



Substance Use Disorders

# Te Rau Hinengaro

The New Zealand Mental Health Survey





Auckland UniServices Limited

# **Substance Use Disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey**

## **FINAL REPORT**

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# **Substance Use Disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey**

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## WHAKATAUKĪ

Ahakoā te momo mate, whakanuia tangata

This whakataukī or proverb is an expression of hope and that regardless of illness or disease people deserve dignity and respect and the opportunity to become well again.



## FOREWORD

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This report, *Substance use disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey*, has been prepared for the Alcohol Advisory Council of New Zealand, which provided part of the funding for the survey.

Its purpose is to provide information for people whose interest is primarily in substance use disorders, rather than mental health in general. It is a companion document to the longer main report, *Te Rau Hinengaro: The New Zealand Mental Health Survey* (Oakley Browne, Wells, & Scott, 2006), where results are presented for all disorders assessed.

This report took the data from the survey and subjected it to further analysis to determine the prevalence of substance disorders in New Zealand and their patterns of onset and impact for adults in New Zealand, information that was not available before this survey.

In the area of substance abuse, as with mental health, policy development has had to rely to a large extent on information from overseas, augmented by some local information. Now for the first time, we will not have to extrapolate from overseas studies and simply estimate the burden of harm in New Zealand.

We now have comprehensive population based understanding of the prevalence of substance disorders in New Zealand. We finally have our own information that can be used by service planners and service deliverers



Gerard Vaughan  
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# EXECUTIVE SUMMARY

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## OBJECTIVES OF THE SURVEY

The four main objectives of *Te Rau Hinengaro: The New Zealand Mental Health Survey* (see 1.3) were, for the total New Zealand, Māori and Pacific populations living in New Zealand, to:

- describe the one-month, 12-month and lifetime prevalence of major mental disorders among those aged 16 and over living in private households, overall and by sociodemographic correlates
- describe patterns of and barriers to health service use for people with mental disorder
- describe the level of disability associated with mental disorder
- provide baseline data and calibrate brief instruments measuring mental disorders and psychological distress to inform the use of these instruments in future national health surveys.

The two instruments used to meet the fourth objective were the Kessler 10-item scale (K10), a measure of psychological distress, and the Alcohol Use Disorders Identification Test (AUDIT).

Te Rau Hinengaro literally translates as ‘the many minds’ and is a reference to how the mind may be thought of as having many different states or levels. It is used to capture the objective of the survey to measure mental disorder.

## CONTENT OF THIS REPORT

This report, *Substance use disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey*, has been prepared for the Alcohol Advisory Council of New Zealand, which provided part of the funding for the survey. Much of the content is also in the longer main report, *Te Rau Hinengaro: The New Zealand Mental Health Survey* (Oakley Browne, Wells, & Scott, 2006), where results are presented for all disorders assessed. Similarly, a series of articles (listed in 1.4) presents results for all disorders.

Because this report is about substance use disorders, only summary results for anxiety, mood and eating disorder groups are presented. These results provide a context in which to place the substance use disorder results. Material in chapter 6 about the AUDIT and substance use disorders is in this report only and not in the main report.

## **Substance Use Disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey**

This report:

- provides important information about the prevalence of substance disorders and their patterns of onset and impact for adults in New Zealand; information that was not available before this survey
- explores the relationship between substance use disorders and other mental disorders, and between substance use disorders and physical disorders
- provides information about the patterns of health and non-health service use by people with substance use disorder
- examines the relationship between sociodemographic correlates and the probability of people meeting criteria for a substance disorder or accessing care
- describes the relationship between substance use disorders and suicidal behaviour
- investigates the prevalence of hazardous drinking as measured by the AUDIT and the relationship between scores on the AUDIT and alcohol disorder.

This report has been written to meet the aims of the survey and to interpret findings; it does not advocate actions or policies.

Chapter 1 provides the background to the report. It briefly describes relevant mental health policy and strategic planning initiatives, previous community mental health surveys in New Zealand and other countries, and other New Zealand research and service provision data sources. It then summarises the key features of the survey. Chapter 7 places the survey in a policy context and explains its strengths and limitations.

The contents and key results from chapters 2 to 6 are summarised below.

The appendices contain supporting information: the AUDIT (Appendix A) and the ethnicity question used in the interview (Appendix B).

The references conclude the report.

### **THE INTERVIEW**

The New Zealand interview was based on the Composite International Diagnostic Interview (CIDI 3.0). The CIDI is a fully structured interview suitable for use by trained lay interviewers. Diagnoses of mental disorders were made from responses to the symptom questions. Laptop computers were used for computer assisted personal interviews; interviewers read questions off the laptop screen and entered responses directly into the laptop.

Four groups of mental disorders were assessed:

- anxiety disorders (panic disorder, agoraphobia without panic, specific phobia, social phobia, generalised anxiety disorder, post-traumatic stress disorder and obsessive–compulsive disorder)
- mood disorders (major depressive disorder, dysthymia and bipolar disorder)
- substance use disorders (abuse of or dependence on alcohol or other drugs)
- eating disorders (anorexia and bulimia).

Other modules assessed suicidal behaviours, health service use, chronic physical conditions, disability, psychological distress, and alcohol use and its consequences in the past 12 months (AUDIT).

### **SURVEY DESIGN AND SAMPLE**

The target population was people aged 16 and over living in permanent private dwellings throughout New Zealand. The survey design was for a nationally representative sample. To improve the precision of estimates for Māori and Pacific people, oversampling was used. The number of Māori was doubled and the number of Pacific people was quadrupled compared with that expected without oversampling. Nonetheless, unbiased estimates for the whole population could be made because of the appropriate weighting of participants.

The National Research Bureau, under contract to the Ministry of Health, carried out the fieldwork in late 2003 and 2004.

The response rate was 73.3%.

The total number of interviews was 12,992. The number of participants reporting Māori ethnicity was 2,595 and the number reporting Pacific ethnicity was 2,374.

### **PREVALENCE OF DISORDER**

Prevalences of substance use disorders are reported in chapter 2 and the prevalence of hazardous drinking is reported in chapter 6.

#### **Prevalences across the whole population**

Substance use disorders are widespread in New Zealand: 13.8% of the population are predicted to meet criteria for a disorder at some time in their lives, with 12.3% having already done so and 3.5% having a disorder in the past 12 months. The prevalence of hazardous drinking in the past 12 months was 20.0%.

The onset of substance use disorders occurs mostly in the late teenage years and early 20s with 75% of those who develop a substance use disorder doing so by 25 years of age.

#### **Sociodemographic correlates**

Younger people have a higher prevalence of substance use disorders and hazardous drinking in the past 12 months and are more likely to report having ever had such a disorder by any particular age.

Males have prevalences of substance use disorders that are more than double those for females. The same pattern was seen for hazardous drinking in the past 12 months.

Prevalences of substance use disorders in the past 12 months are higher for people who are disadvantaged, whether measured by educational qualification, equivalised household income or using the small area index of deprivation (NZDep2001). Similar results were found for hazardous drinking in that period.

## **Substance Use Disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey**

### **Ethnic comparisons**

The prevalence of substance use disorders in any period is higher for Māori and Pacific people than for the Other composite ethnic group. For disorder in the past 12 months the prevalences are 9.1% for Māori, 4.9% for Pacific people and 2.7% for Others, which indicates that Māori and Pacific people have a greater burden due to substance use problems. Much of this burden appears to be due to the youthfulness of the Māori and Pacific populations and their relative socioeconomic disadvantage.

After adjusting for sociodemographic correlates the prevalence of substance use disorder remained higher for Māori (6.0%) than for Pacific people (3.2%) and Others (3.0%).

The ethnic differences seen for substance use disorders were also seen for hazardous drinking in the past 12 months as measured by the AUDIT. The observed prevalences were 35.4% for Māori, 21.4% for Pacific and 17.9% for Others. After adjustment, the prevalence of hazardous drinking remained higher for Māori (29.6%) than for Pacific people (18.1%) and Others (18.6%).

Pacific people were less likely to drink than Māori or Others, but for those who did drink, the prevalence of hazardous drinking was similar to that for Māori, not Others, with or without adjustment for sociodemographic correlates.

Drinking is equally common among Māori and Others (about 80%), but Māori have a higher prevalence of hazardous drinking and a higher prevalence of alcohol disorder. For Pacific people not much more than half of the population drink but those who do drink, drink nearly as hazariously as Māori and the prevalence of alcohol disorder among drinkers is only slightly and non-significantly lower than that for Māori.

A slightly different pattern occurs for drug disorder. Māori are much more likely than Pacific people or Others to use drugs. Among Māori drug users the prevalence of drug disorder is higher than that for Other drug users, even after adjustment for sociodemographic correlates. The prevalence of drug disorder in Pacific drug users is intermediate between that for Māori and Other drug users and not significantly different from either.

### **COMORBIDITY AND DISABILITY**

Chapter 3 reports on comorbidity and disability.

People with substance use disorders often experience other disorders. In the past 12 months, 40% experienced an anxiety disorder and 29% experienced a mood disorder. Comorbidity between substance use disorders was very common.

People with substance use disorders have higher prevalences of some chronic physical diseases (such as chronic pain and respiratory disease) and of chronic disease risk factors (smoking, high blood pressure and, of course, hazardous alcohol use) than people without mental disorders.

Substance use disorders and anxiety disorders are associated with similar degrees of disability. Mood disorders are associated with more disability than anxiety or substance use disorders.

### **SUICIDAL BEHAVIOUR**

Chapter 4 reports on suicidal behaviour.

### Prevalence across the whole population

Of the population, 15.7% reported ever having thought seriously about suicide (suicidal ideation), 5.5% had ever made a suicide plan and 4.5% had ever made an attempt.

In the past 12 months, 3.2% experienced suicidal ideation, 1.0% made a suicide plan and 0.4% made a suicide attempt.

### Mental disorders

Individuals with a mental disorder had elevated risks of suicidal behaviour, with 11.8% of people with any mental disorder reporting suicidal ideation, 4.1% making a suicide plan and 1.6% making a suicide attempt.

Mood disorders, anxiety disorders, eating disorders and substance use disorders were all associated with suicidal ideation, suicide plan and suicide attempt. Of individual disorders, major depressive episode had the strongest association with suicidal ideation, suicide plan and suicide attempt. However, substance use disorders were associated with about a three-fold increase in risk, even after taking account of comorbidity with other disorders and sociodemographic correlates.

## HEALTH SERVICES

Chapter 5 reports health service use.

### Health service use for people with substance use disorders

Of all 12-month cases of substance use disorders, 29.9% had a mental health visit to a healthcare or non-healthcare provider in the past 12 months. Of these 12-month cases, 14.5% had contact with a mental health specialist, 20.0% with a general medical provider, 2.6% within the human services sector and 5.7% with a complementary and alternative medicine practitioner. Most people with lifetime substance use disorders eventually made contact if their disorder continued. However, the percentages seeking help at the age of onset were small for all disorders. The median duration of delay until contact varied by specific disorder from 3 years to 16 years.

### Sociodemographic correlates

Treatment contact in the past 12 months for any mental disorder was lower in younger people and Pacific people. People with lower educational attainment and people resident in rural centres or areas had lower rates of visits to the mental health specialty sector. Unmet need for treatment for any disorder did not vary significantly by socioeconomic status.

### Ethnic comparisons

The percentage of those seeking help specifically for their substance use disorder in the past 12 months was low for all ethnic groups (12.4%) but much lower for Pacific people (3.9%) than for Māori (11.7%) or for Others (13.6%). The differences between Pacific people and Māori and between Pacific people and Others were significant, although those between Māori and Others were not.

## **ALCOHOL USE DISORDERS IDENTIFICATION TEST**

Chapter 6 reports on the AUDIT, which can be used to provide the prevalence of hazardous drinking. These prevalence results have been reported along with those for substance use disorders earlier in this executive summary.

The AUDIT discriminated very effectively between cases and non-cases for alcohol disorder and for alcohol dependence (AUC (area under the curve)  $\geq 0.96$ ), but, as intended, also detected other people with hazardous or harmful drinking who did not meet criteria for a DSM-IV alcohol disorder. (See 1.6.1 about the *Diagnostic and statistical manual of mental disorders* (DSM).)

If a cut-point on the AUDIT was to be used to indicate alcohol disorder or dependence then a cut-point higher than the standard cut-point of a score of 8 or more should be used.

## **OVERALL SUMMARY**

Substance use disorder is widespread in New Zealand, but is much more common in some groups in the population (such as younger people, males and Māori) than in others.

People with a substance use disorder frequently have more than one disorder. Furthermore, people with substance use disorders are more likely to have some chronic physical conditions and vice versa.

On average, current substance use disorders impact on people's lives to a similar extent as anxiety disorders and less than mood disorders.

Substance use disorders are associated with suicidal behaviours even when comorbid disorders and sociodemographic correlates are taken into account.

The percentage of people with substance use disorders in the past 12 months who make any contact with treatment providers for any mental health reason is low and the percentage seeking help specifically for their substance use problems is lower still. Nonetheless almost all eventually make contact with services if their disorder continues although this may be after a delay of several years.

## **STRENGTHS OF THE SURVEY**

The key strengths of the survey are as follows.

- The researchers used a survey design and sample frame consistent with best practice, so the survey generates estimates of acceptable precision that can be generalised to the New Zealand adult population.
- Māori and Pacific people were selected at higher rates to allow (for the first time) estimates of acceptable precision for those communities.
- The diagnostic instrument used is known to have acceptable reliability and validity for community surveys.
- The fieldwork conformed to best practice standards and incorporated quality controls to ensure adherence to best practice.
- The data were extensively checked for quality.
- The analysis took account of the complex sample design appropriately.

### LIMITATIONS OF THE SURVEY

The key limitations of the survey are as follows.

- As intended, the survey was a community survey, so people living in institutions (such as rest homes, hospitals, sheltered accommodation, university colleges, prisons and armed forces group accommodation) and homeless people were not included in the sampling frame.
- While the response rate of 73.3% was comparable with that for other national health surveys in New Zealand there may still have been some non-response bias for some estimates.
- While an initial attempt was made to translate the survey questionnaire into languages other than New Zealand English, for reasons of cost and logistics this was not possible.
- Although there has been extensive work on the validity and reliability of earlier versions of the CIDI, the version used in New Zealand (the CIDI 3.0) may have underestimated the prevalence of substance use dependence. Relative to some other interviews the CIDI 3.0 appears to be conservative in its diagnoses of abuse and dependence.
- The diagnostic instrument used does not incorporate the beliefs about health of Māori or Pacific peoples, as the systems of disease classification it follows are the American Psychiatric Association's DSM and the International Classification of Diseases, reflecting Western or Eurocentric conceptualisations and beliefs about mental disorder.
- The study is quantitative and aggregates information across individuals to arrive at estimates for the population and subgroups within the population, so it does not capture each person's unique experience.

### BACKGROUND TO THE REPORT

#### Key organisations and people

Many organisations and people have been involved with this survey.

- The Mental Health Research and Development Strategy initiated the survey.
- The Ministry of Health, Health Research Council of New Zealand, Mental Health Research and Development Strategy, and Alcohol Advisory Council of New Zealand funded the survey.
- The research team comprised researchers from the universities of Auckland, Otago, Massey (New Zealand) and Monash (Australia), and included separate Māori and Pacific research groups. The research team was contracted to Auckland UniServices Ltd, University of Auckland.
- The World Mental Health Survey Initiative Consortium (sponsored by the World Health Organization and Harvard University) assisted with the survey.
- The Public Health Assessing Committee, Health Research Council of New Zealand, reviewed and approved the survey protocol.
- All 14 New Zealand regional ethics committees reviewed and approved this survey.

Key people who contributed to this survey are listed in the acknowledgements.

## **Substance Use Disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey**

### **Pilot study**

The main survey (originally called the New Zealand Survey of Mental Health and Wellbeing) was preceded by a pilot study that involved community consultation. The survey firm that undertook the survey did field testing to ensure the duration of the interview would be acceptable to participants and that an adequate response rate was likely to be achieved for the main survey.

# 1 INTRODUCTION

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## 1.1 OVERVIEW

This chapter provides the background to Te Rau Hinengaro: The New Zealand Mental Health Survey. It briefly reports the relevant mental health policy and strategic planning initiatives that provide the context in which the findings of the survey will be used, and describes the origins of the survey. Previous sources of information about mental disorders, including substance use disorders, in New Zealand are described to show the gaps in knowledge. This leads to the objectives of the survey, and then the main features of the survey.

Key terms used in this report are defined at the end of this chapter (see 1.6). The audience for this report is expected to be mainly mental health professionals, particularly those working in alcohol and drug services. However, to make the report accessible to a wider audience, the criteria for substance use disorders have been provided.

Te Rau Hinengaro literally translates as ‘the many minds’ and is a reference to how the mind may be thought of as having many different states or levels. It is used to capture the objective of the survey to measure mental disorder.

### 1.1.1 Survey overview

Te Rau Hinengaro provides important national information not previously available about the prevalence of mental disorders, their patterns of onset and their impact for adults in New Zealand. The survey allows investigation of the relationship between mental disorders and that between mental disorders and physical disorders (comorbidity). In addition, it provides information about the patterns of health and non-health service use of people with mental health problems. The relationship between sociodemographic factors and the probability of people meeting criteria for a mental disorder or accessing care can be explored. The survey also collected data on suicidal behaviour.

Of particular note is that the survey design enabled the participation of sufficient numbers of Māori and Pacific people to allow estimates of acceptable precision for these ethnic groups.

### 1.1.2 Policy framework

In *Te Tāhuhu: Improving mental health 2005–2015: The second New Zealand Mental Health and Addiction Plan* it was noted that the provision of information about rates of mental disorder and health service use is important to inform policy makers, service funders, service providers, and consumers and their families (Minister of Health, 2005). Good-quality information can assist in the development of an environment of transparency and trust, which will facilitate good decision making. Te Rau Hinengaro can contribute to the development of such an environment.

*Te Tāhuhu* highlighted the importance of improving Māori mental health and improving the responsiveness of services to Māori and Pacific people. Both *Te Puāwaitanga: Māori Mental Health National Strategic Framework* (Ministry of Health, 2002) and *Whakatātaka: Māori Health Action Plan 2002–2005* (Minister of Health & Associate Minister of Health, 2002) noted the probable excess burden attributable to mental disorders borne by Māori and the need for more population-based information to inform decision making. Similarly, in *Te Orau Ora: Pacific Mental Health Profile*, the lack of information about the mental health status of Pacific

## **Substance Use Disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey**

communities was seen as limiting planning for those communities (Ministry of Health, 2005b). This survey addresses these information gaps.

The first national mental health plan prioritised the provision of care for the estimated 3.0% of the population who had a major mental health disorder (Minister of Health, 1997; Ministry of Health, 1994). This estimate was based on projections from overseas studies (Andrews, 1991). *Te Tāhuhu* re-emphasises the importance of ensuring that people with the highest need can access specialist services, but it is also a plan that covers the mental health needs of all New Zealanders. This survey provides estimates for serious, moderate and mild disorder based on nationally representative data. These results will assist with service planning for those with the highest need and the wider population.

Finally, the survey provides useful information on suicidal ideation, plans and attempts in order to supplement the information from other sources. Reducing the rates of suicide and attempted suicide is an important goal of the New Zealand Health Strategy (Minister of Health, 2000).

### **1.1.3 Origins of the study**

The Mental Health Research Development and Strategy Steering Committee initiated this survey (originally called the New Zealand Survey of Mental Health and Wellbeing). It was funded by the Ministry of Health, with additional funding from the Health Research Council of New Zealand, the Mental Health Research and Development Strategy, and the Alcohol Advisory Council of New Zealand.

A team of researchers from the University of Auckland, the University of Otago, Massey University (New Zealand) and Monash University (Australia) designed the study, oversaw the conduct of the survey fieldwork, analysed the data and produced the main report on the survey (Oakley Browne, Wells, & Scott, 2006) and this report on substance use disorders. The research team included Māori and Pacific research groups. The Māori research group was supported and advised by the Kaitiaki Group, which also provided cultural support and guidance to the study as a whole. The Pacific Advisory Group played a similar role for the Pacific research group. Consumer participation and input occurred throughout the survey (see Wells, McGee, & Oakley Browne, 2006, section 12.1). The members of the research team are contracted to Auckland UniServices Ltd of the University of Auckland, which manages the research team's contract with the Ministry of Health.

The Public Health Assessing Committee of the Health Research Council of New Zealand reviewed and approved the study protocol.

The survey was undertaken with the assistance of the World Mental Health (WMH) Survey Initiative, which is sponsored by the World Health Organization (WHO) and Harvard University.

Ethics review and approval was obtained from all 14 New Zealand regional ethics committees.

The main survey was preceded by a pilot study, which involved community consultation (Oakley Browne, Durie, & Wells, 2000). The survey firm that undertook the survey did field testing to ensure the duration of the interview would be acceptable to participants and that an adequate response rate was likely to be achieved.

## 1.2 PREVIOUS STUDIES

The review of studies in this section is a condensation of that in chapter 1 of the main report (Oakley Browne & Wells, 2006b, sections 1.7 and 1.8). The purpose of this section is to show the gaps in current information for New Zealand that lead to Te Rau Hinengaro. Relevant results for substance use disorders are presented in conjunction with results from this survey in subsequent chapters.

### 1.2.1 Previous community surveys that included substance use disorders

Community surveys that included substance use disorders began in the early 1980s with the Epidemiologic Catchment Area Study (ECA), a landmark survey of nearly 20,000 people in five areas of the United States (US) (Robins & Regier, 1991). In the ECA, as in subsequent surveys, substance disorders were assessed along with anxiety and mood disorders and some other disorders. These surveys have been able to study large samples by using fully structured diagnostic interviews that can be administered by interviewers who are not clinicians. The first such interview was the Diagnostic Interview Schedule (DIS) (Robins, Helzer, Croughan, & Ratcliff, 1981). Several regional surveys in other countries, including New Zealand, followed the ECA, using the same interview and methods. Substance use disorder results from these surveys were reported in Helzer and Canino (1992) and Wells et al. (1992).

The New Zealand survey was the Christchurch Psychiatric Epidemiology Study. This was a regional community survey carried out in the Christchurch urban area between April and December 1986. The household sample consisted of about 1,500 adults aged 18–64. Trained lay interviewers used the DIS, which provided DSM-III diagnoses (see 1.6.1 for an explanation of the *Diagnostic and statistical manual of mental disorders* (DSM)) (Oakley Browne, Joyce, Wells, Bushnell, & Hornblow, 1989; Wells, Joyce, Bushnell, Hornblow, & Oakley Browne, 1989).

A decade after the ECA a national survey of mental disorder was carried out in the US, the National Comorbidity Survey (NCS) (Kessler, 1994; Kessler et al., 1994) using the Composite International Diagnostic Interview (CIDI) which, in various versions, has been used in several other countries (Bijl et al., 2003).

In 1997 the Australian National Survey of Mental Health and Well-Being surveyed over 10,000 people in the community using a version of the CIDI that focused on the past 12 months and yielded diagnoses for that period only.

After the Australian national survey, other nations decided to undertake national or regional mental health surveys. Many of the lead investigators in these projects sought advice and assistance from the WHO, which took a lead role in coordinating their efforts.

The WMH Survey Initiative is a project of the Assessment, Classification and Epidemiology Group at the WHO (World Mental Health Survey Consortium, 2005). This group is responsible for coordinating the implementation and analysis of general population epidemiologic surveys of mental disorders, substance use disorders and behavioural disorders in countries in all WHO regions.

The WMH Survey Initiative developed out of the findings of the WHO Global Burden of Disease Study (Murray & Lopez, 1996a, 1996b). This study showed that mental and substance use disorders are among the most burdensome in the world, and that this burden is projected to increase. The WMH Survey Initiative was established to provide data to confirm and refine the

## **Substance Use Disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey**

findings of the Global Burden of Disease Study and to inform the development of public health initiatives to address the burden of mental and substance use disorders. By 2006, 17 surveys, including this New Zealand survey and a repeat of the NCS (the NCS-R), had been completed across all of the WHO major regions and other surveys are in the field or in preparation.

Publications are listed on the WMH Survey Initiative website (<http://www.hcp.med.harvard.edu/wmh/publications.php>).

The research team for Te Rau Hinengaro joined the WMH Survey Consortium to collect New Zealand data that was internationally comparable and to benefit from the intellectual and technical resources of the consortium. There have been no previous national community surveys of substance use disorders or any other mental health disorders in New Zealand. The only community survey of the mental health of adults was the Christchurch Psychiatric Epidemiology Study.

### **1.2.2 Other studies and data sources within New Zealand**

Two longitudinal studies, the Dunedin Multidisciplinary Health and Development Study (<http://dunedinstudy.otago.ac.nz/>) and the Christchurch Health and Development Study (<http://www.chmeds.ac.nz/research/chds>), have assessed mental disorders, including substance use disorders. However, as the participants in these studies are now only in their late 20s and early 30s these studies cannot provide a comprehensive picture of substance use disorders across the adult age range, although they provide insight into the pathways in to and out of disorder (Wells, Horwood, & Fergusson, 2004, 2006).

Two other studies of special groups included substance use disorders along with other mental disorders. The Mental Health and General Practice Investigation (the MaGPIe study) was a study of the prevalence and types of common mental disorders among patients attending New Zealand general practices (Mental Health and General Practice Investigation, 2001, 2003). The New Zealand National Prison Study explored the rates of disorder in a representative sample of prison inmates (Brinded, Simpson, Laidlaw, Fairley, & Malcolm, 2001; Simpson, Brinded, Laidlaw, Fairley, & Malcom, 1999)

National health surveys in 1996/97 (Minister of Health, 1999) and 2002/03 (Ministry of Health, 2004b) asked about mental illnesses in the chronic conditions section, requiring that the condition lasted at least six months although it could be episodic. Only schizophrenia and bipolar disorder were listed although other conditions could be reported. The prevalence of depression, schizophrenia or bipolar disorder was 2.5%. There was no report of symptoms. It seems likely that many people did not think of substance use disorders, especially abuse, as chronic conditions classified as mental illnesses.

These surveys also used the Alcohol Use Disorders Identification Test (AUDIT) as a measure of hazardous drinking. Therefore, the Ministry of Health wanted to know about the relationship between scores on the AUDIT and diagnoses of substance use disorders, particularly alcohol disorders.

Mental health service data collected by the New Zealand Health Information Service contains information about outpatient and inpatient attendances at specialist mental health services and some non-governmental organisations (New Zealand Health Information Service, 2004). However, as it does not include primary care data, other health services, all non-governmental organisations, or alternative or complementary medicine providers it captures only a proportion

of the services provided for people with mental disorders. Furthermore, it provides only service use and cannot indicate overall community prevalence of disorder or the proportion of people with disorder who do not make contact with services. Nonetheless it was the mental health service data that showed that Māori rates of hospitalisation were higher than those for non-Māori, raising concern about Māori mental health. Also, while rates for Pacific people were low in earlier years (Bridgeman, 1996) this is now thought to have been due in part to poor recording of ethnicity in official data sets. Also there was concern that the rates of service use might be due to lower use of services rather than lower prevalence of disorder.

There have been national surveys of alcohol consumption or drug use (see <http://www.shore.ac.nz> and <http://www.alac.org.nz>) and these have also asked about a number of problems resulting from use. The national health surveys have also asked questions about use of alcohol (within the AUDIT) and use of marijuana. However, none of these surveys has provided estimates of the prevalence of disorder or use of services, as this was not their purpose.

### 1.2.3 Information gaps in New Zealand

When the Ministry of Health decided a national survey of mental disorders was required, the only New Zealand national data on mental health came from a few self-reported diagnoses from health surveys and from mental health service data. Although data from the Christchurch Psychiatric Epidemiology Study had been used in place of national estimates, results from this regional survey were from the mid 1980s, when there were different definitions of disorder (see 1.6.1), and did not provide estimates of disorder for Māori or Pacific people. For substance use disorders changes in prevalence could be expected because of changes in the availability of drugs and an overall decline in the per capita consumption of alcohol (see <http://www.stats.govt.nz/>), although that did not necessarily indicate a decline across all age groups. Furthermore, there had been major changes in the definitions of substance use disorders (see 2.3.6). From the late 1970s to the new millennium, there had been a major shift in specialist service provision for substance use disorders from mainly residential services to predominantly outpatient services, so there had been an expansion in service availability and a change in the type of services available.

## 1.3 OBJECTIVES OF THE SURVEY

The objectives of Te Rau Hinengaro were, for the total New Zealand, Māori and Pacific populations living in New Zealand, to:

- describe the one-month, 12-month and lifetime prevalence of major mental disorders among people aged 16 and over living in private households, by sociodemographic variables
- describe patterns of and barriers to health service use for people with mental disorders
- describe the level of disability associated with mental disorder
- provide baseline data and calibrate brief instruments measuring mental disorders and psychological distress to inform the use of these instruments in future national health surveys.

The two brief instruments included were the Kessler 10-item scale (K10), a measure of psychological distress, and the AUDIT.

### 1.4 PURPOSE AND CONTENT OF THIS REPORT

This report, *Substance Use disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey*, has been prepared for the Alcohol Advisory Council of New Zealand, which provided part of the funding for the survey. Its purpose is to provide information for people whose interest is primarily in substance use disorders, rather than mental health in general. Much of the content is also in the longer main report, *Te Rau Hinengaro: The New Zealand Mental Health Survey* (Oakley Browne, Wells, & Scott, 2006), where results are presented for all disorders assessed. Similarly, a series of articles presents results for all disorders (Baxter, Kingi, Tapsell, Durie et al., 2006; Baxter, Kokaua et al., 2006; Beautrais, Wells, McGee, & Oakley Browne for the New Zealand Mental Health Survey Research Team, 2006; Foliaki, Kokaua, Schaaf, & Tukuitonga, for the New Zealand Mental Health Survey Research Team, 2006; Oakley Browne, Wells, & McGee, for the New Zealand Mental Health Survey Research Team, 2006; Oakley Browne, Wells, Scott, & McGee, for the New Zealand Mental Health Survey Research Team, 2006; Scott, McGee, Oakley Browne, & Wells, for the New Zealand Mental Health Survey Research Team, 2006; Scott, McGee, Wells, & Oakley Browne, for the New Zealand Mental Health Survey Research Team, 2006; Scott, Oakley Browne, McGee, & Wells, for the New Zealand Mental Health Survey Research Team, 2006; Wells, Oakley Browne et al., 2006a, 2006b).

Because this report is about substance use disorders, only summary results for anxiety, mood and eating disorder groups are presented. These results provide a context in which to place the substance use disorder results..

Information in chapter 6 of this report, about the AUDIT and the relationship between the AUDIT and substance use disorders, is not in the main report. In this report sociodemographic correlates of 12-month substance use disorders are presented (Table 2.5) and ethnic comparisons of 12-month substance use disorders are more extensive. Table 2.6 presents ethnic comparisons for alcohol disorders and for drug disorders as well as for substance use disorders combined. Table 2.7 shows the prevalence of drinking and the prevalence of drug use in each ethnic group and then Table 2.8 presents the prevalence of alcohol disorder among drinkers and drug disorder among those who had used drugs. Figure 2.1 shows the onset of substance use disorder in different birth cohorts. In chapter 4, Tables 4.4–4.6 report the results of additional analyses to investigate the role of substance use disorders in suicidal behaviours.

This report:

- presents the prevalence of substance use disorders and their patterns of onset and impact for adults in New Zealand; information that was not available before this survey
- explores the relationships between substance use disorders and other mental disorders, and between substance use disorders and physical disorders
- provides information about the patterns of health and non-health service use by people with substance use disorders
- examines the relationship between sociodemographic correlates and the probability of people meeting criteria for a substance disorder or accessing care
- describes the relationship between substance use disorders and suicidal behaviour
- investigates the prevalence of hazardous drinking as measured by the AUDIT and the relationship between scores on the AUDIT and alcohol disorder.

Because of the objectives for the survey, the focus is on *disorder*, not on consumption. The use of alcohol and other drugs will be reported in subsequent publications.

This survey falls under the classification of 'official statistics', which are defined as statistics produced by government agencies, including statistical surveys. *Protocols for Official Statistics* defines the principles official statistics must adhere to (Statistics New Zealand, 1998). These principles include the requirement for objectivity and impartiality in the presentation of data and that 'releasing official statistics should be separate from the advocacy of policies' (Statistics New Zealand, 1998: principles 8 and 9). Therefore, this report has been written to meet the objectives of the survey and to interpret findings; it does not advocate actions or policies.

### 1.5 THE SURVEY

A much fuller account of the survey is given in chapter 12 of the main report (Wells, McGee et al., 2006). Only the main features are reported in this introductory chapter.

Ethical approval was obtained from all 14 regional ethics committees, with the Auckland Y Committee as the lead committee. Signed consent was obtained from all participants before interview. A 24-hour triage service was available for free through an 0800 number, should participants want help. Multiple contacts were also provided for the fieldwork firm, other services, support groups and consumer advocacy.

#### 1.5.1 The interview

The New Zealand interview was based on the CIDI 3.0, previously known as the WMH-CIDI (Kessler & Ustun, 2004). The CIDI is a fully structured interview suitable for use by trained lay interviewers. Diagnoses of mental disorders were made from responses to the symptom questions. Laptop computers were used for computer assisted personal interviews. Interviewers read questions off the laptop screen and entered responses directly into the laptop.

Four groups of mental disorders were assessed:

- anxiety disorders (panic disorder, agoraphobia without panic, specific phobia, social phobia, generalised anxiety disorder, post-traumatic stress disorder and obsessive–compulsive disorder)
- mood disorders (major depressive disorder, dysthymia and bipolar disorder)
- substance use disorders (abuse of or dependence on alcohol or other drugs)
- eating disorders (anorexia and bulimia).

Other sections assessed suicidal behaviours, health service use, chronic physical conditions, disability, psychological distress, and alcohol use and its consequences in the past 12 months (AUDIT).

A modification was made to the drug section. Participants who had used marijuana and other drugs were first asked each symptom question in relation to drugs. If they reported a symptom they were then asked if they experienced it for marijuana. This followed the pattern used in the Australian National Survey of Mental Health and Well-being (Teesson, Hall, Lynskey, & Degenhardt, 2000) (see 1.2.1), except that the Australian interview asked separately about all types of drugs used.

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Figure 1.1 shows the sections of the interview and the flow through the interview. It indicates which sections were given to all participants and which sections participants were screened into. It also shows those additional sections included in the long form of the interview that were asked of only a subsample of participants.

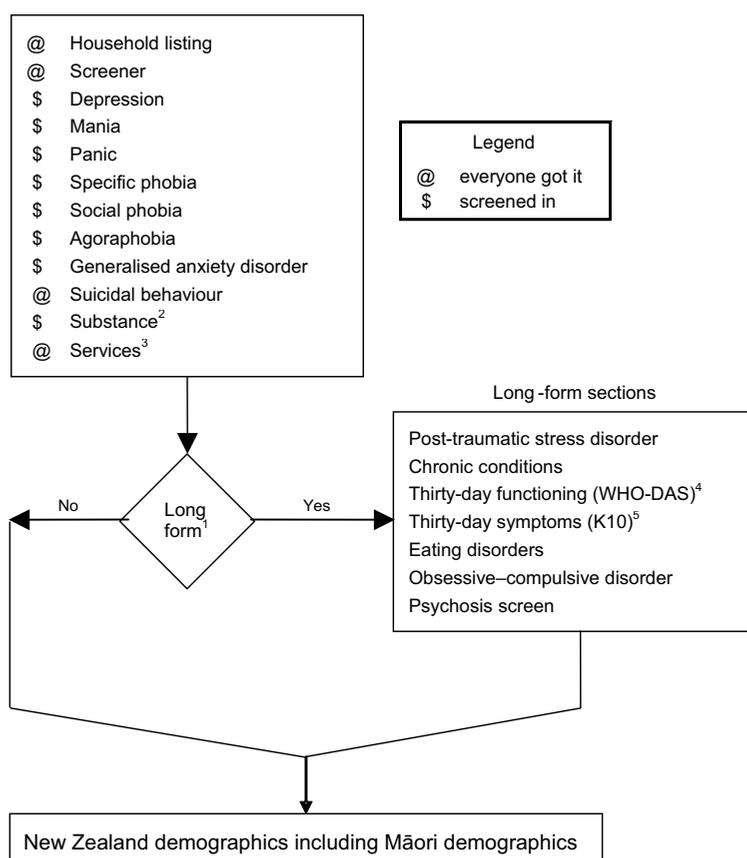
In the version of the CIDI used in New Zealand, participants did not reach the abuse section unless they reported problems in the screener, and they did not reach the dependence section unless they reported at least one symptom of abuse. This may have resulted in some underestimation of the prevalence of dependence. These 'skips' were found in the versions of the CIDI 3.0 used at many WMH sites (Demyttenaere et al., 2004).

Because the Ministry of Health wanted to know the relationship between the AUDIT and alcohol use diagnoses, the AUDIT was added into the New Zealand interview. However, the alcohol consumption questions in the AUDIT use slightly different categories from those in the CIDI 3.0. It was not appropriate to ask participants these very similar questions twice. Instead 'drinkers' (people who had ever drunk 12 drinks or more in a year) were randomly assigned to the AUDIT or the CIDI 3.0 alcohol consumption questions with a 50:50 chance of being assigned to either group. The AUDIT questions are in Appendix A. As in the 1996/97 New Zealand Health Survey (Minister of Health, 1999) and the 2002/03 New Zealand Health Survey (Ministry of Health, 2004b) only people who had drunk alcohol in the past 12 months were given the 10 questions of the AUDIT. For the K10, participants were randomly assigned to respond about the past month or the worst month in the past 12 months.

The use of screening into sections, long and short forms, and random assignment permitted assessment of more disorders within the same average interview time than would have been possible without these strategies. However, one consequence is that sample sizes are not the same across all analyses. For example, the percentage who had a drink in the past 12 months is estimated from the whole sample but AUDIT scores are available only for half of those who had ever drunk 12 or more drinks in a year, namely under half the total sample. Those who did not drink in the past 12 months were assigned a score of zero on the AUDIT so the distribution of AUDIT scores based on the 10 questions of the AUDIT are available for a smaller group again. Results for the composite classification of any mental disorder are obtained from the long form subsample as only these participants were assessed for all disorders.

The full CIDI 3.0 interview cannot be used without training, but it can be viewed at <http://www.hcp.med.harvard.edu/wmhcredi/>. Completion of training ensures the interview is administered correctly, and is required before access to diagnostic algorithms is provided. The New Zealand interview is available from <http://www.moh.govt.nz>, but also cannot be used without official CIDI training, except for questions added in New Zealand such as those derived from the 2001 New Zealand Census of Population and Dwellings (the 2001 Census) or the AUDIT. New Zealand questions in the interview begin with 'NZ', but not 'NZR', which indicates a New Zealand variant of a CIDI question that was recoded for international comparisons. There were only a small number of such recoded questions.

