ORIGINAL ARTICLE

Alcohol controls and violence in Nunavut: a comparison of wet and dry communities

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ABSTRACT

Objectives. The purpose of this study was to determine if communities in Nunavut that prohibit the importation of alcoholic beverages have less violence relative to communities that allow alcohol importation.

Study design. A retrospective cross-sectional study based on community-level records of violent crimes known to the police.

Methods. Violence was measured using community-level records of homicide, assault and sexual assault as reported to the Royal Canadian Mounted Police in 23 communities in Nunavut for the years 1986 to 2006. Crude-rate comparisons were made between wet communities (which allow alcohol importation) and dry communities (which prohibit alcohol importation) and contrasted with national rates for context.

Results. Wet communities in Nunavut recorded rates of violent crime that were higher than the rates recorded by dry communities. Relative to dry communities, wet communities’ overall sexual assault rate was 1.48 (95% CI=1.38–1.60) times higher, the serious assault rate was 2.10 (95% CI=1.88–2.35) times higher and the homicide rate was 2.88 (95% CI=1.18–8.84) times higher. Although safer than wet communities, dry communities reported rates of violence that were higher than national rates including a serious assault rate that was double the national rate (3.25 per 1,000 vs. 1.44 per 1,000) and a sexual assault rate that was at least seven times as high as the national rate (7.58 per 1,000 vs. 0.88 per 1,000).

Conclusions. As elsewhere in the Arctic, communities in Nunavut that prohibited alcohol were less violent than those that allowed alcohol importation. Even with prohibition, dry communities recorded rates of violence much greater than the national average.

(Keywords: alcohol, prohibition, violence, assault, homicide, Nunavut)
Alcohol controls and violence in Nunavut

INTRODUCTION

With a typical drinking style that has been characterized as low frequency/high quantity (1), Indigenous peoples in North America are less likely to use alcohol but more likely to consume large quantities on occasions when drinking does occur (2–5). As a result of this drinking style, they have higher rates of alcohol-related mortality (6–8) and are more likely to die from accidental and intentional injuries associated with alcohol abuse (9,10). Alcohol consumption is also seen as a prime contributor to violence in Indigenous communities across the continent (11–15).

One widely used policy response to these problems is “local option” prohibition whereby communities choose to outlaw alcohol. Since 1976, communities in Nunavut have had the authority to prohibit the importation of alcohol using a local option plebiscite process originally sanctioned under the Northwest Territories Liquor Act (R.S.N.W.T. 1988, c. L9, s. 48 to 50; hereafter, Liquor Act). Today, roughly a third (35%) of Nunavummiut reside in 1 of 8 “dry” communities that have chosen to prohibit the importation of alcohol. This article considers the effect of local prohibition on violence in Nunavut to determine if dry communities are safer than others in the territory.

Most of the research on the effectiveness of local alcohol prohibition in indigenous communities has focused on American Indians and Alaska Natives in the U.S. The results indicate that geographic isolation is an important mediator of prohibition’s effectiveness in preventing interpersonal violence and other alcohol-related trauma. In the lower-48, where American Indian reservations are connected to merchants by highway, local alcohol prohibition has either had no effect on rates of violence or has served to exacerbate existing problems (16–19). However, in Alaska Native villages that are isolated from the state’s road system, prohibition has been shown to be an effective response to problems related to alcohol abuse (20–23).

Less is known about the effects of local alcohol prohibition in Canadian Aboriginal communities. The 2 studies that have been conducted provide, at most, limited support for the policy. Probably the most compelling evidence is from an ethnographic case study of an unnamed Inuit community in which, following its prohibition of alcohol in 1978, problems related to alcohol abuse “virtually disappeared” (24). The other study found lower rates of violent crime throughout the 1980s in 3 Inuit communities in the eastern Arctic that prohibited alcohol, relative to 9 other communities in the region that allowed importation; however, those differences were not statistically significant (25). Given these suggestive results as well as those from Alaska, it was hypothesized that communities in Nunavut – all accessible only by air or sea – would be less violent when alcohol was prohibited than when its importation was legal.

