NHS Health Scotland

Health outcomes and determinants by occupation and industry in Scotland, 2008–2011

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The forest plots presented in *Figures* 15–20 use tools developed by Neyeloff, Fuchs and Moreira (2012).[1]

Formal citation of survey data

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Office for National Statistics. Social Survey Division. (2015). *Annual Population Survey, January - December, 2010: Special Licence Access*. [data collection]. *3rd Edition.* UK Data Service. SN: 6810.

Contents

Executive summary

Introduction

This report aims to:

- describe health outcomes, behavioural risk factors, workplace stress and work characteristics, by occupation and industry, for adults in Scotland aged 16–64
- identify whether or not occupations and industries were independently associated with differences in self-reported general health and possible mental health problems, for adults in Scotland aged 16–64, after adjustment for individual, socioeconomic and lifestyle risk factors
- classify occupations and industries that could be characterised as 'multiply' advantaged or disadvantaged by health outcomes and determinants
- summarise the key findings, highlight strengths and limitations and suggest implications for policy and future research.

Methods

The analysis is based on comparisons of occupations and industries using cross-sectional data from the Scottish Health Survey,[2] Annual Population Survey[3]/Labour Force Survey[4] and the Annual Survey of Hours and Earnings.[5]

We used logistic regression to assess the independent association between occupation/industry on the likelihood of reporting 'good/very good' general health and having a General Health Questionnaire 12 (GHQ-12) score of 4+ (which indicates a possible mental health problem). Results were adjusted for age, sex, employment status, educational attainment, living in a low-income household and lifestyle risk factors (smoking, physical activity, hazardous/harmful alcohol consumption, obesity and not eating five or more portions of fruit/vegetables a day).

Results

This report confirms the importance of paid, secure employment in improving health, but also highlights the independent association between household income, health outcomes, and occupation and industry of employment. It supports the view that

inequalities in health are partly driven by inequalities in the labour market. However, it is important to note that social class, a distinct concept from occupation, may also be driving these differences at a more fundamental level (through status and power), although it is not possible to be definitive about this using cross-sectional data.

Professionals and managers are, in general, consistently advantaged, along with those in protective service occupations, such as police or prison officers (in the latter case, this is despite high levels of job strain). Those in transport, process, caring, customer service and elementary occupations appear consistently disadvantaged.

Industries that may cause a health disadvantage to their employees include land transport, hotels and restaurants, food and beverage manufacturing, and construction. Industries that may give some health advantage to their workforce include extraction of petroleum and natural gas, education and (with some challenges around workplace stress) financial services.

Many of the disadvantaged occupations were independently associated with poorer self-reported health even after employment status and a range of other factors were taken into account. Occupation was also independently associated with possible mental health problems for men but not for women. Land transport remained significantly associated with poorer self-reported heath, and computer and related activities, and electrical and electronic manufacturing with poorer mental health, after adjustment for demographic, socioeconomic and lifestyle factors. It is also important to note that the following factors emerged as important independent variables: living in a low-income household, physical activity, smoking and obesity.

There is a gendered dimension as well. In particular, current or previous employment in professional/managerial occupations does not appear to protect working-age women’s mental health (as it does for men); while for women, household income is relatively more important in (creating) good health.

Discussion

A key strength of this research is its novel use of Scottish Health Survey data to present health outcomes and determinants by occupation and industry. However, there are limitations, which include:

- reliance on self-reported data for health outcomes
- a crude approach to scoring outcomes, behaviours, workplace stress and work characteristics
- the indicators selected may not capture the relevant concepts adequately
- findings are restricted to a point in time, and to Scotland only.

The research suggests a number of policy implications:

- more support for measures that increase the number of people in sustainable, paid employment that protect against poverty
- a continued focus on measures that increase household incomes (by increasing money coming in and reducing unfair costs and the poverty premiums) over and above increasing the employment rate
- continued support for effective interventions to reduce lifestyle risk factors, especially smoking, obesity and lack of physical activity
  more detailed consideration of the health challenges for specific occupations and industries.

Consideration could be given to:

- the extent to which growth sector industries promote improved health and reduced health inequalities
- ensuring that demand-side measures to increase the availability of work also take the quality of employment into account.

Adverse health outcomes and determinants associated with occupations and industries are not inevitable. The information in this report can be used to increase the prospects of ‘good work for all’ – with all the human, social and economic benefits that it would bring.

Chapter 1: Introduction

Background and aims

This report describes contemporary health outcomes, behaviours and determinants, by current or most recent occupation and industry of employment, for adults aged 16–64 years in Scotland. Employment, along with income and education, are key social determinants of population health and health inequalities.[6]

In Scotland, health inequalities are widest for adults of working age, especially for those aged 30–49 years,[7] and there is increasing policy interest in the role of work quality in determining social outcomes.[8,9] NHS Health Scotland is undertaking a programme of research on how the patterning of employment in Scotland affects health and health inequalities to inform decisions that will help promote good work for all and a healthier working-age population.

While previous NHS Health Scotland research in this area has focused on inequalities in the risk of worklessess (focusing on differences in the effective demand for labour),[10] this report broadens the focus to examine inequalities in the health of working-age adults currently or recently in work. It aims to:

- describe health outcomes, health behaviours and workplace stress by current or most recent occupation or industry of employment
- describe the quality of work within different industries and occupations using (a subset of) criteria defined by the Marmot review[11]
- assess the independent association of occupation and industry on self-reported general health and possible mental health problems for working-age adults in Scotland using logistic regression
- identify occupations and industries characterised by multiple advantages/disadvantages across three domains: health outcomes, health behaviours and work characteristics.

What is known already and what this report adds

There is a large body of literature describing inequalities in health outcomes and determinants by social class – measures that are typically derived from information about individuals' current or most recent job held. The Black report (1980),[12] Acheson enquiry (1998)[13] and Marmot review (2010)[11] illustrated their arguments by reference to the Registrar General's social class, socioeconomic groupings and the National Statistics Socio-economic Classification (NS-SEC).

Population surveys in Scotland, including the Scottish Health Survey and Scottish Household Survey, publish analyses of outcomes by these categories and this is very useful in providing researchers, policy-makers and others with individual-level information on the extent of socioeconomic inequalities. However, typically, results are shown at a high level of aggregation. Data on health outcomes by industry of employment are seldom shown: the exception is reporting on accidents and injuries at work published by the Health and Safety Executive on a regular basis.

By contrast, policy-makers, employment support services, employers and statutory institutions* involved in labour market interventions focus on (often quite specific) occupations and industries. NS-SEC and its predecessors may not provide sufficient detail for them to identify challenges and prioritise actions. Broad occupational categories may conceal different challenges within them. For example, in NS-SEC, routine occupations include both bus and coach drivers, and cleaners and domestics; small employers and own account workers include both taxi drivers and opticians; and lower managerial and professionals include both nurses and teachers. Scottish Government policy also aims to expand seven key sectors[14] in order to promote sustainable economic growth. It would be useful to know the contribution these sectors could also make to cohesion, solidarity and the reduction of health inequalities, which are also Scottish Government priorities. Recent work published by Eurofound,[15,16] using data from the European Working Conditions Survey[17] (EWCS), recognised the need to be more specific in describing differences by occupation type and industry to

* Such as the Health and Safety Executive (HSE) and UK Commission for Employment and Skills (UKCES).

inform policy. This report uses this principle, greater specificity, to help improve knowledge in this area for Scotland.

A key question is to what extent health outcomes for individuals reflect the characteristics of their current/most recent occupation or industry of employment, independent of individual circumstances. These circumstances include not just age, sex and health behaviours, but also household income and whether or not the individuals are currently in paid employment. The report attempts to address this question by examining the independent association of occupation and industry of employment with self-reported general health and a GHQ-12 score of 4+ (which indicates a possible mental health problem).

Structure of the report

The report is structured as follows:

- A methods section, outlining the data sources, definitions of occupations and industries, and the analytical approach.
- A results section, which presents the key findings split by occupation, industry and (where appropriate) sex. Themes covered include:
  - distribution of the population
  - health outcomes
  - health behaviours
  - workplace stress
  - work characteristics
  - accounting for differences in health outcomes, after adjusting for a number of other factors
  - classifying occupations and industries by multiple (dis)advantage.
- A conclusions section with a section summarising the key findings, strengths and limitations, and implications.

Chapter 2: Methods

Data sources

Most of the information presented in this report comes from three cross-sectional population surveys of the Scottish adult population. The main source is the Scottish Health Survey, which began in 1995 (with follow-up surveys in 1998 and 2003), before becoming an annual survey in 2008. The design of Scottish Health Survey currently consists of both a core questionnaire and two modules of questions. The core questionnaire collects information on health outcomes, determinants and the characteristics of all respondents every year. The modules include a rotating biennial module which collects information on selected topics of a subset of respondents every second year and a biological module to be completed by the remaining subset of respondents. The biennial module includes questions on workplace psychosocial stress.

The second main source is the Annual Population Survey, which combines four quarters of UK Labour Force Survey data on a range of labour market issues (e.g. employment and unemployment), and has been boosted to produce more robust results for the regions and local areas of England, Scotland, Wales and Northern Ireland.

Data on accidents at work are taken from the quarterly Labour Force Survey, as this question is only asked in the January–March quarter of the survey. Supplementary data on hourly earnings by occupations and industry are taken from the Annual Survey of Hours and Earnings, which is drawn from a 1% random sample of employees jobs registered to Pay As You Earn (PAYE) schemes. Except for a small number of indicators in which the Scottish sample was not robust, information presented from the Annual Population Survey, Annual Survey of Hours and Earnings and Labour Force Survey in this report is for Scotland.

Data on health outcomes and behaviours were pooled from 4 years of the Scottish Health Survey (2008–11) and were confined to adults aged 16–64 years. Indicators of workplace stress used combined data from the 2009 and 2011 ‘version A’ module

of the Scottish Health Survey, and again was restricted to adults aged 16–64 years. Labour market data are based on estimates from the January–December 2010 Annual Population Survey. All results shown are based on weighted data.[†]

Defining occupations and industries

Adult respondents to the Scottish Health Survey are asked if they are: currently in employment; waiting to take up employment; or have ever been in paid employment. If they answer yes, they are then asked the name or title of the job.[18] This is used to derive information on the occupation or industry of employment. Based on this information, the Scottish Health Survey team created two new variables for inclusion in the data set. These were:

1. Standard Occupational Classification (SOC) 2000,[‡] using the two-digit subcategories.
2. Industry of employment, derived from Standard Industrial Classification (SIC) codes 1992 and 2003.

Please note that analyses presented for health outcomes and health behaviours refer to the current or most recent job held (including those currently inactive/unemployed with a recent work history), but for the workplace stress factors analyses, only the current job held by respondent is used (including only those currently in paid employment).

There were 25 occupational categories within the SOC 2000 two-digit subcategories. While most of the subcategory titles are self-explanatory, note that the most common

[†] For the Scottish Health Survey, the 'int08091011_wt' weight was applied to adjust for differences between responding and non-responding individuals within cooperating households. For analysis of workplace stress module variables, the 'vera0911wt' weight was applied to adjust for the fact that the Health Board boost sample interview did not include the version A module. For the APS/Labour Force Survey, results were weighted using the population grossing weight.

[‡] A new classification for occupations in the UK, the SOC 2010, was introduced after 2010 and is now used routinely in most labour market data sets (e.g. the Annual Population Survey). The main revisions of note are a tighter definition of managers (with a number of jobs re-classified as professionals) and the movement of midwives and nurses from the associate professional to professional category. For more information, see: www2.warwick.ac.uk/fac/soc/ier/publications/2000/soc2000vol1v5_tcm77-179121.pdf

jobs within the ‘textiles, printing and other skilled trades’ subcategory were those in skilled food preparation trades: chefs, cooks, butchers and bakers.

Table 1 gives examples of the types of jobs covered by each subcategory. The estimated number of men and women aged 16–64 years affected in Scotland is taken from the 2010 Annual Population Survey.

Table 1: SOC 2000 two-digit classification, adults aged 16–64 years (‘000s) by current/most recent occupation: Scotland, 2010.

SOC 2000 two-digit classification	**Number (000s)**	**Types of job included in this category**
Elementary administration and services	289.9	Cleaners and domestics; kitchen and catering assistants; waiters and waitresses
Corporate managers	277.6	Marketing and sales managers; production works and maintenance managers; retail and wholesale managers
Administration occupations	259.0	General office assistants or clerks; account wages clerk bookkeeper; civil service administration officers and assistants
Caring personal services	224.4	Care assistants and home carers; educational assistants; nursing auxiliaries and assistants
Sales occupations	214.6	Sales and retail assistants; retail cashiers/checkout operators; sales-related occupations not otherwise classified
Teaching and research professionals	141.3	Secondary education teaching professionals; primary and nursery education teaching professionals; teaching professionals not otherwise classified
Health and social welfare associate professionals	131.0	Nurses; housing and welfare officers; youth and community workers
Business and public service associate professionals	129.9	Sales representatives; finance and investment analysts and advisers; personnel and industrial relations officers
Skilled metal and electrical trades	113.7	Electricians and electrical fitters; metal working production and maintenance fitter; motor mechanics auto engineers
Transport and mobile machine drivers and operatives	112.8	Heavy goods vehicle drivers; taxi cab drivers and chauffeurs; van drivers
Elementary trades	104.9	Other good handling and storage occupations not otherwise classified; labourers build and woodworking trades; packers, bottlers, canners and fillers

SOC 2000 two-digit classification	Number (000s)	Types of job included in this category
Process, plant and machine	96.5	Food, drink and tobacco process operator; metal working machine operatives; construction operatives not otherwise classified
Skilled construction and building trades	94.7	Carpenters and joiners; construction trades not otherwise classified; plumbers, heating and ventilating engineers
Science and technology professionals	92.5	Software professionals; IT strategy and planning professionals; engineering professionals not otherwise classified
Business and public service professionals	87.1	Management consultants and actuaries, economists and statisticians; chartered and certified accountants; solicitors and lawyers, judges and coroners
Managers and proprietors in agriculture and services	81.6	Managers and proprietors in other services not otherwise classified; restaurant and catering managers, shopkeepers, wholesale and retail dealers
Textiles, printing and other skilled trades	67.6	Chefs, cooks; furniture makers, other craft woodworkers; butchers, meat cutters
Secretarial occupations	63.0	Personal assists and other secretaries; receptionists; medical secretaries
Customer service occupations	57.6	Customer care occupations; call centre agents and operators
Leisure and other personal services	57.1	Hairdressers, barbers; caretakers; housekeepers and related occupations
Science and technology associate professionals	50.8	IT operations technicians; engineering technicians; IT user support technicians
Culture, media and sport	50.7	Graphic designers; photo and audio-visual equipment operators; sports coaches, instructors and officials
Skilled agricultural trades	39.3	Gardeners and grounds(wo)men; farmers
Health professionals	38.7	Medical practitioners; pharmacists and pharmacologists; dental practitioners
Protective services	37.0	Police officers (sergeant and below); non-commissioned officers; and other ranks; prison serving officers (below principal officers)

Source: Annual Population Survey January–December 2010. Figures include those in employment and the unemployed/inactive whose previous job was in those occupations.

The industry of employment variable used in this report contains 38 categories, based on the SIC codes. Some categories were combined to strike a balance between retaining reasonable sample sizes and presenting results at as fine-grained

a level as possible. Note that ‘other business activities’ is a diverse category containing: a range of professional services (legal, accountancy, architectural and engineering consultancy); head office and management consultancy; and office and facilities support (such as security, administration, cleaning and call centres). As for occupations, the number of men and women aged 16–64 years currently or previously employed in these industries in Scotland was estimated from the 2010 Annual Population Survey.

Approach

Health outcomes

Four health outcomes were calculated for men and women aged 16–64 years:

1. percentage with very good or good self-reported general health
2. percentage with a self-reported limiting longstanding illness
3. percentage with a GHQ-12 score of 4+ (which indicates a possible mental health problem)
4. mean Warwick–Edinburgh Mental Well-being Scale (WEMWBS) score (the range for which is 14–70).

In addition, occupations were ranked from 1 (‘best’) to 25 (‘worst’) according to their scores on each measure (low scores being favourable) for men and women separately. Industries were ranked on a similar basis from 1 (‘best’) to 38 (‘worst’). General health and limiting longstanding illness rankings were summed to give an indication of overall health and GHQ-12 rankings and WEMWBS rankings were summed to give an indication of mental health and wellbeing.

Health behaviours

Five measures were calculated for men and women aged 16–64 years:

1. percentage who reported being a current smoker
2. percentage who reported drinking alcohol at harmful/hazardous levels,[§] based on self-reported weekly alcohol consumption
3. percentage who reported meeting guidance on consuming five or more portions of fruit or vegetables a day
4. percentage with a body mass index (BMI) score of ≥ 30 kg/m^2, indicating obesity
5. percentage meeting the physical activity recommendations.

Using a modified version of the approach favoured by Lawder *et al*. (2010),[19] a summary measure of health behaviours was also calculated as follows:

- smoker (0 = never/ex-smoker, 1 = current smoker)
- drinker (0 = non-drinker/moderate drinker, 1 = hazardous/harmful drinker)
- diet (0 = meets five a day recommendation, 1 = does not meet recommendation)
- obesity (0 = not obese, 1 = obese)
- physical activity (0 = meets recommendations, 1 = does not meet recommendations).

These were summed so that each survey respondent had a health behaviour score between 0 (no adverse health behaviours, not obese) and 5 (all four adverse behaviours and obese).

[§] Defined using the pre-2015 guidelines as drinking more than 14 units of alcohol a week for women and 21 units of alcohol for men.

Workplace stress

For all adults aged 16–64 years in employment, nine indicators of workplace stress (taken from the rotating biennial module in the Scottish Health Survey) were analysed by occupation and industry. These were:

1 percentage who report that their job is very or extremely stressful

2 mean satisfaction with work–life balance (scored from 0 = extremely dissatisfied to 10 = extremely satisfied)

3 percentage who report always or often having unrealistic demands at work

4 percentage who report always or often having a choice in deciding how they do their work

5 percentage who report always or often being clear what their responsibilities are at work

6 percentage who report that they strongly agree or tend to agree that their manager encourages them at work (excluding not applicable)

7 percentage who report that they strongly agree or tend to agree that they get the support and help they need from colleagues at work

8 percentage who report that they strongly agree or agree relationships at work are strained

9 percentage who report that they strongly agree or agree that staff are consulted about changes at work.

In the literature on workplace health, psychosocial factors that have been most extensively studied are those on control, demand and support. Low control at work has been found to be consistently associated with poor health outcomes.[6] High job strain (combining low control and high demand) seems to be particularly damaging to the mental and physical health of workers.[20] Low demand, low control ('passive') jobs might also be harmful to health because monotonous work with few prospects

for advancement has been shown to have a negative impact on workers' mental health and wellbeing.[21] 'Active' jobs are characterised by a combination of high control and high demand, and 'low strain' jobs by high control and low demand: both of these types of jobs (especially active jobs) may confer some relative health advantage.

Given the importance of control–demand–support for psychosocial health, we created charts to divide occupations and industries into low control, high demand (high job strain); low control, low demand (passive); high control, high demand (active); and high control, low demand jobs. We also created additional charts to divide occupations and industries by the level of perceived support received by managers and colleagues. We made comparisons to discriminate between occupations and industries by the other measures of workplace stress.

Work characteristics

The following indicators were proposed as reflecting job quality, in line with the Marmot characteristics. The data source used is shown in brackets after each indicator:

- **Unemployment rate:** % of the economically active population aged 16–64 years who were unemployed using the International Labour Organization (ILO) measure (Annual Population Survey 2010).[**]
- **Hourly pay:** median hourly pay for all employees on adult rates whose pay for the survey pay period was not affected by absence (Annual Survey of Hours and Earnings 2010).
- **Inadequate hours***:* % of those in employment aged 16–64 years working part time because they cannot find a full-time job (Annual Population Survey 2010).

[**] Arguably a better measure of demand would be the number of ILO unemployed relative to the number of unfilled vacancies. However, vacancies data from the Employers Skills Surveys are not currently disaggregated below single-digit SOC and broad industrial sector, so it was not possible to calculate this.

- **Precariousness:** % of those in employment aged 16–64 years with a temporary contract who would like a permanent job (Annual Population Survey 2010).
- **Physical risk:** adults currently in work, aged 16–64 years who reported they had an accident resulting in injury at work, per 100,000 in employment (Labour Force Survey, 2008, 2009 and 2010).
- **Control at work:** % of those in employment aged 16–64 years who always/often have a choice in deciding how they do their work (Scottish Health Survey 2009 and 2011).

All results were calculated for Scotland. Each of the six characteristics associated with each occupation/industry was scored 1 (better than average), 0 (average) or –1 (worse than average). These values were summed to produce an overall score from 6 (best) to –6 (worst), as a measure of 'good work'. Similar analyses were conducted for industry of employment, though Great Britain figures were used to increase robustness of results for injury rates.[22]

Assessing the independent impact of occupation and industry

Logistic regression analysis was used to compare the independent association of occupation and industry for adults aged 16–64 years, on the likelihood of being in good health and the likelihood of having a high GHQ-12 score (which indicates a possible mental health problem), once appropriate adjustments were applied for age, household income, smoking, employment status and, where appropriate, sex. For occupations, results were analysed separately for men and women, adjusting for:

- broad age band (reference group: 16–44 years)
- highest level of education (reference group: no qualifications)
- employment status (reference group: not currently in paid employment), excluding full-time students
- household income (reference group: not in bottom two quintiles)
- smoking (reference group: not current smoker)
- alcohol consumption (reference group: not drinking at hazardous/harmful levels)

- diet (reference group: not eating at least five portions of fruit or vegetables a day)
- obese (reference group: not obese)

  physical activity (reference group: not meeting physical activity recommendations).

The socioeconomic variables were selected owing to the importance of income, employment and education in patterning health inequalities.[23] The lifestyle variables were chosen because of their association with mental health and wellbeing (especially physical activity, smoking, fruit and vegetable consumption and alcohol consumption),[24] and their association with physical health.[25]

For industries, regression analysis was run for all adults aged 16–64 years, with sex included as an independent variable (rather than stratification), along with the other variables listed above.

Classifying occupations and industries by multiple (dis)advantage

New variables were created as follows:

- **A combined measure of general self-reported health and limiting longstanding illness**. Respondents scored 1 if their health was good/very good, 2 if it was fair and 3 if it was bad/very bad. They also scored 1 if they had no long-term conditions, 2 if they had a long-term condition but it was not limiting and 3 if they had a limiting long-term condition. These were summed to give scores from 2–6, with higher scores indicating poorer general and physical health. A mean score was taken for occupations and industries.
- **A combined measure of possible mental health problems and wellbeing.** Respondents scored 1 if they had a GHQ-12 score of 0, 2 if they had a GHQ-12 score of 1–3 and 3 if it was 4+. They also scored 1 if their WEMWBS score was between 58 and 70, 2 if it was between 42 and 57 and 3 if it was less than 42. Again, these were summed to give scores from 2–6, with higher scores indicating poorer mental health. A mean score was taken for occupations and industries.

