

EXECUTIVE SUMMARY

Introduction

Background

A national study of gambling participation and problem gambling was conducted in New Zealand during 1991. This was the first national prevalence study internationally to use a validated measure of problem gambling.

During the three years before 1991, new forms of gambling had been introduced and New Zealand per capita gambling expenditure doubled. Throughout the ten-year period prior to this, inflation-adjusted per capita expenditure had changed very little.

The 1991 national survey involved two phases. In the first phase, 4,053 adults were interviewed by telephone to determine the degree of gambling involvement and estimate the prevalence of problem gambling in the community. The second phase involved a smaller number of in-depth, face-to-face interviews with sub-samples drawn from the phase one sample. Phase two enabled more extensive information to be gathered from participants with gambling problems as well as from participants who gambled weekly or more and did not experience gambling-related problems.

Since 1991 there has been further growth in gambling availability and expenditure in New Zealand, albeit that expenditure has increased at a lower rate than it did from 1987 to 1991. New forms of gambling have been introduced, including casinos in Auckland and Christchurch. Gaming machines outside of casinos have increased in number. In 1991, total national expenditure on the main legal forms of gambling was NZ\$575 million. In 1998, the corresponding total was NZ\$1,045 million.

The New Zealand Gaming Survey (NZGS)

This report outlines and discusses the findings of a major component of a programme of research, the New Zealand Gaming Survey (NZGS), commissioned by the Department of Internal Affairs. In broad terms, the purpose of the overall research programme is to investigate the impact that this recent increase in gambling involvement has had on the lives of New Zealanders and advance scientific understanding of gambling and problem gambling. Other objectives are to:

- Provide information that will assist in the development of gaming and related health and social policy
- Contribute to robust frameworks for future studies of the prevalence and wider economic and social impacts of gambling and problem gambling
- Provide a solid baseline to enable assessments of future changes in the prevalence of problem gambling and gambling participation to be made.

The National Prevalence Survey (NPS)

This report is based on information gathered from a national sample of 6,452 adults aged 18 years and older, interviewed during 23 January to 21 March 1999. This component of the NZGS is referred to as Phase One of the National Prevalence Survey (NPS-1). The great majority of interviews were conducted via telephone and the procedures used and questions asked of participants were broadly comparable to those employed in phase one of the 1991 national survey.

Survey participants, aged 18 years and over, were randomly selected from households that had telephone numbers listed in current electronic telephone directories. The response rate was 75 percent, comparable to that of the recent Swedish national survey (72%) and substantially higher than rates for previous community gambling surveys conducted in New Zealand and other parts of the world. The resulting survey data were subsequently weighted to scale the sample to represent the whole adult population, account for different probabilities of respondent selection and account for different rates of non-response between sub-populations.

A stratified, two-stage sample design was used. Sample complexity associated with this design was taken into account in estimating sample errors and confidence intervals and in undertaking statistical analyses by using a variety of special procedures. Appropriate procedures were also used to provide confidence intervals for measures (such as problem gambling) with low proportions. Standard statistical methods, although used in previous population surveys of gambling and problem gambling, are inappropriate in these situations and can lead to incorrect conclusions.

While the methods used in this study resulted in a sound probability survey, it should be noted that certain groups were excluded from the sample frame. Excluded groups include people who reside in non-residential dwellings such as hospitals and prisons, residents of households without telephones and people with unlisted telephone numbers. In addition, response rates for some groups including young adults and Pacific Islanders were lower than those of other respondents. Although weighting of the data adjusts for this lower representation, it cannot correct for differences in gambling participation and problems (if they are present) between survey participants and non-participants in these groups.

The 1999 NPS-1 was primarily undertaken to provide reliable estimates of problem gambling in the adult New Zealand population, as well as to provide estimates of the proportions of adults who engage in different forms of gambling at varying levels of intensity. The survey was also designed to generate a wide range of additional information about gambling and problem gambling at a lower level of precision. This included consideration of reported changes in gambling participation and in the prevalence of problem and probable pathological gambling since the 1991 national survey.

The NPS-1 is the first national level 'replication' study to have been conducted internationally, allowing changes to be examined, over time, in the same population.

As with the 1991 survey, the 1999 National Prevalence Survey involved a second phase (NPS-2) in which selected sub-samples of Phase One respondents were interviewed, face-to-face, in more depth. Selecting and recruiting participants for this follow-on study

was a further important objective of the Phase One survey. Phase Two is intended to provide more detailed information about problem gamblers, including their comparison with non-problem gamblers on a variety of relevant measures. The findings from this part of the 1999 National Prevalence Survey will be presented in a separate report.

Other Relevant Studies

Three further components of the NZGS are relevant to the findings outlined and discussed in the present report, namely:

The Literature Review (Abbott & Volberg, 1999) provides a critical overview of previous surveys of gambling and problem gambling conducted internationally, with an emphasis on New Zealand, Australian and North American research. This review provides a background and context within which the findings of the present report can be considered.

The Longitudinal Follow-up (Abbott, Williams & Volberg, 1999) is based on follow-up interviews with 143 people who originally participated in phase two of the 1991 national survey. The report on this study presents information about the definition and measurement of gambling and problem gambling and stability and change in these behaviours. It also identifies factors that are associated with this stability and change. This study, by following the same individuals over time, provides a different and complementary perspective on some of the matters considered in the present report. The Longitudinal Follow-up report findings assist with interpretation of a number of the 1999 NPS results.

The Prison Study, based on surveys of a number of New Zealand prisons, provides information about gambling and problem gambling in one of the sectors of the adult population that was not included in the NPS sample frame. Like other general population studies, the NPS was confined to people living in residential dwellings. Among other things, findings of the Prison Study will assist in establishing a more accurate estimate of problem gambling in the total adult population. This study will be reported in two separate publications.

A further national study, recently completed in Sweden, also has relevance to the present survey in that it uses similar methodology and was conducted in a country with per capita gambling expenditure that approximates that of New Zealand (Rönnerberg, Volberg & Abbott et al, 1999).

