

## Summary

# Development of an evaluation template for the reaccreditation of Traffic-Safe Municipalities

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Authors: Tor-Olav Nøvestad, Astrid Helene Amundsen, Beate Elvebakke & Karen Ranestad  
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Norwegian municipalities can influence traffic safety in many different ways. In 2015 the Norwegian road safety organisation Trygg Trafikk (Safe Traffic) launched the accreditation scheme Traffic-Safe Municipality. The purpose of the scheme includes to define criteria for systematic and coherent traffic safety work at municipality level. The first Traffic-Safe Municipality was approved in August 2015, and there is a plan to reapprove accredited municipalities after a period of three years. The main aim of the current study was to develop a template to guide the evaluation of Trygg Trafikk's Traffic-Safe Municipality scheme. It has been a request from the principals that the template should be used for reaccreditation, and that it should focus on the "soft" aspects (e.g. ways of thinking, attitudes) of Traffic-Safe Municipalities. Our work to develop the template was guided by interviews, field work, literature studies, questionnaires and study of accident levels. The proposed template was tested out in three municipalities accredited for varying lengths of time. The municipality that had been accredited for the longest time scored more positively on measures of familiarity with the scheme, increased focus on (traffic) safety at work and new ways to think about safety. Likewise, greater shares in this municipality reported improvements in traffic safety for themselves, colleagues, end-users and inhabitants, as a result of the scheme. An apparent correlation between length of time as an accredited Traffic-Safe Municipality and self-reported effects indicates that the template works as a tool to guide reaccreditation. As a result of the questionnaire, we excluded 19 questions from the template. Our data and design are insufficient to assess the effects of Traffic Safe Municipalities. We have a little and biased sample, no control groups or pre measurements.

## Background and aim

Norwegian municipalities can influence traffic safety in a number of ways. The municipalities are a large employer with just under 500,000 employees altogether at national level. We can safely assume that many of these employees drive regularly for work, and that a small share will be involved in traffic accidents every year. Travelling in traffic is the largest risk that many of these employees will face in the course of a working day, with 36 per cent of fatal accidents on Norwegian roads involving at least one driver driving for work at the time of the accident (Phillips & Meyer, 2012). In addition, municipalities influence traffic safety through development and maintenance of the road infrastructure, through training and other activities in kindergartens and schools, and as transport procurers. We can therefore assume that there is substantial safety potential in measures aiming to strengthen the traffic safety work of Norwegian municipalities.

Municipalities can choose from several different approaches in order to work systematically with safety. The "Safe Communities" approach was for example introduced by WHO in 1989, but focuses on prevention of all types of injuries, i.e. not just traffic safety injuries. Trygg Trafikk launched the notion of Traffic-Safe Municipality (TSM) in Norway in 2015. This is an accreditation scheme that defines criteria for systematic traffic safety work, to be fulfilled by the municipalities' various units. In August 2017 there were around 40 TSMs, of

a total of 426 municipalities. The first municipality was accredited in 2015, with a plan for reaccreditation three years following initial approval. However, a method or way of standardising the reaccreditation process is required. The main aim of the current study is therefore to develop a template for evaluating *Trygg Trafikk*'s "Traffic-Safe Municipality" program at municipality level.

## **Method**

Development of the evaluation template was informed by the following activities:

1. Interview and field work to gain insight into what TSMs are, and how municipalities become "traffic-safe".
2. Literature review of studies evaluating (traffic) safety programs in municipalities.
3. Template proposal, based on 1. and 2.
4. Testing of the proposed template in TSMs, and optimization of the template on the basis of the results. This evaluation was based mainly on a questionnaire survey of three municipalities, A (51 respondents), B (24 respondents), and C (n=57 respondents). We examined also the annual development in material and personal injuries in traffic based on database information and statistics of police-reported personal injury accidents.

## **What is a Traffic-Safe Municipality?**

*Trygg Trafikk* has developed criteria for TSMs. These include that the mayor or head of the municipality should be given ultimate responsibility for traffic safety, that a board should be selected with responsibility for traffic safety, that traffic safety should be integrated as part of HSE and internal inspection systems, that there is an updated overview of traffic accidents in the municipality, and that there is a traffic safety plan. Special criteria are also described for kindergartens, schools, technical departments and so on. Municipalities that fulfill the criteria are approved as TSMs, but it is made clear that this does not necessarily guarantee prevention of accidents. Finally, all criteria are rooted in laws and regulations, so there should not be any need to do anything that should not in any case be done according to the law.

