DEMOGRAPHIC RESEARCH
A peer-reviewed, open-access journal of population sciences

DEMOGRAPHIC RESEARCH

VOLUME 45, ARTICLE 21, PAGES 693–726
PUBLISHED 7 SEPTEMBER 2021
https://www.demographic-research.org/Volumes/Vol45/21/
DOI: 10.4054/DemRes.2021.45.21

Research Article

Gender differences in self-reported health and psychological distress among New Zealand adults

Santosh Jatrana

Contents

Demographic Research: Volume 45, Article 21
Research Article

Gender differences in self-reported health and psychological distress among New Zealand adults

Santosh Jatrana[1]

Abstract

BACKGROUND
Previous research that examines gender differences in health does not rigorously assess the gender-related differential 'exposure' and differential 'vulnerability' hypotheses; i.e., does not try to identify the 'direct' (unmediated) effect of gender or quantify the relative importance of different risk factors for each gender.

OBJECTIVE
I test the hypothesis that gender differences in health (self-assessed health (SAH) and psychological distress (PD)) are due to indirect or mediating effects via socioeconomic and behavioural factors, and are not a direct effect of gender on health.

METHOD
Data (N = 18,030) from the third wave of the Survey of Family, Income and Employment (SoFIE) and multivariate logistic regression analyses are used to test gender differences in SAH and psychological distress.

RESULTS
The analyses show that women are less likely to report poor self-assessed health but more likely to report moderate-to-high psychological distress. Differential exposure of men and women to the determinants of health did not completely account for gender differences in health. Gender-specific differences in vulnerability were found only in the direct effects of age, and employment status.

CONCLUSION
These results suggest that much, but not all, of the association between gender and health is mediated by socioeconomic factors.

CONTRIBUTION
This paper extends the literature on gender differences in health through a detailed empirical examination of the differential exposure of men and women to sociodemographic, socioeconomic, and health behaviour factors (i.e., indirect effects), and the differential vulnerability of women and men to this exposure (i.e., direct effects).

[1] James Cook University, Douglas, North Queensland, Australia. Email: santosh.jatrana@jcu.edu.au.

1. Introduction

In this paper I examine gender differences in health status among adults in New Zealand using two different measures of health status: self-assessed health (SAH) and psychological distress. The apparent 'morbidity paradox' that "women are sicker but men die quicker" (Nathanson 1975, 1977; Verbrugge 1985, 1989) remained uncontested during the 1970s and 1980s. However, from the 1990s onward there was increasing recognition that gender differences in health status are dynamic and complex and their direction and magnitudes of difference vary according to the health measures, the stage of the life cycle, and the context (Macintyre, Hunt, and Sweeting 1996; Arber 1997; Arber and Cooper 1999; Hunt and Annadale 1999; Williams 2003; Salk, Hyde, and Abramson 2017; Oksuzyan et al. 2019). Furthermore, it became clear that gender differences in health are not fixed over time and across places (Lawlor, Ebrahim, and Davey Smith 2001). Over the last two decades or so, several studies have attempted to examine gender differences across different health measures by age and in different contexts (Arber 1997; Rieker and Bird 2000; Lahelma et al. 2001; Denton, Prus, and Walters 2004; Gorman and Read 2006; Chun et al. 2008; Bambra et al. 2009; Crimmins, Kim, and Solé-Auro 2010; Van de Velde, Bracke, and Levecque 2010; Dahlin and Härkönen 2013; Dreger, Gerlinger, and Bolte 2016; Salk, Hyde, and Abramson 2017). Some of these studies have suggested that gender differences in health may be smaller than previously thought and have actually argued for "converging trends" or "reversing women's disadvantage in the gender morbidity difference" (Macintyre, Hunt, and Sweeting 1996; Lahelma and Rahkonen 1997; Arber and Cooper 1999; Crimmins, Kim, and Solé-Auro 2010; Dahlin and Härkönen 2013).

1.1 Gender differences in health: A theoretical perspective

Since gender has both biological/genetic and social dimensions, gender–health associations likely reflect interactions between them (Bird and Rieker 1999). In terms of social factors, researchers have attributed differences in the health of men and women to two popular hypotheses: gender-related differential 'exposure' and differential 'vulnerability'.

The differential exposure hypothesis proposes that gender differences in health are a function of different levels of gender-related social exposure (Ross and Bird 1994; Arber and Cooper 1999; Denton, Prus, and Walters 2004; Graham 2009). Such exposure ranges from men and women's differential socioeconomic experience in terms of labour force participation, division of labour, access to material resources, and other social factors that foster health and well-being, to differential exposure to various health-risk

behaviours such as smoking and drinking. This exposure is gender-related because it is associated with gender-related social roles, relations, and socialisation. For instance, women's higher exposure to lower socioeconomic status relative to men may induce a health disadvantage, while their lower exposure to negative health behaviours (e.g., smoking and drinking) may drive a health advantage (Graham 2009).

The 'vulnerability' hypothesis suggests that although men and women may be exposed to similar levels of risk factors, differences in response or reactions to the material, behavioural, and psychosocial conditions that foster health result in gender differences in health (McDonough and Walters 2001). For example, men and women are affected differently by widowhood. Women become disadvantaged due to economic difficulties associated with widowhood while men suffer from a decrease in social support following widowhood (Umberson, Wortman, and Kessler 1992). Accordingly, gender differences in health may be attributed not only to different levels of exposure to the same risk factors but to different responses to these risk factors.

Analytically, the 'exposure' hypothesis can be quantified by how much the gender association with health is reduced after adjusting for the putative exposure (or, more strictly speaking, mediators), and the remaining independent effect is the 'vulnerability' component. In epidemiology, these are the indirect and direct effects (Cole and Hernan 2002) respectively. Although some earlier studies examine the different risk factors involved in mediating the impact of gender on health, few have assessed the two hypotheses; i.e., tried to identify the 'direct' (unmediated) effect of gender and to quantify the relative importance of different risk factors for each gender (Roxburgh 1996; McDonough and Walters 2001; Denton, Prus, and Walters 2004). Most of the studies are based on statistical models with a gender main effect. However, gender interacts with other predictors; hence, attempts to understand whether men and women differ in health require approaches that consider the relationship between gender and other predictors of health. Understanding the interactions between gender and the distinct determinants of health has important implications for advancing theoretical knowledge of the subject. Moreover, most recent studies have not reported measurement uncertainties, limiting inferences about precision of estimation. Gender differences in health remain inconclusive and highly debated.

Accordingly, this paper contributes to current understanding by examining gender differences in two different health measures, using data from a national sample of over 20,000 adult individuals in New Zealand. It addresses the following three specific questions:

1) Do gender differences exist in self-reported measures of health (self-assessed health and psychological distress)?
2) If such differences exist, can they be explained by men and women's differential exposure to sociodemographic, socioeconomic, and health behaviour factors (i.e., indirect effects)?
3) Are gender differences in health explained by women and men's differential vulnerability to these exposures (i.e., direct effects)?

The first research question is answered by determining whether there are gender differences in health. To address the second question, the indirect effect of gender on self-assessed health and psychological distress through differential exposure (e.g., socioeconomic position, health behaviours) is estimated. For the third research question, I evaluate the magnitude of the remaining direct effects of gender on health after controlling for differential exposure.

1.2 The New Zealand context

As elsewhere, understanding of the ways in which risk factors differentially affect the health of men and women in New Zealand is currently limited. Research on health inequalities in New Zealand has focussed more on socioeconomic and ethnic determinants than on gender, and gender has received less attention in a range of areas including health research (Johnson, Huggard, and Goodyear-Smith 2008; Neville 2008; Callister and Didham 2009).

New Zealand provides an interesting setting for further research on gender disparities in health. In terms of gender-equitable social development, New Zealand demonstrates a high level of gender-related development as compared to the United States, Canada, and the United Kingdom, where most previous research on this topic has been conducted. For example, New Zealand has achieved remarkable levels of female enrolment in secondary and tertiary education, where New Zealand performs better than the United States, Canada, the United Kingdom, and Australia (United Nations Development Programme 2019). The female labour force participation rate in New Zealand is 65%, as compared to 61% in Canada, 60% in Australia, 57% in the United Kingdom, and 56% in the USA (United Nations Development Programme 2019). While women earn less than men in all these countries, the male–female gap in earned income is less in New Zealand than in the United States, Canada, Australia, and the United Kingdom (United Nations Development Programme 2019). The higher level of gender equality in New Zealand is evidenced by comparing the Gender Empowerment Measure (GEM), an indicator representing the level of economic autonomy and political

participation in society, which ranks New Zealand 11th out of 177 countries, Canada 10th, Australia 8th, the United Kingdom 14th, and the USA 15th (United Nations Development Programme 2019). Thus, the higher social, economic, and political participation of women in New Zealand may lead to differences in gender-related social roles and relations in New Zealand compared to other countries, which may result in differently gendered health patterns.

2. Methods

2.1 Data

This research used cross-sectional data (Wave 3; 2004/05) from the Statistics New Zealand-led Survey of Family, Income and Employment (SoFIE: wave 1 to 7 data version 2). The survey, described in detail elsewhere (Carter et al. 2010), is a nationally representative panel study of over 22,000 adults interviewed annually through face-to-face interviews between 2002 and 2010. Data on socioeconomic, family, and demographic factors were collected annually. A detailed add-on health module, with questions on health-related quality of life, psychological stress, and individual deprivation, was included in waves 3 (2004/05), 5 (2006/07), and 7 (2008/09).

2.2 Outcome variables

The outcomes used in this study are self-assessed health (SAH) and psychological distress (PD).

