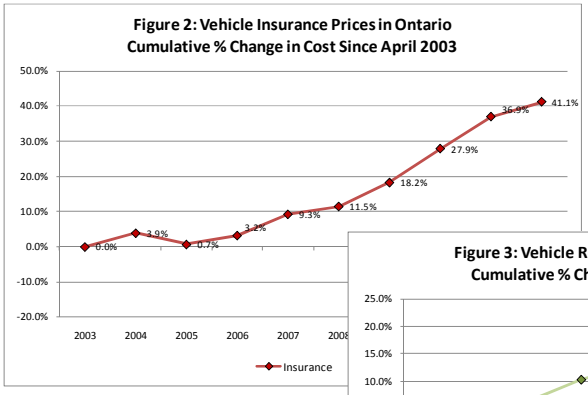
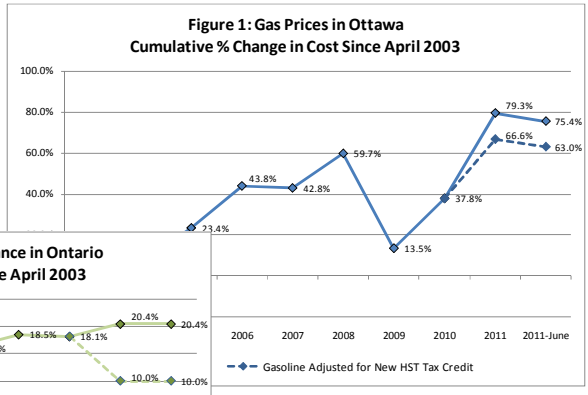
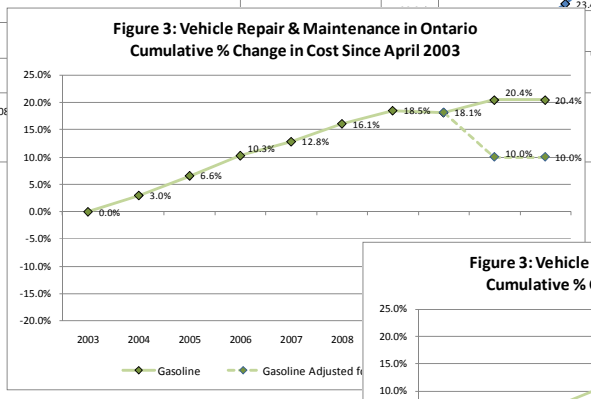
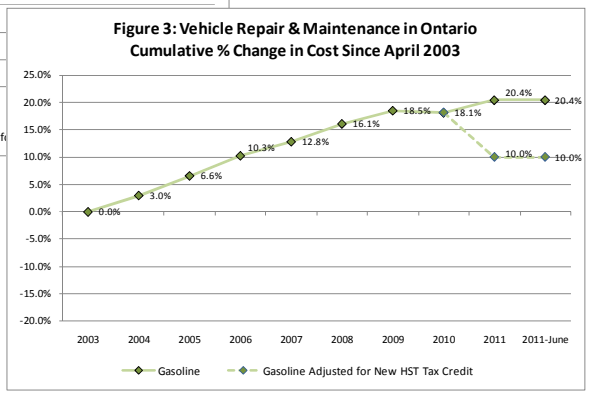
Bylaw and Regulatory Services
City of Ottawa

Ottawa Taxi Cost Index 2011 Update









Hara Associates

Ottawa Taxi Cost Index
2011 Update

Prepared for:

Bylaw and Regulatory Services
City of Ottawa

By:

Hara Associates Inc.

Bayswater Square, 1066 Somerset Street West, Suite 406, Ottawa, Ontario, K1Y 4T3
613-722-5528, 613-482-4901 (Fax), hara@haraassociates.com

Hara Associates Reference: 1514
August 22, 2011

TABLE OF CONTENTS

Executive Summary

One of the challenges in regulating taxis is setting meter rates fairly and effectively. The City of Ottawa, regulates rates to protect consumers, while at the same time having a duty in law to ensure meter rates allow operators the opportunity to earn a *just and reasonable* rate of return.

With today's volatile fuel prices and rising insurance costs, industry requests for rate reviews are frequent. When a request is received, a city faces a number of questions. For example:

- How much should rates be increased? What proportion of taxi costs go to fuel? How have other costs changed?
- What should we do if some prices fall again? What adjustment should be made?

Ideally, meter rates should be adjusted in a fair and predictable way to respond to all industry costs, not just fuel prices.

A *cost index* is a common solution used in many regulated industries to guide rate setting without the expense of extensive cost inquiries. Ottawa has tracked the cost of operating a taxi by using a cost index since 2003. The current Bylaw refers to the Taxi Cost Index as a ceiling for any increase in meter rates.

This report addresses two issues:

- *What is the current level of Ottawa's Taxi Cost Index? What does it indicate about the adequacy of meter rates?* The year-to-year calculation of a cost index is normally automatic using a formula based on Statistics Canada data. However the introduction of the Harmonized Sales Tax (HST) in July 2010 complicated the process.
- *Revision of the cost profile for Ottawa Taxis.* The cost index is based on a cost profile of taxi operation. Over time, this profile can become inaccurate. The index accounts for changes in prices, but not for changes in vehicle technology, average traffic congestion, etc. The cost profile underlying an index should be reviewed at least every ten years, and ideally more frequently. It has now been eight years since the Ottawa Taxi Cost Index was updated.

The report assesses today's meter rates using the current Taxi Cost Index established in the Bylaw. Separately, an updated Taxi Cost Index, developed in consultation with key industry stakeholders, is recommended for application to future years.

Finding on 2011 Meter Rates

In 2010, the City of Ottawa raised meter rates to account for the anticipated Harmonized Sales Tax (HST) effective July 1, 2010. Although the HST was a combining of two existing taxes, it also extended a new 8% tax onto the taxi industry, which had not previously been subject to the old 8% provincial sales tax. [1]

[1] The actual adjustment to the meter rates was approximately 7.4% to account for the fact that the meter rate is expressed as a tax included price.

However, in addition to the HST, other costs of operation grew significantly between 2010 and 2011, notably gasoline and insurance. Gasoline prices rose 27.3%, between April 2010 and June 2011. (April is the review month set in the Bylaw, and June was the most recent data available for this report.)[2] Insurance rose 11.2%.

An adjustment to the meter rate would be needed to catch up to these costs, to preserve the benchmark set for meter rates by Council in 2003, and to conform to the resulting Bylaw. In 2003 Ottawa conducted an extensive review of meter rates in light of a long preceding period where meter rates had remained unchanged while costs increased. The 2003 Council set new rates, and established the current Taxi Cost Index within the Bylaw to guide regular review.

Before applying the Taxi Cost Index, it is necessary to make adjustment for the fact that the HST also allows taxi operators to claim new tax rebates from the HST that were not previously available under the Ontario Provincial Sales tax. Table 1 summarizes the impact on individual cost elements.

Table 1
Percentage Change in Cost Before and After New HST Tax Credits April 2010 to June 2011

Before/After new HST Credits	GAS	REPAIR	INSURANCE	AUTO	OTHER COSTS	COMPARABLE WAGE
Percentage change in price as per Statistics Canada data series	27.3%	2.0%	11.2%	-3.9%	3.8%	1.0%
Percentage change net of new HST tax credits	18.3%	-5.3%	11.2%	-10.7%	-3.5%	1.0%

