Differences amongst estimates of the UK problem gambling prevalence rate are partly due to a methodological artefact

Philip W. S. Newall[1]*

Leonardo Weiss-Cohen[2]

Volker Thoma[3]

Peter Ayton[4]

1 School of Psychological Science, University of Bristol, 12a Priory Road, Bristol, BS8 1TU, United Kingdom

2 Department of Psychology, Kingston University, Penrhyn Road, Kingston upon Thames, London, KT1 2EE, United Kingdom

3 School of Psychology, University of East London, United Kingdom

4 Leeds University Business School, Charles Thackrah Building, University of Leeds, Leeds, LS2 9JT, United Kingdom

Running head: UK gambling prevalence surveys

For over 30 years, prevalence surveys have been the principal methodology for measuring the distribution of gambling-related harm in a population (Volberg, 2004), and have informed debates around whether existing harm reduction efforts are working, both in the academic literature (Shaffer et al., 2004) and in the news (Davies, 2022). Despite this longevity, prevalence surveys have been subject to critical perspectives throughout their use (Doughney, 2007; Nadler, 1985; Roberts et al., 2022; Young, 2013). Here we note that current estimated UK prevalence rates reported in 2022 vary from 0.2% (Gambling Commission, 2022) to 2.8% (Gunstone et al., 2022), which is a level of uncertainty. Previous work suggests that the mode of conducting these surveys can cause some differences, with online rates being higher than in-person (Sturgis & Kuha, 2022), and mobile phone rates being higher than landline (Dowling et al., 2016). This is likely responsible for part of the differential, with the 0.2% rate being from a phone survey and the 2.8% rate being from an online survey. Here we show how part of this differential is due to another methodological artefact: the choice of problem gambling screener.

The 2.8% rate is derived from the 9-item Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001), the current gold standard in the field (Miller et al., 2013). The frequency of problematic behaviour measured by each item is scored 0-3, summed, and a scoring threshold of 8+ applied. The 0.2% rate is derived from the 3-item Short Form PGSI (Volberg & Williams, 2012) , applying a scoring threshold of 4+ (Gambling Commission, 2022). These three items are a subset of the nine PGSI questions, hence any 9-item PGSI dataset could produce a corresponding Short Form prevalence rate. This is the best way to produce comparable rates from studies using these different scales.

We contacted the authors and funder of the study reporting the 2.8% rate but were unable to obtain access to their data. We therefore investigated this issue using our own recent data on UK gamblers (Newall et al., 2022). These groups had higher overall problem gambling rates,

but can still be used to compare relative rates between the two scales. In a sample of online roulette gamblers (*N*=1501), we found that the PGSI rate of 10.5% reduced significantly to 8.7% with the short form [$\chi 2(1)=5.19$, p=0.023], and in a sample of online sports bettors (N=1004), the PGSI rate of 7.2% reduced significantly to 4.7% with the short form [$\chi 2(1)=9.35$, p=0.002]. Overall, these results suggest the 2.8% figure could be around 25% lower, or about 2.1%, if measured in the same way as the other survey. This means that, of the 2.6% difference between the two surveys, around 0.7% is attributable to this methodological artefact.

This shows another way in which differences between prevalence figures, widely reported on in the news (Davies, 2022), are subject to numerous methodological factors (Sturgis & Kuha, 2022). On this specific factor, the 2.8% figure is the more reliable of the two, since it is based on the gold standard scale (Miller et al., 2013). This example adds to the previous critical perspectives on prevalence surveys, and provides further justification for moves to other ways of measuring gambling-related harm (Chagas & Gomes, 2017; Muggleton et al., 2021).

References

Chagas, B. T., & Gomes, J. F. (2017). Internet Gambling: A Critical Review of Behavioural Tracking Research. *Journal of Gambling Issues*, *36*. https://doi.org/10.4309/jgi.2017.36.1

Davies, R. (2022). *Gambling addiction could be nine times higher than industry claims*. https://www.theguardian.com/society/2022/mar/23/gambling-addiction-could-be-nine-times-higher-than-industry-claims

Doughney, J. (2007). Lies, damned lies and 'problem gambling'prevalence rates: The example of Victoria, Australia. *Journal of Business Systems, Governance and Ethics*, *2*(1), 41–54.

Dowling, N. A., Youssef, G., Jackson, A. C., Pennay, D., Francis, K. L., Pennay, A., & Lubman, D. I. (2016). National estimates of Australian gambling prevalence: Findings from a dual-frame omnibus survey. *Addiction*, *111*(3), 420–435.

Ferris, J., & Wynne, H. J. (2001). *The Canadian problem gambling index: Final report*. Canadian Centre on Substance Abuse.

Gambling Commission. (2022). *Statistics on participation and problem gambling for the year to March 2022*. https://www.gamblingcommission.gov.uk/statistics-and-research/publication/statistics-on-participation-and-problem-gambling-for-the-year-to-march-2022

Gunstone, B., Gosschalk, K., Zabicka, E., & Sullivan-Drage, C. (2022). *Annual GB Treatment and Support Survey 2021*. https://www.begambleaware.org/sites/default/files/2022-03/Annual%20GB%20Treatment%20and%20Support%20Survey%20Report%202021%20%28FINAL%29.pdf

Miller, N. V., Currie, S. R., Hodgins, D. C., & Casey, D. (2013). Validation of the problem gambling severity index using confirmatory factor analysis and rasch modelling. *International Journal of Methods in Psychiatric Research*, *22*(3), 245–255.

Muggleton, N., Parpart, P., Newall, P., Leake, D., Gathergood, J., & Stewart, N. (2021). The association between gambling and financial, social, and health outcomes in big financial data. *Nature Human Behaviour*, *5*, 319–326. https://doi.org/10.1038/s41562-020-01045-w

Nadler, L. B. (1985). The epidemiology of pathological gambling: Critique of existing research and alternative strategies. *Journal of Gambling Behavior*, *1*(1), 35–50.

Newall, P. W. S., Weiss-Cohen, L., Singmann, H., Walasek, L., & Ludvig, E. A. (2022). Impact of the "when the fun stops, stop" safer gambling message on online gambling behaviour: A randomised, online experimental study. *The Lancet Public Health*. https://doi.org/10.1016/S2468-2667(21)00279-6

Roberts, A., Sharman, S., & Bowden-Jones, H. (2022). The ability of the UK population surveys to capture the true nature of the extent of gambling related harm. *Addiction*. https://doi.org/10.1111/add.15864

Shaffer, H. J., LaBrie, R. A., & LaPlante, D. (2004). Laying the foundation for quantifying regional exposure to social phenomena: Considering the case of legalized gambling as a public health toxin. *Psychology of Addictive Behaviors*, *18*(1), 40.

Sturgis, P., & Kuha, J. (2022). How survey mode affects estimates of the prevalence of gambling harm: A multisurvey study. *Public Health*, *204*, 63–69.

Volberg, R. A. (2004). Fifteen years of problem gambling prevalence research: What do we know? Where do we go? *Journal of Gambling Issues*, *10*.

Volberg, R., & Williams, R. (2012). *Developing a short form of the PGSI: Report to the Gambling Commission*. Great Britain: Gemini Research.

Young, M. (2013). Statistics, scapegoats and social control: A critique of pathological gambling prevalence research. *Addiction Research & Theory*, *21*(1), 1–11.