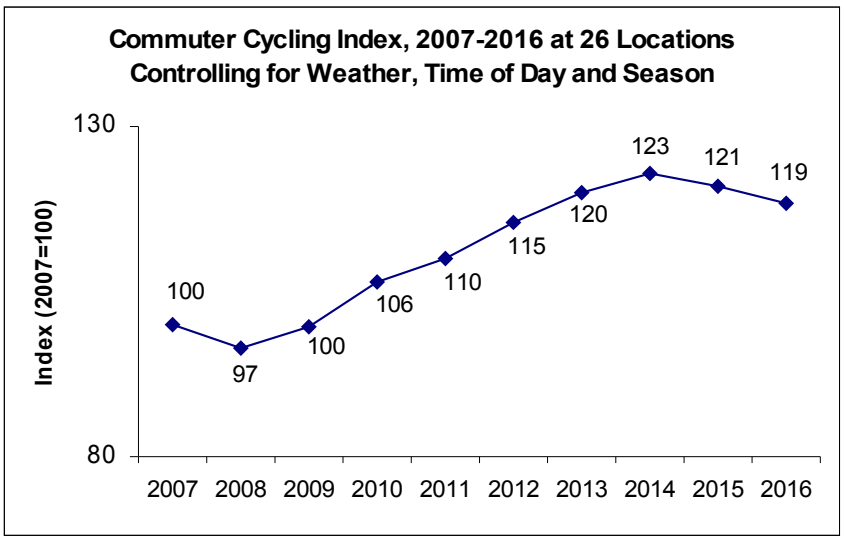
Commuter Cycling in Winnipeg, 2007 - 2016
Executive Summary

Volunteers from Bike Winnipeg (formerly Bike to the Future) have been conducting spring counts of bicycle traffic since 2007 in order to provide solid information about the numbers of commuter cyclists in Winnipeg based on direct observation. During May and June of 2016 we completed 64 counts at 41 locations in Winnipeg. Since 2007 we have completed 679 counts at 118 locations. (See Appendix A for summary data on the 2016 counts.) Our analysis resulted in these findings:

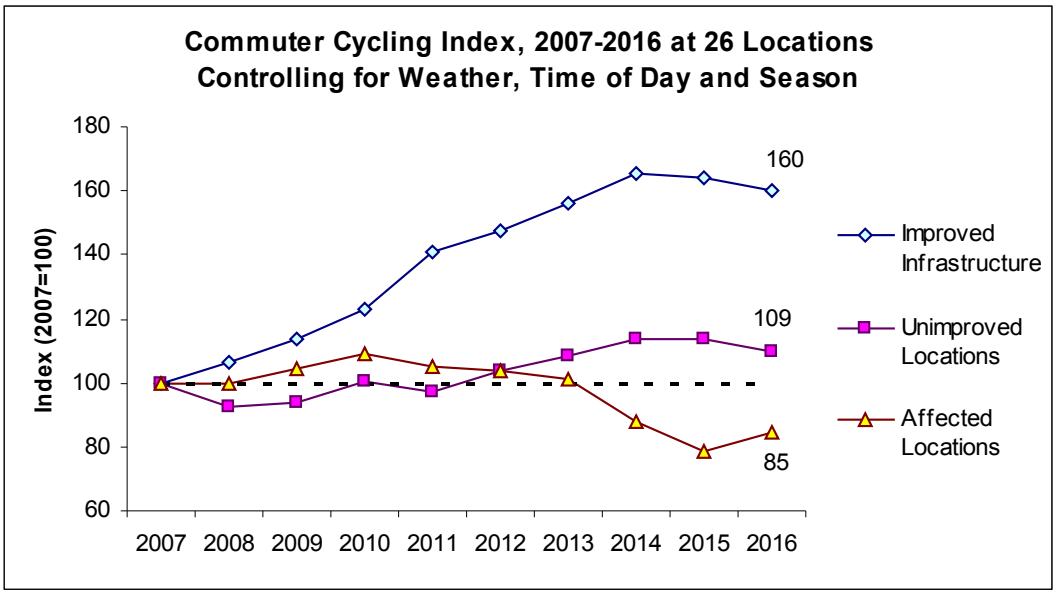
Commuter Cycling Peaked in 2014

After controlling for location, weather, time of day and spring timing, it is estimated that commuter cycling increased by about 23% between 2007 and 2014, but since 2014 it has declined slightly.



Increase in Commuter Cycling Where Bike Lanes and Paths are Available

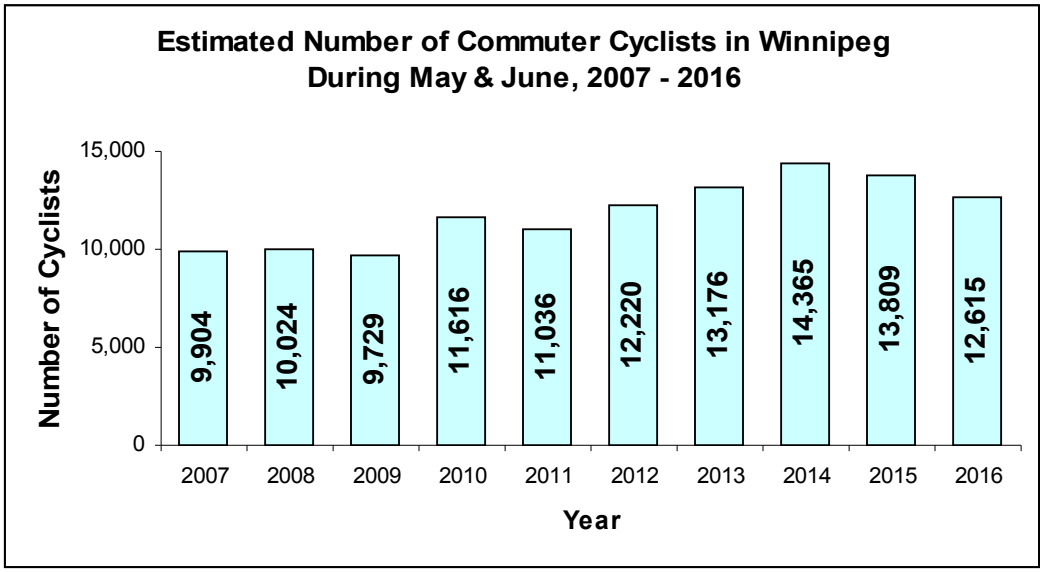
Cycling trends are related to the availability of bicycle lanes and paths. At locations where bike lanes or paths have been completed in recent years the number of cyclists increased dramatically. **Since 2007 bicycle counts at these locations have increased by 60%.** On the other hand there was little change in bicycle counts at locations without such improvements.



More than 12,000 Daily Bicycle Commuters in Winnipeg

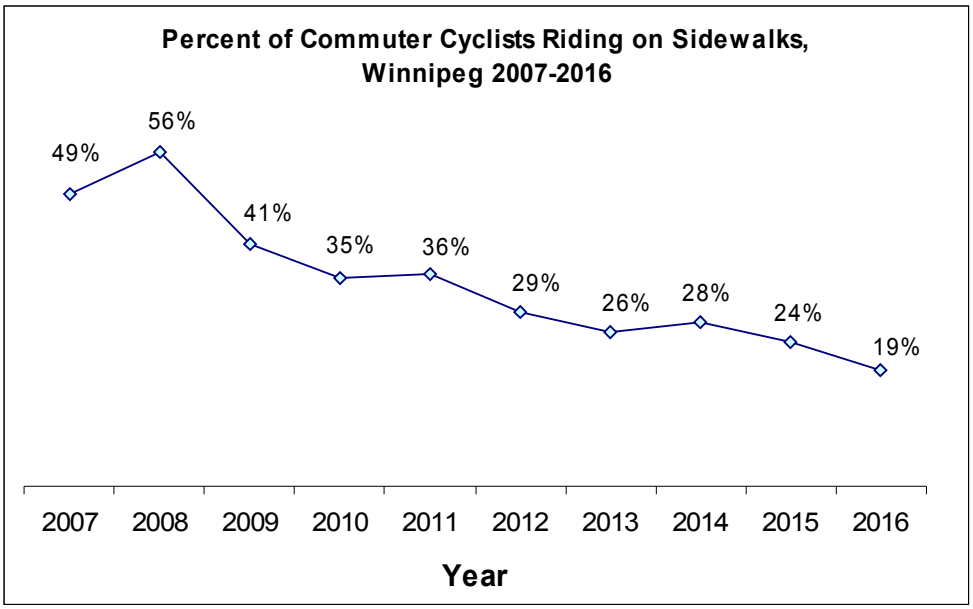
- In **downtown Winnipeg** average daily bicycle traffic (number of cyclists) traveling during a typical weekday in May or June is estimated at **12,100.**
- Assuming each cyclist is counted twice, traveling both in and out of downtown, the number of downtown commuter cyclists is estimated at half of the total daily traffic or **6,050**.
- Given that downtown commuters are about 48% of the total number of Winnipeg commuter cyclists, the number of bicycle commuters for the city as a whole on a typical weekday in May or June is estimated at about **12,600**. The total number of commuter cyclists in the city would be higher, given that not every cyclist commutes every day.

Similar estimates have been made each year since 2007 and these estimates are summarized in the graph below.



