, kidney etc)
 - 8- Nuggets
 - 9- Sausages
 - 10- Deli meat (pre cooked)
 - 11- Pate [PAT-A]
 - 12- Other poultry products
- | | -8- | -9- | -10- | -11- | -12- |
|--|------|------|------|------|------|
| | (70) | (71) | (72) | (73) | (74) |

SP

Yes.....	1	1	1	1	1
No.....	2	2	2	2	2
Don't know.....	3	3	3	3	3

*****NEW QUESTION*****

Q16B Was the poultry [....]?
[READ LIST]

-1-	Burgers, patties, meat-balls					
-2-	Pieces e.g. legs/wings					
-3-	Kebabs					
-4-	Fillet/strips					
-5-	Mince					
-6-	Serving from a whole chicken/turkey					
-7-	Offal (liver, kidney etc)					
-8-	Nuggets					
-9-	Sausages					
-10-	Deli meat (pre cooked)					
-11-	Pate [PAT-A]					
-12-	Other poultry products					
		-8-	-9-	-10-	-11-	-12-
		7/9	7/10	7/11	7/12	7/13

MP

Bought fresh and used before the					
Used by date.....	1	1	1	1	1
Previously bought fresh, the frozen, then thawed for this meal.....	2	2	2	2	2
Bought frozen then thawed for this meal.....	3	3	3	3	3
Bought cooked, including take away.....	4	4	4	4	4
Bought some other way.....	5	5	5	5	5
Other (specify)...	6	6	6	6	6

Q16C Did any of the poultry [....] appear pink on the inside when

ate it?

- 1- Burgers, patties, meat-balls
- 2- Pieces e.g. legs/wings
- 3- Kebabs
- 4- Fillet/strips
- 5- Mince
- 6- Serving from a whole chicken/turkey

-7-	Offal (liver, kidney etc)					
-8-	Nuggets					
-9-	Sausages					
-10-	Deli meat (pre cooked)					
-11-	Pate [PAT-A]					
-12-	Other poultry products					
		-8-	-9-	-10-	-11-	-12-
		(75)	(76)	(77)	(78)	(79)
SP						
Yes.....	1	1	1	1	1	1
No.....	2	2	2	2	2	2
Don't know.....	3	3	3	3	3	3

Q16D Was the poultry [....] cooked using a...
[READ LIST]

-1-	Burgers, patties, meat-balls					
-2-	Pieces e.g. legs/wings					
-3-	Kebabs					
-4-	Fillet/strips					
-5-	Mince					
-6-	Serving from a whole chicken/turkey					
-7-	Offal (liver, kidney etc)					
-8-	Nuggets					
-9-	Sausages					
-10-	Deli meat (pre cooked)					
-11-	Pate [PAT-A]					
-12-	Other poultry products					
		-8-	-9-	-10-	-11-	-12-
		(14)	(15)	(16)	(17)	(18)
MP						
BBQ.....	1	1	1	1	1	1
Microwave.....	2	2	2	2	2	2
Grill.....	3	3	3	3	3	3
Something else....	4	4	4	4	4	4

IF Q14B(1)='Yes' ASK

Q17 eaten any poultry meat or offal that WAS NOT chicken e.g. turkey, duck, goose etc..

Yes.....1
 No.....2
 Unsure.....3

IF Q17='Yes' ASK

Q17A What other poultry meat or offal eat?
 [RECORD UP TO THREE OTHER MEATS]

MP

[+X1txt+]^o.....1
 [+X2txt+]^o.....2
 [+X3txt+]^o.....3
 Other (specify) 4
 (22-41)

Specified Other

IF Q17A=('oth1') OR Q17A=('oth2') OR Q17A=('oth3') ASK

Q18B Was the[%OTXT%]?
 [READ LIST]

MP

Bought fresh and used before the Used by date....1
 Previously bought fresh,the frozen, then thawed
 for this meal.....2
 Bought frozen then thawed for this meal.....3
 Bought cooked, including take away.....4
 Bought some other way.....5
 Other (specify) 6
 (43-62)

Specified Other

Q18C Did any of the [%OTXT%] appear pink on the inside when
 ate it?

Yes.....1
 No.....2
 Don't know.....3

Q18D Was the [%OTXT%] cooked using a...

[READ LIST]

	MP
BBQ.....	1
Microwave.....	2
Grill.....	3
something else.....	4

IF Q17A=('oth2') OR Q17A=('oth3') ASK

Q18BI Was the[%OTXT%]?
[READ LIST]

	MP
Bought fresh and used before the Used by date....	1
Previously bought fresh,the frozen, then thawed for this meal.....	2
Bought frozen then thawed for this meal.....	3
Bought cooked, including take away.....	4
Bought some other way.....	5
Other (specify)	6
	(8-27)
Specified Other	

Q18CI Did any of the [%OTXT%] appear pink on the inside when
ate it?

Yes.....	1
No.....	2
Don't know.....	3

Q18DI Was the [%OTXT%] cooked using a ...
[READ LIST]

	MP
BBQ.....	1
Microwave.....	2
Grill.....	3
Something else.....	4

IF Q17A=('oth3') ASK

Q18BII Was the [%OTXT%]?
[READ LIST]

MP

- Bought fresh and used before the Used by date....1
 - Previously bought fresh, the frozen, then thawed
for this meal.....2
 - Bought frozen then thawed for this meal.....3
 - Bought cooked, including take away.....4
 - Bought some other way.....5
 - Other (specify) 6
- (31-50)
- Specified Other

Q18CII Did any of the [%OTXT%] appear pink on the inside when
ate it?

- Yes.....1
- No.....2
- Don't know.....3

Q18DII Was the [%OTXT%] cooked using a...
[READ LIST]

MP

- BBQ.....1
- Microwave.....2
- Grill.....3
- Something else.....4

ASK ALL
IF Q14B(1)='Yes' ASK

Q19 eat any poultry meat outside of the home?

- Yes.....1
- No.....2

IF Q19='Yes' ASK

Q20

Was it ..

[READ LIST - MULTI-RESPONSE]

MP

From a fast food/take away place.....1

From a cafe/lunch bar/restaurant.....2

At a catered event.....3

At a social occasion involving barbecued food....4

At another social occasion (e.g. dinner at a
friends house).....5

Other (specify) 6

(55-74)

Specified Other

IF Q14B(2)='Yes' ASK

We are now going to talk about what beef products have eaten.

Q21
cooked

Was the beef meat ate in the last seven days prepared,
or eaten at home?

Yes.....1

No.....2

Don't Know.....3

GO TO Q23

GO TO Q23

IF Q21='Yes' ASK

Q22A

..... eat any beef..

-1- Burgers, patties, meat-balls

-2- Chops

-3- Steak

-4- Pieces

-5- Mince

- 6- Roast
- 7- Offal (liver, kidney etc)
- 8- Deli meat (pre cooked)
- 9- Sausages
- 10- Pate [PAT-AY]
- 11- Other beef products

	-8-	-9-	-10-	-11-
	(12)	(13)	(14)	(15)
SP				
Yes.....	1	1	1	1
No.....	2	2	2	2
Don't know.....	3	3	3	3

*****NEW QUESTION*****

Q22B Was the beef [....] bought...
[READ LIST]

- 1- Burgers, patties, meat-balls
- 2- Chops
- 3- Steak
- 4- Pieces
- 5- Mince
- 6- Roast
- 7- Offal (liver, kidney etc)
- 8- Deli meat (pre cooked)
- 9- Sausages
- 10- Pate [PAT-AY]
- 11- Other beef products

	-8-	-9-	-10-	-11-
	(23)	(24)	(25)	(26)
MP				
Fresh.....	1	1	1	1
Frozen.....	2	2	2	2
OR ready cooked...	3	3	3	3

Q22C Did any of the beef [....] appear pink on the inside when
ate
it?

- 1- Burgers, patties, meat-balls

- 2- Chops
- 3- Steak
- 4- Pieces
- 5- Mince
- 6- Roast
- 7- Offal (liver, kidney etc)
- 8- Deli meat (pre cooked)
- 9- Sausages
- 10- Pate [PAT-AY]
- 11- Other beef products

	-8- (34)	-9- (35)	-10- (36)	-11- (37)
SP				
Yes.....	1	1	1	1
No.....	2	2	2	2
Don't know.....	3	3	3	3

Q22D Was the beef [....] cooked using a ...
[READ LIST]

- 1- Burgers, patties, meat-balls
- 2- Chops
- 3- Steak
- 4- Pieces
- 5- Mince
- 6- Roast
- 7- Offal (liver, kidney etc)
- 8- Deli meat (pre cooked)
- 9- Sausages
- 10- Pate [PAT-AY]
- 11- Other beef products

	-8- (45)	-9- (46)	-10- (47)	-11- (48)
MP				
BBQ.....	1	1	1	1
Microwave.....	2	2	2	2
Grill.....	3	3	3	3
Something else....	4	4	4	4

Q23 eat any beef meat outside of the home?

Yes.....1
No.....2

IF Q23='Yes' ASK

Q24 Was it ..
[READ LIST - MULTI-RESPONSE]

MP
From a fast food/take away place.....1
From a cafe/lunch bar/restaurant.....2
At a catered event.....3
At a social occasion involving barbecued food....4
At another social occasion (e.g. dinner at a
friends house).....5
Other (specify) 6
(51-70)
Specified Other

ASK ALL

ASK ALL
IF Q14B(3)='Yes' ASK

We are now going to talk about what Lamb or mutton products have eaten.

Q25 Was the lamb/mutton meat that ate in the last seven days prepared, cooked or eaten at home?

Yes.....1
No.....2 GO TO Q27
Don't Know.....3 GO TO Q27

IF Q25='Yes' ASK

Q26A eat any Lamb or mutton..

- 1- Burgers, patties, meat-balls
 - 2- Chops
 - 3- Steak
 - 4- Pieces
 - 5- Mince
 - 6- Roast
 - 7- Offal (liver, kidney etc)
 - 8- Deli meat (pre cooked)
 - 9- Sausages
 - 10- Pate [PAT-A]
 - 11- Other lamb/mutton products
- | | -8- | -9- | -10- | -11- |
|--|------|-----|------|------|
| | 14/8 | (9) | (10) | (11) |

SP

Yes.....	1	1	1	1
No.....	2	2	2	2
Don't know.....	3	3	3	3

*****NEW QUESTION*****

Q26B Was the Lamb or mutton [....] bought...
[READ LIST]

- 1- Burgers, patties, meat-balls
 - 2- Chops
 - 3- Steak
 - 4- Pieces
 - 5- Mince
 - 6- Roast
 - 7- Offal (liver, kidney etc)
 - 8- Deli meat (pre cooked)
 - 9- Sausages
 - 10- Pate [PAT-A]
 - 11- Other lamb/mutton products
- | | -8- | -9- | -10- | -11- |
|--|------|------|------|------|
| | (19) | (20) | (21) | (22) |

MP

Fresh.....	1	1	1	1
Frozen.....	2	2	2	2
OR ready cooked...	3	3	3	3

Q26C Did any of the Lamb or mutton [....] appear pink on the inside when
..... ate it?

- 1- Burgers, patties, meat-balls
 - 2- Chops
 - 3- Steak
 - 4- Pieces
 - 5- Mince
 - 6- Roast
 - 7- Offal (liver, kidney etc)
 - 8- Deli meat (pre cooked)
 - 9- Sausages
 - 10- Pate [PAT-A]
 - 11- Other lamb/mutton products
- | | | | |
|------|------|------|------|
| -8- | -9- | -10- | -11- |
| (30) | (31) | (32) | (33) |

SP

Yes.....	1	1	1	1
No.....	2	2	2	2
Don't know.....	3	3	3	3

Q26D Was the Lamb or mutton [....] cooked using a ...
[READ LIST]

- 1- Burgers, patties, meat-balls
- 2- Chops
- 3- Steak
- 4- Pieces
- 5- Mince
- 6- Roast
- 7- Offal (liver, kidney etc)

-8- Deli meat (pre cooked)
 -9- Sausages
 -10- Pate [PAT-A]
 -11- Other lamb/mutton products

	-8-	-9-	-10-	-11-
	(41)	(42)	(43)	(44)

MP

BBQ.....	1	1	1	1
Microwave.....	2	2	2	2
Grill.....	3	3	3	3
Something else....	4	4	4	4

ASK ALL

Q27 eat any lamb/mutton outside of the home?

Yes.....1
 No.....2

IF Q27='Yes' ASK

Q28 Was it ..
 [READ LIST - MULTI-RESPONSE]

	MP
From a fast food/take away place.....	1
From a cafe/lunch bar/restaurant.....	2
At a catered event.....	3
At a social occasion involving barbecued food....	4
At another social occasion (e.g. dinner at a friends house).....	5
Other (specify)	6
	(47-66)
Specified Other	

IF Q14B(4)='Yes' ASK

We are now going to talk about what pork products ate.

Q29 Was the pork meat ate on the last seven days prepared,
 cooked
 or eaten at home?

 Yes.....1
 No.....2 GO TO Q31
 Don't Know.....3 GO TO Q31

IF Q29='Yes' ASK

Q30A eat any pork..

-1- Burgers, patties, meat-balls
 -2- Chops
 -3- Steak
 -4- Pieces
 -5- Mince
 -6- Roast
 -7- Offal (liver, kidney etc)
 -8- Deli meat (pre cooked)
 -9- Sausages
 -10- Pate [PAT-A]
 -11- Other pork products

	-8-	-9-	-10-	-11-
	(77)	(78)	(79)	(80)
SP				
Yes.....	1	1	1	1
No.....	2	2	2	2

*****NEW QUESTION*****

Q30B Was the pork [....] bought...
 [READ LIST]

-1- Burgers, patties, meat-balls
 -2- Chops
 -3- Steak
 -4- Pieces

- 5- Mince
- 6- Roast
- 7- Offal (liver, kidney etc)
- 8- Deli meat (pre cooked)
- 9- Sausages
- 10- Pate [PAT-A]
- 11- Other pork products

	-8- (15)	-9- (16)	-10- (17)	-11- (18)
MP				
Fresh.....	1	1	1	1
Frozen.....	2	2	2	2
OR ready cooked...	3	3	3	3

Q30C Did any of the pork [....] appear pink on the inside when
ate it?

- 1- Burgers, patties, meat-balls
- 2- Chops
- 3- Steak
- 4- Pieces
- 5- Mince
- 6- Roast
- 7- Offal (liver, kidney etc)
- 8- Deli meat (pre cooked)
- 9- Sausages
- 10- Pate [PAT-A]
- 11- Other pork products

	-8- (26)	-9- (27)	-10- (28)	-11- (29)
SP				
Yes.....	1	1	1	1
No.....	2	2	2	2
Don't know.....	3	3	3	3

Q30D Was the pork [....] cooked using a...?
[READ LIST]

- 1- Burgers, patties, meat-balls
 - 2- Chops
 - 3- Steak
 - 4- Pieces
 - 5- Mince
 - 6- Roast
 - 7- Offal (liver, kidney etc)
 - 8- Deli meat (pre cooked)
 - 9- Sausages
 - 10- Pate [PAT-A]
 - 11- Other pork products
- | | -8- | -9- | -10- | -11- |
|--|------|------|------|------|
| | (37) | (38) | (39) | (40) |

MP

BBQ.....	1	1	1	1
Microwave.....	2	2	2	2
Grill.....	3	3	3	3
Something else?...	4	4	4	4

ASK ALL

Q31 eat any pork outside of the home?

Yes.....1
 No.....2

IF Q31='Yes' ASK

Q32 Was it ..

[READ LIST - MULTI-RESPONSE]

MP

From a fast food/take away place.....1
 From a cafe/lunch bar/restaurant.....2
 At a catered event.....3
 At a social occasion involving barbecued food....4
 At another social occasion (e.g. dinner at a
 friends house).....5
 Other (specify) 6

Specified Other

IF Q14A='Yes' ASK

We are now going to talk about what non-poultry offal products may have eaten.

Q33 eaten any non-poultry offal in the last seven days? By offal we mean kidneys, liver, heart etc

- Yes.....1
No.....2 GO TO
Don't know.....3 GO TO

SKIPQ40
SKIPQ40

IF Q33='Yes' ASK

Q34 Was the non-poultry offal bought.... [READ LIST]

- Fresh.....1
Frozen.....2
Ready cooked.....3

Q35 Did the non-poultry offal meat appear pink on the inside when ate it?

- Yes.....1
No.....2
Don't know.....3

Q36 Was the non-poultry offal cooked by?

[READ LIST]

MP
BBQ.....1
Microwave.....2
Grill.....3
Something else.....4

Q37 eat non-poultry offal outside of the home?

Yes.....1
No.....2

IF Q37='Yes' ASK

Q38 Was it ..

[READ LIST - MULTI-RESPONSE]

MP
From a fast food/take away place.....1
From a cafe/lunch bar/restaurant.....2
At a catered event.....3
At a social occasion involving barbecued food....4
At another social occasion (e.g. dinner at a
friends house).....5
Other (specify) 6
(8-27)
Specified Other

ASK ALL

ASK ALL

ASK ALL

SKIPQ40 CONTINUE

IF Q14B(5)='Yes' ASK

We are now going to talk about the other meat products ate.

IF Q14C=('meat1') OR Q14C=('meat2') OR Q14C=('meat3') ASK
Q41I Was the %OTXT% ate in the last seven days prepared,
cooked or
eaten at home?
Yes.....1
No.....2 GO TO
Q43I Don't Know.....3 GO TO
Q43I

IF Q41I='Yes' ASK

Q42IA eat any %OTXT%..

