SoFIE-Health Primary Care: Overview and Early Results

SoFIE-Health Report 3

Version 1.0

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Acknowledgements

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

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Chapter 1 Introduction

1.1 Background

Numerous ecological and multi-level and individual level studies in the United States and elsewhere have established positive associations between the provision of primary care services and population health, and positive associations between domains of primary care, such as accessibility and continuity, with health outcomes. However, the bulk of research on this area has been carried out mainly on American data and most commonly cited papers, in respect of the benefits of a strong primary health care system, measure primary care attributes at the level of the whole system, rather than at an individual patient level. Moreover, the different attributes of primary care, such as accessibility and continuity, have not been studied to the same extent. This may, in part, be due to the challenge of 1) collecting information at the individual level about primary care domains and 2) translating these domains of primary care into characteristics that can be measured. Given that primary care is the gateway to more secondary and tertiary care, it is important to study the attributes of primary care and its association with various demographic, socioeconomic and health characteristics of the population.

1.2 Purpose

The main objective of this report is to compile information from the Statistics New Zealand led Survey of Family, Income and Employment (SoFIE) study along with the SoFIE-Health: Primary Care sub-study. This report focuses on one of the three main goals of the SoFIE-Health sub-study, determining the contribution of access and continuity of primary health care to health status. This report, besides providing cross sectional analyses of primary care attributes of SoFIE-Health, forms a basis for future longitudinal analyses of changes in these primary care attributes and changes in health status. The primary audience for this report are users of the SoFIE-Health data. Note: the numbers presented in this report are not weighted to the New Zealand population, or age- or sex-adjusted.

1.3   Structure and Content

This report is mainly a reference document to be used for planning future longitudinal analyses. It provides information that:

- Describes the SoFIE-Health Primary Care sub-study
- Describes the modules and variables collected within the study
- Describes the creation of scores for first contact accessibility, first contact utilisation and continuity of primary care
- Provides cross-tabulations of demographic, socioeconomic, health behaviour and health variables, by affiliation with a primary care provider (PCP).
- Provides cross-tabulations of demographic, socioeconomic, health behaviour and health variables, by first contact accessibility and first contact utilisation and continuity of care.
- Provides cross-tabulations of demographic, socioeconomic, health behaviour and health variables, by financial accessibility to care.

1.4   SoFIE Study[1]

Statistics New Zealand was granted funding from the Foundation for Research, Science and Technology in 1997 to conduct a feasibility study for a longitudinal survey of income, employment and family dynamics. Following on from the feasibility study, the SoFIE study was developed and first went into the field in October 2002. SoFIE is the largest longitudinal survey ever run in New Zealand.

SoFIE is a single fixed panel longitudinal survey with an expected maximum duration of eight years. It will collect information once a year from the same individuals on income levels, sources and changes; and on the major influences on income such as employment and education experiences, household and family status and changes, demographic factors and health status. Every two years (Waves 2, 4, and 6) it will also

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[1] For more information on SoFIE study, please refer to Carter, K., Hayward, M., & Richardson, K. (2008). SoFIE-Health Baseline Report: Study Design and Associations of Social Factors and Health in Waves 1 to 3. SoFIE-Health Report 2. Wellington: University of Otago, Wellington.

collect information on assets and liabilities to monitor net worth and savings. Every other year it will collect detailed information on health. The overall objective of SoFIE is to provide information about changes over time in the economic well-being of individuals and their families, and about factors influencing those changes.

1.4.1   SoFIE-Health Study[2]

In 2003 researchers from the Department of Public Health, University of Otago, Wellington (UOW) applied for funding from the Health Research Council (HRC) of New Zealand to add a health module to the core SoFIE questionnaires to be asked every alternative year. The SoFIE-Health add-on is comprised of 20 minutes of questionnaire time in waves 3 (2004-05), 5 (2006-07) and 7 (2008-09), in the following health-related domains: health status (SF36 & Kessler scale), perceived stress, chronic conditions (heart disease, diabetes, and injury-related disability), tobacco smoking, alcohol consumption, health care utilisation, and access and continuity of primary health care, and an individual deprivation score.
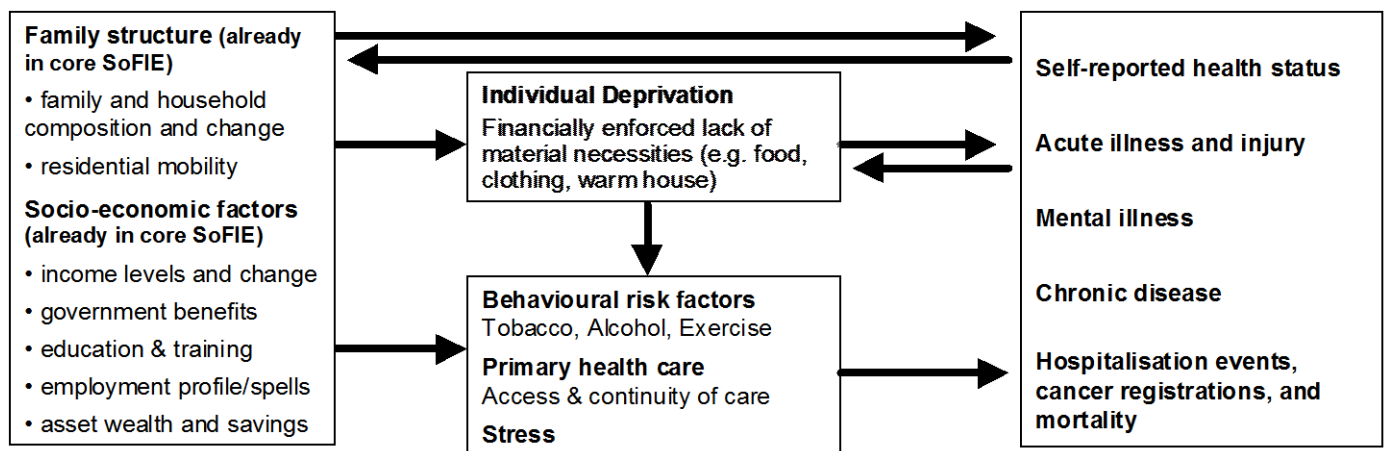
Figure 1: Domains of SoFIE-Health

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[2] For a detailed information on SoFIE-Health, please refer to Carter, K., Hayward, M., & Richardson, K. (2008). SoFIE-Health Baseline Report: Study Design and Associations of Social Factors and Health in Waves 1 to 3. SoFIE-Health Report 2. University of Otago, Wellington.

In Figure 1 the information on family structure and socio-economic factors is placed on the left of the diagram, and constitutes the 'upstream determinants' of health already collected by the core of SoFIE. In the mid-stream determinants (data collected by the SoFIE-Health) are individual deprivation, behavioural risk factors, primary care and stress. The right-hand box includes measures of self-reported health status and disease outcomes. The arrows identify likely causal relationships. Note that these domains cover in some way all four possible intervention points to reduce social inequalities in health identified by the Ministry of Health strategy for reducing inequalities in health.

There are three major goals within SoFIE-Health: (1) Determining the impact of labour market factors, asset wealth, income and family dynamics on health; (2) Determining the impact of health status on labour market factors, income trajectories, asset wealth and family dynamics; (3) Determining the contribution of access, continuity and co-ordination of primary health care to health status and to social inequalities in health. Within these goals are a number of objectives.

1.4.2   SoFIE-Health: Primary Care (SoFIE-Health PC)

There has been a tendency for social epidemiological frameworks to de-emphasise the role of health services as determinants, or mediators, of health status. This is despite a well-established body of international evidence that suggests that primary care, in particular, is important both for improving health outcomes, controlling health care spending, and reducing health care disparities. For instance, numerous ecological (Starfield 1991; Shi 1994; Vogel and Ackermann 1998; Shi and Starfield 2001; Gulliford 2002; Starfield and Shi 2002; Macinko, Starfield et al. 2003), multi-level (Shi, Starfield et al. 2002) and individual level studies in the US and elsewhere have established positive associations between the provision of primary care services and population health. Similarly, positive associations between health outcomes and accessibility (Franks and Fiscella 1998), continuity (Hjortdahl and Laerum 1992; Safran, Taira et al. 1998; Mainous, Baker et al. 2001; Parchman, Puch et al. 2002) and coordination (Safran, Taira et al. 1998)have been described.

However, the most commonly cited papers, in respect of the benefits of a strong primary health care system, measure primary care attributes at the level of the whole system, rather than at individual patient level. Moreover, these studies have a number of other limitations: 1) most studies are limited by selective samples and disease-specific outcomes; 2) the different attributes of primary care have not been studied to the same extent; 3) there is little evidence related to the contribution of primary care to reducing health inequalities; 4) there is lack of consistency in measurement of primary care attributes; 5) there is a paucity of evidence that grounds the international experience in the New Zealand context. Therefore, policy makers in New Zealand (and elsewhere) have an inadequate knowledge-base to draw on when directing changes to primary care service delivery. For example, it is possible that those who are in poor health are more likely to be affiliated with a PCP relative to those who are in good health. It is also plausible that the protective effects of specific primary care attributes (e.g. continuity) are more important for older people, those in poor health, and those with chronic diseases. It is not clear what planning and policy approaches should be used in response to different rates of affiliation. In order to address the limited knowledge-base, we are exploring the association between primary care and health outcomes in New Zealand to inform policy development in the future.

1.4.2.1 Goals and Objectives

Goal three of SoFIE Health addresses four groups of questions that relate to primary care: a) extent of affiliation with a primary care provider, first contact - access and first contact – utilisation; b) continuity of care; c) co-ordination of care; and d) financial barriers to access. Specific research questions that will be addressed in the 2004-08 period, by objective, are:

Objective 7:   Are access to, continuity and coordination of primary care associated with better health?

- What are the associations between affiliation with a primary care provider and health status (mental health, chronic diseases, recent hospitalisation, and mortality)?

- What are the associations between separate primary care attributes (access, continuity and co-ordination) and health outcomes?

Objective 8:   Do access, continuity and coordination of primary health care explain some of the associations of ethnicity, family structure, and socio-economic factors with health?

Do access to, continuity and coordination of primary care mediate the relationships between:

- ethnicity and health?
- family and whanau structure and health?
- socio-economic factors and health?

These research questions will determine the differences in health status between those people affiliated with (or not) a primary care provider (including PHOs)[3], and between people reporting varying levels of access, continuity and cultural competence. In the out-years of SoFIE-Health, we will use the longitudinal data to delineate the causal direction of these associations. This report focuses on objective 7 of SoFIE Health:PC.

1.4.2.2 Relevance to Health

In New Zealand, as elsewhere, primary care structural re-design is being carried out in the absence of strong empirical evidence related to health outcomes. This research aims to explore the effects of key primary care variables (affiliation with, access to, and continuity of care of primary care services), on 1) health outcomes, and 2) health inequalities.

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[3] PHOs are the local structures for delivering and co-ordinating primary health care services in New Zealand.

Chapter 2 **Methods**

This Chapter is divided into six sections. The first describes the Primary Care Assessment Tool (PCAT) (Starfield 1998b; Shi and Starfield 2001) as the attributes of primary care elicited from the SoFIE-HEALTH respondents use a modified version of PCAT. The second section describes the primary care attributes asked in SoFIE-Health. The third section describes the development of summary measures about first contact – access, first contact - utilisation and continuity of primary care. The fourth section describes the health variables used in this report, such as self assessed health, the Short Form (SF) 36, Kessler 10 and chronic disease status. The fifth section describes the demographics, socioeconomic and health behaviour variables used in this report. A description of the analyses undertaken is provided in the final section.

2.1   PCAT

One of the major challenges for health system delivery system has been to translate the broad concepts of primary care into characteristics that can be measured. These concepts include the four main domains of primary care: first contact care, continuity, comprehensiveness and coordination of care. The Primary Care Assessment Tools were developed to collect and analyse information needed to describe primary care services needed, provided and experienced by the population. These tools measure both the structure and process elements related to the four main domains of primary care and outcomes as well (Donabedian 1966; Donabedian 1988). Structure refers to the characteristics that allow the primary care system to provide services (e.g., staff, facilities and equipment, range of services etc); process (commonly called 'performance') refers to the actions of the system (practitioners, practices, PHOs etc) and the actions of populations and patients (e.g., utilisation, satisfaction, management); outcomes refers to various aspects of health status (e.g. ambulatory sensitive hospitalisations). These three components interact with, and are determined by, the social, political and economic environment in which the health system exists

2.2 Primary Care Attributes in SoFIE-Health

SoFIE-Health PC modified PCAT to incorporate some New Zealand-specific questions (e.g., on financial barriers to accessibility) and to include specific questions within a specified time limit. SoFIE-Health PC has questions related to first contact access, first contact utilisation and continuity of care. Questions related to coordination and comprehensiveness of care were not included as part of SoFIE-Health PC, mainly because of time constraint. Also the numbers of questions within the main domain are different from PCAT.

2.2.1   Affiliation

Having an affiliation with a PCP or having a regular source of care is one of the four cardinal domains of primary care (Starfield 1992). Being affiliated means having a doctor, nurse or medical centre one could go to if need arises. Affiliation with a PCP does not necessarily mean actual utilization of primary care services. Rather it is a measure of potential access that makes it more likely that care will be used when needed (Kasper 1987; Short and Lefkowitz 1992; Kempe, Beaty et al. 2000; Seid, Stevens et al. 2003). Studies have shown that potential access - having a regular provider of care - is strongly related to the likelihood of seeing a physician (Rundall and Wheeler 1979; Aday, Anderson et al. 1980; Aday, Fleming et al. 1984); may account for some of the reported differences in primary care experiences between race/ethnic groups in the US (Seid, Stevens et al. 2003) and is associated with fewer emergency department visits in the US (Orr, Charney et al. 1991). Some studies have also reported that potential access is also associated with 25% lower total costs of care compared with those with no regular source of primary care (Butler, Winter et al. 1985); factors influencing self-care behaviour (Kleinman 1988; O'Connor, Crabtree et al. 1997); and better diabetes care (O'Connor, Desai et al. 1998).

In this report we provide the characteristics of those who are affiliated/not affiliated with a PCP and the associations between affiliation and health status.   The information on affiliation is extracted from the following question:

Q: Do you have a doctor, nurse or medical centre you usually go to, if you needed to see a doctor?

The response categories include:
Yes
No
DK/RF (Don't know / refused)

It is important to note that SoFIE-Health PC has only one question on affiliation while the PCAT has three items/questions about affiliation.

2.2.2 First Contact Care

First contact care facilitates entry into care. First contact care encompasses two sub-domains: first contact-access and first contact- utilisation. While first contact-access concerns health system characteristics that facilitate access (i.e. the structural characteristics of the facility or provider that reflect a capacity to achieve each of the functions of primary care), first contact-utilisation assesses performance or use of primary care facilities (i.e. processes of care), which indicates the achievement of the function in actual practice (Starfield 1992).

2.2.2.1 First Contact-Access:

The first contact-access component was assessed by answers to the questions regarding ease of accessing care. There are three items included in SoFIE-Health PC (four items were used in the PCAT).

Q: If you get sick when they're <u>open</u>, would they be able to <u>see you on the same day</u>?
Q: When they're <u>open</u>, could you quickly get <u>advice over the phone</u> if you needed it?
Q: If you got sick when they were <u>closed</u>, does (primary care provider) have a <u>phone number</u> you could call for advice?

The response categories include:

Definitely

Probably

Probably not

Definitely not

DK/RF

2.2.2.2 First Contact-Utilisation:

The sub-domain of first contact-utilisation addresses the consistency of use of that source when care was needed. There were two items included in this sub-domain in SoFIE-Health PC (three were used in the PCAT).

Q: If you had a new problem would you go to (PCP) rather than anywhere else?
Q: If you wanted a check-up, would you go to (PCP) rather than anywhere else?

The response categories include:

Definitely

Probably

Probably not

Definitely not

DK/RF

2.2.2.3 Financial Barrier to Accessibility

This set of questions relates to financial barriers to doctor visits, dental care and the ability to collect prescription items. They are specific to SoFIE-Health PC and not included in the PCAT. This links up with the question of the associations between financial barrier to access and health outcomes. Timely receipt of health care is an important factor in health outcomes. However, there are barriers to accessing health services and the elimination of these barriers is a major goal for the health services of many developed countries. Financial barriers are only one of the barriers people face in

obtaining timely health care. The following questions were asked as part of SoFIE-Health PC regarding financial barrier to accessibility:

Q: In the last 12 months, have you put off going to see your doctor when you needed to, because you could not afford the cost of a visit?

The response categories include:

Yes

No

DK/RF

Q: If yes, how many times have you done this in the last 12 months?

Q: In the last 12 months, have there been any times when a doctor gave you a prescription, but you did not collect one or more of those items because you could not afford the cost?

The response categories include:

Yes

No

DK/RF

Q: If yes, how many times have you done this in the last 12 months?

Q: In the last 12 months, have you put off going to see a dentist when you needed to, because you could not afford the cost of a visit?

The response categories include:

Yes

No

DK/RF

2.2.3 Continuity of Care

One of the hallmarks of primary care is continuity of care, which is defined as seeing the same health care provider over time (Starfield 1992). Continuity of care presupposes the existence of a regular source of care over time, regardless of the presence or absence of disease or injury. It is intended to help the provider and the patient build a long term relationship in order to foster mutual trust between provider and patient, and knowledge of both parties' expectations and needs (Blumenthal, Mort et al. 1995). Increased continuity of care is associated with positive health outcome (Weiss and Blustein 1996), high quality care (Christakis, Wright et al. 2002), decreased use of emergency services (Christakis, Wright et al. 1999; Gill, Mainous et al. 2000), increased vaccination (Christakis, Mell et al. 2000), lower likelihood of hospitalization for any condition (Gill and Mainous 1998; Mainous and Gill 1998).