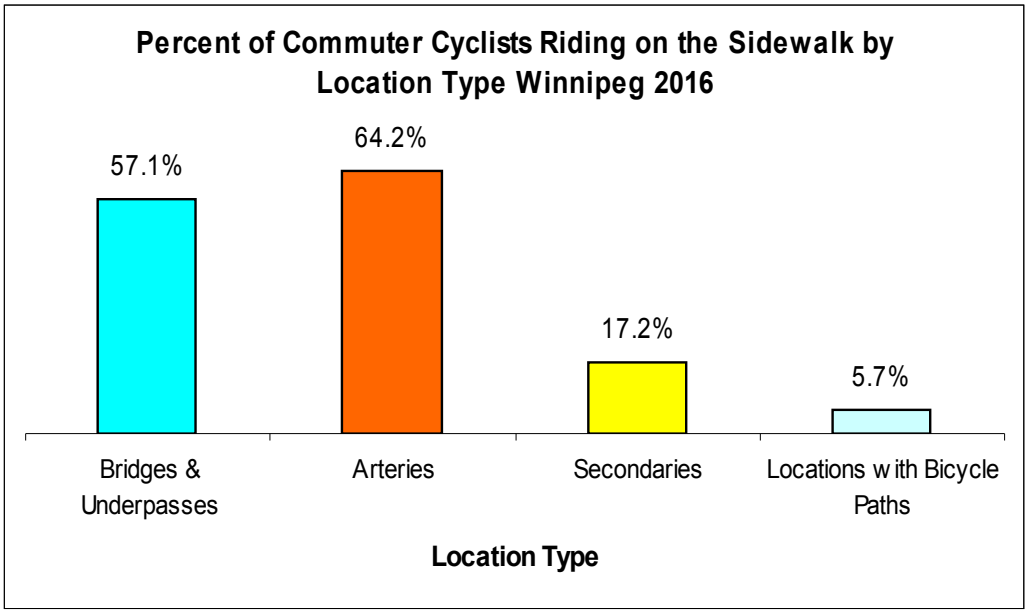
Less Sidewalk Riding Where Bike Paths Exist

Although cycling on sidewalks is illegal in Manitoba, except where explicitly permitted, many cyclists ride on the sidewalks, either for convenience or out of fear of riding in the street. At the locations we monitor, the proportion of cyclists riding on the sidewalks declined from 49% in 2007 to 19% in 2016. The percentage riding in the street has also declined, from 45% to 27%. At the same time the percentage of cyclists riding on bike lanes or paths has increased from 6% in 2007 to 54% in 2016. In short, there has been a major shift in bicycle traffic from sidewalks and roads to bike lanes and multi-user paths. The timing of these shifts coincided with the completion of a number of new bike lanes and paths in 2010 and subsequent years.



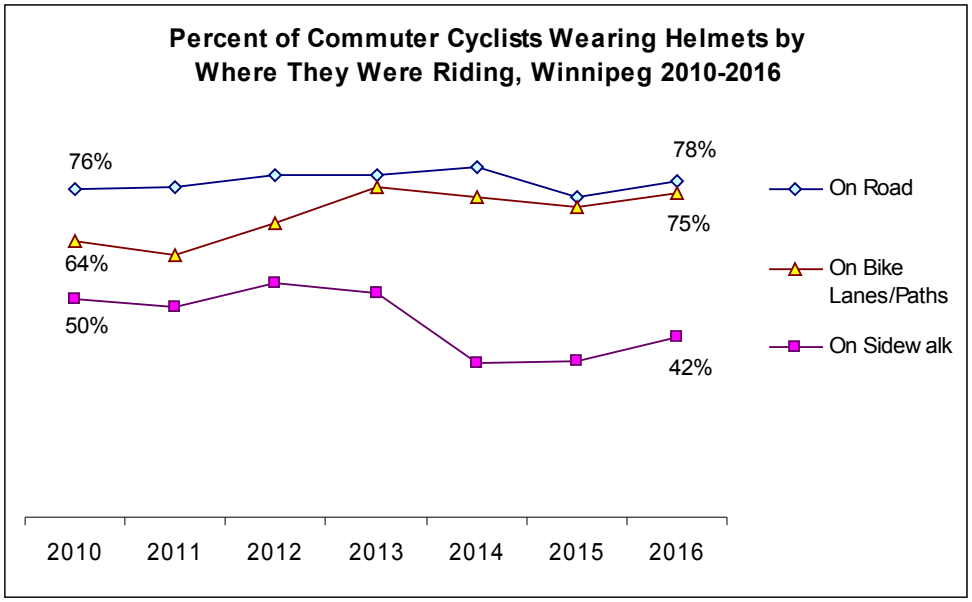
Most Cyclists Ride on Sidewalks on Major Arteries, Bridges and Underpasses

Sidewalk riding remains high on major arteries where the majority continue to take to the sidewalks. Where bike lanes or paths are available few ride on the sidewalks.



Helmet Use Higher on Roads and Bike Lanes than on Sidewalks

In 2016 70% of commuter cyclists wore helmets. While 78% of cyclists riding in the street and 75% of cyclists riding on bike lanes or paths wore helmets, only 42% of those riding on sidewalks wore helmets.



Conclusions

Over the past several years Winnipeg has been gradually increasing the extent of facilities designed for cyclists, including the provision of multi-user paths, separated or buffered bike lanes, painted bike lanes, and traffic calming devices. Many of the new facilities were built as part of the federal infrastructure stimulus program, coming on line in the 2009-2011 period. More recently there have been some improvements on a few major bridges, and the development of bike lanes on Sherbrook Street and Pembina Highway, but investment levels have been relatively low. In 2015 the City adopted a new pedestrian and cycling strategy with more ambitious goals and this is starting to be reflected in new bicycle lanes. If this results in a more substantial investment in cycling infrastructure we can expect to see increased cycling levels in the future.

There is strong evidence that even the limited construction of new cycling infrastructure that has occurred since 2009 had a positive impact on the numbers of cyclists in Winnipeg, but this growth seems to have stalled. Growth has taken place primarily at locations with new bike lanes and multi-user paths have been built, and primarily during the period immediately following the introduction of new infrastructure. The locations with these new bicycle facilities have seen a reduction in sidewalk riding. On the other hand, major bridges and underpasses that have not yet been improved or which do not have bike lanes continue to push cyclists onto the sidewalks, or to discourage them from riding at all. If these major barriers are dealt with the frequency of cycling throughout the entire cycling network can be expected to increase.

In addition, we reached the following conclusions:

- After taking into account location, weather conditions, spring timing and time of day, commuter cycling in Winnipeg peaked in 2014 but has declined slightly over the past two years.
- On a typical weekday in May and June an estimated 6,000 cyclists commuted in and out of the downtown area of Winnipeg, and throughout the entire city about 12,600 cyclists commuted on a given day. The total number of individual commuter cyclists in the city would be higher, given that not every cyclist commutes every day.
- Sidewalk riding has been declining where bike paths and trails are available. More than half of cyclists ride on the sidewalks on major bridges and underpasses, but where bike paths exist, only 6% ride on sidewalks.
- There has been a major shift in bicycle traffic from sidewalks and streets to bike lanes and multi-user paths *where they have been provided.*
- Use of helmets has been increasing. In 2016 70% of commuter cyclists were wearing helmets. Women are more likely to wear helmets than men and those riding in the street are more likely to wear helmets than those riding on sidewalks.
- In 2016 women made up 26% of commuter cyclists in Winnipeg.

A more comprehensive survey would be needed to more accurately estimate the number of cyclists, and the bicycle share of traffic in Winnipeg. The only such survey done on a regular basis is the Census of Canada which identifies the number of people commuting to work, by mode of

transportation in 2001, 2006 and 2011. Data from these sources suggests that commuter cycling increased in the City of Winnipeg by 32% between 2006 and 2011. However there is no source available that provides annual data, seasonal transportation patterns, or bicycle travel for purposes other than travel to or from work. This means that, in spite of the bicycle counts reported here, **there is a continuing lack of basic data on the numbers and other characteristics of cyclists in Winnipeg, and throughout Manitoba**. Such information is needed by governments and others in order to identify trends and develop policies related to active transportation.

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Commuter Cycling in Winnipeg, 2007-2016

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1. Bicycle Counting in Winnipeg

For the past nine years Bike Winnipeg has recruited volunteers to count cyclists traveling during rush hour at selected locations. The timing and locations are designed to capture commuter traffic broadly defined. The timing of the counts means that most of the cyclists are likely to be traveling to work or school, although some are likely to be traveling for other reasons, such as shopping, going to appointments or recreational activities. Non-commuter traffic is probably more frequent during our afternoon counts when we notice more children and families traveling.

Most counts this year were done mid-week during May and June. This year we included several new counting locations related to planned infrastructure improvements on Fort, Garry and Main Street in the downtown area, on McDermot near the Health Sciences Centre, and on St Matthews. We also included new counts on Powers in the north end. During May and June we completed 64 counts at 41 locations in Winnipeg. Since 2007 we have completed 679 counts at 118 locations. (See Appendix B for summary data on the 2016 counts.)

The purpose of these counts is to document the level of bicycle traffic during rush hour at key locations, especially in downtown Winnipeg, at locations with high traffic levels, and where new bicycle infrastructure is being planned or has been built. By counting at the same locations during different months and years, we are able to document peak flows and trends in commuter cycling and estimate the total daily bicycle traffic at these locations. The counts provide baseline data for planning and assessing improvements to cycling infrastructure. They are also useful in documenting before & after counts at locations where new bicycling infrastructure is planned or has been built.

Counting locations include several bicycle commuting "choke points," such as bridges and underpasses through which cyclists must pass traveling to or from the downtown area. The choice of locations is also based in part on the availability of our volunteers who are all bicycle commuters themselves. We see the counting process as one way for people to become involved in cycling issues, and we also value the local knowledge of cycling that these volunteers bring with them.

2. Survey Methods

Volunteers are recruited mainly through the Bike Winnipeg email newsletter, and among past volunteers. We had 31 volunteers in 2016, most of them having volunteered in previous years. Instructions were transmitted by email. A tally sheet that includes survey instructions was emailed to each volunteer, along with a spreadsheet for summarizing and reporting the results. Using the tally sheet, volunteers count cyclists passing a given point, usually for a two hour period within five minute blocks, identifying those traveling on the street separately from those traveling on the sidewalks. There are separate columns for those traveling "in" or "out" for the road, for each sidewalk and for separate bike paths where they exist. The tally sheets are adapted to various locations as required. Volunteers are given the option of counting pedestrians as well as cyclists, keeping track of the apparent gender of the cyclists and whether they were wearing helmets. The decision to include this information is based on the volunteer's interest and how busy the location is. Some locations are too busy to try to keep track of all of these factors. We follow the standard "screen line" counting method; volunteers count all cyclists who cross an imaginary line on the road, whether they are riding on the sidewalk, the street, or a bicycle path/trail. In some cases counters also kept track of traffic on a second cross-street at an intersection, doing two separate screen line counts at the same time.

The survey manager coordinates the counting process and assignment of locations and provides forms, counting procedures, and other information to the volunteer counters. Volunteers may deliver their counts by email as spreadsheets, as scans of their tally sheets, as regular mail, or as faxes or they may provide their totals by email. The survey manager responds to questions from volunteers to clarify methodology and locations. With the help of volunteers, the survey manager enters the data, and then analyzes the results. The manager follows up with volunteers as needed to clarify information in their counts.