2.2.1 Self-assessed health

The self-assessed health question asked at every wave of all respondents aged 15+ years was: "In general would you say your health is..." with reply options on a five-point scale ranging from 'excellent' to 'poor'. Following other studies (Khang et al. 2004; Chun et al. 2008), I combined the categories excellent/very good/good (good health) and fair/poor (less than good health).

2.2.2 Psychological distress

Psychological distress was measured using the Kessler-10 scale. The Kessler-10 consists of ten questions about non-specific psychological distress and seeks to measure the current level of anxiety and depressive symptoms based on questions about the negative emotional states the person may have experienced in the four weeks prior to interview (Kessler et al. 2002; Kessler et al. 2003). The scores were grouped into four levels according to criteria developed by Andrews and Slade (2001): low (10–15), moderate (16–21), high (22–29), and very high (30+) (Andrews and Slade 2001; Phongsavan et al. 2006). I dichotomised the scores as 'low' (10–15) versus 'high' (greater than 15).

In the exploratory phase of the data analysis I assessed the predictive power of SAH and PD, varying from the original continuous variable to dichotomous groupings with various cut-off points. Sensitivity analyses for the final modelling strategy, conducted using the SAH and PD scores continuously rather than dichotomised, produced similar results. Since dichotomisation greatly "simplifies the presentation and produces meaningful findings that are easily understandable to a wider audience" (Farrington and Loeber 2000), I decided to dichotomise both SAH and PD.

2.3 Independent variables

The framework used in this study hypothesises that gender differences in health are in part a function of sociodemographic factors (age, gender, legal marital status, ethnicity, family structure), socioeconomic status (SES) (income, employment status, education, area deprivation (NZDep) and individual deprivation (NZiDep)), and health behaviour (smoking and drinking) variables. This paper uses the 'prioritised' concept of ethnicity commonly used in New Zealand, which "reduces multiple ethnic responses to a single ethnic response so that the count of ethnic groups equals the population count" (Ministry of Health 2008). In the 'prioritised' output, each respondent was assigned to a mutually exclusive ethnic group by means of a prioritisation: Māori, if any of the responses to self-identified ethnicity was Māori; Pacific, if any one response was Pacific but not Māori; Asian, if any one response was Asian but not Māori/Pacific; and 'Others/ New Zealanders of European descent'– strictly speaking not an ethnic group). The reference group used here was New Zealand Europeans.

New Zealand Deprivation 2001 (NZDep2001) is a census-based small-area index of socioeconomic deprivation (Salmond and Crampton 2002). The deprivation index was categorized into quintiles where quintile 5 corresponds to high socioeconomic deprivation (Salmond and Crampton 2012). NZDep2001 deprivation scores apply to

areas rather than individual people. The index scale used here is from 1 to 5, where 1 = the least deprived 20% of areas, and 5 = the most deprived 20% of areas.

The Individual Deprivation Index (NZiDep) is a composite score based on eight simple items reflecting personal deprivation in consumption such as using food banks, being forced to buy cheaper food, feeling cold to save heating costs, wearing worn-out shoes, being on a means-tested benefit, or receiving help from community organisations (Salmond et al. 2006). The NZiDEP was generated using standard statistical techniques (factor analysis, Cronbach's coefficient alpha, item–total correlations, principal component analysis) (Salmond et al. 2006) and was organised into the following five ordinal categories:

1 = no deprivation characteristics (reference)
2 = one deprivation characteristic
3 = two deprivation characteristics
4 = three or four deprivation characteristics
5 = five or more deprivation characteristics

The current smoking-status variable was categorised into three categories: current smoker, ex-smoker, and never smoker (reference). The term 'binge drinking' in this paper is defined as drinking eight or more (for males) or six or more (for females) standard drinks on one drinking occasion. I dichotomised binge drinking variables into 'ever binge drinkers' versus 'drinkers but never binge' and 'never drinkers' (reference). While many studies use gender-specific measures of binge drinking, other studies use the same measure of binge drinking for men and women (Wilsnack et al. 2018). SoFIE-Health uses a gender-specific threshold because the same or even lower levels of alcohol consumption causes greater physical, mental, and social damage to women than men (Roman 1988; Brienza and Stein 2002; Nolen-Hoeksema 2004; Rossow and Hauge 2004). Heavy drinking, particularly during pregnancy, has been shown to be associated with adverse effects on the developing foetus (Gladstone and Koren 1996).

3. Analysis

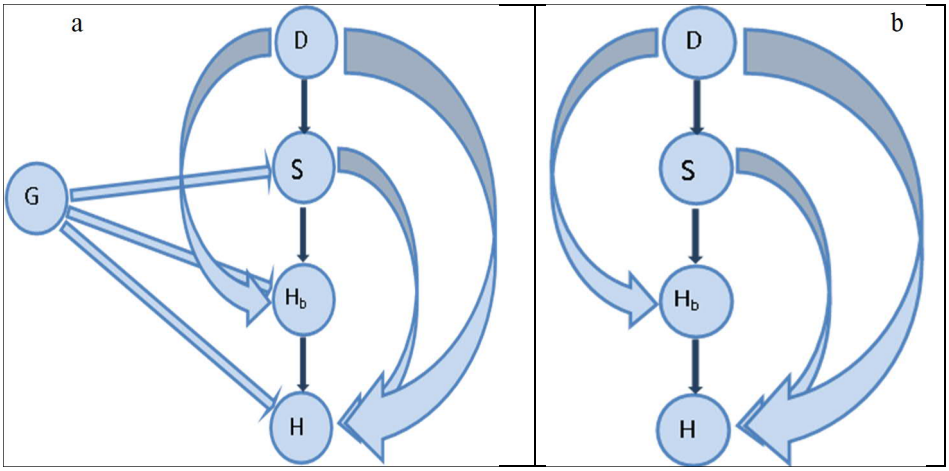
The cross-sectional population used in the analyses comprised 18,030 adults (self-assessed health) and 17,886 adults (K10) aged 15 years and above interviewed at Wave 3, with no missing values for any of the covariates in the most complex model. Logistic regression was used to answer the research questions. While all analyses were done using the unrounded numbers, all counts presented in this paper are rounded to the nearest multiple of 5 as per the Statistics New Zealand protocol for confidentiality output

(Statistics New Zealand 2020). All analyses were performed using SAS version 8.2. I regressed the two health measures on gender while controlling for other predictors, added sequentially as follows: (1) gender and demographic variables; (2) gender, demographic, and socioeconomic variables; (3) gender, demographic, socioeconomic, and health behaviour variables. This approach allowed me to examine the differential 'exposure' hypothesis of gender–health associations. If there was no direct gender effect, observed gender differences in health must be caused by differential exposure of the genders to the predictor variables and the regression coefficient for gender would reduce to the null as I control for demographic, socioeconomic, and health behaviour variables (causal determinants of health). Therefore, in the absence of unmeasured confounding, collider bias, and measurement error (Blakely 2002; Cole and Hernan 2002; VanderWeele 2010; le Cessie et al. 2012), controlling for gender and all other causal determinants of health allows the regression coefficient for gender to be interpreted as the direct effect of gender on health (see Fig 1). Figure 1 shows the Directed Acyclic Graph (DAG) which is a useful tool for developing analytical assumptions on the directionality of the causal relationships in epidemiological analyses and whether other factors (such as education) are confounding or mediating the relationship (Greenland, Pearl and Robins 1999). If the gender coefficient does not reduce to the null, I have evidence that differential exposure is not the sole cause of gender health differences. I used bootstrapping to determine whether differences between the gender coefficients in the models were significant after adjusting for demographic factors (model 1), socioeconomic factors (model 2), and health behaviours (model 3).

In order to examine the differential vulnerability hypothesis (or direct effects), I used a model that was equivalent to separate models for males and females, and controlled for all (non-gender) measured determinants of health. For a given gender, I interpret the regression coefficient of each covariate (e.g., labour force status) as estimating the independent association of that covariate with health when all other covariates are held constant. Logistic regression models that included all main effects and interaction terms between gender and all other covariates (Tables 4, 5, and 6) were used to estimate gender-specific direct effects. For notational simplicity, consider just the two-level dummy covariates *G* (say gender) and *X* (say labour force status) which take values 0 (reference) and 1: in this paper, the reference for gender and labour force status covariates are "male" and "not working". The association between the expected value of health and these covariates in the gender interaction model can be written (ignoring other covariates in the model) as

$$\text{logit}(\Pr(\text{Health} = \text{Poor}|\text{Gender}=g, X=x)) = \beta_0 + \beta_g g + \beta_x x + \beta_{gx}(g * x).$$

Figure 1: (a) Directed Acyclic Graph (DAG) of causal paths for the direct effect of gender
(b) DAG of causal paths for separate male and female models



Note: (a) Nodes G, D, S, H_b, and H denote gender, demographic, SES, Health behaviour, and health covariates respectively. Controlling for D, S, and H_b (parents of H) leaves only the direct effect of gender on health. The identifiability of the direct effect in the absence of unmeasured confounders follows from the observation there are no backdoor paths between gender and health in the sub-graph formed by deleting all arrows out of gender (Pearl 2009).
(b) In this case the demographic, SES, and health behaviour nodes actually represent a set of sub-nodes (e.g., age and ethnicity are sub-nodes of D) which are linked by additional causal paths. In the absence of unmeasured confounders, and using the same approach as in (a), it can be shown that the direct effect of each sub-node is identifiable.

Then the odds ratio for poor health in non-working females (relative to females who are working) is $exp(\beta_{x=1} + \beta_{gx=(1,1)})$, which uses the main effect for X and the interaction term between gender and X, and is a measure of the relative strength of the direct effect of labour force status on health for non-working females and working females. The corresponding odds ratio for males is $exp(\beta_{x=1})$. The interaction term β_{gx} provides a test for male–female differences in the direct effect of key predictors (e.g., whether the direct effect of not-working differ for males and females).