Continuity of care questions address the extent of the relationship with a specific provider and the "person orientation" of practitioner-patient interactions. This component was assessed by the following 4 items in PCAT as well as in SoFIE-Health PC:

Q: Would the <u>same doctor</u> or nurse take care of you every time you go?
Q: If you called them, could you talk to the person that <u>knows you best</u>?
Q: Do you think they <u>know you very well as a person</u>?
Q: Do you think they <u>know what medical problems</u> are most important to you?

The response categories for all the questions include:
Definitely
Probably
Probably not
Definitely not
DK/RF

2.2.4   Coordination of Care

As mentioned before there were no items on coordination of care in SoFIE PC while there were four items in PCAT.

2.2.5   Cultural Sensitivity/ Culturally Competent

Cultural competence addresses adaptations that would facilitate relationships with populations having special cultural characteristics or beliefs. There were three items in PCAT while only one item is used in SoFIE PC.

Q: Do you think they would give advice or treatment that is culturally sensitive?

The response categories include:

Definitely

Probably

Probably not

Definitely not

DK/RF

2.3   Development of Summary Measures of First Contact Care and Continuity

Scoring for each primary care sub domain (first contact utilisation, first contact access and continuity of care), described below involves the following steps.

2.3.1   First Contact - Access

Step 1.   Reverse response levels so that higher level indicates higher access to primary care: 11=4, 12=3, 13=2, 14=1, representing definitely, probably, probably not and definitely not respectively (Please see table 2.1). The response levels for DK/RF remained unchanged.

Table 2. 1: Response levels

Response categories	SNZ code	Our code*

Definitely	11	4*
Probably	12	3*
Probably not	13	2*
Definitely not	14	1*
DK/RF	88/99	88/99

Note: *Reverse the code so that higher code indicates higher use of primary care.

Step 2.   Exclude any observations if coded 99 (RF) in the sub-domain.

Step 3.   If less than 50% of questions/items for a person/s are coded 88 (DK) in the sub-domain, we impute the value for the response 88 in the following way.

-Sum the response levels for their answered questions/items.

- Multiply this sum by the mean of response of those who answered that question/item.

-Divide this number by the sum of the means of other questions/items.

For example, table 2.2 shows hypothetical response/s from four individuals (1-4) and missing information for individual 1 for the 3rd question/item (Q_3). Following the imputation procedure, the sum of responses to answered questions (Q_1 and (Q_2 in this case) for the first individual is 6 (3+3=6). The last row of column 4 in table 2.2 shows that the mean response for individuals 2-4 (the ones who answered this question) for question/item 3 is 3.6 (4+3+4/3=3.6). The mean for all respondents on question/item 1 and 2 is 3.25 (3+3+3+4/4=3.25) and 3.75 (3+4+4+4/4=3.75) respectively. The imputed value for would be:

$$= 3.66 \times \left(\frac{3+3}{3.25+3.75} \right) = 3.13$$

Table 2.2: Imputation of missing values

Respondents	Q_1	Q_2	Q_3
1	3	3	-

2	3	4	4
3	3	4	3
4	4	4	4
$\bar{x}$	3+3+3+4/4=3.25	3+4+4+4/4=3.75	4+3+4/3=3.66

Step 4.   The final score for this sub domain is calculated by summing responses (and imputed value for DK, if there is any) for each of the questions/items listed for that variable and dividing this sum by the number of questions/items.

For example, first contact access is assessed by means of answer to the three questions/ items. The mean score for this sub-domain (first contact- access) is calculated by the sum of the responses for each question/item divided by the number of questions/items to produce a mean score. This score will range from 4 if an individual's response to all the three questions/items is 4 (i.e. 4+4+4/3=4), to 1 if an individual's response to all the three questions/items is (i.e.1 1+1+1/3=1).
The final score was categorised into low (0-<2.5), medium (2.5 - <3.5) and high ($\geq$ 3.5).

2.3.2   First Contact Utilisation

Step 1.   Reverse response levels so that higher level indicates higher use of primary care as in table 2.1.
Step 2.   Exclude observations coded 99 (RF) in the sub-domain.
Step 3.   If <50% of questions are coded 88 (DK), replace 88 by 2 (probably). Do not score if coded 88 for >= 50% of questions in the sub-domain.
Step 4.   The final score for this sub-domain is calculated by the summing the response number (1 to 4) for each of the questions/items listed for that variable and dividing this sum by the number of questions/items.

For example, first contact- utilisation sub-domain is based on answers to 2 questions/items. The mean score for this sub-domain is calculated by the sum of the

responses to each question/item divided by the number of questions/items to produce a mean score. This score will also range from 1 to 4.

The final score was categorised into low (0-<2.5), medium (2.5 - <3.5) and high (≥ 3.5).

2.3.3 Continuity of Care

Step 1. Reverse response levels so that a higher level indicates higher use of primary care as in table 2.1.

Step 2. Exclude observations coded 99 (RF) in the sub-domain.

Step 3. If <50% of questions are coded 88 (DK), replace 88 by 2 (probably). Do not score if coded 88 for >= 50% of questions in the sub-domain.

Step 4. The final score for this sub-domain is calculated by summing the response number (1 to 4) for each of the questions/items listed for that variable and dividing this sum by the number of questions/items.

For example, the continuity of care variable is based on answer to 4 items. The mean score for this sub-domain is calculated by the sum of the response to the questions/items divided by the number of questions/items to produce a mean score.

The final score was categorised into low (0-<2.5), medium (2.5 - <3.5) and high (≥ 3.5).

2.4 Health Outcome Variables[4]

2.4.1 General Health

The global self-rated health question is asked at every wave of all respondents aged 15+ years. It was taken from the first SF36 question "*in general would you say your health is...*" with a 5-point Likert Scale. Excellent (1), Very Good (2), Good (3), Fair (4), Poor (5), don't know (88), refused (99). This report presents results on all 5 levels of self-rated health.

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[4] For a detailed information on the creation of health variables, please refer to Carter, K., Hayward, M., & Richardson, K. (2008). SoFIE-Health Baseline Report: Study Design and Associations of Social Factors and Health in Waves 1 to 3. SoFIE-Health Report 2. Wellington: University of Otago, Wellington.

2.4.2 SF36

The Short-Form health survey (SF-36) is a multi-purpose survey with only 36 questions. The most recent SF-36 Version 2 was used in the SoFIE survey. The SF-36 is comprised of 36 questions that fall into eight health domains: general health perceptions (GH items), physical functioning (PF), role limitations due to physical functioning (RP), bodily pain (BP), general mental health (MH), role limitations due to emotional problems (RE), vitality (VT), and social functioning (SF) (Ware, Snow et al. 2000). Each is scored from 0 (worst score) to 100 (best score). The SF-36 also yields two psychometrically-based physical and mental health summary measures the Physical Component Summary (PCS) and the Mental Component Summary (MCS). SF-36 has been validated in New Zealand (Scott, Tobias et al. 1999).

2.4.3 Kessler-10 Scale

The Kessler-10 (K-10) is a scale measuring non-specific psychological distress (Kessler, Andrews et al. 2002; Kessler, Barker et al. 2003). The K-10 consists of ten questions about non-specific psychological distress and seeks to measure the level of current anxiety and depressive symptoms based on questions about negative emotional states experienced a person may have experienced in the four weeks prior to interview. The scores were grouped into four levels according to the 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, Chey et al. 2006).

2.4.4 Chronic Diseases

As part of the health module each respondent was asked "have you ever been told by a doctor that you had": Asthma, High Blood Pressure, High Cholesterol, Heart Disease, Diabetes, Stroke, Migraines, Chronic Depression, Manic Depression or Schizophrenia. If a respondent answered "Yes" to any of these, they are not asked in following waves. This was coded into a co-morbidities index: 0, 1-2, >2 co-morbid diseases.

2.5 Demographic, Socioeconomic and Health behaviour Variables

All demographic, socio-economic and health behaviour variables used in this report are collected at wave 3 of SoFIE.

2.5.1 Geographical region

Major geographical regions of dwelling were, Auckland, Waikato, Wellington, Rest of North Island, Canterbury, Rest of South Island.

2.5.2 Age

Age is categorised into 5 year age groups as 15-24, 25-34, 35-44, 45-54, 55-64, and 65+.

2.5.3 Marital status

Marital status relates to legal marital status and is categorised into currently married, previously married (separated/divorced/widowed) and never married.

2.5.4 Ethnicity

This report uses the 'prioritised' concept of ethnicity. In the 'prioritised' concept, each respondent was assigned to a mutually exclusive ethnic group by means of a prioritisation system commonly used in New Zealand: 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; the remainder non-Māori non-Pacific non-Asian (nMnPnA), mostly New Zealanders of European descent, but strictly speaking not an ethnic group.

2.5.5 Income

In SoFIE, income is collected from every individual over 15 years at every wave. All income is reported as gross (before tax) amounts. Information is collected on household and individual income, with detailed information on the types/sources of individual income. This information has been used to derive into total annual household income and total personal income, with the main source within these incomes.

For the analyses in this report, equivalised household income at wave 3 is used[5]. Household equalised income is adjusted to Jensen index for household structure according to the consumer price index (CPI) for the quarter ending December 2001 (the first reference quarter of the study). Income presented in tertiles is used: low (< $26,109), medium ($26,109 to $43,015) and high (≥ $43,016).

2.5.6   Education

The education module in SoFIE collects two types of information. The first covers the type of qualification held, and the second covers participation in education during the period covered by this wave of the survey. We use the highest level of education in this paper which is categorised as no qualification, school qualification, and post-school vocational and degree or higher qualification[6].

2.5.7   NZ Deprivation 2001

NZDep2001, an index of socioeconomic deprivation, is a census based small-area index of deprivation (Salmond and Crampton 2002). NZDep2001 deprivation scores apply to <u>areas</u> 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.

2.5.8   NZiDep

The NZiDep index is a tool for measuring New Zealand socioeconomic deprivation for individuals and is based on eight simple questions which take about two minutes to administer (Salmond, King et al. 2005). The index is indicative of personal deprivation/need, in general, and is designed for use as a variable in research, and for

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[5] Statistics New Zealand has acknowledged there is a problem with the wave 3 income variables that will be corrected in future releases of SoFIE data. It is used here as a placeholder for corrected wave 3 income, to be included in a later version of this report, because we require co-temporality for household income and other SoFIE-PC variables.

[6] The Statistics NZ variable *MaxQualRank* does not extrapolate maximum qualifications from one year to the next, leaving many missing values. Until this problem is corrected, we have used our own version of this variable (*MaxQualRank_WSM*), derived by filling missing cells with valid responses (non-missing) from the previous year.

elucidating the relationships between socioeconomic position and health/social outcomes. The final deprivation score was coded into the following five ordinal categories[7]:

1 = no deprivation characteristics

2 = one deprivation characteristic

3 = two deprivation characteristics

4 = three or four deprivation characteristics

5 = five or more deprivation characteristics

2.5.9   Smoking

Detailed information on current and past cigarette use was asked as part of the health module. From this we derived a current smoking status variable:

Current smoker – Do you smoke cigarettes = Yes

Ex smoker – Do you smoke cigarettes = No, Have you ever been a regular smoker = Yes

Never smoked – Do you smoke cigarettes = No, Have you ever been a regular smoker = No

2.5.10   Alcohol

Alcohol consumption measures the frequency of drinking and is derived from whether a respondent had a drink in the last month, and if so how many days in the last 4 weeks did they drink. This was categorised as never drinks, drinks monthly or less, drinks 2-4 times a month, drinks 2-3 times a week, or drinks 4 or more times a week.

Binge drinking was calculated as if a respondent had > 0 occasions in the last 4 weeks where they drank 8 (male) or 6 (female) drinks containing alcohol. The frequency of binge drinking was coded as never binge drinks, binge drank monthly, binge drank 2 times per month, binge drank weekly, daily or almost daily binge drinking.

2.6   Analyses

This report provides cross sectional analyses of wave 3. The population used in the analyses was 18,320 adults original sample member (OSM) at wave 3.   The analyses

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[7] Relatively few people have the largest number of deprivation characteristics

from chapter four onwards are further restricted to those who reported having an affiliation with a PCP. All analyses and data management were conducted using SAS 8.2 in the Statistics NZ data laboratory. All tables present crude analyses i.e. the results are not adjusted for age (or other confounders). The analyses are based on unweighted data.

2.6.1 Data Management

Access to the unit record data was via Statistics NZs Wellington data laboratory under conditions designed to protect the confidentiality of individuals' information. The dataset used here contains a longitudinal record for each surveyed OSM, with variables from both the core SoFIE and SoFIE-Health questionnaire components. Coding was done to standard classifications, for example ethnicity, occupation, industry and qualifications.

2.6.2 Rounding

To produce confidentialised results in concordance with the *Statistics Act (1975)*, rounding procedures were used on all outputs. All counts and values in the tables have been randomly rounded (up or down) to the nearest multiple of 5 and cells with counts less than 10 assigned the value 10. Therefore, table totals may not equal the sum of individual cells. Some row percentages in the tables may also sum to greater than 100, as the percentages were calculated according to the randomly rounded totals.

Chapter 3 Association between Affiliation and Health

This chapter describes in detail the characteristics of those who are affiliated/not affiliated with a PCP and the associations between affiliation and health status. Defining the characteristics of those affiliated/not affiliated with a PCP at the individual level is especially important in the light of the fact that a PCP is usually the first point of contact for patients and PCPs are "gatekeepers", who regulate access to more costly secondary and tertiary care. Being able to identify a usual source of care means a person has a point of entry to the health care system.

3.1 Demographic characteristics of participants affiliated with a PCP versus not affiliated with a PCP

The following section describes the demographic characteristics of those who were affiliated/not affiliated with a PCP (Tables 3.1; crude and not adjusted for any other covariates). Of the total of 18,320 respondents, 16,735 (91.3%) reported an affiliation with a PCP and 1515 (8.3%) reported no affiliation with a PCP. Respondents living in Auckland and Wellington were more likely to be not affiliated with a PCP (11.6% and 9.3% respectively) than respondents living in the rest of the North Island[8] (6.4%). Similarly respondents living in Canterbury were more likely not to be affiliated with a PCP (7.1%) than respondents living in the rest of the South Island (excluding Canterbury) (5.5%).

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[8] Excluding Auckland, Waikato and Wellington

Table 3.1: Demographic characteristics of respondents who reported having affiliation with a place/doctor versus those with no affiliation with a place/doctor[1]

Characteristics	N	Affiliation with a PCP					
		Yes (N)	%	No (N)	%	Miss, DK, REF (N)	%
Total	18320	16735	91.3	1515	8.3	75	0.4
Major region							
Auckland	4540	3995	88.0	525	11.6	15	0.3
Waikato	1660	1515	91.5	145	8.5	.	.
Wellington	2430	2170	89.2	225	9.3	35	1.5
Rest of North Island	4130	3855	93.4	265	6.4	10	0.2
Canterbury	2960	2740	92.6	210	7.1	10	0.2
Rest of South Island	2605	2455	94.3	145	5.5	10	0.2
Age							
15-24	2775	2280	82.1	480	17.3	15	0.6
25-44	6235	5575	89.4	640	10.2	25	0.4
45-64	6135	5765	94.0	350	5.7	20	0.3
65-74	1740	1700	97.5	35	2.1	10	0.4
75+	1425	1405	98.7	15	1.0	10	0.3
Sex							
Male	8430	7420	88.0	970	11.5	40	0.5
Female	9890	9315	94.2	540	5.5	30	0.3
Marital status							
Currently married	9575	9025	94.3	515	5.4	35	0.3
Previously married	3220	3035	94.3	170	5.3	15	0.4
Never married	5515	4665	84.6	825	15.0	25	0.5
Ethnicity							
NZ/European	14315	13235	92.5	1035	7.2	40	0.3
Māori	1975	1790	90.8	175	8.8	10	0.4
Pacific	800	700	87.6	85	10.9	10	1.5
Asian	925	735	79.1	185	20.3	10	0.6
Others	310	270	88.1	30	10.6	10	1.3
Born In NZ							
No	3755	3315	88.2	415	11.1	25	0.7
Yes	14560	13420	92.2	1100	7.5	45	0.3

Note: Total N may not sum up to 18320 because of random rounding.

[1]*Unadjusted for age or other covariates.*

Younger adults were more likely not to have an affiliation with a PCP than older adults. Men were more likely than women not to have an affiliation with a PCP (11.5% and 5.5% respectively). A higher proportion of never married people were not affiliated with a PCP (15.0). A higher proportion of Pacific and Asian (10.9% and 20.3% respectively) than NZ European and Māori (7.2% and 8.8% respectively) were not affiliated with a PCP. Note, again, though that these differences are based on crude data, unadjusted for age.

3.2   Socioeconomic and health behaviour characteristics of participants affiliated with a PCP versus those not affiliated with a PCP

Tables 3.2 and 3.3 show the association between affiliation and socioeconomic characteristics and health behaviours respectively. Non-affiliation tended to decrease with increase in income. No clear pattern emerged between affiliation and individual deprivation and between affiliation and education. People from the most deprived areas of New Zealand were more likely not to be affiliated with a PCP (8.7%), than people from the least deprived areas (6.7%).   A higher proportion of current smokers (10.5 %) than ex smoker (5.2%) or never smokers (8.9%) were not affiliated with a PCP. Among those who were daily or almost daily binge drinkers, 14.1% were not affiliated with a PCP compared with only 7.0% of those who were never binge drinkers. However, these rates are not adjusted for age or any other covariates.