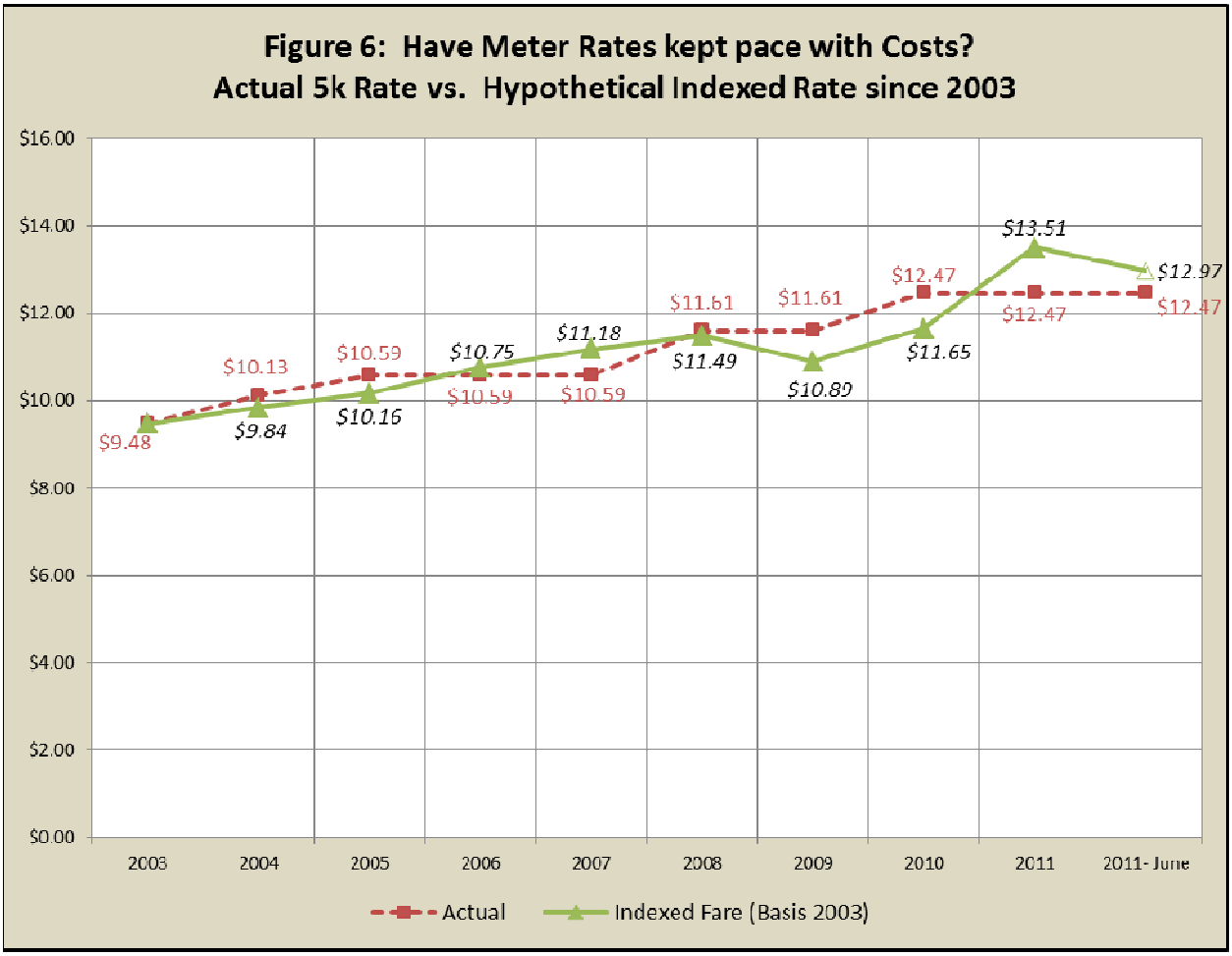
Net of adjustment, gas prices still rose 18.3% over the last year. However, effective cost of repairs actually fell, and declining auto prices fell further.

The Taxi Cost Index estimates the combined effect of these changes. Applying results in this finding.

Finding: *Costs of taxi operation increased 11.3% between 2010 and 2011, significantly more than the 8% increase in rates undertaken in 2010 in anticipation of the HST. The primary cause was a 27% increase in fuel costs and an 11.2% increase in insurance. After adjusting for HST rebates, an additional rate increase of 4.0% would be necessary for the industry to catch-up and bring meter rates in line with the benchmark levels established by Ottawa City Council in 2003.*

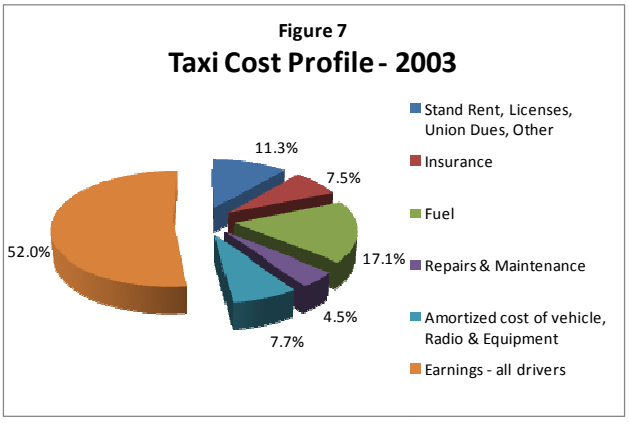
Figure 6 from the report provides a longer term comparison between actual meter rates (red dashed line) and the hypothetical index rate preserving the five kilometre fare established in 2003.

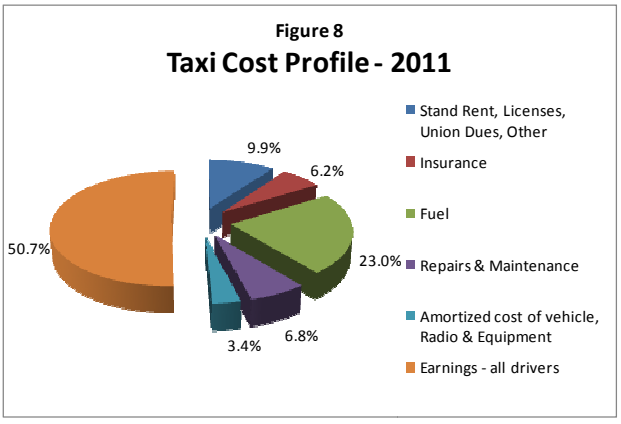
[2] The Bylaw recommends using April as a reference to avoid seasonal variation in year to year adjustments. This report uses June because the recent economic slowdown has reduced gas and other prices from their peak for non-seasonal reasons.



Going Forward: A New Index for 2012 and future years

Separately, an updated cost profile for taxi operation is recommended for use when updating the Taxi Cost Index in future years. Figures 7 and 8 from the report compare the 2003 cost profile to the recommended profiled based on 2011 costs of taxi operation.





(This page intentionally blank for two-sided reproduction)

Ottawa Taxi Cost Index – Update 2011

One of the challenges in regulating taxis is setting meter rates fairly and effectively. The regulator has a duty to ensure *just and reasonable* rates of returns, and that meter rates are adjusted to reflect changing cost conditions experienced by the industry. At the same time, consumers must be protected against overcharging and exploitation.

In these days of volatile fuel prices and rising insurance costs, industry requests for rate reviews are frequent. When a request is received, a city faces a number of questions. For example:

- How much should rates be increased? What proportion of taxi costs go to fuel?
- What should we do if some prices fall again? What adjustment should be made?

Ideally, meter rates should be adjusted in a fair and predictable way to respond to all industry costs, not just fuel prices.

A *cost index* is a common solution used in many regulated industries to guide rate setting without the expense of extensive cost inquiries. Ottawa has tracked the cost of operating a taxi by using a cost index since 2003. The current Bylaw refers to the Taxi Cost Index as a ceiling for any increase in meter rates.

This report addresses two issues:

- *What is the current level of Ottawa's Taxi Cost Index? What does it indicate about the adequacy of meter rates?* The year-to-year calculation of a cost index is normally automatic using a formula based on Statistics Canada data. However the introduction of the Harmonized Sales Tax (HST) in July 2010 complicated the process.
- *Revision of the cost profile for Ottawa Taxis.* The cost index is based on a cost profile of taxi operation. Over time, this profile can become inaccurate. The index accoungts for changes in prices, but not for changes in vehicle technology, average traffic congestion, etc. The cost profile underlying an index should be reviewed at least every ten years, and ideally more frequently. It has now been eight years since the Ottawa Taxi Cost Index was updated.

The report assesses current meter rates using the current Taxi Cost Index established in the Bylaw. Separately, an updated Taxi Cost Index, developed in consultation with key industry stakeholders, is recommended for application to future years. The report is divided into four sections:

1. **Background on Rate Regulation and the Role of Cost Indexes.** The problem of rate regulation is discussed. Advantages and disadvantages of the cost index solution are explained.
2. **Recent Changes in Ottawa Taxi Costs.** Changes in fuel, insurance, and other costs are discussed.
3. **Cost Index and Meter Rates for 2011.**
4. **An updated Cost Profile of Ottawa Taxis for future years.**

The report is accompanied by an updated computer spreadsheet tool (in Microsoft Excel) to assist city staff annual updates of the TCI. The spreadsheet has step-by-step instructions, and lists the necessary data sources.

1 Background: Rate Regulation and Cost Indexes

Ottawa has already implemented a Taxi Cost Index in its livery Bylaw. This section provides general background on cost indexes, and their use by regulators.

1.1 Policy Objectives and the Law

Cities regulate meter rates to protect consumers. In the absence of regulation, passengers cannot assess a fair price given the variable nature of the service in terms of both distance and quality of vehicle and driver. Regulated rates on meters provide a convenient set guide, and avoid situations of haggling or exploitation (as on a lonely street late at night).

Although rates are set for the benefit of the consumer, the concerns of the industry also must be considered. The broader framework of common law places duties on governments when regulating the price of any product or service; prices must be set high enough to allow firms in the industry the opportunity to make a *fair and reasonable* rate of return on their investment. To do this the cost conditions of the industry must be considered, and cities typically change taxi meter rates in response to changes in industry costs.

1.2 The Trend Away from Cost Inquiries

Setting taxi meter rates is a form of rate regulation. The obligations and responsibilities of the regulator are the same as for setting rates for electrical power or telephones.

