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Health and Wellness of New Zealand Farmers

Initial findings from research into the wellness of, and wellness behaviour patterns of, New Zealand farmers

August 2017

Disclaimer

The results in this report are not official statistics, they have been created for research purposes from the Integrated Data Infrastructure (IDI), managed by Stats NZ.

The opinions, findings, recommendations, and conclusions expressed in this report are those of the author(s), not Stats NZ.

Access to the anonymised data used in this study was provided by Stats NZ in accordance with security and confidentiality provisions of the Statistics Act 1975. Only people authorised by the Statistics Act 1975 are allowed to see data about a particular person, household, business, or organisation, and the results in this report have been confidentialised to protect these groups from identification.

Careful consideration has been given to the privacy, security, and confidentiality issues associated with using administrative and survey data in the IDI. Further detail can be found in the Privacy impact assessment for the Integrated Data Infrastructure available from www.stats.govt.nz.

The results are based in part on tax data supplied by Inland Revenue to Stats NZ under the Tax Administration Act 1994. This tax data must be used only for statistical purposes, and no individual information may be published or disclosed in any other form, or provided to Inland Revenue for administrative or regulatory purposes.

Any person who has had access to the unit record data has certified that they have been shown, have read, and have understood section 81 of the Tax Administration Act 1994, which relates to secrecy. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes, and is not related to the data's ability to support Inland Revenue's core operational requirements.

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Introduction

Context

This document presents the preliminary results of research on the health and wellbeing of New Zealand farmers. This work is sponsored by DairyNZ and the Ministry of Health, and was undertaken by Scarlatti Limited.

Purpose

The purpose of this report is to summarise findings of research. In turn this will inform the choice of benchmarks and KPIs that can be used to monitor the wellness and wellbeing behaviour patterns of New Zealand farmers.

Better understanding of the nature of wellness and wellbeing patterns will allow the users of this research to:

- Inform policy and project design – Organizations such as FarmStrong, DairyNZ and RHAANZ can use these findings to inform the design of promotional campaigns and training programmes.
- Develop indicators for ongoing monitoring of the mental and physical wellbeing of the workforce. For example, DairyNZ's wellness dashboard can be updated to incorporate relevant KPIs.

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Emerging findings

- In most respects farmers' wellness behaviours, physical health and mental wellness is typical of other working New Zealanders.

- Farmers visit their doctor about as often as other people, and smoke about as much as workers in other vocational industries (although more than workers in professional industries).

- Once controlled for age and gender, farmers appear little different than workers in other industries with respect to the physical wellness measures used in this study.

- There is little difference between any of the industries in the number of people being prescribed medication to treat mental illness.

- There are some differences between industries as to the severe effects of mental illnesses (hospitalisations and suicide). However, the number of these events is small and those differences that are observed may be explained by variations in age, gender and / or by demographic variables other than rurality.

- Vocational occupations appear to have an elevated rate of severe mental health indicators (suicide and hospital stays) when compared to professional occupations. A similar, but dampened, effect is visible between rural and urban communities.

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Recommendations

1. Consider further analysis to explore whether there is a meaningful rural (location and/or occupation) impact on mental wellness. One approach could be a regression analysis to test the relative importance of variables including age, gender, occupation, 'level of rurality' and income. This analysis would enable more refined controls for age, gender and income which would facilitate better comparisons between occupations and over time.

2. Consider GP visits within a year, and statin prescriptions, as indicators for changes in wellness behaviour over time. However, note that any changes need to be considered in the context of wider trends in the overall population.

3. Consider two additional markers: blood test data from the laboratory claims data set, and smoking data from the 2006 census. However, be aware that this research is unlikely to change any of the other recommendations, or the general story this report tells.

4. Do *not* use measure of serious mental wellness events or physical wellness conditions as markers for trends over time. The numbers are too small to provide statistically significant year on year trends.

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Research approach

The overall approach taken during this research was to compare dairy and sheep & beef farmers with a number of other industries, including a mixture of industries typically dominated by rural and urban people, and a mixture of professional and vocational industries.

The occupations studied in this work vary considerably in terms of their gender make-up and age profile. As both gender and age are important drivers of wellness we need to control for these when comparing occupations. In this work we do this by including a data series for males aged 40-50 only in each analysis.

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Integrated Data Infrastructure

This research uses micro data accessed through Stats NZ Integrated Data Infrastructure (IDI) to get insights into the health and wellbeing patterns of farmers, and to make comparisons to the workforce in other industries.

The IDI is a data set that combines information from a range of organisations that provide things such as health, education, and welfare services to New Zealand public. Along with tax, employment, and crime data, it also includes Stats NZ survey data, such as data from the 2013 Census. With all personal information removed, integrated data gives a safe view across government so agencies can deliver better services to the public and ensure investment is made where it's needed most.

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Overview of methodology – Specific data sets used in this analysis

Three data sources from the IDI were used to complete the study:

1. **Inland revenue (tax)**– This provides longitudinal records of employment for both:
   - Employees (monthly data)
   - Employers and self-employed (annual data).

2. **Business register** – This is sourced from Longitudinal Business Database, to provide the enterprise codes and the industry that enterprises belong to.

3. **Ministry of Health –** Sourced from administrative data collected by various parts of the health system. Within the Ministry of Health datasets, the following tables were used:

   - **Chronic illness and serious health conditions table:** A data set Ministry of Health have created using existing tables that collates eight common chronic illnesses and serious health conditions.

   - **Pharmaceutical collection:** A large data set that records every time a health care user is prescribed medicine.

   - **PRIMHD:** A data set that records any time a healthcare user interacts with a government funded mental health service other than primary care providers.

   - **Hospital discharge data:** An administrative data set containing information about all publicly funded hospital stays (the reason for the stay, length of stay etc.).

   - **Primary Health Organisation:** Information about GP registrations and visits.

   - **Mortality collection:** Information about the cause of each death in New Zealand.

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Population definitions

IRD defined

Employees have been defined as belonging to an industry's workforce in any given year, if they earned more than $1000 in March of that year, from a business that is classified within the industry using ANZSIC codes. Owners of these businesses are identified in a separate query.

This method is not perfect, and some of the known issues are highlighted below.

- Those workers that perform a role that is not in line with the businesses' core offering will be included (e.g. an office cleaner for a road freight company). That said, we have attempted to benchmark industries dominated by a single occupation.

- People that are only temporarily working in the industry are included.

- Conversely, people that are temporarily absent from the industry are not included (away for the month of March).

- Relevant to this study, the deceased are removed from this data set.

Census defined

An alternative method for defining a population is to use the 2013 Census. In the Census, respondents are asked to identify the industry in which they work, and their occupation within that industry (e.g. a receptionist in the road freight industry). This provides a 'cleaner' definition of a workforce, but is only available for a single point in time, March 2013.

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Physical wellbeing – Rates of chronic conditions and significant health events

The Ministry of Health maintain a record of chronic illnesses called the chronic condition/significant health event cohort. This data set contains information about healthcare users who have been diagnosed with one or more of eight chronic conditions or significant health events using a variety of sources. In addition to these eight conditions and health events, we have included melanoma.

This data set was able to give us information on the rates of each of these conditions/health events within the population of dairy farmers, along with other populations for comparison.

The nine conditions or serious health events included are:
- Cancer registration
- Diabetes
- Coronary heart disease
- Gout
- Chronic Obstructive Pulmonary Disease (COPD)
- Traumatic brain injury
- Stroke
- Acute myocardial infarction
- Melanoma

Challenges in measuring mental wellbeing using administrative data

Mental wellbeing is difficult to measure using administrative data, as many cases aren't treated with government funded services. Cases that are reported by hospitals are typically extreme cases, and this may be a poor proxy for the number of moderate cases of mental illness.

We have used three different Ministry of Health datasets to report the level of mental health issues in each of the occupations investigated. These are PRIMHD, the pharmaceutical collection, and the publicly funded hospital discharges data set. Brief descriptions of each are given below:

PRIMHD (pronounced primed): The Programme for the Integration of Mental Health Data (PRIMHD) is a Ministry of Health single national mental health and addiction information collection of service activity and outcomes for healthcare users. The data set contains records of any interaction with a government funded mental health or addiction service, except some non-governmental organization services that do not report usage information

Pharmaceutical collection: The pharmaceutical collection contains claim and payment information from pharmacists for subsidised dispensings that have been processed by the Ministry of Health. The data set contains records of people for whom a pharmaceutical claim was submitted to, and approved by, the Ministry of Health.

Publicly funded hospital discharges: Data is provided by public hospitals and by those private hospitals who provide publicly funded services about the services they provide to patients.

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Incidence measures

The incidence rate of a number of diseases (or outcomes) is presented in this report. This is the proportion of workers in an industry which experience a new case of the outcome within the time interval.

Incidence rate $= \dfrac{\text{Number of new cases during specified time interval}}{\text{Summed person–years of observations during time interval}}$

where:

- time interval: 2005 – 2015
- 'new' cases: Disease is first diagnosed (or outcome is first observed) within the time interval
- person-years : The summed industry counts for each year in the interval is used to approximate person-years at risk.

Caveats

- Total person years will include a few people who are not truly at risk of the disease. For example, those who already have the disease at the beginning of the time interval. This will have a relatively minor impact, as the number of persons in the population that this will affect is small.

- Individuals who receive multiple diagnoses in the time period 2005 – 2015 are counted for *each* first diagnosis of the disease. However, this will be a small number of cases.

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Significance testing

To test whether the incidence rate of a disease in one industry is different to the incidence rate in another industry, a Chi-squared test of proportions is used. This tests the hypothesis that there is no difference in proportions between two groups.

For each disease or outcome, the proportion of cases in the dairy farming industry is tested against all other industries. The benchmark industries have not been tested against each other.

For each test, a p value is calculated, which measures how much evidence there is against our hypothesis. A p value smaller than .01 means that we can be 99% confident that the difference between two proportions is not equal to 0.

Where the incidence rate of an outcome is measured across a number of years, a linear regression analysis for an increasing/decreasing trend over time is carried out. The industries with statistically significant trends (the slope of the trend line is not equal to 0), along with the p values for this test are listed beneath the relevant charts.

These tests are based on large sample sizes, which tend to produce significant results. Statistical significance in this case does imply practical significance.

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Occupation appears to be strongly correlated to smoking with vocational occupations, including farming, showing a higher propensity to smoke. Compared to other vocational occupations, the proportion of farmers that smoke appears to be typical.

