



UNIVERSITY OF MASSACHUSETTS SCHOOL OF PUBLIC HEALTH AND HEALTH SCIENCES

EXECUTIVE SUMMARY

THE MA GAMBLING IMPACT COHORT: ANALYSES ACROSS THREE WAVES

Abstract

This report details analyses and findings from the first three waves of the Massachusetts gambling impact cohort—the first adult longitudinal cohort study of gambling and problem gambling in the US. Principally, we focus on Wave 3 data collection and changes across the three waves in terms of (1) gambling participation, (2) incidence of problem gambling, and (3) transitions within the cohort.

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Executive Summary

Between September 2013 and May 2014, a Baseline General Population Survey (BGPS) of 9,578 Massachusetts adults (18+) was assessed to establish the impacts of the introduction of new casinos in Massachusetts between 2015 and 2019. This is known as the Social and Economic Impacts of Gambling in Massachusetts ([SEIGMA](#)) study. In April 2014, a contract to conduct a cohort study utilizing the BGPS sample was awarded to the present research team. A total of 4,860 individuals from the BGPS were deemed eligible for the new cohort study (Massachusetts Gambling Impact Cohort: [MAGIC](#)), in part due to having characteristics making them at greater risk for developing gambling problems. Of these individuals, 3,139 agreed to participate and completed the inaugural MAGIC questionnaire between March 2015 and September 2015.

The cohort begins with the BGPS in 2013/2014, which we are calling Wave 1. Typically, the date a cohort study begins and is established is the date of initial contact with respondents. In this case, however, initial contact was made through the BGPS study. Therefore, we use the term *established* to note the date when BGPS respondents were asked to participate in the cohort study. Using this terminology, the cohort study began in 2013/2014 (Wave 1) and the cohort was established in 2015 (Wave 2). The appropriate description of who continues from Wave 1 to Wave 2 is *response rate*, whereas the appropriate description of who continues from Wave 2 and beyond is *retention rate*.

The questionnaire completed in the BGPS (Wave 1) was very similar to the questionnaire completed in Wave 2. The response rate from Wave 1 to Wave 2 was 65.1%. These respondents established the MAGIC cohort. The Wave 3 questionnaire was significantly expanded to more comprehensively assess variables of etiological significance to problem gambling and administered between March and August 2016. A total of 2,450 individuals completed Wave 3, for a cohort retention rate of 78.1%.

The current report presents results across the first three waves of MAGIC with a focus on Wave 3 data collection and changes in (1) gambling participation, (2) incidence of problem gambling, and (3) gambling behavior across the first three waves. Subsequent reports will more comprehensively analyze and identify variables predictive of future problem gambling as well as remission from problem gambling. As this is a longitudinal cohort study, readers should exercise caution when generalizing findings to the population of Massachusetts residents.

Changes in Gambling Participation

Changes in gambling participation within the cohort were examined by comparing the self-reported past-year behaviors of the 2,428 members of the cohort who completed all three waves. There was a statistically significant increase in daily lottery games, sports betting, and private betting from Wave 1 to Wave 2. The magnitude of these increases, however, was small.

From Wave 2 to Wave 3, there was a statistically significant increase in overall gambling participation, all lottery, traditional lottery, instant games, daily games, bingo, sports betting, and online gambling. However, the magnitude of many of these changes was either small or medium. These increases (especially the larger increases) may be a result of changes in how the questions were asked from Wave 2 to Wave 3. For instance, the large increase in daily games may in part be due to a wording change in the question in Wave 3 which included more examples of daily games compared to Wave 2 (i.e., Wave 3 included Mass Cash and the Numbers Game). There was also a large increase in online gambling participation from Wave 2 to Wave 3. This change, however, was also likely driven by a questionnaire change whereby in Wave 3, unlike in previous waves, all questions concerning participation in specific

gambling formats were followed up by a question as to whether the individual participated in this format online.

It is notable that out-of-state casino gambling significantly decreased from Wave 2 (2015) to Wave 3 (2016) and the magnitude of this change was large. This change may reflect the introduction of Massachusetts' first slot parlor, Plainridge Park Casino, which opened in June 2015. This may have resulted in fewer Massachusetts residents gambling in out-of-state casinos.