Major Findings

Gambling

Gambling Participation

In 1999, 94.0 percent (93.4-94.6%) of New Zealand adults said that they had participated in at least one type of gambling activity at some time in their lives. The percentages given in brackets indicate the confidence interval surrounding the point prevalence estimate of

94 percent. There is a 95 percent probability that the true estimate for the adult population falls between 93.4 and 94.6 percent.

The 94.0 percent lifetime gambling participation rate is similar to that of the 1991 national survey (95%) and comparable to rates obtained in recent Australian, Canadian and Swedish surveys. It is higher than United States participation rates.

Lifetime participation in New Zealand is highest for Lotto (85.9%; 84.9-86.9%), followed by other lotteries or raffles (76.8%; 75.6-78%), Instant Kiwi (61.4%; 60.1-62.7%), betting on horse or dog races (48.1%; 46.6-49.6%), gaming machines outside casinos (37.1%; 35.6-38.6%), casino gaming machines (35.7%; 34.4-37.0%), money bets with friends or work-mates (34.3%; 32.9-35.7%) and TeleBingo (25.8 %; 24.6-27.0%). Lifetime rates are below 25 percent for other types of gambling.

Past six months participation in at least one form of gambling (86.2%; 85.2-87.2%) is high by international standards, although somewhat lower than was reported in the 1991 national survey (90%). Only three gambling activities (Lotto, other lotteries or raffles and Instant Kiwi) are engaged in this frequently by more than 25 percent of adult New Zealanders.

Weekly participation in at least one form of gambling (40.8%; 39.2-42.4%), although also high by international standards, is largely confined to people who purchase Lotto tickets. Over a third of adults (35.0%; 33.6-36.4%) report weekly Lotto participation. Once a week or more frequent involvement in other forms of gambling are: TeleBingo (6.2%; 5.4-7.0%), Instant Kiwi (5.9%; 5.2-6.6%), other lotteries or raffles (3.1%; 2.6-3.6%), betting on horse or dog races (2.7%; 2.2-3.2%) and gaming machines-outside casinos (2.0%; 1.5-2.5%). Weekly rates for other forms fall below two percent.

Where a form was available in both 1991 and 1999, lower weekly participation rates were reported in 1999 (except for housie, with a one percent weekly rate in both surveys). However, not all of these differences are likely to be statistically significant. Of the recently introduced forms, TeleBingo ranks second in 1999 after Lotto. Daily Keno, with a rate of one percent, is less popular.

People who gambled weekly or more were considered further by allocating them to one of two mutually exclusive categories – regular non-continuous gamblers or regular continuous gamblers. Regular non-continuous gamblers participate frequently in Lotto and/or other forms of gambling where winnings cannot be re-invested shortly after a win. Regular continuous gamblers participate frequently in one or more forms of gambling such as gaming machines, track betting and casino table games where winnings can be readily re-invested. These gambling activities generally also involve an element of skill or perceived skill and have been shown by previous research to be more strongly associated with the development of problem gambling than is the case with non-continuous activities. Regular continuous gamblers may also engage weekly or less frequently in non-continuous forms of gambling. While regular non-continuous gamblers may engage infrequently in continuous forms, if they do so weekly or more they are excluded from this category and classified as continuous gamblers.

In 1999, it is estimated that 30.3 percent (28.9-31.7%) of New Zealand adults are regular non-continuous gamblers and that another 10.5 percent (9.6-11.4%) are regular

continuous gamblers. In 1991, a similar percentage (30%) was classified as regular non-continuous gamblers. However, in the 1991 survey, the continuous estimate was higher (18%). This suggests that while there has been no change in the proportion of regular non-continuous gamblers, there has been a reduction in the proportion that gambles regularly on continuous forms.

A recent national Australian survey found that approximately 40 percent of Australian adults gamble weekly or more on at least one type of gambling activity (Productivity Commission, 1999). This figure is similar to the weekly participation rate in Sweden (42%) and the New Zealand point estimate (40.8%). However, the Australian estimate for regular continuous gamblers (20%), is approximately double that of its 1999 New Zealand counterpart.

The Sociodemographic Profile of Gamblers and Non-Gamblers

The sociodemographic profile of people who have gambled as a whole broadly reflects the profile of the New Zealand adult population. This is expected given the high levels of lifetime and past six months participation in at least some form of gambling. However, sociodemographic profiles are more distinct for people who never or rarely gamble and for regular (weekly or more) continuous gamblers.

In 1999 the following groups, relative to others within the same grouping of sociodemographic categories, contain relatively large proportions of people who take part weekly or more in continuous forms of gambling:

- Males
- People aged 55-64 years
- Māori
- People without formal educational qualifications
- Employed people
- People with lower status occupations
- Roman Catholics
- Christchurch residents.

The following groups have 25 percent or more people who have never gambled or who did not gamble in the past six months:

- Asians
- People born in countries other than New Zealand, Europe, Australia and North America
- People who had lived in New Zealand less than four years
- Students
- Other Christians (i.e. Christians not in the major denominations)
- Other religions (i.e. people of religions other than Christian).

People who are unemployed or not in the labour force also contain relatively large proportions (exceeding 20%) of non-gamblers and occasional gamblers.

The sociodemographic profiles of gamblers vary across the different forms of gambling. For example, with respect to past six months or more frequent participation:

Lotto participants are:

- more likely to be employed and lack degree or higher qualifications
- less likely to be aged 18-24 years, to have lived in New Zealand for less than four years, to be of a religion other than Christian or a Christian who does not belong to one of the major denominations.

Instant Kiwi participants are:

- more likely to be employed, to be female or aged under 45 years (with particularly high levels of participation on the part of people aged 18-24 years)
- less likely to be Pacific Islanders, to have lived in New Zealand for less than four years, be of a religion other than Christian or a Christian who does not belong to one of the major denominations.

