

Urban elders and casino gambling: Are they at risk of a gambling problem?

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Abstract

This study examined gambling among older adults and explored the critical predictors of problem gambling behaviors. Relatively unknown and understudied is the extent, or prevalence, of problem gambling behaviors among urban elders and the factors associated with problem gambling. The sample consisted of 1410 randomly selected participants, aged 60 and older, who reside in the City of Detroit. Mental health, health, demographics, social activities, senior optimism, social support network, and frequency of casino visits were examined in order to predict problem gambling behaviors among elders. The survey implemented the Lie/Bet Questionnaire for Screening Probable pathological Gamblers. The results showed that the prevalence of problem gambling behaviors was 10.4% overall, and 18% of persons reporting any casino visitation. Predictors accounted for 16% of problem gambling behaviors. The findings from this study confirmed that gambling has the potential to become a serious health problem among elders.

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Casino gambling has become one of the fastest growing entertainment venues nationwide. Twenty-eight states have authorized casino gambling ([The United Way of Michigan, 1999](#)), while Americans wagered more than \$551 billion in 1997 ([National Research Council, 1999](#)). Gaming is already a big industry in Michigan. Due to more than 20 forms of legal gambling in Michigan, 85% of Michigan residents have gambled while approximately \$5 billion is wagered annually ([Michigan Department of Community Health, 1999](#)). Currently, there are 16 Native American casinos throughout Michigan, while casino gambling arrived in the Detroit area in 1999. Recent statistics reflect Detroit's three casinos have taken in an estimated \$4.12 billion since 1999 ([Lam, 2004](#)). Detroit has now

become the largest city in the United States with casino gambling ([The United Way of Michigan, 1999](#)).

According to a federal survey, the number of seniors visiting casinos nationwide has more than doubled since 1975, a rate far surpassing any other age group ([American Gaming Association, 2001](#)). Public concern has been expressed about older adults' vulnerability to gambling problems related to fixed incomes, social isolation, and declining health ([Korn and Shaffer, 1999](#)). Since a growing number of older adults have discovered casinos as a place to socialize, problem gambling is anticipated to increase among older adults due to gambling becoming socially acceptable and more available ([McNeilly and Burke, 2001](#)). Although casino gambling has brought many economic benefits to Detroit, the concern now is that engagement in this type of recreational activity could become a serious problem for more vulnerable groups such as the elderly. The purpose of the current study was to determine the

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prevalence of problem gambling behaviors as well as critical predictors of problem gambling among older adults.

1. Literature review

Older adults and problem gambling

In a meta-analysis of gambling disorders among adults in the U.S. and Canada, [Shaffer, Hall, and Vander Bilt \(1997\)](#) concluded that between 1977–97 the number of problem gamblers among the adult general population have increased due to the immense social acceptance of gambling. In a study conducted by the [National Opinion Research Center \(NORC\) for the National Gambling Impact Study Commission \(1999\)](#), findings suggest an estimated lifetime prevalence of pathological gambling for the United States general adult population to be 1.2%, while the estimate of pathological and problem gambling combined was about 2.5%. The combined results reported an increase among adults age 65 and older who currently gambled in comparison to an earlier study conducted in 1974. When differences by age were examined, persons over the age of 65 were substantially less likely to be at risk of a gambling problem when compared to the younger age groups. Although older adults have increased their participation in gambling activities, they were the least likely group for concern of problem gambling.

Legalized gambling is now a viable force in the Michigan economy and all residents will feel its economic and social effects ([The United Way of Michigan, 1999](#)). Statewide gambling studies have been conducted to determine the prevalence of gambling problems among Michiganders, while research has only recently begun to explore older adults and their gambling behaviors. A study by [Gullickson and Hartman \(1997\)](#), examined gambling behaviors throughout the state of Michigan. The telephone survey questionnaire included 3942 adult persons residing in the state of Michigan. The South Oaks Gambling Screen (SOGS) is a commonly used screening tool that is comprised of 20 questions and was implemented to measure Current and Lifetime problem gambling. SOGS scores were calculated as follows: 0=No problem; 3 to 4=Some Problem; and, 5 or more=Probable Pathological gambler. The study included 514 participants aged 65 and older who ranked casino gaming second to playing the lottery among types of gambling during the past twelve months. The reported Current SOGS scores indicated that 1.6% of elders were problem gamblers, 0.8% were probable pathological gamblers, and 97.7% were social

gamblers. The reported Lifetime SOGS score indicated that 3.1% of elders were problem gamblers, 1.8 were probable pathological gamblers, and 95.1% were social gamblers. Identified problem and probable pathological gamblers also reported substance abuse and mental health problems. It was further noted that minorities and lower income individuals were under-represented in the study.