One approach to setting rates is to conduct a full cost inquiry in which the industry's costs are fully disclosed and examined. Such inquiries are expensive for both the regulator and those making presentations. Since the costs of regulation are part of the costs of doing business, the consumer usually ends up paying for this process in the form of higher rates.

A reason for the expense of these enquiries is that finding a *just and reasonable* return is not easy. In practice, the focus is on the percentage return on capital. Determining the net capital invested in a firm can be a challenging accounting exercise. On top of this, the percentage return must reflect the riskiness of the business. Since risk varies by industry, and is assessed in a complex way[3], a great deal of expert time may be involved in arguing the appropriate percentage return.

Other disadvantages of cost inquiries are:

- They tend to rely on the regulated industry itself for cost data;

[3] As an example of the issues involved: Risk is assessed not by the variation in returns, but by the *covariance* of returns with general market returns.

- There is a large body of literature indicating that regulating in this fashion can lead to perverse results, such as overinvestment in capacity by the industry.

As a result, regulators have sought alternative methods of rate setting that are cheaper, and provide an independent check on industry arguments as to how their costs have changed.

1.3 Specific Challenges for Setting Taxi Meter Rates

The taxi meter is located in the taxi. This means that it is the *taxi* whose price is being regulated, not the taxi company (also called a *broker*). The individual taxi owner is a customer of the broker and pays *stand rent* and other fees for the broker's services in providing common colours and receiving telephone calls and dispatching taxis to customers. Brokers may own some of their taxis.

Because the individual taxi is the object of regulation, cities face problems not faced by most other rate regulators:

- **Many small firms.** Each taxi owner is a separate entity, entitled to make his/her own arguments about profitability;
- **Cash business.** Much of the business is done in cash and is poorly recorded. Even taxi companies do not know the costs and revenues of individual taxis, although experienced taxi companies may have a good idea.

1.4 What is a Cost Index?

A cost index is similar to a consumer price index. The consumer price index measures the change in cost of living for the average consumer by checking the price of a typical "basket" of consumer goods and services every month. A taxi cost index does the same for the goods and services that are required to operate a taxi. Change is expressed proportionately. When an index rises from 100 to 110, it means that there has been a 10% increase in cost. To construct an index, each cost component receives a weight proportional to its share in total costs of operation. For example, if fuel costs were half of total costs[4], then a 10% increase in fuel would result in a 5% increase in the cost index. A cost index is applied in three steps:

1. **Develop Cost Profile.** An operating cost profile of a typical taxi is developed. The result is a percentage of cost assigned to each type of cost (fuel, vehicle, insurance, etc.), adding up to 100%.
2. **Monitor Changes in Cost.** Changes in cost for each element are monitored using publicly available information. For example, the cost of fuel in Ottawa is monitored monthly by Statistics Canada.
3. **Calculate percentage change year-by-year**. The overall percentage change in costs is calculated each year, relative to the base year when the index was started. The calculation can be automated with a computer spreadsheet. Anyone doing the calculation should obtain the same a result – providing a transparent process that can be verified. If needed, the percentage change in costs can be done in any month using the previous month's published data from Statistics Canada.

[4] The proportion of "half" is chosen to keep the mathematics simple – it is not a real number.

The advantages of a cost index are:

- **Industry participation is easier.** The industry can participate in setting the initial cost-profile, without revealing actual cost information. Stakeholders contribute their ideas in the form of percentage share of costs (e.g. what percentage of a single taxi's gross revenue goes to fuel?).
- **Specific to each city.** Costs of taxi operation vary from city to city. Fuel costs vary, distances per fare vary, time spent waiting for a fare varies, etc. The cost index can be based on taxi operation typical of the selected city.
- **Easy to update.** Once the cost profile for the starting year is established, the index can be recalculated whenever desired using published data from Statistics Canada or other reliable public agencies. Usually this is done annually;
- **Easy to apply.** If the cost index rises 5%, then rates can be adjusted upward by 5%. Most cities use the index as a guide, leaving open the possibility that the industry might decline the rate increase (as sometimes happens), and giving city council ultimate authority. City councillors tend to feel comfortable and well guided when an objective index is used. This permits the council process to become routine. Some cities write the cost index into a bylaw as Ottawa has done;
- **More regular rate adjustments.** Ease of application allows regular small adjustments to fares, rather than large adjustments after a few years. The index should be reviewed and rebased at least every ten years;
- **Standardized methods.** The principles of cost indexes are well known and applied in many fields. Calculation can be embodied in a computer spreadsheet that can be reviewed and crosschecked against public sources by anyone.

The disadvantages of a taxi cost index are:

- **Only preserves the status quo.** A taxi cost index is used to keep the profitability of the industry at the same level as in the base year that is chosen. It says nothing about whether the profitability in the base year was too high or too low.
- **Requires updates when vehicle technology changes.** The cost index assumes that the physical requirements for operating in the industry remain unchanged. In reality, gas mileage of vehicles may improve, reducing the importance of fuel. Other changes also occur, including longer lasting vehicles with lower maintenance, or a change in traffic speed and congestion within a city. When technology changes, the cost index will no longer give the correct weight to each factor. *Cost indexes should be updated at least once every ten years to take into account technological and other changes.*

2 Recent Changes in Ottawa Taxi Costs

As further background, the charts below show the cumulative percentage changes in costs for four key elements of taxi costs since 2003. In 2003, Ottawa conducted a major review of taxi meter rates. Based on this study, Council set a new meter rate and instituted the current cost index to manage year-to-year adjustment. Thus 2003 is a reference year. All data are based on

published Statistics Canada series.[5] Sources are shown in Replacement for a Taxi Cost Index and Review of Taxi Plate Numbers.

Impact of Recent Economic Slowdown

Changes shown are based on April of each year, except for the last data point. The charts show two values for 2011, April and June, in order to illustrate recent economic events. As a general pattern, the slowdown in economic growth in recent months has caused prices to fall between April and June (the most recent month available at the time this report was drafted).

Impact of HST Tax Credits

In 2010, Ontario introduced the Harmonized Sales Tax (HST). The 8% sales tax was combined with the 5% goods and services tax to create a 13% tax. This had a number of impacts. First, it resulted in a new 8% tax on taxi service. Taxis had been subject to GST, but had not previously paid the retail sales tax. In addition, it had an impact on the net price paid by taxis for some items. Before the HST, a taxi might pay 5% GST on tires, plus another 8% PST. Only the 5% could be claimed back as GST input credit. After the HST, the entire 13% could be claimed back.

For 2011, the charts below show percentage change in price inclusive of tax, and where relevant, the change net of the 8% additional tax credits. Insurance and wages are not subject to HST.

2.1 Changes in Fuel Costs

Figure 1 shows that Ottawa fuel costs rose consistently until 2008 (up 59.7% since 2003). The recession of 2009 caused fuel prices to dip sharply, but they recovered rapidly. As of April 2010, prices were 37.8% higher than 2003, but still below their previous peak. Another sharp increase followed, aided by a tax increase of 8% through the introduction of Ontario's Harmonized Sales Tax(HST). Gasoline had not been subject to Ontario's retail sales tax previously. In April of 2011, price was 79.3% above 2003, a new peak.

However, the tax credit that taxis could claim for fuel purchases also increased 8% under the HST, offsetting this part of the fuel price increase. The dotted line for 2011 shows the change in price accounting for the increased tax credit under the HST.

Even after adjusting for an increased tax credit, gas prices in April had reached a new peak. They remained high in June, although moderated by the recent economic slowdown.

2.2 Changes in Insurance, Maintenance and Labour Costs

While fuel prices have been highly variable, insurance costs have moved steadily upwards. As of June 2011, vehicle insurance in Ontario was 41.1% higher than in 2003. In contrast, the consumer price index had risen only 18.3% over the same period.

Taxation of insurance did not change with the HST. An insurance taxed under the provincial sales tax remained under the same 8% tax of the old regime.

[5] For data sources and methodology, see chapter 2 of *Replacement for a Taxi Cost Index and Review of Taxi Plate Numbers*, undertaken for the City of Ottawa in 2003.

