Dear Dr Karhulahti and the Managing Board,

Thank you for the opportunity to submit a revised version of this stage 2 manuscript to *PCI Registered Reports*, which has now been uploaded to the Open Science Framework and is available at this link: https://doi.org/10.31219/osf.io/hnd7w (Version 5). I include the complete text of Dr Karhulahti's recommender comments and the three reviews by Drs Moshirnia, Macey, and Chin in *black italics*; my point-by-point responses in purple; and amended or newly added text in blue below.

The only additional point that I would like to highlight is that I have added a Postscript section to the manuscript. This section discusses two matters that have arisen since the preprint was published and the study completed: specifically, (i) the Belgian Minister of Justice's official response and (ii) the compliance actions taken by *Roblox*. I do not think it would be appropriate to change my discussion section in light of these two matters given that I would be writing in retrospect and somewhat biasing my original discussion section by doing so. I would also not want to not include these two matters as they provide context and transparency, and I believe they should be read in conjunction with the study. This sort of post-preprint, but pre-peer-reviewed publication, matters arising is quite novel. I hope my handling of it here is agreeable to the recommender and the reviewers.

Leon Y. Xiao

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Dr Karhulahti's Recommender Comments, 29 Aug 2022 16:01

Dear Leon Xiao,

Thank you for submitting the Stage 2 manuscript. We were lucky to have all three original reviewers to re-review and they have provided valuable comments. I briefly comment on these reviews to help you navigate them, after which I give my own feedback, as before.

Response 1: I am very grateful to Drs Karhulahti, Moshirnia, Macey, and Chin for providing very detailed and constructive feedback on this manuscript so promptly, especially considering that this was during the summer period. I address all points raised point-by-point below.

1. It's rare to see three reviewers agree on something, as they do here by explicitly asking a shorter and more focused discussion. While R3 suggests half of the discussion out, R1 & R2 ask individual sections to be removed. I tend to agree: the very benefit of using RRs is that you don't have to sell the results, but the results speak for themselves. I leave it for you to assess how much to cut, but indeed, please consider moving significant parts of the discussion either to supplements or -- perhaps better -- to a separate article systematically dealing with different sides of loot box regulation.

Response 2: Thanks to Dr Karhulahti for synthesising the reviewers' comments on the discussion section. I have indeed cut down significantly on the text in that section with the intent of including the more controversial and theoretical aspects in another paper.

2. Again, all reviewers agree that the anecdotal Figure 4 is used as a basis for too many not-so-strong discussion points (especially 4.6.2.). Please carefully assess the strength of each section and erase or rewrite. We have no word limits and exploratory analyses are allowed -- but considering the already-large scale, introducing new data (such as user discussions) may not improve the quality of the article but rather leaves it open to criticism. Sometimes less is more.

Response 3: I have duly considered the comments relating to analysing the user review. This issue has been raised by all three reviewers. I also take Dr Karhulahti's point about introducing too much new data and how less is sometimes more. As discussed below under Responses 19, 22, 24 and 28, this analysis will now be included in a different paper.

3. All reviewers also point at the use of unnecessarily strong language. Although I personally believe author voice can/should be present, some expressions (and directions taken in the discussion) are certainly stronger than needed. As the main problem in such voice is that readers don't know how to interpret that, I suggest something that is a standard in qualitative studies: positionality statement, which describes your own beliefs and context from which the text is coming. This would make your position transparent for readers (while your statement would relate explicitly to the theme of this paper, see some great statements from a different field by another PCI report [here](#)). This is a suggestion, not a demand.

Response 4: As I detailed below in Responses 23 and 32, I have softened the language used.

As to the inclusion of a positionality statement, I have considered this carefully and read references, in particular, recommendations in and based on Roberts *et al.* (2020) https://doi.org/10.1177/1745691620927709. I do want to address this point head-on as I appreciate the benefits. In particular, I am persuaded by the following hypothetical example in Roberts *et al.*: 'If, for instance, scholars are drawing conclusions about Asian Americans, yet the author list consists exclusively of White Americans, that could be made clear.' I would personally have changed the 'could' to 'should' or even 'must.' However, in relation to the present study, I have come to the conclusion (and I am not sure whether I am right, and I am prepared to change my mind in the future) that I do not feel providing certain information about myself (*e.g.*, ethnicity), such as those included in the examples provided, would be helpful. Indeed, I think that doing so may actually mislead readers rather than assist them in better contextualising my writing. I do not feel comfortable 'representing' or be

represented by many of these 'labels.' I believe certain incorrect inferences may be drawn. Such reservations were duly recognised in Roberts *et al.*, and I appreciate that Dr Karhulahti emphasised that this was a suggestion and not a demand.