- 1- Burgers, patties, meat-balls
 - 2- Chops
 - 3- Steak
 - 4- Pieces
 - 5- Mince
 - 6- Roast
 - 7- Offal (liver, kidney etc)
 - 8- Deli meat (pre cooked)
 - 9- Sausages
 - 10- Pate [PAT-AY]
 - 11- Other products
- | | -8- | -9- | -10- | -11- |
|--|------|------|------|------|
| | (38) | (39) | (40) | (41) |

SP
Yes..... 1 1 1 1
No..... 2 2 2 2
Don't know..... 3 3 3 3

*****NEW QUESTION*****

Q42IB Was the %OTXT% [.....] bought...
[READ LIST]

- 1- Burgers, patties, meat-balls
- 2- Chops
- 3- Steak
- 4- Pieces
- 5- Mince
- 6- Roast
- 7- Offal (liver, kidney etc)
- 8- Deli meat (pre cooked)
- 9- Sausages
- 10- Pate [PAT-AY]
- 11- Other products

-8- -9- -10- -11-
 (49) (50) (51) (52)

MP

Fresh.....	1	1	1	1
Frozen.....	2	2	2	2
OR ready cooked...	3	3	3	3

Q42IC Did any of the %OTXT% appear pink on the inside when
 ate
 it?

- 1- Burgers, patties, meat-balls
- 2- Chops
- 3- Steak
- 4- Pieces
- 5- Mince
- 6- Roast
- 7- Offal (liver, kidney etc)
- 8- Deli meat (pre cooked)
- 9- Sausages
- 10- Pate [PAT-AY]
- 11- Other products

-8- -9- -10- -11-
 (60) (61) (62) (63)

SP

Yes.....	1	1	1	1
No.....	2	2	2	2
Don't know.....	3	3	3	3

Q42ID Was the %OTXT% cooked using a ...

[READ LIST]

- 1- Burgers, patties, meat-balls
- 2- Chops
- 3- Steak
- 4- Pieces
- 5- Mince
- 6- Roast
- 7- Offal (liver, kidney etc)
- 8- Deli meat (pre cooked)
- 9- Sausages
- 10- Pate [PAT-AY]
- 11- Other products

	-8-	-9-	-10-	-11-
	(71)	(72)	(73)	(74)
MP				
BBQ.....	1	1	1	1
Microwave.....	2	2	2	2
Grill.....	3	3	3	3
Something else....	4	4	4	4

ASK ALL

Q43I eat any %OTXT% outside of the home?

Yes.....1
No.....2

IF Q43I='Yes' ASK

Q44I Was it ..

[READ LIST - MULTI-RESPONSE]

MP

From a fast food/take away place.....1
From a cafe/lunch bar/restaurant.....2
At a catered event.....3
At a social occasion involving barbecued food....4
At another social occasion (e.g. dinner at a
friends house).....5

Other (specify)

6
(8-27)

Specified Other

IF Q14C=('meat2') OR Q14C=('meat3') ASK

Q41II Was the %OTXT% ate in the last seven days prepared,
cooked or
eaten at home?

Yes.....1

No.....2 GO TO

Q43II

Don't Know.....3 GO TO

Q43II

IF Q41II='Yes' ASK

Q42IIA eat any %OTXT%..

-1- Burgers, patties, meat-balls

-2- Chops

-3- Steak

-4- Pieces

-5- Mince

-6- Roast

-7- Offal (liver, kidney etc)

-8- Deli meat (pre cooked)

-9- Sausages

-10- Pate [PAT-AY]

-11- Other products

-8- -9- -10- -11-
(38) (39) (40) (41)

SP

Yes..... 1 1 1 1

No..... 2 2 2 2

Don't know..... 3 3 3 3

*****NEW QUESTION*****

Q42IIB Was the %OTXT% [....] bought...
[READ LIST]

- 1- Burgers, patties, meat-balls
 - 2- Chops
 - 3- Steak
 - 4- Pieces
 - 5- Mince
 - 6- Roast
 - 7- Offal (liver, kidney etc)
 - 8- Deli meat (pre cooked)
 - 9- Sausages
 - 10- Pate [PAT-AY]
 - 11- Other products
- | -8- | -9- | -10- | -11- |
|------|------|------|------|
| (49) | (50) | (51) | (52) |

MP

Fresh.....	1	1	1	1
Frozen.....	2	2	2	2
OR ready cooked...	3	3	3	3

Q42IIC Did any of the %OTXT% appear pink on the inside when
ate
it?

- 1- Burgers, patties, meat-balls
 - 2- Chops
 - 3- Steak
 - 4- Pieces
 - 5- Mince
 - 6- Roast
 - 7- Offal (liver, kidney etc)
 - 8- Deli meat (pre cooked)
 - 9- Sausages
 - 10- Pate [PAT-AY]
 - 11- Other products
- | -8- | -9- | -10- | -11- |
|------|------|------|------|
| (60) | (61) | (62) | (63) |

SP

Yes.....	1	1	1	1
No.....	2	2	2	2
Don't know.....	3	3	3	3

Q42IID Was the %OTXT% cooked using a ...
[READ LIST]

- 1- Burgers, patties, meat-balls
- 2- Chops
- 3- Steak
- 4- Pieces
- 5- Mince
- 6- Roast
- 7- Offal (liver, kidney etc)
- 8- Deli meat (pre cooked)
- 9- Sausages
- 10- Pate [PAT-AY]
- 11- Other products

-8- -9- -10- -11-
(71) (72) (73) (74)

MP

BBQ.....	1	1	1	1
Microwave.....	2	2	2	2
Grill.....	3	3	3	3
Something else....	4	4	4	4

ASK ALL

Q43II eat any %OTXT% outside of the home?

Yes.....1
No.....2

IF Q43II='Yes' ASK

Q44II Was it ..
[READ LIST - MULTI-RESPONSE]

MP

From a fast food/take away place.....1
From a cafe/lunch bar/restaurant.....2
At a catered event.....3

At a social occasion involving barbecued food....4
 At another social occasion (e.g. dinner at a
 friends house).....5
 Other (specify) 6
 (8-27)
 Specified Other

IF Q14C=('meat3') ASK

Q41III Was the %OTXT% ate in the last seven days prepared,
 cooked or
 eaten at home?

Yes.....1
 No.....2 GO TO

Q43III Don't Know.....3 GO TO

Q43III

IF Q41III='Yes' ASK

Q42IIIA eat any %OTXT%..

- 1- Burgers, patties, meat-balls
 - 2- Chops
 - 3- Steak
 - 4- Pieces
 - 5- Mince
 - 6- Roast
 - 7- Offal (liver, kidney etc)
 - 8- Deli meat (pre cooked)
 - 9- Sausages
 - 10- Pate [PAT-AY]
 - 11- Other products
- | | -8- | -9- | -10- | -11- |
|--|------|------|------|------|
| | (38) | (39) | (40) | (41) |

SP

Yes.....	1	1	1	1
No.....	2	2	2	2
Don't know.....	3	3	3	3

Q42IIIB Was the %OTXT% [....] bought...
[READ LIST]

- 1- Burgers, patties, meat-balls
 - 2- Chops
 - 3- Steak
 - 4- Pieces
 - 5- Mince
 - 6- Roast
 - 7- Offal (liver, kidney etc)
 - 8- Deli meat (pre cooked)
 - 9- Sausages
 - 10- Pate [PAT-AY]
 - 11- Other products
- | | | | |
|------|------|------|------|
| -8- | -9- | -10- | -11- |
| (49) | (50) | (51) | (52) |

MP

Fresh.....	1	1	1	1
Frozen.....	2	2	2	2
OR ready cooked...	3	3	3	3

Q42IIIC Did any of the %OTXT% appear pink on the inside when
ate
it?

- 1- Burgers, patties, meat-balls
 - 2- Chops
 - 3- Steak
 - 4- Pieces
 - 5- Mince
 - 6- Roast
 - 7- Offal (liver, kidney etc)
 - 8- Deli meat (pre cooked)
 - 9- Sausages
 - 10- Pate [PAT-AY]
 - 11- Other products
- | | | | |
|------|------|------|------|
| -8- | -9- | -10- | -11- |
| (60) | (61) | (62) | (63) |

SP

Yes.....	1	1	1	1
----------	---	---	---	---

No.....	2	2	2	2
Don't know.....	3	3	3	3

Q42IIID Was the %OTXT% cooked using a ...
 [READ LIST]

- 1- Burgers, patties, meat-balls
 - 2- Chops
 - 3- Steak
 - 4- Pieces
 - 5- Mince
 - 6- Roast
 - 7- Offal (liver, kidney etc)
 - 8- Deli meat (pre cooked)
 - 9- Sausages
 - 10- Pate [PAT-AY]
 - 11- Other products
- | | | | |
|------|------|------|------|
| -8- | -9- | -10- | -11- |
| (71) | (72) | (73) | (74) |

MP

BBQ.....	1	1	1	1
Microwave.....	2	2	2	2
Grill.....	3	3	3	3
Something else....	4	4	4	4

ASK ALL

Q43III eat any %OTXT% outside of the home?

Yes.....1
 No.....2

IF Q43III='Yes' ASK

Q44III Was it ..
 [READ LIST - MULTI-RESPONSE]

MP

From a fast food/take away place.....1

From a cafe/lunch bar/restaurant.....2
 At a catered event.....3
 At a social occasion involving barbecued food....4
 At another social occasion (e.g. dinner at a
 friends house).....5
 Other (specify) 6
 (8-27)

Specified Other

ASK ALL

Now we are going to ask some questions about how handle food.

Q51A In the last seven days, did anyone in your household handle raw
 poultry meat or other raw meat. This includes raw pet food)?

Yes.....1
 No, no one in my household handled any raw meat..2
 Don't know.....3

IF Q51A='Yes' ASK

Q51B Which of the following statements applies to who handled raw
 meat in
 your household in the last seven days? More than one may
 apply.

- 1- handle raw poultry meat?
- 2- handle other raw meat?
- 3- handle raw pet food?
- 4- Did someone else in the home handle raw poultry meat?
- 5- Did someone else in the home handle other raw meat(s)?
- 6- Did someone else in the home handle raw pet food?

	-1-	-2-	-3-	-4-	-5-	-
6-						
	(29)	(30)	(31)	(32)	(33)	
(34) SP						
Yes, Applies.....	1	1	1	1	1	1
No, doesn't apply.	2	2	2	2	2	2

Q52I In the last seven days, did handle any items that may
have
 been in contact with raw poultry meat or other meat (including
raw
 pet food) before it was cooked such as knives, chopping boards,
 plates or dish cloths?
 Yes.....1
 No.....2
 Don't know.....3

IF Q52I='Yes' ASK

Q52 Which of the following did use...
 [READ LIST - MULTI RESPONSE]

	MP
Knives.....1	
Chopping boards.....2	
Dish cloths.....3	
Plates/dishes.....4	
None of these.....5	

ASK ALL
ASK ALL

The next few questions are also about the food eat(s).

Q53 In the last 7 days, did eat any other uncooked foods such
as
 salad, vegetables, fruit ..

- 1- As part of a chicken meal or snack
 - 2- As part of a meat meal/ snack
 - 3- As part of a meal/snack that did not contain meat
- | | | |
|------|------|------|
| -1- | -2- | -3- |
| (37) | (38) | (39) |

SP

Yes.....	1	1	1
No / DK.....	2	2	2

IF Q53(1)='Yes' ASK

Q54 Was chicken meal or snack, which included other uncooked foods, prepared at [READ LIST]

- | | |
|--|---------|
| | MP |
| Home..... | 1 |
| Fast food / takeaway place..... | 2 |
| Cafe/lunch bar/restaurant..... | 3 |
| A catered event..... | 4 |
| Social occasion, involving barbecued food..... | 5 |
| Other social occasion (e.g. dinner at friend.s house)..... | 6 |
| Other (specify) | 7 |
| | (41-60) |
| Specified Other | |

IF Q53(2)='Yes' ASK

Q55 Was meat meal or snack, which included other uncooked foods, prepared at [READ LIST]

- | | |
|--|--------|
| | MP |
| Home..... | 1 |
| Fast food / takeaway place..... | 2 |
| Cafe/lunch bar/restaurant..... | 3 |
| A catered event..... | 4 |
| Social occasion, involving barbecued food..... | 5 |
| Other social occasion (e.g. dinner at friend.s house)..... | 6 |
| Other (specify) | 7 |
| | (8-27) |
| Specified Other | |

IF Q53(3)='Yes' ASK

Q56 Was non-meat meal or snack, which included other uncooked foods, prepared at [READ LIST]

MP

Home.....1
Fast food / takeaway place.....2
Cafe/lunch bar/restaurant.....3
A catered event.....4
Social occasion, involving barbecued food.....5
Other social occasion (e.g. dinner at friend.s house).....6
Other (specify) 7
(29-48)

Specified Other

ASK ALL

Q57 In the last 7 days, can you please tell me how many of meals were prepared at home, compared with the number prepared outside the home.

[IF REQUIRED - Prepared meals or part of meal brought fully packed or frozen from a supermarket or other shop and then re-heated would be classified as a home meal]

	Dinner (49)	Lunch (50)	Breakfast (51)
0 TO 7.....	_____	_____	_____
Don't know.....	Y	Y	Y

Q58 In the last 7 days, eaten or drunk raw (unpasteurised) milk or

milk products that were not cooked or heat treated to seventy degrees before eating or drinking them?

[DO NOT READ]

Yes.....1
 No.....2
 Don't know.....3

IF Q58='Yes' ASK

Q59A Did eat or drink any .

- 1- Unpasteurised milk
- 2- Unpasteurised yoghurt
- 3- Unpasteurised cheese
- 4- Other unpasteurised milk products

	-1- (74)	-2- 20/75	-3- 20/76	-4- 20/77
SP				
Yes.....	1	1	1	1
No.....	2	2	2	2
Other (specify)...	3	3	3	3

*****NEW QUESTION*****

Q59B What was the brand of the ...

.....?

- 1- Unpasteurised milk
- 2- Unpasteurised yoghurt
- 3- Unpasteurised cheese
- 4- Other unpasteurised milk products

	-1- (28-47)	-2- (48-67)	-3- 23/8-27	-4- (28-47)
.....	_____	_____	_____	_____

Q59C Where did obtain the

- 1- Unpasteurised milk
- 2- Unpasteurised yoghurt
- 3- Unpasteurised cheese
- 4- Other unpasteurised milk products

	-1-	-2-	-3-	-4-
	(48-67)	24/8-27	(28-47)	(48-67)

.....

ASK ALL

We now have a couple of questions about food preparation.

Q60 Does your kitchen have separate chopping boards for..

.....

- 1- Raw poultry
- 2- Other raw meats
- 3- All raw meats and poultry
- 4- Other foods such as vegetables, fruit and cooked food

	-1-	-2-	-3-	-4-
	(68)	(69)	(70)	(71)

SP

Yes.....	1	1	1	1
No.....	2	2	2	2
Don't Know.....	3	3	3	3

IF Q60 (1)='No' OR Q60 (1)='Don''t know' OR Q60 (2)='No' OR Q60 (2)='Don''t know' OR Q60 (3)='No' OR Q60 (3)='Don''t know' OR Q60 (4)='No' OR Q60 (4)='Don''t know' ASK

Q61 Do you wash the board/s between use for raw meat and other foods

[DO NOT READ]

Yes.....1
 No.....2 GO TO
 SKIPQ63
 Don't Know.....3 GO TO
 SKIPQ63

ASK ALL

Q62Z How do you wash your boards?
 [MULTIPLE RESPONSE - DO NOT READ PRECODE LIST

 Wipe them with a damp cloth.....1
 Rinse them with clean water.....2
 Wash them with detergent and hot water.....3
 Put them through dishwasher cycle.....4
 Other (specify) 5
 (8-27)

 Specified Other

SKIPQ63 CONTINUE

Q63 which of the following foods would you usually rinse in the
 sink

 before cooking e.g. under a running tap? Would you rinse....

	Raw Chicken	Raw Meat
	25/28	(29)
SP		
Yes.....	1	1
No.....	2	2
Don't ever cook it	3	3

We are now going to ask some questions about contact with animals.

Q64 had any physical contact with your own or other people's
 animals in the last seven days?

[IF REQUIRED -this can include contact with poo or manure e.g.
 changing litter boxes, holding, patting, feeding, cleaning up

afterwards, touching things that the animals have used,.]

Yes.....1
No.....2
Don't know.....3

IF Q64='Yes' ASK

Q65A What animals had contact with? Were they....

- 1- Pets - dogs (including working dogs), puppies, cats, kittens or birds
- 2- Chicken or other poultry
- 3- Pigs/swine
- 4- Cattle (cows)
- 5- Sheep
- 6- Other animals

	-1-	-2-	-3-	-4-	-5-	-
6-						
	(32)	(33)	(34)	(35)	(36)	
(37) SP						
Yes.....	1	1	1	1	1	1
No.....	2	2	2	2	2	2
Don't know.....	3	3	3	3	3	3

IF Q65A(1)='Yes' ASK

kittens or birds'

*****NEW QUESTION*****

IF Q65A(6)='Yes' ASK

Q650TH Please specify other animals
(38-57)

ASK ALL

Q65B Were the at your home or at another location? If at another

location, where were they?

- 1- Pets - dogs (including working dogs), puppies, cats, kittens or birds
- 2- Chicken or other poultry
- 3- Pigs/swine
- 4- Cattle (cows)
- 5- Sheep
- 6- Other animals

	-1-	-2-	-3-	-4-	-5-	-
6-						
	(58)	25/59	25/60	25/61	25/62	
25/63 SP						
At home.....	1	1	1	1	1	1
Other (specify)...	2	2	2	2	2	2

Q65C Were the sick?

- 1- Pets - dogs (including working dogs), puppies, cats, kittens or birds
- 2- Chicken or other poultry
- 3- Pigs/swine
- 4- Cattle (cows)
- 5- Sheep
- 6- Other animals

	-1-	-2-	-3-	-4-	-5-	-
6-						
	(68)	(69)	(70)	(71)	(72)	
(73) SP						
Yes.....	1	1	1	1	1	1
No.....	2	2	2	2	2	2

Q65D What type of illness did the [....] have?