In 1999, [Gullickson, Hartman, and Weirsma](#) replicated their gambling study, which allowed inference of the rate of problem gambling in Michigan. The sample size in this study included 400 adults from four regions in Michigan. The subgroup SOGS scores included 136 adults aged 65 and older. The reported Current SOGS scores indicated that 0.0% were problem gamblers, 0.7% were probable pathological gamblers, and 99.3% older adults were social gamblers. The Lifetime SOGS scores indicated that 0.7% of elders were problem gamblers, 0.7 were probable pathological gamblers, and 98.5% were social gamblers. Consistent with their 1997 study, gambling participation revealed that casino gambling ranks second to playing the lottery. Once more, it was noted that African-Americans, lower education (<HS education), and lower income groups (<\$25,000 annually) were under-represented in the study. According to [Gullickson, Hartmann, and Wiersma, \(1999\)](#) gambling behaviors remained consistent when comparing the 1997 study with the 1999 study, while the number of problem gamblers had increased in Michigan.

Prior to the casinos opening in Detroit, [Widgery \(1998\)](#) conducted a study of the effects of casino gambling on at-risk groups identified as the poor and elderly persons residing in the City of Detroit. Among 700 Detroiters who participated in the telephone survey, 72% gambled at the casino in Windsor, Canada followed by 46% who gambled out-of-state. Nearly three in ten respondents who received government assistance or were widowed frequently patronized a casino in the past year. Low-income and elderly persons lost 2.4 times more gambling in proportion to their total income compared to those in higher income groups. Moreover, African-Americans lost 2.5 times more at the casinos than Whites. According to [Widgery](#), the reported Detroit percentage of problem gamblers is twice the figure reported in the 1997 [Gullickson, Hartman, and Weirsma](#) study.

[Wong, McAuslan, and Bray \(2000\)](#), conducted a problem gambling study in order to determine the social impact of gambling the Metropolitan Detroit Area. Among the 1200 randomly selected participants, 300 adult residents were recruited from each of the four

geographic areas, including the City of Detroit, and suburbs in the Wayne, Macomb, and Oakland Tri-County areas. This study used the SOGS to measure problem and probable pathological gambling behavior. Among the 178 elders surveyed, 96.6% were reported as non-problem gamblers; 1.7% met the classification for problem gamblers, and 1.7% met the criteria for probable pathological gamblers. Demographically, lower education attainment and lower income levels were associated with problem gambling. Overall, the Metropolitan Detroit Area has an estimated 58,000 adults who are current problem and probable pathological gamblers (Wong et al., 2000). Findings showed that Detroit residents and minorities were more likely to be problem and probable pathological gamblers than whites or suburban residents.

Psychiatric comorbidity among older adults and problem gambling

Cross-addiction, or comorbidity, has been well documented in probable pathological gambling studies. Substance use disorders, depression, suicide, personality disorders, and social consequences have co-occurred with probable pathological gambling (National Research Council, 1999; Shaffer et al., 1997). Analogous with studies recently examining older adults gambling behaviors, research has only begun to explore such correlates among elders. An estimated 3.2 to 6.4 older Americans experience mental health problems (Craven and Parker, 2002), while depression is the primary emotional disorder affecting older adults (Hooyman and Kiyak, 2002). Older adults are less likely than younger adults to seek mental health services, or professional treatment, when faced with such challenges (Atchley & Barusch, 2004). Problem gambling help lines are, however, one avenue in which older adults have accessed to discuss their gambling concerns, including personal matters associated with the gambling problem. Moreover, the number of older adults contacting problem gambling help lines have increased in recent years (Fowler, 1999; Karpin, 1999; NSO, 2002).

Clinicians have reported underlying gambling problems that surfaced when older adults presented themselves for treatment of an affective disorder (Govoni, Frisch, & Johnson, 2001; McNeilly and Burke, 2000). Yet, once a gambling problem is identified, effective treatment approaches for gambling disorders need to be modified in order to properly address the needs of older adults (Petry, 2002; Stewart and Olsin, 2001). The National Research Council,

(1999), discussed how studies that have not been able to show an association between problem gambling and depression may be the result of weak methodologies such as small samples or exclusion of a particular race or gender. In 1981, the Epidemiologic Catchment Area (ECA), a landmark study of psychiatric disorders, determined the prevalence of problem gambling and relationships with other psychiatric disorders (Cunningham-Williams, Cottler, Compton, & Spitznagel, 1998). The pathological gambling questions were asked among 3004 adult participants from St. Louis, MO. The results showed that depression preceded the gambling problems and it was distinguished that there was an association between psychiatric illnesses and problem gambling. The National Research Council, (1999) noted that this may be the only general population study that has examined the relationship between problem gambling and depression.