With that said, I do believe two points should perhaps be stated in terms of 'positionality' (widely defined): (i) my own personal views on the very regulatory approach that I am assessing here and how they have changed through conducting this study and (ii) my personal engagement with loot boxes. I now do this as follows in the Positionality Statement section following the Data Availability Statement:

> **Positionality Statement**
> When drafting and revising the stage 1 registered report and when conducting fieldwork in Belgium, the autho was open to the idea that a 'ban' approach to loot box regulation might potentially be effective and worth pursuing, although he was slightly sceptical. However, after the results have been analysed and the disadvantages of a 'ban' were considered and after meeting with the Belgian Gaming Commission to discuss the (im)practicalities of enforcing a ban, in drafting and revising the stage 2 registered report, he wrote with the perspective that a 'ban' approach to loot box regulation is unlikely to be worth pursuing economically. As he subsequently wrote in a guest post on GamesIndustry.biz on 20 September 2022: 'As to exactly how loot boxes should be regulated more broadly, I personally advocate for a more middle-ground approach to loot box regulation. Doing nothing fails to adequately recognise and address the potential harms, but banning the mechanic is likely going too far and removing the economic benefits of loot boxes (for both companies and players)'[120]. In terms of the author's personal engagement with loot boxes, he plays video games containing loot boxes but he has never purchased any loot boxes with real-world money.

4. I agree with R3 that speculating about the possible removal of Game 36 doesn't belong to results but appendix/footnote/supplement/out. Please also follow R3's advise and move all exploratory analysis to the appropriate section and clearly explain how simulated casino games were coded e.g., in a readme file, as per TOP guidelines (I can see they're included in the coding file, but replicators need to know *how* such decisions were made)

Response 5: The discussion regarding the removal of Game 36 has been moved to Appendix 3, as stated in Response 25, as I think it is important to provide all context relating to the data collection process.

Confirmatory and exploratory analyses are now separately listed under the Results section as stated in Response 27.

In relation to identifying social casino games, I have added a definition in the same section reporting the results as detailed in Response 27.

My additional comments:

a. Please move the Stage 1 link near the abstract, as per PCI RR author guidelines*. Also, please exclude from the abstract all points (i)-(viii), which are not based on the collected data and their confirmatory analysis; they are only hypothetical avenues for discussion. We *don't* want to give readers (esp. stakeholders & media) the false impression that these are supported research findings. Consider using general language, such as "Implications of inefficient regulation are discussed."*

Response 6: The abstract has been edited accordingly.

b. Please return the Study Design Template, which has been removed. Later this year, PCI RR will also start asking Stage 2 reports to include a new outcome column, which briefly states the result. I suggest adding this column. See example*.*

Response 7: Apologies for this oversight. The Study Design Table/Appendix 2 has now been updated to additionally include the results column and correctly appended.

c. I know this is not always easy, but the Stage 1 part of the MS is occasionally hard to read (especially for a non-native speaker like myself) due to the chosen past tenses, e.g., pp. 17–18. I suggest carefully rereading the Stage 1 part and proposing updated language edits that are more coherent, e.g., "It was planned to…" or "Author planned to…", "H4 was decided to be accepted if…" etc.

Response 8: Thanks for pointing this out. This actually took me a good while to understand. I think this is an issue that arises when the stage 1 manuscript uses 'will' to talk about something hypothetical. I did not change this to the past tense in my original stage 2 submission, which I have now done. 'Will be's have been changed to 'would have beens's. This conversion of future tense to past tense (whilst maintaining the integrity of the stage 1 manuscript) is a rather difficult aspect of writing a registered report.

I have also fixed some other grammatical issues in the Introduction and Methods sections (all changes are tracked).