From Wave 1 to Wave 2, there was a statistically significant decrease in the average maximum frequency of gambling, yet the size of this change was small. This decrease continued from Wave 2 to Wave 3 and again the size of this change was small. From Wave 2 to Wave 3, there was a significant decrease in total gambling expenditures and the magnitude of this change was large. This change, however, was likely affected by outliers which affected the estimate at Wave 2. From Wave 2 to Wave 3, there was a statistically significant increase in the average number of gambling formats engaged in. The size of this change, however, was small. Overall, there does not seem to be a notable change in these measures of gambling intensity.

Once again, since this is a cohort study, caution should be taken when generalizing these findings to the Massachusetts population.

Incidence of Problem Gambling

Incidence in this study is defined as the number of individuals classified using the Problem and Pathological Gambling Measure (PPGM) as Non-Gamblers, Recreational Gamblers, and At-Risk Gamblers in one wave who are classified as Problem or Pathological Gamblers in the next wave. These estimates are based on behavior reported over the past 12 months and are weighted to the Massachusetts population.

The 'natural' (prior to the opening of casinos in Massachusetts) problem gambling incidence rate within the cohort from Wave 1 (2013/2014) to Wave 2 (2015) in Massachusetts was 2.4% (95% CI [1.5%, 3.7%]). From Wave 2 (2015) to Wave 3 (2016), the problem gambling incidence rate within the cohort was 1.2% (95% CI [0.6%, 2.2%]). While the incidence rate from Wave 1 to Wave 2 is high relative to other jurisdictions—which tend to range from 0.12% to 1.4%—the incidence rate substantially declined from Wave 2 to Wave 3.

'Remission' refers to individuals who meet criteria for a disorder at one point in time but not at a subsequent point in time. Remission is defined as a temporary end of signs and symptoms of a disorder. From Wave 1 to Wave 2, the remission rate (49.4%, 95% CI [29.2%, 69.8%]) within the cohort indicated that approximately half of the Problem Gamblers in Wave 1 were no longer classified as Problem Gamblers in Wave 2. From Wave 2 to Wave 3, the remission rate was 44.0% (95% CI [25.6%, 64.2%]). It appears that the high rate of remitting cases continued from Wave 2 to Wave 3 as the number of people becoming a problem gambler and remitting from problem gambling was almost equal, with slightly more individuals remitting compared to those becoming new problem gamblers.

With the unexpected finding of an unusually high incidence rate from Wave 1 to Wave 2, the research team endeavored to triangulate this finding using other data sources.¹ No corroborating evidence supported the high incidence found from Wave 1 (2013/2014) to Wave 2 (2015).

Part of the difference (and decline) in incidence across the three waves could be explained by variation in the inter-assessment windows from Wave 1 to Wave 2 (an average of 16.5 months) and from Wave 2 to Wave 3 (an average of 12.5 months).² While the questions assessing gambling behavior specified a 12 month recall window, the longer length of time between assessments may have independently contributed to the relatively higher incidence rate from Wave 1 to Wave 2. The higher incidence rate from Wave 1 to Wave 2 may have also been the result of factors influencing retention between Wave 1 and Wave 2, which may not have been as strong between Wave 2 and Wave 3 (see Volberg, Williams, Stanek, Zorn, and Mazar (2017) for a discussion of these issues).

Stability and Transitions of Gambling Behavior

Another goal of the present analyses is to elucidate the stability and transitions of gambling behavior experienced by members of the cohort across the three waves. Since we are interested in understanding transitions within the cohort, we do not extrapolate to the Massachusetts population and only include participants for whom we have complete PPGM information across all three waves (n=2,418).