One of the first studies to investigate older adults' motivations and gambling behaviors was conducted by McNeilly and Burke (2000). Among the 308 older adults surveyed, it was reported that 4.2% were identified as probable pathological gamblers, while 2.6% were classified as problem gamblers. Results further showed that the highest incidence of depression, the lowest reported life satisfaction, and most frequent spending on gambling were among the probable pathological gamblers. A follow-up study by McNeilly and Burke (2002), further explored the extent of problem gambling amid older adults. Through a small sample of older adults being treated for a depression disorder at an outpatient geriatric clinic, gambling problems surfaced. Important to each case was the fact that these individuals first began to gamble later in life and within three years following the inception of casino gambling. The hidden nature of the problem gambling that emerged during the course of treatment for their presenting problem typifies the growing number of older adults who are experiencing gambling problems (McNeilly and Burke, 2002).

In a rare cross-sectional study, Bazargan, Bazargan, and Akanda (2000) investigated the correlates of gambling habits among 80 African American older adults who participate in gambling trips from Los Angeles, CA to gambling sites in Nevada through a senior center. The face-to-face interview results showed that 17% of the sample was identified as pathological gamblers. Significant relationships occurred between the gambling behaviors and psychological well being. In other words, the classified pathological gamblers reported a greater number of stressful life events, higher levels of anxiety, and a greater number of obsessive-

compulsive symptoms. Moreover, this group of older adults was more likely to report a lower level of perceived health and control over their future health status. In contrast to the [McNeilly and Burke \(2000\)](#) study, there was no association found between depression and gambling behaviors.

[Volberg \(2003\)](#) recently conducted a telephone survey among 1260 residents, aged 55 and over, to assess the gambling behaviors among Florida seniors. The majority of respondents reported that they participated in one or more gambling activities throughout their lifetime. Results from the survey questionnaire showed that 0.8% of the sample classified as lifetime pathological gamblers, while 1.0% classified as lifetime problem gamblers. Additionally, 0.4% seniors classified as past year pathological gamblers, while another 0.7% classified as past year problem gamblers. The classified senior problem gamblers were significantly more likely than at-risk and non-gamblers to rate their physical health fair to poor, reported being depressed, and were coping with a personal loss in the past year. Further, the past-year problem gambling prevalence rates were highest among the men, Blacks and Hispanics, divorced and separated individuals, and those employed part-time.

Finally, in a recent cross-sectional, longitudinal study examining gambling activity and health, mental health, and social support [Vander Bilt, Dodge, Pandav, Shaffer, and Ganguli, \(2004\)](#) found among a Pennsylvania community cohort of 1016 older adults, gambling participation was associated with the young-old (age 70–79), men, fewer years of education, greater social support, better self-rated health, lower depression scores, and higher cognitive functioning. Unlike other comorbidity studies, the authors suggest that gambling participation in certain forms (the state lottery) and contexts (going to the race track and charitable bingo) could have positive social and psychological outcomes. Among these older Pennsylvanians, gambling may offer a forum of social support for those elders who may otherwise isolate themselves as they age.

Previous research findings have provided direction in which to understand the various factors associated with older adults and their gambling behaviors. The purpose of this study is to determine the prevalence of problem gambling behaviors and which variables are the best predictors of problem gambling among older adults. It is hypothesized:

1. Socio-demographic factors such as income, educational attainment, age, gender, marital

status, and transportation will be significant predictors of problem gambling behaviors.

2. Poor mental health, poor physical health, lack a social support network, and lack of senior optimism will be significant predictors of problem gambling behaviors.
3. Older adults who participate in a variety of (other) social activities and are more involved in the community are less likely to report problem gambling behaviors.
4. Frequency of casino visits will be a significant predictor of problem gambling behaviors.

