E-mail sent on Mar 30, 2014 to Mayor and Council, with attachment:

Dear Mayor and Council,

Thank you to Councillor Masse for asking the great question about economic benefits of cycling during the discussions on the draft Transportation Plan at Council Workshop on Feb. 17. My apologies for the delay in my attempt at answering this question...

Attached is some information with a selection of links. There's definitely a wealth of information out there about the various economic benefits of cycling, both for the individual as for the community and for society as a whole. Of course the benefits are not always the same for every community, and depend on a wide variety of factors. But the overal evidence is clear: cycling does have significant economic benefits, and investments in cycling have a great ROI!

Further, I would like to know how the Maple Ridge transportation plan responds to and integrates with regional plans (Translink and Metro Vancouver):

http://www.translink.ca/~/media/Documents/plans_and_projects/regional_transportation_strategy/rts_strategic_framework_07_31_2013.ashx

http://www.translink.ca/~/media/documents/cycling/regional_cycling_strategy/cycling%20for%20everyone.ashx

ATTACHMENT:

Re Council Workshop 17/2/2014; Maple Ridge Council's discussions on Cycling and Pedestrian/Transportation Advisory Committee and draft Transportation Plan

Councillor Masse: What are the economic benefits of cycling?

Unfortunately, because many of the benefits of cycling are difficult to measure and are distributed across several sectors, cycling projects tend to be undervalued and underfunded.

In addition to looking at the economic benefits of cycling, it's also important to at the same time look at the cost side of the various transportation modes.

Cost

For the last several decades, spending on cycling in our community has been pretty minimal. As far as I know, $50,000 per year was generally budgeted in recent years for cycling (less than $1 per resident per year). Exact actual spending is unknown, because it is said that cycling sometimes "piggybacks" onto road construction projects (just as other construction projects sometimes "piggyback" onto cycling projects, such as with the Lougheed multi-use path). After minimal spending for decades, in the last few years we're finally starting to see some projects that will eventually get more cyclists out to ride once we see better AAA (all-ages-all-abilities) cycling connections. However, there's some grumbling going on among those residents and politicians who are under the assumption that cyclists do not pay for the roads (so they feel that cyclists are being subsidized), and that better cycling infrastructure just results in more crime, danger, and general misery for everyone who doesn't bike.

So who is being subsidized?

It helps if our politicians know the facts. Most cycling takes place on municipal roads. Most road construction, maintenance and repairs are paid for through property taxes. The amount of property taxes everyone pays depends on the value of your property, or the amount of rent you pay. It has no relationship at all to your principal mode of transportation. You pay the same whether you drive a big truck, you ride a bike, or you mostly walk to get around. However, the costs everyone imposes on the municipal transportation system IS directly related to mode of transportation. It's obvious that those who use their bikes for a good part of their trips tend to subsidize those who drive.

From http://thecostofsprawl.com/:*"Governments in Canada spend almost $29 billion on roads every year – far more than they spend on transit, rail, air, marine and all other transportation modes combined. Fuel taxes, licence fees and all other motor vehicle payments cover only a little over half of that cost; $13 billion is subsidized by other sources."* That means that driving is subsidized by about $370 per person per year (cyclists are actually subsidizing driving; see "Whose Roads" by Todd Littman of Victoria Transport Policy Institute: http://www.vtpi.org/whoserd.pdf, page 12) (this document provides further info about economic benefits).

$29 billion is the actual money spent, and does not take into account the external costs such as greenhouse gas emissions (= global warming and its costly consequences), pollution, decreased livability, noise, cost of traffic and collision policing, mental and physical suffering and death from car accidents etc., accident costs above insurance, loss of and damage to eco-systems services, and also a big one is free or subsidized parking. A disproportionate amount of many of these external costs are borne by low income households, since they're generally the ones that live along busy roads and in town centres in which large areas are reserved for free car parking. (these external costs are either non-existent or minimal for cycling)

Apart from government (= tax payer) spending, on average, almost 20% of Canadians' household income is spent on private automobiles. That means we're working on average one day a week just to pay for our cars. Much of that money does not stay in the local economy (Cyclists can either save considerably on car expenses, or don't have any if they can get by without a car. They also tend to shop locally, which benefits the local economy)

For many families, much of the money spent on a car is not optional in our community, due to:

- the way we have allowed and still continue to allow our city to sprawl and the incomplete neighbourhoods that are created;
- for many (65% of the work force) also due to the fact that they work outside the community and cycling nor transit are an option, while combining the two modes remains problematic (due to inadequate/unsafe cycling facilities to reach transit hubs as well as inadequate, often insecure bike parking); (however, **over 60% of all trips are within the District**; ALL trips matter, not just trips to work)
- and also due to the fact that the car is still very much #1 in our planning priorities, and the bicycle is still dead last; cars get the most direct, flattest, most convenient and comfortable routes, and cyclists are usually given routes to get them out of the way of cars.

