

Calgary



Centre City Cycle Track Pilot **SUMMARY REPORT**

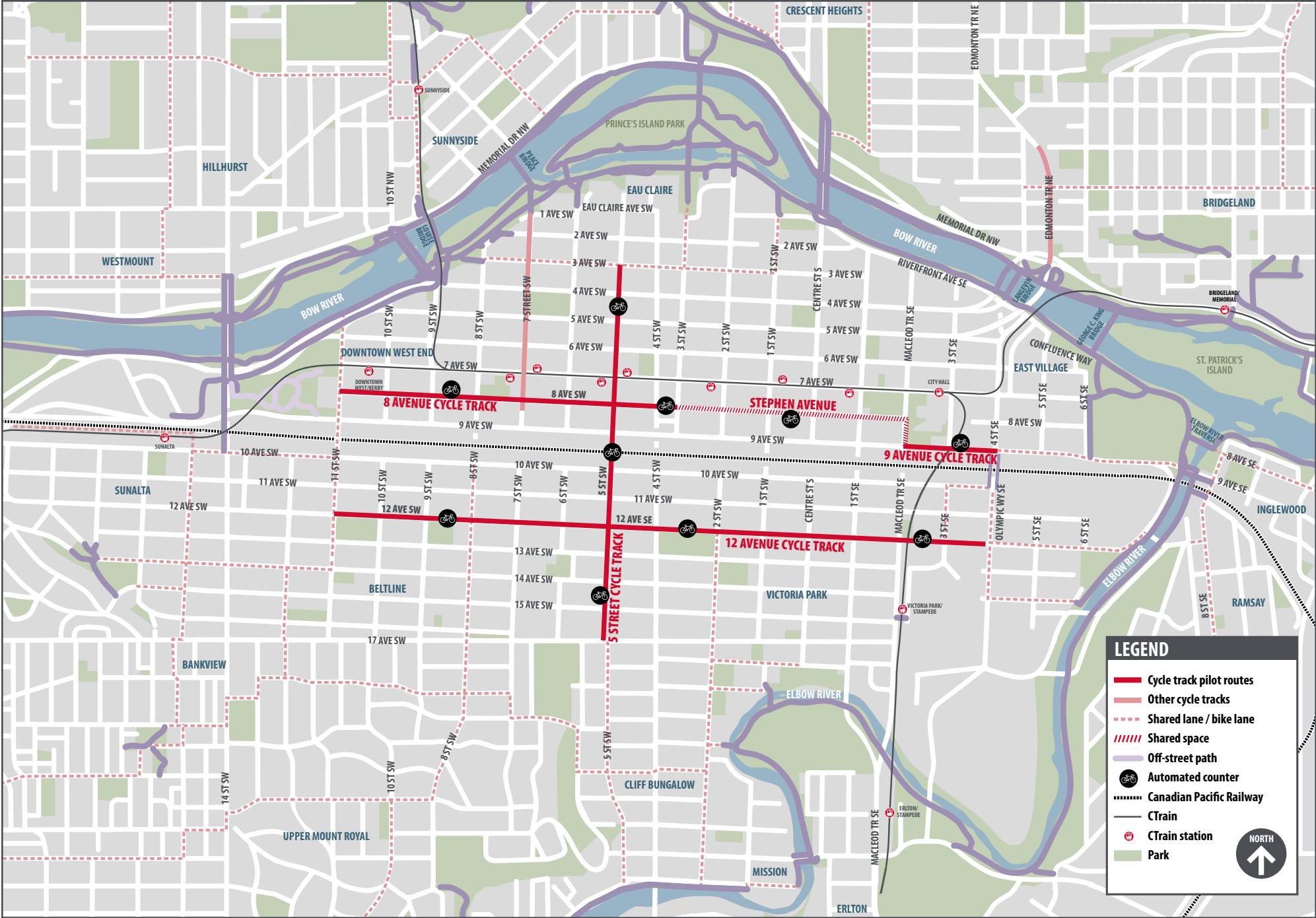


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Produced by The City of Calgary Transportation Department – Dec. 2016

Current Bikeway and Pathway Network in Centre City



LEGEND

- Cycle track pilot routes
- - - Other cycle tracks
- - - - - Shared lane / bike lane
- / / / / / Shared space
- Off-street path
- Automated counter
- - - - - Canadian Pacific Railway
- CTrain
- CTrain station
- Park

NORTH
↑

Fast facts about the cycle track pilot

2% of 300 km of downtown travel lanes used for **6.5 km** of cycle tracks



allowing more people to choose to travel by bike.