Wellness behaviour – Smoking

Incidence rate of regular smoking among workers

Legend:
- All workers (orange)
- Males 40-50 (blue)

Categories: Dairy farming, Sheep & beef farming, Road freight, Accounting, Building, Hairdressing, Teaching, Farmers, Others, Vocational, Professional

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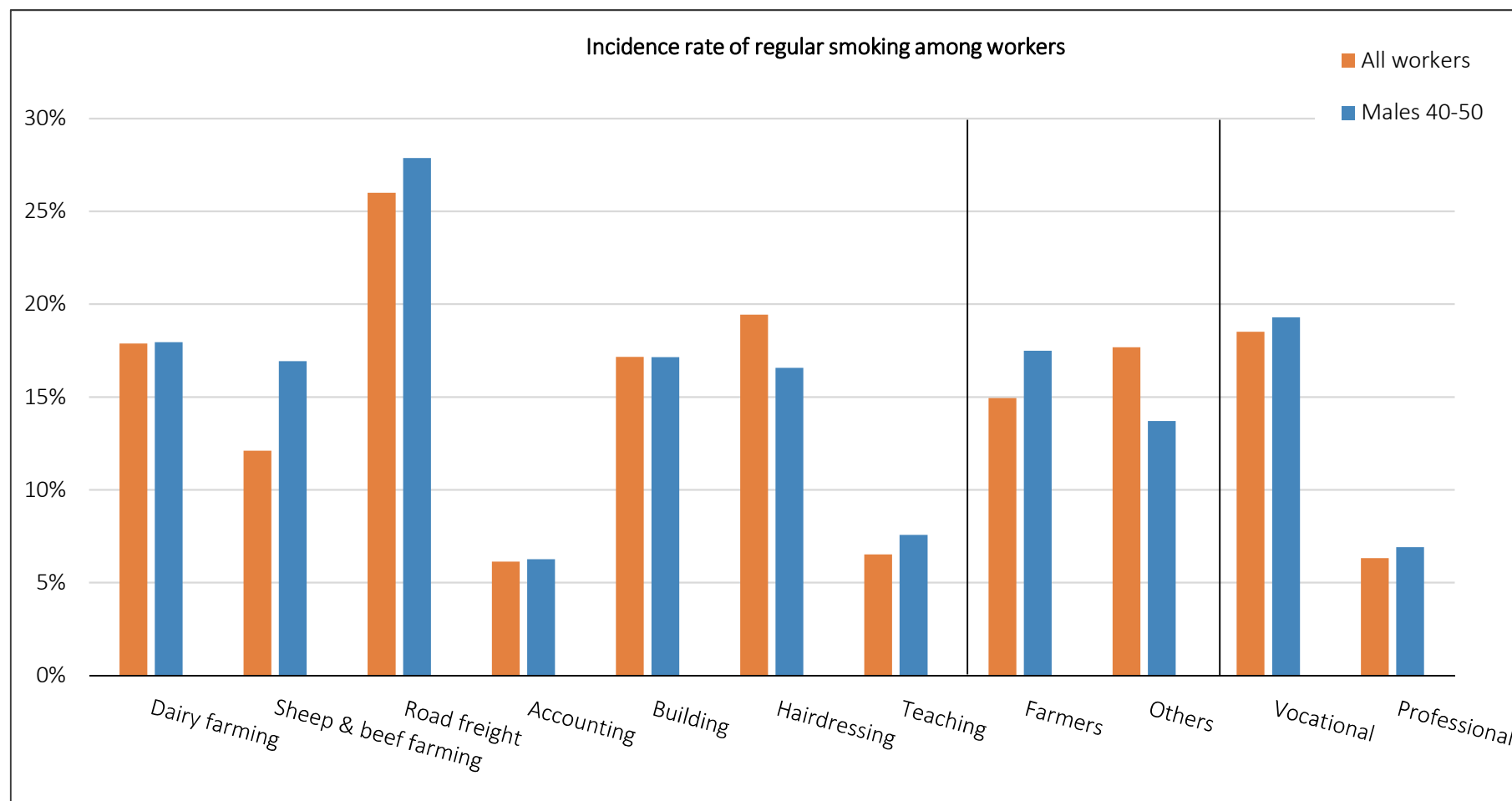
All of the occupations studied in this work have high rates of GP registrations and farmers appear typical in this respect.

Wellness behaviour – GP registrations

Incidence rate of GP registrations among workers

Legend: ■ All workers ■ Males 40-50

Categories (x-axis): Dairy farming, Sheep & beef farming, Road freight, Accounting, Building, Hairdressing, Teaching, Farmers, Others, Vocational, Professional

Y-axis: 0% to 100%

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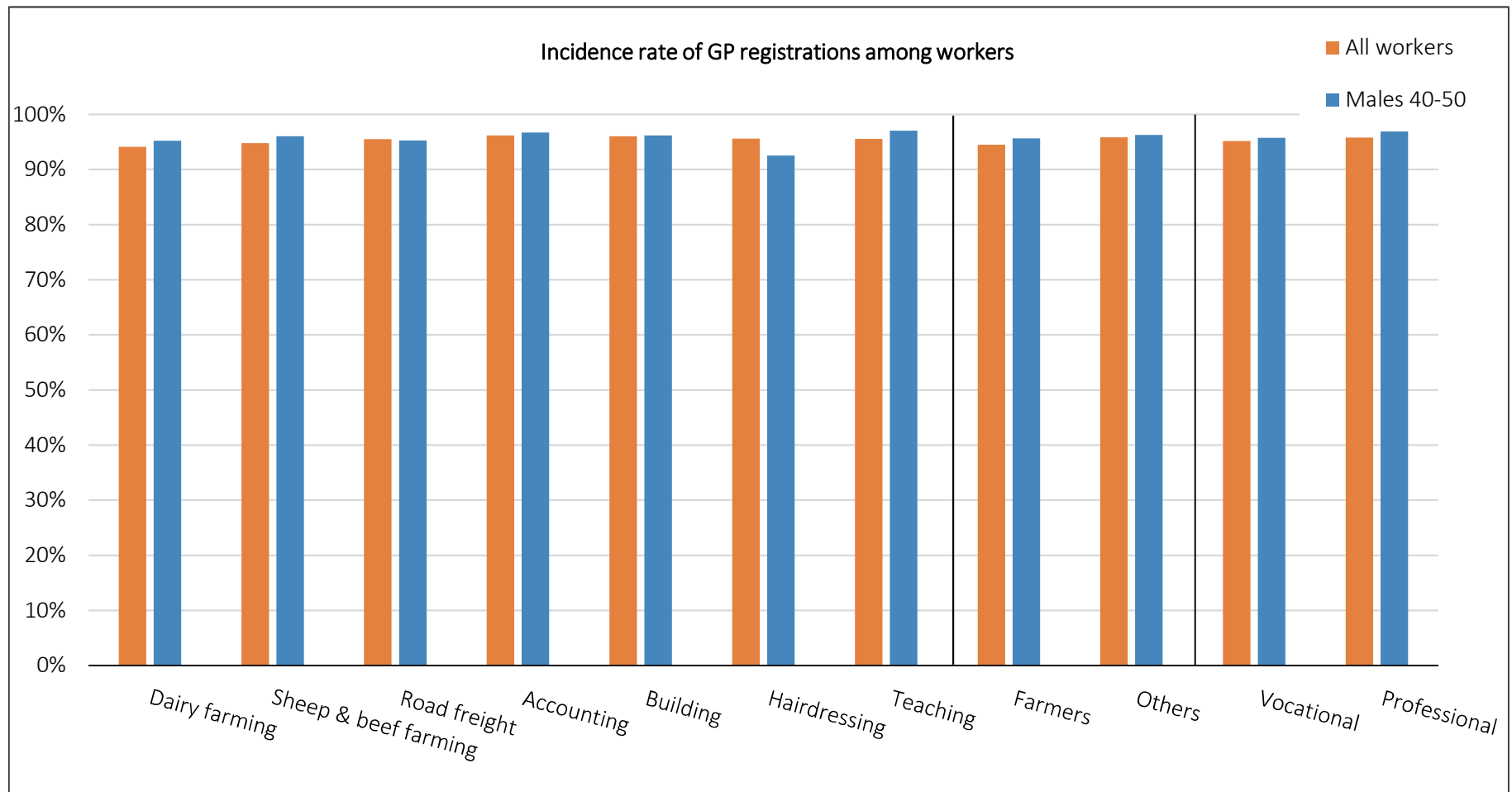
Farmers appear to visit their GPs slightly less often than workers in the other industries studied for this work (p value <.01 for all industry comparisons). However, this difference largely disappears when the comparison is limited to mean aged 40-50 (only accounting, building and teaching significantly different from dairy farming) suggesting that age and gender differences are more important than occupation or rural/urban.

Wellness behaviour – Visits GP

Incidence rate of GP visits in the past twelve months among workers

Legend: All workers (orange), Males 40-50 (blue)

Categories: Dairy farming, Sheep & beef farming, Road freight, Accounting, Building, Hairdressing, Teaching, Farmers, Others, Vocational, Professional

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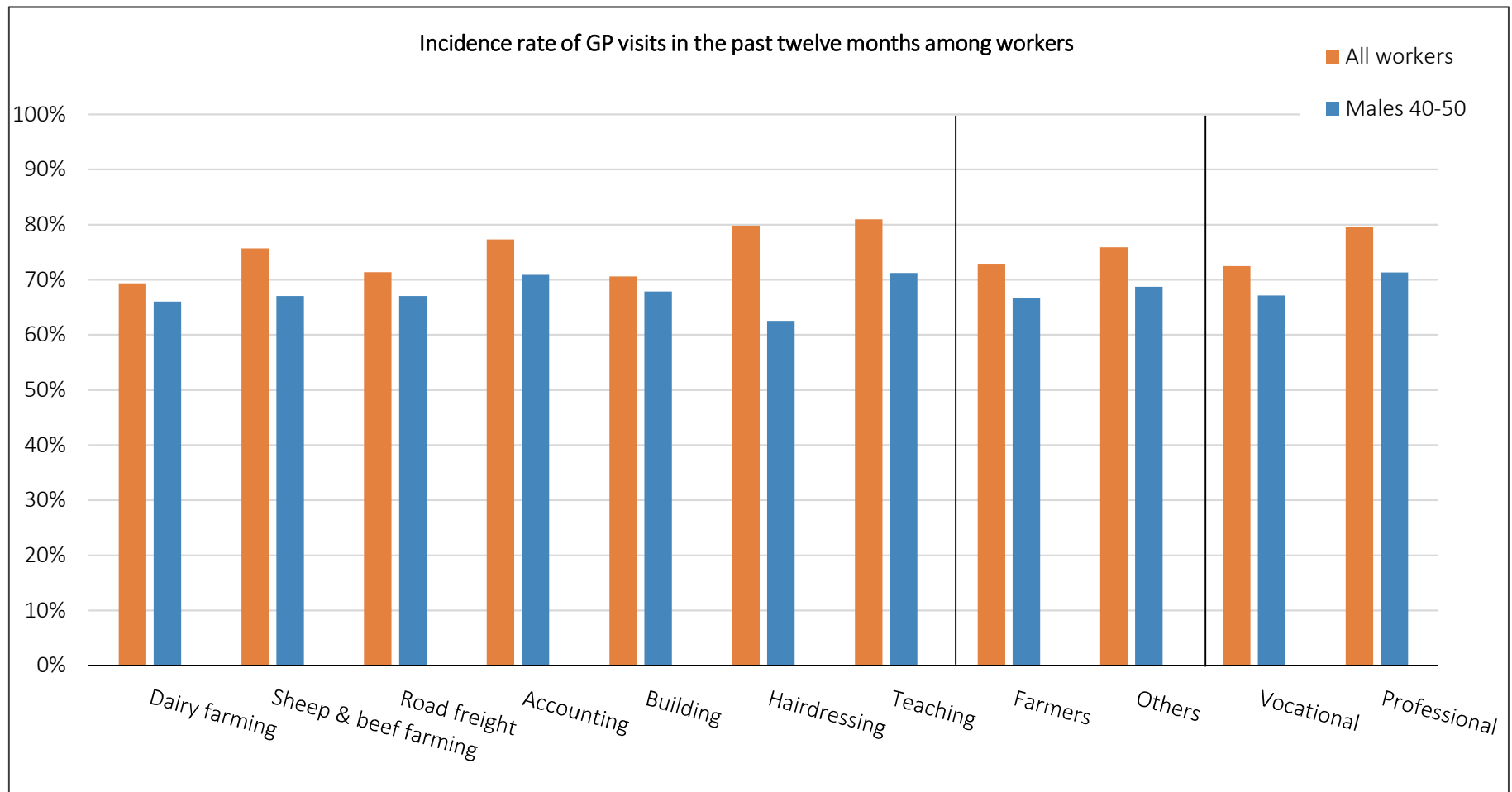
Whether someone visits a GP in a year is not in itself a sign of good or bad wellness behaviour. We also wanted to know if people were making a high number of visits to the GP, which would also be considered a sign of bad health. The Ministry of Health records each quarter in which an individuals visits the GP, allowing us to analyse how many quarters per year people in each occupation were visiting the GP. Dairy farmers exhibit among the lowest rates of 3+ visits, but as we saw earlier, do visit the GP slightly less than those in other occupations.

