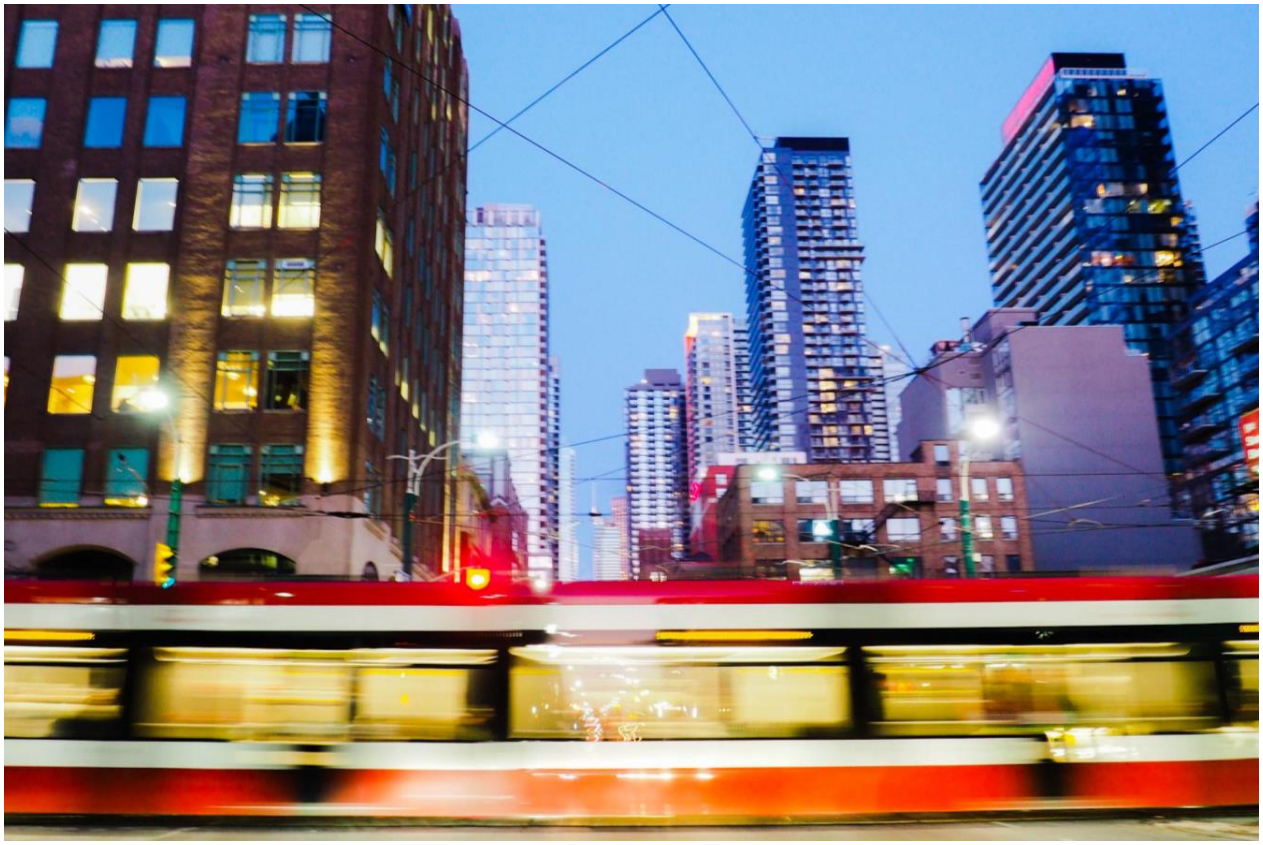

# Sustainable Commuting: Workplace Supports

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TORONTO

munk school
OF GLOBAL AFFAIRS & PUBLIC POLICY

UNIVERSITY OF TORONTO

# Introduction/Background

In 2017, the City of Toronto adopted a new and ambitious climate action strategy called TransformTO. The overarching goal of TransformTO is to reduce greenhouse gas emissions in Toronto, which will also improve the health of the population, foster economic growth and social equity, and lessen traffic congestion. Some of the TransformTO goals for 2050 include: 1) reducing greenhouse gas emissions by 80%, 2) 100% of all vehicles using low-carbon energy, and 3) 75% of all trips under 5 km being walked or cycled (City of Toronto, 2017b).

Currently, transportation generates approximately one-third of all local greenhouse gas emissions, and the City seeks to significantly decrease this number over the next 30 years. Furthermore, a vast majority of Torontonians describe transportation as one of the most salient issues, and congestion is one of the primary reasons contributing to this perception. Toronto's congestion issues can be explained by the inefficient use of the roads, as 56% of people commute by car alone (Campbell, 2018).

In order to achieve a low-carbon transition, it is key that people's commuting behaviors change. As major employers, large Toronto-based companies and organizations are in a unique position to incentivize their employees to switch to more sustainable modes of transportation, such as biking, transit, and walking, and to smart commute options such as carpooling, teleworking, and electric mobility. However, it is unknown how pervasive the promotion and support of these sustainable modes are in large workplaces across the city of Toronto outside of the Smart Commute program, and more data needs to be collected. In our project, we seek to gain a better understanding of how major companies and organizations located in Toronto are incentivizing their employees to use more sustainable modes of transportation, and what motivates them to do so.

# Final Scope of the Project

1. Survey of Toronto-based employers' practices of incentivizing their employees to use sustainable modes of transportation
2. Identification of the local best practice
3. Recommendations based on the main findings/key takeaways of the survey and online research

# Methodology

We constructed a survey which inquired about how employers incentivize their employees to use sustainable modes of transportation. This survey was successfully received by about 150 employers of various different sectors (creative/tech, health, government, education, finance and other/charities/NGOs). We have received 29 responses which equals to about a 20% response rate. The survey has proven to be useful because of three reasons: 1) it showed us the current situation in Toronto, 2) it enabled us to visit or call the most engaged companies and pick the local best practice (Blackberry), and 3) we devised some of the recommendations based on the survey's main findings/key takeaways.

# Main Findings

## Online Survey

(For detailed survey results, please see Appendix A)

Overall, the tech/creative sector and charities/NGOs displayed high survey response rates and were particularly engaged with the survey. Additionally, these two sectors scored above average in terms of incentivizing their employees to use sustainable modes of transportation.

For Smart Commute, it is thus essential to recognize and acknowledge the different levels of interest in sustainable commuting between the different sectors. More innovative/socially conscious companies and organizations are evidently more likely to engage in such conversations, whereas other companies do not seem to perceive it as their responsibility how their employees commute to work.

**Biking and Walking Infrastructure**

A majority of the respondents indicated a basic level of biking infrastructure with both covered/unsecured and covered/secured bicycle parking. Other infrastructure (showers, lockers and changing facilities, bike repair stations) is, however, much scarcer.

A key finding of both the online as well as phone survey was that especially smaller companies/organizations often do not have control over their building their offices are located in. Companies/organizations can thus not necessarily provide facilities, even if they want to (lower scores despite interest), and other companies/organizations simply have these facilities because they were already provided (higher scores despite no interest, 'free riding' on existing infrastructure).

This has several implications:

- The presence of facilities alone does not signify a company's interest in fostering sustainable commuting, and vice versa, the absence thereof does not necessarily signify the lack of interest of a company/organization to support such programs
- Landlords/property managements are important points of contact
- Infrastructure should already be considered in the planning of new office buildings

**Parking Infrastructure**

In our survey, we found that free parking is offered by 31% of all employers. This is detrimental to sustainable commuting for two reasons: 1) employer-offered free parking increases drive-alone rates (Shoup, 2017), and 2) sustainable commuting won't increase if free parking remains to be offered by employers (Hamre & Buehler, 2014). We will elaborate on both of these notions later in the report.

**Public Transit**

A majority of companies/organizations offers little to support the use of public transit. One respondent indicated that they attempted to receive a corporate discount for Presto passes, but they were told that this is not possible. Some few employers (partially) cover the fees towards a transit pass.

Thus, it is not necessarily a lack of interest in such programs, but could also be due to the difficulty to receive discounts.

**Financial Incentives for Sustainable Commuting/Shuttles**

A very minimal amount of employers offer financial incentives to employees who use public transit (14%), carpool (0%), or walk/bike to work (10%). None of the respondents indicated any other financial incentives for sustainable commuting. Only 10% of employers offer shuttle services for their employees. These low numbers of financial incentives for sustainable commuting/shuttles are further offset by employer-offered free parking as mentioned above.

**Information/Education/Events**

Of all respondents, even the basic provision of information regarding sustainable commuting is provided only by 48%, about 40% indicated they participate in events such as Bike to Work day, but only 5 respondents indicated that ongoing support such as buddy programs are offered.

A respondent in the phone survey indicated that one of the major challenges is to engage the employees, and to keep them engaged. Learning opportunities are relatively low-cost, but can have a major impact.

Thus, there is a great opportunity to improve the level of information provided.

### Flexible Working Hours and Compressed Work Weeks

In our survey, we found out that flexible working hours (76%) are offered by employers more frequently than compressed work weeks (21%). This is an issue as flexible working hours only deal with alleviating rush hour congestion while compressed work weeks allow employees to not commute five times a week.

