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Fifteen years of problem gambling prevalence research: What do we know? Where do we go?

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Abstract

This paper charts the rapid growth of problem gambling prevalence research in North America and internationally. Looking beyond the overall prevalence of problem gambling in the general population, the results of these studies support the notion of a link between the expansion of legal gambling opportunities and the prevalence of problem gambling as well as the notion that the characteristics of problem gamblers change in response to changes in the availability of specific types of gambling. The results of these studies also challenge existing concepts and definitions of problem gambling. In the future, it will be important to improve how problem gambling prevalence research is done. Such work is likely to include changes in how we measure gambling problems as well as requiring us to take steps to overcome obstacles in achieving representative samples of the population and obtaining valid and accurate information.

Introduction

In the second edition of *The Chase: Career of the Compulsive Gambler*, published in 1984, Henry Lesieur included an Afterword in which he described several momentous developments related to problem gambling that had taken place in the United States in the years since his book was first published. These developments included the first national survey of gambling and gambling-related problems in the United States, which was undertaken in 1975 as part of the work of the Commission on the Review of National Policy Toward Gambling and the inclusion of the diagnosis of pathological gambling in the American Psychiatric Association's *Diagnostic and Statistical Manual* in 1980. At the end of this chapter, Lesieur emphasized the critical need for research to improve our understanding of problem gambling and to assist policy-makers and treatment professionals in their work. In particular, he noted the need for “solid epidemiological research … to find out the incidence and prevalence of pathological gambling” (Lesieur, 1984, p. 262).

In 1986, my colleagues and I undertook one of the first state-level epidemiological surveys of problem gambling prevalence as part of a three-year evaluation of problem gambling treatment programs in New York State (Volberg & Steadman, 1988). Few tools existed at that time to assess gambling-related difficulties and none that were based on the diagnostic criteria of the American Psychiatric Association (1980). Henry Lesieur was a consultant to our New York State evaluation and kindly provided us with a pre-publication copy of his newly developed South Oaks Gambling Screen (SOGS) for use in our survey.

This paper begins by charting the rapid growth of problem gambling prevalence research in North America and internationally, outlines a few of the many interesting findings that have emerged from this research and ends by considering several important challenges in our investigations of the epidemiology of problem

gambling. In writing this paper, I have become more aware than ever of the debt that all of us who work in the field of gambling studies owe to Henry Lesieur and his early fascination with “the gambling world” (Lesieur, 1984, p. ix).

The growth of problem gambling prevalence research

With the rapid expansion of legal gambling in the 1970s and 1980s, state governments began to establish services for individuals with gambling problems. In establishing these services, policy-makers and program planners initially sought answers to questions about the number of people in the general population who might seek help for their gambling-related difficulties. These questions required epidemiological research to identify the number of problem and pathological gamblers, ascertain their demographic characteristics and determine the likelihood that they would utilize treatment services if these became available.

Pathological gambling was first recognized as a medical disorder in 1980 when the American Psychiatric Association included it as a diagnosis in the *DSM-III* (American Psychiatric Association, 1980). Within a few years, the first tool based on these psychiatric criteria to screen for gambling problems in clinical populations — the South Oaks Gambling Screen (SOGS) — had been developed (Lesieur & Blume, 1987). Like other tools in psychiatric research, the SOGS was quickly adopted for use in epidemiological research as well as in clinical settings. By 2003, the SOGS — or one of its many variants (Lesieur, 1994; National Research Council, 1999) — had been used in population-based research in more than 50 jurisdictions in the United States, Canada, Asia and Europe (Abbott & Volberg, 1996, 2000; Bondolfi, Osiek & Ferrero, 2000; Orford, Sproston, Erens, White & Mitchell, 2003; Productivity Commission, 1999; Shaffer, Hall & Vander Bilt, 1997; Volberg, 2001a; Volberg, Abbott, Rönnberg & Munck, 2001; Welte, Barnes, Wieczorek, Tidwell & Parker, 2001). This widespread use of the SOGS came at least partly from the great advantage that a standard tool provides for making comparisons across and within jurisdictions over time (Walker & Dickerson, 1996).

