

# Raising Revenue, Raising Health

Health Supporting Revenue Tools  
for Toronto

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Wellesley Institute works to improve health and health equity in the Greater Toronto Area through research and policy development based on the social determinants of health.

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## Introduction

There is a growing acknowledgement at City Hall that for a fiscally sustainable Toronto we must begin to look at new revenue tools. Much of the discussion has revolved around the important fiscal and structural issues with the budget, and the ability of diverse taxing options to help us build a healthy city. The significant public health impacts of some of the revenue tools contemplated has received paltry discussion by comparison.

There are a number of revenue tools available to the City of Toronto which have the power to improve public health. This discussion paper aims to increase the profile of these public health benefits and argue for their inclusion as central criteria for evaluating revenue tools alongside considerations such as potential revenue and the effect on the business community. While City reports have acknowledged that certain tools align with and can support health and equity priorities, the relative importance placed on these health promoting effects has remained peripheral.

Health supporting revenue tools can be used to improve urban health in Toronto while also addressing issues such as the structural budget gap and the stability of funding for quality city services. Health supporting revenue tools can be grouped broadly into two categories: tobacco and alcohol surtaxes; and vehicle, road, and parking levies. These revenue tools have the power to discourage and decrease the consumption of harmful substances such as alcohol and tobacco, and decrease the number of personal vehicles on Toronto's roads thus decreasing harmful air pollutants. There is a great deal of evidence supporting the impact of price sensitivity on behaviour. New revenue tools can align and support the City's existing public health priorities and commitments while improving the fiscal sustainability of the City.

## Method

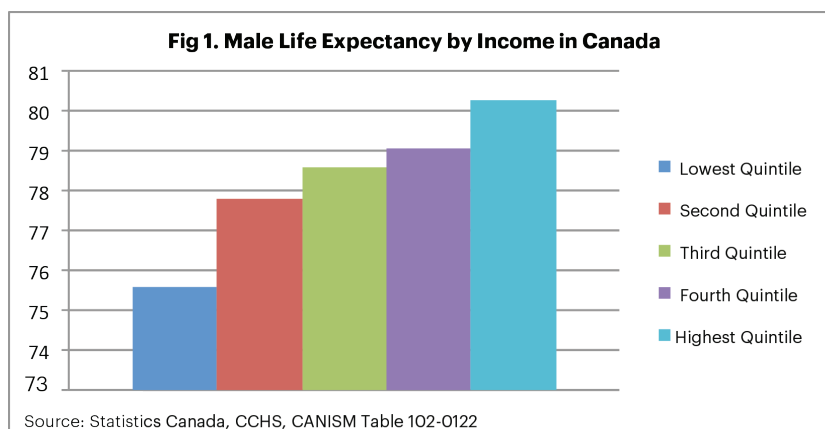
This paper is a brief examination of the public health effects that could be expected as a product of new revenue tools in Toronto. It directs attention to this crucial set of criteria for examining potential revenue tools, highlighting the need for their inclusion in evaluations of these tools.

This examination of the revenue tools available to the City of Toronto employs public health and health equity lenses to highlight the expected effects of these tools. Public health can be directly impacted via changes in public behaviour resulting from the impact of taxes on prices, and therefore behaviour. These differential impacts are understood to produce inequities or mitigate inequities in economic resources and health outcomes. For example, if a tax is expected to decrease smoking more in low-income populations compared to high income populations, this could be expected to improve health equity by decreasing the health disparities we currently see across income groups (see fig. 1). Alternatively, if a tax takes a higher percentage of income from low-income groups compared to high-income groups, this tax could increase economic inequality. As there is research connecting greater economic inequality with poorer health outcomes for the entire population, increasing economic inequality is detrimental to population health and thus not desirable (Wilkinson and Pickett 2009).<sup>1</sup> However, if the revenues collected were directed to health enhancing public services this impact could be mitigated or reversed.

Two primary mechanisms are examined by which the examined revenue tools can be expected to impact public health. The first is the price elasticity of demand. This mechanism informs how much demand for

a good or service will change following a change in price.<sup>2</sup> The sensitivity of demand to price informs the magnitude of the effect we could expect to see on public health indicators as a product of the implementation of the revenue tool, holding other factors unchanged. For example, increasing the price of tobacco by five percent can be expected to decrease consumption by two percent on average. This example is examined in more depth in the following section on Tobacco Surtaxes.