### Reasons to support sustainable commuting

**13. If your organization supports sustainable commuting in any of the ways outlined in these survey questions above, please rank the reasons for doing so from highest (1) to lowest priority (7)?**


Of all respondents, improving employees' health has been weighted as the most important factor to support sustainable commuting, followed by employee retention.

However, the motivation on the side of the employer only captures one aspect; the reasons for an employee to switch to more sustainable modes of transportation are evidently a key factor that should be considered. A study in Copenhagen has found that the most important factor for local people to commute to work with a bike was the convenience of it (56%), and health concerns were only secondary (19%), the cost (6%) and environment (1%) being comparatively irrelevant factors (Colville-Andersen, 2018).

Thus, the importance to consider the needs and motivation of the employees is of crucial importance, which was also underlined in a personal conversation with one of the respondents.

## Follow-up Interviews

Based on the survey, we identified four interesting companies/organizations for follow-up interviews.

Some of the key findings from these conversations were how the provision of infrastructure was often not a conscious decision by the company/organization, but were already included in the rental object. The existence of infrastructure was then not complemented by offering incentives

as well as engagement. In other cases, it was indicated that the company/organization would like to offer better infrastructure, but had no control over this aspect.

Overall, three of the four respondents indicated a great interest in improving their policies. In addition to not having enough control over the infrastructure, other obstacles that were mentioned were the difficulty to receive corporate discounts for public transit. However, they also see offering financial support for public transit as the ideal way of incentivizing employees to reconsider driving to work alone.

Some of the respondents had experience working with Smart Commute or considered working with Smart Commute, however, they noted a lack of back and forth engagement, as well as a perceived lack of value-for-money.

## Key Take-Aways

1. Better to take a holistic approach, which is **cross-mode** and includes **multiple actors**
2. Better incentives and infrastructure are not enough as long as **free parking** remains
3. Incentives and infrastructure need to be complemented with **continuous engagement**

# Recommendations

## 1. An Integrated Approach: Infrastructure, Incentives and Engagement

Note: Based on the local best practice example of Blackberry, information gathered both from the survey as well as a personal conversation.

| | **Blackberry** |
|---|---|
| **Summary/Objective of the policy** | 'Getting the individual out of the car', combination of offering the right infrastructure, incentives as well as engagement |
| **Policy points** | ▪ Annual survey to establish the commuting patterns, as well as their needs<br>▪ Identification of 'special needs', such as employees with children<br>▪ Provision of monthly lunch events regarding sustainability, including financial incentives to attend those<br>▪ Annual survey of experience with these events<br>▪ Commuting Action Plan, aiming to drop drive-alone rate by 15%<br>▪ Continuous engagement with the local region<br>▪ Information shared on posters, email signatures, newsletters, word of mouth |
| **Key Take-Aways** | ▪ Strong involvement of the employer as an important motivator for employees<br>▪ HR as the key actor within company/organization<br>▪ "People who bike are the happiest and most productive employees" - BlackBerry sees a direct benefit in fostering sustainable modes of transportation<br>▪ For a company to engage its employees, they need to be engaged themselves. Some companies do not see |

| | |
|---|---|
| | it as their responsibility, and they need to be engaged first |
| **Effectiveness/Cost** | ▪ Effectiveness measured via surveys and participation rates in events. They always have waitlists for events.<br>▪ Cost: unknown/flexible<br>▪ KPIs: Number of survey respondents, number of participants in events, improvement is self-declared by employees |

The example of BlackBerry is characterized by strong leadership and a serious commitment to changing the behaviour of their employees. Evidently, this is a best practice example other companies and organizations cannot copy directly, however, there is certain overall key elements that can be applied more generally:

First, infrastructure, incentives and engagement are seen not as single pillars, but as deeply interconnected factors that all shape and strengthen each other. Fostering only one is not sufficient, they all need to be considered, as they strengthen each other.

- **It is thus recommended that a company/organization always considers the three different aspects at once and explores how they can strengthen each other**

Second, based on the survey, many companies/organizations have a basic level of infrastructure, but little is done in terms of engaging their employees. However, engagement is crucial to change behaviour and to break habits, but companies/organizations might not be aware of the importance of this aspect.

However, studies show that habits and past use are some of the strongest predictors for an individual's choice of travel mode, and that while investments in infrastructure and financial incentives are of crucial importance, they need to be complemented with communication and behaviour change strategies (Mundorf, Redding, & Paiva, 2018).

Of all survey respondents, even the basic provision of information regarding sustainable commuting is provided only by 48%, about 40% indicated they participate in events such as Bike to Work day, but only 5 respondents indicated that ongoing support such as buddy programs

are offered. Thus, not even half are even offering information, and other forms of engagement are even more rare.

- **It is thus recommended that the importance of engagement is highlighted by Smart Commute**

Third, there is a lot of flexibility and many different opportunities how a company/organization can engage their employees, and depending on the current level of engagement, a company/organization can scale up their efforts at a speed, cost and extent that is feasible for each individual case.

- **A crucial first step is the introduction of an at least an annual survey, to establish commuting patterns, special needs, and to evaluate change over time**

## 2. Adoption of Parking Cash Out and Commuter Benefits Laws

| | | |
|---|---|---|
| **Issue in Toronto** | Free parking, which increases the drive-alone rate, is offered by 31% of employer survey respondents | Commuter benefits/sustainable transportation incentives are offered by a minimal amount of employer survey respondents |
| **Policy** | **1992 California Parking Cash Out Law** | **2008 San Francisco Commuter Benefits Ordinance** |
| **Objective of the policy** | Decrease employer-offered free parking | Increase the amount of employees who are being offered commuter benefits |
| **Summary of the policy** | Employers, who provide free parking, are required to give their employees an option to give up their parking spot for monthly cash payments | Employers are required to provide a commuter benefits program to their employees |
| **Effectiveness/Results** | Proved highly effective in Santa Monica, City of Austin Pilot, and a 1997 LA study | Proved highly effective in San Francisco with significant CO2 and VMT reductions |
| **Costs to Employers** | No costs to employers | No costs to employers if pre-tax benefits are chosen |
| **Recommendation** | In Toronto, each employer would be subject to only one of the two policies, depending on their circumstance | |

In our survey, we found out that employers offer free parking (31 percent) more frequently than any sustainable transportation incentives/commuter benefits such as discounted transit passes, shuttle services, or financial incentives for employees who bike, walk, carpool, or commute by public transit to work (see Figure 1).

This finding is problematic because of two reasons: **1)** employer-offered free parking increases the number of single drivers, and **2)** sustainable commuting won't increase if free parking remains to be offered by employers.

Firstly, employer-offered free parking invites employees to drive alone to work (Shoup, 2017). An early 1990s Los Angeles study found out that "free parking at work increased the number of

drivers by 34%" (Shoup, 2017). Similarly, a Washington D.C. study found out that 73% of employees, who are offered free parking by their employer, drive alone to work, while only 23% of employees without free parking do so (see Figure 2) (Balding, 2017). This is a massive 50% difference. Furthermore, one anecdote from the D.C. area showcases the high value of free parking: John Smith spends an hour and twenty minutes in his car commute rather than taking the Metrorail just because his employer offers him free parking (Di Caro, 2017). This shows that the value of free parking is greater than the cost of riding transit. Finally, in Toronto 56 percent of employees drive to work alone (Campbell, 2018). This not only contributes to increased amounts of emissions but also to air pollution and increased congestion. Because of this inefficient use of the roads, 17 percent of Toronto employees spend more than an hour to get to work (Campbell, 2018). Because of all these reasons, the figure of 56 percent of lone drivers needs to significantly decrease.

Secondly, sustainable commuting won't increase if free parking remains to be offered by employers. If an employer offers both free parking and transit/bike/ped incentives/benefits, the vast majority of employees (86.8%) still drive alone to work (see Table 1 and Figure 3) (Hamre & Buehler, 2014). In a scenario where no benefits are offered, 75.9% of employees drive alone to work (see Table 1) (Hamre & Buehler, 2014). This is a surprising decrease from the previous scenario where commuter benefits are offered in tandem with free parking. This again shows the incredible high value of free parking and employees unwilling to commute more sustainably when free parking is offered. The ideal scenario occurs when only transit/bike/ped benefits are offered as only 25.6% of employees drive alone to work (see Table 1) (Hamre & Buehler, 2014). However, when only free parking is offered, 96.6% of employees drive to work alone (see Table 1) (Hamre & Buehler, 2014). This scenario is currently typical of Toronto where almost none of the employers offer commuter benefits while some employers offer free parking. This means that the current situation in Toronto must drastically change.

Based on the survey findings and the two reasons stated above, two things need to change in Toronto in order to significantly reduce emissions, air pollution, and congestion: **1)** employer-offered free parking has to decrease, and **2)** commuter benefits/sustainable transportation incentives need to be offered to more employees. Fortunately, there are two laws/policies (best practices) which already deal with these two issues. The 1992 California Parking Cash Out Law aims to decrease employer-offered free parking, and the 2008 San Francisco Commuter Benefits Ordinance aims to increase the number of employees that are offered commuter benefits. Next, these two laws and their effectiveness will be described before proposing a policy recommendation which is a combination of these two laws.