- 1- Pets - dogs (including working dogs), puppies, cats, kittens or birds
- 2- Chicken or other poultry
- 3- Pigs/swine
- 4- Cattle (cows)
- 5- Sheep
- 6- Other animals

	-1-	-2-	-3-	-4-	-5-	-
6-						

28/8-27 (28-47) (48-67) 29/8-27 (28-47) (48-67)

.....

Q65E Was the contact with the [....] occupational? (part of job)

- 1- Pets - dogs (including working dogs), puppies, cats, kittens or birds
- 2- Chicken or other poultry
- 3- Pigs/swine
- 4- Cattle (cows)
- 5- Sheep
- 6- Other animals

	-1-	-2-	-3-	-4-	-5-	-
6-						
	(68)	(69)	(70)	(71)	(72)	
(73) SP						
Yes.....	1	1	1	1	1	1
No.....	2	2	2	2	2	2

Q66 How long been working with or in physical contact with.

.....

- 1- Pets - dogs (including working dogs), puppies, cats, kittens or birds
- 2- Chicken or other poultry
- 3- Pigs/swine
- 4- Cattle (cows)
- 5- Sheep
- 6- Other animals

	-1-	-2-	-3-	-4-	-5-	-
6-						
	(74)	(75)	(76)	(77)	(78)	
(79) SP						
Less than 1 month.	1	1	1	1	1	1
2-3 months.....	2	2	2	2	2	2
4-12 months.....	3	3	3	3	3	3
Over 1 year.....	4	4	4	4	4	4

SKIPNEXT CONTINUE

ASK ALL

These questions are about water supply and consumption.

Q67Z Which of the following are sources of water supply to
home?

[READ LIST]

- | | |
|------------------------------------|---------|
| | MP |
| A)Town supply..... | 1 |
| B)Private bore / spring water..... | 2 |
| C)Tanker truck water..... | 3 |
| D)Roof / rain water..... | 4 |
| E)Creek / stream water..... | 5 |
| F)Don't know..... | 6 |
| Other (specify) | 7 |
| | (29-48) |
- Specified Other

IF Q67Z='<B)Private bore / spring water>' ASK

Q68A Do you know if the private bore / spring water is treated or
filtered?

- | | |
|-----------------|---|
| Yes..... | 1 |
| No..... | 2 |
| Don't know..... | 3 |

IF Q68A='Yes' ASK

Q68B Is the private bore or spring water
[READ LIST - MULTI-RESPONSE]

- | | |
|-------------------------------|----|
| | MP |
| Chlorinated..... | 1 |
| Boiled..... | 2 |
| Treated with UV..... | 3 |
| Treated but not sure how..... | 4 |
| Filtered..... | 5 |

Don't know.....6

ASK ALL

IF Q67Z='<C)Tanker truck water>' ASK

Q69A Do you know if the tanker / truck water is treated or filtered?

Yes.....1

No.....2

Don't know.....3

IF Q69A='Yes' ASK

Q69B Is the tanker/truck water...

[READ LIST - MULTI-RESPONSE]

MP

Chlorinated.....1

Boiled.....2

Treated with UV.....3

Treated but not sure how.....4

Filtered.....5

Don't know.....6

ASK ALL

IF Q67Z='<D)Roof / rain water>' ASK

Q70A Do you know if the roof / rain water is treated or filtered?

Yes.....1

No.....2

Don't know.....3

IF Q70A='Yes' ASK

Q70B Is the roof / /rain water...

[READ LIST - MULTI-RESPONSE]

MP

Chlorinated.....1
Boiled.....2
Treated with UV.....3
Treated but not sure how.....4
Filtered.....5
Don't know.....6

ASK ALL

IF Q67Z='<E)Creek / stream water>' ASK

Q71A Do you know if the creek / stream water is treated or filtered?

Yes.....1
No.....2
Don't know.....3

IF Q71A='Yes' ASK

Q71B Is the creek / stream water...

[READ LIST - MULTI-RESPONSE]

MP

Chlorinated.....1
Boiled.....2
Treated with UV.....3
Treated but not sure how.....4
Filtered.....5
Don't know.....6

ASK ALL

IF Q67Z=7 ASK

Q72A Do you know if the other main source of drinking water is
treated or
filtered?

Yes.....1
 No.....2
 Don't know.....3

IF Q71A='Yes' ASK

Q72B Is the other main source of drinking water...
 [READ LIST - MULTI-RESPONSE]

MP

Chlorinated.....1
 Boiled.....2
 Treated with UV.....3
 Treated but not sure how.....4
 Filtered.....5
 Don't know.....6

ASK ALL

Q73Z Which of the following is the main source of water supply to

 work/ preschool/school?
 [READ LIST]

MP

A)Town supply.....1
 B)Private bore / spring water.....2
 C)Tanker truck water.....3
 D)Roof / rain water.....4
 E)Creek / stream water.....5
 F)Other main source of drinking water.....6
 G)Don't know.....7
 Other (specify) 8
 (50-69)

Specified Other

IF Q73Z='<B)Private bore / spring water>' ASK

Q74A Do you know if the private bore / spring water is treated or
 filtered?

Yes.....1
 No.....2
 Don't know.....3

IF Q68A='Yes' ASK

Q74B Is the private bore or spring water
 [READ LIST - MULTI-RESPONSE]

MP

Chlorinated.....1
 Boiled.....2
 Treated with UV.....3
 Treated but not sure how.....4
 Filtered.....5
 Don't know.....6

ASK ALL
 IF Q73Z='<C>Tanker truck water' ASK

Q75A Do you know if the tanker / truck water is treated or filtered?

Yes.....1
 No.....2
 Don't know.....3

IF Q74A='Yes' ASK

Q75B Is the tanker/truck water...
 [READ LIST - MUTLI-RESPONSE]

MP

Chlorinated.....1
 Boiled.....2
 Treated with UV.....3
 Treated but not sure how.....4
 Filtered.....5

Don't know.....6

ASK ALL

IF Q73Z='<D)Roof / rain water>' ASK

Q76A Do you know if the roof / rain water is treated or filtered?

Yes.....1
No.....2
Don't know.....3

IF Q76A='Yes' ASK

Q76B Is the roof / /rain water...
[READ LIST - MULTI-RESPONSE]

MP
Chlorinated.....1
Boiled.....2
Treated with UV.....3
Treated but not sure how.....4
Filtered.....5
Don't know.....6

ASK ALL

IF Q73Z='<E)Creek / stream water>' ASK

Q77A Do you know if the creek / stream water is treated or filtered?

Yes.....1
No.....2
Don't know.....3

IF Q77A='Yes' ASK

Q77B Is the creek / stream water...

[READ LIST - MULTI-RESPONSE]

MP

Chlorinated.....1
Boiled.....2
Treated with UV.....3
Treated but not sure how.....4
Filtered.....5
Don't know.....6

ASK ALL
IF Q73Z=8 ASK

Q78A Do you know if the other main source of drinking water is
treated or
filtered?

Yes.....1
No.....2
Don't know.....3

IF Q78A='Yes' ASK

Q78B Is the other main source of drinking water...
[READ LIST - MULTI-RESPONSE]

MP

Chlorinated.....1
Boiled.....2
Treated with UV.....3
Treated but not sure how.....4
Filtered.....5
Don't know.....6

ASK ALL

Q79 In the last 7 days, did use bottled water for drinking?

Yes.....1
No.....2
Don't know.....3

IF Q79='Yes' ASK

Q80 Was bottled water the only drinking water source?

Yes.....1
No.....2
Don't know.....3

ASK ALL

Q81 In the last 7 days, did drink any water from untreated
supplies that would not normally drink from? We mean
outside
of your home, work or school.
For example, at a bach or on a camping trip.

Yes.....1
No.....2
Don't know.....3

IF Q81='Yes' ASK

Q82 Were these untreated water supplies?
[READ LIST]

MP

A)Town supply.....1
B)Private bore / spring water.....2
C)Tanker truck water.....3
D)Roof / rain water.....4
E)Creek / stream water.....5
G)Don't know.....6

ASK ALL

These last few questions are about activities that may have participated in.

Q83 participated in any activity at an indoor or outdoor swimming pool or spa, in the last seven days?

Yes.....1
No.....2
Don't know.....3

IF Q83='Yes' ASK

Q84 Was the pool or spa..

MP

A)A public swimming pool /spa.....1
B)A home swimming pool / spa.....2
C)Another pool / spa e.g. hotel, motel, school..3

Q85 What are the names and locations of the pools and spas visited?

(If more than one, please describe each)

(8-27)

ASK ALL

Q86A participated in any of the following outdoor activities in the

last 7 days?

[IF REQUIRED EXPLAIN - swimming includes playing, paddling and splashing around]

-1-	Outdoor freshwater swimming, including rivers and lakes			
-2-	Outdoor sea water swimming			
-3-	Other water activities e.g. sailing, kayaking, fishing			
		-1-	-2-	-3-
		(29)	(30)	(31)
SP				
Yes.....		1	1	1
No.....		2	2	2
Don't know.....		3	3	3

*****NEW QUESTION*****

Q86B Was the [...] after heavy rainfall?

-1-	Outdoor freshwater swimming, including rivers and lakes			
-2-	Outdoor sea water swimming			
-3-	Other water activities e.g. sailing, kayaking, fishing			
		-1-	-2-	-3-
		(32)	(33)	(34)
SP				
Yes.....		1	1	1
No.....		2	2	2

Q86C When participated in [...] Were there livestock such as sheep, cattle or other farm animals in the area?

-1-	Outdoor freshwater swimming, including rivers and lakes			
-2-	Outdoor sea water swimming			
-3-	Other water activities e.g. sailing, kayaking, fishing			
		-1-	-2-	-3-
		(35)	(36)	(37)
SP				
Yes.....		1	1	1
No.....		2	2	2

Q86D What was the type, location and name of the [...] site. (*)

See

Interviewer note below.

[NOTE - For outdoor fresh or sea water .swimming. establish whether

the site was a public pool, private pool, sea, river or lake]

[NOTE - For fishing, establish whether site was sea, river or lake]

[NOTE - For other water activities e.g. kayaking / sailing, establish whether site was pool, sea, river or lake]

- 1- Outdoor freshwater swimming, including rivers and lakes
 - 2- Outdoor sea water swimming
 - 3- Other water activities e.g. sailing, kayaking, fishing
- | | -1- | -2- | -3- |
|--|---------|---------|---------|
| | (38-57) | (58-77) | 32/8-27 |

.....

IF Q86A(3)='Yes' ASK

Q87 You mentioned that participated in other water activities.

What were these activities?

(28-47)

ASK ALL

Q88A In the last 7 days, have touched, with hands, any of the

following substances

- 1- Soil
 - 2- Sand (e.g. sand box, beach)
 - 3- Human poo (example from changing nappies)
 - 4- Sewage, stagnant water or flood water
 - 5- Manure or compost, including pet faeces
- | | -1- | -2- | -3- | -4- | -5- |
|--|------|------|------|------|------|
| | (49) | (50) | (51) | (52) | (53) |

SP

Yes.....	1	1	1	1	1
No.....	2	2	2	2	2
Don't know.....	3	3	3	3	3

Q88B How and where did the contact happen with the ?
[Note to Interviewer - Establish under what circumstance the contact occurred.]

For example, contact with sand could have occurred while at the seaside or from a private or public sandpit. Contact with soil could have occurred while gardening.]

- 1- Soil
- 2- Sand (e.g. sand box, beach)
- 3- Human poo (example from changing nappies)
- 4- Sewage, stagnant water or flood water
- 5- Manure or compost, including pet faeces

-1-	-2-	-3-	-4-	-5-
(54-73)	33/8-27	(28-47)	(48-67)	34/8-

27

.....

Q90 During the last 7 days, were flies a problem in your kitchen or food preparation area?

- Yes.....1
- No.....2
- Don't know.....3

We have reached the end on the survey. On behalf of ESR I would like to thank you for taking part in this important study. If you have any questions or concerns you can contact Dr Rob Lake at ESR on 03-3516019 or email rob.lake(at)esr.cri.nz

My name is %INAME% and if you have any queries about this survey you can ring my supervisor Pania Brown on (09)-373-8711.

[*CO:*

APPENDIX F: MULTIVARIATE ANALYSIS DETAILS

Multivariate analysis

The aim of the multivariate analysis is to determine which risk factors or combination of multiple risk factors are of most importance on the outcome (i.e. being a case or not). Multiple statistical techniques were used to determine which risk factors were of most importance, in order to guide which variables should be included in the multivariate models. The variables inserted into the final multivariate models were also guided by expert knowledge of the epidemiology of campylobacteriosis. To determine the most appropriate multivariate model we compare the AIC and residual deviance of several multivariate models built.

The statistical techniques used in this analysis, to determine risk factors of importance, include step-wise logistic regression, LASSO and random forests. These techniques are described below, along with their results.

Step-wise logistic regression

Step-wise regression is an approach for determining the 'best' model by the addition or removal of variables from the base model, resulting in a reduction in the AIC. The AIC provides an estimate of the models quality based on both the goodness of fit of the model and its simplicity. Generally, the resulting model only contains variables which have a significant effect (at the 5% level) on the response (i.e. being a case or control).

The step-wise procedure begins with an initial model, normally either the full saturated model containing all covariates or the null model containing no covariates, for simplicity. Covariates are then removed or added and the AIC recalculated. If the removal or addition of certain covariates results in a reduction of the AIC then that model becomes the current model and the procedure of removal or addition of other covariates and re-calculation of the AIC is repeated. When there is very little to no change in the AIC, the model provided is considered 'best'. However, it must be kept in mind that not all models are explored as this is not practically possible, especially when the number of covariates is large. For this dataset there are 275 covariates to explore, meaning the total number of models to be checked, if all were checked, is $2^{275} = 6.1 \times 10^{82}$. Therefore, it is possible that the model selected as the best may not actually be the best choice of model.

The step-wise regression technique is easy to implement, interpret and understand, but suffers from several disadvantages. Firstly, a logistic regression (also known as a logit) model requires no missing data for the variables inserted into the model. If there is missing data, then the model simply omits the individual from the dataset (which reduces the degrees of freedom available). If there is a large amount of missing data then this approach will discard a large amount of information. Ideally before implementing a logistic regression model one should remove any covariates that are highly correlated with one another. This is because having multiple variables which are highly correlated with one another in the model can cause inflated coefficients (thus inflated odds ratios). In practice, when the dataset is large, removing all highly correlated covariates can be difficult. Thus, any results achieved using the step-wise regression technique on this data set must be interpreted with caution due to multicollinearity.

There is also the problem that some of the questions perfectly separate the cases from controls (i.e. all cases may answer yes whereas all the controls may answer no). This is indicated by the large number (25) of Fisher Scoring iterations. We would expect this value

to be less than 10 in the case of little separation. Separation results in incorrect estimates of the coefficients and large standard errors which produce large p-values close to 1. This approach should only be used as a guide as to which variables may be important and will be compared with other modeling techniques and expert advice regarding campylobacteriosis.

Before carrying out the step-wise procedure those questions from the survey which had more than 25% of the data missing were omitted. Questions where only a single answer was provided (e.g. everyone answered 'no' to the question and no one answered 'yes') were also removed. For the remaining 275 questions, observations which had missing data were omitted. This left a dataset which had 365 observations, 175 cases and 314 controls (less than 40% of the full dataset).

Forward step-wise results

A forward step-wise procedure was carried out first, beginning with the null model containing no covariates. Variables were inserted into the model and if they provided a reduction in the AIC they were retained. With the forward step-wise procedure once a covariate has been included in the model it is not removed. Variables are continually added to the model until no improvement in the AIC value can be seen. The model with the lowest AIC value is then considered the "best" model. The model considered best according to this procedure had an AIC of 130, residual deviance of 0 on 423 degrees of freedom and included the covariates

```
Case ~ chicken_grill + q6b_wash_hands + q21_chicken + q15c_chick_pieces +
q19d + q23b_water_roof + q15i_list__3 + child_age_group +
q14a_indirect_contact + q23_bottled_water + q20a + q15h_meat_handled__6+
q7b_work__1 + q23c_water_source__7 + q23c_water_source__1 +
q26_flies + q15h_meat_handled__4 + q15f_beef_pieces + q17_dinners +
q22a_sheep__2 + q22a_other_animal_sick + q22a_pets_contact +
q6a_dairy_animals__3 + q16_options_not_meat__2 + q24b_other_water__1 +
beef_buy_frozen + q24a_pool_type__3 + chicken_bbq + q15c_chick_deli +
lamb_bbq + q16_options_chicken__1 + q16_options_meat__4 +
q15f_pork_saus + q15f_beef_chop + beef_buy_fresh + q15_meat_consumption +
q15a_meat_type__5 + q11b_treatment_4weeks + q15f_beef_mince +
q20_wash_board_list + chick_froze + q15c_chick_other + q21_meat +
q16_options_meat__6 + q22a_pets__2 + q15i_list__4 + q6a_poultry__1 +
q23e_bottled_water_only + q15c_chick_kebabs
```

Note that the variable naming used here is based on the variable field names provided in the survey.

The variables of most importance are likely to enter the model first as they explain the largest amount of the variation in the response. The table below shows the first 20 variables to enter the model and the corresponding reduction in the AIC and residual deviance. This model should be compared in terms of its fit with other multivariate models based on the other statistical methods of variable importance and expert knowledge.

