HHS Public Access

Author manuscript

Am J Prev Med. Author manuscript; available in PMC 2016 January 04.

Published in final edited form as:

Am J Prev Med. 2014 September ; 47(3): 290–299. doi:10.1016/j.amepre.2014.04.006.

Gambling with Our Health:

Smoke-Free Policy Would Not Reduce Tribal Casino Patronage

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Abstract

Background—Tribal sovereignty exempts tribal casinos from statewide smoking bans.

Purpose—To conduct a tribally-led assessment to identify the characteristics of casino patrons at Lake of the Torches Resort Casino in Lac du Flambeau WI and their preferences for a smoke-free casino.

Methods—A survey was administered from April to August 2011 to a stratified random sample of 957 members of the casino players club to assess their preferences for a smoke-free casino. These members were categorized into three groups: those who reported being likely to (1) visit more; (2) visit less; or (3) visit the same if the casino prohibited smoking. They were characterized by age, education, sex, race/ethnicity, annual income, players club level, and reasons for visiting the casino. Statistical analyses were conducted on weighted data in October to December 2011. Weighted logistic regression was calculated to control for potential confounding of patron characteristics.

Results—Of the 957 surveyed patrons, 520 (54%) patrons were likely to visit more; 173 (18%) patrons to visit less; and 264 (28%) patrons were indifferent to the smoke-free status. Patrons more likely to prefer a smoke-free casino tended to be white, elderly, middle class and above, and visit the casino restaurants. Patrons within the lower tiers of the players club, almost half of the players club members, also showed a higher preference for a smoke-free casino.

Conclusions—This tribal casino would likely realize increased patronage associated with smoke-free status while also contributing to improved health for casino workers and patrons.

Introduction

Tribal casinos can intervene on the social determinants of health, reducing poverty and improving SES,[1–7] in American Indian (AI) communities experiencing significant health disparities.[8–10] The smoking prevalence among AIs is 40%—the highest of any racial/ethnic

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No financial disclosures were reported by the authors of this paper.

group—and more than double that of the general U.S. population.[8–10] The incidence of heart disease among AIs is twice that of the general U.S. population,[11,12] and mortality rates for both heart disease and stroke are 20% and 14% greater for AIs than all U.S. races.[13,14] Although the cancer incidence rate is decreasing among whites, it is increasing among AIs.[15,16] With poverty rates as high as 85%[17] and unemployment rates nearly 80%,[3] it is hardly surprising that, in AI communities where casinos are located, health outcomes are improving.[1,5,7,18,19]

Nevertheless, despite the potential benefits casinos provide, both casino workers and patrons continue to be exposed to secondhand smoke in the face of the Surgeon General's warning that there is no safe level of tobacco smoke exposure.[20,21] Indeed, even brief exposure increases the risk of heart attack or cancer.[22–25] Consequently, 26 states have banned smoking in public places.[26] Because the tobacco industry has lobbied hard against smoke-free laws, particularly in casinos,[27] only eight of these states have banned smoking in casinos.[26]

Tribal casinos are exempt from statewide bans because of tribal sovereignty. As smoking has declined among the non-Hispanic white population, the tobacco industry has increasingly targeted tribal casinos. As a result, only six of the 237 tribes operating casinos have voluntarily implemented casino-wide smoking bans.[28] This statistic is particularly troubling given that one in four casino employees is an AI,[29] as AIs are the least likely of any racial/ethnic group to have smoke-free worksites or homes[30] and are more likely than any other racial/ethnic group to be exposed to secondhand smoke.[31]

Although there is broad support for banning smoking in public places,[32] only one published study by Timberlake et al.[33] in 2012 assessed the views of tribal casino patrons with regard to a proposed casino smoking ban, as well as the characteristics of those patrons who might prefer or oppose a smoke-free casino. Using secondary data from the 2008 California Tobacco Survey, the study assessed smoking prevalence by casino visitation, predictors of casino visitation, avoidance of secondhand smoke among casino patrons, and willingness to extend one's stay and visit again if smoking were prohibited. The study found that smoke-free tribal casinos would increase patronage by Californians, including first-time and repeat visits.[33]

This article reports on a community-led assessment conducted with the Lake of the Torches Resort Casino in northern Wisconsin, which surveyed current casino patrons. The characteristics of the patrons and their preferences for a smoke-free casino environment were assessed, and the results were reported back to the tribal leadership and community for health infrastructure planning. This assessment is, to our knowledge, the first of its kind to be led by Native American tribal members and work in partnership with a tribally owned casino to directly survey active casino patrons.