The **1992 California Parking Cash Out Law** requires employers, who offer free parking, to give their employees an option to give up their parking spot and receive a certain amount of cash

which would equal to the cost of renting that parking spot (Shoup, 2017). This means that the parking cash out is cost-free for employers as they only transfer the parking rent expense to their employees in a form of a taxable income. This taxable cash amount could be spent on a transportation alternative such as transit, carpooling, or biking (Shoup, 2017). However, in California, only certain employers are subject to this law: those who have over 50 employees, provide free or subsidized employee parking on leased spaces (not owning), and are able to reduce the number of leased parking spaces without financial penalty (not renting parking spaces in bulk) (Shoup, 2005).

The parking cash out has been proven to effective in numerous studies. For example, a 1997 study of eight employers in Los Angeles showed that the amount of solo drivers decreased by 13 percent after the parking cash out was implemented (see Figure 4) (Shoup, 2017). In turn, carpooling increased by 9 percent, and transit use increased by 3 percent (see Figure 4) (Shoup, 2017). In 2012, the City of Austin piloted the parking cash out on their employees for eight months (City of Austin, 2012). In total, 27 City employees participated which is a 7.14% participation rate (see Table 2) (City of Austin, 2012). Even with this small participation, the resulting environmental benefits were massive: 1634 trips were avoided, 20,436 vehicle miles were avoided, or 21,238 pounds of GHG were reduced (see Table 3) (City of Austin, 2012). The cash incentive and wanting to help the environment were the main reasons to participate in the parking cash out while 21% of participants were already using alternate commute (see Table 4) (City of Austin, 2012). Finally, the main reasons to not participate in the parking cash out pilot were: errands before/after work, no reasonable transit options, or preferring to drive own car, amongst others (see Table 5) (City of Austin, 2002).

The state of California authorized local jurisdictions to enforce the law through financial penalties (Shoup, 2017). However, Santa Monica is the only city in California that currently enforces the law (Shoup, 2017). 33 employers in Santa Monica are subject to the law, and, at some of these firms, more than 50% of employees have given up their parking spot for monthly cash (Shoup, 2017). In total, about 20% of employees of all of the 33 employers opted for the parking cash out (Parking Policy). A Santa Monica financial services company's drive alone rate dropped from 91% to 56% after the implementation of the parking cash out choice to their employees (Hill, 2002). The city of Santa Monica started enforcing the parking cash out law in the year of 1996 (Parking Policy). With the implementation of the law, the city set a goal of increasing the average vehicle ridership to 1.5 (Bhatt & Ryan, 2014); in 1993, the AVR was only 1.13 (1.37 in 1996), and in 2005 the City surpassed its goal as the AVR increased to 1.59 (see Figure 5) (Sustainable Santa Monica).

The **2008 San Francisco Commuter Benefits Ordinance** requires employers to offer a commuter benefits program that incentivizes their employees to use sustainable modes of

transportation instead of driving to work alone (SF Environment). Every San Francisco employer with more than 20 employees is subject to this law (SF Environment). There are three options or ways of offering commuter benefits: 1) pre-tax benefits: an employee sets aside a certain amount of cash from their taxable income for their transportation expenses, saving money on transit or carpooling expenses in this way, 2) employer-paid benefit: the employer directly pays for the employee's transit or carpooling expenses, and 3) employer-provided shuttle: the employer directly provides transportation for their employees, for example, in the form of a shuttle (SF Environment). This law is enforceable through fines of up to 800 dollars (SF Environment) if the employer doesn't annually report compliance (511).

As of 2013, 23% of San Francisco employees are taking advantage of their employer-offered commuter benefits (SF Environment, 2013). The policy has proven to be very effective. In 2013 alone, almost 300,000 metric tons of C02 were reduced and the average daily VMT reduction was at almost 3 million miles (see Table 6) (SF Environment, 2013). Finally, the pre-tax benefit is the most popular (77%) commuter benefit provided by employers (see Figure 6) (SF Environment, 2013). However, in the U.S., this pre-tax benefit is based on the U.S. federal tax code which enables employers to offer it to their employees (CUTA, 2005). The Canadian tax code does not include this, and several organizations have been pushing the CRA since 1995 to update the federal tax code so that pre-tax commuter benefits can be offered to Canadian employees (CUTA, 2005).

This leads us to our policy recommendation to the City of Toronto. Enforcing both laws to all employers wouldn't be the most sensible idea. The example of Washington D.C. demonstrates the failure of enforcing both laws to all employers. In 2014, D.C. implemented its commuter benefits law and in 2017, D.C attempted to enforce the parking cash out law to all employers (Di Caro, 2017). Employers heavily protested the latter bill; for example, employers who have leased parking spaces in bulk argued that they cannot get rid of individual parking spaces in order to pay money to employees who give up their parking spot (Di Caro, 2017).

**Policy Recommendation to the City of Toronto**

We recommend that each employer would be subject to only one of the two policies, depending on their circumstance. The Parking Cash Out Law would be only enforced on employers who provide free or subsidized parking on leased spaces, can reduce the number of leased parking spaces without financial penalty (do not lease in bulk), and have at least 10 employees. All other employers (above 10 employees) would be only subject to the Commuter Benefits Law. Both of these laws would be enforced through fines. However, pre-tax benefits are currently unavailable in Canada; it is needed that a change occurs on the federal level (CRA updating its tax code) so that the City of Toronto could enforce its commuter benefits law. As of today, only the parking cash out law could be implemented and enforced.

One modelling study displayed the effectiveness of this parking cash out and commuter benefits combination (Sethi, 2017). In this study, the researchers tested the effectiveness of six different scenarios: one of them being a combination of parking cash out for employers who offer free parking and commuter benefits for employers who don't offer free parking. Out of the six different scenarios, this combination showed the highest VMT reduction (see Figure 7) (Sethi, 2017).

## 3. Increasing the visibility of biking as a relevant mode of transportation with systematic data collection

| | **Seattle** | **Calgary** |
|---|---|---|
| **Objective of the policy** | Creation of ridership baseline to "[…] assess the future years and to help ensure that investments are helping their goal of quadrupling ridership by 2030" (Seattle Government, n.d.) | To collect data to help with planning and managing of bicycle infrastructure and to observe trends (City of Calgary, 2014). |
| **Policy points** | ▪ 24/7/365 bicycle counters by Eco Compteur<br>▪ Data is uploaded once a day at 5 am to dedicated website | |
| **Key take-aways:** | These counters have enabled both cities to gain a better understanding of the situation in their city. As the City of Calgary (2014) notes, "We are now able to see how bicycle traffic varies with the weather, by day of the week, and by season, something that was not possible previously". | |
| **Cost/Effectiveness** | ▪ Effectiveness: difficult to measure, as they support the overall policy making of the City<br>▪ Cost: circa $25000-$35000 per Eco-Totem (Klingbeil, October 26, & 2016, 2016)<br>▪ KPIs: Number of bikers/achieving of own goals, monthly website traffic on public webpage | |

Bicycle infrastructure, such as separate biking lanes or the clearing of bike lanes from snow, are of crucial importance to incentivize more people to bike, as they significantly increase the safety.

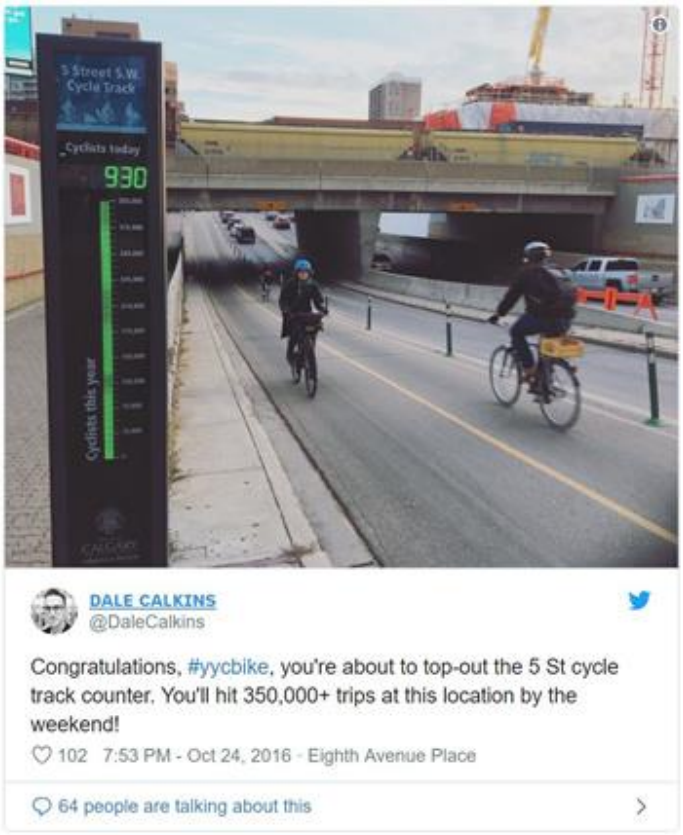
However, it has historically been proven difficult to improve the bicycle infrastructure in the City of Toronto.

