



Barriers to Implementation:

What Prevents Municipalities from Building More Complete Streets and Vision Zero Infrastructure



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EXECUTIVE SUMMARY

The movement for safer and more equitable streets in Ontario has been growing in recent years, with an increasing number of residents demanding improved road safety infrastructure. To meet this demand, municipalities across Ontario have been adopting and expanding approaches in their policies, with two prominent approaches being Complete Streets and Vision Zero. Complete Streets are streets designed to accommodate all road users regardless of age, ability and mode of travel. TCAT has long advocated for the adoption of a Complete Streets approach in municipal policy, and for over a decade now Complete Streets policy adoption has grown. This growth is evidenced by the abundance of policies documented on TCAT's Complete Streets for Canada Website (a repository for Complete Streets policy and case study research in Canada). Of the 44 Ontarian municipalities documented on the website, 42 have adopted complete streets policies, with many having continued to expand their policies further.

The movement towards Complete Streets policy adoption in Ontario started more than ten years ago. In comparison, Vision Zero is a relative newcomer in the province, with most strategies adopted in 2019 or later. Vision Zero is a global road safety movement, originating from Sweden in the 1990s, that aims to reduce all road-related fatalities and serious injuries to zero. This is done through a Safe Systems approach which seeks to understand and address the factors that contribute to road violence. In this approach, collisions are accepted as unavoidable, but fatalities and serious injuries are recognized as preventable and the product of an unsafe road network. Of the 44 previously mentioned municipalities, 18 have a Vision Zero strategy or related initiative.

While this policy growth gives the impression that the Ontario road safety movement is rapidly accelerating, concerns persist for safe street advocates that progress is not happening quickly enough. Many streets are still without sidewalks and people riding bikes continue to feel unsafe. Of the same 44 municipalities, nearly half of them (20) had fewer than three Complete Streets related projects reported on their website, which supports the concern that not enough is being done. Policy is an important step, but safe street advocates care more about what gets built than what policy has been adopted. With no lack of Complete Streets and Vision Zero policies in Ontario, the question arises: what are the barriers between policy and implementation? Accordingly, the following research questions are proposed:

- 1) What is the state of Complete Streets and Vision Zero Policy in Ontario and how effective has this policy been at facilitating the construction of Safe Street infrastructure?
- 2) What is it that still gets in the way of building Complete Streets and Vision Zero infrastructure when municipalities have, theoretically, all the right policy?

This report investigates these questions through two main methods: a scan of Complete Streets and Vision Zero policy and initiatives in Ontario; and a series of interviews with planners and engineers from seven Ontarian municipalities. Policies are found to have increased the pace of implementation to an extent, but there are still major barriers faced by efforts to achieve the stated goals of Complete streets and Vision Zero policies. From the interviews, six themes highlighting the barriers preventing rapid implementation emerged:

1. Policy and guidelines

Current policy was deemed inadequate, with insufficient design guidance and a lack of strong rationales for Complete Streets and Vision Zero. Interviewees stressed the importance of Guidelines, which provide operationalizing details, resulting in internal efficiencies.

2. Cultures of opposition

Car culture remains the dominant perspective in the planning and designing of streets. Interviewees noted how a vocal minority of municipal staff, politicians and members of the public oppose Complete Streets and Vision Zero initiatives.

3. Staff coordination

Interviewees noted how municipal staff can fail to notify Complete Streets and Vision Zero teams about relevant road projects. There is a need to facilitate efficient communication between municipal staff.

4. Budgeting and resources

There were several barriers related to budgeting mentioned by interviewees, including the cost of maintenance for Complete Streets, the need for road widening due to car-centric road planning, and a lack of human resources.

5. Balancing needs

Given the reluctance to implement road diets, interviewees explained how compromises must be reached on which elements are to be implemented, and the location of infrastructure to be installed. The decisions that are made have equity implications.

6. Data

Insufficient means of analysing and distributing data was stressed by practitioners. There is a need for better systems of management, which require greater human resources. Data collection has also faced challenges, such as those posed by COVID.

While each theme presents its own challenges, the first two – policy and cultural opposition – are particularly pronounced and contextualize the other four. With these barriers understood, the hope is that municipalities will take steps to mitigate them.

METHODOLOGY



METHODOLOGY

A policy scan was used to investigate the first research question on the state of Complete Streets and Vision Zero Policy in Ontario. It looked at the effectiveness of this policy at facilitating the construction of Safe Street infrastructure. Interviews were used to investigate the second research question on what gets in the way of building Complete Streets and Vision Zero infrastructure by identifying operational, cultural and systemic issues that may not be apparent from an external vantage.

The scan used a sample size of 46 Ontarian municipalities, which included the 44 Ontarian municipalities documented on the Complete Streets for Canada website, plus 2 others that were part of the potential interview pool (Region of Peel and Caledon) (Appendix, table 1). Municipal planning documents were scanned in search of relevant policies. The documents reviewed include Official Plans, Transportation Master Plans, Active Transportation Master Plans, Complete Streets Guidelines, and Vision Zero/Road Safety Strategies.

The scan looked for explicit or strongly implied adoption of Complete Streets and Vision Zero policy in each document and coded for their presence. Municipal websites were then searched for Complete Streets related projects, such as new sidewalks, cycling facilities, streetscaping, etc. It was determined that a maximum of 3 infrastructure projects would be coded per municipality, as many appeared to be below that threshold. The quality of policy and implemented projects was not assessed, due to time constraints. Because the focal point of this report is infrastructure, Vision Zero research was directed towards engineering countermeasures, although it is acknowledged that many Vision Zero and Road safety strategies in Ontario use an 'E's approach that incorporate other types of countermeasures (most typically education and enforcement).

Where available, annual Vision Zero/Road Safety Reports were consulted to gauge progress on Vision Zero initiatives, although what could be gleaned was limited, given that most Vision Zero initiatives in the province are relatively new. To gauge the impact that the size of municipalities may have on these results, population data was retrieved from Statistics Canada. With the coding complete, descriptive analysis was conducted to identify trends in the data and quantify

the effectiveness of policy.

Following the scan, interviews were conducted with engineers and planners from seven different municipalities (Guelph, Hamilton, London, Markham, Mississauga, Peel Region, and Toronto) to further determine the barriers and discuss their potential solutions. During the interviews, six open questions were asked related to the research topic (Appendix, table 2). Some were meant to provide context about the municipality, and others were meant to reveal what barriers are faced during project planning. Additional probing questions were asked for interviewees to elaborate, clarify and explore topics left undiscussed. From these interviews, six themes were identified as being particularly important.

