

# GREO EVIDENCE EXCHANGE – MARCH 2020

## WARNING LABELS AND MESSAGING FOR YOUTH GAMBLERS

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Age restrictions and warning labels have been used in gambling to reduce harms for youth and vulnerable populations. This report will provide an overview of adherence to legal age limits for gambling, ways to enforce age limits, warning labels, unintentional consequences, and guidelines for advertising. For an overview of different age restrictions set by several Western countries,<sup>i</sup> please refer to *Appendix A: Age Restrictions Around the World*. Refer to *Appendix B: Overview of Age Restrictions and Gambling* for literature on youth and gambling, the awareness of age restrictions, and the evidence for age restrictions.

### ADHERENCE TO THE LEGAL AGE LIMITS FOR GAMBLING

Underaged youth are participating in illegal gambling activities despite legislation on age restrictions. In the U.K., just over 1 in 10 (11%) of those 11-16 years old gambled within the last week. The first experience gambling for most (23%) of these young people is playing slot machines. Of these youth, approximately 4.4% may be experiencing gambling problems or are at-risk of experiencing gambling problems<sup>3</sup> In Sweden, infringements against age restrictions were the most common among males. About a third of youth indicated that they had gambled on video lottery terminals.<sup>4</sup> Thus, there seems to be a disregard for legal age restrictions and/or the enforcement of the restrictions may be lacking.

Learning from the tobacco and alcohol research, age restrictions are only effective when they are rigorously enforced.<sup>2</sup> Currently, there appears to be inadequate enforcement of age restriction regulations across all types of gambling activities. Research in Finland found that enforcement for the legal gambling age was the weakest (4%), compared to alcohol (49%) and tobacco (43%).<sup>5</sup> <sup>ii</sup> Slot machine age enforcement may be lower compared to alcohol or tobacco, because the locations of the slot machines are typically out of reach of shop attendants' counters, gambling time can be short, and the gambler does not need direct interaction with the shop attendant.<sup>6</sup> Research from Atlantic City in the United States found that

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<sup>i</sup> There were no studies found on the topic of age restrictions in gambling from non-Western countries. This may be due to the search being limited to English language documents.

<sup>ii</sup> Please note that only the abstract was reviewed for this article because the full text was not written in English.

age restriction enforcement at casinos may also be poor.<sup>7</sup> Therefore, attention to regulating and enforcing legal age restrictions is warranted.

## OTHER VULNERABLE POPULATIONS

It is not only youth are at risk of developing gambling problems. Young adults, ages 18-24 are also at risk due to incomplete brain development. It is argued that emotion and logic are not fully formed at the young adult stage in life.<sup>8</sup> Therefore, inadequate decision-making abilities may cause young adults to take more risks and to act more impulsively.<sup>8</sup> For example, research has found that those aged 18–20 years old were significantly more likely to chase losses and bet more than they could afford.<sup>8</sup> This age group may be overlooked by gambling legislation in several countries that have legal age restrictions starting at 18 years or younger.

Research in Finland suggests that other vulnerable populations include people who were: in the 50 to 74 age groups; on a disability pension; chronically ill; on a pension due to old age or years of service; unemployed or laid-off; and those who were spending €6 or more on gambling per week. People who were on a disability pension, chronically ill, unemployed, or who were laid-off, also had the highest prevalence of problem gambling.<sup>9 ii</sup>

## WAYS TO ENFORCE AGE LIMITS

The literature noted several ways that gambling age restrictions have been enforced. However, there were no studies that examined the effectiveness of these strategies. The strategies include:

1. **Introduce fines for non-compliance.** In the Netherlands, underaged gamblers may be fined.<sup>10</sup> Fines should also be introduced to vendors of gambling products.
2. **Restrict visibility.** Visible gambling in retail outlets (e.g., newsagents, convenience stores, petrol stations, etc.) may expose vulnerable populations to an increased opportunity to participate in gambling.<sup>11</sup>
3. **Restrict convenient access.** In the Netherlands, age limit compliance was lower for off-site locations with convenient access to gambling such as retail stores (0% compliance rate) compared to on-site locations, such as casinos (14% compliance rate).<sup>10</sup> Access to public gambling machines present a threat to the potential of pathological gambling in minors, even though entry into casinos are for those older than 18 years.<sup>12</sup>

4. **Restrict availability.** In theory, legal age limits should act to limit the availability of gambling products. Enforcement of law was easier by limiting the availability of slot machines to dedicated gambling areas.<sup>6, 13</sup>
5. **Verify age verbally and request identification.** Simply asking the age of an individual is not effective in enforcing gambling age restrictions. In the Netherlands, compliance rates were the worst when asking for age only (0%), followed by identification only (67%), with the best compliance being age and identification (75%).<sup>10</sup>
6. **Use warning labels and messages.** The use of warning labels is supported across all studies examined in a systematic review.<sup>14</sup> Messages are informative to consumers, and if applied appropriately, they had the potential to reduce harm.<sup>14</sup> In a laboratory setting with undergraduate students, those who received warning messages on common irrational gambling beliefs demonstrated significantly fewer irrational beliefs and less risky gambling behaviour, than those in the control condition who didn't receive messages.<sup>15</sup>

## WARNING LABELS AND UNINTENTIONAL CONSEQUENCES

Warning labels and advertising may influence consumer participation in gambling. Among 14 to 17-year-olds, warning messages were found to reduce the probability of consuming potentially harmful products.<sup>16</sup> Warning labels also provide knowledge to youth about the health effects of risky behaviours. In a study with Canadian students in grades six to twelve, those who purchased loose cigarettes (rather than from a package) were less knowledgeable about the health effects of smoking.<sup>17</sup> However, providing knowledge does not necessarily impact gambling behaviour. When gambling odds were on warning messages to alter irrational beliefs, gambling behaviour did not change significantly.<sup>18</sup> This section will discuss recommendations on effective warning labels, the effectiveness of graphic vs. text labels, and unintended consequences.

## RECOMMENDATIONS FOR WARNING LABELS

The source, type of warning, and content of the message must be taken into consideration when creating effective warning labels for gambling.