Although there were increasingly well-focused grounds for concern about the performance of the SOGS in non-clinical environments, this screen quickly became, and to a great extent remains, the de facto standard in the field (Volberg & Banks, 1990). The main criticism of the SOGS has been that the screen was developed and tested in a clinical setting, and its performance in community samples is not well understood (Wiebe, Single & Falkowski-Ham, 2001). Other researchers have questioned the reliability and validity of the SOGS but have gone further in challenging the conceptualization of problem gambling as a lifetime disorder, an assumption that they argue was built into the original version of the instrument (Culleton, 1989; Dickerson, 1993; Walker, 1992).

In 1994, the fourth edition of the *Diagnostic and Statistical Manual* (*DSM-IV*) adopted a new set of criteria for the diagnosis of pathological gambling. The new criteria incorporated empirical research — including a great deal of epidemiological research — that linked pathological gambling to other addictive disorders like alcohol and drug dependence (American Psychiatric Association, 1994). One response to these changes in the conceptualization of pathological gambling was the development of a large number of new screens for problem and pathological gambling. Despite this proliferation, the psychometric properties of most of these new tools remain unexamined. Even more significantly, few of these new screens have been tested for their differential performance in clinical settings, population research and program evaluation. Another concern is how to calibrate the performance of these new screens with the results of nearly two decades of SOGS-based research.

Looking below the surface

When the results of new problem gambling prevalence studies are announced, policy-makers and the media generally focus their attention on a single number — the overall rate of gambling problems in the general population. Comparisons are made with prevalence rates in other jurisdictions and questions are asked about the number of problem gamblers that this overall rate represents and about how many of them may seek treatment if such services are made available. While these are important reasons for conducting prevalence research, there is much more to learn by looking beneath and beyond the overall prevalence rate, as the following analyses illustrate.

Is there a link between gambling expansion and problem gambling prevalence?

One hotly debated issue in the gambling studies field, legislative circles and the gambling industries is the question of whether or not, and how closely, increases in opportunities to gamble are linked to increases in the prevalence of problem gambling. Results from a range of epidemiological studies support the existence of a link between the availability of some types of legal gambling and higher rates of problem and pathological gambling.

The assumption that increases in the availability of gambling will inevitably lead to increases in the prevalence of problem gambling is likely rooted in the findings of the first national gambling prevalence survey (Kallick, Suits, Dielman & Hybels, 1976). Based on substantial differences in the prevalence rates of “probable compulsive gambling” in a large, nationally representative sample of adults and a sub-sample of adult Nevada residents, this study concluded that widespread legalization of casino gambling in the United States was likely to result in a

significant increase in the prevalence of gambling problems.

A meta-analysis of problem gambling prevalence surveys carried out between 1975 and 1996 provided further support for the notion of a direct relationship between gambling availability and the prevalence of gambling problems (Shaffer, Hall & Vander Bilt, 1997, 1999). Utilizing several analytic strategies, these researchers concluded that the prevalence of gambling disorders among adults in the general population increased significantly between 1974 and 1997, a period when the availability of lotteries, casinos and other forms of gambling increased dramatically.

More recently, the gambling impact and behavior survey carried out for the National Gambling Impact Study Commission found that access to a casino within 50 miles (versus 50 to 250 miles, or 80 to 400 km.) was associated with approximately double the rate of pathological gambling (2.1% compared to 0.9%) (Gerstein Volberg, Toce, Harwood, Christiansen, Hoffmann & Murphy et al., 1999). Similarly, the first prevalence survey conducted in Nevada established that the prevalence of pathological gambling in the most mature casino gambling market in the world was somewhere between 75% and 85% higher than in the United States as a whole, depending on how the disorder was measured. Based on past-year SOGS, the prevalence of pathological gambling in Nevada was 3.5% compared with a national rate of 1.9% (Volberg, 2002; Welte et al., 2001). Based on the lifetime NODS (National Opinion Research Center DSM-IV Screen for Gambling Problems), the prevalence of pathological gambling in Nevada was 2.1% compared with a national rate of 1.2% (Gerstein et al., 1999; Volberg, 2002). Finally, research in New Zealand found that although the past-year prevalence of pathological gambling in the general population declined from 1.2% to 0.5% between 1991 and 1999, residence in Auckland and Christchurch — where large urban casinos opened in the interval between the two studies — emerged as an independent predictor of gambling problems even when controlling for other factors associated with this disorder (Abbott & Volberg, 2000).