LIMITATIONS

There are a few key limitations to this research. With the scan, the sample was not random: it mostly comprised of municipalities with preexisting Complete Streets initiatives. Another issue is that the number of a municipality's Complete Streets projects was assessed using publicly available information on each municipality's website, which may not report all projects undertaken. This means the absence of projects found on the website may not have equated to an actual lack of projects. As for the interviews, there are two limitations. Firstly, the number of interviews was small, and a larger number could have revealed more barriers and solutions. Secondly, most municipalities interviewed were from mid to large-sized cities in the GTHA, which may not represent the plight of smaller urban centres and rural communities.



THE STATE OF COMPLETE STREETS AND VISION ZERO

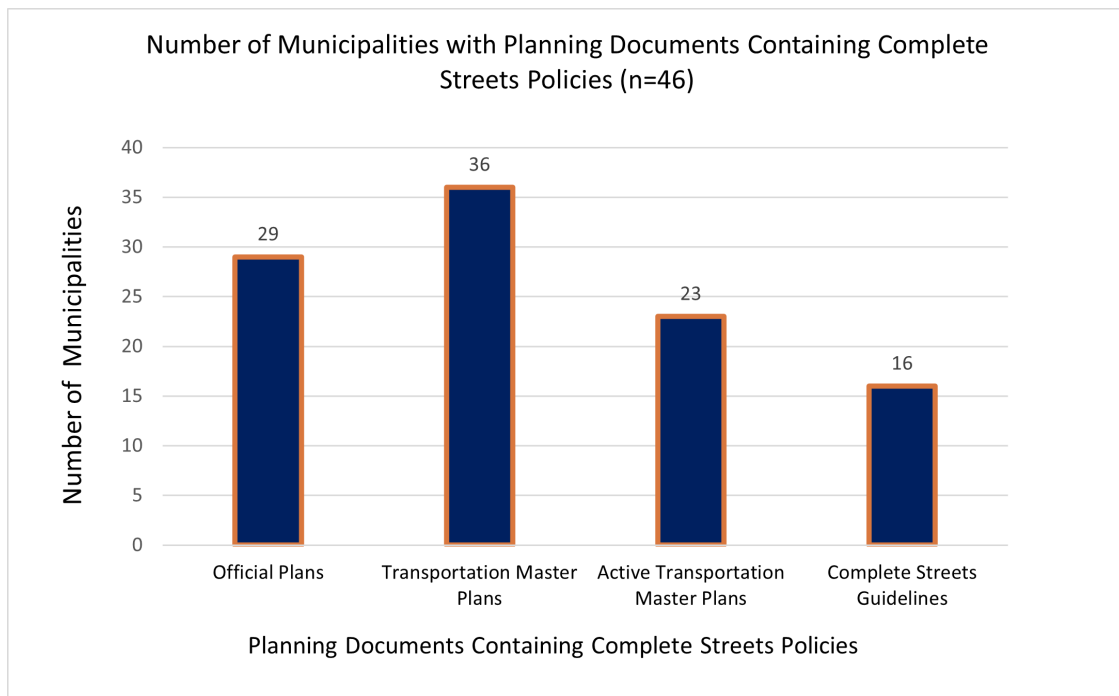


THE STATE OF COMPLETE STREETS AND VISION ZERO

COMPLETE STREETS - PATTERNS BETWEEN POLICY AND IMPLEMENTATION

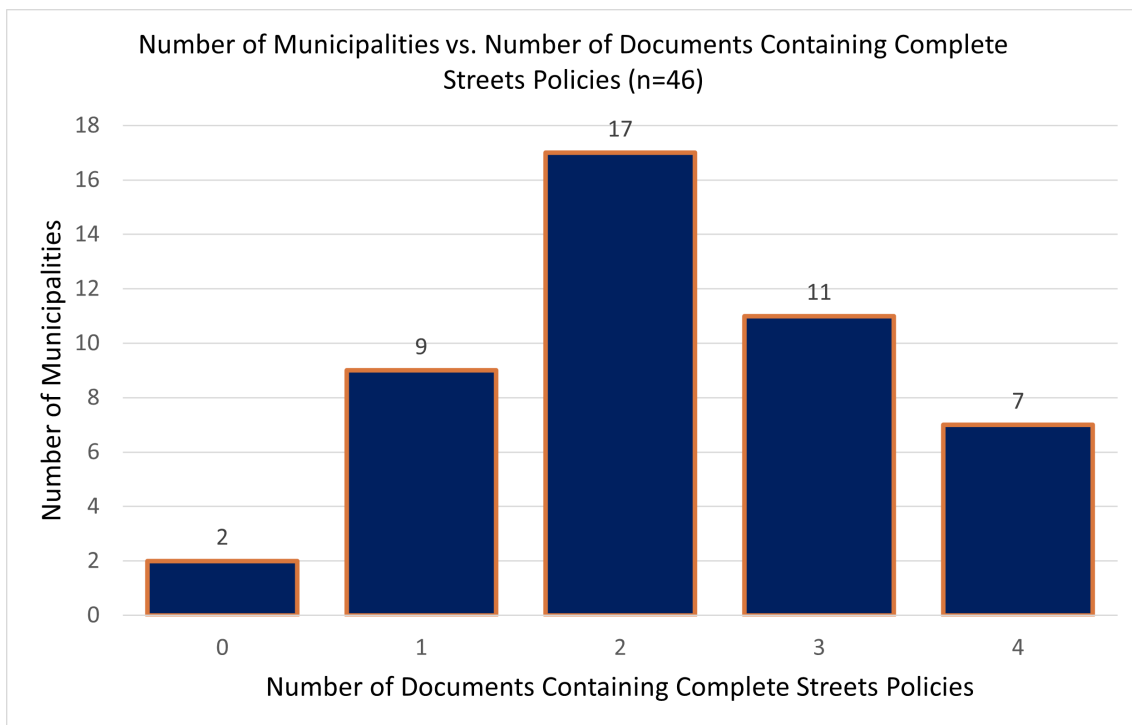
Looking at Complete Streets and Vision Zero policies and projects revealed a great deal about their position in Ontario. To understand which kinds of planning documents provided direction for implementing Complete Streets, three types of plans were analyzed and coded: Official Plans, Transportation Master Plans and Active Transportation Master Plans. The presence of Complete Streets Guidelines was coded as well (figure 1).

Figure 1: A count municipalities who have at least one Complete Streets policy in each of the coded documents. These categories are not mutually exclusive as most municipalities had Complete Streets policies in more than one document.