I have added game references to all games mentioned in-line with game studies research. This meant that the stage 1 part of the manuscript had the following information added (marked in red):

> Further, if a so-called 'sand box' game, such as *Minecraft* (Mojang, 2011) or *Roblox* (Roblox Corporation, 2012)…

*d. I didn't notice this earlier, but on page 4 it states: "this paper omits further Manx law discussion…" However, Manx law *is* discussed later. I give permission to remove this factually incorrect statement or propose alternative action for correction.*

Response 9: This has been changed to '…this paper does not focus on Manx law because…,' which I think resolves the issue.

e. As one reviewer also notices, there was a promise (p. 9) to approach the Commission about possible loot box licenses, however, there is no such document in the supplements. In fact, on p. 44 there is a sentence (without reference) that appears to conflict with the above: "Belgian gambling law does not allow loot boxes to be licensed at all." The source for this is likely the meeting noted on p. 23, which also references a license list provided by the Commission. Please clarify and preferably address the communication with the Commission in detail in a separate subsection or supplement (as preregistered). This is highly important information.

Response 10: I have addressed this in Response 26, in which I provide more detail as to the Commission's response and the meeting. I am also proposing slight changes to the stage 1 registration to reflect what did transpire.

f. Please report the software (Stata?) and version that were used to carry out statistical analysis, as per TOP guidelines. I also recommend reporting confidence intervals and exact p-values (instead of p<).

Response 11: The software and version information has been added.

Statistical analysis was conducted using Stata, version 15.1.

In relation to reporting the p values, I followed the APA guidelines which state that p values of less than 0.001 should be reported as $< .001$: https://web.archive.org/web/20220905085352/https://apastyle.apa.org/instructional-aids/numbers-statistics-guide.pdf (p.2). I hope this is acceptable as it does not conflict with the TOP guidelines, and I also anticipate that journals would have required overly exact p values that are less than 0.001 to be changed to follow style guidelines. The exact p values are, in any case, available in the output file.

g. On page 24, exploratory analysis is reported for the debated "social casino games." The exploratory analysis is based on the alternative view, which does not consider such games as gambling. However, for the analysis, these games have been removed from the data (N=85) instead of classified as non-gambling games. In my view, appropriate analysis would use the original sample, including non-gambling social casino games (N=100).

Response 12: I take Dr Karhulahti's point. However, I think the alternative view by Zendle *et al.* is that social casino games do not contain loot boxes and not that social casino games are not gambling. I cannot agree that social casino games should be classified as non-gambling games, particularly in a Belgian law context. I am not willing to include that alternative analysis as it would be based on a factually incorrect assumption. Members of the video game industry would also appear to be in agreement with me that in-game transaction with randomised elements beyond loot boxes are also 'loot boxes' for (self-)regulatory purposes. This is why I thought the fairest approach that accounts for both Zendle *et al.*'s perspective and our perspective is to exclude social casino games from the analysis entirely. I continue to believe that the original manuscript has sufficiently set out the case supporting this exploratory analysis, and I am not sure whether further clarification is needed. I would also welcome the other reviewers' thoughts on this point.

h. I don't have the resources to assess each of the analyzed games myself, but I did review the data/materials and took a closer look at some titles. To pick an example, #100 (Wild Rift) states: "It did not appear possible to directly buy the Poros Energy that is required to open the loot boxes. However, by buying the season pass with premium currency (which can be bought with real-world money), it is possible to obtain those Poros Energy, so the player can indirectly buy the Poros Energy." Although I have no access to the Belgium version, to my knowledge the season pass provides only indirect rewards, i.e., players earn extra content when playing games. So, if one needs to a) buy a pass to b) play more and c) change one's rewards to d) earn poro energy to e) finally access a loot box, can we say loot boxes were sold? I'm not claiming "no", but this brings us back to issues of the method, as discussed in the ongoing debate ("If everything is a loot box, nothing is" etc.). I would've hoped the results/discussion to have dedicated more space on making transparent the interpretive challenges, which otherwise end up being criticized in future commentaries and responses. E.g., a table with a breakdown of loot box types/structures and their classification challenges would make the article stronger.

Response 13: The most cautious video game companies are interpreting the law and the definition of 'loot boxes' broadly. For example, there is no 'loot box' in the traditional sense in *Diablo Immortal*: there is no product containing randomised rewards that you can buy directly with premium currency. Instead, you spend the premium currency to get a key which allows you to modify a dungeon, only after playing and beating that dungeon do you get randomised rewards. Blizzard Entertainment did not published *Diablo Immortal* in the Netherlands and Belgium citing loot box regulation. Accordingly, I believe my interpretation should stand.