Volunteers are asked to do their counts for two hours during either the morning rush hour (between 6:30 and 9:00 am) or the afternoon rush hour (between 3:30 and 6:00 pm). In some cases volunteers have counted for shorter time periods, but no less than 90 minutes, and in these cases their results are extrapolated to arrive at two hour estimates. In other cases, volunteers have counted for longer than two hours, and in these cases the two hour period with the highest number of cyclists is used.

The targeted days for counting are mid-week days (Tuesday through Thursday) during May and June. This timing was selected for consistency and to enable us to compare counts at the same location done in different years and weather conditions. Generally traffic counts on these days are considered more typical for commuting traffic than counts on Mondays, Fridays or weekends.

Most of the data from the individual counts is entered into a data base, including:

- Location
- Date
- Start and end times
- Total count
- Two hour count or estimate
- Number traveling “in” and “out” (defined according to local traffic flows)
- Number riding on the road, on the sidewalks or on a bike path
- Pedestrian count (two hour) (if counted)
- Number of men and women, with or without helmets (if counted)
- Weather conditions at 7:00 AM (for morning counts) or 4:00 PM (for afternoon counts), including temperature, wind speed, and precipitation, based on official Environment Canada weather data at the Winnipeg Forks.

(Survey forms and instructions are available on request.)

3. Locations and Counts

From 2007 through 2016 Bike Winnipeg volunteers have completed 679 counts at 118 locations in Winnipeg. The number of counts and timing has varied among locations, ranging from only one count at some locations to more than 30 counts at others. The number of cyclists counted per two hours ranges from 1 to more than 500, with the highest counts recorded at Assiniboine Ave., Sherbrook-Maryland Bridges and Norwood Bridge. There can be a wide range between counts done at the same location at different times and under different weather conditions. These variations are related to several factors, the foremost being weather conditions, followed by time of year and time of day

(afternoons are higher than mornings). There have also been variations from year-to-year. All of these factors will be described below.

A summary of this year's counts is provided in Appendix A.

4. Impact of Weather Conditions on Numbers of Cyclists

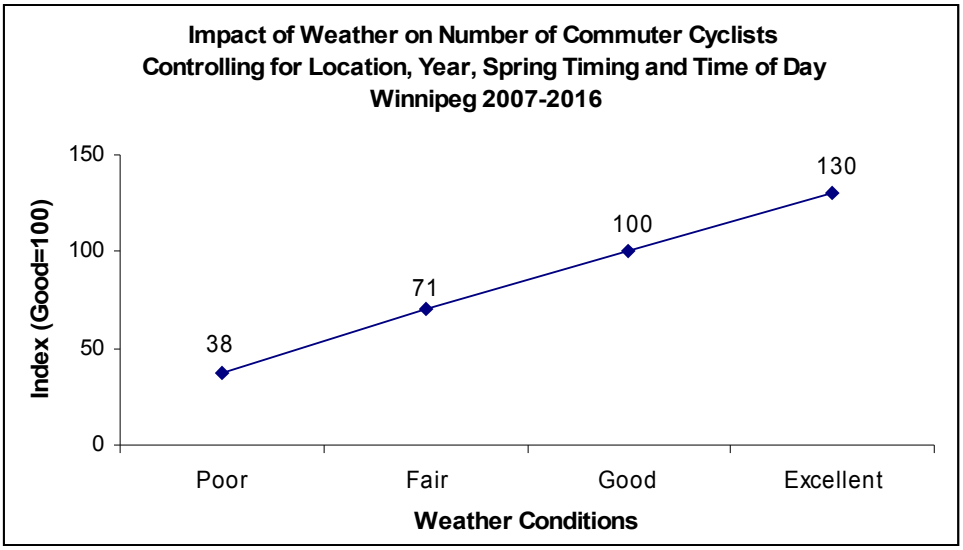
It is clear that weather conditions affect the numbers of people who travel by bicycle on a given day. Weather data is incorporated into the bike counts data base and a set of weather categories has been created, combining temperature, precipitation and wind speed (see box).

Weather Conditions – Definition of Categories

Poor:	Rain or Snow, or Temperature less than 0º Celsius
Fair:	Temperature = 0º to 8º Celsius, or wind of 40 km/hr or more (without rain or snow)
Good:	Temperature = 9º to 17º Celsius with wind less than 40 km/hr (without rain)
Excellent:	Temperature ≥ 18º Celsius with wind less than 40 km/hr (without rain)

It was found that these categories resulted in a clear relationship between weather conditions and numbers of cyclists, as shown in the chart below. The chart is the result of analysis of numbers of cyclists at a given location where all other factors were the same, including the year, time of day and spring timing. (Seasonal timing will be described below.) Only counts where all these factors were the same were included in the analysis. There were five pairs of counts comparing poor weather and fair weather; eleven sets comparing fair and good weather, and nine sets comparing good weather and excellent weather. Average counts were totaled for each type of comparison and the ratios of the totals were calculated. These ratios were then used to create an index. For the sake of the index "good" weather conditions are set at 100.

Based on the 25 pairs of comparable counts, it was found that the number of cyclists increased as weather conditions improved. The relationship can be described in the following way: if 100 cyclists are likely to travel at a given location in good weather, then 38 are likely to travel at the same location in poor weather, 71 in fair weather, and 130 in excellent weather.



5. Morning and Afternoon Counts

Afternoon rush hour bicycle counts are consistently higher than morning rush hour counts. We have completed 60 pairs of AM and PM counts at the same location on the same day. The morning and afternoon counts were compared for a standard two hour period, and in 57 of these pairs the afternoon counts were higher. The total for the 60 two hour morning counts was 7,548 and the total for the 60 two hour afternoon counts was 10,068. The afternoon counts, therefore, were 32% higher on average than the morning counts. Normally weather conditions are somewhat better in the afternoon, which is likely to increase the number of people choosing to use their bicycle for an afternoon trip. Afternoon counts may also reflect other travel preferences, including the after school activity of students. Volunteers have often noted that there appeared to be more school-age children and non-commuters in the afternoons, as reflected by how they were dressed. The percentage riding on the sidewalks was also higher in the afternoons compared to the mornings. This would suggest a larger proportion of casual cyclists in the afternoons.

6. Seasonal Trends

The survey methodology was designed to provide a look at cycling trends over the course of the spring. From 2007 through 2014 the counts were done at the beginning of each month: April, May and June. It was assumed that the differences between the months would capture differences in bicycle counts between early and late spring. However, in carrying out the data analyses in previous years it became apparent that the months may not provide a consistent measure of the variability of cycling conditions within the spring season. In 2015 we dropped the April counts and all the counts were done at various times throughout May and June.

The timing of spring weather in Winnipeg is highly variable from year to year. Some years we experience milder, relatively short winters and early springs, and other years we have long winters and late springs. For example, early April conditions vary from wintry, with 30 cm of snow on the ground,

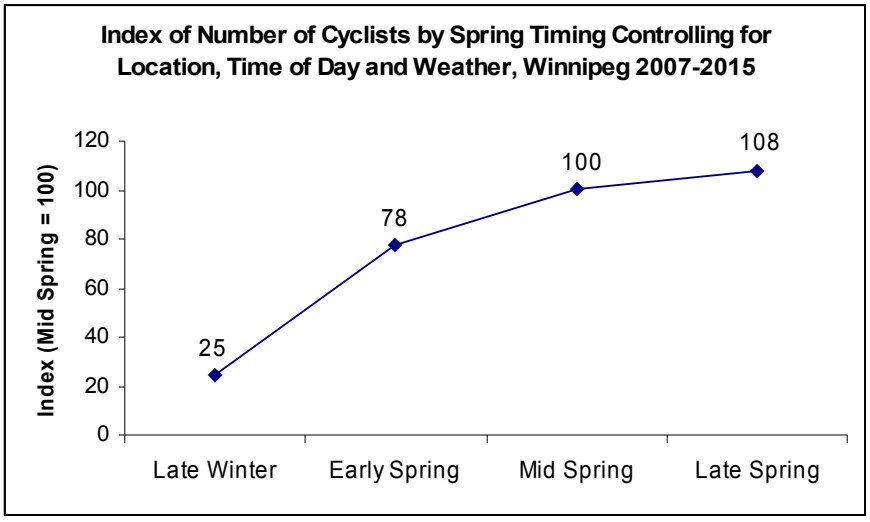
to warm days with snow having long since melted away. The arrival of warm spring weather can range from March to May.

It seems likely that the timing of the start of spring weather could affect the numbers of cyclists, regardless of what the month is. The majority of cyclists stop or greatly reduce their cycling activity during the winter and many put their bikes away in the fall until the next spring. An early spring could encourage cyclists to get their bikes out early, while a late spring could have the opposite effect. The variability of timing of spring weather over the past few years has brought this issue to the fore.

After investigating different ways of identifying the timing of spring weather it was found that the last day of snow on the ground provided a good measure of the arrival of spring. Data for snow on the ground were obtained through Environment Canada based on a Charleswood weather reporting station (the only location in Winnipeg for which this type of data was available). The following categories were created based on the number of days elapsed between the reference date and the date of each bicycle count.

Late Winter	Before Last Day of Snow on the Ground
Early Spring	0-14 Days After Last Day of Snow on the Ground
Mid Spring	15-45 Days After Last Day of Snow on the Ground
Late Spring	46+ Days After Last Day of Snow on the Ground

Using these categories, the average bicycle traffic volumes per location were compared between late winter, early spring, mid spring and late spring where possible, controlling for time of day, and weather. A total of 135 comparable counts were identified where the spring timing of the count was different but all the other factors - location, time of day, and weather conditions - were the same. Comparisons were only made between adjacent time periods: late winter vs. early spring, early spring vs. mid spring, and mid spring vs. late spring. Counts were totaled for each set of comparisons. Ratios between spring timing categories were calculated for each set of totals. An index was created based on these ratios with mid spring counts set as the reference point, as shown in the following chart. It was found that late winter counts were 75% lower than mid spring counts, early spring counts were 22% lower than in mid spring, and later spring counts were 8% higher than in mid spring.