The second mechanism by which public health can be affected by taxes is through how the revenues are spent. There are potential public health effects if the revenue from the tools was directed to pro-health initiatives such as poverty reduction and public health programming. The spending side is also very important for mitigating the regressive effects these revenue tools. While these revenue tools could be expected to capture a greater portion of low income groups' incomes, if the revenues are spent on program areas with provide benefits directed at low income groups, then the tools could be on the whole progressive. This mechanism is only explored briefly, and in a separate section, as these effects are entirely dependent on where the revenue raised is spent. These effects while subject to greater uncertainty highlight the important role of public spending in improving public health, economic inequality, and health equity. For example a \$1 per day commercial parking tax could be expected to raise \$640 million per year for the City of Toronto.<sup>3</sup> For context this revenue could almost match the entirety of the City's Shelter Support and Housing Administration expenditure of \$651 million. It is more than twice the \$252 million that the City contributes to Toronto Public Health (City of Toronto 2015). A quick examination of how revenue could be spent highlights the scale of the potential positive health impacts of these tools. If a significant portion of the revenue was directed to housing, public health, or poverty reduction the impacts could be transformative.



## Health Supporting Revenue Tools

There are a number of unutilized revenue tools which are currently available to the City of Toronto under the City of Toronto Act, 2006. A number of these are examined in the section below for their potential health and equity impacts. There are a number of other taxes available to the City which are not examined here as they are expected to have negligible health impacts (e.g. billboard tax). The revenue tools examined here can be roughly grouped into two sets: alcohol and tobacco surtaxes; and road, vehicle, and parking

levies. These revenue tools could be structured in a multitude of ways, changing their expected effects. The health impacts and revenues would be dependent on factors such as the rate and base (e.g. which sales are included).

### Health Supporting Revenue Tools: Preliminary Expected Effects

Revenue Tool	Tax Rate	Generally Accepted Price Elasticities <sup>4</sup>	Estimated Public Health Impact <sup>5</sup>	Estimated Revenue <sup>6</sup>
Alcohol Tax	5%	-0.5	2.5% decrease in alcohol consumption	\$77 million
Tobacco Tax	5%	-0.4	2% decrease in tobacco consumption  7500 fewer Toronto smokers <sup>7</sup> 1% less cigarettes smoked	\$30 million
Vehicle Registration Tax	\$60 per car per year	Difficult to estimate without further local research. See subsequent section for details. <sup>8</sup>		\$66 million
Non-Residential Parking Tax	\$100 per parking space per year			\$175 million
Road Tolls on the Gardiner Expressway and the Don Valley Expressway	.10 per km for peak hours .05 per km for non-peak hours			\$78 million

(Shaded areas in table sourced from CCPA, 2015)

## Alcohol and Tobacco Surtaxes

### Alcohol Surtax

*Several international projects linked with the WHO point to alcohol pricing as the intervention with the strongest empirical support and widest impact among more than 30 interventions assessed.* - Canadian Public Health Association, 2011

Alcohol use is a major contributor to disease, disability, and death in Toronto. The mechanisms through which alcohol causes medical, psychological, and social harms are well understood. Alcohol is causal factor in over 200 disease and injury conditions, and negatively impacts a number of organs and body systems. Alcohol use and intoxication increases accidents, injuries, road traffic collisions, suicides, violence, community disruption, and acute disease outcomes (WHO 2014). Alcohol is also an addictive substance that can lead to dependence and acute and chronic social problems. Alcohol causes many types of cancers, and there is no 'safe limit' known for which alcohol does not increase the risk of developing cancer (Cancer Care Ontario 2013). The Public Health Agency of Canada (2015) estimates that alcohol use is responsible for 4000 annual premature deaths in Canada, and \$14.6 billion in added economic costs to society.

There are a number of ways in which public policy can limit the availability of alcohol, minimise consumption, and mitigate the ill effects of alcohol use. Examples of policies include minimum prices, limiting hours of legal sale, dependence treatment programming, and taxation. Taxation which increases the price of alcohol has been shown to decrease demand for and consumption of alcohol in the absence of countervailing pressures (Babor et al. 2010; Österberg 2013; WHO 2014). It is likely that these price sensitivity policies work best in concert with policies such as bans on advertising, limited hours of sale, and alcohol addiction services. Taxation could perhaps be best looked upon as one tool amongst many in government's toolbox to help decrease the harmful impacts of alcohol use.