I appreciate Dr Karhulahti's suggestion as to a detailed breakdown of the loot boxes found, but I think that would be beyond the ambit of this particular paper and something that I would look forward to exploring in a future piece (possibly also taking into account other loot boxes we previously found in other countries).

This issue with interpretation has now been clearly set out as a limitation of the study:

> The present study interpreted 'loot boxes' broadly as including any in-game transaction involving randomised elements. For example, in relation to Game 100, *League of Legends: Wild Rift*, a loot box was positively identified because the player was able to spend real-world money to purchase a 'season pass,'[119] which allowed the player to obtain additional rewards through gameplay, and some of the rewards obtained through the paid season pass allowed to player to engage with a loot box mechanic. There is debate within the academic literature as to how broadly the term 'loot boxes' should be interpreted[75,cf 80]. Had a more restrictive definition for 'loot boxes' been applied, a lower prevalence rate would have been observed.

i. Following the above, the limitations only mention the possibility that the obtained prevalence was lower than true value, while different interpretations could evidently result in the true value being significantly lower as well.

Response 14: I believe the added passage in the Limitations section described immediately above in Response 13 has addressed this point.

j. I try helping to balance the discussion. First, I am not fully convinced that a ban like this necessarily aims to be immediately effective (page 36: "intended perfect or near-perfect elimination of the risks"), and comparisons of loot boxes to drug and weapon control (p. 33) don't seem appropriate. That said, the present results should not be deemed conclusive evidence of "ineffectiveness" either. For example: in Finland where I live, our traffic law has demanded cyclists to wear a helmet since 2003, yet with it, it was also explicitly stated by the officials that cyclists won't be fined for not wearing a helmet. Despite there being no enforcement, helmet use has slowly climbed from 35% to 60%, having potentially saved thousands of lives (1% annual improvement). Was the law ineffective? Considering the near-zero-cost, many would say it is highly effective (if it caused the improvement). The point being: effectiveness is difficult to measure and goes way beyond short-term prevalence. For this reason, it could be a strength for the article to take a more neutral stance in the current early stage, until we have more data. It's ok to speak of ineffectiveness, as preregistered, but taking limitations seriously can also add to scientific credibility.

Response 15: I have deleted the reference to drugs and weapons. My point is made without those explicit references. I have also emphasised the positives more, as detailed in Response 23, for example. Indeed, opportunities to be exposed to loot boxes may well have reduced due to the removal of popular games and despite the availability of other games.

I have also added the following to the Discussion section:

Although referred to as a 'ban,' perhaps the complete elimination of the product from the Belgian market is not necessarily a goal that the measure must achieve for it to be deemed 'successful.' Even when imperfectly enforced, a 'ban' that potentially leads to reduced exposure to loot boxes and thereby provides better protection is still arguably of benefit to many consumers.

k. I don't know if you decide to save 4.6.3., but some years ago we drafted a small [framework](#) explicitly for competitive design ethics. The dynamics of fair design are complexly divided between money, time, skill, luck, and occasion factors (combined), and it feels the discussion section in the MS might not be sufficient for addressing such complexity (e.g., removing loot boxes could also advantage Belgian players because item purchases would no longer depend on luck).

Response 16: Thanks to Dr Karhulahti for suggesting this framework. I look forward to considering this when we deal with the user reviews and gameplay experience in another paper.

I hope the feedback by the reviewers and myself help making this important study as good as possible. Because these are major revisions, I invite the reviewers again. As usual, I'll be happy to respond to any questions meanwhile.

Veli-Matti Karhulahti

Response 17: Thanks to Dr Karhulahti for the detailed guidance.

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Review 1 by Dr Andrew Moshirnia, 21 Aug 2022 12:06

I recommend this paper for publication. The data collected is sufficient to test the stated hypotheses concerning the incidence of loot boxes in Belgian games. The author has employed a thorough approach and offered a well-written account of results.

Response 18: Thanks to Dr Moshirnia for his time.

Though I have some concerns regarding conclusions drawn from the given evidence, especially concerning technical measures employed by Game 50 and the effectiveness/desireability of bans. These might be better addressed by being framed as issues for future study/examination.

2a. The data gathered is sufficient to test the hyptheses and answer the proposed research questions.