- **The mean number of adverse health behaviours**, by occupation and industry, calculated from the summary measure of health behaviours shown above.

Occupations and industries were then classified according to their scores in four areas: general health and limiting longstanding illness; mental health; multiple adverse health behaviours; and the work characteristics scores shown in *Work characteristics* above. They were classified as multiply disadvantaged if they were in the worst scoring 10 occupations/15 industries, and multiply advantaged if they were in the best scoring five occupations and eight industries, for at least two areas.

Chapter 3: Results

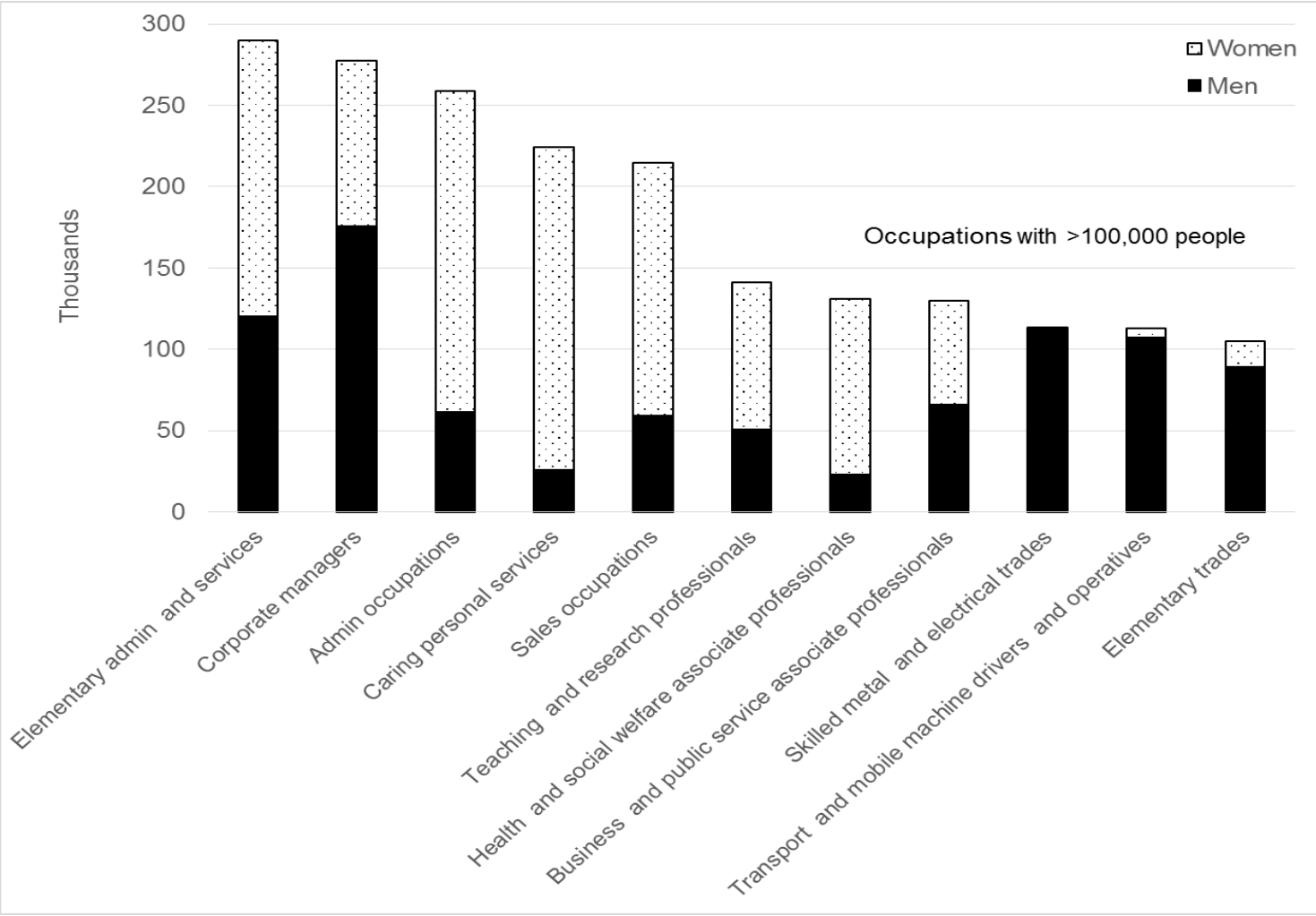
Distribution of the population by occupation and industry

Figure 1 shows the distribution of the population aged 16–64 years who have ever worked, by current/last occupation and sex, for Scotland in 2010. Two points are worth noting. First, in 2010, while many adults in Scotland had experience of work in professional or managerial jobs, a large number were concentrated in occupations that required few or no formal qualifications, such as sales and elementary occupations, or that required either sustained physical labour (skilled manual trades) or a mixture of emotional and physical labour and practical knowledge (caring). Second, there is a clear sex divide: the most extreme examples are in the skilled manual trades, transport and mobile machine operative and elementary trades (more men than women) and secretarial and caring occupations (more women than men). For men, the largest occupation categories were corporate managers, elementary administration and services, and skilled metal and electrical trades, while for women the single largest occupation groups were caring personal services, administration occupations, sales, and elementary administration and services.

Figure 2 shows the distribution of the population aged 16–64 years who have ever worked, by current/last industry of employment and sex, for Scotland in 2010. The largest single industrial sectors were health and social work, retail, education and other business activities. For both men and women, education, health and social work, and hotels and restaurants are important sources of employment, though health and social work is heavily skewed towards women. Construction is the largest single industrial category for men, with land transport also being important. Financial services is a relatively more important source of employment for women.

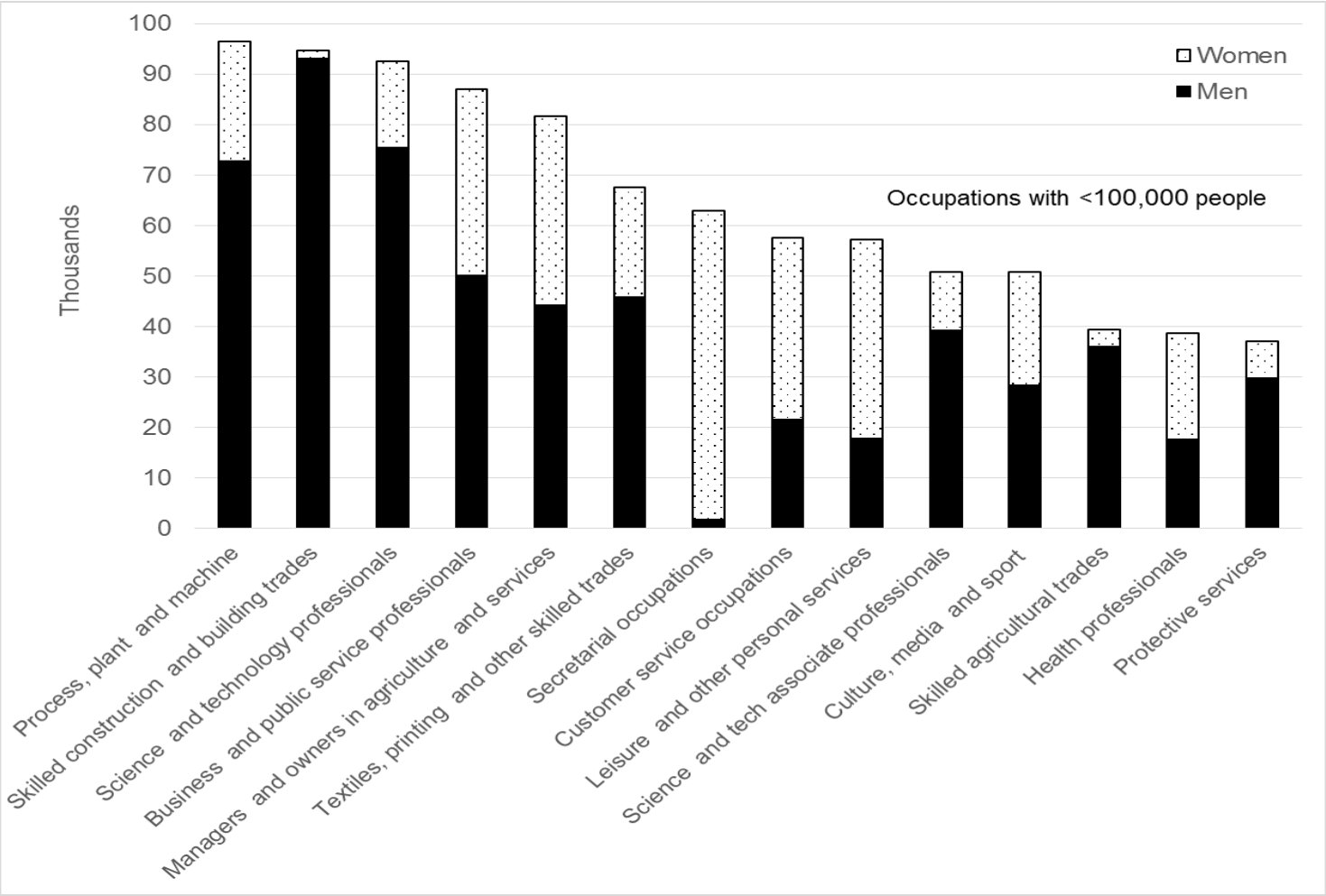
In the next section, health outcomes for each occupation and industry, by sex, are examined.

Figure 1a: Distribution of population aged 16–64 years who have ever worked, by current/last occupation and sex (000s): Scotland, 2010.



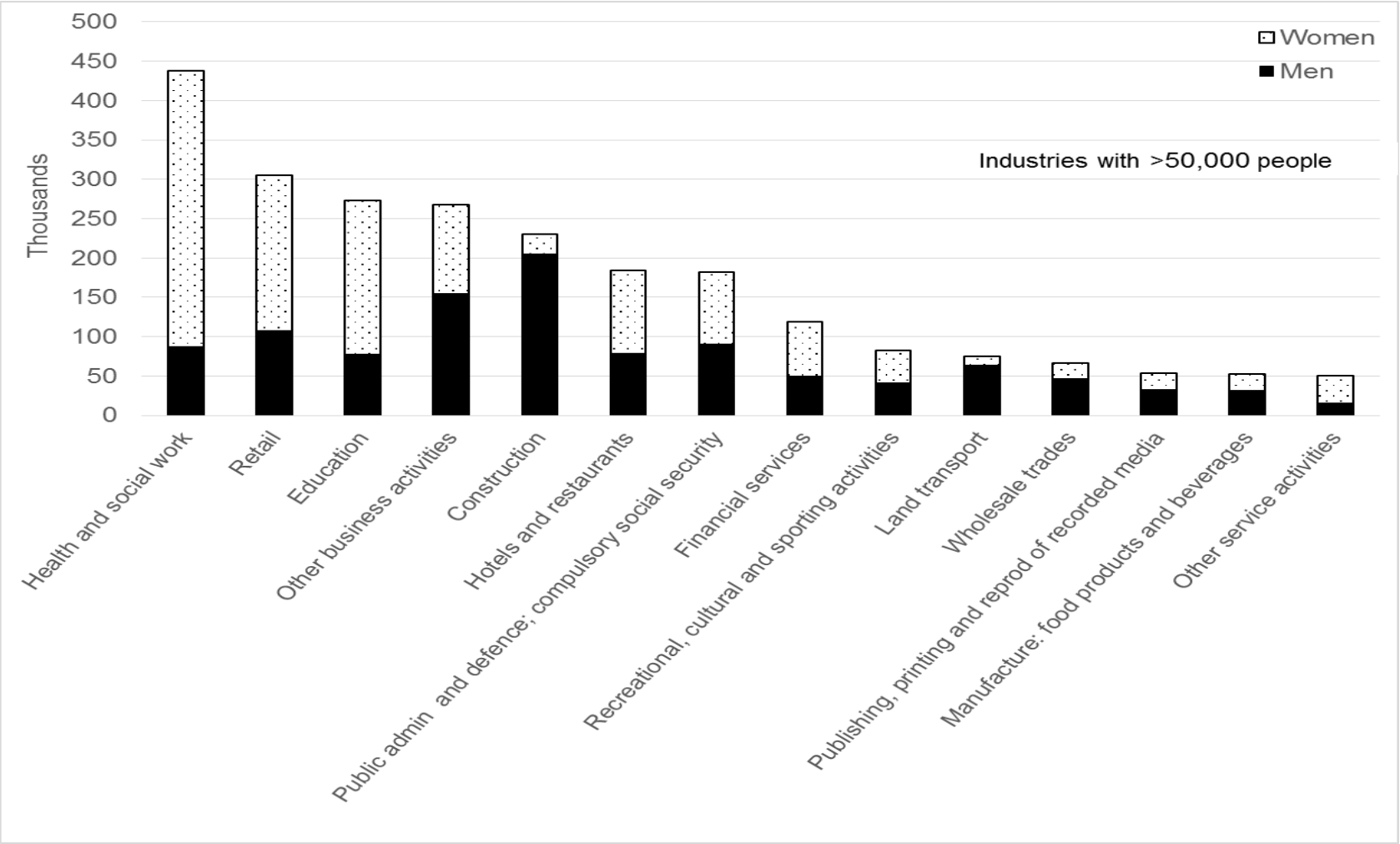
Source: Annual Population Survey, 2010. Note: for full occupation titles, see *Table 1*.

Figure 1b: Distribution of population aged 16–64 years who have ever worked, by current/last occupation and sex (000s): Scotland, 2010.



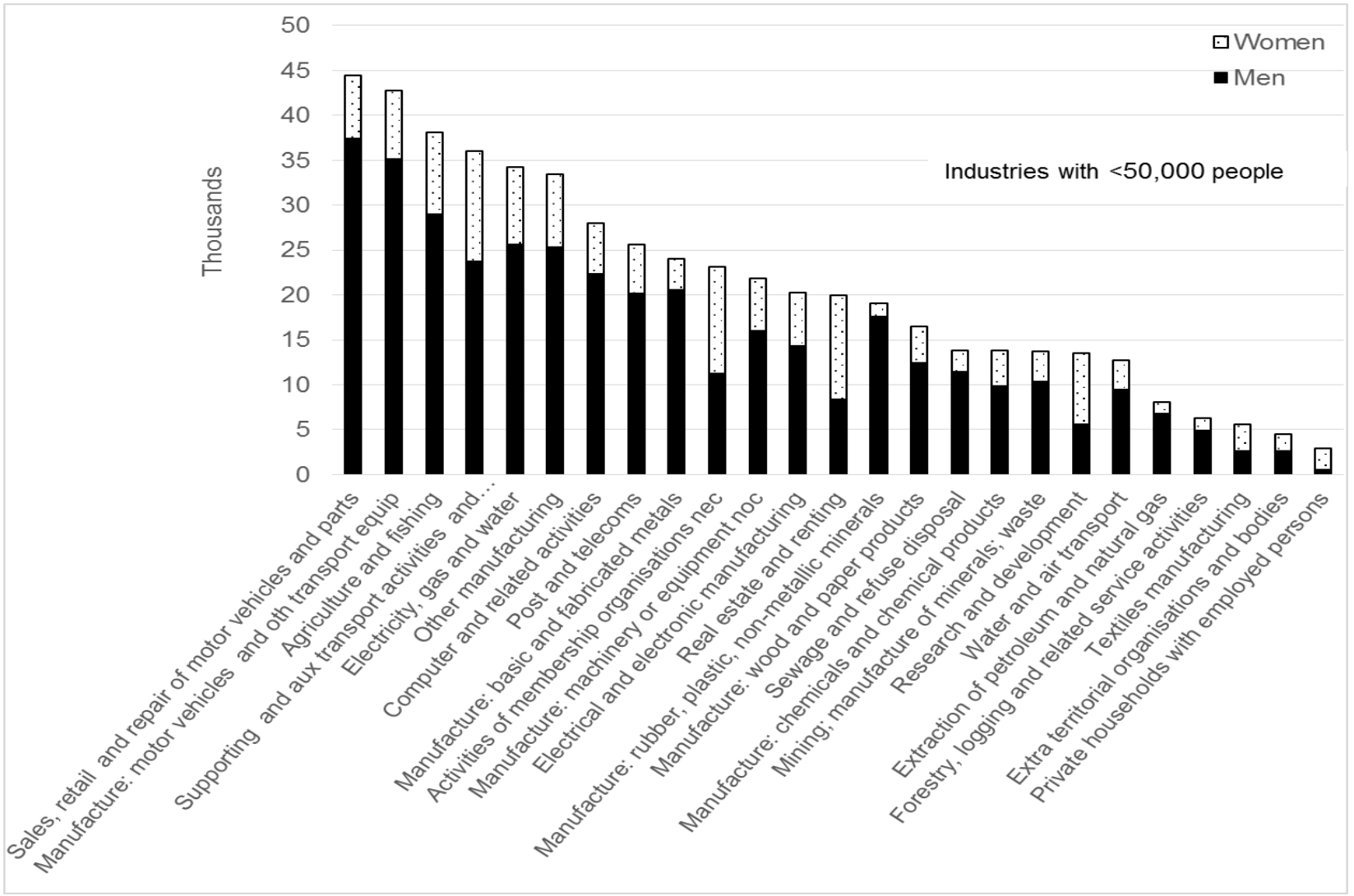
Source: Annual Population Survey, 2010. Note: for full occupation titles, see *Table 1*.

Figure 2a: Distribution of population aged 16–64 years who have ever worked, by current/last industry of employment and sex (000s): Scotland, 2010.



Source: Annual Population Survey, 2010. Note: for full industry titles, see *Table 4*.

Figure 2b: Distribution of population aged 16–64 years who have ever worked, by current/last industry of employment and sex (000s): Scotland, 2010.



Source: Annual Population Survey, 2010. Note: for full industry titles, see *Table 4*.

Health outcomes

Occupations

Indicators of four health outcomes (general self-rated health, limiting longstanding illness, possible mental health problems and positive mental wellbeing) were calculated, for men and women, for all 25 occupations. Detailed information is presented in *Tables 2* and *3*. In these tables, a 'traffic light system' was used to rank health outcomes from red ('worst') to light green ('best').

To simplify comparisons, occupations were ranked from 1 (best) to 25 (worst) for each of the four indicators (general health, limiting longstanding illness, GHQ-12 of 4+ and WEMWBS). The general health and limiting longstanding illness rankings were summed to give a score between 2 (best) and 50 (worst). The same process was used to provide a score for mental health, based on the combined rankings of mental health problems and wellbeing.

The occupations associated with the best health outcomes for men were corporate managers, science and technology professionals, health professionals, and business and public service professionals. In 2010, just over one-fifth (22%, 319,000) of men aged 16–64 years in Scotland were currently working in or had previously worked in these occupations.

Figure 3 summarises the health outcomes for men aged 16–64 years against the 25 SOC occupations, grouping them according to their general health and limiting longstanding illness (x-axis) and mental health problems and wellbeing (y-axis). The size of the bubbles indicate the relative share of the population aged 16–64 with a work history in each occupation.

Table 2: Selected health outcomes, by current/last occupation of employment, in men aged 16–64 years: Scotland, 2008–2011.

Occupation	% with very good/good health	% with a self-reported limiting longstanding illness	% with a GHQ-12 score of 4+	Mean WEMWBS score
Corporate managers	88	12	9	51.73
Managers and proprietors in agriculture and services	81	18	12	50.55
Science and technology professionals	90	10	10	51.59
Health professionals	93	7	7	52.88
Teaching and research professionals	90	16	11	52.02
Business and public service professionals	91	15	9	52.47
Science and technology associate professionals	88	15	10	50.87
Health and social welfare associate professionals	84	17	13	50.67
Protective services	92	17	7	51.6
Culture, media and sport	88	12	15	49.71
Business and public service associate professionals	88	15	11	51.71
Administration occupations	82	20	13	49.49
Secretarial occupations	*	*	*	*
Skilled agricultural trades	80	23	15	50.46
Skilled metal and electrical trades	80	19	9	50.34
Skilled construction and building trades	78	21	10	49.61
Textiles, printing and other skilled trades	74	21	17	48.19
Caring personal services	78	23	20	48.6
Leisure and other personal services	73	29	11	49.65
Sales occupations	81	16	14	50.89
Customer service occupations	80	18	27	47.46
Process, plant and machine	70	24	16	48.96
Transport and mobile machine drivers and operators	68	30	15	48.49
Elementary trades	70	30	21	47.44
Elementary administration and services	74	22	16	48.35

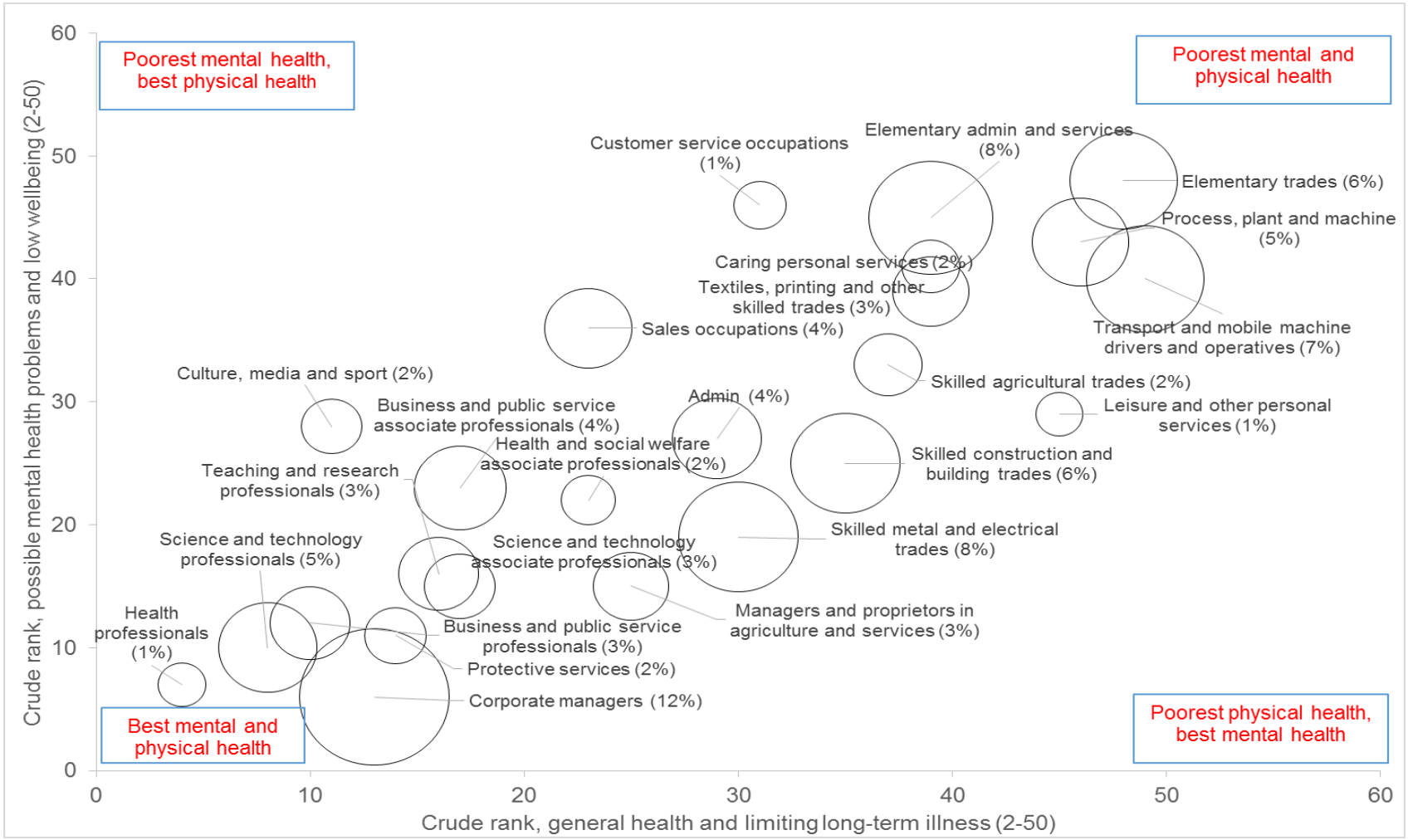
Source: Scottish Health Survey 2008-2011.* Results suppressed as they are based on fewer than 30 unweighted observations.