7. 2007-2016 Trends

Two hour bike counts at specific locations are not the best way to track trends in cycling over time because of the high variability between different locations, time periods and weather conditions. Changes to infrastructure and construction projects also frequently occur and these can affect cycling behaviour. Trends in the numbers of cyclists can easily be overwhelmed by variations caused by the various factors. In addition, the Winnipeg locations where counts are done were not selected to be representative of cycling throughout the city.

Still, in the absence of other systematic data collection in Winnipeg concerning cycling levels or frequencies it may be of interest to look at the trends for specific locations. An analysis was carried out based on year-over-year comparisons while controlling for location, time of day, seasonal timing and weather conditions. Comparable counts were often separated by two or more years and in these cases the missing values in the annual series were interpolated based on the average annual rate of change over the time period. There were usually several sets of comparisons available for a given location, so average counts were computed for each specific location. A total of 309 year/year comparisons were possible. An overall weighted average percentage change was then calculated for all the locations for which year-to-year comparisons were available in a given year.

Table 1
Data Used for Trend Analysis: Locations, Numbers of Counts and Numbers of Comparisons, Winnipeg, 2007-2016

Location	Observed Counts (Averages)*	Interpolated Counts	Year/Year Pairs
Arlington @ Ellice	6	3	6
Arlington Bridge	2	3	4
Assiniboine Ave @ Hargrave	9	9	14
Bishop Grandin Greenway @ Dakota	4	3	5
Dakota @ Bishop Grandin Greenway	4	7	9
Disraeli AT Bridge	2	0	1
Ellice @ Arlington	5	3	6
Fort Garry Bridges	4	5	7
Grosvenor @ Harrow	4	1	3
Harrow @ Grosvenor	5	2	5
Louise Bridge	20	17	30
Main St @ Higgins	13	10	18
Midtown Bridge	7	9	13
Munroe @ North Pioneer Greenway	2	3	4
Norwood Bridge	28	15	34
North Pioneer Greenway @ Munroe	2	3	4
Omand Park Train Bridge	15	18	26
Osborne Bridge	25	37	52
Osborne Underpass	15	9	19
Pembina @ St Maurice School	12	9	16
Pembina-Jubilee Underpass	12	3	10
Provencher Bridge/Esplanade Riel	18	15	25
River Trail @ Main St	5	2	5
Sherbrook-Maryland Bridges	18	6	18
Slaw Rebchuk Bridge	14	10	18
University Crescent	16	9	18
Totals: 26 Locations	**267**	**211**	**370**

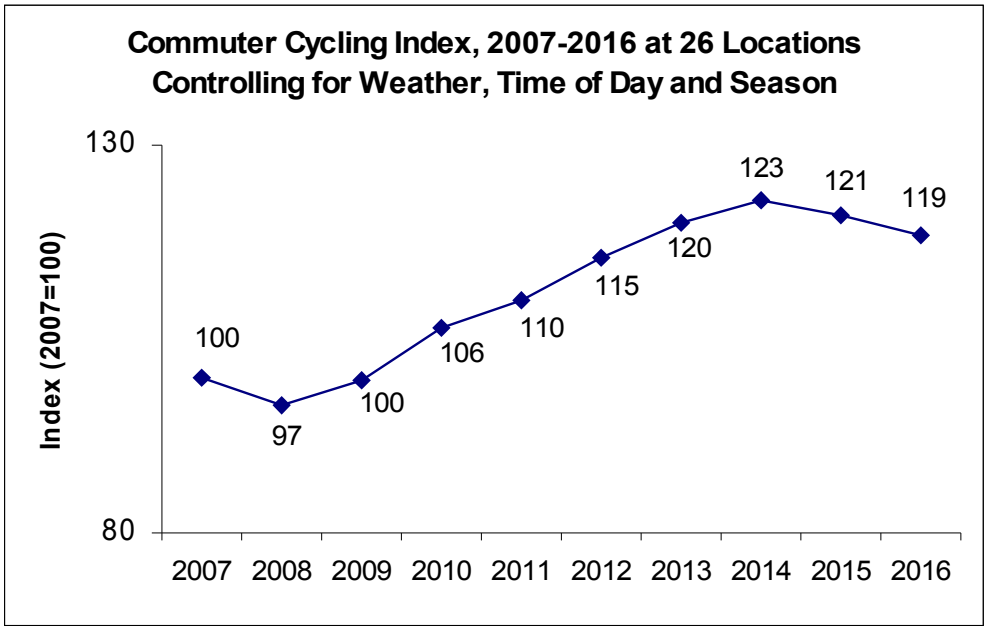
* The observed counts may be a single count or the average of two or more counts in a given year that have the same time of day, weather conditions and seasonal timing.

At these locations it appears that cycling increased the most during the years from 2009-2014 after which it leveled off and started to decline. This is also the period when there was a significant investment in cycling infrastructure within Winnipeg, and it seems likely that the new infrastructure had a role in stimulating an increase in cyclists.

These trends may not be representative of the city as a whole – they are a reflection of the specific locations where we completed our counts as shown in Table 1. The percentage changes per year are shown in Table 2. These percentage changes were converted to an index, with 2007 set at 100. (See chart below.)

Table 2
Year/Year Change in Bicycle Counts
Controlling for Location, Time of Day, Weather
And Spring Timing, Winnipeg 2007-2016

Year	Yr/Yr Change	Index
2007	---	100.0
2008	-3.5%	96.5
2009	3.1%	99.6
2010	6.9%	106.4
2011	3.2%	109.9
2012	5.0%	115.4
2013	4.0%	120.0
2014	2.4%	122.9
2015	-1.6%	120.9
2016	-1.9%	118.5



8. Impact of Infrastructure Projects

Even after controlling for various factors, there was a lot of variability between locations and from year-to-year. One possible factor is the impact of new cycling infrastructure projects at specific locations. There were several major projects and many smaller projects that provided new bicycle facilities during this time period, summarized in the following table:

Table 3
City of Winnipeg Cycling Infrastructure Projects Completed between 2007 and 2016

Project	Cycling Infrastructure	Completion
North Pioneer Greenway	Multi-user pathway	2008 (extended in 2012)
Fort Garry Bridges Rehabilitation	South Sidewalk becomes a multi-user trail	2009
Osborne Bridge Rehabilitation	Shy Lanes* added – often used as a bike lanes	2012
Federal Infrastructure Stimulus Program	35 smaller projects including the Assiniboine Ave. separated bike lane, the Pembina Hwy. buffered bike lane, the Dakota St. multi-use trail/sidewalk, Harrow St. bike lane, Churchill Parkway/Red River Trail extension to the Forks, etc.	2010-2012
Pembina Buffered Bike Lanes	Chevrier to Plaza Drive	2013
Pembina Buffered Bike Lanes	Bishop Grandin to Bison Drive	2015
Disraeli Cycling and Pedestrian Bridge	New Cycling and Pedestrian Bridge	2013
Sherbrook Protected Bike Lane	Bike lane separated from car travel lanes by parking from Wolseley to Broadway.	2014

* A shy lane is a narrow shoulder on the side of a road to allow clearance from the curb or barrier. Shy lanes do not meet the width requirements for bike lanes. Shy lanes are painted on a number of Winnipeg bridges, including Sherbrook & Maryland Bridges, Osborne Bridge and others. Cyclists typically use these lanes as bike lanes, although they do not continue past the end of the bridge.

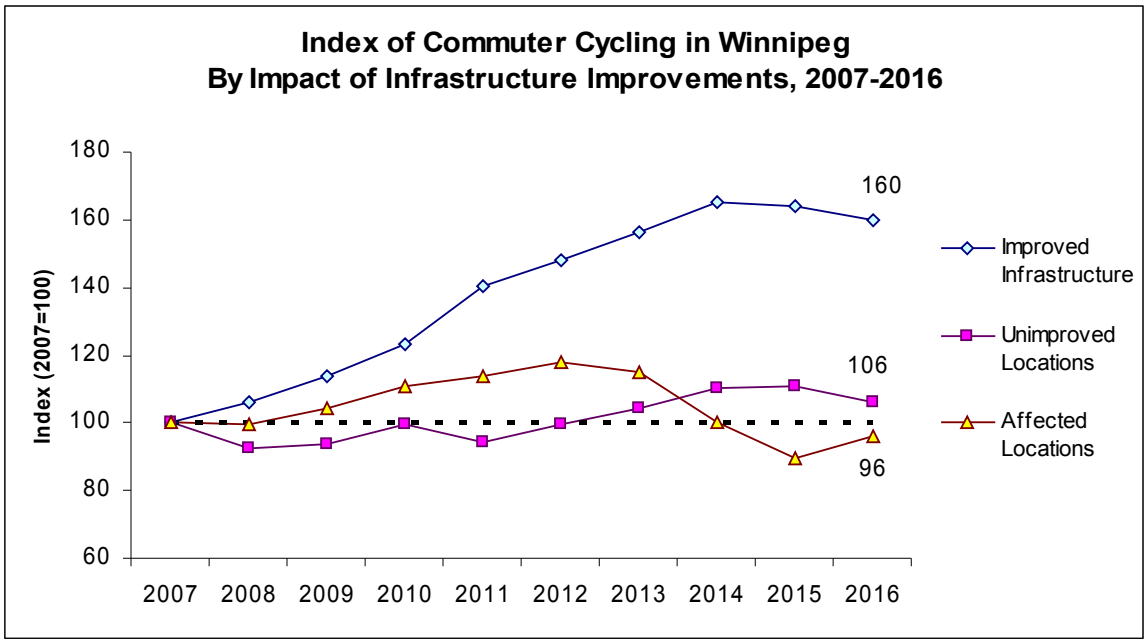
Some of our counting locations have clearly benefited from new infrastructure, such as the Assiniboine Avenue at Hargrave location where a separated bike line was constructed in 2009-2010. Other locations were not affected by the new bicycle infrastructure. There are also some locations where the new infrastructure may have diverted traffic away and reduced the number of cyclists. The new Disraeli AT bridge appears to have diverted bicycle traffic that would formerly have traveled across the nearby Louise Bridge, the development of the bike path to the University through the former Southwood Golf Course may have diverted traffic from University Crescent, the development of bike paths and bike routes through the Lord Roberts area of Fort Rouge may have diverted bicycle traffic from Pembina-Jubilee Underpass and improvements to the Churchill Parkway river trail, connecting it to the Forks, may have diverted cyclists from the Osborne Underpass. Both of these underpasses require cyclists to choose between riding with heavy traffic through the underpass or riding illegally on a narrow sidewalk.