Table 3.2: Socioeconomic characteristics of respondents who reported having affiliation with a place/doctor versus those with no affiliation with a place/doctor[1]

Characteristics	N	Yes (N)	%	No (N)	%	Miss, DK, REF (N)	%
				Affiliation with a PCP			
Total	18330	16735	91.3	1515	8.3	75	0.4
Income tertiles							
1	6315	5865	92.9	425	6.7	25	0.3
2	5160	4680	90.8	450	8.8	25	0.4
3	6850	6185	90.3	635	9.3	25	0.4
NZDep							
NZDepQ1 (least deprived)	3495	3235	92.6	230	6.7	25	0.7
NZDepQ2	3580	3280	91.5	295	8.2	10	0.3
NZDepQ3	3305	2985	90.4	310	9.4	10	0.2
NZDepQ4	3835	3505	91.5	310	8.2	15	0.4
NZDepQ5 (most deprived)	3505	3185	90.9	305	8.7	15	0.4
Missing	600	540	89.9	60	10.1	.	.
NZiDep							
No Dep	13085	12005	91.7	1070	8.2	10	0.1
1 Dep	2795	2555	91.3	240	8.7	10	0.0
2 Dep	1105	1000	90.6	100	9.2	10	0.2
3-4 Dep	965	885	91.4	80	8.6	.	.
5 + Dep	295	280	93.9	20	6.1	.	.
Missing	70	15	21.9	10	4.1	55	74.0
Education							
No education	265	225	84.5	35	13.6	10	1.9
School	4915	4455	90.6	440	9.0	20	0.5
Post-school vocational	6275	5755	91.7	500	8.0	15	0.3
Degree or higher	2585	2275	87.9	305	11.9	10	0.3
Missing	4275	4030	94.2	230	5.4	20	0.4

Note: Total N may not sum up to 18320 because of random rounding.

[1]Unadjusted for age or other covariates.

Table 3.3: Health behaviour characteristics of respondents who reported having affiliation with a place/doctor versus those with no affiliation with a place/doctor[1]

| Characteristics | *N* | Affiliation with a PCP | | | | | |
		Yes (N)	%	No (N)	%	Miss, DK, REF (N)	%
Total	18330	16735	91.3	1515	8.3	75	0.4
Smoking							
Current	3705	3310	89.5	385	10.5	10	0.1
Ex	4660	4410	94.7	240	5.2	10	0.1
Never	9890	8995	90.9	885	8.9	15	0.1
Missing	65	15	20.6	10	1.5	55	77.9
Had drink in the last 12 months							
Yes	3290	3005	91.3	285	8.6	10	0.2
No	14945	13710	91.7	1230	8.2	10	0.1
Miss, DK, REF	80	20	27.8	10	2.5	55	69.6
Alcohol drink frequency							
Never	3290	3005	91.3	280	8.6	10	0.2
< monthly	3390	3125	92.3	255	7.6	10	0.2
2-4 times/ monthly	4880	4430	90.9	445	9.1	10	0.0
2-3 times/ week	2510	2280	90.9	225	9.1	10	0.0
4 or more times/ week	4150	3845	92.7	300	7.3	10	0.0
Miss, DK, REF	100	45	42.6	10	3.0	55	54.5
Binge drink							
Never	9335	8680	93.0	650	7.0	10	0.1
Monthly	1405	1255	89.3	150	10.7	.	.
2 times/ month	825	735	89.1	90	10.9	.	.
Weekly	990	880	88.4	115	11.6	.	.
Daily or almost daily	685	590	85.8	100	14.1	10	0.1
Miss, DK, REF	5070	4590	90.6	415	8.1	60	1.2

Note: Total N may not sum up to 18320 because of random rounding.

[1]Unadjusted for age or other covariates.

3.3 Association between affiliation and health

Tables 3.4, 3.5 and 3.6 describe the association of the various health measures with affiliation with a PCP. However, please note that these results are not adjusted for age or any other covariates. Respondents reporting excellent, very good and good health were more likely to not be affiliated with a PCP (12.2%, 7.8%, and 5.6% respectively) than respondents reporting fair and poor health (3.3% and 1.7% respectively but small cell counts in latter). Those reporting low levels of psychological distress were more likely to not be affiliated (8.6%) than those reporting high and very high levels of psychological distress (6.7% and 4.0% respectively but small counts in latter). The mean mental distress score was 13.5 for those having an affiliation with a PCP and 13.1 for those not having an affiliation with a PCP (Table 3.6).

Table 3.5 provides a detailed description of the association of various chronic conditions and affiliation. This is based on the responses to questions about whether they had ever been told by a doctor if they had various chronic diseases. A chronic disease is a physical or mental illness that has lasted, or is expected to last, for more than six months. The chronic diseases were summed into a co-morbidity index, which is presented in the last rows of Table 3.5. Respondents with a presence of any chronic disease were more likely to be affiliated with a PCP as compared to those reporting no chronic disease. There were particularly large differences in not being affiliated with a PCP with those reporting a high blood pressure (2.3% vs 10% with or without high BP respectively) and high cholesterol (2.3% vs 9.5% with or without high cholesterol respectively). Similarly there is an increasing trend with increasing co-morbid diseases for the proportion of respondents who were affiliated with a PCP. For example, 87% of the respondents reporting no chronic diseases were affiliated with a PCP as compared to 99% of those reporting more than two co-morbid diseases. These results might reflect the age structure of the population which we have not controlled for.

Table 3.6 describes the mean, standard deviation, standard error and 95% confidence interval for eight SF-36 (version 2) domain scores and the physical and mental component score by affiliation. The eight domains are: physical functioning (PF),

role limitations due to physical problems (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role limitations due to emotional problems (RE), and mental health (MH).   Table 3.6 also supports previous results that people not affiliated with a PCP have better mental health status than those affiliated with a PCP with higher mean score on all SF-36 domains.

Table 3.4: Health characteristics of respondents who reported having affiliation with a place/doctor versus those with no affiliation with a place/doctor[1]

Characteristics	*N*	Yes (N)	%	No (N)	%	Miss, DK, REF (N)	%
			Affiliation with a PCP				
Total	18330	16735	91.3	1515	8.3	75	0.4
Self assessed health (%)							
Excellent	6095	5330	87.4	745	12.2	25	0.4
V Good	6235	5730	91.9	485	7.8	15	0.3
Good	4120	3885	94.2	230	5.6	10	0.3
Fair	1435	1375	96.2	50	3.3	10	0.6
Poor	420	405	97.4	10	1.7	10	1.0
Miss, DK, REF	10	10	60.0	.	.	10	40.0
Kessler 10 groups							
Low (10-15)	14120	12895	91.3	1210	8.6	10	0.1
Moderate (16-21)	2725	2505	92.0	215	8.0	10	0.0
High (22-29)	945	880	93.1	65	6.7	10	0.2
V. High (30+)	300	290	96.0	10	4.0	.	.
Miss, DK, REF	235	170	71.4	15	5.1	55	23.5

Note: *Total N may not sum up to 18320 because of random rounding.*

   [1]Unadjusted for age or other covariates.

Table 3.5: Prevalence of chronic disease among who reported having affiliation with a place/doctor versus those with no affiliation with a place/doctor[1]

Characteristics	N	Yes (N)	%	No (N)	%	Miss, DK, REF (N)	%
				Affiliation with a PCP			
Total	18330	16735	91.3	1515	8.3	75	0.4
Prevalence of Asthma							
Yes	3450	3245	94.0	210	6.0	10	0.0
No	14805	13475	91.0	1305	8.8	20	0.1
Missing	65	10	16.1	10	4.8	50	79.0
High BP							
Yes	3995	3905	97.6	95	2.3	10	0.1
No	14255	12815	89.9	1420	10.0	20	0.1
Missing	70	20	25.7	10	2.9	50	71.4
High cholesterol							
Yes	3145	3070	97.6	75	2.3	10	0.0
No	15060	13610	90.3	1440	9.5	20	0.1
Missing	115	55	50.0	10	5.4	50	44.6
Heart disease							
Yes	1160	1145	98.8	10	1.1	10	0.1
No	17080	15560	91.1	1500	8.8	20	0.1
Missing	80	30	34.2	10	2.5	50	63.3
Diabetes							
Yes	810	795	98.6	10	1.1	10	0.2
No	17450	15925	91.3	1505	8.6	20	0.1
Missing	69	10	15.0	10	1.7	50	83.3
Stroke							
Yes	450	450	99.3	10	0.7	.	.
No	17800	16270	91.4	1510	8.5	20	0.1
Missing	65	15	21.5	10	1.5	50	76.9
Migraines							
Yes	2445	2335	95.6	105	4.4	10	0.0
No	15805	14380	91.0	1410	8.9	20	0.1
Missing	70	20	28.2	10	1.4	50	70.4
Manic Dep/ Schizophrenia							
Yes	1680	1620	96.3	65	3.8	.	.
No	16575	15100	91.1	1455	8.8	20	0.1
Missing	65	15	23.9	10	1.5	50	74.6
Co-morbidity index (%)							
0	8305	7220	86.9	1070	12.9	15	0.2
1-2	8150	7715	94.7	425	5.2	10	0.1
>2	1810	1795	98.9	15	1.0	10	0.1
Miss, DK, REF	55	10	9.1	10	1.8	50	89.1

Note: Total N may not sum up to 18320 because of random rounding.

Table 3.6: Health characteristics of respondents who reported having affiliation with a place/doctor versus those with no affiliation with a place/doctor[1]

	Affiliation with a PCP					Non-Affiliation with a PCP				
	N	Mean	SD	SE	95% CI	N	Mean	SD	SE	95% CI
SF-36 domain										
PF	16720	85.4.	22.4	0.173	85.1- 85.7	1510	94.9	11.8	0.304	94.2 - 95.4
RP	16695	83.4	24.1	0.186	83.0 - 83.7	1515	91.9	15.6	0.402	91.1 -9 2.7
BP	16715	81.3	23.2	0.179	80.9 - 81.6	1510	88.1	17.6	0.454	87.2 - 89.0
GH	16710	77.7	20.4	0.158	77.4 - 78.0	1510	84.2	15.3	0.395	83.5 - 85.0
VT	16655	63.9	20.2	0.156	63.6 - 64.2	1510	69.7	18.3	0.472	68.8 - 70.6
SF	16705	89.6	21.0	0.163	89.3 - 89.9	1510	93.9	15.2	0.391	93.1 - 94.7
RE	16690	91.9	17.1	0.132	91.6 - 92.1	1510	94.0	14.5	0.373	93.3 - 94.7
MH	16660	83.1	14.4	0.112	82.9 - 83.3	1505	84.2	12.7	0.327	83.5 - 84.8
PCS	16625	50.1	9.4	0.073	49.9 - 50.2	1505	54.1	5.7	0.147	53.8 - 54.4
MCS	16625	52.1	9.1	0.070	52.0 - 52.2	1505	52.9	7.9	0.205	52.5 - 53.3
Kessler scale										
Mean	16565	13.5	4.8	0.037	13.4-13.6	1505	13.1	4.1	0.105	12.9 - 13.3

Note: [1]*Unadjusted for age or other covariates.*

PF: physical functioning; RP: role physical; BP: bodily pain; GH: general health; VT: vitality;

SF: social functioning; RE: role emotional; MH: mental health.

Chapter 4 Association between First Contact-Accessibility and Health

This chapter describes in details the association of the first contact-access sub-domain of primary care with demographic, socioeconomic, health behaviour and various health measures at Wave 3. The results in all the subsequent chapters are for those who reported having an affiliation with a PCP. Note: numbers and means presented here are not adjusted for age or any other covariates.

4.1 Demographic characteristics associated with first contact-accessibility

The following section describes the mean and standard deviations of various demographics of first contact-access (Table 4.1; crude and not adjusted for any other covariates). The mean score for first contact-access was 3.16 (95% CI 3.14 to 3.18). Respondents living in Waikato reported the highest mean score on first contact-access (3.28, 95% CI 3.25 to 3.31), while the lowest mean score was reported by those living in rest of the South Island excluding Canterbury (3.02, 95% CI 3.00 to 3.04). As the age of the respondents increased, so did the mean first contact- accessibility score, with older respondents aged 65 and above reporting a mean score of 3.26 (95% CI 3.23 to 3.29) as compared to younger respondents (3.01, 95% CI 2.99 to 3.01). First contact-accessibility scores were found to only modestly vary by sex and between Māori, European and Pacific. Asian was significantly lower (3.04, 2.99 to 3.09), and likewise among the never married (3.06, 3.04 to 3.08). Note, again, thought that these differences are based on crude data, unadjusted for age.

Table 4.1: First contact access by demographics[1]

Characteristics	*N*	Mean (95% CI)	SD
All	15285	3.16 (3.14 - 3.18)	0.57
Major region			
Auckland	3635	3.16 (3.14 - 3.18)	0.57
Waikato	1395	3.28 (3.25 - 3.31)	0.58
Wellington	1995	3.06 (3.04 - 3.08)	0.54
Rest of North Island	3570	3.21 (3.19 - 3.23)	0.55
Canterbury	2495	3.22 (3.20 - 3.24)	0.54
Rest of South Island	2185	3.02 (3.00 - 3.04)	0.58
Age			
15-24	1915	3.01 (2.99 - 3.03)	0.54
25-44	5160	3.12 (3.10 - 3.14)	0.57
45-64	5320	3.19 (3.17 - 3.21)	0.56
65-74	1580	3.26 (3.23 - 3.29)	0.56
75+	1310	3.26 (3.23 - 3.29)	0.56
Sex			
Male	6590	3.13 (3.12 - 3.14)	0.56
Female	8695	3.18 (3.17 - 3.19)	0.57
Marital status			
Currently married	8440	3.20 (3.19 - 3.21)	0.57
Previously married	2770	3.19 (3.17 - 3.21)	0.56
Never married	4065	3.06 (3.04 - 3.08)	0.56
Missing	10		
Ethnicity			
NZ/European	12115	3.17 (3.16 - 3.18)	0.56
Māori	1630	3.16 (3.13 - 3.19)	0.57
Pacific	640	3.15 (3.10 - 3.20)	0.60
Asian	660	3.04 (2.99 - 3.09)	0.64
Others	245	3.09 (3.01 - 3.17)	0.64
Born In NZ			
No	3045	3.14 (3.12 - 3.16)	0.59
Yes	12240	3.16 (3.15 - 3.17)	0.56

Note: Total N may not sum up 15285 because of random rounding and missing values.

[1]Not adjusted for age or any other covariates.

4.2   Socioeconomic and health behaviour characteristics associated with first contact - accessibility

Tables 4.2 and 4.3 show the associations between mean first contact-accessibility scores and socioeconomic and health behaviour characteristics of the respondents. Mean First contact – accessibility scores were positively associated with income tertiles but negatively with individual deprivation. Those in the highest income tertile had above the mean first contact – access scores (3.19, 95% CI 3.17 to 3.21) than those in the lowest income tertile (3.13, 95% CI 3.12 to 3.14). Mean first contact-accessibility scores declined with increases in the number of individual deprivation characteristics (NZiDep). Those with no individual deprivation had a mean score which is above the mean first contact – access score (3.18, 95% CI 3.17 to 3.19) while those with a 5+ score for individual deprivation characteristics had a mean score below the mean first contact – access score (3.12, 95% CI 3.05 to 3.19). There was no clear pattern associated with area deprivation and education with first contact-access.   Scores were found to be above the average for ex-smokers (3.20, 95% CI 3.18 to 3.22) and those who were never binge drinkers (3.17, 95% CI 3.16 to 3.18). Note, again, thought that these differences are based on crude data, unadjusted for age or any other covariates.

Table 4.2: First contact access by socioeconomic factors[1]

Characteristics	*N*	Mean (95% CI)	SD
All	15285	3.16 (3.15 - 3.17)	0.57
Income tertiles			
1	5395	3.19 (3.17 - 3.21)	0.58
2	4265	3.15 (3.13 - 3.17)	0.57
3	5625	3.13 (3.12 - 3.14)	0.55
NZDep			
NZDepQ1 (least deprived)	2965	3.15 (3.13 - 3.17)	0.55
NZDepQ2	3000	3.16 (3.14 - 3.18)	0.56
NZDepQ3	2670	3.13 (3.11 - 3.15)	0.56
NZDepQ4	3235	3.16 (3.14 - 3.18)	0.57
NZDepQ5 (most deprived)	2915	3.17 (3.15 - 3.19)	0.58
Missing	500		
NZiDep			
No Dep	10955	3.18 (3.17 - 3.19)	0.55
1 Dep	2350	3.14 (3.12 – 3.16)	0.59
2 Dep	915	3.05 (3.01 - 3.09)	0.59
3-4 Dep	800	3.07 (3.03 - 3.11)	0.63
5 + Dep	255	3.12 (3.05 - 3.19)	0.61
Missing	10		
Education			
No education	165	3.12 (3.04 - 3.20)	0.53
School	4020	3.16 (3.14 - 3.18)	0.55
Post-school vocational	5310	3.17 (3.15 - 3.19)	0.57
Degree or higher	2105	3.09 (3.07 - 3.11)	0.57
Missing	3675		

Note: Total N may not sum up to 15285 because of random rounding and missing values

[1]Unadjusted for age or any other covariates

Table 4.3: First contact access (FCA) by health behaviour characteristics[1]

Characteristics	*N*	Mean (95% CI)	SD
All	15285	3.16 (3.15 - 3171)	0.57
Smoking			
Current	3025	3.14 (3.12 - 3.16)	0.58
Ex	4095	3.20 (3.18 - 3.22)	0.56
Never	8160	3.14 (3.13 - 3.15)	0.56
Missing	10		
Had drink in the last 12 months			
Yes	12545	3.15 (3.14 - 3.16)	0.56
No	2730	3.18 (3.16 - 3.20)	0.59
Missing	15		
Alcohol drink frequency			
Never	2730	3.18 (3.16 - 3.20)	0.59
< monthly	2895	3.18 (3.16 - 3.20)	0.56
2-4 times/ monthly	4040	3.12 (3.10 - 3.14)	0.57
2-3 times/ week	2055	3.13 (3.11 - 3.15)	0.55
4 or more times/ week	3535	3.18 (3.16 - 3.20)	0.55
Missing	30		
Binge drink			
Never binge drink	7995	3.17 (3.16 - 3.18)	0.56
Monthly	1135	3.14 (3.11 - 3.17)	0.55
2 times/ month	660	3.11 (3.07 - 3.15)	0.54
Weekly	780	3.06 (3.02 - 3.10)	0.54
Daily or almost daily	515	3.07 (3.02 - 3.12)	0.56
Missing	4195		

Note: Total N may not sum up to 15285 because of random rounding.