Table 3: Selected health outcomes, by current/last occupation of employment, women aged 16–64: Scotland, 2008–2011.

Occupation	% with very good/good health	% with a self-reported limiting longstanding illness	% with a GHQ-12 score of 4+	Mean WEMWBS score
Corporate managers	88	17	16	51.09
Managers and proprietors in agriculture and services	79	17	15	50.92
Science and technology professionals	94	10	15	51.47
Health professionals	88	12	16	53.03
Teaching and research professionals	89	17	14	52.52
Business and public service professionals	87	16	18	51.57
Science and technology associate professionals	84	26	20	49.16
Health and social welfare associate professionals	87	20	14	51.62
Protective services	89	14	17	50.4
Culture, media and sport	83	22	15	51.17
Business and public service associate professionals	90	18	17	50.79
Administration occupations	83	21	15	49.89
Secretarial occupations	83	20	17	50.06
Skilled agricultural trades	77	35	13	52.59
Skilled metal and electrical trades	*	*	*	*
Skilled construction and building trades	*	*	*	*
Textiles, printing and other skilled trades	71	29	21	47.5
Caring personal services	77	25	18	49.12
Leisure and other personal services	79	21	18	50.1
Sales occupations	78	22	20	48.62
Customer service occupations	74	27	23	47.9
Process, plant and machine	52	47	22	45.69
Transport and mobile machine drivers and operators	65	35	29	45.81
Elementary trades	71	29	25	45.93
Elementary administration and services	69	30	21	47.59

Source: Scottish Health Survey 2008-2011. * Results suppressed as they are based on fewer than 30 unweighted observations.

Figure 3: Men aged 16–64 years, by current/last job SOC summary health outcomes: Scotland, 2008–2011.



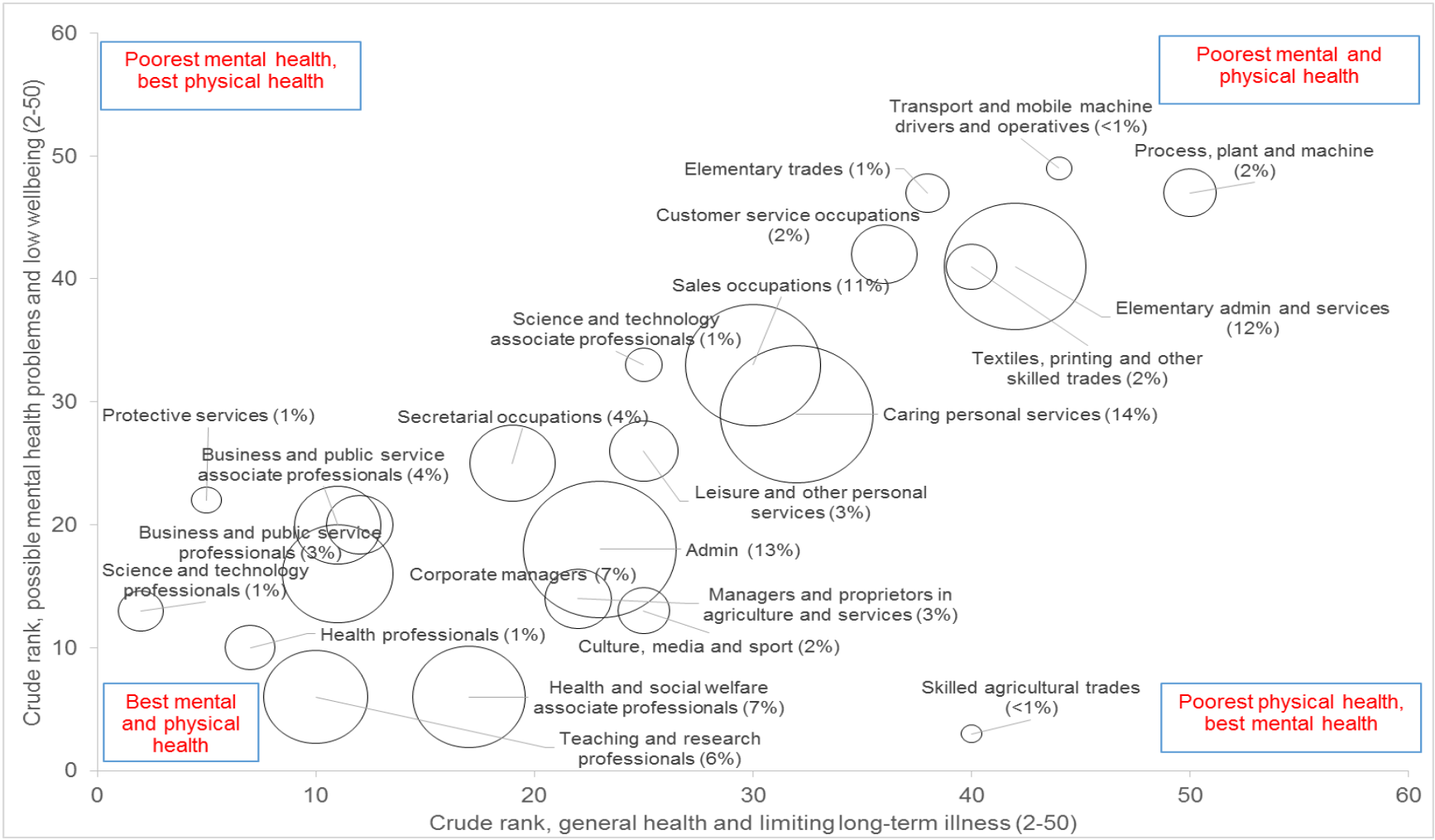
Source: Scottish Health Survey 2008–2011. Estimated percentage of those aged 16–64 years with current/last job estimated from Annual Population Survey 2010. Percentages do not sum to 100% because of rounding. Protective services include police, prison officers and non-commissioned officers.

The occupation type associated with the worst health for men was elementary trades. More than 1 in 20 (6%, 89,000) men aged 16–64 years in Scotland in 2010 were currently working, or had previously worked, in these occupations. Process, plant and machine operatives, transport and mobile machine drivers and operatives, and elementary administration and service occupations were also identified as risky for men in terms of their health outcomes. In 2010, 300,000 men aged 16–64 years in Scotland (>20%) were currently working in or had previously worked in these occupations.

Figure 4 summarises the four health outcomes for women against the 25 SOC occupations. The occupation types associated with the best health for women was teaching and research professionals, while health outcomes for health professionals were also very good. More than 112,000 women (8%) were currently working in or had previously worked in these two occupation types in Scotland in 2010.

While no occupations scored unfavourably on all four outcomes, 15% of women aged 16–64 years (215,000) were currently working in or had previously worked in the most risky occupations, with the majority of these in elementary administration and service occupations. Women with experience of customer service occupations and caring occupations (accounting for 16% of those with a current/previous occupation in 2010, most of whom with experience in caring occupations) were also less likely to assess their health as very good or good. For both men and women, jobs with poor mental health also tended to have poor physical health, with little deviation from this pattern.

Figure 4: Women aged 16–64 years, by current/last job SOC summary health outcomes: Scotland, 2008–2011.



Source: Scottish Health Survey 2008-2011. Estimated percentage of those aged 16–64 years with current/last job estimated from Annual Population Survey 2010. Percentages do not sum to 100% because of rounding. Protective services include police, prison officers and non-commissioned officers.

Industries

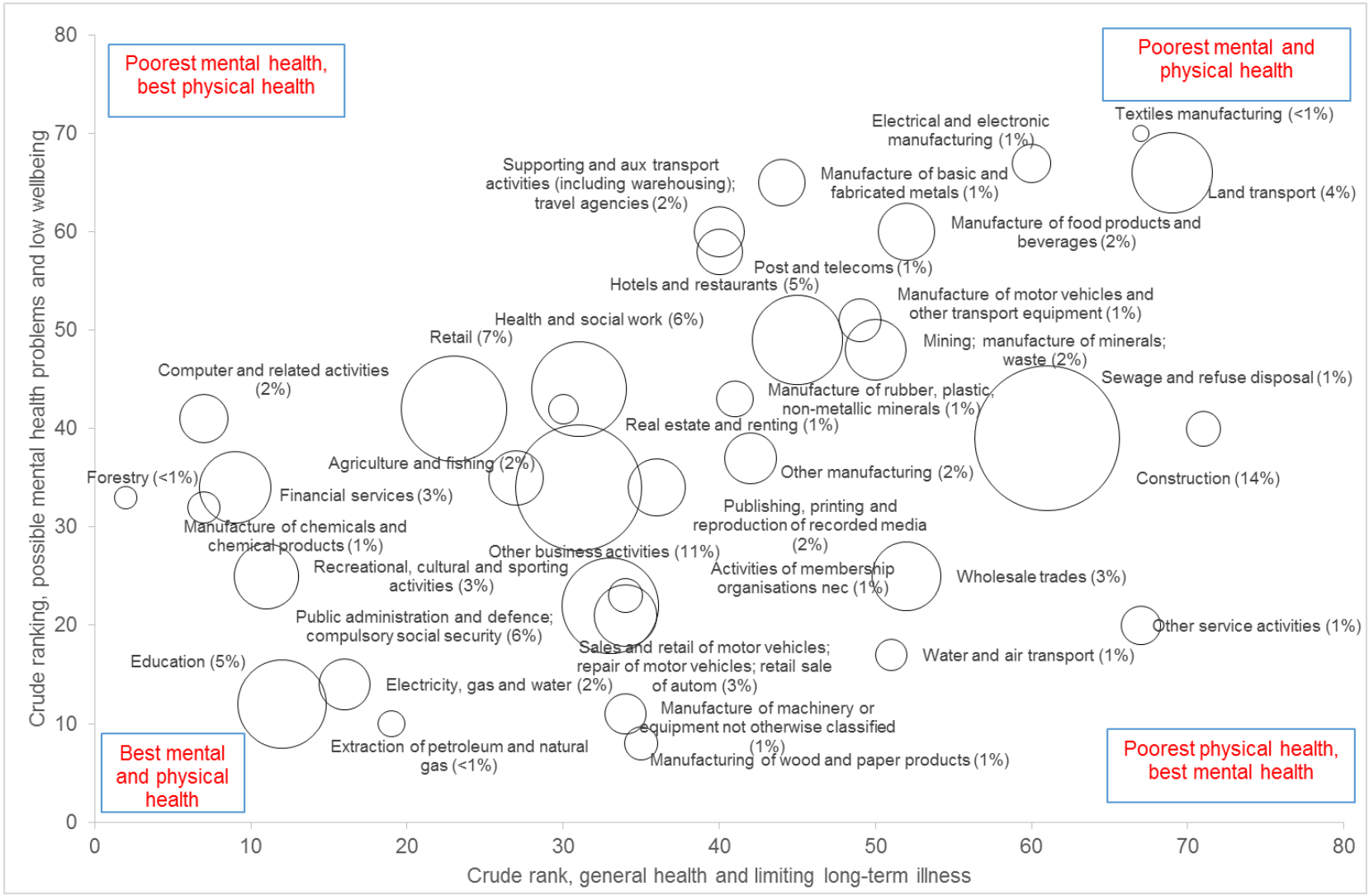
Figure 5 summarises the four health outcomes for men against 36 industries, grouping them according to their general health and limiting longstanding illness (*x*-axis) and mental health problems and wellbeing (*y*-axis) in the same way as for occupations. The size of the bubbles indicate the relative share of the population aged 16–64 years with a work history in each industry. Detailed information on the four health outcomes for men, for all 36 industries, is presented in *Table 4*.

The industries associated with the best health outcomes for men were: education; electricity, gas and water; extraction of petroleum and natural gas; and recreational, cultural and sporting activities. In 2010, one in 10 (10%, 150,000) men aged 16–64 years in Scotland were currently working in or had previously worked in these occupations.

In the same year, almost four in 10 men in Scotland aged 16–64 years (37%, 536,600) were currently working in or had previously worked in an industry with relatively favourable health outcomes. The largest sectors identified in this category were retail, public administration, education and financial services.

Just under a quarter of men (24%, 349,300) were currently working in or had previously worked in an industry with relatively poor health, with the largest industries affected being construction, land transport**,** manufacture of basic and fabricated metals, and post and telecoms. For men, the most risky industries in terms of health outcomes were land transport, sewage and waste disposal and textiles.

Figure 5: Men aged 16–64 years, by current/last SIC summary health outcomes: Scotland, 2008–2011.



Source: Scottish Health Survey 2008–2011. Estimated percentage of those aged 16–64 years with current/last job estimated from Annual Population Survey 2010. Percentages do not sum to 100% because of rounding.

Table 4: Selected health outcomes, by current/last industry, men aged 16–64 years: Scotland, 2008–2011.

Health outcome	% with very good/good health	% with a self-reported limiting longstanding illness	% with a GHQ-12 score of 4+	Mean WEMWBS score
Activities of membership organisations not elsewhere classified	84	22	14	52.06
Agriculture and fishing	82	19	13	49.86
Computer and related activities	86	13	20	50.99
Construction	75	24	13	49.73
Education	88	18	10	51.29
Electrical and electronic manufacturing	76	26	24	48.63
Electricity, gas and water	84	17	11	51.73
Extra territorial organisations and bodies	*	*	*	*
Extraction of petroleum and natural gas	84	17	5	50.69
Financial services	88	15	14	50.45
Forestry, logging and related service activities	89	11	17	51.32
Health and social work	81	19	15	49.96
Hotels and restaurants	78	20	14	49.50
Land transport	66	28	16	47.73
Manufacture of basic and fabricated metals	75	18	19	48.51
Manufacture of chemicals and chemical products	86	11	10	49.65
Manufacture of food products and beverages	76	21	17	49.14
Manufacture of machinery or equipment not otherwise classified	77	16	6	50.95
Manufacture of rubber, plastic, non-metallic minerals	81	21	12	48.95
Manufacturing of wood and paper products	80	19	5	51.23
Mining; manufacture of minerals; waste	78	21	15	49.81
Motor vehicles and other transport equipment	79	23	14	49.28
Other business activities	82	19	13	50.23
Other manufacturing	75	18	13	49.87
Other service activities	76	33	12	52.11

Health outcome	% with very good/good health	% with a self-reported limiting longstanding illness	% with a GHQ-12 score of 4+	Mean WEMWBS score
Post and telecoms	77	18	14	48.50
Private households with employed persons	*	*	*	*
Public administration and defence; compulsory social security	84	20	11	50.64
Publishing, printing and reproduction of recorded media	86	23	10	49.64
Real estate and renting	83	19	13	49.79
Recreational, cultural and sporting activities	86	14	13	50.55
Research and development	*	*	*	*
Retail	81	14	15	50.30
Sales and retail of motor vehicles; repair of motor vehicles; retail sale of automobiles	82	19	8	50.24
Sewage and refuse disposal	62	31	9	47.76
Supporting and aux transport activities (including warehousing); travel agencies	80	19	17	49.27
Textiles manufacturing	70	27	20	47.75
Water and air transport	80	23	7	50.40
Wholesale trades	80	24	10	50.30

Source: Scottish Health Survey 2008-2011. * Results suppressed as they are based on fewer than 30 unweighted observations.

Men with work experience in the construction industry were less likely to assess their general health as good or very good, and more likely to report they had a longstanding illness.

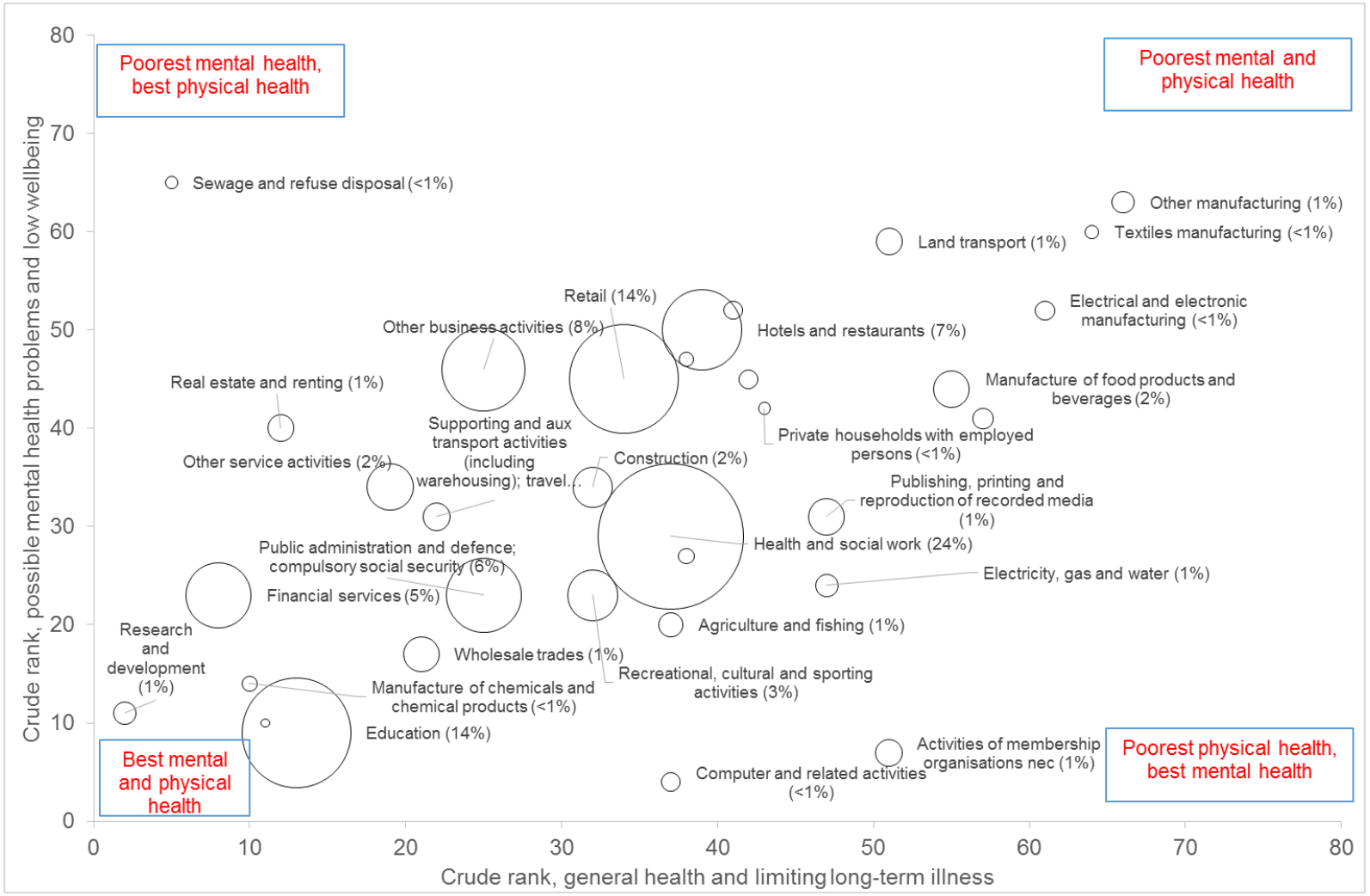
Results are presented for women in *Figure 6* and *Table 5*. Almost a third (28%, 397,900) of women aged 16–64 years in 2010 were currently working in or had previously worked in an industry with relatively good health outcomes. The largest sectors in this group were education (good physical and general health and low

mental health problems), public administration (good general health) and financial services.

In 2010, one in five women aged 16–64 years in Scotland (20%, 282,000) were currently working in or had previously worked in an industry with more adverse health outcomes, though the pattern is slightly different than for men. The largest industries affected for women were other business activities (poor mental health), hotels and restaurants (poor general health) and manufacture of food products and beverages (poor general health, high limiting longstanding illness and low wellbeing). Land transport and other manufacturing also have poor health outcomes, though fewer women work in these sectors compared with men.

It is notable that the mental and physical health outcomes are closely correlated for men and women using the occupational categories (i.e. occupations associated with worse physical health are also those associated with worse mental health), but this is less pronounced for the industrial categories. For example, among men working in construction, retail and computer-related activities there are very similar mental health outcomes but very wide range of physical health outcomes (with worse physical health in construction but better for retail- and computer-related activities).

Figure 6: Women aged 16–64 years, by current/last SIC summary health outcomes: Scotland, 2008–2011.



Source: Scottish Health Survey 2008–2011. Estimated percentage of those aged 16–64 years with current/previous job estimated from Annual Population Survey 2010. Percentages do not sum to 100% because of rounding. Industries with < 1% share of working-age population unlabelled to improve clarity.

Table 5: Selected health outcomes, by current/last industry, women aged 16–64 years: Scotland, 2008–2011.

Industry	% with very good/good health	% with a self-reported limiting longstanding illness	% with a GHQ-12 score of 4+	Mean WEMWBS score
Activities of membership organisations not elsewhere classified	73	29	10	50.90
Agriculture and fishing	79	24	13	49.80
Computer and related activities	76	22	8	51.38
Construction	81	24	16	48.95
Education	85	20	14	51.56
Electrical and electronic manufacturing	62	38	20	46.88
Electricity, gas and water	78	32	12	49.16
Extra territorial organisations and bodies	*	*	*	*
Extraction of petroleum and natural gas	84	18	15	51.80
Financial services	85	15	17	50.13
Forestry, logging and related service activities	*	*	*	*
Health and social work	80	24	17	50.00
Hotels and restaurants	76	23	20	48.67
Land transport	72	26	29	47.20
Manufacture of basic and fabricated metals	*	*	*	*
Manufacture of chemicals and chemical products	83	13	15	50.92
Manufacture of food products and beverages	72	29	17	47.77
Manufacture of machinery or equipment not otherwise classified	77	23	19	48.91
Manufacture of rubber, plastic, non-metallic minerals	*	*	*	*
Manufacturing of wood and paper products	*	*	*	*
Mining; manufacture of minerals; waste	*	*	*	*
Motor vehicles and other transport equipment	70	29	13	49.34
Other business activities	81	21	21	49.53
Other manufacturing	50	54	28	45.25
Other service activities	82	18	17	49.61
Post and telecoms	81	27	24	48.92
Private households with employed persons	70	21	20	49.18

Industry	% with very good/good health	% with a self-reported limiting longstanding illness	% with a GHQ-12 score of 4+	Mean WEMWBS score
Public administration and defence; compulsory social security	84	23	16	50.11
Publishing, printing and reproduction of recorded media	78	30	20	50.78
Real estate and renting	84	15	19	49.86
Recreational, cultural and sporting activities	83	24	16	50.12
Research and development	91	12	11	50.51
Retail	78	21	18	48.80
Sales and retail of motor vehicles; repair of motor vehicles; retail sale of automobiles	73	38	15	46.72
Sewage and refuse disposal	*	*	*	*
Supporting and aux transport activities (including warehousing); travel agencies	81	18	17	50.05
Textiles manufacturing	51	46	20	44.63
Water and air transport	76	21	25	49.59
Wholesale trades	83	20	13	50.10

Source: Scottish Health Survey 2008–2011. * Results suppressed as they are based on fewer than 30 unweighted observations.