Track betters are:

- more likely to be employed, to have no school or other qualifications, to be male, aged 25-34 years, to be Māori, to be a Roman Catholic and live in Wellington or Christchurch
- less likely to be aged 18-24 years, to be Asian, to live in a household with an income of NZ\$40,001-NZ\$50,000, to be of a religion other than Christian or a Christian who does not belong to one of the major denominations.

TeleBingo participants are:

- more likely to be female, to be aged over 34 years, to be Māori or Pacific Islanders, to lack a degree or higher qualifications, to be married or living in a defacto relationship
- less likely to be of a religion other than Christian or a Christian who does not belong to one of the major denominations, to have lived in New Zealand for less than four years, to have a household income over NZ\$50,000 and to live in Auckland or Christchurch.

Gaming machine (outside casino) participants are:

- more likely to be male, to be employed, to lack a degree or higher qualifications, to be Māori, to be aged under 35 years, and to be never married
- less likely to be of a religion other than Christian or a Christian who does not belong to one of the major denominations, to be an Auckland resident, to live alone, and have a household income of NZ\$20,001-NZ\$30,000 or NZ\$50,001-NZ\$70,000.

Casino gaming machine participants are:

- more likely to be employed, to be Pacific Islanders, to live in Christchurch or Auckland, to be born outside Europe, Australia or North America and to have a household income over NZ\$70,000
- less likely to be a Christian who does not belong to one of the major denominations, live in a household of five or more, and have a household income of NZ\$30,000 or less.

Other casino games participants are:

- more likely to be male, employed, aged 25-34 years, live in Christchurch or Auckland and to be born in Europe, Australia or North America
- less likely to be a Christian who does not belong to one of the major denominations, to have school qualifications only and to have a household income of \$NZ30,000 or less.

The 1991 survey did not examine the sociodemographic profiles for different forms of gambling in as much detail as the 1999 study did. However, there appear to be some changes over time, the most notable being a substantial reduction in the proportion of unemployed people who participate in a number of forms of gambling including Instant Kiwi, track betting and gaming machines. Pacific Islanders also appear to have substantially lower levels of involvement in Instant Kiwi and track betting. Although gender differences remain with respect to forms of gambling that were available in both 1991 and 1999, women have similar or higher levels of involvement in casino gaming machines and TeleBingo. Both of these forms were introduced after 1991.

Gambling Expenditure

Typical monthly gambling expenditure was calculated for survey participants who reported having gambled on at least one form of gambling in the past six months. Based on this information, the estimated annual expenditure for New Zealand adults was NZ\$1,162 million (NZ\$993-1,331 million). This is similar to the Department of Internal Affairs 1998 actual net expenditure figure of NZ\$1,045 million for major forms of legal gambling.

The 1999 mean (average) reported monthly expenditure per adult was NZ\$41. The comparable 1991 survey estimate was NZ\$37.

Of the total reported gambling expenditure, Lotto takes the largest share (36.0%; 30.9-41.1%), followed by track betting (18.4%; 10.5-26.3%), gaming machines-outside casinos (6.8%; 5.2-8.4%), other lotteries or raffles (6.5%; 5.0-8.0%), Instant Kiwi (5.9%; 5.0-6.8%) and gaming machines-in casinos (5.7%; 4.1-7.3%). None of the other forms, individually, accounted for more than five percent of total reported expenditure.

The 1999 expenditure percentages for Lotto, track betting, gaming machines-outside casinos and other lotteries or raffles are similar to those obtained in the 1991 national survey. Instant Kiwi accounted for a larger percentage of total reported expenditure in 1991 (9%), as did betting on card games (15%).

Although the total reported gambling expenditure estimate is very close to 1998 official total gambling expenditure for major forms of legal gambling, the reported estimates for gaming machines and casino gambling are much lower than the official figures. Underestimates of expenditure of these forms of gambling have been noted in studies in Australia and North America. The estimates for Lotto and other types of lotteries and raffles, on the other hand, are higher than the official figures for these activities. It is likely that the Lotto/lottery estimates are high because most respondents do not factor winnings into their calculation of 'expenditure'. It is less certain why gaming machine and casino estimates differ from official expenditure records. Participants in these forms of gambling may be unaware of the full extent of their losses and/or be reluctant to report them. In contrast to the situation with other major forms of gambling, reported expenditure on horse and dog betting was similar to official expenditure figures.

Most adults report spending small amounts on gambling activities. The majority of New Zealand adults (53%) report gambling less than NZ\$20 per month. This is also typical of surveys conducted in other countries. For example, the recent Swedish national survey found that 58 percent of the population reported this level of expenditure. A smaller percentage report moderate to high levels of expenditure. In 1999, 23 percent of New Zealand adults report spending NZ\$40 or more per month.

When the various forms of gambling are considered separately, it is evident that the average reported typical monthly expenditure for people who participate in each activity is highest for card games, followed by track betting, casino games, housie and Internet-other sports betting. These are all continuous forms of gambling and some also involve a degree of skill.

On average, regular continuous gamblers report spending NZ\$152 (NZ\$105-200) per month. **Although only 10.5 percent of adults are classified as regular continuous gamblers, they account for nearly a third (32.1%; 29.4-34.8%) of people who report spending NZ\$40 per month or more on gambling activities. Seventy-one percent of regular continuous gamblers are in this high expenditure category.** There is also wide variability in expenditure within this expenditure group, with a moderate proportion of continuous gamblers reporting very high monthly expenditure.

Regular non-continuous gamblers report, on average, spending NZ\$42 (NZ\$40-44) per month on gambling. Relative to the regular continuous gamblers, there is much less variability in expenditure levels within this group.

People who report having bet in the past six months, but not on a weekly basis, account for the great majority of people who spend less than NZ\$20 per month. The average monthly reported expenditure for this group of infrequent gamblers is NZ\$15 (NZ\$14-17). As with regular non-continuous gamblers, this group displays little variability in their reported expenditure.

Although gambling is widespread throughout the population, there are significant differences between social and demographic groups with respect to gambling expenditure.

