

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form ([see an example](#)) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below. Some articles will have been accepted based in part or entirely on reviews undertaken for other BMJ Group journals. These will be reproduced where possible.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Changes in smoking behaviours following smoke-free legislation in parks and on beaches: an observational study
<b>AUTHORS</b>	Rice, Wendy; Okoli, Chizimuzo; Johnson, Andrew; Pederson, Ann; Adkins, Sarah

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Joan M. Brewster, PhD Adjunct Lecturer Dalla Lana School of Public Health University of Toronto Toronto, Ontario, Canada
<b>REVIEW RETURNED</b>	02-Apr-2013

<b>RESULTS &amp; CONCLUSIONS</b>	Problems with describing the methods, and interpreting the results, are described in the comments to the authors.
<b>GENERAL COMMENTS</b>	<p>It is important to evaluate the effect of banning smoking in outdoor public places, and observational studies are a common approach. This study observed the numbers of smokers at Vancouver beaches (N=3) and parks (N=3) before, and at several time points following, the banning of smoking at these venues. The authors suggest that “the methods employed in this study may be a useful preliminary evaluation tool for other jurisdictions,” but this study report needs clarification of the methods and presentation of results.</p> <p>The observation periods were limited to weekends, except for the day of bylaw implementation and one week afterwards. It is remarkable how greatly the numbers of people in the venues varied among observation dates. Some of the dates fell on the weekends of Canadian statutory holidays, but this was not commented on by the authors. Would this affect the number of people in the park or beach, or the number of smokers? The authors did take temperature variations into account. The number of people in the venues is sometimes quite large, reaching nearly 5,000 people at English Bay beach 10 months post-law. How were these numbers counted or estimated?</p> <p>Figure 2 is a puzzle. If there are fewer smokers post-law than pre-law, there would be fewer red than blue dots on the pictures. This is not apparent on some of the pictures, although I did not count the individual dots. The numbers are available in Table 1, and we see that, for all three parks and one beach, the numbers of smokers are in fact larger at 12 months post-law than pre-law. This apparent increase is dealt with by taking into account the numbers of people at the venues, and calculating a smoking rate. But it makes the use of Figure 2 questionable. If it is used, it should be accompanied by more explanation.</p>

	One of the key messages suggests that bylaws “reduce the number of smokers in each venue,” but this reduction was not significant at the beach venue. As the authors point out, there are differences in the way beaches and parks are used, and the study highlights the difficulties of performing observational studies in multiple venues.
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<b>REVIEWER</b>	SELBY, PETER CENTRE FOR ADDICTION AND MENTAL HEALTH, ADDICTION PROGRAMS
<b>REVIEW RETURNED</b>	14-Apr-2013

<b>GENERAL COMMENTS</b>	<p>This is a very unique action research pre-post study on the effects of policy on human behaviour. Does an outdoor smokefree ban work and if so are there site differences?</p> <p>I am concerned about a possible sampling error between the beaches and parks.</p> <p>Could you comment whether a correction for the size of the area was made and could this account for the difference between parks and beaches? It could be that there were more people observed on the beach given the area is smaller and therefore easier to count compared to parks where people are scattered and site lines aren't as clear as on beaches. A visual inspection of Figure 2 appears to show that the parks are larger. Moreover, access into parks and beaches varies given that one side of the beach is ocean. Also, beaches and parks might have different patterns of use through the week and these differences should be acknowledged. It is possible that during the week, the smoking in the parks may be no different pre and post the bylaw given that the park might be used during the week while the beach might not be by those who work and happen to take a stroll through the park. Also, there is insufficient detail as to whether the entire beach and park were observed during the 30minutes?</p> <p>Also, please clarify how a single smoker who smoked twice was counted? Was a difference made between smoking cigarettes versus marijuana joints, pipes or cigars?</p> <p>Also how were those sharing cigarettes counted?</p> <p>Can you comment on using "butt" counts as another method of determining if there was less smoking pre and post. See work of Callaghan Am J Public Health. 2008 January; 98(1): 4–5. doi: 10.2105/AJPH.2007.121954. What are your thoughts about that method as a way to triangulate your findings?</p>
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## VERSION 1 – AUTHOR RESPONSE

Reviewer: Joan M. Brewster, PhD Adjunct Lecturer Dalla Lana School of Public Health University of Toronto Toronto, Ontario, Canada 1. The observation periods were limited to weekends, except for the day of bylaw implementation and one week afterwards. It is remarkable how greatly the numbers of people in the venues varied among observation dates. Some of the dates fell on the weekends of Canadian statutory holidays, but this was not commented on by the authors. Would this affect the number of people in the park or beach, or the number of smokers?