I also compared the health status of women and men in the same predictor category; e.g., women compared to men in the age group 25–44 and married women compared to married men. In this case the odds ratio for women who are not working compared to men who are not working is computed as $exp(\beta_{g=1} + \beta_{gx=(1,1)})$; i.e., using the gender main effect and the interaction term.

4. Results

4.1 Gender differences in health: The differential exposure hypothesis

Table 1 shows the characteristics of the sample population by gender, while Table 2 presents bivariate associations between gender and the two outcome measures. The results suggest that men and women might be differently exposed to social and economic factors, and that these factors mediate or explain the association of gender with health (i.e., indirect effects). Table 3 formally tests the differential exposure hypothesis using logistic regression. Adjusting for gender and demographic factors (Model 1) suggests no gender difference in the odds of reporting poor self-assessed health (OR 0.95, CI 0.85 to 1.05; the total effect of gender on SAH) but after adjusting additionally for socioeconomic variables (Model 2) a gender difference appears (OR 0.78, 95% CI 0.70 to 0.87), implying that gender has a direct effect on SAH that is not apparent or is obscured in model 1 due to the more adverse socioeconomic profile of women. The gender odds ratio remained at this level after simultaneously controlling for demographic, socioeconomic, and health-behaviour factors (Model 3), indicating that health behaviours do not further alter the direct gender effect once SES is adjusted for; a conclusion supported by lack of significance in bootstrap estimates of the difference in gender coefficients between models 2 and 3.

The odds of reporting moderate-to-high levels of psychological distress were 1.23 (95% CI 1.14 to 1.32) times higher for women than for men in Model 1, which controls for demographic factors. Further adjusting for socioeconomic variables (Model 2) reduced the gender odds ratio for predicting moderate-to-high levels of psychological distress (1.10; CI 1.02, 1.19), implying that socioeconomic variables mediate just over half of the association of gender with psychological distress. There was little further change with the addition of health behaviour covariates in Model 3. However, the differences in gender coefficients between models 1 and 2, and 2 and 3 were significant, according to bootstrap estimates. This implies – collider biases and measurement error aside – that a pro-health distribution of behaviours among women is masking some of the direct effect of gender on health. However, it is modest.

Table 1: Characteristics of study population including missing values[1]

	Total		Men		Women		Men	Women
	N	Col %	*N*	Row %	*N*	Row %	Col %	Col %
Total	23,345	100.0	10,940	46.9	12,405	53.1	100.0	100.0
Age								
15–24	4,275	18.3	2,155	50.4	2,120	49.6	19.7	17.1
25–44	8,045	34.5	3,660	45.5	4,385	54.5	33.5	35.4
45–64	7,125	30.5	3,365	47.2	3,760	52.8	30.7	30.3
65–74	2,035	8.7	965	47.4	1,070	52.6	8.8	8.6
75+	1,865	8	790	42.4	1,075	57.6	7.2	8.7
Marital status								
Never married	4,295	18.4	2,130	49.6	2,165	50.4	19.5	17.5
Previously married	2,710	11.6	785	29.0	1,925	71.0	7.2	15.5
Currently married	11,610	49.7	5,675	48.9	5,940	51.2	51.9	47.9
Missing	4,730	20.3	2,350	49.7	2,380	50.3	21.5	19.2
Ethnicity								
NZ/European	16,660	71.4	7,865	47.2	8,795	52.8	71.9	70.9
Māori	3,285	14.1	1,435	43.7	1,850	56.3	13.1	14.9
Pacific	1,430	6.1	665	46.5	760	53.1	6.1	6.1
Asian	1,425	6.1	685	48.1	745	52.3	6.3	6
Others	535	2.3	280	52.3	250	46.7	2.6	2
Missing	10	0	10	NA	10	NA	0	0
Family structure								
One person (not in a family)	3,950	16.9	1,695	42.9	2,255	57.1	15.5	18.2
Sole parent	1,890	8.1	550	29.1	1,340	70.9	5.0	10.8
Couple only	5,405	23.2	2,685	49.7	2,725	50.4	24.6	22.0
Couple with children	7,880	33.8	3,960	50.3	3,920	49.7	36.3	31.6
Missing	4,220	18.1	2,050	48.6	2,170	51.4	18.8	17.5
Employment status								
Employed	12,455	53.4	6,315	50.7	6,140	49.3	57.8	49.5
Unemployed	365	1.6	190	52.1	175	47.9	1.8	1.4
Inactive	6,405	27.4	2,380	37.2	4,025	62.8	21.8	32.4
Missing	4,115	17.6	2,050	49.8	2,070	50.3	18.7	16.7
NZDep								
NZDepQ1 (least deprived)	3,915	16.8	1,895	48.4	2,020	51.6	17.4	16.3
NZDepQ2	3,890	16.7	1,830	47	2,065	53.1	16.7	16.7
NZDepQ3	3,495	15	1,600	45.8	1,895	54.2	14.7	15.3
NZDepQ4	4,085	17.5	1,895	46.4	2,190	53.6	17.3	17.7
NZDepQ5 (most deprived)	3,835	16.4	1,715	44.7	2,120	55.3	15.6	17.1
Missing	4,125	17.7	2,005	48.6	2,120	51.4	18.4	17.1
NZiDep								
No Dep	13,375	57.3	6,620	49.5	6,750	50.5	60.5	54.5
1 Dep	2,790	12	1,135	40.7	1,650	59.1	10.4	13.3
2 Dep	1,110	4.8	395	35.6	715	64.4	3.6	5.8
3–4 Dep	980	4.2	315	32.1	665	67.9	2.9	5.4
5 + Dep	295	1.3	80	27.1	215	72.9	0.8	1.8
Missing	4,795	20.5	2,390	49.8	2,410	50.3	21.8	19.4

Table 1: (Continued)

	Total		Men		Women		Men	Women
	N	Col %	*N*	Row %	*N*	Row %	Col %	Col %
Education								
No education	4,865	20.8	2,150	44.2	2,715	55.8	19.6	21.8
School	5,170	22.1	2,195	42.5	2,975	57.5	20.0	23.9
Post-school	6,500	27.8	3,285	50.5	3,210	49.4	30.0	25.8
Degree or higher	2,710	11.6	1,265	46.7	1,445	53.3	11.6	11.6
Missing	4,095	17.5	2,040	49.8	2,060	50.3	18.6	16.6
Smoking								
Current	3,760	16.1	1,760	46.8	1,995	53.1	16.1	16.1
Ex	4,685	20.1	2,360	50.4	2,325	49.6	21.6	18.8
Never	10,115	43.3	4,430	43.8	5,680	56.2	40.5	45.8
Missing	4,790	20.5	2,385	49.8	2,405	50.2	21.8	19.4
Alcohol consumption								
Currently consuming alcohol but not binging	11,125	47.7	4,910	44.1	6,215	55.9	44.9	50.2
Currently consuming alcohol but binging	3,995	17.1	2,380	59.6	1,615	40.4	21.7	13.0
Never	3,390	14.5	1,235	36.4	2,155	63.6	11.3	17.4
Missing	4,835	20.7	2,410	49.8	2,420	50.1	22.0	19.5

Source: Survey of Family, Income and Employment 2004–2005
Note: [1]All numbers of respondents presented in this paper are rounded to the nearest multiple of five, with a minimum value of 5, as per Statistics New Zealand protocol.

Table 2: Health measures by gender[1]

	Total		Male		Female		Men	Women
Variable	*N*	Col %	*N*	Row %	*N*	Row %	Col %	Col %
Total	23,350	100.0	10,940	46.8	12,410	53.2	100.0	100.0
Self-assessed health								
Excellent	6,245	26.8	2,920	46.8	3,325	53.2	26.7	26.8
V. Good	6,345	27.2	2,910	45.9	3,435	54.1	26.6	27.7
Good	4,175	17.9	1,920	46.0	2,255	54.0	17.6	18.2
Fair	1,445	6.2	645	44.6	800	55.4	5.9	6.4
Poor	425	1.8	195	45.9	230	54.1	1.8	1.9
Missing	4,715	20.2	2,350	49.8	2,365	50.2	21.5	19.1
Kessler 10 groups								
Low (10–15)	14,340	61.4	6,810	47.5	7,530	52.5	62.3	60.7
Moderate (16–21)	2,780	11.9	1,180	42.4	1,600	57.6	10.8	12.9
High (22–29)	965	4.1	395	40.9	575	59.6	3.6	4.6
V. High (30+)	305	1.3	90	29.5	215	70.5	0.8	1.7
Missing	4,955	21.2	2,460	49.6	2,490	50.3	22.5	20.1

Source: Survey of Family, Income and Employment 2004–2005
Note: [1]All numbers of respondents presented in this paper are random rounded to the nearest multiple of five, with a minimum value of 5, as per Statistics New Zealand protocol.
Numbers may not add up to 100% because of rounding or missing values.

Table 3: Odds ratios for logistic regression predicting selected health outcomes, with and without adjusting for (main) effects of demographic, socioeconomic, and health behavioural variables[1]

Variable	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)
Self-assessed health			
Men	1.00	1.00	1.00
Women	0.95 (0.85, 1.05)	0.78 (0.70, 0.87)	0.77 (0.69, 0.86)
R-Square	0.10	0.20	0.21
AIC	10729.6	9863.2	9811.5
Psychological distress			
Men	1.00	1.00	1.00
Women	1.23 (1.14, 1.32)	1.10 (1.02, 1.19)	1.13 (1.04, 1.22)
R-Square (Max-rescaled)	0.03	0.12	0.12
AIC	18446.0	17427.3	17374.7

Source: Survey of Family, Income and Employment 2004–2005.
Note: [1]Total sample (n= 18030 for self- assessed health; 17885 for K10)
Model I includes gender, age, marital status, ethnicity, and family structure as the covariates.
Model 2 adds employment status, NZDep, NZDip, education, to the covariates of Model I.
Model 3 adds smoking, alcohol consumption, to the covariates of Model 2.