Wellness behaviour – Number of GP visits

Incidence rate of GP visits among all workers, by frequency
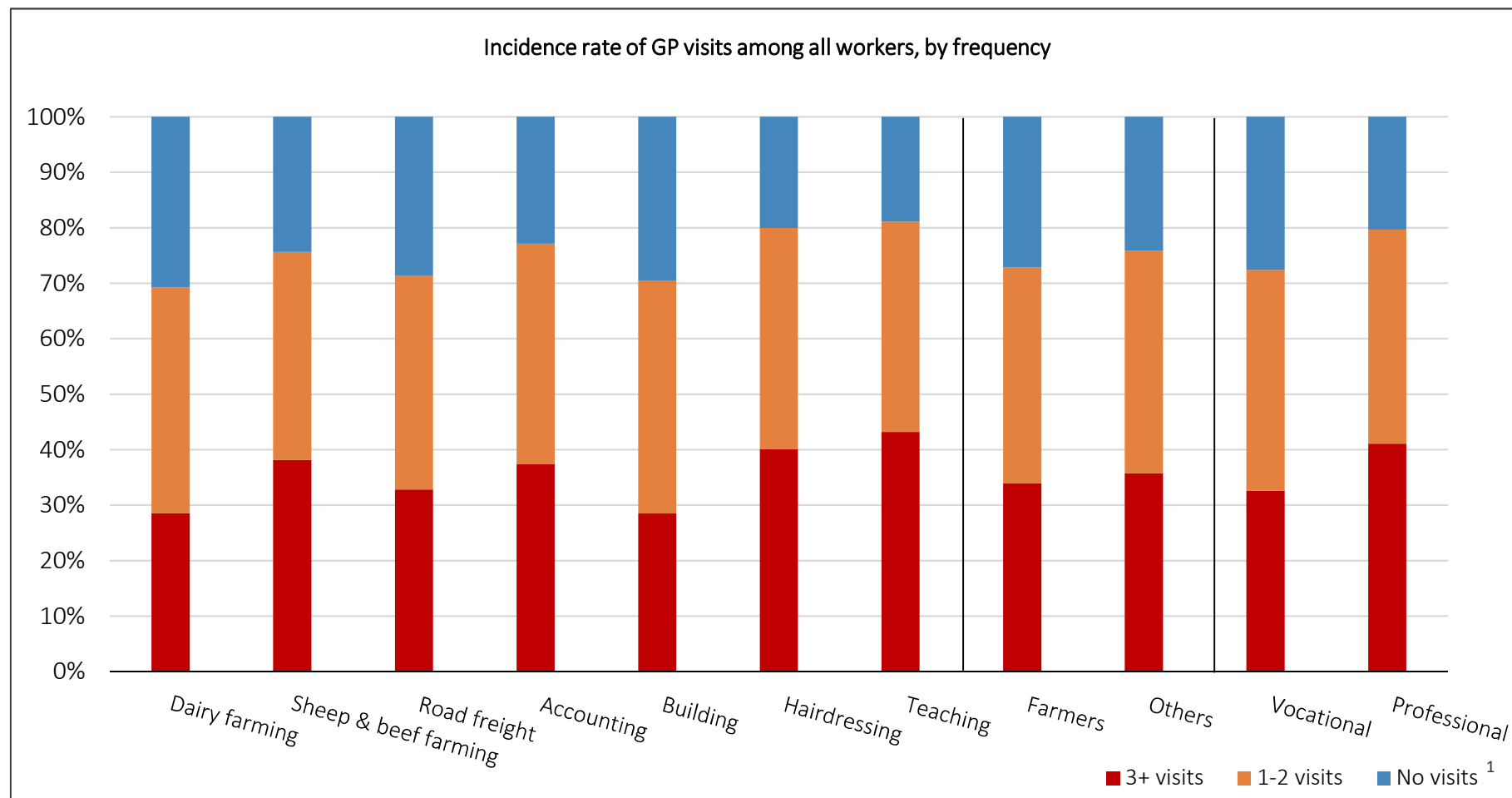
1. Ministry of Health do not record a count of how many times an individual visits the GP, rather they record each quarter in which an individual visits the GP at least once.

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When we control for age and gender, we see very little difference between the occupations. For example, the 1-2 visits categories of Rural, Urban, Vocational and Professional are all within 1% of each other.

Wellness behaviour – Number of GP visits, male 40-50

Incidence rate of GP visits among male 40-50 year olds, by frequency

Legend: 3+ visits | 1-2 visits | No visits

Categories: Dairy farming, Sheep & beef farming, Road freight, Accounting, Building, Hairdressing, Teaching, Farmers, Others, Vocational, Professional

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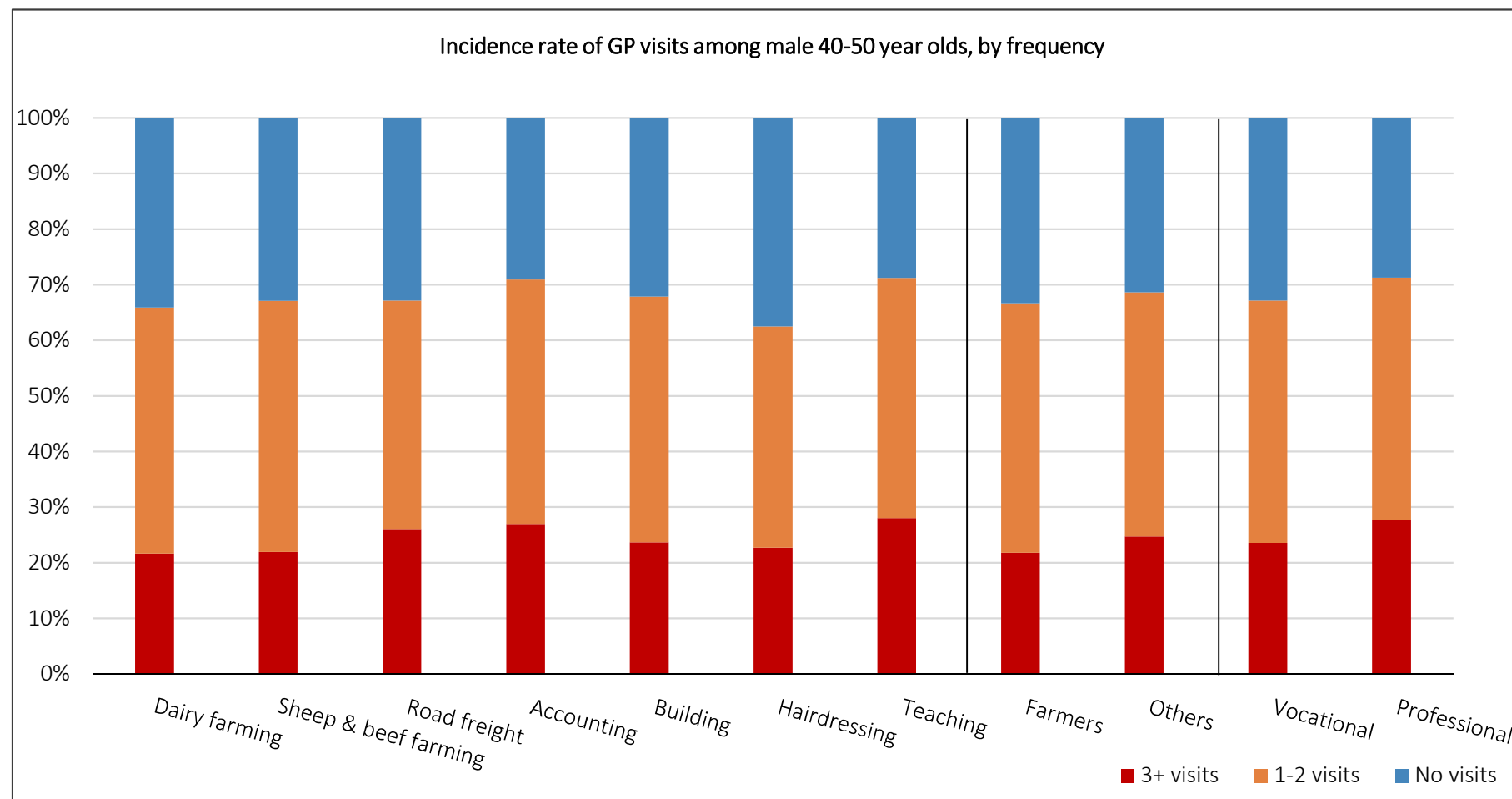
While there appears to be a small increase in the rate at which people visit their GPs in other industries, dairy farmers have made little change between 2005 and 2015. The pattern of trends changes for the male 40-50 age band, however, suggesting that demographic change is a more important factor than a change in attitude towards visiting the doctor.

Wellness behaviour – Visits to GP

Incidence rate of GP visits within a year – among all workers

Incidence rate of GP visits within a year – male 40-50

Dairy (.04), Sheep & beef (<.01), Building (<.01), Road freight (<.01), Teaching (<.01)

Dairy (.05), Sheep & beef (<.01), Building (<.01), Road freight (<.01)

— Dairy farming   — Sheep & beef farming   — Road Freight   — Secondary teaching   — Building
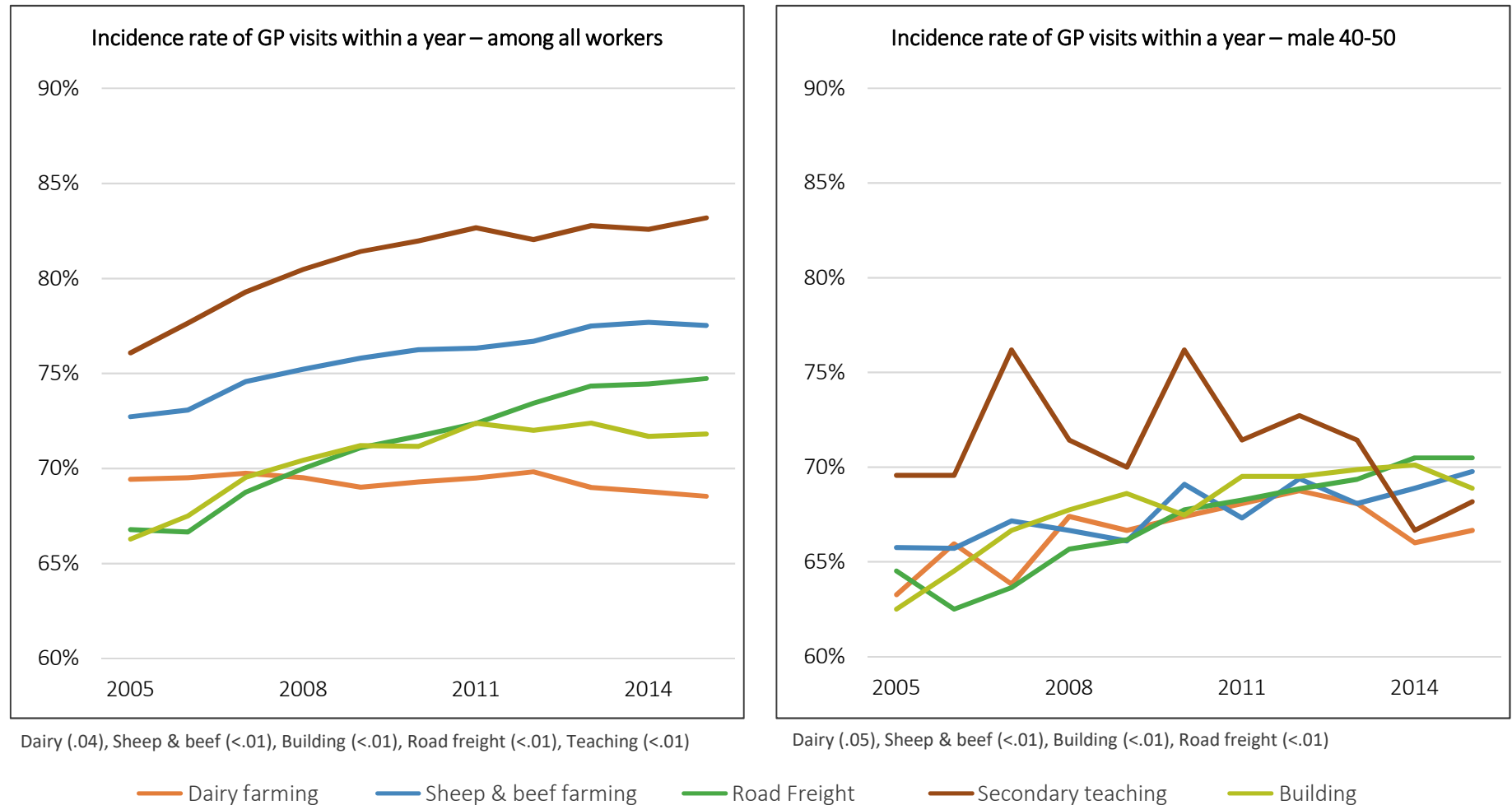
Levels of statin prescription are increasing in all compared industries. Dairy farmers are prescribed the least statins of workers in the five compared industries. When controlled for age and gender, dairy farming still appears to have a low rate of statin prescriptions. Sheep & beef farmers shift from having among the highest rates when not controlled for age and gender, to the lowest rate when controlled. Differences between the industries' use of statins appear consistent with the rate of heart disease in each industry, as seen later in this report.