The most stable group of gamblers were Recreational Gamblers, with 70.2% of Recreational Gamblers at Wave 1 remaining in this category across the next two waves. This represents 49.2% (n=1,189) of the cohort. The second most stable group of gamblers were Non-Gamblers—48.1% of Non-Gamblers at Wave 1 remained Non-Gamblers across the next two waves, representing 7.0% (n= 169) of the cohort. Of those who were Problem/Pathological Gamblers at Wave 1, 32.8% remained Problem/Pathological Gamblers at Wave 2 and Wave 3. This represents 0.87% (n=21) of the cohort. The least stable group were At-Risk Gamblers, where only 20.4% of At-Risk Gamblers at Wave 1 remained in this category across all three waves. This represents 2.6% (n=63) of the cohort.

Interestingly, none of the Problem Gamblers at Wave 1 moved to Non-Gambling by Wave 3 and only one transitioned into a Non-Gambler at Wave 2 (and then moved to Recreational Gambling at Wave 3). Only 4.9% (15 of the 309) of At-Risk Gamblers at Wave 1 moved to become Non-Gamblers at either Wave 2 or Wave 3. Like Problem/Pathological Gamblers, this suggests that At-Risk Gamblers rarely transition to Non-Gambler status. Recreational Gamblers also seem unlikely to transition into becoming Non-Gamblers, as only 12.5% (211 of 1,694) of Recreational Gamblers at Wave 1 transitioned to become Non-Gamblers at Wave 2 or Wave 3.

¹ We specifically examined whether there were significant differences in (a) the prevalence rate of problem gambling in the Baseline Targeted Population Survey in Plainville and surrounding communities in 2014 compared to the Follow-Up Targeted Population Survey in 2016; (b) the prevalence rate of problem gambling in Springfield and surrounding communities subsample of the Baseline General Population Survey in 2013/2014 compared to the Baseline Targeted Population Survey in Springfield and surrounding communities in 2015; (c) the incidence of problem gambling in MAGIC Wave 3 in 2016 relative to Wave 2 in 2015; and (d) any secondary data sources pertaining to problem gambling (i.e., Department of Public Health admissions data, Massachusetts Council on Compulsive Gambling helpline calls, Gamblers Anonymous chapters). No significant changes were found.

² The average time between assessments was computed using an unweighted pairwise comparison of the dates that each respondent completed the Wave 2 or Wave 3 questionnaire compared to the previous wave of the questionnaire. The weighted interval was 16.5 months between Wave 1 and Wave 2 and 12.5 months between Wave 2 and Wave 3.

Limitations

Generalizing findings from the MAGIC study to the Massachusetts population should be undertaken with care since there are several factors that deserve attention when interpreting results. One important limitation concerns whether all sampling biases have been accounted for. The response rate was 36.6% for Wave 1 and 65.1% for Wave 2 and the retention rate was 78.1% for Wave 3. This produces ample opportunity for differential response and retention rates for subgroups of the population. Various adjustments and weighting partially accounted for some differential response and retention rates within the cohort, but the methods, by necessity, were limited to a few factors and available information. Other factors could be related to response and retention rates and affect estimates and interpretation. In particular, the first wave of the study (BGPS/Wave 1) was introduced as a survey of “health and recreation” in an effort to prevent participation bias related to respondents’ attitudes toward gambling. In Wave 2 and Wave 3, however, respondents were aware that the survey was predominantly about gambling, which may have influenced their decision to join and remain in the cohort or to drop out.

There are several other limitations of all cohort studies. For one, repeated surveying is known to have some influence on self-report of behavior (e.g., social desirability to convey ‘improvement’), as well as some influence on actual behavior (i.e., intensive scrutiny of one’s behavior may serve as a sort of intervention). Observed changes over time are also sensitive to the reliability of the measurement instruments. For less reliable measures, repeated assessments typically lead to regression to the mean, resulting in some artifactual accentuation of transitions from more to less severe states.