An alcohol surtax could be structured in a variety of ways. It could be applied to either off-license stores, on-license establishments, or both; and it could be set at a variety of rates. Higher rates and a larger base (e.g. applying to both on- and off-licence) could be expected to have greater health impacts and raise more revenue.

## **Health Supporting Mechanisms**

### **Demand elasticity mechanism**

According to a wide range of studies it can be expected that increasing the price of alcohol will decrease consumption by reasonably predictable amounts (Anderson & Baumberg 2006; Babor et al. 2010; Österberg 2013; WHO 2014). Through this mechanism the positive public health impacts can also be estimated. The impact of changing alcohol prices has been extensively studied. The magnitude of the change in alcohol consumption is estimated by the price elasticity.

Alcohol is a relatively inelastic good, meaning that the alcohol consumption is relatively insensitive to the price. A number of recent meta-analyses have been undertaken in order to estimate the elasticity of alcohol demand in a number of contexts, for a number of distinct populations (Österberg 2013). A 2007 meta-analysis of 132 studies from 23 countries found that alcoholic beverages in general have an elasticity of -0.5 (Gallet 2007). This implies a 10 percent increase in prices can be expected to lead to a 5 percent decrease in consumption.

Studies have shown that increasing the price of alcohol reduces acute and chronic harm related to drinking amongst all age groups (Babor et al. 2010; Österberg 2013). This research has also shown that young people, heavy drinkers, and people with lower incomes are more sensitive to price changes, and thus exhibit a greater elasticity of demand (Anderson & Baumberg, 2006; Babor et al. 2010). Changes in alcohol prices have been found to increase the number of people who abstain from alcohol use, and also

influence moderation in alcohol intake (Babor et al. 2010).

A number of other factors mediate and add complexity to this relationship between price and demand for alcohol. The addictive nature of alcohol for instance reduces and interacts with the elasticity of demand. One outcome of this is that short-term price sensitivity is smaller than long-term sensitivity (Anderson & Baumberg 2006). Different forms of alcohol, such as wine and spirits, are also affected differently, generally with beer being less elastic (Gallet 2007). Price sensitivity is also different in different countries and regions, and can change in one place over time (Babor et al. 2010). The generally accepted elasticities cited here are taken from large meta-analyses in the literature.

## Expected Equity Impacts

An alcohol surtax can be expected to be mildly economically regressive, as lower income households on average spend a slightly higher portion of their total income on alcohol (see fig. 2). This relationship between lower income and higher relative alcohol spending should not be overstated. It is not consistent across all of the Canadian income quintiles, and the difference is only two-tenths of one percent of total expenditure from the richest 20 percent of Canadians to the poorest 20 percent. As mentioned above, how the revenue from an alcohol tax is spent would significantly affect how progressive or regressive such a tax would be. If spent on programs that benefit the lower income quintiles more than the higher income quintiles, on the whole the tax could be economically progressive, having a role in decreasing economic inequality in Toronto.

### Toronto Alcohol Surtax: Other Factors and Considerations

Public health impacts are one important factor amongst many when weighing public finance revenue tools. Below is a very brief overview of a number of other considerations.

#### Administrative costs:

- 1.5% of revenue: off-licence shops (e.g. LCBO, Beer Store)
- 3% of revenue: on-licence establishments (e.g. bars)

#### Potential revenue:

- varies widely depending on rate and base
- \$77 million annually: recent estimate for 5% levy in off-licence shops only (CCPA 2015)

#### Economic distortion:

- could be expected to change consumer behavior particularly in border areas, and negatively affect businesses which rely on alcohol sales