1.2 million bicycle trips

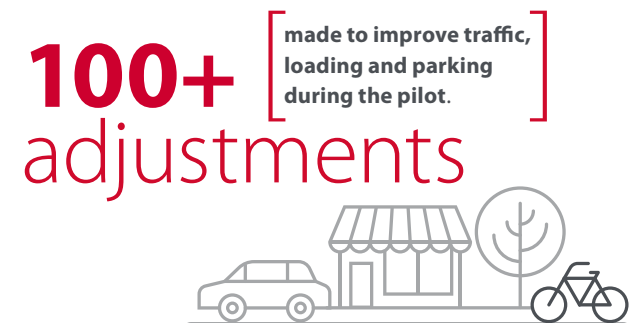
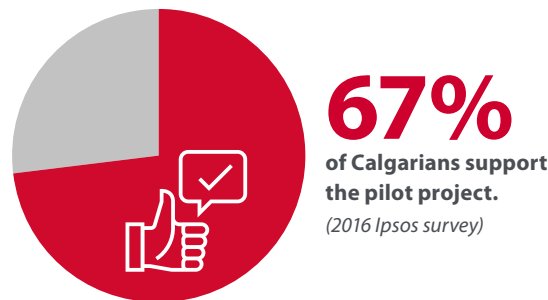
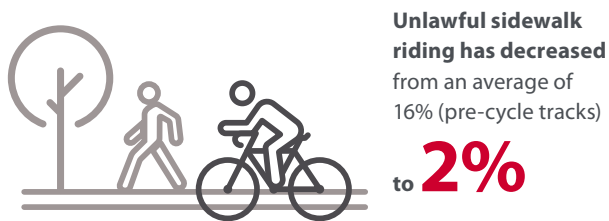
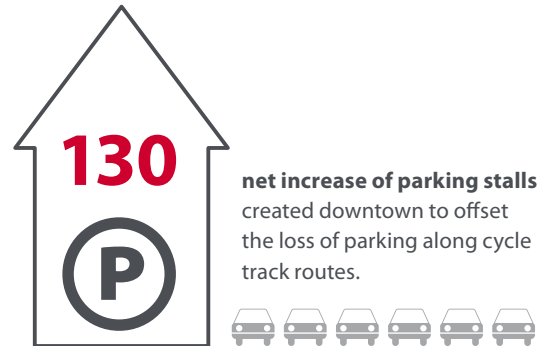
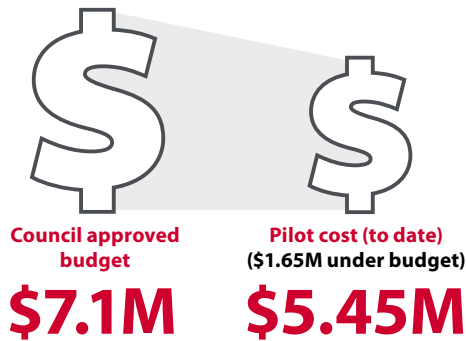


between June 18, 2015 and November 20, 2016

90 seconds longest delay to people driving



travelling entire 12 Avenue cycle track corridor during morning peak period.



Executive summary

The Council-approved 18 month Centre City cycle track pilot has ended.

The pilot project created a 6.5 km network of protected bike lanes to provide better transportation options for Calgarians and visitors to reach destinations in the Centre City. The presence of bicycle lanes that are, for the most part, separated by a barrier from people driving and walking has led to a tripling of cycling along the network and the largest recorded single year increase of bike trips into downtown (up 40% from May 2015 to May 2016).