Methods

Community Profile

The project team included the Great Lakes Inter-tribal Council (GLITC), a non-profit consortium created to expand the self-determination of 12 federally recognized member tribes located in Wisconsin and Upper Michigan, and the Lac du Flambeau Band of Lake Superior Chippewa Indians (LDF) tribal nation—a member of the GLITC consortium—located in a reservation in northern Wisconsin.

The smoking rate in the LDF reservation is 44%,[8,34] similar to other tribes in the Great Lakes region where AIs have the highest lung cancer mortality in the U.S.[34] A recent survey showed that 37% of Native youth in the region reported smoking within the past month—more than any other racial/ethnic group surveyed.[35]

The unemployment rate in the LDF reservation is 59%; among reservation residents who are employed, 61% live below federal poverty guidelines.[2] The Lake of the Torches Resort Casino (hereafter the casino) maintains a hotel, convention center, two restaurants, and two bars, and is one of the few sources of employment within the reservation. Smoking is permitted everywhere in the casino, with the exception of some nonsmoking hotel rooms, one restaurant, and a small nonsmoking section of the gaming floor.

Survey Development and Design

The GLITC team partnered with the LDF tribal nation in the conception and implementation of this assessment and in the interpretation of its findings. The process began with GLITC team members, several of whom are Native American tribal members, approaching the LDF tribal nation, voicing the GLITC interest in assessing casino patrons' views regarding smoking bans, and gaining approval to conduct the assessment in partnership with the Economic Development Corporation for the LDF tribal nation. GLITC worked with both the Economic Development Corporation and casino management to co-develop the survey, including the determination of question topics to include tobacco, casino use, and demographics, as well as the order and wording of each question. GLITC worked closely with casino management to use the patron database, administer the survey, and collect survey results. The final survey is shown in Appendix A. This assessment was entirely community-led and involved the approval and collaboration of the LDF tribal nation at all levels, including the publication of this manuscript.

Study Participants and Data Collection

The study sample consisted of casino patrons who participated in the casino players club (the only patrons for which the casino collects data); had visited the casino between January and June 2010; and had a theoretical win (TW) of at least $10 during the 6-month period (N=34,787). The TW is a dollar figure that projects the casino's gross earnings per dollar played in a game and is the single largest factor affecting casino profits.[36] For example, perhaps a slot machine has a hold percentage of 10% and costs $1 per spin. If a patron were to sit at that machine and take 100 spins ($100 coin-in), the TW would be $10. Descriptive

statistics of players club member characteristics were calculated for 34,620 patrons, excluding those who did not report a date of birth or reported an age of 103 years or more.

These patrons were then stratified by the six players club tiers. The TW and patronage frequency combine to indicate the tiers of the players club such that patrons at the highest tiers generally produce higher profits for the casino (the exact formula for allocating players into tiers is specific to a casino and a trade secret). Finally, because patrons were not evenly distributed across these tiers, they were randomly selected from each tier in proportion to the distribution of patrons across the tiers. However, the first tier of the players club, or those patrons with the highest TW, is composed of the fewest patrons; thus, this tier was oversampled to ensure sufficient representation in the sample. The random sampling process was conducted using the randomizing program of SAS, version 9.2 (SAS Institute Inc, Cary NC). The sampling strategy and responses by tier are depicted in Figure 1. From August 8 to 31, 2011, the casino printed paper versions of the surveys labeled with their corporate logo and mailed them to the randomly selected patrons from the players club database. Each survey had a unique identifier associated with the patron. This allowed identification of the patron for a nominal reimbursement of a $10 “free-play” incentive upon survey completion and also linked them with the players club database, which included their age, sex, number of visits, and TW. The casino gave the completed surveys to the GLITC team for scanning and exporting to an Access database. Data were validated by the GLITC team to ensure accuracy. The response rate (1,116/5,805) was 19%. All incomplete surveys were excluded. Thus, 957 surveys (17% of distributed surveys) were included in this study. This response rate, albeit low, is consistent with the response rate of other customer surveys sent out by the casino.