Recommendations for warning labels include:

1. **Chose a trustworthy source.** Although a U.S. study on youth and cigar warnings found no differences between the source of the warning (in this study, sources were

Food and Drug Administration, Surgeon General, Centers for Disease Control and Prevention, and no source),<sup>19</sup> other gambling studies found that a trustworthy source for the warning label is crucial to its believability. Medical sources are more effective than government sources.<sup>20</sup> Moreover, a source related to the gambling provider had almost the same effect as no source.<sup>20</sup>

2. **Place warnings on each gambling machine, table, and scratchcard.** An online survey at a U.S. college on waterpipe use showed that the location of the placement of the warning was important.<sup>21</sup> In relation to gambling, this may mean to use harm-based messages in noticeable locations (i.e., on the gambling machines, at the gambling tables, etc.) where potential consumers can see it easily and frequently. The key is to make labels are conspicuous rather than discrete.<sup>22</sup>
3. **Use pop-up style messages** rather than static messages. On gambling machines and where possible, pop-up messages may be more impactful on thoughts and behaviours than static messages.<sup>23</sup> They were also recalled more immediately after the gambling session and upon a 2-week follow-up.<sup>23</sup> Furthermore, pop-up style messages were found to be optimal when they were **displayed in the centre of the screen, created an interruption to play, and required the player to actively remove it.**<sup>14</sup>
4. **Use threatening warnings.** Increased threat elicits fear among gamblers, and this can prompt them to consider the risks that they are facing.<sup>20</sup> However, the long-term effects of threatening messages are unknown, and individual differences (such as fear) may explain why fear motivates some people to change their gambling, but not others.<sup>24</sup>
5. **Use simple, descriptive messages** rather than longer and more complex warnings.<sup>14</sup> For example, a patient information leaflet may be too overwhelming and, therefore, ineffective.<sup>25</sup>
6. **Encourage self-appraisal** rather than provide informative messages. Messages that asked the gamblers to self-appraise also had significantly greater impact on thoughts and behaviours.<sup>23</sup> Although both types of messages reduced gambling through behaviour change.<sup>26</sup>
7. **Focus on money.** Messages that discuss money spent have the greatest impact on gambling consumption.<sup>26</sup>
8. **Create tailored labels/messages.** In a U.S. anti-substance use study, youth were asked to design their own messages. The more time that youth had, the more persuasive their messages were.<sup>27</sup> In a focus group study with First Nations and Metis youth, tailored messages to cultural backgrounds and gender were found to be more

effective.<sup>28</sup> In a gambling study, young adults responded to messages about their own play and expertise while skill game gamblers responded to messages on the odds of winning and outcomes over time.<sup>29</sup> Therefore, messages need to be tailored to maximize effectiveness.

## PICTORIAL VS. TEXT WARNING LABELS

Pictorial warning messages have increased the perceived severity of gambling-related losses. However, there is a lack of gambling studies in real-world settings to determine effectiveness of such pictorial warnings.<sup>30</sup> Research on the effectiveness of pictorial or graphic health warning labels, compared to text warning labels, have been studied extensively for smoking. **Generally, graphic warning labels were more effective than text-only warnings or personal testimonials.**<sup>31, 32</sup> When graphic warning labels and text were combined, youth tended to pay more attention to the images.<sup>33</sup> Children (ages 5 to 6 years) may not understand warning messages that are shown to them due to lack of comprehension.<sup>34</sup> Overall, however, pictorial warnings may increase comprehension for younger age groups.

Youth did not seem to care about the credibility of the graphic warning labels; the importance was using imagery that elicited negative emotions.<sup>35, 36</sup> Negative emotions or reactance to the graphic warning labels were associated with a greater likelihood of negative attitudes towards the behaviour, and therefore higher chances of taking on cessation attempts.<sup>37, 38</sup> Graphic warning labels in youth ages 13 to 20 years evoked higher arousal than text-only warning labels.<sup>39</sup> However, another study found that graphic and text-only warning labels provided comparable levels of negative emotions.<sup>40</sup> **Graphic warning labels were generally more effective for those who already gamble.** The effects of graphic warning labels may be higher for those engaged in the behaviour (e.g., they are more effective for smokers than for non-smokers).<sup>39, 41</sup>

The following are recommendations for graphic warning labels:

- **Make graphic warning labels as gruesome as possible.** An online survey was completed among U.S. college students for smoking. Most students (78.6%) rated the gruesome images as the most effective while only 19.5% rated testimonials as most effective.<sup>42</sup> More graphic images evoked more fear, guilt, and disgust for adolescent smokers, which resulted in an extra push toward smoking cessation.<sup>41</sup>
- **Create full-colour graphic warning labels.** It was found that colour labels captured the attention of youth and adults for longer than black-and-white labels.<sup>40</sup>
- **Use larger warnings with pictures.** A review found that these are more effective than smaller warnings with text-only messages.<sup>43</sup>

## UNINTENTIONAL CONSEQUENCES OF USING WARNING LABELS

There was no research on the use of age-related warning labels (ARLs) with youth and gambling. Therefore, a number of behaviours in other areas of study were examined to determine efficacy and consequences of ARLs. In a study on ARLs with highly caffeinated food and drinks, students (ages 14 to 17 years) reported that ARLs were ineffective in deterring them from consumption.<sup>44</sup> In fact, the ARLs may increase the appeal of the product. More than half of the students (55%) still chose products that had ARLs, the most frequent being R rated movies (64.5%), video games (56%), and power bars (55%).<sup>44</sup> It should be noted that gambling products were not part of this study, and therefore, it is uncertain whether ARLs on gambling products would also increase gambling appeal for youth.

Research on messaging related to smoking suggests that framing warning messages as a “loss” or in a negative way, rather than what can be “gained” by not participating in the risky behaviour, may be effective as a prevention method for adolescents.<sup>45</sup> However, this is different in the nutrition industry. Across three studies, dieters who saw a negative message on unhealthy food packaging had an increased desire for consumption of those foods. Non-dieters ignored the messages. In some cases, two-sided messages rather than just a negative message, may be the best option.<sup>46</sup> Therefore, it is important to study the effects of messaging among gamblers, as framing two-sided messages may be optimal.

In terms of the amount of warning labels, it seems that consumers are not ‘desensitized’ to a plethora of warning messages. Prior warning messages helped people appreciate the risks communicated by different warning messages and also increased safety behaviours.<sup>47</sup> Furthermore, a study of graphic health warning labels with 13- to 17-year-olds found that novel warnings increase cognitive processing, however regular messaging is needed as a refreshment.<sup>48</sup> Therefore, from a public health perspective, increased exposure to warnings may be beneficial in preventing youth gambling, especially since no research was found that pointed to negative consequences of youth being overloaded by warning labels.

Other research also supports the notion that that youth need more frequent exposure to warning labels and more salient warning labels. In the same study on ARLs with youth consumption of products, some students reported that they did not notice the ARLs at all (up to 73% of the time).<sup>44</sup> The authors recommended that more research is needed on how to make ARLs more visible and effective.

