



Full length article

If it works there, will it work here? The effect of a multi-component responsible beverage service (RBS) programme on violence in Oslo



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ABSTRACT

Background: The Stockholm Prevents Alcohol and Drug Problems (STAD) programme has been regarded as one of the most successful programmes to date, in reducing alcohol-related violence. This multi-component Responsible Beverage Service (RBS) programme was implemented in Stockholm, Sweden, and has been documented to be extremely effective in reducing alcohol-related nightlife violence. The SALUTT programme in Oslo, Norway was carefully modelled on the STAD project.

Aim: We investigate whether the results from STAD were replicated in the SALUTT intervention.

Design: Using geocoded data, the level of violence in the intervention area was compared with different control areas before and after the intervention.

Statistics: Autoregressive moving average models (ARIMA).

Findings: The SALUTT programme had no statistically significant effect on violence. However, the level of violence in the different potential control areas of Oslo fluctuated without a clear common trend. Hence, it was difficult to establish proper control areas.

Conclusions: The results from the Swedish STAD-intervention were not replicated in Oslo. Successful interventions are not necessarily replicated in other contexts, and the current literature does not shed sufficient light on the conditions under which such interventions actually work. Moreover, more attention should be devoted to the identification of adequate control areas in future research.

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1. Introduction

STAD (Stockholm Prevents Alcohol and Drug Problems) was a multi-component responsible beverage service (RBS) programme that was implemented in Stockholm, the capital of Sweden. The STAD intervention included RBS-training of the staff and owners of licensed premises combined with increased enforcement by the police and the municipality. It was documented to have produced impressive results with regard to the reduction of alcohol-related violence, and the key publications have a high citation rate (Wallin et al., 2005, 2004, 2003). The intervention stands out in a literature with rather few success stories (Graham and Homel, 2008).

Based on this evidence, a similar programme was implemented in Oslo, the capital of Norway. Over the preceding few decades, there had been rapid growth in the city's night-time economy, the number of licensed premises had increased, and many key actors, including the head of the police force, had argued that alcohol-

related violence had become a major concern (Andresen, 2010). Grytdal and Meland (2009) found that most of the night-time violence occurred in connection with premises serving alcohol, and that both perpetrator and victim were usually intoxicated. The promising results from Sweden inspired key actors in Oslo to replicate the experiences in a city with many similarities to Stockholm. This implementation was called SALUTT (a Norwegian abbreviation for Together we Make the Nightlife Safer). The initial implementation started in 2011 in a predefined geographical area, but the area was substantially expanded to a new area in January 2014. For reasons to be explained below, we estimate the effect of this expansion on night-life related violence.

While licensed premises play a key role in alcohol-related violence (Graham et al., 2001; Gruenewald et al., 2006), it is not easy to develop successful interventions in this area. Two recent reviews concluded that most of the evaluations of interventions implemented to reduce alcohol-related harm and overserving in drinking environments are limited because of methodological shortcomings (Jones et al., 2011; Kurtze et al., 2014). Hence, the general effects of such interventions still seem to be uncertain. However, in these reviews, three intervention studies stood out as more

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robust, suggesting that multi-component programmes combining community mobilisation, RBS training, increased police work and stricter enforcement of licensing laws have the greatest potential to reduce violent assaults. Among these, the Swedish STAD project is generally regarded as the most successful intervention (Holder et al., 2000; Treno et al., 2007).

STAD was set up as a research project, with an intervention area and a control area in central parts of Stockholm. Key components of the STAD programme were a) an advisory group with regular meetings, formalizing the collaboration between the country administration, the police and representatives of the bar and restaurant industry b) RBS training for servers, doormen and restaurant-owners (2-day course), c) increased enforcement, done by regular meetings between the police and the Licensing board, increased distribution of notification letters to licensed premises and mutual controls of licensed premises conducted by the Licensing board and the police (Wallin et al., 2003).

The evaluation showed a decrease in police-recorded crimes by a striking 29% in the intervention area, compared to the control area (Wallin et al., 2003). Recent re-analysis of the original data set, using more robust statistical methods and additional comparison areas, revealed smaller effects, but essentially confirmed the results (Norström and Trollidal, 2013). According to Wallin et al. (2003), the effect on violence may be transmitted by a reduction in overserving, which they found to be drastically reduced. Wallin et al. (2004) pointed to five key factors that ensure the success of the STAD programme: adoption, sustainability, key leader support, structural changes, and compliance. In addition, an active use of media to promote the programme's intentions was listed as another key factor to success.