	Step	Df	Deviance	Resid. Df	Resid. Dev	AIC
1		NA	NA	487	635.7778	637.7778
2	+ chicken_grill	-1	47.734509	486	588.0433	592.0433
3	+ q6b_wash_hands	-4	48.628118	482	539.4152	551.4152
4	+ q21_chicken	-2	26.871364	480	512.5438	528.5438
5	+ q15c_chick_pieces	-1	23.868099	479	488.6757	506.6757
6	+ q19d	-2	28.511098	477	460.1646	482.1646
7	+ q23b_water_roof	-1	19.690439	476	440.4742	464.4742
8	+ q15i_list__3	-1	14.665135	475	425.8090	451.8090
9	+ child_age_group	-4	23.245380	471	402.5637	436.5637
10	+ q14a_indirect_contact	-2	13.984389	469	388.5793	426.5793
11	+ q23_bottled_water	-1	11.928819	468	376.6504	416.6504

12		+ q20a	-2	12.848741	466	363.8017	407.8017
13	+	q15h_meat_handled__6	-1	9.916363	465	353.8853	399.8853
14		+ q7b_work__1	-1	9.406304	464	344.4790	392.4790
15	+	q23c_water_source__7	-1	10.349216	463	334.1298	384.1298
16	+	q23c_water_source__1	-1	18.186913	462	315.9429	367.9429
17		+ q26_flies	-2	13.102864	460	302.8400	358.8400
18	+	q15h_meat_handled__4	-1	10.061546	459	292.7785	350.7785
19		+ q15f_beef_pieces	-1	9.838414	458	282.9401	342.9401
20		+ q17_dinners	-1	12.517461	457	270.4226	332.4226

For quick reference those variable names not fully obvious from the naming are as follows: q19d = using separate chopping boards for other foods such as fruit and veg, q20a = washing boards between use with meat and veg, q21_chicken = rinsing raw chicken before cooking, q16_options_not_meat_2 = having a vegetarian snack at a fast food place, q24b_other_water_1 = participating in other water activities e.g. sailing, kayaking, fishing, q21_meat = rinsing raw meat before cooking.

Mixed step-wise results

Unlike the forward step-wise approach, where once a variable has been added to the model it is not removed, the mixed step-wise approach allows a variable in the model to be removed if it results in an improvement in the AIC. Any model can be used as the initial model to start the procedure. Use of the full saturated model as the initial starting point does not yield a model with an improved AIC or residual deviance over that reached by the forwards approach. However, allowing the model received from the forwards approach as the initial starting point for this approach allows for a slightly improved model compared to that shown above by the removal of the covariates beef_grill and q15c_chick_deli (see below).

	Step	Df	Deviance	Resid. Df	Resid. Dev	AIC	
1		NA	NA	423	5.608263e-06	130	
2	-	q15h_meat_handled__6	1	1.560651e-07	424	5.452198e-06	128
3		- q7b_work__1	1	5.168325e-08	425	5.400514e-06	126

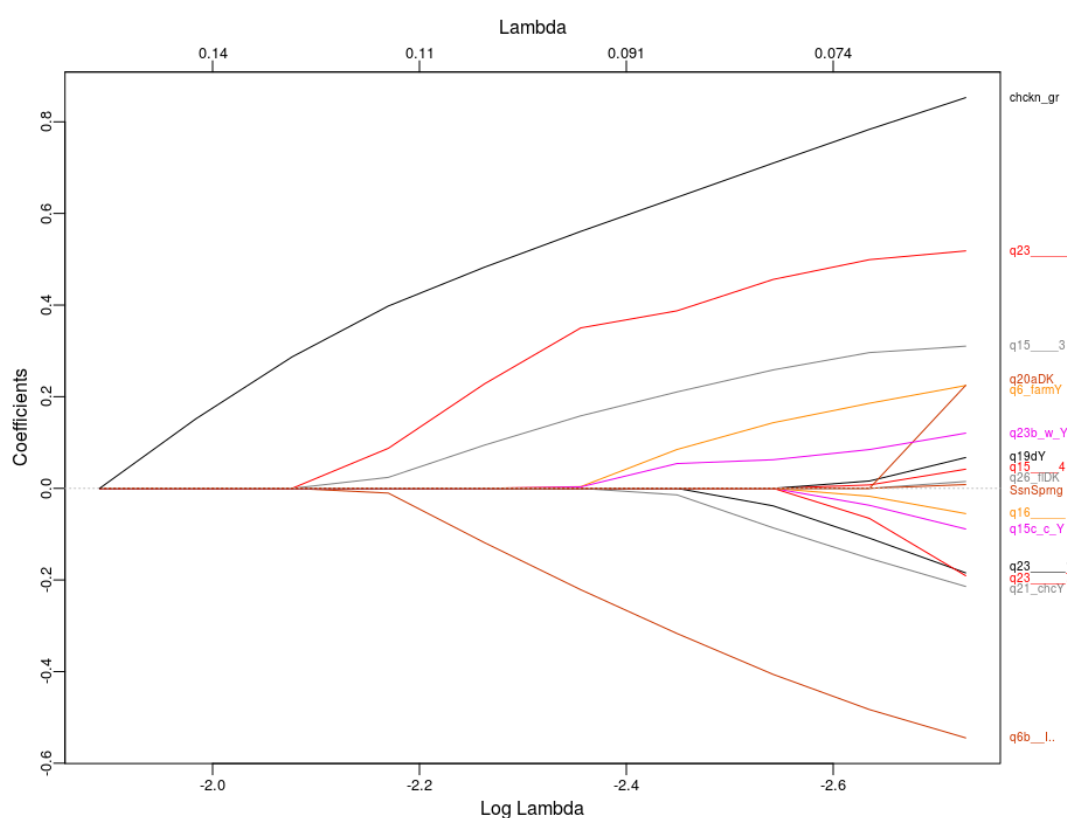
Least Absolute Shrinkage and Selection Operator (LASSO) approach

The step-wise logistic regression approach involves using ordinary least squares to fit a linear model that contains a subset of the covariates in the dataset. Rather than selecting a certain subset of covariates to include in the model, the LASSO approach allows a model that contains all p covariates, but shrinks some of the covariates coefficients towards zero. The shrinking of these coefficients to exactly zero makes the LASSO approach useful for selecting variables of importance and also helps overcome the difficulties of multi-collinearity faced in the step-wise logistic regression approach. The LASSO approach however, does require the user to determine an appropriate tuning parameter λ , where $\lambda \geq 0$, which regulates the amount of shrinkage that will occur. A large value of λ implies a large amount of shrinkage will occur and thus a very large number of the coefficients in the model will be shrunk to zero. In contrast, when $\lambda = 0$ there is no penalty applied and the coefficients will be the same as those achieved by the logistic regression model (i.e. the ordinary least squares estimates). The choice of appropriate λ can be made by applying cross-validation techniques as carried out in the results section.

LASSO models allow for estimation of effect sizes (i.e. odds ratios and their 95% CIs). The estimates from the LASSO model tend to be biased to being more conservative than those obtained from the logistic regression modelling due to the shrinkage of many coefficients. Unfortunately, the LASSO approach, similarly to logistic regression, requires observations which have no missing data. So the dataset, with 177 cases and 314 controls, used for the step-wise logistic regression was also used here.

LASSO results

The R package `glmnet` was used to perform the LASSO analysis and visualisation was carried out using the `plotmo` package. A preliminary LASSO model was run where the model was constrained to only contain at most 20 variables of importance. The plot below shows the order in which coefficients became non-zero (i.e. the variable begins to have an effect on the outcome) and what their coefficient becomes for a range of different values of λ . Notice that λ is provided along the top of this plot, with larger values of λ are to the left (more shrinkage) and smaller values of λ on the right (less shrinkage). Recall that the larger λ the fewer coefficients that are non-zero. Therefore, looking at this plot it can be seen the first variable which enters the model is `chckn_grill` (i.e. cooking chicken on the grill). This implies that cooking chicken on the grill appears to account for a larger amount of variation in the outcome than other variables. As λ increases, the effect size of the risk factor cooking chicken (i.e. coefficients on the plot) on the grill grows. Note that those covariates with positive coefficients can be considered as risk factors which have a negative impact, whereas those with negative coefficients can be considered as protective factors. This plot shows that `q6b__l` (washing hands before meals if visually dirty) and `q21_chchY` (washing raw chicken before cooking) can be considered protective.



This approach detected 16 coefficients of importance. However, it should be considered if a smaller group of these coefficients is more appropriate. The choice of appropriate λ helps aids this decision. Cross-validation analysis suggests that the most appropriate value of λ (i.e. that which minimises the formulation of the LASSO) is 0.0210 with a conservative estimate λ_{1SE} (i.e. the minimum value of λ plus 1 standard error) of 0.0178. Both these values λ and λ_{1SE} fall outside the lower bound of our plot. Therefore, this suggests that all 16 variables determined to be of importance should be retained in the model.

Given the small value of λ it is unsurprising that the covariates of importance found here are a similar subset to those identified as entered the step-wise logistic regression method first.

Random forest classification

Random forests are a classification method based on classification trees, which are often used for prediction purposes. A classification tree is constructed by first determining a root node, that is calculating which variable best predicts the response. The root node variable is chosen based on a measure of impurity. A variable is considered as impure if it does not perfectly separate the data into the categories of the response. A popular measure of impurity is the Gini index. Once the root node is decided, the other variables in the dataset can then be used to split the data into smaller subsets, for which the impurity measure can be re-calculated. This procedure is repeated until no further decrease in the Gini impurity index occurs.

Classification trees often lack accuracy and are unstable with respect to small changes in the data. The random forest technique was introduced to make use of the classification trees, but help improve the predictive accuracy and account for the instability through averaging. A random forest involves taking a bootstrapped sample (with replacement) from the dataset many times and for each bootstrap sample creating a classification tree. The results from a large number of classification trees can then be combined, to provide prediction or determine the variables of most importance. Determining variables of most importance can be done by assessing the mean decrease in accuracy or the mean decrease in Gini impurity measure. The disadvantage to using random forests over a technique such as logistic regression or LASSO is that a random forest is a non-parametric approach for which we do not calculate effect sizes (i.e. odds ratios). However, unlike logistic regression the models more easily take into consideration possible interactions and assessment of which interactions of variables are of most importance can be done.

Random forests can be implemented in R using two different approaches. The first is through the R package `randomForest` created by A. Liaw and M. Wiener (2002), which is the standard package used by many. The disadvantages of the `randomForest` package are that splits in trees are often favoured by variables with a large number of categories or numerical variables (not a big concern with our data) and that the dataset used must be complete (i.e. no missing data). Therefore, we again made use of the dataset used with the logistic regression and LASSO modeling with this package.

Another R package for implementing random forests called the party package, created by Strobl et. al (2008), allows for the incorporation of missing data and accounts for the splitting problem observed in the `randomForest` package. However, at this point in time the party package does not have a means of calculating the importance measure for groups of variables, so that the most important interactions could be determined.

In this analysis, the party package was used to provide a random forest model where missing data were taken into consideration. The most important individual variables were determined by calculating the mean decrease in accuracy. Since it is not possible to determine the most important interactions using the party package at this time, the `randomForest` package was used to determine the most important individual variables and interactions. The results for the two approaches were then compared.

cforest variable importance implementation

A total of 1000 trees were incorporated in the random forest (very little difference was seen in most important covariates when using 1000 trees in comparison to 2000 trees). The top 20 variables of most importance in terms of their mean decrease in accuracy are tabulated below. It is encouraging to see that a similar subset of variables is considered important by this approach, which incorporates all the data, in comparison to the step-wise logistic regression and LASSO techniques.

Variable	Mean decrease in accuracy
q6b_wash_hands	0.002306

Variable	Mean decrease in accuracy
q6_farm	0.002278
q23a_water_source__4	0.001958
q15i_list__3	0.001734
q14_contact	0.001614
q6_farm_yes	0.001598
q15i	0.001508
q14a_close_contact	0.001493
q23b_water_roof	0.001408
q23b_treat_meth_roof__4	0.001373
q23c_water_source__7	0.001337
chicken_grill	0.001308
q14a_other_contact	0.001305
q15h_meat_handled__4	0.001254
q15i_list__4	0.001215
q23a_water_source__1	0.001208
q14a_indirect_contact	0.00117
chick_fresh	0.001156
q25_compost	0.001149
q15h_meat_handled__6	0.001118

randomForest variable importance implementation

A total of 500 trees were included in the implementation of randomforest (less variation occurred in importance due to the smaller sample size used with the randomForest package). Below is the tabulation of the mean decrease in accuracy and mean decrease in Gini impurity index for the top 20 variables. A similar subset of important variables can be seen here in comparison to cforest, LASSO and step-wise logistic regression.

Variable	MDA	MD.Gini
chicken_grill	27.33	7.609
q20a	16.11	2.559
q6b_wash_hands	14.25	5.169
q15h_meat_handled__4	11.85	1.677
child_age_group	10.86	2.33
q15i_list__4	10.77	1.994
q15h_meat_handled__5	10.28	1.603
q15i_list__3	10.13	2.166
q6_farm_yes	9.86	1.927
location	9.417	1.15
q26_flies	9.009	1.404
Season	8.978	3.399
q16_other_food__2	8.911	1.316
q23b_treat_meth_roof__4	8.704	1.475

Variable	MDA	MD.Gini
q16_other_food___1	8.573	1.502
chick_fresh	8.025	1.086
q11b_treatment_name	7.731	3.779
q23b_water_roof	7.407	1.265
q23c_water_source___7	7.096	1.021
q16_options_chicken___1	6.950	1.196

A group importance measure based on a weighted average of the Gini impurity index was calculated to see if any potential interactions were flagged as important. However, what can be seen from the table below is that some of our main effects (in particular chicken cooked on the grill) have such a large effect on the outcome that any signal of an important interaction is lost. Therefore, expert opinion was required to determine appropriate interaction terms (if any) for our multivariate models.

group.imp	interactions
8.191	chicken_grill q15f_pork_burger
8.191	q15f_pork_burger chicken_grill
8.182	chicken_grill q22a_cattle_sick
8.182	q22a_cattle_sick chicken_grill
8.173	chicken_grill q23b_treat_meth_bore___2
8.173	q23b_treat_meth_bore___2 chicken_grill
8.164	chicken_grill q15g_lamb_source___4
8.164	q15g_lamb_source___4 chicken_grill
8.155	chicken_grill q23d_treat_meth_bore2___4
8.155	q23d_treat_meth_bore2___4 chicken_grill
8.146	chicken_grill q23b_water_private_bore
8.146	q23b_water_private_bore chicken_grill
8.146	chicken_grill q6a_dairy_animals___2
8.146	q6a_dairy_animals___2 chicken_grill
8.146	chicken_grill q23d_treat_meth_bore2___2
8.146	q23d_treat_meth_bore2___2 chicken_grill
8.137	chicken_grill q22a_pigs_contact
8.137	q22a_pigs_contact chicken_grill
8.128	chicken_grill q15f_beef_offal
8.128	q15f_beef_offal chicken_grill

Building and comparing multivariate models

Choice of model

Several models based on the above results and expert opinion about the epidemiology of campylobacteriosis were constructed. These models were then compared using AIC, BIC, and residual deviance along with their degrees of freedom. A preliminary model was constructed based on the covariates considered important by the LASSO. Variables which

were considered important according to the random forest approach were then added. Questions which were nested within other questions in the model were then removed (e.g. direct, indirect and other contact are nested inside the question did you have contact with someone who had gastroenteritis). This resulted in a model which was still very much over-parameterised. Expert opinion and the guidance provided by the univariate analysis allowed us to reduce this model further. The removal of variables not considered to be of interest and the addition of other variables seen to have a large effect in the univariate analysis resulted in the model found in the main body of this report.

Having decided on the appropriate model it was run on the full dataset and odds ratios, population attributable fractions and their confidence intervals estimated.

Population attributable fraction (PAF)

The number of terms used to describe attributable measures is perhaps the largest of any concept in epidemiology, with many authors often providing no exact definition for their measure used and very few providing confidence intervals. The current study has used the adjusted population attributable fraction for case-control studies described by Bruzzi *et al.* [1] defined as:

$$PAF = \frac{P_e (RR - 1)}{1 + P_e (RR - 1)}$$

Where P_e is the probability of exposure in the population to the risk factor being considered for removal. This value under a case-control study is estimated based on the probability of exposure to the risk factor in the control group, under the assumption that the control group is representative of the population that is not diseased (this assumption should only be made if the disease under consideration is rare in the population) and RR represents the relative risk, which Bruzzi *et al.* suggests replacing with an adjusted odds ratio calculated from a logistic regression model. Note that the PAF as a percentage can be obtained by simply multiplying the value calculated by 100. Bruzzi *et al.* calculated confidence intervals for the PAF based on the delta method. Due to a lack of R package for implementing confidence interval calculation for this adjusted PAF bootstrapped confidence intervals were calculated, where 1000 bootstrap samples are taken from the dataset. These allow both the uncertainty in the probability of exposure (as controls are resampled) and uncertainty in the relative risk from the odds ratio (as cases are resampled).

The PAF can take on values between $-\infty$ and 1. A negative value for the PAF suggests that the risk factor been considered from the population has a protective effect, whereas a positive PAF represents a harmful exposure (PAF of 0 suggests no effect). As an example of interpreting the PAF say the PAF is 0.5. This suggests that a maximum of 50% of the cases of campylobacteriosis in the population can be attributed to the risk factor being considered. If the PAF were -1 this would suggest that if the exposure was removed then the number of cases would be expected to increase by 100% (i.e. double).

References

1. Bruzzi P, Green SB, Byar DP, et al. 1985. Estimating the population attributable risk for multiple risk factors using case-control data. *American Journal of Epidemiology* 122(5): 904-14.

APPENDIX G: MICROBIOLOGY AND WHOLE GENOME SEQUENCING PROCEDURES

Sample processing: human samples

The participating diagnostic laboratories were:

- Labtests Auckland
- North Shore Hospital
- Middlemore Hospital
- Auckland Hospital
- MedLab Central

Each laboratory (apart from MedLab Central) took a charcoal swab from the remaining faecal sample of a sample giving a positive result, either by plate culture (Middlemore, North Shore) or polymerase chain reaction (PCR) direct test (Labtests, Auckland). The original sample was usually a faecal sample, but other sample types (blood, tissue etc.) were not excluded. For these other types of sample, a swab from a positive culture plate was supplied by the laboratory. Medlab Central provided a swab taken from several *Campylobacter* colonies with identical morphology appearing on each positive culture plate.

The swabs were stored by the laboratory at refrigeration temperature for up to a week before sending to ESR. Swabs were identified by the NHI number accompanying the notification. In most cases, the submitting laboratory number was also supplied, in case follow-up was needed.