4.2 Gender differences in health: The differential vulnerability hypothesis

In order to examine the differential vulnerability hypothesis for different sociodemographic, socioeconomic, and health behaviour factors, logistic regression models were used that included all main effects and interaction terms between gender and all other covariates for both health measures (Tables 4 and 5). These tables show that while the relationships between the predictors and the health outcomes were similar for men and women, there were some gender differences in vulnerability to specific indicators; i.e., the direct effect of some indicators were gender-specific. Among the demographic variables, older age was associated with increased odds of reporting poor self-assessed health but reduced odds of psychological distress for both men and women. However, for self-assessed health the effect of age differs for males and females. For example, both male and female respondents older than 15–24 (the reference age group) have increased odds of reporting poor self-assessed health, but for women aged 25–44 this increase is not significant; i.e., the confidence interval includes the null. Thus, male health appears more vulnerable to ageing. By contrast, respondents older than 15–24 have reduced odds of reporting psychological distress, but the confidence interval for males aged 25–44 includes the null. However, the interaction term for psychological distress is not significant (at the 95% confidence level), so evidence for gender differences in vulnerability to ageing is weak for this health outcome.

For marital status, and ethnicity, neither main effect nor interaction term is significant for either health measure, as the confidence interval includes the null (Tables 4 and 5). Results in Tables 4 and 5 show that family structure is not significantly associated with self-assessed health, but this is not the case for psychological distress: males not in a family and females in a couple-only family had increased odds of reporting (moderate-to-high levels of) psychological distress, marginally so for females. However, there is not a significant interaction between gender and family status, so evidence for a gender difference is weak.

Table 4: Odds ratios for logistic regression predicting poor self-assessed health, adjusting for effects of demographic, socioeconomic, health behavioural, and health variables where separate effects for men and women have been estimated from a model with gender interactions

	Self-assessed health			
	Men	Women	Main effect	Interaction
Variable	OR (95% CI)	OR (95% CI)		
Age				
15–24	1	1		
25–44	2.98 (1.97, 4.5)	1.2 (0.84, 1.71)	< .0001	0.0014
45–64	5.39 (3.53, 8.24)	2.63 (1.82, 3.78)	< .0001	0.0014
65+	7.43 (4.68, 11.79)	5.33 (3.59, 7.92)	< .0001	0.0014
Marital status				
Currently married	1	1		
Previously married	1.18 (0.77, 1.82)	1.27 (0.86, 1.87)	0.6397	0.2057
Never married	1.22 (0.81, 1.84)	0.9 (0.6, 1.34)	0.6397	0.2057
Ethnicity				
NZ/European	1	1		
Asian	0.99 (0.66, 1.47)	1.29 (0.91, 1.83)	0.1302	0.3419
Māori	0.76 (0.58, 1)	0.96 (0.76, 1.2)	0.1302	0.3419
Pacific	0.71 (0.47, 1.07)	1.01 (0.72, 1.41)	0.1302	0.3419
Family structure				
Couple with children	1	1		
Couple only	1.16 (0.92, 1.47)	1.02 (0.81, 1.29)	0.5118	0.8619
Not in a family	1.04 (0.71, 1.53)	0.94 (0.64, 1.39)	0.5118	0.8619
Sole parent	0.87 (0.54, 1.41)	0.87 (0.58, 1.31)	0.5118	0.8619
Employment status				
Working	1	1		
Not working	2.91 (2.36, 3.59)	2.12 (1.77, 2.54)	< .0001	0.0261
NZDep				
NZDepQ1 (least)	1	1		
NZDepQ2	1.28 (0.97, 1.69)	1.36 (1.04, 1.78)	0.1206	0.7553
NZDepQ3	1.17 (0.88, 1.56)	1.35 (1.03, 1.77)	0.1206	0.7553
NZDepQ4	1.42 (1.08, 1.86)	1.74 (1.34, 2.24)	0.1206	0.7553
NZDepQ5 (most)	1.33 (1, 1.77)	1.67 (1.28, 2.18)	0.1206	0.7553

Table 4: (Continued)

	Self-assessed health			
	Men	Women	Main effect	Interaction
NZiDep				
0 dep	1	1		
1 dep	2.61 (2.1, 3.23)	1.87 (1.54, 2.27)	< .0001	0.1423
2 dep	2.77 (2, 3.82)	2.88 (2.23, 3.73)	< .0001	0.1423
3–4 dep	3.24 (2.3, 4.57)	3.61 (2.76, 4.71)	< .0001	0.1423
5+ dep	6.26 (3.69, 10.62)	5.59 (3.85, 8.13)	< .0001	0.1423
Education				
No education	2.13 (1.51, 3.02)	1.5 (1.1, 2.04)	0.0003	0.4137
School	1.93 (1.35, 2.76)	1.29 (0.95, 1.77)	0.0003	0.4137
Post-school	1.74 (1.24, 2.43)	1.28 (0.94, 1.75)	0.0003	0.4137
Deg+	1	1		
Smoking				
Never	1	1		
Current	1.87 (1.5, 2.33)	1.36 (1.11, 1.66)	< .0001	0.1108
Ex	1.33 (1.09, 1.62)	1.17 (0.99, 1.4)	< .0001	0.1108
Alcohol consumption				
Currently consuming alcohol but not binging	0.78 (0.63, 0.97)	0.74 (0.63, 0.88)	< .0001	0.6315
Currently consuming alcohol but binging	0.53 (0.4, 0.7)	0.6 (0.45, 0.8)	< .0001	0.6315
Never	1	1		
R-Square (Max-rescaled)	0.21	0.21		
AIC	9822.2	9822.2		

Source: SoFIE= Survey of Family, Income and Employment, 2004–2005

Table 5: Odds ratios for logistic regression predicting psychological distress adjusting for effects of demographic, socioeconomic, health behavioural, and health variables, where separate effects for men and women have been estimated from a model with gender interactions

	Psychological distress			
	Men	Women	Main Effect	Inter-action
Variable	OR (95% CI)	OR (95% CI)		
Age				
15–24	1	1		
25–44	0.85 (0.69, 1.06)	0.68 (0.57, 0.81)	< .0001	0.1947
45–64	0.65 (0.51, 0.82)	0.55 (0.45, 0.67)	< .0001	0.1947
65+	0.57 (0.43, 0.76)	0.6 (0.47, 0.76)	< .0001	0.1947
Marital status				
Currently married	1	1		
Previously married	0.88 (0.67, 1.17)	1.12 (0.9, 1.41)	0.2154	0.2747
Never married	0.81 (0.64, 1.03)	1.03 (0.84, 1.27)	0.2154	0.2747

Table 5: (Continued)

	Psychological distress			
	Men	Women	Main Effect	Inter-action
Ethnicity				
NZ/European	1	1		
Asian	0.99 (0.76, 1.29)	1.53 (1.22, 1.92)	0.3454	0.0504
Māori	0.87 (0.73, 1.05)	1.04 (0.9, 1.21)	0.3454	0.0504
Pacific	1.12 (0.86, 1.48)	1.4 (1.12, 1.76)	0.3454	0.0504
Family structure				
Couple with children	1	1		
Couple only	1 (0.84, 1.18)	1.16 (1, 1.35)	0.0123	0.0824
Not in a family	1.41 (1.14, 1.74)	1.09 (0.89, 1.33)	0.0123	0.0824
Sole parent	1.15 (0.88, 1.5)	0.81 (0.65, 1.01)	0.0123	0.0824
Employment status				
Working	1	1		
Not working	1.84 (1.58, 2.15)	1.25 (1.11, 1.41)	< .0001	0.0001
NZDep				
NZDepQ1 (least)	1	1		
NZDepQ2	1.25 (1.03, 1.51)	1.24 (1.05, 1.47)	0.0068	0.7404
NZDepQ3	1.24 (1.02, 1.51)	1.24 (1.04, 1.47)	0.0068	0.7404
NZDepQ4	1.38 (1.14, 1.67)	1.49 (1.26, 1.75)	0.0068	0.7404
NZDepQ5 (most)	1.42 (1.16, 1.73)	1.29 (1.08, 1.54)	0.0068	0.7404
NZiDep				
0 dep	1	1		
1 dep	2.11 (1.81, 2.46)	1.75 (1.54, 2)	< .0001	0.1306
2 dep	3.14 (2.5, 3.94)	2.71 (2.27, 3.24)	< .0001	0.1306
3–4 dep	3.54 (2.74, 4.57)	4.3 (3.56, 5.19)	< .0001	0.1306
5+ dep	5.81 (3.57, 9.44)	6.97 (5.08, 9.57)	< .0001	0.1306
Education				
No education	1.23 (0.99, 1.53)	1.26 (1.04, 1.52)	0.2221	0.7525
School	1.24 (1, 1.54)	1.14 (0.95, 1.36)	0.2221	0.7525
Post-school	1.2 (0.98, 1.47)	1.19 (1, 1.42)	0.2221	0.7525
Deg+	1	1		
Smoking				
Never	1	1		
Current	1.37 (1.18, 1.6)	1.45 (1.26, 1.66)	< .0001	0.7801
Ex	1.26 (1.08, 1.46)	1.22 (1.08, 1.39)	< .0001	0.7801
Alcohol consumption				
Currently consuming alcohol but not binging	0.98 (0.82, 1.17)	0.84 (0.74, 0.96)	0.9555	0.1555
Currently consuming alcohol but binging	0.99 (0.82, 1.21)	1.01 (0.85, 1.2)	0.9555	0.1555
Never	1	1		
R-Square (Max-rescaled)	0.13	0.13		
AIC	17380.0	17380.0		

Source: Survey of Family, Income and Employment-Health, 2004–2005

For men and women, not working was associated with increased odds of reporting poor self-assessed health and psychological distress, and there were gender differences in these effects (interaction p-value = 0.0261 (SAH), 0.0001 (K10)): non-working males had greater odds of poor self-assessed health and increased psychological distress than females. Regarding individual deprivation, respondents reporting any deprivation characteristics showed an increased risk of poor self-assessed health and psychological distress. However, no significant gender differences were observed (at the 95% confidence level). Living in a deprived area increased the odds of reporting psychological distress but did not significantly impact self-assessed health, and its impact for psychological distress was similar for men and women. Having no education was associated with increased odds of poor self-assessed health for men and women. Increased odds of poor self-assessed health were also apparent for males with school and post-school educational levels, though these gender differences were not significant (at the 95% confidence level). Educational level was not a statistically significant male or female predictor of psychological distress, as the confidence interval includes the null.