Health

The greatest economic benefits of cycling can be found in the health aspect.

- World Health Organization's Health Economic Assessment Tool for Cycling (HEAT for cycling). This has become the standard UK Government's method for incorporating physical activity benefits into transportation appraisals. Calculates mean annual benefit (per cyclist, per trip, and total annual benefits) due to reduced mortality as a result of cycling. (also on-line at http://www.heatwalkingcycling.org/).
- Recent report to Cycling England, "Planning for Cycling", valued health benefits of cyclist who commutes three times/week at about US$ 1,070 per year. http://webarchive.nationalarchives.gov.uk/20110407094607/http:/www.dft.gov.uk/cyclingengland/site/wp-content/uploads/2008/08/valuing-the-benefits-of-cycling-full.pdf
- In UK Cycling Demonstration Towns project, cycling rates increased by 27% in the Demonstration Towns, and health benefits (from reduced mortality) were estimated to be around £2.50 for every £1 spent (Cycling England 2010).
- Sixteen studies of an economic valuation of an aspect of transportation infrastructure or policy showed benefit-cost ratios for cycling that were quite impressive: median BCR was 5:1. In the UK a BCR of greater than 2 is considered "high value for money". Health benefits make a sizeable contribution to these BCRs. (From: City Cycling – John Pucher and Ralph Buehler)

Note: few studies look at health benefits of reduced air pollution, noise pollution, greenhouse gas emissions, improved livability.

Effective speed

This is an important term for politicians and everybody else to understand. It takes into account the time and money needed to pay for using a certain transportation mode, for individuals and for society as a whole, both with and without the external costs.

All the costs related to driving – including e.g. the time needed to earn the money to pay for the costs to travel) are converted to time. The external costs – which are generally not a motivator influencing the travel behavior of individual motorists - can be included in this as well.

According to one US study (Kifer, 2002), when only the direct costs to the motorist are considered, the "net effective speed" of US motorists was estimated to be about 9.7 mph (excl. costs for parking, tolls, fines).

Of course, for low income households, the effective speed can be significantly lower than for higher income households, which is a very important thing to keep in mind.

In *Cycling in Cities* (John Pucher, Ralph Buehler) calculations are made to estimate how fast a cyclist would need to bike to be able to compete in effective speed with a car for different cities. Of all 15 cities considered, the fastest a cyclist would have to bike is 21.5 km/h (for Canberra), and the slowest would be Nairobi (3.1 km/h) (including external costs these speeds would be lower).

In the coming years, the effective speed will decline because of:

1. Increased congestion
2. Decline in the ability of motorists (and cities!) to afford the costs of cars

Increasing trip speeds for cars has little impact on effective speed, since the main time component of the cost of cars for drivers is the time spent earning the money to pay for all the costs. The cost of increasing trip speeds (faster, wider roads, more policing, more accident costs, reduced fuel efficiency, increased stress on drivers etc.) will actually reduce effective speeds.

Any increase in trip speed for cyclists would have a significant positive impact on effective speed of cycling, since the cost is extremely low, not only to individuals, but also to cities as well as society as a whole.

Fisher (2006) explains the inefficiency of a car: about 20% of the energy in fuel is converted into motion. Most drivers weigh only 1/20th of the mass of their cars. Thus the energy efficiency of a car is only about 1% for a driver-only situation. Add to that the costs of recycling cars, the efforts of maintaining access to oil (e.g. wars!), costs of mitigating effects of global warming (sea level rise, cyclone, flood damage), and the efficiency of the car comes down to a few tenths of 1%. It's obvious that continued encouragement of use of oil for private automobiles is very unwise and wasteful. Both the monetary and environmental cost of oil extraction continue to go up, and oil is a finite resource that has many other uses for which there are presently no alternatives.