**Figure 1.1: New Zealand interview: long form and short form logic and sections<sup>1</sup>**



- 1 Long form subsample: participants who had ever met certain criteria for depression, mania or the anxiety disorders in the first part of the interview, or who had ever had a suicide plan or suicide attempt, or who had ever been hospitalised for psychiatric problems all went on to the long form sections. Others were randomly selected in, with the probability of selection increasing with the number of eligibles in the household. There were two sets of selection probabilities: participants with some evidence of psychiatric problems had selection rates of 27%–100%, whereas those with no evidence had selection rates of 9%–45%.
- 2 All entered section. Fifty percent did CIDI 3.0 consumption questions and 50% did the Alcohol Use Disorders Identification Test. Screened into symptom questions.
- 3 Plus Māori health services.
- 4 WHO-DAS = World Health Organization Disability Assessment Schedule II.
- 5 K10 = Kessler 10-item scale. Fifty percent did K10 for the worst month in the past 12 months and 50% did K10 for the past month.

### 1.5.2 Survey design

The target population was people aged 16 and over living in permanent private dwellings throughout New Zealand. The survey design was for a nationally representative sample. A multi-stage area probability sample was selected. The first stage of selection involved sampling census meshblocks, small areas containing mostly around 40–70 dwellings. The second stage involved selecting dwellings within meshblocks. The final stage involved selecting one person per household.

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To improve the precision of estimates for Māori and Pacific people oversampling was used. The number of Māori was doubled and the number of Pacific people was quadrupled compared with that expected without oversampling. Two techniques were used for oversampling: targeting and screening. For targeting, meshblocks with a high density of Pacific people were selected with a higher probability. Screening was carried out in the other meshblocks: in some households everyone aged 16 years and over was eligible, in some households only Māori or Pacific people were eligible, and in the remaining households only Pacific people were eligible. Targeting is efficient for fieldwork but leads to less precision in estimates, whereas screening is statistically efficient but requires extensive door-knocking.

Although the sample was designed to contain twice as many Māori and four times as many Pacific people as expected from their numbers in the population, this oversampling did not bias estimates for the whole population or for Māori or Pacific people because of the appropriate weighting of participants.

### **1.5.3 Fieldwork**

The National Research Bureau carried out the fieldwork in late 2003 and 2004.

### **1.5.4 Response rate**

A total of 75,340 dwellings were approached for this survey. Because of screening, many dwellings were approached but were found to be ineligible: 79% of households screened for Māori and Pacific people had no one eligible (over 13,000 households) and 88% of those screened for Pacific people only had no one eligible (over 37,000 households). These numbers show something of the additional fieldwork associated with doubling the number of Māori and quadrupling the number of Pacific people.

The overall response rate was 73.3%. Ethnic-specific response rates could not be calculated directly because while the ethnicity of participants was known, the ethnicity of non-participants was not known, except for screened households where a listing of the ethnicity of household members had been obtained.

### **1.5.5 The sample**

The total number of interviews was 12,992. The number of participants who reported Māori ethnicity was 2,595 and the number who reported Pacific ethnicity was 2,374. There were 138 participants who reported both Māori and Pacific ethnicity.

There were 10,791 participants who had ever drunk 12 drinks of alcohol or more in a year of whom 5,408 were randomly assigned to the AUDIT, and of those 4,823 had drunk alcohol in the past 12 months so answered the 10 questions of the AUDIT.

There were 7,435 participants in the long form subsample.

### **1.5.6 Statistical analyses**

This survey produced a complex sample for which analyses had to take account of strata, clustering and unequal weights. Data manipulation and exploratory analyses were carried out using SAS 9.1.3 software, and analyses involving standard errors, confidence intervals and significance tests were carried out using SUDAAN 9.0.1 software to take account of the

complex sample design. Taylor series linearisation (Shah, 1998) was used to approximate the variance of estimates, with two strata and meshblocks as primary sampling units. For prevalences or proportions with less than 30 events in the numerator, confidence intervals were calculated according to a method by Korn and Graubard (1998, 1999).

For a comparison of scores on the AUDIT and alcohol diagnoses, the receiver operating characteristic curve and the area under the curve were estimated using a SAS macro, %WTC (see <http://www2.sas.com/proceedings/sugi28/275-28.pdf>) (Izrael, Battaglia, Hoaglin, & Battaglia, 2003). Confidence intervals were calculated according to Newcombe (2006), but using weighted estimates, and then inflated using the highest design effect for sensitivity or 1-specificity over all cut-points.

### 1.6 KEY TERMS

To help the reader the following key terms, which are used frequently throughout the report, are defined below:

- DSM (see 1.6.1)
- substance use disorders (see 1.6.2)
- CIDI (see 1.6.3)
- lifetime disorder, 12-month disorder and one-month disorder (see 1.6.4)
- prevalence (see 1.6.5)
- severity of disorder (see 1.6.6)
- oversampling (see 1.6.7)
- prioritised ethnicity (see 1.6.8)
- sociodemographic correlates (see 1.6.9)
- statistical terms (see 1.6.10).

Chapter 12 of the main report provides more detail on these key terms and on the analyses used (Wells, McGee et al., 2006).

#### 1.6.1 *Diagnostic and statistical manual of mental disorders*

To diagnose disorders it is necessary to specify criteria so diagnoses are comparable. The criteria for mental disorders have been refined over the past century, with major clarification occurring in the late 1970s and further refinement since then. In New Zealand, clinicians use what are known as 'DSM criteria'. The *Diagnostic and statistical manual of mental disorders* is the American Psychiatric Association's official classification system for defining mental disorders (American Psychiatric Association, 1980, 1987, 2000).

The version of the DSM classification system is indicated by the roman numerals after the DSM abbreviation (so DSM-IV is the fourth revision of the manual).

Different survey questionnaires have used different versions of the DSM to generate prevalence rates of mental disorders. For instance, the DIS, which was used in the ECA, generated DSM-III diagnoses, and the NCS used the CIDI-NCS to generate DSM-III-R diagnoses. The questionnaire used in this study generated DSM-IV diagnoses. In the report, it is sometimes made explicit that a mental disorder is defined with a particular version of the DSM.

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### **1.6.2 Substance use disorders**

The main substance use disorders are substance abuse and substance dependence. This survey collected information that enabled subclassification of the substance use disorders into alcohol use disorders, drug use disorders, and, within drug use disorders, marijuana use disorders. The summary provided here is generic across these substance types for DSM-IV substance use disorders.

#### *Substance abuse*

Substance abuse is a maladaptive pattern of substance use that involves recurrent and significant adverse consequences, namely, one or more of the following:

- repeated failure to fulfil major role obligations at work, school or home
- recurrent substance use in situations in which it is hazardous (eg, driving or operating machinery)
- recurrent substance-related legal problems
- continued substance use despite recurrent social or interpersonal problems (eg, arguments with spouse about consequences of intoxication or fights while intoxicated).

#### *Substance dependence*

Substance dependence is a pattern of use that is characterised by three or more of the following symptoms occurring at any time in the same 12-month period:

- tolerance, as defined by either a:
  - need for markedly increased amounts of the substance to achieve intoxication or the desired effect, or
  - markedly diminished effect with continued use of the same amount of the substance
- withdrawal (a substance-specific set of physiological, behavioural and cognitive symptoms associated with stopping regular use of the substance) or the taking of the substance to avoid withdrawal symptoms
- the substance is often taken in larger amounts or over a longer period than was intended
- a persistent desire or unsuccessful efforts to cut down or control substance use
- a great deal of time spent in activities necessary to obtain the substance
- important social, occupational or recreational activities given up or reduced because of substance use
- the substance use is continued despite its known negative effect on a physical or psychological problem (eg, an ulcer made worse by drinking alcohol).

In DSM-IV abuse is diagnosed only in the absence of dependence, but throughout this report abuse includes those with and without dependence in order to show the prevalence of abuse behaviour. This is consistent with publications from the WMH Survey Initiative project (Kessler, Chui, Demler, & Walters, 2005).

### **1.6.3 Composite International Diagnostic Interview**

Large-scale surveys are required because the prevalence of individual mental disorders is low. Neither the personnel nor the money required is available to carry out such surveys using fully trained clinical staff. Two solutions have been used for the assessment of participants. One is to

use two-phase sampling: lay interviewers administer a screening questionnaire and a proportion of participants are subsequently interviewed by trained clinical staff. This approach is used in national surveys in the United Kingdom (Jenkins, Bebbington et al., 1997; Jenkins, Lewis et al., 1997). The second approach has been the development of fully structured interviews that can be used by trained lay interviewers. This is the approach used in this survey and in the surveys reported in 1.2.1.

The questionnaire used in this survey to make DSM-IV diagnoses is the CIDI. The CIDI is a fully structured questionnaire that asks about symptoms and their onset and offset in order to determine whether a DSM mental disorder has occurred within specific periods such as ever in someone's life before interview or in the past 12 months.

Different versions of the CIDI have been used in surveys over the past decade. This survey used the WMH-CIDI (version 15) and the WHO has now accepted version 20 of the WMH-CIDI as the official WHO CIDI 3.0. Throughout this report, the questionnaire is referred to as the CIDI 3.0.

### **1.6.4 Lifetime disorder, 12-month disorder and one-month disorder**

The CIDI 3.0 generates DSM-IV diagnoses by determining whether the person has ever in their lifetime met criteria for the disorder, then determines the last time the person had an episode or key symptoms of the disorder. Throughout this report it is stated that this person (or people) had 'a lifetime disorder'. This is a short way of stating that at the time of the interview, the person had met criteria for a DSM-IV mental disorder, as ascertained with the CIDI 3.0, at some previous time in their life.

If the person has ever met criteria for a DSM-IV disorder, as ascertained with the CIDI 3.0, and experienced an episode or symptoms in the 12 months before the interview, then this is described as a '12-month disorder'. Similarly if the person ever met criteria for a DSM-IV disorder, as ascertained with the CIDI 3.0, and experienced an episode or symptoms in the month before the interview, this is described as a 'one-month disorder'.

### **1.6.5 Prevalence**

The prevalence of a disorder is the proportion of people with the disorder in a specified population at a designated time. As the CIDI 3.0 generates DSM-IV diagnoses and determines the period in which people met criteria, it is possible to aggregate data across people to calculate prevalence. In this report, data on three prevalence periods are provided.

- *Lifetime prevalence is the proportion of people known to have met criteria at some time in their lives before the interview.*
- *Twelve-month prevalence is the proportion of people to have ever met criteria for a disorder and to have experienced an episode of disorder or key symptoms in the 12 months before the interview.*
- *One-month prevalence is the proportion of people to have ever met criteria for a disorder and to have experienced an episode of disorder or key symptoms in the month before the interview.*

As this study uses a complex survey design, the survey data are 'weighted' and the calculation of prevalence is not simple. In the text and tables, 'weighted' prevalences are presented as proportions of the total population or specified subpopulations.

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### 1.6.6 Severity of disorder

A composite severity measure was developed for the WMH Survey Initiative to classify people with 12-month prevalence of any disorder (cases) as mild, moderate or severe (Demyttenaere et al., 2004). In New Zealand the same set of definitions was used except for substance dependence.

For substance dependence the WMH definition of 'serious' required at least one symptom in the past 12 months and the presence of physiological symptoms ever. In the US NCS-R, Kessler and colleagues used a definition that required substantial impairment in the past 12 months before substance dependence was classified as serious; otherwise substance dependence was classified as moderate (2005). Substantial impairment was defined as at least two areas in which a participant experienced consequences of substance use 'a lot' (see 2.3.2).

Using the NCS-R definition instead of the WMH definition reduced the percentage of New Zealand participants with substance dependence in the past 12 months who were classified with serious dependence from 90.4% to 25.7%. This strongly supports the contention that physiological symptoms can have occurred at some time without substance dependence symptoms necessarily having a major impact in the past 12 months.

In the definitions below for severity in the past 12 months, disorders had to have occurred in that period. Impairment in the Sheehan Disability Scales (Demyttenaere et al., 2001; Leon, Olfson, Portera, Farber, & Sheehan, 1997) was for the worst month in the past 12 months (see also Wells, McGee et al., 2006, section 12.12.2). On the Sheehan Disability Scales participants reported interference with life from a particular disorder for each of four domains (home management, work or study, close relationships, social life) on a labelled scale: 0 (no interference), 1–3 (mild), 4–6 (moderate), 7–9 (severe), 10 (very severe interference).

- *Serious disorder: Twelve-month bipolar I disorder, 12-month substance dependence with substantial impairment, a suicide attempt in the past 12 months and a DSM-IV CIDI 3.0 12-month disorder, at least two areas of severe role impairment due to a 12-month psychiatric disorder in the disorder-specific Sheehan Disability Scales, or a combination of other criteria found in the NCS-R (Kessler, Chui et al., 2005) to predict a global assessment of functioning score (American Psychiatric Association, 2000) of 50 or less in conjunction with a DSM-IV CIDI 3.0 disorder (12-month disorder and 51 or more days out of role in the past 12 months, and no more than one Sheehan domain with a maximum score less than 7 for work or social domains or less than 8 for home and personal relationship domains).*
- *Moderate disorder: Cases not classified as severe were classified as moderate if they reported at least moderate interference in any Sheehan Disability Scales domain or if they had substance dependence without substantial impairment.*
- *Mild disorder: Everyone with any 12-month diagnosis not classified as serious or moderate was classified as mild.*

There is no internationally accepted definition of 'serious', 'severe' or 'major' mental disorder and the terms are used interchangeably.

### 1.6.7 Oversampling

As previously discussed, very limited data exist about mental disorder in the community for Māori and Pacific people. An important aim of the study was to obtain data about the prevalences of mental disorders, and the associated disability and health service use, for Māori, Pacific people and Other people in the New Zealand population. If Māori and Pacific people were eligible for selection and sampled from the population on the basis of their proportions in the population, there would be insufficient numbers of Māori and Pacific participants to provide estimates of disorders and service use of acceptable precision. For this reason, Māori and Pacific people were 'oversampled'. That is, the sample design was such that the probability of Māori and Pacific people being selected for participation in the study was higher than the probability of their being selected based simply on their proportions in the New Zealand population. This is explained briefly in 1.5.2 and in detail in chapter 12 of the main report (Wells, McGee et al., 2006).

In 'weighting' the sample, these differential probabilities of eligibility for participation are taken into account, such that the estimates obtained are representative of the New Zealand adult population and the Māori, Pacific and Other subpopulations.

### 1.6.8 Prioritised ethnicity

To determine ethnicity, participants were asked the same questions as asked by Statistics New Zealand in the 2001 Census. The relevant questions are in Appendix B. These questions allow participants to identify themselves as belonging to more than one ethnic group. However, for most analyses participants were assigned to one of three mutually exclusive ethnic groups.

This report used the standard New Zealand system for prioritising ethnicity: Māori ethnicity was prioritised over Pacific ethnicity, and Pacific ethnicity was prioritised over other ethnicities. That is, people who stated they identified as Māori *and* stated they identified with other ethnic groups were classified as belonging to the Māori ethnic group. People who identified as Pacific, but not Māori, were classified as Pacific people regardless of whatever other ethnicities they may also have reported.

### 1.6.9 Sociodemographic correlates

#### *Educational qualifications*

Education was asked about using the two 2001 Census education questions about school qualifications and post-school qualifications. Those with no qualifications were asked for their age at the end of their last complete year at school. A three-level grouping is used throughout the report: no qualification; school or post-school qualification only; and both school and post-school qualifications. Combining those with only school qualifications and those with only post-school qualifications was a way of producing a category of people with usually no more than 13 years of education and a qualification. It accommodated the pattern in older generations to leave school without a qualification, but to complete some kind of trade training. Fewer than 10 participants had missing data on education and these were imputed by consideration of other variables such as age and employment (Wells, McGee et al., 2006, section 12.7.1).

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### *Equivalised household income*

Household income was asked about in one question. Because of the 13.0% non-response on this question imputation was carried out (Wells, McGee et al., 2006, section 12.7.1). A modification of the revised Jensen equivalence scale (Jensen, 1988) was used to take account of the number of children. In this survey the age of individual children was not known, just the number aged under 16. Therefore, an average age of eight years was assumed. (The formulae are in Wells, McGee et al. (2006, section 12.12.1).)

### *New Zealand Index of Deprivation 2001*

The New Zealand Index of Deprivation 2001 (NZDep2001) is a small area index of deprivation provided by Statistics New Zealand for each 2001 Census meshblock. This index has also been provided from the 1991 Census and the 1996 Census (Crampton & Davis, 1998; Salmond, Crampton, & Sutton, 1998). It is based on census data on the percentage of people lacking a telephone, receiving means-tested benefits, being unemployed, having a low income, having no access to a car, being in a single-parent family, lacking qualifications, renting, and having inadequate living space for a household. It is most commonly reported in deciles, with decile 10 being the most deprived.

Because of variability within a meshblock, NZDep2001 may not be a good measure of deprivation for an individual. This is why throughout this report individual measures (education and equivalised household income) are used predominantly. Nonetheless NZDep2001 is also used in some analyses to enable comparison with results from routinely collected data. National health and health service data sets (New Zealand Health Information Service morbidity and mortality data and the Mental Health Information National Collection) (see <http://www.nzhis.govt.nz>) have been able to use only NZDep2001 or earlier versions, as index of deprivation data can be obtained from residential addresses whereas education and income are not routinely collected.

### *Urbanicity*

Standard Statistics New Zealand definitions were used for urbanicity (Statistics New Zealand, 2006). These are:

- main urban areas (a minimum population of 30,000)
- secondary urban areas (a population of 10,000–29,999)
- minor urban areas (a population of 1,000–9,999)
- other (rural centres and rural areas).

### *Regions*

The four major regions are based on District Health Boards and are (Mental Health Commission, 2002b):

- North: Northland, Waitemata, Auckland and Counties-Manukau
- Midland: Waikato, Bay of Plenty, Tairāwhiti (Gisborne), Lakes and Taranaki
- Central: Hawke's Bay, Midcentral (Manawatu), Whanganui, Wairarapa, Hutt and Capital & Coast
- South: Nelson-Marlborough, Canterbury, West Coast, South Canterbury, Otago and Southland.

### 1.6.10 Statistical terms

The precision of the survey results is indicated by the 95% confidence intervals (CIs). If multiple survey samples were obtained, even at the same time, they would provide results that differed. The 95% CI is the interval that would be expected to contain the true population value 95% of the time if many samples were taken.

Conventionally, differences are said to be statistically significant if the probability ( $p$ ) is less than .05. The smaller the  $p$ -value the more evidence that there is a real difference in the population, not just in the sample. However,  $p$  is affected by both the size of the difference and the size of the sample, so it is important to inspect the results themselves to ascertain if the difference is small or large.

If the 95% CIs for two groups do not overlap then the results for the two groups are statistically significantly different at the .05 level. However, the 95% CIs may overlap to some extent when  $p$  is less than .05, which is one of the reasons  $p$ -values are sometimes quoted in this report. In addition, it is possible for some multi-valued variables such as age group to have a significant effect even when individual age groups do not differ, and this is conveniently indicated by a  $p$ -value.



## 2 PREVALENCE

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### KEY RESULTS

- The prevalence of substance use disorders depended on the period involved: 12.3% of the population had met criteria for a DSM-IV substance use disorder at some time in their life before interview, 3.5% had experienced a substance use disorder within the past 12 months and 1.5% in the past month.
- In the past 12 months 2.6% of the population experienced alcohol abuse, 1.3% alcohol dependence, 1.2% drug abuse and 0.7% drug dependence. Marijuana disorders were a subgroup of drug disorders with prevalences of 0.9% for abuse and 0.5% for dependence.
- The prevalence of substance use disorders in the past 12 months was markedly higher for younger people, and higher for males, people with less education, people with less income and people who lived in more deprived areas. Secondary centres had slightly lower prevalences but there were no differences across regions.
- Māori had the highest prevalence of substance use disorders in the past 12 months followed by Pacific people and then the Other composite ethnic group (unadjusted prevalences for Māori, Pacific and Others were 9.1%, 4.9% and 2.7%). After adjustment for sociodemographic correlates, differences were much reduced, particularly for Pacific people (adjusted prevalences for Māori, Pacific and Others were 6.0%, 3.2% and 3.0% respectively).
- The lifetime prevalence of substance use disorders was 12.3% and the estimated lifetime risk was 13.8%.
- Twenty-five percent of people who will at some time in their lives experience substance use disorder do so by age 16, 50% by age 18 and 75% by age 24.
- Younger people have a higher lifetime prevalence of substance use disorders than older people. Compared with the group aged 65 and over at interview, the other age groups have significantly higher hazard ratios for lifetime substance use disorders ( $p < .0001$  for all comparisons). A gradient exists across these birth cohorts, with more recent cohorts having higher hazard ratios than earlier cohorts.
- Males have a higher prevalence of lifetime substance use disorders than females have. With adjustment for ethnicity and age, males have higher hazard ratios for lifetime substance use disorders compared with females.
- Māori have a significantly higher risk of developing substance use disorders than Pacific people, who have significantly higher risk than the composite Other group, even after adjustment for age and sex (hazard ratios of 2.6 and 1.5 for Māori and Pacific relative to Others).

### 2.1 INTRODUCTION

In 1977 the then United States (US) first lady, Rosalynn Carter, was authorised to assemble a mental health commission. She asked how many people had mental disorders, who was affected and what treatment they received (Freedman, 1991). No comprehensive information was available, and to fill this gap the Epidemiologic Catchment Area Study (ECA) was set up with fieldwork conducted in the early 1980s. Chapter 1 describes how the ECA (Myers et al., 1984; Robins et al., 1984; Robins & Regier, 1991) and subsequent community surveys in the US (Kessler, Berglund et al., 2004; Kessler et al., 1994; Kessler & Merikangas, 2004) and in other countries (Demyttenaere et al., 2004; Weissman et al., 1996; World Health Organization International Consortium of Psychiatric Epidemiology, 2000) have attempted to answer the questions asked by Rosalynn Carter. They have ascertained the prevalence of mental disorder, the correlates of disorder and the percentage of people with disorders who have received treatment.

In these surveys, as in clinical practice, a history of disorder is taken in addition to an assessment of current state. An important difference is that in clinical practice patients turn up when they are unwell. In community surveys interviewers turn up at a time dependent on the roll-out of the survey, not because of the potential participant's current state. Consequently in many interview schedules (Robins et al., 1981; Robins et al., 1988) more emphasis is placed on a history of disorder and less on current state than in clinical practice. For each disorder, participants are asked if they have ever experienced symptoms, and then about onset and recency, namely when they first experienced symptoms and when they last experienced symptoms. Reports of recency are used to calculate period prevalences, which are required to understand the course of disorder and the possible need for treatment within certain periods. Mental disorders appear at different times throughout the lifespan. Some disorders often persist for years, some disappear completely and others are recurrent. Disorders differ across individuals in severity, chronicity and recurrence. To capture this variable course it is necessary to report period prevalences: lifetime prevalence, 12-month prevalence and, sometimes, six-month prevalence or one-month prevalence.

As described in chapter 1, lifetime prevalence is the percentage of the population with a disorder at any time in their life until the time of interview (see 1.6.4). This differs from lifetime risk, which is the risk of disorder over a lifetime up to some particular age such as 75 years. For surveys using the Diagnostic Interview Schedule (DIS) (Robins et al., 1981), the Composite International Diagnostic Interview (CIDI) (Robins et al., 1988) and the World Mental Health (WMH) CIDI/CIDI 3.0 (Kessler & Ustun, 2004) used in New Zealand (see 1.6.3), 12-month prevalence is the percentage who have ever met criteria for disorder and who have reported an episode or symptoms in the past 12 months. One-month prevalence is defined similarly. Full criteria for disorder may not have been met within the restricted period in these interviews. While one-month prevalence is the least subject to recall problems, it is imprecise. Even in large surveys the small numbers of participants with current disorder mean upper confidence limits for disorders may be several times greater than lower confidence limits.

The ECA found that 32% of American adults had met criteria in their lifetime before interview for one or more of the DSM-III mental disorders assessed and 20% had an active disorder (12-month prevalence) (Robins, Locke, & Regier, 1991) (see 1.6.1 for an explanation of the *Diagnostic and statistical manual of mental disorders* (DSM)). These high prevalences were accompanied by low rates of inpatient or outpatient treatment: only 21% of those with disorder in the last six months received treatment in that time. Results like these have led to debates

about definitions of disorder and the need for treatment. DSM-IV (American Psychiatric Association, 1994) has added a clinical significance criterion to many disorders, requiring clinically significant distress or impairment in functioning for diagnosis. Some healthcare professionals such as Mechanic (2003) have argued that meeting criteria for disorder does not itself necessitate treatment; many cases may be mild, self-limiting and non-disabling, as often occurs for instance with viral infections. Hence, it is essential that severity is assessed in order to better understand the extent of unmet need. The WMH-CIDI/CIDI 3.0 (Kessler & Ustun, 2004) has extended the assessment of impairment and the WMH Survey Initiative has produced a composite measure across disorders to classify the severity of a case (American Psychiatric Association, 1994; Demyttenaere et al., 2004; Kessler, Chui et al., 2005).

This chapter presents results for Te Rau Hinengaro: The New Zealand Mental Health Survey for:

- period prevalences (see 2.2)
- 12-month prevalence including prevalence of disorders, severity, correlates of alcohol disorder, drug disorder and substance use disorder, and comparisons across ethnic groups (see 2.3)
- lifetime prevalence and projected lifetime risk, age of onset of disorders, and correlates of the hazard of developing a substance use disorder (see 2.4).

When the prevalence of abuse is reported it includes everyone who exhibited those symptoms, regardless of whether they ever met criteria for dependence. Because those without abuse of alcohol or drugs were not assessed for dependence, dependence is dependence in those with abuse at some time in their lives.

## 2.2 PERIOD PREVALENCES

The period prevalences shown in Table 2.1 are based on ever meeting criteria for disorder (lifetime prevalence) and having symptoms or an episode within the relevant period. There were seven anxiety disorders, including phobias, panic disorder and post-traumatic stress disorder, and three mood disorders, including major depressive disorder, dysthymia and bipolar disorder. Substance use disorders included abuse of or dependence on alcohol or other drugs.

## Substance Use Disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey

**Table 2.1:** Lifetime, 12-month and one-month prevalences of mental disorders<sup>1</sup>

	Lifetime prevalence % (95% CI)	Twelve-month prevalence % (95% CI)	One-month prevalence % (95% CI)
<b>Disorder group</b>			
Any anxiety disorder <sup>2</sup>	24.9 (23.6, 26.2)	14.8 (13.9, 15.7)	9.3 (8.6, 10.1)
Any mood disorder	20.2 (19.3, 21.1)	7.9 (7.3, 8.7)	2.3 (2.1, 2.7)
Any substance use disorder	12.3 (11.6, 13.1)	3.5 (3.0, 4.0)	1.5 (1.3, 1.8)
Any eating disorder <sup>2</sup>	1.7 (1.5, 2.1)	0.5 (0.3, 0.6)	0.2 (0.1, 0.4)
<b>Any disorder<sup>2</sup></b>	<b>39.5</b> (37.9, 41.2)	<b>20.7</b> (19.5, 21.9)	<b>11.6</b> (10.7, 12.4)

1 DSM-IV CIDI 3.0 disorders, see 1.6.1–1.6.3.

2 Assessed in the subsample who did the long form interview, see 1.5.1.

Table 2.1 shows how common it is for New Zealanders to experience mental disorder: 39.5% reported sufficient symptoms to meet criteria for at least one disorder at some time in their lives before interview. It is likely that mild episodes, or episodes a long time ago, may have been completely or partially forgotten, as Andrews et al. (1999) and Wells and Horwood (2004) have shown for depression. Therefore, the lifetime prevalences in Table 2.1 will, to some extent, be underestimated. This may also have affected other prevalences; participants who had previously met criteria but who were not diagnosed because they had failed to recall enough symptoms, would not have been counted for other period prevalences even though they reported some symptoms.

The 12-month prevalence of any disorder was 20.7%, which implies that about half of those who have ever experienced disorder did not experience disorder in the past 12 months. Sometimes the ratio of 12-month to lifetime prevalence is called the non-recovery rate (Oakley Browne et al., 1989). By this measure anxiety disorders, with a non-recovery rate of 59.4%, are seen to be more persistent than mood or substance use disorders (39.1% and 28.5%). Thus nearly three-quarters (71.5%) of those who have reported sufficient symptoms to ever meet criteria for a substance use disorder said that they did not have symptoms in the past 12 months.

Overall the one-month prevalence of any disorder was 11.6%. Comparison of one-month and 12-month prevalences shows the highest ratio for anxiety disorders, which again implies greater chronicity for these disorders than for mood disorders, which are mostly episodic, or for substance use disorders. The one-month prevalence is the closest estimate of point prevalence. In interpreting this, though, it must be remembered that participants can delay interviews and may do so until they are feeling better. In addition, refusal rates may be higher in those with current disorder.

## 2.3 TWELVE-MONTH PREVALENCE

The 12-month prevalence of a disorder is the proportion of the population who have ever met criteria for a disorder and who have experienced symptoms or an episode in the past 12 months (see 1.6.4 and 1.6.5). This is the period prevalence most commonly reported in community surveys (Bijl et al., 2003; Demyttenaere et al., 2004; Robins & Regier, 1991). It is useful for health service planning. It also provides a reasonable balance between recall requirements and the precision of prevalence estimates (see 2.1). This is particularly important for estimating the prevalence of individual disorders, some of which are uncommon.

Secondary analyses (Narrow, Rae, Robins, & Regier, 2002) of earlier surveys have suggested that many 12-month cases are mild. Hence in the WMH-CIDI/CIDI 3.0 (Kessler & Ustun, 2004), scales were added to each disorder to measure impact in the past 12 months. A composite measure of severity was developed to take account of all disorders experienced in that period. Therefore, in New Zealand both impact on life from specific disorders and overall severity were measured. Severity is defined for an individual, not a disorder (see 1.6.6). When severity is reported for a particular disorder it shows the overall levels of severity of people with that disorder, including the impact of any comorbid disorders. It indicates the severity of the 'cases', not the severity of the disorder.

Age and sex differences in prevalences of individual substance use disorders are reported. Twelve-month prevalence of substance use disorders has been found to decrease with age (Kessler et al., 1994; Myers et al., 1984). Men have been found to have higher prevalence of substance use disorders, whereas women have higher prevalence of depression and anxiety (Kohn, Dohrenwend, & Mirotznic, 1998). Prevalences are also presented for other sociodemographic correlates and a series of ethnic comparisons are made.

### 2.3.1 Twelve-month prevalence overall, by age and by sex

#### *Twelve-month prevalence overall*

Table 2.2 shows that anxiety disorders (14.8%) were the most common disorder group, followed by mood disorders (8.0%) and substance use disorders (3.5%), with a low prevalence of eating disorders (0.5%). The prevalence of individual disorders ranged from 7.3% for specific phobia to less than 0.1% for anorexia and varied several-fold within each disorder group.

Alcohol disorders were more common than drug disorders. Alcohol abuse (2.6%) was 2.3 times more prevalent than drug abuse (1.2%) and alcohol dependence (1.3%) was 1.8 times more common than drug dependence (0.7%).

Expressing the prevalence of disorder as a percentage of users provides a different perspective. Alcohol was used in the past 12 months by 79.1% and drugs by 13.7%. Among those who drank alcohol in the past 12 months, 3.3% had alcohol abuse and 1.6% had dependence, whereas 8.1% of those who used drugs in that period had drug abuse and 5.0% had drug dependence. Drug users were much more likely to experience disorder than alcohol users, but alcohol caused more disorder in the population because of its more widespread use.

Drug users tended to be young and male, both characteristics associated with abuse and dependence of any substance. Everyone who used drugs in the past 12 months also used alcohol, and these drug users experienced more alcohol abuse and dependence (12.7%, 6.5%) than drug abuse and dependence (8.1%, 5.0%). Therefore, these results show that alcohol

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caused more disorder than did drugs both in the overall population and in the subpopulation of drug users.

The prevalence of marijuana abuse and dependence was a little below that for drug disorders, indicating that about 0.4%–0.5% of the population had experienced drug disorders without a marijuana disorder. Those with a marijuana disorder who also used other drugs may or may not have met criteria for drug disorder because of their use of other drugs as well as their use of marijuana; all that is known is that they were positive for a drug diagnosis in general and for marijuana when asked about symptoms due specifically to marijuana. Among those who used only marijuana in the past 12 months, 6.8% had marijuana abuse and 3.6% had marijuana dependence.

The prevalence of some disorders may have been underestimated. For alcohol and separately for drugs, participants who did not report ever experiencing any symptom of abuse were not asked dependence questions. A study by Hasin and Grant (2004) suggests this will have resulted in underestimation.

**Table 2.2:** Twelve-month prevalence of mental disorders,<sup>1</sup> overall and by age and by sex

Disorder groups	Total % (95% CI)	Age group (years) % (95% CI)				Sex % (95% CI)	
		16–24	25–44	45–64	65 and over	Male	Female
<b>Anxiety disorders</b>							
Any anxiety disorder <sup>2</sup>	14.8 (13.9, 15.7)	17.7 (15.1, 20.6)	18.2 (16.6, 19.9)	13.2 (11.8, 14.7)	6.0 (4.7, 7.6)	10.7 (9.5, 12.0)	18.6 (17.3, 20.0)
<b>Mood disorders</b>							
Any mood disorder	8.0 (7.4, 8.6)	12.7 (10.4, 15.4)	9.2 (8.3, 10.2)	6.8 (5.9, 7.9)	2.0 (1.5, 2.7)	6.3 (5.5, 7.2)	9.5 (8.7, 10.5)
<b>Substance use disorders</b>							
Alcohol abuse	2.6 (2.3, 3.0)	7.1 (5.7, 8.9)	3.2 (2.6, 3.9)	0.8 (0.6, 1.2)	<0.1 (0.0, 0.2)	3.7 (3.1, 4.4)	1.6 (1.3, 2.1)
Alcohol dependence	1.3 (1.1, 1.5)	3.0 (2.2, 4.1)	1.7 (1.3, 2.2)	0.4 (0.2, 0.7)	<0.1 (0.0, 0.1)	1.7 (1.4, 2.2)	0.9 (0.6, 1.1)
Drug abuse	1.2 (0.9, 1.4)	3.8 (2.8, 5.1)	1.2 (0.9, 1.6)	0.2 (0.1, 0.5)	<0.1 (0.0, 0.1)	1.6 (1.2, 2.0)	0.8 (0.6, 1.1)
Drug dependence	0.7 (0.5, 0.9)	2.1 (1.3, 3.2)	0.9 (0.6, 1.2)	0.1 (0.0, 0.3)	<0.1 (0.0, 0.1)	1.1 (0.7, 1.5)	0.4 (0.2, 0.5)
Marijuana abuse <sup>3</sup>	0.9 (0.7, 1.1)	3.2 (2.3, 4.4)	0.9 (0.7, 1.3)	0.2 (0.1, 0.4)	<0.1 (0.0, 0.1)	1.3 (0.9, 1.7)	0.6 (0.4, 0.9)
Marijuana dependence <sup>3</sup>	0.5 (0.3, 0.6)	1.5 (0.9, 2.4)	0.6 (0.3, 0.9)	<0.1 (0.0, 0.2)	<0.1 (0.0, 0.1)	0.8 (0.5, 1.1)	0.2 (0.1, 0.3)
Any substance use disorder	3.5 (3.1, 4.0)	9.6 (7.9, 11.5)	4.2 (3.6, 5.0)	1.2 (0.9, 1.6)	<0.1 (0.0, 0.2)	5.0 (4.3, 5.8)	2.2 (1.8, 2.7)
<b>Eating disorders</b>							
Any eating disorder <sup>2</sup>	0.5 (0.3, 0.6)	0.6 (0.2, 1.3)	0.7 (0.4, 1.1)	0.3 (0.1, 0.6)	0.1 (0.0, 0.5)	0.3 (0.1, 0.5)	0.6 (0.4, 0.9)
<b>Any disorder</b>							
Any disorder <sup>2</sup>	20.7 (19.5, 21.9)	28.6 (25.1, 32.3)	25.1 (23.2, 27.1)	17.4 (15.7, 19.2)	7.1 (5.7, 8.8)	17.1 (15.5, 18.8)	24.0 (22.4, 25.6)

1 DSM-IV CIDI 3.0 disorders, see 1.6.1–1.6.3.

2 Assessed in the subsample who did the long form interview, see 1.5.1.

3 Those with marijuana disorder are a subgroup of those with drug use disorder. They may or may not have met criteria for abuse of or dependence on other drugs.

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### *Twelve-month prevalence, by age and by sex*

Table 2.2 shows that the prevalence of any 12-month disorder declined across the age groups from 28.6% in the youngest age group to 7.1% in the oldest age group. This pattern was particularly pronounced for substance use disorders.

The 12-month prevalence of both alcohol disorders and drug disorders declined dramatically with age, with very few cases among those aged 65 and over ( $p < .0001$  over all age groups). For example, for alcohol abuse the prevalences were 7.1%, 3.2%, 0.8% and less than 0.1% across the four age groups. For dependence, the decline with age may be exaggerated because of the version of the CIDI interview used in New Zealand, which skipped dependence questions if there were never symptoms of abuse. Therefore, as reported lifetime abuse declined with age, older participants were less likely to be asked about dependence. For drug dependence, the decline with age must also reflect the lower proportions who had ever used drugs.

The overall prevalence of any 12-month disorder was higher for females than for males (24.0% compared with 17.1%;  $p < .0001$ ). However, in contrast to age, where a fairly similar pattern was seen across disorders, sex predominance varied markedly across disorders. For alcohol and drugs there was a clear and significant male predominance for abuse and dependence, with males having prevalences around double those for females ( $p < .0001$  for all comparisons). For example, for any substance use disorder the prevalence for males was 5.0% (4.3, 5.8) but 2.2% (1.8, 2.7) for females.

The joint effects of age and sex are such that overall prevalences can conceal markedly higher prevalences in some subgroups. This is particularly true for substance use disorders. The overall 12-month prevalence of substance use disorder was 3.5% but it was 12.5% (9.6, 15.4) in males aged 16–24 and in young Māori males it was 22.0% (14.8, 29.3).

### **2.3.2 Effects on life in the past 12 months from dependence**

Participants with alcohol dependence and symptoms in the past 12 months were asked five questions about how much they had experienced consequences of drinking. The response options were 'a lot', 'some', 'a little' and 'not at all'. The same questions were asked about consequences of drug use for those with 12-month drug dependence symptoms. The questions were:

- How much has your physical health been harmed by your use of [XXX]?
- How much has your family been hurt by your use of [XXX]?
- How much have you done impulsive things that you regretted later because of using [XXX]?
- How much have you failed to do what was expected of you because of your use of [XXX]?
- How much have you been unhappy because of using [XXX]?

Participants with alcohol dependence in the past 12 months were consistently less likely than those with drug dependence to report each consequence of their substance use (Table 2.3). For each consequence, fewer than half reported that the consequence had occurred 'a lot'. Of those with drug dependence, 29.4% were marijuana dependent and had used only marijuana in the past 12 months. This marijuana-only group experienced less impact from their drug use than those who used other drugs either with or instead of marijuana. The difference was particularly

clear for the health impact of drug use (9.8% for the marijuana group, 37.2% for the whole drug dependence group).