Over 25 percent of people in the following groups report spending NZ\$40 or more per month on gambling activities:

- Males
- People aged 45-64 years
- Pacific Islanders
- Māori
- People born in countries other than New Zealand, Europe, Australia and North America
- Migrants resident for four years or more
- People without formal qualifications
- Employed people
- People in the following occupations:
 - Elementary occupations
 - Plant and machine operators and assemblers
 - Trades workers
 - Legislators, administrators and managers
 - Clerks
- Catholics
- Presbyterians
- People of 'other religions'
- People with a household income of NZ\$70,001 or more
- People with a household income of NZ\$40,001 to NZ\$50,000
- Auckland residents.

From inspection of this list and the list of people who did not gamble in the last six months (see page 5), it is evident that two groups - people born in countries other than New Zealand, Europe, Australia or North America and people of 'other religions' - have bimodal distributions. In other words, they contain relatively large proportions of both high spending gamblers and people who do not gamble or have low levels of expenditure. Pacific Islanders also have a bimodal distribution with approximately 40 percent spending less than NZ\$10 per month and over 40 percent spending more than NZ\$40 per month. These appear to be groups that have recently been introduced to gambling or have recently increased their gambling involvement.

In 1999, the reported average monthly gambling expenditure for men was NZ\$53. The average for women was NZ\$30. In 1991, the respective averages for these groups were NZ\$55 and NZ\$20. This suggests that there has been little or no change for men but that for women there has been an increase in their average expenditure from 1991 to 1999.

In 1999, the oldest and youngest age groups report the lowest average monthly gambling expenditure (NZ\$31 and NZ\$30 respectively). People aged 45-54 years report the highest expenditure (NZ\$58). The other age groups range between NZ\$40 and NZ\$44. In 1991, the oldest age group also reported the lowest expenditure (NZ\$20). However, at that time, the youngest age group, along with people aged 30-39 years, reported the highest expenditure (NZ\$46). **This suggests that there has been a substantial reduction in average expenditure among people aged 18-24 years and a moderate increase among people aged 65 years and older.**

In 1999, reported average monthly gambling expenditure for the major ethnic groupings were:

- Pacific Islanders NZ\$62
- Māori NZ\$49
- Europeans NZ\$40
- Asians NZ\$38
- Other ethnic groups NZ\$26.

Comparable figures were not provided in the 1991 national survey report.

Gambling Preferences

In 1999, approximately three-quarters of the 94 percent of the adult population that report ever having gambled indicate that they have a favourite or preferred form of gambling. Only 26.4 (25.2-27.6) percent of adults do not report having a preference for a particular type. These percentages are the same as those given in the 1991 national survey report.

Consistent with the gambling participation and expenditure findings, Lotto is the most preferred form of gambling, with 24.4 (23.2-25.6) percent stating that this is their favourite gambling activity. Of the remaining forms of gambling, only betting on horse or dog races (9.7%; 8.8-10.6%), Instant Kiwi (6.2%; 5.5-6.9%) and TeleBingo (5.4%; 4.7-6.1%) are favoured by more than five percent of New Zealand adults.

In 1991, 28 percent of adults favoured Lotto, 12 percent betting on horse or dog races and seven percent Instant Kiwi. While these three forms of gambling retain the same ranking in 1999, all appear to have declined somewhat in absolute terms.

Regular gamblers, especially regular continuous gamblers, are much more likely than less frequent gamblers to report having a favourite form. Almost a quarter of regular continuous gamblers favour betting on horse or dog races. Instant Kiwi and gaming machines-outside casinos are the other forms of continuous gambling favoured by people in the regular continuous category. A relatively large number also favour Lotto, a non-continuous form of gambling. Lotto is by far the most frequently mentioned preference for regular non-continuous gamblers, favoured by over 40 percent.

Men more often than women favour betting on horse and dog races, other sports betting, taking money bets with friends and work-mates and card games for money. Women more frequently than men favour Instant Kiwi, TeleBingo and housie. There is little or no gender difference for other preferences, including preferences for Lotto, gaming machines and casino table games.

Younger adults (under 35 years) more often than other adults report that they have a favourite form of gambling. They more frequently favour Instant Kiwi, gaming machines (both in and outside casinos), other sports betting and money bets with friends and work-mates. Older adults more often favour Lotto.

With respect to gambling preferences, only three ethnic groupings were considered - European, Māori and other ethnic groups. The latter, while predominantly consisting of a

variety of Pacific Island and Asian ethnicities, includes all New Zealand residents who are not Māori or European. Consequently, it may obscure differences between groups within this broad category.

Of the three ethnic categories, Māori most frequently indicate that they have a favourite gambling activity. Europeans more often express a preference for horse or dog racing than people in the other groupings. Māori, relative to the other two groups, prefer gaming machines outside casinos. People in the 'other' category appear to more often favour casino table games although large absolute and relative sampling errors for this and most other gambling activities preclude meaningful examination of apparent preference differences between the ethnic groups.

Reasons for Gambling

In 1999, the majority of people (53.4%; 51.9-54.9%) indicate that they gamble to win money. This was also the main reason given in 1991 (57%).

The other reasons given for gambling in 1999, in descending order, include: entertainment/fun (37.2%; 35.9-38.5%), to support worthy causes (27.7%; 26.4-29.0%), socialising (15.3%; 14.4-16.2%) and excitement/challenge (12.8%; 11.9-13.7%). Other particular reasons are given by less than five percent of the population.

In 1991, similar proportions of the population said they gambled to socialise (15%) or for excitement/challenge (15%). Smaller proportions said they gambled to support worthy causes (19%) or for entertainment/fun (33%).

In 1999, regular non-continuous gamblers are more likely than the other major gambling participation groups to say they gamble to win money. They are less likely to say they gamble to socialise.

Regular continuous gamblers are more likely to report gambling for entertainment/fun, for excitement/challenge, to socialise or because it is a hobby or habit.