With the new infrastructure there have been many lessons learned along the way. Several different design treatments have now been tried, tested and in many cases, have been modified during the pilot based on public input and monitoring by the Transportation Department. Over 100 adjustments were made during the pilot to improve parking, traffic operations and reduce conflict between people walking, cycling and driving. Other adjustments can be made after the pilot, should Council choose to keep the network.

Council asked Administration to monitor and report back on over 80 performance measures. This report summarizes that data to help inform the final decision on the pilot project.

While not every target was met, the objectives of the pilot have been achieved:

- People cycling can safely access more destinations.
- The number of people cycling on cycle tracks and downtown has increased.
- The impacts to people walking or driving have been modest.

Council will determine if a grid of bike friendly streets will be available to Calgarians and visitors travelling downtown and in the Beltline, which is home to as many as 160,000 employees, 40,000 residents, and has plans for continued growth.

Over the years the Centre City has evolved to move people efficiently, and features 300 km of lanes to move traffic, a transit mall, a pedestrian mall, pathways along the Bow and Elbow rivers, a network of skyways (Plus 15) and possibly a network of bike friendly streets. This project seeks to augment that network to make cycling a safe and convenient option.



Council will now determine if a grid of bike friendly streets will be available to Calgarians and visitors travelling downtown and in the Beltline.

Project background

Planning for a network of downtown cycle tracks began in 2011 with the adoption of the Cycling Strategy. Although cycling downtown had been slowly increasing as of 2009, mostly along the pathways, there was little on-street bicycle infrastructure.

Project milestones

July 2011 - Council approved a motion to determine a separated cycle track network in the Centre City.

September 2011 - A Centre City Bicycle Projects Committee made up of business and community associations and the cycling community was established to provide input on a future network.

July 2013 - Calgary's first downtown cycle track opens on 7 Street S.W.

Spring 2013 to Spring 2014 - Extensive public engagement through 90 open houses, information sessions, one-on-one meetings to determine proposed network.

April 2014 - A 7.3 km network of cycle tracks is proposed on four corridors. After removing the proposed 1 Street S.E. cycle track, Council approved a modified 6.5 km network on three corridors including a shared space on Stephen Avenue and Olympic Plaza block as an 18 month pilot project with a maximum budget of \$7.1 million.

Summer 2014 to Spring 2015 - After approval, The City began designing each corridor while working with stakeholders.

January 2015 - Council approved a comprehensive evaluation program.

Spring 2015 - Network constructed and opened two weeks early on June 18, 2015.

August 2016 - One million bicycle trips recorded on the pilot network (event pictured).

December 2016 - Final report and decision on pilot network.



The pilot network was constructed in spring 2015 and opened on June 18, 2015.

Evaluation plan

To help evaluate the pilot project, Council asked for an extensive data collection and evaluation plan.

Project data was collected at ten count locations at six different times during the project. Baseline data was collected in September 2014, and final project data was collected in September 2016. To provide a snapshot of how the network operates in winter, a portion of the data was collected in January 2015 and 2016. Data was collected and verified using a variety of automated, manual and survey tools including:

PERFORMANCE MEASURE	MEASUREMENT METHOD
Satisfaction	Ipsos (third party) telephone survey of Calgarians
Safety	Collision data collected by Calgary Police Service
Bicycle Volumes	Automated counters embedded into pavement at 10 count locations along the cycle tracks
Peak period travel time for automobiles	GPS and stop watch trials for a vehicle travelling the entire length of the corridor
Unlawful sidewalk riding and wrong way riding	Manual count by Transportation
Economic Vitality - merchants along route	In-person surveys conducted by Transportation
Economic Vitality - pedestrians along route	In-person surveys conducted by Transportation
Demographics - age	Manual count by Transportation
Demographics - gender	Manual count by Transportation

Manual counts and vehicle travel times are collected on a single day during each evaluation period.

Route specific results for primary performance measures follow in the next section and data for all performance measures is found in Appendix A.

Data collection tools:



Handheld electronic counter used for manual data collection.