The original STAD project was launched only in one city, but it is important to assess whether it will also be effective elsewhere. The programme has subsequently been disseminated to a large number of Swedish municipalities, and the estimated effect was far smaller and only significant in the smaller municipalities. Trollidal et al. (2013) measured the degree of implementation as to what extent three key components were present; RBS-training, supervision of licensed premises, and having a community coalition steering group. Increasing the programme by one component decreased violence by 3 percent. However, when they tried to estimate the effect of each component of the programme, only the presence of community coalition steering group had a significant effect.

The aim of this paper is to explore whether a multi-component Responsible Beverage Service (RBS) programme did decrease the reported level of alcohol-related nightlife violence. Our study will reveal whether a programme modelled by a successful programme in one country (Sweden) actually is transferable to another country (Norway).

1.1. The Salutt intervention in Oslo

In Oslo, the intervention was designed as a replication of STAD and took the form of a collaboration between the City of Oslo, the police and representatives of the bar and restaurant industry. The intervention was called SALUTT and contained all three components discussed by Trollidal et al. (2013). The main purpose was to prevent intoxicated customers from being served alcohol, and to prevent disturbances of the peace and alcohol-related violence. The intervention area was defined as the area with the most violence in Oslo city centre. In addition to reducing violence, it was a specific goal to increase cooperation between the key actors: the police, the municipality and representatives of the bar and restaurant industry. As in the STAD intervention, the focus was on three main components: (i) increasing the competence of all institutional actors involved (i.e., pub and bar staff, the police and those from

the municipality responsibility for supervising pubs) regarding laws and regulations through training; (ii) better dialogue between the municipality/the police and staff and proprietors of pubs and bars; (iii) an increased level of control and sanctions. This included courses for bartenders, meetings with managers, intensified control by the local authorities and police patrol units in the project area (Baklien and Buvik, 2014).

While SALUTT included all the key components from STAD, Buvik and Baklien (2014: 58) claim that SALUTT differs from STAD on two points: a bit more emphasis on dialogue relative to sanctions, and a less central part played by the police in SALUTT, since the police in Norway are not in charge of licensing and control. We might also add that the SALUTT area was smaller than that of Stockholm, restricted to an area where these problems were particularly prevalent.

SALUTT was initially implemented in a small area in 2011, and then expanded in January 2014. Further expansions were planned to cover a large part of the city centre. Using a variety of data sources, a recent extensive evaluation of SALUTT concluded that the training programme had functioned well, that the police had become more involved in preventive work and that the industry had become more engaged in proactive prevention (for a detailed description, see: Baklien and Buvik, 2014: 35–52). The evaluation thereby concluded that the intervention has been implemented as planned, that the actors involved cooperated better and that bartenders in Oslo also seem to have become more restrictive, although not more in the intervention area than in other areas. The overall level of violence also seems to have decreased in the city, (26 percentage points reduction in central areas), but the authors conclude that the reduction may have been caused by other factors than the SALUTT-intervention.

Baklien and Buvik (2014) indicated that it took some time to establish good ways of cooperation between the key actors. For example, representatives from the industry were after a while included in the steering group, and the police were not truly committed until late 2013. The RBS courses had shifted attention from training of bar staff to the owners since the bar staff primarily follow the instructions from their employer. Hence, the initial implementation period was gradual but found its final form by the end of 2013, with full cooperation by the police, key leaders, as well as strong political support. When launching the second phase of the programme in a new area in 2014, which we will refer to as SALUTT 2, it could be expected to take immediately full effect. In this phase, experience was drawn from the first implementation and several actions were taken simultaneously: general collaboration between the police and municipality was already established and was intensified, the education programme had found an effective form and was easy to introduce in a new area, and the larger SALUTT organisation also functioned well (Baklien and Buvik, 2014). Hence, the SALUTT 2 can be expected to be more efficient and to have had a more clear-cut launch than is the case for most other programmes. Gradual implementation is hard to evaluate as it is hard to know when the effect should take place, but the immediate implementation in SALUTT 2 allows for a precisely defined time of effective intervention.