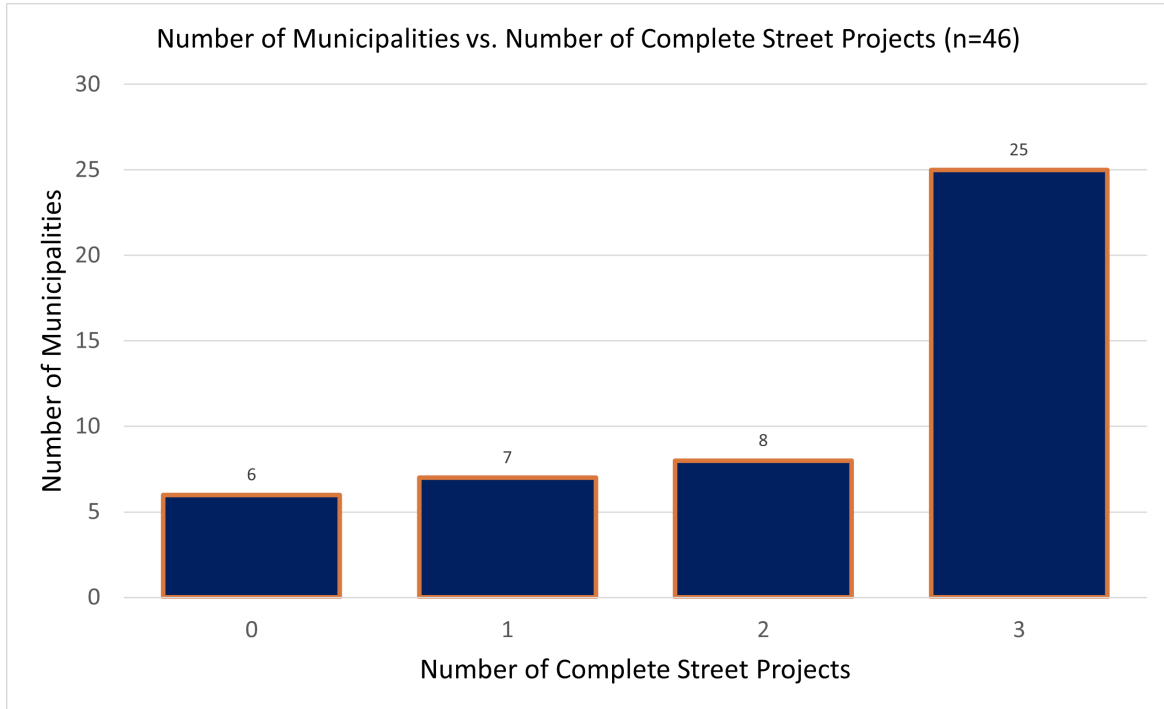
Most sampled municipalities were found to adopt Complete Streets in their Official Plans and/or Transportation Master Plans, while Complete Streets guidelines were the least common document. Municipalities were then sorted according to the number of coded documents containing Complete Streets policies and counted (figure 2). Only 7 municipalities (15.2%) had Complete Streets adoption in all 4 coded documents, while 17 (40%) had 2 documents with Complete Streets adoption (the mode average).

Figure 2: A count of the number of municipalities, sorted by number of documents coded.



To understand how effective these policies have been, municipal websites were scanned for Complete Streets related infrastructure projects. The number of projects (out of a maximum of 3) was recorded and charted (figure 3).

Figure 3: A count of the number of municipalities, sorted by number of Complete Streets projects coded.



On average, municipalities had 2.13 Complete Streets projects on their websites. With some municipalities exceeding 3 projects, this average would likely have been greater with a higher coding limit. Comparing the average number of projects against the number of planning documents with Complete Streets policies revealed a roughly linear relationship (figure 4). For the most part, municipalities with more adoption of Complete Streets across planning documents have a higher average than those with less comprehensive adoption.

Figure 4: A comparison between the average number of Complete Streets projects and the number of coded planning documents.

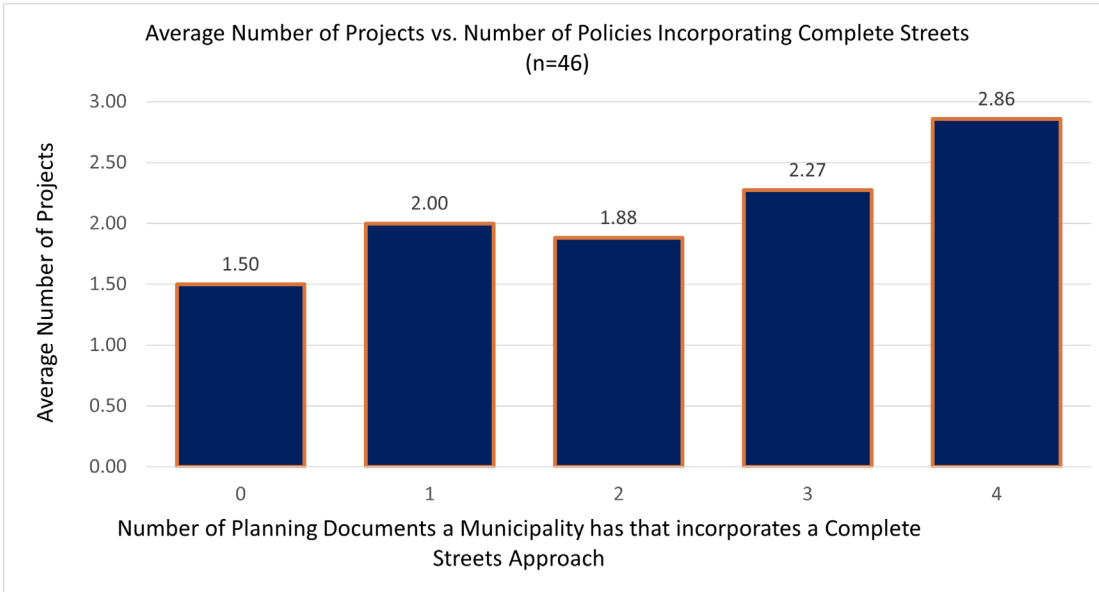
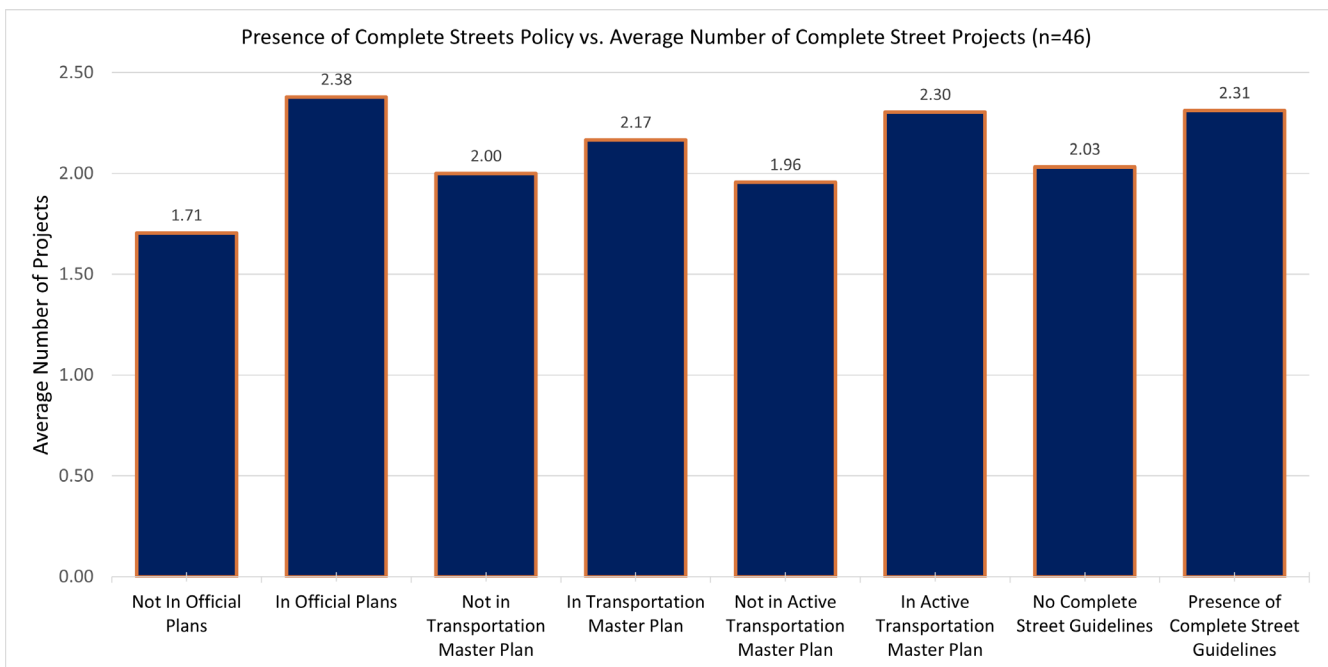