## GUIDELINES FOR ADVERTISING

Along with warning labels, other strategies such as mass media campaigns are needed to provide knowledge to youth about negative health effects.<sup>17</sup> When Finland raised age restrictions on gambling, there were mass media campaigns to increase awareness and

support of the new age restriction within the population.<sup>2</sup> These campaigns took place on platforms like the Internet, radio, newspapers, and physical posters in public spaces.<sup>2</sup>

General recommendations for gambling advertising include:

1. **Prohibit marketing that targets underaged<sup>1, 49</sup>** or vulnerable populations. This involves not depicting children participating in gambling activities (modest empirical support) and not implicitly or explicitly directing advertising at vulnerable or disadvantaged groups (strong empirical support).<sup>50</sup>
2. **Prohibit marketing or advertisements that portrays children, youth, or people who look underaged.** In a U.S. alcohol study with youth, when youth liked the ad and identified with people in the ad, they were more likely to have a positive attitude towards drinking. When the ads were not relatable, there was little impact on their attitudes towards drinking.<sup>51</sup>
3. **Install signage** that communicates the age requirement at all gambling venues.<sup>1, 10</sup>
4. **Restrict advertising.** One in five people believed that gambling advertising should be restricted.<sup>9 ii</sup>
5. **Enforce responsible marketing and increase education surrounding risks.** A Canadian study with youth and young adults on energy drinks, recommended that a comprehensive policy approach is needed as an effective approach to reduce harms.<sup>52</sup> This can also be applied to gambling marketing and education.

## CONCLUSIONS

There is limited evidence on the effectiveness and unintended consequences of using of age-restriction warning labels among children, youth, and vulnerable populations for gambling. Evidence from gambling research and research in other fields suggests that warning labels that simply state “age restricted” may not deter youth from gambling. In fact, they may create more appeal and lead to youth gambling more. Effective warning labels include tailored, strong, and colourful graphics that depict the negative consequences of gambling. Messages that are simple and concise, that depict positive and negative aspects (telling a two-sided story) of gambling could be the best option to avoid unintended consequences of only presenting negative aspects of gambling. Finally, it appears that youth are not desensitized to warning labels. They require frequent reminders as a refreshment. Placing several warning labels in noticeable areas where youth and other vulnerable populations may gamble, could be the best deterrent for potential gamblers.

## REFERENCES

1. Nordmyr J, Osterman K. Raising the legal gambling age in Finland: problem gambling prevalence rates in different age groups among past-year gamblers pre- and post-implementation. *International Gambling Studies*. 2016;16(3):347-56.
2. Raisamo S, Warpenius K, Rimpela A. Changes in minors' gambling on slot machines in Finland after the raising of the minimum legal gambling age from 15 to 18 years: a repeated cross-sectional study. *Nordic Studies on Alcohol and Drugs*. 2015;32(6):579-90.
3. Gambling Commission. Young People and Gambling Survey 2019: A research study among 11-16 year olds in Great Britain. United Kingdom: Gambling Commission; 2019. Available from: <https://www.gamblingcommission.gov.uk/PDF/Young-People-Gambling-Report-2019.pdf>
4. Jonsson J, Rönnerberg S. Sweden. In: Meyer G, Hayer T, Griffiths M, editors. *Problem gambling in Europe: challenges, prevention, and interventions*. New York, NY: Springer Science + Business Media; US; 2009.
5. Warpenius K, Holmila M, Raitasalo K. Peliin ei puututa. Alkoholien, tupakan ja rahapeliautomaattien ikäraja- ja valvontaa testanneet ostokokeet vähittäisliikkeissä [Enforcing age limits on purchases of alcohol and tobacco and the use of slot machines: test purchases in retail outlets]. *Yhteiskuntapolitiikka*. 2012;77(4):375–85.
6. Castren S, Basnet S, Pankakoski M, Ronkainen J-E, Helakorpi S, Uutela A, et al. An analysis of problem gambling among the Finnish working-age population: a population survey. *BMC Public Health*. 2013;13:519.
7. Frank ML. Underage gambling in Atlantic City casinos. *Psychol Rep*. 1990;67(3 Pt 1):907-12.
8. Responsible Gambling Council. Gambling and young adults. Ontario and Lottery Gaming Corporation; 2020. Available from: <https://www.responsiblegambling.org/for-the-public/safer-play/gambling-and-young-adults/>
9. Salonen A, Raisamo S. *Suomalaisten rahapelaaminen 2015. Rahapelaaminen, rahapeliongelmat ja rahapelaamiseen liittyvät asenteet ja mielipiteet 15-74-vuotiailla. [Finnish gambling 2015. Gambling, gambling problems, and attitudes and opinions on gambling among Finns aged 15-74, with English abstract]2015.*
10. Gosselt JF, Neefs AK, van Hoof JJ, Wagteveld K. Young poker faces: compliance with the legal age limit on multiple gambling products in the Netherlands. *Journal of Gambling Studies*. 2013;29(4):675-87.
11. Pugh P, Webley P. Adolescent participation in the U.K. National Lottery games. *Journal of Adolescence*. 2000;23(1):1-11.
12. Macur M, Makarovic M, Roncovic B. Slovenia. In: Meyer G, Hayer T, Griffiths M, editors. *Problem gambling in Europe: challenges, prevention, and interventions*. New York, NY: Springer Science + Business Media; US; 2009.
13. Salonen A, Raisamo S. *Suomalaisten rahapelaaminen 2015. Rahapelaaminen, rahapeliongelmat ja rahapelaamiseen liittyvät asenteet ja mielipiteet 15-74-vuotiailla. (Finnish gambling 2015. Gambling, gambling problems, and attitudes and opinions on gambling among Finns aged 15-74, with English abstract). Terveystieteiden ja hyvinvoinnin laitos (National Institute for Health and Welfare, THL); 2015.*
14. Ginley MK, Whelan JP, Pfund RA, Peter SC, Meyers AW. Warning messages for electronic gambling machines: evidence for regulatory policies. *Addiction Research & Theory*. 2017;25(6):495-504. Plain language summary available at <https://www.greo.ca/Modules/EvidenceCentre/Details/a-review-of-research-evidence-on-the-impact-of-warning-messages-for-electronic-ga>
15. Floyd K, Whelan JP, Meyers AW. Use of warning messages to modify gambling beliefs and behavior in a laboratory investigation. *Psychology of Addictive Behaviors*. 2006;20(1):69-74.
16. Shang C, Huang J, Chaloupka FJ, Emery SL. The impact of flavour, device type and warning messages on youth preferences for electronic nicotine delivery systems: evidence from an online discrete choice experiment. *Tobacco Control: An International Journal*. 2018;27(e2):e152-e9. Plain language summary available at Database: PsycINFO <1806 to March Week 1 2020> Search Strategy:
17. Elton-Marshall T, Wijesingha R, Kennedy RD, Hammond D. Disparities in knowledge about the health effects of smoking among adolescents following the release of new pictorial health