Automated counter.



Digital Display Counter at 8 Avenue and 3 Street S.W.

5 Street S.W. Cycle Track

Destinations along this route:

Calgary Courts, 17 Avenue Retail and Entertainment District, Sheldon M. Chumir Health Centre, Western Canada High School, Eau Claire Market, restaurants and office towers.

Fast facts:


- The spine of the network and the busiest on-street bikeway in the city.
- 15% (2,120) of daily on-street trips (14,167) are by bicycle at the CPR underpass (4% before cycle tracks).
- The number of women increased from 50 (in 2014) to 276 (in 2016) during a 6 hour period.




Total bicycle trips at
5 Street S.W. at the
CPR underpass:
(June 12, 2015 –
November 20, 2016)

567,154

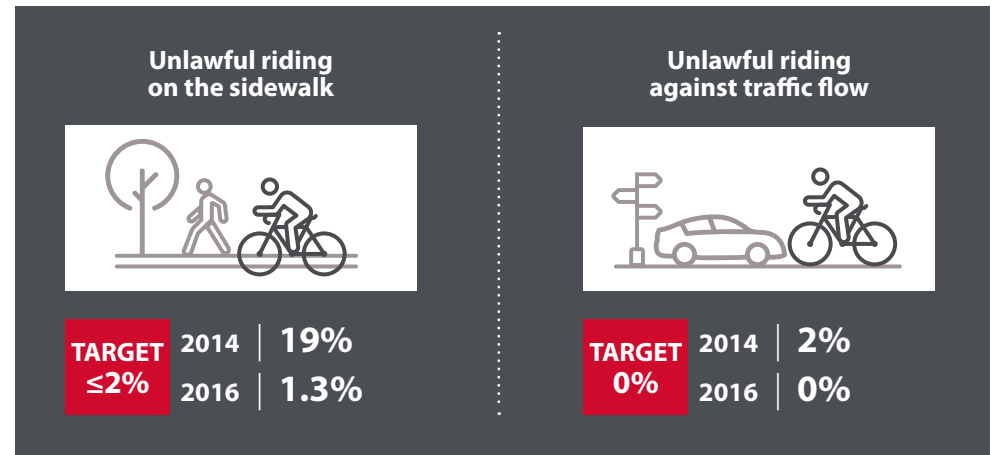
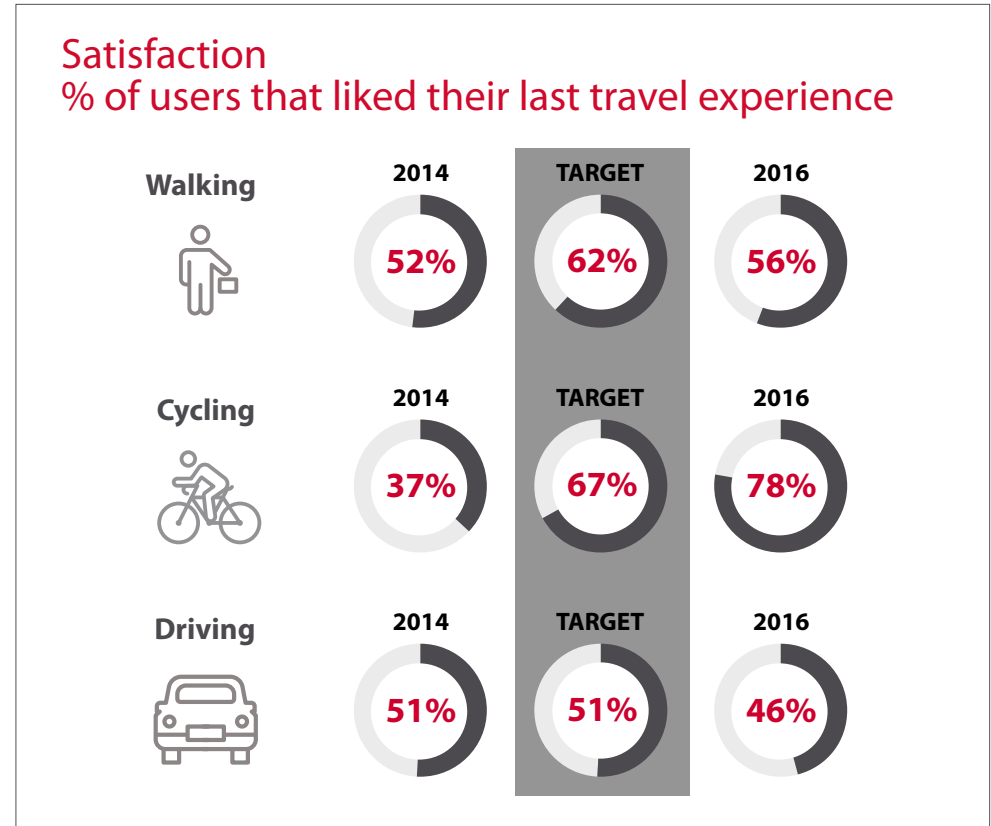
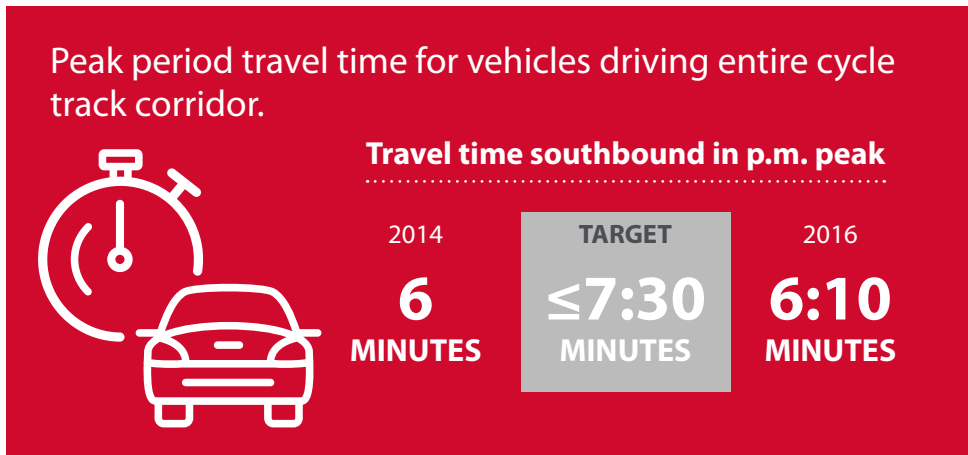
5 Street S.W.