Males more frequently than females say they gamble to socialise and less frequently give supporting a good cause as a reason for gambling. These gender differences were also apparent in 1991. In 1991, males were more likely than females to say they gambled for excitement/challenge and for entertainment/fun. In 1999, males and females differ very little with respect to these two reasons.

Adults aged under 35 years are more likely than other adults to indicate that they gamble to socialise, for excitement/challenge and for entertainment/fun. They are less likely to report gambling to support worthy causes. Similar age differences were found in 1991 for excitement/challenge and entertainment/fun. In 1991, but not in 1999, younger adults were more likely to report gambling to win money.

Problem Gambling

Problem and Probable Pathological Gambling

Problem gambling refers to patterns of gambling behaviour that compromise, disrupt or damage health, personal, family or vocational pursuits. While the individual experiencing the problem, family members and close friends and associates are most likely to experience harm, adverse effects can extend to the wider community.

Problem gambling is typically regarded in one of two different ways:

- (1) as a continuum, with people experiencing one or a small number of minor, transient problems at one end, through to people experiencing a cluster of serious gambling-related problems of prolonged duration at the other;
- (2) as a mental disorder that is assessed on the basis of individuals meeting diagnostic criteria established by organisations such as the American Psychiatric Association and accepted by health authorities including the World Health Organisation and the New Zealand Ministry of Health.

In the present report problem gambling is conceptualised both as a continuum and as a mental disorder, with pathological gamblers regarded as a sub-set of problem gamblers. Pathological gamblers suffer from severe problems and can be identified using official diagnostic criteria.

The Measurement of Problem and Probable Pathological Gambling

In the National Prevalence Survey (NPS), problem and pathological gambling are measured using a revised version of the South Oaks Gambling Screen (SOGS-R). This screen was developed for the 1991 New Zealand national survey (Abbott & Volberg, 1991; 1996). This revised screen, or adaptations of it, has subsequently been used in the majority of problem gambling prevalence studies conducted throughout the world. The original SOGS was based on the official psychiatric definition of pathological gambling as a chronic or chronically relapsing mental disorder. People who acknowledge that they have, at some time in their lives, experienced five or more of 20 symptoms are classified as probable pathological gamblers. Those who report that they have experienced three or four symptoms are also differentiated and referred to as problem gamblers. The remainder, who report having experienced two or fewer symptoms, are referred to as non-problem gamblers.

The SOGS-R differs from the original version in that the 20 'clinical' questions are presented in both lifetime (ever experienced) and current (experienced in the past six months) formats. This lifetime-current distinction is based on the premise that pathological and problem gambling are not, invariably, life-long conditions. It is assumed that for some people they will be chronic. For others, it is assumed that they will either fluctuate over time or be transient states not prone to relapse. These assumptions have been corroborated by the findings of the recent longitudinal follow-up study of problem gamblers and regular non-problem gamblers who were included in the 1991 national survey (Abbott, Williams & Volberg, 1999).

The term 'probable pathological gambler' is used to distinguish people identified on the basis of their scores on screening instruments such as the SOGS-R from people

diagnosed following clinical assessments conducted by clinical psychologists or psychiatrists.

Research has shown that the original SOGS and lifetime SOGS-R screens are very good at detecting serious gambling problems among people who have been independently diagnosed as pathological gamblers. However, like screens for other clinical conditions, in general population surveys they typically do this at the expense of generating a substantial number of false positives (people who are classified as having a disorder but who do not have it when assessed clinically). False positives may or may not be counterbalanced by false negatives (people who are not classified as having a disorder but who are found to have it when assessed clinically). The current SOGS-R, relative to the lifetime measure, appears to produce fewer false positives but substantially more false negatives. Consequently, the current measure probably provides a weaker screen for identifying people with serious gambling problems and under-estimates the prevalence of problem and probable pathological gambling when used in community settings. This concern has led most investigators since 1991 to extend the timeframe used in the current SOGS-R to 12 months. However, it has yet to be determined whether or not this modification reduces the number of false negatives or changes the number of false positives.

In the present study, although it is noted that the six-month version of the SOGS-R may under-estimate current prevalence, this timeframe is retained to facilitate comparison with the findings of the 1991 'baseline' survey.

Problem and Probable Pathological Gambling Prevalence Estimates

Prevalence refers to the proportion of the population or a sector of the total population with serious gambling-related problems. It can be thought of as a measure of 'stock' - the number of cases present at a given point in time. In the NPS, both lifetime and past six months prevalence timeframes are used. The former refers to the number of adults presently living in the community who have ever experienced serious gambling-related problems. The latter refers to the number experiencing such problems currently. Incidence, in contrast to prevalence, refers to the number of new cases that develop during a fixed period of time. It can be regarded as a measure of flow (or, more precisely, in-flow) rather than stock.

The NPS provides prevalence estimates. Incidence cannot be directly assessed by studies of this type. The estimation of incidence requires longitudinal surveys that follow large numbers of the same individuals over time. To date, there have been no incidence studies of problem gambling that involve a representative sample drawn from a general population.

From the present survey, it is concluded that even though approximately 94 percent of New Zealand adults report having gambled at some time, the great majority of adults (83.1%; 81.9-84.3%) have never experienced any of the symptoms or gambling-related problems included in the SOGS-R.

On the basis of the SOGS-R, it is estimated that between 38,300 (1.4%) and 68,600 (2.5%) New Zealanders aged 18 years and older can be classified as lifetime

problem gamblers and that an additional 19,700 (0.7%) to 39,100 (1.4%) can be classified as lifetime probable pathological gamblers.

The lifetime estimates include current problem and probable pathological gamblers as well as people who report having problems in the past but not currently.

It is estimated that between 15,400 (0.6%) and 30,700 (1.1%) New Zealand adults can be classified as current problem gamblers and that an additional 7,300 (0.3%) to 20,100 (0.7%) can be classified as current probable pathological gamblers. The current estimate is based on behaviour reported in the past six months.

For a variety of reasons discussed in the body of this report, it is considered that all of these estimates are probably conservative and possibly highly conservative (i.e. they under-estimate the number of people with serious gambling-related problems).