A prominent casino industry representative has based his argument that links between increased opportunities to gamble and the prevalence of problem gambling are either weak or non-existent on a range of epidemiological studies conducted in the United States and internationally (Fahrenkopf, 2002). It is true that a number of replication studies in the 1990s, including several directed by the present author, have identified prevalence rates of past-year pathological gambling that were stable or declined over periods ranging from two to eight years (Abbott & Volberg, 2000; Emerson & Laundergan, 1996; Gullickson, Hartmann & Wiersma, 1999; Ipsos Reid & Gemini Research, 2003; Volberg & Moore, 1999a, 1999b; Wallisch, 1996; The WEFA Group, 1997).

It is worth noting that despite increased legal opportunities to gamble in most of

these jurisdictions, statistically significant declines in weekly gambling participation were identified in all of the studies directed by the present author. Furthermore, comprehensive services for problem gamblers — including public awareness campaigns, helplines and professional counseling programs — were introduced in all of these jurisdictions. An alternative interpretation is that the relationship between heightened opportunities to gamble and the prevalence of problem gambling may increasingly be moderated by declines in regular gambling participation and growth in the availability of problem gambling services (Abbott, Volberg & Rönnberg, in press).

Specific gambling activities and the characteristics of problem gamblers

Another intriguing set of findings relates to the changing demographics of problem and pathological gamblers in different jurisdictions. This analysis emerges from consideration of prevalence surveys carried out in several jurisdictions between 1992 and 2000. Full methodological details for all of these surveys have been published elsewhere (Polzin et al., 1998; Volberg, 1992, 1993, 1995, 1997, 2001b, 2001c; Volberg & Moore, 1999a, 1999b; Volberg & Silver, 1993). In summary, all of the surveys were directed by the present author; the period between baseline and replication ranged from three to eight years; the primary problem gambling screen used in all the surveys was the revised South Oaks Gambling Screen (SOGS-R) (Abbott & Volberg, 1996) and all of the surveys obtained information from representative samples of residents of these states aged 18 and over living in households that had telephones.

The mix of available gambling activities changed in all five states between the baseline and replication survey. All five states permitted new casinos to begin operations — four riverboat casinos in Louisiana, two new tribal casinos each in Montana, North Dakota and Oregon and 10 new tribal casinos in Washington State. Three of the states — Louisiana, Montana and Oregon — permitted broadly distributed gaming machines, offering mostly video poker to operate throughout the period between baseline and replication; however, Oregon and Louisiana had far smaller numbers of gaming machines per capita compared to Montana. Finally, Washington State was unique both in the number of new tribal casinos and in the dramatic expansion of commercial card rooms. These establishments, legal in only a few North American jurisdictions, were permitted to expand from five to 20 tables per establishment as well as to introduce “house-banked” games. This change occurred in response to pressure from the card room owners facing competition from the newly opened tribal casinos.

Table 1 shows that the proportion of male lifetime problem gamblers in Louisiana, Montana and Oregon decreased between baseline and replication. In contrast, the proportion of male problem gamblers in North Dakota and Washington state increased substantially between baseline and replication. In these two states as

well as in Montana, the proportion of problem gamblers from minority groups (primarily Native Americans in Montana and North Dakota) increased significantly between baseline and replication.

While the small sample sizes suggest the need for caution in interpreting these results, they do suggest that the demographic characteristics of problem gamblers in the general population may change in response to changes in the availability of *specific* types of gambling. For example, the proportion of female problem gamblers increased in the three states with widespread availability of gaming machines — a form of gambling particularly attractive to women (Volberg, 2003). Similarly, the proportion of problem gamblers from minority groups increased in the three states where tribal casinos and/or card rooms became more available. Of these, the most intriguing was the increase in the proportion of male problem gamblers in Washington state. Was this a response to the tremendous expansion in the availability of card room gambling in the state — an activity that appeals far more to men than to women?

Improving our understanding of problem gambling

Finally, prevalence research has the potential to improve how gambling problems are defined and diagnosed. The discussion here summarizes material presented in greater depth and detail in publications co-authored with my colleagues Marianna Toce-Gerstein and Dean Gerstein (Toce-Gerstein, Gerstein & Volberg, 2003a, 2003b).