Wellness behaviour – Statin prescriptions

Incidence rate of statin prescriptions - among all workers

Incidence rate of statin prescriptions – male 40-50
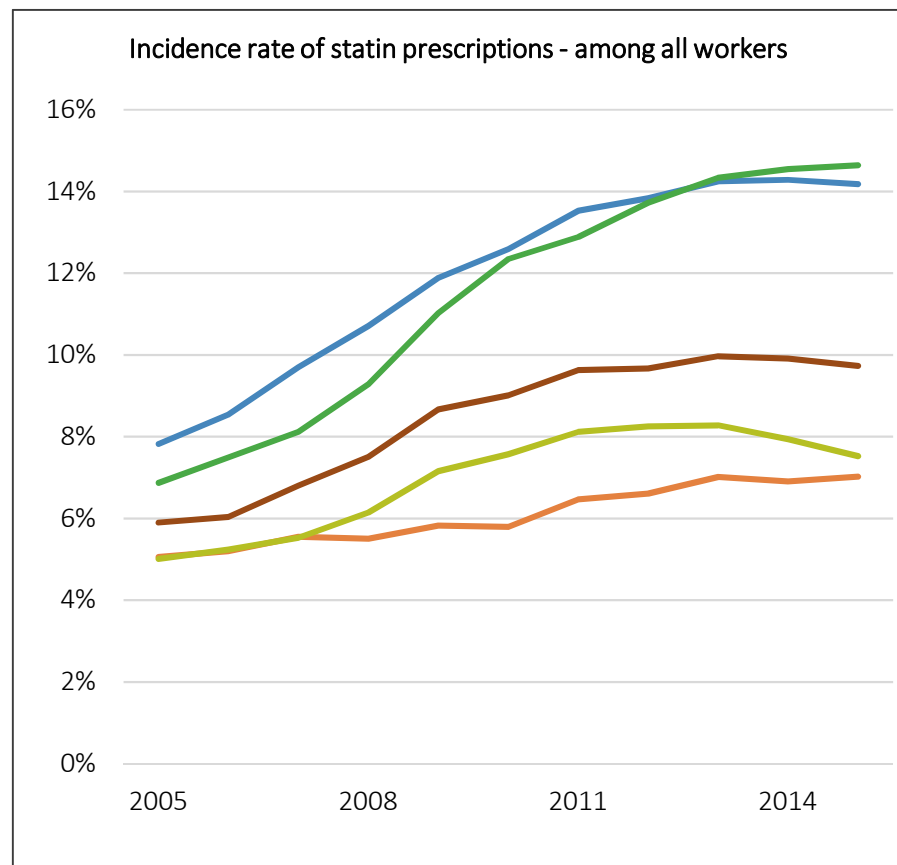
All industries (<.01)
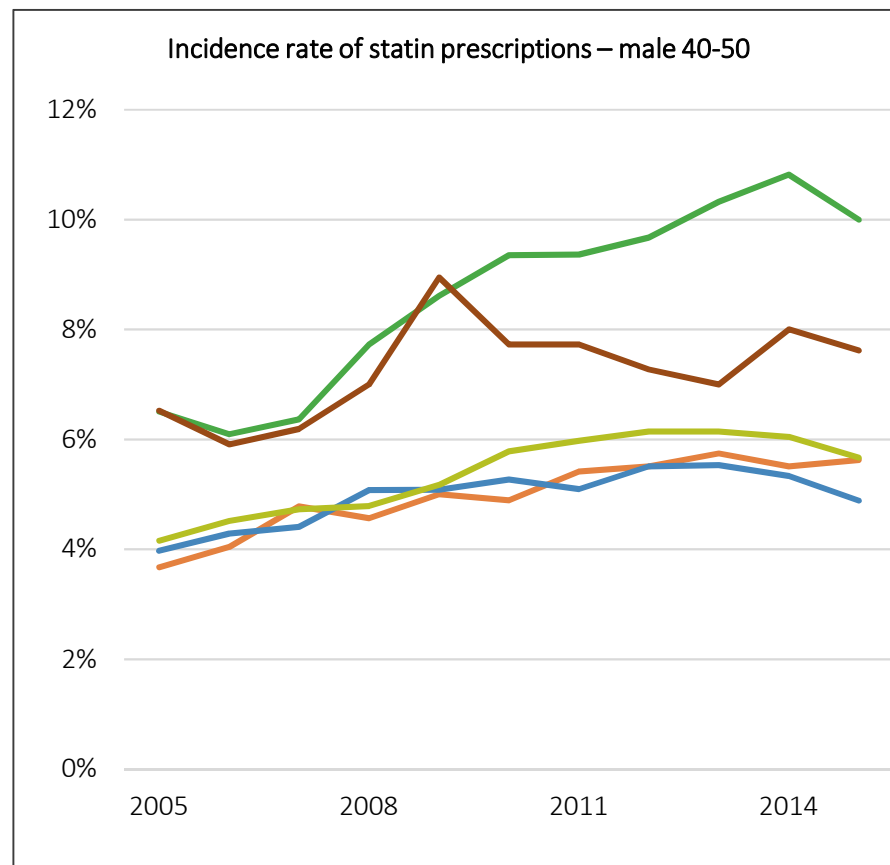
Dairy, Sheep & beef, Building and Road freight (<.01)

Dairy farming — Sheep & beef farming — Road Freight — Secondary teaching — Building

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Wellness behaviour indicators

Physical wellness indicators

Mental wellness indicators

Dairy farmers' level of diabetes is significantly lower than all industries shown here, except for hairdressing (p values <.01). However, levels for male dairy farmers aged 40-50 year old are significantly higher than the equivalent sheep and beef farmers'(p value <.01).

Physical wellbeing - Diabetes
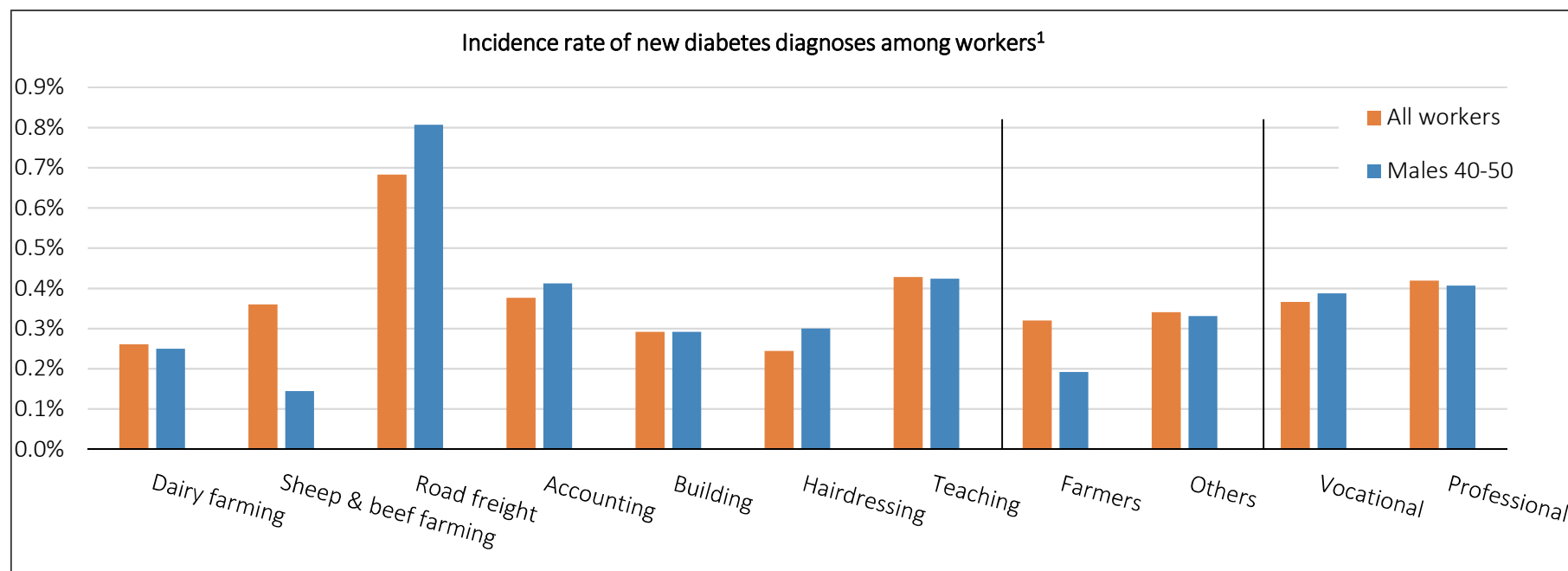
Incidence rate of new diabetes diagnoses among workers[1]

Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	371,900	472,600	292,800	223,200	514,300	122,800	373,700
Total diagnoses	970	1,700	2,000	840	1,500	300	1,600
Males 40-50 person-years	52,100	62,500	69,400	18,200	96,100	4,000	23,600
Males 40-50 diagnoses	130	90	560	75	280	12	100

1. The Ministry of Health record the first date of diagnosis for each person that has diabetes. This could be captured in a range of ways, such as being prescribed insulin or oral hypoglacemic agents, diabetes coded hospital admissions and other Ministry of Health recorded events related to diabetes. If an individual is working in the given occupation at the time of their first diagnosis, they are counted in this measure.

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Incidence of cancer among dairy farmers is significantly lower than among sheep & beef farmers (p value <.01), however this difference disappears when comparing just male 40-50 year olds.

Physical wellbeing - Cancer (all)
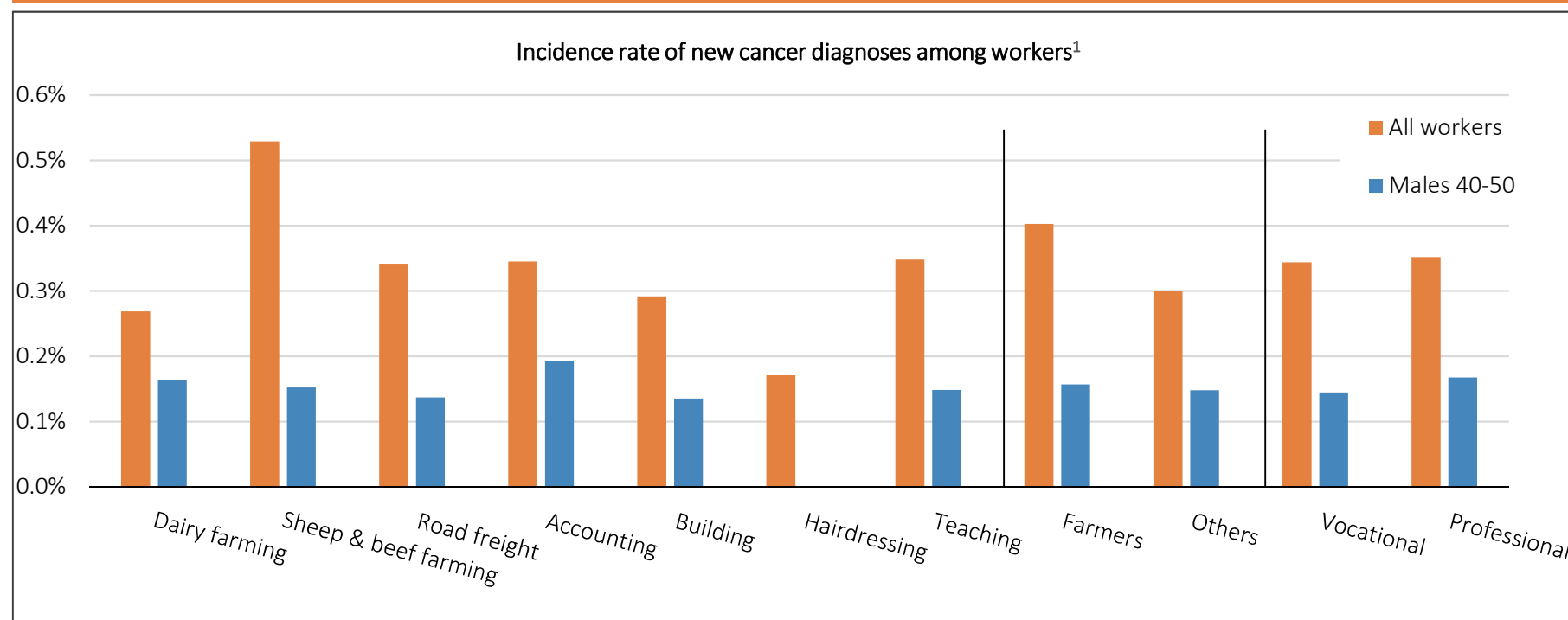
Incidence rate of new cancer diagnoses among workers[1]

Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	371,900	472,600	292,800	223,200	514,300	122,800	373,700
Total cancer events	1,000	2,500	1,000	770	1,500	210	1,300
Males 40-50 person-years	52,100	62,500	69,400	18,200	96,100	4,000	23,600
Males 40-50 cancer events	85	95	95	35	130	-	35

1. The Ministry of Health record each cancer diagnosis. If an individual is working in the given occupation at the time of their first diagnosis of cancer, they are counted in this measure.