Currently, bicycle countings in the City of Toronto are done manually, not on a consistent basis and rely heavily on the support of volunteers. This necessarily results in a lack of comprehensive data, such as changes over the day, weeks and months. It does not account for the impact of construction sites as well as the impact of seasons and the weather, which leads to misconceptions such as that bike lanes in the winter are not used (Koehl & Caputo, 2017).

Numerous cities around the world, however, rely on automated counting technology, including the City of Seattle as well as the City of Calgary. Both cities have installed multiple so called 'Eco-Totems', produced by the Montreal-based company Eco Compteur. These bicycle counters count all bikes 24h a day, 365 days a year. The data is available to the public online, and each totem shows the daily as well as yearly count of bicycles passing by. The data is thus easily accessible and on display throughout the city on a daily basis, and also serves as an important messaging tool to the public (Eco-compteur, 2019).

Data and hard facts are of crucial importance to plan and manage bicycle infrastructure as well as to lobby for future investments, and they help to combat misconceptions (City of Calgary, 2014; Klingbeil et al., 2016; Seattle Government, n.d.):

- **It is thus recommended that the City of Toronto starts to use such automatic bicycle counters at select locations, such as on Bloor Street**




An example of an Eco-Totem standing in Calgary, and how it is used as a messaging tool to celebrate a local milestone in the form of a Twitter Post by Dale Calkins, Senior Policy & Planning Advisor to Councillor Druh Farrell, City of Calgary.

Image Source: (Klingbeil et al., 2016).

# 4. Promoting EV Infrastructure and Vehicles through Carsharing

| | **Autolib, Paris:** | **Communauto, Québec** |
|---|---|---|
| **Summary/Objective of the policy** | 'Accelerating Electrification through Carsharing' | 'EV's for everyone' |
| **Policy points** | ▪ All-electric car-sharing fleet<br>▪ Free-floating<br>▪ Accessible for charging of all EVs | ▪ Free-floating<br>▪ Diverse fleet, EVs but also other cars |
| **Key take-aways:** | The program failed as the program did not become self-sustainable, possible explanations:<br>▪ Victim of its own success. Cars could not be reserved, frustrated customers could not get a car<br>▪ Cars were dirty; people were drinking taking drugs, leaving trash behind, became shelter for homeless people<br>▪ Competition from Uber; seemed more user-friendly | ▪ The project was enabled through the collaboration of a wide array of actors, including the government, private sector and academia |

| | | |
|---|---|---|
| **Effectiveness, Ease of Implementation, KPIs** | Went bankrupt/never achieved self-sustainability | ▪ Effectiveness: Both Montréal and Québec City have a higher density of charging stations due to these efforts<br>▪ Ease of Implementation: fairly feasible; scaling up of an existing project in Toronto with a company that has experience with transitioning toward EV fleet<br>▪ KPIs:<br>Ridership numbers, approval ratings, longer term: sales of EV cars in general |

The City of Toronto seeks to increase the number of EV vehicles significantly, however, a key determinant for more EV vehicles is the presence of necessary infrastructure as well as to convince users of conventional cars that an EV vehicle is the better alternative.

Following numerous cuts by the Doug Ford government, there are significantly lower financial incentives in place for new buyers of EVs in Ontario, which will likely affect the number of EVs sold (Richardson, 2019). Similarly, Metrolinx ended a pilot program, which saw the installation of EV charging stations at the parking lots of GO stations, stating low demand. This is an indicator that currently, there is not enough EVs in Toronto that would justify significant improvement of the current EV infrastructure (Boisvert, 2019).

A number of cities have experimented with the idea to combine the promotion of EVs through carsharing services, and some have linked car-sharing services with other means of

transportation, such as public transit and bike-sharing services. Offering electric car-sharing services allows the public "[…] to get accustomed to the product and overcomes psychological barriers concerning its limited range and technical problems" (Hildermeier & Villareal, 2014, p. 329).

Furthermore, it helps to address the 'chicken and egg' problem with the infrastructure. For EVs to be attractive alternatives to common cars, charging stations need to be widely available, however, without enough demand for such charging stations due to a lack of demand for EV cars, it is difficult to push for investments thereof (Graham-Richard, 2015).

Since the building of infrastructure allows producers of EVs to enter a new market, they are interested in pursuing partnerships with cities and to support the development of infrastructure. An example of such a collaboration occurred in Québec:

In 2011, Communauto, Hydro-Québec and Nissan Canada announced the establishment of an all-electric car-sharing service in Québec. The project had a number of additional stakeholders that enabled the project, including the Québec government, which committed to electric mobility and signed a memorandum of understanding with Nissan, as well as actors who helped with the implementation of charging stations, such as the cities of Québec and Montreal, research institutes, the University of Montreal and actors from the financial sector, amongst others (Communauto, 2011).

Although it is difficult to directly link the increase of EVs sold as well as infrastructure built to the carsharing project, the comparison of the number and density of charging stations in Montréal, Québec City and Toronto shows a clear difference, and is an indicator that the Province of Québec is moving in the right direction:

As of December 2018, Montreal had 1003 charging stations (population: 4.09 million), Québec City 275 (800,296) and Toronto 301 (5.92 million) (Irwin, 2018).

This innovative pattern of collaboration between producers of EV vehicles, city administrators as well as other partners could be an interesting opportunity for the City of Toronto to further pursue (Hildermeier & Villareal, 2014). The producers of EVs and other stakeholders can support the establishment of necessary infrastructure, most notably charging stations, whereas the city can offer financial incentives for car-sharing services to introduce electric vehicles in their fleet.

In November 2018, the City of Toronto approved a pilot project of Communauto, a free-floating car-sharing service, for 18 months in Toronto. The entire fleet in Toronto is made of gas cars, but the company already has a large fleet of electric cars in other Canadian cities, such as Montreal and Québec as mentioned above, and is interested to collaborate with city administrations and other actors to increase their number of electric vehicles. The company thus already has ample experience in such a transition.

- **Thus, the City of Toronto should, should the pilot project by Communauto be successful, collaborate with Communauto and other stakeholders to introduce EVs to their carsharing fleet in Toronto**

In the case of Québec, the provincial government was supporting the project. In addition to the potential for EV cars in the City of Toronto, it is also in the interest of the Province of Ontario to support the shift to EV vehicles. The car manufacturing sector has been on the decline, with the closing of major plants such as the one by General Motors (GM) in Oshawa. The closing of the plant is linked to the shift to electric cars: "GM's changes are part of a worldwide shift to electric and self-driving cars, and an acknowledgement that U.S. consumers are buying fewer cars than they used to." (The Globe and Mail, 2018).

This shift will likely only intensify, and it could thus be an interesting alternative for Ontario to establish itself as an EV vehicle hub: "The shift to electric can add momentum for Ontario's manufacturing sector, as the province can become a North American hub for producing low-carbon electric vehicles and their components" (Blinick, Leclerc, Robinson, & Ribaux, 2017). Framing electric mobility beyond concerns related to sustainable transportation could achieve support by the provincial government, which has proven to be a crucial partner in Québec.

- **Thus, it is recommended that the entire sector of Electric Mobility is presented as an opportunity for the entire Province of Ontario to counter the negative growth in the local car manufacturing industry**

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# Figures and Appendix

**3. Does your company/organization provide vehicle infrastructure and services for employees, such as?**

| Sub-questions | Resp. | % of responses | avg | med | SD |
|---|---|---|---|---|---|
| paid parking | 29 | 48 / 48 / 3 | 1.55 | 1.5 | 0.56 |
| reserved/preferred parking spots for electric vehicles | 29 | 34 / 66 | 1.66 | 2 | 0.48 |
| free parking | 29 | 31 / 66 / 3 | 1.72 | 2 | 0.52 |

**5. Does your company/organization provide public transit supports for employees, such as?**

| Sub-questions | Resp. | % of responses | avg | med | SD |
|---|---|---|---|---|---|
| shuttle services between the company/organization and a nearby GO/subway/bus station (If required) | 29 | 10 / 90 | 1.9 | 2 | 0.3 |
| discounted transit passes | 29 | 7 / 93 | 1.93 | 2 | 0.25 |

**7. Does your company/organization provide financial incentives for employees who:**

| Sub-questions | Resp. | % of responses | avg | med | SD |
|---|---|---|---|---|---|
| commute by public transit (other than a subsidized transit pass) | 29 | 14 / 86 | 1.86 | 2 | 0.34 |
| walk or bike to work | 29 | 10 / 90 | 1.9 | 2 | 0.3 |
| carpool/Vanpool | 29 | 100 | 2 | 2 | 0 |