Figure 5: A comparison between the average number of projects and presence of Complete Streets policy in each of the coded documents.

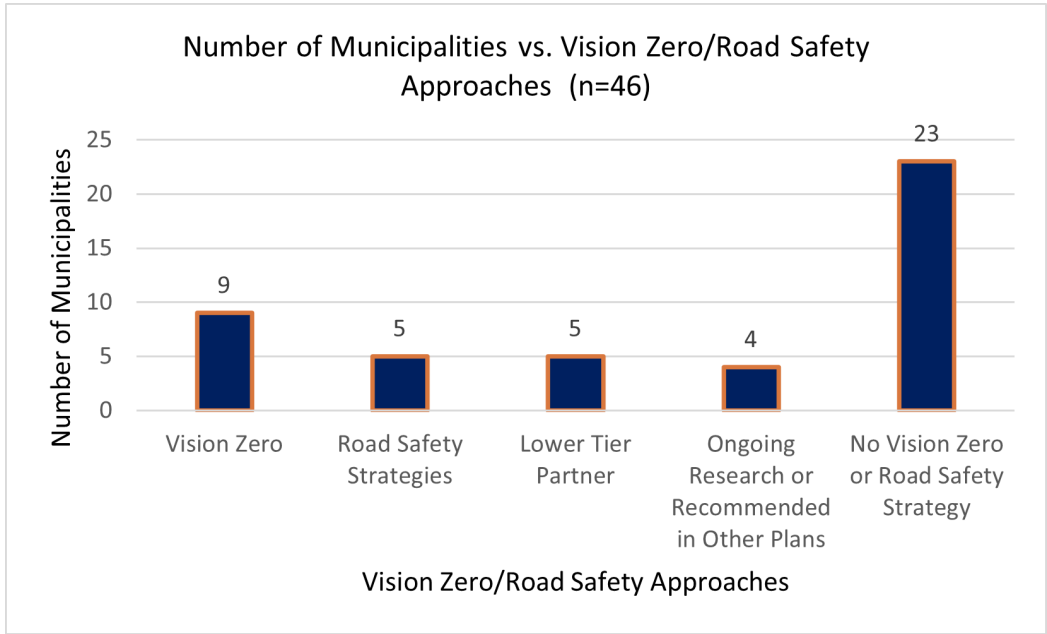


Planning documents were then assessed individually to see which ones resulted in the greatest outcomes (table 5). This shows that while each individual document type appears to have a positive effect on implementation, Official Plans and Active Transportation Master Plans appear to have the greatest impact on Complete Streets project implementation. While more research is required, these findings suggest that Complete Streets policy is effective at facilitating the construction of Complete Streets infrastructure. What's more, there is plenty of room for policy growth, especially with guidelines, which are not widely adopted in Ontario.

VISION ZERO - PATTERNS BETWEEN POLICY AND IMPLEMENTATION

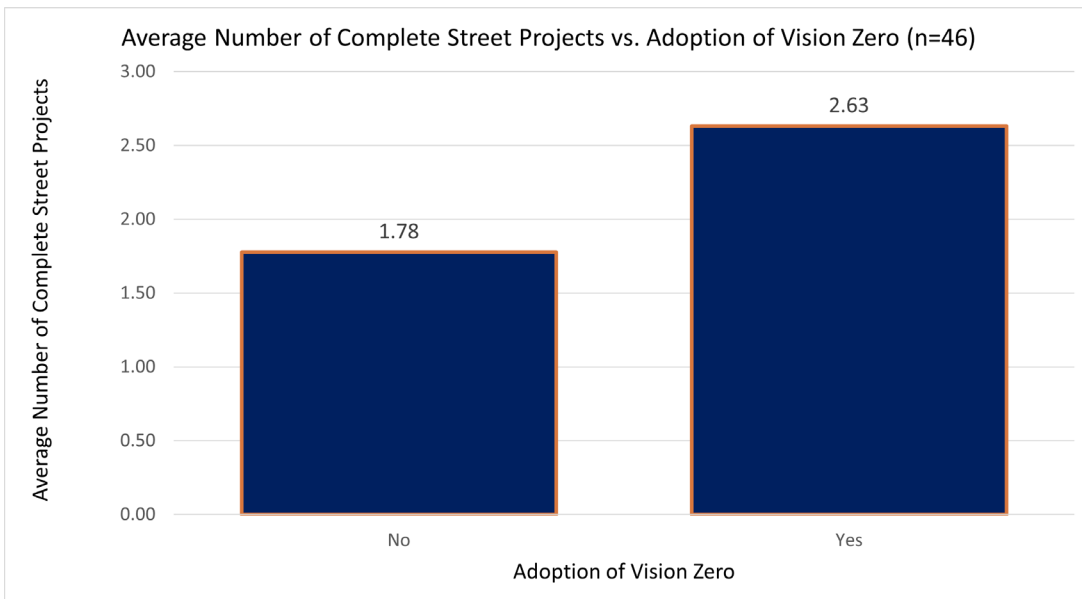
Looking at Vision Zero, municipalities were sorted between those with Vision Zero strategies, Road Safety strategies, partnerships with their upper tier municipalities on road safety initiatives, ongoing road safety research or recommendation in other plans, and those without any such initiatives (figure 6). This revealed that 14 sampled municipalities have a road safety or Vision Zero Strategy. It was difficult to assess implementation of Vision Zero initiatives because they are relatively new in Ontario. Most were only adopted in 2019 or later. The metrics that are available tend to focus on collisions and KSI (killed or seriously injured) collisions as opposed to the amount of built infrastructure. Regardless, comparing the average number of Complete Streets projects between municipalities that did and did not have a Vision Zero initiative was interesting. Municipalities with Vision Zero and/or Road Safety initiatives had a higher apparent effect on the average number of Complete Streets projects than the presence of Complete Streets guidelines, or Complete Streets direction in Official Plans, Active Transportation Master Plans, or Transportation Master Plans (fig. 7). This demonstrates the power of safety as a narrative for safe street implementation and shows the synergistic connections possible between Complete Streets and Vision Zero.