2b - 2d - Sound method and adherence, though I have some concerns as relates to exploratory analyses regarding games 50 and 78.

2e. As noted above I have two concerns:

Conclusions drawn as to the technical measures in G.o.P 3 (game 50). The text concludes that the likely IP address based block was easily circumventable (by users) through the use of a VPN (or physical travel) and that this explains why the game was ranked in the top 50. However, there are several other possibilities which may not require user efforts to circumvent: the most likely to my mind is that the IP block may be poorly or incompletely implemented. Indeed, the temporary failure of the IP block at the Brussels International Airport (without the use of a VPN) indicates that the block is inconsistent. While the text's conclusion may ultimately be true, it would be worthwhile to look at digital communities to see if VPN and/or other circumvention strategies are advanced/discussed (this would mirror the text's use of consumer reviews to prove frustration). The distinction does matter: the conclusion that VPN/travel would defeat the ban (as shown in testing) is not the same as the conclusion that dedicated users are in fact using those methods.

Response 19: I now agree with Dr Moshirnia's point (also raised by other reviewers) about putting the analysis of the user reviews into a different study. My original intention was, of course, to provide a balanced narrative. I did not want to say that VPNs allowed for circumvention without also saying that some players might have not been able to circumvent and have therefore been successfully prevented from loot box purchasing. I now merely allude to the user reviews, which I do intend to explore very soon in a different study.

> Regardless of its imperfect efficacy, Game 50 should still be commended for at least attempting to implement a technical block on loot box purchase from

within Belgium because it might have successfully prevented some players from spending money: analysing user reviews of the game, which is beyond the ambit of the present study, may shed further light on that point.

In relation to the point about the VPNs failing, I have missed that point in my own thinking and have now added it as follows.

Temporary failures of the technical measures, without the player intentionally trying to circumvent them, represent another potential reason why these two games have continued to nonetheless generate revenue from Belgium.

I also later emphasise the importance of this distinction, as Dr Moshirnia noted:

When a Belgian player seeking to actively circumvent the ban has managed to download, play, and pay for loot boxes in a video game that the company has purposefully chosen not to publish in Belgium due to the country's loot box ban, it cannot be said that the company or platform provider should still be deemed culpable in such cases, provided that reasonably strong technical measures have been implemented to prevent such circumvention. Belgium should therefore consider requiring companies and platform providers to implement sufficiently difficult-to-circumvent technical measures. Any regulation should also be cautious as to not mistakenly identify a player against whom the technical measures have failed without said player intending to attempt circumvention (*e.g.*, the author's experience at Brussels International Airport in relation to Game 50 detailed in the Method section) as a player who has *intentionally* tried to circumvent the technical measures.

*The text's conclusion that "If the target [of the ban] is . . . highly dedicated players, then the measure is evidently not working (**and realistically cannot ever work**)" strikes me as greatly improved by deletion of the parenthetical, because one could imagine systems (IP spoof detection, etc) that could be implemented. A similiar concern arises with "**is in fact impossible to achieve)**".*

Response 20: The conclusion has been reworded in-line with the removal of more controversial and theoretical aspects of the Discussion. The wordings highlighted by Dr Moshirnia no longer appear.

Section 4.6.2 seems a bit too broad on the current evidence. While I appreciate the bold conclusions in this section, the author would to well to further note the need for far greater study to these particular effects. It is hard to conclude as to the balance of harm reduction and diminished game enjoyment (and the negative reviews for Game 50 don't provide a rich enough sample to conclude one way or the other). I am slightly confused by the incidence rate comparison here -- if under an imagined effective ban 99 users have a slightly diminished

experience, but 1 user is saved from crippling debt and attendant depression, it would be strange to argue incidence over severity.

Response 21: Section 4.6.2. has been removed following the advice of other reviewers and the recommender. I now note the importance of studying high-spending players in Belgium:

> Further research should consider the perspectives of high-spending Belgian players and, in particular, their views on circumvention and whether they have attempted to do so.

Again, the criticisms above should not be taken as disqualifying. The paper is an impressive read and is a valuable contribution to the literature. It strikes me that the concerns in 2e provide fertile ground for further study, and I would recommend they be framed as such in the current text.

Response 22: As I stated under Response 19, I agree with Dr Moshirnia that analysing the reviews should be a further study and have now framed it as such. Thanks again to Dr Moshirnia.