**Table 2.3:** *Effects on life in the past 12 months from alcohol dependence and drug dependence*

Dependence <sup>1</sup>	Effects on life experienced 'a lot' <sup>2</sup> % (95% CI)				
	Health harmed	Family hurt	Impulsive actions regretted	Failed to do things	Unhappy
Alcohol dependence	22.3 (15.6, 30.8)	20.1 (14.2, 27.7)	30.8 (22.5, 40.4)	20.7 (14.5, 28.6)	24.4 (17.6, 32.9)
Drug dependence	37.2 (24.4, 52.2)	36.5 (23.8, 51.4)	39.5 (26.3, 54.5)	40.0 (26.9, 54.7)	35.0 (22.2, 50.4)
Marijuana dependence <sup>3</sup> in those using only marijuana in past 12 months	9.8 (2.4, 24.7)	23.8 (7.4, 49.0)	19.2 (7.1, 38.0)	24.8 (11.1, 43.6)	20.4 (8.5, 37.8)

1 DSM-IV CIDI 3.0 alcohol and drug dependence disorders, see 1.6.1–1.6.3.

2 See 2.3.2.

3 Those with marijuana dependence are a subgroup of those with drug dependence. They may or may not have met criteria for dependence on other drugs.

### 2.3.3 Twelve-month prevalence and severity

Severity across disorders is defined as in chapter 1 (see 1.6.6). The severity reported for a particular disorder depends on how severely individuals with that disorder have been affected by it in the past 12 months plus the impact of any other disorders also experienced by those individuals in the past 12 months.

The 12-month prevalence of any disorder was 20.7% (Table 2.4). For these cases who had all met full criteria for disorder during their lifetime and experienced symptoms or an episode in the last 12 months, the distribution of severity was 22.7% with serious disorder, 45.6% with moderate disorder and 31.7% with mild disorder.

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**Table 2.4:** Twelve-month prevalence and severity of mental disorders

Disorder groups <sup>1</sup>	Twelve-month prevalence <sup>1</sup> % (95% CI)	Distribution of overall severity of cases with each disorder <sup>1</sup> %		
		Serious	Moderate	Mild
<b>Anxiety disorders</b>				
Any anxiety disorder <sup>2</sup>	14.8 (13.9, 15.7)	23.8 (21.4, 26.3)	43.3 (40.3, 46.3)	32.9 (30.2, 35.8)
<b>Mood disorders</b>				
Any mood disorder	7.9 (7.3, 8.7)	40.2 (36.6, 43.9)	50.3 (46.5, 54.1)	9.5 (7.4, 12.0)
<b>Substance use disorders</b>				
Alcohol abuse	2.6 (2.3, 3.0)	25.9 (20.3, 32.5)	36.8 (30.0, 44.1)	37.3 (29.0, 46.4)
Alcohol dependence <sup>3</sup>	1.3 (1.1, 1.5)	42.2 (33.3, 51.7)	57.8 (48.3, 66.7)	0.0
Drug abuse	1.2 (0.9, 1.4)	41.1 (31.6, 51.2)	33.9 (24.8, 44.2)	25.1 (16.8, 35.8)
Drug dependence <sup>3</sup>	0.7 (0.5, 0.9)	58.8 (44.7, 71.5)	41.2 (28.5, 55.3)	0.0
Marijuana abuse <sup>4</sup>	0.9 (0.7, 1.1)	47.1 (35.8, 58.8)	26.9 (17.9, 38.3)	26.0 (16.5, 38.3)
Marijuana dependence <sup>3,4</sup>	0.5 (0.3, 0.6)	62.7 (45.6, 77.1)	37.3 (22.9, 54.4)	0.0
Any substance use disorder	3.5 (3.0, 4.0)	29.5 (24.8, 34.7)	37.1 (31.0, 43.8)	33.4 (27.0, 40.3)
<b>Eating disorders</b>				
Any eating disorder <sup>2</sup>	0.5 (0.3, 0.6)	46.2 (32.6, 60.5)	28.5 (18.1, 41.8)	25.3 (14.4, 40.6)
<b>Any disorder<sup>2</sup></b>				
Any disorder <sup>2</sup>	20.7 (19.5, 21.9)	22.7 (20.8, 24.7)	45.6 (43.1, 48.2)	31.7 (29.4, 34.1)

1 DSM-IV CIDI 3.0 disorders, see 1.6.1–1.6.3. For severity, see 1.6.6.

2 Assessed in the subsample who did the long form of the interview, see 1.5.1.

3 Dependence is moderate or serious by definition, so never mild.

4 Those with a marijuana disorder are a subgroup of those with a drug use disorder. They may or may not have met criteria for abuse or dependence on other drugs.

Overall, cases with substance use disorders were about equally likely to be classified as serious (29.5%), moderate (37.1%) and mild (33.4%). Alcohol disorders were more common than drug disorders but were less likely to be classified as serious. By definition, dependence could not be mild. The definition of serious disorder for substance dependence (see 1.6.6 and 2.4) was that developed for the US WMH survey, the National Comorbidity Survey Replication (NCS-R) (Kessler, Chui et al., 2005), which required substantial impairment in the past 12 months, not just physiological symptoms ever as in the WMH definition. In New Zealand use of the NCS-R definition instead of the WMH definition reduced the proportion whose substance dependence

was classified as serious from 90.4% to 25.7%, leaving the remainder with dependence classified as moderate.

### 2.3.4 Correlates of substance use disorders in the past 12 months

To allocate resources in relation to need it is necessary to know what groups within New Zealand experience higher or lower rates of disorder. Table 2.5 describes the 12-month prevalence of alcohol disorder, drug disorder and substance use disorder for each of several correlates, considered one at a time. This table shows associations, not causes.

Many surveys have shown that the prevalence of disorder is higher, the lower the income, or education, or any other measure of social advantage. Psychiatric epidemiology has a long history of attempts to distinguish between social causation and social selection explanations of these socioeconomic gradients (Kohn et al., 1998). To summarise, there is evidence for both processes. More difficult environments produce higher rates of disorder, but disorder, particularly severe disorder, interferes with usual life course and opportunities and can result in low levels of education, employment and income. As a cross-sectional study this survey, Te Rau Hinengaro: The New Zealand Mental Health Survey, adds little to this debate. There are limited data on family background and reports of onset of disorder are retrospective. Publications from the two internationally well-known longitudinal birth cohort studies in New Zealand, the Dunedin Multidisciplinary Health and Development Study (Silva, 1990) (<http://dunedinstudy.otago.ac.nz/>) and the Christchurch Health and Development Study (Fergusson & Horwood, 2001; Wells et al., 2004; Wells, Horwood et al., 2006) (<http://www.chmeds.ac.nz/research/chds/>), provide much more information on causal pathways (see 1.2.2).

All four individual-level correlates in Table 2.5 were significantly associated with 12-month alcohol disorder ( $p \leq .0003$ ), 12-month drug disorder ( $p \leq .003$ ) and substance use disorder ( $p \leq .0001$ ). As was seen for abuse and dependence separately (Table 2.2), males had prevalences that were more than double those of females ( $p \leq .0002$ ). There was a steep gradient for age from the group aged 16–24, who had the highest prevalences, down to the oldest age group (aged 65 and over), who had very low prevalences. People with the highest level of educational qualification had lower prevalences of disorder. Twelve-month disorders were more common in lower income groups. Of the area-level characteristics, deprivation showed the clearest association with prevalence: those living in more deprived areas had higher prevalences ( $p \leq .007$ ). People living in secondary centres tended to have lower prevalences than those in other urban or rural areas ( $p = .05$  for alcohol disorder over all areas,  $p = .14$  for drug disorders, and  $p = .03$  for substance use disorder). There were no differences across the four regions ( $p \geq .39$ ).

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Table 2.5: Sociodemographic correlates and 12-month prevalence of alcohol disorder, drug disorder and substance use disorder

Correlate	Twelve-month prevalence of alcohol disorder <sup>1</sup> % (95% CI)	Twelve-month prevalence of drug disorder <sup>1</sup> % (95% CI)	Twelve-month prevalence of substance use disorder <sup>1</sup> % (95% CI)
<b>Individual characteristics</b>			
Sex			
Male	4.1 (3.4, 4.8)	1.9 (1.5, 2.4)	5.0 (4.3, 5.8)
Female	1.8 (1.4, 2.2)	0.9 (0.7, 1.2)	2.2 (1.8, 2.7)
Age group (years)			
16–24	7.8 (6.3, 9.5)	4.5 (3.4, 6.0)	9.6 (7.9, 11.5)
25–44	3.4 (2.8, 4.2)	1.4 (1.1, 1.9)	4.2 (3.6, 5.0)
45–64	0.9 (0.7, 1.3)	0.3 (0.1, 0.6)	1.2 (0.9, 1.6)
65 and over	<0.1 (0.0, 0.2)	<0.1 (0.0, 0.1)	<0.1 (0.0, 0.2)
Educational qualifications <sup>2</sup>			
None	3.8 (3.0, 4.7)	1.7 (1.2, 2.4)	4.5 (3.7, 5.6)
School or post-school only	3.9 (3.2, 4.7)	1.8 (1.4, 2.4)	4.6 (3.8, 5.5)
Both school and post-school	1.7 (1.3, 2.2)	0.9 (0.6, 1.3)	2.3 (1.8, 2.9)
Equivalent household income <sup>2</sup>			
Under half of median	3.9 (3.0, 5.0)	2.2 (1.6, 3.1)	5.0 (4.0, 6.3)
Half median to median	3.6 (2.9, 4.5)	1.6 (1.1, 2.3)	4.3 (3.5, 5.3)
Median to one and a half times median	2.2 (1.6, 3.0)	1.0 (0.6, 1.6)	2.6 (1.9, 3.5)
One and a half times median and over	1.9 (1.4, 2.6)	0.8 (0.5, 1.2)	2.5 (1.9, 3.2)
<b>Area characteristics</b>			
NZDep2001 deciles <sup>2</sup>			
9 and 10 (most deprived)	4.4 (3.4, 5.6)	2.3 (1.6, 3.1)	5.6 (4.6, 6.8)
7 and 8	3.0 (2.2, 4.0)	1.5 (0.9, 2.4)	3.9 (2.8, 5.3)
5 and 6	3.2 (2.4, 4.1)	1.5 (1.0, 2.1)	3.7 (2.9, 4.7)
3 and 4	2.0 (1.3, 3.0)	1.0 (0.5, 1.6)	2.5 (1.7, 3.6)
1 and 2 (least deprived)	2.0 (1.4, 2.9)	0.8 (0.4, 1.3)	2.3 (1.7, 3.2)

Correlate	Twelve-month prevalence of alcohol disorder <sup>1</sup> % (95% CI)	Twelve-month prevalence of drug disorder <sup>1</sup> % (95% CI)	Twelve-month prevalence of substance use disorder <sup>1</sup> % (95% CI)
Urbanicity <sup>2</sup>			
Main	3.0 (2.6, 3.5)	1.4 (1.1, 1.8)	3.7 (3.2, 4.3)
Secondary	1.5 (0.7, 2.7)	0.7 (0.2, 1.6)	1.9 (1.0, 3.3)
Minor	3.3 (1.9, 5.7)	1.7 (0.9, 3.0)	4.1 (2.5, 6.5)
Other (rural)	2.5 (1.8, 3.7)	1.1 (0.6, 2.0)	3.2 (2.3, 4.3)
Region <sup>2</sup>			
North	2.6 (2.1, 3.3)	1.7 (1.2, 2.2)	3.6 (2.9, 4.5)
Midland	3.2 (2.4, 4.1)	1.2 (0.7, 1.8)	3.7 (2.9, 4.7)
Central	2.9 (2.2, 3.8)	1.1 (0.6, 1.7)	3.3 (2.5, 4.2)
South	3.0 (2.1, 4.1)	1.3 (0.9, 2.0)	3.6 (2.7, 4.8)
<b>Total</b>	<b>2.9</b> (2.5, 3.3)	<b>1.4</b> (1.1, 1.7)	<b>3.5</b> (3.1, 4.0)

1 DSM-IV CIDI 3.0 disorders, see 1.6.1–1.6.3.

2 Sociodemographic correlates are defined in 1.6.9.

### 2.3.5 Ethnicity and 12-month prevalence of substance use disorders

This section presents comparisons of ethnic groups. In the main report chapter 9 presents the results for Māori (Baxter, Kingi, Tapsell, & Durie, 2006) and chapter 10 presents the results for Pacific people (Foliaki, Kokaua, Schaaf, & Tukuitonga, 2006).

#### *Ethnic comparisons of the 12-month prevalence of substance use disorders*

To compare ethnic groups a sequence of comparisons is presented. This sequence is used throughout the report. A more technical explanation about the logistic regressions used in these analyses is given in chapter 12 of the main report (Wells, McGee et al., 2006, section 12.10.2).

The first comparison considers the prevalence of disorder as it occurs in each ethnic group, without any form of adjustment. This shows the percentage with 12-month disorder, indicating the burden due to disorder experienced by each ethnic group. These unadjusted prevalences describe the actual situation for each ethnic group.

The subsequent comparisons take account of various sociodemographic correlates of disorder. These comparisons begin to explain why there may be differences in the population prevalence between ethnic groups.

The second set of comparisons takes account of age and sex. This is important for comparisons of prevalence. As shown in Tables 2.2 and 2.5, the prevalence of substance use disorders was much higher in younger age groups. Prevalence also varied with sex, with males having prevalences more than twice those for females. The three main ethnic groups differ little in

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terms of sex ratio but both the Māori and Pacific populations are considerably younger than the Other composite ethnic group (Wells, McGee et al., 2006, Table 12.3). For example, 24.5% of Māori and the same percentage of Pacific people were in the 16–24 year age group but only 14.1% of Others. By adjusting for different age and sex distributions it is possible to see if ethnic differences in prevalence still remain, unaccounted for by these correlates.

There are also socioeconomic correlates of prevalence: substance use disorders were more common in people with less education and less income and who lived in more deprived areas (Table 2.5). Māori and Pacific people are worse off on all of these correlates (Wells, McGee et al., 2006, Table 12.3). For example, 31.8% of Māori and 32.6% of Pacific people lived in households with an equivalised household income (see 1.6.9) below half of the median, in contrast to only 17.7% of Others. Therefore, it is informative to see if differences in prevalence remain after taking account of socioeconomic correlates. In other words, are some ethnic groups experiencing more substance use problems even allowing for age, sex and socioeconomic correlates? Is a Māori or Pacific person more or less likely to experience disorder than a person from the Other group, even if they are of the same age and sex and have the same level of education and income? Socioeconomic correlates are defined in chapter 1 (see 1.6.9). Note that the socioeconomic correlates used are current; histories of advantage or disadvantage are not known and are not taken into account.

Table 2.6 presents the ethnic comparisons for any substance use disorder, alcohol disorder and drug disorder.

Unadjusted prevalences show that the burden of substance use disorder was highest for Māori (9.1%), intermediate for Pacific people (4.9%) and lowest among Others (2.7%) ( $p \leq .003$  for all comparisons). Although full adjustment halved the difference between Māori and Others, the prevalence of substance use disorder among Māori remained double that for Others (6.0% compared with 3.0%;  $p < .0001$ ) and was also significantly above the prevalence for Pacific people (3.2%;  $p < .0001$ ). For Pacific people full adjustment almost completely removed differences between Pacific and Others ( $p = .8$ ).

**Table 2.6:** Ethnic comparisons of the 12-month prevalence of substance use disorders<sup>1</sup>

Comparison <sup>2</sup>	Twelve-month prevalence of disorder <sup>1</sup> % (95% CI)		
	Māori	Pacific	Other
<b>Any substance disorder</b>			
Unadjusted	9.1 (7.6, 10.6)	4.9 (3.6, 6.1)	2.7 (2.3, 3.2)
Adjusted for age and sex	7.1 (6.0, 8.3)	3.8 (2.8, 4.8)	2.9 (2.4, 3.4)
Adjusted for age, sex, educational qualifications <sup>3</sup> and equivalised household income <sup>3</sup>	6.0 (5.0, 7.1)	3.2 (2.3, 4.0)	3.0 (2.5, 3.6)
<b>Alcohol disorder</b>			
Unadjusted	7.4 (6.1, 8.8)	4.3, (3.0, 5.5)	2.2 (1.8, 2.6)
Adjusted for age and sex	5.8 (4.8, 6.9)	3.3 (2.3, 4.3)	2.3 (1.9, 2.8)
Adjusted for age, sex, educational qualifications <sup>3</sup> and equivalised household income <sup>3</sup>	4.9 (3.9, 5.8)	2.8 (1.9, 3.6)	2.4 (2.0, 2.9)
<b>Drug disorder</b>			
Unadjusted	4.0 (3.0, 5.0)	1.3 (0.1, 2.0)	1.0 (0.1, 1.3)
Adjusted for age and sex	3.5 (2.6, 4.4)	1.2 (0.1, 1.7)	1.3 (0.1, 1.6)
Adjusted for age, sex, educational qualifications <sup>3</sup> and equivalised household income <sup>3</sup>	3.0 (2.2, 3.8)	1.0 (0.1, 1.5)	1.4 (0.1, 1.7)

1 DSM-IV CIDI 3.0 substance use disorders, see 1.6.1–1.6.3.

2 For the method of adjustment, see Wells, McGee et al. (2006, section 12.10.2).

3 Sociodemographic correlates are defined in 1.6.9.

This pattern is seen for both alcohol disorders and drug disorders. Māori had higher prevalence of alcohol disorder and of drug disorder than Pacific people or Others ( $p \leq .0006$ .) for all comparisons although the size of the difference in prevalence between Māori and Others reduced with adjustment. Pacific people had a higher burden of alcohol disorder than Others ( $p = .002$ ) but similar prevalence after adjustment ( $p = .5$ ), and drug disorder prevalences were similar for all comparisons ( $p \geq .3$ ).

#### *Ethnic comparisons of use of substances in the past 12 months*

Unlike other mental disorders, substance use disorders can occur only in those who use alcohol or other drugs. Therefore, it is possible to look not only at the overall prevalence of disorder in ethnic groups but also at the percentage who use substances, and the prevalence of disorder among substance users. A high overall prevalence of disorder in one ethnic group may occur because a high percentage of that population use substances, or because substance users have a high prevalence of disorder (or both). Alternatively, a low overall prevalence may occur because of a low percentage who use substances, but substance users may be as much as risk as users in other ethnic groups. Table 2.7 shows the percentage of each ethnic group who

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drank alcohol or used other drugs. Then Table 2.8 shows the prevalence of disorder among those used alcohol or other drugs.

**Table 2.7:** *Ethnic comparisons of the use of alcohol or drugs in the past 12 months*

Comparison <sup>1</sup>	Use of alcohol or drugs in the past 12 months % (95% CI)		
	Māori	Pacific	Other
<b>Alcohol<sup>2</sup></b>			
Unadjusted	80.2 (77.8, 82.7)	51.7 (47.2, 56.1)	80.4 (79.1, 81.7)
Adjusted for age and sex	79.0 (76.4, 81.5)	50.4 (46.1, 54.8)	80.6 (79.3, 81.9)
Adjusted for age, sex, educational qualifications <sup>3</sup> and equivalised household income <sup>3</sup>	81.6 (79/2. 84.0)	55.6 (51.3, 59.9)	80.0 (78/7. 81.4)
<b>Drugs</b>			
Unadjusted	26.2 (22.9, 29.5)	11.3 (8.0, 14.6)	12.1 (10.8, 13.5)
Adjusted for age and sex	21.5 (18.9, 24.2)	9.4 (6.8, 12.1)	12.6 (11.2, 14.0)
Adjusted for age, sex, educational qualifications <sup>3</sup> and equivalised household income <sup>3</sup>	20.1 (17.5, 22.7)	8.7 (6.2, 11.2)	12.9 (11.5, 14.2)

1 For the method of adjustment, see Wells, McGee et al. (2006, section 12.10.2).

2 Those who had never drunk 12 or more drinks in a year were counted as abstainers for the past 12 months, see 1.5.1.

3 Sociodemographic correlates are defined in 1.6.9 and see Wells, McGee et al. (2006, section 12.12.1).

Māori and Others were equally likely to drink alcohol in the past 12 months ( $p \geq .27$ ). whereas Pacific people were much less likely to drink ( $p < .0001$ ) (see also 6.3.2).

Drug use was about twice as common for Māori as for Pacific people ( $p < .0001$ ) or for Others ( $p < .0001$ ). Pacific people and Others were about equally likely to have used drugs ( $p = .65$ ) but after adjustment the percentage of users was lower for Pacific people ( $p = .03$  after adjustment for age and sex,  $p = .002$  after full adjustment).

### *Ethnic comparisons of disorder among users*

Table 2.8 shows ethnic comparisons of the prevalence of alcohol disorder among drinkers and the prevalence of drug disorder among those who used other drugs.

**Table 2.8:** Ethnic comparisons of the prevalence of alcohol disorder<sup>1</sup> or drug disorder<sup>1</sup> in the past 12 months among users<sup>2</sup>

Comparison <sup>3</sup>	Twelve-month prevalence of alcohol or drug disorder <sup>1</sup> % (95% CI)		
	Māori	Pacific	Other
<b>Alcohol disorder<sup>4</sup> among drinkers</b>			
Unadjusted	9.2 (7.6, 10.9)	7.7 (5.4, 9.9)	2.7 (2.2, 3.3)
Adjusted for age and sex	7.0 (5.7, 8.3)	5.4 (3.8, 7.0)	2.9 (2.4, 3.5)
Adjusted for age, sex, educational qualifications <sup>5</sup> and equivalised household income <sup>5</sup>	5.7 (4.6, 6.8)	4.4 (3.1, 5.8)	3.1 (2.5, 3.7)
<b>Drug disorder among drug users</b>			
Unadjusted	14.6 (11.1, 18.2)	11.0 (5.4, 16.6)	8.2 (6.2, 10.3)
Adjusted for age and sex	14.4 (10.9, 17.9)	10.3 (4.9, 15.6)	8.3 (6.3, 10.5)
Adjusted for age, sex, educational qualifications <sup>5</sup> and equivalised household income <sup>5</sup>	13.1 (9.8, 16.5)	9.6 (4.4, 14.8)	8.7 (6.5, 10.8)

1 DSM-IV CIDI 3.0 substance use disorders, see 1.6.1–1.6.3.

2 Users of the appropriate substance in the past 12 months.

3 For the method of adjustment, see Wells, McGee et al. (2006, section 12.10.2).

4 Those who had never drunk 12 or more drinks in a year were counted as abstainers for the past 12 months, see 1.5.1.

5 Sociodemographic correlates are defined in 1.6.9.

The prevalence of alcohol disorder among Māori drinkers was significantly higher than for Other drinkers ( $p \leq .0001$ ) and even after full adjustment was nearly twice as high (5.7% compared with 3.1%). The prevalence of drug disorder among drug users was also higher for Māori than for Others ( $p \leq .03$ ), even after adjustment (13.1% compared with 8.7%).

Comparisons with Pacific people were affected by the imprecision caused by the relatively small numbers of Pacific people who used alcohol or drugs. In all comparisons prevalences for Pacific users were intermediate between those for Māori users and those for Other users. No comparisons between Māori and Pacific users were significant ( $p \geq .11$ ). Pacific drinkers had significantly higher prevalence of alcohol disorder than Other drinkers ( $p \leq .005$ ) except after full adjustment ( $p = .09$ ) but all comparisons for drug users were non-significant ( $p \geq .37$ ).

In summary, although Māori were not more likely to drink than Others, Māori had higher overall prevalence of alcohol disorder and higher prevalence of disorder among drinkers, even taking account of sociodemographic correlates. The higher prevalence of disorder among Māori, when compared with Others, was therefore not attributable to a higher proportion of drinkers. Drug use was more common among Māori, and drug disorder was higher than for Others both overall and among users. Thus, the overall prevalence of drug disorder in Māori was due in part to use being more common and also to disorder being more prevalent among users.

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Many Pacific people were protected from alcohol disorder by abstinence. However, those who drank tended to be more likely than Others to experience alcohol disorder, although their prevalence of disorder was non-significantly lower than that for Māori drinkers. Drug use was lower than for Māori, and lower than for Others after full adjustment. Drug disorder among Pacific drug users was intermediate between that for Māori users and that for Other users. Not using substances safeguards many Pacific people from substance use disorders but those who use are at least as much risk of disorder as users from the Other ethnic group.

### **2.3.6 Comparisons with other surveys**

The prevalence of any psychiatric disorder reported from a survey depends on the definition used for the disorder, the instrument used to measure it and the response rate, as well as level of morbidity in the population. Therefore, comparisons of prevalences from various surveys must be made with due consideration of all these factors.

Results from other WMH Survey Initiative countries are the most comparable with those from New Zealand, as they used the same interview (CIDI 3.0), the same DSM-IV criteria and the same algorithms to calculate diagnoses. New Zealand has a high 12-month prevalence of substance use disorders relative to the 15 sites reported in 2004 (Demyttenaere et al., 2004). Only the Ukraine, which did not assess drug disorder, still had a substantially higher prevalence (6.4%) than New Zealand (3.5%), with the US (3.8%) non-significantly higher than New Zealand.

Prevalences for individual 12-month disorders in the WMH Survey Initiative are available for the US (Kessler, Chui et al., 2005) and for the six European countries in the European Study of the Epidemiology of Mental Disorders (ESEMeD) combined (Alonso et al., 2004a). New Zealand had the same 12-month prevalence as the US for alcohol dependence (1.3% for both) and a marginally higher prevalence of drug dependence (0.7% compared with 0.4%,  $p \approx .05$ ), although for all other disorders assessed at both sites New Zealand had a slightly lower prevalence. For abuse the prevalences were non-significantly different: for alcohol abuse 2.6% in New Zealand and 3.1% in the US; for drug abuse 1.2% in New Zealand and 1.4% in the US.

Comparisons with results combined across the six European countries showed that New Zealand had higher prevalences of alcohol abuse (2.6% compared with 0.7%) and alcohol dependence (1.3% compared with 0.3%). Drug prevalences are not available because of problems with the computerised version of the interview in these countries, which were the first of the WMH surveys to be carried out. Given the variation in prevalence for disorder groups across the ESEMeD countries (Demyttenaere et al., 2004), it is not straightforward to interpret the prevalences for individual disorders that have been combined across countries. The response rates in the ESEMeD countries varied from 46% in France to 79% in Spain, which may have introduced bias into prevalence estimates from those countries with a low response rate. The response rates for New Zealand and the US were 73% and 71%. The high per capita consumption in these European countries (Rehm et al., 2004, Table 12.3; World Advertising Research Centre, 2004) contrasts with the estimated low prevalences of alcohol disorder. A pattern of daily consumption rather than less frequent consumption of higher amounts is not associated with high blood alcohol concentrations and so is less likely to result in symptoms of abuse. However, this pattern of consumption may conceal symptoms of dependence because alcohol is always available and withdrawal is not observed. Furthermore, the CIDI 3.0 interview may have been particularly misleading in these countries because dependence was not assessed unless there was ever at least one symptom of abuse. Unfortunately there were too

few cases of alcohol disorder in the clinical re-appraisal study carried out in three of the ESEMeD countries to assess the concordance between 12-month CIDI 3.0 substance use disorders and clinical judgements (Haro et al., in press).

The 1997 Australian National Survey of Mental Health and Well-being (Andrews, Henderson, & Hall, 2001) used a variant form of the CIDI interview that asked only about the past 12 months. A diagnosis was given only if all criteria were met within the past 12 months. All other versions of the CIDI ask about all of life before interview and then, for each disorder, ask how recently symptoms or episodes had occurred. Full criteria for a diagnosis may not have been met within the past 12 months. Therefore, the New Zealand and Australian 12-month prevalences are ascertained in different ways.

The prevalence of DSM-IV alcohol dependence was 4.1% in the Australian study, but only 1.3% in New Zealand. As Australia and New Zealand have similar per capita consumption and patterns of drinking (Rehm et al., 2004, Table 12.3; World Advertising Research Centre, 2004) this difference is unexpected. The skip past dependence in the New Zealand interview may have resulted in dependence being underestimated, but this is unlikely to account all of the difference. Hasin and Grant (2004), using version 4 of the Alcohol Use Disorders and Associated Disabilities Schedule (AUDADIS-IV) interview, found that 13.9% of those with lifetime alcohol dependence did not ever have alcohol abuse. Applying such a correction would increase the lifetime prevalence of alcohol dependence in New Zealand from 4.0% to 4.6%. Even if all those ever dependent without abuse were still dependent in the past 12 months this would raise the New Zealand prevalence only from 1.3% to 1.9%. It seems likely that the higher estimates of 12-month prevalence from the AUDADIS-IV of 3.8% and the CIDI version 2.1 estimate of 4.1% arose because both interviews asked more specific questions.

The prevalence of alcohol abuse without dependence was closer across the two countries than the prevalence of alcohol dependence: 1.6% for New Zealand compared with 1.9% for Australia (not significantly different).

Comparison of drug disorders yields similar results with only slightly lower prevalence of abuse without dependence in New Zealand (0.7% compared with 1.0%) but significantly lower prevalence of drug dependence (0.7% compared with 2.0%) and marijuana dependence (0.5% compared with 1.5%) (Swift, Hall, & Teesson, 2001). In Australia disorder was assessed for marijuana, sedative, stimulants and opioids, not just for any drug or for marijuana as in New Zealand. Teesson, Hall, Lynskey, & Degenhardt (2000) showed that marijuana disorder was several-fold more common than disorder for other classes of drugs and it seems likely that this finding would also hold for New Zealand.

The only previous New Zealand community-wide survey was the Christchurch Psychiatric Epidemiology Study (CPES) (see 1.2.1) (Oakley Browne et al., 1989; Wells, Joyce et al., 1989), which interviewed people aged 18–64, not 16 years and over as in the present survey. The CPES used the DIS on which the first CIDI interview was based. At that time DSM-III criteria were used for diagnosis and there are many differences between DSM-III and DSM-IV diagnoses.

Diagnostic changes have been particularly marked for substance abuse and dependence. In DSM-III, abuse was much closer to a lay concept of abuse and consisted of a considerable list of symptoms of excessive use, any of which resulted in diagnosis. In DSM-IV, abuse requires repeated failure to meet obligations; continued use despite repeated arguments with family,

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friends or workmates; repeated use in situations where use could be dangerous; or repeated contact with police. Dependence has been broadened as a concept (Sellman, 1994) but now requires that at least three symptoms must have occurred within one year. In addition, within the version of the CIDI 3.0 used in Te Rau Hinengaro, dependence may have been underestimated because of the failure to assess dependence in those who did not ever meet criteria for abuse.

The 12-month prevalence of alcohol abuse or dependence was 9.3% in the CPES and 2.9% in the present survey for the full age range 16 years and over, and 3.4% for the age range 18–64, as in the CPES. In spite of all the technical reasons for an apparent decline in prevalence a real decline may have occurred. In 1986 per capita alcohol consumption for those aged 15 and over was 11.3 litres per year. In 2004 it was 18% lower at 9.2 litres per year, having declined fairly steadily throughout the 1980s and 1990s until 1997, since when it has fluctuated slightly or risen a little (<http://www.stats.govt.nz/>).

The 12-month prevalence of drug abuse or dependence was 2.3% in the CPES and 1.4% in the present study for the full age range 16 years and over and 1.6% for the age range 18–64, as in the CPES.

### **2.3.7 Conclusions about 12-month prevalence**

The prevalences for 12-month substance use disorders from this national New Zealand survey, Te Rau Hinengaro, were similar to or a little higher than those from the US but higher than those for most other countries that used the same interview. Prevalences declined markedly with age for abuse and for dependence, for alcohol and for drugs. Males had double the prevalence of substance use disorders compared with females. Higher prevalences occurred for those with less education or income and who lived in more deprived areas.

The 12-month prevalence of substance use disorders differed markedly between ethnic groups. Māori had the highest prevalence of substance use disorders, followed by Pacific people, with the lowest prevalence for Others. Adjustment for sociodemographic correlates much reduced differences between Māori and Others and between Pacific people and Others. Nonetheless after full adjustment the prevalence for Māori remained double that for Others whereas the prevalence for Pacific people became very close to that for Others.

Consideration of use and disorder in users showed a more complicated picture. Māori and Others were equally likely to drink but Māori drinkers had a higher prevalence of disorder. Only about half of Pacific people drank but those that did tended to have quite a high prevalence of disorder. Māori were about twice as likely to use drugs as Pacific people or Others, and Māori users had a higher prevalence of drug disorder than Other users. The prevalence of drug disorder in Pacific users was intermediate between that for Māori users and Other users and not significantly different from either.

## **2.4 LIFETIME PREVALENCE AND LIFETIME RISK**

### **2.4.1 Introduction**

Only one previous community survey in New Zealand, the CPES, has provided information about the lifetime prevalence of specific mental disorders (Wells, Joyce et al., 1989). That survey was undertaken in 1986 in the Christchurch urban area and the sampling frame was a non-institutional household sample of people aged 18–64. The diagnostic instrument used (the DIS) (Robins et al., 1981) was based on the DSM-III diagnostic system, which has been

superseded by the DSM-IV (see 1.6.1). The DIS was the forerunner of the CIDI (Robins et al., 1988) (see 1.6.3) and the two instruments differ in structure and content.

The differences in sampling frame, diagnostic criteria and questionnaire design between the CPES and this survey make comparisons of prevalences problematic. The CPES did not provide information about lifetime prevalence in Māori or Pacific people and it is doubtful whether the results can be generalised to the national population. It is also possible that, with the passage of time, prevalences of disorders may have changed.

Of CPES participants, 21.0% had experienced a substance use disorder at some time in their lives (18.9% for alcohol disorder, 5.7% for drug disorder).

### 2.4.2 Lifetime prevalences from overseas studies

The ECA, a survey of more than 20,000 adults in five US communities, was completed between 1980 and 1984 (Robins et al., 1991). This survey used the DIS to generate DSM-III diagnoses (Robins et al., 1981). A lifetime prevalence of 32% was found for any disorder with prevalences of 13.8% for alcohol disorder (Helzer, Burnam, & McEvoy, 1991) and 6.2% for drug disorder (Anthony & Helzer, 1991). A decade after the ECA, the NCS (Kessler, 1994; Kessler et al., 1994) was undertaken. In this survey a nationally representative non-institutional sample of people aged 15–54 was used. The survey instrument was the CIDI, which generated DSM-III-R diagnoses (Robins et al., 1988). In the NCS, the lifetime prevalence of any DSM-III-R disorder was of 48% (Kessler et al., 1994) with a lifetime prevalence of 26.6% for substance use disorder.

The Australian National Survey of Mental Health and Well-being (Andrews, Hall et al., 1999; Henderson, Andrews, & Hall, 2000) was a nationally representative household survey completed in 1997. The sample included people aged 18 and over. The survey instrument was the CIDI 2.1 and this generated International Classification of Diseases revision 10 (ICD-10) and DSM-IV diagnoses, but only for disorders present in the 12 months before interview. Lifetime prevalences were not obtained. The CIDI 2.1 also differs in structure and content from the CIDI 3.0 used in this survey.

More recently, 28 countries have collaborated in undertaking national and regional mental health surveys under the auspices of the WMH Survey Initiative. This is a project of the Assessment, Classification and Epidemiology Group at the World Health Organization (World Mental Health Survey Consortium, 2005). Several nations in the consortium have published results from their national surveys, including the European sites (the ESEMeD) (Alonso et al., 2002) and the US (the NCS-R) (Kessler, Berglund et al., 2004; Kessler & Merikangas, 2004). These two surveys were based on nationally representative non-institutional samples of adult people. Both the NCS-R and ESEMeD used the same diagnostic interview as used in Te Rau Hinengaro. This instrument, the CIDI 3.0 (Kessler & Ustun, 2004), generates DSM-IV and ICD-10 diagnoses. However, the surveys differed in the types of specific disorder covered, questionnaire content and the age range of participants (18 years and over in the ESEMeD and NCS-R; 16 years and over in Te Rau Hinengaro).

In the ESEMeD 5.2% of participants reported a lifetime history of any alcohol disorder (Alonso et al., 2004a). Drug disorder was not assessed in the ESEMeD countries. In the NCS-R, the lifetime prevalence for substance use disorders was 14.6% (Kessler, Berglund, Demler et al., 2005).

### **2.4.3 Lifetime prevalences and estimated lifetime risk**

Lifetime prevalence estimates are based on those people who, at the time of the interview, had ever met criteria for a disorder. In contrast, estimated lifetime risk is a projected estimate of the proportion of people in the population who would ever have experienced a disorder by the end of their lifetime (Kessler, Berglund, Demler et al., 2005), or by a specified age such as 75 years.

Lifetime risk is useful when considering the burden of disease in a population and for service planning purposes. It is not possible to obtain the actual lifetime risk from cross-sectional surveys, as at the time of interview many people will not yet have experienced disorders that will occur for them later. However, if the age of onset of disorder data are obtained, it is possible to estimate lifetime risk using survival analysis (Oakley Browne, 2006). This has seldom been done in psychiatric surveys, in part because the techniques were not available for complex survey data. Hence, earlier surveys reported only lifetime prevalence and in this report lifetime prevalences are provided for purposes of comparison. However, in the NCS-R, projected lifetime risks to age 75 were calculated. For substance use disorder the estimated lifetime risk was 16.3%.

### **2.4.4 Lifetime prevalence**

The lifetime prevalence estimates for individual DSM-IV disorders, overall and by age and sex, are presented in Table 2.9.

The experience of a mental disorder is relatively common, with a substantial minority of the sample (39.5%) meeting criteria for a disorder at some time before the interview. Although most people experience only one disorder (20.0%), comorbid mental disorders are common, with a minority experiencing two mental disorders (9.9%) or three or more mental disorders (9.7%).

**Table 2.9:** Lifetime prevalence of mental disorders,<sup>1</sup> by age and sex

Disorder groups	Total % (95% CI)	Age group (years) % (95% CI)				Sex % (95% CI)	
		16–24	25–44	45–64	65 and over	Male	Female
<b>Anxiety disorders</b>							
Any anxiety disorder <sup>2</sup>	24.9 (23.6, 26.2)	23.9 (20.9, 27.3)	28.9 (26.8, 31.0)	25.4 (23.2, 27.7)	14.2 (12.0, 16.8)	19.9 (18.3, 21.7)	29.4 (27.7, 31.3)
<b>Mood disorders</b>							
Any mood disorder	20.2 (19.3, 21.1)	20.7 (18.1, 23.7)	22.2 (20.8, 23.7)	22.0 (20.4, 23.6)	10.6 (9.3, 12.2)	15.6 (14.4, 16.9)	24.3 (23.1, 25.6)
<b>Substance use disorders</b>							
Alcohol abuse	11.4 (10.7, 12.2)	16.7 (14.6, 19.0)	13.4 (12.3, 14.6)	9.7 (8.7, 10.9)	4.0 (3.1, 5.1)	16.3 (15.1, 17.6)	6.9 (6.2, 7.7)
Alcohol dependence	4.0 (3.6, 4.5)	6.5 (5.1, 8.2)	5.0 (4.3, 5.7)	3.1 (2.5, 3.8)	0.7 (0.3, 1.2)	5.6 (4.9, 6.4)	2.6 (2.2, 3.0)
Drug abuse	5.3 (4.8, 5.8)	11.3 (9.5, 13.4)	7.2 (6.4, 8.2)	2.2 (1.7, 2.8)	<0.1 (0.0, 0.1)	7.3 (6.5, 8.2)	3.5 (3.0, 4.0)
Drug dependence	2.2 (1.9, 2.5)	4.1 (3.0, 5.5)	3.3 (2.8, 4.0)	0.7 (0.4, 1.1)	<0.1 (0.0, 0.1)	2.9 (2.4, 3.5)	1.5 (1.2, 1.9)
Marijuana abuse <sup>3</sup>	4.7 (4.2, 5.2)	10.0 (8.4, 11.9)	6.4 (5.6, 7.3)	2.0 (1.5, 2.6)	<0.1 (0.0, 0.1)	6.7 (5.9, 7.6)	2.9 (2.4, 3.4)
Marijuana dependence <sup>3</sup>	1.7 (1.4, 2.1)	3.6 (2.6, 5.0)	2.6 (2.1, 3.1)	0.5 (0.3, 0.8)	<0.1 (0.0, 0.1)	2.4 (1.9, 3.0)	1.1 (0.9, 1.4)
Any substance use disorder	12.3 (11.6, 13.1)	18.8 (16.6, 21.2)	14.6 (13.4, 15.9)	10.0 (8.9, 11.2)	4.0 (3.1, 5.1)	17.3 (16.1, 18.6)	7.7 (6.9, 8.5)
<b>Eating disorders</b>							
Any eating disorder <sup>2</sup>	1.7 (1.5, 2.1)	2.0 (1.1, 3.2)	2.9 (2.3, 3.6)	1.0 (0.6, 1.5)	0.1 (0.0, 0.5)	0.5 (0.3, 0.9)	2.9 (2.3, 3.5)
Any disorder <sup>2</sup>							
<b>Any disorder<sup>2</sup></b>	39.5 (37.9, 41.2)	41.6 (37.4, 45.9)	45.1 (42.4, 47.9)	39.7 (36.9, 42.6)	22.4 (19.4, 25.6)	36.5 (34.2, 39.0)	42.3 (40.1, 44.5)
<b>No disorder<sup>2</sup></b>	60.5 (58.8, 62.1)	58.4 (54.1, 62.6)	54.9 (52.1, 57.6)	60.3 (57.4, 63.1)	77.6 (74.4, 80.6)	63.5 (61.0, 65.8)	57.7 (55.5, 59.9)

1 DSM-IV CIDI 3.0 disorders, see 1.6.1–1.6.3.

2 Assessed in the subsample who did the long form of the interview, see 1.5.1.

3 Those with a marijuana disorder are a subgroup of those with a drug use disorder. They may or may not have met criteria for abuse or dependence on other drugs.