An analysis of the various locations found that, as expected, bicycle travel tended to increase where new infrastructure has been built, and to decline on Louise Bridge, University Crescent, Pembina-Jubilee Underpass and Osborne Underpass after alternate routes were created or improved. Table 4 provides a summary of the findings concerning annual trends in bicycle counts for the three sets of locations.

Table 4
Estimated Year/Year Percentage Change in the Number of Commuter Cyclists
At 26 Locations, Winnipeg, 2007-2016
Controlling for Weather, Time of Day and Spring Timing

	2008/ 2007	2009/ 2008	2010/ 2009	2011/ 2010	2012/ 2011	2013/ 2012	2014/ 2013	2015/ 2014	2016/ 2015
Locations with No Change in Bicycling Infrastructure									
Arlington @ Ellice	-8.2%	-21.9%	-7.7%	182.8%					
Arlington Bridge					8.1%	8.1%	8.1%	8.1%	
BGG @ Dakota						25.9%	25.9%	18.8%	12.1%
Ellice @ Arlington	-22.9%	-15.9%	-5.6%	300.0%					
Main St @ Higgins	5.1%	7.3%	7.4%	-0.8%	-16.4%	-3.5%	24.0%	-18.3%	104.5%
Midtown Bridge	5.0%	5.5%	5.9%	-0.5%	-23.0%	-23.0%	268.6%		
Munroe @ NPG					-4.1%	-4.1%	-4.1%	-4.1%	
Norwood Bridge			11.6%	-8.6%	9.5%	9.0%	-0.2%	-6.2%	-15.5%
NPG @ Munroe					18.9%	18.9%	18.9%	18.9%	
Omand Park Train Bridge	-33.3%		4.6%	21.1%	9.2%	2.3%	2.6%	2.9%	8.5%
Osborne Bridge	0.6%	-0.4%	1.7%	-7.7%	2.6%	2.8%	-1.1%	-3.8%	-19.5%
Provencher Bridge/ Esplanade Riel	12.3%	12.3%	11.0%	-24.0%	16.8%	2.4%	-5.1%	2.2%	0.2%
Slaw Rebchuk Bridge	-9.3%	-5.6%	-5.4%	-5.2%	-9.3%	-12.6%	5.8%	-12.4%	-14.9%
Weighted Average		**1.6%**	**6.7%**	**-3.0%**	**7.0%**	**4.5%**	**4.6%**	**0.2%**	**-3.9%**
Locations with New Infrastructure									
Assin Ave @ Hargrave			23.6%	23.6%	23.6%	8.1%	6.3%	0.5%	-1.7%
Dakota @ BGG				-5.5%	-5.5%	7.8%	8.1%	8.4%	-5.5%
Disraeli AT Bridge									2.7%
Fort Garry Bridges		29.5%	29.5%	91.1%	29.5%	29.5%	29.5%		
Grosvenor @ Harrow					7.9%	106.2%			
Harrow @ Grosvenor				19.0%	22.7%	88.0%			
Pembina @ St Maurice School			-3.3%	-3.3%	-3.3%	1.3%	10.5%	1.5%	-19.1%
River Trail @ Main St						-1.2%	16.5%	-1.2%	7.1%
Sherbrook-Maryland Bridges	6.3%	6.7%	4.7%	10.8%	-7.3%	-4.1%	-2.6%	-3.6%	
Sub-total	**6.3%**	**7.1%**	**8.2%**	**14.1%**	**5.1%**	**5.7%**	**5.8%**	**-0.7%**	**-2.5%**
Locations Negatively Affected by New Infrastructure									
Louise Bridge	15.6%	4.9%	9.3%	14.9%	7.6%	-18.8%	-37.2%	-34.7%	
Osborne Underpass			2.3%	-11.0%	-16.7%	4.5%	-3.6%	4.7%	11.3%
Pembina-Jubilee Underpass	-9.7%				10.4%	2.4%	-4.5%	-11.8%	3.6%
University Crescent		4.9%	11.2%	18.0%	17.5%	5.4%	-14.4%		
Sub-total	**-0.3%**	**4.9%**	**6.0%**	**2.7%**	**3.5%**	**-2.3%**	**-13.0%**	**-10.4%**	**7.2%**

The following chart illustrates these patterns. Based on year/year changes it suggests that cycling increased by 60% in locations with improved cycling infrastructure, increased slightly at locations with no change in infrastructure, and decreased slightly at locations where new infrastructure might have diverted traffic away from these locations.



9. Estimates of Downtown Commuter Cyclists

It is difficult to translate the bicycle counts at a set of specific locations into estimates of commuter cyclists in Winnipeg for several reasons. It is not possible to count at all the possible routes among our counting locations, some cyclists may travel past several of our counting points on their commuting routes, and some cyclists travel within smaller geographic areas and may not leave their neighbourhoods. Our method is not designed to provide an overall count of traffic volumes.

On the other hand, our counting locations have been selected to include the major routes in and out of downtown Winnipeg. A circle of 22 of our counting locations around the downtown perimeter cover most of the ways that cyclists would have to travel between the downtown area and outlying areas. (See Table 5 below and Appendix D.) For the majority of the locations shown in the table we have at least one or two counts in mid to late spring of this year. Earlier spring counts are lower and they have been excluded from the calculations of typical spring commuting. The most recent counts are generally within the last year or two but in some cases they are several years old. When there is no count available for 2016, the most recent previous counts have been used. Because there is a large difference between morning and afternoon counts, they have been estimated separately. Where either the morning or afternoon counts were missing the average ratio between AM and PM counts identified in section 5 above (1.33) was used to estimate the missing number.

As shown in the table, average morning rush hour traffic is estimated at about 2,023 cyclists and average afternoon rush hour traffic is estimated at 3,112. This gives a total morning and afternoon count of just over 5,100. The bicycle traffic into and out of the downtown area over the course of a day (24 hours) is estimated at 12,109. This estimate is based on the Winnipeg Area Transportation Survey of 2007 in which the proportion of cyclist trips during morning and afternoon rush hours combined was 42.4% of the daily bicycle traffic[1]. Based on the assumption that these cyclists are passing once in each

[1] Calculated from data in iTrans Consulting, Winnipeg Area Travel Survey Results, Final Report, July 2009, p. 33. This shows that 4,620 bicycle trips were taken during the AM and PM rush hours and 10,890 bicycle trips were taken over 24 hours.

direction, the number of ***cyclists*** is estimated at half of this number, or about **6,000 cyclists** traveling in and out of downtown Winnipeg on a given day at this time of year.

Table 5
Estimates of Traffic In/Out of Downtown Winnipeg During mid to late Spring
Based on 2016 or Most Recent Counts

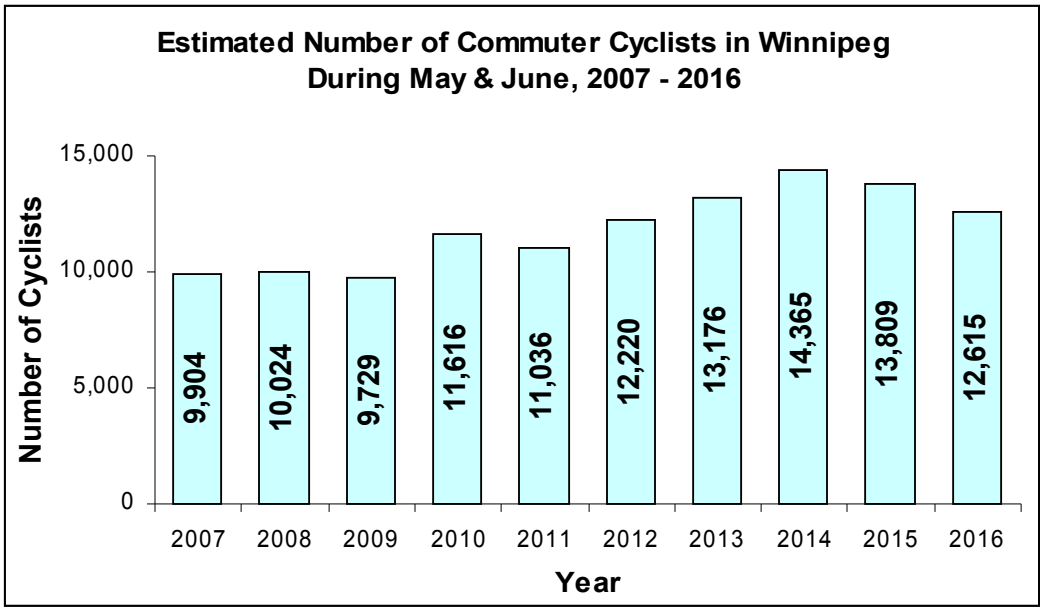
Location	Most Recent Mid or Late Spring 2 Hr Count AM	PM	Total AM+PM
1 Arlington St.@ Ellice	17	51	68
2 Disraeli AT Bridge south end	114	32	146
3 Ellice Ave @ Arlington	32	79	111
4 Louise Bridge	52	**69***	121
5 Main St @ Higgins	58	190	248
6 Maryland @ Notre Dame	11	55	66
7 Midtown Bridge	74	139	213
8 Norwood Bridge	332	324	656
9 Notre Dame at Maryland	64	**85***	149
10 Osborne AT Crosswalk	113	333	446
11 Osborne Bridge	131	251	382
12 Portage Underpass	66	210	276
13 Provencher Bridge/Esplanade Riel	120	211	331
14 River Trail @ Main St	181	145	326
15 Sargent @ Arlington	40	**53***	93
16 Sherbrook @ Cumberland	72	52	124
17 Sherbrook/Maryland Bridges	201	399	600
18 Slaw Rebchuk Bridge	45	38	83
19 St Matthews Ave @ Arlington	55	72	127
20 Stradbrook East of Donald (@ Harkness)	**41***	54	95
21 Wellington Ave. @ Arlington	**39***	52	91
22 Westminster Ave @ Sherbrook	**165***	219	384
Total of 2 Hour Counts	**2,023**	**3,112**	**5,134**
Estimated Daily Downtown Traffic**			**12,109**
Estimated Cyclists Commuting Downtown (50% of Traffic)			**6,054**

* No count available. Estimates based on the ratio PM/AM = 1.32.
** The 2007 Winnipeg Area Transportation Survey showed that 42.4% of bicycle trips in Winnipeg are made during the AM and PM rush hours, combined (5,134 / 0.424 = 12,109).