Samples from the participating laboratories were sent to ESR where they were cultured on modified Cefoperazone Charcoal Deoxycholate agar (mCCDA) plates and in Bolton Broth and incubated at 42°C in a microaerobic atmosphere (85% N₂, 10% CO₂, 5% O₂) for two days. If growth was successful on the plates, then a single colony resembling *Campylobacter* species was subcultured to Blood Agar (BA) and incubated microaerobically at 42°C for 2 days before DNA preparations were made. If no growth occurred from direct plating, the broth was subcultured to a mCCDA plate. The plate was incubated in a microaerobic atmosphere, 42°C for approximately 48 hours.

Samples were batched into groups of 40 at the ESR PHL, with laboratories sending once per week (on Mondays to arrive Tuesday). This assumed that refrigerated storage for up to a week before sending to the PHL results in very few losses⁷. Swabs received by Massey from MedLab Central were all processed for isolate recovery, as current. In the event of a public holiday falling on a Monday, swabs were sent on the following day.

Swabs received by ESR from which isolates were recovered were from every second notified case, and those cases were interviewed by the Public Health Units involved.

Each week, on a Monday, a list of the NHI numbers for each second case (i.e., the cases created in REDCap) at ARPHS and every case from MCPHS were supplied to the ESR PHL, so that isolates supplied by laboratories, arriving on Tuesday mornings, could be identified for recovery from the charcoal swabs. Some isolates were recovered from cases

⁷ Unpublished work by Massey indicates that holding charcoal swabs refrigerated for up to a week results in only very small loss in recovery, and their experience with swabs provided from MidCentral and Whanganui is that recovery is >90%.

that were not able to be contacted for interview, or declined – the number of these were monitored.

Recovered isolates at ESR were checked for species using PCR (see below).

Residual broths and other materials were disposed of according to normal medical disposal procedures in the laboratory for biohazardous materials (double “yellow” bag-lined “Biohazard Yellow Bin” supplied by Interwaste).

Sample processing: source samples

Poultry

Campylobacter isolates were supplied (as swabs from colonies on a culture plate) by the poultry industry from laboratories conducting National Microbiological Database testing. Isolates were recovered using the same methods as for processing the human faecal samples.

Ruminants (cattle, sheep)

Samples of each animal type were pooled in sets of four and the pooled samples screened for *Campylobacter* spp. by inoculating into Bolton’s broth and incubation at 37°C for four hours followed by 42°C microaerobically for 44 hours. After incubation the broth was subcultured onto mCCDA agar and incubated microaerobically at 42°C for two days. Single colonies resembling *Campylobacter* species were subcultured to BA and incubated microaerobically at 42°C for 2 days before DNA preparations were made.

Recovered isolates at ESR were checked for species using PCR (see section 5d below).

Residual broths and other materials were disposed of according to normal medical disposal procedures in the laboratory for biohazardous materials (double “yellow” bag-lined “Biohazard Yellow Bin” supplied by Interwaste).

Isolates and storage

It was assumed that a total of ~850 *Campylobacter* isolates from humans would be obtained by ESR from the approximately 1100 human clinical samples submitted, and 450 *Campylobacter* isolates would be obtained from source samples. Freezer space for the preservation of these isolates required a minimum of four racks of freezer space (freezer boxes with 100 tubes, and freezer racks with 16 placements), or one quarter of a standard -80°C freezer. Both ESR and mEpiLab had access to enough freezer space to store the entire collection and duplicate sets were stored in both locations.

A complete set of isolates was held by both ESR and Massey. Periodic shipments of frozen isolates were made from ESR to Massey during the course of the project.

A single set of isolates was sent to Massey approximately every second months for WGS

1. First week of May 2018
2. First week of July 2018
3. First week of September 2018
4. First week of November 2018
5. First week of February 2019
6. Last week of March 2019

Conditions of transport (WGS)

- Samples were isolates frozen at -80°C in glycerol broth (heavy inoculum into the glycerol is essential)
- In preparation for couriating, plenty of slicka pads/freezer blocks were frozen in the -80°C freezer
- In the chilly bin, completely the box of cultures was completely encased with slicka pads/freezer blocks
- A covering letter to Massey was enclosed describing the number of samples enclosed
- Overnight courier to Massey

Costs for storage of isolates at ESR was covered by the annual isolate storage allocation in the ESR-MPI core contract.

Species determination

The method is suitable for the detection of thermotolerant *Campylobacter* species (*C. jejuni*, *C. coli*, *C. lari* and *C. upsaliensis*) in enrichment broths or from isolated colonies on enrichment plates. In addition to detecting the presence of a thermotolerant *Campylobacter*, this PCR will also determine if it is *C. jejuni* and/or *C. coli*, the species most prevalent in human cases of campylobacteriosis.

Details of the genes targeted by the PCR are as follows. Note that they have not been found in organisms other than *Campylobacter* species.

Bacteria Detected	Target gene	Gene Function
Thermotolerant <i>Campylobacter</i> species	23S rRNA gene	protein synthesis
<i>C. jejuni</i>	lpxA gene	Encodes enzyme acyltransferase which catalyses biosynthesis of lipid A. Lipid A is required for formation of lipopolysaccharides, which are a major constituent of the outer membrane of Gram-negative bacteria.
<i>C. coli</i>	ceuE gene	Encodes the lipoprotein component of a protein-binding transport system involved in iron acquisition

Primers:

Primer Reference:		Sequence:
O0238	LpxA forward	5'-CCGAGCTTAAAGCTATGATAGTGGAT-3'
O0239	LpxA reverse	5'-TCTACTACAACATCGTCACCAAGTTGT-3'
O0240	Therm forward	5'-AAATTGGTTAATATTCCAATACCAACATTAG-3'
O0241	Therm reverse	5'-GGTTTACGGTACGGGCAACATTAG-3'
O0242	CeuE forward	5'-CATGCCCTAAGACTTAACGATAAAGTT-3'
O0243	CeuE reverse	5'-GATTCTAAGCCATTGCCACTTGCTAG-3'

Whole genome sequencing (WGS)

Obtaining DNA for genomic sequencing

The following minimum QC requirements of gDNA for library preparation procedures were applied:

- Non-degraded DNA, as visualised on a 0.8% agarose gel (a single clean large MW band should be visible, with little or no smearing). A photo of each gel should be provided for QC checking.
- <10% of total nucleic acid from RNA.
- Total protein must be <10% of the concentration of total nucleic acid.
- DNA concentration measurements will be accurately determined using Qubit.
- gDNA will be extracted using a modified protocol from the Qiagen mini DNA spin column kits.
- Although labour intensive, manual extraction is feasible for 1050 isolates.

Genome sequencing

Genomic Libraries were prepared using the Illumina Nextera XT kit, in conjunction with the Illumina indexing kits. The Massey Genome Service (MGS) used both MiSeq and HiSeq sequencing technology.

Based on current application of WGS for *C. jejuni* in mEpiLab the aim was to achieve approximately x50 average genomic coverage and good quality contig assembly, high N50s and approximately 75% of the total genome in fewer than 25 contigs. Both MiSeq and HiSeq technology were deployed to produce outcomes of suitable quality for this project. The advantage of MiSeq (despite the higher cost per sample) is that weekly sequencing runs can be carried out to generate data, and these could be checked steadily over the course of the project to avert and minimise the impact of any problems associated with library preparation. In addition, HiSeq technology allowed samples to be accumulated for larger scale sequencing runs carried out every 2–3 months.

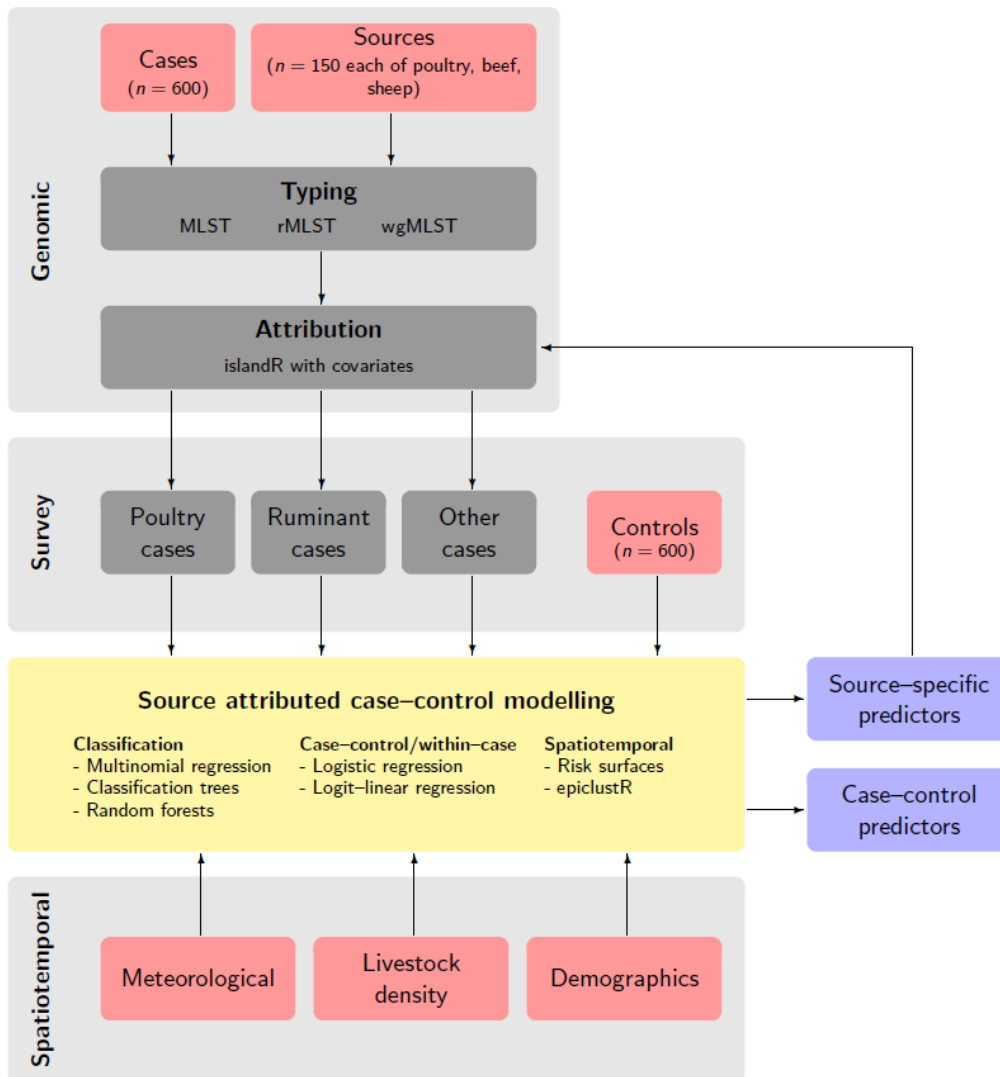
Bioinformatic analysis

The raw read data generated by the genome sequencing was aligned and annotated into sequences suitable for phylogenetic and genomics analysis. This is a rapidly developing field and there are a number of bioinformatics pipelines that can be used to align, assemble and annotate the sequence data. The most appropriate method available when the data became available was applied, using either custom in-house approaches and/or approaches developed by others. For example, the Nullarbour pipeline⁸ contains a suite of tools that take raw read data and output sequence quality data, SNP profiles, and virulence and resistance gene content. Genome Profiler developed by mEpiLab bioinformatician Dr Ji Zhang [1] for producing whole genome MLST profiles was also used. The outputs of these analyses provided data for source attribution and other genomic analyses (e.g. resistance profiling).

⁸ <https://github.com/tseemann/nullarbor>

Analysis

An outline of the analysis plan is provided below.



References

1. Zhang J, Halkilahti J, Hänninen M-L, et al. 2015. Refinement of whole-genome multilocus sequence typing analysis by addressing gene paralogy. *Journal of Clinical Microbiology* 53(5): 1765-1767.
2. Wilson DJ, Gabriel E, Leatherbarrow AJH, et al. 2008. Tracing the source of campylobacteriosis. *PLoS Genetics* 4(9): e1000203-e1000203.
3. Mughini Gras L, Smid JH, Wagenaar JA, et al. 2012. Risk factors for campylobacteriosis of chicken, ruminant, and environmental origin: a combined case-control and source attribution analysis. *PLoS One* 7(8): e42599.
4. Mughini Gras L, Smid JH, Wagenaar JA, et al. 2013. Increased risk for *Campylobacter jejuni* and *C. coli* infection of pet origin in dog owners and evidence for genetic association between strains causing infection in humans and their pets. *Epidemiology and Infection* 141(12): 2526-35.

APPENDIX H: CASE INTERVIEW RESULTS BY WEEK

Table 27. Cases created, and result of contact attempts by week, Auckland

Case Interviews ARPHS	Cases created in REDCap	Cases declined	Cases not eligible	Cases unable to be contacted or other reason	Cases interviewed	Cases with interview and isolate
Week 1 12–18 March 2018	19	2	1	6	10	7
Week 2 19–25 March 2018	19	3	0	8	8	6
Week 3 26 March – 1 April 2018	10	1	0	6	3	2
Week 4 2–8 April 2018	15	1	1	8	5	4
Week 5 9–15 April 2018	14	0	0	7	7	5
Week 6 16–22 April 2018	15	0	1	6	8	7
Week 7 23–29 April 2018	14	2	0	5	7	4
Week 8 30 April – 6 May 2018	18	0	4	3	11	10
Week 9 7–13 May 2018	17	3	3	2	9	6
Week 10 14–20 May 2018	12	3	0	5	4	3
Week 11 21–27 May 2018	13	4	4	2	3	3
Week 12 28 May – 3 June 2018	17	1	1	2	13	11
Week 13 4–10 June 2018	10	1	3	0	6	5
Week 14 11–17 June 2018	12	0	2	3	7	4
Week 15 18–24 June 2018	21	3	1	2	15	12
Week 16 25 June – 1 July 2018	12	0	0	1	11	10
Week 17 2–8 July 2018	13	1	4	2	6	6
Week 18 9–15 July 2018	16	3	2	4	7	3
Week 19 16–22 July 2018	19	1	7	1	10	7

Week 20 23–29 July 2018	15	0	5	3	7	5
Week 21 30 July – 5 August 2018	9	0	1	2	6	3
Week 22 6–12 August 2018	13	4	3	1	5	3
Week 23 13–19 August 2018	13	1	2	1	9	9
Week 24 20–26 August 2018	10	2	0	2	6	6
Week 25 27 August – 2 September 2018	22	1	7	3	11	7
Week 26 3–9 September 2018	18	1	3	1	13	8
Week 27 10–16 September 2018	17	0	4	1	12	11
Week 28 17–23 September 2018	19	2	7	2	8	6
Week 29 24–30 September 2018	19	2	4	3	10	9
Week 30 1–7 October 2018	20	1	7	4	8	6
Week 31 8–14 October 2018	15	3	4	0	8	7
Week 32 15–21 October 2018	22	0	3	6	13	9
Week 33 22–28 October 2018	22	1	0	5	16	13
Week 34 29 October – 4 November 2018	27	4	4	5	14	12
Week 35 5–11 November 2018	27	2	8	1	16	11
Week 36 12–18 November 2018	24	1	5	4	14	13
Week 37 19–25 November 2018	29	1	3	6	19	16
Week 38 26 November – 2 December 2018	33	2	8	3	20	15
Week 39 3–9 December 2018	61	2	9	10	40	30
Week 40 10–16 December 2018	42	3	5	6	28	22
Week 41 17–23 December 2018	35	2	3	5	25	22
Week 42 24–30 December 2018	21	3	4	7	7	5

Week 43 31 December 2018 – 6 January 2019	38	2	3	9	24	17
Week 44 7–13 January 2018	47	5	4	10	28	17
Week 45 14–20 January 2019	26	0	4	10	12	8
Week 46 21–27 January 2019	36	3	8	10	15	13
Week 47 28 January – 3 February 2019	21	2	2	7	10	5
Week 48 4–10 February 2019	17	3	1	4	9	3
Week 49 11–17 February 2019	18	0	2	7	9	3
Week 50 18–24 February 2019	13	5	1	3	4	3
Week 51 25 February – 3 March 2019	18	2	4	4	8	3
Week 52 4–11 March 2019	23	2	3	4	14	10
Total Auckland	1076	91 (8%)	165 (15%)	222 (21%)	598 (56%)	
Study Tolerance	50%	10%	5%		85%	

Case Interviews – MCPHS

Table 28. Cases created, and result of contact attempts by week, Manawatū-Whanganui

Case Interviews MCPHS	Cases created in REDCap	Cases declined	Cases not eligible	Cases unable to be contacted or other reason	Cases interviewed	Cases with interview and isolate
Week 1 12–18 March 2018	10	2	1	2	5	2
Week 2 19–25 March 2018	2	0	2	0	0	0
Week 3 26 March – 1 April 2018	7	2	2	2	1	1
Week 4 2–8 April 2018	4	0	1	0	3	2
Week 5 9–15 April 2018	6	1	0	1	4	3
Week 6 16–22 April 2018	5	1	0	0	4	4
Week 7 23–29 April 2018	4	1	0	0	3	2
Week 8 30 April – 6 May 2018	5	0	0	0	5	5
Week 9 7–13 May 2018	11	2	1	1	7	6
Week 10 14–20 May 2018	9	1	0	0	8	5
Week 11 21–27 May 2018	5	1	1	1	2	2
Week 12 28 May – 3 June 2018	1	0	0	0	1	1
Week 13 4–10 June 2018	9	1	0	3	5	4
Week 14 11–17 June 2018	4	0	1	0	3	3
Week 15 18–24 June 2018	6	0	0	0	6	6
Week 16 25 June – 1 July 2018	5	0	0	0	5	4
Week 17 2–8 July 2018	10	0	2	0	8	8
Week 18 9–15 July 2018	2	0	0	0	2	1
Week 19 16–22 July 2018	4	0	0	1	3	2
Week 20 23–29 July 2018	5	0	2	1	2	1
Week 21 30 July – 5 August 2018	6	2	1	1	2	1