#### Sustainability:

- revenue can be expected to increase with inflation and growth

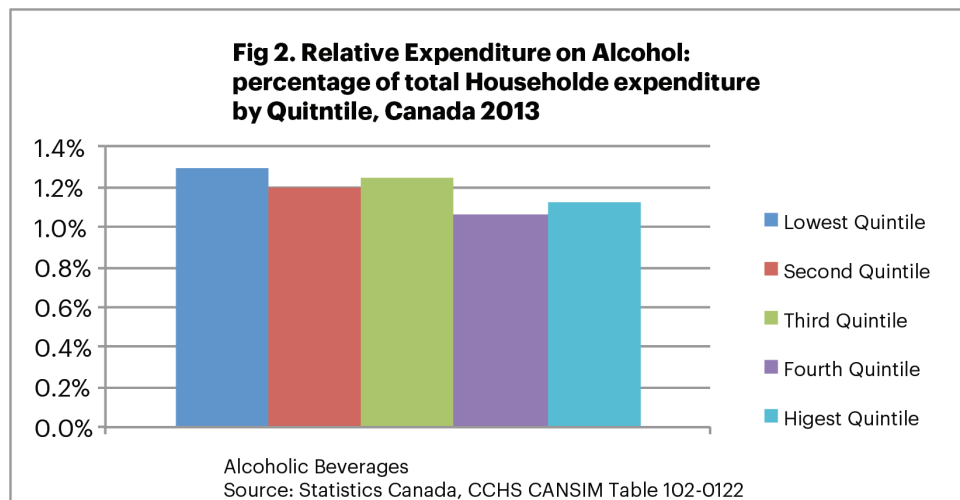
#### Estimated costs of alcohol use in Canada: (Public Health Agency of Canada 2015)

- 4000 premature deaths
- \$14.6 billion; \$3.3 billion in direct healthcare costs, \$3.1 billion in extra policing costs

(Source: City of Toronto 2007, unless otherwise specified)

In terms of physical health equity, an alcohol tax could be expected to decrease the disparities in health across income groups. As lower income groups are more sensitive to changes in price, we could

expect to see a larger drop in consumption amongst these groups when compared to their higher income counterparts. In this way an alcohol surtax could be expected to decrease the health inequities in Toronto which are currently evident across the income gradient (see fig. 1).



## Tobacco Surtax

*Increases in taxes on and prices of tobacco products are by far the best buys in tobacco control because they can significantly reduce tobacco use through lower initiation and increased cessation, especially among young people and the poor.* - World Health Organization, 2011

Tobacco use is a major contributor to ill health and leading factor in health inequities in the developed world (Surgeon General 2014; WHO 2008). Tobacco is a leading cause of preventable disease, disability, and premature death in Toronto, and approximately one half of continuing cigarette smokers die prematurely from its use (WHO 2011). The Public Health Agency of Canada (2015) estimates that tobacco use leads to 37,000 premature deaths in Canada annually. Addiction occurs in the majority of tobacco users, and tobacco dependence has been identified by the WHO (2011) through the ICD-9 as an illness unto itself.

There are a number of ways the City of Toronto can limit the availability and mitigate the harmful effects of tobacco use and addiction. Price changes are an example of one method that would likely produce the best outcomes in conjunction with a range of other interventions such as treating tobacco dependence. A Toronto tobacco tax, employed in concert with other tools, could help to discourage and decrease the number of cigarettes smoked in Toronto.

## Health Supporting Mechanisms

### Demand elasticity mechanism

A Toronto tobacco tax could be used to decrease tobacco consumption by increasing its price. Estimates of price elasticities in the literature for cigarettes (95 percent of tobacco market) in high-income countries are in the -0.4 range (WHO 2012). This implies a 4 percent reduction for every 10 percent increase in the price of cigarettes. Total consumption demand for tobacco can be broken down into more detail, allowing



for the examination of the effect of price on participation (that is whether someone smokes) and intensity (that is the how much people smoke). Recent meta-analyses, and generally accepted elasticity estimates, show that roughly half of the drop in total consumption results in reductions in participation, and roughly half results from the remaining smokers smoking less (IARC 2011; WHO 2012).

Using these elasticities, rough estimates of price effects can be made for Toronto. There are currently 767,677 daily or occasional smokers in Toronto, accounting from 15.0 percent of the population. With an elasticity of -0.4, a 5 percent price increase could thus be expected to lead to a 2 percent decrease in total tobacco consumption. Separating participation and intensity effects, we could estimate roughly that 1 percent of smokers would quit. This could be expected to lead to 7500 fewer smokers in Toronto.

A number of other factors intermediate this relationship between price and consumption, similar to alcohol. As an addictive substance the long-term price sensitivity of tobacco is greater than the short-term elasticity. As well younger tobacco users are more sensitive to price, and thus the same price increase can lead to two to three times less consumption amongst youth compared to adults (WHO 2012). Elasticities for youth up to -1.2 imply elastic youth demand for cigarettes, highlighting that reasonably small increases in prices could have larger impacts in discouraging youth from smoking (WHO 2012). As with alcohol, lower income groups are more sensitive to changes in price in tobacco. As well, tobacco use is quite heavily skewed towards lower income quintiles. This raises the spectre of regressive taxation, though as will be discussed below, this can be ameliorated with planning.