This should not be viewed as an estimate of commuter cyclists in the city. Data from Bike to Work Day[2] and other surveys shows that commuter cyclists are traveling between all regions of the city, and their routes do not always go through the downtown area. For example, a substantial number of cyclists, students and employees, commute to and from the University of Manitoba's Fort Garry campus, and the largest numbers of these students live in the Fort Rouge, Fort Garry and Fort Richmond areas, so that their commuting routes are totally outside of the downtown area. According to Bike to Work Day registration data from 2009, only 48% of those who registered actually were traveling to or from the downtown area of the city. This would suggest that in 2016 about **12,600 cyclists** commute each day ly in Winnipeg during mid to late spring.

[2] According to Bike to Work Day registration data, in 2008 40% of cyclists worked in the downtown area. In 2009, 48% of cyclists traveled between the downtown and other areas of the city. Reports based on Bike to Work Day registration data in 2008 and 2009 are available from Jeremy Hull on request.

Similar estimates have been made each year since 2007 and these estimates are summarized in the graph below. Again, these estimates suggest that commuter cycling reached a peak in 2014 and has declined slightly since then.



10. New Counting Locations Related to City AT Plans

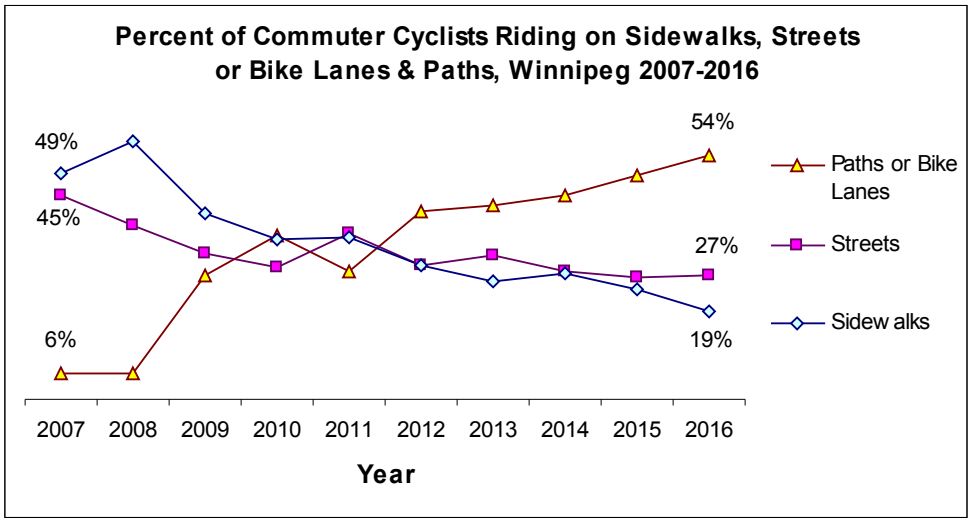
During the 2016 the City of Winnipeg planned several active transportation infrastructure developments including a downtown protected bike lane on Fort and/or Garry, a new AT crosswalk on Main St near Assiniboine Ave. and Union Station, a new bike lane on McDermot near the Health Sciences Centre, new buffered bike lanes on Pembina between Osborne and Grant, and new facilities on Waverley south of Scurfield. In addition, the City plans to improve facilities in other areas in the coming years. Our volunteers undertook counts at several new locations in order to provide benchmark data prior to planned or possible future infrastructure improvements, shown in Table 6. (Pedestrian counts were not always completed.)

Table 6
New Bicycle and Pedestrian Counting Locations in 2016

Location	Month	Day	AM/PM	Weather	2 HR count	Pedestrians (2 hours)
Bishop Grandin Greenway @ St Annes Rd.	JUNE	9	AM	good	**30**	
Bishop Grandin Greenway @ St Annes Rd.	MAY	10	AM	poor	**16**	
Empress @ St Matthews	JUNE	14	PM	excellent	**20**	
Eugenie @ St Marys	JUNE	21	AM	good	**73**	
Fort @ Broadway	MAY	31	AM	poor	**22**	142
Fort @ St Mary	JUNE	2	AM	good	**104**	282
Garry @ Broadway	JUNE	2	PM	excellent	**127**	280
Main St @ Jarvis	JUNE	15	PM	excellent	**160**	546
Main St @ Redwood	JUNE	16	PM	excellent	**137**	268
Main St AT Crosswalk near Assiniboine Ave	MAY	25	AM	good	**107**	174
Main St North of Assiniboine Ave	MAY	25	AM	good	**101**	285
McDermot at Emily	MAY	12	PM	fair	**28**	561
Pembina near Daly	MAY	18	PM	excellent	**29**	58
Powers @ Redwood	JUNE	16	AM	good	**21**	
Powers @ Redwood	MAY	10	AM	poor	**11**	
Powers @ Redwood	MAY	12	PM	fair	**29**	
Redwood @ Powers	JUNE	16	AM	good	**21**	
Redwood @ Powers	MAY	10	AM	poor	**12**	
Redwood @ Powers	MAY	12	PM	fair	**19**	
St Annes @ Bishop Grandin Greenway	JUNE	9	AM	good	**16**	
St Annes @ Bishop Grandin Greenway	MAY	10	AM	poor	**12**	
St Matthews @ Empress	JUNE	14	PM	excellent	**60**	
Wellington Crescent @ Sir John Franklin Park (near Omand bridge)	JUNE	9	PM	excellent	**193**	45
Westminster @ Sherbrook	JUNE	8	PM	poor	**219**	262

11. Sidewalk Use

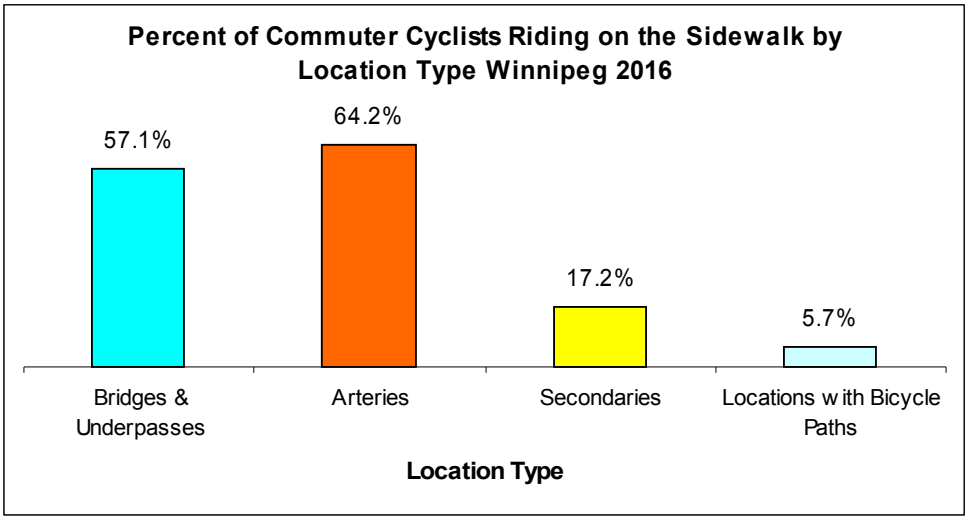
Cycling on sidewalks is generally illegal in Manitoba, except where explicitly permitted or when riding bicycles with wheels of 16" or less. Still many cyclists do ride on the sidewalks, either for convenience or out of fear of riding in the street. At our 2016 counting locations, 19% of cyclists rode on the sidewalk, down from 24% in 2015 and continuing a downward trend. The percentage of cyclists riding on the sidewalks has been declining since 2008 as shown in the chart below.



At the same time the percentage of cyclists that we counted riding on bike paths or trails has increased dramatically with the construction of new cycling facilities, ranging from painted bike lanes to bike separated from traffic and multi-user trails. By 2016 more than half of the cyclists we counted were on some form of bike or Active Transportation (AT) facility. This includes sidewalks which have been improved and designated as bike and pedestrian routes, such as on Taylor, Dakota on Jubilee. It also includes AT bridges such as the Esplanade Riel and the Disraeli AT Bridge.

The percentage of sidewalk riders also varies according to the type of counting location. We have classified these locations as Arterial Streets, Secondary Streets, Bridges & Underpasses, and AT Paths or Trails. In 2016, 57% of cyclists traveling on major arteries used the sidewalks, while 50% of cyclists traveling on bridges or through underpasses, 15% of those on secondary streets and 4% of those on bike paths or trails rode on the sidewalks. (See chart below.)

The behaviour of cyclists depends on the particular location, the amount of traffic and the choices that are available to them. For example, the Louise Bridge is very narrow, has a high volume of traffic, and very few cyclists take the road. Another example is Provencher Bridge/Esplanade Riel, where there is pedestrian/cyclist bridge (Esplanade Riel) parallel to the main bridge on the south side. In this case cyclists can legally ride on the multi-use bridge and avoid traffic, and the majority of them do although a small number of cyclists use the north sidewalk on the main bridge. Cyclists are also more willing to ride in the street on somewhat quieter secondary streets, such as Powers or wider, less congested streets such as Fort. Another factor is an increase in the presence of painted or protected bike lanes on a number of streets, reducing sidewalk riding where they exist on streets such as Pembina and Sherbrook. In addition, the introduction of traffic calming devices, such as the mini traffic circles on a number of residential streets, may have increased the comfort level of cyclists on these streets.