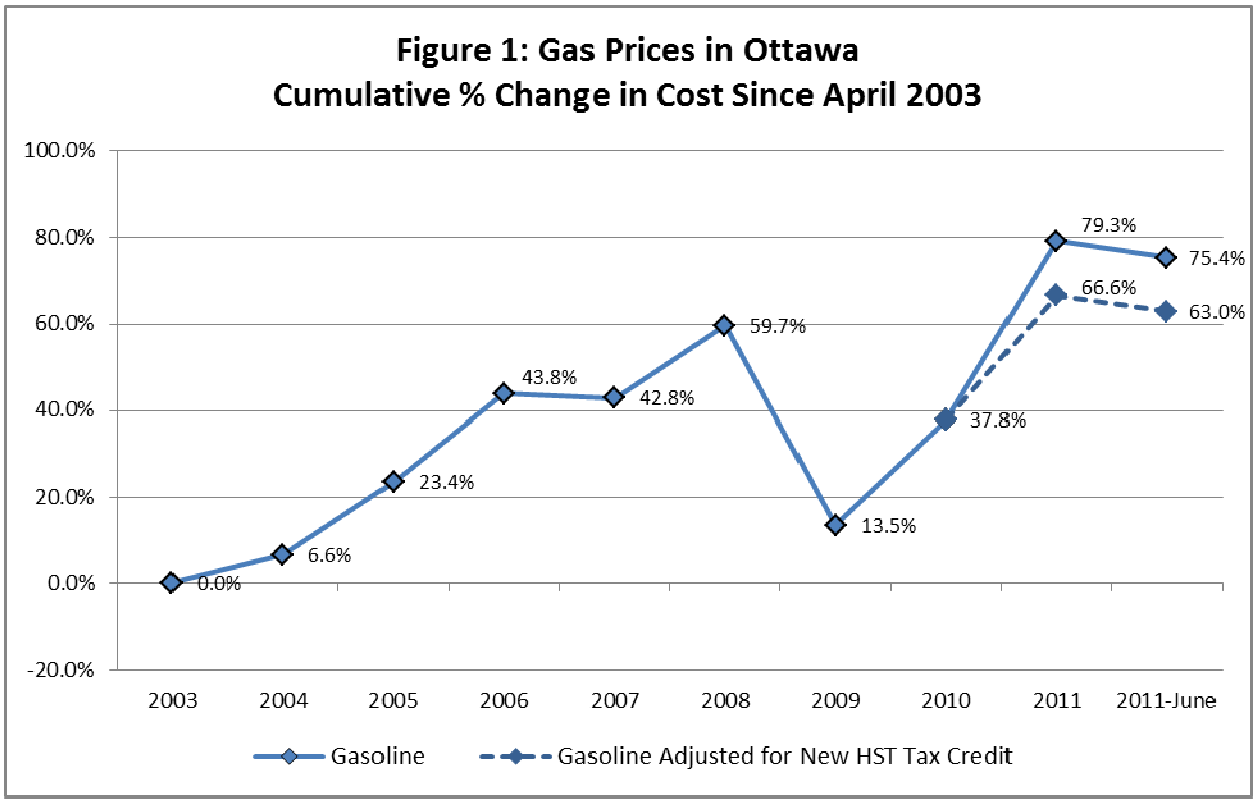


Figure 1: Gas Prices in Ottawa
Cumulative % Change in Cost Since April 2003
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
-20.0%
0.0%
6.6%
23.4%
43.8%
42.8%
59.7%
13.5%
37.8%
79.3%
75.4%
66.6%
63.0%
2003
2004
2005
2006
2007
2008
2009
2010
2011
2011-June
Gasoline
Gasoline Adjusted for New HST Tax Credit

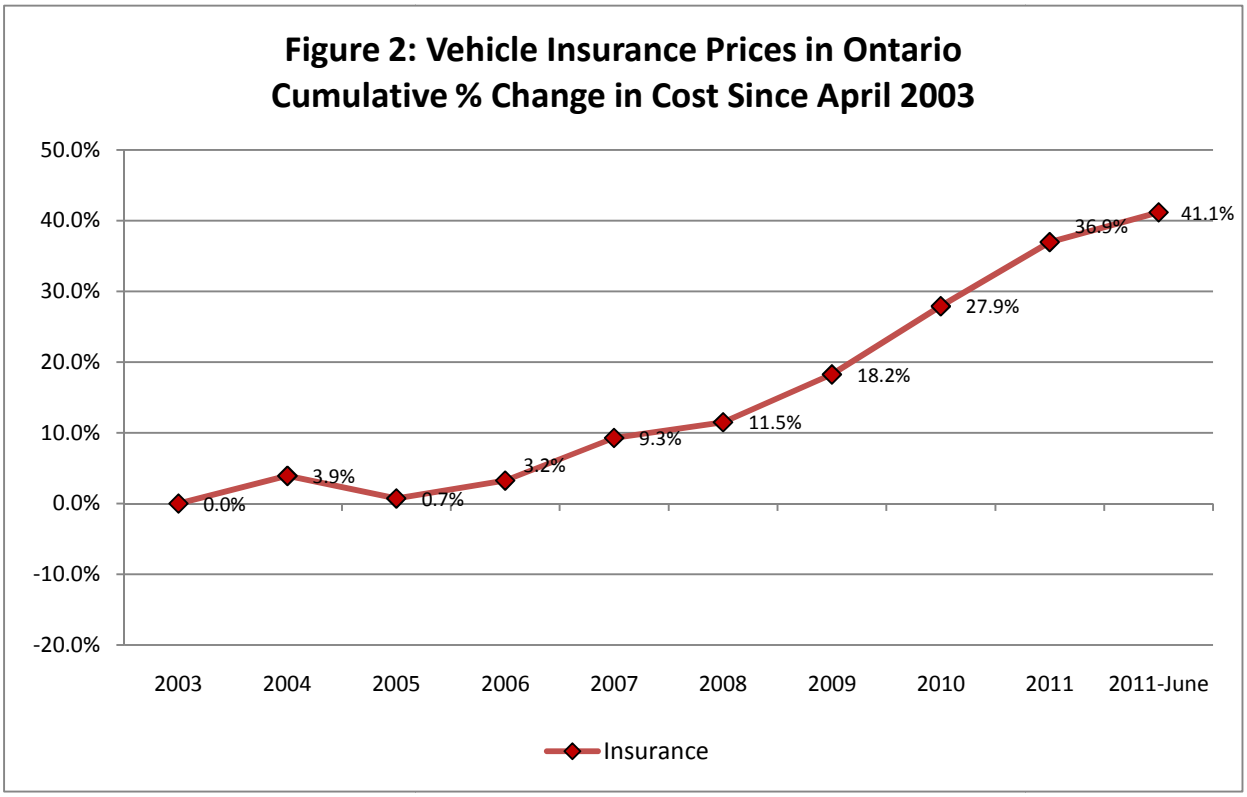
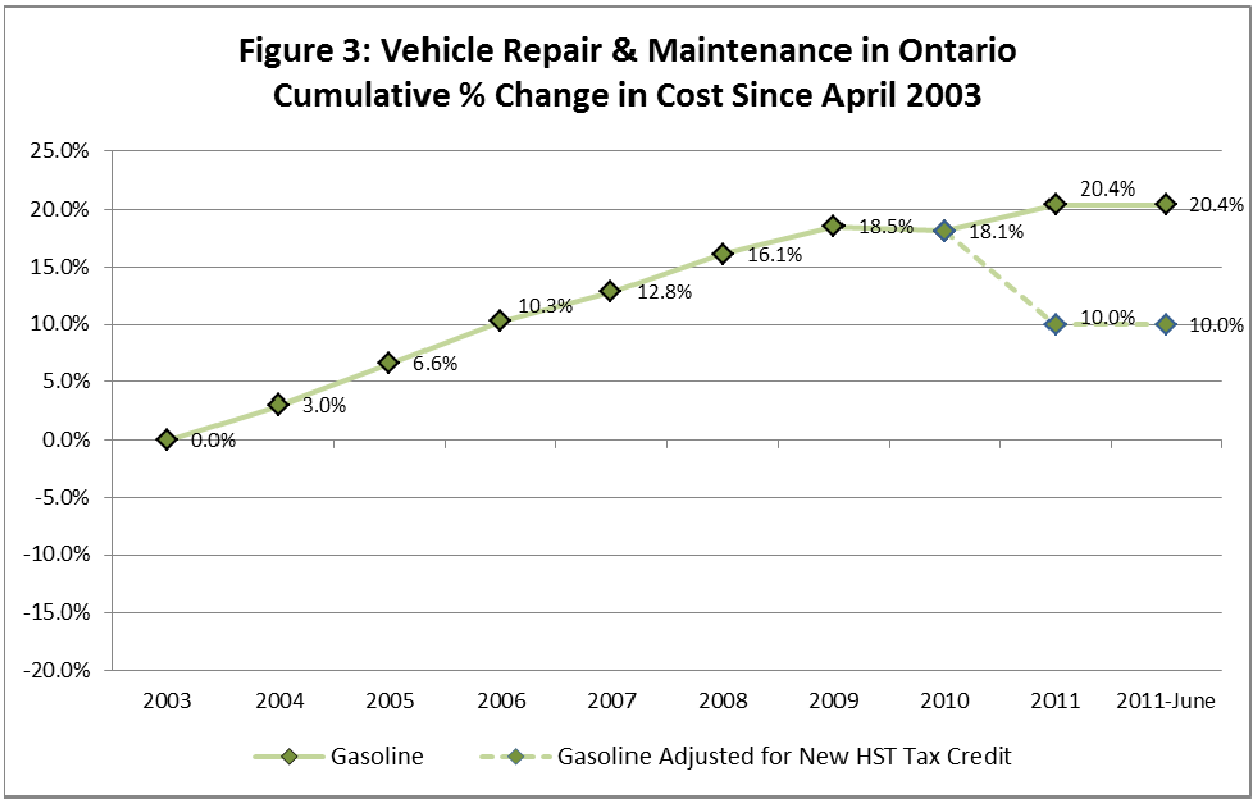