2. Material and methods

2.1. Police data on recorded crimes

Our data on violence are drawn from the Norwegian police register (STRASAK), which includes all reported violent crimes in Oslo. Most of the incidents were already geocoded by the police, but there were also a number of crimes where information on coordinates was missing. Cases that were not geocoded, but where there was a

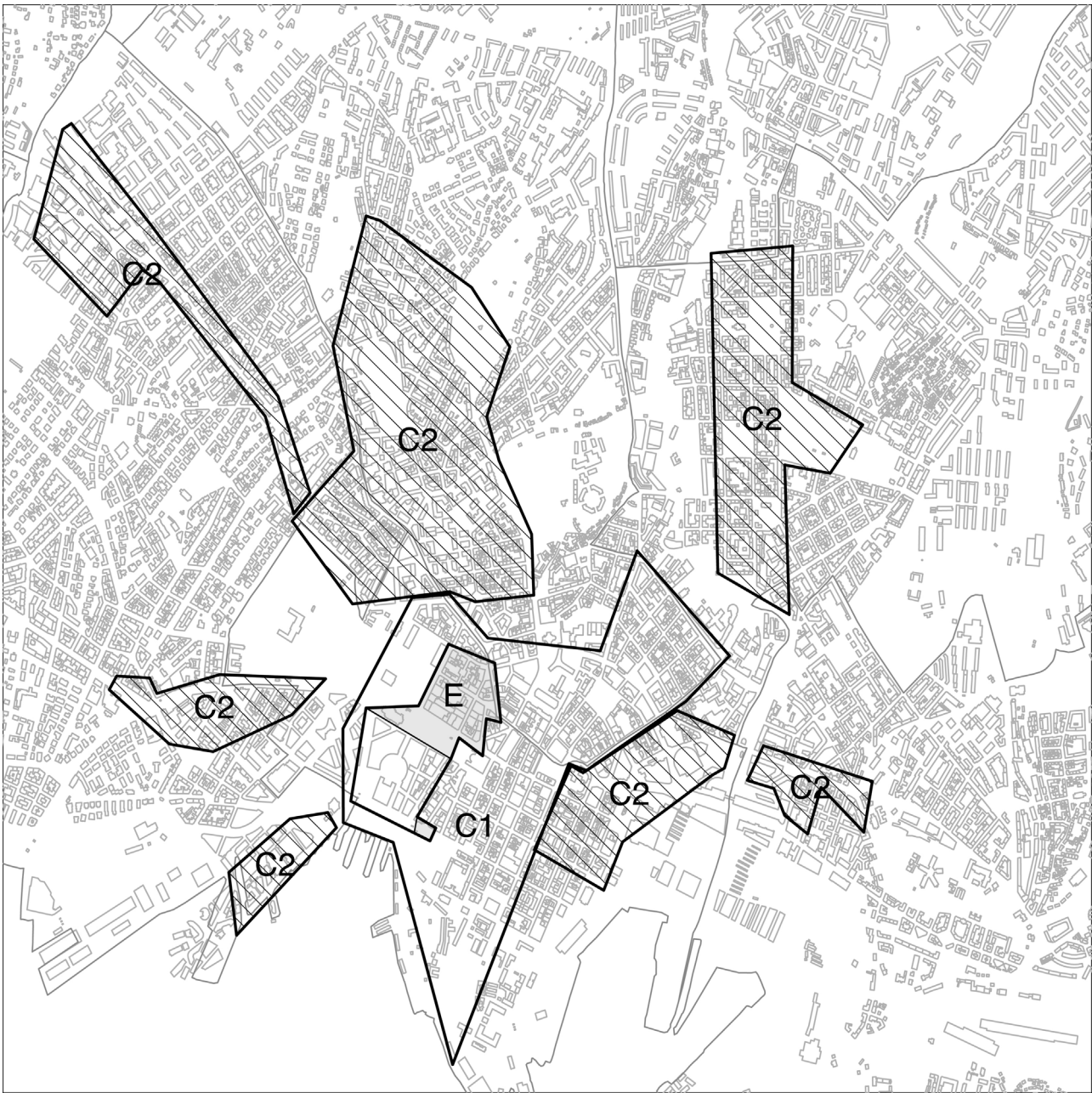


Fig. 1. Study areas in Oslo city centre. The experimental area, SALUTT, is marked E, the first control area is marked C1 and the other areas are combined to form the second control areas marked C2. Note: The map is procued using www.OpenStreetMap.org and osmar (Eugster and Schlesinger, 2013).