Bicycle Volumes (16-hr) 

	2014	TARGET	2016
North of 5 Avenue	410	800	1280
@CPR underpass	630	1200	2040
North of 15 Avenue	330	700	1040

Safety 

	Annual average as of June 2014	TARGET	July 2015 to July 2016
Number of collisions (all modes)	178 (range: 161-200)	160	140



12 Avenue S.

Destinations along this route:

Central Memorial Park and Library, Beltline Aquatic and Fitness Centre, Stampede Park and Scotiabank Saddledome, Sheldon M. Chumir Health Centre, Victoria Park and residential towers.

Fast facts:

- A connection across the Beltline community.
- 6% (930) of all on-street trips (15,030) are by bicycle at 12 Avenue west of 2 Street S.W. (1% before cycle tracks).
- A higher number of daily bicycle trips in the winter than in the summer before the cycle tracks.



Total bicycle trips
at 12 Avenue and
2 Street S.W.
(June 2, 2015 –
November 20, 2016)

308,859


12 Avenue S.



Bicycle Volumes (16-hr)

	2014	TARGET	2016
West of 8 Street S.W.	140	600	890
West of 2 Street S.W.	190	800	870
West of 3 Street E.	220	700	470

Safety

	Annual average as of June 2014	TARGET	July 2015 to July 2016
Number of collisions (all modes) 	153 (range: 129-193)	138	133

Peak period travel time for vehicles along entire cycle track corridor.