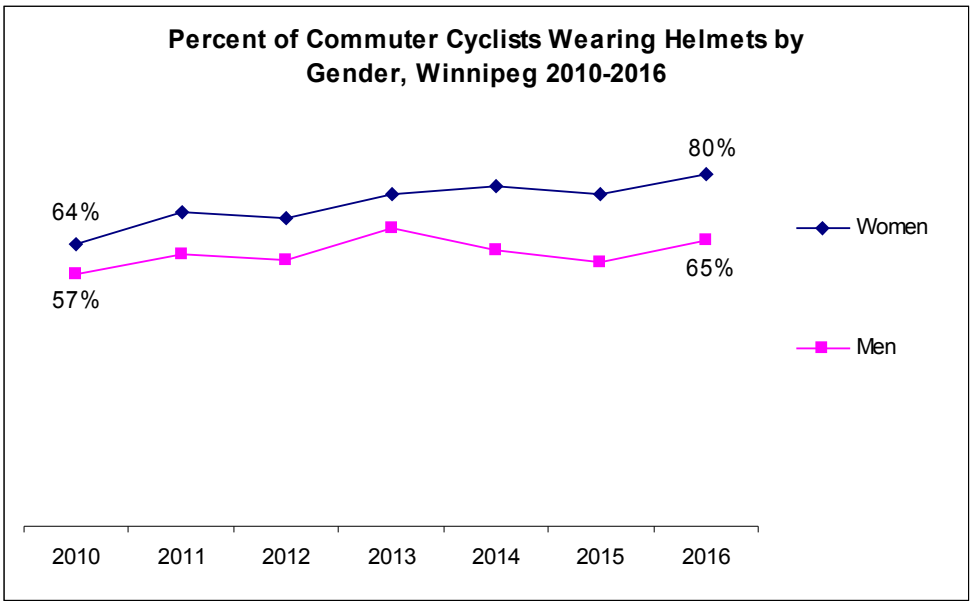


12. Helmet Use and Gender

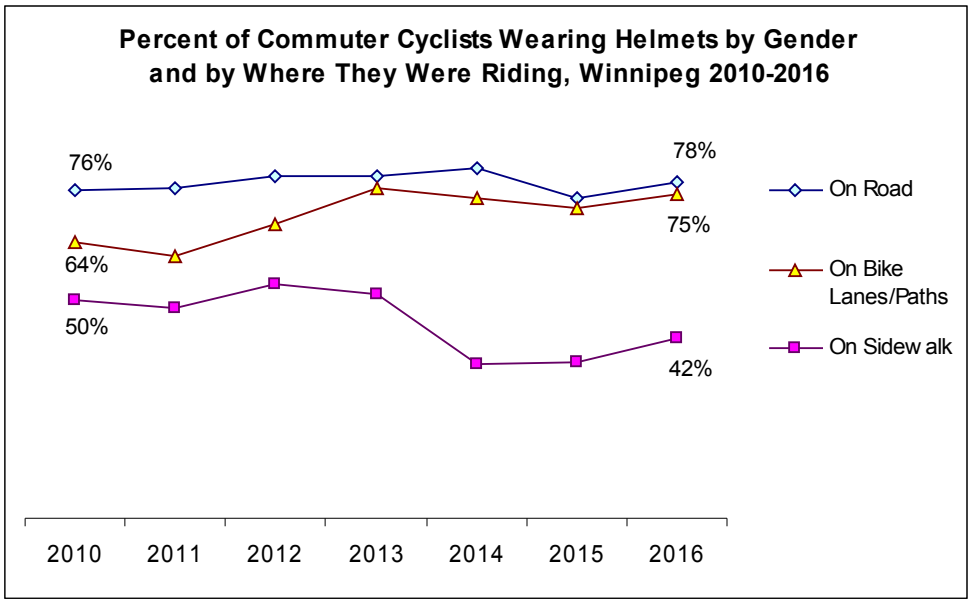
Since 2010 some of our volunteers have kept track of the gender of the cyclists and whether cyclists were wearing bicycle helmets or not. In 2016, 26% of the commuter cyclists were identified as female, and 74% were identified as male. The 2010-2016 average 28% female and 72% male, according to our counts. The 2011 National Household Survey found that 30% of commuter cyclists in Winnipeg were women and 70% were men.[3]

In our counts the percentage of commuter cyclists wearing helmets increased from 60% in 2010 to 70% in 2016. Helmet use is increasing among both women and men, but is consistently higher among women, and the difference between women and men has increased in recent years as shown in the following figure. In 2010 there was a difference of 7 percentage points between women (64%) and men (57%) but by 2016 the difference had increased to 15 percentage points between women (80%) and men (65%).

[3] The National Household Survey took the place of the long form of the Census of Canada in 2011. One question asked about mode of transportation to work and this was reported for various geographic areas, age and sex. See for example Statcan 99-012-X2011031.



There are also differences in helmet use between those riding in the street, on sidewalks, or on bike paths. In 2016 78% of those riding in the street, and 75% of those riding on bike paths wore helmets, compared to 42% of those riding on sidewalks. The higher rate of helmet use among those riding in the street may reflect a general perception that riding in the street is more dangerous than riding on the sidewalk and that helmets are less necessary when riding on the sidewalk (although research does not support this view). Or it may reflect the tendencies of different types of cyclists – regular commuter cyclists may be more likely to ride in the street and may also be more likely to have and use cycling equipment such as helmets, while more casual cyclists may be more likely to ride on the sidewalks and may be less likely to be fully equipped.



13. Conclusions

Over the past several years Winnipeg has been gradually increasing the extent of facilities designed for cyclists, including the provision of multi-user paths, separated or buffered bike lanes, painted bike lanes, and traffic calming devices. Many of the new facilities were built as part of the federal infrastructure stimulus program, coming on line in the 2009-2011 period. More recently there have been some improvements on a few major bridges, and the development of bike lanes on Sherbrook Street and Pembina Highway, but investment levels have been relatively low. In 2015 the City adopted a new pedestrian and cycling strategy with more ambitious goals and this is starting to be reflected in new bicycle lanes. If this results in a more substantial investment in cycling infrastructure we can expect to see increased cycling levels in the future.

There is strong evidence that even the limited construction of new cycling infrastructure that has occurred since 2009 had a positive impact on the numbers of cyclists in Winnipeg, but this growth seems to have stalled. Growth has taken place primarily at locations with new bike lanes and multi-user paths have been built, and primarily during the period immediately following the introduction of new infrastructure. The locations with these new bicycle facilities have seen a reduction in sidewalk riding. On the other hand, major bridges and underpasses that have not yet been improved or which do not have bike lanes continue to push cyclists onto the sidewalks, or to discourage them from riding at all. If these major barriers are dealt with the frequency of cycling throughout the entire cycling network can be expected to increase.

In addition, we reached the following conclusions:

- After taking into account location, weather conditions, spring timing and time of day, commuter cycling in Winnipeg peaked in 2014 but has declined slightly over the past two years.
- On a typical weekday in May and June an estimated 6,000 cyclists commuted in and out of the downtown area of Winnipeg, and throughout the entire city about 12,600 cyclists commuted on a given day. The total number of individual commuter cyclists in the city would be higher, given that not every cyclist commutes every day.
- Sidewalk riding has been declining where bike paths and trails are available. More than half of cyclists ride on the sidewalks on major bridges and underpasses, but where bike paths exist, only 6% ride on sidewalks.
- There has been a major shift in bicycle traffic from sidewalks and streets to bike lanes and multi-user paths *where they have been provided.*
- Use of helmets has been increasing. In 2016 70% of commuter cyclists were wearing helmets. Women are more likely to wear helmets than men and those riding in the street are more likely to wear helmets than those riding on sidewalks.
- In 2016 women made up 26% of commuter cyclists in Winnipeg.

A more comprehensive survey would be needed to more accurately estimate the number of cyclists, and the bicycle share of traffic in Winnipeg. The only such survey done on a regular basis is the Census of Canada which identifies the number of people commuting to work, by mode of transportation in 2001, 2006 and 2011. Data from these sources suggests that commuter cycling increased in the City of Winnipeg by 32% between 2006 and 2011. However there is no source available that provides annual data, seasonal transportation patterns, or bicycle travel for purposes other

than travel to or from work. This means that, in spite of the bicycle counts reported here, **there is a continuing lack of basic data on the numbers and other characteristics of cyclists in Winnipeg, and throughout Manitoba**. Such information is needed by governments and others in order to identify trends and develop policies related to active transportation.

Acknowledgements

I would like to thank the following dedicated volunteers who contributed to the 2016 bicycle counts as well as those who have volunteered in previous years. Collectively we have been able to build baseline data and increase our knowledge about cycling patterns in Winnipeg, and this should prove useful in assessing the improvements that may take place in the coming years. The following volunteers helped with bicycle counts in 2016:

Guy Bonneta, Jim Chapryk, Denis Depape, Erik Dickson, Brion Dolenko, Laura Donatelli, Fanny Drouet, Katarzyna Dyszy, Mani Goodheart, Jeremy Hull, Jonathan Isaak, Frederick Lair, Greg Loeb, Kevin Lunn, Beth McKechnie, Sylvain Massart, Jaret Olford, Jim Parker, Bev Peters, Holly Poklitar, Ken Preston, Bill Reid, Lea Stogdale, Tina Tenbergen, Nadine Tonn, Randy & Jocelyn Tyler, Valerie Unwin, Gavin Williamson, John Wilmot, Terry Woods,

Report prepared by Jeremy Hull for Bike Winnipeg.

If there are questions or comments, or if anyone wants additional information about these counts please contact me at: hull.jeremy@gmail.com.