Response: We thank the reviewer for this comment. We have included a sentence in the limitations section to reflect the observations falling on statutory holidays as follows:

“However, it is important to note that some of the observation dates fell upon Canadian statutory holidays (e.g., Victoria day--May 2nd and Labour Day--September 2nd) which may have resulted in an increase in the number of individuals (and smokers) observed in the parks and on beaches relative to other observation time points.”

2, The authors did take temperature variations into account. The number of people in the venues is sometimes quite large, reaching nearly 5,000 people at English Bay beach 10 months post-law. How were these numbers counted or estimated?

Response: For clarification, the following detail has been added in the methods section: “The number of people in each venue was obtained by two observers using clickers to determine the total number of persons in a venue during the observation time period. One observer counted the total people in the venue as they entered the venue, whereas the second observer counted the number of smokers.”

3. Figure 2 is a puzzle. If there are fewer smokers post-law than pre-law, there would be fewer red than blue dots on the pictures. This is not apparent on some of the pictures, although I did not count the individual dots. The numbers are available in Table 1, and we see that, for all three parks and one beach, the numbers of smokers are in fact larger at 12 months post-law than pre-law. This apparent increase is dealt with by taking into account the numbers of people at the venues, and calculating a smoking rate. But it makes the use of Figure 2 questionable. If it is used, it should be accompanied by more explanation.

Response: For clarification we have added the following sentence to the results section:

“Although there was an increase in the absolute number of observed smokers in all venues in the pre-law (n=74) as compared to the 12-month postlaw (n=87) time periods, there was also an increase in the total number of persons visiting the venues (pre-law=1510 vs 12-month postlaw=3382).” 4. One of the key messages suggests that bylaws “reduce the number of smokers in each venue,” but this reduction was not significant at the beach venue. As the authors point out, there are differences in the way beaches and parks are used, and the study highlights the difficulties of performing observational studies in multiple venues.

Response: We have modified this key message as follows: “This study suggests that these bylaws may be associated with reductions in the observed smoking rate in each venue, but does not fully eliminate the behaviour.” Reviewer: Peter Selby CENTRE FOR ADDICTION AND MENTAL HEALTH, ADDICTION PROGRAMS 1.I am concerned about a possible sampling error between the beaches and parks. Could you comment whether a correction for the size of the area was made and could this account for the difference between parks and beaches? It could be that there were more people observed on the beach given the area is smaller and therefore easier to count compared to parks where people are scattered and site lines aren't as clear as on beaches. A visual inspection of Figure 2 appears to show that the parks are larger.

Response: There was no correction for the size of the area in selecting parks and beaches. However, as the selected parks and beaches were accessed at multiple time points and the general patterns of use were consistent at those time points, we believe that the selection error could be minimized.

However, we have added the following to our limitation section to acknowledge this concern:

“Second, because the selected venues varied in their sizes (i.e. in most cases beaches are larger than parks) it is possible that these differences could have affected the absolute counts of observed smoking between parks and beaches. However, the potential effect of venue size on observed smoking was minimized by using smoking rates and repeated observations in the same venues over time.”

2. Moreover, access into parks and beaches varies given that one side of the beach is ocean. Also, beaches and parks might have different patterns of use through the week and these differences should be acknowledged. It is possible that during the week, the smoking in the parks may be no different pre and post the bylaw given that the park might be used during the week while the beach might not be used by those who work and happen to take a stroll through the park. Also, there is insufficient

detail as to whether the entire beach and park were observed during the 30minutes?

Response: We acknowledged this limitation by adding: "First, the observational data collection is based on the assumption that there are minimal changes in the patterns of use in each venue at each observation time point. To address this, we accounted for potential confounding variables in our analyses, including changes in mean daily temperature during observation times, and time spent in each observation site."

3. Also, please clarify how a single smoker who smoked twice was counted? Was a difference made between smoking cigarettes versus marijuana joints, pipes or cigars? Also how was those sharing cigarettes counted?

Response: A single smoker who smoked twice was only counted once. There was no difference made between smoking cigarettes versus marijuana joints, pipes or cigars because the bylaw in Vancouver prohibits the smoking of any of those products (including e-cigarettes). We have added the following to the methods section for clarification:

"If a group of people were sharing cigarettes (or pipes, or marijuana joints) each person who was observed smoking during the specified time-frame was counted as a smoker."