2. Method

Sample

Data used for this research analysis are from the 2001 Detroit City-Wide Needs Assessment of Older Adults and ([Chapleski, 2002](#)). This study included 1410 non-institutionalized adults age 60 and older residing in the city. The study used a dual-mode stratified sample and addressed a number of topics important to the living and environmental conditions of older persons. Questions were asked about housing, health, transportation, and service utilization. Also included in the survey were questions related to the casino use in Detroit, including attitudes about casinos, frequency of casino visits, and a standardized tool to assess the risk of pathological gambling among this population. Through the use of a random digit dial telephone and area probability face-to-face interviews, the stratified sample targeted 140 from each of the 10 Community Reinvestment (Planning) Sectors. The final random digit dial sample totaled 1310 with an additional 100 for the face-to-face supplement. Post stratified sampling weights were developed to compensate for the different probabilities of selection. Sampling weights were used in all analyses to yield unbiased estimates for the survey population. This process guaranteed that all areas throughout the City of Detroit were represented in the analyses in proportion to the total population of eligible respondents ([Zaraneek & Chapleski, 2005](#)). The data analysis took place in several stages using SPSS. Univariate analysis is in the form of descriptive statistics. Bivariate relationships between the dependent and independent variables were examined through correlation statistics. Logistic regression models were created by grouping the independent variables into blocks and sequentially entered in order to assess their contribution to the effects of the Lie/Bet variable on the predictor variables. Changes in the R^2 were noted to ascertain the overall fit of the model.

3. Measures

Pathological gambling

The risk of pathological gambling is measured from two questions and scored as a yes/no response. The two questions ask: (1) “Have you ever felt the need to bet more and more money?” and (2) “Have you ever had to lie to people important to you about how much you gamble?” These two questions are from the Lie/Bet Questionnaire for Screening Pathological Gamblers. This standardized measuring instrument was developed by Johnson, Hamer, and Nora (1998), and was devised from the DSM-IV criteria for pathological gambling. Johnson et al. (1997, 1998) report the two-item screening tool had a sensitivity of .99 and a specificity of .91 in their earlier study, and a sensitivity of 1.00 and a specificity of .85 in their later study. Based on these results, the authors contend that the two questions represent a useful screening device, while answering yes to one or both of these questions in the Lie/Bet Questionnaire classifies the respondent as at risk of being a pathological gambler. For the purpose of a correlation and logistic regression analyses, the Lie/Bet questions were measured as: 0=lie=no and bet=no; 1=lie=yes and/or bet=yes.

Predictor variables

Variables that are explored as they relate to the outcome variable include demographics such as age, gender, level of education, income, and marital status. Additional predictor variables examined were self-rated health, mental health, transportation, social activities, social support network, community involvement, senior optimism, and casino visits.

- Age was measured as three age cohorts: 1=(85+); 2=(75–84); 3=(60–74).
- Marital Status was coded as two separate dummy variables. The first variable as: 0=not married (never married, separated, or divorced); 1=married. The second variable as: 0=not widowed; 1=widowed.
- Gender was measured as: 0=female; 1=male.
- Education was coded into three categories: 1=post high school; 2=high school graduate; and, 3=<high school.
- Income was dichotomized into two categories: 0=over \$20,000; 1=under \$20,000. To reduce missing values on income from 317 to 206, individuals who reported SSI as their main income and/or had Medicaid were imputed as ‘under \$20,000’.
- Transportation was dummy coded as: 0=no; 1=yes.
- Social Support Network was constructed from ‘yes’/‘no’ survey questions: 1) does not live alone; 2) have children living <30 miles away; 3) have children living <60 miles away; 4) have a friend or relative you feel close to; 5) once weekly or more have contact with children; and 6) once weekly or more have contact with friends or relatives. The scale ranging from 0–6 was coded as: 1=0–3 (low); 2=4 (medium); 3=5–6 (high).
- Senior optimism asks, “Some people say that being a senior citizen is the best time of your life. Do you: (1) strongly disagree; (2) somewhat disagree; (3) somewhat agree; or (4) strongly agree?” The response was collapsed and coded as: 0=agree; 1=neutral; 2=disagree.
- Social activities were based on a principal components factor analysis of thirteen social activity items, subject to a varimax rotation. The social activity questions were self constructed and intended to measure how older adults spend their time. For each activity (thirteen total) the question asks, “Thinking about how you spend your time, could you tell me how much you enjoy doing (activity is named): 1) a lot; 2) a little; 3) not at all; or 4) unable to participate?” A factor analysis produced three separate factors of activities that correlated well with one another. Based on test results and how the types of social activities loaded onto each factor, they were labeled as “active activities”, “passive activities”, and “gambling activities”. The “active activities” factor, where nine of the thirteen social activities loaded, was the only factor used for further analyses. The “active activities” factor score was computed and dichotomized using the mean (zero) as the cut point. Scores falling below the mean were coded as: 0=low number of activities enjoyed doing; 1=high number of activities enjoyed doing. In other words, persons ranking “low” listed few activities enjoyed; those ranking “high” listed more activities enjoyed.
- Community involvement was constructed from four questions inquiring about community participation. The first two dichotomous questions asked: “Are you a member of any community organizations or neighborhood groups?” And, “Do you do any volunteer work?” If the respondent replied ‘yes’ to either question, a seven-category frequency question (rarely to daily) followed.