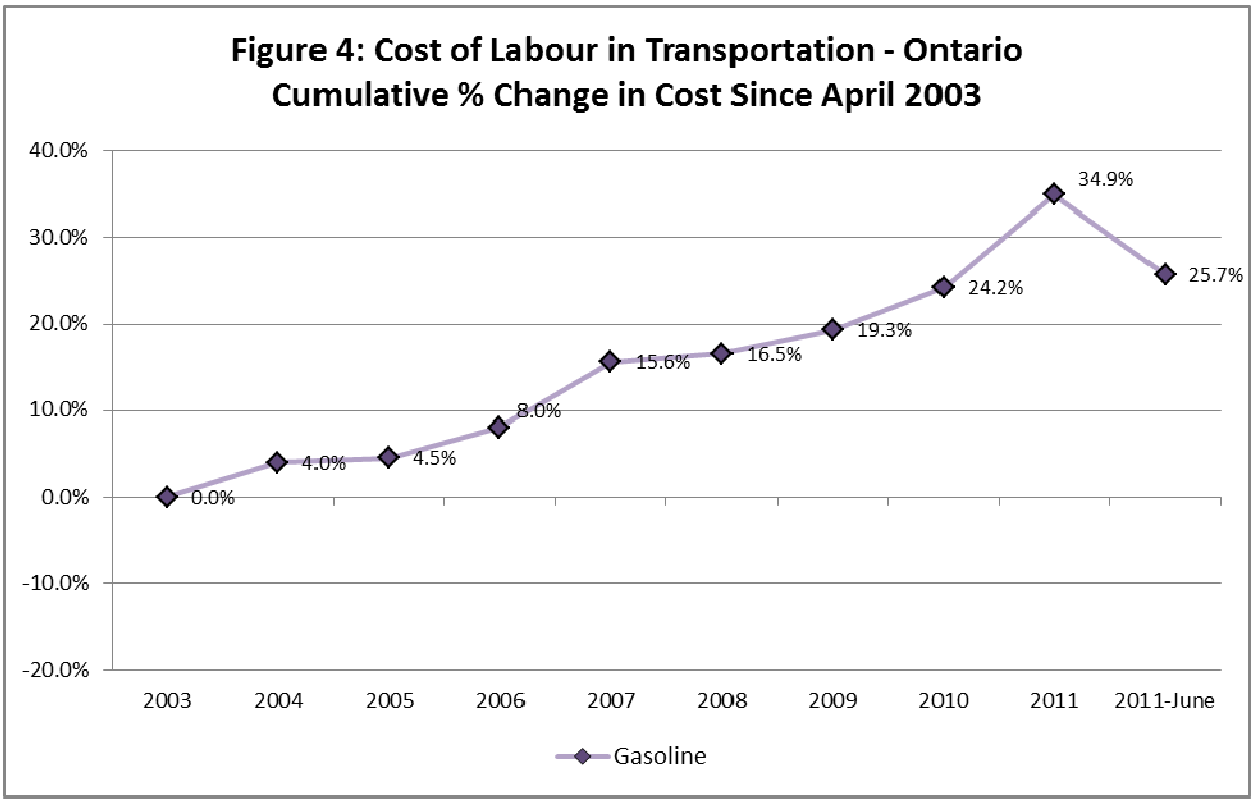
Figure 2: Vehicle Insurance Prices in Ontario
Cumulative % Change in Cost Since April 2003
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
-10.0%
-20.0%
0.0%
3.9%
0.7%
3.2%
9.3%
11.5%
18.2%
27.9%
36.9%
41.1%
2003
2004
2005
2006
2007
2008
2009
2010
2011
2011-June
Insurance

Vehicle maintenance costs have also risen steadily, at a rate only slightly higher than the consumer price index. However, the introduction of the HST converted the 8% provincial sales tax on most repairs into an HST deductible rebate. Including this benefit, the net cost of repairs actually fell between April 2010 and 2011.



Labour costs are also part of the total cost of taxi operation. Although Ottawa taxi drivers are not paid a salary, there must be sufficient returns to taxi drivers to keep them interested in driving. In general, the returns to taxi drivers tend to track the alternative jobs available in the comparable industries. If the hourly wage for working an alternative job in the transportation sector is higher than the return to driving a taxi, it becomes difficult to retain qualified drivers.

Figure 3 shows how hourly wages in the Ontario transportation sector have changed since 2003. Wages rose steadily, with a slower rate during the 2009 recession. As a Canadian economic recovery appeared to take hold, labour markets in Ontario became tighter and wages began to increase more rapidly. April 2011 was a peak. However, the current economic slowdown brought wages back down by June, to a level only a little more than 2010.



2.3 Summary: Cost Changes since Last Year (2010)

Table One summarizes the change in costs between this year and last, before and after the new HST credits.

Table 1:
Percentage Change in Cost Before and After New HST Tax Credits April 2010 to June 2011

Before/After new HST Credits	GAS	REPAIR	INSURANCE	AUTO	OTHER COSTS	COMPARABLE WAGE
Percentage change in price as per Statistics Canada data series	27.3%	2.0%	11.2%	-3.9%	3.8%	1.0%
Percentage change net of new HST tax credits	18.3%	-5.3%	11.2%	-10.7%	-3.5%	1.0%

Gas rose 27.3% over the period to June, in part due to an 8% increase in tax under the HST. However, that 8% tax increase can be claimed by taxi operators as part of their HST rebates. It should not be counted as an increased cost to taxi operation. After adjusting for the rebate, the net cost of gasoline to taxi operators increased 18.3%.

Similarly, the cost of repairs rose 2%, but the conversion of the provincial sales tax to a the HST effectively lowered the cost of repairs by 8% for businesses, resulting in a net drop of 5.3%.[6]

[6] The difference does not equal exactly 8% because the table uses the tax included price in 2010 as a base.

The cost of a car has fallen 3.9% over the last year, and falls even further once the additional 8% HST credit is taken into account. Insurance and wages are not subject to the HST change, so their cost increase is the same, before and after adjustment.