Cost of parking

One of the costs resulting from sprawl is that it requires huge amounts of parking in the Town Core, where most of the services and shops are. The space dedicated to parking is treated as if there's no cost. However there's an opportunity cost. Also, we all pay for the actual cost through the goods and services we buy, as well as through our property taxes. The cost to the District/City (tax payers) is considerable. See *Transportation Cost and Benefit Analysis II – Parking Costs* (Victoria Transport Policy Institute); http://www.vtpi.org/tca/tca0504.pdf

Now that we're seeing more densification in the already built-up areas of town, we should capitalize on that by encouraging more people to walk or use their bikes to get around. This will require AAA (all-ages-all-abilities) cycling infrastructure so that people will feel safe enough to get off the sidewalks.

Infrastructure Deficit

I wonder whether the 0.5% presently added to our annual tax bill to reduce our infrastructure deficit is actually doing that. Our roads are getting wider, more sidewalks are being constructed and expanded, parking facilities are becoming more expensive to provide, since more of it will have to be underground, and the cost for eventual replacement of increasingly structured parking is going to be considerable. Are these factors part of the calculations that the District has made when arriving at the required tax increases?

Since municipalities should but don't use the Municipal Price Index to calculate/estimate cost increases over time for things like road construction, maintenance and repair, we may very well not be making any progress in reducing our infrastructure deficit at all. As guardians of the public purse, it is Council's responsibility to ensure that the District is spending our tax dollars responsibly and sustainably. Is the construction of ever wider roads and more parking space the best use of our public money? Can we/future tax payers afford it?

As an example I would refer to the plan to provide shoulders along the main rural roads in east Maple Ridge, at a cost of over $23 million dollars over the next 20 years, to ensure safety of both pedestrians and cyclists. Our roads absolutely need to be made safe for all users. But the cost is phenomenal and perhaps we need a different way of thinking to make more efficient use of the existing road space.

On European roads, cost-effective "advisory bike lanes" are being used more and more. This wouldn't work on busier rural roads, but it may work on (some stretches of) quieter roads, in those locations where visibility is good (this could be dangerous on hilly and/or winding roads or with vegetation limiting visibility).
See:
http://sustainabletransportationholland.org/topics/bicycle-advisory-lanes/
http://bikeportland.org/2009/10/21/bikeway-design-focus-advisory-bike-lanes-24880

Advisory bike lanes have the added benefit of calming the traffic.

The money saved could be put to good use to make safety improvements in the more densely built-up areas where most of the gains in walking and cycling can be expected.

I understand that the concept of advisory bike lanes is not recognized in Canadian road standards. However, with municipalities struggling to stretch their tax dollars more than ever before, it's important that not only transportation advocates but also politicians and planners actively start thinking about and working towards better alternatives to the way things have been done in the past.

Suggested reading:

The benefits of investing in cycling (BC Cycling Coalition):
http://bccc.bc.ca/wordpress/wp-content/uploads/2013/01/BCCC_Cycling_Investment_Recommendations-2013.pdf

> **Tourism/trails system**: I would in particular point out that a community like Maple Ridge has tremendous but rather underutilized opportunities when it comes to recreational cycling and cycling tourism. We're surrounded by a beautiful natural environment. The dikes may be even better for cycling than for walking because of the distances that can be covered. More could be done to improve the off-road network (and make it truly multi-use!), to expand it to east Maple Ridge, improve connections and close gaps. Other than the dikes, a good number of our off-road trails, although fantastic for the horse community, is rather inaccessible to people on foot or especially by bike, and a lot of trails clearly are just meant to serve the horse community as connections to the equestrian road "trail" system, since various water crossings don't have a bridge.
>
> Our on-road trail system looks great on a map. However it is not always safe to use, whether for people on foot, for horses or for people on bikes, and is slowly but surely given over to more and more noisy and speeding cars as more development occurs. Some of our road trails are downright dangerous (e.g. 128th Ave./210th).

Millions in Tourism Dollars Brought in By Bike: (BC Cycling Coalition)
http://bccc.bc.ca/press-release-tourism-april-2012/

Benefits for businesses (HUB):
https://bikehub.ca/sites/default/files/imce/business.bikes.benefits.pdf

Evaluating Active Transport Benefits and Costs – Victoria Transport Policy Institute
http://www.vtpi.org/nmt-tdm.pdf

Financial benefits of cycling:
http://www.sharetheroad.ca/what-are-the-financial-benefits-of-cycling--s16222

Bicycling Means Business: The Economic Benefits of Bicycle Infrastructure
http://www.advocacyadvance.org/site_images/content/Final_Econ_Update(small).pdf

Here's a good article that compares some of the costs of driving vs. cycling:
http://raisethehammer.org/article/2124