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The lifetime prevalence for substance use disorder is 12.3%. The lifetime prevalence for alcohol abuse is 11.4% and for alcohol dependence, 4.0%. For drug abuse the lifetime prevalence is 5.3% and for drug dependence, 2.2%. For marijuana abuse the lifetime prevalence is 4.7% and the prevalence for marijuana dependence is 1.7%. Because dependence was assessed only in those who ever reported abuse, the lifetime prevalence for alcohol disorder is the same that for alcohol abuse (11.4%) and similarly for drug disorder (5.3%).

### *Lifetime prevalences, by age*

The highest prevalences of all disorders are found in the group aged 25–44 (45.1%), followed by the group aged 16–24 (41.6%), then the group aged 45–64 (39.7%). The lowest prevalences of disorder (22.4%) are found in the oldest age group (65 and over) ( $p < .0001$ ).

Anxiety disorders are most prevalent in the group aged 25–44 (28.9%), followed by the group aged 45–64 (25.4%), then the group aged 16–24 (23.9%). The anxiety disorders are least prevalent in the oldest age group (14.2%;  $p < .0001$ ).

For any mood disorders, the prevalence rate pattern across age groups is the same as for anxiety disorders: 25–44 years, 22.2%; 45–64 years, 22.0%; 16–24 years, 20.7%; and 65 years and over, 10.6% ( $p < .0001$ ).

Substance use disorders are most prevalent in the youngest age group (18.8%), followed by the groups aged 25–44 (14.6%) and 45–64 (10.0%). Substance use disorders are relatively uncommon in the oldest age group (4.0%;  $p < .0001$ ). Across all specific substance use disorders, the youngest age group has the highest prevalences, while the oldest has the lowest prevalences ( $p < .0001$ ).

Eating disorders are uncommon across all four age groups, but the highest prevalences are found in the group aged 25–44 (2.9%) followed by the groups aged 16–24 (2.0%), 45–64 (1.0%) and 65 and over (0.1%) ( $p < .0001$ ).

### *Lifetime prevalences, by sex*

Females have higher ( $p < .001$ ) overall prevalences of any disorder (42.3%) than males (36.5%). Females compared with males have higher prevalences of anxiety disorders (29.4% compared with 19.9%;  $p = .0003$ ), mood disorders (24.3% compared with 15.6%;  $p < .0001$ ) and eating disorders (2.9% compared with 0.5%;  $p < .0001$ ).

Males have higher prevalences of substance use disorders than females (17.3% compared with 7.7%;  $p < .0001$ ). Males have higher prevalences than females of alcohol abuse (16.3% compared with 6.9%;  $p < .0001$ ), alcohol dependence (5.6% compared with 2.6%;  $p < .0001$ ), drug abuse (7.3% compared with 3.5%;  $p < .0001$ ) and drug dependence (2.9% compared with 1.5%;  $p < .0001$ ). The same pattern was seen for marijuana abuse (6.7% compared with 2.9%,  $p < .0001$ ) and marijuana dependence (2.4%, 1.1%,  $p < .0001$ ).

### 2.4.5 Age of onset of disorder

The ages at selected percentiles on the age of onset distributions of disorders are presented in Table 2.10. The table also includes projected lifetime risk at age 75. Calculation of projected lifetime risk for older age groups was not undertaken as the small numbers in older age groups would make such estimates inaccurate. All of these estimates were based on survival analyses (Wells, McGee et al., 2006, section 12.10.3).

Most people experience the onset of their disorders early in their lives. Half of all people who will develop any disorder have experienced disorder by age 18 and three-quarters by age 34. Median age of onset is 13 years for anxiety disorders, 32 years for mood disorders, 18 years for substance use disorders and 17 years for eating disorders.

For alcohol abuse disorder 25% of all cases will have experienced the disorder by age 16, 50% by age 19 and 75% by age 25. For the other specific substance use disorders an almost identical pattern is seen with 25% having developed the disorder by age 16, 50% between the ages of 18 and 19, and 75% between the ages of 21 to 25.

The gap between the lifetime prevalence estimates and the projected lifetime risk estimates varies by disorder: for those disorders that typically have onset early in life, the gap is small whereas for disorders that have onset through middle or late adulthood, the gap is larger. For any substance use disorder the estimated lifetime risk is 13.8% and the lifetime prevalence is 12.3%, a gap of only 1.5 percentage points. This suggests the majority of people who will develop a substance use disorder will do so early in their lives (95% by age 45). These data should be interpreted with caution, as the estimate of lifetime risk is a composite estimate derived from estimates of lifetime risk for different cohorts and it is assumed each cohort has an equal risk. When there are marked cohort effects (ie, a significant variation in risk by cohort), the lifetime risk will tend to be underestimated for younger birth cohorts and overestimated for older birth cohorts. As will be discussed later in this section, this sample has significant cohort effects.

The estimates for lifetime risk, for any disorder, by age 75, for the total sample is 46.6%. This is approximately 7 percentage points more than the lifetime prevalence of 39.5%. In 2.4.7 the risk of developing any disorder is considered by ethnicity, age and sex (unadjusted and adjusted for each of these three demographic correlates).

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**Table 2.10:** Projected lifetime risk at age 75 and age at selected percentiles on the age of onset distributions of mental disorders

Disorder groups <sup>1</sup>	LT risk <sup>2</sup> %	Ages at selected age of onset percentiles (years)							
		5	10	25	50	75	90	95	99
<b>Anxiety disorders</b>									
Any anxiety disorder <sup>3</sup>	28.8	4	4	6	13	30	50	59	78
<b>Mood disorders</b>									
Any mood disorder	28.4	12	14	19	31	48	64	75	86
<b>Substance use disorders</b>									
Alcohol abuse	13.0	14	15	16	19	25	39	45	61
Alcohol dependence	4.5	14	15	16	19	25	35	39	46
Drug abuse <sup>4</sup>	5.6	14	14	16	18	21	25	29	37
Drug dependence <sup>4</sup>	2.3	13	14	16	18	22	26	30	38
Any substance use disorder	13.8	13	14	16	18	24	37	45	61
<b>Eating disorders</b>									
Any eating disorder <sup>3</sup>	1.9	12	13	15	17	24	34	40	56
<b>Any disorder<sup>3</sup></b>	<b>46.6</b>	<b>4</b>	<b>5</b>	<b>10</b>	<b>18</b>	<b>34</b>	<b>53</b>	<b>67</b>	<b>78</b>

1 DSM-IV CIDI 3.0 disorders, see 1.6.1–1.6.3

2 LT risk = projected lifetime risk at age 75.

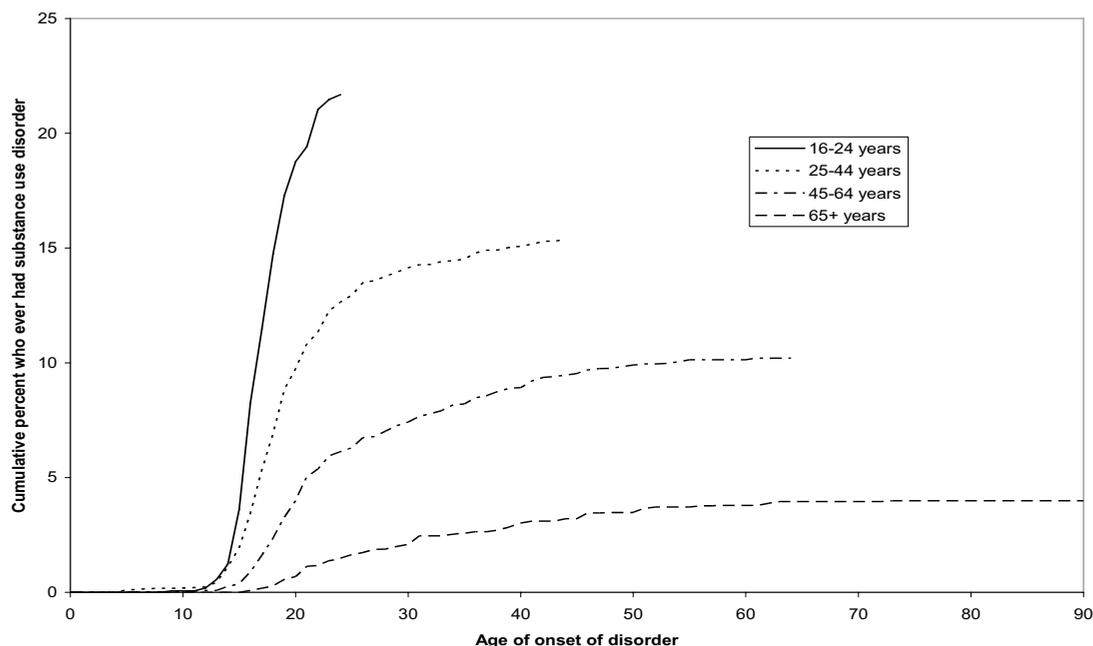
3 Assessed in the subsample who did the long form of the interview, see 1.5.1.

4 Onset for marijuana disorders was not assessed.

### 2.4.6 Lifetime risk across different birth cohorts

Cumulative lifetime risk curves for the onset of substance use disorder are presented in Figure 2.1. Separate onset curves are provided for the groups aged 16–24, 25–44, 45–64, and 65 and over at the time of the interview. These groups represent different birth cohorts, with the youngest age group having been born between 1978 and 1987 and the oldest age group having been born before 1939. The onset curves show that younger age groups have higher probabilities of disorder at any particular age compared with older age groups. For example, the percentages of people who have experienced substance use disorder by age 21 are: 19% for the group aged 16–24; 11% for the group aged 25–44; 5% for the group aged 45–64; and 1% for the group aged 65 and over.

**Figure 2.1:** Onset of substance use disorder,<sup>1</sup> by age at interview



1 DSM-IV CIDI 3.0 disorders, see 1.6.1–1.6.3.

Although the different onset curves shown in Figure 2.1 may reflect a true difference in risk of disorder for younger cohorts compared with older cohorts, it is also possible that these differences are attributable to five systematic biases. These biases are as follows.

- Clear evidence exists from longitudinal studies that people often forget earlier episodes. As current disorder tends to be more prevalent in younger people, and older people have had more time to forget their earlier episodes, this can lead to older people apparently having been less likely to ever experience disorder.
- There is also a general ‘telescoping’ effect for all people asked to recall past episodes of disorder: episodes are brought forward in memory to a time closer to the time of the interview. For older age groups, this leads to an apparent lower risk earlier in their lives as they have ‘moved’ episodes in memory from earlier times in their lives to more recent times.
- Different age cohorts may have different conceptualisations or explanations for episodes of psychological distress or clusters of mental symptoms. People from more recent cohorts may be more likely to interpret such episodes as attributable to mental disorder, while people from older cohorts may interpret such episodes as expected reactions to circumstances and not perceive them as indicative of mental disorder.
- It is possible the degree of trust in the interviewers and associated willingness to disclose symptoms or behaviours varies by age cohort. For instance, younger people may be more prepared to admit to illicit drug use or problematic alcohol use than older people.
- A disorder may result in the removal of those with the disorder from the target population either through mortality or through living in places other than permanent private dwellings (eg, in rest homes, institutions, ‘holiday parks’ or boarding houses).

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Unfortunately, in a cross-sectional survey such as this, it is not possible to determine how much of the estimated increased risk of disorder among more recent cohorts is attributable to a 'true' difference and how much is attributable to bias. The magnitude of the apparent cohort effects for each of the disorder groups, and for any disorder, are seen in 2.4.7 (Table 2.11).

### **2.4.7 Age, sex and ethnicity as predictors of lifetime risk**

In this section sociodemographic correlates are considered as predictors of lifetime risk of any substance use disorder. The sociodemographic factors considered are age at interview (birth cohort), sex and ethnicity. Hazard functions are calculated to consider the influence of these factors on the instantaneous risk of onset of a disorder throughout a person's life.

A hazard is estimated as the proportion of individuals who have experienced an event (in this study, the onset of a disorder) in a particular time interval, given that they are known to have not experienced it previously (Everitt, 1995).

The hazard ratio is a ratio of two hazards, at a defined point in time, for two groups of individuals. In these analyses, one subgroup is chosen as the reference group for the calculation of the ratios. The hazard ratio in this reference group is set to equal 1.0. For comparisons across age groups, the age group that was 65 and over at the time of interview is the reference group. For sex, the reference group is males. For ethnicity, the reference group is the Other composite ethnic group. If the hazard ratio for a group is higher than 1.0 then that group is at a higher lifetime risk of disorder.

Table 2.11 shows the hazard ratios for lifetime disorders by ethnicity, age and sex. Ethnicity is presented both unadjusted and adjusted by age and sex. There is no adjustment for education and household income because these were measured at the time of interview and were not known throughout the whole span of the participants' lives.

**Table 2.11:** Hazard ratios for lifetime disorders,<sup>1</sup> by age, sex and ethnicity (unadjusted and adjusted for the influence of age and sex)

	Hazard ratio for lifetime disorders <sup>1</sup> % (95% CI)				
	Any anxiety disorder <sup>2</sup>	Any mood disorder	Any substance use disorder	Any eating disorder <sup>2</sup>	Any disorder <sup>2</sup>
<b>Ethnicity (unadjusted)</b>					
Māori	1.5 (1.3, 1.7)	1.5 (1.4, 1.7)	3.1 (2.7, 3.5)	2.4 (1.6, 3.5)	1.7 (1.5, 1.9)
Pacific	1.3 (1.1, 1.5)	1.1 (1.0, 1.3)	1.8 (1.6, 2.2)	3.5 (2.3, 5.5)	1.4 (1.3, 1.6)
Other	1.0	1.0	1.0	1.0	1.0
<b>Ethnicity (adjusted for age and sex)</b>					
Māori	1.3 (1.2, 1.5)	1.2 (1.1, 1.4)	2.6 (2.3, 3.0)	1.8 (1.2, 2.6)	1.4 (1.3, 1.6)
Pacific	1.1 (1.0, 1.3)	0.9 (0.8, 1.0)	1.5 (1.3, 1.8)	2.7 (1.7, 4.2)	1.2 (1.1, 1.4)
Other	1.0	1.0	1.0	1.0	1.0
<b>Age group in years (adjusted for ethnicity and sex)</b>					
16–24	3.3 (2.6, 4.1)	17.4 (13.7, 22.2)	11.3 (8.6, 14.9)	76.7 (22.5, 260.8)	5.5 (4.5, 6.8)
25–44	3.2 (2.6, 3.9)	6.8 (5.6, 8.2)	5.1 (3.9, 6.5)	71.4 (22.6, 225.7)	4.1 (3.4, 4.9)
45–64	2.2 (1.8, 2.7)	3.5 (2.9, 4.1)	2.8 (2.1, 3.6)	19.6 (6.0, 64.5)	2.6 (2.1, 3.1)
65 and over	1.0	1.0	1.0	1.0	1.0
<b>Sex (adjusted for ethnicity and age)</b>					
Male	1.0	1.0	1.0	1.0	1.0
Female	1.6 (1.4, 1.8)	1.6 (1.5, 1.8)	0.4 (0.4, 0.5)	5.5 (3.6, 8.4)	1.2 (1.1, 1.3)

1 DSM-IV CIDI 3.0 disorders, see 1.6.1–1.6.3.

2 Assessed in the subsample who did the long form of the interview, see 1.5.1.

The hazard ratios differ significantly for substance use across all three ethnic groups, both unadjusted ( $p < .0001$  for all comparisons) and adjusted for age and sex ( $p < .0001$  for all comparisons). When pairwise comparisons are made between ethnic groups for specific disorders, with adjustment for age and sex, Māori have significantly a higher hazard ratio for substance use disorders ( $p < .0001$ ) than Pacific people, who have a higher hazard ratio for substance use disorders ( $p < .0001$ ) compared with Others. Table 2.11 also shows hazard

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ratios for age and sex. Compared with the group aged 65 and over, the other age groups have significantly higher hazard ratios for substance use disorders ( $p < .0001$ ). There is a gradient across the age groups, with younger age groups having higher hazard ratios than older age groups. Compared with males, females have lower hazard ratios for substance use disorder ( $p < .0001$ ), but higher hazard ratios for any disorder ( $p = .0003$ ).

Table 2.11 also shows hazard ratios for other disorder groups. Cohort effects are apparent for all disorder groups although they are smallest for anxiety disorders. The hazard ratios for each birth cohort are similar for mood and substance disorders.

### **2.4.8 Conclusions**

These results confirm those of other studies: substance disorders are relatively common and tend to have early onset.

The New Zealand lifetime prevalence for alcohol disorder is higher than the aggregated prevalence from the six European countries involved in the ESEMeD (Alonso et al., 2004a) (11.4% compared with 5.2%), as was found for 12-month alcohol disorder. As discussed in 2.3.6 this may be the result of a more regular consumption of smaller amounts of alcohol in Europe but it may also be affected by the failure to assess dependence in those who did not report abuse ever. In contrast the lifetime prevalence of substance use disorder in New Zealand (12.3%) is similar to, although significantly lower than, the prevalence of 14.6% obtained in the US NCS-R (Kessler, Berglund, Demler et al., 2005). Comparison for alcohol and drugs for abuse and dependence shows that New Zealand prevalences are a little lower for each disorder. In both studies most substance use disorders have an early age of onset and younger cohorts are at a higher risk of lifetime disorder than are older cohorts.

As in past and recent community studies, males have higher lifetime prevalence estimates and hazard ratios for lifetime disorder for substance use disorders than females have.

This study is unique in that it provides prevalence rates and hazard ratios for lifetime risk of substance disorder for Māori and Pacific people. The hazard ratios for lifetime substance use disorder suggest Māori and to a lesser extent Pacific people have an excess burden of lifetime substance use disorders compared with other ethnic groups, even when adjustment is made for the different population structures of these ethnic groups.

## 3 COMORBIDITY AND DISABILITY IN THE PAST 12 MONTHS

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### KEY RESULTS

#### Mental disorder comorbidity

- People with substance use disorder commonly experience other disorders: 40.0% experienced an anxiety disorder and 29.0% experienced a mood disorder.
- Comorbidity between substance use disorders was common with 45.3% of those with a drug use disorder also meeting criteria for alcohol abuse and 30.7% meeting criteria for alcohol dependence.

#### Mental–physical comorbidity

- People with mental disorders have higher prevalences of several chronic physical conditions; namely, chronic pain, cardiovascular disease, high blood pressure and respiratory conditions. The prevalence of chronic disease risk factors is also higher among people with mental disorders.
- People with chronic physical conditions generally experience a higher prevalence of mental disorders compared with people without physical conditions.

#### Disability

- Mood disorders are associated with more disability than anxiety or substance use disorders. Substance use disorders and anxiety disorders are associated with similar degrees of disability.
- Mental disorders and chronic physical disorders are generally associated with similar degrees of disability.
- The combination of mental and physical disorders is more disabling than either disorder alone.

### 3.1 MENTAL DISORDER COMORBIDITY

#### 3.1.1 Introduction

Since the development of psychiatric classification systems and the use of structured diagnostic interviews, studies in psychiatric epidemiology have found evidence for substantial mental disorder comorbidity (Andrews, 1996; Wittchen, 1996). With regard to mental disorders, the term 'comorbidity' refers to the co-occurrence of two or more mental disorders within the one individual, either at the same time or within a specified period such as 12 months or over the lifetime.

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The first survey to report lifetime comorbidity was the Epidemiologic Catchment Area Study (ECA) in the United States (US), which found that of those who met criteria for at least one disorder at some stage in their lives, 54% met criteria for two or more disorders (Regier et al., 1990). A decade later a very similar estimate of 56% for lifetime comorbidity was obtained from the National Comorbidity Survey, also in the US (Kessler et al., 1994). More recently, the Australian National Survey of Mental Health and Well-Being found that of people who met criteria for at least one disorder in the 12 months before interview ('12-month disorder'), nearly 40% met criteria for two or more disorders (Andrews et al., 2001). In New Zealand, Te Rau Hinengaro: The New Zealand Mental Health Survey has found that 37% of those with 12-month disorder have more than one disorder (Oakley Browne, Wells, & Scott, 2006).

Understanding the phenomenon of comorbidity is important for several reasons. Recognising the clustering of disorders within individuals gives a greater appreciation of how and in whom the burden of psychopathology is concentrated. Lifetime comorbidity patterns, where adult-onset disorders typically occur to those who have already had at least one disorder, offer important opportunities for secondary prevention of mental disorder (Kessler & Walters, 2002). International research has found that comorbidity is associated with more severe symptoms (Roy-Byrne et al., 2000), a greater likelihood of suicide attempt (Vollrath & Angst, 1989) and greater disability (Andrews, Slade, & Issakidis, 2002; Bijl & Ravelli, 2000). It also increases the likelihood of treatment seeking (Galbaud Du Fort, Newmand, & Bland, 1993; Rodriguez et al., 2004) and frequently complicates treatment, leading to poor treatment response (O'Brien & Vincent, 2003; Rowe, Liddle, Greenbaum, & Henderson, 2004). The New Zealand results on the contribution of comorbidity to case severity and service utilisation are consistent with this international research (Oakley Browne, Wells, & Scott, 2006). These population-based findings can, in conjunction with service-based data, aid policy makers in modelling the funding and configuration of mental health services.

### **3.1.2 Patterns of mental disorder comorbidity**

Table 3.1 indicates which disorders tend to go together. It shows a good deal of overlap between anxiety and mood disorders, with approximately half (49.6%) of those experiencing a 12-month mood disorder also experiencing an anxiety disorder, while only 12.9% of the same group experienced a comorbid substance use disorder. Among those with anxiety disorders, 26.6% had a comorbid mood disorder and 9.4% had a comorbid substance use disorder. Twenty-nine percent of those with a 12-month substance use disorder had a comorbid mood disorder, and 40.0% had a comorbid anxiety disorder. These patterns reflect the relative prevalence of disorders in the population. Anxiety and mood disorders are most likely to co-occur because they are the most prevalent disorder groups.

## Comorbidity and Disability in the Past 12 Months

**Table 3.1:** *Percentage with a 12-month mental disorder, by 12-month mental disorder group*

Twelve-month mental disorder group <sup>1</sup>	Twelve-month mental disorder <sup>1</sup>		
	%(95% CI)		
	Any anxiety disorder <sup>2</sup>	Any mood disorder	Any substance use disorder
Any anxiety disorder <sup>2</sup>		26.6 (24.1, 29.3)	9.4 (7.8, 11.2)
Any mood disorder	49.6 (45.8, 53.4)		12.9 (10.6, 15.6)
Any substance use disorder	40.0 (34.6, 45.7)	29.0 (24.3, 34.3)	
Total population	14.8 (13.9, 15.7)	7.9 (7.3, 8.7)	3.5 (3.0, 4.0)

1 DSM-IV CIDI 3.0 disorder groups, see 1.6.1 and 1.6.3.

2 Assessed in the subsample who did the long form of the interview, see 1.5.1.

Table 3.1 also provides a further demonstration of the general phenomenon of comorbidity among mental disorders: the tendency for mental disorders to occur to those who already have them. Among those with any mood disorder, 12.9% experienced a substance use disorder compared with 3.5% of the total population who experienced a substance use disorder. Among those with any substance use disorder, 29.0% experienced a mood disorder compared with 7.9% of the general population who experienced a mood disorder.

Table 3.2 provides more detail on comorbidity within the substance use disorder group. Comorbidity among substance use disorders was very common. Around a quarter of those with alcohol dependence also met criteria for drug dependence (23.5%) or drug abuse (28.1%). For those with drug use disorders, even greater proportions had alcohol use disorder comorbidity. About half (49.9%) of those with drug dependence also reported alcohol abuse symptoms in the past 12 months, and 43.1% of those with drug dependence were also alcohol dependent. As with Table 3.1, this table demonstrates the clustering of disorders in those who already have disorders. The finding that nearly 50% of those with drug dependence also met criteria for alcohol abuse contrasts with the 2.6% of the general population who met criteria for alcohol abuse.

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**Table 3.2:** *Percentage with 12-month substance use disorders, by substance use disorders*

Twelve-month disorder <sup>1</sup>	Twelve-month substance use disorder <sup>1</sup>			
	%			
	(95% CI)			
	Drug abuse	Drug dependence	Alcohol abuse	Alcohol dependence
Alcohol abuse	20.3 (15.4, 26.3)	13.3 (9.4, 18.6)		39.1 (33.0, 45.7)
Alcohol dependence	28.1 (20.5, 37.3)	23.5 (16.5, 32.4)	79.9 (72.3, 85.8)	
Any alcohol use disorder	21.1 (16.4, 26.7)	13.9 (10.1, 18.9)		
Drug abuse		41.7 (32.2, 51.8)	45.9 (35.8, 56.4)	31.1 (22.7, 41.0)
Drug dependence	69.0 (53.8, 81.1)		49.9 (36.3, 63.4)	43.1 (30.4, 56.9)
Any drug use disorder			45.3 (35.8, 55.3)	30.7 (22.9, 32.9)
Total population	1.2 (0.9, 1.4)	0.7 (0.5, 0.9)	2.6 (2.3, 3.0)	1.3 (1.1, 1.5)

1 DSM-IV CIDI 3.0 substance use disorders, see 1.6.1–1.6.3.

## 3.2 MENTAL–PHYSICAL COMORBIDITY

### 3.2.1 Introduction

Research has documented significant comorbidity between chronic physical conditions and mental disorders. Several studies have testified to the poorer physical health status and higher prevalence of chronic physical conditions, disease and chronic disease risk factors among people with mental disorders (Davidson et al., 2001; Kendrick, 1996; Wallace & Tennant, 1998; Wells, Golding, & Burnam, 1989). This is an important public health issue. It not only results in greater suffering and disability in the affected individuals, but it has been shown to lead to considerably higher risk of premature mortality for people with most mental disorders, even after adjusting for suicide (Brown, Inskip, & Barraclough, 2000; Harris & Barraclough, 1998).

The other perspective on the overlap of mental disorders and physical disease is from the point of view of people with chronic physical conditions and the extent to which they experience comorbid mental disorders. Research has frequently found that the prevalence of mental disorder is higher in people with chronic physical disorders than in people without physical disorders (Buist-Bouwman, de Graaf, Vollebergh, & Ormel, 2005; Kessler et al., 1994; Ormel et al., 1994; Wells, Golding, & Burnam, 1988). Among people with physical disorders, comorbid mental disorders lead to greater role impairment (Kessler, Ormel, Demler, & Stang, 2003; Steffens et al., 1999; Sullivan, LaCroix, Baum, Grothaus, & Katon, 1997) and higher treatment costs (Ciechanowski, Katon, & Russo, 2000). Some mental disorders also make an independent contribution to excess mortality among people with certain chronic physical diseases (Carney, Freedland, Miller, & Jaffe, 2002; Zhang et al., 2005).

The results from Te Rau Hinengaro represent the first New Zealand data on the extent of mental disorder and physical condition comorbidity in the general population. The tables show

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the prevalence of selected chronic physical conditions, and key risk factors for those conditions, in people with and without mental disorders. Conversely, results are presented for the prevalence of mental disorders in people with and without selected chronic physical conditions. The results presented below are adjusted for age and sex. The adjustment provides the scores that would occur if the age and sex distribution of those with the disorder in question (eg, chronic pain) matched the age and sex distribution of those without that disorder. This adjustment is necessary because the prevalence of mental disorders is higher in younger people, while the prevalence of chronic physical conditions is higher in older people.

The assessment of the chronic physical conditions in this survey was carried out by presenting participants with a checklist of physical conditions and asking them whether they had ever had the problem (for some of the conditions) or whether they had ever been told by a doctor they had the problem (for the remainder of the conditions). Participants were also asked if they still had the condition, or were still receiving treatment for it, in the past 12 months. It is this 12-month prevalence of chronic conditions that is reported in this chapter. Self-report of physical conditions is a common method of obtaining information on chronic physical disorders as research has demonstrated a reasonable correspondence between self-reported physical disease and more objective measures such as medical records (Kessler et al., 2003).

### 3.2.2 Physical disease status of people with mental disorders

The key theme that emerges from Table 3.3 is that people with mental disorders had higher prevalences of several chronic physical conditions. People with (any) mental disorder, relative to those no mental disorder, had higher prevalences of chronic pain (51.9% compared with 35.1%) ( $p < .0001$ ), cardiovascular disease (10.2% compared with 7.5%) ( $p < .005$ ), high blood pressure (15.0% compared with 12.5%) ( $p < .02$ ) and respiratory conditions (23.0% compared with 16.7%) ( $p < .0001$ ). Cancer was equally prevalent in those with and without mental disorders (5.8% for both).

Those with substance use disorders have higher prevalences of chronic pain, high blood pressure and respiratory disorders compared with those without any mental disorder.

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**Table 3.3: Prevalence of chronic physical conditions (experienced in the past 12 months) among people with 12-month mental disorder, adjusted for age<sup>1,2,3</sup>**

	Chronic physical condition % (95% CI)					
	Chronic pain <sup>4</sup>	Cardio-vascular disease <sup>5</sup>	High blood pressure	Respiratory conditions <sup>6</sup>	Diabetes	Cancer
<b>Any anxiety disorder</b>						
Males	51.7 (46.5, 56.9)	12.7 (9.1, 16.3)	16.2 (12.2, 20.2)	23.4 (18.0, 28.8)	7.2 (4.2, 10.2)	6.5 (3.9, 9.0)
Females	55.6 (52.3, 59.0)	9.8 (7.8, 11.8)	15.6 (13.1, 18.1)	23.5 (20.7, 26.3)	4.0 (2.8, 5.3)	7.1 (5.4, 8.8)
Total	53.0 (50.0, 55.9)	10.8 (8.8, 12.7)	15.7 (13.5, 17.9)	22.9 (20.1, 25.6)	5.3 (3.9, 6.8)	6.6 (5.2, 8.0)
<b>Any mood disorder</b>						
Males	47.5 (41.3, 53.8)	6.3 (3.2, 9.5)	12.2 (7.4, 17.1)	22.1 (16.3, 27.9)	3.4 (1.1, 5.7)	6.7 (3.1, 10.3)
Females	57.5 (53.4, 61.7)	11.8 (8.5, 15.0)	15.7 (12.1, 19.3)	27.7 (23.6, 31.9)	6.1 (3.4, 8.8)	6.5 (4.3, 8.8)
Total	52.7 (49.0, 56.4)	10.1 (7.5, 12.6)	14.4 (11.5, 17.3)	25.1 (21.6, 28.6)	5.4 (3.3, 7.4)	6.3 (4.4, 8.3)
<b>Any substance use disorder</b>						
Males	49.4 (40.5, 58.2)	5.5 (0.8, 10.2)	13.5 (5.8, 21.1)	22.1 (15.4, 28.8)	1.8 (0.0, 4.5)	4.9 (0.0, 10.0)
Females	63.5 (54.4, 72.6)	10.0 (1.8, 18.1)	21.3 (12.2, 30.3)	33.8 (24.7, 43.0)	6.6 (0.4, 12.9)	6.3 (0.0, 12.9)
Total	56.2 (49.5, 62.9)	6.6 (2.4, 10.8)	15.8 (9.5, 22.2)	27.0 (21.0, 33.0)	2.8 (0.4, 5.2)	5.8 (1.4, 10.1)
<b>Any mental disorder</b>						
Males	49.1 (44.7, 53.5)	10.7 (7.8, 13.6)	14.3 (11.2, 17.4)	20.6 (16.6, 24.7)	5.9 (3.6, 8.2)	5.1 (3.2, 7.0)
Females	55.1 (52.2, 58.0)	9.9 (7.9, 11.8)	15.5 (13.2, 17.7)	25.2 (22.6, 27.9)	4.4 (3.1, 5.7)	6.5 (5.0, 8.0)
Total	51.9 (49.3, 54.5)	10.2 (8.5, 12.0)	15.0 (13.1, 16.9)	23.0 (20.7, 25.4)	5.1 (3.9, 6.4)	5.8 (4.6, 7.0)

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	Chronic physical condition % (95% CI)					
	Chronic pain <sup>4</sup>	Cardio-vascular disease <sup>5</sup>	High blood pressure	Respiratory conditions <sup>6</sup>	Diabetes	Cancer
<b>No mental disorder</b>						
Males	30.0 (27.3, 32.6)	7.8 (6.4, 9.2)	12.3 (10.4, 14.1)	14.8 (12.7, 17.0)	4.7 (3.5, 5.9)	4.8 (3.6, 6.1)
Females	39.8 (37.1, 42.5)	7.3 (5.9, 8.8)	12.6 (10.9, 14.4)	18.3 (16.1, 20.6)	3.3 (2.3, 4.3)	6.6 (5.3, 8.0)
Total	35.1 (33.0, 37.1)	7.5 (6.5, 8.6)	12.5 (11.1, 13.8)	16.7 (15.1, 18.2)	4.0 (3.2, 4.7)	5.8 (4.9, 6.7)
<b>Total</b>						
Males	33.1 (30.6, 35.5)	8.1 (6.7, 9.4)	12.5 (10.8, 14.2)	15.8 (13.9, 17.8)	4.8 (3.7, 5.9)	4.9 (3.7, 6.0)
Females	43.5 (41.2, 45.7)	7.7 (6.5, 9.0)	13.2 (11.6, 14.7)	20.0 (18.2, 21.8)	3.5 (2.7, 4.4)	6.6 (5.5, 7.8)
Total	38.5 (36.7, 40.3)	7.9 (7.0, 8.9)	12.8 (11.7, 14.1)	18.0 (16.7, 19.4)	4.1 (3.5, 4.9)	5.8 (5.0, 6.7)

1 DSM-IV CIDI 3.0 disorders, see 1.6.1 and 1.6.3.

2 Assessed in the subsample who did the long form of the interview, see 1.5.1.

3 Sex-stratified estimates are adjusted for age; 'total' estimates are adjusted for age and sex.

4 Chronic pain: arthritis or rheumatism; chronic back or neck problem; frequent or severe headaches; any other chronic pain.

5 Cardiovascular disease: stroke; heart attack; heart disease.

6 Respiratory conditions: asthma; chronic obstructive pulmonary disease; emphysema; other chronic lung disease.

Table 3.4 shows a significantly higher prevalence of all of the chronic disease risk factors included in the table in people with mental disorder compared with people without mental disorder. Among people with any mental disorder compared with people without mental disorder, there were higher prevalences of current smoking (32.3% compared with 20.7%) ( $p < .0001$ ), overweight/obesity (55.2% compared with 50.9%) ( $p = .01$ ), high blood pressure (15.0% compared with 12.5%) ( $p < .02$ ), and hazardous alcohol use (32.5% compared with 16.5%) ( $p < .0001$ ). The finding for alcohol use is inflated by the 'any mental disorder' category including people with diagnosed substance use disorders, most of whom have alcohol use disorders. However, the prevalence of hazardous alcohol use was still significantly higher among people with mood disorders ( $p < .0001$ ) and anxiety disorders ( $p < .0001$ ) compared with people without.

The pattern for people with substance use disorders does not entirely mirror that for people with any mental disorder. Smoking and, of course, hazardous alcohol use are the risk factors that stand out as being even more elevated among people with substance use disorders relative to people with other mental disorders. The prevalence of being overweight/obese among those with substance use disorders, however, is similar to that observed among those without mental disorders.

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A pattern that was pronounced, although not unexpected, was the higher prevalence of hazardous alcohol use among males, both with and without mental disorders. However, that sex difference was no more pronounced for people with mental disorders than for people without.