Health behaviours

Occupations

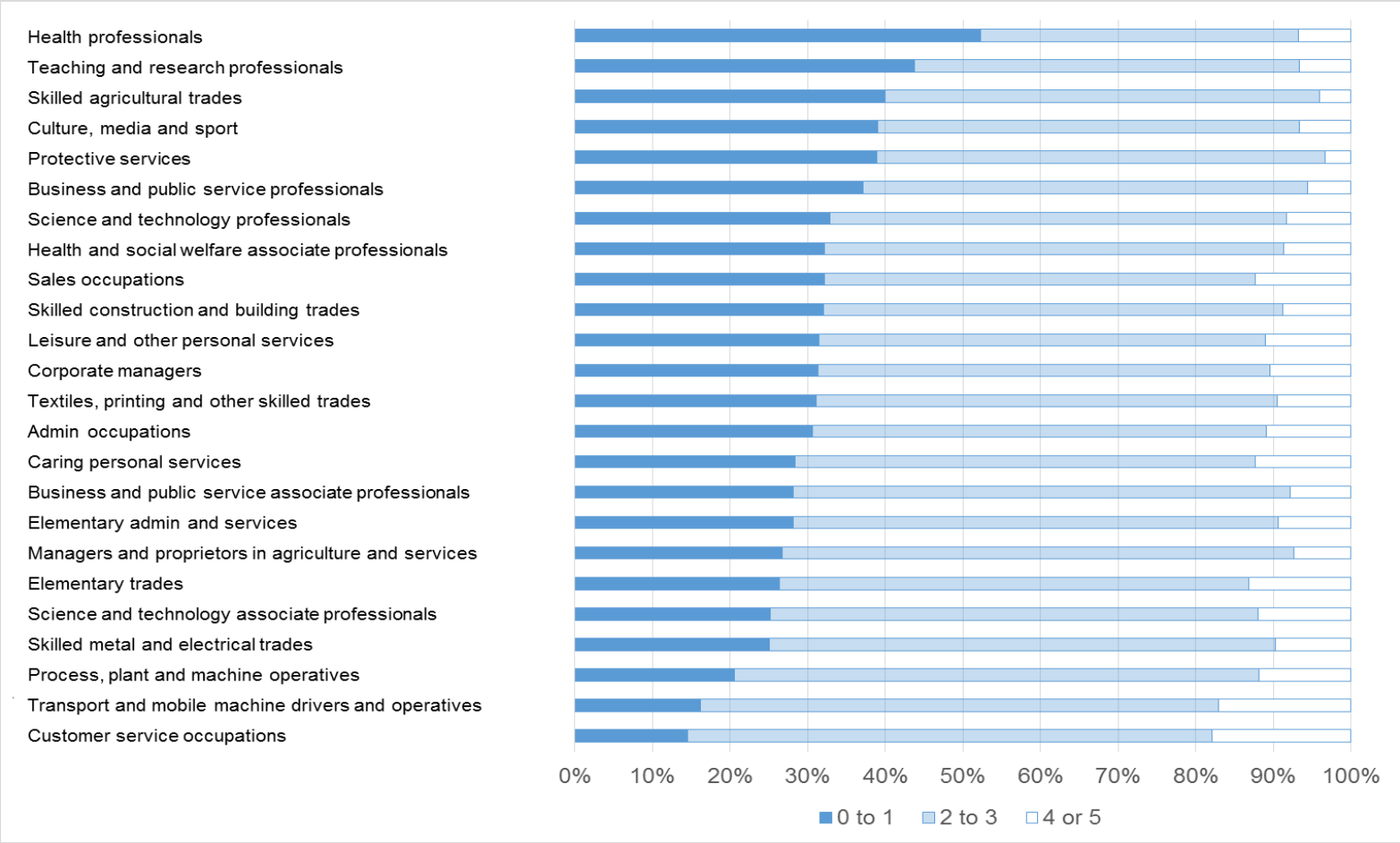
As described in the methods, five health behaviours (smoking, drinking alcohol at hazardous/harmful levels, consumption of fewer than five portions of fruit or vegetables daily, not meeting the physical activity recommendations and being obese) were examined. Prevalence rates were calculated for each indicator separately, for all occupations and industries, split by sex.

A summary variable was also created based on the distribution of multiple adverse health behaviours within each occupation and industry: from 0, where none of the exposures was present, to 5, where all were present. In common with previous studies, nearly the whole sample (94%) had at least one exposure. Lower risk was defined as those with 0–1 exposures and higher risk as those with 4–5 exposures.

Based on the distributions of these simple classifications, lower-risk occupations for men are health and teaching professionals, skilled agricultural trades, culture, media and sport associate professionals, plus protective services (such as police or prison officers). Men with current or recent experience in customer service occupations, transport and mobile machine operative, and process, plant and machine occupations appear to be highest risk (*Figure 7*).

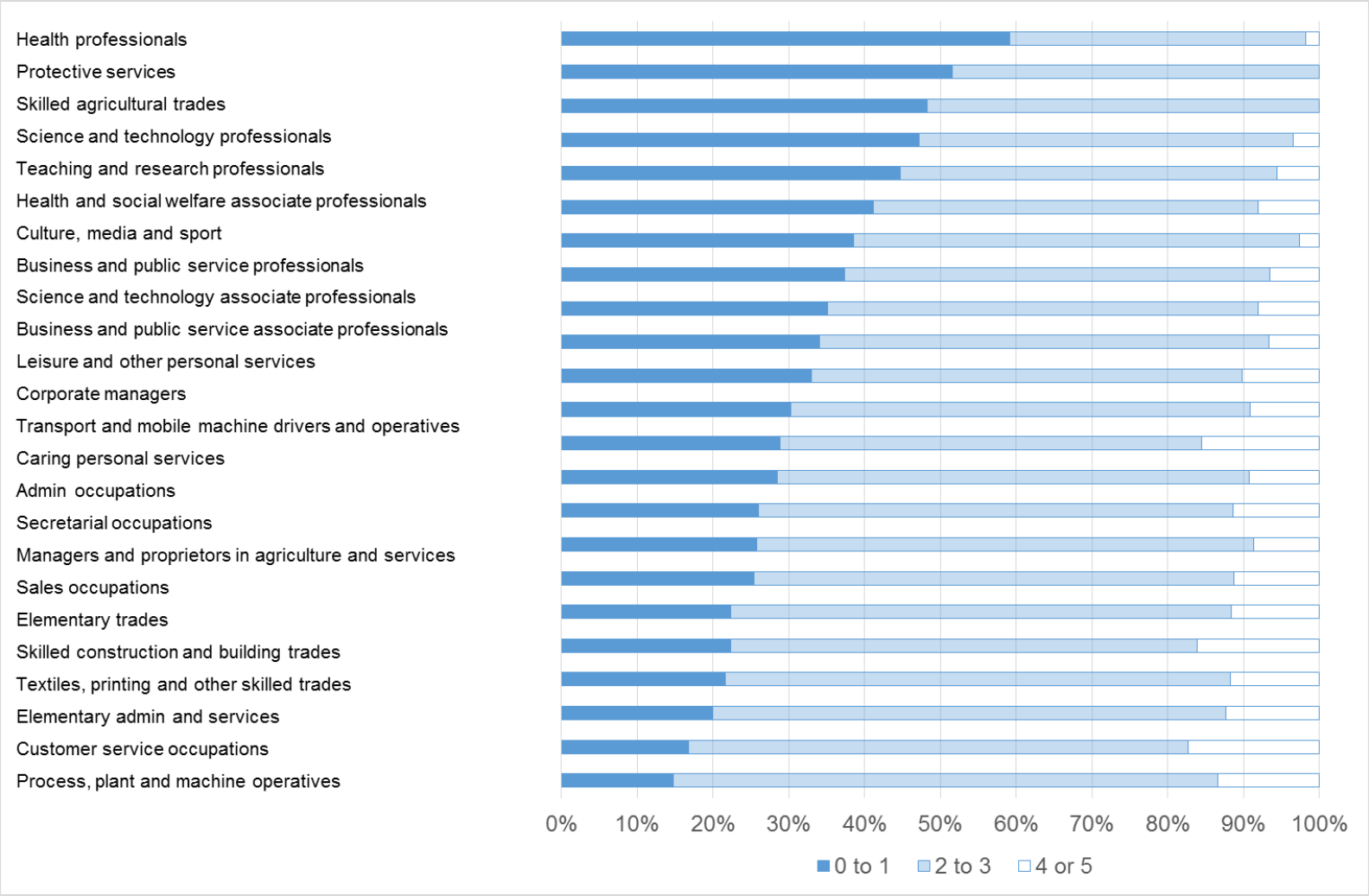
For women, the least risky occupations (in terms of health behaviours and obesity) were also the professions and skilled agricultural trades: health professionals and protective service occupations were among the ‘healthiest’ occupations. At the other end of the spectrum, women with a labour market background in process plant and machine occupations, customer service or elementary administration and services were at higher risk.

Figure 7: Number of risk factors, by current/last occupation of employment, men aged 16–64 years: Scotland, 2008–2011.



Source: Scottish Health Survey 2008–2011. Note: for full occupation titles, see *Table 1*.

Figure 8: Number of risk factors, by current/last occupation of employment, women aged 16–64 years: Scotland, 2008–2011.



Source: Scottish Health Survey 2008–2011. Note: for full occupation titles, see *Table 1*.

The prevalence of individual health behaviours and obesity by occupation is shown in more detail in *Table 6*. They show a mixed pattern. Men with experience of customer service occupations compare poorly on almost all indicators except obesity; females with experience of customer service occupations compare poorly on all of the indicators. While professionals and managers compare favourably on smoking and diet, consumption of hazardous or harmful levels of alcohol may be an issue for managers and some professionals (especially science and technology associate professionals and those in culture, media and sport occupations). Process, transport and elementary occupations are among the riskiest occupations, though reported risky alcohol consumption is low for these groups except for men in elementary trades. For administration/secretarial occupations the challenges may be around low levels of physical activity and obesity, while for skilled manual trades (outside agriculture) they reflect above-average levels of smoking, alcohol consumption and poor diet.

Industries

The distribution of risk factors was calculated for industries in the same way as for occupations. *Figure 9* shows results for men aged 16–64 years. The 'riskiest' industries were land transport, sewage and refuse disposal, and other service activities. Five industries (forestry, logging and related service activities; activities of membership organisations not otherwise classified; agriculture and fishing; recreational, cultural and sporting activities; and education) were less risky in terms of health behaviours and obesity.

Results for women are shown in *Figure 10*. They show that lower-risk industries for women included: extraction of petroleum and natural gas, chemicals manufacturing and education, while motor vehicles and other transport equipment, other manufacturing, construction and land transport were much more risky on these measures.

Table 6a: Selected health behaviour indicators, by current/most recent occupation of employment, men aged 16–64 years: Scotland, 2008–2011.

Occupation	Current smoker	Hazardous/harmful drinker	Five a day of fruit/vegetables	BMI 30+ kg/m^2	Meets physical activity guidelines
Corporate managers	16	30	26	34	43
Managers and proprietors in agriculture and services	26	33	20	28	54
Science and technology professionals	13	26	26	27	42
Health professionals	11	25	46	18	49
Teaching and research professionals	10	32	38	23	46
Business and public service professionals	10	29	31	29	50
Science and technology associate professionals	21	37	19	27	37
Health and social welfare associate professionals	26	24	29	27	56
Protective services	13	28	18	24	70
Culture, media and sport	18	32	33	24	63
Business and public service associate professionals	18	27	24	32	44
Administration occupations	20	23	18	26	43
Secretarial occupations	*	*	*	*	*
Skilled agricultural trades	29	23	21	22	74
Skilled metal and electrical trades	31	32	16	29	50

Occupation	Current smoker	Hazardous/harmful drinker	Five a day of fruit/vegetables	BMI 30+ kg/m^2	Meets physical activity guidelines
Skilled construction and building trades	35	35	17	24	69
Textiles, printing and other skilled trades	45	28	22	27	57
Caring personal services	36	26	18	29	55
Leisure and other personal services	27	30	22	28	50
Sales occupations	33	26	18	19	48
Customer service occupations	39	41	11	13	31
Process, plant and machine	38	32	16	30	50
Transport and mobile machine drivers and operators	39	25	16	39	34
Elementary trades	50	31	12	22	58
Elementary administration and services	39	26	16	20	54

Source: Scottish Health Survey 2008-2011. * Results suppressed as they are based on fewer than 30 unweighted observations.

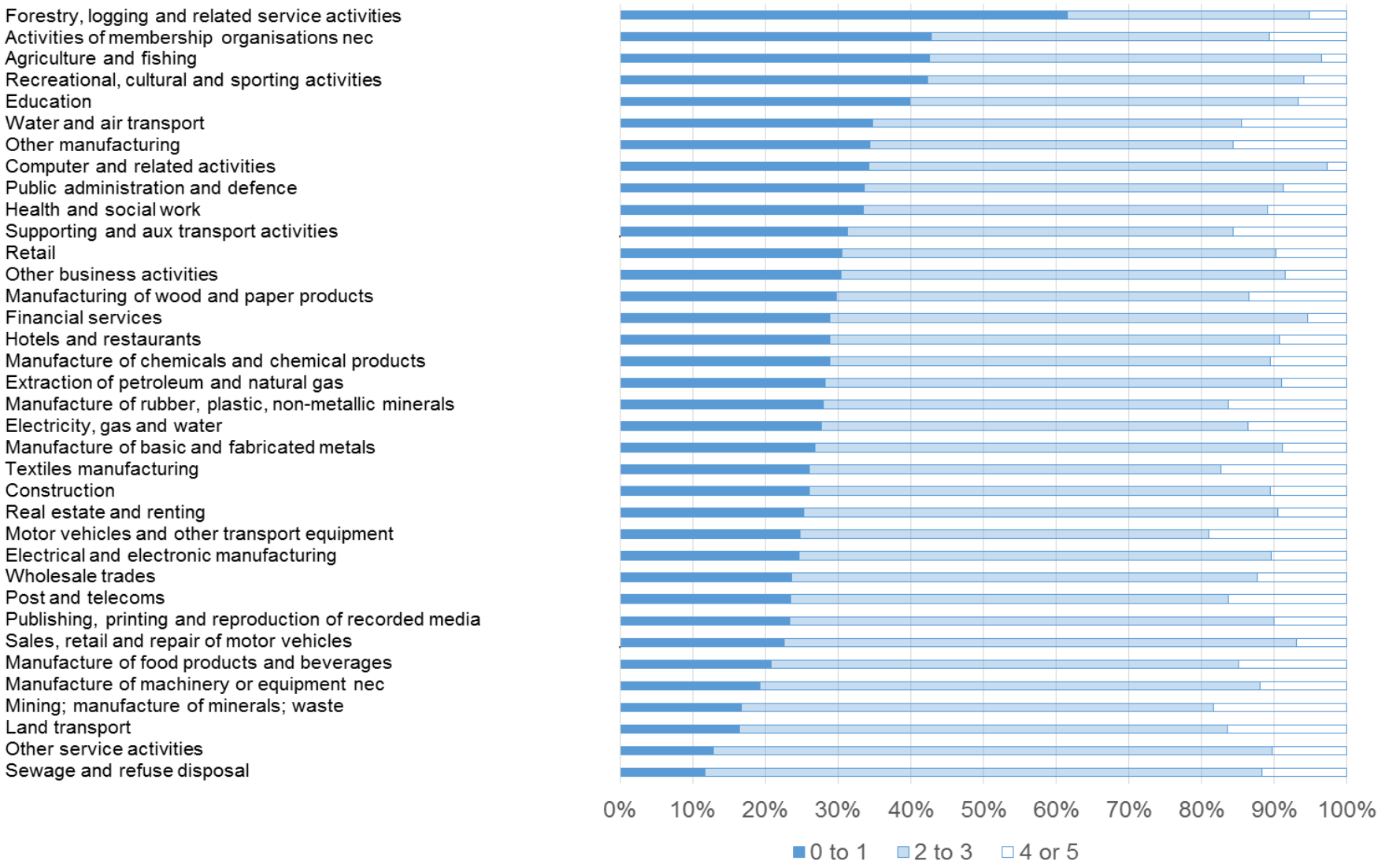
Table 6b: Selected health behaviour indicators, by current/most recent occupation of employment, women aged 16–64 years: Scotland, 2008–2011.

Occupation	Current smoker	Hazardous/harmful drinker	Five a day of fruit/vegetables	BMI 30+ kg/m^2	Meets physical activity guidelines
Corporate managers	23	29	27	26	41
Managers and proprietors in agriculture and services	33	30	27	28	42
Science and technology professionals	13	23	35	14	45
Health professionals	5	18	53	10	49
Teaching and research professionals	8	24	42	21	44
Business and public service professionals	14	24	35	25	40
Science and technology associate professionals	14	25	36	32	33
Health and social welfare associate professionals	16	21	34	27	48
Protective services	22	17	32	6	62
Culture, media and sport	15	28	36	14	51
Business and public service associate professionals	18	23	29	19	39
Administration occupations	22	22	23	31	31
Secretarial occupations	19	24	26	30	34
Skilled agricultural trades	16	19	45	17	70
Skilled metal and electrical trades	*	*	*	*	*
Skilled construction and building trades	*	*	*	*	*
Textiles, printing and other skilled trades	37	20	22	36	35

Occupation	Current smoker	Hazardous/harmful drinker	Five a day of fruit/vegetables	BMI 30+ kg/m^2	Meets physical activity guidelines
Caring personal services	32	18	22	31	46
Leisure and other personal services	33	23	23	27	48
Sales occupations	31	20	13	24	35
Customer service occupations	34	29	15	35	28
Process, plant and machine	43	12	15	36	21
Transport and mobile machine drivers and operators	43	15	13	33	37
Elementary trades	47	15	16	31	38
Elementary administration and services	43	19	15	27	38

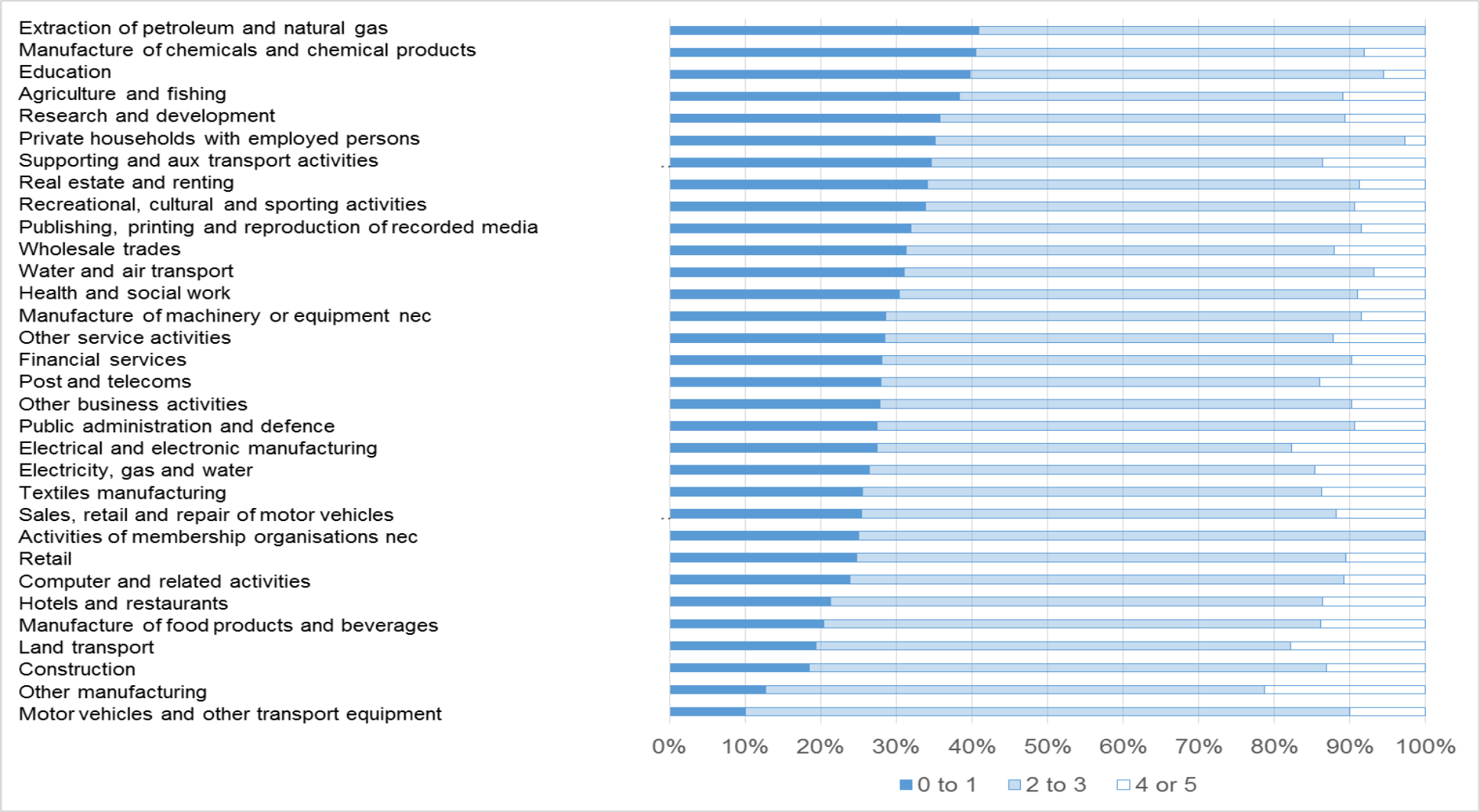
Source: Scottish Health Survey 2008-2011. * Results suppressed as they are based on fewer than 30 unweighted observations.

Figure 9: Number of risk factors, by current/most recent industry of employment, men aged 16–64 years: Scotland, 2008–2011.



Source: Scottish Health Survey 2008–2011. Note: for full industry titles, see *Table 4.*

Figure 10: Number of risk factors, by current/most recent industry of employment, women aged 16–64 years: Scotland, 2008–2011.