Week 22 6–12 August 2018	6	1	0	0	5	5
Week 23 13–19 August 2018	2	0	1	1	0	0
Week 24 20–26 August 2018	7	0	2	0	5	2
Week 25 27 August – 2 September 2018	5	0	1	2	2	2
Week 26 3–9 September 2018	5	0	0	0	5	5
Week 27 10–16 September 2018	8	0	0	0	8	6
Week 28 17–23 September 2018	7	1	0	0	6	5
Week 29 24–30 September 2018	4	0	0	1	3	2
Week 30 1–7 October 2018	4	0	0	1	3	3
Week 31 8–14 October 2018	11	0	2	1	8	8
Week 32 15–21 October 2018	7	0	2	1	4	3
Week 33 22–28 October 2018	11	0	0	2	9	9
Week 34 29 October – 4 November 2018	9	0	1	1	7	6
Week 35 5–11 November 2018	7	1	2	1	3	3
Week 36 12–18 November 2018	12	1	3	0	8	7
Week 37 19–25 November 2018	13	0	2	4	7	4
Week 38 26 November – 2 December 2018	12	0	0	3	9	8
Week 39 3–9 December 2018	20	2	2	2	14	13
Week 40 10–16 December 2018	13	1	1	2	9	9
Week 41 17–23 December 2018	8	1	0	0	7	6
Week 42 24–30 December 2018	9	5	0	1	3	3
Week 43 31 December 2018 – 6 January 2019	15	4	0	4	7	6
Week 44 7–13 January 2018	16	4	0	2	10	10

Week 45 14–20 January 2019	14	3	0	1	10	10
Week 46 21–27 January 2019	2	1	1	0	0	0
Week 47 28 January – 3 February 2019	6	2	1	0	3	3
Week 48 4–10 February 2019	7	1	0	0	6	5
Week 49 11–17 February 2019	6	1	0	0	5	5
Week 50 18–24 February 2019	6	1	0	0	5	4
Week 51 25 February – 3 March 2019	5	0	0	3	2	1
Week 52 4–11 March 2019	10	2	2	0	6	5
Total Manawatū- Whanganui	387	46 (12%)	39 (10%)	44 (12%)	258 (67%)	
Study Tolerance	100%	10%	5%		85%	

APPENDIX I: UNIVARIATE RISK FACTOR ANALYSES

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
<i>Gastric treatment in 4 weeks prior?</i>						
N	556/664	83.7	540/600	90.0	Reference	
Y	101/664	15.2	60/600	10.0	1.84	(1.29,2.65)
<i>Gastro treatment taken?</i>						
No gastro drugs	556/656	84.8	540/600	90.0	Reference	
Eno	0/656	0.0	1/600	0.2		
Gaviscon	10/656	1.5	8/600	1.3	1.22	(0.47,3.26)
Lansoprazole	1/656	0.2	3/600	0.5	0.45	(0.02,3.66)
Lanzole	4/656	0.6	0/600	0.0		
Losec	22/656	3.4	9/600	1.5	2.91	(1.35,6.81)
Mylanta	1/656	0.2	4/600	0.7	0.34	(0.02,2.35)
Omeprazole	52/656	7.9	14/600	2.3	4.14	(2.29,7.96)
Pantoprazole	7/656	1.1	3/600	0.5	2.25	(0.61,10.61)
Peptisoothe syrup	0/656	0.0	1/600	0.2		
Quick-ese	1/656	0.2	7/600	1.2	0.19	(0.01,1.09)
Ranitidine	1/656	0.2	3/600	0.5	0.29	(0.01,2.26)
Zantac	0/656	0.0	1/600	0.2		
Other	1/656	0.2	6/600	1.0	0.16	(0.01,0.95)
<i>Chemotherapy?</i>						
N	658/662	99.4	598/600	99.7	Reference	
Y	4/662	0.6	1/600	0.2	4.81	(0.7,94.92)
<i>Cyclosporine?</i>						

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
N	661/663	99.7	598/600	99.7	Reference	
N	0/663	0.0	0/600	0.0	Undefined	
<i>Methotrexate?</i>						
N	656/663	98.9	591/600	98.5	Reference	
Y	5/663	0.8	6/600	1	0.97	(0.27,3.32)
<i>Prednisone?</i>						
N	644/663	97.1	581/600	96.8	Reference	
Y	16/663	2.4	17/600	2.8	0.82	(0.4,1.67)
<i>Radiation?</i>						
N	658/659	99.9	597/600	99.5	Reference	
Y	1/659	0.2	2/600	0.3	0.48	(0.02,5.14)
<i>Chronic Illness?</i>						
N	619/663	93.4	590/600	98.3	Reference	
Y	36/663	5.4	10/600	1.7	3.43	(1.73,7.44)
<i>Type of chronic illness?</i>						
Crohn's diseases	2/663	0.3	1/600	0.2	2.13	(0.2,46.61)
Irritable bowel syndrome	12/663	1.8	5/600	0.8	1.98	(0.72,6.32)
Ulcerative colitis	2/663	0.3	1/600	0.2	2.16	(0.2,47.33)
Stomach or oesophagus problems	3/663	0.5	0/600	0.0	Undefined	
Other	17/663	2.6	4/600	0.7	3.83	(1.38,13.52)
<i>Travel within NZ last 7 days?</i>						
N	541/664	81.5	499/600	83.2	Reference	
Y	123/664	18.5	101/600	16.8	1.1	(0.82,1.49)
<i>Travel overseas last 7 days?</i>						
N	647/664	97.4	588/600	98.0	Reference	

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Y	17/664	2.6	12/600	2.0	1.31	(0.62,2.88)
<i>Contact with someone with gastro symptoms?</i>						
N	491/665	73.8	539/600	89.83	Reference	
DK	84/665	12.6	12/600	2		
Y	90/665	13.5	49/600	8.17	1.96	(1.35,2.87)
<i>Close contact with someone with gastro symptoms (i.e. same household)?</i>						
N	519/654	79.36	565/600	94.17	Reference	
DK	84/654	12.84	12/600	2		
Y	51/654	7.8	23/600	3.83	2.28	(1.38,3.87)
<i>Other contact with someone with gastro symptoms (i.e. different household?)</i>						
N	537/655	81.98	565/600	94.17	Reference	
DK	84/655	12.82	12/600	2		
Y	34/655	5.19	23/600	3.83	1.58	(0.91,2.78)
<i>Indirect contact with someone with gastro symptoms?</i>						
N	541/648	83.49	560/600	93.33	Reference	
DK	87/648	13.43	14/600	2.33		
Y	20/648	3.09	26/600	4.33	0.78	(0.42,1.43)
<i>Did you eat meat?</i>						
N	37/666	5.56	57/600	9.5	Reference	
Y	617/666	92.64	543/600	90.5	1.75	(1.13,2.75)
<i>Did you eat...</i>						
Poultry	527/654	80.58	491/600	81.83	0.92	(0.69,1.24)
Beef	400/654	61.16	391/600	65.17	0.77	(0.6,0.97)
Lamb	165/654	25.23	170/600	28.33	0.83	(0.64,1.07)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Pork	254/654	38.84	283/600	47.17	0.67	(0.54,0.85)
Other	33/654	5.05	30/600	5	0.84	(0.84,1.42)
<i>Did you eat chicken cooked at home?</i>						
N	127/543	23.39	109/531	20.53	Reference	
Y	416/543	76.61	422/531	79.47	0.85	(0.63,1.14)
<i>Chicken burger?</i>						
N	442/481	91.89	492/531	92.66	Reference	
Y	37/481	7.69	38/531	7.16	1.14	(0.70,1.86)
<i>Chicken deli?</i>						
N	452/484	93.39	512/531	96.42	Reference	
Y	30/484	6.2	16/531	3.01	2.8	(1.5,5.4)
<i>Chicken fillets?</i>						
N	366/503	72.76	390/531	73.45	Reference	
Y	135/503	26.84	140/531	26.37	1.01	(0.76,1.35)
<i>Chicken kebabs?</i>						
N	453/480	94.38	504/531	94.92	Reference	
Y	25/480	5.21	26/531	4.90	1.04	(0.57,1.87)
<i>Chicken mince?</i>						
N	460/477	96.44	519/531	97.74	Reference	
Y	15/477	3.14	11/531	2.07	1.68	(0.75,3.84)
<i>Chicken nuggets?</i>						
N	447/481	92.93	480/531	90.40	Reference	
Y	31/481	6.44	50/531	9.42	0.62	(0.38,1.01)
<i>Chicken offal?</i>						
N	465/476	97.69	523/531	98.50	Reference	

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Y	9/476	1.89	7/531	1.32	1.65	(0.6,4.72)
<i>Other type of chicken?</i>						
N	459/483	95.03	516/531	97.18	Reference	
Y	22/483	4.55	14/531	2.64	1.66	(0.84,3.4)
<i>Chicken pate?</i>						
N	472/478	98.74	521/531	98.12	Reference	
Y	4/478	0.84	7/531	1.32	0.69	(0.18,2.35)
<i>Chicken pieces?</i>						
N	309/508	60.83	271/531	51.04	Reference	
Y	197/508	38.78	259/531	48.78	0.67	(0.52,0.87)
<i>Chicken sausages?</i>						
N	464/480	96.67	519/531	97.74	Reference	
Y	14/480	2.92	11/531	2.07	1.61	(0.71,3.73)
<i>Whole chicken?</i>						
N	378/486	77.78	391/531	73.63	Reference	
Y	106/486	21.81	139/531	26.18	0.76	(0.56,1.03)
<i>Did you eat chicken which was pink on the inside?</i>						
N	413/442	93.44	471/482	97.72	Reference	
Y	29/442	6.56	11/482	2.28	3.21	(1.6,6.87)
<i>Did you eat chicken which was brought...</i>						
Cooked	44/459	9.59	101/527	19.17	0.45	(0.3,0.65)
Fresh	154/459	33.55	257/527	48.77	0.61	(0.47,0.8)
Frozen	56/459	12.2	90/527	17.08	0.62	(0.43,0.9)
Frozen then thawed	148/459	32.24	104/527	19.73	1.76	(1.3,2.37)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Other way	7/459	1.53	8/527	1.52	0.81	(0.26,2.41)
<i>Did you eat chicken cook with a...</i>						
BBQ	37/666	5.56	20/600	3.33	1.77	(1.02,3.16)
Microwave	1/666	0.22	9/600	1.7	0.21	(0.03,0.81)
Grill	130/666	28.14	56/600	10.57	2.99	(2.13,4.24)
<i>Did you eat poultry outside the home?</i>						
N	390/652	59.82	412/600	68.67	Reference	
Y	262/652	40.18	188/600	31.33	1.57	(1.23,2.00)
<i>Did you eat chicken from...</i>						
Fast food/takeaway	128/652	19.63	99/600	16.5	1.27	(0.94,1.72)
Café/restaurant	92/652	14.11	62/600	10.33	1.59	(1.12,2.27)
Catered event	8/652	1.23	1/600	0.17	6.09	(1.08,114.5)
Social BBQ	16/652	2.45	7/600	1.17	1.91	(0.8,5.06)
Other social occasion (e.g. dinner at friends)	21/652	3.22	12/600	2.00	1.61	(0.79,3.43)
Somewhere else	39/652	5.98	14/600	2.33	2.67	(1.46,5.19)
<i>Did you eat poultry that wasn't chicken?</i>						
N	381/407	93.61	417/439	94.99	Reference	
Y	25/407	6.14	20/439	4.56	1.37	(0.74,2.57)
<i>Did you eat duck?</i>						
N	401/404	99.26	423/437	96.8	Reference	
Y	2/404	0.5	14/437	3.2	0.15	(0.02,0.56)
<i>Did you eat duck brought...</i>						
Fresh	0/403	0	1/437	0.23	Undefined	
Frozen	0/403	0	0/437	0	Undefined	
Ready cooked	0/403	0	2/437	0.46	Undefined	

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
<i>Did you eat goose?</i>						
N	402/404	99.5	437/437	100	Reference	
Y	1/404	0.25	0/437	0	Undefined	
<i>Did you eat goose brought...</i>						
Fresh	0/403	0	0/437	0	Undefined	
Frozen	0/403	0	0/437	0	Undefined	
Ready cooked	0/403	0	0/437	0	Undefined	
<i>Did you eat turkey?</i>						
N	391/404	96.78	431/437	98.63	Reference	
Y	12/404	2.97	6/437	1.37	2.24	(0.85,6.59)
<i>Did you eat turkey brought...</i>						
Fresh	2/403	0.5	0/437	0	Undefined	
Frozen	0/403	0	0/437	0	Undefined	
Ready cooked	5/403	1.24	0/437	0	Undefined	
<i>Did you eat beef cooked at home?</i>						
N	345/654	52.75	278/600	46.33	Reference	
Y	309/654	47.25	322/600	53.67	0.71	(0.57,0.9)
<i>Beef burger?</i>						
N	582/617	94.33	535/600	89.17	Reference	
Y	25/617	4.05	65/600	10.83	0.33	(0.2,0.53)
<i>Beef chop?</i>						
N	593/610	97.21	588/600	98	Reference	
Y	7/610	1.15	12/600	2	0.59	(0.21,1.5)
<i>Beef deli?</i>						
N	594/609	97.54	589/600	98.17	Reference	

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Y	5/609	0.82	11/600	1.83	0.45	(0.14,1.28)
<i>Beef mince?</i>						
N	478/625	76.48	452/600	75.33	Reference	
Y	137/625	21.92	148/600	24.67	0.82	(0.62,1.08)
<i>Beef offal?</i>						
N	595/607	98.02	599/600	99.83	Reference	
Y	2/607	0.33	1/600	0.17	1.97	(0.19,42.76)
<i>Beef pate?</i>						
N	599/609	98.36	598/600	99.67	Reference	
Y	0/609	0.00	1/600	0.17	Undefined	
<i>Beef pieces?</i>						
N	574/616	93.18	549/600	91.5	Reference	
Y	33/616	5.36	51/600	8.5	0.59	(0.37,0.94)
<i>Beef roast?</i>						
N	577/608	94.9	578/600	96.33	Reference	
Y	21/608	3.45	22/600	3.67	0.84	(0.45,1.58)
<i>Beef sausage?</i>						
N	532/614	86.64	550/600	91.67	Reference	
Y	73/614	11.89	48/600	8	1.3	(0.87,1.94)
<i>Beef steak?</i>						
N	469/626	74.92	434/600	72.33	Reference	
Y	148/626	23.64	166/600	27.67	0.76	(0.58,0.99)
<i>Other type of beef?</i>						
N	587/610	96.23	586/600	97.67	Reference	
Y	13/610	2.13	14/600	2.33	0.9	(0.41,1.98)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
<i>Did you eat beef which was pink in the middle?</i>						
N	539/600	89.83	499/598	83.44	Reference	
Y	61/600	10.17	99/598	16.56	0.55	(0.39,0.78)
<i>Did you eat beef brought...</i>						
Cooked	11/666	1.65	35/600	5.83	0.25	(0.12,0.48)
Fresh	247/666	37.09	253/600	42.17	0.75	(0.59,0.95)
Frozen	39/666	5.86	87/600	14.5	0.35	(0.23,0.52)
<i>Did you cook beef using a...</i>						
BBQ	32/595	5.38	33/598	5.52	0.98	(0.6,1.61)
Microwave	3/595	0.5	5/598	0.84	0.9	(0.24,3.31)
Grill	85/595	14.29	57/598	9.53	1.62	(1.14,2.33)
<i>Did you eat beef brought outside the home?</i>						
N	502/652	76.99	463/600	77.17	Reference	
Y	150/652	23.01	137/600	22.83	0.94	(0.71,1.23)
<i>Did you eat beef from a...</i>						
Fast food/takeaway	66/652	10.12	57/600	9.5	0.94	(0.64,1.38)
Cafe/restaurant	50/652	7.67	57/600	9.5	0.8	(0.53,1.21)
Catered event	6/652	0.92	2/600	0.33	2.44	(0.55,16.95)
Social BBQ	16/652	2.45	4/600	0.67	3.22	(1.16,11.36)
Other social occasion (e.g. dinner at friends)	11/652	1.69	11/600	1.83	0.99	(0.42,2.35)
Somewhere else	20/652	3.07	8/600	1.33	2.01	(0.9,4.92)
<i>Did you eat lamb cooked at home?</i>						
N	525/653	80.40	461/600	76.83	Reference	
Y	128/653	19.60	139/600	23.17	0.77	(0.58,1.02)
<i>Lamb burger?</i>						

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
N	632/637	99.22	596/600	99.3	Reference	
Y	1/637	0.16	4/600	0.67	0.25	(0.01,1.74)
<i>Lamb chop?</i>						
N	581/644	90.22	525/600	87.50	Reference	
Y	60/644	9.32	75/600	12.50	0.67	(0.46,0.96)
<i>Lamb deli?</i>						
N	633/637	99.00	600/600	100.00	Reference	
Y	0/637	0	0/600	0	Undefined	
<i>Lamb mince?</i>						
N	627/637	98.43	595/600	99.17	Reference	
Y	6/637	0.94	4/600	0.67	1.58	(0.44,6.32)
<i>Lamb offal?</i>						
N	629/637	98.74	600/600	100.00	Reference	
Y	4/637	62.79	0/600	0	Undefined	
<i>Lamb pate?</i>						
N	633/637	99.37	600/600	100.00	Reference	
Y	0/637	0	0/600	0	Undefined	
<i>Lamb pieces?</i>						
N	623/636	97.96	578/600	96.33	Reference	
Y	9/636	1.42	22/600	3.67	0.41	(0.17,0.87)
<i>Lamb Roast?</i>						
N	585/641	91.26	562/600	93.67	Reference	
Y	52/641	8.11	38/600	6.33	1.2	(0.77,1.88)
<i>Lamb sausage?</i>						
N	627/638	98.28	592/600	98.67	Reference	