Eastbound in a.m. peak



2014	TARGET	2016
5:40 MINUTES	≤6:50 MINUTES	7:10 MINUTES

Eastbound in p.m. peak

2014*	TARGET	2016
11:30 MINUTES	≤14 MINUTES	7:20 MINUTES

Satisfaction

% of users that liked their last travel experience

Walking



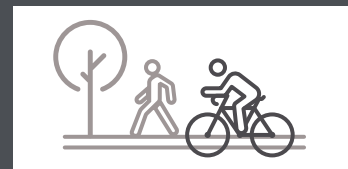
Cycling



Driving

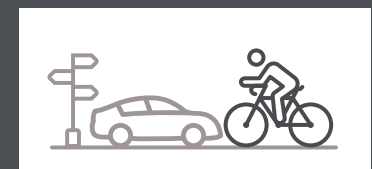


Unlawful riding on the sidewalk



TARGET	2014	2016
≤2%	23%	3.3%

Unlawful riding against traffic flow



TARGET	2014	2016
0%	5%	0%

* Likely Hotel Arts construction delays in 2014 baseline.

8 Avenue S.W. Cycle Track

Destinations along this route:

Stephen Avenue, The CORE shopping centre, Globe Cinema, Shaw Millennium Park, University of Calgary Downtown Campus, restaurants and office towers.

Fast facts:

- Second busiest on-street bikeway in the city.
- Highest number of children (16) on network at 8 Avenue west of 3 Street S.W.
- 31% (1,300) of all on-street trips (4,145) are by bicycle at 8 Avenue west of 3 Street S.W. (24% before cycle tracks).


Results for the 9 Avenue connection are in Appendix A.




Total bicycle trips
at 8 Avenue west
of 3 Street S.W.
(June 18, 2015 –
November 20, 2016)