The results of the national gambling impact and behavior survey were analyzed to assess whether there was support for the idea that gambling disorders comprise a single, sharply distinguished pathological entity or lie on a continuum — a long-standing debate in the gambling studies field. The analysis examined how the individual criteria for pathological gambling, designated by *DSM-IV*, were distributed across two randomly drawn samples of adults in the United States (from individuals reporting a single criterion to those presenting the full array). A range of statistical procedures, including principal components analysis and multi-level regression modeling, were used to identify subtypes of gamblers based on their overall score on the NODS, a widely used problem gambling screen based on the *DSM-IV*.

The results of this analysis support the notion that there may be a hierarchical family of gambling disorders distinguished qualitatively as well as quantitatively. In other words, while the severity of gambling problems can be represented along a continuum, these data indicate that certain groups of variables may be predictive of several distinct patterns of gambling problems. These include a non-clinical pattern marked most often by chasing; a subclinical pattern of “problem gambling” characterized by elevated rates of gambling-related fantasy (e.g. lying, gambling to

escape, and preoccupation); a clear differential diagnosis of pathological gambling characterized by markedly higher rates of loss of control, withdrawal symptoms, tolerance, risking social relationships and requiring bailouts; and a more severe level of pathological gambling characterized primarily by illegal acts.

It is tempting to assume that this proposed hierarchy reflects a temporal progression through several developmental stages. However, a great deal of research is still needed to determine whether this hierarchy really does represent a temporal sequence. Nevertheless, the results of the analysis offer important signposts to future refinement of gambling diagnoses and, we believe, support the need to establish a new and separate diagnosis for “problem gambling” which, aside from its specific components, may be distinguished by an episodic and possibly self-limiting nature. Certainly, the analysis suggests the centrality of loss of control to the recognized disorder of pathological gambling and provides empirical support for the notion that this disorder shares certain, important similarities with the diagnoses of substance dependence and substance abuse (American Psychiatric Association, 1994).

Moving forward

What have we learned from a decade and a half of epidemiological research on problem gambling that can aid us in moving forward? As the foregoing section has hopefully demonstrated, there is value in looking at what is going on beneath the surface of the overall prevalence rate in any jurisdiction. The cost of survey research is too high to indulge ourselves with the notion that the only interesting result of such studies is the prevalence rate of problem gambling in the general population. In this section, I present some considerations related to measuring problem gambling and to improving how problem gambling prevalence research is done.

Whatever happened to the “Eclipse of the SOGS”?

In the wake of growing concerns about the SOGS and the publication of new diagnostic criteria for pathological gambling in 1994, I began predicting that the SOGS would quickly be replaced by one or more *DSM-IV*-based problem gambling screens (Gerstein et al., 1999; Volberg, 1996). Instead, this change has proceeded quite slowly, although use of the *DSM-IV* definition in the new World Mental Health surveys indicates that it is clearly taking place.

Historically, standardized measures like the SOGS emerge in situations where there is, simultaneously, intense distrust and a perceived need for public action (Porter, 1995). The circumstances in which the SOGS developed into the major tool in problem gambling prevalence research represent just such a situation. In this context, it should not be surprising that the predictions I made were taken by

some critics as “discrediting” the SOGS (Fahrenkopf, 2003). This is an enormous overinterpretation of the opinion that I expressed — that the SOGS would soon be supplanted by newer, improved problem gambling screens. In an unpublished response, Dean Gerstein provided a helpful analogy in understanding why the “eclipse” of the SOGS has been slower than predicted.

Until a few weeks ago, Dean was the proud owner of a 1989 Honda Accord. As he put it, “the 2003 Honda Accord is a much improved car compared with the 1989 Accord, and almost anyone with a choice and the money to afford it would prefer to drive the new model. But the 1989 Accord is not thereby'discredited.' There are still many of them on the road, being driven safely and legally; and stockpiles of parts and sturdy engineering may keep them running effectively for years. So it is with the SOGS. But in time, the numbers of both SOGS and 1989 Accords in active use will dwindle to nearly nothing. That is to no one's discredit. In science and engineering, the new always trumps the old, sooner or later.”

How can problem gambling prevalence research be improved?

On the face of it, finding out how many people there are in a community with serious gambling problems is straightforward. You select a random sample of people from the population, assess them using a valid problem gambling measure and carry out some elementary statistical analysis to generate a prevalence estimate. In reality, for a variety of financial and technical reasons, things are not so simple.