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Y	7/638	1.10	8/600	1.33	0.77	(0.27,2.2)
<i>Lamb steak?</i>						
N	628/638	98.43	587/600	97.83	Reference	
Y	6/638	0.94	13/600	2.17	0.5	(0.17,1.28)
<i>Other type of lamb?</i>						
N	626/638	98.12	595/600	99.17	Reference	
Y	8/638	1.25	5/600	0.83	1.58	(0.52,5.3)
<i>Did you eat lamb which was pink in the middle?</i>						
N	617/632	97.63	577/600	96.17	Reference	
Y	15/632	2.37	23/600	3.83	0.64	(0.32,1.25)
<i>Did you eat lamb brought...</i>						
Cooked	1/666	0.15	4/600	0.67	0.27	(0.01,1.82)
Fresh	101/666	15.17	93/600	15.50	0.93	(0.68,1.28)
Frozen	14/666	2.10	47/600	7.83	0.24	(0.12,0.43)
<i>Did you cook lamb using a...</i>						
BBQ	7/666	1	14/600	2	0.45	(0.17,1.11)
Microwave	1/666	0	0/600	0	Undefined	
Grill	42/666	6	19/600	3	2.12	(1.22,3.79)
<i>Did you eat lamb brought outside the home?</i>						
N	609/650	93.69	569/600	94.83	Reference	
Y	41/650	6.31	31/600	5.17	1.29	(0.8,2.12)
<i>Did you eat lamb from a...</i>						
Fast food/takeaway	14/650	2.15	9/600	1.50	1.55	(0.66,3.78)
Cafe/restaurant	11/650	1.69	15/600	2.50	0.72	(0.31,1.59)
Catered event	2/650	0.31	1/600	0.17	1.58	(0.15,34.7)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Social BBQ	6/650	0.92	0/600	0		
Other social occasion (e.g. dinner at friends)	7/650	1.08	6/600	1.00	1.09	(0.36,3.47)
Somewhere else	3/650	0.46	2/600	0.33	1.42	(0.23,11.02)
<i>Did you eat pork cooked at home?</i>						
N	467/651	71.74	378/600	63.00	Reference	
Y	184/651	28.26	222/600	37.00	0.62	(0.49,0.79)
<i>Pork burger?</i>						
N	617/622	99.20	598/600	99.67	Reference	
Y	1/622	0.16	2/600	0.33	0.47	(0.02,5.00)
<i>Pork chop?</i>						
N	575/625	92.0	542/600	90.33	Reference	
Y	47/625	7.52	58/600	9.67	0.72	(0.47,1.08)
<i>Pork deli?</i>						
N	599/625	95.84	572/600	95.33	Reference	
Y	23/625	3.68	28/600	4.67	0.77	(0.43,1.36)
<i>Pork mince?</i>						
N	612/623	98.23	578/600	96.33	Reference	
Y	8/623	1.28	22/600	3.67	0.34	(0.14,0.75)
<i>Pork offal?</i>						
N	616/620	99.35	600/600	100	Reference	
Y	1/620	0.16	0/600	0	Undefined	
<i>Pork pate?</i>						
N	617/620	99.51	600/600	100	Reference	
Y	0/620	0	0/600	0	Undefined	
<i>Pork pieces?</i>						

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
N	601/624	96.31	556/600	92.67	Reference	
Y	20/624	3.21	44/600	7.33	0.39	(0.22,0.67)
<i>Pork Roast?</i>						
N	580/625	92.8	562/600	93.67	Reference	
Y	42/625	6.72	38/600	6.33	1.00	(0.63,1.6)
<i>Pork sausage?</i>						
N	608/624	97.44	560/600	93.33	Reference	
Y	13/624	2.08	40/600	6.67	0.27	(0.14,0.51)
<i>Pork steak?</i>						
N	601/620	96.94	574/600	95.67	Reference	
Y	16/620	2.58	26/600	4.33	0.54	(0.28,1.01)
<i>Other type of pork?</i>						
N	581/627	92.66	555/600	92.50	Reference	
Y	43/627	6.86	45/600	7.50	0.89	(0.57,1.38)
<i>Did you eat pork which was pink in the middle?</i>						
N	604/611	98.85	593/600	98.83	Reference	
Y	7/611	1.15	7/600	1.17	1.00	(0.33,2.99)
<i>Did you eat pork brought...</i>						
Cooked	16/666	2.40	30/600	5.00	0.46	(0.24,0.85)
Fresh	117/666	17.57	143/600	23.83	0.63	(0.47,0.83)
Frozen	14/666	2.10	39/600	6.50	0.29	(0.15,0.54)
<i>Did you cook pork using a...</i>						
BBQ	10/666	1.50	21/600	3.50	0.42	(0.18,0.88)
Microwave	53/666	7.96	34/600	5.67	1.48	(0.94,2.34)
Grill	2/666	0.30	2/600	0.33	0.91	(0.11,7.73)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
<i>Did you eat pork brought outside the home?</i>						
N	566/652	86.81	522/600	87.00	Reference	
Y	86/652	13.19	78/600	13.00	1.02	(0.73,1.43)
<i>Did you eat pork from a...</i>						
Fast food/takeaway	22/652	3.37	25/600	4.17	0.77	(0.42,1.39)
Cafe/restaurant	32/652	4.91	35/600	5.83	0.87	(0.52,1.44)
Catered event	3/652	0.46	2/600	0.33	1.16	(0.19,9.01)
Social BBQ	5/652	0.77	5/600	0.83	0.9	(0.24,3.3)
Other social occasion (e.g. dinner at friends)	13/652	1.99	7/600	1.17	1.74	(0.7,4.72)
Somewhere else	16/652	2.45	5/600	0.83	2.9	(1.11,8.99)
<i>Did you eat a chicken meal/snack with vegetables or fruit?</i>						
N	413/666	62.01	289/600	48.17	Reference	
Y	253/666	37.99	311/600	51.83	0.52	(0.41,0.66)
<i>Did you eat a chicken meal/snack with vegetables or fruit prepared at...</i>						
Home	208/666	31.23	266/600	44.33	0.52	(0.41,0.66)
Fast food/takeaway	49/666	7.36	29/600	4.83	1.39	(0.86,2.28)
Cafe/restaurant	29/666	4.35	25/600	4.17	1.12	(0.64,1.98)
Catered event	4/666	0.60	1/600	0.17	2.9	(0.41,57.67)
Social BBQ	4/666	0.60	2/600	0.33	1.37	(0.26,9.98)
Other social occasion (e.g. dinner at friends)	14/666	2.10	2/600	0.33	5.72	(1.57,36.8)
<i>Did you eat a meat meal/snack that was not chicken with vegetables or fruit?</i>						
N	397/666	59.61	318/600	53.00	Reference	

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Y	269/666	40.39	282/600	47.00	0.67	(0.53,0.85)
<i>Did you eat a meat meal/snack with vegetables/fruit prepared at...</i>						
Home	230/666	34.53	248/600	41.33	0.66	(0.52,0.84)
Fast food/takeaway	48/666	7.21	20/600	3.33	1.85	(1.08,3.28)
Cafe/resturant	28/666	4.20	20/600	3.33	1.27	(0.7,2.34)
Catered event	6/666	0.90	0/600	0	Undefined	
Social BBQ	11/666	1.65	5/600	0.83	1.61	(0.57,5.24)
Other social occasion (e.g. dinner at friends)	12/666	1.80	6/600	1	1.7	(0.64,4.99)
<i>Did you eat a vegetarian meal or snack?</i>						
N	187/666	28.08	212/600	35.33	Reference	
Y	479/666	71.92	388/600	64.67	1.43	(1.12,1.82)
<i>Did you eat a vegetarian meal or snack prepared at....</i>						
Home	432/666	64.86	355/600	59.17	1.29	(1.02,1.63)
Fast food/takeaway	33/666	4.95	13/600	2.17	2.19	(1.16,4.39)
Cafe/restaurant	37/666	5.56	19/600	3.17	2.02	(1.15,3.67)
Catered event	7/666	1.05	1/600	0.17	5.59	(0.97,105.26)
Social BBQ	9/666	1.35	5/600	0.83	1.41	(0.48,4.66)
Other social occasion (e.g. dinner at friends)	17/666	2.55	5/600	0.83	2.68	(1.04,8.3)
Somewhere else	38/666	5.71	15/600	2.50	2.05	(1.11,3.94)
<i>Did you eat/drink raw milk products in the last 7 days?</i>						
N	619/652	94.94	579/600	96.50	Reference	
Y	28/652	4.29	13/600	2.17	1.76	(0.91,3.6)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
<i>Did you eat or drink raw...</i>						
Milk	27/661	4.08	10/592	1.69	2.11	(1.02,4.69)
Yoghurt	1/661	0.15	3/592	0.51	0.32	(0.02,2.52)
Cheese	0/661	0	3/592	0.51	Undefined	
Other product	0/661	0	1/592	0.17	Undefined	
<i>Raw meat or poultry handled in household in the last 7 days...</i>						
I handled poultry meat	234/666	35.14	173/600	28.83	1.59	(1.23,2.06)
I handled other meat	211/666	31.68	161/600	26.83	1.38	(1.07,1.80)
I handled pet food	25/666	3.75	62/600	10.33	0.36	(0.22,0.58)
Someone else handled poultry meat	290/666	43.54	202/600	33.67	1.43	(1.12,1.83)
Someone else handled other meat	257/666	38.59	196/600	32.67	1.14	(0.89,1.46)
<i>Did you handle kitchen items which had contact with raw meats or poultry?</i>						
N	317/662	47.89	389/595	65.38	Reference	
Y	306/662	46.22	200/595	33.61	2.19	(1.7,2.82)
DK	39/662	5.89	6/595	1.01		
<i>Did you handle the following which had contact with raw meats or poultry?</i>						
Knives	294/623	47.19	173/589	29.37	2.58	(1.99,3.35)
Chopping boards	290/623	46.55	177/589	30.05	2.41	(1.86,3.14)
Dish cloths	236/623	37.88	102/589	17.32	3.22	(2.43,4.3)
Plate/dish	243/623	39.00	114/589	19.35	2.94	(2.23,3.89)
<i>Do you use separate chopping boards for raw poultry?</i>						
N	391/656	59.60	383/600	63.83	Reference	

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Y	246/656	37.5	216/600	36.00	1.16	(0.91,1.46)
<i>Do you use separate chopping boards for raw meats that aren't poultry?</i>						
N	317/655	48.40	348/600	58.00	Reference	
Y	318/655	48.55	249/600	41.50	1.43	(1.14,1.81)
<i>Do you use separate chopping boards for all meats?</i>						
N	317/655	48.40	348/600	58.00	Reference	
Y	318/655	48.55	249/600	41.50	1.43	(1.14,1.81)
<i>Do you use separate chopping boards for vegetables?</i>						
N	201/654	30.73	243/600	40.50	Reference	
Y	434/654	66.36	355/600	59.17	1.48	(1.17,1.88)
<i>Do you wash your boards between raw meat and other foods?</i>						
N	19/567	3.35	16/535	2.99	Reference	
Y	526/567	92.77	511/535	95.51	0.88	(0.44,1.76)
DK	22/567	3.88	8/535	1.50		
<i>Do you wash your boards by...</i>						
Putting through dishwasher cycle	147/653	22.51	71/576	12.33	0.52	(0.03,3.72)
Rinsing with clean water	15/653	2.30	22/576	3.82	0.18	(0.01,1.38)
Washing with detergent and hot water	471/653	72.13	434/576	75.35	0.26	(0.01,1.85)
Wiping with damp cloth	4/653	0.61	1/576	0.17	Undefined	
<i>Do you rinse raw chicken before cooking?</i>						
N	475/660	71.97	328/600	54.67	Reference	
Y	130/660	19.70	224/600	37.33	0.42	(0.32,0.55)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Don't ever cook chicken	55/660	8.33	48/600	8.00	0.82	(0.54,1.26)
<i>Do you rinse meat that is not chicken?</i>						
N	537/661	81.24	413/600	68.83	Reference	
Y	78/661	11.80	135/600	22.50	0.45	(0.33,0.62)
Don't ever cook meat that isn't chicken	46/661	6.96	52/600	8.67	0.71	(0.46,1.09)
<i>Do you live or work on a farm or lifestyle block?</i>						
N	492/663	74.21	568/600	94.67	Reference	
Y	170/663	25.64	32/600	5.33	6.16	(4.13,9.45)
<i>Home/work status?</i>						
Don't live or work on a farm	496/664	74.70	568/600	94.67	Reference	
Live on a farm/lifestyle block	123/664	18.52	19/600	3.17	7.29	(4.49,12.49)
Work on a farm/lifestyle block	16/664	2.41	1/600	0.17	18.34	(3.65,333.68)
Live and work on a farm/lifestyle block	23/664	3.46	11/600	1.83	2.52	(1.21,5.55)
<i>Do you work directly with animals, food, the outdoor environment, healthcare or early childhood centers?</i>						
Yes, animal	62/531	11.67	17/485	3.51	3.71	(2.12,6.81)
Yes, food	26/531	4.90	30/485	6.19	0.81	(0.47,1.41)
Yes, outdoor environment	53/531	9.98	40/485	8.25	1.12	(0.72,1.75)
Yes, healthcare/rest home	20/531	3.77	34/485	7.01	0.62	(0.34,1.10)
Yes, early childhood center	10/531	1.88	8/485	1.65	1.29	(0.50,3.45)
<i>Animals you have contact with at home or work...</i>						
Dairy	38/662	5.74	11/600	1.83	2.81	(1.44,5.93)
Meat production	61/662	9.21	20/600	3.33	2.89	(1.7,5.09)
Poultry	44/662	6.65	17/600	3.33	2.12	(1.19,3.93)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Other	67/662	10.12	17/600	3.33	3.7	(2.18,6.6)
<i>Are you in contact with the following dairy animals at home/work?</i>						
Cows	34/662	5.14	9/600	1.50	3.02	(1.47,6.86)
Goats	4/662	0.60	1/600	0.17	2.76	(0.39,54.96)
Sheep	3/662	0.45	2/600	0.33	1.22	(0.2,9.33)
<i>Are you in contact with the following meat production animals at home/work?</i>						
Beef	37/662	5.60	11/600	1.83	3.09	(1.58,6.54)
Sheep	38/662	5.74	11/600	1.83	2.95	(1.5,6.26)
Pig	4/662	0.60	4/600	0.67	0.97	(0.22,4.22)
Cattle	10/662	1.51	3/600	0.50	2.9	(0.87,13.14)
Goat	3/662	0.45	1/600	0.17	2.27	(0.28,46.69)
<i>Are you in contact with the following poultry animals at home/work?</i>						
Domestic poultry	41/662	6.19	16/600	2.67	2.13	(1.18,4.01)
Commercial poultry	1/662	0.15	0/600	0	Undefined	
Poultry processing	1/662	0.15	0/600	0	Undefined	
Other poultry	1/662	0.15	1/600	0.17	0.92	(0.04,23.37)
<i>Have you had any contact with animals?</i>						
N	243/666	36	253/600	42	Reference	
Y	422/666	63	347/600	58	1.25	(0.99,1.58)
<i>Did you have contact with...</i>						
Pets (i.e. dogs, cats, birds)	380/666	57.10	337/600	56.17	1.04	(0.82,1.31)
Chicken	85/666	12.76	21/600	3.50	3.73	(2.29,6.31)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Pigs	10/666	1.50	6/600	1.00	1.45	(0.52,4.38)
Cattle	72/666	10.81	18/600	3.00	3.6	(2.11,6.43)
Sheep	62/666	9.31	18/600	3.00	3.05	(1.79,5.43)
Other	50/666	7.51	30/600	5.00	1.54	(0.96,2.51)
<i>Did you have contact with pets...</i>						
At home	341/666	51.20	245/600	40.83	1.57	(1.25,1.98)
Outside the home	61/666	9.16	92/600	15.33	0.53	(0.37,0.75)
<i>Did you have occupational contact with pets?</i>						
N	648/664	97.60	594/600	99.00	Reference	
Y	16/664	2.41	6/600	1.00	2.42	(0.97,6.88)
<i>Did you have contact with sick pets?</i>						
N	643/664	96.84	587/600	97.83	Reference	
Y	21/664	3.16	13/600	2.17	1.55	(0.77,3.23)
<i>How long did you have contact with pets?</i>						
No Contact	648/664	97.60	594/600	99.00	Reference	
< 1mth	2/664	0.30	0/600	0	Undefined	
2-3mth	1/664	0	0/600	0	Undefined	
>3-12mth	1/664	0	2/600	0.33	0.38	(0.02,5.20)
>1yr	12/664	1.81	4/600	0.67	3.00	(1.02,10.95)
<i>Did you have contact with chickens ...</i>						
At home	64/666	9.61	17/600	2.83	3.44	(2.01,6.19)
Outside the home	21/666	3.15	4/600	0.67	3.96	(1.46,13.86)
<i>Did you have occupational contact with chickens?</i>						
N	659/664	99.25	596/600	99.33	Reference	
Y	5/664	0.15	4/600	0.67	0.96	(0.24,3.98)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
<i>Did you have contact with sick chickens?</i>						
N	665/666	99.85	599/600	99.83	Reference	
Y	1/666	0.15	1/600	0.17	0.78	(0.03,19.85)
<i>How long did you have contact with chicken?</i>						
No Contact	581/586	99	579/583	99	Reference	
>3-12mth	2/586	0	0/583	0	Undefined	
>1yr	3/586	1	4/583	1	0.7	(0.13,3.29)
<i>Did you have contact with pigs...</i>						
At home	5/666	0.75	3/600	0.50	1.54	(0.37,7.65)
Outside the home	5/666	0.75	3/600	0.50	1.36	(0.32,6.92)
<i>Did you have occupational contact with pigs?</i>						
N	666/666	100.00	599/600	99.83	Reference	
Y	0/666	0	1/600	0.17	Undefined	
<i>How long did you have contact with pigs?</i>						
No Contact	656/656	100.00	594/595	99.83	Reference	
>1yr	0/656	0	1/595	0.17	Undefined	
<i>Did you have contact with cattle...</i>						
At home	48/666	7.21	10/600	1.67	4.24	(2.17,9.12)
Outside the home	26/666	3.90	8/600	1.33	2.34	(1.07,5.67)
<i>Did you have occupational contact with cattle?</i>						
N	640/665	96.24	593/600	98.83	Reference	
Y	25/665	3.76	7/600	1.17	2.91	(1.28,7.5)
<i>Did you have contact with sick cattle?</i>						
N	657/664	98.95	600/600	100.00	Reference	
Y	7/664	1.05	0/600	0	Undefined	