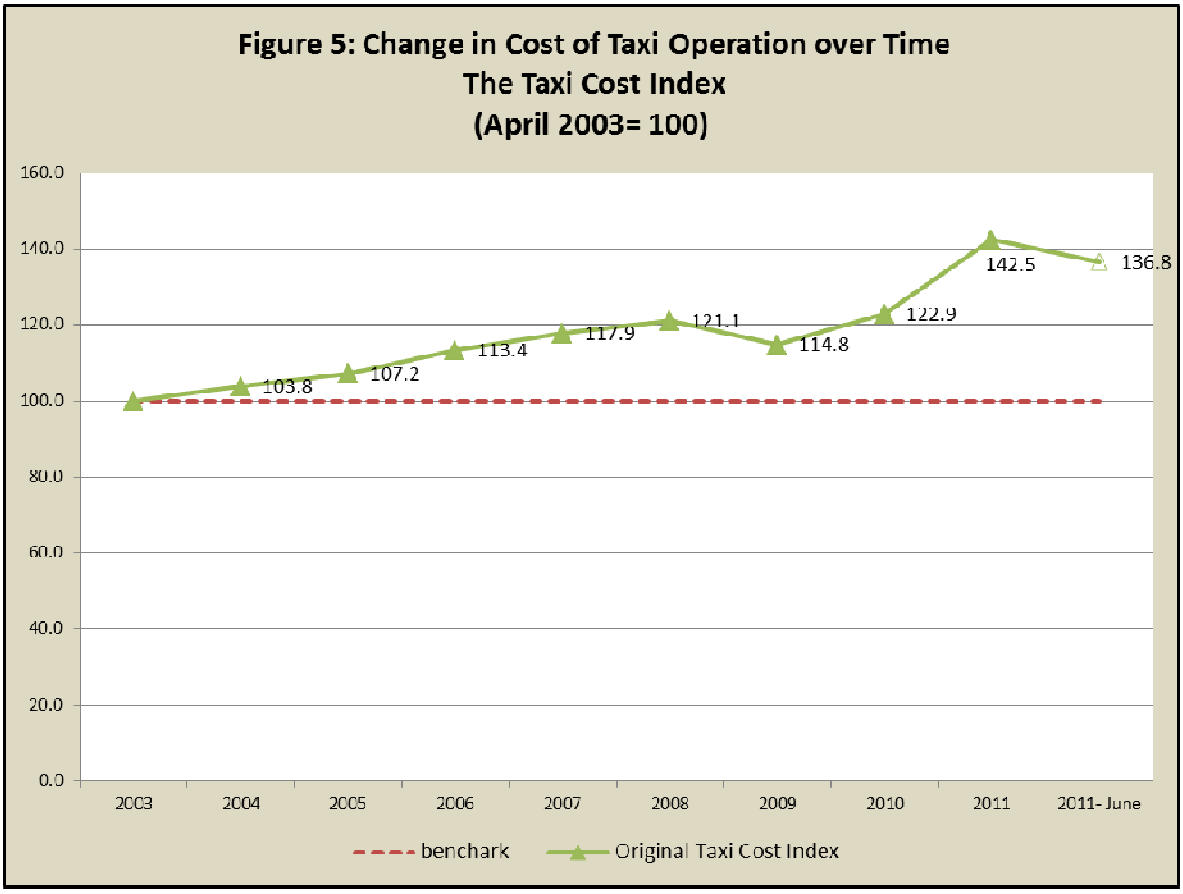
3 Cost Index and Meter Rates – 2011

Gas prices are up. The cost of vehicles is down. How has the overall cost of taxi operation increased over time? The cost index gives each cost element a weight according to its importance to the cost of taxi operation. A description of methodology is available in the original 2003 report for Ottawa.[7][8]

To account for the introduction of the HST, the index must be increased for the new 8% tax imposed on taxis, and then reduced for the additional HST tax credits available on gas, maintenance, auto purchase, and other costs as noted in Table1 .

Figure 5 shows how the overall cost of taxi operation in Ottawa has changed over time, using the taxi cost index developed in 2003. It is inclusive of HST adjustments. The index starts at 100 in 2003. Costs rise steadily until 2008, then drop in the 2009 recession, when gasoline and other prices fell dramatically. Costs rise again to April 2011, then fall with the recent economic slowdown. As of June 2011, the index was at 136.8, indicating that taxi operating costs were up 36.8% since 2003.

Figure 5: Change in Cost of Taxi Operation over Time
The Taxi Cost Index
(April 2003= 100)

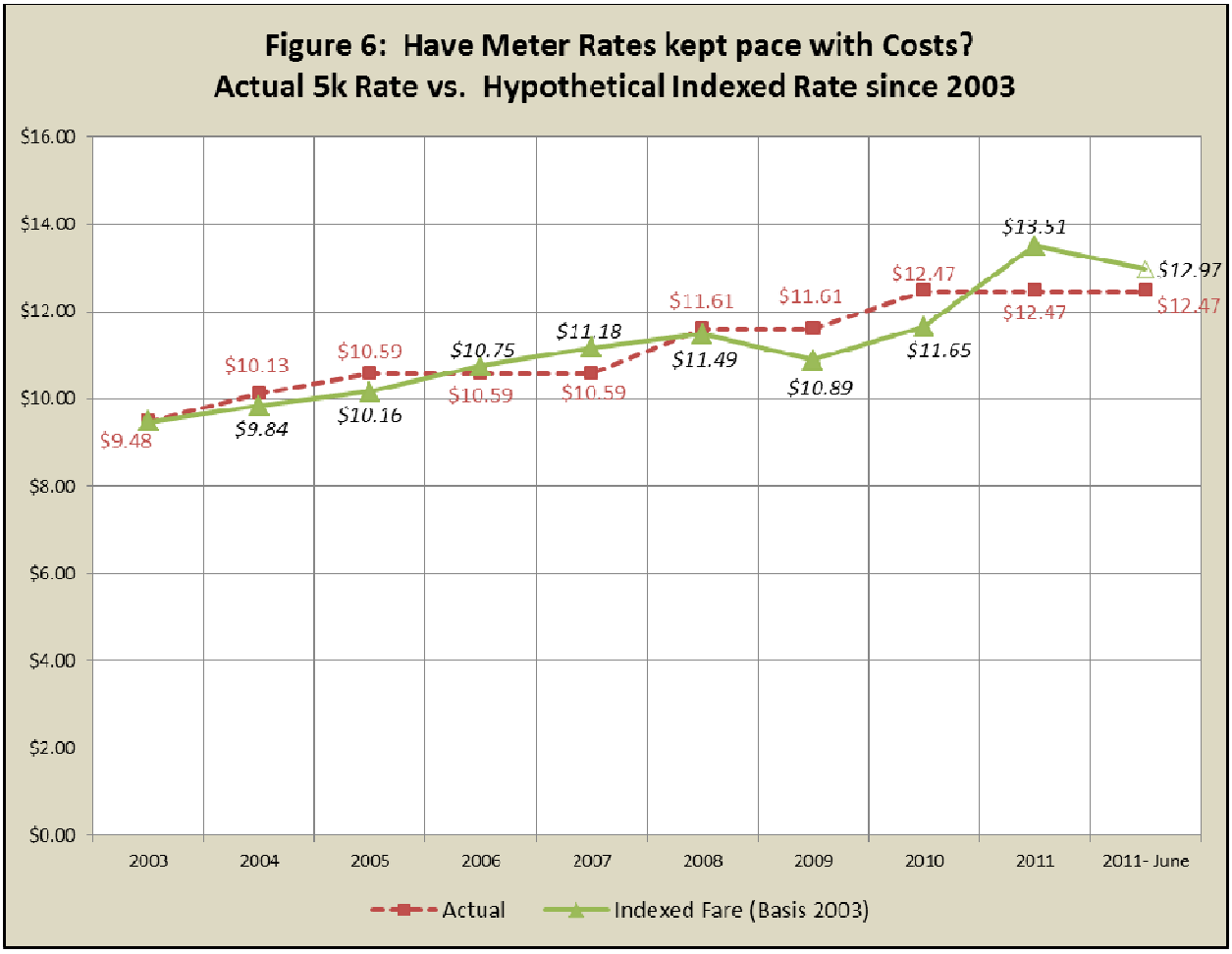


[7] *Replacement for a Taxi Cost Index and Review of Taxi Plate Numbers*, Hara Associates (2003).
[8] In 2007, Statistics Canada revised the consumer price index, discontinuing some series. The TCI after 2007 is based on comparable replacement series from Statistics Canada. See Table 5 of this report.

3.1 Have Meter Rates Kept Pace with Costs?

The year 2003 is a point of reference. In 2003, Ottawa City Council conducted an taxi meter rate review and set benchmark rates that were intended to be maintained into the future using the Taxi Cost Index. For example, a 5-kilometre fare was set to $9.48 in 2003.[9]

A cost index does not tell you the *level* of meter rates that is fair. It does tell you what percentage increase to apply to preserve the status quo. At the same time as establishing new meter rates in 2003, Ottawa adopted a taxi cost index to assist in managing year to year adjustments afterwards. Applying the index in Figure 5 to the benchmark rates established in 2003 results in a hypothetical indexed meter rate for each year to present. This is the green line in Figure 6. Also shown for comparison is the actual meter rate for a 5-kilometre fare (red dashed line).



Over time, Ottawa has referred to the cost index to adjust meter rates. The process also allows the industry to decline meter rate increases, as may happen when recessionary conditions mean a weak demand for taxis.

[9] Initial charge (the drop rate) and distance rates only. Time charges may vary depending on traffic congestion.

In general, Ottawa taxi meter rates have tracked the Ottawa taxi cost index fairly well, with occasional variation. After 2003 the actual meter rate adjustments were slightly larger than the index rate. Then, the industry chose to skip adjustment in 2006 and 2007, causing rates to fall behind increases in costs. Rates caught up to costs with the 2008 adjustment. However, the subsequent recession in 2009 reduced operating costs, leaving the actual meter rate ahead of cost changes. Rates were left unchanged that year. After 2009, costs rose again as the economy recovered. Between 2010 and 2011, costs rose sharply, partly due to the HST taxation of taxi service, but also due to the strong increase in gas and insurance costs.

Finding: *Costs of taxi operation increased 11.3% between 2010 and 2011 significantly more than the 8% increase in rates undertaken in 2010 in anticipation of the HST. The primary cause was a 27% increase in fuel costs and an 11.2% increase in insurance. After adjusting for HST rebates, an additional rate increase of 4.0% would be necessary for the industry to catch-up and bring meter rates in line with the benchmark levels established by Ottawa City Council in 2003.*

Had wages and prices not changed over the past year, the 8% awarded by Council would have been more generous than intended, since it did not account for the new HST tax rebates benefiting taxi operators. However, prices did change. The higher gas and insurance costs more than offset the new HST credits, leaving a 4% gap between the meter rate and changes in costs as of June 2011. It should also be noted that Council's adjustment for the 8% tax was actually implemented as approximately 7.4%, in order to account for the meter rate being charged on tax inclusive basis.