- warning labels. *Preventive Medicine: An International Journal Devoted to Practice and Theory*. 2018;111:358-65. Plain language summary available at Database: PsycINFO <1806 to March Week 1 2020> Search Strategy:
18. Steenbergh TA, Whelan JP, Meyers AW, May RK, Floyd K. Impact of warning and brief intervention messages on knowledge of gambling risk, irrational beliefs and behaviour. *International Gambling Studies*. 2004;4(1):3-16.
  19. Kowitt SD, Jarman K, Ranney LM, Goldstein AO. Believability of cigar warning labels among adolescents. *Journal of Adolescent Health*. 2017;60(3):299-305.
  20. Munoz Y, Chebat JC, Suissa JA. Using Fear Appeals in Warning Labels to Promote Responsible Gambling Among VLT Players: The Key Role of Depth of Information Processing. *Journal of Gambling Studies*. 2010;26(4):593-609.
  21. Islam F, Salloum RG, Nakkash R, Maziak W, Thrasher JF. Effectiveness of health warnings for waterpipe tobacco smoking among college students. *International Journal of Public Health*. 2016;61(6):709-15.
  22. Lou C. Effects of conspicuity and integration of warning messages in social media alcohol ads: balancing between persuasion and reactance among underage youth. *Dissertation Abstracts International Section A: Humanities and Social Sciences*. 2017;78(4-A(E)).
  23. Monaghan S, Blaszczynski A. Impact of mode of display and message content of responsible gambling signs for Electronic Gaming Machines on regular gamblers. *Journal of Gambling Studies*. 2010;26(1):67-88.
  24. De Vos S, Crouch R, Quester P, Ilicic J. Examining the effectiveness of fear appeals in prompting help-seeking: the case of at-risk gamblers. *Psychology & Marketing*. 2017;34(6):648-60. Plain language summary available at <https://www.greo.ca/Modules/EvidenceCentre/Details/can-fear-prompt-at-risk-gamblers-to-look-for-help>
  25. Weiss-Cohen L, Konstantinidis E, Speekenbrink M, Harvey N. Task complexity moderates the influence of descriptions in decisions from experience. *Cognition*. 2018;170:209-27.
  26. Gainsbury SM, Aro D, Ball D, Tobar C, Russell A. Optimal content for warning messages to enhance consumer decision making and reduce problem gambling. *Journal of Business Research*. 2015;68(10):2093-101. Plain language summary available at <https://www.greo.ca/Modules/EvidenceCentre/Details/electronic-gaming-machine-warning-message-content-what-is-effective>
  27. Pena-Alves S, Greene K, Ray AE, Glenn SD, Hecht ML, Banerjee SC. "Choose today, live tomorrow": a content analysis of anti-substance use messages produced by adolescents. *Journal of Health Communication*. 2019;24(6):592-602. Plain language summary available at Database: PsycINFO <1806 to March Week 1 2020> Search Strategy:
  28. Bottorff JL, Haines-Saah R, Oliffe JL, Struik LL, Bissell L, Richardson CP, et al. Designing tailored messages about smoking and breast cancer: a focus group study with youth. *CJNR: Canadian Journal of Nursing Research*. 2014;46(1):66-86.
  29. Gainsbury SM, Abarbanel BLL, Philander KS, Butler JV. Strategies to customize responsible gambling messages: a review and focus group study. *BMC Public Health*. 2018;18(1):1381. Plain language summary available at <https://www.greo.ca/Modules/EvidenceCentre/Details/how-to-customize-responsible-gambling-messages-to-specific-groups-of-gamblers>
  30. Reilly C. Responsible gambling: a review of the research. National Center for Responsible Gaming; 2017. Available from: [http://www.ncrg.org/sites/default/files/uploads/responsible\\_gambling\\_research\\_white\\_paper\\_1.pdf](http://www.ncrg.org/sites/default/files/uploads/responsible_gambling_research_white_paper_1.pdf)
  31. Mutti S, Reid JL, Gupta PC, Pednekar MS, Dhupal G, Nargis N, et al. Perceived effectiveness of text and pictorial health warnings for smokeless tobacco packages in Navi Mumbai, India, and Dhaka, Bangladesh: findings from an experimental study. *Tobacco Control: An International Journal*. 2016;25(4):437-43.
  32. Steier J. Investigation of the effects of graphic cigarette warning labels on youth and adult smoking behavior in Southeast Asia. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. 2016;76(12-B(E)):No-Specified.
  33. Kemp D, Niederdeppe J, Byrne S. Adolescent attention to disgust visuals in cigarette graphic warning labels. *Journal of Adolescent Health*. 2019.