Key Findings, Implications, and Future Directions

The following takeaways can be gleaned from this report:

- Out-of-state casino gambling significantly decreased from Wave 2 (2015) to Wave 3 (2016).
 - The magnitude of this change was large.
 - This change may reflect the introduction of Massachusetts’ first slot parlor, Plainridge Park Casino, which opened in June 2015.
- No notable changes in measures of gambling intensity were detected across the three waves.
- Prior to the opening of casinos in Massachusetts, the problem gambling incidence rate from Wave 1 (2013/2014) to Wave 2 (2015) in Massachusetts was 2.4% (95% CI [1.5%, 3.7%]).
 - Compared to other jurisdictions, this is surprisingly high. This result is likely artifactual and driven by the 16-month inter-assessment window.
- From Wave 1 to Wave 2, the remission rate was 49.4% (95% CI [29.2%, 69.8%]).
- From Wave 2 (2015) to Wave 3 (2016), the problem gambling incidence rate within the cohort declined to 1.2% (95% CI [0.6%, 2.2%]).
- From Wave 2 to Wave 3, the remission rate was 44.0% (95% CI [25.6%, 64.2%]).
 - Slightly more individuals were remitting rather than becoming new problem gamblers.
- Concerning stability (remaining in the same gambling behavior subtype classification across waves), Recreational Gamblers were the most stable, followed by Non-Gamblers. Problem/Pathological Gamblers and At-Risk Gamblers were the least stable.
- Individuals who gamble were unlikely to transition to non-gambling across the three waves.

The finding of out-of-state casino gambling significantly decreasing from Wave 2 to Wave 3 adds to the evidence that the opening of Plainridge Park Casino in Plainville, Massachusetts in June 2015 may have been successful in ‘recapturing’ Massachusetts residents who were previously gambling at out-of-state

casinos (see *Plainridge Park Casino First Year of Operation: Economic Impacts Report*—umass.edu/seigma/reports—for a detailed discussion of Plainridge Park Casino’s ‘recapture’ of Massachusetts residents’ casino spending).

Results from the Massachusetts cohort study suggest that while findings from Wave 1 to Wave 2 evinced a relatively high incidence rate of problem gambling (2.4%), this high rate has not continued from Wave 2 to Wave 3 (1.2%). While the number of people who remitted was approximately half the number of people who became problem gamblers from Wave 1 to Wave 2, we see from Wave 2 to Wave 3 that the number of people who became problem gamblers and the number of people who remitted was almost equal. In fact, slightly more individuals remitted compared to becoming problem gamblers. This suggests that additional treatment resources and prevention efforts may be especially beneficial in continuing the higher remission over incidence rate.

Examining the stability and transitions within the cohort across the three waves also proved instructive. Overall, these three waves of data suggest that both Problem/Pathological and At-Risk Gamblers are unlikely to transition to become Non-Gamblers. These findings suggest that when individuals move to less harmful gambling behaviors, they are unlikely to abstain from gambling altogether, but pursue more moderate forms of gambling behavior. While the majority of Recreational Gamblers remained Recreational Gamblers across all three waves, when individuals in this category did transition, they also seemed unlikely to transition into Non-Gamblers.

These results are consistent with findings that some ‘controlled’ gambling may not be incompatible with recovery from Problem/Pathological Gambling (Slutske, Piasecki, Blaszczyński, & Martin, 2010). More broadly, treatment providers may consider not insisting on abstinence from gambling as a treatment goal since this can reduce treatment seeking by those experiencing problem gambling (Ladouceur, Lachance, & Fournier, 2009). Eventual transition to abstinence as a goal by the patient may emerge from controlled consumption (Dowling & Smith, 2007). Overall, our findings corroborate evidence that Problem/Pathological Gambling recovery tends to occur without abstinence. Nonetheless, these findings only represent three waves of data and, since gambling problems can be transitory and episodic, we look forward to examining how our cohort members transition in future waves and whether this pattern persists.

The goal of the MAGIC study is to uncover high-risk populations in Massachusetts and inform the development of effective and efficient prevention and treatment programming in the Commonwealth. Our next MAGIC report will examine longitudinal predictors of problem gambling across waves and whether there are racial/ethnic, income, gender, and/or regional differences in these predictors. We will also examine the predictors of problem gambling remission and the extent to which accessing treatment is one of these factors (compared to financial exhaustion, self-care, etc.). In later waves, we hope to conduct in-depth interviews with a cross-section of At-Risk and Problem/Pathological Gamblers who remit, do not remit, and relapse to more fully understand pathways to remission.