**Figure 1.** Free parking is being offered by employers more frequently than sustainable transportation incentives.

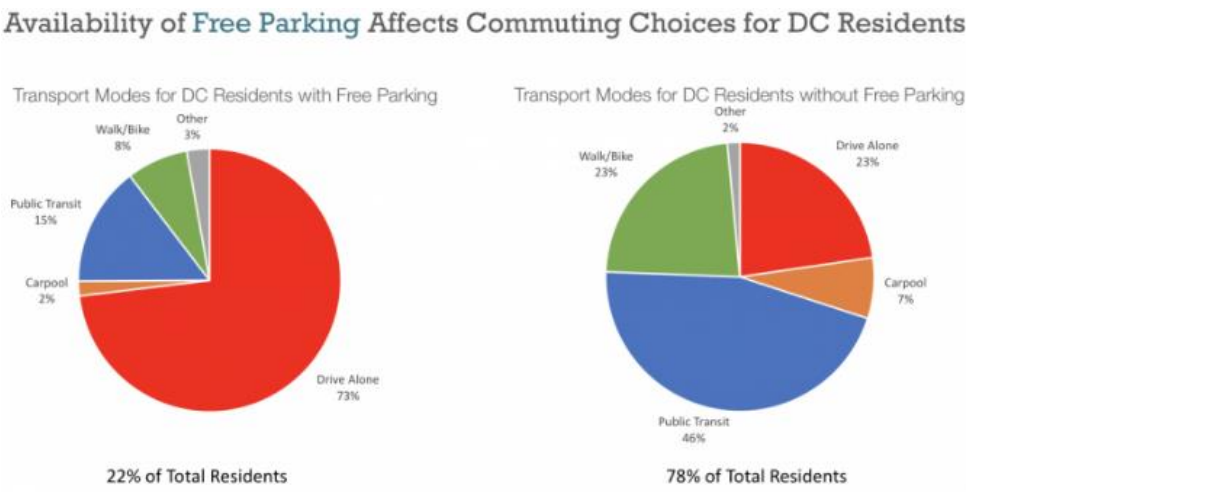



**Figure 2.** 73% of employees, who are offered free parking, drive alone to work, while only 23% of employees without free parking do so (Balding, 2017).

**Table 4. Predicted Probabilities for Mode Choice Outcomes Based upon Different Commuter Benefit Packages (Holding Other Commuter Benefit Packages at Zero and Control Variables at Mean Values)**

| Variable | Drive Alone | Public Transportation | Walk | Cycle |
|---|---|---|---|---|
| No Benefits | 75.9% | 22.3% | 1.4% | 0.5% |
| Free Car Parking | 96.6% | 2.8% | 0.6% | 0.1% |
| Public Transportation Benefits | 22.8% | 76.1% | 0.8% | 0.3% |
| Bike/Walk Benefits | 75.9% | 21.1% | 2.1% | 1.0% |
| Public Transportation Benefits & Bike/Walk Benefits | 25.6% | 72.3% | 1.2% | 1.0% |
| Free Car Parking & Public Transportation Benefits | 82.9% | 16.3% | 0.5% | 0.2% |
| Free Car Parking & Bike/Walk Benefits | 95.4% | 3.3% | 1.0% | 0.3% |
| All Benefits | 86.8% | 12.2% | 0.4% | 0.6% |

**Table 1.** Most employees keep driving to work alone when offered both free parking and commuter benefits (Hamre & Buehler, 2014).

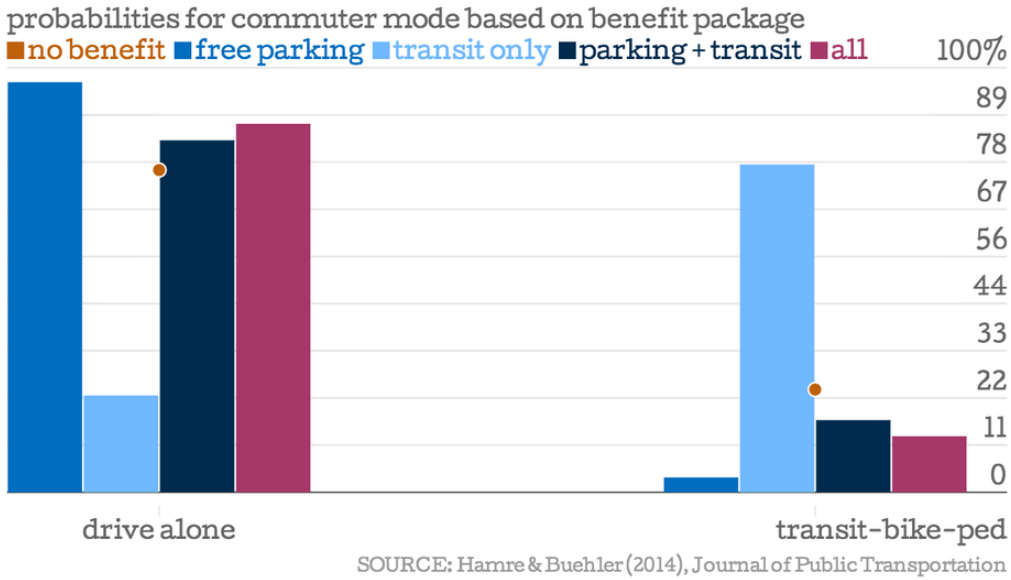
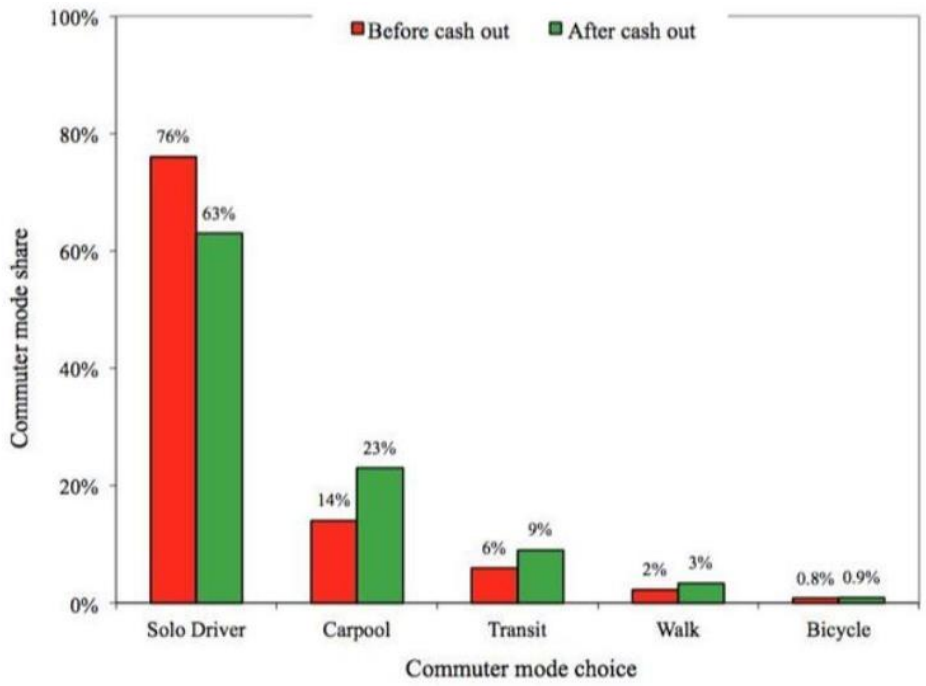



**Figure 3.** Visual representation of the above table (Jaffe, 2014).




Commuter mode shares before and after parking cash out are shown, based on a study of 1,694 employees of eight case-study firms.

**Figure 4.** Effectiveness of the parking cash out: 13 percent decrease in solo drivers (Shoup, 2017).

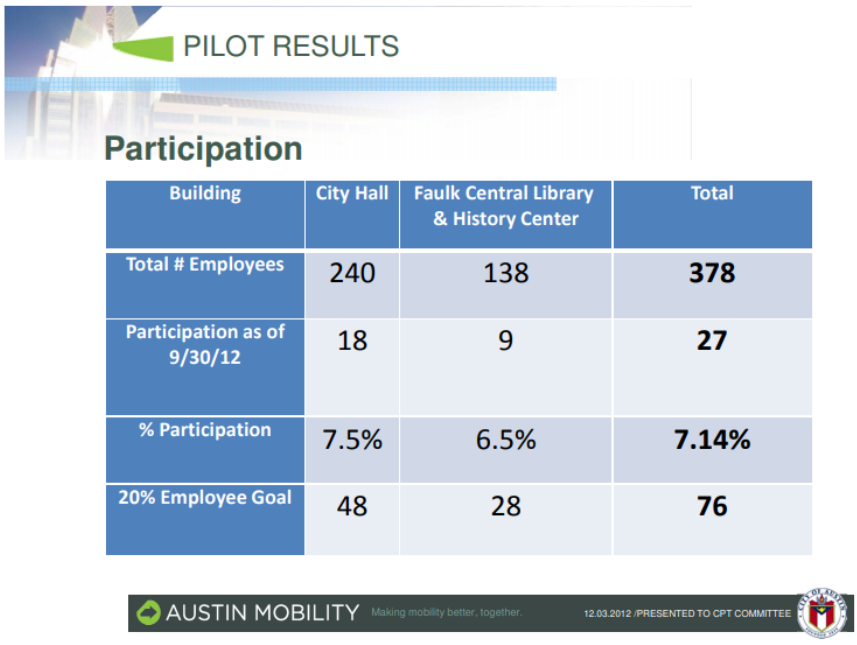



**Table 2.** Participation rates of the 2012 City of Austin Parking Cash Out Pilot (City of Austin, 2012).

PILOT RESULTS

## Environmental Benefits

| Commute Mode | GHG (Lbs) reduced | NOx (Lbs) reduced | CO (Lbs) reduced | VOC (Lbs) reduced | Vehicle Miles Avoided | Trips Avoided |
|---|---|---|---|---|---|---|
| Carpool | 454 | .36 | 4.57 | 1.52 | 2,526 | 168 |
| Transit | 18,244 | 15.57 | 182.78 | 60.15 | 15,330 | 1022 |
| Bicycle | 2,106 | 1.69 | 21.17 | 7.06 | 2,286 | 418 |
| Walk | 49 | .04 | .5 | .17 | 54 | 10 |
| Telework | 227 | .18 | 2.29 | .76 | 240 | 16 |
| **Total** | **21,238** | **17.84** | **211.31** | **69.66** | **20,436** | **1634** |