Source: Scottish Health Survey 2008–2011. Note: for full industry titles, see *Table 4*.

Detailed analyses of health behaviours and obesity, by industry and sex, are shown in *Tables 7* and *8*.

Table 7: Selected health behaviour indicators, by current/most recent industry, men aged 16–64: Scotland, 2008–2011.

Health behaviour indicators	Current smoker	Hazardous/ harmful drinker	Five a day fruit/ vegetables	BMI 30+ kg/m^2	Meets physical activity guidelines
Activities of membership organisations not elsewhere classified	16	13	13	30	48
Agriculture and fishing	30	23	23	25	75
Computer and related activities	17	21	26	24	40
Construction	37	36	16	26	58
Education	16	30	32	22	47
Electrical and electronic manufacturing	26	22	16	25	37
Electricity, gas and water	24	31	24	39	43
Extra territorial organisations and bodies	*	*	*	*	*
Extraction of petroleum and natural gas	28	27	29	31	45
Financial services	13	28	24	26	41
Forestry, logging and related service activities	34	9	20	10	87
Health and social work	28	25	26	28	52
Hotels and restaurants	44	34	20	20	59
Land transport	32	26	15	36	31
Manufacture of basic and fabricated metals	34	27	11	32	49
Manufacture of chemicals and chemical products	21	39	20	17	49
Manufacture of food products and beverages	38	32	15	29	46
Manufacture of machinery or equipment not otherwise classified	28	28	19	34	43
Manufacture of rubber, plastic, non-metallic minerals	37	34	11	33	53
Manufacturing of wood and paper products	33	32	22	29	55

Health behaviour indicators	Current smoker	Hazardous/ harmful drinker	Five a day fruit/ vegetables	BMI 30+ kg/m^2	Meets physical activity guidelines
Mining; manufacture of minerals; waste	27	38	20	50	42
Motor vehicles and other transport equipment	30	32	20	39	52
Other business activities	26	28	27	27	46
Other manufacturing	29	26	14	29	49
Other service activities	44	25	16	43	40
Post and telecoms	36	33	15	29	46
Private households with employed persons	*	*	*	*	*
Public administration and defence; compulsory social security	15	29	22	30	53
Publishing, printing and reproduction of recorded media	25	41	17	27	41
Real estate and renting	25	23	18	32	55
Recreational, cultural and sporting activities	18	27	25	22	65
Research and development	*	*	*	*	*
Retail	32	24	15	22	51
Sales and retail of motor vehicles; repair of motor vehicles; retail sale of automobiles	29	23	11	24	44
Sewage and refuse disposal	39	25	11	39	57
Supporting and aux transport activities (including warehousing); travel agencies	31	29	19	23	47
Textiles manufacturing	27	32	8	21	35
Water and air transport	28	27	20	31	48
Wholesale trades	36	31	17	29	47

Source: Scottish Health Survey 2008–2011. * Results suppressed as they are based on fewer than 30 unweighted observations.

Table 8: Selected health behaviour indicators, by current/most recent industry, women aged 16–64 years: Scotland, 2008–2011.

Health behaviour indicators	Current smoker	Hazardous/ harmful drinker	Five a day fruit/ vegetables	BMI 30+ kg/m^2	Meets physical activity guidelines
Activities of membership organisations not elsewhere classified	12	29	32	21	48
Agriculture and fishing	23	23	29	26	75
Computer and related activities	22	20	17	20	40
Construction	27	23	21	33	58
Education	13	21	34	23	47
Electrical and electronic manufacturing	37	24	26	24	37
Electricity, gas and water	28	24	25	29	43
Extra territorial organisations and bodies	*	*	*	*	*
Extraction of petroleum and natural gas	16	9	35	18	45
Financial services	23	24	22	25	41
Forestry, logging and related service activities	*	*	*	*	*
Health and social work	26	19	26	30	52
Hotels and restaurants	41	26	18	24	59
Land transport	43	24	16	35	31
Manufacture of basic and fabricated metals	*	*	*	*	*
Manufacture of chemicals and chemical products	24	24	33	22	49
Manufacture of food products and beverages	42	15	19	38	46
Manufacture of machinery or equipment not otherwise classified	23	28	21	20	43
Manufacture of rubber, plastic, non-metallic minerals	*	*	*	*	*
Manufacturing of wood and paper products	*	*	*	*	*
Mining; manufacture of minerals; waste	*	*	*	*	*
Motor vehicles and other transport equipment	35	22	22	20	52
Other business activities	28	26	26	27	46
Other manufacturing	46	19	11	31	49
Other service activities	37	23	19	26	40
Post and telecoms	24	16	16	30	46

Health behaviour indicators	Current smoker	Hazardous/ harmful drinker	Five a day fruit/ vegetables	BMI 30+ kg/m^2	Meets physical activity guidelines
Private households with employed persons	21	16	28	30	91
Public administration and defence; compulsory social security	23	23	25	30	53
Publishing, printing and reproduction of recorded media	20	22	38	30	41
Real estate and renting	24	27	26	20	55
Recreational, cultural and sporting activities	24	26	30	21	65
Research and development	9	33	41	17	40
Retail	30	21	16	25	51
Sales and retail of motor vehicles; repair of motor vehicles; retail sale of automobiles	29	13	16	31	44
Sewage and refuse disposal	*	*	*	*	*
Supporting and aux transport activities (including warehousing); travel agencies	21	15	20	31	47
Textiles manufacturing	37	9	14	38	35
Water and air transport	26	29	32	14	48
Wholesale trades	23	27	37	33	47

Source: Scottish Health Survey 2008–2011. * Results suppressed as they are based on fewer than 30 unweighted observations.

Workplace stress

As noted in *Methods* above, we also made comparisons of nine indicators of workplaces stress, collected through the rotating biennial module of the Scottish Health Survey in 2009 and 2011. All respondents to these questions were currently in employment at the time of the survey.

An occupational analysis based on control and demand is shown in *Figure 11*. This shows that:

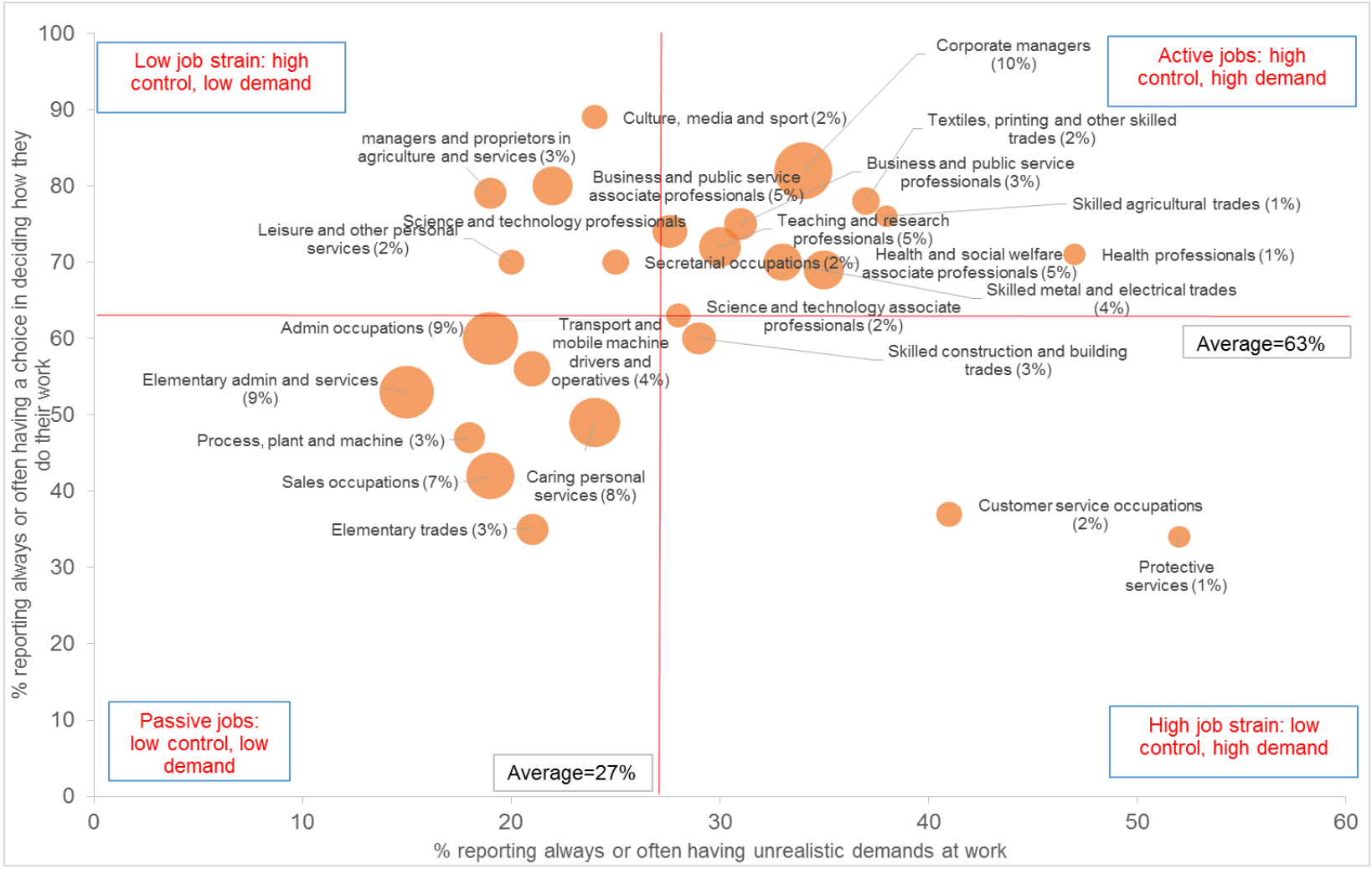
- Customer service occupations (including contact centre operatives) and protective service occupations (police officers, prison officers, etc.) emerge as

having the greatest risk of combined ‘high demand, low control’, and thus of high job strain. These occupations accounted for 3% of people in employment in Scotland.

- Control at work is lowest for: protective service occupations; caring personal services occupations; sales and customer service occupations; process, plant and machine operatives; and elementary occupations.
- Control at work is highest for corporate managers; managers and proprietors in agriculture and services; business and public service professionals and associate professionals; culture, media and sports occupations; and textiles, printing and other skilled trades.
- Elementary administration and service occupations are more likely to be passive jobs, characterised by ‘low control, low demand’. More people are in these occupations compared to high job strain occupations, amounting to 9% of people in employment in Scotland in 2010.
- Corporate manager occupations, accounting for 10% of people in employment in 2010, are ‘active jobs’, with high levels of demand and high levels of control.

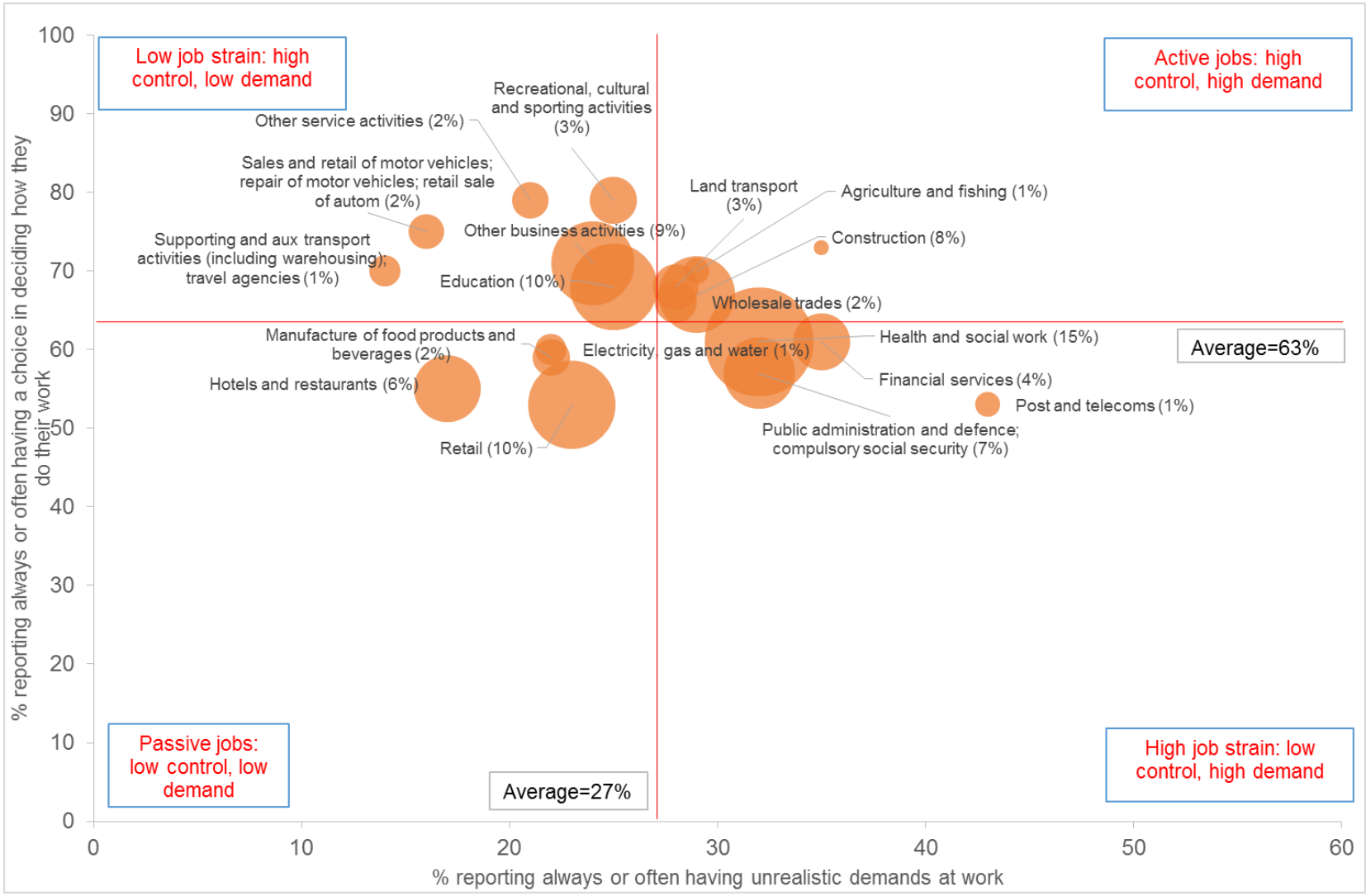
Analysis of control and demand was possible for 19 industries. Results are presented in *Figure 12*. There is much less variation evident between industries than between occupations. Nevertheless, the data suggest that control at work is low in the retail industry but high in the recreational, cultural and sporting activities industries. While no industries stand as being dominated by job strain (high demand, low control), passive (low demand, low control) or active jobs (high demand, high control), demand at work is high in the post and telecoms industry and low in the hotels and restaurants industry.

Figure 11: Occupations by demand and control classification, all persons aged 16–64 years in employment: Scotland, 2009 and 2011.



Source: Scottish Health Survey 2009 and 2011. Percentages show the share of people in employment in Scotland in each occupation (2010). Red lines indicate mean for all occupations.

Figure 12: Industries by demand and control classification, all persons aged 16–64 years in employment: Scotland, 2009 and 2011.



Source: Scottish Health Survey 2009 and 2011. Percentages show the share of people in employment in Scotland in each industry (2010). Red lines indicate mean for all industries.

There is also some evidence[6] that lack of social support at work is associated with poorer mental health, though the evidence of its impact on physical health is mixed. *Figure 13* shows occupations in Scotland by reported levels of manager and colleague support. The key findings are:

- Science and technology professionals, health professionals, and teaching and research professionals were most likely to agree that their line manager encouraged them. Transport and mobile machine drivers and operatives reported very low levels of managerial support.
- In general, people were more likely to agree they received support from colleagues than from their manager. However, people employed in elementary trades and skilled construction trades, as well as manager/proprietors in agriculture and services, were least likely to agree that their colleagues always/often supported them.

Figure 14 illustrates the equivalent balance between manager and colleague support by industry. It shows that:

- levels of managerial support are particularly high in education and low in the land transport industry
- reported levels of colleague support are high in public administration, but low in both the construction and the sales and retail of motor vehicles industries.

A number of other issues also emerged on the other indicators of workplace stress. Results by occupation and industry are summarised in *Table 9*. This shows that:

- corporate managers and those working in wholesale trades were more likely to have lower levels of satisfaction with their work–life balance
- health and social welfare professionals, business and public service managers and corporate managers, and those employed in the health and social work industry, were more likely to report their job was very/extremely stressful
- people working in skilled metal and electrical trades and in the financial services industry were less likely to report that their responsibilities at work were always/often clear

- staff consultation about change at work was less common for people working in protective service occupations, skilled construction trades and transport and mobile machine operatives, and the land transport industry
- work relationships were more likely to be strained among textiles and other skilled manual occupations and elementary trades, and in the food and drink manufacturing industry.

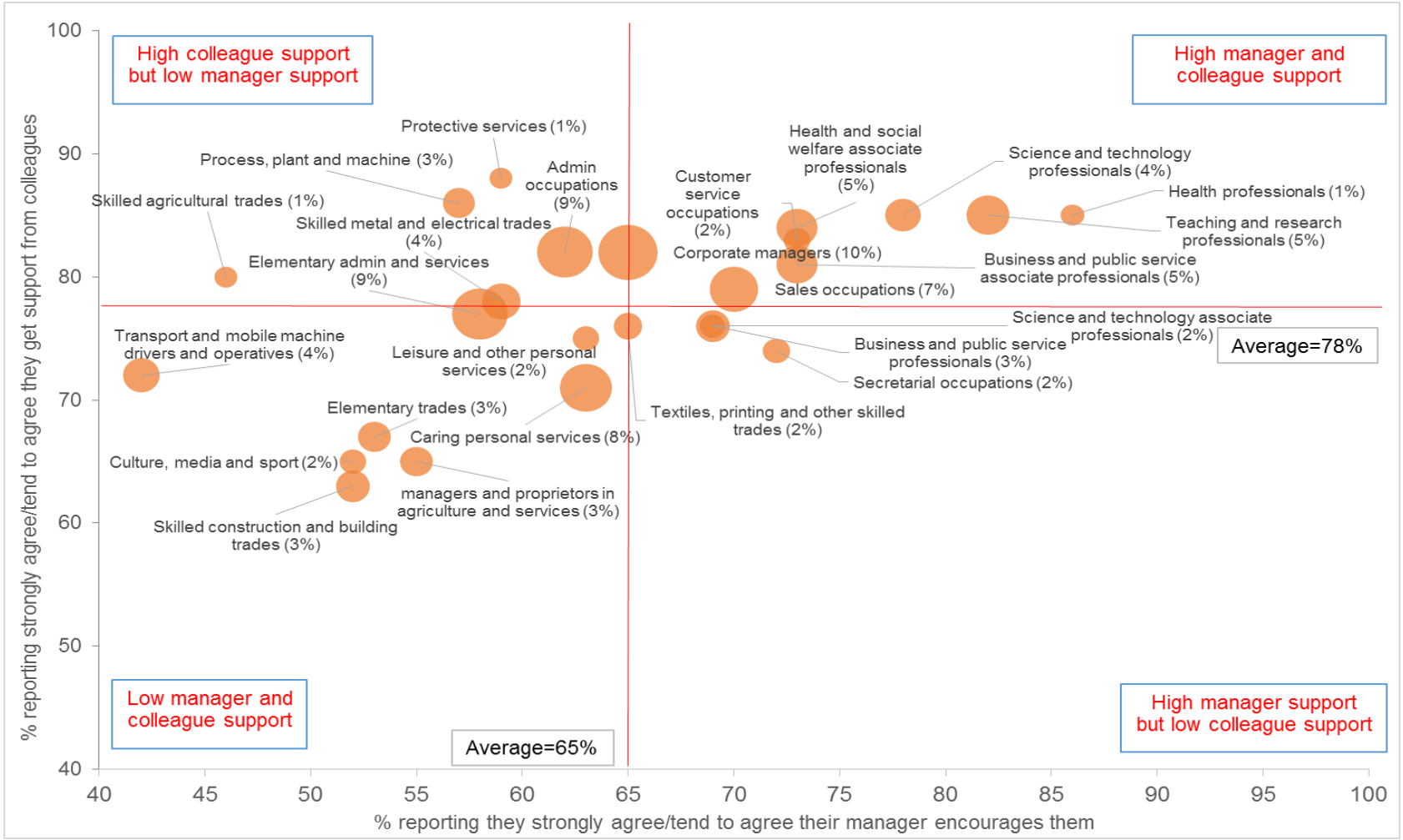
Table 9: Occupations and industries by specific workplace stress challenges: Scotland, 2009 and 2011.

Challenge	Occupation	Industry
Poor work–life balance	Corporate managers	Wholesale trades
Job was very/extremely stressful	Health and social welfare associate professionals; business and public service professionals; corporate managers	Health and social work
Responsibilities at work unclear	Skilled metal and electrical trades	Financial services
Less likely to be consulted about change at work	Protective service occupations (police, prison officers); skilled construction; transport and mobile machine operatives	Land transport
Work relationships strained	Textiles and other skilled manual occupations; elementary trades	Manufacture of food products and beverages

Source: Scottish Health Survey 2009 and 2011.

Detailed results on workplace stress measures are shown in *Tables A1* and *A2*.

Figure 13: Occupations by manager and colleague support, all persons aged 16–64 years in employment: Scotland, 2009 and 2011.



Source: Scottish Health Survey 2009 and 2011. Percentages show the share of people in employment in Scotland in each occupation (2010). Red lines indicate mean for all occupations. Note that axes have been truncated to improve clarity of presentation.

Figure 14: Industries by manager and colleague support, all persons aged 16–64 years in employment: Scotland, 2009 and 2011.

Source: Scottish Health Survey 2009 and 2011. Percentages show the share of people in employment in Scotland in each industry (2010). Red lines indicate mean for all industries. Note that axes have been truncated to improve clarity of presentation.

Work characteristics

The final piece of descriptive analysis was to examine broader characteristics of work (including unemployment, hourly pay, lack of hours, involuntary temporary employment, task discretion and, where possible, the accident rate).

Occupations

Table 10 shows the detailed work characteristics of the 25 SOC2000 occupations. Professional, managerial and administrative/secretarial occupations tend to compare favourably: only the high rates of involuntary, temporary employment in teaching and research, and administrative occupations stand out. At the other end of the scale, elementary occupations compare unfavourably on most measures of employment quality.

Good work scores were also calculated for each occupation, based on the number of positive and negative characteristics observed for each. Results are shown in *Table 11*, along with a summary of the features of each occupation. Based on these characteristics, the 25 occupations were divided into five broad categories:

1. **Good work** (30%, 723,800)††, including: corporate managers (10%); science and technology professionals (4%); managers and proprietors in agriculture and services (3%); business and public service professionals and associate professionals (3%); health professionals (1%); science and technology associate professionals (2%); and secretarial occupations (2%).
2. **Mixed, favourable** (19%, 447,000), including: administration occupations (9%); teaching and research professionals (5%); protective services (1%); and skilled construction and building trades (3%).
3. **Middling** (19%, 446,000), including: health and social welfare associate professionals (5%); culture, media and sport (2%); skilled metal and electrical trades (4%); textiles, printing and other skilled trades (2%); skilled agricultural trades (1%); leisure and other personal services (2%); and customer service occupations (2%).