4. Can you comment on using "butt" counts as another method of determining if there was less smoking pre and post. See work of Callaghan Am J Public Health. 2008 January; 98(1): 4–5. doi: 10.2105/AJPH.2007.121954. What are your thoughts about that method as a way to triangulate your findings?

Response: in our study we did not use butt counts as a method to determine less smoking pre and post. However, I believe this would be a good methodology that has been used in recent studies. A more appropriate reference is Johns et al. 2013 "Evaluating New York City's Smoke-Free Parks and Beaches Law:A Critical Multiplist Approach to Assessing Behavioral Impact" We have added a comment to the limitations/discussion section as follows:

"Third, we did not use any other objective method to determine reductions in smoking in the venues, such as cigarette litter. The validity of observed smoking can be strengthened by using such objective markers of smoking. For example the recent evaluation of the effects of a smoke-free policy in New York Parks also employed cigarette butt counts in addition to observed smoking to determine changes in smoking behaviour in outdoor parks following a smoke free law.17"

### VERSION 2 – REVIEW

<b>REVIEWER</b>	Pamela Kaufman Assistant Professor Ontario Tobacco Research Unit, University of Toronto, and Center for Addiction and Mental Health Canada
	I have no competing interests.
<b>REVIEW RETURNED</b>	11-May-2013

<b>THE STUDY</b>	Patients are not being studied in the research reported on in this manuscript.
<b>GENERAL COMMENTS</b>	This paper is an important addition to the knowledge base on outdoor smoke-free policy. This is a highly relevant policy area with little published research available. The manuscript was been revised based on a previous review and presents much better. A few minor edits include:  p. 25, line 53: information was presumably collected on the number of people smoking, not the number of smokers. Important distinction as there may be smokers in the observation area who are not smoking. Suggest clarifying as: Information on the maximum number

	<p>of persons in the venue and total number of PEOPLE SMOKING (i.e., cigarettes, pipes, marijuana)...</p> <p>Page 26, line 13: remove 'in the venue'</p> <p>Table 1 is referred to as Figure 1 in the text. Also, it would be helpful to include the month and year on the table to indicate the intervals when data was collected. This provides the reader with insight into seasonality, which is explained in the discussion as having an impact on the use of the observed spaces.</p> <p>Pg. 30, line 29/30: sentence is confusing, suggest changing: Although there was an increase in the total absolute number of observed smokers in all venues FROM [remove: in the] pre-law (n=74) [remove: as compared] to 12-month postlaw (n=87) time periods,...</p> <p>Pg. 31, line 17/18: change 'practice' to BEHAVIOUR</p> <p>Abstract conclusions: Could provide some examples for how the type of venue impacts the effectiveness of smoke-free policies based on findings.</p>
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### VERSION 2 – AUTHOR RESPONSE

1. p. 25, line 53: information was presumably collected on the number of people smoking, not the number of smokers. Important distinction as there may be smokers in the observation area who are not smoking. Suggest clarifying as: Information on the maximum number of persons in the venue and total number of PEOPLE SMOKING (i.e., cigarettes, pipes, marijuana)...

Response: We thank the reviewer for this important distinction. We have edited the text throughout to better clarify that data was collected on persons observed smoking based on the reviewers recommendation.

2. Page 26, line 13: remove ' in the venue '

Response: we have deleted 'in the venue' from the text

3. Table 1 is referred to as Figure 1 in the text. Also, it would be helpful to include the month and year on the table to indicate the intervals when data was collected. This provides the reader with insight into seasonality, which is explained in the discussion as having an impact on the use of the observed spaces.

Response: The month and year of data collection have been added to the table for clarification.

4. Pg. 30, line 29/30: sentence is confusing, suggest changing: Although there was an increase in the total absolute number of observed smokers in all venues FROM [remove: in the] pre-law (n=74) [remove: as compared] to 12-month postlaw (n=87) time periods,...

Response: We have changed the sentence for clarification as recommended by the reviewer

5. Pg. 31, line 17/18: change 'practice' to BEHAVIOUR

Response: We have made the requested edit.

6. Abstract conclusions: Could provide some examples for how the type of venue impacts the effectiveness of smoke-free policies based on findings.

Response: We have made the following edit to the conclusion: "The effectiveness of such policies may differ by the type and usage of the venue; for instance, compliance may be better in venues that are used more often and have enforcement."