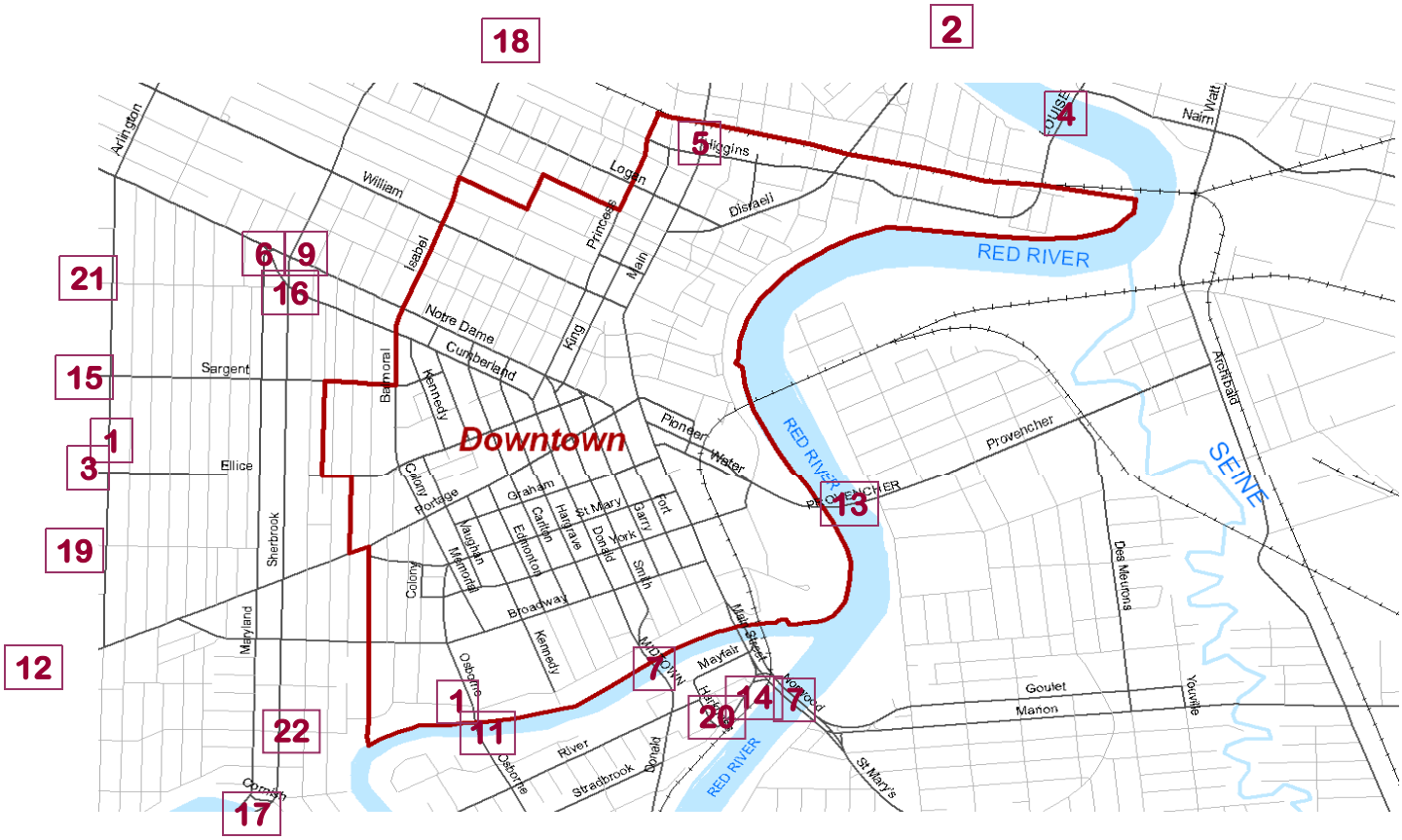
Appendix A:
2016 Commuter Bicycle Count Data

Location	Month	Day	AM/ PM	Spring Timing	Weather	2 HR count	Sidewalk %	% Women	Helmet %
Assin Ave @ Hargrave	MAY	19	AM	Mid Spring	good	**371**	1.1%		81.9%
	MAY	10	AM	Mid Spring	poor	**41**			
Assin Park Footbridge	MAY	10	PM	Mid Spring	poor	**38**		26.7%	93.3%
	MAY	10	PM	Mid Spring	poor	**38**		26.7%	93.3%
Bishop Grandin Greenway @ Dakota	JUNE	1	PM	Late Spring	poor	**10**		0.0%	60.0%
	MAY	4	PM	Mid Spring	excellent	**103**		25.2%	67.0%
Bishop Grandin Greenway @ St Annes	JUNE	9	AM	Late Spring	good	**30**		10.0%	76.7%
	MAY	10	AM	Mid Spring	poor	**16**			
Chalmers @ North Pioneer Greenway	JUNE	14	AM	Late Spring	excellent	**28**			
	JUNE	9	PM	Late Spring	excellent	**32**	100.0%	31.3%	31.3%
Dakota @ Bishop Grandin Greenway	JUNE	1	PM	Late Spring	poor	**15**		0.0%	33.3%
	MAY	4	AM	Mid Spring	fair	**93**		31.2%	61.3%
Disraeli AT Bridge	JUNE	2	AM	Late Spring	good	**114**		24.6%	82.5%
Dunkirk N of Fermor	MAY	17	AM	Mid Spring	good	**161**	0.0%	25.0%	85.1%
Empress @ St Matthews	JUNE	14	PM	Late Spring	excellent	**20**	22.2%		55.6%
Eugenie @ St Marys	JUNE	21	AM	Late Spring	good	**73**	2.7%	36.6%	87.3%
Fort @ Broadway	MAY	31	AM	Late Spring	poor	**22**	18.2%	36.4%	77.3%
Fort @ St Mary	JUNE	2	AM	Late Spring	good	**104**	2.0%	31.4%	84.3%
Garry @ Broadway	JUNE	2	PM	Late Spring	excellent	**127**	10.2%	29.9%	68.5%
Main St @ Higgins	MAY	10	AM	Mid Spring	poor	**58**	75.9%	8.6%	34.5%
Main St @ Jarvis	JUNE	15	PM	Late Spring	excellent	**160**	72.5%	23.3%	12.0%
Main St @ Redwood	JUNE	16	PM	Late Spring	excellent	**137**	67.2%	13.1%	27.0%
Main St at CrosswALk @ AssinIboine Ave	MAY	25	AM	Late Spring	good	**107**	93.5%	42.1%	84.1%
Main St N of Assin Ave	MAY	25	AM	Late Spring	good	**101**	50.5%	32.7%	74.3%
McDermot at Emily	MAY	12	PM	Mid Spring	fair	**28**	25.0%	17.9%	39.3%
Munroe @ North Pioneer Greenway	MAY	17	AM	Mid Spring	good	**4**	0.0%		50.0%
	JUNE	15	PM	Late Spring	excellent	**324**	2.6%	22.0%	69.1%
	JUNE	8	PM	Late Spring	poor	**323**	0.8%		
Norwood Bridge	JUNE	8	AM	Late Spring	good	**332**	0.8%	24.1%	73.5%
	MAY	11	AM	Mid Spring	good	**174**	1.3%	23.1%	71.1%
	MAY	11	PM	Mid Spring	good	**211**	1.0%		
North Pioneer Greenway @ Chalmers	JUNE	14	AM	Late Spring	excellent	**118**			74.7%
	JUNE	9	PM	Late Spring	excellent	**128**		27.0%	66.4%
	MAY	17	AM	Mid Spring	good	**103**			73.8%
Omand Park Train Bridge	MAY	12	PM	Mid Spring	fair	**78**			83.3%
	MAY	5	AM	Mid Spring	good	**199**		34.5%	85.3%
Osborne AT Crossing	MAY	11	AM	Mid Spring	good	**113**		37.2%	77.9%
Osborne Bridge	MAY	11	AM	Mid Spring	good	**131**	22.1%	29.8%	70.2%
Osborne Underpass	MAY	4	AM	Mid Spring	fair	**132**	55.8%		
Path from Wellington Cr to Omand Train Bridge	JUNE	9	PM	Late Spring	excellent	**211**			
	JUNE	9	PM	Late Spring	excellent	**138**	55.3%		
Pembina @ St Maurice School	JUNE	9	AM	Late Spring	good	**99**	10.1%	26.5%	71.8%
	MAY	10	AM	Mid Spring	poor	**45**	11.6%	23.3%	74.8%
	MAY	10	PM	Mid Spring	poor	**61**	12.1%		
Pembina near Daly	MAY	18	PM	Mid Spring	excellent	**29**	65.5%	3.4%	51.7%

Appendix A:
2016 Commuter Bicycle Count Data

Location	Month	Day	AM/ PM	Spring Timing	Weather	2 HR count	Sidewalk %	% Women	Helmet %
Pembina-Jubilee Underpass	JUNE	9	PM	Late Spring	excellent	**142**	76.9%	30.5%	73.1%
Powers @ Redwood	JUNE	16	AM	Late Spring	good	**21**	24.0%	12.0%	28.0%
	MAY	10	AM	Mid Spring	poor	**11**	0.0%	16.7%	33.3%
	MAY	12	PM	Mid Spring	fair	**29**	24.2%	33.3%	12.1%
Provencher Bridge/ Esplanade Riel	MAY	10	AM	Mid Spring	poor	**120**	31.7%		
	MAY	11	PM	Mid Spring	good	**211**	32.4%		
Redwood @ Powers	JUNE	16	AM	Late Spring	good	**21**	48.0%	12.0%	20.0%
	MAY	10	AM	Mid Spring	poor	**12**	91.7%	50.0%	41.7%
	MAY	12	PM	Mid Spring	fair	**19**	86.4%	36.4%	9.1%
River Trail @ Main St	JUNE	7	AM	Late Spring	good	**181**		32.3%	88.4%
	MAY	10	AM	Mid Spring	poor	**101**		25.7%	90.1%
Sherbrook-Maryland Bridges	MAY	10	AM	Mid Spring	poor	**201**	39.8%		84.5%
	MAY	20	PM	Mid Spring	excellent	**399**	67.2%		
Slaw Rebchuk Bridge	JUNE	9	AM	Late Spring	good	**45**	71.1%	24.4%	42.2%
	MAY	12	AM	Mid Spring	poor	**29**	82.8%	13.8%	20.7%
St Annes @ Bishop Grandin Greenway	JUNE	9	AM	Late Spring	good	**16**	37.5%	6.3%	75.0%
	MAY	10	AM	Mid Spring	poor	**12**	66.7%		
St Matthews @ Empress	JUNE	14	PM	Late Spring	excellent	**60**	0.0%		38.2%
Wellington Cres @ Sir John Franklin Park	JUNE	9	PM	Late Spring	excellent	**193**			
Westminster @ Sherbrook	JUNE	8	PM	Late Spring	poor	**219**	24.7%		68.0%

Appendix B:
Downtown Perimeter Counting Locations



1 Arlington St.@ Ellice
2 Disraeli AT Bridge south end
3 Ellice Ave @ Arlington
4 Louise Bridge
5 Main St @ Higgins
6 Maryland @ Notre Dame
7 Midtown Bridge
8 Norwood Bridge
9 Notre Dame @ Maryland
10 Osborne AT Crosswalk
11 Osborne Bridge
12 Portage Underpass
13 Provencher Bridge/Esplanade Riel
14 River Trail @ Main St
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16 Sherbrook @ Cumberland
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