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Low incidence rates make it difficult to compare the incidences of melanoma between occupations. To the extent that a comparison can be made, farmers appear typical in their likelihood of a melanoma diagnosis.

Physical wellbeing - Cancer (Melanoma)
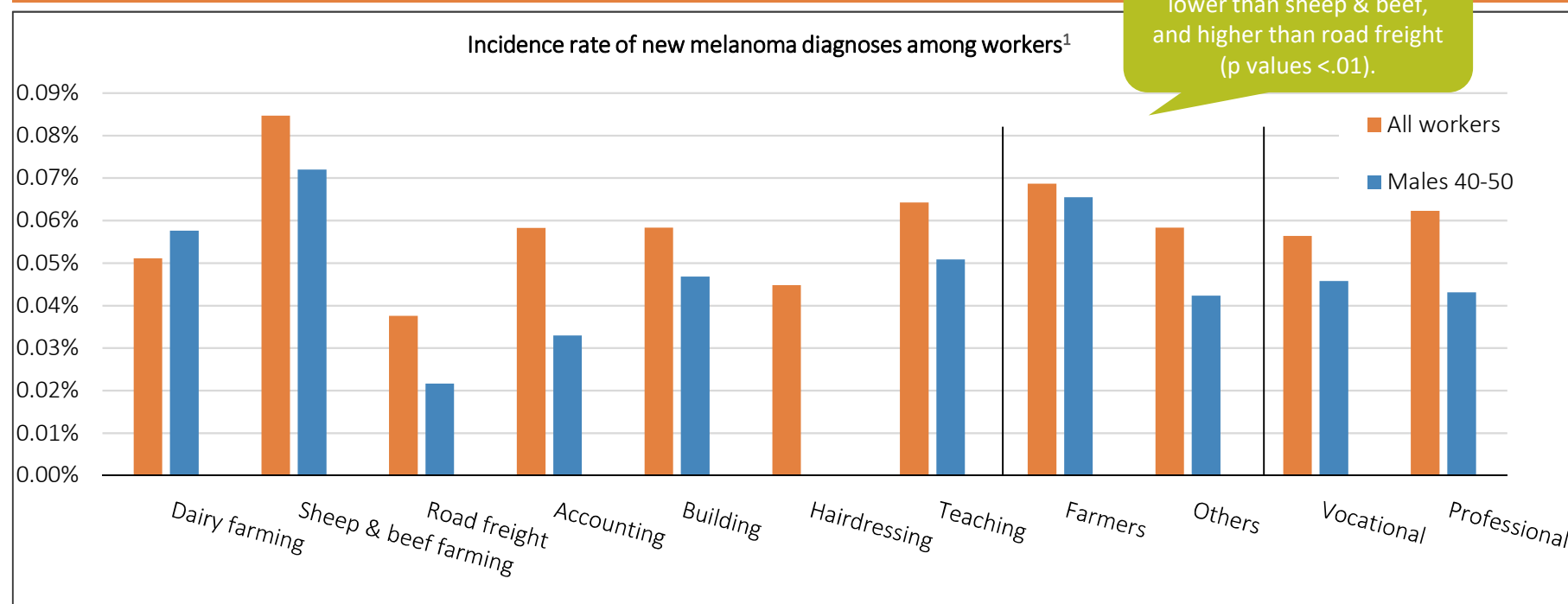
Dairy farming is significantly lower than sheep & beef, and higher than road freight (p values <.01).

Incidence rate of new melanoma diagnoses among workers[1]

Legend: All workers (orange), Males 40-50 (blue)

Categories: Dairy farming, Sheep & beef farming, Road freight, Accounting, Building, Hairdressing, Teaching, Farmers, Others, Vocational, Professional

Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	371,900	472,600	292,800	223,200	514,300	122,800	373,700
Total cancer events	190	400	110	130	300	55	240
Males 40-50 person-years	52,100	62,500	69,400	18,200	96,100	4,000	23,600
Males 40-50 cancer events	30	45	15	6	45	-	12

1. The Ministry of Health record each melanoma diagnosis. If an individual is working in the given occupation at the time of their first diagnosis of melanoma, they are counted in this measure.

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Farmers' levels of chronic heart disease is in line with other populations given the difference in the age and gender profiles.

Physical wellbeing - Chronic Heart Disease (CHD)
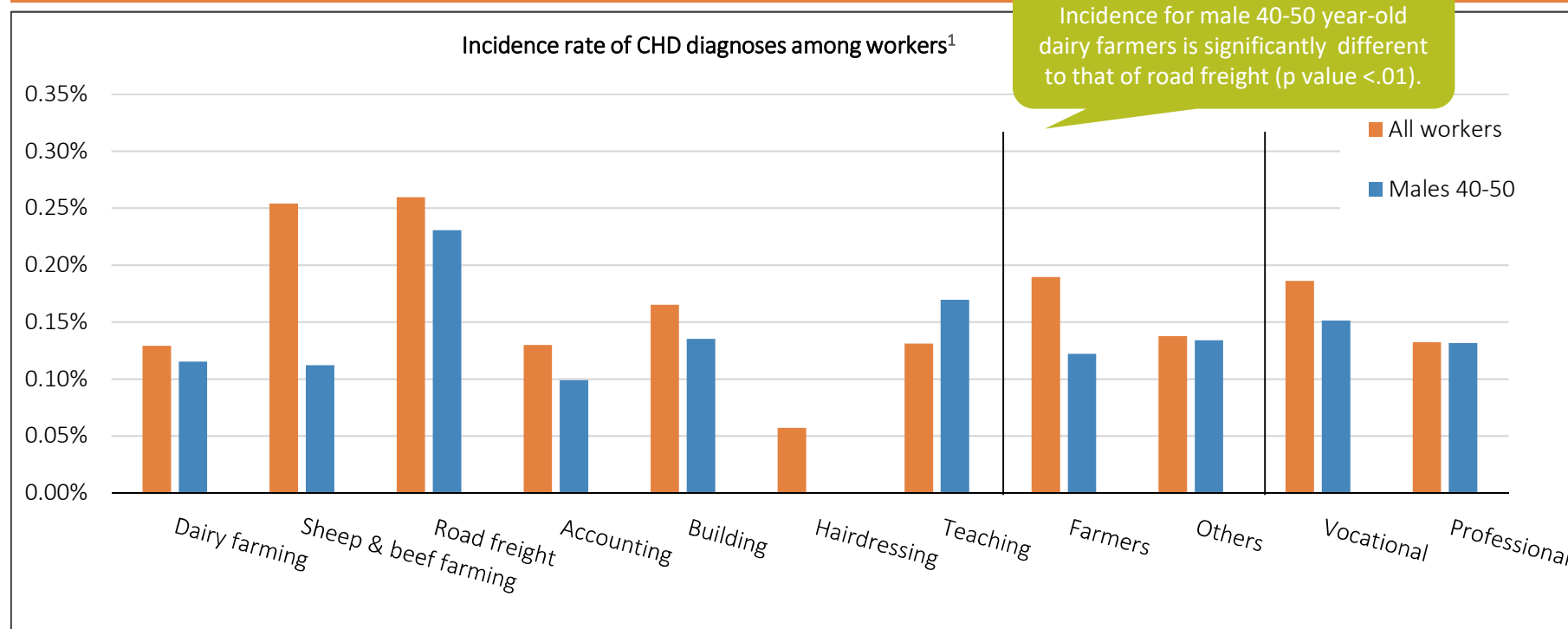
Incidence rate of CHD diagnoses among workers[1]

Incidence for male 40-50 year-old dairy farmers is significantly different to that of road freight (p value <.01).

Legend: ■ All workers ■ Males 40-50

Categories (x-axis): Dairy farming, Sheep & beef farming, Road freight, Accounting, Building, Hairdressing, Teaching, Farmers, Others, Vocational, Professional
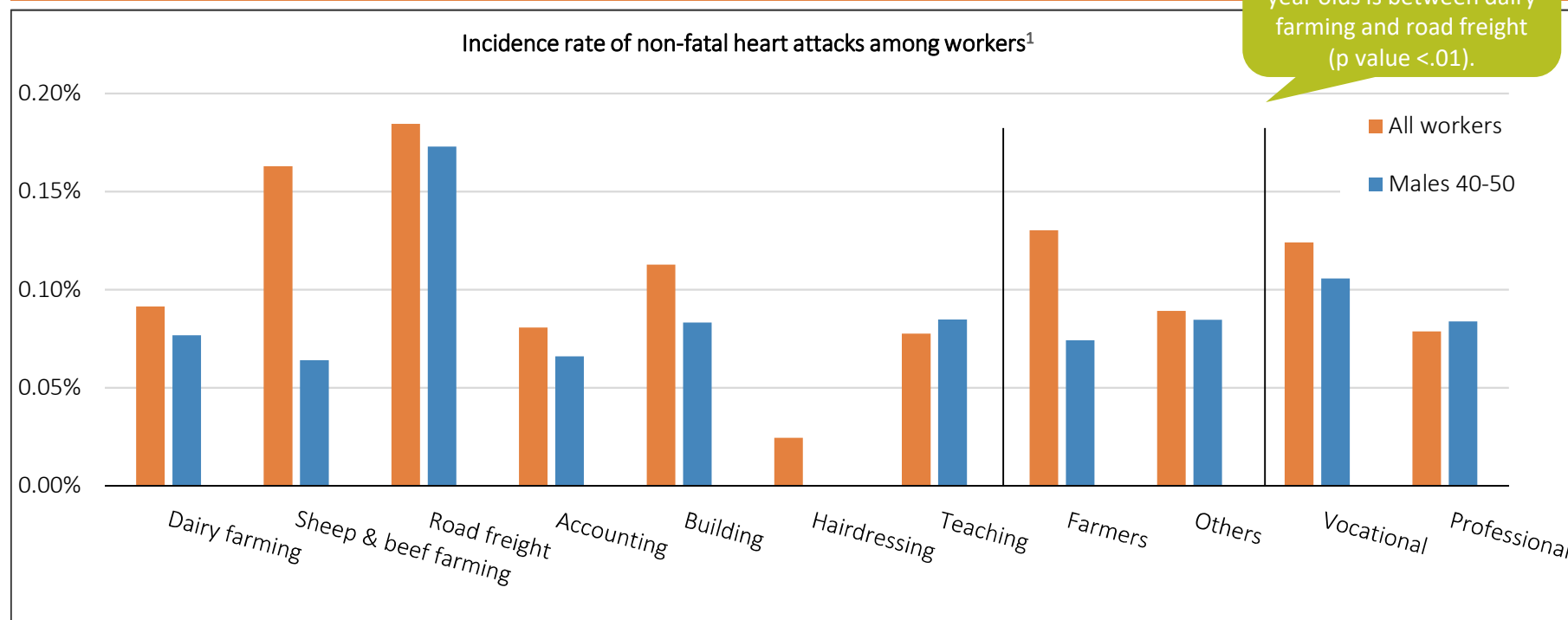
Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	371,900	472,600	292,800	223,200	514,300	122,800	373,700
Total diagnoses	480	1,200	760	290	850	70	490
Males 40-50 person-years	52,100	62,500	69,400	18,200	96,100	4,000	23,600
Males 40-50 diagnoses	60	70	160	18	130	-	40

1. The Ministry of Health counts healthcare users as having CHD if they meet a range of conditions, including prescriptions of certain medications and hospital diagnosis codes. If an individual is working in the given occupation at the time of their first diagnosis of CHD, they are counted in this measure.