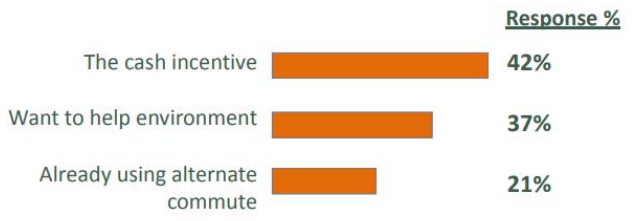
AUSTIN MOBILITY Making mobility better, together. 12.03.2012 /PRESENTED TO CPT COMMITTEE

**Table 3.** Environmental effects of the pilot (City of Austin, 2012).

PILOT RESULTS

## Participation

Employees' reasons for participating in the pilot




*"I wanted to attempt reducing my carbon footprint."*
*– Leslie H.*

AUSTIN MOBILITY Making mobility better, together. 12.03.2012 /PRESENTED TO CPT COMMITTEE

**Table 4.** Reasons to participate (City of Austin, 2012).

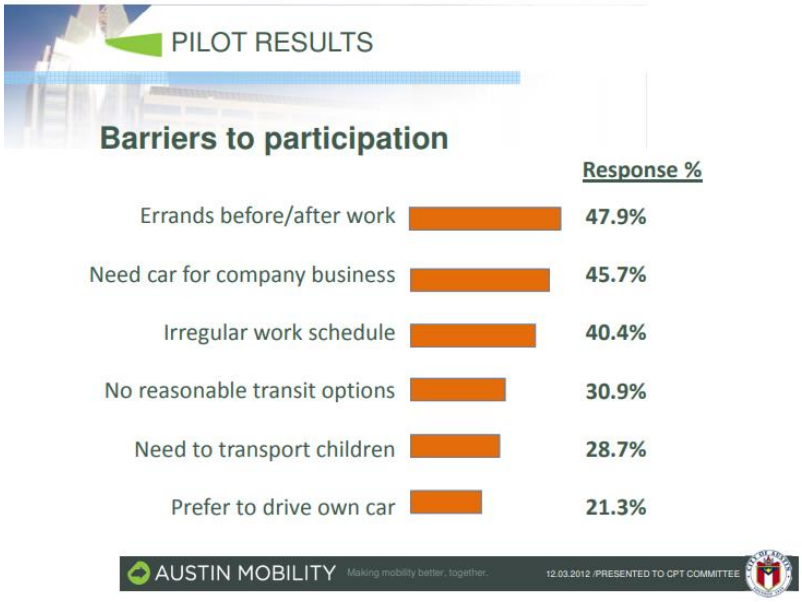



**Table 5.** Reasons to not participate (City of Austin, 2012).

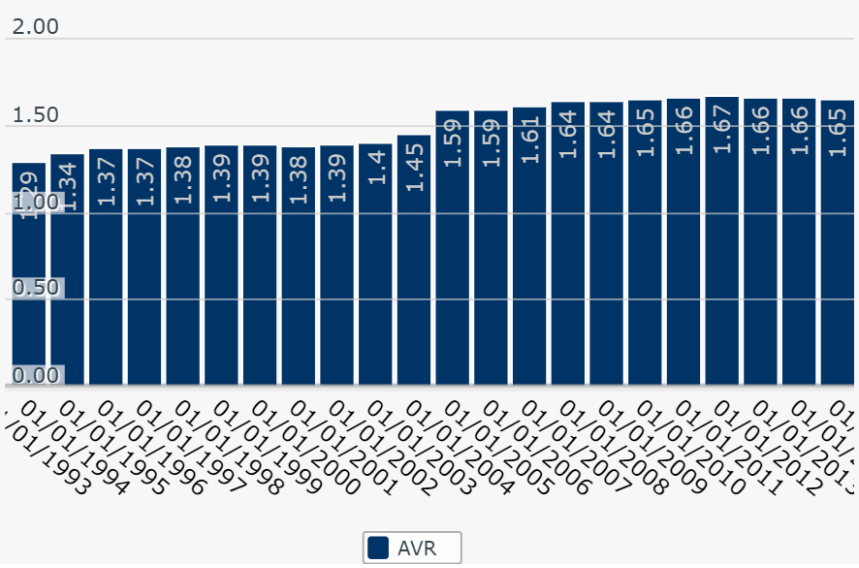



**Figure 5.** Santa Monica's goal of 1.5 AVR surpassed in 2005 (Sustainable Santa Monica).

**Table 1. Emissions Reduction Calculations**

| | |
|---|---|
| **Number of Benefit Program Participants:** | 90,723 |
| **Average Commute Distance:** | 16 mi. one-way |
| **Average Daily VMT Reduction:** | 2,903,136 miles (round-trip) |
| **Average Gallons of Gas Saved:** | 123,538 |
| **Total Daily Reduction in $CO_2$:** | 1,098 metric tons |
| **Total Annual Reduction in $CO_2$:** | 286,547 metric tons |

**Table 6.** Effectiveness and Results of the San Francisco Commuter Benefits Ordinance in 2013 (SF Environment, 2013).

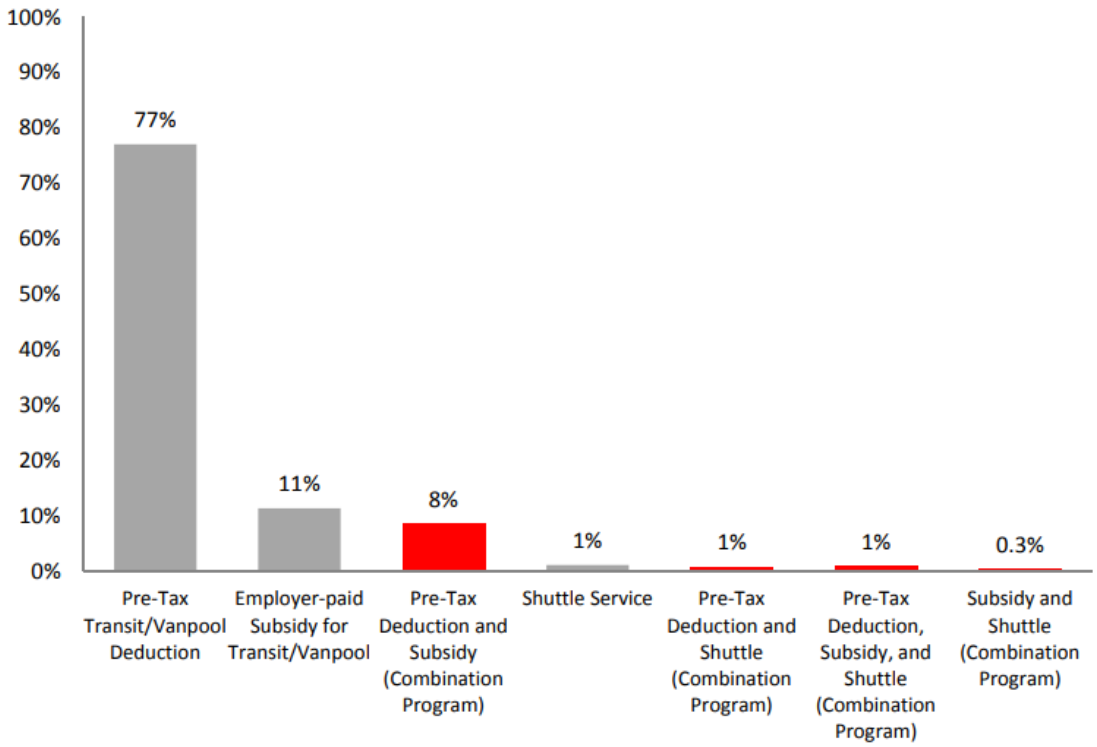



**Figure 6.** Pre-tax benefits are the most popular commuter benefit amongst employers in San Francisco (SF Environment, 2013).