34. Borzekowski DLG, Cohen JE. Young children's perceptions of health warning labels on cigarette packages: a study in six countries. *Journal of Public Health*. 2014;22(2):175-85.
35. Multi-Packer S, Reid JL, Thrasher JF, Romer D, Fong GT, Gupta PC, et al. The role of negative affect and message credibility in perceived effectiveness of smokeless tobacco health warning labels in Navi Mumbai, India and Dhaka, Bangladesh: a moderated-mediation analysis. *Addictive Behaviors*. 2017;73:22-9.
36. Skurka C, Byrne S, Davydova J, Kemp D, Safi AG, Avery RJ, et al. Testing competing explanations for graphic warning label effects among adult smokers and non-smoking youth. *Social Science & Medicine*. 2018;211:294-303. Plain language summary available at Database: PsycINFO <1806 to March Week 1 2020> Search Strategy:
37. Cho YJ, Thrasher JF, Swayampakala K, Yong HH, McKeever R, Hammond D, et al. Does reactance against cigarette warning labels matter? Warning label responses and downstream smoking cessation amongst adult smokers in Australia, Canada, Mexico and the United States. *PLoS One*. 2016;11(7):e0159245.
38. Lou C. Effects of conspicuity and integration of warning messages in social media alcohol ads: balancing between persuasion and reactance among underage youth. *Dissertation Abstracts International Section A: Humanities and Social Sciences*. 2017;78(4-A(E)):No-Specified.
39. Margalhos P, Esteves F, Vila J, Arriaga P. Emotional impact and perceived effectiveness of text-only versus graphic health warning tobacco labels on adolescents. *The Spanish Journal of Psychology*. 2019;22. Plain language summary available at Database: PsycINFO <1806 to March Week 1 2020> Search Strategy:
40. Byrne S, Greiner Safi A, Kemp D, Skurka C, Davydova J, Scolere L, et al. Effects of varying color, imagery, and text of cigarette package warning labels among socioeconomically disadvantaged middle school youth and adult smokers. *Health Communication*. 2019;34(3):306-16. Plain language summary available at Database: PsycINFO <1806 to March Week 1 2020> Search Strategy:
41. Netemeyer RG, Burton S, Andrews JC, Kees J. Graphic health warnings on cigarette packages: the role of emotions in affecting adolescent smoking consideration and secondhand smoke beliefs. *Journal of Public Policy & Marketing*. 2016;35(1):124-43.
42. Berg CJ, Thrasher JF, Westmaas JL, Buchanan T, Pinsker EA, Ahluwalia JS. College student reactions to health warning labels: sociodemographic and psychosocial factors related to perceived effectiveness of different approaches. *Preventive Medicine*. 2011;53(6):427-30.
43. Hammond D. Health warning messages on tobacco products: a review. *Tobacco Control*. 2011;20(5):327-37.
44. Goldman J, Zhu Mo, Pham TB, Milanaik R. Age restriction warning label efficacy and high school student consumption of highly-caffeinated products. *Preventive Medicine Reports*. 2018;11:262-6.
45. Mays D, Hawkins KB, Bredfeldt C, Wolf H, Tercyak KP. The effects of framed messages for engaging adolescents with online smoking prevention interventions. *Translational Behavioral Medicine*. 2017;7(2):196-203.
46. Pham N, Mandel N, Morales AC. Messages from the food police: how food-related warnings backfire among dieters. *Journal of the Association for Consumer Research*. 2016;1(1):175-90.
47. Main KJ, Darke PR. Crying wolf or ever vigilant: do wide-ranging product warnings increase or decrease sensitivity to other product warnings? *Journal of Public Policy & Marketing*. 2019;39(1):62-75.
48. White V, Bariola E, Faulkner A, Coomber K, Wakefield M. Graphic health warnings on cigarette packs: how long before the effects on adolescents wear out? *Nicotine & Tobacco Research*. 2015;17(7):776-83.
49. Parke A, Griffiths MD. Identifying risk and mitigating gambling-related harm in online poker. *Journal of Risk Research*. 2018. Plain language summary available at <https://www.greo.ca/Modules/EvidenceCentre/Details/what-responsible-gambling-features-reduce-gambling-related-harm-online-poker>
50. Johns R, Dale N, Alam L, Keating B. Impact of gambling warning messages on advertising perceptions. Melbourne, Australia: Victorian Responsible Gambling Foundation; 2017.

51. Collins RL, Martino SC, Kovalchik SA, D'Amico EJ, Shadel WG, Becker KM, et al. Exposure to alcohol advertising and adolescents' drinking beliefs: role of message interpretation. *Health Psychology*. 2017;36(9):890-7.
52. Wiggers D, Asbridge M, Baskerville NB, Reid JL, Hammond D. Exposure to caffeinated energy drink marketing and educational messages among youth and young adults in Canada. *International Journal of Environmental Research and Public Health*. 2019;16(4):642.
53. Williams RJ, West BL, Simpson RI. Prevention of problem gambling: a comprehensive review of the evidence and identified best practices. Guelph, ON: Gambling Research Exchange Ontario; 2012. Available from: <https://www.uleth.ca/dspace/handle/10133/3121>
54. BeGambleAware. How is gambling regulated? 2020 [Available from: <https://www.begambleaware.org/understanding-gambling/how-is-gambling-regulated/>].
55. Häfeli J. Switzerland. In: Meyer G, Hayer T, Griffiths M, editors. *Problem gambling in Europe: challenges, prevention, and interventions*. New York, NY: Springer Science + Business Media; US; 2009. p. 317-26.
56. Skokauskas N. Lithuania. In: Meyer G, Hayer T, Griffiths M, editors. *Problem gambling in Europe: challenges, prevention, and interventions*. New York, NY: Springer Science + Business Media; US; 2009. p. 187.
57. Dzik B. Poland. In: Meyer G, Hayer T, Griffiths M, editors. *Problem gambling in Europe: challenges, prevention, and interventions*. New York, NY: Springer Science + Business Media; US; 2009.
58. King DL, Delfabbro PH, Derevensky JL, Griffiths MD. A review of Australian classification practices for commercial video games featuring simulated gambling. *International Gambling Studies*. 2012;12(2):231-42.
59. Laansoo S, Niit T. Estonia. In: Meyer G, Hayer T, Griffiths M, editors. *Problem gambling in Europe: challenges, prevention, and interventions*. New York, NY: Springer Science + Business Media; US; 2009.
60. Linnet J. Denmark. In: Meyer G, Hayer T, Griffiths M, editors. *Problem gambling in Europe: challenges, prevention, and interventions*. New York, NY: Springer Science + Business Media; US; 2009. p. 17-35.
61. Druine C. Belgium. In: Meyer G, Hayer T, Griffiths M, editors. *Problem gambling in Europe: challenges, prevention, and interventions*. New York, NY: Springer Science + Business Media; US; 2009. p. 3-16.
62. Götestam KG, Johansson A. Norway. In: Meyer G, Hayer T, Griffiths M, editors. *Problem gambling in Europe: challenges, prevention, and interventions*. New York, NY: Springer Science + Business Media; US; 2009.
63. Olason DT, Gretarsson SJ. Iceland. In: Meyer G, Hayer T, Griffiths M, editors. *Problem gambling in Europe: challenges, prevention, and interventions*. New York, NY: Springer Science + Business Media; US; 2009.
64. Wardle H, Moody A, Spence S, Orford J, Volberg R, Jotangia D, et al. British Gambling Prevalence Survey 2010. National Centre for Social Research; 2011. Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/243515/9780108509636.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/243515/9780108509636.pdf)
65. Williams RJ, Volberg RA, Stevens RMG. The population prevalence of problem gambling: methodological influences, standardized rates, jurisdictional differences, and worldwide trends. Report prepared for the Ontario Problem Gambling Research Centre and the Ontario Ministry of Health and Long-Term Care; 2012. Available from: <http://hdl.handle.net/10133/3068>
66. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fifth edition: DSM-5*. Washington, DC: American Psychiatric Publishing; 2013.
67. World Health Organization. *International Classification of Diseases, 11th revision*: <https://icd.who.int/browse11/1-m/en>; 2018.
68. Roberts A, Sharman S, Landon J, Cowlshaw S, Murphy R, Meleck S, et al. Intimate Partner Violence in Treatment Seeking Problem Gamblers. *Journal of Family Violence*. 2020;35(1):65-72.
69. Dighton G, Roberts E, Hoon AE, Dymond S. Gambling problems and the impact of family in UK armed forces veterans. *J Behav Addict*. 2018:1-11. Plain language summary available at <https://www.greo.ca/Modules/EvidenceCentre/Details/understanding-the-role-of-family-in-problem-gambling-among-veterans>