MATERIAL AND METHODS

Violence was measured using community-level crime statistics from offences recorded by the Royal Canadian Mounted Police (RCMP) in 23 Nunavut communities for the years 1986 to 2006, as reported by the Canadian Centre for Justice Statistics. Four specific offence types were considered, including homicide (i.e., 1st and 2nd degree murder, manslaughter and infanticide), serious assault (i.e., attempted murder, aggravated assault, assault with a weapon and assault causing bodily harm), sexual assault (i.e., aggra-
vated sexual assault, sexual assault with a weapon and level 1 sexual assault) and simple assault (the least serious assaults involving neither bodily harm nor weapon use). It was necessary to use this broad range of offence types because of the problems inherent in the use of police statistics with small populations. The main problem with police statistics is that not all crimes are reported to the police and that the likelihood of reporting is in direct proportion to the seriousness of the offence (26). Homicide, the one offence for which police statistics are considered reliable, has such a low base rate that it has limited usefulness in studying violence in Nunavut due to a lack of statistical power when making comparisons. As a result, the analyses presented below involved a trade-off between reliability on the dependent variable and the ability to determine if the effects of local alcohol prohibition were larger than one would expect given chance alone.

Communities were classified as dry (n=8) if listed in Paragraph 51 of the Liquor Act as having “liquor prohibition regulations,” while the remainder were classified as wet (n=15). Strictly speaking, the wet communities included those with no restrictions on alcohol importation (n=5) as well as communities that allowed importation only when approved by a local Alcohol Education Committee (n=10). Although the latter communities are considered restricted, in practice there is little difference between the two in terms of the effects of restrictions on the availability of alcohol; the committees are seen to serve little more than a “rubber stamp” function by approving nearly all submitted liquor orders (25,27). An analysis of Territorial Liquor Store order invoices by community in the Baffin Region for 1991 found no difference in the volume of ethanol imported by Inuit residents of restricted communities when compared to Inuit residents of unrestricted communities (25). These restrictions appear to have little effect on violence relative to wet communities without restrictions. A comparison of violent crime rates for both types of wet communities indicates that those with Alcohol Education Committees had only slightly less reported violence for the same period (1986–2006) considered in the analysis conducted for this paper; there were 64 and 67 violent crimes per 1,000 persons in restricted and unrestricted communities, respectively. Given this lack of substantial difference in the outcome measure, it is reasonable to treat the 2 types of communities that allow alcohol importation as a single category for the purpose of considering the effects of local prohibition. With the exception of temporary periods of prohibition enacted in most wet communities during the Christmas holiday season, there are no other policies in Nunavut that communities could enact to reduce the availability of alcohol.

Of the 25 communities in Nunavut, 23 were included in the analyses (see Fig. 1). Iqaluit and Rankin Inlet, the 2 territorial administrative centres, were excluded because alcohol is much more widely available there and because the at-risk population in each centre is atypical for Nunavut. Both Iqaluit and Rankin Inlet allow on-premises alcohol sales in hotels and clubs and they each receive substantial visitor traffic throughout the year from across the territory and beyond. None of the 23 communities included in the analysis changed from wet to dry (or vice versa) between 1986 and 2006; the only changes in local option alcohol policy during the period of analysis were 2 wet communities in 2004 that changed from unrestricted to restricted. Five of the communities were only available for the latter part of the 21 year cross section because in the former part they had been policed from an RCMP detachment.
located in another community that had an alcohol policy opposite to their own. For instance, the dry community of Kugaaruk and the wet community of Taloyoak were both treated as missing in the analyses for the years 1986 through 1998 because both communities were under the jurisdiction of the RCMP detachment in Taloyoak during that time. Therefore, the crime statistics recorded for Taloyoak for the above-mentioned years include crimes that were reported both in Taloyoak and in Kugaaruk.

As a check on the possibility that differences other than alcohol policy could be responsible for variations in patterns of violent crime, comparisons were made between wet and dry communities using 2006 Census measures of a number of socio-economic and demographic characteristics. Results of these comparisons, as shown in Table I, are also contrasted with what was found for Canada as a whole. For the most part, there was very little difference between the 2 types of communities in terms of their age, sex,
racial compositions and housing densities, their levels of educational attainment, employment or income, and the extent to which households were headed by a single female. None of the differences between the 2 types of communities shown in Table I were statistically significant at the p<.05 level as estimated using parametric independent samples t tests or non-parametric Mann-Whitney U tests. Relative to what was found for Canada as a whole, communities in Nunavut were younger, less educated, more likely to report Aboriginal heritage, more likely to be underemployed, more likely to rely on government transfer payments, more likely to live in crowded conditions and more likely to have households headed by single females.