Variables

The primary dependent variable was casino patrons’ likelihood to visit the casino if it prohibited smoking. Specifically, the survey asked, *All things being equal in terms of size, gaming options, and distance from your home, would you be more likely or less likely to visit (the casino) if smoking were prohibited on the gaming floor?* Five possible answers were offered: *much more likely*, *more likely*, *less likely*, *much less likely*, or *does not matter*.

Predictor variables included basic demographics (age, sex, income, and education); casino use within the previous year (services utilized including food, hotel, gaming, theoretical win, and number of visits); and tobacco use (smoking status, beliefs of any harmful effects of secondhand smoke, and sensitivity to secondhand smoke).

Data Analysis

Data analysis was conducted from October to December 2011. Three groups were created based on the survey responses of the patrons to the primary question: in response to going smoke-free, patrons who were likely to (1) visit more (i.e., *much more likely* and *more likely*); (2) visit less (i.e., *less likely* and *much less likely*); or (3) visit the same if the casino prohibited smoking, or indifferent (i.e., *does not matter*). All statistical analyses were conducted on weighted data to account for the oversampling of the first tier. Descriptive analysis was conducted to summarize patron characteristics. Chi-square tests were used to

compare categorical predictor variables across the two patron groups of “visit more” and “visit less.” Analysis of variance (ANOVA) was used to compare continuous predictor variables across the groups. Weighted percentages, standard errors (SEs), and 95% confidence intervals (CIs) were reported. Finally, odds ratios (ORs), both unadjusted and adjusted, were calculated using weighted logistic regression to control for potential confounding of patron characteristics. In the regression analysis, the “indifferent” group was excluded to focus on the difference between patrons more and less likely to visit a smoke-free casino. Exclusion of this group reduced the sample to 693 patrons. Furthermore, variables related to age, race/ethnicity, education, and income were dichotomized to simplify interpretation. Two-tailed tests with p-values ≤0.05 indicated significance. Data were analyzed using SAS, version 9.3 (SAS Institute Inc).

Results

The characteristics of the surveyed patrons (respondents and non-respondents) and known characteristics of the players club patrons who met the initial selection criteria are shown in Table 1. The majority of survey respondents were white (92%); had at least passed high school or the General Educational Development test (96%); and had an annual household income greater than $40,000 (51%). The majority were nonsmokers (77%); were bothered to some extent by smoke in the casino (69%); and believed that secondhand smoke is harmful (81%) (data not shown). Furthermore, survey respondents had a median TW of $742 (interquartile range [IQR]=$245–$2,639) with a median of 17 visits per year (IQR=6–38).

The distribution of the study sample’s characteristics was similar to that of survey non-respondents and players club patrons. Survey respondents were older than both the non-respondents and players club patrons in general ($p<0.0001$). Women were more likely than men to respond to the survey ($p<0.0001$), but both were comparably represented when compared to the players club patrons ($p=0.38$). Gamblers in the middle (average gamblers) and lowest tiers (smallest gamblers) of the players club were more likely to respond to the survey ($p<0.0001$) than survey non-responders, but primarily because oversampling of the biggest gamblers resulted in the study having a higher representation of the biggest tier (tier 1) than the players club.

Survey respondents tended to have higher median TWs and more median annual visits to the casino than either the non-respondents or players club patrons. Comparisons between survey respondents who completed versus failed to entirely complete the surveys indicated similar differences in characteristics. Those who completed the surveys tended to be younger (48% vs 66% aged 65 years and older); male (44% vs 38%); primarily from the middle to lower players club tiers; and with TWs and number of visits higher than respondents with incomplete surveys.

Of the 957 patrons included in this analysis, 520 (54%) patrons were likely to visit more; 173 (18%) to visit less; and 264 (28%) were indifferent to a smoke-free status. Patrons more likely to visit a smoke-free casino were older ($p<0.0001$); more likely to have at least graduated from high school ($p=0.03$); more likely to be white ($p<0.0001$); more likely to earn at least $40,000 per year ($p=0.004$); and more likely to belong to the lower three tiers

(smallest gamblers) of the players club ($p<0.0003$) (Table 2). Across all three groups, the majority of respondents were women ($p=0.13$).

Patrons' reasons for visiting the casino are shown in Table 2. These categories were not mutually exclusive and patrons could select multiple reasons for visiting the casino. Although patrons more likely to visit a smoke-free casino reported visiting the casino for the restaurants ($p=0.003$), they also reported visiting for gambling ($p=0.002$) and entertainment ($p=0.048$).