Through interviews and field work, we learned that earlier municipality traffic safety plans and many of today's plans place great emphasis on physical traffic safety measures, even though it is accepted that physical measures form only a minor share of the total work that a municipality needs to perform to establish optimal traffic safety.

Many of the "soft" measures are often more or less invisible in the municipalities traffic safety plans, implying that such plans accord them low status, even though many see them as important. For instance, much "soft" work is evident at health stations, in kindergartens and schools. This work is about information and training, which helps to establish a safety culture in the municipality, in terms of positive safety attitudes and systemic safety thinking. Such work is carried out at many different levels, by many different actors in the municipalities, who are in touch with and influence the everyday lives of the inhabitants. It is this work that TSM aims to systematize through its accreditation and reaccreditation process.

One of the main principles behind TSM is that traffic safety work should be implemented in a broad cooperation involving all departments and sectors of the municipality. The aim is to encourage a more coherent mindset when working on traffic safety. One should focus on all the inhabitants in the municipality, regardless of whether they are involved in accidents or not. A positive safety culture should be established among the inhabitants, which they may carry with them beyond the municipality borders.

In interviews and in the field work, it was emphasized that the effects of TSMs will often not be expressed in terms of accident numbers (because these are too low), but rather in terms of routines in place, and engagement for traffic safety and coherent traffic safety thinking among municipality employees.

## **Results from the literature study**

There are not yet any evaluations of Traffic Safe Municipalities, since this measure is relatively new. In our literature study we therefore included other municipal safety programs. Most research on municipality safety programs are studies of so-called “Safe Communities” (SC). These programs generally focus on traffic safety, in addition to other municipal safety challenges. We reviewed these studies to understand methods used and associated effects. A central notion of SC is that safety work is conducted locally through the active engagement of the community and key groups in the municipality. The idea is also that injury data is gathered continually and measures are set in place for high-risk groups (e.g. young and old road users). The studies generally employ robust methods and research design, involve several municipalities with control groups, and relatively long study periods. However, the studies tend to neglect aspects of process and implementation of SC programs, even though such factors may influence ultimate effects. The most common effect measure used by the studies is hospital admissions (lasting over 24 h) and/or injuries of different types standardized in relation to the population.

The studies show varying effects for SC programs on injuries in the different municipality studies. Some municipalities have significant reductions in total injuries but others do not. The studies also show group-dependent effects, and effects depending on injury type and level within a municipality. A challenge with several of the effect measures is that they focus on accidents generally, and not just those accidents that the measures used actually targeted. Several measures are also implemented simultaneously, such that the mechanism of effect cannot be understood. A further challenge is that implementation of SC can often result in increased focus on safety, and therefore greater tendencies to report accidents. This in turn can lead authors to underestimate the size of actual accident reductions achieved. Finally, a tendency for municipality with greater safety challenges to want to become SC in the first place, can make it difficult to draw general conclusions.

The mixed results for the different municipalities, between different groups, injury types and injury levels implies that there may be differences in level or success of implementation among different municipalities, and that it is worth considering factors promoting and inhibiting safety work and implementation of SC programs in municipalities. In the literature review, we found that the following factors influence implementation positively: a) measures directed at socially and culturally homogeneous environments, b) long program duration, c) prioritization and support from municipality leaders, d) local relevance, e) continual feedback in the form of data, f) continual injury monitoring and g) measures that target specific groups or injury types.

The studies show that those injuries that are the focus of safety work are those that are most influenced by the programs. The largest effects are generally seen for those measures aimed at preventing a specific type of accident (e.g. traffic accidents), or targeting specific groups (e.g. children, old people). Several of the studies aimed at improving traffic safety of specific groups show desirable effects on injury rates and attitudes.

## **Template description**

Four principles are established as the basis for the template:

- 1) People who are not researchers should be able to use it.
- 2) It shall be appropriate for use in reaccreditation of TSMs.
- 3) TSMs focus mainly on routines and systems thinking. As the accident rates are often too small to be used to conclude the effects of measures, re-approval should not depend on a documented reduction in the number of injuries and accidents in the municipalities.
- 4) The focus for the template should therefore be that there is sustained awareness about criteria for TSM, and that the criteria are still alive among end-users.