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
<i>How long did you have contact with cattle?</i>						
No Contact	594/618	96.12	582/589	98.81	Reference	
< 1mth	1/618	0.16	0/589	0	Undefined	
2-3mth	2/618	0.32	0/589	0	Undefined	
>3-12mth	6/618	0.97	0/589	0	Undefined	
>1yr	15/618	2.43	7/589	1.19	1.96	(0.8,5.28)
<i>Did you have contact with sheep...</i>						
At home	44/666	6.61	12/600	2.00	3.32	(1.77,6.69)
Outside the home	20/666	3.00	6/600	1.00	2.41	(1,6.75)
<i>Did you have occupational contact with sheep?</i>						
N	646/666	97.00	595/600	99.17	Reference	
Y	20/666	3.00	5/600	0.83	3.09	(1.21,9.48)
<i>Did you have contact with sick sheep?</i>						
N	662/665	99.55	600/600	100	Reference	
Y	3/665	0.45	0/600	0	Undefined	
<i>How long did you have contact with sheep?</i>						
No Contact	604/624	96.79	582/587	99	Reference	
< 1mth	2/624	0	0/595	0	Undefined	
2-3mth	1/624	0	0/587	0	Undefined	
>3-12mth	3/624	0	0/587	0	Undefined	
>1yr	14/624	2	5/587	1	2.38	(0.88,7.55)
<i>Did you have contact with other animals...</i>						
At home	39/666	5.86	19/500	3.17	2.03	(1.16, 3.66)
Outside the home	13/666	1.95	11/600	1.83	0.92	(0.4, 2.15)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
<i>Did you have occupational contact with other animals....</i>						
N	662/666	99.40	596/600	99.3		
Y	4/666	0.60	4/600	0.67	0.79	(0.18, 3.43)
<i>Did you have contact with sick other animals...</i>						
N	661/666	99.25	600/600	100		
Y	5/666	0.75	0/600	0		
<i>Did you use bottled water for drinking?</i>						
N	410/662	61.93	334/600	55.67	Reference	
Y	237/662	35.80	265/600	44.17	0.73	(0.58,0.93)
DK	15/662	2.27	1/600	0.17		
<i>Is bottled water the only drinking source?</i>						
N	594/646	91.95	531/597	88.94	Reference	
Y	50/646	7.74	68/597	11.39	0.64	(0.43,0.94)
<i>Does the water to your home come from...</i>						
Town supply	458/666	68.77	524/600	87.33	0.33	(0.24,0.44)
Private bore/spring water	28/666	4.20	7/600	1.17	3.33	(1.5,8.46)
Tanker truck	25/666	3.75	13/600	2.17	1.92	(0.97,3.97)
Roof/rain water	172/666	25.83	43/600	7.17	4.44	(3.11,6.44)
Creek/stream water	3/666	0.45	2/600	0.33	1.15	(0.18,8.97)
Other main source	4/666	0.60	4/600	0.67	0.78	(0.18,3.35)
Don't know	9/666	1.35	17/600	2.83	0.45	(0.19,1.02)
<i>Is the private bore water to the home treated or filtered?</i>						
N	643/666	96.55	597/600	99.50	Reference	

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Y	18/666	2.70	3/600	0.50	5.13	(1.7,22.22)
<i>Did you drink private bore water to the home which was...</i>						
Chlorinated	0/661	0	1/600	0.17	Undefined	
Boiled	1/661	0.15	0/600	0	Undefined	
UV treated	3/661	0.45	1/600	0.17	3.22	(0.39,66.7)
Treated in another way	15/661	2.27	2/600	0.33	5.99	(1.65,38.46)
<i>Is the tanker water to the home treated or filtered?</i>						
N	642/666	96.40	587/600	97.83	Reference	
Y	22/666	3.30	11/600	1.83	1.97	(0.95,4.34)
<i>Did you drink tanker water to the home which was...</i>						
Chlorinated	6/664	0.90	0/598	0	Undefined	
Boiled	0/664	0	0/598	100.00	Undefined	
UV treated	1/664	0.15	0/598	0	Undefined	
Filtered	15/664	2.30	9/598	1.51	1.74	(0.76,4.23)
Treated in another way	2/664	0.30	1/598	0.17	1.82	(0.17,40.58)
<i>Is the roof/rain water to the home treated or filtered?</i>						
N	537/666	80.63	575/600	95.83	Reference	
Y	123/666	18.47	22/600	3.67	5.85	(3.71,9.62)
<i>Did you drink roof/rain water to the home which was...</i>						
Chlorinated	3/660	0.45	0/597	0		
Boiled	3/660	0.45	0/597	0		
UV treated	14/660	2.12	4/597	0.67	3.26	(1.14,11.67)

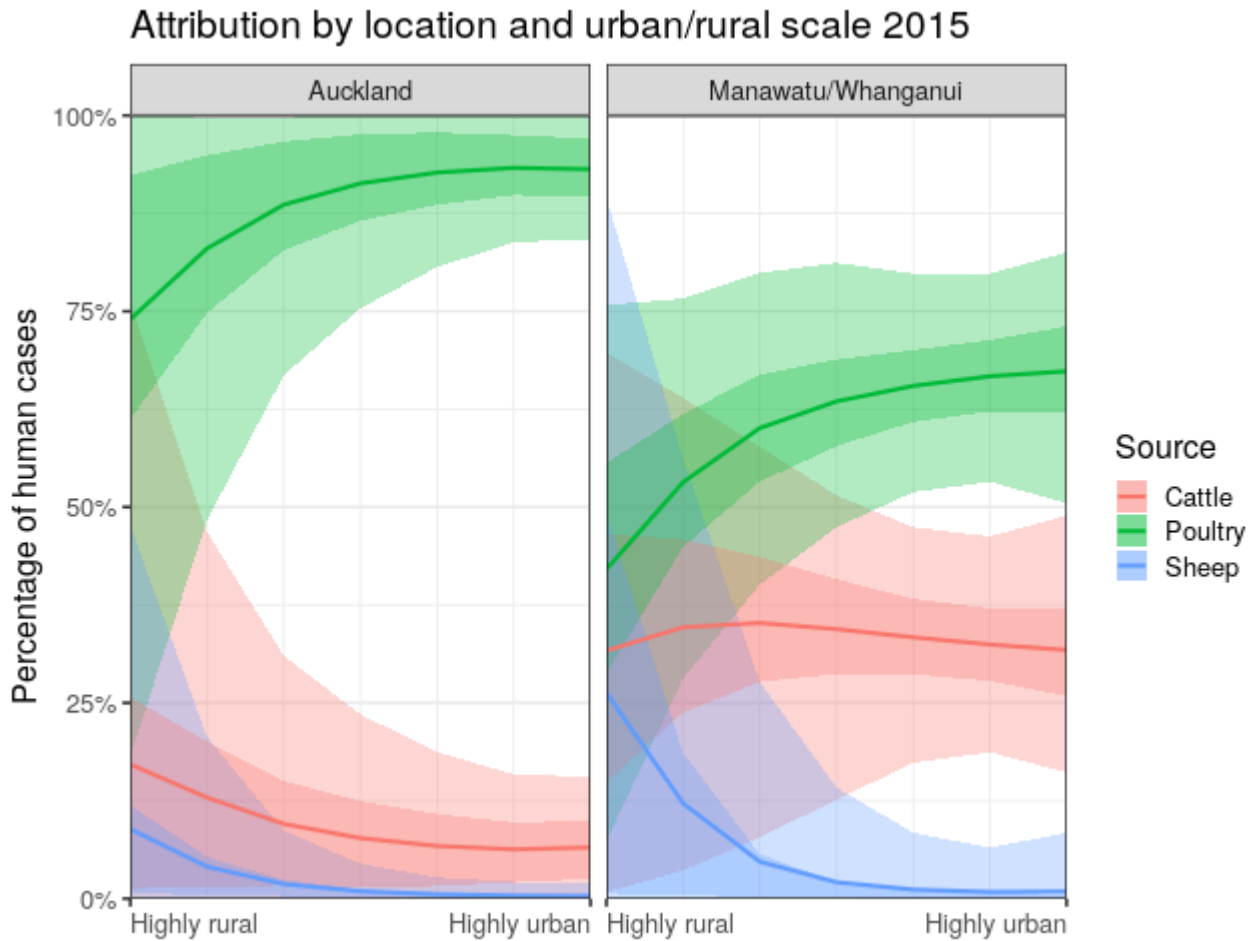
	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Filtered	113/660	17.12	18/597	3.02	6.54	(4,11.3)
Treated in another way	3/660	0.45	1/597	0.17	2.83	(0.35,57.95)
<i>Is the creek/stream water to the home treated or filtered?</i>						
N	665/666	99.85	600/600	100.00	Reference	
Y	1/666	0.15	0/600	0	Undefined	
<i>Did you drink water from an untreated supply you wouldn't normally in the last 7 days? (work, preschool/school)</i>						
N	573/659	87	578/600	96	Reference	
Y	62/659	9	20/600	3	2.98	(1.78,5.19)
DK	24/659	4	2/600	0		
<i>Did you drink water from the following untreated supplies you wouldn't normally? (work, preschool/school)</i>						
Town supply	2/642	0	1/598	0	1.64	(0.15,36.25)
Private bore/spring water	9/642	1	5/598	1	1.49	(0.5,4.97)
Tanker truck	3/642	0	5/598	1	0.69	(0.14,2.87)
Roof/rain water	36/642	6	5/598	1	6.62	(2.8,19.52)
Creek/stream water	5/642	1	2/598	0	1.79	(0.38,12.67)
Don't know	8/642	1	2/598	0	3.25	(0.79,21.88)
<i>Did you swim in indoor or outdoor pool or spa?</i>						
N	558/665	83.91	515/600	85.83	Reference	
Y	106/665	15.94	85/600	14.17	1.09	(0.78,1.52)
<i>Did you swim in...</i>						
Public swimming pool/spa	69/664	10.39	53/600	8.83	1.13	(0.76,1.67)

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
Home swimming pool/spa	23/664	3.46	21/600	3.50	0.9	(0.49,1.68)
Other pool	18/664	2.71	15/600	2.50	1.15	(0.56,2.39)
<i>Did you swim in seawater...</i>						
Yes	45/666	6.76	35/600	5.83	1.15	(0.72,1.85)
Yes after heavy rainfall	4/666	0.60	5/600	0.83	0.67	(0.16,2.55)
Yes in an area with livestock	0/666	0	2/600	0.33	Undefined	
No	615/666	92.34	565/600	94.17	0.77	(0.49,1.22)
<i>Did you participate in any other water activities (e.g. sailing, kayaking, fishing)?</i>						
Yes	20/666	3.00	14/600	2.33	1.23	(0.61,2.54)
Yes after heavy rainfall	1/666	0.15	1/600	0.17	0.66	(0.03,17.08)
Yes in an area with livestock	2/666	0.30	0/600	0	Undefined	
No	633/666	95.05	586/600	97.67	0.48	(0.24,0.9)
<i>Did you swim in outdoor freshwater?</i>						
Yes	21/666	3.15	12/600	2.00	1.31	(0.64,2.8)
Yes after heavy rainfall	1/666	0.15	1/600	0.17	0.73	(0.03,18.56)
Yes in an area with livestock	0/666	0	2/600	0.33	Undefined	
No	640/666	96.10	588/600	98.00	0.61	(0.29,1.21)
<i>Did you have contact with compost?</i>						
N	442/657	67.28	503/600	83.83	Reference	
Y	201/657	30.59	97/600	16.17	2.36	(1.77,3.15)
<i>Did you have contact with human poo?</i>						
N	600/664	90.36	533/600	88.83	Reference	
Y	52/664	7.83	62/600	10.33	0.74	(0.49,1.11)
<i>Did you have contact with sand?</i>						

	Cases (N=666)		Controls (N=600)		Adjusted Odds Ratio	95% Confidence Interval
	Counts	Percent	Counts	Percent		
N	525/664	79.07	447/600	74.50	Reference	
Y	133/664	20.03	150/600	25.00	0.66	(0.49,0.88)
<i>Did you have contact with sewage or flood waters?</i>						
N	618/660	93.63	577/600	96.17	Reference	
Y	34/660	5.15	22/600	3.67	1.31	(0.75,2.33)
<i>Did you have contact with soil?</i>						
N	358/662	54.08	244/600	40.67	Reference	
Y	294/662	44.41	349/600	58.17	0.48	(0.38,0.61)
<i>Did you have a problem with flies in food preparation areas?</i>						
N	565/664	85.09	488/600	81.33	Reference	
Y	72/664	10.84	112/600	18.67	0.53	(0.38,0.74)
<i>Do you wash your hands before meals?</i>						
Always	340/657	51.75	202/600	33.67	Reference	
Most of the time	243/657	36.99	213/600	35.50	0.62	(0.48,0.81)
Only if visibly dirty	37/657	5.63	133/600	22.17	0.13	(0.09,0.20)
Occasionally	32/657	4.87	48/600	8.00	0.30	(0.18,0.50)
Never	5/657	0.76	4/600	0.67	0.52	(0.13,2.26)

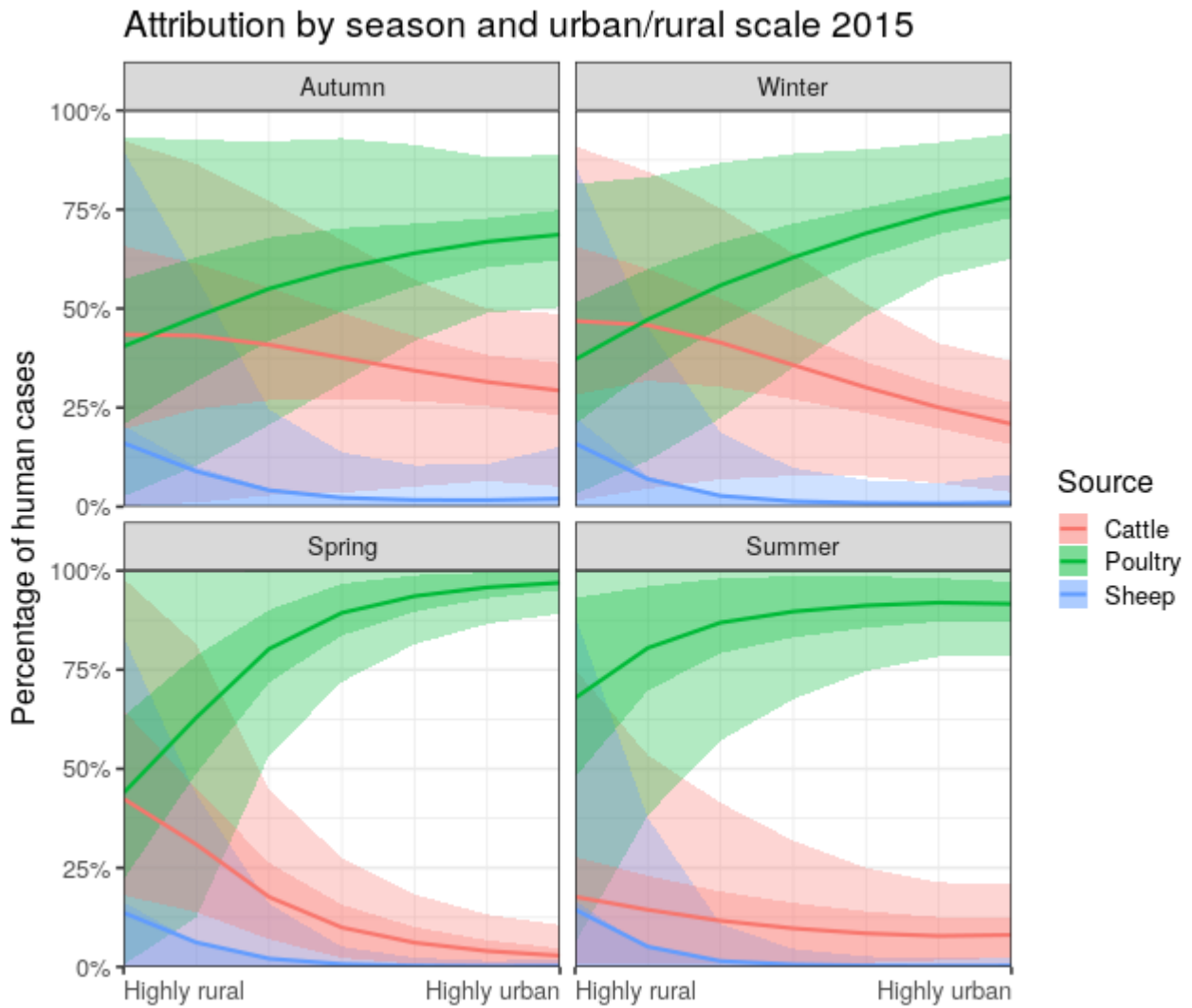
APPENDIX J: ADDITIONAL ATTRIBUTION

Figure 20. Source assigned cases, modelled attribution according to the rurality scale, by region



Note: For the line the wider band is 95% credible interval, darker band is 50% credible interval, and line is posterior median

Figure 21. Source assigned cases, modelled attribution according to the rurality scale, by season



Note: For the line the wider band is 95% credible interval, darker band is 50% credible interval, and line is posterior median

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