To control for potential confounding patron variables, weighted logistic regression analyses were conducted. The unadjusted ORs and adjusted ORs for visiting a smoke-free casino are shown in Table 3. White patrons were three times (95% CI=1.58, 6.41) more likely than non-white patrons to visit a smoke-free casino, and elderly patrons were almost three times (95% CI=1.76, 4.34) more likely than younger patrons to visit a smoke-free casino.

Furthermore, patrons earning at least $40,000 per year were 77% (95% CI=1.12, 2.79) more likely to visit than those earning less than $40,000 per year if the casino was smoke-free. Tier 3 represents the average player in terms of TW and number of visits. Relative to these patrons, patrons in the lowest tiers (tiers 4–6, the smaller gamblers) were between two and four times more likely to visit the casino if it was smoke-free. Patrons in the highest tiers did not indicate a significant preference. Patrons visiting the casino for the restaurants also preferred a smoke-free casino (OR=2.51, 95% CI=1.33, 4.73), with no significant preference found among patrons visiting for the other offered amenities.

Discussion

Overall, the majority of survey respondents in this study reported being more likely to visit the casino if it banned smoking, whereas fewer patrons were likely to visit less. The patrons who were more likely to prefer a smoke-free casino tended to be white, elderly, middle class and above, and patrons of the casino restaurants. Patrons within the lower tiers of the players club (smaller gamblers), almost half of the players club members, also showed a higher preference for a smoke-free casino. These data suggest that a smoking ban would lead to increased patronage for this casino.

This finding is consistent with the other tribal casino study that assessed patron support for banning smoking and found that both patrons and non-patrons would visit casinos more often if smoking was prohibited, projecting a 20% increase in casino patronage if smoking was banned.[33] Similarly, the large majority of surveyed casino patrons in this study did not smoke, were bothered by the casino smoke, and believed secondhand smoke is harmful. These findings are consistent with other studies that have shown that only 20% of casino patrons smoke,[27,37] smoking bans are not cited as reasons people visit casinos less,[28,33,38–40] and smoking bans do not result in revenue loss for casinos.[41–44]

This study is unique in several ways. It is the first of its kind to employ a community-based and tribally led approach. Members of the GLITC team worked in partnership with the LDF tribal nation, its Economic Development Corporation, and its casino management to develop the study, directly access and survey casino patrons, and interpret the results. Such access

would not have been granted without the significant trust built between GLITC team members and the LDF tribal nation.

The findings of this assessment contribute to a larger body of literature reporting that smoking bans do not result in casino revenue loss.[41–44] However, perhaps an equally important aspect of the assessment is its demonstration of tribal government, health, and economic leadership working together to design a study of importance to the community and utilize study findings to engage in community-based participatory policy work now underway in the LDF tribal nation.

Such collaborative efforts seem less likely to happen with large corporate casinos such as those in Las Vegas. This casino, owned and operated by the tribal nation whose members indirectly benefit from casino revenue, was responsive to community concerns about secondhand smoke exposure and their desire to implement this assessment. This suggests that tribal communities may be uniquely suited, particularly given their sovereign political and economic status, to play a leadership role in a smoke-free casino movement.

There are limitations to this study. First, survey respondents were randomly selected from the players club database. This restricted the pool of possible respondents to only those frequenting the casino enough to become players club members, thus excluding casual visitors. Second, the sample did not include significant numbers of AI casino patrons, thus preventing important comparisons between AI and non-AI patrons needed to develop culturally appropriate tobacco prevention and control policies.[45]

Additionally, casino workers were not included in this survey. Given their significant exposure to tobacco smoke within the casino setting, gaining a better understanding of the characteristics and preferences of casino workers, including the casino management, could provide valuable information in assessing tribal readiness and capacity to implement and enforce smoke-free policies. Furthermore, the low response rate to the survey may restrict the generalizability of the results to all patrons of the casino, especially in light of the differences found between survey respondents and non-respondents, and also the overall players club patrons.

Lastly, an analysis of projected revenue loss or gain, were the casino to ban smoking, was beyond the scope of this study. However, the LDF tribal nation is currently engaged in this and other analyses as part of their ongoing community-based participatory policy work. Any potential loss of revenue incurred by the casino as a result of a smoking ban is being weighed by the LDF tribal nation against the potential savings in both healthcare costs and mortality.