| | *Affected by Requirement* | |
|---|---|---|
| | Employers offering free parking | Employers NOT offering free parking |
| Scenario 1: Monthly Parking Cash Out | ☑ | ☐ |
| Scenario 2: Monthly Employer-paid Transit/ Vanpool Benefit | ☑ | ☐ |
| Scenario 3: Monthly Parking Cash Out + Incentive for Daily Cash Out | ☑ | ☐ |
| Scenario 4: Monthly Parking Cash Out + Pre-Tax Transit Option for Employees without Subsidized Parking | ☑ Cash-out | ☑ Offer pre-tax transit benefit |
| Scenario 5: Incentive to Eliminate Subsidized Parking + Provide Employer-paid Transit/Vanpool Benefit | ☑ Eliminate parking benefit, add transit benefit | ☑ Add transit benefit |
| Scenario 6: Peak Parking Surtax | ☑ | ☑ |

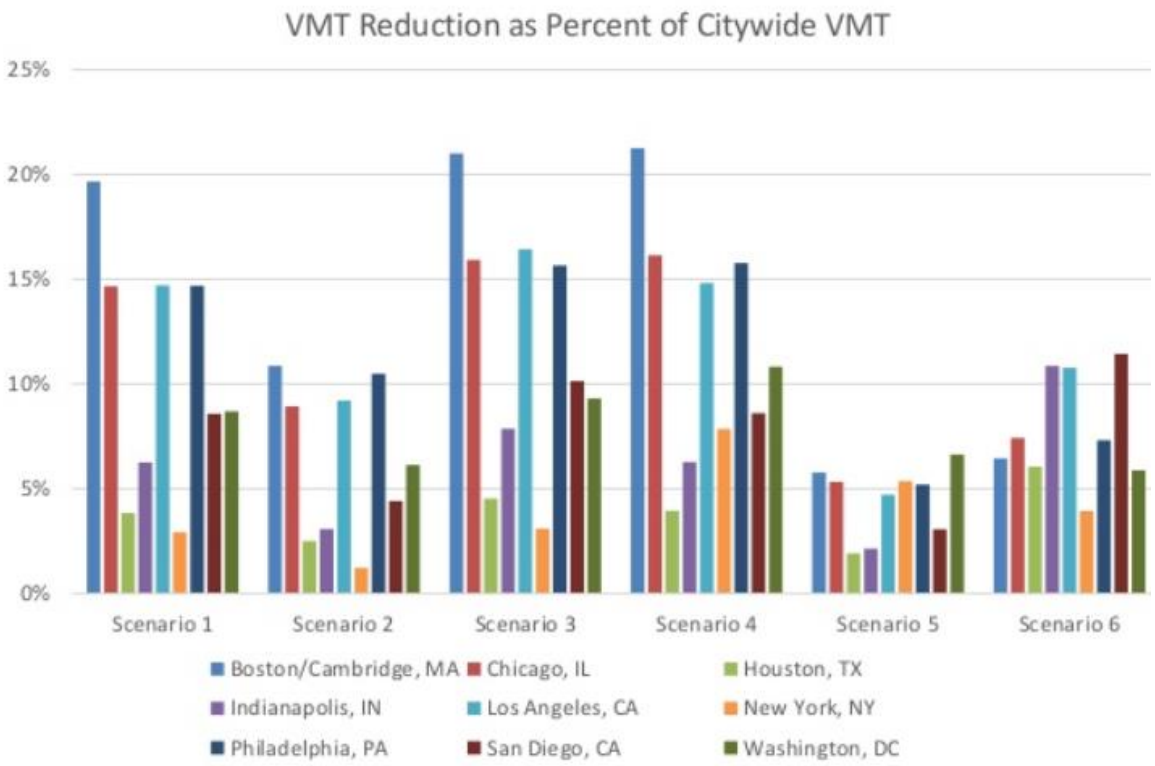



**Figure 7.** Combination of parking cash out and commuter benefits showing the highest VMT reduction (Sethi, 2017).

# Appendix A

## Sustainable Commuting Workplace Supports - Survey

| | | | |
|---|---|---|---|
| Status: | **Closed** | Partial completes: | **0 (0%)** |
| Start date: | **2019-02-19** | Screened out: | **0 (0%)** |
| End date: | **2019-03-19** | Reached end: | **29 (100%)** |
| Live: | **29 days** | Total responded: | **29** |
| Questions: | **19** | | |

### 1. Does your company/organization provide infrastructure to support biking and walking for employees, such as?

| Sub-questions | Resp. | % of responses | avg | med | SD |
|---|---|---|---|---|---|
| uncovered/unsecured bicycle parking | 29 | 76 / 21 / 3 | 1.28 | 1 | 0.52 |
| covered/secured bicycle parking | 29 | 66 / 28 / 7 | 1.41 | 1 | 0.62 |
| shower facilities | 29 | 34 / 59 / 7 | 1.72 | 2 | 0.58 |
| lockers and changing facilities | 29 | 28 / 66 / 7 | 1.79 | 2 | 0.55 |
| bike repair station | 29 | 7 / 90 / 3 | 1.97 | 2 | 0.32 |

Average: 1.63 — Median: 2 — Standard Deviation: 0.59

- 1. Yes
- 2. No
- 3. Don't know

### 2. Is any other infrastructure offered to support employees who bike/walk to work? Please specify.

| | | |
|---|---|---|
| Respondents | 8 | 28% |
| **Skipped question: 21** | 0% 20% 40% 60% 80% | |

We offer them use of folding bikes that they can use for multi-modal travel.

Provide free metro pass each month to employees

na

We do not own the building we are in so we have no control over the facilities available to employees. If we did have control then all of the above would be in place, as this is what we provide at our locations where we are in the entire building.

We have the bike to work day free breakfast once a year.

no

connected to underground PATH system for walking

Partners with Smart Commute which offer webiners, one campus have BikeShare currently and will add to other campuses in the future, as well, there is a bike club on campus

### 3. Does your company/organization provide vehicle infrastructure and services for employees, such as?

| Sub-questions | Resp. | % of responses | avg | med | SD |
|---|---|---|---|---|---|
| paid parking | 29 | 48 / 48 / 3 | 1.55 | 1.5 | 0.56 |
| reserved/preferred parking spots for electric vehicles | 29 | 34 / 66 | 1.66 | 2 | 0.48 |
| free parking | 29 | 31 / 66 / 3 | 1.72 | 2 | 0.52 |
| reserved/preferred parking spots for staff who carpool | 29 | 14 / 86 | 1.86 | 2 | 0.34 |
| fee-based charging stations for electric vehicles | 29 | 17 / 79 / 3 | 1.86 | 2 | 0.43 |
| free charging stations for electric vehicles | 29 | 21 / 72 / 7 | 1.86 | 2 | 0.51 |
| an online tool or other service to help employees find someone to carpool with? | 29 | 14 / 83 / 3 | 1.9 | 2 | 0.4 |

Average: 1.77 — Median: 2 — Standard Deviation: 0.48

- 1. Yes
- 2. No
- 3. Don't know

### 4. Is any other infrastructure offered to support employees who drive a personal vehicle to work? Please specify.

| | | |
|---|---|---|
| Respondents | 9 | 31% |
| Skipped question: 20 | 0% 20% 40% 60% 80% | |

No

We have PEHV for the company car

na

Discounted parking rates

We don't manage the parking at the building so offering programs for our employees in Toronto is a challenge.

Covered parking spots, the entire campus roadways are there for cars.

no

no

Smart Commute Partnership with carpooling tool, webiners, 'try It Week', etc.

### 5. Does your company/organization provide public transit supports for employees, such as?

| Sub-questions | Resp. | % of responses | avg | med | SD |
|---|---|---|---|---|---|
| shuttle services between the company/organization and a nearby GO/subway/bus station (If required) | 29 | 10 / 90 | 1.9 | 2 | 0.3 |
| discounted transit passes | 29 | 7 / 93 | 1.93 | 2 | 0.25 |

Average: 1.91 — Median: 2 — Standard Deviation: 0.28

- 1. Yes
- 2. No
- 3. Don't know

### 6. Is any other support offered to employees who take transit to work? Please specify.

| | | | |
|---|---|---|---|
| Respondents | 11 |  | 38% |
| | Skipped question: 18 | 0% 20% 40% 60% 80% | |

We offer them use of our folding bikes for multi-modal travel.

Pay for monthly transit pass

Help in group purchasing presto passes - day passes for ymca program participants.

na

$350 annuall reimbursement can be used toward public transportation costs staff incur or a bike. Flexible hours outside of rush hours.

Discounted transit options is are discussed.

Employees are able to use a portion of their benefits to cover a transit pass. We had tried to get a corporate discount for our employees with Presto passes but were told that no discounts can be given.