Current smoking (and having previously smoked for men) was associated with increased odds of reporting poor self-assessed health compared to those who never smoked, but the gender difference was not significant. Both current smoking and ex-smoking were associated with moderate-to-high psychological distress for both men and women, but again there was no gender difference. Men and women who were current drinkers (including and not including binge drinking) had low odds of reporting poor self-assessed health as compared to those who never consumed alcohol. However, there was no difference in alcohol consumption for psychological distress.

Table 6 presents gender comparisons within the same non-reference stratum, which, as described above, were computed using the gender main effect and the gender-covariate interaction terms. Women who were previously married had elevated risks of reporting poor self-assessed health (OR 2.68) and psychological distress (OR 1.92), as did women who had never married (OR 1.92), compared to men of the same marital status. Asian, Māori, and Pacific women showed elevated risks of poor self-assessed health and psychological distress (relative to men of the same ethnicity). Women in couple-only relationships had elevated risk of reporting psychological distress compared to men in couple-only relationships.

Women at all non-reference levels of deprivation had increased risks of poor self-assessed health (ORs 2.66–3.05), compared to men at that level of deprivation. The same was true for individual deprivation (ORs 1.79–2.78), although 2 out of 4 non-reference ORs included the null. Smoking was not associated with greater risks of psychological distress or self-assessed health. By contrast, women consuming alcohol (but not binging) and binging had higher risks of poor self-assessed health (ORs 2.38 and 2.81

respectively). However, only women binging had (just) higher risks of psychological distress compared to men who were binging (OR 1.53).

Table 6: Odds ratios for logistic regression predicting poor self-assessed health, adjusting for effects of demographic, socioeconomic, health behavioural, and health variables, where the effects for women compared to men in the stratum have been estimated from a model with gender interactions. The gender main effect is reported on the scale of the linear predictor, and is significant for both health outcomes.

	Self-assessed health		Psychological distress	
	Gender main effect (95% CI)		Gender main effect (95% CI)	
	0.84 (0.07,1.61)		0.59 (0.15, 1.04)	
	Women compared to Men	Interaction	Women compared to Men	Interaction
Age	OR (95% CI)		OR (95% CI)	
15–24				
25–44	1.01 (0.55, 1.84)	0.0014	1.20 (0.83, 1.74)	0.1947
45–64	1.22 (0.67, 2.20)	0.0014	1.28 (0.87, 1.87)	0.1947
65+	1.79 (0.92, 3.49)	0.0014	1.58 (1.00, 2.51)	0.1947
Marital status				
Currently married				
Previously married	2.68 (1.13, 6.35)	0.2057	1.92 (1.13, 3.24)	0.2747
Never married	1.85 (0.87, 3.95)	0.2057	1.92 (1.26, 2.94)	0.2747
Ethnicity				
NZ/European				
Asian	3.27 (1.41, 7.61)	0.3419	2.33 (1.41, 3.85)	0.0504
Māori	3.15 (1.36, 7.26)	0.3419	1.80 (1.1, 2.95)	0.0504
Pacific	3.59 (1.45, 8.84)	0.3419	1.88 (1.1, 3.23)	0.0504
Family structure				
Couple with children				
Couple only	2.19 (0.98, 4.87)	0.8619	1.76 (1.10, 2.80)	0.0824
Not in a family	2.27 (0.82, 6.30)	0.8619	1.16 (0.66, 2.05)	0.0824
Sole parent	2.51 (0.86, 7.29)	0.8619	1.07 (0.59, 1.95)	0.0824
Employment status				
Not working	1.83 (0.83, 4.03)	0.0261	1.03 (0.64, 1.64)	0.0001
Working				
NZDep				
NZDepQ1 (least)				
NZDepQ2	2.66 (1.22, 5.77)	0.7553	1.50 (0.95, 2.36)	0.7404
NZDepQ3	2.88 (1.31, 6.30)	0.7553	1.50 (0.95, 2.37)	0.7404
NZDepQ4	3.05 (1.41, 6.62)	0.7553	1.62 (1.03, 2.55)	0.7404
NZDepQ5 (most)	3.15 (1.42, 6.98)	0.7553	1.38 (0.86, 2.20)	0.7404

Table 6: (Continued)

	Self-assessed health		Psychological distress	
	Gender main effect (95% CI)		Gender main effect (95% CI)	
	0.84 (0.07,1.61)		0.59 (0.15, 1.04)	
	Women compared to Men	Interaction	Women compared to Men	Interaction
NZiDep				
0 dep				
1 dep	1.79 (0.79, 4.05)	0.7553	1.26 (0.78, 2.03)	0.1306
2 dep	2.61 (1.09, 6.21)	0.7553	1.30 (0.77, 2.21)	0.1306
3–4 dep	2.78 (1.15, 6.72)	0.7553	1.83 (1.06, 3.16)	0.1306
5+ dep	2.24 (0.81, 6.16)	0.7553	1.81 (0.86, 3.79)	0.1306
Education				
No education	1.75 (0.86, 3.56)	0.4137	1.54 (1.01, 2.37)	0.7525
School	1.67 (0.84, 3.35)	0.4137	1.38 (0.92, 2.07)	0.7525
Post-school	1.85 (0.92, 3.72)	0.4137	1.49 (0.98, 2.27)	0.7525
Deg+				
Smoking				
Never				
Current	1.82 (0.78, 4.21)	0.1108	1.59 (0.96, 2.64)	0.7801
Ex	2.21 (0.97, 5.02)	0.1108	1.47 (0.9, 2.41)	0.7801
Alcohol consumption				
Currently consuming alcohol but not binging	2.38 (1.14, 4.97)	0.6315	1.30 (0.87, 1.94)	0.1555
Currently consuming alcohol but binging	2.81 (1.30, 6.09)	0.6315	1.53 (1.01, 2.32)	0.1555
Never				
R-Square (Max-rescaled)	0.2129		0.1275	
AIC	9822.161		17379.987	

Source: Survey of Family, Income and Employment-Health, 2004–2005.

5. Discussion and conclusion

The present study has three major findings:

1) Significant gender differences exist in self-assessed health and psychological distress. However, the direction and magnitude of gender differences in health varied. Women were less likely to report poor self-assessed health and more likely to report moderate-to-high psychological distress.
2) Differential exposure of men and women to the determinants of health did not completely account for gender differences in health.
3) There were some gender differences in vulnerability to specific indicators, particularly age and employment status. However, gender differences in

vulnerability to these specific indicators varied according to the health measure.

Contrary to some studies (Macintyre, Hunt, and Sweeting 1996; Lahelma et al. 1999; Lahelma et al. 2001; Denton, Prus, and Walters 2004) which found that women were more likely to report poorer health status than men, this study found that women with similar socioeconomic status to men reported better self-assessed health. The results from this study follow those of Gorman and Read, who show that among similar men and women, women are more likely to report 'excellent' and 'very good' health than men for most of adulthood (Gorman and Read 2006). Given that self-assessed health is a multidimensional construct (Idler and Benyamini 1997; Borg and Kristensen 2000), it perhaps is more sensitive to the socioeconomic resources available to access and buy good health. From a policy perspective this is an important finding because it might be partly amenable to targeted intervention, such as raising education and employment opportunities for women. Moreover, while evaluating their own health, individuals may use criteria that include not only diseases and physical functioning but also social comparison, role activities, and even emotional and spiritual well-being (Idler, Hudson, and Leventhal 1999). It is additionally possible that self-assessed health reflects dimensions of health differently for men and women, and that they consider different aspects of health or different criteria when evaluating their health. Indeed, there is evidence suggesting that what is considered 'good health' varies by gender (Krause and Jay 1994; Jylha et al. 1998). For example, men may consider poor health more in terms of limited functional capacity, whereas women include feelings and health activities in their self-assessment (Radley et al. 2000). This is discussed further below.

This study found that women are significantly more likely to report psychological distress, even after controlling for a wide range of factors likely to affect health. Does this mean women articulate psychological distress differently to men due to different socialisation pressures, or are men more accepting or expectant of feeling 'blue' and worried, and so don't report it? Stigma attached to mental health (Kvalsvig 2018) may also be responsible for men not seeing doctors or reporting issues related to mental health. This may reflect sex differences in emotions, or it may be related to women living longer and experiencing more loss of family and friends (Crimmins, Kim, and Solé-Auro 2010). In New Zealand, women are more likely than men to be diagnosed with a common mental disorder (20% v. 13%) and experience psychological distress (7% vs. 5%) (Mental Health Foundation 2014). However, men have much higher rates of suicide across all age groups (three times more men died of suicide than women in 2016) (Ferguson et al. 2005).