Tribal casinos are improving the social determinants of health in poor rural AI communities.[1,5,7,18,19] However, tribal casinos are also exposing workers and patrons to secondhand smoke and associated health risks, making them vulnerable to litigation.[28,46,47] Banning smoking in tribal casinos would eliminate this vulnerability, reduce overall smoking rates among tribal members,[48,49] and foster sustainable economic development that protects the health and safety of tribal members.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

The project was supported in part by a contract with the CDC (No. U158DP002617). Portions of this project's work involve the Communities Putting Prevention to Work initiative supported by CDC funding. However, the findings and conclusions in this paper are those of the authors and do not necessarily represent the official position of the CDC. The authors would like to thank the Lake of the Torches Resort Casino and casino patrons, Lac du Flambeau Band of Lake Superior Chippewa Indians, Lac du Flambeau Tribal Council and Economic Development Corporation, Maureen Busalacchi and Health First Wisconsin, CDC Project Officer Zachery "Sho Nuff" Harris, ICF International, the Wisconsin Native American Tobacco Network, Great Lakes Inter-Tribal Epidemiology Center, Char Day and Americans for Nonsmokers' Rights, Lashawnda Maulson, Cherokee Nation, Candace Sibley, Elizabeth Tornes, Marva "Movin' On Up" Jefferson and the Wisconsin Tobacco Prevention and Control Program, and the National Tribal Environmental Health Think Tank.

Appendix: Supplementary data

Supplementary data associated with this article can be found at http://dx.doi.org/10.1016/j.amepre.2014.04.006.

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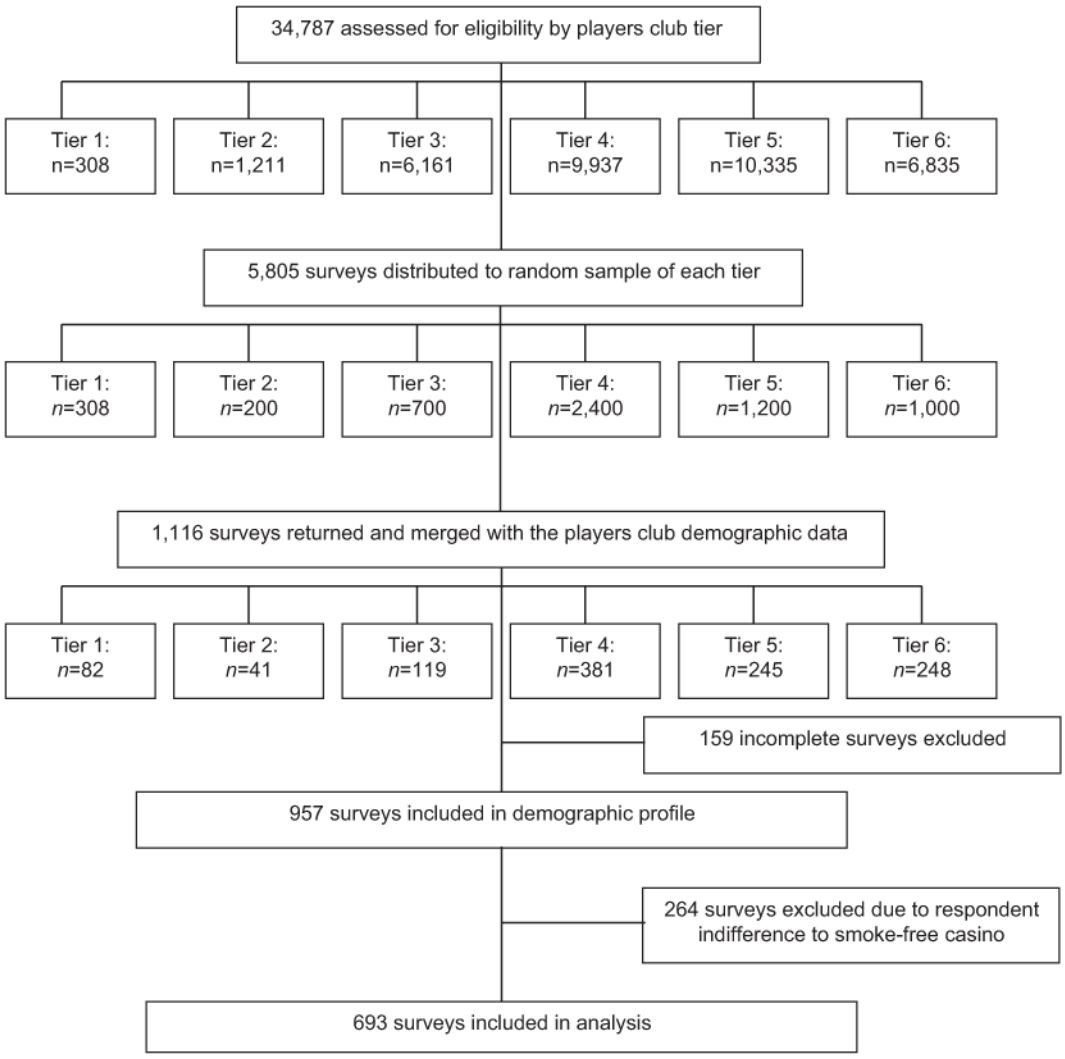