On the basis of interviews, field work and literature review, we have developed a template for the evaluation of TSM comprising 5 elements:

- 1) Formal documentation from the municipality and its organs, showing that the criteria have been met (i.e. same documentation as for initial accreditation).
- 2) Traffic safety measures (and budget) executed for previous 5 years.
- 3) Results of general questionnaire survey measuring a) increased focus on traffic safety, b) new ways to think about traffic safety, c) whether staff think that traffic safety has improved.
- 4) Specific questionnaire survey measuring whether the criteria of the respective departments are “alive”, i.e. awareness levels, extent to which they are used by those that shall use them, whether transgressions are addressed, whether the criteria are passed on to new employees etc.
- 5) Traffic accident levels, injury levels, undesirable traffic incidents in the municipality, which show the development for the last 5 years, based on TRAST, PETRAST and Statistics Norway’s statistics of police-reported personal injury accidents.

## **Testing out the template**

The questionnaire survey is the most important element of the template, because it measures the extent to which the criteria for Traffic Safe Municipalities are functional, i.e. whether they are known and used by those that shall use them, and if they have led to a more coherent/systematic approach and new ways of thinking about traffic safety. We have tested the questionnaire survey in three municipalities. The first, municipality A, is one of the first TSMs, with ca. 2 years since accreditation at time the template was tested. Municipality B had ca. 1 year since accreditation, while municipality C was only recently accredited.

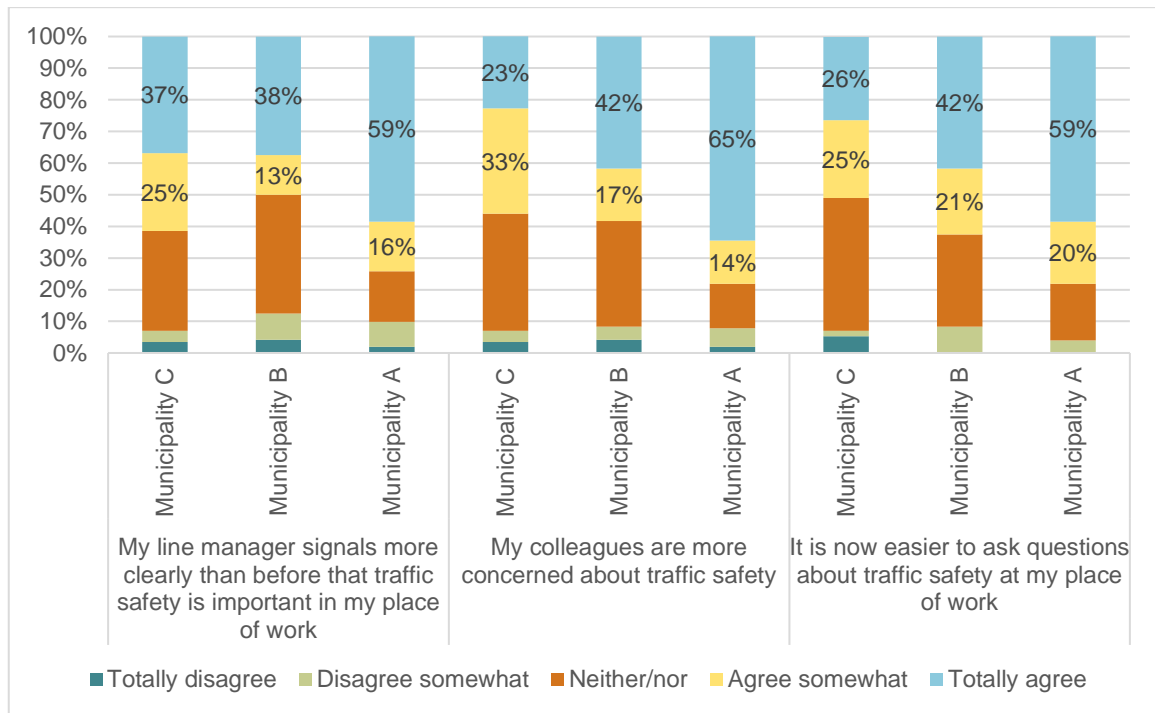


Figure S1. Percentage distribution for agreement with the statements: «Becoming a TSM has resulted in:» «My line manager signals more clearly than before that traffic safety is important in my place of work.» «My colleagues are more concerned about traffic safety» «It is now easier to ask questions about traffic safety at my place of work» in Municipality A (N=51 respondents), B (N=24) and C (N=57).