**Table 3.4:** Prevalence of selected chronic physical condition risk factors (experienced in the past 12 months), by 12-month mental disorder group, age adjusted<sup>1,2,3</sup>

	Risk factors for chronic physical conditions			
	%(95% CI)			
	Smoking <sup>4</sup>	Overweight <sup>5</sup>	High blood pressure	Alcohol <sup>6</sup>
<b>Any anxiety disorder</b>				
Males	28.7 (24.4, 33.1)	58.9 (53.8, 64.1)	16.2 (12.2, 20.2)	37.0 (30.0, 44.0)
Females	30.6 (27.6, 33.6)	52.4 (48.9, 55.9)	15.6 (13.1, 18.1)	17.7 (14.3, 21.0)
Total	30.4 (27.7, 33.0)	56.5 (53.5, 59.5)	15.7 (13.5, 17.9)	27.4 (23.7, 31.0)
<b>Any mood disorder</b>				
Males	34.9 (28.3, 41.5)	54.6 (47.7, 61.4)	12.2 (7.4, 17.1)	39.5 (32.1, 46.8)
Females	32.9 (28.6, 37.3)	47.8 (43.1, 52.4)	15.7 (12.1, 19.3)	21.5 (16.0, 27.1)
Total	34.0 (30.2, 37.8)	51.7 (47.7, 55.7)	14.4 (11.5, 17.3)	30.7 (25.8, 35.5)
<b>Any substance use disorder</b>				
Males	50.9 (41.8, 59.9)	51.5 (41.9, 61.0)	13.5 (5.8, 21.1)	90.5 (83.4, 97.6)
Females	69.9 (60.4, 79.3)	53.0 (42.6, 63.4)	21.3 (12.2, 30.3)	74.1 (60.2, 88.0)
Total	56.2 (49.1, 63.2)	49.0 (41.1, 56.8)	15.8 (9.5, 22.2)	82.7 (74.4, 91.0)
<b>Any mental disorder</b>				
Males	32.8 (28.3, 37.3)	58.4 (53.7, 63.2)	14.3 (11.2, 17.4)	46.6 (40.7, 52.5)
Females	31.4 (28.7, 34.2)	51.2 (48.2, 54.3)	15.5 (13.2, 17.7)	19.5 (16.3, 22.7)
Total	32.3 (29.7, 34.8)	55.2 (52.5, 58.0)	15.0 (13.1, 16.9)	32.5 (28.9, 36.0)
<b>No mental disorder</b>				
Males	22.4 (19.8, 25.0)	59.1 (56.1, 62.1)	12.3 (10.4, 14.1)	24.0 (20.2, 27.8)
Females	19.1 (16.9, 21.3)	43.4 (40.6, 46.2)	12.6 (10.9, 14.4)	9.3 (6.9, 11.8)
Total	20.7 (19.0, 22.4)	50.9 (48.9, 53.0)	12.5 (11.1, 13.8)	16.5 (14.2, 18.8)

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	Risk factors for chronic physical conditions			
	%			
	(95% CI)			
	Smoking <sup>4</sup>	Overweight <sup>5</sup>	High blood pressure	Alcohol <sup>6</sup>
<b>Total</b>				
Males	24.3 (21.9, 26.7)	59.0 (56.3, 61.6)	12.5 (10.8, 14.2)	28.2 (24.9, 31.6)
Females	22.2 (20.4, 24.1)	45.3 (43.0, 47.5)	13.2 (11.6, 14.7)	12.0 (10.0, 14.0)
Total	23.2 (21.7, 24.8)	51.8 (50.0, 53.6)	12.8 (11.7, 14.1)	19.9 (17.9, 22.1)

1 DSM-IV CIDI 3.0 disorder groups, see 1.6.1 and 1.6.3.

2 Assessed in the subsample who did the long form of the interview, see 1.5.1.

3 Sex-stratified estimates are adjusted for age; 'total' estimates are adjusted for age and sex.

4 Smoking: current smoker.

5 Overweight and obesity: body mass index of 25 or over.

6 Alcohol: Alcohol Use Disorders Identification Test score of 8 or more, described as 'potentially hazardous drinkers'.

### 3.2.3 Mental health status of people with chronic physical conditions

Table 3.5 shows that people with chronic physical conditions generally experienced higher prevalences of mental disorders compared with people without physical conditions. For example, the prevalence of any mental disorder among people with no physical conditions was 15.1%, compared with prevalences of any mental disorder among people with physical conditions mostly falling within a range of 25%–29%. As that example also illustrates, the prevalences of any mental disorder were fairly similar across the chronic conditions specified. However, the total prevalence figure for any mental disorder among those with the specified chronic conditions obscures a general pattern of significantly higher prevalence of any mental disorder among females with chronic conditions compared with males with chronic conditions.

The table suggests that people with some physical conditions have higher prevalences of substance use disorder relative to those with no physical conditions, but the small sample size of those with both physical conditions and substance use disorder means that the confidence intervals around a number of the estimates in the table overlap. Nonetheless, in comparison to those with no physical condition, there is a significantly higher prevalence of substance use disorder in those with chronic pain and in those with respiratory conditions.

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Table 3.5: Prevalence of 12-month mental disorders among people with selected chronic physical conditions (experienced in the past 12 months)<sup>1,2,3</sup>

	Mental disorder group % (95% CI)			
	Any anxiety disorder	Any mood disorder	Any substance use disorder	Any mental disorder
<b>Chronic pain<sup>4</sup></b>				
Males	17.0 (14.3, 19.7)	9.3 (7.5, 11.2)	8.4 (6.3, 10.5)	25.5 (22.3, 28.6)
Females	25.2 (22.9, 27.6)	13.5 (11.7, 15.3)	3.4 (2.3, 4.4)	32.2 (29.5, 34.8)
Total	21.2 (19.4, 23.0)	11.5 (10.1, 12.8)	5.8 (4.6, 7.0)	28.9 (26.8, 31.0)
<b>Cardiovascular disease<sup>5</sup></b>				
Males	15.8 (10.2, 21.4)	4.3 (1.8, 6.8)	3.6 (0.1, 7.1)	20.0 (13.7, 26.2)
Females	26.3 (19.9, 32.7)	16.6 (10.8, 22.5)	2.2 (0.0, 4.5)	34.2 (27.0, 41.4)
Total	21.2 (16.7, 25.8)	10.7 (7.3, 14.1)	2.9 (0.7, 5.0)	27.4 (22.3, 32.5)
<b>High blood pressure</b>				
Males	13.1 (9.1, 17.0)	5.7 (3.1, 8.3)	5.6 (1.7, 9.5)	17.7 (13.0, 22.4)
Females	23.9 (19.4, 28.5)	12.3 (8.8, 15.9)	3.2 (1.2, 5.2)	30.7 (25.7, 35.7)
Total	18.7 (15.5, 21.9)	9.1 (6.9, 11.4)	4.4 (2.1, 6.6)	24.6 (21.0, 28.1)
<b>Respiratory conditions<sup>6</sup></b>				
Males	15.7 (11.6, 19.9)	8.5 (6.1, 10.9)	6.6 (4.6, 8.5)	22.0 (17.5, 26.5)
Females	21.8 (18.6, 25.0)	13.3 (10.9, 15.8)	3.5 (2.3, 4.8)	30.2 (26.3, 34.1)
Total	18.7 (16.2, 21.2)	11.0 (9.3, 12.7)	5.1 (3.8, 6.3)	26.2 (23.2, 29.2)
<b>Diabetes</b>				
Males	14.7 (8.0, 21.4)	4.1 (1.1, 7.1)	2.0 (0.0, 5.1)	18.7 (11.3, 26.2)
Females	22.5 (15.3, 29.7)	17.4 (9.7, 25.1)	3.2 (0.0, 6.3)	31.5 (22.7, 40.3)
Total	18.9 (13.6, 24.1)	10.3 (6.3, 14.4)	2.4 (0.3, 4.5)	25.0 (19.1, 31.0)

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	Mental disorder group % (95% CI)			
	Any anxiety disorder	Any mood disorder	Any substance use disorder	Any mental disorder
<b>Cancer</b>				
Males	14.2 (8.0, 20.5)	9.1 (4.0, 14.2)	6.6 (0.2, 13.1)	17.7 (10.8, 24.6)
Females	19.8 (14.6, 24.9)	9.2 (5.7, 12.7)	1.5 (0.0, 3.3)	23.8 (17.9, 29.6)
Total	16.7 (12.8, 20.6)	8.6 (5.7, 11.5)	3.7 (0.8, 6.5)	20.7 (16.1, 25.3)
<b>No chronic physical condition<sup>7</sup></b>				
Males	6.8 (5.5, 8.1)	4.4 (3.3, 5.5)	3.5 (2.3, 4.7)	12.3 (10.3, 14.4)
Females	13.9 (12.0, 15.7)	6.7 (5.6, 7.9)	1.3 (0.8, 1.8)	17.8 (15.7, 19.9)
Total	10.4 (9.2, 11.5)	5.6 (4.8, 6.5)	2.4 (1.7, 3.0)	15.1 (13.6, 16.7)
<b>Total</b>				
Males	10.6 (9.4, 11.8)	6.2 (5.3, 7.0)	4.9 (4.0, 5.8)	17.0 (15.3, 18.6)
Females	18.7 (17.3, 20.0)	9.6 (8.6, 10.6)	2.1 (1.7, 2.5)	24.1 (22.5, 25.7)
Total	14.8 (13.9, 15.7)	7.9 (7.3, 8.7)	3.5 (3.0, 4.0)	20.7 (19.5, 21.9)

1 DSM-IV CIDI 3.0 disorder groups, see 1.6.1 and 1.6.3.

2 Assessed in the subsample who did the long form of the interview, see 1.5.1.

3 Sex-stratified estimates are adjusted for age; 'total' estimates are adjusted for age and sex.

4 Chronic pain: arthritis or rheumatism; chronic back or neck problem; frequent or severe headaches; any other chronic pain.

5 Cardiovascular disease: stroke; heart attack; heart disease.

6 Respiratory conditions: asthma; chronic obstructive pulmonary disease; emphysema; other chronic lung disease.

7 None of the chronic physical conditions included in this table.

### 3.3 DISABILITY

#### 3.3.1 Background

The disability associated with the common mental disorders has not always been widely appreciated. Understanding of the substantial impact of mental disorders such as depression increased over the last decade or so with the emergence of findings from key primary care studies in the US (Wells, Stewart et al., 1989) and Europe (Ormel et al., 1994), and from general population data available at that time (Broadhead, Blazer, George, & Chiu, 1990; Ormel et al., 1998). But it was the publication of the Global Burden of Disease Study that really attracted attention to the disability burden associated with mental disorders (Murray & Lopez, 1996).

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The Global Burden of Disease Study calculated the number of years of healthy life lost due to premature death and the number of years lived with disability for a wide range of physical conditions, diseases and mental disorders. These were integrated into a single measure termed 'disability adjusted life years' (DALYs). The study showed that psychiatric conditions collectively constituted more than 10% of the worldwide sum of DALYs. Ranking of individual conditions in terms of years lived with disability placed unipolar major depression as the lead cause of disability worldwide, with mental disorders and alcohol use making up 5 of the 10 leading causes of disability.

Although the extent to which mental disorders contributed to the worldwide burden of disease came as a surprise to many, it is a function of known characteristics of mental disorders: their widespread prevalence in the population, their relatively early onset and their chronicity.

The Global Burden of Disease estimates are based on limited empirical data from a small number of countries. It is one of the goals of the World Mental Health (WMH) Survey Initiative, of which this survey is a part, to provide more comprehensive information on the cross-national prevalence of mental disorders and the disability associated with them. Therefore, disability has been measured in more than one way in the WMH surveys.

Two approaches to measuring disability have been used. One approach was to ask respondents about the disruption in functioning they experienced in relation to particular disorders. The results from these disorder-specific 'interference with life' questions are presented in chapter 2.

The second approach to measuring disability was to use a 'generic' measure; that is, a measure that is not specific to a particular disorder. The WMH Survey Initiative version of the World Health Organization (WHO) Disability Assessment Schedule (WMH WHO-DAS) was developed from a preliminary version of WHO-DAS II (Rehm et al., 1999) for use in the WMH surveys. The results from this measure are presented in this chapter. The WMH WHO-DAS questionnaire asked people about their role functioning and health-related disability generally. This provides an estimate of disability for the individual, so it can provide a picture of the disability experienced by those with more than one disorder.

### **3.3.2 Disability measure: WMH WHO-DAS**

The results presented in this chapter are from a multidimensional measure of disability: the WMH WHO-DAS. The WMH WHO-DAS was administered as a generic section asking about disability in the past 30 days. Everyone allocated to the long form of the interview was administered the WMH WHO-DAS, which meant people with psychiatric problems and some people without such problems responded.

The measurement and definition of disability have been controversial. The 'medical model' of disability views disability as a problem within the individual, caused by disease or injury. The 'social model', by contrast, views it as a social construction, caused by an unaccommodating social environment (Bickenbach, Chatterji, Badley, & Ustun, 1999).

One important feature of the WHO-DAS-II and the WMH variant is that they are based on a conceptual model of disability that attempts to synthesise these opposing approaches: the WHO's 2001 International Classification of Functioning, Disability and Health. This framework classifies impairments and their impact on individual capacities (activities) and performance

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(participation). It takes into account the contextual factors, both personal and environmental, that affect how an individual experiences disability. In keeping with this approach, the WMH WHO-DAS profiles functioning across six domains:

- understanding and communicating
- getting around
- self-care
- getting along with others
- household and work activities (role impairment)
- participation in society.

The first three domains reflect the key International Classification of Functioning, Disability and Health dimension of activity limitations, and the second three reflect the other key dimension of participation.

In this chapter, the WMH WHO-DAS was scored to produce subscale scores for five domains.

- *Role impairment (role)*: Four items measuring the extent to which the participant was completely unable to work or carry out their normal activities, or had to cut back on the amount or quality of what was achieved, or had to apply extreme effort to perform at their usual level due to physical health, mental health or substance use problems.
- *Understanding and communicating (cognitive)*: Four items recording difficulties with concentration, understanding, memory and learning.
- *Getting around (mobility)*: Three items measuring difficulties with standing for at least 30 minutes, moving around inside the house and walking distances of about 1 kilometre.
- *Self-care (self-care)*: Three items recording difficulties with washing the body, getting dressed and staying by oneself for a few days.
- *Getting along with others (social)*: Five items measuring difficulties in starting and maintaining conversation, dealing with unknown people, forming and maintaining friendships, and controlling emotions around people.

All domains are scored on a 0–100 scale, with higher scores representing greater disability, using a scoring formula that weights the number of days the individual reports disability out of the past 30 days by the severity of disability reported in a given domain.

One caveat should be borne in mind when reviewing the results below. The WMH WHO-DAS is an entirely self-reported measure of disability. Its validity, therefore, is reduced for those individuals or conditions with limited insight, denial or cognitive impairment that may affect the accuracy of the self-reported data (McKibben, 2004).

### 3.3.3 Role impairment by type of mental disorder

Table 3.6 shows the mean scores for the role impairment domain. These scores integrate days out of role with days of partially impaired performance (the scoring system gives greater weight to days completely out of role). Although in theory the WMH WHO-DAS scores range from 0 to 100, it is unusual for people to have scores at the upper end of the scale, because few people would report 30 days out of 30 completely out of role due to health problems. For example, an individual reporting three full days out of role, plus nine days of cutting down out of the past 30 days, would score 25.

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Table 3.6 provides a comparison of the degree of role impairment experienced by people with different mental disorders. Such comparisons are often complicated by some disorders being more likely to have comorbid (co-occurring) disorders than others, so it can be unclear whether the impairment reported is a function of the specified disorder or its possible comorbidities.

**Table 3.6:** Role impairment in past month,<sup>1</sup> by one-month single and comorbid disorders<sup>2,3</sup>

Disorder group	Mean role impairment domain score % (95% CI)	
	All health <sup>4</sup>	Attributed to mental health <sup>5</sup>
No disorder	6.3 (5.7, 7.0)	0.8 (0.7, 1.0)
<b>Single disorder</b>		
Any anxiety disorder	12.8 (10.9, 14.7)	4.0 (2.9, 5.2)
Any mood disorder	23.2 (16.9, 29.5)	11.3 (6.6, 16.0)
Any substance use disorder	12.8 (7.1, 18.5)	5.9 (2.7, 9.1)
<b>Comorbid disorders</b>		
Disorders comorbid within a group <sup>6</sup>	22.0 (17.1, 26.9)	11.8 (8.4, 15.3)
Disorders comorbid across groups <sup>7</sup>	34.8 (28.9, 40.8)	23.4 (17.8, 29.1)
Total population	7.7 (7.0, 8.3)	1.7 (1.5, 1.9)

1 Past 30 days.

2 DSM-IV CIDI 3.0 disorders, see 1.6.1 and 1.6.3.

3 Assessed in the subsample who did the long form of the interview, see 1.5.1.

4 Role impairment score calculated from four role impairment items: the sum of days out of role plus half of days cut down on amount and a quarter of days cut back on quality or took extreme effort, divided by 30 and multiplied by 100. Scores range from 0 to 100; the higher the score, the greater the impairment.

5 Role impairment score calculated from the three items that allow attribution to mental health problems: the sum of days out of role plus half of days cut down on amount and half of days of extreme effort, divided by 30 and multiplied by 100. Scores range from 0 to 100; the higher the score, the greater the impairment.

6 For example, two or more anxiety disorders.

7 For example, an anxiety disorder and a mood disorder.

Table 3.6 helps to clarify the picture by comparing anxiety, mood and substance use disorders among people with only the specified disorder and no comorbid disorder. The key feature that emerges from these results is that mood disorders are associated with more role impairment than anxiety or substance use disorders. People with a single mood disorder had a mean role impairment score of 23.2, which is nearly double the score of people with anxiety (12.8) or substance use disorder (12.8). The scores attributable to mental health indicate that people with single mental disorders attributed about a third (anxiety disorders) to a half (substance use and mood disorders) of their role impairment to mental health.

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Table 3.6 also provides a comparison of comorbid disorders: disorders comorbid within a group and disorders comorbid across groups. While this suggests that across-group comorbidity is more impairing than within-group comorbidity, this is largely a function of the fact that those with multiple mood disorders were few in number relative to those with multiple anxiety disorders. In contrast, the majority of those with across-group comorbidity had a mood disorder (which, as noted above, is associated with higher levels of impairment than other disorder groups).

### 3.3.4 Types of disability associated with mental disorders and chronic physical conditions

Table 3.7 broadens the picture provided so far for role impairment by adding in the other disability domains. It puts the results for mental disorders in perspective by making comparisons across mental and physical disorders. The table reports both unadjusted scores and scores adjusted for age and sex. The adjustment provides the scores that would occur if the age and sex distribution of those with the disorder in question (eg, any anxiety disorder) matched the age and sex distribution of those without that disorder. This allows a comparison of scores across mental and physical disorders, which generally differ in age structure (mental disorders having a younger age structure than physical disorders) and may differ in sex distribution as well.

A glance at Table 3.7 shows that the role impairment scores are generally higher than the other domain scores. This is partly due to the nature of that domain: role impairment is a more general form of disability than the more specific components of functioning the other domains measure. But it is also because the scoring for the role impairment domain differs from the scoring for the other four domains. The four domains of mobility, self-care, and social and cognitive functioning are scored by measuring the severity of disability and multiplying the result by the number of days in the past 30 the individual reported experiencing the disability.

High scores on these four domains are rare. For example, someone reporting mild impairment in a given domain on 5 out of 30 days would have a score of about 2 for that domain. Someone reporting moderate impairment on 5 out of 30 days would have a score of about 6. Someone reporting moderate impairment on 15 out of 30 days would have a score of about 25.

**Table 3.7:** *WMH WHO-DAS domain scores associated with one-month mental disorders<sup>1</sup> and chronic physical conditions<sup>2</sup>*

	Mean disability domain scores <sup>3</sup>									
	%									
	(95% CI)									
	Role impairment		Mobility		Self-care		Social		Cognitive	
	Un-adjusted	Adjusted for age and sex	Un-adjusted	Adjusted for age and sex	Un-adjusted	Adjusted for age and sex	Un-adjusted	Adjusted for age and sex	Un-adjusted	Adjusted for age and sex
<b>Mental disorder group</b>										
Any anxiety disorder	17.7 (15.8, 19.6)	18.2 (16.3, 20.2)	6.2 (5.1, 7.3)	7.1 (6.0, 8.2)	1.8 (1.3, 2.4)	2.1 (1.5, 2.6)	2.6 (2.0, 3.1)	2.6 (2.0, 3.1)	3.9 (3.2, 4.6)	3.9 (3.2, 4.6)
Any mood disorder	30.3 (25.6, 34.9)	30.9 (26.2, 35.5)	8.8 (6.5, 11.2)	9.9 (7.6, 12.2)	2.6 (1.4, 3.8)	2.8 (1.6, 4.0)	4.0 (2.9, 5.1)	4.0 (2.9, 5.1)	7.2 (5.5, 8.8)	7.2 (5.5, 8.8)
Any substance use disorder	21.0 (15.6, 26.5)	22.6 (17.1, 28.1)	3.6 (1.8, 5.4)	5.9 (4.0, 7.7)	0.8 (0.1, 1.4)	1.2 (0.4, 1.9)	2.2 (1.0, 3.4)	2.2 (1.0, 3.5)	4.3 (2.8, 5.8)	4.3 (2.9, 5.7)
Any mental disorder	18.0 (16.2, 19.7)	18.7 (16.9, 20.4)	6.0 (5.0, 6.9)	7.0 (6.0, 8.0)	1.7 (1.2, 2.1)	1.9 (1.4, 2.4)	2.4 (1.9, 2.8)	2.4 (1.9, 2.8)	3.7 (3.1, 4.3)	3.7 (3.1, 4.3)

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	Mean disability domain scores <sup>3</sup>									
	%									
	(95% CI)									
	Role impairment		Mobility		Self-care		Social		Cognitive	
	Un-adjusted	Adjusted for age and sex	Un-adjusted	Adjusted for age and sex	Un-adjusted	Adjusted for age and sex	Un-adjusted	Adjusted for age and sex	Un-adjusted	Adjusted for age and sex
<b>Physical condition</b>										
Chronic pain <sup>4</sup>	13.9 (12.5, 15.4)	13.8 (12.4, 15.2)	7.5 (6.4, 8.6)	6.7 (5.8, 7.7)	1.6 (1.1, 2.2)	1.5 (1.0, 2.0)	1.0 (0.7, 1.2)	1.0 (0.8, 1.3)	1.6 (1.3, 1.9)	1.7 (1.4, 2.0)
Cardiovascular <sup>5</sup>	18.7 (14.5, 22.9)	17.2 (13.0, 21.4)	14.2 (10.6, 17.7)	10.4 (7.1, 13.7)	4.1 (2.0, 6.3)	3.5 (1.5, 5.5)	0.9 (0.5, 1.3)	1.1 (0.6, 1.5)	2.2 (1.3, 3.0)	2.4 (1.5, 3.2)
Respiratory conditions <sup>6</sup>	10.7 (9.0, 12.3)	10.7 (9.1, 12.3)	5.1 (3.9, 6.3)	5.3 (4.1, 6.5)	1.1 (0.6, 1.6)	1.1 (0.7, 1.6)	0.9 (0.5, 1.3)	0.9 (0.5, 1.3)	1.5 (1.0, 2.0)	1.5 (1.0, 2.0)
Diabetes	14.9 (10.4, 19.4)	13.3 (9.0, 17.7)	10.7 (6.8, 14.6)	7.8 (4.0, 11.7)	3.8 (1.4, 6.3)	3.3 (0.9, 5.7)	1.2 (0.5, 1.8)	1.2 (0.6, 1.9)	2.0 (0.8, 3.2)	2.1 (0.9, 3.3)
Cancer	15.7 (11.8, 19.6)	13.8 (9.9, 17.6)	10.9 (7.0, 14.7)	7.4 (3.9, 10.9)	3.4 (0.8, 6.1)	2.8 (0.3, 5.3)	1.0 (0.5, 1.4)	1.0 (0.6, 1.5)	1.7 (0.9, 2.6)	1.8 (0.9, 2.6)
Any physical condition	11.2 (10.1, 12.2)	11.0 (9.9, 12.0)	5.8 (5.0, 6.6)	5.0 (4.3, 5.6)	1.3 (0.9, 1.7)	1.1 (0.8, 1.5)	0.7 (0.6, 0.9)	0.8 (0.6, 1.0)	1.3 (1.1, 1.5)	1.4 (1.1, 1.6)
Any mental disorder (in absence of physical condition)	10.6 (8.0, 13.2)	11.1 (8.4, 13.8)	1.1 (0.6, 1.7)	2.5 (1.8, 3.3)	0.6 (0.1, 1.2)	0.9 (0.3, 1.5)	1.9 (1.1, 2.6)	1.8 (1.1, 2.6)	2.5 (1.5, 3.5)	2.5 (1.5, 3.5)
Any physical condition (in absence of mental disorder)	9.5 (8.4, 10.6)	9.0 (8.0, 10.1)	5.3 (4.4, 6.2)	4.2 (3.6, 4.9)	1.1 (0.7, 1.6)	0.9 (0.6, 1.3)	0.4 (0.3, 0.6)	0.5 (0.3, 0.6)	0.8 (0.6, 1.1)	0.9 (0.6, 1.1)
Any mental disorder and any physical condition	21.7 (19.5, 23.8)	22.0 (19.8, 24.2)	8.4 (7.1, 9.8)	9.1 (7.7, 10.4)	2.2 (1.6, 2.8)	2.3 (1.7, 3.0)	2.6 (2.0, 3.2)	2.6 (2.0, 3.2)	4.2 (3.5, 5.0)	4.3 (3.5, 5.0)
No mental disorder or physical condition	2.4 (2.0, 2.9)	2.9 (2.4, 3.5)	0.7 (0.4, 1.0)	1.7 (1.3, 2.2)	0.1 (0.0, 0.1)	0.3 (0.1, 0.4)	0.1 (0.1, 0.2)	0.1 (0.0, 0.2)	0.2 (0.1, 0.2)	0.2 (0.1, 0.3)

1 DSM-IV CIDI 3.0 disorders, see 1.6.1 and 1.6.3.

2 Assessed in the subsample who did the long form of the interview, see 1.5.1.

3 Scores range from 0 to 100; the higher the score, the greater the disability.

4 Chronic pain: arthritis or rheumatism; chronic back or neck problems; frequent or severe headaches; any other chronic pain.

5 Cardiovascular disease: stroke; heart attack; heart disease.

6 Respiratory conditions: asthma; chronic obstructive pulmonary disease; emphysema; other chronic lung disease.

In the comparison between mental disorders (any anxiety, any mood, any substance use), mood disorders are again associated with more disability, on all domains, than anxiety or substance use disorders. These latter two disorder groups are associated with fairly similar levels of disability. Looking at the four domains other than role impairment, self-care problems are the least associated with mental disorders (with a score for any mental disorder of 1.9), and mobility appears the most affected (with a score of 7.0). However, when one looks down the table to the category of mental disorder in the absence of comorbid physical disorder, which has a score for mobility of only 2.5, it becomes clear the mobility impairment associated with mental disorders in the top part of the table is probably a function of comorbid physical disorders (it may well be the case that for a number of people mood disorders are secondary to a physical disorder).

## Comorbidity and Disability in the Past 12 Months

Among the physical disorders, cardiovascular disease was generally associated with greater impairment than the other conditions. Diabetes was the next most disabling of those shown. In comparing the four specific domains, physical disorders were associated with most impairment in the mobility domain, followed by self-care.

In the comparison between mental and physical disorders several results are of note. In comparing people with any mental disorder with people with any physical condition, without excluding comorbid conditions, mental disorders appear to be associated with more disability. However, after excluding comorbid conditions, mental and physical disorders appear similarly disabling, although physical disorders are associated with more disability in the mobility domain and mental disorders are associated with more disability in the social and cognitive domains, as might be expected.

Lastly, in observing the scores associated with the category of any mental *plus* any physical condition, it is clear mental-physical comorbidity more than doubles the disability associated with mental disorders or physical disorders alone.



## 4 SUICIDAL BEHAVIOUR

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### KEY RESULTS

- Lifetime prevalences for suicidal behaviours were: suicidal ideation, 15.7%; suicide plan, 5.5%; suicide attempt, 4.5%.
- Median ages of onset for all three behaviours were in the 20s: suicidal ideation, 25 years; making a suicide plan, 25 years; suicide attempt, 21 years.
- The prevalences for suicidal behaviour in the past 12 months were: suicidal ideation, 3.2%; suicide plan, 1.0%; suicide attempt, 0.4%.
- Individuals with a mental disorder had elevated risks of suicidal behaviour, with 11.8% of people with any mental disorder reporting suicidal ideation, 4.1% making a suicide plan and 1.6% making a suicide attempt.
- Mood disorders, anxiety disorders, eating disorders and substance use disorders were all associated with suicidal ideation, suicide plan and suicide attempt.
- Almost half of those with a 12-month history of suicidal ideation, suicide plan or suicide attempt did not report making any general medical or specialist mental health visits within the same 12-month period in which they were suicidal.

### 4.1 INTRODUCTION

This chapter describes the prevalence of suicidal behaviour in the New Zealand population aged 16 and older and the association between mental disorder, particularly substance use disorder, and suicidal behaviour.

#### 4.1.1 Definition of suicidal behaviour

For the purposes of this report suicidal behaviour includes the following behaviours, which were defined by the questions asked in Te Rau Hinengaro: The New Zealand Mental Health Survey:

- *suicidal ideation*: thinking seriously about committing suicide
- *suicide plan*: making a plan for committing suicide
- *suicide attempt*: making a suicide attempt.

#### 4.1.2 Reasons for including suicidal behaviour in the survey

Suicidal behaviour was included in this survey because suicide and attempted suicide are serious sources of mortality and morbidity in New Zealand (Ministry of Health, 2001b). New Zealand has one of the highest rates of suicide among countries in the Organisation for Economic Co-operation and Development (OECD) (10.7 deaths per 100,000 population in 2002), with rates being particularly high for youth (people aged 15–24; 17 per 100,000) and young adults (people aged 25–44; 18.2 per 100,000) (Ministry of Health, 2005a; World Health Organization, 2005). Almost 500 people die by suicide annually; this is higher than the number who die in road traffic accidents. Suicide (after road traffic accidents) is the second most

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common reason for death among people aged 15–34 (New Zealand Health Information Service, 2005).

Suicidal behaviours including, in particular, suicide attempts, are strong risk factors for suicide and for further suicide attempts, and are often associated with mental illness and with significant emotional distress (Beautrais, Collings, Ehrhardt, & Henare, 2005). Almost 4,500 hospital admissions are for suicide attempt each year (Ministry of Health, 2005a). While males more often die by suicide, females make more suicide attempts (Ministry of Health, 2005a). Suicidal behaviours are thus a problem for both sexes. In terms of ethnic distribution, 17.0% of suicides in 2002 involved Māori, 3.9% involved Pacific people, 2.6% involved Asian people and 76.5% involved Europeans (Ministry of Health, 2005a).

New Zealand has extensive data about suicidal behaviour. However, many of these data have been generated from a series of regional community-based studies and the extent to which the data from these studies are generalisable to the wider New Zealand population has often been the subject of debate. Such debate has centred on the extent to which regional studies may or may not be representative of the total New Zealand population. The data from this survey provide nationally representative information about suicidal behaviour and, in particular, about suicidal behaviour in Māori and Pacific people.

### **4.1.3 Previous New Zealand studies**

Previous New Zealand studies have examined suicidal behaviour in the Canterbury region, in a Dunedin-born cohort and in a Christchurch-born cohort, and one national study focused on suicidal behaviour in teenagers attending high school (Adolescent Health Research Group, 2003; Beautrais, 2001; Fergusson, Woodward, & Horwood, 2000; Nada-Raja, Skegg, Langley, Morrison, & Sowbery, 2004; Weissman et al., 1993; Weissman et al., 1999).

The Christchurch Psychiatric Epidemiology Study (see 1.2.1) surveyed 1,500 adults aged 18–64 in Christchurch in 1986 and reported a lifetime rate of suicidal ideation of 18.5 per 100. The lifetime rate of suicide attempt for males was 2.6 per 100 and for females was 6.2 per 100 (Weissman et al., 1993; Weissman et al., 1999). The Canterbury Suicide Project found that 1.0% of 984 adults aged 18 and over interviewed in a community-based study in 1991/92 reported a lifetime history of suicide attempts (Beautrais, 2001). The lifetime rate of suicidal ideation in a Dunedin-born cohort (see 1.2.2), interviewed at age 26, was 13%, with 9% reporting suicide attempt (Nada-Raja et al., 2004). A Christchurch-born cohort (see 1.2.2) of 1,265 young people born in 1977 tracked the development of suicidal ideation and suicide attempt throughout adolescence and young adulthood. This study found that, by age 21, 28.8% reported having thought about killing themselves and 7.5% reported having made a suicide attempt (Fergusson et al., 2000). A national survey of 12,934 secondary school students aged 12–18 in 2001 found that 16.9% of males and 29.2% of females reported suicidal thoughts within the past year, and 4.7% of males and 10.6% of females reported having made a suicide attempt within the past year (Adolescent Health Research Group, 2003). (It should be noted that studies of young people tend to report higher rates of ideation and attempts than studies of people of all ages. This likely occurs because, with the passage of time, people tend to forget episodes of suicidal ideation, and suicide attempts, as these events tend to get overlaid with other life experiences.)

These, and other New Zealand studies have also examined the contribution of a series of risk factors to suicidal behaviour. Risk factors ranging from individual-level factors (eg, genes,

personality, sexual orientation) to macrosocial factors (eg, unemployment rates), and spanning exposure to trauma, family factors, mental disorders, life stresses, social supports, socioeconomic factors, cultural factors, and macrosocial and macroeconomic factors, have all been shown to contribute to suicidal behaviours (Beautrais et al., 2005; Collings & Beautrais, 2005). In particular, risks of suicidal behaviour are increased among people from socially and educationally disadvantaged backgrounds, and among people with mental illness, including mood disorders in particular but also substance use disorders, anxiety disorders, psychotic disorders, and antisocial and offending behaviours. In addition, rates of suicide and attempted suicide are known to vary with age, gender and ethnicity (Beautrais et al., 2005).

Substance use disorders make a significant contribution to suicidal behaviour. After depression, substance use disorders (including alcohol, cannabis and other drug abuse and dependence) are the most common mental disorders associated with vulnerability to suicidal behaviour. Substance use disorders are often comorbid with other disorders including, especially, mood disorders, and comorbidity increases risk of suicidal behaviour (Cherpitel, Borges, & Wilcox, 2004; Conner et al., 2001; Conner & Duberstein, 2004; Sher, 2006; Suokas, Suominen, & Lonnqvist, 2005; Wilcox, Conner, & Caine, 2004). Individuals with alcohol abuse or dependence who make suicide attempts are characterised by mood disorders, a history of prior suicide attempts, stressful life events (particularly interpersonal difficulties and relationship breakdowns), poor social support, living alone, high levels of aggression and impulsivity, hopelessness, comorbid substance abuse, and serious medical illness (Beautrais, Joyce, & Mulder, 2000; Cherpitel et al., 2004; Conner, Beautrais, & Conwell, 2003; Conner et al., 2001; Conner & Duberstein, 2004; Sher, 2006; Suokas et al., 2005; Wilcox et al., 2004).

Findings about risk factors for suicidal behaviour (including substance abuse) from these New Zealand studies have been summarised in two reports (Beautrais et al., 2005; Collings & Beautrais, 2005). However, this survey is the first nationally representative survey to examine the prevalence of, and sociodemographic and mental disorder correlates for, suicidal behaviours in New Zealand, and to have adequate numbers of Māori and Pacific participants to generate estimates of such behaviours with acceptable precision.

#### 4.1.4 Content of this chapter

This chapter includes information about:

- lifetime and 12-month prevalences of suicidal ideation, making a suicide plan and making a suicide attempt (see 4.2)
- onset distributions for suicidal ideation, suicide plan and suicide attempt (see 4.3)
- DSM-IV mental disorders and suicidal behaviours in the past 12 months (see 4.4; for a general explanation about the *Diagnostic and statistical manual of mental disorders* (DSM), see 1.6.1)
- the use of health services by people with suicidal behaviour (see 4.5).

More detailed results by age and sex and other sociodemographic correlates are provided in chapter 7 of the main report, *Te Rau Hinengaro: The New Zealand Mental Health Survey* (Beautrais, 2006).

## 4.2 LIFETIME AND 12-MONTH PREVALENCES

Table 4.1 shows recent (ie, past 12 months) and lifetime prevalences of suicidal ideation, suicide plans and suicide attempts, for males, females and the total population. A hierarchy of severity exists in these suicidal behaviours, with the more severe behaviours occurring less often. While lifetime suicidal ideation was relatively common, with 15.7% reporting a history of suicidal ideation, suicide plans and suicide attempts were less common, with 5.5% reporting a lifetime history of making plans for suicide and 4.5% making a suicide attempt. Similarly, while 3.2% reported suicidal ideation in the past 12 months, only 1.0% reported making suicide plans and 0.4% reported making a suicide attempt.

Lifetime rates of suicidal behaviour were consistently significantly higher in females than males (ideation: females, 17.4%; males, 14.0% ( $p < .0001$ ); plan: females, 6.4%; males, 4.6% ( $p < .005$ ); attempt: females, 5.6%; males, 3.4% ( $p < .0001$ )). However, in the past 12 months males and females were equally likely to have made suicide plans (males, 0.9%; females, 1.0%) and suicide attempts (males, 0.4%; females, 0.4%), despite females significantly more often reporting suicidal ideation (females, 3.7%; males, 2.6% ( $p < .05$ )). (See Table 4.1.)

**Table 4.1:** Twelve-month and lifetime prevalence of suicidal ideation, suicide plan and suicide attempt, by sex

	Twelve-month prevalence			Lifetime prevalence		
	Male	Female	Total	Male	Female	Total
Suicidal ideation	2.6 (2.2, 3.2)	3.7 (3.2, 4.4)	3.2 (2.8, 3.6)	14.0 (12.8, 15.2)	17.4 (16.3, 18.5)	15.7 (14.9, 16.6)
Suicide plan	0.9 (0.7, 1.3)	1.0 (0.8, 1.4)	1.0 (0.8, 1.2)	4.6 (3.9, 5.3)	6.4 (5.7, 7.1)	5.5 (5.0, 6.0)
Suicide attempt	0.4 (0.2, 0.8)	0.4 (0.3, 0.6)	0.4 (0.3, 0.6)	3.4 (2.8, 4.1)	5.6 (4.9, 6.2)	4.5 (4.1, 5.0)

Suicide attempts range in severity from the mildly injurious to the determinedly lethal. All those who made suicide attempts were asked about the lethality and intent of their first and their most recent attempt (Table 4.2). Almost half (46.5%) of those who made one or more suicide attempts reported that their first attempt was a serious attempt to die and it was only by chance that they did not succeed; while 37.0% (more than one-third) reported they did not intend to die in their first attempt and it was a 'cry for help'. The remainder (16.5%) reported that their first attempt was serious but they were not certain that the method would kill them. Levels of intent and lethality reported for the first suicide attempt were strikingly similar to those reported for the most recent attempt (among those who reported more than one lifetime suicide attempt).

**Table 4.2:** *Lethality and intent of first and most recent suicide attempts*

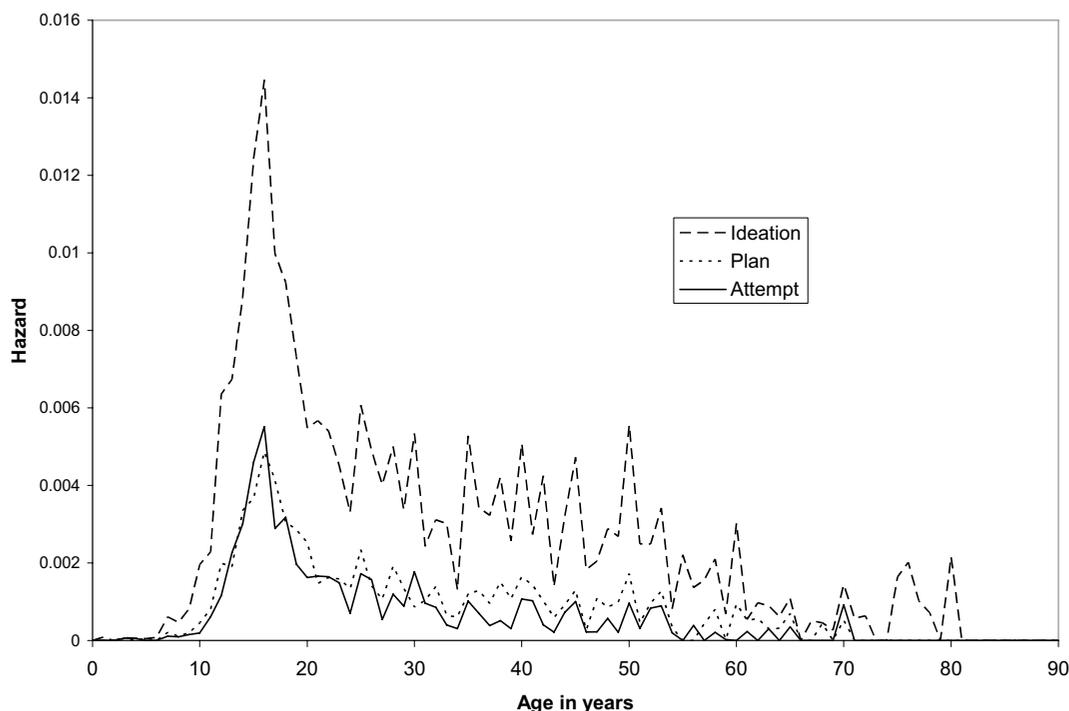
	First suicide attempt %	Most recent suicide attempt (among those making multiple attempts) %
<b>Lethality and intent</b>		
A serious attempt to die and only by chance did not succeed	46.5	47.9
A serious attempt to die but not certain the method would kill them	16.5	15.1
Did not intend to die – a ‘cry for help’	37.0	36.9

### 4.3 ONSET DISTRIBUTIONS

Hazard functions were estimated to show the first onset of suicidal ideation, suicide plan and suicide attempt (Figure 4.1). A hazard is the instantaneous risk of a behaviour happening in an individual who has not previously experienced that behaviour. It is estimated as the proportion of individuals who have experienced an event for the first time in an interval out of those who have reached the beginning of the interval without ever experiencing the event. For example, Figure 4.1 shows that people who had reached the age of 16 without suicidal ideation had a risk of 1.4% of experiencing such ideation for the first time in the next year. This analysis yielded the following results.