Figure 6: A description of which Vision Zero approaches municipalities have taken, if any.



*Lower tier partners" are lower tier municipalities that do not themselves have a Vision Zero or road safety plan but work collaboratively with their upper tier municipality, which does have such a plan. Some municipalities without a Vision Zero or road safety Strategy had traffic calming policies, but they were not coded here.

Figure 7: A comparison between the average number of Complete Streets projects and adoption of Vision Zero.



KEY TAKEAWAYS AND OTHER OBSERVATIONS

These observations suggest that policy has been at least partially effective in Ontario, but it does not paint a picture of unmitigated success. The effect of each individual policy was not especially encouraging. While this is partly a result of the low maximum number of projects coded per municipality, it should be noted that few municipalities exceeded this maximum. Municipalities with comprehensive adoption of Complete Streets across all 4 coded documents had a high average number of projects, but most municipalities had 2 or fewer documents that contain Complete Streets policies, which resulted in below average performance. It seems policy has played a role in facilitating safe street construction, but there appear to be other factors at play as well.

Some other general observations were noted throughout the scan. Very few projects explicitly referred to Complete Streets and Vision Zero, even though the usage of those terms would likely have strengthened the rationale of the projects. Complete Streets projects were usually siloed under “Active Transportation” sections on municipal websites, and they tended to be outnumbered by non-Complete Streets road work. Despite policy recommendations that suggest that all road resurfacing projects should consider Complete Streets designs (e.g., Hanzlik & Davis, 2023, p. 12), it does not appear that this universal approach is typically practiced.

Being a data-driven endeavour, many Vision Zero strategies include a pledge to release annual reports or data summaries documenting progress (e.g., City of Brantford, 2021, p. 16; City of Kingston, 2019, p. 42). Of the 14 Vision Zero and Road Safety strategies assessed, 9 had such a commitment. Unfortunately, more than half have failed to meet that pledge. This may be due to the unpredictable and significant changes in road usage resulting from the pandemic. With the reports that have been published, results were somewhat mixed, with some finding that overall collisions have decreased, but KSIs had not reduced proportionately. For example, Peel Region saw a 33% reduction in total collisions from 2019 to 2020, but fatal collisions increased 29% over that same period (Region of Peel, 2021, sec. 10.1-2). Nevertheless, when assessing the five-year trends, most municipalities that have released annual road safety reports appeared to be reducing KSI collisions overall.

Besides collision data, these annual reports also featured documentation on the various countermeasures initiated. This tended to be qualitative, describing the processes undertaken by each initiative. Metrics on number, size and location of geometric countermeasures were usually missing (with some exceptions such as Hamilton and Toronto). For example, it would be helpful to know not just that leading pedestrian intervals began implementation, but how many were implemented and where. Even when this information was available, it was usually provided to-date, with no way to assess growth at a glance. Given the expected slow movement in collision data, it would be beneficial to quantify just how much Vision Zero infrastructure has grown, as the collision data itself may create a narrative that little is happening.



INTERVIEW THEMES



INTERVIEW THEMES

Throughout this research, many barriers were identified, of which the following six themes were particularly recurring:

- 1) Policy and guidelines
- 2) Cultures of opposition
- 3) Staff coordination
- 4) Budgeting and resources
- 5) Balancing needs
- 6) Data

Each theme is interconnected, with problems intersecting between them, and possible solutions having implications for multiple themes. Policy and cultural opposition were particularly recurrent and provided a backdrop against which the other four can be understood.

POLICY AND GUIDELINES

As the scan suggested, the presence of policy is an important factor in the implementation of Complete Streets and Vision Zero; a lack of policy is still a barrier for some municipalities. However, for municipalities that do have policies, there remain issues about the effectiveness of these policies without appropriate design guidance and stakeholder buy-in. For example, one interviewee noted how Hamilton had Complete Streets policy in its Official Plan for approximately 15 years but did not have much direction in terms of design and decision making. A policy may say “every street shall be a complete street”, but what does that mean for a particular street? What should the lane widths be? How many benches are appropriate? Are bike facilities necessary? Interviewees also spoke of resistance on each of these individual elements from stakeholders: emergency services may fight the narrowing of lanes out of concerns that their vehicles will not fit. Without stakeholder buy-in, resistance on implementing policy is likely to ensue.

In agreement with the findings of the scan, all interviewees expressed skepticism about the effectiveness of high-level policies (Official Plans, Transportation Master Plans, Active Transportation Master Plans) in facilitating Complete Streets and Vision Zero projects. They noted how high-level policy can lack direction, and that when direction is provided, it may be too ideal

or lack of pragmatism. A list of all the elements that create a complete street is nice, but when retrofitting older streets, it is seldom the case that all of them can fit. A bench, for example, may take up valuable sidewalk space. One interviewee mentioned how overly ideal road designs may be geared towards new road development, where space is not confined, which precludes the reality that road diets are a necessary aspect to retrofit projects. Interviewees noted how this lack of pragmatism can lead to a stalemate in decision making, an underappreciation in the small improvements that can be made, and unideal trade-offs between design elements. Some interviewees observed that not all elements will fit the needs of every community, so there is a need for local level policy that is made with community consultation and buy-in.

The main solution proposed across interviews was the importance of detailed design guidelines. While interviewees indicated that high-level policy provides a good foundation and can help justify projects, their lack of direction means they are not always helpful. Interviewees thought that guidelines were useful because they operationalize and clarify best practice that may only be mandated or recommended by higher-level planning documents. Having cross-sections that demonstrate preferred designs for a given road width makes the job of planning such a project easier. These details reduce confusion and increase efficiency internally. Some interviewees recalled how challenging it was to work on Complete Streets Projects prior to the adoption of design guidelines and were enthused to see the efficiencies resulting from their recent adoption. Guidelines were also indicated to help clarify the desires of a municipality to its partners, external consultants and developers.



CULTURES OF OPPOSITION

Each interviewee cited cultural opposition as a barrier to Complete Streets and Vision Zero. Car culture and the dominance of the automobile continue to influence the way street usage is perceived and planned. There is a persistent reluctance to take space away from automobiles, resulting in vocal opposition to any project that may negatively impact car space. This opposition was noted from many fronts, including municipal staff, politicians, and members of the public.