Figure 1.
Sampling strategy

Am J Prev Med. Author manuscript; available in PMC 2016 January 04.

Table 1

Characteristics of survey responders, non-responders, and players club members

	Survey respondents (*n*=957)		Survey non-respondents (*n*=4,823)			Players club (*n*=34,620)		
Characteristic	**Frequency**	**Weighted percentage**	**Frequency**	**Weighted percentage**	***p*-value**	**Frequency**	**Percentage**	***p*-value**
Age (years)[a]								
Weighted M (SD)	63.6 (1.71)		60.86 (14.27)		**<0.0001**	61.5 (14.18)		**<0.0001**
Range	21–92		21–103			21–103		
<65	493	52.22	2,701	55.9	**<0.0001**	18,862	54.48	**0.0002**
≥65	464	47.78	2,122	44.1		15,758	45.52	
Sex								
Female	551	55.9	2,764	57	**<0.0001**	19,442	56.16	0.3833
Male	406	44.1	2,057	43		15,178	43.84	
Education								
<High school	32	3.74						
High school/GED	405	42.57						
Some college	294	30.39						
College graduate	137	14.35						
Graduate or professional degree	89	8.94						
Race								
White	885	92.48						
All others[a]	72	7.52						
Annual income ($)								
<20,000	133	14.7						
20,000–39,000	325	34.3						
40,000–79,000	317	33.51						
≥80,000	182	17.5						
Players club level[b]								
1 (biggest gamblers)	68	1.17	240	5	**<0.0001**	307	0.89	**<0.0001**
2	36	3.74	162	3.4		1,206	3.48	

Characteristic	Survey respondents (*n*=957)		Survey non-respondents (*n*=4,823)			Players club (*n*=34,620)		
	Frequency	**Weighted percentage**	**Frequency**	**Weighted percentage**	***p*-value**	**Frequency**	**Percentage**	***p*-value**
3	101	15.24	599	12.4		6,129	17.7	
4	320	22.72	2064	43.8		9,880	28.54	
5	211	22.05	985	20.4		10,282	29.7	
6 (smallest gamblers)	221	25.9	773	16		6,816	19.69	
	Median	IQR	Median	IQR		Median	IQR	
		(25th–75th)		(25th–75th)			(25th–75th)	
Annual TW, $	742.45	245–2,639	202.56	91.75–591.81	<0.00001	218.67	95–635	<0.00001
Annual number of visits	17	6-38	4	2–8	<0.00001	4	2–11	<0.00001

Note: Boldface indicates significance, χ^2 tests and ANOVA were used to compare categorical and continuous predictor variables, respectively, across the three groups.

[a]"0ther" includes American Indians/Alaska Natives (6.58%); African Americans (0.21%); Asian Americans (0.21%); and Latinos (0.52%).

[b]Patrons were grouped into tiers based on their average daily TW.

GED, General Educational Development; IQR, interquartile range; TW, theoretical win

Am J Prev Med. Author manuscript; available in PMC 2016 January 04.

Am J Prev Med. Author manuscript; available in PMC 2016 January 04.