Two sets of analyses were conducted. First, the “crude rates comparison function” of StatsDirect was used to calculate rates with which to compare relative levels of violence in wet and dry communities. This comparison was made in the form of relative risk, which is a ratio of the rates of wet communities to the rates of dry communities, and confidence intervals for these ratios were calculated based upon a Poisson distribution (28). So as to put the results into context, a second set of analyses comparing the dry community rates and the wet community rates with national rates was conducted. Tests of the statistical significance of differences between the 3 rates (dry, wet, national) were based upon examination of overlaps between confidence intervals (29).

RESULTS

Comparisons of violent crime rates in Nunavut’s dry and wet communities are shown in Table II. Over the entire 21-year cross section that was considered, communities in Nunavut that prohibited alcohol reported fewer violent crimes compared to those where the importation of alcohol was legal. Compared with those in dry communities, Nunavummiut in wet communities reported nearly twice as many simple assaults to the police (Relative Risk [RR]=1.94; 95% Confidence Interval [95% CI]=1.86–2.02) and more than twice as many serious assaults to the police (RR=2.10; 95% CI=1.88–2.35). The rate of reported sexual assaults was about one-and-a-half times as great in wet communities than in dry communities (RR=1.48; 95% CI=1.38–1.60). Even homicide, the rarest violent offence, was relatively more frequent in wet communities than in dry communities (RR=2.88; 95% CI=1.18–8.84).

Table I. Characteristics of wet and dry communities in Nunavut and Canada Total, 2006.

| Community characteristic | Mean by community type a | Wet | Dry | Canada |
|--------------------------|--------------------------|-----|-----|--------|
| % Less than 20 years old | 47.1                     | 50.2| 24.4|        |
| % Male                   | 51.7                     | 51.4| 49.0|        |
| % Aboriginal             | 91.5                     | 93.9| 3.8 |        |
| % Less than high school diploma (among those age 15 and older) | 64.4 | 67.6 | 23.8 |
| % Unemployment rate      | 20.0                     | 18.4| 6.6 |        |
| % Worked full time past year (among those who worked any hours in past year) | 39.0 | 39.9 | 51.0 |
| Median income in dollars | 17,009                   | 15,993| 25,615|        |
| % Income from government transfers | 17.9 | 19.1 | 11.1 |
| Number of persons per room in dwellings | 0.79 | 0.81 | 0.40 |
| % Families headed by single female | 21.4 | 20.9 | 12.7 |
| Total population         | 1288                     | 918 |     |        |

a None of the differences in means were statistically significant at the p<.05 level (based on independent samples t tests and on non-parametric Mann-Whitney U tests).
In order to put the differences between wet and dry communities in Nunavut into context, comparisons were drawn with national rates. Over the entire 21-year time series, for all types of assault (including sexual assault and serious assault) except homicide, the rates for Nunavut communities with either policy were higher than what was found for Canada as a whole. Furthermore, as shown in Figure 2, the 3-year running average serious assault rate for wet communities in Nunavut was consistently higher than the national rate while the similar rate for dry communities began a substantial divergence above the national rate beginning in 1999.

The differences between territorial and national rates increased in the latter years of the study. For instance, the difference between serious assault rates for dry communities and for Canada as a whole grew from 59% for the years 1986–1992 to 226% greater for the years 2000–2006 (see Table II).

Table II. Violent crime rates, wet vs. dry communities, Nunavut, 1986–2006.

| Offence and presence of alcohol control laws | Number of offences | Rate per 1,000 population | Relative risk | 95 % confidence interval |
|---------------------------------------------|--------------------|---------------------------|---------------|--------------------------|
| Simple assault                              |                    |                           |               |                          |
| Wet community                               | 10,110             | 46.70                     | 1.94          | 1.86–2.02***             |
| Dry community                               | 3,007              | 24.06                     |               |                          |
| Serious assault *                           |                    |                           |               |                          |
| Wet community                               | 1,475              | 6.80                      | 2.10          | 1.88–2.35***             |
| Dry community                               | 406                | 3.25                      |               |                          |
| Sexual assault                              |                    |                           |               |                          |
| Wet community                               | 2,436              | 11.30                     | 1.48          | 1.38–1.60***             |
| Dry community                               | 948                | 7.60                      |               |                          |
| Homicide                                    |                    |                           |               |                          |
| Wet community                               | 30                 | 0.14                      | 2.88          | 1.18–8.84*               |
| Dry community                               | 6                  | 0.05                      |               |                          |

* Includes attempted murder, aggravated assault, assault with a weapon and assault causing bodily harm.