Table 1
Sociodemographic characteristics by Lie/Bet questionnaire

Characteristics	Total sample (n=1410)	Lie and/or bet agree	Lie and/or bet disagree
<i>Sex</i>			
Female	70.0	8.9	91.1
Male	30.0	14.7	85.3
<i>Education</i>			
<HS	40.8	11.7	88.3
HS grad	23.9	11.0	89.0
Post HS	35.3	8.9	91.1
<i>Age</i>			
60–74	64.9	11.0	89.0
75–84	28.3	10.3	89.7
85+	6.7	9.7	90.3
<i>Marital status</i>			
Married	27.5	11.3	88.7
Widowed	33.5	9.6	90.4
Single	39.0	10.9	89.1
<i>Income</i>			
<\$20,000	65.8	12.1	87.9
>\$20,000	34.2	8.9	91.1
<i>Mental health</i>			
Poor	25.3	16.2	83.8
Fair	24.4	10.5	89.5
Good	25.0	9.2	90.8
Excellent	25.3	6.2	93.8
<i>Self-rated health</i>			
Poor/fair	35.8	13.4	86.6
Good	31.7	9.5	90.5
Very good/ excellent	32.4	8.3	91.7
<i>Transportation</i>			
No	27.9	8.8	91.2
Yes	71.9	11.2	88.8
<i>Social support network</i>			
Low	32.0	12.6	87.4
Medium	25.5	10.8	89.2
High	42.4	8.6	91.4
<i>Social activities</i>			
Low	46.5	11.1	88.9
High	53.5	9.8	90.2
<i>Community involvement</i>			
No	57.4	9.4	90.6
Yes	42.6	11.3	88.7
<i>Senior optimism</i>			
Agree	58.7	9.1	90.9
Disagree	41.3	12.9	87.1

Table 1 (continued)

Characteristics	Total sample (n=1410)	Lie and/or bet agree	Lie and/or bet disagree
<i>Casino visits</i>			
Never	42.2	6.7	93.3
Rarely/few times a year	40.6	10.5	89.5
Monthly or more	17.2	19.1	80.9

Data in this table are weighted.

- Mental health status was measured by the SF-12 Health Status Survey. The SF-12 is a multipurpose generic measure of health and mental health status. Ware, Kosinski, and Keller (1996) report that in test–retest reliability scores for the physical and mental health summary measures were .89 and .76 respectively. The SF-12 Standardized Mental Component Score (MCS) was calculated then coded and measured as: 1=excellent; 2=good; 3=fair; and 4=poor.
- Physical health was coded and measured by the self-rated health item: “In general, would you say your health is: 1=excellent; 2=good; 3=fair; or 4=poor?”
- Casino visits were measured as: 1=never; 2=rarely/few times a year; 3=monthly or more. For the purpose of a correlation and logistic regression analyses, casino visits was dummy coded as: 0=never/rarely/few times a year; 1=monthly or more.

4. Results

Descriptive analysis

Among the 1410 older adults who participated in the study, the average age is 71.4 years. Seventy percent of the total sample is female, while 30% were male. When looking at race, 82.7% were African American, 13.6% were Caucasian, while 3.4% of the remaining sample were of various other racial groups. Regarding education, 40.8% reported less than a high school education, whereas 35.3% reported some college or additional education. Thirty-nine percent of the participants were single or never married, 33.5% were widowed, and 27.5% were married. More than half of the sample, or 65.8%, had incomes less than \$20,000 annually, while 34.2% had incomes over \$20,000. The self-rated health results indicated that 64% of the sample rated their health as excellent, very good, or good. Mental health as measured by the SF-12 Health Status Survey indicated

($M=52.5$; $SD=9.75$) for seniors aged 65–74, and ($M=52$; $SD=9.72$) for seniors aged >74. More than half of the sample reported that they enjoy a high number of social activities, whereas 57.4% older adults did not volunteer or participate in community organizations or neighborhood groups. Fifty-eight percent of older adults agreed that being a senior citizen is the best time of their life. Thirty-two percent reported having a low social support network, while 43.4% stated they had a high social support network. The demographic results by the Lie/Bet questions are summarized in Table 1.