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Farmers' incidence of heart attacks is in line with other workforces when controlled for age and gender.

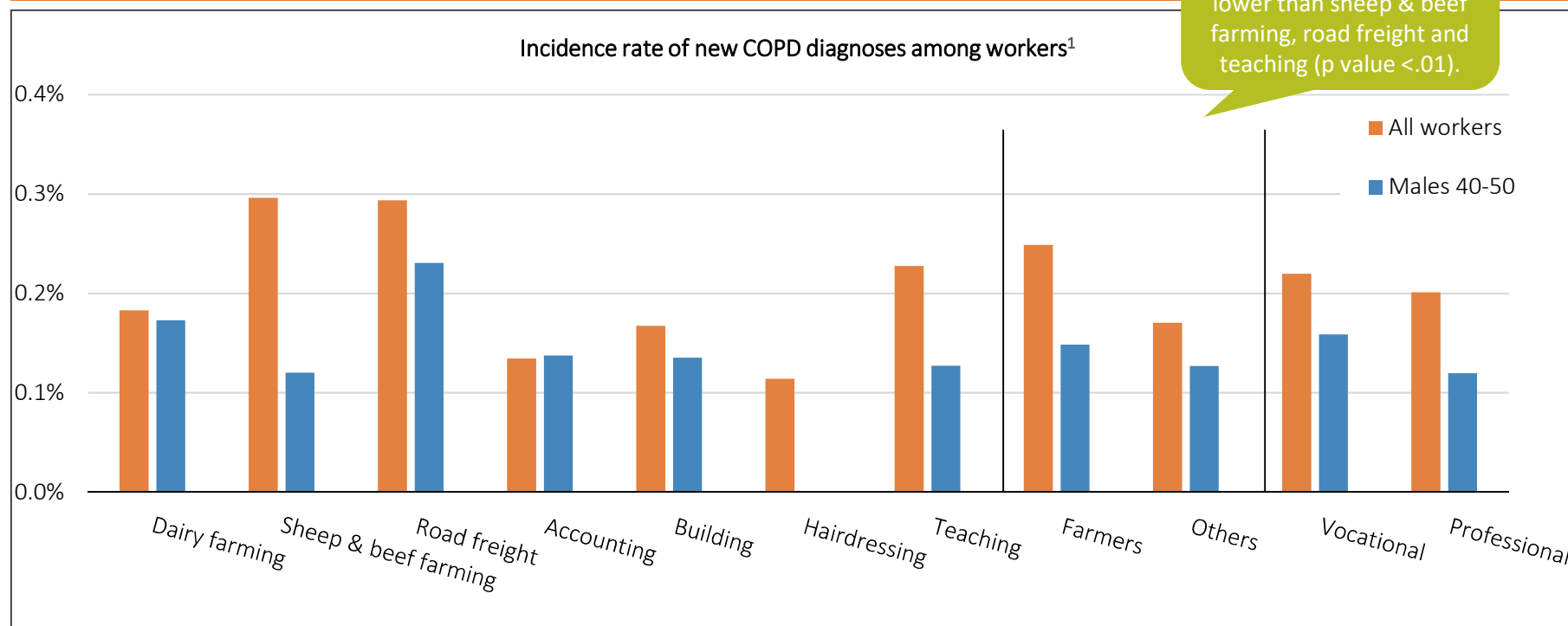## Physical wellbeing - Acute Myocardial infarction (heart attack) (non-fatal)

The only significant difference for male 40-50 year olds is between dairy farming and road freight (p value <.01).

Incidence rate of non-fatal heart attacks among workers[1]

■ All workers
■ Males 40-50

Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	371,900	472,600	292,800	223,200	514,300	122,800	373,700
Total heart attacks	340	770	540	180	580	30	290
Males 40-50 person-years	52,100	62,500	69,400	18,200	96,100	4,000	23,600
Males 40-50 heart attacks	40	40	120	12	80	-	20

1. The Ministry of Health counts healthcare users as having a heart attack if they are given hospital discharge codes associated with heart attacks. If an individual is working in the given occupation at the time of their non-fatal heart attack, they are counted in this measure.

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Farmers' levels of Chronic Obstructive Pulmonary Disease (COPD) is in line with other populations when controlled for age and gender.

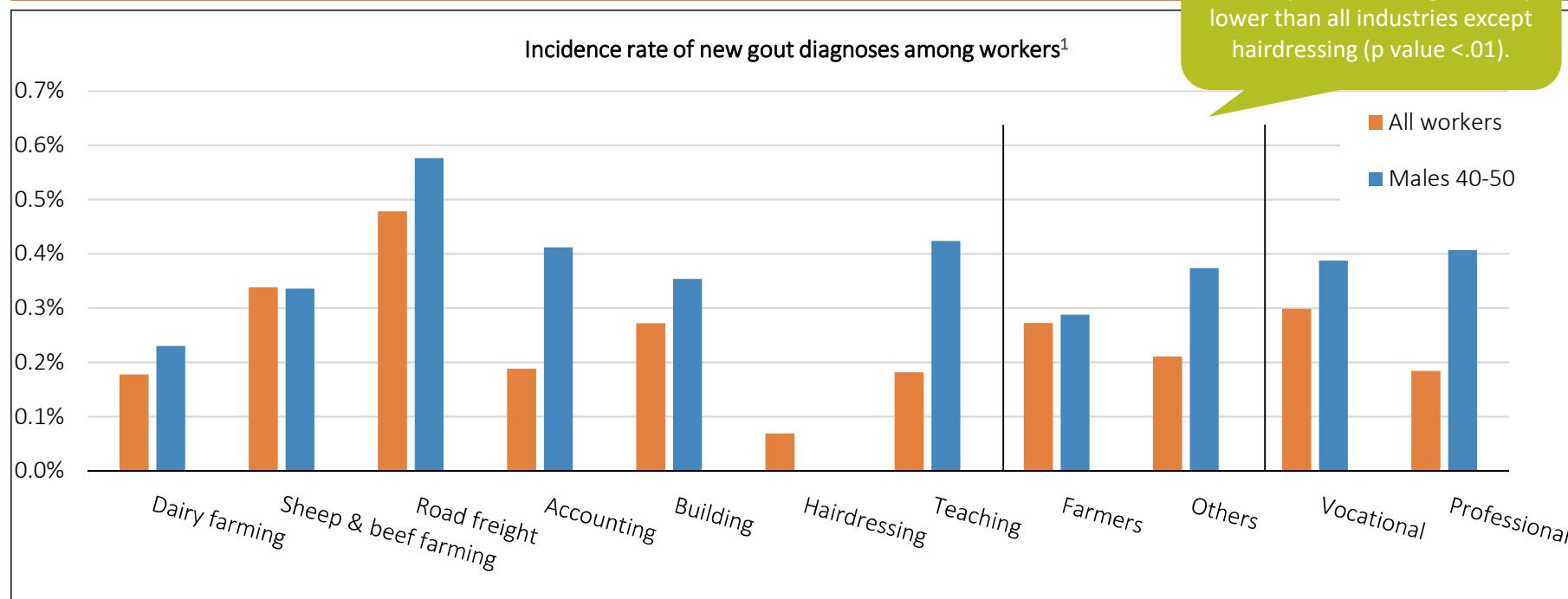# Physical wellbeing - Chronic Obstructive Pulmonary Disease (COPD)

Incidence rate of new COPD diagnoses among workers[1]

Incidence for dairy farmers is significantly lower than sheep & beef farming, road freight and teaching (p value <.01).

■ All workers
■ Males 40-50

Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	371,900	472,600	292,800	223,200	514,300	122,800	373,700
Total diagnoses	680	1,400	860	300	860	140	850
Males 40-50 person-years	52,100	62,500	69,400	18,200	96,100	4,000	23,600
Males 40-50 diagnoses	90	75	160	25	130	-	30

1. The Ministry of Health counts healthcare users as having a COPD if they are given a diagnosis code associated with COPD from any data set that might record it. If an individual is working in the given occupation at the time of their first diagnosis of COPD, they are counted in this measure.

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Farmers' rates of gout appear roughly in line with other workforces.
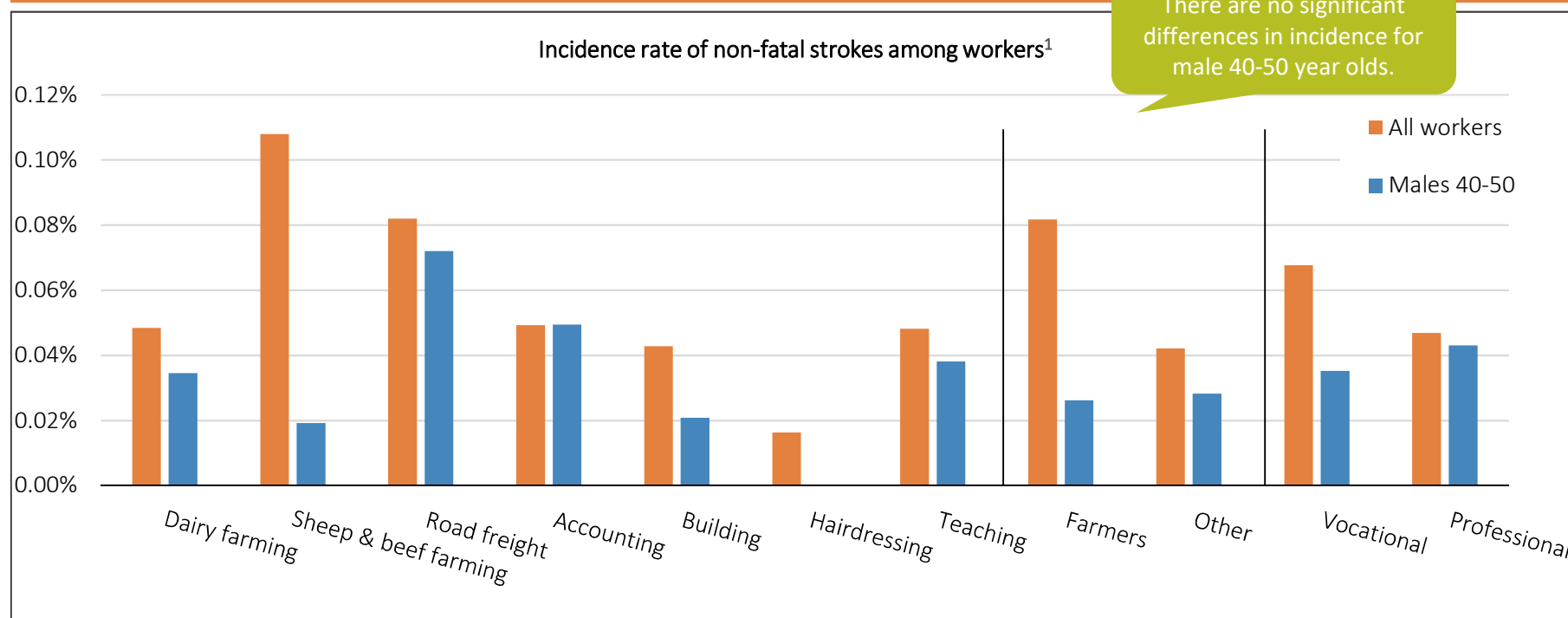
Physical wellbeing - Gout

Incidence rate of new gout diagnoses among workers[1]

Incidence for male 40-50 year old dairy farmers is significantly lower than all industries except hairdressing (p value <.01).