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Review 2 by Dr Joseph Macey, 09 Aug 2022 13:28

Q. 2a. Data collected is suitable for answering all stated hypotheses.
Q. 2b. All consistent with registered report, as per tracked changes.
Q. 2c. Author adhered to registered procedure.
Q. 2d. Additional analyses are justified, sound, and add to the informational content of the paper, with the exception of the user comments highlighted in figure 4 (see below).
Q. 2e. In general, the author's conclusions are justifiable given the data, however, some of the discussion/conclusion content may require some revision. As I indicated in the first review round, on occassion the author allows his personal opinion to shine through to an extent that it detracts from the objectivity of the work. While I understand the author may feel strongly about certain issues, and is fully entitled to do so, I would reccomend that he adopts a more neutral tone in order that the results speak for themselves. For example, in line 1124 I do not believe there is a need to describe the Belgian regulatory approach as "extreme", and the argument loses nothing if this word were removed.

Response 23: Thanks very much to Dr Macey for his review. I really appreciate that Dr Macey is open to perhaps a different perspective. I have revised the manuscript and removed any language that might be viewed as overly inflammatory, including examples pointed out by Dr Macey and other reviewers. In particular, I highlight that the more controversial aspects of the discussion have been removed from this paper, which I hope assists in the more neutral presentation of the results.

In addition, I have added a passage to highlight the potential benefits of the current approach, even poorly enforced:

> Further, it must be recognised that (i) loot boxes have been removed from Belgian versions of some popular games[e.g., 56] and (ii) a number of other popular games have been removed from, or were not published in, the Belgian market[e.g., 59,82,83]. Some Belgian players might therefore have been successfully prevented from being able to purchase loot boxes from these games and potential opportunities to be exposed to loot boxes generally (particularly in relation to children and young people) may have been reduced, despite other games containing loot boxes continuing to be available. However, what percentage of Belgian players that represents is unknown and by how much (if any) average loot box spending has reduced remains the subjects of further research.

Additionally, I would query the position that Belgium's ban leads to "worse gameplay experience" (section 4.6.2) as this is largely speculative and was supported by just two or three comments from an online forum, the collection of which was not described in any of the preceding sections. Neither does it appear that these comments were subject to any methodological form of analysis, there is no information regarding frequency counts of positive or negative comments, why the source of comments was selected in place of others,

etc. Finally, the comments chosen to support this position are taken from a SCG game, as far as I am able to tell, which replicates poker. These are precisely the types of games which prior research has found to have the most problematic relations with traditional gambling, and it necessarilly follows that those who play would like more opportunities to play by purchasing currencies/spins/whatever. The point would be better illustrated by analysing user comments of an explicitly non-gambling game with loot boxes, subject to an appropriate means of data sampling and analysis.

Response 24: As I mentioned in Responses 19 and 22, I do take Dr Macey's point (which was also made by other reviewers) and intend to analyse the user review comments in a further study. I have removed all references to the actual reviews from this manuscript and merely allude to their existence.

However, for the sake of transparency in case an interested party dives into the provenance of this manuscript, I will briefly state how the reviews were obtained for the previous, preprint version of the manuscript. Visiting the Belgian Apple App Store 'Ratings and Reviews' page for Games 50 and 78 (a non-social casino game) showed 10 reviews left by users each. This list of 10 reviews for each game appears to correspond closely to (although deviates slightly from) when the Belgian Apple App Store reviews for Games 50 and 78 were checked using the Apple App Store App on an iPhone and sorting the reviews by 'Most Helpful.' One comment from Game 78 also stated that Belgian players were unable to loot boxes due to the law:

> "Moi et les autres belges jouant à ce jeu sont mis de côté, par semaine on gagne environs 3-4DS si on a déjà farm tout le jeu et comme on ne peut plus acheter à cause des loi de notre pays et on peut faire une multi tout les 8 ans ! PATHÉTIQUE !
>
> [Google Translate Translation: Me and the other Belgians playing this game are put aside, per week we earn around 3-4DS if we have already farmed the whole game and since we can no longer buy because of the laws of our country and we can do a multi every 8 years! PATHETIC !]"

In addition, Section 4.6.2. has been removed. That point will hopefully be addressed in a future paper, and both sides of the argument will be better discussed.