Prevalence of casino visitation and problem gambling behaviors

In regard to casino visitation, 42.2% of the total sample reported that they never visit the casinos, 40.6% visited rarely or a few times a year, while 17.2% visited monthly or more. Problem gambling behaviors, as measured by the Lie/Bet Questionnaire, yielded a prevalence of 10.4%. Specifically, when asked, “Have you ever felt the need to bet more and more money?” 88.7% of the respondents reported no, while 9.4% stated yes. When asked the second question, “Have you ever had to lie to people important to you about how much you gamble?” 95.5% of the respondents reported no, while 2.8% stated yes. Interestingly, of those who responded yes to any casino visitation, 18.2% reported problem gambling behaviors.

Bivariate analysis

The Lie/bet variable had several significant associations with the demographic variables. To begin, income ($r=.08$; $p<.01$) and education ($r=.07$; $p<.01$) were significantly associated with the Lie/Bet variable. Older adults who earned <\$20,000 annually and had a lower education attainment were more likely to exhibit problem gambling behaviors. Gender ($r=.12$; $p<.001$) and marital status ($r=-.05$; $p<.05$) were also associated with the Lie/Bet variable. Thus, older males and widowed individuals were more likely to demonstrate gambling problems. Regarding health status, mental health ($r=.18$, $p<.001$) and self-rated health ($r=.12$, $p<.001$) were significantly associated with the Lie/Bet variable. Therefore, participants who reported a poorer health and mental health status were more likely to show evidence of problem gambling behaviors.

Senior optimism ($r=.09$; $p<.001$) and social support network ($r=.09$; $p<.01$) were significantly associated

Table 2
Correlation coefficients for the associations between variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Lie/Bet														
2. Gender	.13***													
3. Married	.03	.19***												
4. Widowed	-.05*	-.28***	-.48***											
5. Age	-.01	-.01	-.15	.31***										
6. Income	.08**	-.05	-.10***	.14***	.20***									
7. Education	.08**	.10***	-.16***	.09**	.18***	.38***								
8. Self-rated health	.12***	-.01	-.02	.00	.06*	.19***	.14***							
9. Mental health	.19***	.05	-.06*	-.07*	-.05	.16***	.14**	.16***						
10. Optimism	.10***	-.03	-.03	.05*	.14***	.07	.08**	.18***	.13***					
11. Transport	.06*	.06*	.14***	-.07*	-.08**	-.27***	-.20***	-.07**	-.10***	-.09**				
12. Social network	.09**	.15***	-.20***	-.00	.05*	.01	.02	-.08**	.14***	.01	-.09**			
13. Community involvement	.08**	.13***	-.08**	-.02	.04	.21***	.30***	.18***	.11***	.03	-.14***	.07**		
14. Social activities	-.040	-.10***	.01	-.06*	-.12***	-.12***	-.19***	-.12***	-.04	-.16***	.07*	-.06*	-.21***	
15. Casino visits	.19***	.01	-.10***	.07*	-.02	-.03	.02	-.01	.11***	-.03	-.11***	.11***	.03	-.08**

* $p<.05$; ** $p<.01$; *** $p<.001$. Data in this table are weighted.

with the Lie/Bet variable. Individuals who did not agree that being a senior citizen is the best time of their life and reported a low social support network were more likely to demonstrate problem gambling behaviors. Transportation ($r=.05$; $p<.05$) and community involvement ($r=.07$; $p<.01$) were also related to the Lie/Bet variable. Participants who reported having household transportation and were less likely to be involved in their community were more likely to present a gambling problem. Lastly, casino visits ($r=.18$; $p<.001$) was significantly associated with the Lie/Bet variable. Thus, for elders who reported they visit the casino monthly or more, they are more likely to show evidence of a gambling problem. Bivariate results are summarized in Table 2.

Logistic regression analysis

The incremental modeling procedure as reflected in Table 3 includes the analysis of five partial models and one full model. Predictor variables included demographics, mental health, physical health, social support network, transportation, social activities, community involvement, senior optimism, and frequency of casino visits. Due to the low number of “yes” responses (147) versus (1248) “no” responses to one or both questions of the Lie/Bet Questionnaire, the outcome variable was

highly skewed. In order to examine the individual characteristics associated with the Lie/Bet responses, weights were applied to balance the skewed variable (Mertler and Vannatta, 2002). The “yes” responses were weighted by a factor of 4.75 and the “no” responses were weighted by a factor of 0.56, resulting in nearly equal numbers of cases in each response category.