Legend: All workers (orange), Males 40-50 (blue)

Categories: Dairy farming, Sheep & beef farming, Road freight, Accounting, Building, Hairdressing, Teaching, Farmers, Others, Vocational, Professional

Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	371,900	472,600	292,800	223,200	514,300	122,800	373,700
Total diagnoses	660	1,600	1,400	420	1,400	85	680
Males 40-50 person-years	52,100	62,500	69,400	18,200	96,100	4,000	23,600
Males 40-50 diagnoses	120	210	400	75	340	-	100

1. The Ministry of Health record the first date of diagnosis for each person that has gout. This could be captured in a range of ways, such as being prescribed certain medications, hospital discharges or diagnoses codes. If an individual is working in the given occupation at the time of their first diagnosis, they are counted in this measure.

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The number of people that are in the workforce when they have a stroke is very low, making it difficult to compare industries using this measure.
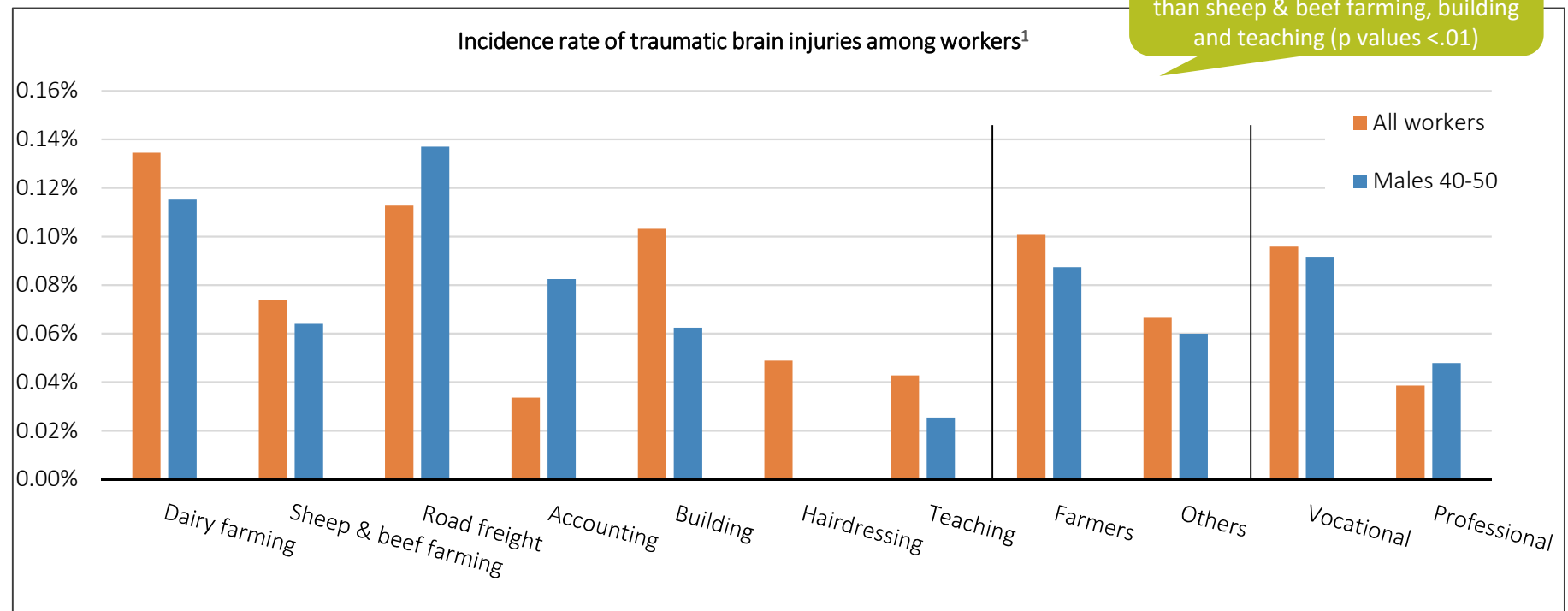
Physical wellbeing - Stroke (non-fatal)

Incidence rate of non-fatal strokes among workers[1]

There are no significant differences in incidence for male 40-50 year olds.

- All workers
- Males 40-50

Categories (x-axis): Dairy farming, Sheep & beef farming, Road freight, Accounting, Building, Hairdressing, Teaching, Farmers, Other, Vocational, Professional

Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	371,900	472,600	292,800	223,200	514,300	122,800	373,700
Total strokes	180	510	240	110	220	20	180
Males 40-50 person-years	52,100	62,500	69,400	18,200	96,100	4,000	23,600
Males 40-50 strokes	18	12	50	9	20	-	9

1. The Ministry of Health counts healthcare users as having a stroke if they are given hospital discharge codes associated with heart attacks. If an individual is working in the given occupation at the time of their non-fatal stroke, they are counted in this measure.

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The incidence rate of dairy farmers experiencing a brain injury is significantly higher than all other industries shown here (all p values <.01).
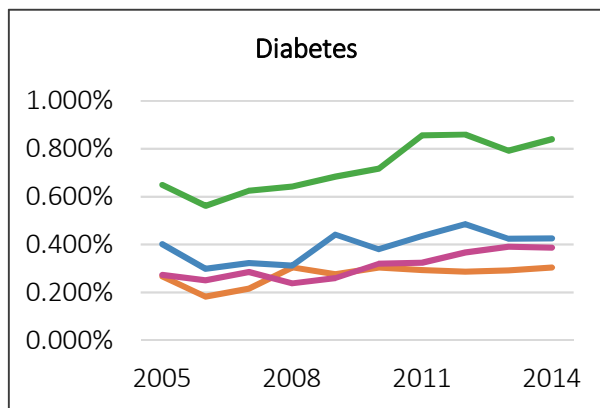
Physical wellbeing - Traumatic Brain Injury

The rate for male 40-50 year old dairy farmers is significantly higher than sheep & beef farming, building and teaching (p values <.01)

Incidence rate of traumatic brain injuries among workers[1]

Legend:
- ■ All workers
- ■ Males 40-50

Chart categories (x-axis): Dairy farming, Sheep & beef farming, Road freight, Accounting, Building, Hairdressing, Teaching, Farmers, Others, Vocational, Professional

Y-axis: 0.00% to 0.16%

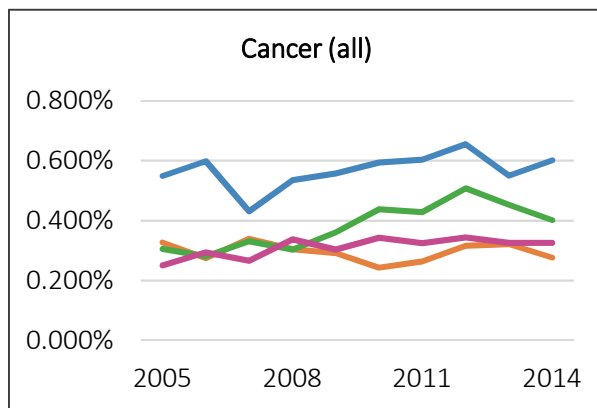| Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	371,900	472,600	292,800	223,200	514,300	122,800	373,700
Total brain injury events	500	350	330	75	530	60	160
Males 40-50 person-years	52,100	62,500	69,400	18,200	96,100	4,000	23,600
Males 40-50 brain injuries	60	40	95	15	60	-	6

1. The Ministry of Health counts healthcare users as having a TBI if they are given hospital discharge codes associated with TBI. If an individual is working in the given occupation at the time of their brain injury, they are counted in this measure.

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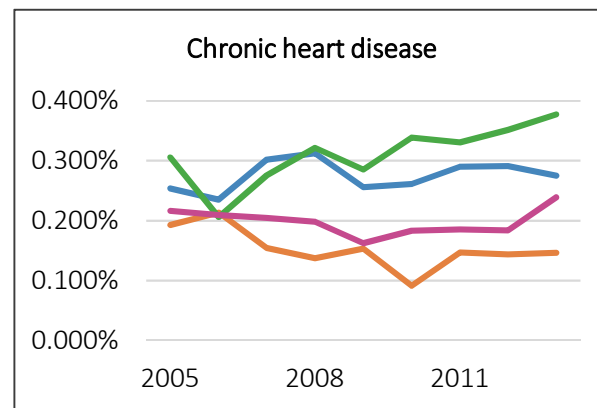There are few statistically significant trends in physical wellness conditions. These are listed under each chart.

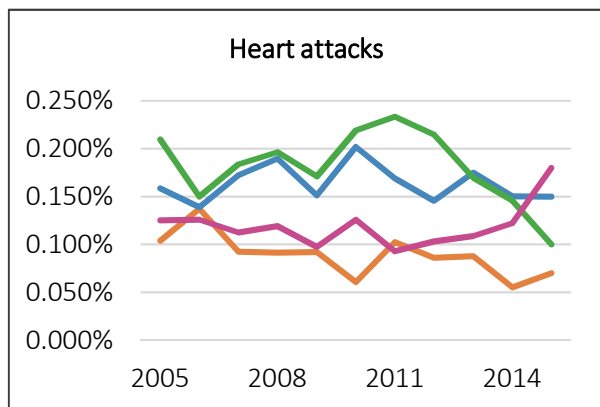## Trends over time for selected physical wellness conditions

Diabetes

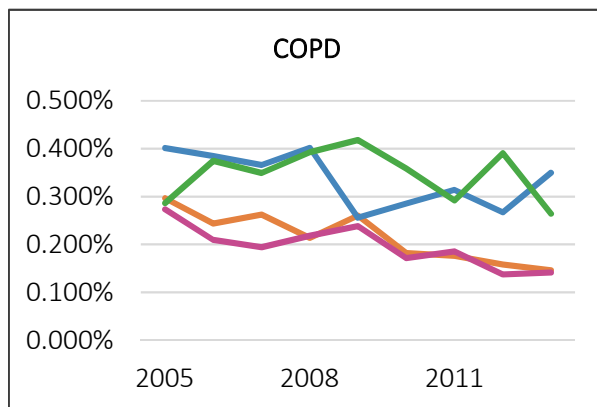Dairy (.05), Sheep & beef (.04), Building (<.01), Road freight (<.01)

Cancer (all)

Building (.02), Road freight (<.01)

Chronic heart disease

Road freight (.01)

Heart attacks

Dairy (.04)

COPD

Dairy (<.01), Building (<.01)

Gout
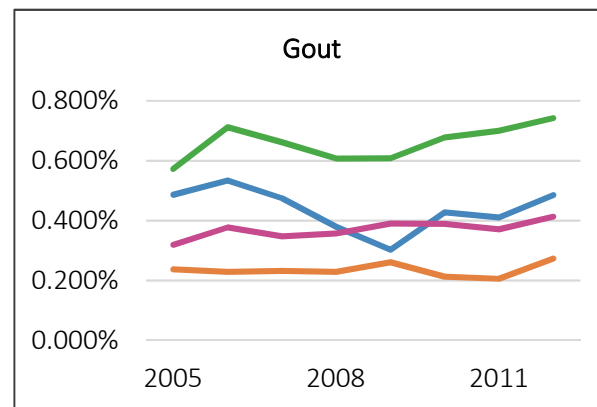
Building (.02)