We work 10-6 to help staff avoid the crush of rush hour on transit

no

no

n/a

### 7. Does your company/organization provide financial incentives for employees who:

| Sub-questions | Resp. | % of responses | avg | med | SD |
|---|---|---|---|---|---|
| commute by public transit (other than a subsidized transit pass) | 29 |   | 1.86 | 2 | 0.34 |
| walk or bike to work | 29 |   | 1.9 | 2 | 0.3 |
| carpool/Vanpool | 29 |   | 2 | 2 | 0 |
| do not drive to work | 29 |   | 2 | 2 | 0 |
| drive an electric vehicle | 29 |   | 2 | 2 | 0 |

Average: 1.95 — Median: 2 — Standard Deviation: 0.21

1. Yes
2. No
3. Don't know

### 8. Does your company/organization provide financial incentives for employees who commute in a way not listed above? If so, please specify.

| | | | |
|---|---|---|---|
| Respondents | 4 |  | 14% |
| | Skipped question: 25 | 0% 20% 40% 60% 80% | |

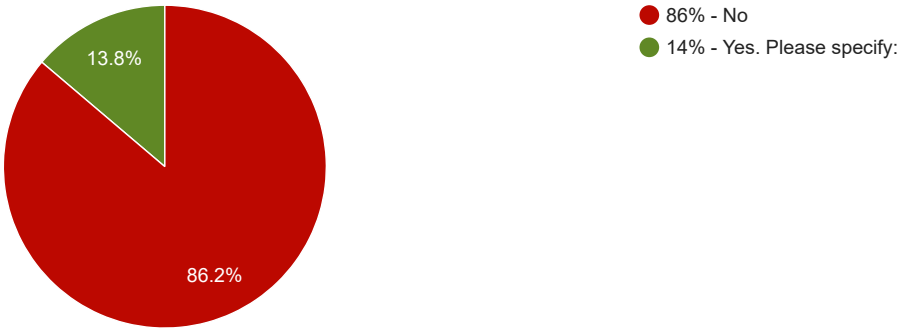
No

na

no

not at this time, reviewing for future options.

**9. Does your company/organization provide non-financial incentives for employees who commute in a sustainable way (e.g. time off, awards, etc.)?**




n=29

**10. Does your company/organization plan group activities and/or education programs for employees, such as?**

| Response | Total | % of responses | % |
|---|---|---|---|
| information about sustainable modes of transportation (biking, cycling, transit, etc.) | 14 | | 48% |
| Other, please specify | 13 | | 45% |
| walking/biking events , such as Bike to Work Day? | 12 | | 41% |
| education/mentoring/buddy programs to help employees transition to a new commute mode, such as cycling and/or public transit | 5 | | 17% |
| Total respondents: 29<br>Skipped question: 0 | | 0% 20% 40% 60% 80% | |

**11. Does your company/organization allow alternative working arrangements, such as?**

| Response | Total | % of responses | % |
|---|---|---|---|
| flexible working hours (e.g. flexible start and end times) | 22 | | 76% |
| technology that enables employees to access their work documents and emails when working at home | 21 | | 72% |
| a formal teleworking policy that allows staff to work at home | 10 | | 34% |
| Compressed work weeks (e.g. four 10-hour shifts per week) | 6 | | 21% |
| Other, please specify | 3 | | 10% |
| Total respondents: 29<br>Skipped question: 0 | | 0% 20% 40% 60% 80% | |

**12. Does your company/organization offer any other policies, programs or supports to help employees commute in a sustainable way?**

| | | |
|---|---|---|
| Respondents | 10 | 34% |
| Skipped question: 19 | 0% 20% 40% 60% 80% | |

No

na

no, they don't seem to care how we get here

stratefically placed offices in teh GTA to support Central East and West end travel.

Outside of Toronto, our offices in Vancouver offer showers and lockers, and Bike Valet during Bike Week

We have a Commuting Action Plan that aims to drop our drive alone rate by 15% by 2020.

N/A

no

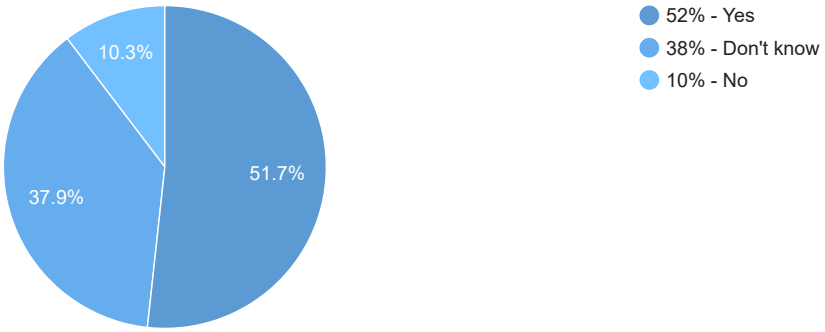
no

n/a

**13. If your organization supports sustainable commuting in any of the ways outlined in these survey questions above, please rank the reasons for doing so from highest (1) to lowest priority (7)?**

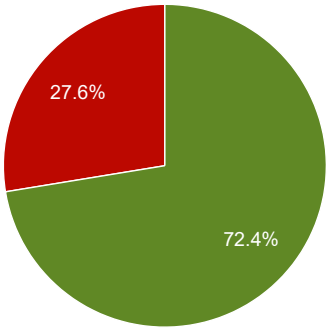
| Response | Weighted score | % |
|---|---|---|
| Improve employee health | | 24% |
| Employee retention | | 20% |
| Increase productivity | | 16% |
| Concern for the environment | | 14% |
| Corporate Social Responsibility | | 11% |
| Reduce costs | | 11% |
| Other, please specify | | 5% |
| Total respondents: | 0% 20% 40% 60% 80% | |

**14. Does your company/organization want to do more to support sustainable commuting by its employees?**




n=29

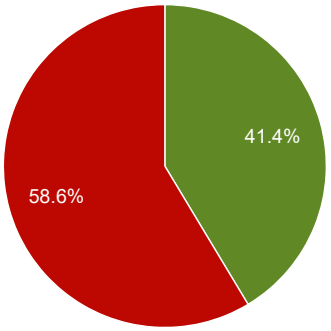
**15. Smart Commute (https://smartcommute.ca/) is a program that helps companies/organization develop and offer programs and policies that encourage and support sustainable commuting choices.  Prior to today, were you aware of the Smart Commute program?**




72% - Yes
28% - No

n=29

**16. Would you be interested in learning more about how the Smart Commute program can support your organization and its employees? If yes, you agree for Smart Commute to contact you.**




41% - Yes
59% - No

n=29

## 17. Company/Organization Information

| Response | Total | % of responses | % |
|---|---|---|---|
| Company/Organization Name | 21 | | 100% |
| Number of Employees | 18 | | 86% |
| Business Postal Code | 19 | | 90% |
| | Skipped question: 8 | 0% 20% 40% 60% 80% | |

Sandbox Advertising

Hedgewood Incl

Revelo

Internat Energy Solutions Canada

Ymca of Greater toronto

Evergreen Brick Works

CanadaHelps

Grey House Publishing Canada

Canadian Bankers Association

Fio Corporation

York Regional Police

Metro Ontario Inc. West Mall Distribution Centre

Penguin Random House Canada

Cadillac Fairview

BlackBerry

OCAD University

Cresa Toronto

Prosper Canada

MASS LBP

Gistex Inc.

Centennial College

21

7

4

12

5000

130

43

10

60

40

2200

400-500

225

16 (in Toronto), 4200 Globally

24

10

3

5,000

M5E 1B3

M5V2H1

M4G 1Y9

M5V3C1

M4S 2C6

M4W 3X8

M5T 3b2

M5V 3B1

M5L1G2

M5C 1S2

M9C 5L6

M5V3B6

M5H3R4

M4P3A2

M5T 1W1

M4T 1N5

M5A 3C8

M3B 1Z3

M1G 3T8

## 18. Contact Business Information

| Response | Total | % of responses | % |
|---|---|---|---|
| Name (First, Last) | 21 | | 91% |
| Position Title | 19 | | 83% |
| Business Email | 23 | | 100% |
| Business Telephone Number | 22 | | 96% |
| | Skipped question: 6 | 0% 20% 40% 60% 80% | |

Patricia Pariselli

Bernard Rasch

Mary, Chong

Livio Nichilo

Versluis, Alex

Alireza Anvari

Lizz Bryce

Bryon Moore

Sherry Thatcher

Kerri Reid

Paulo DaSilva

Tamara

Katie Saunoris

Melissa Potter

Jen McLaughlin

Victoria Ho

Matthew Rosenberg

Melissa Choi

PETER MACLEOD

Rosa Villa

Sarah Van Osch

Office Manager

property manager

CoFounder

Engineering Manager

SVP Property Management and Development

Director, Facility Management

Chief of Staff

General Manager

Manager, Office Services

Superintendent

Executive Assistant, Supply Chain & Logistics and Distribution

Director of Communications

Global Environment Manager

Sustainability Coordinator

Advisor, Account Management

Office Administrator

PRINCIPAL

Administrator

Manager of Ancillary Services & Residence

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4166286948 x2383

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416-362-6093

7059704873

4162717445

416-626-4916

4169571525

4165988215

5195976749

416-977-6000 x.4862

514-909-2395

416-665-2828

416-833-3194

6479628515

416-363-1502

416-289-5000 x. 7649

**19. If you would like to be entered into the contest to win a $50 gif card from Cara Foods, please enter your business email and business telephone number. Contest rules (https://drive.google.com/file/d/1qUJ-scKahWISWAtn0-zINV5fc6LZEuhl/view?usp=sharing).**

| Response | Total | % of responses | % |
|---|---|---|---|
| Business email | 21 | | 100% |
| Business phone number | 21 | | 100% |
| | Skipped question: 8 | 0% 20% 40% 60% 80% | |

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