We studied three municipalities to test an hypothesis that effects of implementation correspond with the length of time for which a municipality has been accredited. In other words, we expected more favorable self-reports on safety standards for municipality A, accredited for 2 years, than for municipality B, accredited for 1 year, but more favorable reports for municipality B than for C, the latter only recently accredited at time of study. The results in Figure S1 fit with our expectations. Larger shares in municipality A than in B or C report increased focus on safety in its units. Larger shares of respondents from municipality A also report largest effect of TSM measures, than from B or C. Likewise greater shares respond awareness that their municipality is a TSM, that they have safer behavior in traffic, that they think more about traffic safety, and that they have learned how all departments in the municipality can contribute to traffic safety (Figure S2). In addition, larger shares in A than in B or C think that traffic safety has improved for themselves, their colleagues, end-users and for the public, because their municipality became a TSM.

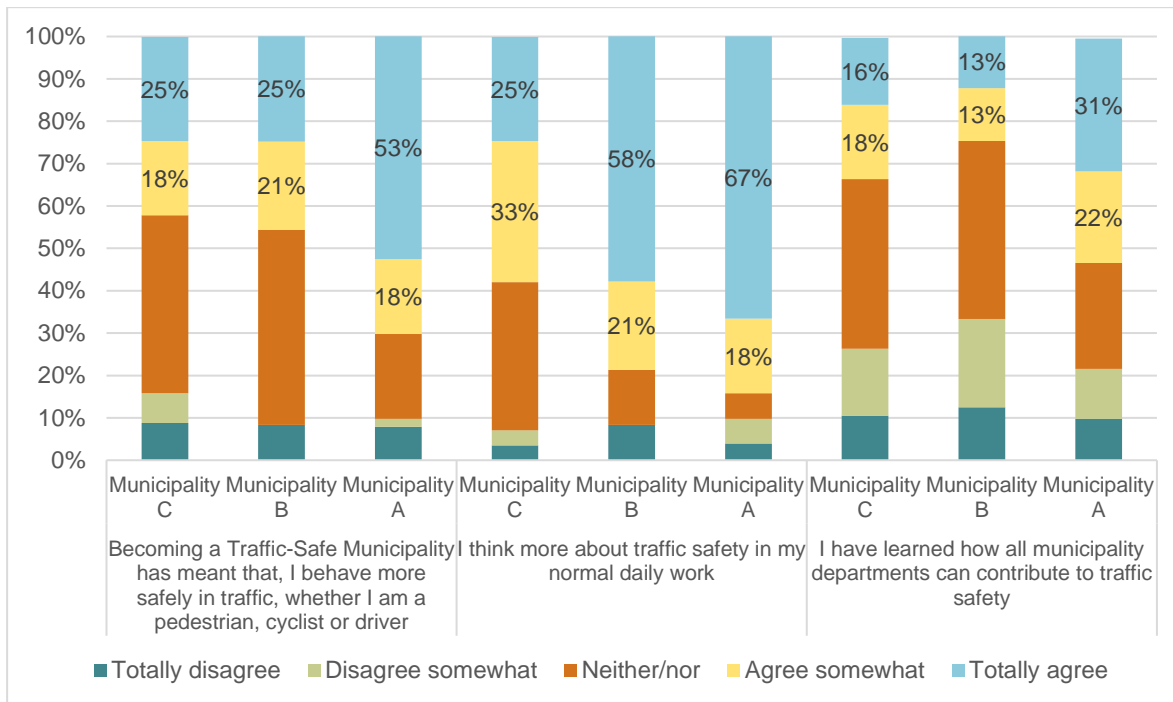


Figure S.2 Percentage distribution for the statements: «Becoming a Traffic-Safe Municipality has meant that, «I behave more safely in traffic, whether I am a pedestrian, cyclist or driver», «I think more about traffic safety in my normal daily work» and «I have learned how all municipality departments can contribute to traffic safety» in municipality A (N=51), B (N=24) and C (N=57).

In the specific questionnaire survey, focusing on whether the TSM criteria are known and used (“functional”) we reported only those results from kindergartens and schools. Low numbers aside, the results indicate that there are high levels of awareness of TSM criteria in the kindergartens, where they are very much “living” criteria. This applied to a lesser extent in the schools, where we also see greater variation in the agreement in items measuring aspects of safety. We have modified the template somewhat based on the results of the survey. We assessed the questions in the survey in light of ten criteria, with the result that 20 items were excluded.