Legend: Dairy farming — Sheep & beef — Building — Road freight
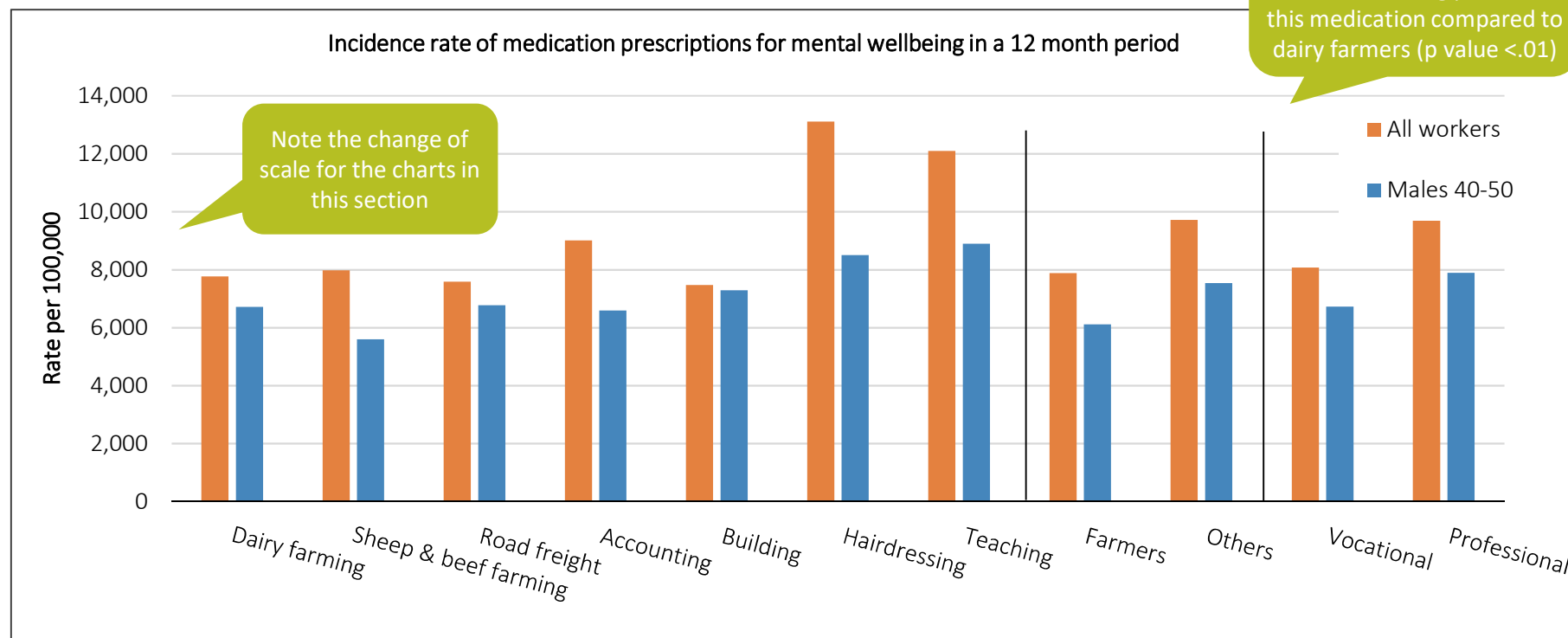
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Dairy farmers are prescribed medication for mental illness at a similar rate to most other industries, and at a rate significantly lower than hairdressing and teaching (p values <.01). When age and gender are controlled for, a similar, but dampened pattern is observed.
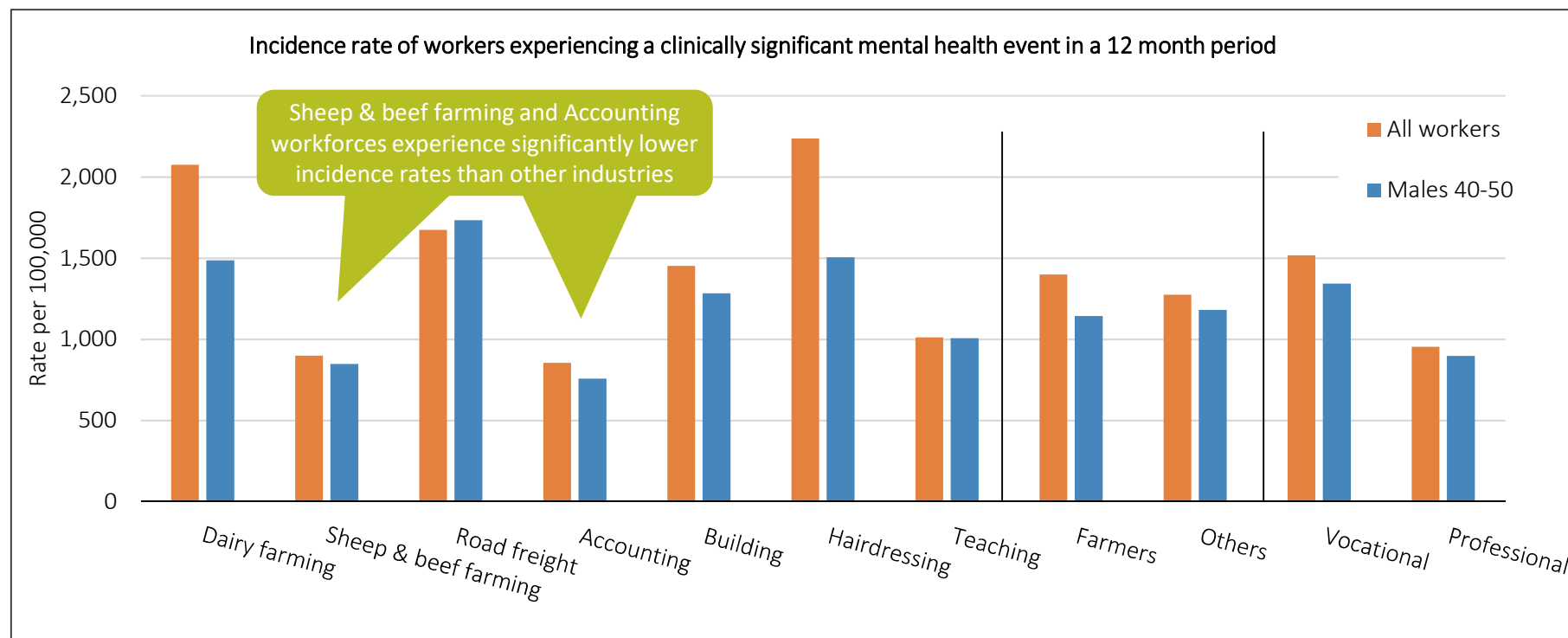
Mental wellbeing – All medications

Incidence rate of medication prescriptions for mental wellbeing in a 12 month period

Note the change of scale for the charts in this section

Slightly fewer male 40-50 year-old sheep & beef farmers are being prescribed this medication compared to dairy farmers (p value <.01)

Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	371,900	472,600	292,800	223,200	514,300	122,800	373,700
Total prescriptions	28,900	37,700	22,200	20,100	38,400	16,100	45,200
Males 40-50 person-years	52,100	62,500	69,400	18,200	96,100	4,000	23,600
Males 40-50 prescriptions	3,500	3,500	4,700	1,200	7,000	340	2,100

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Dairy farmers' incidence of clinically significant mental illness events is statistically higher than all other industries, other than hairdressing (p values <.01). However, the difference to other vocational occupations largely disappears for males 40-50. The difference between dairy farming and sheep & beef farming (both when age and gender are controlled for, and when they are not) warrants further investigation, considering the two workforces are prescribed mental health medication at almost identical rates.
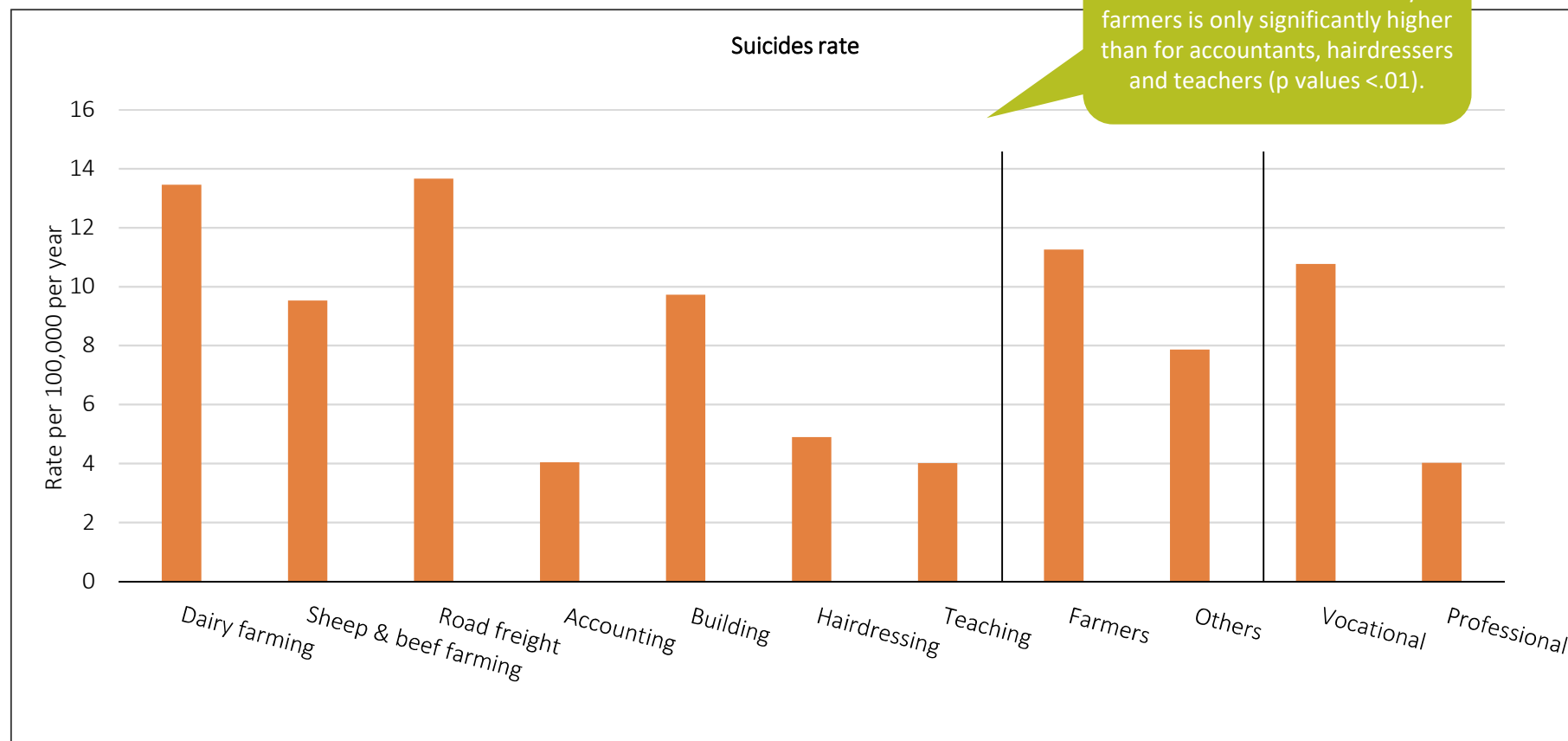
Mental wellbeing – Clinically significant events

Incidence rate of workers experiencing a clinically significant mental health event in a 12 month period

Sheep & beef farming and Accounting workforces experience significantly lower incidence rates than other industries

Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	231,300	311,800	185,200	140,400	323,900	76,000	237,200
Total significant events	4,800	2,800	3,100	1,200	4,700	1,700	2,400
Males 40-50 person-years	37,700	41,300	50,200	13,200	68,600	2,990	16,900
Males 40-50 events	560	350	870	100	880	45	170

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Suicide data need to be interpreted cautiously as numbers are small. The data presented here hint that rurality is no better a predictor of suicide than the type of occupation.

Mental wellbeing – Suicides

Suicides rate

The rate of suicide for dairy farmers is only significantly higher than for accountants, hairdressers and teachers (p values <.01).

Numbers analysed	Dairy farming	Sheep & beef farming	Road freight	Accounting	Building	Hairdressing	Secondary teaching
Total person-years	371,700	472,200	292,800	223,100	514,300	122,700	373,700
Total suicides	50	45	40	9	50	6	15

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Over the period 2005 to 2014, all industries have increased the rate at which they are prescribed medication used to treat mental illness. These trends are all statistically significant (p values <.01).

Mental wellbeing – All medications over time

Incidence rate of medication prescriptions for mental wellbeing in a 12 month period

—— Dairy   —— Sheep & beef   —— Road freight   —— Building   —— Secondary teaching

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