valid street address were geocoded by the researchers using Google maps (Kahle and Wickham, 2013). This allowed us to place all registered violent crimes within the defined areas and to construct time series for each area (see Fig. 1).

Our dependent variable is the number of violent incidents registered by the police each month in the period 1 January 2008 to 21 August 2015. Since alcohol-related nightlife violence was our focus, we restricted the offences to those that had been committed at night. The largest bulk of violent events occur after bars close at 3am, but we include the broader interval between 10 p.m. and 6 a.m. as was also done in the STAD studies (Wallin et al., 2003). This interval corresponds well to the most active times of Norwegian night life, and captures the timing of most violent events by a good margin. We included offences in the categories violence, robbery and violence against a public servant (practically all cases involve assault or inflicting bodily harm, Sections 228 and 229 of the Nor-

wegian General Civil Penal Code). SALUTT 2 was implemented in January 2014, and two new areas were planned for inclusion in the programme in 2015 and 2016. These planned extension areas were used as control area, which we refer to as CONTROL 1. They were particularly suitable since they were perceived as having similar challenges as SALUTT 2 as regards alcohol-related, night-time violence. However, as an additional check and to increase the reliability of our analyses, in separate models we also combined most other remaining areas in central Oslo with a high density of licensed premises. They were labelled CONTROL 2. In Fig. 1, the experimental area, SALUTT 2, is marked E. CONTROL 1 surrounds the SALUTT area and is marked C1. CONTROL 2 comprises the remaining areas (shaded lines) and is marked C2. The SALUTT 1 area is the unmarked area right next to SALUTT 2. Data from SALUTT 1 were not included in any of our analyses.