[1]Unadjusted for age or any other covariates.

4.3   *Association between first contact-accessibility and health*

Tables 4.4, 4.5 and 4.6 show the association between mean first contact-accessibility scores and various health measures. Mean scores for first contact-access increased with declines in self assessed health. However, the score decreased with an increase in the levels of psychological distress (Kessler-10). For example, those experiencing fair and poor health had a higher mean first contact – access score (3.21, 95% CI 3.18 to 3.24 and 3.24, 95% CI 3.18 to 3.30 respectively) than those with excellent and very good health (3.17, 95% CI 3.15 to 3.19 and 3.14, 95% CI 3.12 to 3.16 respectively). Those reporting low levels of psychological distress had a higher mean first contact – access score (3.17, 95% CI 3.16 to 3.18) than those reporting high and very high levels of psychological distress (3.14, 95% CI 3.10 to 3.18 and 3.12, 95% CI 3.04 to 3.20 respectively). However, these results will be strongly confounded by age. General health is worse with increasing age, and first contact accessibility is higher with increasing age. Therefore, it

is likely that there is no, or even a reversed, association of first contact accessibility with self-rated general once age is adjusted. Regarding mental distress, there is less association with age – so less likelihood of confounding.

Table 4.5 provides a detailed description of the association of various chronic conditions and mean first contact - accessibility. Respondents with a presence of any chronic disease were more likely to have a higher first contact - accessibility as compared to those reporting no chronic disease. These differences were noticeable among those reporting a high blood pressure (3.24, 95% CI 3.20 to 3.24 vs 3.13, 95% CI 3.12 to 3.14 with or without high BP respectively), high cholesterol (3.22, 95% CI 3.20 to 3.24 vs 3.15, 95% CI 3.14 to 3.16 with or without high cholesterol respectively), heart disease (3.30, 95% CI 3.27 to 3.33 vs 3.15, 95% CI 3.14 to 3.16 with or without heart disease respectively), diabetes (3.25, 95% CI 3.21 to 3.29 vs 3.15, 95% CI 3.14 to 3.16 with or without diabetes) and stroke (3.23, 95% CI 3.17 to 3.29 vs 3.16, 95% CI 3.15 to 3.17 with or without stroke). Similarly there is an increasing trend in first contact-access with increasing co-morbid diseases. Those reporting no co-morbid conditions had had a mean score which is below the mean first contact – access score (3.12, 95% CI 3.11 to 3.13) while those reporting 2 + co-morbid conditions had a mean score which is above the overall mean first contact – access score (3.25, 95% CI 3.22 to 3.28). However, please note that these results are unadjusted for age or any other covariates.

Table 4.6 also supports previous results that respondents with high levels of first contact - access (a score of ≥3.5) tend to rate their health lower on the physical domains of SF-36 than those reporting low levels of first contact - access (a score of <2.5) with lower mean score on physical domains of SF-36. However, the converse is true about the mental health domains of SF-36, with respondents reporting low levels of first contact - access rating their health lower on the mental health domains of SF-36 than those reporting high levels of first contact - access with lower mean score on mental health domains of SF-36. The mean psychological distress ranged from 13.77 (95% CI 13.60 to 13.94) for those reporting low levels of first contact - access to 13.45 (95% CI 13.31 to 3.59) for those reporting high levels of first contact – access.

Table 4.4: First contact access (FCA) by self rated health[1]

Characteristics	*N*	Mean (95% CI)	SD
All	15285	3.16 (3.15 - 3.17)	0.57
Self assessed health (%)			
Excellent	4790	3.17 (3.15 - 3.19)	0.54
V Good	5245	3.14 (3.12 - 3.16)	0.56
Good	3585	3.15 (3.13 - 3.17)	0.58
Fair	1280	3.21 (3.18 - 3.24)	0.59
Poor	380	3.24 (3.18 - 3.30)	0.64
Missing	10		
Kessler 10 groups			
Low (10-15)	11765	3.17 (3.16 - 3.18)	0.56
Moderate (16-21)	2310	3.11 (3.09 - 3.13)	0.58
High (22-29)	810	3.14 (3.10 - 3.18)	0.58
V. High (30+)	265	3.12 (3.04 - 3.20)	0.67
Missing	135		

Note: Total N may not sum up to 15285 because of random rounding.

[1]Unadjusted for age or any other covariates.

Table 4.5: First contact access by prevalence of chronic disease[1]

Characteristics	N	Mean	SD
All	15285	3.16 (3.15 - 3.17)	0.57
Prevalence of Asthma			
Yes	2990	3.16 (3.14 - 3.18)	0.57
No	12290	3.16 (3.15 - 3.17)	0.57
Missing	10		0.49
High BP			
Yes	3650	3.24 (3.22 - 3.26)	0.58
No	11625	3.13 (3.12 - 3.14)	0.56
Missing	10		0.69
High Cholesterol			
Yes	2890	3.22 (3.20 - 3.24)	0.56
No	12350	3.15 (3.14 - 3.16)	0.57
Missing	45		0.65
Heart disease			
Yes	1090	3.30 (3.27 - 3.33)	0.58
No	14175	3.15 (3.14 - 3.16)	0.56
Missing	20		0.63
Diabetes			
Yes	750	3.25 (3.21 - 3.29)	0.60
No	14530	3.15 (3.14 - 3.16)	0.56
Missing	10		0.00
Stroke			
Yes	425	3.23 (3.17 - 3.29)	0.63
No	14850	3.16 (3.15 - 3.17)	0.56
Missing	10		0.55
Migraines			
Yes	2215	3.19 (3.17 - 3.21)	0.57
No	13055	3.15 (3.14 - 3.16)	0.56
Missing	15		0.50
Manic Dep/ Schizophrenia			
Yes	1505	3.15 (3.12 - 3.18)	0.57
No	13765	3.16 (3.15 - 3.17)	0.57
Missing	10		0.55
Co-morbidity index (%)			
0	6440	3.12 (3.11 - 3.13)	0.56
1-2	7140	3.17 (3.16 - 3.18)	0.57
>2	1705	3.25 (3.22 - 3.28)	0.59
Missing	10		

Note: Total N may not sum up to 15285 because of random rounding and missing values.

Unadjusted for age or any other covariates.

Table 4.6: First contact access (FCA) by SF-36[1]

			Low FCA			Medium FCA			High FCA	
	Total (*N*)	N	Mean	SD	N	Mean	SD	N	Mean	SD
SF-36 domain										
PF	16720	3270	87.79 (87.11 - 88.47)	19.93	8995	86.06 (85.61 - 86.51)	21.96	4460	82.48 (81.75 - 83.21)	24.85
RP	16700	3260	85.22 (84.44 - 86.00)	22.72	8985	83.61 (83.11 - 84.11)	23.97	4450	81.69 (80.94 - 82.44)	25.38
BP	16720	3265	82.53 (81.77 - 83.29)	22.29	8995	81.42 (80.94 - 81.90)	23.10	4460	80.09 (79.38 - 80.80)	24.14
GH	16710	3260	77.47 (76.78 - 78.16)	20.11	8985	78.02 (77.61 - 78.43)	19.93	4455	77.32 (76.69 - 77.95)	21.61
VT	16655	3250	62.89 (62.20 - 63.58)	20.02	8960	64.00 (63.59 - 64.41)	19.72	4445	64.64 (64.01 - 65.27)	21.26
SF	16705	3260	90.48 (89.79 - 91.17)	20.12	8990	89.48 (89.04 - 89.92)	21.21	4455	89.41 (88.78 - 90.04)	21.58
RE	16690	3260	92.33 (91.76 - 92.90)	16.74	8980	91.98 (91.63 - 92.33)	16.88	4450	91.57 (91.04 - 92.10)	17.87
MH	16660	3250	82.10 (81.59 - 82.61)	14.87	8965	82.94 (82.64 - 83.24)	14.31	4445	84.32 (83.89 - 84.75)	14.47
PCS	16625	3240	51.13 (50.83 - 51.43)	8.62	8950	50.31 (50.12 - 50.50)	9.26	4440	48.89 (48.59 - 49.19)	10.12
MCS	16625	3240	51.44 (51.12 - 51.76)	9.25	8945	52.02 (51.83 - 52.21)	9.01	4440	52.93 (52.66 - 53.20)	9.24
Kessler scale										
Mean	16565	3225	13.77 (13.60 - 13.94)	4.89	8915	13.55 (13.45 - 13.65)	4.71	4425	13.45 (13.31 - 13.59)	4.91

Note: [1]*Unadjusted for age or other covariates.*

PF: physical functioning; RP: role physical; BP: bodily pain; GH: general health; VT: vitality;

SF: social functioning; RE: role emotional; MH: mental health.

Chapter 5 Association between First Contact-Utilisation and Health

This chapter describes in detail the associations of the first contact-use sub-domain of primary care with demographic, socioeconomic, health behaviour and various health measures at Wave 3. Note: numbers and means are not adjusted for age or any other covariates.

5.1 Demographic characteristics associated with first contact - utilisation

The following section describes the mean and standard deviations of various demographics of first contact-utilisation (Table 5.1; crude and not adjusted for any other covariates). The mean score for first contact-utilisation was 3.74 (95% CI 3.73 to 3.75). Respondents living in Waikato reported the highest mean score on first contact-utilisation (3.83, 95% CI 3.81 to 3.85), while the lowest mean score was reported by those living Wellington (3.67, 95% CI 3.65 to 3.69). As the age of the respondents increased, so did the mean first contact- utilisation score, with older respondents aged 75 years and above reporting a mean score of 3.90 (95% CI 3.88 to 3.92) as compared to younger respondents aged 15-24 years (3.60, 95% CI 3.58 to 3.62). There was not much variation in the mean score for first contact-utilisation with respect to sex and 'born in New Zealand'. However, first contact - utilisation scores were found to be lower than the overall mean first contact – utilisation score among never married (3.64, 95% CI 3.63 to 3.65) and among Maori (3.68, 95% CI 3.66 to 3.70). Note, again, though that these differences are based on crude data, unadjusted for age.

Table 5.1: First contact utilisation by demographics[1]

Characteristics	*N*	Mean (95% CI)	SD
All %	16705	3.74 (3.73 – 3.75)	0.46
Major region			
Auckland	3990	3.74 (3.73 - 3.75)	0.45
Waikato	1515	3.83 (3.81 - 3.85)	0.38
Wellington	2160	3.67 (3.65 - 3.69)	0.49
Rest of North Island	3850	3.76 (3.75 - 3.77)	0.46
Canterbury	2735	3.75 (3.73 - 3.77)	0.46
Rest of South Island	2450	3.71 (3.69 - 3.73)	0.51
Age			
15-24	2275	3.60 (3.58 - 3.62)	0.53
25-44	5570	3.70 (3.69 - 3.71)	0.49
45-64	5760	3.76 (3.75 - 3.77)	0.45
65-74	1705	3.87 (3.85 - 3.89)	0.35
75+	1400	3.9 (3.88 - 3.92)	0.29
Sex			
Male	7400	3.71 (3.70 - 3.72)	0.47
Female	9305	3.76 (3.75 - 3.77)	0.46
Marital status			
Currently married	9010	3.77 (3.76 - 3.78)	0.44
Previously married	3030	3.79 (3.77 - 3.81)	0.45
Never married	4650	3.64 (3.63 - 3.65)	0.51
Ethnicity			
NZ/European	13215		0.46
Māori	1790	3.68 (3.66 - 3.70)	0.52
Pacific	695	3.76 (3.73 - 3.79)	0.42
Asian	735	3.74 (3.71 - 3.77)	0.45
Others	270	3.65 (3.59 - 3.71)	0.54
Born In NZ			
No	3305	3.75 (3.73 - 3.77)	0.45
Yes	13400	3.74 (3.73 - 3.75)	0.47

Note: Total N may not sum up to 16705 because of random rounding.

[1]Unadjusted for age or any other covariates.

5.2   Socioeconomic and health behaviour characteristics associated with first contact- utilisation

Tables 5.2 and 5.3 show the association between mean first contact-utilisation scores and socioeconomic and health behaviour characteristics of the respondents. Mean first contact – utilisation scores were positively associated with income tertile but negatively with individual deprivation. Those in the highest income tertile had higher mean scores (3.79, 95% CI 3.78 to 3.80) than those in the lowest income tertile (3.71, 95% CI 3.70 to 3.72). Mean first contact-utilisation score declined with increases in the number of individual deprivation characteristics. Those with no individual deprivation had higher mean scores (3.76, 95% CI 3.75 to 3.77) than those with 5 or more individual deprivation (3.66, 95% CI 3.60 to 3.72). There was no clear pattern associated with area deprivation and first contact – utilisation. Those with no education had lower than the overall mean first contact – utilisation score (3.57, 95% CI 3.50 to 3.64) while those with school or post-school vocational qualification had scores equal to the overall mean first contact – utilisation score (3.7, 95% CI 3.73 to 3.75). Ex-smokers had highest mean first contact – utilisation scores (3.77, 95% CI 3.76 to 3.78) while current smokers had the lowest scores (3.72, 95% CI 3.70 to 3.74). Scores were found to be above the overall average first contact – utilisation score for those who were never binge drinkers (3.76, 95% CI 3.75 to 3.77) and below the mean for any frequency of binge drinking. However, these results are not adjusted for age or any other covariates.

Table 5.2: First contact utilisation by socioeconomic factors[1]

Characteristics	N	Mean (95%CI)	SD
All	16705	3.74 (3.73 – 3.75)	0.46
Income tertiles			
1	5850	3.79 (3.78 - 3.80)	0.43
2	4680	3.72 (3.71 - 3.73)	0.48
3	6175	3.71 (3.70 - 3.72)	0.48
NZDep			
NZDepQ1 (least deprived)	3230	3.73 (3.71 - 3.75)	0.45
NZDepQ2	3270	3.75 (3.73 - 3.77)	0.46
NZDepQ3	2980	3.74 (3.72 - 3.76)	0.48
NZDepQ4	3505	3.74 (3.72 - 3.76)	0.48
NZDepQ5 (most deprived)	3180	3.75 (3.73 - 3.77)	0.45
Missing	540		
NZiDep			
No Dep	11990	3.76 (3.75 - 3.77)	0.45
1 Dep	2545	3.73 (3.71 - 3.75)	0.47
2 Dep	995	3.70 (3.67 - 3.73)	0.49
3-4 Dep	885	3.65 (3.61 - 3.69)	0.56
5 + Dep	275	3.66 (3.60 - 3.72)	0.52
Missing	10		
Education			
No education	220	3.57 (3.50 - 3.64)	0.52
School	4445	3.73 (3.72 - 3.74)	0.47
Post-school vocational	5750	3.74 (3.73 - 3.75)	0.47
Degree or higher	2270	3.69 (3.67 - 3.71)	0.48
Missing	4020		

Note: Total N may not sum up to 16705 because of random rounding.

[1]Unadjusted for age or any other covariates.

Table 5.3: First contact utilisation by health behaviour characteristics[1]

Characteristics	*N*	Mean (95% CI)	SD
All	16705	3.74 (3.73 – 3.75)	0.46
Smoking			
Current	3305	3.72 (3.70 - 3.74)	0.50
Ex	4410	3.77 (3.76 - 3.78)	0.45
Never	8980	3.73 (3.72 - 3.74)	0.46
Missing	10		
Had drink in the last 12 months			
Yes	13695	3.73 (3.72 - 3.74)	0.47
No	2995	3.78 (3.76 - 3.80)	0.44
Missing	20		
Alcohol drink frequency			
Never	35	3.66 (3.51 - 3.81)	0.46
< monthly	2995	3.78 (3.76 - 3.80)	0.44
2-4 times/ monthly	3125	3.74 (3.72 - 3.76)	0.47
2-3 times/ week	4425	3.70 (3.69 - 3.71)	0.50
4 or more times/ week	2280	3.73 (3.71 - 3.75)	0.46
Missing	3840		
Binge drink			
Never binge drink	8665	3.76 (3.75 - 3.77)	0.45
Monthly	1255	3.68 (3.65 - 3.71)	0.51
2 times/ month	735	3.67 (3.63 - 3.71)	0.50
Weekly	880	3.66 (3.62 - 3.70)	0.55
Daily or almost daily	590	3.68 (3.64 - 3.72)	0.49
Missing	4580		

Note: Total N may not sum up to 16705 because of random rounding.

      [1]Unadjusted for age or any other covariates.

5.3 Association between first contact- utilisation and health

Tables 5.4, 5.5 and 5.6 show the associations between mean first contact-utilisation scores and various health measures. While the mean scores for first contact-utilisation increased with declines in self assessed health, it was above the overall mean score for first contact - utilisation. However, the score decreased with an increase in the levels of psychological distress (Kessler-10). For example, those experiencing fair and poor health had a mean first contact − utilisation scores of 3.79 (95% CI 3.77 to 3.81) and 3.81 (95% CI 3.77 to 3.85) respectively while than those with excellent and very good health had mean first contact − utilisation scores of 3.73 (95% CI 3.72 to 3.74) and 3.72 (95% CI 3.71 to 3.73) respectively. Those reporting low levels of psychological distress had a mean score which is higher than the overall first contact − utilisation scores (3.76, 95% CI 3.75 to 3.77) while those reporting high and very high levels of psychological distress had lower than the overall first contact − utilisation mean scores (3.67, 95% CI 3.60 to 3.74).