## Expected Equity Impacts

At first blush a Toronto tobacco tax appears quite economically regressive in that lower income quintiles spend relatively more on tobacco products than higher income quintiles, and a tobacco tax would take a higher percentage of their income (see fig. 3). This regressive nature can however at least partially ameliorated by the allocation of revenue in ways that directly benefit these lower income quintiles. This spending side

### Toronto Tobacco Surtax: Other Factors and Considerations

Public health impacts are one important factor amongst many when weighing public finance revenue tools. Below is a very brief overview of a number of other considerations.

Administrative costs:

- 3% of revenue

Potential revenue:

- varies depending on rate and avoidance
- \$30 million annually: recent estimate for 5% levy (CCPA 2015)

Economic distortion:

- could be expected to change consumer behavior in border areas, would affect smaller shops more negatively, and could contribute to black market sales/ incentivize avoidance

Sustainability:

- revenues can be expected to decline over time due to lower smoking rates

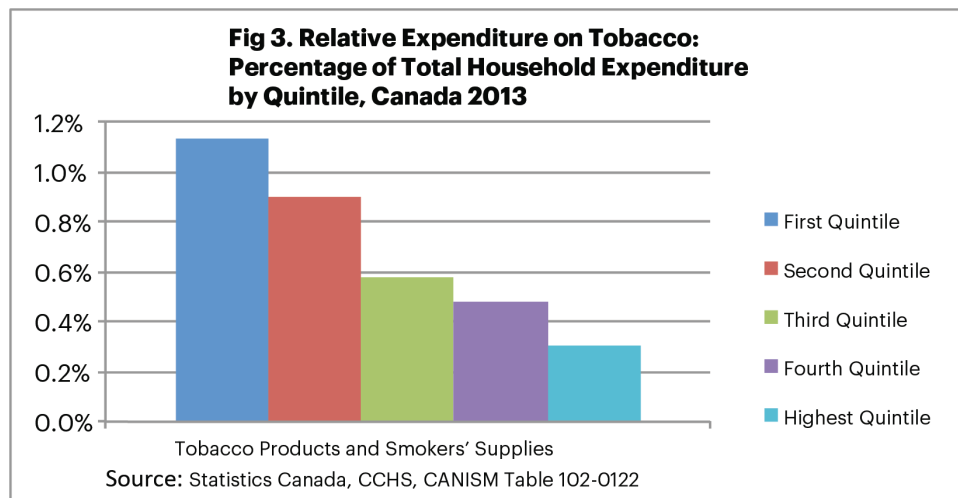
Estimated costs of tobacco use in Canada: (Public Health Agency of Canada 2015)

- 37,000 premature deaths per year

(Source: City of Toronto 2007, unless otherwise specified)

mechanism could be crucial for offsetting the regressive nature of a tobacco tax.

It is estimated that a significant portion of the health disparities between income quintiles is due to tobacco use, and price is a crucial lever for mitigating these inequities (IARC 2011; WHO 2011; WHO 2012). In terms of health equity, as lower income groups are more sensitive to price changes, we can expect to see smoking rates in lower income groups drop faster than higher income groups as a product of price increases. This could be expected to decrease the health inequities which are currently evident across income groups (see fig. 1).



## Vehicle, Road, and Parking Levies

*“Taxes on vehicle purchase, registration, use and motor fuels, as well as road and parking pricing policies are important determinants of vehicle-energy use and GHG emissions.”*

– United Nations Intergovernmental Panel on Climate Change (IPCC) 2007

Air pollution from traffic has serious health impacts for all Torontonians. The connections between vehicle emissions and health are well understood. Vehicle emissions contribute to poor urban air quality and are associated with number medical complications such as the development of asthma, heart disease, and cancer (WHO 2013). Slow-moving traffic with frequent braking and acceleration has relatively high emissions rates. Vehicle emissions contain a number of health harming pollutants such as carbon monoxide, nitrous oxides, particulate matter, volatile organic compounds, ground level ozone, and unburnt hydrocarbons (WHO 2013). On-road vehicles such as personal cars and freight trucks are the single largest local source of air pollution in Toronto, accounting for just over half of local air pollution (TPH 2014). Toronto Public Health estimates that air pollution due to vehicle emissions causes 280 premature deaths and 1,090 extra hospitalizations in Toronto each year (TPH 2014). Currently these health and environmental costs of private vehicle use are not fully included in the costs of driving. Road pricing and other mechanisms can be used to capture these harmful externalities as well as decrease downtown driving and congestion.