70. Jacob L, Haro JM, Koyanagi A. Relationship between attention-deficit hyperactivity disorder symptoms and problem gambling: A mediation analysis of influential factors among 7,403 individuals from the UK. *Journal of Behavioral Addictions*. 2018;7(3):781-91.
71. Kessler RC, Hwang I, LaBrie R, Petukhova M, Sampson NA, Winters KC, et al. DSM-IV pathological gambling in the National Comorbidity Survey Replication. *Psychological Medicine*. 2008;38(9):1351-60.
72. Fisher S. Gambling and pathological gambling in adolescents. *Journal of Gambling Studies*. 1993;9(3):277-88.
73. Kaminer V, Petry NM. Gambling behavior in youths: why we should be concerned. *Psychiatric Services*. 1999;50(2):167-8.
74. Castren S, Basnet S, Salonen AH, Pankakoski M, Ronkainen JE, Alho H, et al. Factors associated with disordered gambling in Finland. *Substance Abuse Treatment, Prevention, and Policy*. 2013;8:24.
75. Magoon ME, Gupta R, Derevensky J. Juvenile delinquency and adolescent gambling: implications for the juvenile justice system. *Criminal Justice and Behavior*. 2005;32(6):690-713.
76. Rahman AS, Pilver CE, Desai RA, Steinberg MA, Rugle L, Krishnan-Sarin S, et al. The relationship between age of gambling onset and adolescent problematic gambling severity. *Journal of Psychiatric Research*. 2012;46(5):675-83.
77. Wood RT, Griffiths MD. The acquisition, development and maintenance of lottery and scratchcard gambling in adolescence. *Journal of Adolescence*. 1998;21(3):265-73.
78. Hayer T, Griffiths MD. Gambling. In: *Handbook of adolescent behavioral problems: evidence-based approaches to prevention and treatment, 2nd ed*. New York, NY, US: Springer Science + Business Media; 2015. p. 539-58.
79. Castren S, Temcheff CE, Derevensky J, Josefsson K, Alho H, Salonen AH. Teacher awareness and attitudes regarding adolescent risk behaviours: a sample of Finnish middle and high school teachers. *International Journal of Mental Health and Addiction*. 2017;15(2):295-311.
80. Mann K, Lemenager T, Zois E, Hoffmann S, Nakovics H, Beutel M, et al. Comorbidity, family history and personality traits in pathological gamblers compared with healthy controls. *European Psychiatry*. 2017;42:120-8. Plain language summary available at <https://www.greo.ca/Modules/EvidenceCentre/Details/comparing-pathological-gamblers-and-healthy-controls-on-mental-health-family-his>
81. Raisamo S, Kinnunen JM, Pere L, Lindfors P, Rimpela A. Adolescent gambling, gambling expenditure and gambling-related harms in Finland, 2011-2017. *Journal of Gambling Studies*. 2019.
82. Salonen A, Raisamo S. *Suomalaisten rahapelaaminen 2015. Rahapelaaminen, rahapeliongelmat ja rahapelaamiseen liittyvät asenteet ja mielipiteet 15-74-vuotiailla. (Finnish gambling 2015. Gambling, gambling problems, and attitudes and opinions on gambling among Finns aged 15-74, with English abstract)2015.*
83. Meyer G, Brosowski T, von Meduna M, Hayer T. Simulated gambling: Analysis and synthesis of empirical findings on games in internet-based social networks, in the form of demo versions, and computer and video games. *Zeitschrift fur Gesundheitspsychologie*. 2015;23(4):153-68.
84. Parke A, Griffiths MD. Identifying risk and mitigating gambling-related harm in online poker. *Journal of Risk Research*. 2018;21(3):269-89.
85. Gambling Commission. Changes to the licence conditions and codes of practice on age and identity verification for remote gambling. United Kingdom: Gambling Commission; 2019. Available from: <https://www.gamblingcommission.gov.uk/PDF/AV-CI-Consultation-responses-Feb-2019.pdf>
86. Shi J, Renwick R, Turner NE, Kirsh B. Understanding the lives of problem gamers: the meaning, purpose, and influences of video gaming. *Computers in Human Behavior*. 2019;97:291-303.
87. Zendle D, Meyer R, Cairns P, Ballou N. The prevalence of loot boxes in mobile and desktop games. *Addiction*. 2020.

## APPENDIX A

# AGE RESTRICTIONS AROUND THE WORLD

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Most of the legislation around the world has restricted age limits for gambling, from between 16 to 25 years old, with the most common being 18 years old.<sup>53</sup>

In the **U.K.**, the minimum legal age for most gambling is 18 years old, which applies to gaming centers, betting shops, bingo halls, casinos, racetracks, and online gambling. An exception is made for the National Lottery, other lotteries, and football pools, where the legal age is 16. In addition, those 16 years of age may participate in some non-commercial gambling, or low stakes and prizes gambling. Machines in family entertainment centers and amusement arcades, such as coin pushers, teddy grabbers, and some lower stakes slot machines do not have a legal age and are open to anyone.<sup>54</sup>

It appears to be common that age restrictions are more lenient for lottery games. **Switzerland**, **Poland**, and **Lithuania** do not have age limits to play lottery games.<sup>55-57</sup> Poland also does not have age limits for playing scratchcards, but other forms of gambling have an age requirement of at least 18 years.<sup>57</sup> Lithuania requires the individual to be at least 21 years old for casino gambling. Although lottery games have more lenient age restrictions compared to other forms of gambling, no evidence or rationale was provided.

The legal minimum age to gamble in **Australia** is 18 for both land-based and online gambling sites. Furthermore, those younger than 18 are also not permitted to play-for-free on gambling games or at gambling venues. Nevertheless, these laws do not stop children from gambling through video games that are classified for children 8 years and older.<sup>58</sup> The legal age to gamble in the **Netherlands** is also 18 years old.<sup>10</sup> In **Canada**, the legal gambling age is 19 in all provinces except for three, where the legal gambling age is 18. **Slovenia** also limits gambling activities in casinos at 18 years. However, adolescents can gamble using slot machines in public places.<sup>12</sup>

Any person younger than 21 years old is not permitted to gamble or visit gambling venues in **Estonia**. Furthermore, people must be at least 16 years old to purchase or play lottery games.<sup>59</sup> Similarly, **Denmark's** age limit for purchasing lottery tickets is also 16 years, however, the age limit for online gambling, playing slot machines, and entering a casino is lower than Estonia at 18 years.<sup>60</sup> **Belgium** has higher age restrictions for playing the National

Lottery, bingo machines, and sports betting at 18 years or older. Casino and gaming arcade gambling is also set at 21 years old.<sup>61</sup>