* p<.05; *** p<.001

![Figure 2](image.png)

Figure 2. Serious assault rates (3-year running average), wet and dry communities, Nunavut, and Canada, 1987–2005.
The only offence in which there wasn't an increase in the magnitude of differences over time was homicide; in fact, given its low base rate, the differences between dry communities’ homicide rates and the national rates were never statistically significant. Otherwise, the difference between Canadian assault rates and the rates of dry communities in Nunavut were highest in 2000–2006. The difference between dry communities’ sexual assault rate and the national sexual assault rate increased from a factor of 5.2 in 1986–1992 to a factor of 11.7 in 2000–2006. There was also more than a doubling in the difference between simple assault rates from 1986–1992, when the dry communities’ rate was 2.4 times that of the nation as a whole, to 2000–2006, when the dry communities’ rate was 6.1 times larger than the national rate.

### DISCUSSION

As hypothesized, the analyses presented above indicate that communities in Nunavut that prohibit alcohol have experienced less violent crime than communities that allow alcohol importation. This was true regardless of the type of violent crime considered, including homicide, sexual assault, serious assault and simple assault. Based on these results, it appears that in Nunavut, dry communities are safer than wet communities. Similar to what has been found for isolated Alaska Native villages (20,23), however, local option prohibition in Nunavut is not a panacea. Although less violent compared to places that permit alcohol imports, communities that prohibit alcohol in Nunavut are still, by national standards, relatively violent places. For simple assault, serious assault

### Table III. Violent crime rates, wet and dry communities, Nunavut, and Canada, 1986–2006.

| Offence and year range | Rate per 1,000 population (95% confidence interval) | Wet communities | Dry communities | Canada |
|------------------------|----------------------------------------------------|----------------|----------------|--------|
| Simple assault         |                                                    |                |                |        |
| 1986–2006              | 46.70 (45.80–47.62)                                | 24.06 (23.21–24.94) | 5.79 (5.78–5.80) |
| 1986–1992              | 39.98 (38.39–41.61)                                | 12.52 (11.37–13.76) | 5.24 (5.23–5.25) |
| 1993–1999              | 40.66 (39.19–42.16)                                | 19.44 (18.12–20.83) | 6.14 (6.13–6.15) |
| 2000–2006              | 56.46 (54.88–58.07)                                | 36.10 (34.43–37.82) | 5.92 (5.91–5.93) |

| Serious assault *   | 8.83 (8.21–9.48)                                   | 5.12 (4.51–5.80)  | 1.57 (1.57–1.58) |
| 1986–2006            | 6.81 (6.47–7.17)                                   | 3.25 (2.94–3.58)  | 1.44 (1.44–1.45) |
| 1986–1992            | 5.85 (5.26–6.50)                                   | 2.18 (1.71–2.73)  | 1.37 (1.36–1.37) |
| 1993–1999            | 5.20 (4.69–5.76)                                   | 1.92 (1.53–2.40)  | 1.38 (1.37–1.38) |
| 2000–2006            | 5.12 (5.12–9.94)                                   | 3.25 (2.94–3.58)  | 1.44 (1.44–1.45) |

| Sexual assault | 11.25 (10.81–11.71)                                | 7.58 (7.11–8.09)  | 0.88 (0.88–0.89) |
| 1986–2006      | 10.69 (9.87–11.55)                                 | 5.14 (4.41–5.96)  | 0.98 (0.98–0.99) |
| 1986–1992      | 12.83 (12.01–13.69)                                | 8.35 (7.49–9.28)  | 0.96 (0.95–0.96) |
| 1993–1999      | 10.33 (9.66–11.03)                                 | 8.66 (7.85–9.52)  | 0.74 (0.74–0.75) |
| 2000–2006      | 0.14 (0.10–0.20)                                   | 0.05 (0.02–0.11)  | 0.02 (0.02–0.02) |
| Homicide       | 0.25 (0.14–0.42)                                   | 0.09 (0.02–0.26)  | 0.02 (0.02–0.03) |
| 1986–1992      | 0.13 (0.06–0.24)                                   | 0.02 (0.00–0.13)  | 0.02 (0.02–0.02) |
| 1993–1999      | 0.07 (0.03–0.15)                                   | 0.04 (0.01–0.15)  | 0.02 (0.02–0.02) |

*Includes attempted murder, aggravated assault, assault with a weapon and assault causing bodily harm.
and sexual assault, the rate for dry communities in Nunavut was at least double that for Canada. Increases in violent crime rates since the turn of the century in dry communities make the need for violence prevention policy responses other than prohibition all the more pressing.