The full model reflected that casino visits was the largest contributor, in which the R^2 considerably increased. Older adults who visited the casino monthly or more were 2.6 times more likely than non-visitors to show evidence of a gambling problem. Unlike previous models, income was a significant predictor where individuals who earned <\$20,000 annually were 1.4 times more likely to exhibit problem gambling behaviors. Once more, marital status, mental health, self-rated health, senior optimism, transportation, and social support network continued to show strong significance for problem gambling behaviors. Age, gender, and being widowed consistently failed to be predictors of a gambling problem. Moreover, community involvement and social activities did not influence either outcome of interest. The identified eight predictor variables in this analysis were consistently significant at the ($p<.01$; $<.001$) levels meaning, the overall fit of the model with the data was very good.

Table 3
Incremental logistic regression models for predicting problem gambling behavior

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	B	Odds ratio	B	Odds ratio	B	Odds ratio	B	Odds ratio	B	Odds ratio	B	Odds ratio
Gender	.244	1.276	.256	1.294	.280	1.323	.133	1.142	.105	1.111	.107	1.113
Married	.203	1.225	.259	1.309	.247	1.280	.366*	1.441	.382*	1.465	.449*	1.567
Widowed	-.143	.866	-.045	.967	-.036	.965	-.034	.996	-.034	.967	-.101	.904
Education	.197*	1.218	.146	1.157	.136	1.146	.206*	1.229	.182*	1.200	.167	1.181
Age	.053	1.054	.062	1.076	.041	1.042	.032	1.032	.030	1.030	.063	1.065
Income (<\$20,000)	.295*	1.343	.176	1.215	.178	1.194	.278	1.321	.263	1.301	.368*	1.445
Self-rated Health			.229**	1.258	.197*	1.217	.224**	1.251	.212*	1.236	.218*	1.244
Mental Health			.299***	1.349	.288***	1.333	.270***	1.311	.267***	1.306	.227***	1.255
Senior optimism					.303*	1.354	.329*	1.390	.327*	1.387	.395**	1.485
Transportation							.577**	1.781	.582**	1.790	.684***	1.981
SS Network							.304***	1.356	.303***	1.354	.298***	1.347
Social activities									-.023	.978	.019	1.019
Community involvement									.190	1.210	.233	1.262
Casino visits											.958***	2.607
R^2	.031		.080		.086		.116		.118		.155	
-2 log likelihood	1393.659		1358.409		1352.772		1328.758		1326.545		1285.593	

* $p<.05$; ** $p<.01$; $p<.001$ ***. Data in this table are weighted.

5. Discussion

The purpose of this research was to determine the prevalence and predictors of problem gambling behaviors among older adults. Utilizing a random sample of older adults, results verified evidence of problem gambling behaviors for one of every five older adults who enter a casino. A large percentage of urban elders are vulnerable to problem gambling and these behaviors were related to a number of demographic, health, psychological, and social characteristics. Regression analyses found that lower income, being married, poorer mental and physical health, lack of senior optimism, lower social support network, and increased casino visitation were significant predictors of problem gambling behaviors.

Older adults who had poor mental and physical health were significant predictors in the multivariate analyses. Health may be a key factor in determining the types of activities elders engage in. Gambling is both a physically passive activity and a potentially exciting and compelling one. The desire for “payoff”, the adrenaline boost that many gamblers report makes it an enticing activity for those with health and mental health challenges. Mental health disorders have consistently been associated with gambling disorders. The finding that poor mental health among the current sample of elders is associated with probable pathological gambling expands previous gambling and comorbidity research (Cunningham-Williams et al., 1998; McNeilly and Burke, 2002; Murray, 1993; National Research Council, 1999; Shaffer and Korn, 2002; Volberg, 2003). The remaining question, however, is to determine the role of problem gambling on existing health and mental health problems. It is to be expected that the increased health, pessimism and social support problems that are related to problem gambling behaviors, are indeed worsened through continued gambling failure and losses. The desire to win back one’s losses, rather than to cut off gambling, is a difficult one to confront and change.

The identified socio-demographic variables such as income, gender, education, marital status, and transportation were associated with problem gambling behavior. While males were twice as likely as females to report yes to one or both of the Lie/Bet questions in the multivariate analyses, gender was not a significant predictor of problem gambling behavior. In conjunction with gender, age was also not significant in the multivariate analyses; however, the young-old (60–74) reflected the highest percentage of individuals who said yes to one or both of the Lie/Bet gambling questions. Previous studies have rarely explored adults 75 and

older; this study can confirm that problem gambling behavior is 2.8% for those between 75–84, and less than 1% for those aged 85 and over. Is this an age effect or a cohort effect or both? Longitudinal research will help answer these questions. Being married, as opposed to being single or widowed was also a significant predictor of problem gambling behavior. An explanation for this finding may be that married couples have reported frequenting casinos with friends and families, thereby increasing their gambling behaviors as opposed to single or widowed individuals who may gamble less often due to being alone.