†† Figures in parenthesis show the number and share of adults aged 16–64 years in employment within each category.

4 **Mixed, unfavourable** (21%, 510,900), including: process, plant and machine (3%); transport and mobile machine drivers and operatives (4%); caring personal services (8%); and sales occupations (7%).

5 **Bad work** (12%, 281,300), including: elementary trades (3%); and elementary administration and services (9%).

Table 10: Selected indicators of employment quality, by main occupation, persons aged 16–64: Scotland, 2010.

Indicators of employment quality	Unemployment rate (2010)	Hourly pay (2010)	Inadequate hours (2010)	Precariousness (2010)	Accident rate (2008–2010)	Control at work (2008–2011)
Corporate managers	2.8	19.0	0.6	0.5	1771	82
Managers and proprietors in agriculture and services	2.1	12.1	0.7	0.1	738	79
Science and technology professionals	1.2	18.5	0.6	0.7	573	74
Health professionals	0.0	25.1	0.7	0.0	3723	71
Teaching and research professionals	1.1	18.8	4.6	5.0	2129	72
Business and public service professionals	1.9	18.0	0.8	1.3	797	75
Science and technology associate professionals	3.1	13.6	1.2	2.1	3636	63
Health and social welfare associate professionals	1.2	14.6	3.7	1.5	3111	69
Protective services	2.6	15.2	1.0	0.0	8232	34
Culture, media and sport	5.0	12.8	3.5	1.4	1468	89
Business and public service associate professionals	3.3	13.3	1.4	2.1	157	80
Administration occupations	4.2	9.7	2.6	3.0	1082	60
Secretarial occupations	4.6	8.9	3.3	0.6	317	70
Skilled agricultural trades	5.6	9.1	2.3	3.6	8360	76
Skilled metal and electrical trades	5.5	12.8	0.8	1.5	4679	70
Skilled construction and building trades	11.5	11.3	1.4	0.3	3165	60

Indicators of employment quality	Unemployment rate (2010)	Hourly pay (2010)	Inadequate hours (2010)	Precariousness (2010)	Accident rate (2008–2010)	Control at work (2008–2011)
Textiles, printing and other skilled trades	6.7	7.5	6.1	1.0	5137	78
Caring personal services	4.1	8.8	9.3	2.3	4821	49
Leisure and other personal services	4.0	8.1	5.8	1.4	984	70
Sales occupations	8.8	6.4	10.9	1.2	1209	42
Customer service occupations	7.4	8.4	2.2	1.6	978	37
Process, plant and machine	12.1	9.7	0.8	2.8	3528	47
Transport and mobile machine drivers and operatives	7.4	9.3	3.1	1.3	6736	56
Elementary trades	18.0	8.1	4.4	4.4	3388	35
Elementary administration and services	10.7	6.7	14.8	2.5	3352	53
Average	5.6	11.0	4.4	1.8	2628	64

Sources: Annual Population Survey; Annual Survey of Hours and Earnings; Labour Force Survey; Scottish Health Survey.

Table 11: Standard occupational classifications, with main characteristics highlighted, ranked by overall 'good work' score: Scotland, 2010.

Score: +6 (best) to –6 (worst)	Occupation	Positive aspects	Negative aspects
5	Corporate managers	Low unemployment, adequate hours, low precariousness, high control, high pay	None
5	Managers and proprietors in agriculture and services	Low unemployment, adequate hours, low precariousness, low accident rate, high control	None
5	Science and technology professionals	Low unemployment, adequate hours, low precariousness, low accident rate, high pay	None
5	Business and public service professionals	Low unemployment, adequate hours, low accident rate, high pay, high control	None
4	Health professionals	Low unemployment, high pay, adequate hours, low precariousness	None
4	Business and public service associate professionals	Low unemployment, adequate hours, high control, low accident rate	None
2	Science and technology associate Professionals	Low unemployment, adequate hours	None
2	Secretarial and related occupations	Low precariousness, low accident rate	None
2	Administrative occupations	Low unemployment, adequate hours, safe	Precariousness
1	Health and social welfare associate professionals	Low unemployment	None
1	Culture, media and sport occupations	High control	None
1	Skilled metal and electrical trades	Adequate hours	None
1	Textiles, printing and other skilled trades	High control	None
1	Teaching and research professionals	Low unemployment, high pay	Precariousness
1	Skilled construction and building trades	Adequate hours, low precariousness	High unemployment
1	Protective services	Low unemployment, adequate hours, low precariousness	High accident rate, low control
0	Skilled agricultural trades	Adequate hours	High accident rate
0	Leisure and other personal service	Low accident rate	Low pay
0	Customer service occupations	Adequate hours, low precariousness, safe	High unemployment, low control

Score: +6 (best) to –6 (worst)	Occupation	Positive aspects	Negative aspects
–1	Process, plant and machine operatives	Adequate hours	High unemployment, low control
–1	Transport and mobile machine drivers and operators	None	High accident rate
–2	Caring personal services	Low unemployment	Lack of hours, high accident rate, low control
–3	Sales occupations	Low accident rate	High unemployment, low pay, lack of hours, low control
–4	Elementary trades	None	High unemployment, low pay, high precariousness, low control
–4	Elementary administration and service	None	High unemployment, low pay, lack of hours, low control

There is considerable variation in terms of the favourable and unfavourable characteristics of each occupation grouping. Looking in more detail at those occupations with the largest share of employment in Scotland in 2010**:**

- **corporate managers**: favourable on five out of the six measures, unfavourable on none
- **administrative occupations**: characterised by low unemployment, adequate hours and low accident rates, but also high rates of precariousness
- **elementary administration and services**: characterised by high unemployment, low pay, lack of hours and low control
- **caring personal services**: characterised by low unemployment but with a lack of hours, a high accident rate and low control
- **sales occupations**: characterised by high unemployment, low pay, lack of hours, low control, but with a low accident rate.

Industries

A similar exercise was undertaken for broad industrial groupings (*Tables 12* and *13*). This process was cruder than for occupations, in part because of incomplete injury rate data and also owing to the classification of industry by broad sectors, which may

obscure differences by detailed industrial category (e.g. between the professional and support activities included in ‘other business activities’), and between occupations within industries (e.g. care assistants and nurses in health and social work, brokers and customer service advisors in financial services, casual agricultural labourers and farmers in agriculture). Changes to the labour market since 2010 (including, for example, radical reductions in employment in some parts of the public sector) may also change the picture presented here.

Industries with the most favourable characteristics included: financial services; electricity, gas and water; and public administration, defence and compulsory social security. Those with the least favourable characteristics included retail, hotels and restaurants.

Looking in more detail at the industries with the largest share of people in employment in Scotland in 2010:

- **health and social work:** had low levels of unemployment
- **retail:** was characterised by high unemployment, low pay, lack of hours and low control, but with below-average rates of temporary jobs
- **education:** was characterised by a lack of hours, a higher rate of involuntary temporary employment but low rates of unemployment.

Table 12: Selected indicators of employment quality, by industry, persons aged 16–64: Scotland, 2010.

Employment quality	Unemployment rate (2010)	Hourly pay (2010)	Inadequate hours (2010)	Precariousness (2010)	Accident rate (2008–2010)	Control at work (2008–2011)
Agriculture and fishing	2.9	9.2	1.0	0.6	4570	70
Construction	11.0	12.0	1.3	1.5	3340	67
Education	1.8	13.2	6.7	3.9	1780	68
Electricity, gas and water	3.1	14.8	0.0	0.2	2800	60
Extraction of petroleum and natural gas	1.8	25.0	0.0	1.9	n/a	73
Financial services	3.8	14.2	0.8	1.5	410	61
Health and social work	2.8	11.7	5.4	1.3	2500	61
Hotels and restaurants	10.2	6.1	10.0	1.8	2600	55
Land transport	6.2	10.1	4.0	1.3	2930	68
Manufacture of food products and beverages	5.6	9.5	1.7	2.8	2820	59
Other business activities	6.7	11.3	3.7	2.8	n/a	71
Other service activities	6.5	9.0	8.5	1.8	1580	79
Post and telecoms	7.6	9.4	12.6	1.0	5880	53
Public administration and defence; compulsory social security	2.3	14.4	1.7	1.7	2600	57
Recreational, cultural and sporting activities	5.7	8.4	6.9	2.4	2060	79
Retail	7.1	6.9	9.1	0.8	2490	53
Sales and retail of motor vehicles; repair of motor vehicles; retail sale of automobiles	6.7	9.2	0.8	0.3	2430	75
Supporting and aux transport activities (including warehousing); travel agencies	5.2	13.1	1.8	1.3	3450	70
Wholesale trades	6.6	9.8	2.8	0.7	1930	66
Average	5.6	11.0	4.4	1.8	2430	64

n/a = not available. Sources: Annual Population Survey; Annual Survey of Hours and Earnings; Labour Force Survey; Scottish Health Survey. Injury figures are for UK, 2008/09 to 2010/11; injury rates for ‘other business activities’ was not calculated because of difference between professional, scientific and technical activities (810 per 100,000) and administrative and support service activities (2,230 per 100,000).

Table 13: Selected industry groups, with main characteristics highlighted, ranked by overall 'good work' score: Scotland, 2010.

Score: +6 (best) to –6 (worst)	Industry	Positive aspects	Negative aspects
4	Financial services	Low unemployment, high pay, adequate hours, low injury rate	None
3	Electricity, gas and water	High pay, adequate hours, low precariousness	None
3	Public administration and defence; compulsory social security	Low unemployment, high pay, low precariousness	None
2	Agriculture and fishing	Low unemployment, adequate hours, low precariousness	High injury rate
2	Sales and retail of motor vehicles; repair of motor vehicles; retail sale of automobiles	Adequate hours, low precariousness	None
1	Health and social work	Low unemployment	None
1	Manufacture of food products and beverages*	Adequate hours	None
1	Supporting and aux transport activities (including warehousing); travel agencies	Adequate hours	None
1	Wholesale trades	Low precariousness	None
0	Post and telecoms	Low precariousness	High injury rate
0	Land transport	None	None
–1	Construction	Adequate hours	High unemployment, high injury rate
–1	Education	Low unemployment	Lack of hours, high precariousness
–1	Recreational, cultural and sporting activities	High control	Low pay, lack of hours
–2	Other service activities	None	Low pay, inadequate hours
–3	Retail	Low precariousness	High unemployment, low pay, lack of hours, low control
–3	Hotels and restaurants	None	High unemployment, low pay, lack of hours

*Assuming that the rate for all manufacturing also applies in this sector.

Accounting for differences in health outcomes

Logistic regression was used to identify whether or not occupations/industries were associated with differences in health outcomes, after other factors were accounted for. The health outcomes examined were:

- being in very good/good general self-reported health: odds of greater than 1 are 'good', indicating increased likelihood of good general health
- having a score of 4+ on the GHQ-12, which indicates a possible mental health problem: odds of greater than 1 are 'bad', indicating increased likelihood of poor mental health.

The reference categories used were: current/previous job as corporate manager; aged 16–44 years; no qualifications; not in work (excluding full-time students); living in household income quintiles 3–5 (mid-high income); never smoked or ex-smoker; not drinking at
hazardous/harmful levels; not eating at least five portions of fruit or vegetables a day; not obese; and not meeting physical activity recommendations.

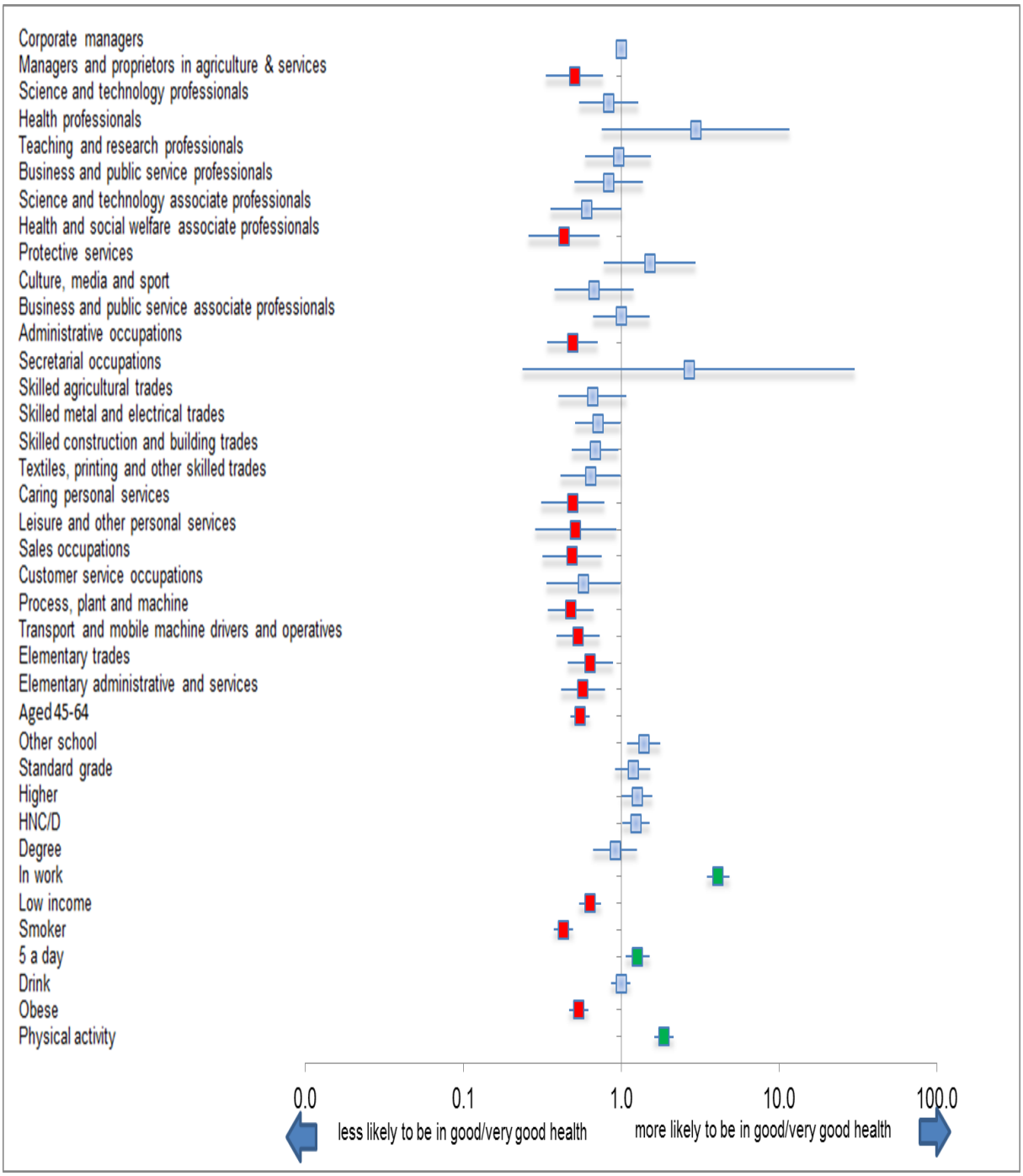
For men and women, occupation remains significantly associated with being in good health after adjustment (*Figure 15* and *16*). A wide range of occupations exert an independent association on reducing the odds of being in good health. For men, the strongest associations were seen for process, plant and machine operatives; and transport and mobile machine drivers and operatives. For women, the strongest associations were seen for process, plant and machine; customer service occupations; and skilled metal and electrical trades.[‡‡] Red squares indicate that the independent variable was associated with worse general or mental health, relative to the reference category; green squares indicate that it was associated with better health.

Of the other factors adjusted for, only self-reported hazardous/harmful alcohol consumption (men only) and self-reported consumption of five or more portions of

[‡‡] Only a very small number of women worked in these occupations.

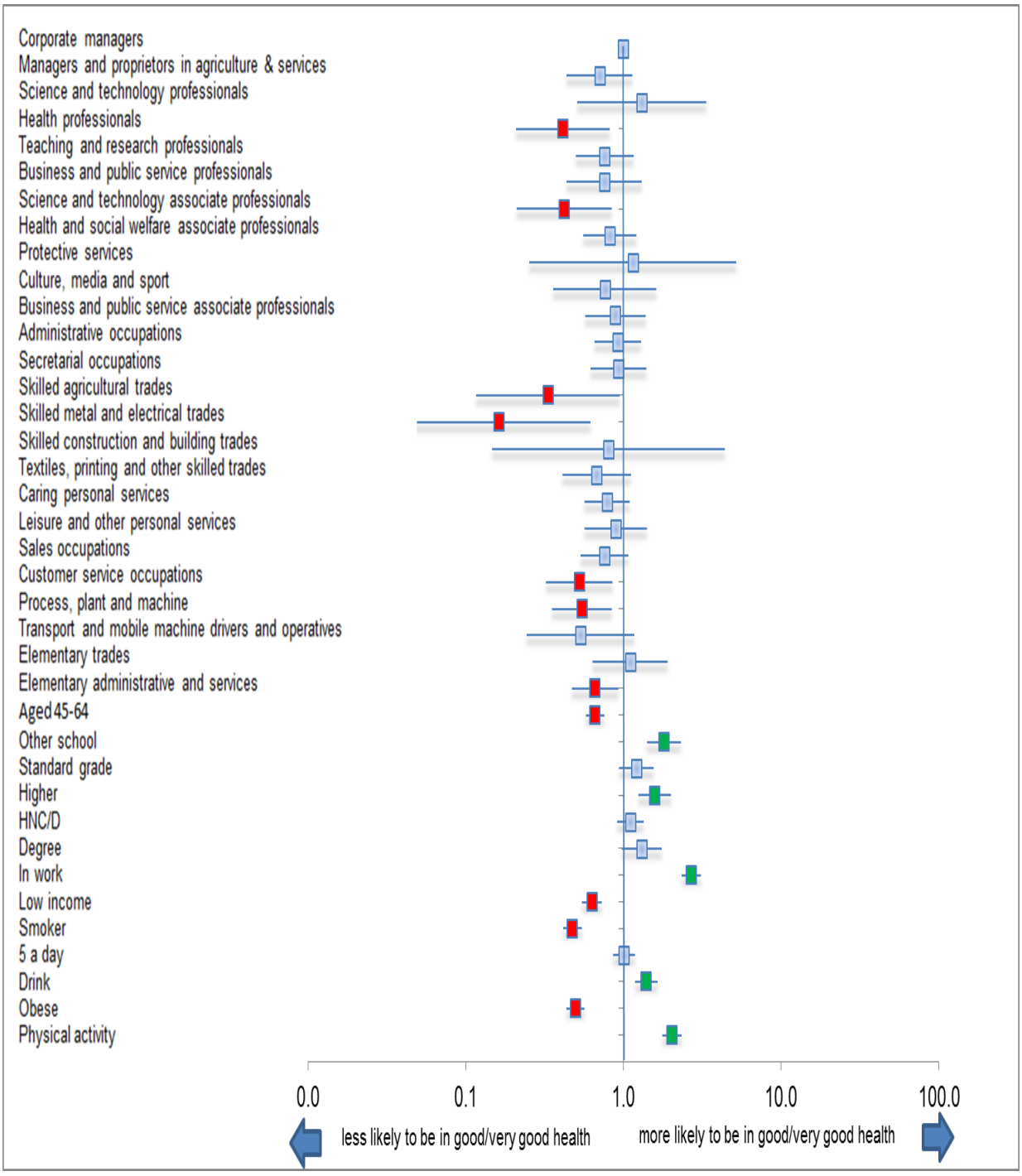
fruit or vegetables a day (women only) were not associated with self-reported general health. Currently being in paid employment was the factor with strongest impact on self-reported health, with smoking, physical activity and obesity also emerging as relatively important. Living in a low-income household exerted an independent (negative) association on self-reported general health even after adjustment for current employment status, educational attainment and occupation.

Figure 15: Adjusted log odds and 95% confidence intervals of being in good/very good general health for men aged 16–64 years, by current/most recent occupation, relative to corporate managers: Scotland, 2008–2011.



Note: Adjusted for age, highest level of qualifications, employment status, household income, smoking, alcohol consumption, fruit and vegetable consumption, obesity and physical activity. Red squares indicate that the independent variable was associated with worse general or mental health, relative to the reference category; green squares indicate that it was associated with better health.

Figure 16: Adjusted log odds and 95% confidence intervals of being in good/very good general health for women aged 16–64 years, by current/most recent occupation, relative to corporate managers: Scotland, 2008–2011.

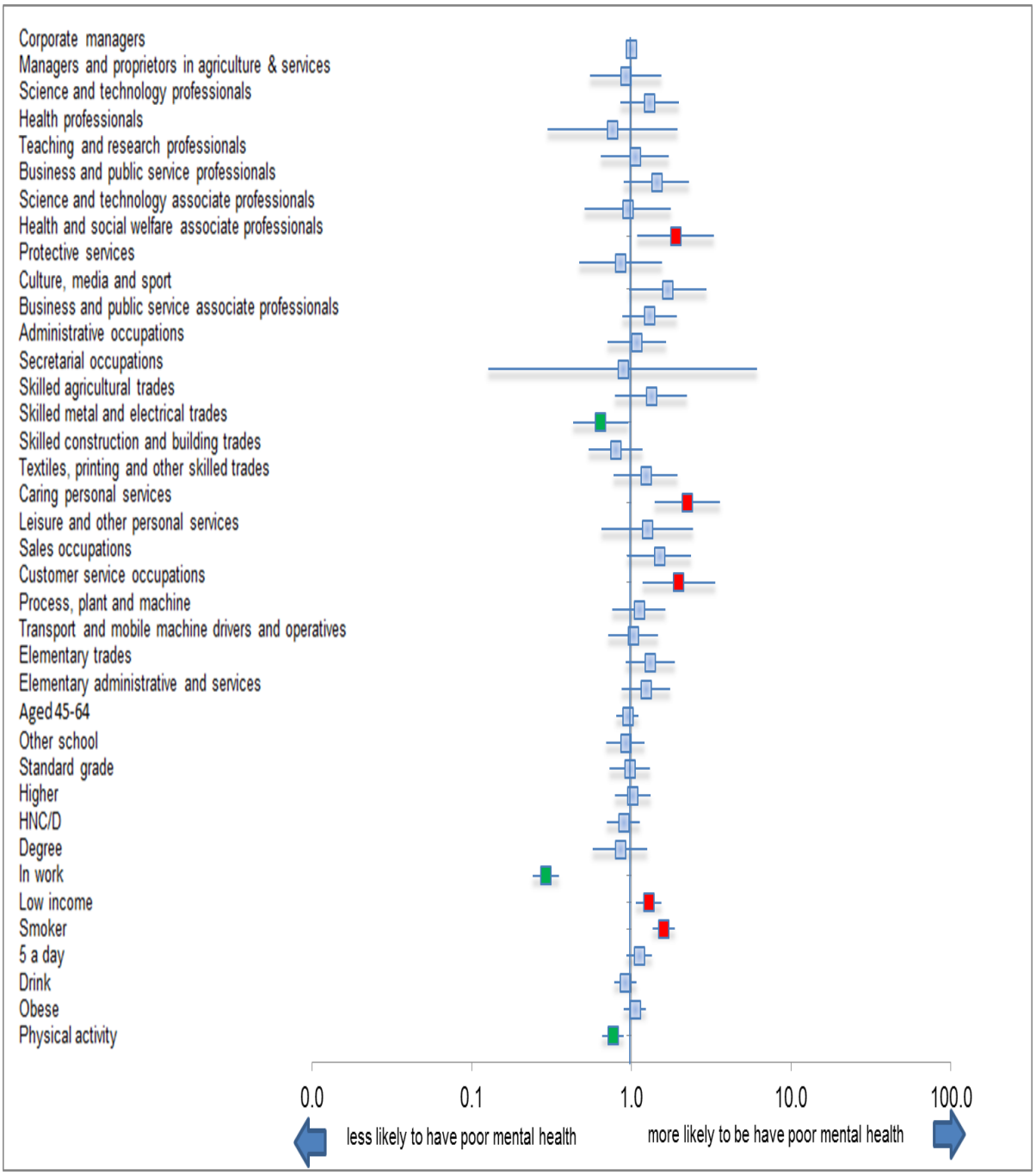


Note: Adjusted for age, highest level of qualifications, employment status, household income, smoking, alcohol consumption, fruit and vegetable consumption, obesity and physical activity. Red squares indicate that the independent variable was associated with worse general or mental health, relative to the reference category; green squares indicate that it was associated with better health.