Table 2

Survey respondent characteristics by likelihood to visit a smoke-free casino

	Visit more (*n*=520)		Visit less (*n*=173)		Indifferent (*n*=264)		
Characteristic	**Unweighted number**	**Weighted percentage**	**Unweighted number**	**Weighted percentage**	**Unweighted number**	**Weighted percentage**	***p*-value**
Age (years)							**<0.0001**
Weighted M (SD)	65.77 (4.06)		57.09 (4.28)		63.55 (3.57)		
Range	26–89		24–92		21–92		
≥65	277	52.44	51	28.67	132	50.98	**<0.0001**
<65	243	47.56	122	71.33	132	49.02	
Education							**0.0278**
<High school	10	1.92	8	4.97	14	6.58	
High school/GED	225	42.89	64	39.57	116	43.89	
Some college	151	29.03	60	32.78	83	31.56	
College graduate	80	15.46	29	16.48	28	10.74	
Graduate or professional degree	54	10.69	12	6.21	23	7.23	
Sex							0.1290
Female	288	53.51	109	62.97	154	56.06	
Male	232	46.49	64	37.03	110	43.94	
Race							**<0.0001**
White	498	95.88	149	82.27	238	89.53	
All others	22	4.12	24	13.73	26	10.47	
Annual income ($)							**0.0036**
<20,000	55	10.74	25	15.95	53	21.76	
20,000–39,000	175	34.09	59	35.85	91	33.72	
40,000–79,000	178	34.71	60	35.12	79	30.06	
≥80,000	112	20.47	29	13.08	41	14.46	
Players club level							**0.0003**
1 (biggest gamblers)	35	1.10	14	1.34	19	1.19	
2	17	3.23	5	2.89	14	5.31	
3	42	11.60	31	26.08	28	15.43	

Characteristic	Visit more (*n*=520)		Visit less (*n*=173)		Indifferent (*n*=264)		*p*-value
	Unweighted number	Weighted percentage	Unweighted number	Weighted percentage	Unweighted number	Weighted percentage	
4	166	21.56	62	24.53	92	23.85	
5	120	32.49	31	25.56	60	32.41	
6 (smallest gamblers)	140	30.02	30	19.60	51	21.82	
Reason for visiting							
Restaurants	477	62.76	145	84.92	223	83.60	**0.0026**
Gambling	510	98.08	171	98.69	262	99.19	**0.0015**
Retail shopping	29	4.80	15	7.78	22	7.98	0.1656
Entertainment/shows	133	24.18	49	28.91	46	18.17	0.0475
Primarily slot machines	480	92.66	164	93.23	245	91.78	0.8560
Hotel/lodging	148	28.44	60	36.04	89	31.72	0.2017

Note: Boldface indicates significance. χ^2 tests and ANOVA were used to compare categorical and continuous predictor variables, respectively, across the groups that “visit more” versus “visit less.”

GED, General Educational Development

Table 3

Predictors of patrons reporting being more or less likely to visit a smoke-free casino, *n*=693

Predictor	Unadjusted OR (95% CI)	AOR (95% CI)
Age (years)		
≥65	**2.74 (2.36, 3.19)**	**2.76 (1.76, 4.34)**
<65	ref	ref
Race/ethnicity		
White	**3.65 (1.99, 6.69)**	**3.17 (1.58, 6.41)**
Non-white	ref	ref
Sex		
Male	**1.48 (1.28, 1.71)**	**1.30 (0.85, 1.96)**
Female	ref	ref
Educational level		
<College	ref	ref
≥College	1.12 (0.75, 1.67)	1.16 (0.71, 1.93)
Annual income ($)		
<40,000	ref	ref
≥40,000	**1.32 (1.15, 1.52)**	**1.77 (1.12, 2.79)**
Players club level		
1 (biggest gamblers)	1.72 (0.74, 4.02)	1.72 (0.73, 4.05)
2	2.78 (0.82, 9.45)	2.78 (0.80, 9.68)
3	ref	ref
4	**2.27 (1.26, 4.09)**	**2.27 (1.26, 4.10)**
5	**3.42 (1.76, 6.66)**	**3.42 (1.75, 6.68)**
6 (smallest gamblers)	**4.03 (2.08, 7.81)**	**4.14 (2.13, 8.04)**
Reason for visiting		
Food and beverage	**1.97 (1.13, 3.42)**	**2.51 (1.33, 4.73)**
Gambling	0.67 (0.14, 3.21)	0.66 (0.085, 5.13)
Retail shopping	0.60 (0.29, 1.22)	0.89 (0.43, 1.86)
Entertainment/shows	0.78 (0.52, 1.19)	0.83 (0.52, 1.34)
Primarily slot machines	0.92 (0.44, 1.89)	0.76 (0.34, 1.73)
Hotel/lodging	0.71 (0.46, 1.05)	0.73 (0.47, 1.15)