## Questionnaire, checklist or workshop?

The template comprises five elements, and the most important of these is the questionnaire survey, which evaluates awareness of the TSM criteria, and whether they are functional in the different municipality units. We are open to the possibility that *Trygg Trafikk*, who will use the template to reapprove municipalities as TSM, do not necessarily want to use a survey to evaluate whether there is awareness of the criteria, and that the criteria are still functional in the municipality. They could for example also use the most relevant questions from the survey to form a checklist that they have with them when they go to reapprove the municipality. They can perhaps use such a checklist as the basis for interviews with key persons in the different units in the TSM. We summarise the advantages and disadvantages of the five approaches we envisage below. When we write “time consuming” we mean primarily for *Trygg Trafikk*, who will conduct the reaccreditation process.

- 1) **Questionnaire survey** (potentially best data; only way to get an approximate representative and valid answer, but time and resource intensive and it is uncertain whether you get enough answers)
- 2) **Checklist and visit** (not so time-consuming, can give relevant data with correct balance of informants, i.e. interviews with manager, staff representative, end-user representative, but still not as balanced as pt. 1)
- 3) **Checklist without visit** (least time consuming, can give relevant data, but little control over the process and no firsthand experience of how things are, uncertainty about whether sufficient time used when filling out checklist)
- 4) **Workshop with accreditors present** (somewhat time consuming, good learning potential for municipality units, culture-building, can help increase awareness of and engagement with criteria)
- 5) **Workshop without accreditors present** (not so time consuming, still good learning potential, but higher levels of uncertainty for accreditors requires sound documentation process; manager can be responsible for implementation)

Alternative 1 is supposedly the best and we primarily recommend this approach. If this approach is too time consuming and resource-intensive (especially getting enough answers), Trygg Trafikk may consider the approach in Alternative 2, and perhaps also the approach in Alternative 4 in some units. We do not recommend 3), but this could be used together with 2), i.e. some units are visited with a checklist, and some are just given the checklist to complete. The same principle applies also for alternative 5).

## **Methodological considerations and data limitations**

A clear connection between time since accreditation as TSM and reported effects of accreditation can indicate that the template works. In interpreting the results we should however be cautious, since the survey is based on relatively low number of responses. It has taken a while to collect the answers, and the answers can be affected by self-selection bias i.e. only those most engaged respondents have answered the survey. However, we would expect this effect to be equally manifest across all three municipalities tested, and we do not think that this effect weakens the conclusions we have made.

Our conclusions would be reinforced by comparing the responses of TSMs with responses of municipalities that had not become TSMs, for questions about change in safety aspects over the same before-after period. Likewise, we did not take measures on the items used before the municipality involved had become TSMs.

The robustness of the data in this study is therefore less than that of many of the studies we reviewed. This is because our mandate was to make a template for evaluation that could be used by people who are not researchers. We have therefore focused more on proposing a template for evaluation that is easy to understand and use for people who are not researchers, than to propose a template that is aligned with the soundest scientific principles for evaluation of traffic safety measures. Our data and design are insufficient to assess the effects of Traffic Safe Municipalities.

## Questions for future research

### Increased management focus on traffic safety is key

We have developed and tested a theoretical model of relations between implementation and effect, and which factors can influence the level of implementation in the municipality. The model in Figure S3 is based on interviews, field work, the literature review and research on safety culture.

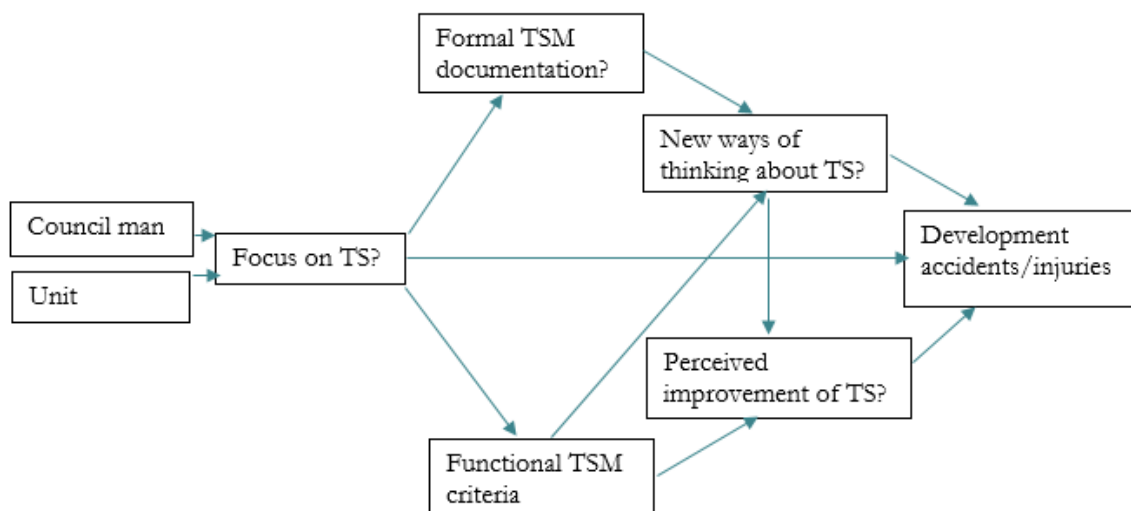


Figure S.3 Theoretical model of how we perceive the relationships between implementation and effect, and factors influencing the degree of implementation in the municipality.