3.2 Technical Note: What about the Other Changes in the GST?

No adjustment has been made for the general reduction in the GST from 7% to 5% during this period. An adjustment is not necessary because the index is based on data series drawn from Statistics Canada's Consumer Price Index. The CPI reports prices inclusive of tax. Thus a reduction in the GST is reflected in lower reported price changes. This in turn means smaller changes in the taxi cost index and lower implied meter rate adjustments. Adjusting rates for both the TCI and for the GST change would result in double counting.[10]

The introduction of the HST was different from a general change in the GST, in that net taxation remained the same for most things, but an additional 8% tax was put on the taxi industry. This requires a specific adjustment to the cost index.

4 Looking to the Future – Updating the Taxi Cost Index

The cost profile underlying the taxi cost index needs to be updated periodically. The index track changes in costs originating from price changes. But the index does not adjust for technological and environmental changes. For example, better fuel economy, or more

[10] More accurately, there is a policy choice involving the degree to which a regulator wishes to shield the industry from a change in the GST. It can be shown that If the City does nothing to adjust rates except continue to reflect changes in the cost index, then taxis end up sharing the cost or benefit of the GST change to roughly the same degree as workers in comparable occupations. By not making a specific adjustment for reductions in the GST rate, the City of Ottawa has implicitly made this choice. The alternative choice would be to fully shield the industry by adjusting meter rates up or down in proportion to changes in the GST.

congested traffic are both environmental factors that change the proportion of taxi costs that go to fuel.

It has been eight years since the cost profile of the taxi cost index was last reviewed. The present work represented an opportunity to update the index to reflect the current cost profile of Ottawa taxis.

4.1 Consultation with Industry Stakeholders and Financial Confidentiality

Ideally, industry stakeholders should contribute to constructing the cost profile so that local conditions are accurately captured.

A major obstacle to consultation is the industry's desire to keep its financial data confidential.

To facilitate industry cooperation, it was agreed that industry members could speak frankly with Hara Associates on estimated dollar amounts, but that only the percentage breakdown of costs would be shared with the City and placed in the public report. This arrangement was recommended by Hara Associates based on previous index construction experience. Better quality information is obtained when industry members feel comfortable speaking about costs. The City administration and industry participants accepted this recommendation.

One of the advantages of this process is that there is little conflict of interest for industry participants. Since costs must add to 100%, increasing one cost necessarily decreases another. On a percentage basis, it is in the interest of all participants to declare costs accurately so that the Taxi Cost Index responds accurately to future cost changes.

Those invited to participate included

- CAW local 1688 (the union representing drivers)
- Coventry Connections (Blue line and associated plate owners and brokers).
- Westway Taxi.

An initial cost profile was developed independently with each group. The results were calculated, shared back with each respective group, and revised in light of feedback.

The three sets of costs were then combined. Where there was disagreement between the groups, Hara Associates applied its expert judgement. In some cases, the best documented and most reasonable analysis was adopted. In other cases, an average was taken between the three points of view.

Views were most divergent around the total revenue earned by the typical taxi, and on repair costs.

The rest of this section reports the revised taxi cost profile for 2011. The revised profile is recommended for use in updating the taxi cost index from 2011 forward.

4.2 The Cost Profile of a Typical Ottawa Taxi

There is more than one kind of taxi. For Ottawa, the 2003 cost index distinguished between a double-shifted taxi (used intensively by two or more drivers in shifts), and a single shifted taxi. A typical cost profiles was developed for each case. The final cost profile was an average of the two, assuming 60% double shifted and 40% single shifted.

The 2011 update took the same approach. Stakeholders left the 60/40 mix unchanged. Tables 2 and 3 report the results for double-shifted and single shifted taxis. Note that the actual cost profile developed was more detailed than illustrated. Costs have been combined into broad categories to protect the confidentiality of the industry contributions. [11]

Table 2: Taxi Cost Profile Central Zone - Double Shift	
Item	**%**
Stand Rent, Licenses, Union Dues, Other	8.0%
Insurance	5.1%
Fuel	23.5%
Routine Repairs & Maintenance	6.1%
Amortized cost of vehicle, Radio & Equipment	2.5%
Earnings - all drivers	54.9%
TOTAL	**100.0%**

Table 3: Taxi Cost Profile Suburban - Single Shift	
Item	**%**
Stand Rent, Licenses, Union Dues, Other	12.9%
Insurance	7.9%
Fuel	22.3%
Routine Repairs & Maintenance	7.9%
Amortized cost of vehicle, Radio & Equipment	4.7%
Earnings - all drivers	44.3%
TOTAL	**100.0%**

Figures 7 and 8 compare the combined 2011 cost profile with the 2003 cost profile The most striking difference is the proportion of taxi costs going to fuel. It rises from 17.1% to 23.0%. The share of costs going to maintenance has also increased from 4.5% to 6.5%. Meanwhile, the cost share of vehicle and equipment has gone down as additional equipment requirements are offset by lower vehicle prices, and the strong climb in other sources of expense.

Although the cost profile has certainly changed between 2003 and 2011, this does not mean that switching the index from the old profile to the new profile is an equally big change. A cost index implicitly captures the change in fuel costs due to price changes over the years. Thus there is an implicit 2011 cost profile within the 2003 based index. Table 4 compares the implicit 2011cost shares in the current index to the new proposed new index cost shares in for the same year.

[11] Payments to lease a taxi plate have also been excluded from the calculation. The plate lease is not part of the cost of operation, it is the value of the residual after the costs have been paid. Inclusion would be similar to including the share price of Bell telephone in a telephone cost index. **Inclusion** would result in a circular calculations, since a higher index would lead to higher meter rates, and higher meter rates would lead to higher plate lease values.

Figure 7

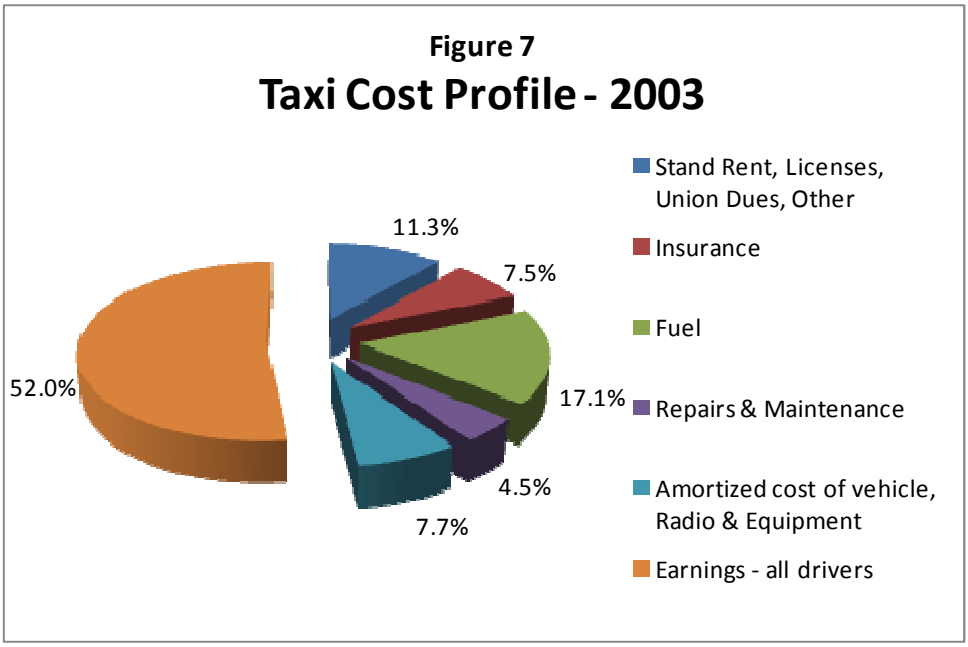
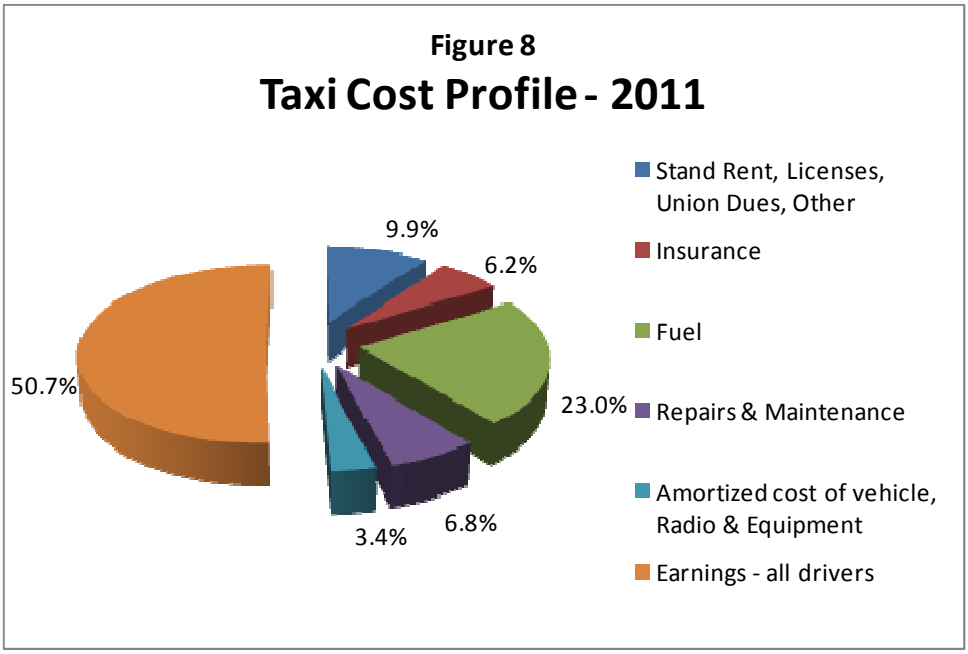