Table 5.5 provides a detailed description of the association of various chronic conditions and mean first contact - accessibility. Respondents with a presence of any chronic disease were more likely to have a higher first contact - utilisation as compared to those reporting no chronic disease. These differences were noticeable among those reporting a high blood pressure (3.82, 95% CI 3.81 to 3.83 vs 3.72, 95% CI 3.71 to 3.73 with or without high BP respectively), high cholesterol (3.80, 95% CI 3.78 to 3.82 vs 3.73, 95% CI 3.72 to 3.74 with or without high cholesterol respectively), heart disease (3.86, 95% CI 3.84 to 3.88 vs 3.73, 95% CI 3.72 to 3.74 with or without heart disease respectively), diabetes (3.83, 95% CI 3.80 to 3.86 vs 3.74, 95% CI 3.73 to 3.75 with or without diabetes) and stroke (3.83, 95% CI 3.79 to 3.87 vs 3.74, 95% CI 3.73 to 3.75 with or without stroke). Similarly there is an increasing trend in first contact-access with increasing co-morbid diseases. Those reporting no co-morbid conditions had lower mean

first contact – utilisation scores (3.70, 95% CI 3.69 to 3.71) than those reporting 2 or more co-morbid conditions (3.81, 95% CI 3.79 to 3.83).

Table 5.6 shows the association between SF-36 domains with first contact – utilisation.   Respondents with high first contact utilisation also rate their health high on most of SF-36 domains including mental health domains (except for PF-physical functioning and PCS) than those reporting low first contact - utilisation with higher mean score on those domains of SF-36.   However, please note that these results are not adjusted for age or any other covariates.

Table 5.4: First contact utilisation by self-rated health characteristics[1]

Characteristics	*N*	Mean (95% CI)	SD
All	16705	3.74 (3.73 – 3.75)	0.46
Self assessed health (%)			
Excellent	5320	3.73 (3.72 - 3.74)	0.47
V Good	5720	3.72 (3.71 - 3.73)	0.47
Good	3875	3.76 (3.75 - 3.77)	0.45
Fair	1375	3.79 (3.77 - 3.81)	0.46
Poor	410	3.81 (3.77 - 3.85)	0.42
Missing	10		
Kessler 10 groups			
Low (10-15)	12880	3.76 (3.75 - 3.77)	0.45
Moderate (16-21)	2500	3.70 (3.68 - 3.72)	0.50
High (22-29)	880	3.67 (3.63 - 3.71)	0.54
V. High (30+)	290	3.67 (3.60 - 3.74)	0.57
Missing	160		

Note: Total N may not sum up to 16705 because of random rounding.

[1]Unadjusted for age or any other covariates.

Table 5.5: First contact utilisation by prevalence of chronic disease among who reported having affiliation with a place/doctor versus those with no affiliation with a place/doctor[1]

Characteristics	*N*	Mean (95% CI)	SD
All	16705	3.74 (3.73 – 3.75)	0.46
Prevalence of Asthma			
Yes	3235	3.74 (3.72 - 3.76)	0.47
No	13460	3.74 (3.73 - 3.75)	0.46
Missing	10		
High BP			
Yes	3900	3.82 (3.81 - 3.83)	0.41
No	12790	3.72 (3.71 - 3.73)	0.48
Missing	15		
High Cholesterol			
Yes	3065	3.80 (3.78 - 3.82)	0.43
No	13585	3.73 (3.72 - 3.74)	0.47
Missing	50		
Heart disease			
Yes	1150	3.86 (3.84 - 3.88)	0.36
No	15530	3.73 (3.72 - 3.74)	0.47
Missing	20		
Diabetes			
Yes	795	3.83 (3.80 - 3.86)	0.41
No	15905	3.74 (3.73 - 3.75)	0.47
Missing	10		
Stroke			
Yes	450	3.83 (3.79 - 3.87)	0.40
No	16245	3.74 (3.73 - 3.75)	0.47
Missing	10		
Migraines			
Yes	2335	3.75 (3.73 - 3.77)	0.49
No	14355	3.74 (3.73 - 3.75)	0.46
Missing	20		
Manic Dep/ Schizophrenia			
Yes	1615	3.73 (3.71 - 3.75)	0.51
No	15080	3.74 (3.73 - 3.75)	0.46
Missing	10		
Co-morbidity index (%)			
0	7210	3.70 (3.69 - 3.71)	0.48
1-2	7705	3.76 (3.75 - 3.77)	0.45
>2	1790	3.81 (3.79 - 3.83)	0.43
Missing	10		

Note: Total N may not sum up to 16705 because of random rounding.

[1]Unadjusted for age or any other covariates.

Table 5.6: First contact utilisation (FCU) by SF-36[1]

			Low FCU			Medium FCU			High FCU	
	Total (*N*)	N	Mean (95% CI)	SD	N	Mean (95% CI)	SD	N	Mean (95% CI)	SD
SF-36 domain										
PF	16720	290	86.39 (83.78 - 89.00)	22.69	2385	89.39 (88.85 - 89.93)	13.36	14040	84.75 (84.37 - 85.13)	23.03
RP	16695	285	80.56 (77.66 - 83.46)	24.97	2385	84.51 (83.61 - 85.41)	22.53	14025	83.28 (82.88 - 83.68)	24.39
BP	16720	285	76.92 (73.82 - 80.02)	26.72	2390	82.2 (81.32 - 83.08)	21.91	14040	81.22 (80.83 - 81.61)	23.38
GH	16710	285	75.87 (73.15 - 78.59)	23.40	2385	77.84 (77.11 - 78.57)	18.16	14035	77.74 (77.40 - 78.08)	20.72
VT	16660	285	59.24 (56.57 - 61.91)	23.02	2375	63.32 (62.57 - 64.07)	18.56	14005	64.16 (63.82 - 64.50)	20.40
SF	16705	285	82.34 (79.09 - 85.59)	28.03	2390	89.48 (88.67 - 90.29)	20.26	14030	89.84 (89.49 - 90.19)	21.05
RE	16690	285	87.35 (84.87 - 89.83)	21.40	2385	91.61 (90.94 - 92.28)	16.58	14020	92.09 (91.81 - 92.37)	17.11
MH	16660	280	77.27 (75.15 - 79.39)	18.14	2375	80.99 (80.41 - 81.57)	14.30	14005	83.63 (83.39 - 83.87)	14.38
PCS	16625	285	50.42 (49.31 - 51.53)	9.53	2365	51.53 (51.21 - 51.85)	8.06	13975	49.84 (49.68 - 50.00)	9.60
MCS	16625	285	48.25 (46.89 - 49.61)	11.74	2365	50.85 (50.49 - 51.21)	9.03	13980	52.45 (52.30 - 52.60)	9.05
Kessler scale										
Mean	16665	285	15.51 (14.78 - 16.24)	6.30	2360	14.03 (13.83 - 14.23)	4.90	13925	13.45 (13.37 - 13.53)	4.74

Note: [1]*Unadjusted for age or other covariates.*

PF: physical functioning; RP: role physical; BP: bodily pain; GH: general health; VT: vitality;

SF: social functioning; RE: role emotional; MH: mental health.

Chapter 6 Association between Continuity of Care and Health

This chapter describes in detail the associations of the continuity of care sub-domain of primary care with demographic, socioeconomic, health behaviour and various health measures at Wave 3. Note: numbers and means are not adjusted for age or any other covariates.

6.1 Demographic characteristics associated with the continuity of care

The following section describes the mean and standard deviations of various demographics of continuity of care (Table 6.1). The mean score for continuity of care was 3.10 (95% CI 3.09 to 3.11), lower than the mean score for first contact – access (3.16, 95% CI 3.14 to 3.18) and first contact-utilisation (3.74, 95% CI 3.73 to 3.75). Respondents living in Auckland reported the highest mean score on continuity of care (3.17, 95% CI 3.15 to 3.19), while the lowest mean score was reported by those living in Wellington (2.95, 95% CI 2.92 to 2.98). As the age of the respondents increased, so did the mean continuity of care score, with older respondents aged 75 and above reporting a mean score of 3.48 (95% CI 3.45 to 3.51) as compared to younger respondents aged 15-24 (2.86, 95% CI 2.83 to 2.89). There was not much variation in the mean score for continuity of care with respect to sex and 'born in New Zealand'. However, continuity of care scores were found to be lower than the overall mean score for first contact – continuity among never married (2.91, 95% CI 2.89 to 2.93), among Maori (3.01, 95% CI 2.98 – 3.04).

Table 6.1: Continuity of care by demographics[1]

Characteristics	*N*	Mean (95% CI)	SD
All	16630	3.10 (3.09 - 3.11)	0.68
Major region			
Auckland	3970	3.17 (3.15 - 3.19)	0.64
Waikato	1500	3.10 (3.06 - 3.14)	0.73
Wellington	2160	2.95 (2.92 - 2.98)	0.68
Rest of North Island	3840	3.11 (3.09 - 3.13)	0.70
Canterbury	2725	3.13 (3.10 - 3.16)	0.67
Rest of South Island	2440	3.08 (3.05 - 3.11)	0.66
Age			
15-24	2255	2.86 (2.83 - 2.89)	0.68
25-44	5550	2.95 (2.93 - 2.97)	0.70
45-64	5725	3.17 (3.15 - 3.19)	0.64
65-74	1695	3.38 (3.35 - 3.41)	0.56
75+	1400	3.48 (3.45 - 3.51)	0.52
Sex			
Male	7365	3.07 (3.05 - 3.09)	0.68
Female	9270	3.13 (3.12 - 3.14)	0.67
Marital status			
Currently married	8980	3.16 (3.15 - 3.17)	0.66
Previously married	3020	3.24 (3.22 - 3.26)	0.65
Never married	4625	2.91 (2.89 - 2.93)	0.70
NA:DK:REF	10		
Ethnicity			
NZ/European	13160	3.11 (3.10 - 3.12)	0.67
Māori	1780	3.01 (2.98 - 3.04)	0.73
Pacific	695	3.20 (3.15 - 3.25)	0.64
Asian	725	3.11 (3.06 - 3.16)	0.68
Others	270	2.97 (2.88 - 3.06)	0.75
Born In NZ			
No	3290	3.14 (3.12 - 3.16)	0.67
Yes	13335	3.10 (3.09 - 3.11)	0.68

Note: Total N may not sum up 16630 because of random rounding and missing values.

[1]*Unadjusted for age or any other covariates.*

6.2 Socioeconomic and health behaviour characteristics associated with continuity of care

Tables 6.2 and 6.3 show the associations between mean continuity of care scores and socioeconomic and health behaviour characteristics of the respondents. Mean Continuity of care scores was positively associated with income tertile but negatively with individual deprivation. For example, those in the highest income tertile had a mean continuity of care score of 3.23 (95% CI 3.21 to 3.25) and those in the lowest income tertile had a mean continuity of care score of 3.02 (95% CI 3.00 to 3.04). Mean continuity of care scores declined with increases in the number of individual deprivation characteristics. Those with no individual deprivation characteristics had higher than the overall mean continuity of care score (3.12, 95% CI 3.11 to 3.13) while those with 3-4 (2.98, 95% CI 2.93 to 3.03) and 5 or more individual deprivation characteristics (3.08, 95% CI 2.99 to 3.17) had below the overall mean continuity of care score. Continuity of care increased with increases in area deprivation. Those with no education had lower continuity of care score (2.83, 95% CI 2.74 to 2.92) as compared to those post-school vocational qualification (3.11, 95% CI 3.09 to 3.13). Ex-smokers had the highest mean continuity of care scores (3.17, 95% CI 3.15 to 3.19) while current smokers had the lowest score (3.06, 95% CI 3.04 to 3.08). Scores were found to be above the average continuity of care score for those who were never binge drinkers (3.12, 95% CI 3.11 to 3.13) and below the mean for any frequency of binge drinking.

Table 6.2: Continuity of care by socioeconomic factors[1]

Characteristics	N	Mean (95% CI)	SD
All	16630	3.10 (3.09 - 3.11)	0.68
Income tertiles			
1	5835	3.23 (3.21 - 3.25)	0.66
2	4650	3.05 (3.03 - 3.07)	0.69
3	6150	3.02 (3.00 - 3.04)	0.66
NZDep			
NZDepQ1 (least deprived)	3220	3.08 (3.06 - 3.10)	0.66
NZDepQ2	3255	3.10 (3.08 - 3.12)	0.66
NZDepQ3	2970	3.10 (3.08 - 3.12)	0.67
NZDepQ4	3490	3.11 (3.09 - 3.13)	0.70
NZDepQ5 (most deprived)	3160	3.13 (3.11 - 3.15)	0.70
Missing	540		
NZiDep			
No Dep	11935	3.12 (3.11 - 3.13)	0.66
1 Dep	2540	3.10 (3.07 - 3.13)	0.70
2 Dep	990	3.02 (2.98 - 3.06)	0.70
3-4 Dep	880	2.98 (2.93 - 3.03)	0.73
5 + Dep	275	3.08 (2.99 - 3.17)	0.77
Missing	10		
Education			
No education	215	2.83 (2.74 - 2.92)	0.67
School	4415	3.06 (3.04 - 3.08)	0.68
Post-school vocational	5730	3.11 (3.09 - 3.13)	0.67
Degree or higher	2260	2.97 (2.94 - 3.00)	0.67
Missing	4005		

Note: Total N may not sum up to 16630 because of random rounding and missing values.

[1]Unadjusted for age or any other covariates.

Table 6.3: Continuity of care by health behaviour characteristics[1]

Characteristics	*N*	Mean	SD
All	16630	3.10 (3.09 - 3.11)	0.68
Smoking			
Current	3285	3.06 (3.04 - 3.08)	0.72
Ex	4400	3.17 (3.15 - 3.19)	0.65
Never	8935	3.08 (3.07 - 3.09)	0.67
Missing	10		
Had drink in the last 12 months			
Yes	13635	3.08 (3.07 - 3.09)	0.68
No	2975	3.23 (3.21 - 3.25)	0.67
Missing	15		
Alcohol drink frequency			
Never	2975		0.67
< monthly	3110	3.23 (3.21 - 3.25)	0.68
2-4 times/ monthly	4405	3.11 (3.09 - 3.13)	0.68
2-3 times/ week	2275	3.03 (3.01 - 3.05)	0.67
4 or more times/ week	3825	3.03 (3.00 - 3.06)	0.66
Missing	30	3.13 (3.11 - 3.15)	
Binge drink			
Never binge drink	8630		0.66
Monthly	1255	3.12 (3.11 - 3.13)	0.67
2 times/ month	735	2.99 (2.95 - 3.03)	0.68
Weekly	870	2.96 (2.91 - 3.01)	0.71
Daily or almost daily	585	2.92 (2.87 - 2.97)	0.70
Missing	4555		

Note: Total N may not sum up to 16630 because of random rounding.

[1]Unadjusted for age or any other covariates.

6.3 Association between continuity of care and health

Tables 6.4, 6.5 and 6.6 show the associations between mean continuity of care scores and various health measures. Mean scores for continuity of care increased with decline in self- assessed health and increases in the levels of psychological distress (Kessler-10). For example, those experiencing fair and poor health had mean continuity of care scores of 3.31 (95% CI 3.28 to 3.34) and 3.39 (95% CI 3.33 to 3.45) respectively and those with excellent and very good health had mean continuity of care scores of 3.02 (95% CI 3.00 to 3.04) and 3.06 (95% CI 3.04 to 3.08) respectively. Those reporting low levels of psychological distress had slightly lower mean continuity of care score (3.11, 95% CI 3.10 to 3.12) than those reporting high and very high levels of psychological distress (3.07, 95% CI 3.04 to 3.10 and 3.13, 95% CI 3.08 to 3.18 respectively).

Table 6.5 provides a detailed description of the associations of various chronic conditions and mean continuity of care. Respondents with a presence of any chronic disease were more likely to have a higher continuity of care as compared to those reporting no chronic disease. These differences were noticeable among those reporting a high blood pressure (3.32, 95% CI 3.30 to 3.34 vs 3.04, 95% CI 3.03 to 3.05 with or without high BP respectively), high cholesterol (3.27, 95% CI 3.25 to 3.29 vs 3.06, 95% CI 3.05 to 3.07 with or without high cholesterol respectively), heart disease (3.47, 95% CI 3.44 to 3.50 vs 3.08, 95% CI 3.07 to 3.09 with or without heart disease respectively), diabetes (3.42, 95% CI 3.38 to 3.46 vs 3.09, 95% CI 3.08 to 3.10 with or without diabetes) and stroke (3.45, 95% CI 3.40 to 3.50 vs 3.09, 95% CI 3.08 to 3.10 with or without stroke). Similarly there is an increasing trend in continuity of care with increasing co-morbid diseases. Those reporting no co-morbid conditions had low mean continuity of care score (2.99, 95% CI 2.97 to 3.01) than those reporting 2 or more co-morbid conditions (3.35, 95% CI 3.32 to 3.38).

Table 6.6 shows the association between SF-36 domains with continuity of care. Respondents with high levels of continuity of care (a score of ≥3.5) rate their health as

low on most of SF-36 domains including mental health domains (except for PF-physical functioning) compared with those reporting low continuity of care 9 a score of < 2.5) - with lower mean scores on those domains of SF-36.   This means worse health leads to higher continuity (though we don't know the direction of causation). The mean psychological distress ranged from 15.51 for those reporting low first contact - utilisation to 13.45 for those reporting high first contact – utilisation. However, these results are not adjusted for age or any other covariates.

Table 6.4: Continuity of care by self-rated health[1]

Characteristics	N	Mean (95% CI)	SD
All	16630	3.10 (3.09 – 3.11)	0.68
Self assessed health (%)			
Excellent	5290	3.02 (3.00 - 3.04)	0.69
V Good	5705	3.06 (3.04 - 3.08)	0.67
Good	3860	3.18 (3.16 - 3.20)	0.66
Fair	1370	3.31 (3.28 - 3.34)	0.64
Poor	400	3.39 (3.33 - 3.45)	0.62
Missing	10		
Kessler 10 groups			
Low (10-15)	12820	3.11 (3.10 - 3.12)	0.67
Moderate (16-21)	2495	3.11 (3.10 - 3.12)	0.69
High (22-29)	880	3.07 (3.04 - 3.10)	0.70
V. High (30+)	285	3.13 (3.08 - 3.18)	0.73
Missing	145		

Note: Total N may not sum up to 16630 because of random rounding.