- Median ages of onset for all three behaviours were in the 20s: 25 years for suicidal ideation; 25 years for making a suicide plan; and 21 years for a suicide attempt.
- Although the onset of suicidal ideation was most likely to occur in late adolescence, onset continued throughout adult life: 2.8% (2.4, 3.2) reported suicidal ideation by age 15; 7.8% (7.2, 8.5) by age 20; 10% (9.3, 10.8) by age 25; and 17.5% (16.5, 18.5) by age 50. By age 75, 20.2% (19.1, 21.3) reported suicidal ideation.
- A similar pattern emerged for suicide plans: 0.9% (0.7, 1.1) reported suicide plans by age 15; 2.7% (2.4, 3.1) by age 20; 3.6% (3.1, 4.0) by age 25; and 6.2% (5.6, 6.9) by age 50. By age 75, 7.2% (6.5, 7.9) reported making suicide plans.
- For suicide attempts, 0.8% (0.6, 1.0) reported suicide attempts by age 15; 2.6% (2.2, 2.9) by age 20; 3.2% (2.9, 3.7) by age 25; and 5.1% (4.6, 5.6) by age 50. By age 75, 5.5% (5.0, 6.2) reported having made at least one suicide attempt.

**Figure 4.1:** Hazard functions of first onset of suicidal ideation, suicide plan and suicide attempt



#### 4.4 MENTAL DISORDER CORRELATES IN THE PAST 12 MONTHS

Percentages of suicidal behaviour by mental disorder in the past 12 months are presented in Table 4.3. The overall 12-month prevalences were 3.2% for suicidal ideation, 1.0% for suicide plan and 0.4% for suicide attempt. Individuals with any mental disorder had elevated risks of suicidal behaviour, with 11.8% of those with any disorder reporting suicidal ideation, 4.1% making a suicide plan and 1.6% making a suicide attempt. Suicidal behaviour was rare in individuals with no mental disorder: 0.9% for suicidal ideation; 0.2% for suicide plan; and 0.1% for suicide attempt.

More specifically, mood disorders, anxiety disorders, eating disorders and substance use disorders were all associated with suicidal ideation: 20.2% of those with a mood disorder, 12.1% of those with an anxiety disorder, 22.9% of those with an eating disorder, 16.7% of those with an alcohol disorder and 28.5% of those with a drug disorder reported suicidal ideation. For individual disorders the percentages reporting ideation ranged from 10.2% (specific phobia) to 40.9% (drug dependence).

These disorders were also associated with the risk of making plans for suicide, with from 4.3% (specific phobia) to 23.2% (drug dependence) of those with these disorders reporting they had made suicide plans. Among those with mood disorders 7.6% reported making plans for suicide while the percentage among those with anxiety disorders was 4.7%. Among those with eating disorders 10.1% reported making suicide plans while 7.6% of those with an alcohol disorder and 16.0% of those with a drug disorder reported making such plans.

The risk of suicide attempt was less common than suicidal ideation or making suicide plans: 3.4% of those with a mood disorder, 1.9% of those with an anxiety disorder, 9.0% of those with an eating disorder, 4.0% of those with a substance use disorder reported making suicide attempts.

Within substance use disorders suicidal behaviours were more common among those with drug disorders than those with alcohol disorders, and among those with dependence rather than those with abuse.

**Table 4.3:** *Mental disorder in past 12 months and risk of suicidal ideation, suicide plan and suicide attempt in past 12 months*

<b>Disorder groups<sup>1</sup></b>	<b>Suicidal ideation % (95% CI)</b>	<b>Suicide plan % (95% CI)</b>	<b>Suicide attempt % (95% CI)</b>
<b>Anxiety disorders</b>			
Any anxiety disorder <sup>2</sup>	12.1 (10.3, 14.2)	4.7 (3.6, 6.2)	1.9 (1.2, 3.0)
<b>Mood disorders</b>			
Any mood disorder	20.2 (17.2, 23.4)	7.6 (5.7, 9.9)	3.4 (2.1, 5.4)
<b>Substance use disorders</b>			
Alcohol abuse	16.5 (12.2, 21.9)	7.6 (4.8, 11.8)	2.3 (1.1, 4.5)
Alcohol dependence	23.5 (16.7, 32.1)	12.1 (7.3, 19.6)	3.8 (1.9, 7.4)
Drug abuse	25.7 (17.5, 35.9)	13.3 (7.8, 21.8)	4.3 (2.2, 8.2)
Drug dependence	40.9 (27.8, 55.4)	23.2 (12.3, 39.5)	11.3 (3.6, 30.2)
Marijuana abuse <sup>3</sup>	24.2 (15.6, 35.5)	12.5 (6.8, 21.9)	4.9 (2.4, 9.8)
Marijuana dependence <sup>3</sup>	38.6 (24.3, 55.2)	19.8 (10.1, 35.3)	6.6 (3.1, 13.6)
Any alcohol disorder	16.7 (12.7, 21.7)	7.6 (5.0, 11.5)	2.5 (1.4, 4.6)
Any drug disorder	28.5 (20.0, 38.8)	16.0 (9.3, 26.1)	7.4 (2.9, 17.5)
Any substance use disorder	18.5 (14.5, 23.3)	9.0 (6.0, 13.2)	4.0 (2.0, 7.8)
<b>Eating disorders</b>			
Any eating disorder <sup>2</sup>	22.9 (12.3, 38.4)	10.1 (4.4, 21.7)	9.0 (3.0, 24.3)
<b>Any disorder<sup>2</sup></b>	11.8 (10.4, 13.5)	4.1 (3.2, 5.1)	1.6 (1.1, 2.4)
<b>No disorder<sup>2</sup></b>	0.9 (0.7, 1.3)	0.2 (0.1, 0.3)	0.1 (0.0, 0.2)
<b>Total</b>	3.2	1.0	0.4

1 DSM-IV CIDI 3.0 disorders, see 1.6.1.

2 Assessed in the subsample who did the long form of the interview, see 1.5.1.

3 Those with marijuana disorder are a subgroup of those with drug use disorder. They may or may not have met criteria for abuse or dependence on other drugs.

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Table 4.3 presents the percentage with suicidal behaviour in people with a disorder. It does not take account of what other disorders some of those individuals may also have experienced. For example, someone with drug dependence in the past 12 months may also have experienced an episode of major depression in that period. In chapter 3, Table 3.1 shows the extent of comorbidity between disorder groups; of those with substance use disorder in the past 12 months, 40.0% also had an anxiety disorder and 29.0% had a mood disorder. Table 3.2 shows the extent of comorbidity between substance use disorders in the past 12 months. For instance 43.1% of those with drug dependence also had alcohol dependence.

Because comorbidity was so common, it is informative to find out how much substance use disorders increased the risk of suicidal behaviours when the co-occurrence of other disorders was taken into account. This was done in two ways, one looking at individual disorders and the second looking at disorder groups. The results are reported in Tables 4.4 and 4.5 using odds ratios. The odds ratio is a relative measure of risk, assessing how much more likely it is that someone exposed to a particular risk factor will develop an outcome (in this case, suicidal ideation, suicide plan or suicide attempt) compared with someone who is not exposed.

In the first type of analysis, all 15 disorders were used together to predict the risk of suicide (16 disorders were assessed but there were too few cases with anorexia to include that disorder). Although everywhere else in this report 12-month substance abuse is reported whether or not people also had symptoms of dependence, for this analysis a different split is used: abuse alone (ie, without dependence symptoms in the past 12 months) and dependence (whether or not symptoms of abuse were present). The majority of those with dependence also reported symptoms of abuse (79.9% for alcohol disorder, 69.0% for drug disorder). The split used in Table 4.4 is better suited for analyses that try to separate out the impact of different disorders. Marijuana disorders are a subgroup within drug disorders and are not dealt with separately in this analysis. To provide context, Table 4.4 includes results for major depression, the individual disorder with the highest odds ratios. This finding for major depression is consistent with previous work (Beautrais et al., 2005). Results are not reported for suicide attempts because there were too few attempts for an analysis with 15 predictors.

The odds ratios in Table 4.4 indicate that people with abuse of or dependence on alcohol or drugs were at higher risk of suicidal ideation and suicide plan even taking account of all other comorbid disorders. The odds ratios ranged from 2.3 to 5.8 and all were significant, especially drug dependence ( $p \leq .0009$ ), except for the risk of suicidal ideation in those with drug abuse without dependence ( $p = .17$ ). The risk seen for abuse in Table 4.3 was not entirely due to the inclusion of those with concurrent dependence.

**Table 4.4:** Odds ratios (ORs) for suicidal ideation and suicide plan in the past 12 months for major depressive disorder and substance use disorders

Disorder groups <sup>1</sup>	Suicidal ideation OR <sup>3,4</sup> (95% CI)	Suicide plan OR <sup>3,4</sup> (95% CI)
Major depressive disorder <sup>2</sup>	7.2 (4.9, 10.8)	7.2 (3.7, 14.0)
<b>Substance use disorders</b>		
Alcohol abuse without dependence	2.5 (1.2, 5.4)	4.2 (1.5, 11.7)
Alcohol dependence	2.4 (1.3, 4.7)	3.5 (1.6, 7.7)
Drug abuse without dependence	2.3 (0.7, 7.2)	2.9 (1.0, 8.4)
Drug dependence	4.9 (2.2, 11.3)	5.8 (2.0, 16.2)

1 DSM-IV CIDI 3.0 disorders, see 1.6.1.

2 Major depressive disorder excludes anyone who has ever met criteria for mania or hypomania.

3 Assessed in the subsample who did the long form of the interview, see 1.5.1.

4 OR adjusted for all 14 other disorders in the model. Disorders not shown above are panic disorder, agoraphobia without panic, specific phobia, social phobia, generalised anxiety disorder, post-traumatic stress disorder, obsessive–compulsive disorder, dysthymia and bipolar disorder.

The second type of analysis taking account of comorbidity involved disorder groups, rather than individual disorders. With only four disorder groups (anxiety, mood, substance use and eating), it was possible to look at suicide attempts, as well as suicidal ideation and plans (see Table 4.5). Again substance use disorders were strong predictors of suicidal behaviour (odds ratios from 3.8 to 5.4,  $p < .0001$ ), even taking account of all other disorder groups. Comorbidity cannot account for the observed association between substance use disorder and suicidal behaviour.

**Table 4.5:** Odds ratios (ORs) for suicidal ideation and suicide plan in the past 12 months for disorder groups

Disorder groups <sup>1</sup>	Suicidal ideation OR <sup>2,3</sup> (95% CI)	Suicide plan OR <sup>2,3</sup> (95% CI)	Suicide attempt OR <sup>2,3</sup> (95% CI)
Any anxiety disorder <sup>2</sup>	4.0 (2.8, 5.5)	6.0 (3.6, 10.2)	3.8 (1.9, 7.6)
Any mood disorder	7.0 (5.0, 9.7)	7.3 (4.6, 11.7)	8.6 (4.3, 17.0)
Any substance use disorder	3.8 (2.6, 5.7)	5.4 (3.1, 9.2)	4.8 (1.9, 12.1)
Any eating disorder	2.2 (0.7, 6.5)	1.9 (0.6, 6.5)	4.7 (1.0, 23.1)

1 DSM-IV CIDI 3.0 disorders, see 1.6.1.

2 Assessed in the subsample who did the long form of the interview, see 1.5.1.

3 OR adjusted for all other disorder groups.

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The final set of analyses looking at the impact of mental disorders also took account of sociodemographic correlates, namely age, sex, education and equivalised household income, and ethnicity. These correlates are related to suicidal behaviour in this survey and they are also related to substance use disorder (see 2.3).

Table 4.1 shows that females were more likely to experience suicidal ideation. The prevalence of ideation, plans and attempts declined steadily with age. Across the age groups of 16–24, 25–44, 45–64, and 65 and over, the prevalences were 6.6%, 3.6%, 2.1% and 0.8% for suicidal ideation, 2.0%, 1.2%, 0.5% and 0.3% for suicide plans and 1.3%, 0.4%, 0.1% and 0.1% for suicide attempt. Suicidal ideation was more common in those with less education (see 1.6.9): 4.3%, 3.4%, 2.6%. All three suicidal behaviours were more than twice as common in the lowest income group as in the highest income group (see 1.6.9). Māori and Pacific people had higher prevalences of suicidal behaviours than Others: suicidal ideation (Māori, 5.4%; Pacific, 4.5%; Other, 2.8%); suicide plan (Māori, 1.8%; Pacific, 2.6%; Other, 0.8%); suicide attempt (Māori, 1.1%; Pacific, 1.2%; Other, 3.0%). A fuller report of the relationship of these correlates to suicidal behaviour is given in Beautrais et al. (2006) and Beautrais (2006).

With so many correlates it was not possible to include eating disorders in the full sequence of adjustment analyses because these disorders were so uncommon in the past 12 months (0.5%). As can be seen by comparing results from Tables 4.5 and 4.6, the odds ratios for substance use disorders were little affected by the inclusion or exclusion of eating disorder.

**Table 4.6:** Odds ratios (ORs) for suicidal ideation and suicide plan in the past 12 months for substance use disorders

Adjustment	Suicidal ideation OR <sup>2,3</sup> (95% CI)	Suicide plan OR <sup>2,3</sup> (95% CI)	Suicide attempt OR <sup>2,3</sup> (95% CI)
Adjusted for any anxiety or any mood disorder <sup>1</sup>	3.9 (2.6, 5.8)	5.4 (3.2, 9.3)	5.1 (2.1, 12.2)
Adjusted for any anxiety or any mood disorder, <sup>1</sup> age and sex	3.2 (2.1, 4.8)	4.4 (2.6, 7.5)	3.4 (1.4, 7.9)
Adjusted for any anxiety or any mood disorder, <sup>1</sup> age, sex and ethnicity	3.1 (2.1, 4.7)	4.2 (2.5, 7.2)	3.1 (1.3, 7.2)
Adjusted for any anxiety or any mood disorder, <sup>1</sup> age, sex, ethnicity, educational qualifications <sup>3</sup> and equivalised household income <sup>3</sup>	2.9 (1.9, 4.3)	4.1 (2.4, 6.9)	– <sup>4</sup>

1 DSM-IV CIDI 3.0 disorders, see 1.6.1–1.6.3.

2 Assessed in the subsample who did the long form of the interview, see 1.5.1.

3 Sociodemographic correlates are defined in 1.6.9.

4 Unable to be estimated because too many predictors for the number of suicide attempts.

Adjustment for sociodemographic correlates does reduce the odds ratios for substance use disorder indicating that some of the observed risk of suicidal behaviour arose because those with substance use disorders were also young, Māori or Pacific, or had lower levels of education or income. However, even after adjustment for these correlates and sex, substance use disorders were still associated with a three- to four-fold increase in the risk of suicidal behaviours ( $p < .0001$  for suicidal ideation or suicide plan;  $p \leq .01$  for suicide attempt).

## **4.5 HEALTH SERVICES USE**

The extent to which those who reported 12-month suicidal ideation, suicide plan and suicide attempts made visits for mental illness in the past 12 months was explored. While available data do not give precise information about the timing of these visits in relation to suicidal behaviour, or whether the visit was specifically for suicidal behaviour, it is useful to know the fraction of those with suicidal behaviour within the past 12 months who also made visits for mental health reasons, including substance use problems, within the past 12 months.

Almost half of those with a 12-month history of suicidal ideation (42.8%), suicide plan (45.0%) or suicide attempt (44.7%) did not make any mental health visits within the same 12-month period in which they were suicidal. More specifically, of those with suicidal ideation, 16.7% reported that they had made visits to a psychiatrist within the past 12 months, 34.5% had made visits to a psychiatrist and/or another mental health professional, and 53.6% had made visits to any health professional. Of those who made a plan for suicide, 25.8% had made visits to a psychiatrist within the previous 12 months, 41.7% had made visits to a psychiatrist and/or another mental health professional and 54.5% had made visits to any health professional. Of those who made a suicide attempt, 31.5% had made visits to a psychiatrist within the previous 12 months, 45.2% had made visits to a psychiatrist and/or another mental health professional and 53.7% had made visits to any health professional.

These findings of lack of contact with services also applied to those with suicidal behaviours who also had substance use disorder in the past 12 months. Half of those with suicidal ideation and substance use disorder in the past 12 months (48.1%) made no mental health visits in that period. The percentage without contact with any services was 55.2% for those with a suicide plan and 55.1% for those who had made a suicide attempt. It is not possible to tell whether the mental health visits that were made were for suicidal behaviour, substance use disorder or some other problem. What is clear is that around half did not make any contact.

## **4.6 CONCLUSIONS**

The analyses reported in this chapter have implications for the following major themes relating to the prevalence, correlates and management of suicidal behaviours in New Zealand.

### **4.6.1 Prevalence of suicidal behaviours**

Suicidal ideation was common, with 15.7% of participants acknowledging a lifetime history of suicidal ideation. In comparison, lifetime rates of suicide plans (5.5%) and attempts (4.5%) were lower. Reports of suicidal behaviours were more common among the young and decreased with increasing age. Lifetime rates of suicidal behaviours were consistently significantly higher in females than males. Suicidal behaviours are thus a problem for both sexes: while males are more likely to die by suicide, suicidal morbidity is dominated by females (Ministry of Health, 2005a).

The findings in this survey are broadly consistent with estimates of suicidal ideation and suicide attempt obtained in previous New Zealand studies (Beautrais, 2001; Fergusson et al., 2000; Nada-Raja et al., 2004; Weissman et al., 1993; Weissman et al., 1999), with the exception of the findings from the National Secondary School Youth Health Survey (Adolescent Health Research Group, 2003), which reported rates of suicidal behaviour in the year before interview that were higher than the findings from other New Zealand studies. The findings from this survey are also consistent with findings from national surveys conducted in comparable OECD

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countries. These studies have reported lifetime rates of suicidal ideation ranging from 11.3% to 16.5% and of suicide attempt ranging from 3.1% to 4.9% (Kessler, Borges, & Walters, 1999; Pirkis, Burgess, & Dunt, 2000; Weissman et al., 1999), and 12-month rates of ideation ranging from 3.3% to 3.4% and of attempt ranging from 0.4% to 0.6% (Kessler, Berglund, Borges, Nock, & Wang, 2005; Pirkis et al., 2000).

It should be noted that the observed prevalences for suicidal behaviours are likely to be underestimates, because of participant reluctance to admit to stigmatised suicidal behaviours or because of non-participation in the survey. It is also likely that the observations of decreasing suicidal behaviours with increasing age may reflect, in part, recall bias or forgetting, and that, with age, historical events become overlaid with more recent life experiences. However, these limitations are likely to apply to a similar degree to comparable surveys.

### **4.6.2 Mental disorders and suicidal behaviours**

Individuals with mental disorder had elevated rates of suicidal behaviour, with 11.8% of those with any disorder reporting suicidal ideation, 4.1% making a suicide plan and 1.7% making a suicide attempt. Mood disorders, anxiety disorders, eating disorders, and alcohol, drug and substance use disorders were all associated with increased rates of suicidal ideation, suicide plan and suicide attempt, with major depressive disorder having the strongest association with each type of suicidal behaviour. Nonetheless substance use disorders were associated with a three- to four-fold increase in the risk of suicidal behaviours, even after taking account of other mental disorders, age, sex, education and equivalised household income.

These findings confirm the association between mental disorders and the risk of suicidal behaviours found in extensive New Zealand and international research. This body of evidence suggests substance use disorders along with other mental disorders, particularly depressive disorders, are consistent and moderately strong risk factors for suicidal behaviour (Beautrais et al., 2005; Collings & Beautrais, 2005; Goldsmith et al., 2002; Hawton & van Heeringen, 2000).

### **4.6.3 Visits made to health professionals for suicidal behaviours**

Almost half of those who reported suicidal behaviours within the 12 months before interview made no visits to specialist mental health professionals or other health professionals in that period. In particular, less than one-third (31.5%) of those who attempted suicide received treatment from a psychiatrist.

In this survey we collected very limited data on the temporal links between suicidal behaviours and visits to health professionals, limited data on type of treatment received during visits to health professionals, and no data on the quality of that treatment. Nevertheless, the findings from our survey are generally consistent with New Zealand and international research that suggests a substantial proportion of people with suicidal behaviours and the mental disorders with which they are associated do not receive treatment. In addition, emerging evidence suggests that, of those who do have treatment contact, only a minority receive adequate treatment (Beautrais et al., 2000; Demyttenaere et al., 2004; Wang et al., 2005b). There are clear and consistent recommendations that patients with substance use disorders, especially alcoholism, who make a suicide attempt or report a suicide plan or ideation should be admitted to hospital and closely monitored to address the immediate risk of suicidal behaviour, and then provided with adequate and long-term treatment, care and support during hospitalisation and discharge (Sher, 2006). The data from the present study suggest that this recommendation is often not met in New Zealand.

## 5 HEALTH SERVICES

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### KEY RESULTS

- A significant unmet need for treatment exists for people with substance use disorders. Of all 12-month cases of substance use disorder, 29.9% had a mental health visit to a healthcare or non-healthcare provider in the past 12 months. Of these 12-month cases, 14.5% had contact with a mental health specialist, 20.0% with a general medical provider, 2.6% within the human services sector and 5.7% with a complementary or alternative medicine provider.
- Treatment contact for any disorder was lower in younger people and Pacific people. People with lower educational attainment and people resident in rural centres or areas had lower rates of visits to the mental health specialty sector. Unmet need for treatment did not vary significantly by socioeconomic status.
- The percentage of those seeking help specifically for their substance use disorder was low for all ethnic groups (12.4% overall) but much lower for Pacific people with substance use disorder (3.9%) than for Māori (11.0%) or for the Other composite ethnic group (13.6%). The differences between Pacific people and Māori and between Pacific people and Others were significant, although those between Māori and Others were not.
- Most people with lifetime substance use disorders eventually made contact if their disorder continued, with proportions making contact being: 85.9% for alcohol abuse disorder, 99.5% for alcohol dependence, 92.1% for drug abuse and 98.0% for drug dependence.
- However, the percentages seeking help at the age of onset were small for all disorders: 8.9% for alcohol abuse disorder, 19.4% for alcohol dependence, 13.0% for drug abuse and 25.2% for drug dependence.
- The median duration of delay until contact was 16 years for alcohol abuse, seven years for alcohol dependence, eight years for drug abuse and three years for drug dependence.
- The most commonly endorsed reasons for delaying seeking help, stopping treatment early, or not seeking help were attitudinal (such as 'I thought the problem would get better by itself').

### 5.1 INTRODUCTION

#### 5.1.1 Government mental health plans

Over the past decade government national mental health plans have emphasised the development of community mental health services, the development of the mental health workforce, strengthening the primary health sector's responsiveness to people with mental health problems, and the coordination of care provision across the health and social service sectors (Minister of Health, 1997, 2005; Ministry of Health, 1994). These plans have also highlighted the need to improve mental health service provision for specific groups in the community, especially Māori, Pacific people, children and young people, and older people. The plans also recognise the importance of reducing the stigma and discrimination associated with mental illness that may act as barriers to people accessing appropriate care for recovery (Ministry of Health, 2001a; Ministry of Health & Alcohol Advisory Council of New Zealand, 2001).

Although the first two national mental health plans focused on the needs of the estimated 3.0% of the adult population who suffer from major mental health problems, the second plan widened the focus of service provision to include the estimated 17% of New Zealanders who experience mild to moderate mental illness (Minister of Health, 2005).

The key goals of these plans have been to (Minister of Health, 1997, pp. 2 and 56; Ministry of Health, 1994, p. 4):

- 'decrease the prevalence of mental illness and mental health problems in the community'
- 'increase the health status of and reduce the impact of mental disorders on consumers, their families, caregivers and the general community'.

#### 5.1.2 Evidence available

The epidemiological evidence used in the national mental health plans has been drawn from the limited information available from New Zealand community surveys and records of inpatient or outpatient contacts within specialist mental health services. The former data are based on regional surveys undertaken more than a decade ago, with very limited participation by Māori and Pacific people. Consequently, the information may no longer be relevant and representative at a national level. The latter data are unlikely to be representative of the extent of need for the whole New Zealand population, as they do not include information about the majority of people with mental disorders who do not have contact with specialist mental health services.

Estimates of psychiatric morbidity and service use have also been based on the results from surveys in Australia, Canada and the United States (US). The population demographics and health service structures in these countries are very different from those in New Zealand and it is uncertain how applicable the results from such overseas studies are to New Zealand.

The Christchurch Psychiatric Epidemiology Study showed that of the participants with a Diagnostic Interview Schedule (DIS) DSM-III mental disorder during the last six months, only 29% had visited a health service or professional for a mental health consultation, although 75% had sought health care, over that period. (See 1.6.1 for an explanation of the *Diagnostic and statistical manual of mental disorders* (DSM).)

Mental health consultations were more commonly reported with general practitioners than mental health specialists, who saw only 7.0% of those with recent disorder. Only 5.0% of the participants had ever had an inpatient admission for mental health reasons. Of participants with a DSM-III disorder in the previous six months, 10% had ever been admitted for mental health reasons.

This study showed that for those who at some point in their lives had not sought help even though they or others had considered it necessary, attitudinal reasons were more important than practical concerns such as finance, time or access to care (Hornblow, Bushnell, Wells, Joyce, & Oakley Browne, 1990).

The findings from the Christchurch Psychiatric Epidemiology Study were similar to those in the multicentre US Epidemiologic Catchment Area Study (ECA) (see 1.2.1), where only 19% of participants with an active disorder had inpatient treatment in the past 12 months or an outpatient consultation in the past six months (Narrow, Regier, Rae, Manderscheid, & Locke, 1993; Regier et al., 1993). A comparison between one ECA site (St Louis) and Christchurch showed that the reasons for not seeking help were almost identical and mainly attitudinal, despite differences in demographics and health services between the two cities (Wells, Robins, Bushnell, Jarosz, & Oakley Browne, 1994).

More recent overseas studies have shown similar patterns to the above studies and provided more detailed information about the unmet need for mental health services. The US National Comorbidity Survey (NCS) (see 1.2.1) found that only 25% of participants with a 12-month DSM-III-R disorder received outpatient treatment in the 12 months before interview (Kessler, Zhao et al., 1999).

In the Australian National Survey of Mental Health and Well-being (see 1.2.1), only 35% of people with an International Classification of Diseases (revision 10) mental disorder in the 12 months before the survey had consulted someone for a mental problem during that year, although most had seen a general practitioner (Andrews et al., 2001).

The European Study of the Epidemiology of Mental Disorders (ESEMED) (see 2.3.6), a community mental health survey conducted in six European nations, obtained information from the participants about mental health visits and the type of treatment received. It was found that of the participants with a 12-month DSM-IV disorder, 25.7% had consulted formal health services during that period, and of these 21.2% had received no treatment (Alonso et al., 2004b).

The NCS was replicated (NCS-R) one decade after the first NCS (see 1.2.1). It showed that of 12-month DSM-IV cases, 41.1% received some treatment in the past 12 months. Of these, 12.3% were treated by a psychiatrist, 16.0% by a general medical services provider, 8.1% by a human services provider and 6.8% by a complementary or alternative medicine (CAM) provider. This study found that the unmet need for treatment was greatest in older people, people from racial-ethnic minority groups, people with low incomes, people without health insurance, and people resident in rural areas (Wang et al., 2005b). The pattern seems consistent across mental health surveys from several countries: only a minority of people with recent mental disorder have a consultation about, or receive treatment for, that disorder, and unmet need seems greatest in the groups traditionally under-served with respect to health resources.

The NCS showed that, although the age of onset for many disorders is in late childhood, the teenage years or young adulthood, a substantial delay often occurs before the person receives

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treatment (Kessler, Olfson, & Berglund, 1998). The US findings were very similar to those of the Ontario Health Survey, despite the differences in health service systems in the US and Canada (Olfson, Kessler, Berglund, & Lin, 1998).

The NCS-R also revealed delay among those with lifetime disorders, with treatment contact delays ranging from 6 to 8 years for mood disorders and from 9 to 23 years for anxiety disorders. Thus, in the US, the pattern of treatment delay after the onset of mental disorder persisted despite significant changes in the organisation and financing of mental health care; the availability of evidence-based therapies; and public attitudes to, and awareness of, mental health problems.

### **5.1.3 New Zealand mental health initiatives since mid 1990s**

Since the mid 1990s in New Zealand, several important initiatives have been introduced to improve the accessibility, effectiveness and appropriateness of mental health services. These initiatives have included the development and implementation of the new mental health plans, the restructuring of general health and mental health services, a real increase in funding for mental health services, the development of the mental health workforce, the implementation of clinical practice guidelines for specialist mental health and primary health sectors, and a nationwide public awareness campaign about mental health (Mental Health Commission, 1998, 1999, 2002a, 2004).

### **5.1.4 Uses of data from survey**

The data from Te Rau Hinengaro: The New Zealand Mental Health Survey may be used to:

- describe the current situation
- provide baseline data for the second National Mental Health Plan
- inform the development of further mental health initiatives.

Importantly, the survey provides community data for the first time for Māori and Pacific people, for whom indirect data suggest access to appropriate treatments and services may be problematic.

### **5.1.5 Categorisation of health and non-health services**

In the interview, all participants were asked:

Did you ever in your lifetime go to see any of the professionals on this list for problems with your emotions, nerves, mental health or your use of alcohol or drugs?

A list of treatment providers was then presented to the participant to aide recall. This list included:

- a psychiatrist
- a general practitioner or family physician
- any other medical doctor such as a cardiologist, urologist or gynaecologist
- a psychologist
- a social worker, youth aid worker, child welfare officer, school counsellor or teacher
- a counsellor other than a school counsellor

- any other mental health professional such as a psychotherapist or psychiatric nurse
- a general nurse, occupational therapist or other health professional
- a religious or spiritual advisor like a minister, priest or tohunga
- any other healer, like a herbalist, homeopath, naturopath, chiropractor, spiritualist or traditional healer.

The participants were also asked about their use of support groups, self-help groups and mental health crisis helplines, and admissions to hospitals and other facilities. Separate questions were then asked of those participants who had contact for a mental health problem about each care or service provider. These questions included the age at first contact and age at most recent contact. The number and duration of visits in the past 12 months were also obtained. For those participants who were admitted overnight, each day of admission was assumed to include a visit with a psychiatrist. Participants who had received care were asked to rate their satisfaction with, and the perceived helpfulness of, the care received.

The data on contacts within the past 12 months were categorised into four groups:

- the mental health specialist sector, which includes psychiatrist and non-psychiatrist mental health specialists (psychiatrist, psychologist or other non-psychiatrist mental health professional; social worker or counsellor in a mental health specialty setting; use of a mental health helpline; or overnight admissions for mental health or drug or alcohol problems, with a presumption of daily contact with a psychiatrist)
- the general medical sector (general practitioner, other medical doctor, nurse, occupational therapist or any healthcare professional)
- the human services sector (religious or spiritual advisor or social worker or counsellor in any setting other than a specialty mental health setting)
- the CAM sector (any other type of healer such as a herbalist or homeopath, participation in an internet support group, or participation in a self-help group).

The mental health specialist sector and general medical sector were then combined into the healthcare sector. The human services sector and CAM sector were combined into the non-healthcare sector.

### 5.1.6 Content of chapter

This chapter provides information on the patterns of 12-month mental health treatment in New Zealand across the four service sectors: mental health specialist service, general medical, human services and CAM sectors. As described above, these four service sectors are further grouped into a healthcare sector and a non-healthcare sector.

Data are presented on:

- the percentage of participants treated in the four service sectors (see 5.2)
- sociodemographic correlates of mental health treatment (see 5.3)
- the proportions of treatment contacts in the year of disorder onset and median duration of delay among cases that subsequently made treatment contact (see 5.4).
- participants' reasons for delaying seeking help, stopping treatment early and not seeking help (see 5.5).

## **5.2 PROBABILITY OF 12-MONTH USE OF MENTAL HEALTH SERVICES**

In this survey, 4.9% (4.5, 5.4) of the population had ever been admitted overnight to a hospital or other facility to receive help for a mental health or substance use problem. Of people with any DSM-IV mental disorder in the past 12 months, 1.8% (1.3, 2.6) had been admitted within that period.

### **5.2.1 Use of services by people with a diagnosed disorder, by sector**

Table 5.1 presents 12-month mental health service use in separate sectors for people with substance use disorders, any disorder and the total population. The visits reported in the table are for any mental health problems or for problems with alcohol or drugs, which makes them all mental health visits regardless of the sector in which they occurred. The percentage of participants with a disorder who visited one of the four sectors for a mental health reason (ie, 'had a mental health visit') was low. Of all people who met criteria for a substance use disorder within the past 12 months, 14.5% had a mental health visit to a mental health specialist (ie, a visit within the mental health sector) and 27.3% had a mental health visit within the health sector. Within the mental health and health sectors, 6.9% had visited a psychiatrist, 12.0% visited another mental health specialist and 20.0% visited another health practitioner. Of 12-month cases, 7.5% had a mental health visit to the non-healthcare sector (human services and CAM sectors); 2.6% had a mental health visit within the human services sector; and 5.7% had a mental health visit to a CAM practitioner. Of 12-month cases, 29.9% had at least one mental health visit to a care provider within either the health sector or the non-health sector.

In the general medical sector it is important to note that the majority of visits were with general practitioners. Of the population, 23.2% (21.8, 24.6) stated that they, at some time in their lives, had a mental health visit with a general practitioner. A very small percentage, 1.3% (1.1, 1.5) visited both a general practitioner and another medical practitioner (other than a psychiatrist), and only 0.6% (0.4, 0.8) visited only another medical practitioner. That is, of those in the population who visited a medical practitioner other than a psychiatrist for a mental health problem, 92% visited only a general practitioner.

Because of the structure of the questionnaire, it was not possible to determine what percentage of those visiting the general medical sector in the past 12 months had been seen in primary care. However, the structure of the New Zealand health system (where the general practitioner acts as the gateway to other medical specialists) means it can be reasonably assumed that most of these people did see a general practitioner.

**Table 5.1:** Prevalence of 12-month mental health service use in separate service sectors, by 12-month substance use disorders, any disorder, and total population.

Type of disorder group <sup>3</sup>	Health care % (95% CI)					Non-health care % (95% CI)			Any service use % (95% CI)
	Mental health specialty					Human services	Complementary or alternative medicine <sup>2</sup>	Any non-healthcare provider	
	Psychiatrist	Other mental health specialist	Any mental health specialist	General medical <sup>1</sup>	Any healthcare provider				
Alcohol abuse	5.9 (3.1, 10.1)	10.4 (7.0, 15.0)	13.1 (9.3, 18.1)	17.2 (13.0, 22.6)	24.8 (19.7, 30.6)	2.7 (1.1, 5.5)	4.3 (2.2, 7.3)	6.5 (3.8, 10.3)	25.8 (20.8, 31.5)
Alcohol dependence	7.2 (3.6, 12.7)	18.4 (12.3, 26.5)	21.6 (15.1, 29.9)	24.4 (17.5, 33.0)	35.2 (27.1, 44.4)	2.3 (0.7, 5.2)	7.6 (3.8, 13.3)	9.4 (5.3, 15.1)	36.9 (28.8, 45.8)
Drug abuse	12.3 (6.2, 20.5)	17.8 (11.0, 26.4)	20.8 (14.0, 29.7)	23.4 (15.8, 33.1)	33.2 (24.2, 43.7)	4.5 (1.2, 11.0)	10.1 (5.2, 17.2)	13.9 (7.9, 22.1)	37.7 (28.4, 48.0)
Drug dependence	14.6 (6.0, 28.0)	24.3 (13.7, 37.7)	25.3 (14.6, 38.7)	25.1 (15.4, 37.1)	35.2 (23.8, 48.6)	3.5 (0.8, 9.2)	9.0 (3.8, 17.4)	10.4 (4.9, 18.9)	40.1 (28.3, 53.2)
Marijuana abuse <sup>4</sup>	10.4 (4.0, 21.0)	17.5 (9.7, 28.0)	21.4 (12.7, 32.4)	21.8 (12.9, 33.2)	34.3 (24.1, 46.2)	5.2 (1.3, 13.4)	10.8 (5.2, 19.3)	15.1 (8.0, 24.9)	38.0 (27.6, 49.6)
Marijuana dependence <sup>4</sup>	13.3 (3.3, 32.5)	21.0 (8.9, 38.5)	22.5 (10.1, 39.8)	15.2 (6.8, 27.7)	28.6 (15.0, 45.7)	3.0 (0.4, 10.0)	7.6 (2.5, 16.7)	8.6 (3.2, 17.9)	35.9 (21.7, 52.2)
Any substance use disorder	6.9 (4.5, 10.4)	12.0 (8.9, 16.0)	14.5 (11.1, 18.7)	20.0 (15.9, 24.8)	27.3 (22.6, 32.6)	2.6 (1.3, 4.8)	5.7 (3.5, 8.6)	7.5 (5.2, 10.9)	29.9 (25.1, 35.1)
Any disorder	6.2 (5.0, 7.6)	13.5 (11.9, 15.2)	16.4 (14.7, 18.4)	28.3 (26.2, 30.6)	35.7 (33.4, 38.1)	4.8 (3.9, 6.0)	6.9 (5.7, 8.4)	10.3 (8.8, 12.0)	38.9 (36.5, 41.3)
Total population	1.7 (1.5, 2.0)	4.0 (3.6, 4.5)	4.9 (4.5, 5.5)	9.1 (8.5, 9.7)	11.7 (11.0, 12.4)	1.6 (1.3, 1.9)	2.5 (2.1, 2.8)	3.6 (3.2, 4.1)	13.4 (12.7, 14.2)

- 1 The general medical sector includes nurses and other healthcare professionals as well as doctors.
- 2 Complementary or alternative medicine includes self-help groups.
- 3 DSM-IV CIDI 3.0 disorders.
- 4 Those with marijuana disorder are a subgroup of those with drug use disorder. They may or may not have met criteria for abuse or dependence on other drugs.