The Stability of Problem and Probable Pathological Gambling

Because the current probable pathological gambling prevalence rate is approximately half its lifetime counterpart, it would appear that about a half of all people who have experienced serious gambling-related problems at some time in their lives no longer experience problems of this severity. This finding is consistent with the findings of many other surveys that have used the SOGS-R, including those of the 1991 New Zealand national survey. However, the 1999 longitudinal survey (Abbott, Williams & Volberg, 1999) found that over two-thirds of respondents who scored as lifetime probable pathological gamblers in 1991 no longer scored five or more on the lifetime SOGS-R when they were re-assessed in 1998. In other words, many people significantly under-report past gambling-related problems, especially people who no longer (currently) experience such problems. Consequently, it can be concluded that the SOGS-R provides a highly conservative indication of lifetime probable pathological gambling.

In the present context, given the instability in lifetime SOGS-R scores, it is likely that the actual lifetime rates are at least twice as high as reported above. If so, it also means that the degree of problem reduction inferred from the lifetime-current difference is an underestimate. This further suggests that, for some probable pathological gamblers, their problems may be more transient than has previously been considered to be the case.

There are indications, from both the present survey and the longitudinal follow-up study, that problem gamblers who score three or four on the SOGS-R are more prone to problem reduction over time than probable pathological gamblers are. However, it was also found in the longitudinal study that a significant minority (18%) of 1991 problem gamblers progressed to probable pathological gambling status when re-assessed seven years later. Put another way, while this labile problem gambling group may be regarded as being at high risk for the development of pathological gambling, its members are much more likely to overcome their problems.

Swedish and Australian Comparisons

The 1999 lifetime probable pathological gambling point prevalence estimate of one percent is somewhat lower than that obtained in the recent Swedish national survey (1.5%). The current probable pathological gambling point prevalence estimate of 0.5 percent is similar to the Swedish rate (0.6%). Both the New Zealand and Swedish current rates are substantially lower than the national probable pathological gambling estimate obtained from a recent Australian survey (2.1%). However, they are comparable with prevalence estimates for Western Australia (0.7%) and Tasmania (0.4%), the states with the lowest per capita gambling expenditures (Productivity Commission, 1999). The Australian survey did not include a lifetime measure. Both the Australian and Swedish studies used a 12 month measure of current probable pathological gambling status. The 12 month time-frame probably yields slightly higher estimates than the six month frame used in the NPS-1 although this has yet to be determined.

Other Indicators of Problem Gambling

Apart from the aggregate SOGS-R measures of problem and probable pathological gambling, a number of other questions included in the questionnaire have some relevance to gauging the extent of gambling-related problems in New Zealand. Specifically, respondents were asked:

- If they had ever felt nervous about the amount of money gambled
- Whether they personally considered that they had a problem with gambling (currently and/or in the past)
- If they had ever wanted help to stop gambling
- Whether they had ever tried to get help to stop gambling
- Whether they think someone else in their life has a problem with gambling.

Seven percent of adults report that they had felt nervous about the amount of money they spent gambling.

One-point-six percent of adults indicate that they, themselves, considered that they had a problem with gambling in the past and 0.5 percent consider that they have a problem currently. The current estimate is the same as the SOGS-R current probable pathological gambling point prevalence rate. The lifetime estimate is somewhat higher than the SOGS-R lifetime probable pathological gambling point prevalence rate. These questions were also asked in the 1991 survey. In 1991 two percent said that they had had a problem at some time; just under one percent indicated they had a problem currently.

This question was also included in the recent Swedish and Australian national surveys. In Sweden, 0.3 percent considered that they had a problem with gambling in the past year. In Australia, 6.3 percent considered that they had a problem currently.

One percent of New Zealand adults said that at some stage in their lives they had wanted help to stop gambling. This is the same as the 1999 SOGS-R lifetime probable pathological gambling point prevalence rate.

Zero-point-four percent of adults indicated that they had tried to get help to stop gambling, 40 percent of those who said they had wanted to obtain this type of assistance. This is approximately 9,500 people, slightly more than the number (approximately 8,500) that have sought professional assistance from specialist problem gambling help-line and counselling services since they commenced in the early 1990s.

Questions concerning help seeking were also included in the Australian national survey. However, reported findings are not directly comparable to those of the NPS because they are confined to the past 12 months. In Australia, 0.8 percent said they wanted help in the past 12 months for problems related to gambling, 0.3 percent said they had tried to get help during this time period and 0.2 percent said they had received it.

In the NPS 3.6 percent of adults said they thought that their father may have or may have had a gambling problem. One-point-five percent thought likewise with respect to their mother. These percentages are somewhat higher than self-ratings of problem gambling and suggest that people may be more willing to recognise and/or report other peoples' problem gambling than their own. In 1991, four percent of respondents said they considered that one or both of their parents had sometime had a problem with gambling.

In 1999, 9.5 percent also said that they thought another close family member may have or may have had a gambling problem. Eighteen-point-four percent said likewise for a friend or someone else of their acquaintance. These questions were not asked in the 1991 survey.

The 1991 Survey and Consideration of Factors that Influence Changes in Prevalence

The authors of the 1991 national study (Abbott & Volberg; 1991, 1996) concluded that the survey was picking up some of the early consequences of a recent rapid expansion in gambling availability and participation. They observed that large numbers of people had only relatively recently started to participate in continuous forms of gambling on a regular basis and that it usually takes many years for serious gambling problems to develop. The 1991 survey found very high prevalence rates of problem gambling among young adults, Māori and Pacific Islanders. Demographic projections indicated that during the next two decades, Māori and Pacific Islanders would make up a growing proportion of the adult population. Abbott and Volberg expected that as the young adult cohort aged, many of the SOGS-R defined problem gamblers would become pathological gamblers and that, over time, the adult population as a whole would contain more pathological gamblers. It was also expected that the next cohort of young adults would have problem gambling rates that were similar to or higher than those of their 1991 counterparts.