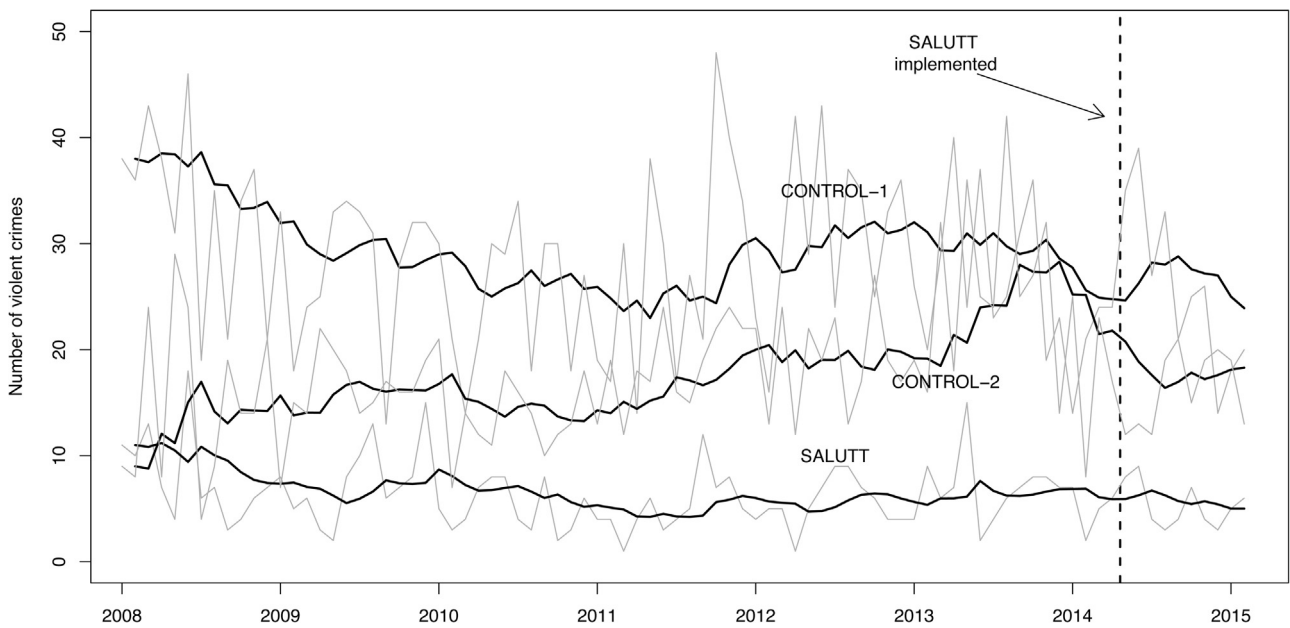


Fig. 2. Observed (grey) and smoothed trends (black) in the SALUTT-2 area. Vertical line shows the official date of implementation of SALUTT-2.

2.2. Modelling strategy

We use autoregressive integrated moving average (ARIMA) models in a similar way as in the prior studies of STAD (Norström and Trolldal, 2013; Wallin et al., 2003). The models is denoted ARIMA (p,d,q) where p is the order of autoregressive model, d is the degree of differencing, and q is the order of the moving average model. The date of implementation of SALUTT 2 is treated as an exogenous variable when comparing with CONTROL 1. Hence, the model is specified as:

$$\log(V E_t) = \alpha + \beta_1 \log(V C_t) + \beta_2 W + \beta_3 I_t + \varepsilon_t$$

where VE is violence in the experimental area, VC is violence in the control area, I is a dummy taking the value 1 when intervention occurs in the experimental area and 0 otherwise, and ε is an error term. W is the number of Friday and Saturday nights in month t (varying between 8 and 10). The parameter of interest is β₃, which is interpretable as the relative change in violence, so that the percentage change in violence is: exp(β₃) × 100.

The control area, VC, represents the general trend in violence during the observation period. We use the pre-intervention period to select the autoregressive terms of the model (Hyndman and Khandakar, 2008), using VC and W as predictors, and then model the entire observation period when estimating the intervention effects. The model rests on the assumption that the experimental area would follow the trend in the control area if the intervention had not occurred, i.e., it assumes that a common trend is present in both areas.

3. Results

The trends for violence in the SALUTT 2 area and the two control areas are shown in Fig. 2, where the grey lines are the observed number of night-time violent crimes and the black line is a simple exponential smoother of the trend. We would expect SALUTT 2 to take effect fairly quickly after implementation, but the striking visual feature of this time series is a relatively stable, flat trend throughout the latter part of the observation period, including the period after implementation. The trend in CONTROL 1 decreased until 2011, followed by an increase and a subsequent

Table 1

Estimated intervention effects of SALUTT 2 on police-recorded violence.

Control area	Model specification	Estimate	SE	p-value	Q
CONTROL 1	ARIMA(0,1,1)(0,1,1)	-0.22	0.36	0.50	0.33
CONTROL 2	ARIMA(1,1,1)(0,1,1)	-0.15	0.39	0.70	0.42

Q=Box-Ljung test for residual autocorrelation.

slight decrease in the last part of the observation period. The most striking feature of the CONTROL 2 trend, on the other hand, is the gradual increase in violence from 2008 through 2013, which is then followed by a reduction.

The estimated intervention effects compared with the two control areas are shown in Table 1. The estimate in the comparison with CONTROL 1 suggests a negative point estimate (-0.22), with a very high p-value that is far from being statistically significant. The estimate for CONTROL 2 suggests a similar point estimate (-0.15), but this estimate is also far from statistically significant (p=0.73). Thus, we find no effect of the intervention.

Since the standard errors are large, it can be argued that the null results are a result of low statistical power. This is at best only a partial explanation. As shown in Fig. 2, there is no post-intervention change in violence in the SALUTT area. For this reason, an estimated causal effect could only arise if the counterfactual outcome were an increase in violence. While this is of course possible, we see no intuitive reason why that should have happened, and the fact that the line is approximately flat indicates no impact of the intervention.