The interviews, the literature study and the safety culture research indicate that 1) Management focus on safety is a key prerequisite for safety measures to have effect. We therefore think that this may influence 2) Formal documentation that the TSM-criteria are fulfilled in the municipality, 3) Functional (known and used) criteria in the municipality and positive development with regard to traffic accidents and injuries. In addition, we think that the level of functional TSM criteria can lead to 4) New ways to think about traffic safety and 5) perception of improved traffic safety. We test, adjust and expand this model somewhat in Chapter 6.4. Bivariate analyses largely support the relationships depicted in the model.

### Relationship between accreditation and traffic injuries?

We do not see any clear relationship between the time of accreditation as TSM and development in insurance claims for material traffic damage in the municipality. The number of material injuries remained stable in 2015 and 2016 in all three municipalities. This is not surprising since the literature review shows it takes several years (five to eight is typical) before effects on accidents of systematic traffic safety work can be observed. The relationship between traffic safety measures and traffic accidents in municipalities is complicated, and is influenced by a range of different factors such as roads, road quality, traffic volumes, type of traffic, road maintenance, and so on. When we look at insurance reported personal injuries in the three municipalities (Figure S4), we see that the numbers are low, with large annual variations.



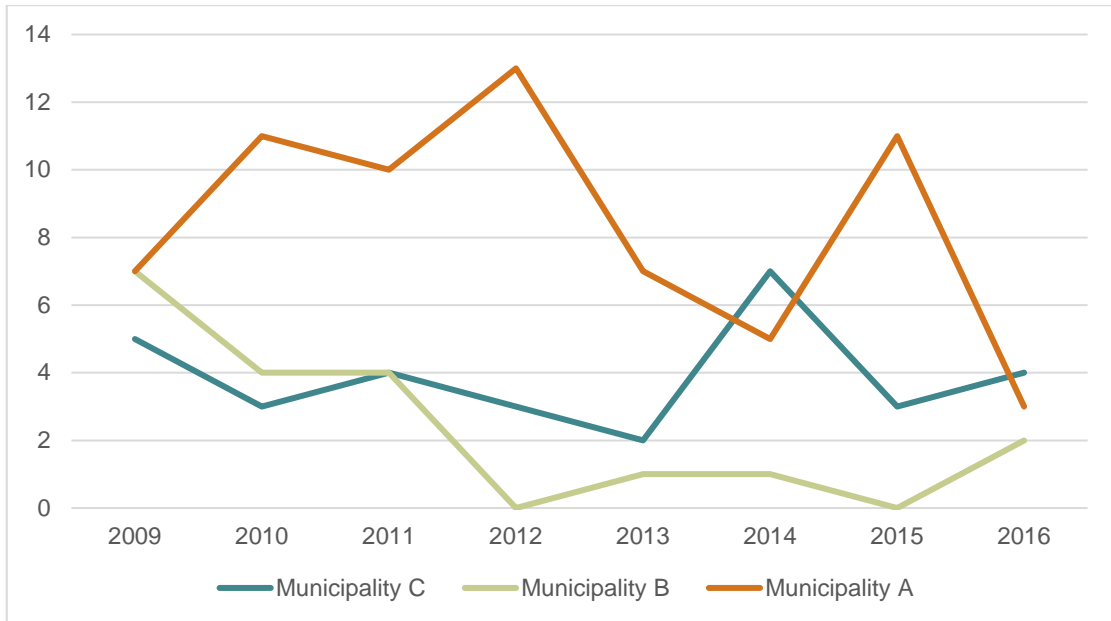


Figure S.4 Number of claims of personal injuries in traffic reported to insurance companies for municipality A, B and C for the period 2009 to 2016. Source: PETRAST

This is a real challenge for evaluating TSM effects based on person injury accidents alone, especially for TSMs with small populations and relatively few traffic incidents. Given the results from the literature study, we can perhaps expect a reduction in certain types of traffic accidents and injuries after five to eight years of accreditation as TSM.