In order to decrease downtown air pollution and traffic, one method could be increasing the price of driving downtown. Increasing the price of driving would likely be best employed in conjunction with other mechanisms for decreasing downtown traffic, such as improving public transit and making the TTC a more attractive alternative to driving. Furthermore, increasing the cost of driving downtown could

lead not only to less traffic, congestion, and air pollution; but also to the resources necessary to make public transit a more viable alternative to commuting via personal vehicle. A dedicated transit fund could reasonably be the beneficiary of a vehicle, road, or parking tax in Toronto.

There are several ways in which the City of Toronto could increase the price of driving downtown, including:

- Congestion Tolls (Cordon)
- Highway Tolls
- Parking Levy
- Vehicle Registration Tax (VRT)

Each of these revenue tools would work in quite different ways, but the end result of each would be to increase the dollar cost of driving in Toronto. Congestion tolls could be expected to produce the largest effect on downtown traffic with the most visible increase in the cost of driving downtown. There are a number of options for how such a system could be set up, but the general idea is that it would cost a toll, which would be higher during rush hours, to enter the downtown core in a personal vehicle. This would encourage commuters to substitute driving into the city with other forms of transportation such as public transit or carpooling. It would also decrease traffic congestion by encouraging drivers to enter the city outside of the defined rush hour periods, redistributing and decreasing rush hour congestion.

Highway tolls could have similar effects on highway congestion. Highway tolls could be implemented by the city on the DVP and the Gardiner Expressway, though not the 400-series highways which are under provincial purview. Highway tolls would have similar effects in discouraging commuting via personal vehicle, and would also have the added benefit of being easier to administer and set-up compared to a downtown cordon charge. Both of these revenue tools could also be expected to have drawbacks, for instance in discouraging people living outside the city, who often have few options other than driving, from taking work downtown. Highway tolls could also perversely incentivize drivers to use local roads instead, leading to more local street traffic and under-utilized highways. These drawbacks and potential issues would require mitigation plans, and would have to be weighed on the whole against the potential benefits of such revenue tools.

Parking Levies could discourage driving downtown indirectly, by making it more expensive to park in the city. An up-side to this revenue tool is that it would be relatively easy to implement and administer compared to cordon charges or highway tolls. Depending on the rate and base of this tax, it could be expected to have not insignificant effects on personal vehicle commuting.

A Vehicle Registration Tax (VRT) could also somewhat indirectly discourage driving downtown, by making it more expensive for Toronto residents to register personal vehicles. Even more so than parking levies, a VRT could be implemented and administered easily, and almost immediately. A VRT however would only effect, and thus discourage, drivers who live in Toronto, giving suburban residents a free pass.

## **Health Supporting Mechanisms**

### **Demand elasticity mechanism**

The demand elasticities for transportation levies are more complex than for alcohol or tobacco levies. Mode of transportation decisions include not only monetary price but also service quality, time costs, reasons for travel, demographic factors, and other considerations. The visibility and price structure of

added costs are also very important for transportation elasticities. People react more strongly for instance to highly visible usage-based monetary costs (road pricing, direct cost-to-consumer parking fees) as opposed to less visible, non-usage-based costs like the VRT. There are also a number of second round impacts that could modify expected effects from road, vehicle, and parking levies. Congestion tolls for instance could increase the dollar costs of driving, but decrease time cost (i.e. time spent in traffic) and thus have more complicated effects and distributive impacts.

There are a number of important close substitutes to driving, and private vehicle use demand is dependent on attractiveness and costs of these substitutes such as transit and carpooling. Implementing driving disincentives such as a parking levy or road pricing causes automobile trips to decline, shifting a percentage of trips to other methods such as transit. The goal is not to limit overall mobility, but to shift the method of mobility to ones that have lower fully internalized health, social, and economic costs. This can be encouraged by making healthier transportation options cheaper than more damaging ones.

Downtown driving is generally understood to be inelastic, meaning that changes in price lead to proportionately smaller changes in driving. Short-run price effects however tend to be about a third of long-run effects (Litman 2013, 2015). As well individual price components of driving (tolls, parking, registration) tend to be less elastic because they each represent only a small proportion of the total user costs of driving. The price effect needs to be examined relative to the total cost of driving as a percentage of income in order to highlight the full effect of price changes.