Figure 8



The change in fuel costs between the new profile and the old one is actually only 1% point for 2011. This suggests that the majority of the change in fuel costs came from price changes, not from increased physical consumption of fuel. Although insurance costs have risen in absolute terms, they have fallen as a % of costs because other costs (like fuel) have risen more strongly. The most notable proportionate change is the cost of maintenance, which changes from 3.9% to 6.8% of costs. This may reflect a more reasonable view of fleet management costs by industry stakeholders in the present round of consultation. Alternatively, it may reflect higher maintenance costs of an aging fleet. The 2003 index was undertaken shortly after vehicle age limits were imposed. This may have resulted in a round of new car purchases and lower annual maintenance in 2003.

Table 4
Comparing New Cost Profile to Cost Profile in Current Index for the Same Year

Item	New Cost Profile 2011	Current Index Cost Profile Implicit for 2011	Difference
Stand Rent, Licenses, Union Dues, Other	9.9%	9.6%	0.4%
Insurance	6.2%	8.3%	-2.1%
Fuel	23.0%	22.0%	1.0%
Repairs & Maintenance	6.8%	3.9%	2.9%
Amortized cost of vehicle, Radio & Equip.t	3.4%	4.8%	-1.5%
Earnings - all drivers	50.7%	51.4%	-0.7%
TOTAL	**100.0%**	**100.0%**	

Table 5: Taxi Cost Index Data Sources - Ottawa 2011

Item	% of Taxi Costs	Public Data Source Used to Independently Track Costs			
		Name	Statistics Canada Reference		Full Series Name
			Cansim Table	Cansim Series	
Fuel	23.0%	Retail Price of Regular Unleaded Gasoline in Ottawa	Table 326-0009	v735097	Average retail prices for gasoline and fuel oil, by urban centre; Ottawa-Gatineau, Ontario part; Regular unleaded gasoline at self service filling stations (cents per litre)
Repairs & Maintenance	6.8%	Cost of passenger vehicle parts, maintenance and repairs in Ontario	Table 326-0020	v41691995	Consumer Price Index, 2009 basket; Ontario; Passenger vehicle parts, maintenance and repairs (2002=100)
Insurance	6.2%	Passenger vehicle insurance premiums in Ontario	Table 326-0020	v41691997	Consumer Price Index, 2009 basket; Ontario; Passenger vehicle insurance premiums (2002=100)
Amortized cost of vehicle, Radio & Equipment	3.4%	Purchase of a passenger vehicle in Ontario	Table 326-0020	v41691992	Consumer Price Index, 2009 basket; Ontario; Purchase of passenger vehicles (2002=100)
Stand Rent, Licenses, Union Dues, Other	9.9%	General consumer price index for Ottawa-Gatineau	Table 326-0020	v41692882	Consumer Price Index, 2009 basket; Ottawa-Gatineau, Ontario part, Ontario/Quebec [35505]; All-items CPI (2002=100)
Return to Drivers	50.7%	Average hourly wage for full-time jobs in transportation and warehousing - Ontario	Table 282-0071	v2153229	Ontario; Average hourly wage rate (current dollars); Full-time employees; Transportation and warehousing [48-49]; Both sexes; 15 years and over

Recommendation for New Cost Profile

It is recommended that the taxi cost index be updated to reflect the new 2011 cost profile. A computer spreadsheet and instructions have been delivered under separate cover to assist implementation, and to ensure a consistent transition between the current taxi cost index and a new one. Table 6 details the cost profile, and associated Statistics Canada data series that may be used to update the index annually.

Periodic revisions of the cost profile are a normal part of the application of cost indexes. Another update should take place not later than the year 2021, or in the event of a major change in the vehicle technology used by the industry (such as a switch to an alternative fuel).

Appendix A

Document Used in Stakeholder Consultations

Industry Input on Cost Profile of Typical Ottawa Taxi

(The text and tables below were provided as a starting point for discussion key industry stakeholders. Interviews were held independently. The table was amended as needed to reflect each respondents view on taxi costs))

Thank you for your assistance. This information is intended to help the City of Ottawa update its formula to guide the regular adjustment of meter rates in response to changes in industry costs. ***Any financial data is held confidential and anonymous by Hara Associates Inc.*** *The City of Ottawa has agreed to receive only percentage figures.*

The City of Ottawa maintains a *Taxi Cost Index* to track changes in the cost of operating taxis, such as changes in fuel costs. The "Taxi Cost Index" tracks the cost of operation the same way the Consumer Price Index tracks changes in the cost of living. This requires making assumptions about how important each type of cost is. For example, if 20% of costs are fuel costs, and fuel prices rise 10%, then overall costs would rise 2% (that is ten percent of 20%).

It is in everyone`s interest that the cost profile be accurate and reflect Ottawa's unique conditions. Please help by giving your opinion of cost for each item below. You may fill in with just % (adding up to 100% or to one dollar, if you prefer), or you may fill in actual cost and revenue estimates and Hara Associates will calculate the percentages. **If you provide dollar estimates, only Hara Associates will see them. Your form will be destroyed afterwards.**

The question is: *Where does the average dollar of revenue go today?* Two profiles are needed:

- Model One: CENTRAL area (double-shift)
- Model Two: SUBURBAN area (single-shift)

There is one form for each. Most people find it easier to think of costs in an average month (the months between busy season and slack season).

Note that a portion of fare revenue goes to driver(s). We include this in the index because drivers are an important part of providing a taxi. If average earnings in other professions rise, we would expect to adjust meter rates higher to increase driver returns accordingly.

Thank you for your cooperation and contribution. Questions may be addressed to Dr. Hara at 613-722-5528, or *danhara@haraassociates.com*.

Hara Associates

Model One: OTTAWA TAXI – OPERATING IN CENTRAL AREA – DOUBLE -SHIFT *WHERE DOES A DOLLAR OF FARE REVENUE GO?*		
Item	**Please choose ONE of the columns ($ or %) to express your opinion** ***Any answers in $ will be held confidential by Hara Associates*** **↓ OR ↓**	
	$ Cost Per Average Month *(e.g. neither the busiest nor the slowest month of the year)*	**% of Cost Per Average Month** *(or pennies out of an average dollar of fare revenue)*
Taxi Driver License Renewal		
Taxi Vehicle Renewal		
Ontario Vehicle License		
Radio License		
Insurance		
Fuel		
Routine Repairs & Maintenance		
?Accident allowance		
Stand Rent		
Radio		
Meter		
Computer		
Camera		
Union Dues		
Cell Phone		
Parking/fines/etc.		
Professional Fees		
Credit Card Charges		
Plate Rental		
Cell phone		
Financing costs (e.g. vehicle)		
Professional Fees (Accountant, lawyer)		
Miscellaneous		
Other:		
Driver Returns		
TOTAL	**$xxxxxxxx**	**100% (or $1.00)**

Model Two: OTTAWA TAXI – OPERATING IN SUBURBAN – SINGLE -SHIFT *WHERE DOES A DOLLAR OF FARE REVENUE GO?*		
Item	**Please choose ONE of the columns ($ or %) to express your opinion** ***Any answers in $ will be held confidential by Hara Associates*** **↓ OR ↓**	
	$ Cost Per Average Month *(e.g. neither the busiest nor the slowest month of the year)*	**% of Cost Per Average Month** *(or pennies out of an average dollar of fare revenue)*
Taxi Driver License Renewal		
Taxi Vehicle Renewal		
Ontario Vehicle License		
Radio License		
Insurance		
Fuel		
Routine Repairs & Maintenance		
?Accident allowance		
Stand Rent		
Radio		
Meter		
Computer		
Camera		
Union Dues		
Cell Phone		
Parking/fines/etc.		
Professional Fees		
Credit Card Charges		
Plate Rental		
Cell phone		
Financing costs (e.g. vehicle)		
Professional Fees (Accountant, lawyer)		
Miscellaneous		
Other:		
Driver Returns		
TOTAL	**$xxxxxxxx**	**100% (or $1.00)**