Considering Fig. 2 again, its' perhaps most striking feature is the lack of common trends in the three different areas investigated during the period up until the intervention. This raises the concern of whether the control areas are in fact suitable in the first place. The assumption in this kind of evaluation approach is that there is some common underlying trend across different areas of the city. We therefore carried out a new set of analyses (see Supplementary material), where we compared the pre-intervention trends in violence for all city districts in Oslo. The findings revealed that each area's trend had distinct features, with varying peaks and reductions. Indeed, our exploration of the trends in each sub-area does not provide convincing evidence of any common trend in nightlife violence across the relevant areas of Oslo.

4. Discussion

4.1. Main findings

In this study we have evaluated a multi-component, responsible beverage service (RBS) programme in Oslo, SALUTT, which was carefully modelled on the Swedish STAD intervention. However, whereas the STAD intervention was regarded as highly successful in reducing violence in the night-time economy, SALUTT did not have any significant effect. We will return to possible substantive explanations for the null results, but let us first consider potential methodological problems in the study.

4.2. Methodological considerations

Firstly, our measure was violent crimes and does not encompass threats and harassment, which were included in the measure used in the STAD evaluation (Wallin et al., 2003). There is a possibility that SALUTT reduced some kinds of incidents despite not affecting recorded violent crimes. It is hard to know whether the measures of violence are comparable to prior studies, but, if the differences in results from prior studies are due to differences in measures, this would have implications for the interpretation of those studies as well.

A second potential reason for our lack of clear results is related to low base rates of violence in the relevant areas of Oslo, which could be related to the scaling of the project. The SALUTT project area is much smaller (only about 20 ha) than the STAD project (412 ha). Thus, the absolute number of offences is low in SALUTT and the trends are more unstable. Hence, our analyses have lower statistical power.

Third, one might be concerned that there might be spill-over effects from the intervention areas to the control areas which makes it hard to detect actual effects. This could happen if bar staff had been to courses while working in the SALUTT area and then changed job to somewhere outside this area, but continuing to comply with what was taught at the courses. Another possibility is that, e.g., the policing practices in how dealing with “problem-bars” changed also outside the SALUTT area. While such spill-over effects can be hard to definitively rule out, we are not aware of any indications of this happening.

A fourth explanation might be related to the suitability of the control areas. When using one or multiple other areas in the same city as control areas the suitability of the areas as controls is crucial. Most importantly, the implicit assumption is that the areas follow a common trend so that the development in the control areas represents what would have happened in the treatment area. The control areas for SALUTT was chosen as assumed similar areas nearby, in a similar rationale as in the evaluation of STAD (Norström and Trollidal, 2013).

However, interviews with police officers and employees in the night-time economy suggest that the situation is highly dynamic and shifts over time with regard to which areas are in fashion, where new pubs and bars open and others close, and the clientele that is attracted to each area changes over time. Previous research on ‘geographies of the night-time economy’ has documented the present rapid restructuring of this industry, where the volume of sales of alcohol seems to be a driving force, as this is the key to high profit (Jayne et al., 2006). Such dynamics include competition between large corporations and smaller independent operators or older ‘traditional’ pubs, or development of urban centres with late-night bars and commercialised youthful ‘playscapes’ or ‘nightscape’ (Roberts, 2015). Gentrification of inner-city areas can also result in frictions and contests over public space (Pennay et al., 2014), a pattern that has also characterised Oslo (Hjorthol and Bjørnskau, 2005). Thus, people may drink (and fight) in a rapidly

changing night-time urban landscape. This makes it reasonable to question the presence of a *common* trend in alcohol-related violence across sub-areas in the same city, which would be necessary for proper causal inference.

4.3. Interpretation of findings

Despite the methodological concerns, we do *not* believe that our null results are only due to methodological limitations. The time series for the SALUTT area (Fig. 2) is practically flat around the time of the implementation. Any claim that it has had an effect on the level of violence must therefore rest on an assumption that violence would have *increased* in the absence of the implementation. Although such a counterfactual increase is theoretically possible, we see no particular reason why that should have happened.