When considered in light of what is found on First Nation reserves throughout Canada, the higher rates of violence in both wet and dry communities in Nunavut relative to national rates are not surprising. One comparison of crime patterns for on-reserve versus off-reserve jurisdictions in 2004 found violent crime rates in the former (71 per 1,000 persons) that were seven times as great as the latter (9.5 per 1,000 persons) (30). In 2004, wet and dry communities in Nunavut both had violent crime rates (94 and 61 per 1,000 persons, respectively) that resembled First Nation reserve rates much more closely than rates for the remainder of Canada.

Although the results presented above do provide support for a policy of local prohibition in isolated Indigenous communities in the Arctic, they should be considered in light of the limitations of the study. The cross-sectional research design makes specification of the causal relationship problematic. Furthermore, the measures of violence used were less than optimal. At best, the results presented in this paper indicate that there is an inverse association between local option prohibition and violent crime in Nunavut. However, the results do not allow us to determine if the relationship is spurious such that an antecedent or intervening variable is really responsible for the lower rates of violent crime where alcohol importation is outlawed. It is possible that there is something of a self-selection bias at work whereby dry communities are more likely to be populated by those who are least likely to be violent regardless of formal regulations. In other words, it is possible that the places that chose to prohibit alcohol would have been less violent anyway.

Part of the difficulty of specifying the relationship between local option prohibition and lower levels of violent crime in this study is that it was not possible to identify the causal mechanism by which formal regulations led to reduced violence. It is unclear how much of the effects of prohibition are brought about by reductions in the availability of alcohol and how much of those effects are a result of drinking styles in dry communities that are much more circumspect than those found elsewhere. Although drinking does occur in dry communities (24,31), not enough is known about the prevalence and frequency of residents’ alcohol use to be able to estimate relative influences of supply reductions vs. guarded consumption.

In addition to issues surrounding the internal validity of the results, it is important to note the potential for bias resulting from the measures of the dependent variable. The results presented above are limited by the problems inherent to the use of police statistics as a measure of violence. Even though each community had its own RCMP detachment, the degree of trust local residents had in the Mounties was probably not constant across communities. As a result, it is impossible to determine if the under-reporting of violent offences was constant across communities or if the likelihood of a case coming to the attention of the police was related to the presence or absence of local alcohol controls. Different degrees of assault seriousness were used in the analyses to try to mitigate the problem of under-reporting, but it is possible that the differences seen between wet and dry communities were more of a reflection of reporting behaviour rather than of under-
lying levels of criminal violence. Of course, homicide is the one exception to this potential source of bias in that it rarely goes unknown to the police; at the very least, communities in Nunavut that prohibited alcohol had less murder and manslaughter relative to communities that allowed alcohol importation.

Given the problems involved with police statistics, future research on the topic should look to other measures of violence. One option would be to use measures of serious injury or death derived from medical and public health sources as has been done in the American studies considered earlier (16,17,19,20,22,23). Another possibility is a reanalysis of victimization data gathered in the territorial oversample of the 2004 General Social Survey (32) to compare wet and dry communities on assaults of all levels of seriousness, regardless of cases being reported to the police. It may also be appropriate to look to measures of health and well-being other than violence to consider the breadth of impact that local option prohibition can have on a community.

A final caveat regarding the dependent variable is that, because of the risk of committing an ecological fallacy, any conclusions should be made only at the community level and should not be extrapolated to individuals. Although the results indicate that dry communities were safer than wet communities in Nunavut, this does not necessarily mean that the residents of communities that prohibited alcohol were any less likely to commit (or to be the victim of) a violent offence. Dry communities’ crime statistics do not capture offences committed by or against residents as they travel to Iqaluit or Rankin Inlet or other places where alcohol is much more readily available. Individual-level research would be required to measure the overall impact of local prohibition upon residents’ self-reported offending and victimization, both when at home and when travelling outside their community.

Notwithstanding these concerns about measurement and internal validity, the results of this study indicate that the policy of local alcohol prohibition in Nunavut’s geographically isolated communities was a partly effective response to the violence that often accompanies alcohol abuse. Similar to what has been found in Alaska, isolated communities in Nunavut that chose to prohibit alcohol were less violent than communities where drinking was legal. However, given that even dry communities had much higher rates of assault than was found nationally, prohibition alone is only a partial solution to the high levels of violence found in Nunavut. Communities that have outlawed alcohol would be best served if hamlet leaders also looked to other solutions to enhance local safety.

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