Despite the presence of policy, interviewees observed that not all municipal staff wholly endorse Complete Streets and Vision Zero. Some examples were given. Senior staff may not see the need to alter their planning and engineering practices. Financing staff may tend to be more conservative in budgeting and question the need for Complete Streets and Vision Zero based infrastructure. Emergency and Public Transit services may object to road diets, with concerns about their vehicles fitting on narrower streets. The result is a work environment that is not conducive to rapid construction of safe street infrastructure, as stakeholder buy-in for each project must be painstakingly built.

While most interviewees felt that this internal culture was changing, they noted that culture change takes time, and the cause of its change can be unclear. A willingness to have open dialogue with oppositional staff was one idea floated during interviews. It is unlikely that any individual conversation will change someone's tune, but the cumulative effect of many conversations may slowly shift opinions. Life experience was also credited for its role in opinion formation. One interviewee shared an anecdote about a colleague who vehemently opposed active transportation infrastructure, but after using an e-bike extensively on a vacation, became significantly more amenable to the concept of cycling facilities. While it is difficult to imagine how a municipality could operationalize such soft strategies, it is important to recognize the role that life experience plays in changing minds so that such experiences can be encouraged where possible.

Interviewees also proposed procedural strategies for changing staff culture, such as training. Having all relevant staff learn about the benefits of, and rationales for, Complete Streets and Vision Zero in a group setting would help staff understand their importance. Opposition may not

be firmly entrenched but may rather be the result of disinterest or misunderstanding. Team meetings were also noted as a method to get staff on the same page, where ideas can be talked through, and resistant staff can have their concerns addressed. Interviewees once again appealed to the need for policy with strong rationales that staff can reference. Because Complete Streets and Vision Zero projects can be contentious, it is important that policy curtails that criticism with strong arguments.

As for public perception, practitioners noted that the public tends to be supportive of high-level plans for Complete Streets and Vision Zero; no one is, in principle, opposed to safer streets. However, interviewees felt that it is during the planning or even construction phase of projects that public opposition becomes pronounced. While it was posited that this opposition was usually the opinion of a vocal minority, it can still represent a strong barrier to implementation. Cited public concerns include loss of property value, wasting of municipal finances, increased traffic congestion, and suspicion about users of active transportation infrastructure in their neighbourhood.

Interviewees noted how in suburban communities, residents often explain that their choice of neighbourhood was to avoid things like bike lanes, which they associate with downtown or Toronto culture. Meanwhile, in urban settings it was noted that the removal of on-street parking was a pain point for residents and local businesses who may cite fears about the loss of access and loss of customers. Nevertheless, opposition is not the only critical voice. Practitioners also referenced the growing public demand for more protection for vulnerable road users, which some thought to be the more difficult criticism to address.

A few strategies were proposed during interviews to address public opposition. Reading the political climate and being pragmatic with decisions was one such strategy. Some practitioners thought that overly ambitious plans resulted in more opposition, with residents fearing the consequences of designs with which they are unfamiliar, especially road diets. Incremental street improvements are thought to decrease the volume of opposing voices, while gradually convincing others of their need. However, such a strategy has issues. It fails to adequately address the public demand for more safe infrastructure and only continues the slow pace of implementation. It may ensure that no project is a failure, but it also means no project is a big

success either. From a Vision Zero perspective, in which the urgency to save lives is paramount, the idea that lifesaving projects should be watered down to calm the concerns of a select few residents is questionable. Nevertheless, in instances of intense opposition, some progress is likely better than none. Because culture shift takes time, some interviewees felt it was best to match that pace when implementing changes to communities.

Frequent communication with the public was another often-cited solution to public opposition: maintaining dialogue with communities can ensure that their concerns are addressed and that the rationale for a project is well understood. Communicating ideas in concrete language is especially important. For example, when advocating for a speed limit reduction, one interviewee noted the effectiveness of the message that a reduction of the speed limit would only have the effect of adding one stop light to the average commute. Communicating in this way made the proposed change more palatable to most commuters when weighing the benefits of safer streets.

Ultimately, the need for strong leadership, especially from council and the mayor's office was what practitioners thought was really needed. If council is in support of a project, then it is likely to happen, but politicians can be risk averse and may overestimate the strength of opposing voices. Others noted the value of community groups and community advocates, which can help elevate the voices of those demanding more.



STAFF COORDINATION

In all seven interviews, internal coordination was discussed as a barrier. They noted how, ideally, municipal staff should be notifying their colleagues when there is crossover with the expertise of other staff. For example, if road reconstruction is initiated to implement new wastewater facilities, then wastewater staff should notify the Complete Streets/Vision Zero teams so that they may provide input on a potential road redesign. Unfortunately, practitioners noted how this coordination may not happen at all or happen too late for effective input. While some interviewees indicated that there are existent protocols that require municipal departments to notify each other of upcoming projects, staff do not always comply. This puts the onus on Complete Streets/Vision Zero staff to monitor and flag projects.

Interviewees did not generally believe this lack of coordination to be the result of internal opposition, but instead pointed to ineffective procedures. For instance, it may not always be clear to staff which projects should be flagged for review and at what point Complete Streets and Vision Zero staff should be notified. With other divisions having their own deadlines, the lack of a structured process means it is easy to ignore seemingly vestigial components of an overall road project. There is some crossover here with the theme of internal opposition – if staff care about safe streets, then they would presumably make the effort to include them in their projects – but better procedures would improve things a great deal.

Some interviewees once again cited the need for guidelines as a solution to this issue. The clear guidance they provide can remove confusion over which projects are to be Complete Streets projects, and their contents can be disseminated into engineering specifications. This way the guidelines are further operationalized into the routine practice of all municipal divisions.

Increased internal communication was another proposed solution, but with busy work schedules, it can be hard for municipal staff to allocate time to information sharing. For the sake of efficient communication, the solution of consolidating staff was discussed. With multiple teams working on different but related projects, there can be many points of communication breakdown; but if consolidated into one team, communication becomes commonplace. Alternatively, interviewees proposed the appointment of a staff member or committee whose job it is to assess and flag road projects for review by Complete Streets and Vision Zero Staff. For example, in Toronto, an

intra-divisional coordination committee was created for transportation services to smoothen communication between teams. This change is relatively new, but it is reportedly already aiding in identifying and prioritizing projects earlier.