### 5.2.2 Use of services by specific substance use disorder

For alcohol abuse and alcohol dependence disorders, the percentages of cases with service contacts are low across all sectors. Of all 12-month cases of alcohol abuse only a quarter (25.8%) reported a mental health visit within the 12 months before the interview. Similarly, for alcohol dependence, the percentages of cases of service contact are low across all sectors, although higher than the rates for alcohol abuse. Of all 12-month cases of alcohol dependence, just over one-third (36.9%) reported a mental health visit in the 12 months before the interview.

People with drug abuse or drug dependence are more likely to have a mental health visit than people with alcohol abuse or dependence. However, the percentages of cases with contact remain low across all sectors. Of all 12-month cases of drug abuse disorder, just over one-third (37.7%) reported a mental health visit within the 12 months before the interview. Of all 12-month cases of drug dependence, 40.1% reported a mental health visit within the 12 months before the interview.

People with 12-month marijuana disorders are a subgroup of those with drug disorders. Table 2.2 shows that over 70% of those with drug abuse or drug dependence had marijuana abuse or marijuana dependence, respectively. Therefore, the results for service use by those with marijuana disorders would be expected to be similar to those for drug abuse or dependence, as they are. Of all 12-month cases of marijuana abuse disorder, 38.0% reported a mental health

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visit within the 12 months before the interview. Of all 12-month cases of marijuana dependence, 35.9% reported a mental health visit within the 12 months before the interview.

Across all specific substance use disorders, only between a quarter and a third of 12-month cases have had service contact in the 12-month period before the interview. The percentages of cases (between approximately 25% and 35%) with contact with the health care sector are higher than the percentages of cases (between approximately 6% and 15%) with contacts in the non-health care sector.

### **5.3 SOCIODEMOGRAPHIC CORRELATES OF 12-MONTH TREATMENT CONTACT**

Table 5.2 presents the demographic correlates of 12-month service use by people with any disorder in the past 12 months. Individual-level correlates are sex, age group, educational qualifications and equivalised household income. In addition, three community-level sociodemographic correlates were examined: the small area measure of socioeconomic deprivation; the New Zealand Index of Deprivation 2001 (NZDep2001); the geographic region of place of residence; and urbanicity/rurality.

Table 5.3 presents the prevalences of 12-month service use by ethnicity for those with a 12-month disorder. The prevalences presented are unadjusted, adjusted for age and sex, and adjusted for age, sex, educational qualification and equivalised household income (see 1.6.9 and Wells, McGee et al., 2006, section 12.10.2).

Both Tables 5.2 and 5.3 present the percentages of those participants who met criteria for a mental disorder within the past 12 months who had:

- visited a professional in either the healthcare sector or non-healthcare sector ('any visit')
- had any visit and had visited a professional in the healthcare sector ('any healthcare visit')
- had any healthcare sector visit and had visited a mental health professional in the specialty mental health sector visit ('any mental health specialty visit').

Other tables such as Table 5.1 present the absolute percentages of participants who made a particular type of visit. Tables 5.2 and 5.3 provide a different perspective. As per the definitions above, Tables 5.2 and 5.3 present a series of conditional percentages. For example, for those with any 12-month disorder, 38.9% made a mental health visit to any sector in the past 12 months. Of these people with any visit, 91.8% had made a visit to the healthcare sector. Of those who made a healthcare visit, 46.0% had made a visit to the mental health speciality sector. These proportions in Table 5.2 can be calculated from Table 5.1 but presenting them explicitly makes it clearer where differences in access occur. It is evident that the majority of people who made mental health visits contacted the healthcare sector, not just the human services sector or CAM sector. Of those with a mental health visit in the health sector, just under half were seen by a mental health practitioner.

Table 5.2 shows that the youngest age group (16–24 years) was less likely than other age groups to have any visit for a mental health reason ( $p = .03$ ). However, among those in this age group who did have a mental health visit, there appears to be no difference compared with other age groups in the rates of healthcare sector visit or mental health speciality sector visits.

Males had lower rates of any mental health visits than females ( $p < .0001$ ), but higher rates of any healthcare sector visits ( $p = .007$ ). The rates of mental health specialty visits for males are marginally higher than those for females, but the difference is not statistically significantly different ( $p = .08$ ). This suggests females make greater use of the non-healthcare sector for mental health visits than males.

Participants with lower educational achievement had lower rates of any visit for a mental health reason and any healthcare sector visit, and lower rates of mental health specialty sector visits compared with participants with higher educational achievement. However, this is statistically significant only for any mental health specialty visit ( $p = .03$ ).

There were no clear patterns of differences in rates of visits by equivalised household income or the small area measure of socioeconomic deprivation (NZDep2001).

Participants who were resident in secondary or minor centres had higher rates of healthcare sector consultation ( $p = .03$ ) compared with participants in the main urban centres or other (rural) areas. Participants resident in secondary, minor and other (rural) areas had lower rates of mental health specialty sector visits compared with participants in the main urban centres ( $p = .01$ ). Participants resident in rural centres and areas had the second lowest rate of healthcare sector consultation and the lowest rates of mental health specialty sector visits. There are no differences in rates of visit by region.

**Table 5.2:** Sociodemographic correlates of 12-month service use in people with 12-month mental disorder (including substance use disorders)<sup>1</sup>

Correlate <sup>2</sup>	Any visit for mental health reason % (95% CI)	Any healthcare sector visit among patients with any visit % (95% CI)	Any mental health specialty sector visit among patients with healthcare sector visit % (95% CI)
<b>Individual characteristics</b>			
Sex			
Male	32.4 (28.5, 36.5)	95.3 (91.6, 97.4)	51.4 (43.8, 58.9)
Female	43.2 (40.2, 46.2)	90.0 (87.2, 92.3)	43.2 (38.6, 48.0)
Age group (years)			
16–24	32.1 (26.7, 38.0)	91.6 (84.0, 95.8)	51.9 (40.1, 63.6)
25–44	39.5 (36.1, 43.1)	91.1 (88.1, 93.4)	48.2 (42.6, 53.8)
45–64	43.0 (38.6, 47.5)	91.6 (86.9, 94.8)	39.7 (33.2, 46.7)
65 and over	42.0 (31.9, 52.8)	98.9 (92.2, 99.8)	39.4 (19.6, 62.1)

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<b>Correlate<sup>2</sup></b>	<b>Any visit for mental health reason % (95% CI)</b>	<b>Any healthcare sector visit among patients with any visit % (95% CI)</b>	<b>Any mental health specialty sector visit among patients with healthcare sector visit % (95% CI)</b>
<b>Educational qualifications</b>			
None	35.1 (30.6, 39.8)	95.3 (91.4, 97.4)	37.5 (30.1, 45.5)
School or post-school only	38.2 (34.5, 42.1)	89.7 (85.5, 92.9)	44.5 (38.0, 51.2)
Both school and post-school	41.5 (37.6, 45.5)	92.2 (88.8, 94.6)	51.0 (44.7, 57.3)
<b>Equivalent household income</b>			
Under half of median	40.8 (36.8, 44.9)	91.3 (86.8, 94.3)	47.3 (40.2, 54.6)
Half median to median	40.5 (36.3, 44.8)	90.2 (85.7, 93.4)	46.7 (39.3, 54.3)
Median to one and a half times median	35.8 (30.6, 41.4)	91.7 (86.2, 95.1)	41.9 (33.5, 50.8)
One and a half times median and over	37.7 (32.6, 43.2)	94.7 (89.3, 97.5)	47.3 (38.1, 56.7)
<b>Area characteristics</b>			
<b>NZDep2001 deciles</b>			
9 and 10 (most deprived)	36.8 (31.0, 43.0)	92.0 (84.6, 96.0)	46.6 (36.6, 56.9)
7 and 8	43.9 (38.5, 49.4)	92.6 (86.4, 96.1)	43.9 (34.5, 53.7)
5 and 6	38.5 (33.5, 43.7)	90.1 (84.7, 93.7)	52.9 (44.9, 60.8)
3 and 4	39.0 (33.2, 45.0)	92.0 (87.2, 95.1)	38.3 (30.3, 47.1)
1 and 2 (least deprived)	36.7 (32.3, 41.4)	92.5 (88.3, 95.2)	47.8 (40.1, 55.6)
<b>Urbanicity</b>			
Main	38.4 (35.6, 41.3)	91.1 (88.5, 93.2)	49.3 (44.6, 54.0)
Secondary	43.2 (34.3, 52.6)	93.5 (80.7, 98.0)	36.6 (23.8, 51.1)
Minor	39.2 (32.2, 46.6)	97.1 (93.1, 98.8)	41.4 (31.1, 52.6)
Other (rural)	40.6 (34.0, 47.6)	91.7 (84.0, 95.8)	31.6 (21.7, 42.9)
<b>Region</b>			
North	37.9 (33.6, 42.5)	90.3 (86.1, 93.4)	51.1 (44.1, 58.1)
Midland	38.2 (33.4, 43.3)	93.3 (88.9, 96.0)	38.9 (31.2, 47.2)
Central	36.3 (31.1, 41.8)	94.0 (89.4, 96.7)	40.9 (32.6, 49.9)
South	42.6 (38.4, 46.9)	91.2 (86.2, 94.5)	47.8 (40.3, 55.4)
<b>Percentage getting treatment overall</b>	<b>38.9 (36.5, 41.3)</b>	<b>91.8 (89.6, 93.5)</b>	<b>46.0 (42.0, 50.0)</b>

1 DSM-IV CIDI 3.0 disorders, see 1.6.1 and 1.6.3.

2 Sociodemographic correlates are defined in 1.6.9.

Table 5.3 presents the same description of mental health visits among participants with a 12-month diagnosis, by ethnicity. The ethnicity data are presented unadjusted, adjusted for age and sex, and adjusted for age, sex, education and household income (see chapter 1 and Wells, McGee et al., 2006).

For people with any 12-month disorder, the Other composite ethnic group (41.1%) was the ethnic group most likely to make treatment contact in that period with any treatment sector, followed by Māori (32.5%) with Pacific people being the least likely (25.4%). These ethnic differences in making treatment contact cannot be explained by a lower prevalence of mood disorder for Pacific people as the same pattern for service use was seen for anxiety disorders and for mood disorders (Oakley Browne & Wells, 2006a, section 8.5). However, for people with substance use disorders there was no significant difference across the ethnic groups in the percentage who made treatment contact: 35.7% (24.0, 49.4) for Pacific people; 27.8% (21.6, 35.0) for Māori; and 30.2% (23.6, 37.7) for Others. This finding for people with substance use disorder is for any treatment contact, for any mental health reason including alcohol or drug problems.

**Table 5.3:** *Ethnicity and 12-month service use in people with 12-month disorder<sup>1</sup>*

	Any visit for mental health reason % (95% CI)	Any healthcare sector visit among patients with any visit % (95% CI)	Any mental health specialty sector visit among patients with healthcare sector visit % (95% CI)
<b>Unadjusted</b>			
Māori	32.5 (28.3, 36.7)	90.3 (86.7, 93.8)	49.8 (41.5, 58.1)
Pacific	25.4 (19.4, 31.4)	87.7 (81.2, 94.2)	41.6 (26.7, 56.5)
Other	41.1 (38.1, 44.1)	92.2 (89.9, 94.5)	45.6 (41.0, 50.2)
<b>Adjusted for age and sex</b>			
Māori	32.9 (28.7, 37.2)	90.8 (87.4, 94.2)	49.1 (40.7, 57.5)
Pacific	26.1 (20.0, 32.2)	88.0 (81.5, 94.4)	39.8 (24.8, 54.7)
Other	41.0 (38.0, 43.9)	92.1 (89.8, 94.4)	45.8 (41.2, 50.3)
<b>Adjusted for age, sex, educational qualification, equivalised household income<sup>2</sup></b>			
Māori	32.6 (28.0, 37.1)	90.1 (86.3, 94.0)	51.2 (42.2, 60.1)
Pacific	25.3 (19.3, 31.3)	88.8 (82.5, 95.2)	40.3 (25.2, 55.3)

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	Any visit for mental health reason % (95% CI)	Any healthcare sector visit among patients with any visit % (95% CI)	Any mental health specialty sector visit among patients with healthcare sector visit % (95% CI)
Other	41.1 (38.1, 44.1)	92.2 (89.9, 94.4)	45.4 (40.9, 50.0)

1 DSM-IV CIDI 3.0, see 1.6.1 and 1.6.3.

2 Sociodemographic correlates are defined in 1.6.9.

A different picture is seen for contact specifically for substance use disorder, which was asked about at the end of the substance use diagnostic section of the interview. Contact includes talking with any professional, visiting an outpatient alcohol or drug service, or attending a self-help group. The percentage of those seeking help specifically for their substance use disorder was low for all ethnic groups (12.4% overall) but much lower for Pacific people with substance use disorder (3.9%: 0.8, 7.0) than for Māori (11.7%: 6.7, 16.8) or for Others (13.6%: 8.3, 18.8) with substance use disorder. The differences between Pacific people and Māori and between Pacific people and Others were significant ( $p = .009$ ,  $p = .002$ ), although those between Māori and Others were not ( $p = .63$ ). Taking account of whether people had alcohol disorder, drug disorder or both altered this pattern very little with adjusted percentages for Pacific people of 4.2%, for Māori of 11.0% and for Others of 13.9% (Pacific compared with Māori,  $p = .02$ ; Pacific compared with Others,  $p = .002$ ; Māori compared with Others,  $p = .43$ ).

These analyses do not explain why Pacific people with substance use disorders are as likely as Māori and Others with substance use disorder to make some treatment contact but are much less likely to seek help for their substance use problems.

There is some similarity between these results and those for access to general practitioners as reported from the 2002/03 New Zealand Health Survey (Ministry of Health, 2004a, 2004b). Māori males were less likely than Other males to have visited a general practitioner in the past 12 months. For males, unmet need for a general practitioner was most likely to be reported by Pacific people, followed by Māori, with the least unmet need reported by Others, although these differences were not significant. Māori females were particularly likely to report an unmet need for a general practitioner.

## 5.4 CUMULATIVE LIFETIME PROBABILITIES OF TREATMENT CONTACT

Survival curves were used to estimate the percentage of DSM-IV CIDI 3.0 cases that would eventually make treatment contact for each disorder assessed (Wells, McGee et al., 2006, section 12.10.3). These cumulative lifetime probabilities of treatment contact are presented in Table 5.4. The table reports the:

- percentage with a lifetime diagnosis of specific substance use disorder who ever made treatment contact at the age of onset of that disorder (ie, the reported age of onset equalled the reported age of first treatment contact)
- percentage with a lifetime diagnosis of specific substance use disorder who will ever make treatment contact if their disorder continues
- median duration of delay to first treatment contact, reported in years.

For alcohol and drug abuse, the percentages making contact at the age of onset were low: 8.9% for alcohol abuse and 13.0% for drug abuse. Of all participants with alcohol abuse, 85.9% eventually made treatment contact if disorder continued, but the median duration of delay was 16 years. For drug abuse, 92.1% eventually made treatment contact and the median treatment delay was eight years.

Similar patterns were found for alcohol dependence and drug dependence. Only 19.4% of participants with alcohol dependence and 25.2% with drug dependence made contact at the age of onset. The majority of people with these disorders did eventually make treatment contact if their disorder continued: 99.5% of those with alcohol dependence and 98.0% of those with drug dependence. The median durations of delay were seven years for alcohol dependence and three years for drug dependence.

**Table 5.4:** *Percentage who made treatment contact and median duration of delay among cases of substance use disorder<sup>1</sup> who would ever make treatment contact*

Specific substance use disorders	Percentage making treatment contact at age of onset %	Percentage estimated to ever make treatment contact <sup>2</sup> %	Median duration of delay <sup>2</sup> years
Alcohol abuse	8.9	85.9	16.0
Alcohol dependence	19.4	99.5	7.0
Drug abuse	13.0	92.1	8.0
Drug dependence	25.2	98.0	3.0

1 DSM-IV CIDI 3.0 disorders, see 1.6.1–1.6.3.

2 Projections based on time-to-contact survival analyses, see Wells, McGee, & Oakley Browne (2006, section 12.10.3).

3 Assessed in the subsample who did the long form of the interview, see 1.5.1.

## 5.5 REASONS FOR DELAYING SEEKING HELP, STOPPING TREATMENT OR NOT SEEKING HELP IN THE PAST 12 MONTHS

Some participants who did make treatment contact in the past 12 months acknowledged that they delayed seeking help for their mental health problems and problems with alcohol and other drugs). These participants were told:

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I'm going to read a list of reasons why people delay seeking help and ask you to say 'yes' or 'no' for whether each one was a reason for why you didn't get professional help more quickly than you did.

These participants were then shown a list of 15 possible reasons for their delay in seeking help and asked to endorse any that applied to them. The three most frequently endorsed reasons were:

- 'I wanted to handle the problem on my own' (79.3%)
- 'I thought the problem would get better by itself' (63.2%)
- 'The problem didn't bother me very much at first' (48.9%).

Some participants acknowledged that they had entered treatment and then stopped treatment. They were then told:

You mentioned stopping your treatment before you had finished. I'm going to read a list of reasons and would like you to say 'yes' or 'no' for whether each one was a reason you stopped.

Participants most commonly endorsed the following reasons, from the 16 potential reasons, for stopping treatment:

- 'You got better' (45.8%)
- 'You didn't need help any more' (41.2%)
- 'You wanted to handle the problem on your own' (24.5%).

Some participants acknowledged not seeking help in the past 12 months when they believed they might need to see a professional for mental health reasons (including alcohol or drug problems). These participants were then told:

Here are some reasons people have for not seeking help even when they think they might need it. Please tell me 'yes' or 'no' whether each statement is a reason as to why you did not see a professional.

The most frequently endorsed reasons, from a list of 16 reasons, for not seeking help were:

- 'I wanted to handle the problem on my own' (43.5%)
- 'The problem went away by itself, and I did not really need help' (37.3%)
- 'I thought the problem would get better by itself' (31.8%).

Cost might be expected to be a barrier to care. However, it was not among the top three reasons given in any of the three sets of reasons considered here. Nonetheless, the percentage of people citing costs as a reason was not trivial: 36.7% for delaying seeking help, 20.7% for stopping treatment and 25.9% for not seeking treatment at all.

## 5.6 CONCLUSIONS

The patterns of these findings are broadly consistent with previous New Zealand community studies and overseas studies. Of those participants with a mental disorder within the past 12 months, a large number do not have a mental health visit within the 12 months. However, the majority of lifetime cases do eventually make treatment contact, although the median duration of delay can be long and varies greatly, depending on the disorder. A comparison of people with 12-month disorder across the three ethnic groups shows that Pacific people are least likely to make mental health visits across all service sectors. Ethnicity is related to access to treatment whereas socioeconomic correlates are not.

Some findings may be compared with recent results from similar overseas studies. When comparisons are made with developed countries in the World Mental Health (WMH) Survey Initiative (Demyttenaere et al., 2004) it is evident that, within New Zealand, the rates of mental health visits grouped by severity are very similar. In New Zealand, 60.9% (56.3, 65.4) of participants with any serious disorder had a mental health visit in the past 12 months. This compares with 52.3% (48.5, 56.1) in the US, 53.9 (25.2, 82.5) in Belgium, 63.3% (38.6, 88.1) in France, 49.7% (26.6, 72.8) in Germany, 50.2% (29.5, 70.8) in the Netherlands, and 64.5% (49.2, 79.7) in Spain. Comparisons between New Zealand and the other WMH Survey Initiative developed countries for moderate and mild disorders show the rates are also broadly similar.

As the diagnoses at interview vary among the different WMH Survey Initiative sites, it is best to compare the rates of visits across sectors for the total sample. It should also be remembered that the New Zealand sample included people aged 16 and over, whereas the ESEMeD and NCS-R included people aged 18 and over. The six European sites in the ESEMeD have published rates of visits to formal health services in the past 12 months (Alonso et al., 2004b). In the ESEMeD, rates for the total sample were 6.4%, which is lower than the rate of 11.7% in New Zealand. Examination of the New Zealand rates and those from the NCS-R reveals that the rates were generally lower in New Zealand than in the US. For the total sample, 13.4% had a mental health visit in the past 12 months compared with 17.9% in the US (Wang et al., 2005b). Compared with the US, the rates of visits were lower in New Zealand to the mental health specialty sector (US, 8.8%; New Zealand, 4.9%), general medical provider (US, 9.3%; New Zealand, 9.1%), any healthcare provider (US, 15.3%; New Zealand, 11.7%) and the non-healthcare sector (US, 5.5%; New Zealand, 3.6%).

The New Zealand data on the percentage ever making treatment contact and duration of delays to treatment contact for substance use disorders may be compared with data from the NCS-R (Wang et al., 2005a). There are differences between the New Zealand and NCS-R data for the percentages ever making treatment contact for substance use disorders. For alcohol abuse the percentages are 85.9% for New Zealand and 52.7% for the US. For alcohol dependence the percentages are 98.0% for New Zealand and 69.8% for the US. For drug abuse, the percentages are 92.1% for New Zealand and 57.0% for the US. For drug dependence, the percentages are 98.0% for New Zealand and 76.9% for the US.

Although there are differences between the US and New Zealand in percentages ever making treatment contact, the percentages for people making contact within the 12 months of age of onset are very similar. In New Zealand the percentage for alcohol abuse is 8.9% and in the US 12.4%. For alcohol dependence, the percentages are 19.4% in New Zealand and 20.7% in the US. The percentages for drug abuse are 13.0% in New Zealand and 12.5% in the US. The percentages for drug dependence are 25.2% in New Zealand and 26.5% in the US.

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These findings suggest a significant unmet need for treatment for people with mental disorder and substance use disorders exists in the New Zealand community, as in other comparable developed countries. There are other similarities and differences in other aspects of service use between countries.

## 6 ALCOHOL USE DISORDERS IDENTIFICATION TEST

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### KEY RESULTS

- A fifth of the population (20.0%) drank hazardously in the past 12 months, as assessed by scores on the Alcohol Use Disorders Identification Test (AUDIT).
- Hazardous drinking was more common among males, younger people and people with medium levels of education.
- People with lower equivalised household incomes and people living in more deprived areas were less likely to drink but more likely to drink hazardously if they did drink.
- Māori and the Other composite ethnic group were equally likely to have drunk in the past 12 months (about 80%) but just over half of Pacific people drank in the past 12 months. Even after adjustment for sociodemographic correlates the prevalence of hazardous drinking was higher for Māori drinkers (35.6%) and Pacific drinkers (32.6%) than for Other drinkers (23.4%).
- The AUDIT discriminated very effectively between cases and non-cases for alcohol disorder and for alcohol dependence (area under the curve  $\geq 0.96$ ), but, as intended, also detected other people with hazardous or harmful drinking who did not meet criteria for a DSM-IV alcohol disorder.
- If a cut-point on the AUDIT was to be used to indicate alcohol disorder or dependence then a cut-point higher than the standard cut-point of a score of 8 or more should be used.

### 6.1 INTRODUCTION

When considering the health state of individuals and populations, it is often useful to have continuous measures of ill-health or symptoms, as well as categories of disorder. This is for several related reasons. First, some types of health state are best thought of as points on a continuum, for instance, high blood pressure or high cholesterol. Second, for some disorders it is not possible to demonstrate a clear boundary between states of good health or ill-health (Kendell & Jablensky, 2003; Kendell, 1989). Third, dichotomising into case or non-cases, on the basis of a pre-determined cut-point, leads to a loss of statistical information. Fourth, in population-based public health interventions, it is important to have information on the total distribution of symptoms, as effective interventions may target the whole population, including individuals with mild and moderate levels of symptom, as well as individuals with severe symptom levels

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(Rose, 2001). People with mild or moderate symptom levels may be 'sub-threshold' and not meet criteria for disorder when standard classification systems of disorder are used.

One aim of Te Rau Hinengaro: The New Zealand Mental Health and Wellbeing Survey was to trial short instruments that could be used in repeated generic health surveys to monitor changes in the mental health status of the population. Given the complexity of the Composite International Diagnostic Interview (CIDI) 3.0 (see 1.6.3 and 2006, section 13.4) and the average time taken to complete the questionnaire, it would not be a suitable instrument for such a task. For use as a health surveillance tool, an instrument needs to:

- be quick and simple to administer
- have well-defined psychometric properties
- predict, with acceptable accuracy, the probability that a participant in a health survey has a mental disorder.

The Kessler 10-item scale (K10) is an instrument developed for this task to measure psychological distress. It takes a few minutes to complete, its psychometric properties are now well described (Andrews & Slade, 2001; Furukawa, Kessler, Slade, & Andrews, 2003; Kessler et al., 2002) and it is a very good predictor of the respondent meeting DSM-IV criteria for anxiety and mood disorders (see 1.6.1 about the *Diagnostic and statistical manual of mental disorders* (DSM)). However, it is less effective as a predictor of a substance use disorder. For this reason, the Alcohol Use Disorders Identification Test (AUDIT) was also used in the New Zealand survey. Furthermore the AUDIT had been used in both the 1996/97 and 2002/03 New Zealand Health Surveys (Minister of Health, 1999; Ministry of Health, 2004b) and is being used in the 2006/07 New Zealand Health Survey. Therefore, the Ministry of Health wanted to know the relationship between the AUDIT and diagnoses of alcohol disorders.

This chapter presents the results for the AUDIT. Two sets of relationships are reported.:

- sociodemographic correlates and the AUDIT
- the AUDIT and CIDI-diagnosed disorders.

These results show how the AUDIT varies across groups within New Zealand and how the AUDIT relates to disorder.

## 6.2 ALCOHOL USE DISORDERS IDENTIFICATION TEST

The AUDIT was developed to make early intervention possible by identifying hazardous and harmful drinking. Primary care is the most likely setting for such early intervention so the test development was carried out in a World Health Organization study in primary care settings in six countries (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). Most of the subsequent research using the AUDIT has also been carried out in clinical settings (Allen, Litten, Fertig, & Babor, 1997; Reinert & Allen, 2002). Nonetheless the AUDIT has also been used in epidemiological studies to estimate rates of hazardous and harmful drinking in various populations (Reinert & Allen, 2002) and its test-retest reliability is acceptable in a general population sample (Selin, 2003).

The AUDIT is a 10-item scale (see Appendix A) that assesses three domains: alcohol intake (items 1–3), dependence (items 4–6) and adverse consequences (7–10 items). The questions focus on consumption and problems in the past 12 months. The range of scores per question is

## Alcohol Use Disorders Identification Test

0–4 with totals of 0–40. A longitudinal study of subsequent outcomes indicated that scores of 8 or more indicated a potential alcohol problem (ie, hazardous drinking) and this cut-point has been accepted generally (Reinert & Allen, 2002). Note that a score of 8 can be obtained from the alcohol consumption items alone. Someone who drank six or more drinks twice a week would have a score of 8 made up from the following question scores: Q1 = 3; Q2 = 2; Q3 = 3.

In the two previous New Zealand surveys (Minister of Health, 1999; Ministry of Health, 2004b) and in this survey participants were asked the AUDIT questions only if they had drunk alcohol in the past 12 months. Participants who had not drunk alcohol in the past 12 months were assigned an AUDIT score of zero. To reach the AUDIT questions in this survey, a participant had to have ever drunk 12 or more drinks in a year, been randomised to the AUDIT instead of the CIDI 3.0 consumption questions, and to have drunk alcohol in the past 12 months (see 1.5.1).

Participants who had never drunk 12 drinks or more in a year were not asked about the previous 12 months and were categorised as abstainers.

One-fifth of the population (20.0%) aged 16 and over scored positive for hazardous drinking on the AUDIT. In the short screener section of the interview only 15.1% reported ever experiencing problems with alcohol or drugs and the prevalence of DSM-IV CIDI 3.0 alcohol disorder in the past 12 months was 2.6% for alcohol abuse and 1.3% for alcohol dependence. The AUDIT detects hazardous drinking in addition to problems arising from drinking, not just problems serious enough to result in a DSM-IV diagnosis. This is what it was designed to do.

### 6.3 CORRELATES OF ALCOHOL USE DISORDERS IDENTIFICATION TEST SCORES

#### 6.3.1 Hazardous drinking and sociodemographic correlates

Table 6.1 shows the overall percentage with AUDIT scores for hazardous drinking (ie, a score of 8 or more) by sex, age, educational qualification and equivalised household income. The overall percentage is calculated over drinkers and abstainers combined. It depends on the percentage who were drinkers and the percentage of drinkers with hazardous drinking.

For the overall percentage with hazardous drinking, there were significant differences on all socioeconomic correlates ( $p < .0001$ ) except for income ( $p = .6$ ). Males had more than double the percentage above the cut-point relative to females (28.0% compared with 12.5%). There was a clear and steep gradient with age, from 38.3% of the age group 16–24 above the cut-point to only 4.4% of the age group 65 and over. Those with a middle level of educational qualification had the highest percentage above the cut-point.

The gender difference arose in part because a greater percentage of males had drunk in the past year than females (84.8% compared with 73.7%). However, the major contributor was that males who did drink were nearly twice as likely to be hazardous drinkers than females (33.2% compared with 16.8%). Age groups differed little in the percentage drinking, except for the oldest age group, so the overall percentages with hazardous drinking were dominated by the scores for the drinkers. For education, those without qualifications were less likely to drink, but if they did drink they were as likely to be hazardous drinkers as those with mid-level qualifications. The percentage drinking increased steadily as equivalised household income rose (67.9% to 89.3%), whereas the percentage of hazardous drinkers declined from 32.4% to 22.7%. The pattern of drinking in some groups may account for some of these differences. Surveys of

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drinking behaviour (Casswell, Pledger, & Hooper, 2003; Minister of Health, 1999) have shown that lower socioeconomic groups drink less often than other groups, but tend to drink more heavily when they do drink.

Although the prevalence of hazardous drinking in the population in the past 12 months (20.0%) is much higher than that for alcohol disorder (2.9%), the pattern of results for individual sociodemographic characteristics is similar for both of these outcomes: prevalences are higher for males, younger people and people with less education. However, the prevalence of hazardous drinking does not differ across equivalised income groups whereas the prevalence of alcohol disorder is higher in those with less income.

## Alcohol Use Disorders Identification Test

**Table 6.1:** *Percentage with Alcohol Use Disorders Identification Test (AUDIT) scores for hazardous drinking, by sociodemographic correlates*

Correlate	Percentage with hazardous drinking <sup>1,2</sup> % (95% CI)	Percentage who drank alcohol in past 12 months <sup>3</sup> (drinkers) % (95% CI)	Percentage with hazardous drinking <sup>1,2</sup> among drinkers <sup>3</sup> % (95% CI)
<b>Individual characteristics</b>			
Sex			
Male	28.0 (26.0, 30.2)	84.8 (83.5, 86.0)	33.2 (30.7, 35.7)
Female	12.5 (11.2, 13.9)	73.7 (72.3, 75.1)	16.8 (15.1, 18.7)
Age group (years)			
16–24	38.3 (34.1, 42.8)	78.7 (75.8, 81.3)	48.6 (43.4, 53.9)
25–44	23.3 (21.3, 25.4)	82.3 (80.8, 83.7)	28.2 (25.8, 30.7)
45–64	13.2 (11.5, 15.1)	80.8 (79.2, 82.4)	16.2 (14.2, 18.5)
65 and over	4.4 (3.4, 5.9)	67.4 (65.0, 69.6)	6.7 (5.1, 8.8)
Educational qualifications <sup>4</sup>			
None	20.1 (17.7, 22.7)	71.2 (69.1, 73.3)	28.8 (25.4, 32.5)
School or post-school only	23.5 (21.3, 25.9)	79.8 (78.2, 81.3)	29.4 (26.7, 32.3)
Both school and post-school	17.0 (15.2, 18.9)	81.7 (80.2, 83.1)	20.7 (18.5, 23.0)
Equivalentised household income <sup>4</sup>			
Under half of median	21.6 (18.7, 24.8)	67.9 (65.5, 70.1)	32.4 (28.3, 36.7)
Half median to median	19.5 (17.2, 22.0)	74.1 (72.2, 75.9)	26.1 (23.2, 29.2)
Median to one and a half times median	18.8 (16.4, 21.6)	82.8 (80.9, 84.5)	22.8 (19.8, 26.1)
One and a half times median and over	20.4 (18.1, 22.9)	89.3 (87.9, 90.5)	22.7 (20.2, 25.4)
<b>Total</b>	<b>20.0</b> (18.7, 21.4)	<b>79.0</b> (78.0, 80.0)	<b>25.3</b> (23.6, 27.0)

1 An AUDIT score of 8 or more.

2 Assessed in a random sample of participants, see 1.5.1.

3 Those who had never drunk 12 or more drinks in a year were counted as abstainers for the past 12 months, see 1.5.1.

4 Sociodemographic correlates are defined in 1.6.9.

### 6.3.2 Hazardous drinking and ethnicity

Unadjusted and adjusted prevalences are presented by ethnicity in Table 6.2. Adjustment reduced, but did not eliminate, differences across ethnic groups. With or without adjustment the pattern was for Pacific people to have a much lower prevalence of drinking in the past 12 months than Māori or the Other composite ethnic group (with full adjustment, 55.6% compared with 81.6% and 80.1% respectively;  $p < .0001$ ). However, those Pacific people who did drink had a percentage with hazardous drinking (32.6%) that was close to that for Māori (35.6%) ( $p = .3$ ) and much higher than for Others (23.4%) ( $p = .0002$ ). The net result was that overall percentages for hazardous drinking for Pacific people were close to those for Others and below those for Māori, but this similarity in the overall percentage for Pacific people and Others conceals very different component patterns.

For all three outcomes in Table 6.2 the same pattern of results was seen for all the ethnic groups for educational qualification and equivalised household income. Males were more likely to drink and to drink hazardously than females in all ethnic groups. Nonetheless the pattern seen for the percentage drinking in the past 12 months was as reported in other New Zealand surveys (Huakau et al., 2005; Huakau et al., 2004; Ministry of Health, 2004b) with a larger difference between Pacific males and females than for Māori or Other males and females, although this was not significant when all three groups were compared together ( $p = .1$ ). Among Pacific people, 63.4% of males drank but only 42.0% of females, whereas the percentages were 84.6% and 76.5% for Māori and 85.5% and 75.5% for Others. With increasing age, there was a much steeper decrease in the percentage who had drunk alcohol in the past 12 months for Māori and Pacific people than for Others ( $p < .0001$ ), but this relationship was not seen for the overall prevalence of hazardous drinking ( $p = .2$ ) or the prevalence among drinkers ( $p = .2$ ).

**Table 6.2:** Percentage with Alcohol Use Disorders Identification Test (AUDIT) scores for hazardous drinking, by prioritised ethnicity

	Percentage with hazardous drinking <sup>1,2</sup> % (95% CI)	Percentage who drank alcohol in past 12 months <sup>3</sup> (drinkers) % (95% CI)	Percentage with hazardous drinking <sup>1,2</sup> among drinkers <sup>3</sup> % (95% CI)
<b>Unadjusted</b>			
Māori	35.4 (31.9, 38.9)	80.2 (77.8, 82.7)	44.1 (40.1, 48.1)
Pacific	21.4 (17.6, 25.1)	51.6 (47.2, 56.1)	41.4 (35.7, 47.1)
Other	17.9 (16.4, 19.3)	80.4 (79.1, 81.6)	22.2 (20.5, 24.0)
<b>Adjusted for age and sex</b>			
Māori	31.2 (28.1, 34.3)	79.0 (76.4, 81.5)	38.6 (35.0, 42.2)
Pacific	19.0 (15.8, 22.3)	50.4 (46.1, 54.8)	34.7 (29.9, 39.5)
Other	18.4 (16.9, 19.8)	80.6 (79.3, 81.9)	22.9 (21.1, 24.7)
<b>Adjusted for age, sex, educational qualification<sup>4</sup> and equivalised household income<sup>4</sup></b>			
Māori	29.6 (26.4, 32.8)	81.6 (79.2, 84.0)	35.6 (32.0, 39.3)
Pacific	18.1 (14.8, 21.3)	55.6 (51.3, 59.9)	32.6 (27.9, 37.3)
Other	18.6 (17.1, 20.1)	80.1 (78.7, 81.4)	23.4 (21.5, 25.2)

1 An AUDIT score of 8 or more.

2 Assessed in a random sample of participants, see 1.5.1.

3 Those who had never drunk 12 or more drinks in a year were counted as abstainers for the past 12 months, see 1.5.1.

4 Sociodemographic correlates are defined in 1.6.9.

### 6.3.3 Hazardous drinking and area characteristics

AUDIT results are presented by area characteristics in Table 6.3. The percentage drinking in the past 12 months varied significantly by region, urbanicity and deprivation (all  $p < .0001$ ). The North had the lowest percentage of drinkers, reflecting the presence of Pacific people in the Auckland area. Other regions did not differ from each other. Drinking was more common in minor towns and rural areas than in main and secondary urban centres. As with equivalised

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household income, there was a clear gradient across levels of deprivation, with those living in more deprived areas being less likely to drink (71.6% for those in deciles 9 and 10 compared with 83.0% for those in deciles 1 and 2).

The percentage of drinkers with hazardous drinking did not differ by region ( $p = .95$ ) or urbanicity ( $p = .09$ ) and the overall percentage with hazardous drinking also did not differ by region ( $p = .3$ ) or urbanicity ( $p = .3$ ). Drinkers living in more deprived areas were much more likely to drink hazardously ( $p < .0001$ ): 35.2% down to 16.3%. In spite of a lower percentage drinking in more deprived areas the opposite gradient for high AUDIT scores in those who did drink resulted in a gradient for the overall percentage whereby more deprived areas had higher percentages drinking hazardously (25.3%–13.7%).

## Alcohol Use Disorders Identification Test

**Table 6.3:** *Percentage with Alcohol Use Disorders Identification Test (AUDIT) scores for hazardous drinking, by area characteristics*

Correlate	Overall percentage with hazardous drinking <sup>1,2</sup> % (95% CI)	Percentage who drank alcohol in the past 12 months <sup>3</sup> (drinkers) % (95% CI)	Percentage with hazardous drinking <sup>1,2</sup> among drinkers <sup>3</sup> % (95% CI)
<b>Area characteristics</b>			
NZDep2001 deciles <sup>4</sup>			
9 and 10 (most deprived)	25.3 (22.2, 28.6)	71.6 (69.1, 73.9)	35.2 (31.0, 39.8)
7 and 8	22.8 (19.7, 26.4)	76.1 (73.7, 78.3)	29.9 (25.8, 34.4)
5 and 6	19.8 (17.4, 22.4)	81.4 (79.2, 83.4)	24.5 (21.7, 27.6)
3 and 4	19.4 (16.4, 22.9)	81.8 (79.5, 83.9)	23.7 (20.1, 27.7)
1 and 2 (least deprived)	13.7 (11.3, 16.5)	83.0 (80.9, 85.0)	16.3 (13.5, 19.6)
Urbanicity <sup>4</sup>			
Major	20.4 (18.8, 22.1)	78.1 (76.8, 79.3)	26.2 (24.2, 28.3)
Secondary	17.8 (13.7, 22.9)	76.4 (72.7, 79.7)	22.7 (17.3, 29.1)
Minor	21.7 (16.8, 27.5)	81.8 (79.0, 84.4)	26.0 (20.2, 32.8)
Other (rural)	17.6 (14.6, 21.0)	84.2 (81.8, 86.4)	20.9 (17.4, 24.9)
Region <sup>4</sup>			
North	18.2 (16.0, 20.7)	73.6 (71.7, 75.5)	24.6 (21.7, 27.9)
Midland	20.6 (18.0, 23.6)	80.5 (78.3, 82.4)	25.8 (22.4, 29.4)
Central	20.3 (17.7, 23.3)	82.2 (80.3, 84.0)	25.1 (21.8, 28.6)
South	21.7 (19.0, 24.8)	83.1 (81.3, 84.8)	25.8 (22.5, 29.3)
<b>Total</b>	<b>20.0</b> (18.7, 21.4)	<b>79.0</b> (78.0, 80.0)	<b>25.3</b> (23.6, 27.0)

1 An AUDIT score of 8 or more.

2 Assessed in a random sample of participants, see 1.5.1.

3 Those who had never drunk 12 or more drinks in a year were counted as abstainers for the past 12 months, see 1.5.1.

4 Sociodemographic correlates are defined in 1.6.9.

## 6.4 ALCOHOL USE DISORDERS IDENTIFICATION TEST SCORES AND 12-MONTH MENTAL DISORDERS

Participants who did not drink alcohol in the past 12 months could not have had problems resulting from their drinking in that period. In Table 6.4 only those who drank in the past 12 months are included. The relationship with alcohol abuse (with or without dependence) and alcohol dependence is of primary interest. Drug disorder and any disorder are included in Table 6.4 to see to what extent comorbidity with alcohol consumption and problems produces a relationship between AUDIT scores and these disorders. Anyone who drank in the past 12 months had to score at least 1 on the AUDIT; a score of 1 indicates someone who drank monthly or less and did not score on any other questions.