   [1]Unadjusted for age or any other covariates.

Table 6.5: Continuity of care by prevalence of chronic disease [1]

Characteristics	N	Mean (95% CI)	SD
All	16630	3.10 (3.09 - 3.11)	0.68
Prevalence of Asthma			
Yes	3235	3.10 (3.08 - 3.12)	0.67
No	13390	3.10 (3.09 - 3.11)	0.68
Missing	10		
High BP			
Yes	3890	3.32 (3.30 - 3.34)	0.61
No	12730	3.04 (3.03 - 3.05)	0.68
Missing	15		
High Chol			
Yes	3065	3.27 (3.25 - 3.29)	0.62
No	13520	3.06 (3.05 - 3.07)	0.68
Missing	50		
Heart disease			
Yes	1145	3.47 (3.44 - 3.50)	0.53
No	15460	3.08 (3.07 - 3.09)	0.68
Missing	25		
Diabetes			
Yes	795	3.42 (3.38 - 3.46)	0.56
No	15830	3.09 (3.08 - 3.10)	0.68
Missing	10		
Stroke			
Yes	445	3.45 (3.40 - 3.50)	0.57
No	16175	3.09 (3.08 - 3.10)	0.68
Missing	10		
Migraines			
Yes	2330	3.14 (3.11 - 3.17)	0.67
No	14285	3.10 (3.09 - 3.11)	0.68
Missing	15		
Manic Dep/ Schizophrenia			
Yes	1615	3.15 (3.12 - 3.18)	0.66
No	15010	3.10 (3.09 - 3.11)	0.68
Total	10		
Missing			
Co-morbidity index (%)			
0	7155	2.99 (2.97 - 3.01)	0.69
1-2	7685	3.15 (3.14 - 3.16)	0.66
>2	1790	3.35 (3.32 - 3.38)	0.61
Missing	10		

Note: Total N may not sum up to 16630 because of random rounding.

[1]Unadjusted for age or any other covariates.

Table 6.6: Continuity of care (Cont) by SF-36[1]

	Total (*N*)		Low Cont			Medium Cont			High Cont	
		N	Mean (95% CI)	SD	N	Mean (95% CI)	SD	N	Mean (95% CI)	SD
SF-36 domain										
PF	16720	2740	91.04 (90.41 - 91.67)	16.92	7340	87.69 (87.23 - 88.15)	20.17	6635	80.65 (80.03 - 81.27)	25.75
RP	16700	2735	86.91 (86.13 - 87.69)	20.88	7330	84.68 (84.16 - 85.20)	22.77	6630	80.56 (79.92 - 81.20)	26.46
BP	16720	2735	82.9 (82.08 - 83.72)	21.93	7340	82.32 (81.82 - 82.82)	22.06	6635	79.47 (78.87 - 80.07)	24.87
GH	16710	2740	80.85 (80.16 - 81.54)	18.39	7335	78.63 (78.19 - 79.07)	19.10	6635	75.44 (74.90 - 75.98)	22.32
VT	16660	2720	64.11 (63.39 - 64.83)	19.25	7315	64.23 (63.79 - 64.67)	19.16	6620	63.58 (63.06 - 64.10)	21.66
SF	16705	2735	90.2 (89.45 - 90.95)	20.10	7340	90.05 (89.58 - 90.52)	20.34	6635	89 (88.46 - 89.54)	22.29
RE	16690	2735	92.81 (92.21 - 93.41)	16.08	7330	92.09 (91.71 - 92.47)	16.54	6625	91.42 (90.98 - 91.86)	18.14
MH	16660	2720	82.12 (81.58 - 82.66)	14.35	7315	82.78 (82.46 - 83.10)	14.02	6625	83.97 (83.61 - 84.33)	14.99
PCS	16625	2715	52.26 (51.97 - 52.55)	7.61	7305	50.96 (50.76 - 51.16)	8.63	6610	48.24 (47.99 - 48.49)	10.52
MCS	16625	2710	51.44 (51.10 - 51.78)	9.06	7300	51.88 (51.68 - 52.08)	8.83	6610	52.75 (52.52 - 52.98)	9.44
Kessler scale										
Mean	16565	2705	13.67 (13.49 - 13.85)	4.74	7265	13.54 (13.43 - 13.65)	4.68	6595	13.55 (13.43 - 13.67)	4.95

Note: [1]*Unadjusted for age or any other covariates.*

PF: physical functioning; RP: role physical; BP: bodily pain; GH: general health; VT: vitality;

SF: social functioning; RE: role emotional; MH: mental health.

Chapter 7 Association between financial barriers to visiting a doctor and Health

Access to care is a complex concept that has been defined in a general way as the ability to "obtain needed medical care" (Bindman, Grumbach et al. 1995). Timely receipt of health care is important as delayed or nonreceipt of medical care may result in more serious illness for patients, increased complications, a worse prognosis, and longer hospital stays (Epstein, Stern et al. 1990; Adler, Boyce et al. 1993; Himmelstein and Woolhandler 1995). However, there are many barriers that impede an individual's ability to obtain needed medical care (Anderson and Armstead 1995; Himmelstein and Woolhandler 1995; Gelberg, Andersen et al. 2003). Financial costs are only one of the barriers people face in obtaining timely health care. Information about the delays patients experience in seeing their doctors, buying prescriptions and visiting their dentists is critical for providing equitable access to needed health care. This chapter explores whether respondents had put-off going to see their doctor when they needed to, because they could not afford the cost of a visit. Note, though that these results are not adjusted for age or any other covariates.

7.1 Demographic characteristics associated with financial barriers to visiting a doctor

Demographic characteristics of those who deferred/not deferred visiting a doctor are shown in Table 7.1. Of the total of 16,735 respondents, 14,070 (84.1%) did not defer visiting a doctor and 2,625 (15.7%) reported that they had deferred seeing their doctor/s, at least once during the preceding 12 months, because they could not afford the cost of a visit. Respondents living in Wellington, the rest of North island[9] were more likely to defer a doctor's visit (17.4% and 16.8% respectively) than respondents living in

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[9] Excluding Wellington, Waikato and Auckland.

Auckland, Waikato and those living in the rest of the South Island[10] (14.6%, 15.2% and 14.7% respectively) because of cost.

Younger adults aged 15-24 and 25-44 (20.8% and 23.4% respectively) were more likely to defer a doctor's visit than older adults. Women were more likely than men to defer a doctor's visit (19.2% and 11.3% respectively). A significantly higher proportion of never married people were postponing visiting a doctor (23.1) as compared to currently married (10.6%). A higher proportion of Māori and Pacific (24.0% and 23.4% respectively) than NZ European and Asians (14.4% and 11.3% respectively) postponed visiting a doctor. Similarly a higher proportion of those born in New Zealand (16.1%) deferred visiting a doctor than those born overseas (14.1). Note, again, though that these results are based on crude data, unadjusted for age or any other covariates.

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[10] excluding Canterbury.

Table 7.1: Deferring doctors visit because of financial barrier by demographics[1]

Characteristics	N	None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
				Deferring doctors visit because of financial barrier			
Total	16735	14070	84.1	2625	15.7	40	0.2
Major region							
Auckland	3995	3405	85.2	585	14.6	10	0.3
Waikato	1515	1285	84.8	230	15.2	10	0.1
Wellington	2165	1780	82.1	380	17.4	10	0.4
Rest of North Island	3855	3205	83.1	650	16.8	10	0.1
Canterbury	2740	2310	84.2	425	15.5	10	0.2
Rest of South Island	2455	2085	85.0	360	14.7	10	0.4
Age							
15-24	2280	1785	78.4	475	20.8	20	0.7
25-44	5575	4265	76.5	1305	23.4	10	0.1
45-64	5770	5055	87.6	705	12.2	10	0.2
65-74	1700	1605	94.5	90	5.5	.	.
75+	1410	1360	96.4	45	3.3	10	0.4
Sex							
Male	7420	6555	88.4	840	11.3	25	0.3
Female	9315	7515	80.7	1785	19.2	15	0.2
Marital status							
Currently married	9025	8065	89.4	955	10.6	10	0.1
Previously married	3035	2440	80.4	590	19.4	10	0.2
Never married	4665	3565	76.3	1080	23.1	25	0.5
Ethnicity							
NZ/European	13240	11300	85.4	1905	14.4	30	0.2
Māori	1790	1360	75.9	430	24.0	10	0.1
Pacific	700	530	75.8	165	23.4	10	0.9
Asian	730	650	88.5	85	11.3	10	0.1
Others	275	230	85.0	40	14.7	10	0.4
Born In NZ							
No	3315	2840	85.7	470	14.1	10	0.2
Yes	13420	11230	83.7	2155	16.1	30	0.2

Note: Total N may not sum up to 16735 because of random rounding.

[1]Unadjusted for age or other covariates.

7.2   Socioeconomic and health behaviour characteristics associated with financial barriers to visiting a doctor

Socioeconomic and health behaviours characteristics of those who deferred/not deferred visiting a doctor are shown in Tables 7.2 and 7.3 respectively. We found a higher proportion of those in the lowest income tertiles (20.0%) postponed a doctor's visit than those in the highest tertile (9.1%). A higher proportion of adults with a degree or higher qualification postponed visiting their doctor/s (11.7%) compared to those with no education (3.6%). People with more individual deprivation characteristics (5+) were more likely to defer a doctor's visit (75.0%) than people with a no or low (1 dep) individual deprivation score (6.8% and 23.8% respectively).   People from the least deprived areas of New Zealand were less likely to defer a doctor's visit (8.5%), than people from the most deprived areas (23.2%).   A higher proportion of current smokers (28.1 %) than never smokers (12.2%) and ex smoker (13.6%) were deferring visit to a doctor. Among those who were daily or almost daily binge drinkers, 22.5.1% reported that they had deferred visiting their doctor/s compared with only 12.2% of those who were never binge drinkers. Note, again, that these differences are based on crude data, unadjusted for age or any other covariates.

Table 7.2: Socioeconomic characteristics of respondents who reported deferring a doctor's visit versus those with no deferring[1]

Characteristics	N	None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
				Deferring doctors visit because of financial barrier			
Total	16735	14070	84.1	2625	15.7	40	0.2
Income tertiles							
1	5865	4680	79.7	1170	20.0	20	0.3
2	4680	3780	80.7	890	19.0	10	0.3
3	6185	5615	90.8	565	9.1	10	0.1
NZDep							
NZDepQ1 (least deprived)	3240	2955	91.4	275	8.5	10	0.2
NZDepQ2	3280	2855	87.1	420	12.8	10	0.2
NZDepQ3	2985	2460	82.5	510	17.1	15	0.4
NZDepQ4	3505	2910	82.9	595	16.9	10	0.1
NZDepQ5 (most deprived)	3185	2435	76.5	740	23.2	10	0.3
Missing	540	450	83.7	85	16.3	.	.
NZiDep							
No Dep	12005	11170	93.1	815	6.8	15	0.1
1 Dep	2550	1940	75.9	605	23.8	10	0.2
2 Dep	1000	535	53.3	465	46.4	10	0.3
3-4 Dep	885	355	40.1	530	59.9	.	.
5 + Dep	275	70	25.0	210	75.0	.	.
Missing	15	10	18.8	.	.	10	81.3
Education							
No education	225	210	93.8	10	3.6	10	2.7
School	4455	3735	83.9	705	15.9	10	0.2
Post-school vocational	5755	4790	83.3	960	16.6	10	0.1
Degree or higher	2275	2005	88.2	265	11.7	10	0.2
Missing	4030	3330	82.6	690	17.1	10	0.2

Note: Total N may not sum up to 16735 because of random rounding.

[1]Unadjusted for age or other covariates.

Table 7.3: Health behaviour characteristics of respondents who reported deferring a doctors' visit versus those no deferring[1]

| Characteristics | N | Deferring doctors visit because of financial barrier | | | | | |
		None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
Total	16735	14070	84.1	2625	15.7	40	0.2
Smoking							
Current	3315	2375	71.7	930	28.1	10	0.2
Ex	4410	3810	86.3	605	13.6	10	0.0
Never	8995	7880	87.6	1095	12.2	25	0.3
Missing	15	10	64.3	.	.	10	35.7
Had drink in the last 12 months							
Yes	3005	2515	83.7	475	15.9	15	0.5
No	13705	11545	84.2	2140	15.6	20	0.1
Miss, DK, REF	25	10	59.1	10	18.2	10	22.7
Alcohol drink frequency							
Never	3005	2515	83.7	480	15.9	15	0.5
< monthly	3125	2450	78.4	670	21.4	10	0.2
2-4 times/ monthly	4430	3640	82.1	790	17.8	10	0.2
2-3 times/ week	2280	1940	85.0	340	14.9	10	0.1
4 or more times/ week	3845	3500	91.0	345	9.0	10	0.0
Miss, DK, REF	40	30	69.8	10	16.3	10	14.0
Binge drink							
Never	8680	7610	87.7	1060	12.2	10	0.1
Monthly	1255	985	78.4	270	21.3	10	0.2
2 times/ month	735	580	78.5	155	21.5	.	.
Weekly	875	690	78.3	190	21.6	10	0.1
Daily or almost daily	590	460	77.5	130	22.5	.	.
Miss, DK, REF	4595	3750	81.7	820	17.8	25	0.5

Note: Total N may not sum up to 16735 because of random rounding.

[1]Unadjusted for age or other covariates.

7.3 Association between financial barriers to visiting a doctor and health

Tables 7.4, 7.5 and 7.6 describe the associations of the various health measures with deferring a doctor's visit because of unaffordability. Note, that these results are based on crude data, unadjusted for age or any other covariates. Respondents reporting excellent, very good and good health were less likely to defer visiting their doctor/s (11.4%, 14.7%, and 19.5% respectively) than respondents reporting fair and poor health (21.7% and 28.9% respectively). Those reporting low levels of psychological distress were less likely to postpone seeking medical care by not visiting their doctor/s (12.0%) than those reporting high and very high levels of psychological distress (36.2% and 45.3% respectively). The mean psychological distress ranged from 13.0 for those not deferring to see a doctor to 16.1 for those who put off going to see a doctor because they could not afford the cost of a visit (Table 7.6).

Table 7.5 provides a detailed description of the association of various chronic conditions and deferring a visit to a doctor because of cost. This is based on the response to the question about whether they had ever been told by a doctor if they had various chronic diseases. A chronic disease is a physical or mental illness that has lasted, or is expected to last, for more than six months. The chronic diseases were summed into a co-morbidity index, which is presented in the last rows of Table 7.5. Respondents with asthma, diabetes, migraine or manic depression/Schizophrenia were more likely to defer visit to a doctor as compared to those not reporting these chronic disease. However, those reporting high blood pressure (13.2% vs 16.5% with or without high BP respectively), high cholesterol (13.0% vs 16.3% with or without high cholesterol respectively), heart disease (10.9 % vs 16.0% with or without heart disease respectively), and stroke (14.5% vs 15.7% with or without stroke) were less likely to defer visiting the doctor compared to those reporting these chronic disease. Similarly there is an increasing trend with increasing co-morbid diseases for the proportion of respondents who were deferring visiting their doctor/s when needed because they could not afford the cost of a visit. For example, 13.0 % of the respondents reporting no chronic diseases postponed a

doctor's visit as compared to 22.3 % of those reporting more than two co-morbid diseases.

Table 7.6 describes the mean, standard deviation, standard error and 95% confidence interval for eight SF-36 (version 2) domain scores and the physical and mental component score by deferring doctor/s visit because of unaffordability of the cost of a visit. The eight domains are: physical functioning (PF), role limitations due to physical problems (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role limitations due to emotional problems (RE), and mental health (MH). Table 7.6 also supports previous results that the respondents who defer visiting their doctor when needed to because of cost have worse mental health status than those not deferring the visit with lower mean score on all SF-36 domains.

Table 7.4: Health characteristics of respondents who reported deferring a doctors visit versus those with no deferring [1]

| Characteristics | *N* | Deferring doctors visit because of financial barrier | | | | | |
		None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
Total	16735	14070	84.1	2625	15.7	40	0.2
Self assessed health (%)							
Excellent	5330	4710	88.4	610	11.4	10	0.2
V Good	5730	4875	85.1	840	14.7	15	0.2
Good	3880	3120	80.3	755	19.5	10	0.3
Fair	1375	1080	78.1	300	21.7	10	0.2
Poor	410	290	70.7	120	28.9	10	0.5
Miss, DK, REF	10	10	66.7	10	16.7	10	16.7
Kessler 10 groups							
Low (10-15)	12895	11335	87.9	1545	12.0	15	0.1
Moderate (16-21)	2505	1895	75.7	605	24.0	10	0.3
High (22-29)	880	560	63.6	320	36.2	10	0.2
V. High (30+)	290	160	54.3	130	45.3	10	0.3
Miss, DK, REF	170	125	76.6	25	15.6	15	7.8

Note: Total N may not sum up to 16735 because of random rounding.