Drivers tend to be more sensitive to highly visible road pricing (congestion tolls, highway tolls) compared to other types of price changes. Some research has indicated a strong bias against paying tolls, regardless of amount, leading to less traffic volume and revenues than expected (Brinckerhoff 2012). Recent studies have found widely differing driving elasticities with respect to road pricing, with contextual factors such as economic activity having strong modifying impacts. A 2010 literature review found that the elasticity of traffic volume to tolls is typically between -0.1 and -0.45, depending on conditions such as viable non-toll alternatives and the percentage of non-commuter trips (Spears, Boarnet and Handy 2010). This implies that a 10 percent increase in tolls could be expected to reduce traffic by 1 percent to 4.5 percent on that roadway. A 2008 Norwegian study found that elasticities average -0.54 in the short run and -0.82 in the long run implying considerably larger effects (Odeck and Brathan 2008). Spears, Boarnet and Handy also found that cordon charges have reduced traffic volumes in five European cities by 12 percent to 22 percent, indicating a -0.2 to -0.3 elasticity.

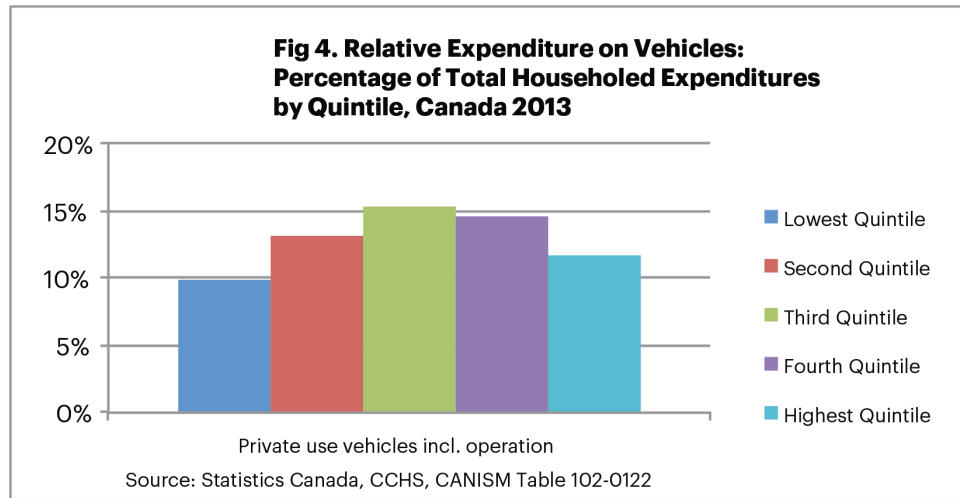
Parking is another highly visible cost of driving when the consumer pays the cost directly. Parking costs that are rolled into other services, and thus obscured, can be expected to affect consumers' behaviour less than the same charge at a more visible rate. For instance, the cost of parking being rolled into the costs of products at a shop, thus appearing "free," could be expected to have lower effects.

## **Expected Equity Impacts**

Vehicle, road, and parking levies are linked to usage rather than income and thus are economically regressive. Lower income people in general spend less relative income on private vehicle transportation than middle income groups, and rely more on urban public transportation than all the other income groups (see fig. 4). Certain types of public transportation could speed up with less congestion (trams,

buses), thus potentially lead to some mobility equity gains for low income people.

How the revenues from road, vehicle, and parking levies are spent is particularly important. There is a strong argument for the beneficiary of such tools to be a dedicated transit fund. If road pricing revenues go to enhancing public transit, then lower income groups who rely more on public transit could be better off than under the current arrangement. As well if some of the revenue went to free or discount low income transit passes for instance, then the net effect could be quite progressive. This could lead to increased low income mobility, increased ability for low income groups' to take work, and to less economic inequality.