The distribution of AUDIT scores in drinkers was quite skewed. Only 11.8% scored the minimum of 1. From a score of 6 and above, the percentage of drinkers declined with only 2.2% scoring 20 or more.

**Table 6.4:** Correspondence between Alcohol Use Disorders Identification Test (AUDIT) scores in drinkers and the prevalence of 12-month mental disorder

AUDIT score <sup>2</sup>	Distribution of AUDIT scores among those who drank in the past 12 months % (95% CI)	Twelve-month mental disorder <sup>1</sup> % (95% CI)				
		Alcohol abuse	Alcohol dependence	Alcohol disorder	Drug disorder	Any disorder <sup>3</sup>
1	11.8 (10.8, 13.0)	< 0.1 (0.0, 0.5)	< 0.1 (0.0, 0.5)	< 0.1 (0.0, 0.5)	0.1 (0.0, 0.9)	14.4 (11.0, 18.7)
2–3	22.6 (21.2, 24.1)	< 0.1 (0.0, 0.3)	< 0.1 (0.0, 0.3)	< 0.1 (0.0, 0.3)	0.3 (0.0, 1.1)	13.8 (11.3, 16.7)
4–5	25.5 (24.0, 27.1)	0.3 (0.0, 0.9)	< 0.1 (0.0, 0.4)	0.3 (0.0, 0.9)	0.4 (0.1, 1.0)	15.3 (12.4, 18.7)
6–7	14.7 (13.6, 16.0)	0.7 (0.1, 1.9)	< 0.1 (0.0, 0.5)	0.7 (0.1, 1.9)	0.5 (0.1, 1.4)	17.7 (14.0, 22.2)
8–9	10.0 (9.0, 11.1)	3.7 (2.0, 6.3)	< 0.1 (0.0, 0.6)	3.7 (2.0, 6.3)	2.9 (0.9, 6.7)	21.7 (16.1, 28.4)
10–14	9.4 (8.4, 10.5)	10.6 (7.7, 14.3)	4.5 (2.5, 7.3)	10.8 (7.9, 14.5)	4.8 (2.6, 7.8)	31.8 (25.5, 38.8)
15–19	3.6 (3.0, 4.4)	29.0 (20.4, 39.5)	10.2 (6.0, 16.0)	32.4 (23.5, 42.8)	7.7 (3.5, 14.3)	60.1 (46.6, 72.3)
20–40	2.2 (1.7, 2.8)	51.5 (39.9, 63.0)	42.0 (31.0, 53.7)	58.3 (46.5, 69.2)	20.8 (11.3, 33.5)	76.9 (59.4, 88.4)

1 DSM-IV CIDI 3.0 disorders see 1.6.1–1.6.4.

2 All who were randomly routed to the AUDIT (see 1.5.1) and who drank alcohol in the past 12 months.

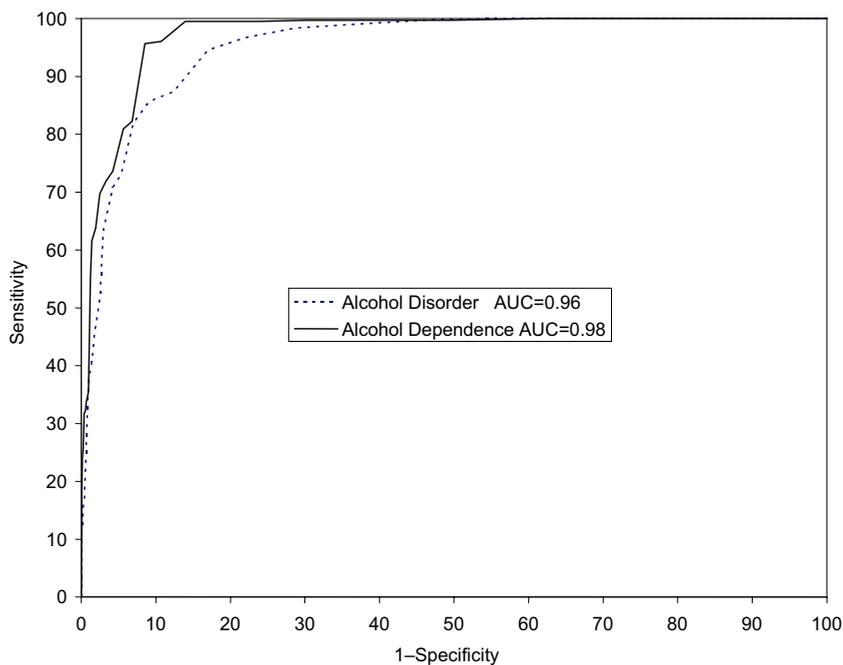
3 Assessed in the subsample who did the long form interview, see 1.5.1.

## Alcohol Use Disorders Identification Test

For alcohol abuse or alcohol dependence, the higher the AUDIT score the more likely the participant had ever met criteria and had symptoms in the past 12 months. Nonetheless, in even the highest score band (20–40) only 58.3% had a DSM-IV alcohol disorder in the past 12 months. An AUDIT score of less than 8, the standard cut-point, almost certainly ruled out alcohol disorder (0.7% in those scoring 6 or 7). Because of comorbidity AUDIT scores also indicate drug disorder, although this is present in only 20.8% of those in the highest band of AUDIT scores. Because any disorder includes an alcohol disorder it would also be expected to rise with AUDIT scores, as it does; the percentage with any disorder is 15%–25% higher than the percentage with an alcohol disorder across all score bands.

Figure 6.1 shows the receiver operator characteristic (ROC) curve for 12-month DSM-IV alcohol disorder and for alcohol dependence as predicted by AUDIT scores. A ROC curve is a graphical presentation of the ability of a test to discriminate between people with a disorder and people without that disorder. It is plotted for each possible test score. If the test does not discriminate at all the curve is a diagonal from the bottom left to the top right of the graph, because for each value of the test both cases and non-cases are equally likely to score above the cut-point (sensitivity equals 1–specificity). The area under the curve (AUC) can be interpreted as the probability that a randomly chosen participant with a disorder and a randomly chosen participant without a disorder can be distinguished correctly based on their test scores (this probability is often reported as  $c$ ). A test that does not discriminate at all has an AUC of 0.5.

**Figure 6.1:** ROC curves<sup>1</sup> for Alcohol Use Disorders Identification Test and 12-month alcohol disorder or alcohol dependence<sup>2</sup>



- 1 ROC curves = receiver operating characteristic curves; AUC = area under the curve.
- 2 DSM-IV CIDI 3.0 alcohol disorder or dependence, see 1.6.2.

For this survey weighted sensitivities and non-specificities were calculated (see 1.5.6). These sensitivities and non-specificities are provided in Table 6.5 to show the effect of different cut-points on the AUDIT. As the cut-point is increased non-specificity declines but so does sensitivity. With the usual cut-point of 8 or more on the AUDIT 99.5% of those with alcohol

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dependence were detected (sensitivity) but 23.7% of those without dependence also scored in this range (non-specificity). If the cut-point was raised to 14 or more, then sensitivity dropped to 80.9% and non-specificity was reduced to 5.7%. The optimal cut-point depends on the purpose of the test and the costs of failure to detect cases and false detection of non-cases. The ROC curves showing these sensitivities and non-specificities are in Figure 6.1.

**Table 6.5:** Sensitivity and non-specificity for alcohol disorder and alcohol dependence for different cut-points on the Alcohol Use Disorders Identification Test (AUDIT)

AUDIT score cut-point	Alcohol disorder <sup>1</sup>		Alcohol dependence <sup>1</sup>	
	Sensitivity <sup>2</sup>	1-specificity <sup>3</sup>	Sensitivity <sup>2</sup>	1-specificity <sup>3</sup>
1+	100.0	100.0	100.0	100.0
2+	100.0	87.1	100.0	87.4
3+	100.0	75.2	100.0	75.8
4+	100.0	62.2	100.0	63.1
5+	99.9	48.0	99.7	49.3
6+	99.0	36.3	99.7	37.8
7+	98.4	28.7	99.7	30.3
8+ (standard)	96.7	22.0	99.5	23.7
9+	94.6	17.0	99.5	18.8
10+	87.4	12.4	99.5	14.0
11+	85.7	9.1	96.0	10.7
12+	82.0	7.0	95.7	8.5
13+	73.1	5.4	82.2	6.8
14+	70.9	4.2	80.9	5.7
15+	63.4	3.0	73.6	4.2
16+	51.5	2.5	71.9	3.3
17+	46.1	1.8	69.7	2.5
18+	40.6	1.4	63.8	1.9
19+	37.3	1.0	61.6	1.4
20+	32.8	0.8	54.9	1.2
21+	24.1	0.6	35.5	1.0
22+	19.2	0.5	33.7	0.7
23+	16.9	0.4	32.0	0.5
24+	16.1	0.3	31.8	0.4
25+	12.6	0.2	25.7	0.3
26+	11.2	0.1	24.0	0.1
27+	8.5	0.1	18.9	0.1
28+	8.3	0.1	18.8	0.1
29+	5.3	0.1	11.7	0.1
30+	3.3	0.0	7.0	0.0
31+	3.1	0.0	6.4	0.0
32+	1.3	0.0	2.2	0.0
33+	1.3	0.0	2.2	0.0
34+	0.8	0.0	1.8	0.0
35+	0.8	0.0	1.8	0.0
36+	0.8	0.0	1.8	0.0
37+	0.1	0.0	0.2	0.0
38+	0.1	0.0	0.2	0.0
39+	0.0	0.0	0.0	0.0

1 DSM-IV CIDI 3.0 disorders, see 1.6.1–6.4.

## Alcohol Use Disorders Identification Test

- 2 Sensitivity = probability that a case will be detected (ie, will score at or above the cut-point).
- 3 1-specificity = probability that a non-case will score at or above the cut-point.

The AUDIT is extremely good at discriminating between cases and non-cases of alcohol disorder and similarly for alcohol dependence. For alcohol disorder the AUC is 0.96 (0.92, 0.99) and for alcohol dependence it is 0.98 (0.94, 1.0); with no discrimination the AUC would be 0.5. Therefore, the distribution of scores on the AUDIT could be used to estimate the prevalence of alcohol disorder in the absence of a diagnostic interview.

Nonetheless the AUDIT is intended to detect hazardous and harmful drinking, not just disorder, so should be interpreted in relation to its intended purpose. It is not merely a proxy for a diagnostic interview. The distribution on each item and the distribution of the total score may be of public health relevance as well as the percentage classified with hazardous drinking. However, a 10-item scale cannot capture all the sorts of harm resulting from alcohol consumption. The AUDIT was derived from an initial battery of 150 items, but even that did not exhaust the full range of possible negative outcomes from drinking (Babor et al., 2001; Saunders et al., 1993).

### 6.5 CONCLUSIONS

Both the 1996/97 New Zealand Health Survey (Minister of Health, 1999) and 2002/03 New Zealand Health Survey (Ministry of Health, 2004b; Public Health Intelligence, 2005) used the AUDIT. These health surveys found slightly lower percentages with hazardous drinking than the present survey. For the 1996/97 survey the overall unadjusted percentage with hazardous drinking was 17.3% (16.1, 18.5) and for the 2002/03 survey it was 17.2% (16.1, 18.3) whereas for this survey the comparable prevalence was 20.0% (18.7, 21.4). The size of this difference is small, being less than 3%, and is detectable only because of the large size of these three surveys. Nonetheless if future health survey AUDIT results are used to estimate alcohol disorder prevalences there should be appropriate calibration for this small difference.

It is unlikely that between 2002/03 and 2003/04, when this survey was carried out, there were population changes or changes in drinking behaviour sufficient to produce this small though significant difference ( $p = .002$ ). In this survey the lowest age was 16 years whereas it was 15 years in the health surveys. Comparison of the youngest age groups (16–24 compared with 15–24) shows, as expected, a higher prevalence of hazardous drinking in this survey (38.3%: 34.1, 42.8) than in the 2002/03 health survey (33.2%: 29.1, 37.3) although this difference was not significant ( $p = .1$ ). However, the prevalence of hazardous drinking was also higher in the 25–44 age group (this survey: 23.3%; 21.3, 25.4; 2002/03 survey: 19.2%; 17.5, 20.9;  $p = .04$ ) and non-significantly higher in the 45–64 age group (this survey: 13.2%; 11.5, 15.1; 2002/03 survey: 11.7%; 10.4, 12.9;  $p = .2$ ). The prevalence was very similar in those aged 65 and over (this survey: 4.4%; 3.4, 5.9; 2002/03 survey: 4.2%; 3.1, 5.3;  $p = .8$ ).

The slightly higher prevalence of hazardous drinking in this survey cannot be attributed entirely to the omission of 15-year-olds. One possible explanation for the difference might be a general context effect; people may report alcohol-related problems a little more readily in the context of a mental health survey than in a general health survey. Another possibility is that the difference is due to the use in this survey of a showcard of the number of standard drinks in various common beverage drinks. The health survey did not have a definition of a drink. If this is the explanation then the difference between the surveys should be only for the consumption questions and not for the dependence symptoms or consequences questions. Thus further analysis could establish to what extent each explanation holds. Most aspects of the sample

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design were similar, apart from some aspects of the oversampling, and the consequences of these would be taken account of in the estimates of standard errors. The response rates were also similar (73.3% compared with 72%).

The relationship between sociodemographic correlates and the AUDIT was very similar in all three surveys. As shown above the prevalence of hazardous drinking was markedly higher in younger people, and was also more than twice as high in males as in females. The prevalences for males were 25.7% in 1996/97, 25.4% in 2002/03,<sup>1</sup> and 28.1% in this survey. For females the prevalences were 9.3%, 9.7% and 12.5%. Contrary gradients across deprivation levels were seen in all three surveys for the percentage drinking and the percentage drinking hazardously: the more deprived the area in which someone lives, the less they are likely to drink, but the more likely they are to drink hazardously.

Ethnic patterns were also the same across all three surveys. Around 80% of Māori and Others had drunk alcohol in the past 12 months whereas only about half of Pacific people had done so. However, Pacific drinkers were nearly as likely as Māori drinkers to drink hazardously. The overall prevalence of hazardous drinking was highest for Māori and similar for Pacific people and Others.

The relationship between the AUDIT and alcohol disorders indicates that the AUDIT could be used to derive estimates of alcohol disorder, although this is not its primary purpose.

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1 The 2002/03 results in Tables 11 and 12 (Ministry of Health, 2004b) are labelled 'Hazardous drinking patterns in drinkers' when they are actually 'Hazardous drinking patterns' (personal communication, Maria Turley, Public Health Intelligence, Ministry of Health).

## 7 THE STUDY IN PERSPECTIVE

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### 7.1 COMMUNITY MENTAL HEALTH SURVEYS AND POLICY

What is the place of this community mental health survey in helping health policy decision makers, service funders, providers, consumers and their families address the health needs of the New Zealand community? Whiteford (2001, p. 428) suggests that research can impact on the development, adoption and implementation of policy 'by providing ... data which allow decisions to be made more on the basis of fact and less on political expediency and ideology'.

The results of community surveys such as this may be used by health policy decision makers, in several ways. Jenkins (2003, pp. 190–191) outlines four reasons, from a government policy perspective, for such large-scale surveys.

- 'Effective policy needs to be based on epidemiology and the social and economic costs of psychiatric morbidity.'
- '[R]epresentative information in a defined geographic area can document the use of existing services and can estimate the extent of unmet needs and services required meeting those needs.'
- '[V]alid information on prevalence and associated factors of presumed causal importance allow aetiological hypotheses to be generated and tested, albeit with the limitations inherent in cross-sectional studies.'
- '[B]y repeating community surveys it is possible to monitor the health of the population and trends together with changes in potential risk factors.'

As stated in the introduction to this report (chapter 1), the major task of the World Mental Health (WMH) Survey Initiative is to facilitate the conduct of general population mental health surveys. From the outset, the initiative has aimed to provide data to health policy decision makers in the participating countries on prevalences and societal costs of mental disorder, the unmet need for treatment of mental disorders, as well as potentially modifiable barriers to treatment. The initiative also aims to independently evaluate the conclusions of the Global Burden of Disease Study that mental disorders are among the most burdensome in the world (Kessler & Ustun, 2000; World Mental Health Survey Consortium, 2005). Independent confirmation of this finding will have important implications for the allocation of health resources.

## **7.2 KEY FINDINGS FOR SUBSTANCE USE DISORDERS**

### **7.2.1 Prevalence of substance use disorders and hazardous drinking**

The key substance disorder findings for prevalence are as follows.

- Substance use disorders are widespread in New Zealand: 13.8% of the population are predicted to meet criteria for a disorder at some time in their lives, with 12.3% having already done so and 3.5% having a disorder in the past 12 months.
- The onset of substance use disorder occurs mostly in the late teenage years and early 20s with 75% of those who develop substance use disorder doing so by 25 years of age.
- Younger people have a higher prevalence of substance use disorder in the past 12 months and are more likely to report having ever had such a disorder by any particular age.
- Males have prevalences of substance use disorders that are more than double those for females.
- Prevalences are higher for people who are disadvantaged, whether measured by educational qualification, equivalised household income or using the small area index of deprivation (NZDep2001).
- The prevalence of substance use disorder in any period is higher for Māori and Pacific people than for the Other composite ethnic group. For disorder in the past 12 months the prevalences were 9.1% for Māori, 4.9% for Pacific people and 2.7% for Others, which indicates that Māori and Pacific people have a greater burden due to substance use problems. Much of this burden appears to be due to the youthfulness of the Māori and Pacific populations and their relative socioeconomic disadvantage.
- After adjusting for sociodemographic correlates the prevalence of substance use disorder remained higher for Māori (6.0%) than for Pacific people (3.2%) and Others (3.0%).
- The ethnic differences seen for substance use disorder were also seen for hazardous drinking in the past 12 months as measured by the Alcohol Use Disorders Identification Test (AUDIT). The observed prevalences were 35.4% for Māori, 21.4% for Pacific and 17.9% for Others. After adjustment, the prevalence of hazardous drinking remained higher for Māori (29.6%) than for Pacific people (18.1%) and Others (18.6%).
- Pacific people were less likely to drink than Māori or Others but for those who did drink, the prevalence of hazardous drinking was similar to that for Māori, not Others, with or without adjustment for sociodemographic correlates. A similar pattern was seen for the prevalence of alcohol disorder among drinkers.
- Drug use was more common among Māori than among Pacific people or Others and the prevalence of drug disorder among Māori was higher than for Others both overall and among drug users. The prevalence of drug disorder in Pacific people who used drugs was intermediate between the prevalence for Māori and that for Others and not significantly different from either.

### 7.2.2 Comorbidity and disability

The key substance disorder findings for comorbidity and disability are as follows.

- People with substance use disorders often experience other disorders. In the past 12 months 40% experienced an anxiety disorder and 29% experienced a mood disorder. Comorbidity between substance use disorders was very common.
- People with substance use disorders have higher prevalences of some chronic physical diseases (such as chronic pain and respiratory disease) and of chronic disease risk factors (smoking, high blood pressure and, of course, hazardous alcohol use) than people without mental disorders.
- Substance use disorders and anxiety disorders are associated with similar degrees of disability. Mood disorders are associated with more disability than anxiety or substance use disorders.

### 7.2.3 Suicidal behaviour

The key findings for suicidal behaviour and substance use disorder are as follows.

- Of the population, 15.7% reported ever having thought seriously about suicide (suicidal ideation), 5.5% had ever made a suicide plan and 4.5% had ever made an attempt. The levels of suicidal ideation and suicide attempt are broadly comparable with those for several other developed countries.
- In the past 12 months, 3.2% experienced suicidal ideation, 1.0% made a suicide plan and 0.4% made a suicide attempt.
- Individuals with a mental disorder had elevated risks of suicidal behaviour in the past 12 months, with 11.8% of people with any mental disorder reporting suicidal ideation, 4.1% making a suicide plan and 1.6% making a suicide attempt.
- Substance use disorders were associated with about a three-fold increase in risk of suicidal ideation, suicide plan and suicide attempt, even after taking account of comorbidity with other disorders and sociodemographic correlates and ethnicity. Of individual disorders, major depressive episode had the strongest association with suicidal ideation, suicide plan and suicide attempt.

### 7.2.4 Health service use

The key health service use findings for substance use disorder are as follows.

- Of all 12-month cases of substance use disorder, 29.9% had a mental health visit to a healthcare or non-healthcare provider in the past 12 months. Of these 12-month cases, 14.5% had contact with a mental health specialist, 20.0% with a general medical provider, 2.6% within the human services sector and 5.7% with a complementary and alternative medicine practitioner. Most people with lifetime substance use disorders eventually made contact if their disorder continued, however, the percentages seeking help at the age of onset were small for all disorders. The median duration of delay until contact varied by specific disorder from 3 to 16 years.
- Treatment contact for any disorder in the past 12 months was lowest in younger people and Pacific people. People with lower educational attainment and people resident in rural centres or areas had lower rates of visits to the mental health specialty sector. Unmet need for treatment did not vary significantly by socioeconomic status.

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- The percentage of those seeking help specifically for their substance use disorder in the past 12 months was low for all ethnic groups (12.4%) but much lower for Pacific people with substance use disorder (3.9%) than for Māori (11.7%) or for the Other composite ethnic groups (13.7%). The differences between Pacific people and Māori and between Pacific people and Others were significant, although those between Māori and Others were not.

### **7.2.5 Alcohol Use Disorders Identification Test**

The key findings for the AUDIT are as follows.

- The prevalence of hazardous drinking (a score of 8 or more on the AUDIT) was much higher than that of alcohol disorder, let alone alcohol dependence: 20.0% for hazardous drinking, 2.9% for alcohol disorder and 1.3% for alcohol dependence.
- Scores on the AUDIT discriminated well between those with alcohol disorder and those without it.
- If a cut-point on the AUDIT was to be used to indicate alcohol disorder or dependence then a cut-point higher than the standard cut-point of a score of 8 or more should be used.

Other key prevalence findings are reported in 7.2.1.

## **7.3 STRENGTHS OF THE SURVEY**

The utility of data from community mental health surveys, for health policy decision makers, depends on the scientific soundness of the study (Cooper & Singh, 2000). The New Zealand survey has several strengths that have ensured it has met its objectives and provides useful information for health policy decision makers.

First, the researchers used a survey design and sample frame consistent with best survey practice that provides estimates of acceptable precision that can be generalised to the New Zealand adult population. Within this sample, Māori and Pacific people were selected at higher rates ('oversampled') to allow, for the first time, estimates of acceptable precision for those communities. There was extensive consultation with overseas and local experts to achieve an appropriate survey design.

Second, the conduct of the fieldwork and the data management conformed to best practice standards and incorporated quality controls to ensure adherence to best practice, as required by the WMH Survey Initiative (see 1.2.1) (World Mental Health Survey Consortium, 2005). Extensive data cleaning and checking were conducted by the National Research Bureau, the research team and the WMH Survey Initiative Data Coordinating Center based at Harvard University (Boston, United States (US)). The response rate of 73.3% exceeded the 70% required by the Ministry of Health and was similar to that obtained in the 1996/97 New Zealand Health Survey (73.8%) (Haslett & Statistics New Zealand, c1999) and the 2002/03 New Zealand Health Survey (72%) (Ministry of Health, 2004b). Post-stratification by age, sex and ethnicity was used to attempt to ameliorate any non-response bias.

Third, the diagnostic instrument used (the Composite International Diagnostic Interview (CIDI) 3.0) was designed for cross-national community surveys and has been widely used for that purpose. It has acceptable reliability when it is used in such community surveys (Andrews &

Peters, 1998; Janca, Robins, Bucholz, Early, & Shayka, 1992; Wittchen, 1994; Wittchen, Lachner, Wunderlich, & Pfister, 1998). The CIDI 3.0 has been significantly revised on the basis of experience with earlier versions. Some of the important innovations compared to earlier versions include: a focus on 12-month as well as lifetime disorders in the same interview; detailed assessment of clinical severity; and disorder-specific and global assessment of the impact of both mental and common medical conditions (Kessler & Ustun, 2004). The CIDI 3.0 includes an extensive section on health service use and treatment.

There is ongoing vigorous debate about the comparative reliability and validity of fully structured interviews such as the CIDI, administered by trained lay interviewers, compared to semi-structured clinician-administered interviews, such as the Schedules for Clinical Assessment in Neuropsychiatry (Wing et al., 1990). Some critics have questioned the validity of lay-person-administered, fully structured interviews and attributed the variability in prevalence rates between studies to problems with such questionnaires (Brugha, Bebbington, & Jenkins, 1999; Cooper & Singh, 2000; Weich & Araya, 2004). Proponents of the use of a lay-person-administered, fully structured interview in large-scale community surveys have responded to these criticisms by arguing that the current evidence does not support the contention that clinician-administered diagnostic interviews are more valid or reliable than lay-person-administered structured diagnostic interviews (Wittchen, Ustun, & Kessler, 1999). Within some of the WMH Survey Initiative sites, these issues are being explored further through clinical calibration studies. In these studies the researchers will examine the consistency of diagnoses by the lay-person-administered structured interview (the CIDI 3.0) and a clinician-administered semi-structured interview (the Structured Clinical Interview for DSM-IV) (Kessler, Abelson et al., 2004). (See 1.6.1 for an explanation of the *Diagnostic and statistical manual of mental disorders* (DSM)). So far results are available for the National Comorbidity Survey Replication (NCS-R) and the European Study of the Epidemiology of Mental Disorders (Haro et al., in press; Kessler, Berglund, Demler et al., 2005). Although the New Zealand study has not included a clinical calibration study (because of resource limitations and cost), the results of clinical calibration studies from similar countries may be informative for interpretation of the New Zealand results.

## 7.4 LIMITATIONS OF THE SURVEY

The survey has several limitations. First, it was always intended to be a community survey, so people living in institutions could not be selected. Therefore, people in prison were not included. Surveys in New Zealand prisons have shown a high prevalence of substance use disorders and other mental health disorders in prisoners (Brinded et al., 2001; Simpson et al., 1999), but the inclusion of prisoners could not have altered national prevalences by much since only 2 out of every 1,000 adult New Zealanders are in prison (Department of Corrections, 2005). Similarly, the exclusion of rest-home residents or long-stay patients in hospitals could have had little impact on national prevalences although it would have had a larger impact on estimates for older people, such as those aged over 80.

Although the response rate of 73.3% is regarded as a satisfactory result for a household survey, it does mean that 26.7% of the intended sample were not interviewed. One consequence of non-response is a reduction in sample size. However, the likely response rate was taken into account when planning the survey. Furthermore, the confidence intervals presented throughout the report reflect the obtained sample size, so this consequence of the response rate is known. The second consequence of non-response is that response bias may occur. If respondents and non-respondents differ on some characteristics measured in the survey, there will be bias in

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survey estimates of those characteristics (Groves et al., 2004, chapter 6, p. 182). There are three important features of non-response bias.

- No information from respondents can establish whether there is non-response bias.
- Non-response bias is specific to the characteristic being measured; it is not a feature of a survey as a whole.
- Reducing non-response is likely to reduce non-response bias but does not necessarily do this.

Therefore, although best practice was followed there is no way of knowing to what extent and for what outcomes there was non-response bias. Nonetheless, some estimates of the extent of bias come from sensitivity analyses considering the effects of hypothetical ratios of prevalences in respondents and non-respondents. For example, if the prevalence of disorder X was 5% for respondents and 10% for non-respondents (a ratio of 2), and the response rate was 70%, then the true prevalence must have been 6% ( $100 \times (0.7 \times 0.05 + 0.3 \times 0.10)$ ), so the observed prevalence underestimated the true prevalence by one-sixth. If the ratio was only 1.5, the true prevalence must have been 5.75%. These examples show that with a response rate of 70% or more, even if non-responders have up to twice the prevalence of responders, the resulting bias is relatively small.

In the US two surveys have made additional efforts to obtain interviews from people who were 'hard to reach' and to interview them using a short form instead of the full interview. Even with financial incentives the response rate among hard-to-reach people is low (18.6% in the NCS-R). In the NCS the main response rate was 80.2% and a higher proportion of hard-to-reach people reported problems than was found for full interview respondents. A decade later in the NCS-R the response rate had fallen to 70.9% but comparing full-interview and hard-to-reach respondents there was no evidence of non-response bias on any of those questions that covered anxiety, mood, substance problems and impulse-control problems (Kessler, Berglund et al., 2004). Nonetheless, it is likely that people with rare, serious, current disorders such as anorexia or psychosis might be more likely to refuse to be interviewed.

The CIDI 3.0 does generate estimates of recent and lifetime prevalence rates by disorder from the same interview. There is now considerable evidence that estimates of lifetime prevalence rates are biased by inaccurate recall of past episodes ('recall bias') (Andrews, Anstey, Brodaty, Issakidis, & Luscombe, 1999; Patten, 2003; Wells & Horwood, 2004). When asked about past episodes of illness or disorder people forget episodes or tend to bring them forward to a time closer to the interview ('telescoping'). Telescoping results in reported ages of onset that are later than those that actually occurred. Forgetting results in underestimates of lifetime prevalence and this is thought to be more marked for older age groups. However, it is important to emphasise that the bias results in an underestimation not overestimation of lifetime prevalence, so the lifetime prevalences presented in this report are conservative estimates of the 'true' prevalences. Recall bias may also influence estimates of mental health service use. Self-reported use is higher than administrative records indicate for those who have been highly distressed (Rhodes & Fung, 2004; Rhodes, Lin, & Mustard, 2002). This implies that the extent of unmet need in this report is likely to be a conservative estimate of the 'true' extent.

This study, along with other previous cross-sectional studies, has shown an apparent cohort effect: younger age groups having higher rates of mental disorder than older age groups. The possible explanations for this effect are provided in the chapter on lifetime prevalence rates. Recall bias and differential mortality in the elderly may account, in part, for this effect (Patten,

2003), particularly for substance use disorders. It must be noted that this explanation does not challenge the high rates of substance use disorder in the younger age groups; it does call into question the observed low lifetime prevalence of these disorders in the elderly living in the community.

Although the CIDI 3.0 is the latest of the succession of lay-person-administered interviews developed to provide DSM diagnoses of mental disorders (see 1.6.1) (American Psychiatric Association, 1994), the version used in New Zealand and most other WMH countries may have underestimated the prevalence of substance use dependence. Participants were not assessed for alcohol dependence unless they had reported at least one symptom of alcohol abuse ever. The same skip procedure was followed for drug dependence. A survey in the US by Hasin and Grant using version 4 of the Alcohol Use Disorders and Associated Disabilities Schedule, which did not have this skip pattern, found that 13.9% of those with lifetime alcohol dependence did not report ever experiencing any symptoms of alcohol abuse (Hasin & Grant, 2004). Applying their finding to the New Zealand estimate of lifetime prevalence of alcohol dependence would raise it from 4.0% to 4.6%.

Surveys with interviews that asked more detailed questions about abuse and dependence than the CIDI 3.0 have produced higher 12-month prevalences than those from the CIDI 3.0 across comparable countries, even though all use the same DSM-IV diagnostic criteria (Andrews et al., 2001; Hasin & Grant, 2004; Teesson et al., 2000). This is seen in comparisons of results for Australia (Andrews et al., 2001; Teesson et al., 2000) and this New Zealand survey, and in comparisons of national studies in the US (Hasin & Grant, 2004; Kessler, Chui et al., 2005) (see 2.3.6) Only clinical calibration studies and longitudinal studies looking at longer term outcomes can show which interviews produce more appropriate prevalences. So far clinical calibration studies have been carried out only for the CIDI 3.0 (Haro et al., in press). In the US such a study (Haro et al., in press; Kessler, Berglund, Demler et al., 2005) showed that for lifetime diagnosis of substance use disorders the specificity of the CIDI was good but it tended to under-diagnose, with lower than desirable sensitivities. In Europe the calibration sample investigated the concordance of CIDI 3.0 diagnoses and clinical diagnoses for 12-month disorders but had too few cases of alcohol disorder to accurately assess this (Haro et al., in press), as discussed in 2.3.6.

Problems remain about the assessment of substance use symptoms, particularly the assessment of tolerance in young people whose alcohol intake is increasing and who, therefore, report the development of 'tolerance' that is not the tolerance understood as a symptom of dependence in DSM-IV (Chung, Martin, Armstrong, & Labouvie, 2002 ; Wells, Horwood et al., 2006). Furthermore, although abuse and dependence are diagnostic categories there is clearly a dimension of severity underlying each, which is an issue under consideration in the review of DSM-IV.

The survey questionnaire was available only in English and was not formally translated into other languages. Interpreters were available to assist with interviews with participants from the Pacific communities. For people from other ethnic groups and non-English-speaking backgrounds, translators were not available. The costs and logistics of providing trained interpreters to all non-English-speaking participants made such provision impractical. If the participant's comprehension of the interview was a problem, because of language difficulties, the interviewer did not proceed.

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The CIDI 3.0, although designed to be used in cross-national surveys with different language groups, follows the DSM and International Classification of Diseases classification systems. It can be argued that these systems reflect Western or Eurocentric conceptualisations and beliefs about mental disorder. For instance, the diagnostic instrument used does not incorporate the beliefs about health found in Māori culture or the cultures of other Pacific communities. Furthermore, the study is quantitative and aggregates information across individuals to arrive at estimates for the population and subgroups within the population. Such an approach captures what is common across people but does not capture the unique experience of each person.

These limitations accepted, this survey is best regarded as a pragmatic attempt to address some large information gaps about the prevalence of mental disorders including substance use disorders, the associated disability, correlates and patterns of health service use in the New Zealand population. The information is relevant to the strategic aims of the second national mental health plan (Minister of Health, 2005) and to the Alcohol Advisory Council of New Zealand. The information in this report and that from subsequent analyses will help inform the decisions of policy makers, but will also be useful for service funders, service providers, and consumers and their families. Of itself, the survey will not be sufficient for these purposes and additional information from other types of study will be needed.

## APPENDIX A: ALCOHOL USE DISORDERS IDENTIFICATION TEST QUESTIONS

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Each question with a valid answer is scored from 0 to 4. For questions 2 to 10 this requires subtracting 1 from response category shown below. For question 1 the lowest response category of NEVER has been removed and scoring is as shown for responses.

---

NZAUD1. Looking at showcard 15, how often do you have a drink containing alcohol?

- MONTHLY OR LESS .....1
  - UP TO 4 TIMES A MONTH .....2
  - UP TO 3 TIMES A WEEK .....3
  - 4 OR MORE TIMES A WEEK.....4
  - REFUSED .....9
- 

NZAUD2. Looking at showcard 16, how many drinks containing alcohol do you have on a typical day when you are drinking?

- ONE OR TWO .....1
  - THREE OR FOUR .....2
  - FIVE OR SIX .....3
  - SEVEN TO NINE .....4
  - TEN OR MORE.....5
  - REFUSED .....9
- 

\*NZAUD3. Looking at showcard 17 as a guide to answering the next questions, how often do you have six or more drinks on one occasion?

- NEVER .....1
  - LESS THAN MONTHLY .....2
  - MONTHLY .....3
  - WEEKLY .....4
  - DAILY OR ALMOST DAILY .....5
  - REFUSED .....9
-

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\*NZAUD4. How often during the last year have you found that you were not able to stop drinking once you had started?

- NEVER .....1
  - LESS THAN MONTHLY .....2
  - MONTHLY .....3
  - WEEKLY .....4
  - DAILY OR ALMOST DAILY .....5
  - REFUSED .....9
- 

\*NZAUD5. How often during the last year have you failed to do what was normally expected from you because of drinking?

- NEVER .....1
  - LESS THAN MONTHLY .....2
  - MONTHLY .....3
  - WEEKLY .....4
  - DAILY OR ALMOST DAILY .....5
  - REFUSED .....9
- 

\*NZAUD6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

- NEVER .....1
  - LESS THAN MONTHLY .....2
  - MONTHLY .....3
  - WEEKLY .....4
  - DAILY OR ALMOST DAILY .....5
- 

\*NZAUD7. How often during the last year have you had a feeling of guilt or remorse after drinking?

- NEVER .....1
  - LESS THAN MONTHLY .....2
  - MONTHLY .....3
  - WEEKLY .....4
  - DAILY OR ALMOST DAILY .....5
  - REFUSED .....9
-

**Alcohol Use Disorders Identification Test Questions**

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\*NZAUD8. How often during the last year have you been unable to remember what happened the night before because you have been drinking?

- NEVER .....1
- LESS THAN MONTHLY .....2
- MONTHLY .....3
- WEEKLY .....4
- DAILY OR ALMOST DAILY .....5
- REFUSED .....9

---

\*NZAUD9. Looking at showcard 18 as a guide to answering this question and the next question, have you or someone else been injured as a result of your drinking?

- NO .....1
- YES, BUT NOT IN THE LAST YEAR .....2
- YES, DURING THE LAST YEAR.....3
- REFUSED .....9

---

\*NZAUD10. Has a relative or friend, or a doctor or other health worker, been concerned about your drinking or suggested you cut down?

- NO .....1
  - YES, BUT NOT IN THE LAST YEAR .....2
  - YES, DURING THE LAST YEAR.....3
  - REFUSED .....9
-



## APPENDIX B: SCREENING SECTION ETHNICITY QUESTION

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The following question was asked of the participant at the beginning of the interview to determine the ethnic group the participant regarded herself or himself as belonging to. For more information, see chapter 12 of the main report (Wells, McGee et al., 2006, section 12.12.1).

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\*NZRDA2      Looking at showcard 1, which ethnic group or groups do you belong to?

NZ EUROPEAN	1
MĀORI	2
SAMOAN	3
COOK ISLAND MĀORI	4
TONGAN	5
NIUEAN	6
CHINESE	7
INDIAN	8
OTHER (SUCH AS DUTCH, JAPANESE, TOKELAUAN ETC.)	9
SPECIFY OTHER _____	
DON'T KNOW	98
REFUSED	99

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