**Sweden** introduced online gambling age limit of 18 years in 2007. Prior to 2007, age limits for sports betting, horse racing, roulette, dice, card games, and video lottery terminals were already limited to 18 years or older. Gambling in international casinos was 20 years or older.<sup>4</sup>

**Finland** currently has the most research related to age restrictions in gambling. The legal gambling age was raised from 15 to 18 years old in 2010. A transition period was given to slot machines with the law coming into effect in 2011.<sup>2</sup> **Iceland** and **Norway** (increased from 16 years) have legal age restrictions on gambling machines to anyone under the age of 18.<sup>62, 63</sup> However, in Iceland, there are no age restrictions on participation in other types of gambling activities. Gambling operators can set their own age restrictions. These operators have typically set the age restrictions at 18 to 20 years old.<sup>63</sup>

## APPENDIX B

# OVERVIEW OF AGE RESTRICTIONS AND GAMBLING

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In Great Britain, approximately 35.5 million people aged 16 and over gamble.<sup>64</sup> However, approximately 2.3% of people experience gambling problems.<sup>65</sup> People who experience excessive gambling problems could be classified as experiencing “hazardous gambling or betting” in the International Classification of Diseases, 11<sup>th</sup> edition (ICD-11) or as experiencing “gambling disorder” in the ICD-11 and in the Diagnostic Statistics Manual, 5<sup>th</sup> edition (DSM-5).<sup>66, 67</sup> Harms associated with people who experience gambling disorder include financial problems, problems with interpersonal relationships,<sup>68, 69</sup> and associations with other psychiatric disorders.<sup>70, 71</sup> Youth may be a particularly susceptible population for gambling problem harms. Therefore, it is important to understand the use of age restrictions in preventing or minimising these harms. This Appendix will provide an overview of youth and gambling, the awareness of age restrictions, the evidence for age restrictions, and forms of gambling that do not involve money.

### YOUTH AND GAMBLING

Children have been exposed to gambling as early as eight years old.<sup>72</sup> However, the idea that gambling is a potentially harmful activity for children and adolescents has been longstanding. In 1978, Cornish stated that it is dangerous to introduce gambling to youth because their lives are not yet structured by the constraints, obligations, and rewards that adults have, which act to prevent excessive involvement with gambling. Adolescents are also more inclined to participate in risk-taking behaviours such as substance use and gambling. Subsequently, they are also more vulnerable than adults to the negative impacts of gambling.<sup>73</sup>

An early age of gambling is associated with the development of problem gambling<sup>74, 75</sup> and more severe problem gambling later in life.<sup>76</sup> There have been consistent findings that the rates of problem gambling are higher among youth than adults.<sup>73</sup> With evidence that the risks of problem gambling is heightened for youth,<sup>10</sup> failure to address the needs of this younger population may result in increasing numbers of problem gamblers.<sup>73</sup>

## RISK FACTORS FOR YOUTH GAMBLING

A survey study on children in the U.K., ages 13 to 15 years old, found that the best predictors of online gambling were income, household participation (by a parent or caregiver), watching gambling on television, and whether a retailer had refused to sell the child a lottery ticket.

Therefore, two reasons why children in the U.K. gamble are: 1) because members of their households (possibly parents or caregivers) gamble,<sup>77</sup> and 2) exposure to gambling on television, which may make gambling seem like a socially acceptable activity.<sup>11</sup>

Other factors that contribute to problem gambling in youth include: individual factors such as genetics, gender, concurrent illness, and involvement in other money-related games,<sup>72</sup> interpersonal factors such as parental involvement in gambling,<sup>72</sup> and structural characteristics such as gambling laws. These structural characteristics affect the accessibility, availability, and acceptability of gambling.<sup>78</sup> In attempts to mitigate problem gambling in youth, many countries have set age restrictions.

## AWARENESS OF LEGAL AGE LIMITS

Although many countries have legislation age requirements for gambling, there are few studies on the public awareness of these age requirements. A Finnish study examined teachers' awareness of the minimum legal age for various activities, including gambling. Most teachers (over 70%) were aware of the legal age limit for online gambling, slot machine gambling, purchasing a lottery ticket, and casino gambling.<sup>79</sup> However, their awareness for gambling activities were not as accurate as their knowledge of other potentially risky activities, such as purchasing alcohol, purchasing cigarettes, or driving a car.<sup>79</sup>

Teachers reported having observed students gambling (21.9%) and overheard students talking about gambling (43.8%). However, only 16.8% and 17.6% of the teachers correctly estimated the percentage of 11- to 14-year-old and 15- to 17-year-old-students, who had gambled in the past year. Students who had gambled in those age groups were both 41-60%.<sup>79</sup> Teachers' perceptions on the number of students who gambled were highly inaccurate.

Teachers had also reported hearing that some students were experiencing problems related to gambling (14.2% for 11-14-year-olds; 16.8% for 15-18-year-olds). The problem gambling rates among 11- to 18-year-old Finnish students was 1-4%.<sup>79</sup> Interestingly, gambling not was perceived by the teachers to be a serious concern compared to other behaviours such as excessive video game playing, spending too much online, violence in school or bullying, smoking, unsafe online activities, academic problems, and depression.<sup>79</sup>

Despite teachers not perceiving gambling to be a serious concern compared to other issues, most teachers (75%) agreed that excessive gambling is a serious issue among youth. They believed that youth gambling could escalate to problem gambling (19%) and that youth gambling can be highly addictive (84%). The teachers also believed that youth gambling can impact school/work (75%), interpersonal relationships (67%), and that it could lead to criminal behaviours (53%).<sup>79</sup>

#### WHO SHOULD TAKE RESPONSIBILITY?

When asked whose responsibility it is to prevent youth from gambling, teachers believed that parents should be the primary source of responsibility. Many also believed that responsibility should fall with the gambling industry and the government.<sup>79</sup> It was not stated, however, how parents, the gambling industry and the government should take responsibility. Just over half of the teachers believed that youth themselves should be responsible and just under half of the teachers believed that the school staff should be responsible.<sup>79</sup> None of the teachers indicated that they were aware of a gambling prevention program that was run by their schools.<sup>79</sup> In summary, teachers believed that most of the responsibility should fall upon individual families of youth.

Similar findings on the responsibility of problem gambling were found in a general population survey conducted in Finland. Approximately half of the respondents believed that prevention of gambling problems is the responsibility of the gamblers themselves.<sup>9</sup> <sup>iii</sup> While 32% believed that the gambling providers should be responsible. Approximately 20% believed that authorities that regulate gambling and manage gambling problems should be responsible.<sup>9</sup> <sup>ii</sup> In this study, parents/caregivers of youth, teachers, and schools were not mentioned as sources of responsibility. No evidence was found comparing the effectiveness of different sources taking responsibility with youth gambling prevention.