### Mitigating Regressive Aspects: The Spending Side Mechanism

How revenues are spent has a large impact on the public health effects, and the economic progressivity of policy changes that increase taxes. These revenue tools could raise significant revenue which could allow for progress on a number of health and social priorities. For an example of scale, a moderate five percent alcohol tax, applied only to off-licence stores such as the LCBO and the Beer Store, could be expected to sustainably raise \$77 million per year (CCPA 2015). This revenue could cover the entirety of the \$75 million in incremental funding that 50 community groups highlighted as necessary to move the dial on poverty in Toronto (C2C 2016). A modest five percent tobacco surtax could be expected to raise \$30 million per year for the City of Toronto (CCPA 2015). Revenue from road, vehicle, and parking levies could be used through a dedicated transit fund for improved services or system expansion. Revenue could be used to expand the TTC services, reverse recent fare increases, or bring the TTC in line with other city's fare-subsidy ratios. Research has shown that drivers are more likely to accept vehicle, road, and parking price increases if they are part of an integrated strategy that is considered fair and provides benefits everyone (Litman 2013). Odeck and Brathan (2008) found that public attitudes toward tolls tend to become more favorable when people understand how revenues will be used.

Revenue from these tools could allow the City of Toronto to allocate more funding for a myriad of social and health programming. These types of spending generally disproportionately benefit lower income groups, and thus could help mitigate the regressive aspects of the explored revenue tools.

## Conclusion

This discussion paper aims to spur a wider dialogue around the public health effects of revenue tools currently available to the City of Toronto. Through the implementation of these tools significant public health effects could be expected. For example a five percent tobacco tax could be estimated to decrease tobacco consumption by two percent in Toronto.<sup>9</sup> Roughly estimated, this could lead to 7,500 people quitting, or not starting altogether.<sup>10</sup> The harmful and costly effects of alcohol use could be partially mitigated through a Toronto alcohol tax, lowering alcohol consumption in Toronto by 2.5 percent.<sup>11</sup> Road, vehicle, and parking levies could be used to decrease harmful downtown pollution and congestion which are currently responsible for 280 premature deaths and 1,090 extra hospitalizations in Toronto each year (TPH 2014). The revenues raised from these market-based revenue tools could also be used to make transformative changes in Toronto by improving public health, mitigating poverty, and expanding transit.

The public health impacts of revenue tools should be included as a central criterion in the evaluation of revenue tools for the City of Toronto. Their effects are too large to ignore. It is the goal of this discussion paper to contribute to this discourse, and highlight that debates around taxation should include a mindfulness of their public health impacts. There are several health promoting revenue tools which the City currently has the power to implement, and these tools have the power to improve public health by decreasing the consumption of harmful substances such as alcohol and tobacco, and by decreasing congestion and pollution from vehicles on Toronto's streets.

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## Endnotes

1 Health adjusted life expectancy at Birth for Ontario Males 2005/2007. “Health-adjusted life expectancy is a more comprehensive indicator than that of life expectancy because it introduces the concept of quality of life. Health-adjusted life expectancy is the number of years in full health that an individual can expect to live given the current morbidity and mortality conditions. Health-adjusted life expectancy uses the Health Utility Index (HUI) to weigh years lived in good health higher than years lived in poor health. Thus, health-adjusted life expectancy is not only a measure of quantity of life but also a measure of quality of life.” Statistics Canada.

2 This mechanism is examined in a preliminary and illustrative manner in this paper using commonly accepted linear elasticities. Price-demand relationships have more complex intermediating cross elasticities, good specific factors, and non-linear elasticities, which are not examined here. For a more thorough examination of these factors please see the source documents.

3 This estimate is based on the estimated of parking spaces in the City of Toronto conducted by Altus Consulting in 2013. This estimate accounts for a 3% administrative cost, in line with estimates used in City of Toronto (2007). It does not account for tax avoidance or projected responses in supply.

4 Linear elasticities from Gallet 2007 for alcohol, and WHO 2012 for tobacco.

5 Calculations using the aforementioned linear elasticities.

6 CCPA (2015) estimates for 2015 in current dollars. Includes administrative costs, price elasticities, and avoidance elasticities. For alcohol includes only off-licence establishments.

7 Using WHO (2012) estimates of participation price elasticities for tobacco in high income countries. One percent of total Toronto occasional or daily smokers in 2013-14, Statistics Canada table 105-0592.  $767,677(0.01) = 7676$

8 Also see City of Toronto 2007, CCPA 2015, Litman 2013/2015.

9 See full section above for explanation and sources.

10 Participation elasticity of tobacco is estimated at -0.1 (IARC 2007). One percent of total Toronto occasional or daily smokers in 2013-14, Statistics Canada table 105-0592.  $767,677(0.01) = 7676$ .

11 Ceteris paribus. See full section above for explanation and sources.