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Review 3 by Dr Jason Chin, 24 Aug 2022 10:34

Title: *Breaking Ban: Assessing the effectiveness of Belgium's gambling law regulation of loot boxes*

Recommendation: *Revise and resubmit*

My feedback on the stage 2 manuscript is as follows.

1. *I don't think the point about the study possibly causing a game to be removed is worth saying, but it could be included in a footnote.*

   Response 25: Thanks to Dr Chin for taking the time provide this useful feedback.

   As I attempted to justify in Response 5, the discussion about the removal of Game 36 has now been moved to Appendix 3 to provide full transparency.

2. *Did anything come from the request to the Belgian Gaming Commission mentioned in the stage 1 manuscript? A response or a lack thereof should be in the results.*

   Response 26: I now explain this in more detail:

   > 'In response to the author asking for the Belgian Gaming Commission to confirm whether any of the games found to contain loot boxes were duly licensed in an email dated 20 June 2022, the Commission stated in a meeting with the author on 24 June 2022 that this could be manually checked by the author and referred the author to…'

   I have also slightly amended the stage 1 manuscript (which was written hypothetically) to reflect the factual situation:

   > 'Permission to publish the Commission's response, if any is received, was sought and, a summary will be made available at the data deposit link (<https://doi.org/10.17605/OSF.IO/7KJS9>).'

   …was changed to:

   > 'The Commission's response is described in the Results section.'

   and

   > '…the Commission may not respond…'

… was changed to:

'…the Commission could have not responded (although it in fact did)…'

3. *The author is using the terms "non-preregistered" and "exploratory" in a way that seems interchangeable. If that is the case, the same term should be used throughout to be consistent. All of the non-registered/exploratory tests should also be in one heading at the end.*
   a. *Regarding the simulated casino game coding, which I think was also not registered, the coding sheet or reproducible way in which those were coded should be provided.*

Response 27: Thanks for spotting this. I now only use 'exploratory' for consistency.

I have also divided up the confirmatory and exploratory analysis.

In relation to social casino games, I have added the following about the coding:

> This was defined as any games that allowed the player to spend real-world money to participate in simulated traditional gambling activities, *i.e.*, 'games of chance' or 'mixed games of chance and skill,' such as slot machines, poker, bingo, belote, and craps. Particular attention is drawn to Game 77 (*UNO!*™ (Mattel163, 2018)), which was coded as a social casino game because it involved players competing against each other to win or lose premium virtual currency (similarly to social casino games involving poker) whilst playing a simulated version of the tabletop game *UNO* (1971, Robbins), which itself is a mixed game of chance and skill that has reportedly been played physically as a form of gambling[81].

4. *I'm not sure how useful the reviews in Figure 4 are because I don't know how they were selected.*

Response 28: As discussed above under Responses 19, 22 and 24, the user comments will no longer be analysed in this study. I have removed Figure 4 and explicit references to particular review comments.

5. *The author should provide a codebook or readme for the datafile because the variable labels are not immediately obvious.*

Response 29: The readme file can be found at: https://osf.io/9wkmr.

6. *The discussion is much too long, taking up about 20 pages of the 50 page manuscript. I got the sense that the results were being treated as more of a launching off point for several tangential points, policy comparisons, and so on. I think the discussion should be cut down by about half. For example, the points about the good and the bad of banning (e.g., forbidden fruit) could all be dealt with in about a sentence each.*

   Response 30: I have cut down on the discussion (particularly theoretical aspects that will be reserved for a future paper). I hope doing so means that the text is now better focused at discussing the results at hand.

7. *Should Belgian court on page 32 be Belgian courts?*

   Response 31: Indeed! This has been fixed.

8. *Is this too strong (page 36)? "From a public health perspective, a complete ban of the product or 'eliminate choice' is the most restrictive regulatory intervention for addressing potential harms."*

   Response 32: This point has also been raised by Dr Macey, although not this particular example. As I detailed in Response 23, I have reworked the manuscript to include less controversial arguments and adopted more toned-down language.

9. *Is it a bit repetitive to say ultra vires, beyond its powers and without legal authority in the same sentence? (page 40)*

   Response 33: I take Dr Chin's point. This repetition is because I want to both use the correct legal terminology and provide an accessible explanation of what '*ultra vires*' means. I would therefore attempt to justify not changing this on that basis.

I always sign my reviews,

Jason Chin (ORCID: 0000-0002-6573-2670)