A more substantive reason for why SALUTT did not succeed in reducing violence might, instead, be that the programme did *not* in fact reduce the over-serving that is believed to be causally linked to violence. In the STAD project, the level of over-serving did in fact decrease drastically, which could explain the reduced level of violence (Wallin et al., 2005). Previous research using purchase attempts with pseudo-intoxicated patrons has shown that the level of over-serving in Oslo is high, and although a slight decrease has taken place, this decrease does not seem to be stronger in the SALUTT area than in other areas of the city (Baklien and Buvik, 2014; Buvik and Rossow, 2015). Hence, the lack of change in the level of over-serving in the intervention area, as compared to other areas, may explain why we do not find a significant area-specific reduction in the level of violence either.

A related issue concerns whether there is something about the local setting that made the programme ineffective in Oslo. It should be noted, however, that RBS programmes have *not* proven effective in the majority of the studies from other countries either (Kurtze et al., 2014). It is also notable that the estimated effect of the initial STAD project was a 29% reduction, while the subsequent extensions elsewhere in Sweden were much more modest, only around 3% on average (Trollidal et al., 2013). It could perhaps be hypothesised that the initial STAD intervention was associated with a so-called ‘Hawthorne effect’, i.e., the effects may have been the result of the effects of the involved actors and institutions of being singled out and made to feel important, and not of the intervention per se (Adair, 1984; McCambridge et al., 2014). In later interventions, it may have been difficult to replicate this effect.

This also highlights the question of how easy it is to transfer such programmes to other settings. The causal mechanisms involved in successful RBS programmes and the conditions under which they may be effective have not been well spelled out. Given that the original STAD intervention was rolled out in a very large area, we must also assume that the area included a greater variety of licensed premises. The much smaller SALUTT 2 area in Oslo was considered to be a particularly problematic and concentrated area with regard to binge drinking and violence. We can hypothesise that licensed premises in ‘average areas’ are more responsive to such policies than the areas targeted in SALUTT 2. Thus, any effect of such interventions might depend on the kind of clientele, bars, or kinds of areas targeted.

We should also remember that the remarkably high reduction in violence in the first STAD project was achieved 20 years ago. If competence in the prevention of night-time violence has improved in general, new programmes will make less difference and have less effect. That a programme has proven successful somewhere else and in another time is not by itself sufficient to infer that it will work equally well in a new setting (Cartwright and Hardie, 2012).

4.4. Conclusion

The multi-component SALUTT intervention in Oslo was modelled on the most successful RBS intervention to date, the STAD intervention in Stockholm, and a previous evaluation concluded that SALUTT was implemented according to the plan. However, we found no reduction in the level of violence in the intervention area in Oslo. Hence, in this respect the SALUTT intervention was not a success, as opposed to the initial STAD intervention.

Theoretically, the lack of observed results in Oslo may be due to methodological problems such as lack of statistical power. However, it is not likely that this is the correct explanation of the null findings. It is more likely that such interventions do not necessarily 'travel well', particularly when the mechanisms involved in the interventions are not better identified than in the literature on RBS. Moreover, the characteristics of the areas where the programmes are implemented, in terms of the clientele visiting the bars, sociodemographic and sociocultural distinguishing marks, and patterns of use of alcohol may have an impact on the potential success of a programme. In addition, the study sheds light on the problem of establishing adequate control areas in this kind of research. The various city districts in Oslo display strikingly different time-series patterns of violence, probably reflecting large and rapid general changes in the night-time economy.

We conclude that there is need for more knowledge about the contexts where such interventions seem to work well and about the mechanisms that may enhance or reduce the likelihood of success in such programmes.

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All authors have contributed to the writing and review of the manuscript.

Conflict of interest

No conflict declared.

Contributors

Torbjørn Skardhamar has had the main responsibility for the statistical analysis and data management, and taken part in all stages of the research process, from the design of the study, throughout the process of analyzing the data. He has had the main responsibility for finalizing the manuscript. He has read and approved the final version of the article.

Silje B. Fekjær has taken part in all stages of the research process, from the design of the study, throughout the process of analyzing the data and discussing the findings. She was responsible for applying for permissions for the data and handling the registers from which the data is collected. She has also contributed to the writing of all parts of the manuscript. She has read and approved the final version of the article.

Willy Pedersen has taken part in all stages of the research process, from the design of the study, throughout the process of analyzing the data, discussing the findings, he has also taken part in writing the various drafts of the paper and finally in deciding that the paper was ready for submission. He has read and approved the final version of the article.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.drugalcdep.2016.10.019>.

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