One significant concern relates to the sample sizes typically employed in problem gambling surveys. In general, samples have been too small to detect differences between subgroups in the population that are at the highest risk for gambling problems. With small sample sizes, the margins of error associated with population estimates tend to be quite large. In the case of many subgroups within these studies, error terms may be so large that little confidence can be placed in findings pertaining to them, and researchers have responded by dramatically increasing the sample sizes for problem gambling prevalence surveys in recent years (Abbott & Volberg, 2000; Orford et al., 2003; Volberg et al., 2001).

Another concern in gambling research is with rising refusal rates for all kinds of surveys. Given the uncertainty about the characteristics of individuals who choose not to participate in surveys, it is important to attain the highest possible response rates in gambling surveys. This means budgeting for and completing substantial callbacks to eligible respondents in order to complete as many interviews as possible. This also means employing interviewers with demonstrated success at completing lengthy interviews and experience in converting refusals. Along with increases in sample size, these efforts have led to substantial increases in the cost of problem gambling prevalence surveys as well as in the time required to

complete such surveys.

Facing stringent constraints on the resources available to conduct gambling research, what else can be done to improve the validity of the resulting data? There are at least three additional problems associated with obtaining accurate data in surveys of gambling and problem gambling. These include obstacles in achieving representative samples of the entire gambling population, challenges of obtaining valid and accurate information from survey respondents, and the question of how characteristics of different gambling activities affect both the ability to obtain accurate reports of behavior and to sample representative groups of players. While there is no perfect way to guard against any of these problems, it is possible to improve our methods to take these particular challenges into account.

Recruiting representative samples of gamblers

A variety of studies suggest that the most likely explanation for under-reporting of some behaviors such as extreme sexual behavior or heavy alcohol consumption is related to under-sampling of the small proportion of individuals in the population who are heavily involved in these activities, particularly when standard household sampling methods are used. For example, studies based on household sampling are likely to under-represent very heavy drinkers since these individuals are more likely to be institutionalized or incarcerated, less likely to live in households, and may also be less able or willing to participate in surveys. Although such people do not constitute a substantial portion of the population, their effect on mean consumption estimates is believed to be considerable (Polich & Orvis, 1979).

A key difficulty in developing accurate assessments of gambling and problem gambling in the community is the small number of people who gamble heavily, gamble professionally or experience serious difficulties related to their gambling. Small groups like these are difficult to find and interview in surveys of the general population. Difficulties in obtaining a representative sample of the entire gambling population are compounded by the distinct challenges of successfully interviewing such individuals.

Both professional and problem gamblers are difficult to represent in gambling surveys because their numbers relative to the general population are so low. Problem gamblers are additionally difficult to represent in gambling surveys for reasons similar to those of heavy alcohol users. Lesieur (1994) notes that telephone survey methods are likely to under-represent problem gamblers for a variety of reasons. While problem gamblers' lack of telephone service is related to the sampling frame, their absence from home because they are gambling and their reluctance to participate in a gambling-specific survey are related to biases of non-response. As with heavy drinkers, however, if professional gamblers and problem gamblers are under-represented in gambling surveys, the effect on estimates of

gambling behavior is likely to be significant.

The U.S. national survey addressed this issue by interviewing patrons at gambling venues in addition to surveying a randomly selected sample of individuals in the general population. The results of the patron survey confirmed the promise of this approach. On the whole, the patron group was far more likely than the randomly selected sample to play the lottery at least once a week, to gamble in casinos or at the track at least once a month and to consider themselves to be “professional” gamblers. Additionally, this approach meant that substantial numbers of problem and pathological gamblers were included in the final sample (Gerstein et al., 1999). Supplementing household surveys with surveys at gambling establishments is likely to improve the chances that heavy gamblers (including both professional and problem gamblers) would be included in the final results.

Getting valid and accurate information

There is a general tendency for human beings to remember emotionally positive events, such as winning, and to forget negative ones, such as losing (Thompson, Skowronski, Larsen & Betz, 1996; Wagenaar, 1986). Painful memories, such as the exact amount of large losses, may be forgotten more readily than happy memories, such as the exact amount of a big win. Alternatively, it is possible that an extremely unpleasant event, like a very large loss, may be more memorable than a large number of smaller losses (Tourangeau, Rips & Rasinski, 2000). In considering the accuracy of information about gambling behavior elicited in surveys, it is important to consider how respondents' personal experiences may affect their ability to recall their gambling involvement with accuracy.