From the above considerations, Abbott and Volberg envisaged a 'pipeline' effect whereby a large number of people who were at-risk for, or in the early stages of, problem gambling development would, over time, be added to those in the population who had already developed serious problems. They further anticipated that if new forms of gambling such as casinos were introduced and other continuous forms of gambling became more widely available, there would be a further increase in the number entering the 'pipeline'. In other words, it was concluded that the incidence rate would rise and hypothesised that, during

the next decade, the prevalence of problem and probable pathological gambling would increase.

However, prevalence (the total stock of cases) is not totally determined by incidence (the inflow of new cases). Prevalence is also determined by the duration of the illness or disorder in question. This may also be thought of as outflow - the rate at which people cease to be cases. Outflow can occur through self-recovery, successful treatment, emigration or death. In the case of prevalence assessed from community household surveys, outflow can also occur if significant numbers are hospitalised, imprisoned or reside in other institutional settings.

At the time of the 1991 national survey, while Abbott and Volberg were of the view that serious problem gambling may be more transient than was generally considered to be the case, they did regard pathological gambling as a chronic or chronically relapsing disorder for the majority. They also considered it likely that the majority of less serious problem gamblers (who made up nine percent of the 18-24 years age cohort in 1991) would become pathological gamblers. In 1991 there were no specialist counselling, treatment or public education programmes for problem gambling. If such services did become available, previous research with related disorders such as alcohol dependence had shown that most people in the community with problems do not access them and, of those who do, many are treatment failures. Although some overseas research had found high rates of suicidal ideation and suicide attempts among pathological gamblers, it was thought that only a small minority of pathological gamblers would kill themselves. For these reasons, Abbott and Volberg considered it most unlikely that the outflow or stock reduction would do more than partially offset an increasing inflow of new cases of problem and probable pathological gambling.

From the above considerations and a review of relevant international research concerning changes in problem gambling prevalence over time and associations between gambling participation, expenditure and problem gambling, Abbott and Volberg predicted at the outset of the 1999 survey that 1999 prevalence rates would be substantially higher than in the 1991 survey.

The 1991 and 1999 Prevalence Rates Compared

The 1991 lifetime problem gambling prevalence rate for the total adult population was 4.3 percent (3.6-5.0%). The lifetime probable pathological gambling prevalence was 2.7 percent (2.2-3.3%). These rates are higher than the 1999 prevalence estimates which were respectively 1.9 percent (1.4-2.5%) and one percent (0.7-1.4%).

In 1991, the current problem gambling prevalence rate was 2.1 percent (1.7-2.7%). The current probable pathological gambling prevalence was 1.2 percent (0.9-1.6%). Again, these rates are higher than the 1999 estimates of 0.8 percent (0.6-1.1%) and 0.5 percent (0.3-0.7%).

These findings fail to corroborate the hypothesis that prevalence rates would be higher in 1999. Thus, a conservative conclusion is that there is no evidence of an increase in the prevalence of problem gambling and probable pathological gambling since 1991.

At this point, a cautionary note needs to be made concerning comparison of these and other findings from the 1991 and 1999 surveys. Although similar procedures and questionnaires were used, the methodologies and statistical treatment of the data from the two studies are not identical. For the most part these differences arose from the objective, in 1999, to conduct a high quality probability survey and obtain a response rate in excess of 70 percent. The differences and their implications for interpretation of the findings from the two studies are discussed in the body of this report. While it is likely that methodological factors had an influence on the prevalence estimates obtained, it is considered unlikely that they would be sufficient to fully account for differences of the magnitude reported above. Nevertheless, it remains a possibility that the difference between the prevalence estimates is an artefact of methodological differences between the two studies.

It should also be noted that information from two surveys is not sufficient to determine trends over time. This requires at least three data points, preferably more, obtained from surveys using identical or very similar methodologies. On the basis of the findings of the 1991 and 1999 surveys alone, it would be premature to conclude that the prevalence of problem and probable pathological gambling has levelled out or declined in New Zealand. However, the findings do suggest that this might be the case and both hypotheses should be addressed in future studies.

Irrespective of the effects of using slightly different methodologies in 1991 and 1999, it is considered that the 1999 survey is more robust technically and provides more accurate information about gambling participation and serious problem gambling than the 1991 survey does.

Gambling Expenditure by Problem Gamblers and Non-problem Gamblers

The average reported monthly gambling expenditure for current problem and probable pathological gamblers combined is NZ\$526 (NZ\$176-876) and for non-problem gamblers is NZ\$34 (NZ\$32-36). Apart from indicating a large difference between the two groups in average expenditure, these figures also show that there is considerable variation in expenditure among problem gamblers and much less variation among those without significant problems.

Although current problem and probable pathological gamblers constitute about only 1.3% of the total adult population, this group is responsible for approximately 19 percent of total reported monthly gambling expenditure. This estimate is likely to be conservative, in large part because gaming machine expenditure is under-reported.

Prevalence by Category and Type of Gambling

People who report participating regularly (weekly or more) in continuous forms of gambling and who report spending NZ\$40 per month or more on gambling

have substantially higher rates of both current and lifetime problem and probable pathological gambling.

Twenty-six percent of people who report weekly or more frequent participation in gaming machines outside casinos and 18 percent of people who report betting this often on horse or dog races are lifetime problem or pathological gamblers. Rates for current problem or pathological gambling are 19 percent and 13 percent respectively.

Regular continuous gambling involvement and frequent participation in gaming machine and track betting were also strongly linked to problem gambling in 1991.

In 1999, apart from regular gaming machine participation outside casinos and track betting, participation in gaming machines at casinos, other casino games and TeleBingo are also associated with both current and lifetime problem and pathological gambling. Taking money bets with friends or work-mates is also linked to current problem and probable pathological gambling. Playing card games for money is an additional risk factor for lifetime problem and probable pathological gambling.