If women do actually have higher levels of psychological distress than men this is a concern, because women in New Zealand are also more likely to defer primary care than men because of cost (Jatrana and Crampton 2012). Indeed, women have lower access to

resources to pay out-of-pocket costs for medication and other healthcare services, but also face non-financial barriers to care and greater demands placed on their time, especially for those who combine employment with domestic responsibilities (Doyal 2000).

Regarding gender differences in the response to the social determinants of health (the differential vulnerability hypothesis), the results of the multivariate regression analyses, interaction analyses, and gender comparison within the same non-reference stratum generally revealed very small gender differences, and the associations between risk factors and health all seemed to be of roughly the same magnitude for both genders. Gender-specific differences in the response to the social determinants of health were found only in the direct effects of age, and employment status. Being unemployed (for self-assessed and psychological distress) affected men and women's health differently, perhaps having a greater impact on men's health, while age (for self-assessed health) also affected women's and men's health in different ways. These factors are discussed within the theoretical context discussed in the introduction.

Men have traditionally been socialised to prioritise the breadwinning role (i.e., responsibility for the main source of income), so separation from the work role through either job loss or retirement may be more detrimental to male health, particularly mental health (Turner and Turner 1999; Möller-Leimkühler 2003), especially in societies where gender roles are more strongly demarcated. While New Zealand performs well internationally on most gender equality indicators, it still follows traditional norms governing family and household division of labour. Women in New Zealand (as in most other developed countries) still retain primary responsibility for household tasks and childrearing even when in paid employment (Callister 2005; Statistics New Zealand 2009; Ministry for Women 2019). The degree of gender imbalance in the division of labour in market and non-market activities is evident in the data on men's and women's time allocation: New Zealand men spend 60% of their time in market activities and 40% in non-market activities, while the corresponding figures for New Zealand women are 32% in market activities and 68% in nonmarket activities (United Nations Development Programme 2019). In other words, compared to women, New Zealand men likely are much more focused on their work, deriving status, authority, and meaning from their role as primary breadwinner for the household. Hence, any change affecting that role (such as unemployment) may have greater (adverse) effects on men than on women.

Regarding gender differences in the association between age and health, I found that men older than 15–24 (the reference age group) have increased odds of reporting poor self-assessed health, but this increase is not significant for women aged 25–44; i.e., the confidence interval includes the null. Thus, the size of disadvantage men experience in terms of reporting poor health increases with age and male health appears more vulnerable to ageing. One possible explanation for this relationship between gender, age,

and SAH lies in the different dimensions that constitute 'good health' for men and women. For example, as mentioned earlier, men may consider poor health more in terms of limited functional capacity, whereas women include feelings and health activities in their self-assessment (Radley et al. 2000). This implies that there is a different process by which men and women assess their general state of health. While men tend to reflect serious and life-threatening disease in their SAH, women tend to reflect both life-threatening and non-life-threatening diseases (Benyamini, Leventhal, and Leventhal 2000). There is also evidence that life-threating medical conditions increase with age, but at a faster pace for men (Gorman and Read 2006). Therefore, a systematic increase among men in the odds of reporting poor SAH may reflect more serious conditions and an increase in limited physical capacity.

The low odds of men and women who were current drinkers (including and not including binge drinking) reporting poor self-assessed health, as compared to those who never consumed alcohol, may reflect a 'reverse causality' effect where those who are in good health are more likely to drink. However, the results of this study cannot confirm the direction of the association between drinking and health, as teasing out this causal pathway requires a longitudinal analysis. Similarly, I do not dismiss the possibility of a 'sick non-starter' effect on never drinking – that certain people never take up drinking because of poor health (Fat et al. 2014: 5039). Indeed, previous research has shown an association between poor health and non-drinking among adults (Power, Rodgers, and Hope 1998), even after adjusting for a range of demographic and social factors (Fat and Shelton 2012). Studies have also found that persistent long-standing illness is associated with remaining a non-drinker across adulthood (Fat et al. 2014). However, I found no difference in alcohol consumption for psychological distress.

The results of this study are an important contribution to understanding the key determinants and mechanisms that lead to gender differences in health. I focussed on the differential exposure of men and women to socioeconomic and health behaviour factors as possible mechanisms because they are key determinant of health status. I found minimal support for a 'pure' differential exposure hypothesis. While I found socioeconomic position useful for understanding gender differences in self-assessed health, it was less useful for explaining the gender gap in reporting psychological distress. Arber and Cooper (1999: 75) label this pattern as a "new paradox", in which women are more likely to report better self-assessed health but are also more likely to be disabled, and they call for further explanation of the coexistence of a higher level of disability with a lack of gender difference in self-assessed health. While I did not have measures of disability, this study builds on their analysis and extends it by incorporating an additional explanatory mechanism (i.e., health behaviour factors).

This research has produced several important findings related to gender differences in health using national survey data, but has several limitations. First, the study was non-

causal in the sense of Pearl (2009), and in particular did not use recent advances in causal methods to estimate the direct and indirect effects of gender on the outcomes (VanderWeele 2009). For example, I was not able to account for various endogeneity biases that may be important (e.g., unmeasured confounders, reverse causation between health and health behaviours). Future research could extend the results by examining how changes in socioeconomic status and health behaviours are related to the gender gap in health. Secondly, although the original SoFIE study population (Wave 1) was a nationally representative sample of New Zealand households, the health module data was only collected in Waves 3, 5, and 7. It has been found that younger people of lower socioeconomic status are more likely to drop out of SoFIE (Carter et al. 2012). This sample attrition may therefore have led to selection bias and reduced the generalisability of the present study results. Similarly, exclusion of institutionalised people and specific very vulnerable groups (e.g., the homeless) from the SoFIE survey can be a source of bias. As women are overrepresented in lower socioeconomic status (Graham 2009) and are more likely to be in institutions (Grundy and Halt 2001; Huisman et al. 2004), both these factors are likely to have the effect of minimizing the reported gender differentials in health.

Third, sources of measurement error also need consideration. For example, as with other self-reported surveys, health status is measured using self-reported data that relies not only on the ability of respondents to recall information accurately but also upon other characteristics of individuals, such as health outcome and the consequence of that outcome for everyday life, their willingness to report it, and their frequency of contact with a physician (Kehoe et al. 1994; Kunst, Geurts, and van den Berg 1995; Goldman et al. 2003). These factors might also be affected by male–female differential reporting behaviour, and therefore the reliability and validity of self-reports could be in question. Indeed, Oksuzyan and colleagues found that gender differences in both poor and good health widened when differences in men's and women's reporting behaviours were taken into account (Oksuzyan et al. 2019). However, they found no clear evidence of gender-specific patterns in the reporting of either poor or good health. Other studies have found no clear gender pattern in reporting behaviour (Dowd and Todd 2011; Grol-Prokopczyk et al. 2015). Future studies should further rigorously test reporting differences as a contributory factor in the gender gap in reported health. If women's reporting of health outcomes differs in some systematic way from that of men, this may bias the results, though the magnitude and direction of such bias is unknown. Following Verbrugge's assertion (Verbrugge 1985) that women are more likely than men to have greater retrospective reporting because they have better recall of symptoms they experience, this study may have overestimated poor female health compared to that of men.

Fourth, mortality selection may diminish gender health inequalities, since mortality is higher among men than women across the life course (because they are more at risk of

fatal health conditions), resulting in a healthier (and younger) sample of men in our study. If mortality selection was not present and only if men 'always' report poorer health than women, the health gap between men and women would have been smaller than observed in this study. Finally, the health–age–gender association observed in this study may reflect differential cohort experience. For example, the respondents represent a cross-section of birth cohorts, from those born on or before 1940 (aged 65 and over) to those born in 1980–1990 (aged 15–24 years). These birth cohorts have lived in different historical periods in which factors affecting gender disparity in health have changed dramatically. Though it is difficult to untangle age and cohort effects, I tried controlling (crudely) for cohort effects by age-stratifying (two groups: 15–44 and 45 and above) but, as noted above, this did not substantially change the outcomes (results not shown but available on request). Fifth, there could be other mediators and confounders such as diet, exercise, and weight, which can influence the relationship between gender and health. However, I have not included these variables in the analysis since they were not collected in the data set that I used. Finally, the survey on which this study is based is dated and future research should update the results using surveys that are more recent.

Despite these limitations, the results presented here are important in several ways. This study uses a large, original, national survey and a variety of health measures to examine gender difference in health. Since this work has identified both differing and common health predictors for men and women, it is possible to target gender-specific factors that reduce the risk of poor health. By showing that gender disparity in health varies depending on the measure of health, this work suggests that research on gender–health association should typically use multiple indicators of health. In addition, this work refocuses attention on the differential socioeconomic experience of men and women, which mediates the relationship between gender and health. Long-term improvement in women's self-assessed health requires correcting the gender inequalities that women face in economic opportunity and social power during the life course. From a policy perspective, there is a great need to respond to women's greater burden of psychological stress. The significance of socioeconomic factors, particularly employment, highlights the health gains for both men and women if targeted interventions such as raising education and employment opportunities are available for everyone.

6. Statistics New Zealand security statement

Access to the data used in this study was provided by Statistics New Zealand in a secure environment designed to give effect to the confidentiality provisions of the Statistics Act, 1975. All researchers need to apply to access the survey data and to sign a statutory declaration of secrecy before they can work with the data (Statistics New Zealand 2020).