Focusing on GHQ-12 scores, after adjustment for the variables above, occupation of employment remained a significant independent predictor of a high GHQ-12 score for men but not for women (*Figures 17* and *18*). Compared with corporate managers, three occupations (health and social welfare associate professionals, caring occupations and customer service occupations) were associated with higher GHQ-12 scores for men aged 16–64 years. For both men and women, of the factors controlled for, being in paid employment had the strongest (protective) influence on GHQ-12 scores. Income also exerted an independent association.

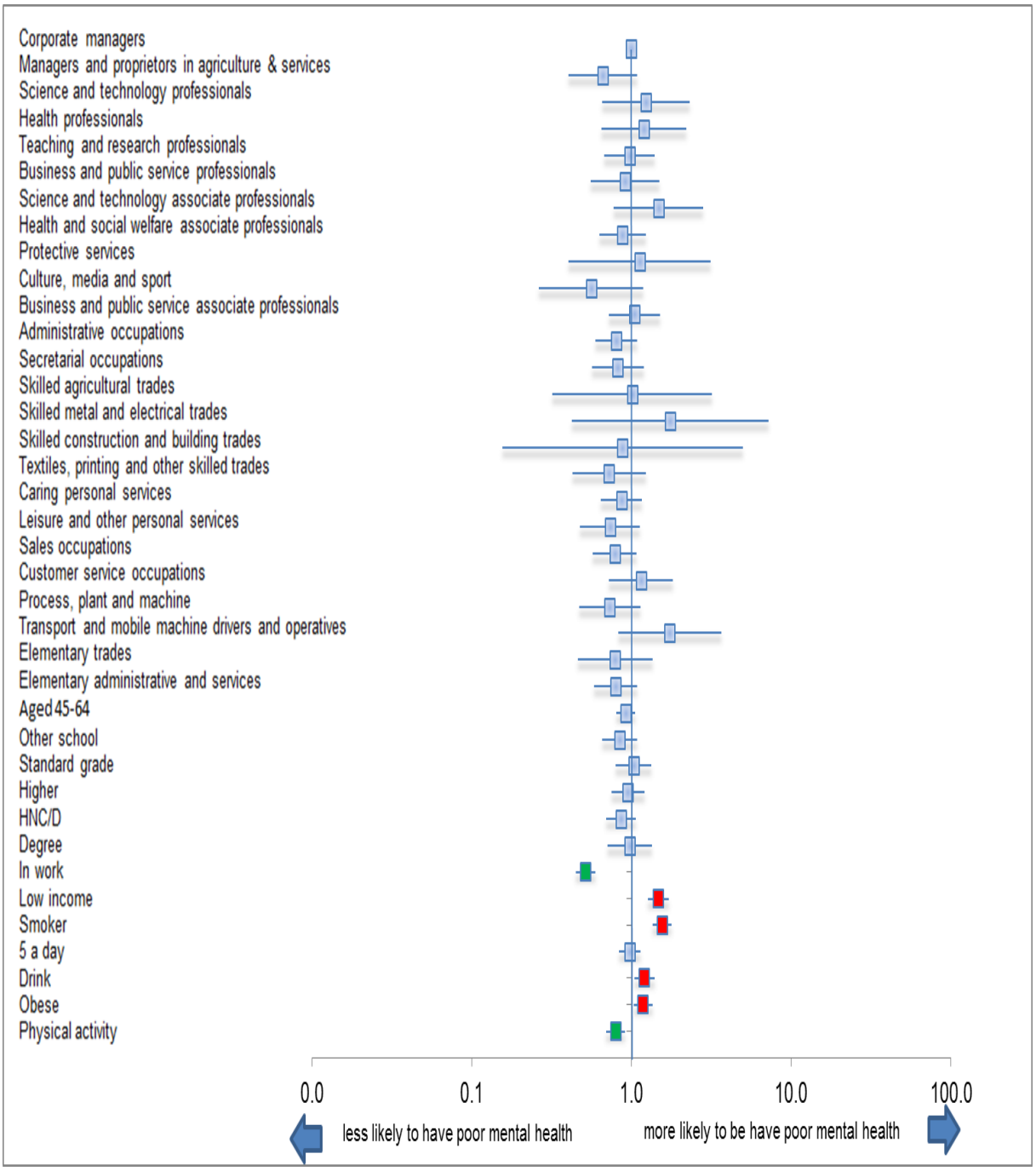
The results for industries are shown in *Figures 19* and *20*. After adjustment for a range of independent variables, industry of employment was not significantly associated overall with self-reported general health. However, after adjustment, general health was poorer for people aged 16–64 years with work experience in land transport and less definitively, other manufacturing compared to wholesales trades (*Figure 19*). As with the occupational analysis, being in paid employment and, to a lesser extent, smoking, physical activity, obesity and living in a low-income households had strong, independent associations on the health outcomes. Industry of employment was also independently associated with a higher or lower risk of having a GHQ-12 score of 4+ and thus a possible mental health problem. Compared to those in wholesale trades industries, computer and related activities, and electrical and electronic manufacturing were associated with higher GHQ-12 scores (and possible mental health problems) for adults aged 16–64 years (*Figure 20*).

Figure 17: Adjusted log odds of having a GHQ-12 score of 4+ (which indicates a possible mental health problem) for men aged 16–64 years, by current/most recent occupation, relative to corporate managers: Scotland, 2008–2011.



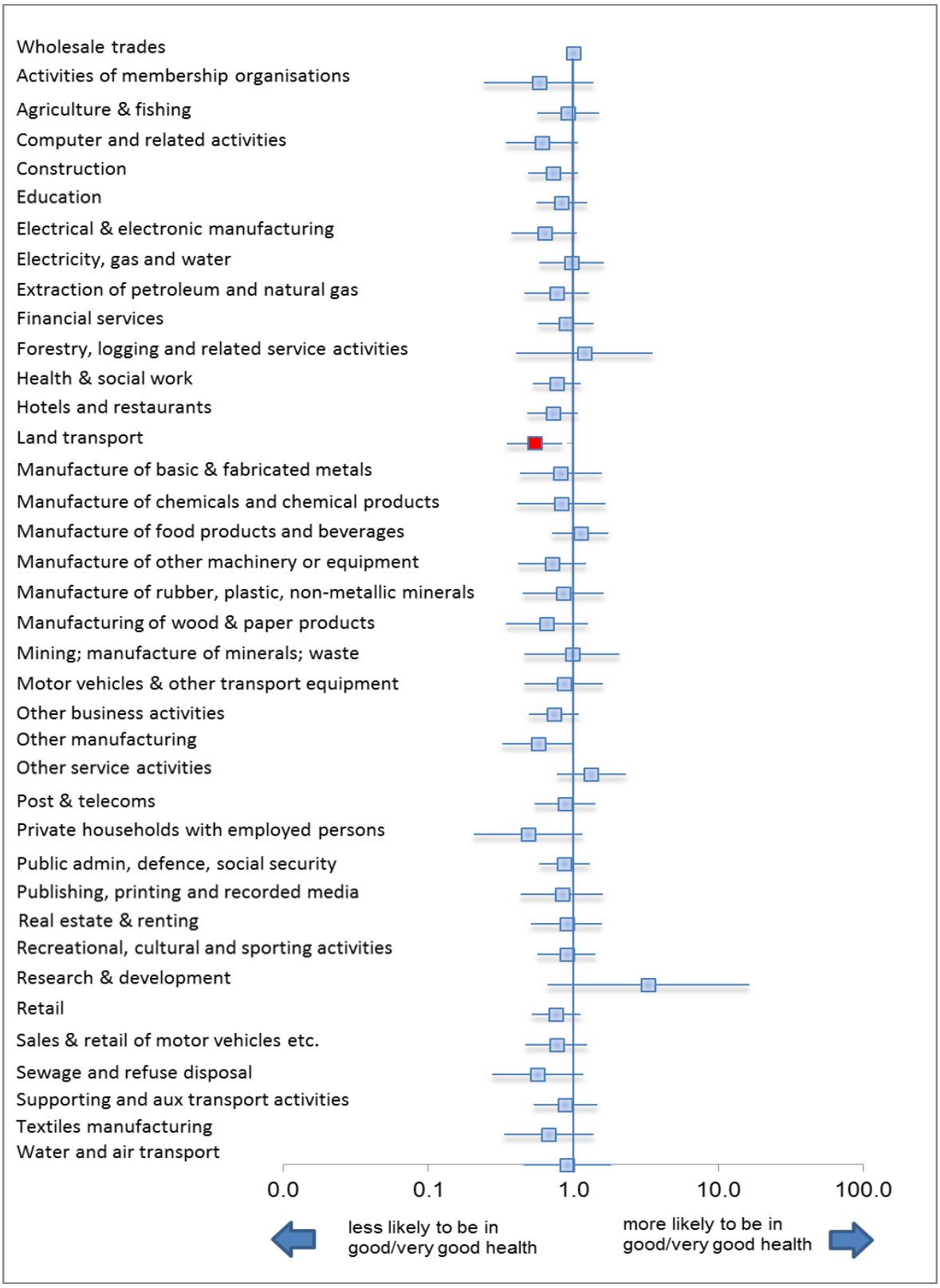
Note: Adjusted for age, highest level of qualifications, employment status, household income, smoking, alcohol consumption, fruit and vegetable consumption, obesity and physical activity. Red squares indicate that the independent variable was associated with worse general or mental health, relative to the reference category; green squares indicate that it was associated with better health.

Figure 18: Adjusted log odds of having a GHQ-12 score of 4+ (and a possible mental health problem) for women aged 16–64 years, by current/most recent occupation, relative to corporate managers: Scotland, 2008–2011.



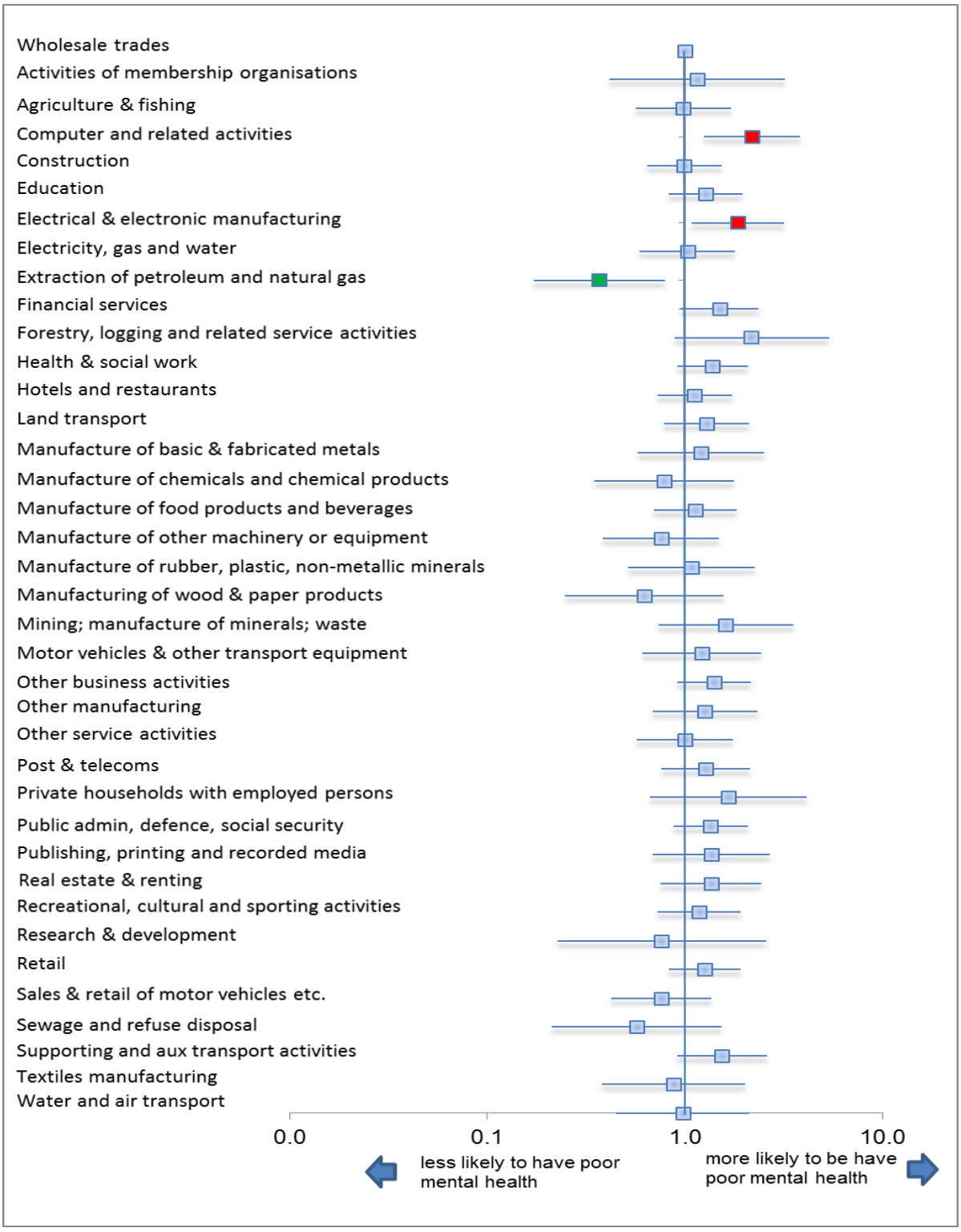
Note: Adjusted for age, highest level of qualifications, employment status, household income, smoking, alcohol consumption, fruit and vegetable consumption, obesity and physical activity. Red squares indicate that the independent variable was associated with worse general or mental health, relative to the reference category; green squares indicate that it was associated with better health.

Figure 19: Adjusted odds of being in good/very good general health for adults aged 16–64 years, by current/most recent industry: Scotland, 2008–2011.



Note: Adjusted for sex, age, highest qualification level, employment status, household income, smoking, diet, alcohol consumption, obesity and physical activity. Industry reference category was wholesale trades. Red squares indicate that the independent variable was associated with worse general or mental health, relative to the reference category.

Figure 20: Adjusted odds of having a GHQ-12 score of 4+ for adults aged 16–64 years, by current/most recent industry: Scotland, 2008–2011.



Note: Adjusted for sex, age, highest qualification level, employment status, household income, smoking, diet, alcohol consumption, obesity and physical activity. Industry reference category was wholesale trades. Red squares indicate that the independent variable was associated with worse general or mental health, relative to the reference category; green squares indicate that it was associated with better health.

Classifying occupations and industries by multiple (dis)advantage

Table 14 shows occupations in Scotland characterised by advantage or disadvantage across at least two of the four domains examined. Occupations and industries were also classified by their relative disadvantage across four domains: general health and limiting longstanding illness; mental health; multiple health behaviours; and work characteristics. The largest occupations in the multiply disadvantaged group were administrative occupations, elementary administration and service occupations, and caring personal services. However, transport and mobile machine drivers and operatives; elementary trades; and process, plant occupations, although affecting fewer working-age adults, are among the most severely disadvantaged occupations.

Table 14: Advantaged and disadvantaged occupations in Scotland, 2008–2011.

Category	**Occupation**	***N***
Disadvantaged	Elementary administration and services	208,589
	Transport and mobile machine drivers and operatives	94,237
	Elementary trades	72,743
	Process, plant and machine	70,684
	Caring personal services	183,153
	Sales occupations	162,828
	Textiles, printing and other skilled trades	55,663
	Customer service occupations	47,286
	Administration occupations	211,426
Advantaged	Health professionals	36,101
	Protective services	34,306
	Science and technology professionals	84,793
	Business and public service associate professionals	114,015
	Corporate managers	242,977
	Teaching and research professionals	122,223

N = number of adults aged 16–64 years by current/most recent occupation of employment.

Table 15 shows industries in Scotland classified in the same way. In the disadvantaged industry group, retail, construction, and hotels and restaurants are the largest single categories, although land transport and manufacture of food products and beverages are arguably the most disadvantaged.

Excluded from this list were industries in which it was not possible to estimate control at work. If these were included, the list of disadvantaged industries would expand to include: most of manufacturing (except chemicals manufacturing);[§§] private households with employed persons; publishing, printing and reproduction of recorded media and sewage; and refuse disposal. Computer and related activities; forestry, logging and related service activities; manufacture of chemicals and chemical products; and research and development would be added to the list of advantaged industries.

Table 15: Advantaged and disadvantaged industries in Scotland, 2008–2011.

Category	**Occupation**	***N***
Disadvantaged	Construction	230,676
	Hotels and restaurants	183,705
	Land transport	74,715
	Manufacture of food products and beverages	52,668
	Post and telecoms	25,606
	Retail	305,251
Advantaged	Agriculture and fishing	38,127
	Education	273,565
	Electricity, gas and water	34,227
	Extraction of petroleum and natural gas	8,032
	Financial services	118,907
	Recreational, cultural and sporting activities	82,482
	Sales and retail of motor vehicles; repair of motor vehicles; retail sale of automobiles	44,431

N = Number of adults aged 16–64 years by current/most recent industry of employment.

The detailed scores underpinning these classifications are shown in *Tables A2* and *A3*.

[§§] Specifically, electrical and electronic manufacturing, manufacture of basic and fabricated metals, manufacture of machinery or equipment not otherwise classified, manufacture of rubber, plastic, non-metallic minerals, motor vehicles and other transport equipment, other manufacturing and textiles manufacturing.

Chapter 4: Discussion

Summary of findings

This report has described contemporary health outcomes, behaviours and determinants by current or most recent occupation and industry of employment, for adults aged 16–64 years in Scotland. The evidence suggests a number of broad conclusions.

Descriptive analysis

Focusing first on the descriptive analysis, some occupations appear consistently disadvantaged or advantaged across multiple aspects of health and its determinants, regardless of the measures used. Professionals and managers are, in general, consistently advantaged, along with those in protective services (for protective services, this is despite high levels of job strain). Those in transport, process, caring, customer service and elementary occupations appear consistently disadvantaged.

For industries, the pattern is less clear. Where industries are characterised by a high degree of internal inequality (e.g. financial services, public administration, and health and social care), taking average scores of measures may obscure these differences. Nonetheless, the evidence does provide some clues. The most ‘disadvantaged’ industries (in 2008–2011) included land transport, hotels and restaurants, food and beverage manufacturing and construction. ‘Advantaged’ industries included extraction of petroleum and natural gas, education and (with some challenges around workplace stress) financial services.

Being in any paid employment was more important than occupation or industry in accounting for differences in the range of health outcomes examined. However, many of the disadvantaged occupations (especially elementary, process and customer service occupations) listed in *Table 14* were independently associated with poorer self-reported health even after employment status and a range of other factors were taken into account. Occupation was also independently associated with possible mental health problems for men but not for women. Land transport remained significantly associated with poorer self-reported health, and computer and related activities, and electrical and electronic manufacturing with poorer mental health, after adjustment. It is also important

to note that physical activity, smoking, obesity and (especially for women) living in a low-income household emerged as important independent variables.

Anomalies

In addition, there are some interesting potential anomalies. Health and social work emerged as an industry with relatively favourable health outcomes and behaviours, despite scoring unfavourably in terms of workplace stress. Likewise, skilled construction trades have poor health behaviours, high unemployment and injury rates, and relatively low levels of control at work, but also low levels of reported mental health problems. Exploring these issues might be a useful piece of future research.

Finally, the evidence highlights interaction between sex, labour market (dis)advantage and health outcomes. While men are more likely to be concentrated in the occupations with the 'worst' health outcomes, they are also more likely to be found in occupations with the 'best' outcomes. Unlike men, being employed in professional/managerial jobs does not seem to protect the mental health of working-age women. In addition, being in paid employment has a slightly weaker beneficial impact, and low income a slightly more detrimental impact, on their health compared to men.

Strengths and limitations

A key strength of this analysis is that it presents detailed contemporary self-reported health-related data by occupations and industries in Scotland. Limitations of the approach include the following:

- **Use of cross-sectional data means we are unable to draw conclusions about causation**. This could be addressed by future research using the Scottish Health Survey linked data sets, to explore whether or not occupation and industry in the starting time period are associated with hospitalisation and other health outcomes at follow-up.
- **Health outcomes and behaviours include not just those currently in employment but also those who are unemployed or economically inactive.** This has partly been accounted for through the regression analysis adjustment above. Being in employment has a strong association, but it reduces, rather than eliminates, inequalities in health outcomes.

- **A reliance on self-reported data.** Although generally considered good indicators of health, and shown to be good predictors of mortality, the health outcome measures presented here are based on individuals' subjective judgement or self-reporting.
- **A crude, unweighted approach to scoring overall outcomes, behaviours, workplace stress and work characteristics.** It could reasonably be argued that some aspects of workplace stress or job characteristics are more important than others: for example, job control and unemployment might be more important than support from colleagues/managers and underemployment for health. Future work might explore how different measures can be weighted to create a more sophisticated index.
- **The indicators chosen might not fully capture the relevant concepts:** for example, the measure of demand might accurately assess time pressures at work but not the degree of task monotony (which is also important for health). Another example is how hourly pay and hours interact in reality – with home care workers not paid for time spent driving between clients, for example.
- **Findings are restricted to a point in time.** Results shown are drawn from population survey data collected around the years 2008–2011. They do not allow us to comment on how health outcomes and determinants for particular occupations/industries changed over time prior to that date, and or how they might have changed since. The economic context of that period (a move from economic growth and a more favourable labour market into a deep and prolonged recession) may also influence the results. For example, fear of redundancy has been shown to have an adverse impact on employees' mental health. If this was higher during the period 2008–2011 (and it seems plausible that it was), then this might mean mental health reported here was poorer than during 'normal' times.
- **Findings are restricted to Scotland as a whole.** The results shown do not describe any geographic differences in health outcomes by employment. The next phase of work will involve using Annual Population Survey and Census data to describe how 'healthy' local labour markets might be. This is assuming that the health-related characteristics of jobs/industries do not also vary within Scotland.