Gambling Preferences of Problem and Probable Pathological Gamblers

The gambling preferences of current problem and probable pathological gamblers were compared with those of non-problem gamblers. Relative to the non-problem group, the combined problem groups are much more likely to say that they have a preferred form of gambling. Consistent with the participation information just presented, problem gamblers are much more likely to report that they prefer betting on horse or dog races and playing gaming machines outside casinos. While a substantial number also favour Lotto, they are much less likely to do so than non-problem gamblers.

Sociodemographic Risk Factors

Considered individually, the factors most strongly associated with lifetime problem and probable pathological gambling in 1999 are gender, ethnicity, age, household size and location. Specifically, males, Māori and Pacific Islanders, people aged 25-34 years, people living in households of five or more and Auckland residents are significantly more likely than others within these sociodemographic categories to have lifetime SOGS-R scores of three or more.

Males, Māori and Pacific Islanders, people living in households of five or more and Auckland residents were also high-risk groups for both lifetime and current problems in 1991. At that time, people aged 18-24 years and unemployed people were additional high-risk groups. People in lower status occupations and lacking school qualifications were also at somewhat higher risk.

In 1999, the individual risk factors most strongly associated with current problem and probable pathological gambling are ethnicity (Māori and Pacific Islanders have very high prevalence rates relative to other groups), labour force status (employed people have higher prevalence rates than those unemployed or not in the labour force), and education (people with no qualifications or vocational or trade qualifications have higher rates than those with school qualifications only or degree or higher qualifications).

Although Auckland or Christchurch residence is also associated with higher current problem and probable pathological gambling, these associations are of marginal significance statistically.

The 1999 risk factors for lifetime problem and probable pathological gambling are more similar to 1991 risk factors than the 1999 risk factors for current problem and probable pathological gambling are. This is what would be expected if there was a change in risk factors over time. While having some shortcomings as a lifetime measure of problem gambling, lifetime SOGS-R scores are more of an indicator of past gambling problems than current SOGS-R scores are.

Considered overall, the 1991 and 1999 national survey data suggest that there have been some significant changes over time with respect to risk factors for problem and pathological gambling, particularly for people with current problems.

In 1991, large percentages of current problem and probable pathological gamblers were male, aged under 30 years, Pacific Islanders, Māori and unemployed. In 1999, Māori and Pacific Islander representation (44%) is similar to what it was in 1991. However, notable differences are evident for the other groups. Specifically, in 1999:

- **Male probable pathological gamblers no longer outnumber females, although there remains a gender difference with respect to problem gambling.** In 1991, 80% of current probable pathological gamblers and 55% of current problem gamblers were males
- **People aged 18-24 years, previously the age group with the highest prevalence rate, have the second lowest rate after people aged 65 or older**
- **No unemployed people are identified as current probable pathological gamblers and only 0.2 percent are problem gamblers.** In 1991 29 percent of current probable pathological gamblers were unemployed and 12 percent of unemployed people were current problem or probable pathological gamblers.

Inter-relationships between Risk Factors

Many of the sociodemographic risk factors are correlated. For example, Māori and Pacific Islanders are more likely to be young, have lower levels of formal education and lower incomes, be unemployed and live in Auckland. For this reason, considering individual sociodemographic or other risk factors in isolation can give a misleading account of their relative importance. In the present study, this matter was addressed by

undertaking multivariate analyses (logistic regression and correspondence analysis) that examined groups of risk factors together.

With respect to lifetime problem and probable pathological gambling, the individual risk factors considered above were confirmed as significant predictors in one or both of the multivariate analyses conducted. Some additional risk factors emerged from these analyses. In both analyses, Catholics were at somewhat higher risk than people of other religions as were people born outside New Zealand, Europe, Australia and North America. In the logistic regression analysis, people lacking formal qualifications were also at somewhat greater risk. Both Auckland and Christchurch residence were associated with higher problem and probable pathological gambling prevalence.

With respect to current problem and probable pathological gambling, Māori and Pacific Island ethnicity emerged as very strong predictors in both the logistic regression and correspondence analyses. Being born outside New Zealand, Europe, Australia or North America was also confirmed as a significant predictor in one of the analyses. In contrast to the situation with lifetime problem and probable pathological gambling, a number of additional predictors emerged in the multivariate analyses. In two of the analyses, Catholicism and living in a household with an income of NZ\$40,001-50,000 were significant. In the logistic regression, Christchurch residence also emerged as a relatively strong predictor and other Christians were found to be at relatively low risk. Males and people with vocational or trade qualifications also appeared to be at somewhat greater risk.

The finding of higher prevalence rates in some analyses for people living in Auckland and Christchurch relative to other parts of the country is consistent with the hypothesis that the introduction of urban casinos to these cities would generate additional gambling problems.

Other Risk Factors

A number of additional factors were examined to determine whether or not they differentiated problem and probable pathological gamblers from non-problem gamblers. In these analyses, the two problem groups were combined. As with the gambling participation risk factors, multivariate procedures were used and both current and lifetime problem gambling were considered.

From logistic regression analyses, risk factors that have the strongest relationship with both current and lifetime problem gambling include:

- Gambles as a hobby or habit
- Usually gambles alone
- Someone in the respondent's life has a gambling problem.

The factors associated with a low probability of both current and lifetime problem gambling include:

- Usually gambles with friends or co-workers
- Usually gambles for less than one hour.

In the case of lifetime but not current problem gambling, there appears to be a high risk associated with first commencing gambling before the age of 13 years or at 25 years or older. Gambling for excitement or challenge, usually gambling with other family members, and reporting first gambling in a casino or on gaming machines and first playing cards for money, are further risk factors for lifetime problem gambling.

In the case of current but not lifetime problem gambling, first purchasing Instant Kiwi tickets was an additional risk factor.

Cautionary Note

In a cross sectional survey of the type conducted here, it is not generally possible to clarify the temporal sequence of events and determine cohort effects. Additionally, statistical associations do not necessarily mean that variables are causally linked. Further research using stronger designs (e.g. longitudinal surveys and quasi-experimental studies) is required to examine the relationship between variables identified as risk factors and the development of problem gambling.