The results in this study and any errors contained therein are those of the author, not Statistics New Zealand.

References

Andrews, G. and Slade, T. (2001). Interpreting scores on the Kessler Psychological Distress Scale (K10). *Australian and New Zealand Journal of Public Health* 25(6): 494–497. doi:10.1111/j.1467-842X.2001.tb00310.x.

Arber, S. (1997). Comparing inequalities in women's and men's health: Britain in the 1990s. *Social Science and Medicine* 44: 773–787. doi:10.1016/S0277-9536(96)00185-2.

Arber, S. and Cooper, R.S. (1999). Gender differences in health in later life: The new paradox. *Social Science and Medicine* 48: 61–76. doi:10.1016/S0277-9536(98)00289-5.

Bambra, C., Pope, D., Swami, V., Stanistreet, D., Roskam, A., Kunst, A.E. and Scott-Samuel, A. (2009). Gender, health inequalities and welfare state regimes: A cross-national study of 13 European countries. *Journal of Epidemiology and Community Health* 63: 38–44. doi:10.1136/jech.2007.070292.

Benyamini, Y., Leventhal, E.A., and Leventhal, H. (2000). Gender differences in processing information for making self-assessments of health. *Psychosomatic Medicine* 62(3): 354–364. doi:10.1097/00006842-200005000-00009.

Bird, C.E. and Rieker, P.P. (1999). Gender matters: An integrated model for understanding men's and women's health. *Social Science and Medicine* 48: 745–755. doi:10.1016/S0277-9536(98)00402-X.

Blakely, T. (2002). Commentary: Estimating direct and indirect effects: Fallible in theory, but in the real world? *International Journal of Epidemiology* 31(1): 166–167. doi:10.1093/ije/31.1.166.

Borg, V. and Kristensen, T.S. (2000). Social class and self-rated health: can the gradient be explained by differences in life style or work environment? *Social Science and Medicine* 51: 1019–1030. doi:10.1016/S0277-9536(00)00011-3.

Brienza, R.S. and Stein, M.D. (2002). Alcohol use disorders in primary care: Do gender-specific differences exist? *Journal of Internal Medicine* 17: 387–397. doi:10.1007/s11606-002-0046-1.

Callister, P. (2005). The changing gender distribution of paid and unpaid work in New Zealand. (New Zealand Treasury Working paper 05/07). Wellington: The Treasury.

Callister, P. and Didham, R. (2009). Dying differently: Gendered mortality trends in New Zealand. (IPS Working Paper 09/01). Wellington: Institute of Policy Studies.

Carter, K., Cronin, M., Blakely, T., Hayward, M., and Richardson, K. (2010). Cohort profile: Survey of Families, Income and Employment (SoFIE) and Health Extension (SoFIE-health). *International Journal of Epidemiology* 39(3): 653–659. doi:10.1093/ije/dyp215.

Carter, K., Imlach-Gunasekara, F., McKenzie, S.K., and Blakely, T. (2012). Differential loss of participants does not necessarily cause selection bias. *Australian and New Zealand Journal of Public Health* 36(3): 218–222. doi:10.1111/j.1753-6405.2012.00867.x.

Chun, H., Khang, Y.H., Kim, I.H., and Cho, S.I. (2008). Explaining gender differences in ill-health in South Korea: The roles of socio-structural, psychosocial, and behavioural factors. *Social Science and Medicine* 67: 988–1001. doi:10.1016/j.socscimed.2008.05.034.

Cole, S.R. and Hernan, M.A. (2002). Fallibility in estimating direct effects. *International Journal of Epidemiology* 31(1): 163–165. doi:10.1093/ije/31.1.163.

Crimmins, E.M., Kim, J.K., and Solé-Auro, A. (2010). Gender differences in health: Results from SHARE, ELA and HRS. *European Journal of Public Health* 21(1): 81–91. doi:10.1093/eurpub/ckq022.

Dahlin, J. and Härkönen, J. (2013). Cross-national differences in the gender gap in subjective health in Europe: Does country-level gender equality matter? *Social Science and Medicine* 98: 24–28. doi:10.1016/j.socscimed.2013.08.028.

Denton, M., Prus, S., and Walters, V. (2004). Gender differences in health: A Canadian study of the psychosocial, structural and behavioural determinants of health. *Social Science and Medicine* 58: 2585–2600. doi:10.1016/j.socscimed.2003.09.008.

Dowd, J.B. and Todd, M. (2011). Does self-reported health bias the measurement of health inequalities in U.S. adults? Evidence using anchoring vignettes from the Health and Retirement Study. *Journal of Gerontology. Series B, Psychological Sciences and Social Sciences* 66(4): 478–489. doi:10.1093/geronb/gbr050.

Doyal, L. (2000). Gender equity in health: Debates and dilemmas. *Social Science and Medicine* 51(6): 931–939. doi:10.1016/S0277-9536(00)00072-1.

Dreger, S., Gerlinger, T., and Bolte, G. (2016). Gender inequalities in mental wellbeing in 26 European countries: do welfare regimes matter? *European Journal of Public Health* 26(5): 872–876. doi:10.1093/eurpub/ckw074.

Farrington, D.P. and Loeber, R. (2000). Some benefits of dichotomization in psychiatric and criminological research. *Criminal Behaviour and Mental Health* 10(2): 100–122. doi:10.1002/cbm.349.

Fat, N.L., Cable, N., Marmot, M.G., and Shelton, N. (2014). Persistent long-standing illness and non-drinking over time, implications for the use of lifetime abstainers as a control group. *Journal of Epidemiology and Community Health* 68(1): 71–77. doi:10.1136/jech-2013-202576.

Fat, N.L. and Shelton, N. (2012). Associations between self-reported illness and non-drinking in young adults. *Addiction* 107(9): 1612–1620. doi:10.1111/j.1360-0443.2012.03878.x.

Ferguson, S., Blakely, T., Allan, B., and Collings, S. (2005). Suicide rates in New Zealand: Exploring associations with social and economic factors. Wellington: New Zealand, Ministry of Health.

Gladstone, N.I. and Koren, G. (1996). Reproductive risks of binge drinking during pregnancy. *Reproductive Toxicology* 10: 3–13. doi:10.1016/0890-6238(95)02024-1.

Goldman, N., Lin, I.F., Weinstein, M., and Lin, Y.H. (2003). Evaluating the quality of self-reports of hypertension and diabetes. *Journal of Clinical Epidemiology* 56: 148–154. doi:10.1016/S0895-4356(02)00580-2.

Gorman, B.K. and Read, J.G. (2006). Gender disparities in adult health: An examination of three measures of health. *Journal of Health and Social Behavior* 47(2): 95–110. doi:10.1177/002214650604700201.

Graham, H. (ed.) (2009). *Understanding health inequalities.* New York: McGraw-Hill.

Greenland, S., Pearl, J., and Robins, J.M. (1999). Causal diagrams for epidemiologic research. *Epidemiology* 10(1): 37–48.

Grol-Prokopczyk, H., Verdes-Tennant, E., McEniry, M., and Ispány, M. (2015). Promises and pitfalls of anchoring vignettes in health survey research. *Demography* 52(5): 1703–1728. doi:10.1007/s13524-015-0422-1.

Grundy, E. and Halt, G (2001). The socioeconomic status of older adults: How should we measure it in studies of health inequalities? *Journal of Epidemiology and Community Health* 55: 895–904. doi:10.1136/jech.55.12.895.

Huisman, H., Kunst, A.E., Anderson, O., Bopp, M., Borgan, J.-K., Borrell, C., Costa, G., and Deboosere, P. (2004). Socioeconomic inequalities in mortality among elderly people in 11 European populations. *Journal of Epidemiology and Community Health* 58: 468–475. doi:10.1136/jech.2003.010496.

Hunt, K. and Annadale, E. (1999). Relocating gender and morbidity: examining men's and women's health in contemporary Western societies: Introduction to special issue on gender and health. *Social Science and Medicine* 48(1): 1–5. doi:10.1016/S0277-9536(98)00284-6.

Idler, E. and Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behaviour* 38: 21–37. doi:10.2307/2955359.

Idler, E., Hudson, S.V., and Leventhal, H. (1999). The meaning of self-rating of health. *Research on Aging* 21: 458–476. doi:10.1177/0164027599213006.

Jatrana, S. and Crampton, P. (2012). Gender differences in financial barrier to primary health care in New Zealand. *Journal of Primay Health Care* 4 (2): 113–122. doi:10.1071/HC12113.

Johnson, L., Huggard, P., and Goodyear-Smith, F. (2008). Men's health and the health of the nation. *New Zealand Medical Journal* 121(1287): 69–76.

Jylhä, M., Guralnik, J.M., Ferrucci, L., Jokela, J., and Heikkinen, E. (1998). Is self-rated health comparable across cultures and genders? *The Journals of Gerontology: Series B* 53B(3): S144–S152. doi:10.1093/geronb/53B.3.S144.

Kehoe, R., Wu, S.Y., Leske, M.C., and Chylack, L.T.J. (1994). Comparing self-reported and physician-reported medical history. *American Journal of Epidemiology* 139(8): 813–818. doi:10.1093/oxfordjournals.aje.a117078.

Kessler, R.C., Andrews, G., Colpe, L.J., Hiripi, E., Mroczek, D.K., Normand, S.L.T., Walters, E.E., and Zaslavsky, A.M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine* 32(2): 959–976. doi:10.1017/S0033291702006074.