[1]*Unadjusted for age or other covariates.*

Table 7.5: Prevalence of chronic disease among who reported having affiliation with a place/doctor versus those with no affiliation with a place/doctor [1]

Characteristics	N	None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
				Deferring doctors visit because of financial barrier			
Total	16735	14070	84.1	2625	15.7	40	0.2
Prevalence of Asthma							
Yes	3245	2430	75.0	805	24.8	10	0.3
No	13480	11635	86.3	1825	13.5	25	0.2
Missing	10	10	50.0	.	.	10	50.0
High BP							
Yes	3900	3380	86.7	515	13.2	10	0.1
No	12815	10675	83.3	2110	16.5	30	0.2
Missing	20	10	66.7	10	11.1	10	22.2
High Chol							
Yes	3070	2670	86.9	395	13.0	10	0.1
No	13605	11355	83.5	2220	16.3	30	0.2
Missing	55	45	78.6	10	12.5	10	8.9
Heart disease							
Yes	1150	1020	88.9	125	10.9	10	0.2
No	15560	13030	83.8	2495	16.0	30	0.2
Missing	25	20	66.7	10	14.8	10	18.5
Diabetes							
Yes	795	645	81.3	145	18.4	10	0.3
No	15925	13420	84.3	2475	15.6	30	0.2
Missing	10	10	33.3	10	11.1	10	55.6
Stroke							
Yes	450	385	85.5	65	14.5	.	.
No	16270	13680	84.1	2560	15.7	35	0.2
Missing	10	10	57.1	10	7.1	10	35.7
Migraines							
Yes	2340	1735	74.3	595	25.5	10	0.2
No	14375	12325	85.7	2025	14.1	25	0.2
Missing	20	10	50.0	10	20.0	10	30.0
Manic Dep/ Schizophrenia							
Yes	1615	1100	68.1	515	31.8	10	0.1
No	15100	12960	85.8	2110	14.0	30	0.2
Total	20	10	43.8	10	18.8	10	37.5
Co-morbidity index (%)							
0	7225	6255	86.7	940	13.0	20	0.3
1-2	7715	6420	83.2	1285	16.6	10	0.1
>2	1790	1390	77.5	400	22.3	10	0.2
Miss, DK, REF	10						

Note: Total N may not sum up to 16735 because of random rounding;. [1]Unadjusted for age or other covariates.

Table 7.6: Health characteristics of respondents who reported deferring a doctors' visit versus those with no deferring[1]

	Total (*N*)	None					One or more				
		N	Mean	SD	SE	95% CI	N	Mean	SD	SE	95% CI
SF-36 domain											
PF	16720	14065	85.9	22.3	0.187	85.53 – 86.26	2625	83.2	23.0	0.449	82.32 - 84.09
RP	16695	14050	84.8	23.3	0.196	84.41 – 85.18	2620	76.0	26.6	0.520	75.02 – 77.06
BP	16715	14060	82.7	22.3	0.188	82.35 – 83.09	2625	73.6	26.0	0.508	72.62 – 74.61
GH	16710	14050	79.1	19.6	0.165	78.79 – 79.44	2625	70.3	22.8	0.444	69.48 – 71.23
VT	16660	14015	65.7	19.5	0.164	65.37 – 66.02	2615	54.5	20.9	0.409	53.76 – 55.37
SF	16705	14055	91.2	19.3	0.163	90.91 – 91.55	2620	81.2	27.0	0.527	80.18 – 82.25
RE	16690	14045	93.2	15.5	0.131	92.98 – 93.49	2620	84.9	22.4	0.438	84.13 – 85.85
MH	16655	14015	84.5	13.3	0.112	84.27 – 84.71	2615	75.9	17.7	0.346	75.24 – 76.60
PCS	16625	13990	50.4	9.2	0.078	50.20 – 50.51	2610	48.6	9.9	0.194	48.29 – 49.06
MCS	16625	13990	53.1	8.2	0.069	52.96 – 53.23	2610	47.0	11.4	0.223	46.62 – 47.49
Kessler scale											
Mean	16565	13945	13.0	4.2	0.035	13.00 – 13.14	2600	16.1	6.4	0.126	15.94 – 16.44

Note: [1]*Unadjusted for age or any other covariates.*

PF: physical functioning; RP: role physical; BP: bodily pain; GH: general health; VT: vitality;

SF: social functioning; RE: role emotional; MH: mental health.

Chapter 8 Association between financial barriers to collecting a prescription and Health

While access to has been defined in a general way as the ability to "obtain needed medical care", (Bindman, Grumbach et al. 1995), it can be seen as more than simply access to a physician to include supplementary health care services such as prescription drugs, dental care, eye glasses and mental health care (Berk, Schur et al. 1995). This chapter explores access to (or unmet need for) prescribed drugs. Participants were asked "In the past 12 months, have there been any times when a doctor gave you a prescription, but you didn't collect one or more of these items because you could not afford the cost?" Although the question is limited in the sense that it does not tell about the medical necessity of the medication, it is found to be a powerful measure for broad comparisons of drug access between population groups (Cunningham 2005). Note, again, that all the analyses are based on crude data, unadjusted for age or any other covariates.

8.1 Demographic characteristics associated with financial barrier in getting prescription drugs

Demographic characteristics of those who deferred/not deferred collecting a prescription are shown in Table 8.1 (crude and not adjusted for any covariates). Of the total of 16,735 respondents, 2,625 (15.7%) reported that they did not collect prescription drug/s at least once during the preceding 12 months because of cost. Respondents living in the North island[11] were more likely not to collect a prescribed drug (8.4%) than respondents living in Waikato and those living in the rest of the South Island[12] (5.9%, and 4.8% respectively) because of cost.

Younger adults aged 25-44 (10.4%) were more likely not to get prescription drugs because of cost than older adults aged 65-74 and 75+ years (1.9% and 0.9% respectively). This is likely a result of the more extensive safety net available to older people, in terms

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[11] Excluding Wellington, Waikato and Auckland.

[12] Excluding Canterbury.

of higher rates of eligibility for subsidised prescribed drugs. Women had much higher levels of prescription drugs access problems than men (8.4% and 4.5% respectively). A higher proportion of unmarried people reported an inability to collect prescribed drugs (23.1) as compared to currently married (10.5%). A higher proportion of Māori and Pacific (14.3% and 17.0% respectively) than NZ European and Asians (5.2% and 3.8% respectively) did not collect a prescription. Similarly a higher proportion of those born in New Zealand (7.0%) were unable to obtain prescription drugs because of cost than those born overseas (5.4%).

Table 8.1: Deferring buying prescription because of financial barrier by demographics[1]

Characteristics	N	None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
			Deferring buying prescription because of financial barrier				
Total	16735	15590	93.2	1110	6.6	35	0.2
Major region							
Auckland	3995	3735	93.4	260	6.5	10	0.2
Waikato	1515	1425	93.9	90	5.9	10	0.1
Wellington	2170	2015	93.0	145	6.6	10	0.4
Rest of North Island	3855	3530	91.6	320	8.4	10	0.1
Canterbury	2745	2555	93.1	180	6.6	10	0.3
Rest of South Island	2460	2330	94.9	120	4.8	10	0.3
Age							
15-24	2280	2070	90.8	195	8.5	15	0.7
25-44	5575	4985	89.5	580	10.4	10	0.1
45-64	5765	5465	94.8	295	5.1	10	0.1
65-74	1700	1670	98.1	35	1.9	.	.
75+	1410	1390	98.8	10	0.9	10	0.3
Sex							
Male	7420	7070	95.3	335	4.5	20	0.3
Female	9315	8520	91.5	780	8.4	10	0.2
Marital status							
Currently married	9025	4160	89.1	490	10.5	20	0.4
Previously married	3035	2765	91.1	265	8.8	10	0.2
Never married	4665	3565	76.3	1080	23.1	25	0.5
Ethnicity							
NZ/European	13240	12530	94.6	685	5.2	20	0.2
Māori	1790	1535	85.5	260	14.3	10	0.1
Pacific	695	570	81.9	120	17.0	10	1.0
Asian	735	705	96.0	30	3.8	10	0.1
Others	275	250	92.3	20	7.7	.	.
Born In NZ							
No	3315	3130	94.5	175	5.4	10	0.2
Yes	13420	12460	92.8	935	7.0	30	0.2

Note: *Total N may not sum up to 16735 because of random rounding.*
[1]Unadjusted for age or other covariates.

8.2   Socioeconomic and health behaviour characteristics associated with financial barrier to collecting a prescription

Socioeconomic and health behaviour characteristics of those who deferred/not deferred collecting a prescription are shown in Tables 8.2 and 8.3 respectively. As expected, unmet need for prescription drugs was inversely related to income tertiles, with those in the lowest income groups having the highest levels of not getting prescribed drugs. For example, 10.1% of those in the lowest income tertiles did not get needed prescription medications as compared to 2.9% of those in the highest income tertile. While there was no clear relationship between levels of education and getting the prescribed medications, those with no education had the highest levels of getting prescribed drugs. People with more individual deprivation characteristics (5+) were more likely to not to get prescription drugs (57.2.0%) than people with no or low (1 dep) individual deprivation characteristics (1.8% and 9.0% respectively).   People from the most deprived areas of New Zealand were more likely not to obtain a prescription (12.6%), than people from the least deprived areas (2.7%).   A higher proportion of current smokers (14.5 %) than never smokers (4.4%) and ex smoker (5.3%) reported their inability to obtain needed prescription. Among those who were daily or almost daily binge drinkers, 9.5% reported that did not get prescription drugs compared with only 4.6% of those who were never binge drinkers.

Table 8.2: Socioeconomic characteristics of respondents who reported deferring buying prescription versus those with no deferring [1]

Characteristics	*N*	Deferring buying prescription because of financial barrier					
		None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
Total	16735	15590	93.2	1110	6.6	35	0.2
Income tertiles							
1	5865	5255	89.6	590	10.1	20	0.3
2	4680	4335	92.5	340	7.3	10	0.2
3	6185	6000	97.0	180	2.9	10	0.1
NZDep							
NZDepQ1 (least deprived)	3235	3145	97.2	85	2.7	10	0.2
NZDepQ2	3280	3135	95.8	135	4.1	10	0.1
NZDepQ3	2985	2805	93.8	175	5.8	10	0.4
NZDepQ4	3505	3215	91.8	285	8.1	10	0.1
NZDepQ5 (most deprived)	3185	2775	87.2	400	12.6	10	0.3
Missing	540	510	93.7	30	6.3	.	.
NZiDep							
No Dep	12005	11780	98.1	215	1.8	15	0.1
1 Dep	2555	2315	90.7	230	9.0	10	0.3
2 Dep	995	780	78.4	215	21.5	10	0.1
3-4 Dep	885	595	66.8	295	33.2	.	.
5 + Dep	275	115	42.8	155	57.2	.	.
Missing	15	10	25.0	.	.	15	75.0
Education							
No education	225	215	96.9	10	1.3	10	1.8
School	4450	4160	93.4	280	6.3	10	0.2
Post-school vocational	5755	5375	93.4	375	6.5	10	0.1
Degree or higher	2270	2175	95.7	90	4.1	10	0.1
Missing	4030	3660	90.9	360	8.9	15	0.3

Note: Total N may not sum up to 16735 because of random rounding.

[1]Unadjusted for age or other covariates.

Table 8.3: Health behaviour characteristics of respondents who reported deferring buying prescription versus those no deferring [1]

Characteristics	N	Deferring buying prescription because of financial barrier					
		None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
Total	16735	15590	93.2	1110	6.6	35	0.2
Smoking							
Current	3310	2825	85.4	480	14.5	10	0.2
Ex	4410	4175	94.6	235	5.3	10	0.0
Never	8995	8575	95.3	395	4.4	25	0.2
Missing	15	10	71.4	.	.	10	28.6
Had drink in the last 12 months							
Yes	3005	2730	91.0	255	8.6	15	0.4
No	13710	12835	93.7	855	6.2	15	0.1
Miss, DK, REF	20	15	68.2	10	9.1	10	22.7
Alcohol drink frequency							
Never	3000	2735	91.0	260	8.6	10	0.4
< monthly	3130	2815	90.1	305	9.8	10	0.2
2-4 times/ monthly	4435	4105	92.6	325	7.3	10	0.1
2-3 times/ week	2280	2170	95.0	115	4.9	10	0.1
4 or more times/ week	3840	3730	97.1	115	2.9	10	0.1
Miss, DK, REF	40	30	76.7	10	11.6	10	11.6
Binge drink							
Never	8680	8270	95.3	400	4.6	10	0.1
Monthly	1255	1140	90.7	110	9.1	10	0.2
2 times/ month	735	665	90.9	65	9.1	.	.
Weekly	880	805	91.5	70	8.3	10	0.2
Daily or almost daily	590	535	90.3	60	9.5	10	0.2
Miss, DK, REF	4595	4175	90.8	400	8.8	20	0.4

Note: Total N may not sum up to 16735 because of random rounding.

[1]Unadjusted for age or other covariates.

8.3 Association between financial barriers to collecting a prescription and health

Tables 8.4, 8.5 and 8.6 describe the association of the various health measures with deferring collecting a prescription because of unaffordability. Respondents reporting fair and poor health (12.3% and 16.6% respectively) were more likely to report not getting the prescribed drugs than respondents reporting excellent, very good and good health (3.7%, 5.7%, and 8.9% respectively) than respondents reporting fair and poor health (12.3% and 16.6% respectively). Those reporting high and very high levels of psychological distress (36.2% and 45.3% respectively) were more likely not to collect needed prescriptions than those reporting low levels of psychological distress (4.2%). The mean psychological distress ranged from 13.2 for those collecting needed prescriptions to 17.6 for those who did not collect prescriptions (Table 8.6).

Table 8.5 provides a detailed description of the association of various chronic conditions and deferring buying a prescription because of cost. This is based on the response to the question about whether they had ever been told by a doctor if they had various chronic diseases. The chronic diseases were summed into a co-morbidity index, which is presented in the last rows of Table 8.5. Respondents with asthma, high blood pressure, diabetes, stroke, migraine or manic depression/Schizophrenia were more likely to report that they did not get prescription drugs because of cost as compared to those not reporting these chronic diseases. Similarly there is an increasing linear trend with increasing co-morbid diseases for the proportion of respondents who did not collect the needed prescription because they could not afford the cost of it. For example, only 4.4% of the respondents reporting no chronic diseases reported not collecting the prescription medications as compared to 12.9 % of those reporting more than two co-morbid diseases.

Table 8.6 describes the mean, standard deviation, standard error and 95% confidence interval for eight SF-36 (version 2) domain scores and the physical and mental component score by collecting prescription medication. Table 8.6 also supports

previous results that people who deferred collecting prescription have worse mental health status than those who did get the prescription drugs with lower mean score on all SF-36 domains.

Table 8.4: Health characteristics of respondents who reported deferring buying prescription versus those with no deferring[1]

Characteristics	N	None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
			Deferring buying prescription because of financial barrier				
Total	16735	15590	93.2	1110	6.6	35	0.2
Self assessed health							
Excellent	5325	5120	96.1	200	3.7	10	0.2
V Good	5730	5395	94.1	330	5.7	10	0.2
Good	3880	3525	90.8	350	8.9	10	0.3
Fair	1380	1205	87.5	170	12.3	10	0.1
Poor	410	340	82.9	70	16.6	10	0.5
Miss, DK, REF	10	10	83.3	.	.	10	16.7
Kessler 10 groups							
Low (10-15)	12895	12335	95.7	545	4.2	10	0.1
Moderate (16-21)	2505	2205	88.3	290	11.5	10	0.2
High (22-29)	880	705	80.0	175	19.5	10	0.5
V. High (30+)	290	195	66.4	95	32.9	10	0.7
Miss, DK, REF	165	145	86.8	10	6.6	10	6.6

Note: Total N may not sum up to 16735 because of random rounding.

[1]Unadjusted for age or other covariates.

Table 8.5: Prevalence of chronic disease among who reported deferring buying prescription versus those with no deferring[1]

Characteristics	N	None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
				Deferring buying prescription because of financial barrier			
Total	16735	15590	93.2	1110	6.6	35	0.2
Prevalence of Asthma							
Yes	3245	2815	86.9	420	13.0	10	0.2
No	13475	12765	94.7	690	5.1	25	0.2
Missing	10	10	50.0	.	.	10	50.0
High BP							
Yes	3900	3625	92.9	275	7.0	10	0.1
No	12815	11945	93.2	840	6.5	30	0.2
Missing	15	15	77.8	.	.	10	22.2
High Chol							
Yes	3070	2885	93.9	185	6.1	10	0.0
No	13610	12660	93.0	920	6.8	30	0.2
Missing	55	45	85.7	10	5.4	10	8.9
Heart disease							
Yes	1145	1080	94.0	70	6.0	.	.
No	15560	14485	93.1	1045	6.7	25	0.2
Missing	30	20	77.8	10	3.7	10	18.5
Diabetes							
Yes	800	715	89.5	80	10.4	10	0.1
No	15930	14865	93.4	1030	6.5	30	0.2
Missing	10	10	44.4	.	.	10	55.6
Stroke							
Yes	445	410	91.8	35	8.2	.	.
No	16270	15165	93.2	1075	6.6	25	0.2
Missing	15	10	64.3	.	.	10	35.7
Migraines							
Yes	2335	2035	86.9	300	12.8	10	0.2
No	14380	13540	94.2	815	5.6	25	0.2
Missing	20	15	70.0	.	.	10	30.0
Manic Dep/ Schizophrenia							
Yes	1620	1360	83.9	260	16.0	10	0.2
No	15100	14225	94.2	850	5.6	25	0.2
Missing	15	10	56.3	10	6.3	10	37.5
Co-morbidity index (%)							
0	7220	6885	95.3	315	4.4	20	0.3

1-2	7715	7145	92.6	565	7.3	10	0.1
>2	1795	1560	87.0	230	12.9	10	0.1
Miss, DK, REF	10						

Note: Total N may not sum up to 16735 because of random rounding.

[1]Unadjusted for age or other covariates.