BUDGETING AND RESOURCES

Interviewees were mixed on how much the cost of infrastructure was a barrier, with some indicating that funds were adequate for their projects. This may be especially true for Vision Zero initiatives that are partially funded by tickets issued through traffic enforcement. The scan also indicated that funding was not a barrier and showed little pattern between population size (used as a proxy for scale of resources) and the number of projects reported on a municipality's website. The exception is that municipalities with fewer than 80,000 residents had notably fewer average projects than their counterparts. While this pattern likely has several causes (e.g., a lack of density, a lack of apparent demand in less populous municipalities, etc.) it does suggest that a lack of funds is an issue for smaller communities. Nevertheless, interviewees identified other ways in which budgeting can present a barrier to Complete Streets and Vision Zero implementation, including the narratives surrounding budgets, maintenance costs, the cost of acquiring land, a lack of human resources and budgeting timelines.

A lack of funding for the initial stages of a project can create issues. One practitioner noted that councillors rarely reject a fully designed Complete Streets Project, but funding to begin drafting plans and designs is more difficult to come by. With a lack of designs, it is difficult to convey a vision for a safer street. In this light, budgeting is as much a political barrier as it is a resource barrier. The budget is there so long as council is amenable. Narratives surrounding the dominance of the car rear their head here, which leads to discrediting the added value of Complete Streets and Vision Zero improvements. With the accompanying reluctance to consider road diets, there is a created need to widen the road to make more room for Complete Streets additions. This means acquiring space from adjacent properties, which can balloon the cost of a project and push them towards infeasibility.

The issue of added of maintenance costs created by Complete Streets projects was particularly pronounced during interviews. An example provided was how bike facilities are opposed on the

basis that no one bikes in the winter and that it is, therefore, too expensive to plow them and invest in the maintenance vehicles needed. This leads to a chicken and egg problem where there are not enough bike lanes in the network to justify spending money on plows, but without plows, it is difficult to justify building the bike lanes. Sidewalks have many of the same issues. Streetscaping elements were noted for being especially demanding on maintenance resources: street trees need pruning and upkeep, and plants need watering. An example mentioned was the Dundas Complete Streets project in London, which is set to have streetscaping elements removed because of the prohibitive cost of upkeep. The maintenance costs of car infrastructure were not flagged by interviewees as an issue, despite bike lanes and sidewalks being far less costly to maintain than vehicle lanes.

A lack of human resources was noted in interviews, especially regarding staff coordination, communication with the public, and the management and interpretation of data. One interviewee claimed that their team had no lack of data per se, but that there was a lack of staff to interpret and organize the data. The scope of data available for Vision Zero efforts may therefore be minimal. Another interviewee indicated the need to address this problem through partnerships with external researchers and academic collaborators, but budgeting for such projects can remain an issue. Other practitioners noted how communication with the public regarding Complete Streets related concerns is limited by the number of staff hours that can be allocated. While this communication is essential, the budget dictates how much time can be spent communicating and is often not sufficient for good engagement.

The timeline of budgets can present a unique issue too. One interviewee outlined how capital budgets are planned up to a decade out. These budgets have historically been made on the assumption that the road is returned to its previous state once construction is complete, leaving out the potential for road safety improvements. With preliminary designs commencing two and a half years prior to construction, there is a seven to eight year period where the capital budget has not accounted for new best practice in road designs. With newer budgets, this concern will eventually be addressed, but there are budget shortfalls in the interim.

Few budgeting solutions were proposed during interviews. One proposal was to include costing details in policy and guidelines for different Complete Streets design elements, especially for

components. It was noted that without a strong idea of the cost of elements, there is a tendency to underestimate their costs, which means that projects can get watered down, canceled, or have components retroactively removed. Understanding the economic benefits of elements that a traditional street design may consider unnecessary (e.g., urban greenery) would also be beneficial and diminish the perceived cost of installation and maintenance. Ultimately, budgeting issues are a symptom of the political climate, so it is important to further consider solutions to cultural opposition: if it were not for the reluctance to consider road diets, the costly need for widening roads would not be necessary.



BALANCING NEEDS

Each interviewee indicated some challenge in balancing needs and working with competing visions for street space. This theme is contextualized by cultural opposition. For example, the reluctance to remove car space from roads means that decisions must be made between Complete Streets elements. This can create a conflict between the goals of Complete Streets and Vision Zero, and force compromises with the location of infrastructure.

Interviewees noted how the attempt to accommodate all road users can lead to the desire for more space for Complete Streets infrastructure. Given the reluctance to take space away from cars, Complete Streets and Vision Zero planners can be left with a small amount of space for street improvements. Bike lanes may be narrowed to accommodate other uses. Trees may be removed to fit bike lanes. Sidewalks may be converted into multi-use paths to accommodate a greater variety of users. From a Complete Streets perspective, these kinds of compromises are a loss.

A recent project in London was recalled where compromises were made to a Complete Streets road design, in which plans to remove on-street parking to add bike lanes received significant opposition. On this downtown street, local businesses feared a loss in customers and residents feared a loss of access to the nearby park. The resulting decision was to remove the adjacent street trees, instead of the on-street parking, to make room for the proposed bike lanes. This demonstrates how the unique value of urban greenery is not universally appreciated, even though it is a critical component of a complete street: it is seen as a nice-to-have, not a need-to-have.

While there are many synergies between Complete Streets and Vision Zero, even these two approaches can be in conflict. There was an interesting tendency among Complete Streets practitioners to lament the small width of their municipality's streets, while Vision Zero staff tended to see the same streets as oversized. In the face of opposition to road diets, a Complete Streets lens can lend itself to a view that roads need to be widened to accommodate Complete Streets components in addition to unaltered car space. This leads to contradictions with Vision Zero Staff who argued that wider roads are more dangerous and encourage speeding. This conflict is probably because, for Complete Streets, road diets are just one possible strategy to

make more space for additions, whereas in Vision Zero, they are an essential tool to create safer streets.

Deciding which streets to prioritize for improvements was another frequent topic of conversation in interviews. Multiple interviewees brought up the dilemma between prioritizing local roads and higher traffic thoroughfares. With higher speeds on arterials and collector roads, the need to separate vulnerable road users from traffic is clearly needed, and consequently many municipalities prioritize such roads. This approach has its drawbacks though. One interviewee noted how this could be a weakness in Mississauga's approach, as there are many local roads without sidewalks. On the other hand, prioritizing local roads presents other difficulties, with one practitioner noting the issues arising from their municipality's policies that direct all streets to include sidewalks. The result in that municipality has been that every street project becomes a battle with residents. It was noted that when opposition stops the installation of a sidewalk on a particular street, precedent is then created which generates a sense of entitlement for opposers of other sidewalk projects. It was argued that this may direct valuable resources and staff efforts away from more important projects.

During one interview, the approaches used for different types of roads were discussed. Speed humps and chicanes were argued to work well on low volume, local streets but were not considered viable options on high volume arterials. The interviewee noted the equity issue this creates, as the higher socio-economic status residents living on neighbourhood streets get to enjoy the effects of engineered traffic calming solutions, whereas the lower socio-economic status residents living on arterials must settle for enforcement-based solutions. It was noted how this could place a financial burden on equity deserving groups. This plays into car culture narratives, and the purported need for high-speed car movement on arterials, even if that street has other uses besides being a thoroughfare.