Kessler, R.C., Barker, P.R., Colpe, L.J., Epstein, J.F., Gfroerer, J.C., and Hiripi, E. (2003). Screening for serious mental illness in the general population. *Archives of General Psychiatry* 60(2): 184–189. doi:10.1001/archpsyc.60.2.184.

Khang, Y.H., Lynch, J.W., Yun, S., and Lee, S.I. (2004). Trends in socioeconomic health inequalities in Korea: Use of mortality and morbidity measures. *Journal of Epidemiology and Community Health* 58(4): 308–314. doi:10.1136/jech.2003.012989.

Krause, N.M. and Jay, G.M. (1994). What do global self-rated health items measure? *Medical Care* 32(9): 930–942. doi:10.1097/00005650-199409000-00004.

Kunst, A.E., Geurts, J.J., and van den Berg, J. (1995). International variation in socioeconomic inequalities in self reported health. *Journal of Epidemiology and Community Health* 49: 117–123. doi:10.1136/jech.49.2.117.

Kvalsvig, A. (2018). Wellbeing and mental distress in Aotearoa New Zealand: Snapshot 2016. Wellington: Health Promotion Agency New Zealand. https://www.hpa.org.nz/research-library/research-publications.

Lahelma, E., Arber, S., Martikainen, P., Rahkonen, O., and Silventoinen, K. (2001). The myth of gender differences in health: Social structural determinants across adult ages in Britain and Finland. *Current Sociology* 49: 31–54. doi:10.1177/0011392101049003004.

Lahelma, E., Martikainen, P., Rahkonen, O., and Silventoinen, K. (1999). Gender differences in ill health in Finland: Patterns, magnitude and change. *Social Science and Medicine* 48: 7–19. doi:10.1016/S0277-9536(98)00285-8.

Lahelma, E. and Rahkonen, O. (1997). Health inequalities in modern societies and beyond. *Social Science and Medicine* 44(6): 721–722. doi:10.1016/S0277-9536(97)88373-6.

Lawlor, D.A., Ebrahim, S., and Davey Smith, G. (2001). Sex matters: Secular and geographical trends in sex differences in coronary heart disease mortality. *British Medical Journal* 323: 541–545. doi:10.1136/bmj.323.7312.541.

le Cessie, S., Debeij, J., Rosendaal, F.R., Cannegieter, S.C., and Vandenbroucke, J.P. (2012). Quantification of bias in direct effects estimates due to different types of measurement error in the mediator. *Epidemiology* 23(4): 551–560. doi:10.1097/EDE.0b013e318254f5de.

Macintyre, S., Hunt, K., and Sweeting, H. (1996). Gender differences in health: Are things really as simple as they seem. *Social Science and Medicine* 42(4): 617–624. doi:10.1016/0277-9536(95)00335-5.

McDonough, P. and Walters, V. (2001). Gender and health: Reassessing patterns and explanantions. *Social Science and Medicine* 52: 547–559. doi:10.1016/S0277-9536(00)00159-3.

Mental Health Foundation (2014). Quick Facts and Stats 2014. Wellington: Mental Health Foundation: https://www.mentalhealth.org.nz/assets/Uploads/MHF-Quick-facts -and-stats-FINAL-2016.pdf.

Ministry for Women (2019). Gender inequality and unpaid work: A review of recent literature. Wellington: Ministry for Women, Department of the Prime Minister and Canbinet.

Ministry of Health (2008). Presenting Ethnicity: Comparing prioritised and total response ethnicity in descriptive analyses of New Zealand Health Monitor surveys, Public Health Intelligence Occasional Bulletin 48. Wellington: Ministry of Health.

Möller-Leimkühler, A.M. (2003). The gender gap in suicide and premature death or: Why are men so vulnerable? *European Archives of Psychiatry and Clinical Neuroscience* 253(1): 1–8. doi:10.1007/s00406-003-0397-6.

Nathanson, C.A. (1975). Illness and the feminine role: A theoretical review. *Social Science and Medicine* 9: 57–62. doi:10.1016/0037-7856(75)90094-3.

Nathanson, C.A. (1977). Sex, illness and medical care: A review of data, theory and methods. *Social Science and Medicine* 11: 13–25. doi:10.1016/0037-7856(77)90141-X.

Neville, S. (2008). Men and health. *New Zealand Medical Journal* 121(1287): 7–10.

Nolen-Hoeksema, S. (2004). Gender differences in risk factors and consequences for alcohol use and problems. *Clinical Psychological Review* 24: 981–1010. doi:10.1016/j.cpr.2004.08.003.

Oksuzyan, A., Dańko, M.J., Caputo, J., Jasilionis, D., and Shkolnikov, V.M. (2019). Is the story about sensitive women and stoical men true? Gender differences in health after adjustment for reporting behavior. *Social Science and Medicine* 228: 41–50. doi:10.1016/j.socscimed.2019.03.002.

Pearl, J. (2009). *Causality: Models, reasoning, and inference*. Cambridge: Cambridge University Press. doi:10.1017/CBO9780511803161.

Phongsavan, P., Chey, T., Bauman, A., Brooks, R., and Silove, D. (2006). Social capital, socio-economic status and psychological distress among Australian adults. *Social Science and Medicine* 63(10): 2546–2561. doi:10.1016/j.socscimed.2006.06.021.

Power, C., Rodgers, B., and Hope, S. (1998). U-shaped relation for alcohol consumption and health in early adulthood and implications for mortality. *Lancet* 352(9131): 877. doi:10.1016/S0140-6736(98)23937-7.

Radley, A., Grove, A., Wright, S., and Thurston, H. (2000). Gender-role identity after heart attack: Links with sex and subjective health status. *Psychology and Health* 15(1): 123–133. doi:10.1080/08870440008400293.

Rieker, P. and Bird, C. (2000). Sociological explanations of gender differences in mental and physical health. In: Bird, C., Conrad, P., and Fremont, A. (eds.). *Handbook of medical sociology.* Upper Saddle River: Prentice Hall.

Roman, P.M. (1988). Biological features of women's alcohol use: A review. *Public Health Reports* 103: 628–637.

Ross, C.E. and Bird, C.E. (1994). Sex stratification and health lifestyle: Consequences for men's and women's perceived health. *Journal of Health and Social Behavior* 35(2): 161–178. doi:10.2307/2137363.

Rossow, I. and Hauge, R. (2004). Who pays for the drinking? Characteristics of the extent and distribution of social harms from others' drinking. *Addiction* 99: 1094–1102. doi:10.1111/j.1360-0443.2004.00788.x.

Roxburgh, S. (1996). Gender differences in work and well-being: Effects of exposure and vulnerability. *Journal of Health and Social Behavior* 37(3): 265–277. doi:10.2307/2137296.

Salk, R.H., Hyde, J.S., and Abramson, L.Y. (2017). Gender differences in depression in representative national samples: Meta-analyses of diagnoses and symptoms. *Psychological Bulletin* 143(8): 783–822. doi:10.1037/bul0000102.

Salmond, C., King, P., Crampton, P., and Waldegrave, C. (2006). NZiDep: A New Zealand index of socioeconomic deprivation for individuals. *Social Science and Medicine* 62(6): 1474–1485. doi:10.1016/j.socscimed.2005.08.008.

Salmond, C. and Crampton, P. (2012). The development of New Zealand's deprivation index (NZDep) and its uptake as a national policy tool. *Canadian Journal of Public Health* 103(Suppl 2): S7–S11

Salmond, C. and Crampton, P. (2002). NZDep2001 Index of Deprivation. Wellington: Ministry of Health.

Statistics New Zealand (2009). New Zealand Time Use Survey. Wellington: Statistics New Zealand.

Statistics New Zealand (2020). Apply to use microdata for research https://www.stats.govt.nz/integrated-data/apply-to-use-microdata-for-research/. Wellington: Statistics New Zealand.

Turner, H.A. and Turner, R.J. (1999). Gender, social status, and emotional reliance. *Journal of Health and Social Behavior* 40(4): 360–373. doi:10.2307/2676331.

Umberson, D., Wortman, C.B., and Kessler, R.C. (1992). Widowhood and depression: Explaining long-term gender differences in vulnerability. *Journal of Health and Social Behavior* 33(1): 10–24. doi:10.2307/2136854.

United Nations Development Programme (2019). Beyond income, beyond averages, beyond today: Inequalities in human development in the 21st century. Human Development Report. New York: UNDP.

Van de Velde, S., Bracke, P., and Levecque, K. (2010). Gender differences in depression in 23 European countriess: Cross-national variation in the egnder gap in depression. *Social Science and Medicine* 71(2): 305–313. doi:10.1016/j.socscimed.2010.03.035.

VanderWeele, T.J. (2009). Marginal structural models for the estimation of direct and indirect effects. *Epidemiology* 20(1): 18–26. doi:10.1097/EDE.0b013e31818f69ce.

VanderWeele, T.J. (2010). Bias formulas for sensitivity analysis for direct and indirect effects. *Epidemiology* 21(4): 540–551. doi:10.1097/EDE.0b013e3181df191c.

Verbrugge, L.M. (1985). Gender and health: An update on hypotheses and evidence. *Journal of Health and Social Behavior* 26(3): 156–182. doi:10.2307/2136750.

Verbrugge, L.M. (1989). The twains meet: Empirical explanations for sex differences in health and mortality. *Journal of Health and Social Behaviour* 3(4): 327–348. doi:10.2307/2136961.

Williams, D.R. (2003). The health of men: Structured inequalities and opportunities. *American Journal of Public Health* 93(5): 724–731. doi:10.2105/AJPH.93.5.724.

Wilsnack, R.W., Wilsnack, S.C., Gmel, G., and Kantor, L.W. (2018). Gender differences in binge drinking. *Alcohol Research: Current Reviews* 39(1): 57–76.