Table 8.6: Health characteristics of respondents who reported deferring buying prescription versus those with no deferring[1]

	N	None					One or more				
		N	**Mean**	**SD**	**SE**	**95% CI**	**N**	**Mean**	**SD**	**SE**	**95% CI**
SF-36 domain											
PF	16720	15585	85.9	22.1	0.177	85.54 – 86.24	1110	79.5	24.9	0.749	78.09 – 81.03
RP	16700	15560	84.2	23.5	0.188	83.91 – 84.65	1110	71.4	28.3	0.850	69.75 – 73.09
BP	16715	15580	82.0	22.6	0.181	81.70 – 82.42	1115	70.5	27.5	0.827	68.91 – 72.16
GH	16710	15570	78.5	19.8	0.159	78.22 – 78.84	1115	66.6	23.9	0.717	65.23 – 68.05
VT	16660	15525	64.8	19.7	0.158	64.54 – 65.16	1110	51.3	21.6	0.650	50.06 – 52.61
SF	16705	15570	90.6	19.9	0.159	90.33 – 90.96	1110	75.8	29.7	0.891	74.08 – 77.58
RE	16690	15555	92.7	16.1	0.129	92.49 – 92.99	1110	80.6	24.8	0.746	79.16 – 82.09
MH	16660	15530	83.9	13.7	0.110	83.68 – 84.12	1110	72.7	18.9	0.598	71.59 – 73.83
PCS	16625	15495	50.2	9.2	0.074	50.14 – 50.43	1105	47.3	10.7	0.323	46.73 – 48.00
MCS	16625	15500	52.6	8.6	0.069	52.53 – 52.80	1105	44.8	12.4	0.373	44.15 – 45.62
Kessler scale											
Mean	16565	15440	13.2	4.4	0.035	13.20 – 13.34	1110	17.6	7.2	0.219	17.22 – 18.08

Note: [1]Unadjusted for age or any other covariates.

PF: physical functioning; RP: role physical; BP: bodily pain; GH: general health; VT: vitality;

SF: social functioning; RE: role emotional; MH: mental health.

Chapter 9 Association between financial barriers to dental care and Health

This chapter explores financial barriers to dental care. Participants were asked "In the past 12 months, have you put off going to see a dentist when you needed to, because you could not afford the cost of a visit?" Note, again, though that all the analyses are based on crude data, unadjusted for age or any other covariates.

9.1 Demographic characteristics associated with financial barrier to dental care

Demographic characteristics of those who deferred/not deferred visiting dentist are shown in Table 9.1. Of the total of 16,735 respondents, 3,825 (22.8%) reported that they had deferred seeing a dentist, at least once during the preceding 12 months, because they could not afford the cost of a visit. Respondents living in the North Island were more likely to defer a visit to a dentist than respondents living in the South island. Younger adults aged 15-24 and 25-44 (20.8% and 35.7% respectively) were more likely to defer a dentist's visit than older adults aged 65-74 years and 75+ years (9.3 and 5.2% respectively). Women were more likely than men to defer a dentist's visit (26.6% and 18.1% respectively). A significantly higher proportion of never married people postponed visiting a dentist (28.0%) as compared to currently married (19.4%). Higher proportions of Māori and Pacific respondents (33.5% and 33.0% respectively) postponed visiting a dentist compared with NZ European and Asians (20.8% and 21.7% respectively). There was no difference in visiting a dentist between those born in New Zealand and those born overseas.

Table 9.1: Demographic characteristics of respondents who reported postponing a dentist visit because of unaffordability versus those with none postponement[1]

Characteristics	*N*	Deferring dentists visit because of financial barrier					
		None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
Total	16735	12845	76.8	3825	22.8	65	0.4
Major region							
Auckland	3995	2915	72.8	1055	26.3	35	0.9
Waikato	1515	1130	74.6	385	25.2	10	0.2
Wellington	2170	1630	75.1	530	24.4	10	0.5
Rest of North Island	3855	2985	77.5	860	22.4	10	0.1
Canterbury	2745	2210	80.5	530	19.4	10	0.2
Rest of South Island	2460	1980	80.6	470	19.0	10	0.4
Age							
15-24	2280	1790	78.4	475	20.8	20	0.7
25-44	5575	3565	64.0	1995	35.7	15	0.3
45-64	5765	4625	80.2	1125	19.5	15	0.3
65-74	1700	1535	90.2	160	9.3	10	0.5
75+	1405	1325	94.2	70	5.2	10	0.6
Sex							
Male	7420	6045	81.5	1340	18.1	35	0.4
Female	9315	6800	73.0	2480	26.6	35	0.4
Marital status							
Currently married	9020	7245	80.3	1750	19.4	30	0.3
Previously married	3030	2255	74.3	765	25.2	15	0.5
Never married	4665	3335	71.5	1305	28.0	25	0.6
Ethnicity							
NZ/European	13240	10445	78.9	2750	20.8	45	0.3
Māori	1790	1185	66.1	600	33.5	10	0.4
Pacific	700	455	65.5	230	33.0	15	1.6
Asian	735	570	77.9	160	21.7	10	0.4
Others	275	190	70.0	80	30.0	.	.
Born In NZ							
No	3315	2545	76.7	755	22.8	15	0.5
Yes	13420	10300	76.8	3065	22.9	50	0.4

Note: Total N may not sum up to 16735 because of random rounding.

   [1]Unadjusted for age or any other covariates.

9.2 *Socioeconomic and health behaviour characteristics associated with financial barrier to dental care*

Socioeconomic and health behaviour characteristics of those who deferred/not deferred visiting a dentist are shown in Tables 9.2 and 9.3 respectively. A higher proportion of those in the lowest income tertiles (24.9%) reported having postponed a dentist's visit than those in the highest tertile (17.4%). A higher proportion of adults with a degree or higher qualification were postponing visiting their dentist (21.3%) compared to those with no education (2.7%). People with more individual deprivation characteristics (5+) were more likely to defer a dentist's visit (73.2%) than people with no or low (1 dep) individual deprivation characteristics(14.1% and 33.5% respectively). People living in the least deprived areas of New Zealand were less likely to defer a dentist's visit (15.4%), than people from the most deprived areas (28.7%). A higher proportion of current smokers (34.0 %) than never smokers (19.4%) and ex smokers (21.5%) deferred visiting a dentist. Among those who were daily or almost daily binge drinkers, 25.1% reported that they had deferred visiting their dentist compared with 20% of those who were never binge drinkers.

Table 9.2: Socioeconomic characteristics of respondents who reported deferring a dentists visit versus those with no deferring[1]

Characteristics	N	Deferring dentists visit because of financial barrier					
		None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
Total	16735	12845	76.8	3825	22.8	65	0.4
Income tertiles							
1	5865	4365	74.4	1460	24.9	35	0.6
2	4685	3380	72.2	1285	27.4	20	0.4
3	6185	5100	82.4	1080	17.4	10	0.2
NZDep							
NZDepQ1 (least deprived)	3240	2725	84.2	500	15.4	10	0.3
NZDepQ2	3275	2610	79.6	655	20.0	15	0.4
NZDepQ3	2985	2230	74.6	740	24.8	20	0.5
NZDepQ4	3505	2625	75.0	865	24.8	10	0.3
NZDepQ5 (most deprived)	3185	2255	70.8	910	28.7	15	0.5
Missing	540	395	73.0	145	26.6	10	0.4
NZiDep							
No Dep	12005	10280	85.6	1695	14.1	30	0.2
1 Dep	2550	1680	65.9	855	33.5	15	0.6
2 Dep	995	475	47.6	520	52.1	10	0.3
3-4 Dep	885	330	37.3	550	62.1	10	0.6
5 + Dep	275	70	26.4	205	73.2	10	0.4
Missing	15	10	18.8	.	.	10	81.3
Education							
No education	225	210	95.5	10	2.7	10	1.8
School	4450	3385	76.1	1045	23.5	20	0.4
Post-school vocational	5755	4270	74.2	1470	25.5	15	0.3
Degree or higher	2275	1785	78.5	485	21.3	10	0.2
Missing	4030	3190	79.2	815	20.3	20	0.5

Note: Total N may not sum up to 16735 because of random rounding.

[1]Unadjusted for age or any other covariates.

Table 9.3: Health behaviour characteristics of respondents who reported deferring/not deferring dentists visit[1]

Characteristics	N	None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
				Deferring dentists visit because of financial barrier			
Total	16735	12845	76.8	3825	22.8	65	0.4
Smoking							
Current	3310	2175	65.6	1125	34.0	15	0.4
Ex	4415	3450	78.2	945	21.5	15	0.4
Never	8995	7215	80.2	1745	19.4	30	0.4
Missing	15	10	50.0	10	14.3	10	35.7
Had drink in the last 12 months							
Yes	3000	2310	76.8	670	22.3	25	0.9
No	13705	10525	76.8	3150	23.0	35	0.3
Miss, DK, REF	20	10	54.5	10	22.7	10	22.7
Alcohol drink frequency							
Never	3005	2305	76.8	670	22.3	25	0.9
< monthly	3130	2255	72.0	865	27.6	10	0.4
2-4 times/ monthly	4435	3300	74.4	1130	25.4	10	0.2
2-3 times/ week	2285	1750	76.8	525	23.0	10	0.2
4 or more times/ week	3845	3210	83.4	630	16.4	10	0.2
Miss, DK, REF	45	30	67.4	10	16.3	10	16.3
Binge drink							
Never	8675	6920	79.7	1740	20.0	20	0.2
Monthly	1255	880	70.1	370	29.6	10	0.3
2 times/ month	735	540	73.7	195	26.1	10	0.1
Weekly	880	635	72.2	240	27.5	10	0.2
Daily or almost daily	590	440	74.6	150	25.1	10	0.3
Miss, DK, REF	4590	3425	74.6	1130	24.6	40	0.8

Note: Total N may not sum up to 16735 because of random rounding.

[1]Unadjusted for age or any other covariates.

9.3 *Association between financial barrier to dental care and health*

Tables 9.4, 9.5 and 9.6 describe the associations of the various health measures with deferring a visit to the dentist because of unaffordability. Respondents reporting excellent, very good and good health were less likely to defer visiting their dentist (19.6%, 22.5%, and 25.3% respectively) than respondents reporting fair and poor health (27.9% and 29.6% respectively). Those reporting low levels of psychological distress were less likely to postpone seeking dental care by not visiting a dentist (19.7%) than those reporting high and very high levels of psychological distress (40.1% and 47.1% respectively). The mean psychological distress ranged from 13.1 for those not deferring to see a dentist to 15.0 for those who put off going to see a dentist because they could not afford the cost of a visit (Table 9.6).

Table 9.5 provides a detailed description of the association of various chronic conditions and deferring a visit to a dentist because of cost. Respondents with asthma, migraine or manic depression/Schizophrenia were more likely to defer visit to a dentist as compared to those not reporting these chronic diseases. However, those reporting high blood pressure (19.6% vs 23.8% with or without high BP respectively), high cholesterol (19.7% vs 23.6% with or without high cholesterol respectively), heart disease (17.2 % vs 23.2% with or without heart disease respectively) and stroke (18.7% vs 23.0% with or without stroke) were less likely to defer visit to a dentist as compared to those reporting these chronic disease. Similarly there is an increasing linear trend with increasing co-morbid diseases for the proportion of respondents who were deferring visiting a dentist when needed because they could not afford the cost of a visit. For example, 21.1 % of the respondents reporting no chronic diseases postponed a dentist's visit as compared to 27.2 % of those reporting more than two co-morbid diseases.

Table 9.6 describes the mean, standard deviation, standard error and 95% confidence interval for eight SF-36 (version 2) domain scores and the physical and mental component score by deferring dentist visit because of unaffordability of the cost of a visit. This Table also supports previous results that people deferring visiting a dentist when needed to because of cost have worse mental health status than those not deferring the visit with lower mean score on all SF-36 domains.

Table 9.4: Health characteristics of respondents who reported deferring/not deferring a dentist's visit [1]

		Deferring dentists visit because of financial barrier					
Characteristics	*N*	None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
Total	16735	12845	76.8	3825	22.8	65	0.4
Self assessed health							
Excellent	5330	4265	80.0	1045	19.6	20	0.4
V Good	5730	4420	77.2	1290	22.5	15	0.3
Good	3880	2885	74.2	980	25.3	15	0.4
Fair	1380	985	71.5	385	27.9	10	0.7
Poor	405	285	69.4	120	29.6	10	1.0
Miss, DK, REF	10	10	83.3	10	16.7	.	.
Kessler 10 groups							
Low (10-15)	12895	10315	80.0	2540	19.7	35	0.3
Moderate (16-21)	2505	1730	69.0	765	30.6	10	0.5
High (22-29)	880	525	59.6	355	40.1	10	0.3
V. High (30+)	290	150	52.6	135	47.1	10	0.3
Miss, DK, REF	170	130	76.0	25	16.2	15	7.8

Note: Total N may not sum up to 16735 because of random rounding.

[1]Unadjusted for age or any other covariates.

Table 9.5: Prevalence of chronic disease among who reported deferring dentists visit versus those with no deferring[1]

Characteristics	N	None (N)	%	One or more (N)	%	Miss, DK, REF (N)	%
				Deferring dentists visit because of financial barrier			
Total	16735	12845	76.8	3825	22.8	65	0.4
Prevalence of Asthma							
Yes	3245	2265	69.8	970	29.9	10	0.3
No	13480	10575	78.4	2855	21.2	55	0.4
Missing	10						
High BP							
Yes	3905	3125	80.1	765	19.6	15	0.4
No	12810	9710	75.8	3055	23.8	50	0.4
Missing	20						
High Chol							
Yes	3070	2455	79.9	605	19.7	10	0.4
No	13605	10350	76.1	3205	23.6	50	0.4
Missing	55						
Heart disease							
Yes	1150	945	82.4	200	17.2	10	0.3
No	15560	11880	76.4	3615	23.2	60	0.4
Missing	25						
Diabetes							
Yes	800	610	76.7	180	22.9	10	0.4
No	15925	12230	76.8	3635	22.8	60	0.4
Missing	10						
Stroke							
Yes	450	365	80.8	80	18.7	10	0.4
No	16270	12475	76.7	3740	23.0	60	0.4
Missing	15						
Migraines							
Yes	2340	1600	68.5	725	31.1	10	0.4
No	14380	11230	78.1	3095	21.5	55	0.4
Missing	20						
Manic Dep/ Schizophrenia							
Yes	1615	975	60.4	640	39.5	10	0.2
No	15100	11860	78.5	3175	21.1	60	0.4
Missing	15						
Co-morbidity index (%)							

0	7220	5670	78.5	1525	21.1	35	0.4
1-2	7715	5880	76.2	1815	23.5	25	0.3
>2	1790	1295	72.4	490	27.2	10	0.4
Miss, DK, REF	10						

Note: *Total N may not sum up to 16735 because of random rounding.*

[1]*Unadjusted for age or any other covariates.*

Table 9.6: Health characteristics of respondents who reported deferring dentists visit versus those with no deferring[1]

	Total N	None					One or more				
		N	Mean	SD	SE	95% CI	N	Mean	SD	SE	95% CI
SF-36 domain											
PF	16720	12835	85.4	22.6	0.199	85.09 – 85.88	3820	85.4	21.7	0.351	84.75 – 86.13
RP	16695	12825	84.4	23.6	0.207	85.08 – 84.89	3815	79.8	25.5	0.412	79.06 – 80.68
BP	16715	12835	82.2	22.7	0.199	81.89 – 82.67	3820	77.9	24.6	0.399	77.19 – 78.75
GH	16705	12825	78.8	19.9	0.175	78.47 – 79.15	3820	74.1	21.6	0.350	73.46 – 74.84
VT	16660	12795	65.6	19.7	0.174	65.32 – 66.00	3815	58.1	20.6	0.334	56.47 – 58.78
SF	16705	12830	91.0	19.6	0.172	90.75 – 91.43	3815	84.8	24.8	0.401	84.03 – 82.61
RE	16690	12815	93.2	15.7	0.138	92.94 – 93.48	3815	87.6	20.5	0.332	87.00 – 88.31
MH	16660	12790	84.5	13.5	0.119	84.29 – 84.76	3810	78.4	16.5	0.268	77.96 – 79.01
PCS	16625	12770	50.1	9.4	0.082	49.99 – 50.31	3800	49.9	9.4	0.152	49.62 – 50.22
MCS	16625	12770	53.1	8.3	0.074	52.99 – 53.28	3805	48.8	10.5	0.171	48.46 – 49.13
Kessler scale											
Mean	16565	12715	13.1	4.3	0.038	13.04 – 13.19	3795	15.0	5.8	0.094	14.89 – 15.26

Note: [1]*Unadjusted for age or any other covariates.*

PF: physical functioning; RP: role physical; BP: bodily pain; GH: general health; VT: vitality;

SF: social functioning; RE: role emotional; MH: mental health.

Chapter 10   Conclusion

10.1 Main points

- Higher affiliation is associated with higher need.

- Among first contact-access, first contact utilisation and continuity, first contact utilisation has the highest mean score (3.7), followed by first contact-access (3.16) and continuity of care (3.10).

- Higher first contact-access, first contact-use and continuity of care is inversely associated with are deprivation but positively related with income.

- Current smokers and those who binge drink almost daily had low first contact-access, first contact-use and continuity of care.

- Poor self assessed health and presence of chronic conditions are associated with higher first contact-access, first contact utilisation and continuity scores.

- Generally speaking K-10 is inversely associated with first contact access and other domain. Higher mental distress and lower first contact access and other domain.

- People in need are more likely to face financial barriers to doctors' visit, getting prescribed medication and dentists visit with postponing their visit to doctor, buying prescriptions and visit to dentists when needed. Women, Maori and Pacific, those in lowest income tertiles, those with more individual deprivation characteristics are more likely to postpone visiting a doctor, buying a prescribed medication and visiting a dentists as compared to men, European, those in highest income tertiles and those with no or low individual deprivation score.

- A higher proportion of current smokers and those who were daily or almost daily binge drinkers had deferred visiting their doctor, dentists and collecting a prescription as compared to ex smokers and to those who were never binge drinkers.

- A higher proportion of those reporting fair and poor health and those with high or very high levels of psychological distress were more likely to defer

visiting their doctor, dentists and collecting a prescription as compared to those reporting excellent and very good health and those reporting very low levels of psychological distress.

- There was an increasing trend with increasing co-morbid conditions for the proportion of respondents who were deferring visiting their doctor, buying prescription and visiting their dentist when needed because they could not afford the cost of it.

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