The reported income of <\$20,000 annually was a significant predictor in the multivariate analyses. This finding supports the literature where elders on a fixed income are at greater risk of developing a gambling problem, and as a result, possible financial difficulties (McNeilly and Burke, 2002; National Research Council, 1999; Widgery, 1998). In comparison to other social activities, casino gambling could be less expensive and more affordable to participate. In general, casinos promote penny and nickel slot machines, which may explain why lower socioeconomic individuals are attracted to this activity. Thus, a rather inexpensive activity (e.g. slots) is even more attractive because of the hoped for winnings and financial gain. Lastly, transportation was a significant predictor of problem gambling behavior. This finding confirms that those with transportation are more likely to go to the casino.

Lack of a social support network and lack of senior optimism were significant predictors of problem gambling behaviors. This finding suggests that those who have a lower social support network may seek it through extensive gambling behaviors. Furthermore, this may also indicate that gambling is filling a void in their lives and offering a substitute for social support. Although the majority of this sample reported a high to moderate social support network, it does not necessarily mean they do not have a gambling problem. Conversely, because an individual has a low social support network, it does not necessarily mean they have a gambling problem but that they are more likely to be at risk of such a problem. Although more than half of this sample had a positive attitude toward themselves as senior citizens, those elders who were less optimistic about being a senior were more likely to show evidence of a gambling problem. This finding may also imply that a significant number of pessimistic elders may have a poorer quality of life than other elders.

Enjoying a wide range of social activities was related to a lower risk of problem gambling. In other

words, older adults who participated in and enjoyed a variety of other social activities and were involved in community organizations were less likely to demonstrate a gambling problem. Gambling thus may be one of several leisure activities for this group of older adults (Hope and Havir, 2002; McNeilly and Burke, 2001; Vander Bilt et al., 2004). Lower community involvement was also associated with individuals exhibiting problem gambling behaviors. If involvement in alternative neighborhood activities is viewed as preventative this finding does not necessarily suggest that increased community involvement decreases the likelihood of a gambling problem, or less community involvement increases the likelihood of a gambling problem. A significant number of older adults reported they were not involved in their community. What this finding could suggest is that a number of these urban elders are involved in a variety of other social activities which may possibly decrease their likelihood of developing a gambling problem.

Finally, this empirical study's findings substantiate that a significant number of urban older adults show evidence of problem gambling behaviors, specifically, vulnerable older adults. On the basis of limited research in this area, longitudinal research is critical to substantiate the consequences of the effects of gambling, especially for more vulnerable populations such as older adults. The vast expansion of the casino industry validates that gambling has become socially accepted into the western culture, while it has also become a means of economic support for challenged urban communities (American Gaming Association, 2004; Korn and Shaffer, 1999; The United Way of Michigan, 1999). Thus, government and private owners of gambling establishments have responsibility for understanding the genesis of problem gambling and intervening to prevent and/or reduce its negative impacts. Empirical research can only help clarify the trajectory of a gambling problem and determine whether the concerns are temporary or persistent. What's more, research of this nature will substantiate the nature of adverse affects that gambling may inflict upon vulnerable individuals such as urban elders.

Limitations of study

First, this is a cross-sectional study thereby capturing information at a single point and time. Second, this study included a large random sample of older adults 60 and older who reside in the city of Detroit; therefore, the findings can only be generalized to urban populations with similar demographic make-ups. A third

limitation relates to problems of doing a prevalence research study through telephone surveys. Experts in the field of gambling studies (Shaffer and Korn, 2002) discuss when doing telephone surveys, individuals with a gambling disorder may not have access to a telephone due to financial challenges, or they may be unavailable to interview because they are gambling. Further, problem gamblers who are depressed and homebound may answer the telephone and reflect a higher rate of a gambling disorder than non-gamblers. These types of errors could offset one another and the gambling behavior may be under-reported.

The fourth limitation relates to the use of a gambling screening tool to assess the prevalence of a gambling problem within a general population. The results may not accurately reflect the problem if assessed in a clinical setting (National Research Council, 1999; Shaffer et al., 1997). Currently, there is not an assessment tool for such a measure within a general population, which would explain why this type of research could only estimate a gambling problem among the general population. Lastly, the purpose of this survey was a needs assessment of older adults who reside in the city of Detroit. This was not strictly a gambling study. Gambling questions were implemented in order to assess older adult's gambling behaviors. Additional gambling questions that could have been asked may have improved the findings of this study; however, this was not possible due to the length of the survey questionnaire.

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