Implications

This report supports the view that inequalities in health are partly driven by inequalities in the labour market. Policies that increase the number of working-age adults in sustainable, paid employment that protects their physical and mental health would make an important contribution to improving health outcomes. Measures that achieve this should be supported, but it is important to note that many of the flagship policies (such as the Work Programme[26] and increased conditionality for benefits receipt), which have this as a stated aim, have met with only partial success, and may have actually moved some people further away from the labour market. There is also emerging evidence that increased conditionality is associated with increased risk of possible mental health problems for working-age adults in low-income households.[27]

Attention should also be paid to reducing working-age poverty. This could include focusing on measures that can boost the amount of money coming into low-income households (hourly wages, social security benefits, availability of hours, childcare that would allow more hours to be worked, working practices on what is counted as 'working time') and to reduce the amount of money going out (by looking at unfair costs and premiums paid by those on a low income). This should be done in parallel with interventions to tackle specific health behaviours, such as smoking, obesity and lack of physical activity (and it should be noted that upstream measures, focused on legislation and fiscal measures, are likely to be more effective at reducing health inequalities than those targeting individuals or their employers).

In addition, the evidence assembled suggest that there are inequalities in health outcomes and determinants by occupation and industry that cannot be accounted for by employment status, individual characteristics (age, sex or educational attainment) or health behaviours. Information presented here could be used to prioritise occupations and/or industries for targeted interventions. Decisions on this could also be based on the relative scale of employment. On this basis, it might be useful to consider targeting:

- caring personal services, elementary trades and elementary service occupations: these three occupations account for just under one-fifth (19%, 484,000) of Scottish working-age adults in employment
- construction, and hotels and restaurants: these two industries employ 370,000 people (15% of the Scottish workforce).

Some clues as to how employment might be improved are suggested in the workplace stress and job quality tables (*Tables 10*, *11*, *A1* and *A2*). For example, in caring personal services, this might include decreasing the injury rate, increasing levels of job control, and looking at ways to reduce precariousness and involuntary part-time employment. Additionally, it would be useful to explore why occupation is important in changing the relative risk of mental health problems for men but not for women.

In the medium term, the evidence shown here poses a number of important questions. The Scottish Government has identified seven key growth sectors that offer particular opportunities for current and future prosperity.[14] It might be reasonable to explore – consistent with recommendations from the Fair Work Convention – the extent to which these sectors contribute to creating good health and narrowing health inequalities.

At times and places where labour market demand is weak (and as acknowledged by the Fair Work Convention), the quality of employment tends to be poorer.[8] The results reinforce the need for any national full employment strategy to focus on both the quantity and the quality of employment, especially as those occupations where health outcomes and determinants are poorest are also those in which the relative demand for labour is very weak.

Comparisons with other studies

As noted in the limitations section, these findings allow us to describe associations, rather than causal links. Perhaps more fundamentally, the approach only begins to scratch the surface of the interaction between occupation and social class, as argued elsewhere, are 'two distinct constructs that lead to different social stratification hypotheses, social mechanisms and intervention strategies with regard to health inequalities'.[28] Health inequalities that show up as associated with different occupations and industries may in fact reflect differences in power and status in society.

These findings can be compared with work based on the European Work Conditions Survey (EWCS), which attempted to classify occupations and industries by job quality (including measures of earnings, working time quality, prospects, intrinsic job quality, and health and wellbeing at work). The occupations identified across the EU using their

methods were very similar to those shown in *Table 14*.[***] There are a few exceptions: sales occupations and skilled trades do not emerge as clearly disadvantaged from the Scottish data, however, they do from the European analysis. Industries identified as disadvantaged across the EU were also similar to that shown in *Table 15*, although agriculture and fishing, and other business activities do not appear to be as disadvantaged in Scotland as they are in other parts of Europe, while education and public administration appear slightly more advantaged.[†††]

Some staff satisfaction surveys for the UK or Scotland also ask similar or identical questions to those in workplace stress module of the Scottish Health Survey. Compared with the Scottish Health Survey findings above for the health and social work industry, the NHS Scotland Staff Survey 2015 shows much less positive results for control at work (40% vs. 61%) and staff consultation (28% vs. 44%), though results are similar in both surveys for unrealistic demands, clarity of role and manager/colleague support. The UK Civil Service People survey[29] suggests that employees in the largest Scottish organisations have similar levels of control at work to that reported in Scottish Health Survey for people working in the public administration and defence; and compulsory social security industries (63% vs. 57%). Readily obtained information of this kind is, however, confined to the public sector. It would be useful to explore whether or not large private sector industries (for example, construction, transport, retail and social care) would be open to monitoring the mental health of their workforce in a similar, systematic way.

The Workplace Employment Relations Study[30] also provides some revealing results on aspects relevant to physical and psychosocial health by industry and workplace size for the UK, with some analyses possible for Scotland. This includes some concepts not covered by the Scottish Health Survey or Annual Population Survey, such as task monotony, perceived job insecurity and representation at work. Comparing the evidence

[***] The EWCS analysis describes as multiply disadvantaged the following occupations: customer services clerks; personal service workers; sales workers; market-oriented skilled forestry; fishery and hunting workers; building and related trades workers; metal, machinery and related trades workers; food processing; wood working; garment and other craft and related trades workers; stationary plant and machine operators; assemblers, drivers and mobile plant operators; labourers in mining, construction, manufacturing and transport; and food preparation assistants.

[†††] The EWCS identified the administrative services, the agro-food industry, food and beverage services, textiles and clothing, transport and storage, and construction industries as being especially disadvantaged. It identified the chemical industry, utilities supply, banking, insurance, real estate activities, legal and accounting activities, and financial services as being relatively advantaged.

from Workplace Employment Relations Study with this data may also yield useful insights.

Lastly, the Health and Safety Executive[31] provides an important example for bringing together the monitoring of risks at work (for both occupations and industry) and, at least in part, the responsibility to intervene to prevent and mitigate adverse health outcomes. It would be useful to consider if a similar approach could be taken for a broader range of health outcomes and determinants associated with work, starting with the routine monitoring of the 'problem'.

Potential areas for future research

This analysis also suggests a number of areas for further work. These might include:

- Developing a more sophisticated theoretical understanding of what factors to adjust for to identify more clearly the work-related determinants of health and what is likely to be due to social status, income and exposure to different socioeconomic contexts throughout the life course. This could utilise the 'directed acyclic graphs' (DAG) method[32] and longitudinal data sources such as the UK birth cohorts.
- Presenting mortality and (if possible) hospitalisation rates by occupation and industry as a complement to the self-reported health outcomes shown here. The MRC/CSO Social and Public Health Sciences Unit is currently leading a project which will partly answer this question, by providing detailed information on mortality rates by occupation.[33]
- Combining the information in this report (and perhaps the additional analysis proposed below) with routine labour market data (e.g. the Annual Population Survey and the 2011 Census) to quantify the level of good/bad/intermediate work in Scotland and describe its geographical distribution and trends over time.
- Use of routine data to map the characteristics of occupations/industries in Scotland against a more comprehensive suite of 'good work' indicators.
- Use of the Scottish Health Survey data set to explore the relative contribution of different aspects of workplace stress to mental health problems for employed adults in Scotland, controlling for household income, sex and other factors. This would build on recommendations made by Harkins and Egan (2013)[34] and could use as its model the analysis published by Stansfeld *et al*. (2013).[35]

- Exploring whether or not the health outcomes related to employment (after adjusting for other relevant exposures) for similar occupations and industries differ in places where labour market demand is strong, compared with where it is weak.

Concluding remarks

The association of occupations and industries with better or worse health outcomes, and determinants of health, is not inevitable. We describe here wide variations by occupation, within industries, between sexes within the same industries and occupations, and several other variations. These analyses are not explanatory studies but they invite further study by those who have insights into working conditions, and by those who take action to explain and tackle the causes of poorer experience, determinants and outcomes.

The analyses presented in this report suggest that it is possible to examine health outcomes and determinants by occupation and industry in Scotland. This information can be used to increase the prospects of ‘good work for all’ – with all the human, social and economic benefits that would bring.

Appendix 1

Table A1: Workplace stress indicators, by current occupation of employment, persons aged 16–64 years: Scotland, 2009 and 2011.

Workplace stress indicators	Very/ extremely stressful	Always/ often high demand	Always/ often choice at work	Always/ often clear responsibilities	Strongly agree/ tend to agree line manager encourages	Strongly agree/tend to agree colleagues at work support	Strongly agree/agree work relationships are strained	Staff consulted about change	Work–life balance
Corporate managers	21	34	82	93	65	82	16	57	5.73
Managers and proprietors in agriculture and services	23	19	79	93	55	65	14	57	6.36
Science and technology professionals	19	28	74	90	78	85	16	47	6.41
Health professionals	12	47	71	94	86	85	0	41	6.95
Teaching and research professionals	15	30	72	92	82	85	15	57	6.43
Business and public service professionals	24	31	75	91	69	76	15	47	6.25
Science and technology associate professionals	7	28	63	98	69	76	9	65	6.64

Workplace stress indicators	Very/ extremely stressful	Always/ often high demand	Always/ often choice at work	Always/ often clear responsibilities	Strongly agree/ tend to agree line manager encourages	Strongly agree/tend to agree colleagues at work support	Strongly agree/agree work relationships are strained	Staff consulted about change	Work–life balance
Health and social welfare associate professionals	25	35	69	96	73	84	19	49	6.6
Protective services	26	52	34	91	59	88	28	30	6.03
Culture, media and sport	8	24	89	95	52	65	6	43	7
Business and public service associate professionals	17	22	80	93	73	81	12	44	6.13
Administration occupations	11	19	60	91	62	82	20	46	6.63
Secretarial occupations	10	25	70	90	72	74	17	57	6.83
Skilled agricultural trades	14	38	76	98	46	80	17	56	6.95
Skilled metal and electrical trades	7	33	70	82	59	78	20	41	6.45
Skilled construction and building trades	13	29	60	98	52	63	18	36	6.33
Textiles, printing and other skilled trades	12	37	78	100	65	76	33	55	6.27

Workplace stress indicators	Very/ extremely stressful	Always/ often high demand	Always/ often choice at work	Always/ often clear responsibilities	Strongly agree/ tend to agree line manager encourages	Strongly agree/tend to agree colleagues at work support	Strongly agree/agree work relationships are strained	Staff consulted about change	Work–life balance
Caring personal services	16	24	49	92	63	71	24	44	6.51
Leisure and other personal services	8	20	70	97	63	75	13	48	7.11
Sales occupations	10	19	42	95	70	79	15	49	6.44
Customer service occupations	24	41	37	87	73	83	27	54	5.85
Process, plant and machine	14	18	47	89	57	86	20	51	6.53
Transport and mobile machine drivers and operatives	7	21	56	97	42	72	23	32	5.99
Elementary trades	10	21	35	90	53	67	30	36	5.78
Elementary administration and services	9	15	53	95	58	77	21	52	6.74

Table A2: Workplace stress indicators, by current industry of employment, persons aged 16–64 years: Scotland, 2009 and 2011.

Industry	Very/ extremely stressful	Always/ often high demand	Always/often choice at work	Always/often clear responsibilities	Strongly agree/tend to agree line manager encourages	Strongly agree/tend to agree colleagues at work support	Strongly agree/agree relationships are strained	Staff consulted about change	Work–life balance
Agriculture and fishing	16	29	70	100	68	72	27	48	6.61
Construction	11	29	67	93	57	70	18	43	6.20
Education	13	25	68	90	77	81	19	51	6.64
Electricity, gas and water	13	22	60	87	67	84	15	48	6.32
Extraction of petroleum and natural gas	20	35	73	90	76	83	15	46	7.34
Financial services	15	35	61	87	71	86	15	53	5.96
Health and social work	21	32	61	94	67	75	23	44	6.47
Hotels and restaurants	11	17	55	99	62	81	17	54	6.18
Land transport	13	28	68	93	38	75	17	36	5.78
Manufacture of food products and beverages	13	22	59	94	58	92	34	52	6.28
Other business activities	20	24	71	95	68	73	14	44	6.59
Other service activities	5	21	79	95	63	68	10	51	7.59
Post and telecoms	13	43	53	98	64	80	25	50	6.06
Public administration and	18	32	57	90	62	85	17	41	6.40

Industry	Very/ extremely stressful	Always/ often high demand	Always/often choice at work	Always/often clear responsibilities	Strongly agree/tend to agree line manager encourages	Strongly agree/tend to agree colleagues at work support	Strongly agree/agree relationships are strained	Staff consulted about change	Work–life balance
defence; compulsory social security									
Recreational, cultural and sporting activities	8	25	79	94	67	80	16	46	6.79
Retail	10	23	53	93	68	75	19	54	6.40
Sales and retail of motor vehicles; repair of motor vehicles; retail sale of automobiles	11	16	75	84	54	61	6	47	5.70
Supporting and aux transport activities (including warehousing); travel agencies	6	14	70	86	74	81	17	47	6.91
Wholesale trades	22	28	66	93	61	81	28	41	5.79

Table A3: Mean scores for general health and limiting longstanding illness, mental health and number of adverse health behaviours; and work quality scores: by Standard Occupational Classification, adults aged 16–64 years, Scotland.

Occupation	General health and limiting longstanding illness (2–6)	Mental health problems and wellbeing (2–6)	Mean number of risk factors	Work quality [6 (best) to –6 (worst)]
Corporate managers	2.58	3.37	1.79	5
Managers and proprietors in agriculture and services	2.75	3.46	1.83	5
Science and technology professionals	2.46	3.32	1.72	5
Health professionals	2.48	3.33	1.48	4
Teaching and research professionals	2.64	3.35	1.62	1
Business and public service professionals	2.61	3.36	1.69	4
Science and technology associate professionals	2.72	3.41	1.83	2
Health and social welfare associate professionals	2.73	3.45	1.69	1
Protective services	2.55	3.29	1.63	1
Culture, media and sport	2.7	3.63	1.66	1
Business and public service associate professionals	2.61	3.41	1.76	4
Administration occupations	2.77	3.52	1.84	2
Secretarial occupations	2.75	3.52	1.82	2
Skilled agricultural trades	2.91	3.38	1.62	0
Skilled metal and electrical trades	2.81	3.3	1.84	1
Skilled construction and building trades	2.82	3.41	1.77	1
Textiles, printing and other skilled trades	3.02	3.71	1.83	1
Caring personal services	2.94	3.6	1.81	-2
Leisure and other personal services	2.86	3.49	1.78	0
Sales occupations	2.8	3.61	1.87	-3
Customer service occupations	2.91	3.85	2.02	0
Process, plant and machine	3.24	3.64	1.93	-1
Transport and mobile machine drivers and operators	3.18	3.57	2.00	-1
Elementary trades	3.14	3.73	1.88	-4
Elementary administration and services	3.03	3.65	1.88	-4

Table A4: Mean scores for general health and limiting longstanding illness, mental health and number of adverse health behaviours; and work quality scores: by industry, adults aged 16–64 years, Scotland.

Industry	General health and limiting longstanding illness (2–6)	Mental health problems and wellbeing (2–6)	Multiple risk factors	Work quality [6 (best) to –6 (worst)]
Agriculture and fishing	3.38	2.82	1.82	2
Construction	3.44	2.93	2.22	–1
Education	3.37	2.74	1.82	–1
Electricity, gas and water	3.33	2.77	2.24	3
Extraction of petroleum and natural gas	3.3	2.71	2.03	2
Financial services	3.55	2.62	2.09	4
Health and social work	3.54	2.87	2.05	1
Hotels and restaurants	3.64	2.84	2.27	–3
Land transport	3.63	3.15	2.51	0
Manufacture of food products and beverages	3.57	2.93	2.39	1
Other service activities	3.47	2.76	2.27	–2
Post and telecoms	3.6	2.84	2.29	0
Public administration and defence; compulsory social security	3.46	2.77	2.05	3
Recreational, cultural and sporting activities	3.54	2.75	1.88	–1
Retail	3.58	2.77	2.18	–3
Sales and retail of motor vehicles; repair of motor vehicles; retail sale of automobiles	3.37	2.88	2.18	2
Supporting and aux transport activities (including warehousing); travel agencies	3.61	2.79	2.12	1
Wholesale trades	3.46	2.83	2.23	1

Table A5: Unweighted sample sizes, Scottish Health Survey 2008–11 data set: two-digit SOC 2000 by sex.

Occupation	Men	Women	Persons
1.1 Corporate managers	935	725	1,660
1.2 Managers and proprietors in agriculture and services	262	292	554
2.1 Science and technology professionals	390	95	485
2.2 Health professionals	82	124	206
2.3 Teaching and research professionals	284	710	994
2.4 Business and public service professionals	269	254	523
3.1 Science and technology associate professionals	178	84	262
3.2 Health and social welfare associate professionals	137	880	1,017
3.3 Protective service occupations	195	35	230
3.4 Culture, media and sports occupations	156	151	307
3.5 Business and public service associate professionals	395	436	831
4.1 Administrative occupations	354	1431	1785
4.2 Secretarial occupations	17	569	586
5.1 Skilled agriculture trades	264	47	311
5.2 Skilled metal and electrical trades	711	16	727
5.3 Skilled construction and building trades	708	12	720
5.4 Textiles, printing and other skilled trades	268	232	500
6.1 Caring personal services occupations	182	1541	1723
6.2 Leisure and other personal service occupations	124	345	469
7.1 Sales occupations	266	1187	1453
7.2 Customer service occupations	100	235	335
8.1 Process, plant and machine operatives	552	326	878
8.2 Transport and mobile machine drivers and operatives	694	62	756
9.1 Elementary trades, plant and storage related occupations	587	171	758
9.2 Elementary administration and service occupations	716	1568	2284
Total	**8,826**	**11,528**	**20,354**

Table A6: Unweighted sample sizes, Scottish Health Survey workplace stress module 2009 and 2011: two-digit SOC 2000.

Occupation	**Persons**
1.1 Corporate managers	248
1.2 Managers and proprietors in agriculture and services	72
2.1 Science and technology professionals	86
2.2 Health professionals	29
2.3 Teaching and research professionals	137
2.4 Business and public service professionals	89
3.1 Science and technology associate professionals	37
3.2 Health and social welfare associate professionals	168
3.3 Protective service occupations	36
3.4 Culture, media and sports occupations	41
3.5 Business and public service associate professionals	121
4.1 Administrative occupations	200
4.2 Secretarial occupations	69
5.1 Skilled agriculture trades	46
5.2 Skilled metal and electrical trades	96
5.3 Skilled construction and building trades	93
5.4 Textiles, printing and other skilled trades	47
6.1 Caring personal services occupations	217
6.2 Leisure and other personal service occupations	56
7.1 Sales occupations	149
7.2 Customer service occupations	49
8.1 Process, plant and machine operatives	79
8.2 Transport and mobile machine drivers and operatives	91
9.1 Elementary trades, plant and storage related occupations	69
9.2 Elementary administration and service occupations	206
Total	2531

Table A9: Unweighted sample sizes, Scottish Health Survey 2008–11 data set: industry category by sex.

Number	Industry	Men	Women	Persons
1	Activities of membership organisations not elsewhere classified	30	35	65
2	Agriculture and fishing	312	112	424
3	Computer and related activities	133	55	188
4	Construction	1306	141	1447
5	Education	449	1347	1796
6	Electrical and electronic manufacturing	118	85	203
7	Electricity, gas and water	198	82	280
8	Extra territorial organisations and bodies	1	2	3
9	Extraction of petroleum and natural gas	270	64	334
10	Financial services	263	458	721
11	Forestry, logging and related service activities	35	8	43
12	Health and social work	568	3077	3645
13	Hotels and restaurants	400	970	1370
14	Land transport	337	85	422
15	Manufacture of basic and fabricated metals	118	20	138
16	Manufacture of chemicals and chemical products	64	46	110
17	Manufacture of food products and beverages	290	232	522
18	Manufacture of machinery or equipment not otherwise classified	144	40	184
19	Manufacture of rubber, plastic, non-metallic minerals	84	31	115
20	Manufacturing of wood and paper products	75	22	97
21	Mining, manufacture of minerals, waste	74	17	91
22	Motor vehicles and other transport equipment	106	25	131
23	Other business activities	602	739	1341
24	Other manufacturing*	67	144	211
25	Other service activities	44	252	296
26	Post and telecoms	209	117	326
27	Private households with employed persons	10	48	58
28	Public administration and defence; compulsory social security	664	731	1395
29	Publishing, printing and reproduction of recorded media	63	64	127
30	Real estate and renting	99	111	210
31	Recreational, cultural and sporting activities	238	333	571
32	Research and development	20	37	57
33	Retail	603	1578	2181
34	Sales and retail of motor vehicles; repair of motor vehicles; retail sale of automobiles	222	84	306
35	Sewage and refuse disposal	67	7	74
36	Supporting and aux transport activities (including warehousing); travel agencies	201	97	298
37	Textiles manufacturing	37	69	106
38	Water and air transport	100	41	141
39	Wholesale trades	191	95	286

* Manufacturing of wearing apparel; leather goods; furniture; and tobacco, of which the largest categories were manufacture of wearing apparel and of furniture.

Table A10: Unweighted sample sizes, Scottish Health Survey workplace stress module 2009 and 2011: by industry category (16–64 years).

Number	Industry	Persons
1	Activities of membership organisations not elsewhere classified	9
2	Agriculture and fishing	61
3	Computer and related activities	29
4	Construction	176
5	Education	245
6	Electrical and electronic manufacturing	21
7	Electricity, gas and water	39
8	Extraction of petroleum and natural gas	41
9	Financial services	119
10	Forestry, logging and related service activities	9
11	Health and social work	491
12	Hotels and restaurants	140
13	Land transport	57
14	Manufacture of basic and fabricated metals	18
15	Manufacture of chemicals and chemical products	11
16	Manufacture of food products and beverages	45
17	Manufacture of machinery or equipment not otherwise classified	21
18	Manufacture of rubber, plastic, non-metallic minerals	11
19	Manufacturing of wood and paper products	9
20	Mining; manufacture of minerals; waste	9
21	Motor vehicles and other transport equipment	13
22	Other business activities	154
23	Other manufacturing	16
24	Other service activities	34
25	Post and telecoms	43
26	Private households with employed persons	5
27	Public administration and defence; compulsory social security	200
28	Publishing, printing and reproduction of recorded media	16
29	Real estate and renting	28
30	Recreational, cultural and sporting activities	65
31	Research and development	5
32	Retail	233
33	Sales and retail of motor vehicles; repair of motor vehicles; retail sale of automobiles	36
34	Sewage and refuse disposal	2
35	Supporting and aux transport activities (including warehousing); travel agencies	33
36	Textiles manufacturing	6
37	Water and air transport	29
38	Wholesale trades	50
39	Total	2529

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