#### AGE RESTRICTIONS AS A FORM OF HARM REDUCTION OR PREVENTION

There is limited research on the effectiveness of age restrictions on youth and gambling, however the theoretical support can be considered strong.<sup>2</sup> A few reports mention using age limits as a form of prevention for problem gambling.<sup>62, 80</sup> Age limits were mentioned as a way to limit the exposure to and to delay the age of consumption of potentially harmful products.<sup>10</sup> However, as previously indicated, most reports from around the world did not evaluate the effectiveness of applying age limits as a means of preventing or treating problem gambling.

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<sup>iii</sup> Please note that only the abstract was reviewed for this article because the full text was not written in English.

Similarly, there was little mention of how effective age limits are on harm reduction among youth and other vulnerable populations. Regardless, the effectiveness of legalized age limits appears to be inferred as highly effective based widespread implementation, worldwide.<sup>10</sup>

## **RAISING THE AGE LIMIT**

There is no research on the optimal age restriction for gambling activities. Current research examining the effectiveness of raising the legal age restrictions for gambling is limited, however there is some evidence that raising the age restrictions is a strategy that will minimize gambling-related harms.<sup>53</sup> Four Finnish studies that examined the effects of raising the legal age restrictions to gamble were found in the literature.<sup>1, 2, 81, 82</sup> This section will discuss the findings and recommendations from these studies. The age restriction to gamble in Finland was raised from 15 to 18 years old with an interest in protecting youth from gambling-related harms in 2010.

Surveys were distributed in Finland to teenagers at two separate time intervals in three studies. Two studies found that gambling activity had decreased for 12- to 16-year-olds, two years and six years after of raising the age limit.<sup>2 81</sup> Unsurprisingly, 18-year-olds who were not targeted by the age restriction increase showed no significant changes in gambling activity.<sup>81</sup> However, underage gambling was still occurring in about 13% of their sample.<sup>2</sup> One study found decreases in lottery games and slot machine gambling for the 15- to 17-year-old age group and the 18- to 19-year-old age group, three years post legislation change.<sup>1</sup>

A phone survey explored gambling related questions among people aged 15 to 74 years old.<sup>9 ii</sup> In the 2015 cycle of the survey, the prevalence for gambling was the lowest for people aged under 18 years old (37%). Nevertheless, the overall prevalence for gambling had increased by 2% from 2011, particularly in the 18 to 24 and 65 to 74 age groups. Also increasing from 2011, was engaging in at least four different types of gambling and online gambling for all age groups, except for 15- to 17-year-olds (the underage group). Online gambling was rare in the 15 to 17 age group (4%).<sup>9 ii</sup> This may be related to difficulties in obtaining a credit card to gamble for the adolescent age group.

It is important to note that although underage gambling activities decreased overall, the proportion of slot machine use on ships increased significantly.<sup>2</sup> The ships and cruise lines that travel on the Baltic Sea have age restrictions that are not required by law. Underage youth may have gambled more in venues that had less legal enforcements.<sup>2</sup> Increased numbers of youth gambling at unregulated sites, such as cruise ships, may have been an unintended consequence of raising legal age restrictions on land.

In summary, the Lotteries Act enacted in Finland on October 1, 2010 that raised the minimum age limit for gambling from 15 to 18 years old, helped decrease adolescent gambling and problem gambling between 2011 and 2015.<sup>79</sup> The teens who were still gambling experienced significantly less gambling-related harms six years after raising the age restriction. One of the studies had zero teens fulfilling the criteria for problem gambling in a survey that was distributed three years post legislation change.<sup>1</sup> Therefore, the negative consequences experienced by youth from gambling may be less prevalent after raising the age restriction.<sup>81</sup>

**Summary of the recommendations on raising legal age limits:**

- Although results should be interpreted cautiously, they do seem to support having a minimum age of 18 years old or higher for gambling as a form of harm reduction.<sup>1</sup>
- Raising the age limit decreased the prevalence of slot machine use, even when the prevalence of slot machines was not reduced.<sup>2</sup>
- Again, cautious interpretation of study results points to the possibility that decreasing gambling accessibility and acceptability in youth (through age restrictions) may reduce gambling-related harms.<sup>1</sup>
- Slot machine use into young adulthood is unknown.<sup>2</sup> However, given research that was stated in previous sections on early use corresponding with problem gambling, raising the age restriction may have a beneficial impact into young adulthood.
- Follow-up is required to evaluate the long-term effects of raising the age restrictions.<sup>1</sup>

## GAMBLING SIMULATIONS AND GAMBLING IN VIDEO GAMES

Gambling games that lack monetary transactions typically do not fulfill the legal criteria for gambling.<sup>83</sup> Some argue that age restrictions should also be placed on free-to-play gambling games or demo mode games. Access to video, amusement, and fruit machines have ambiguous age restrictions and grant children under 16 years old easy access.<sup>11</sup> Studies in the U.K. found that gambling in a free-to-play mode was the most important predictor of youth gambling for money. It was also the most important predictor of problem gambling in youth.<sup>84</sup> Furthermore, microtransactions in simulated gambling games predicts the individual's tendency to participate in real gambling in the future.<sup>83</sup> Caution must be placed on gambling simulated games with youth, and some jurisdictions are taking action. In fact, the U.K. recently updated their regulation to online gambling and lotteries to enforce age verification before access to any free-to-play gambling games.<sup>85</sup>

Non-traditional forms of gambling are occurring creatively through video games. Problem video gamers described using online video games and digital platforms to gamble.<sup>86</sup> For example, in-

game value items can be exchanged for monetary value. Loot-boxes that offer in-game value items at random chance have similarities to gambling. It has been debated that loot boxes may be a gateway to gambling and gambling problems. Participation and use of video game gambling typically lack legal governance. A survey of the top 100 grossing video games found that loot boxes were prevalent in video games, especially on mobile platforms and that these games are available to children 12 years or older.<sup>87</sup> Another study found gambling embedded within video games that were intended for children 8 years or older.<sup>58</sup> The convergence of gambling and video gaming should be studied in detail regarding impacts on age restrictions.

## CONCLUSIONS

Although there appears to be widespread adoption of setting legal age restrictions on gambling, studies in this area are limited. There is no research on the optimal age restriction for gambling. A small number of studies show promising findings for legally restricting youth from gambling in that it may reduce the amount of youth gamblers and gambling-related harms. Current age restrictions should be strongly enforced around the world in order to have a better understanding of their effect(s). Future consideration of age restrictions in gambling should consider adolescent and young adult development in risk assessments. Future work surrounding prevention and harm reduction in gambling should examine the optimal age restrictions on problem gambling and how they can be best enforced across all gambling venues.