When discussing solutions, interviewees continued to appeal to the need for guidelines. They thought that there should be strong and abundant rationale present in guidelines that advocate for streetscaping elements of Complete Streets. Having strong arguments for staff to reference means that staff are not left on their own to justify road elements that opposition may deem expensive and unnecessary. With such rationales, one might expect a more universal

appreciation for streetscaping.

Having more detailed exceptions to Complete Streets policy was identified as helping to create a more efficient decision-making process. Itemizing all the elements, providing instructions on their usage and advising on when their implementation is to be preferred over other elements would help. Overall, many of these issues arise due to the reluctance to take space away from automobiles, and there is a clear need to have strong rationales in place for road diets, in addition to all the other proposals here. When road diets are seriously considered, practitioners can expect fewer compromises between the elements of Complete Streets and Vision Zero.



DATA

The collection, analysis and distribution of data was an important theme during research. For Vision Zero, data is a crucial component, and is used to inform where road safety alterations are needed and to assess their level of effectiveness. COVID posed a challenge for Vision Zero data collection, which was identified as a barrier to meeting evaluation commitments. One practitioner noted how data creates accountability: if Vision Zero countermeasures are proven to work, then questions arise about why the countermeasures are not more ubiquitous. If KSIs are unusually high in a neighbourhood or corridor, the need to act is highlighted. However, the practitioner pointed out that municipalities can be risk averse and recognized that with greater accountability comes a need to spend funds on Vision Zero initiatives. This means there is a monetary incentive for municipalities to avoid an abundance of data (especially public data). Another point mentioned was the unique challenges that an equity lens poses for Vision Zero and data collection. There is a need to understand who the victims of road violence are, who is benefiting from Vision Zero interventions, and who is financially burdened by automated enforcement countermeasures. A lack of demographic data collection in collision reports and from automated ticketing means it is hard to gauge the effects that Vision Zero has on equity-deserving groups. The need for better demographic data is necessary.

Some interviewees mentioned the ever-present request to demonstrate the demand for bike lanes. Unfortunately, in most cases, cycling level of service is not recorded. They noted how rationales are then made based on latent demand, which is not a widely understood concept outside of planning and engineering. This lack of data makes it difficult to justify the addition of cycling facilities, especially in a political climate that undervalues them.

The need for better ways to analyse data was also outlined. In Mississauga, it was indicated that data management systems are analogue, making it difficult to automate most analysis. It was also noted how data is collected and managed by multiple different teams that don't always distribute their findings internally. Consequently, there might be an abundance of data, but there is a lack of capacity to comprehend all of it.

Most interviewees presented the issue of data as an issue of human resources. The need for

more data, better data analysis, and better data management is a matter of having the right staff to accomplish those goals. This ultimately makes the issue of data a matter of funding.





CONCLUSION



CONCLUSION

Complete Streets and Vision Zero policy growth in Ontario has led to an accelerated implementation of infrastructure; but the fact that it is accelerating, does not mean advocates can be complacent. The abundance of policy has created a friendlier environment for the building of safer and more equitable streets, but barriers persist that ensure that the pace of implementation is still slow. Many of the barriers explored in this report had policy and guideline recommendations attached and it is clear there is a great deal of policy growth still to be had. It is important to update policies to newer standards, address procedural issues and allow for greater clarity and flexibility. Nevertheless, it is also important for practitioners to think beyond just policy. Much of the barriers that persist are rooted in cultural opposition and politics. While it has been noted that changing these deeply rooted issues takes time, it is important to think critically about the way these issues can be addressed. Considering procedural solutions and how to further engage communities are important additions to policy changes.

This research demonstrated a further need for transparency in Vision Zero initiatives, and especially in Complete Streets efforts. Scanning municipal websites for projects revealed a scarcity of information on relevant projects. This lack of publicly available information may be a significant reason why the pace of implementation is perceived as glacial. Without extensive information on what is being built, it appears that the policies are not doing much of anything. More summarizing metrics would fulfill this need well, such as linear kilometres of new cycling facilities, or number of leading pedestrian interval traffic lights implemented.

A few topics for future research are worth considering. The topic of overly ambitious plans and policies and their effects on the amount of backlash is one such topic. Some interviewees noted that a slower and pragmatic approach to Complete Streets and Vision Zero results in lessened opposition. While this approach may prevent cancelation of a project, it also ensures that projects are routinely watered down and slow to implement. For this reason, it would be worth analysing the effectiveness of such a technique, and considering alternative methods that may not have the same adverse effects. Another area that needs further research is the effectiveness of Complete Streets and Vision Zero policy. The results of the scan convey an interesting narrative but are inconclusive regarding cause and effect. It would be interesting to expand this research and introduce statistical methods of analysis to demonstrate the effectiveness of different policy approaches.

Despite the challenges discussed in this report, it was refreshing to hear the optimism expressed by practitioners. Each noted the changes that they have witnessed over the course of their career. One interviewee mentioned the growing acceptance of road diets, while another cited the expanding number of examples of Complete Streets to reference. One practitioner noted a doubling of mode shift in Hamilton from 2016 to 2020 and hoped to see this trend continue. Concepts of equity are becoming more embedded into safe street practice as evidenced by research mentioned in interviews. With these examples, it seems evident that Complete Streets and Vision Zero implementation will continue to evolve in the coming years.



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APPENDIX

1. A list of all municipalities sampled in the scan.

Ajax	Grey County	Mississauga	St. Catharines
Belleville	Guelph	Niagara	St. Thomas
Brampton	Halton Hills	Oakville	Stratford
Brantford	Halton Region	Ottawa	Thunder Bay
Bruce County	Hamilton	Peterborough	Toronto
Burlington	Hastings County	Prince Edward County	Vaughan
Caledon	Kawartha Lakes	Region of Peel	Waterloo
Cambridge	Kingston	Richmond Hill	Wellington County
Clarington	Kitchener	Sarnia	Whitby
Cornwall	London	Sault Ste. Marie	Windsor
Durham	Markham	Simcoe County	
Greater Sudbury	Middlesex County	Smiths Falls	

2. All 6 questions asked during interviews.

What relevant policy, plans and commitments have been made in your municipality, and how would you describe the action that has taken place regarding Complete Streets/Vision Zero?

In your experience, what combination of Complete Streets/Vision Zero policies result in the best outcomes?

Have there been any promising Complete Streets/Vision Zero projects in your municipality that were cut short? If so, what got in the way? What enabling factors are missing?

When planning road maintenance and construction, how often is a Complete Streets/Vision Zero approach up for consideration?

In your opinion, what have been the primary barriers between Complete Streets/Vision Zero policy and implementation in your municipality or elsewhere?

In ten years, what do you anticipate being the state of Complete Streets/Vision Zero in Ontario/your municipality?



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