Certainly, more research is needed on the psychological satisfactions of different gambling activities as well as the likely different heuristics associated with different games. Approaches such as asking heavy gamblers and problem gamblers to keep diaries would help us understand the details of these activities and improve our understanding of reports that are obtained from general population samples.

Characteristics of different gambling activities

In conducting gambling research, little attention has been paid to characteristic features of different gambling activities and their likely impact on reports elicited from samples of respondents in the population. For example, evolving social attitudes towards gambling and the tacit beliefs of survey respondents about the social desirability of different gambling activities may affect their responses.

Gambling is a broad concept that includes diverse activities, undertaken in a wide variety of settings, and individual and community definitions of gambling can vary widely. Furthermore, there is still stigma associated with gambling by some groups in society, most notably women and the elderly (Gerstein et al., 1999; Hing &

Breen, 2001; McNeilly & Burke, 2002; Volberg, 2003). Attitudes toward gambling and gambling participation also differ greatly across ethnic groups (Volberg, 2003; Volberg, Toce & Gerstein, 1999).

Research is badly needed on the social desirability of different types of gambling and on the relationship between gambling attitudes and reports of participation. Cognitive research is needed to examine the ways in which respondents interpret questions about different types of gambling as well as the processes that respondents use in answering survey questions. Research is also needed to determine whether problem gamblers think about and report their gambling differently than non-problem gamblers.

Conclusion

Over the last 15 years, we have learned a great deal about how to conduct prevalence research on gambling and problem gambling. The procedures for awarding contracts for conducting such research have been rationalized, sample sizes have increased substantially and field procedures have improved. Future developments are likely to include greater reliance on multi-modal approaches to data collection (e.g. the use of telephone and postal questionnaires as in the Swedish national prevalence survey or the dual-frame sampling method employed in the United States gambling impact and behavior survey) and larger, cooperative efforts involving multidisciplinary research teams.

While efforts will continue to improve our understanding of gambling problems as well as the methods we use to study this phenomenon, the greatest challenge now facing us is the failure on the part of many governments to monitor gambling and problem gambling in a coherent and systematic fashion. A growing number of national governments in Asia and Europe have begun to establish systems that allow the impacts of legal gambling on citizens and communities to be monitored over extended periods of time (Abbott & Volberg, 1999). However, efforts to establish such systems in the United States — including regularly scheduled prevalence surveys — have, thus far, been fruitless. The trend even seems to be in the opposite direction, as demonstrated by the recent decision in Connecticut, in the face of severe budgetary constraints, to renege on the legislative mandate to conduct impact studies of legal gambling every five years (Rhode Island Special House Commission to Study Gaming, 2003).

Prevalence surveys are an essential tool in efforts to monitor the impacts of gambling and problem gambling over time. While prevalence research has become more expensive and more challenging to carry out to the highest standards, these surveys remain the best single method for monitoring problem gambling prevalence and gambling participation over extended periods of time. What is

needed now are regular, systematic and adequately funded assessments of the impacts of legal gambling and the prevalence of problem gambling at the national, regional and local levels. We may have traveled some distance on the road towards the solid epidemiological research called for by Lesieur in 1984, but we still have a long way to go.

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Tables

Table 1:

Demographic characteristics of problem gamblers [1] in five states

		Baseline	Replication	p-value (1-tail)
Louisiana				
		(n=128)	(n=105)	
	Male	62.5%	50.5%	.033
	Non-Caucasian	40.6	40.0	.463
Oregon				
		(n=75)	(n=69)	
	Male	64.0	55.1	.138
	Non-Caucasian	21.3	14.5	.143
Washington				
		(n=77)	(n=75)	
	Male	63.2	74.7	.063
	Non-Caucasian	16.2	32.0	.012
Montana				
		(n=36)	(n=70)	
	Male	52.8	47.1	.291
	Non-Caucasian	2.9	14.3	.033
North Dakota				
		(n=53)	(n=75)	
	Male	54.7	69.3	.046
	Non-Caucasian	7.5	20.0	.026

(1) Problem gambling is defined as scoring three or more points on the lifetime items of the SOGS-R.

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