355,216

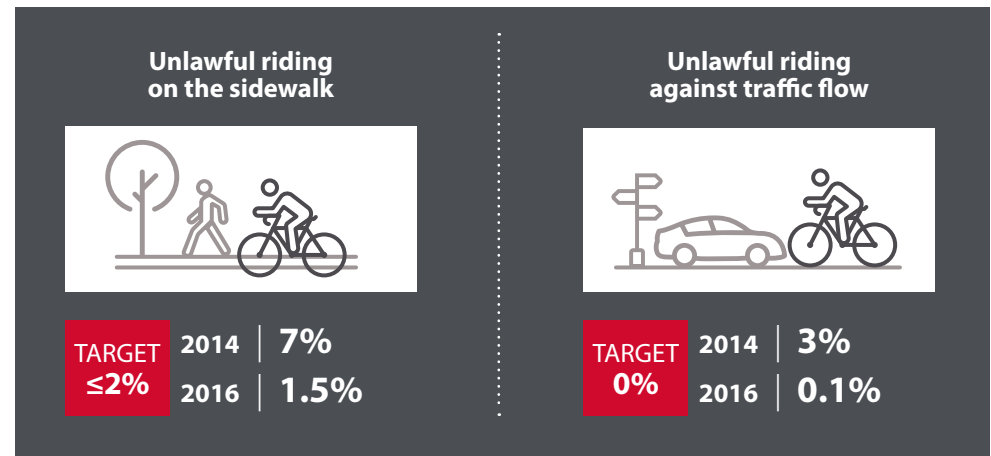
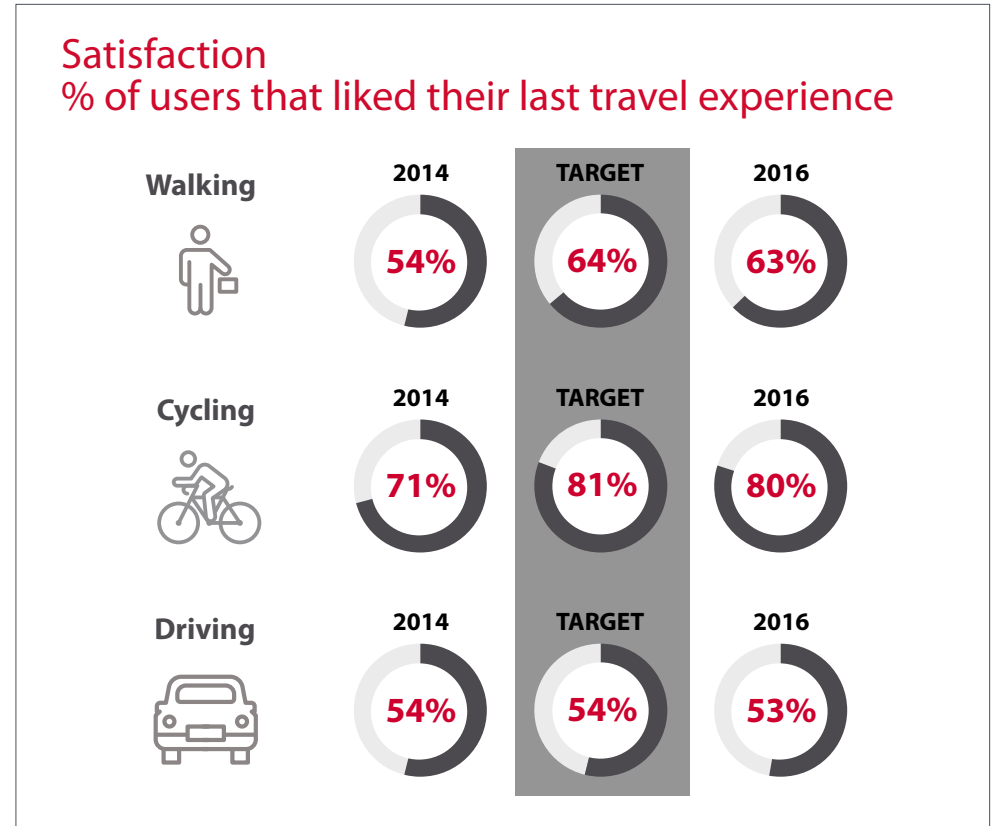
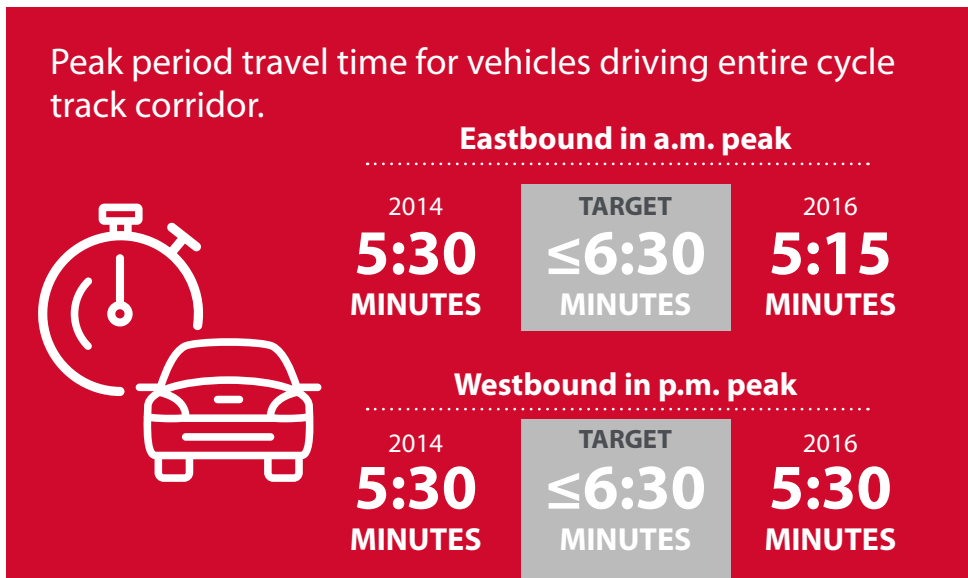
8 Avenue S.W.

Bicycle Volumes (16-hr) 

	2014	TARGET	2016
West of 8 Street S.W.	480	1000	480
West of 3 Street S.W.	920	1800	1240

Safety 

	Annual average as of June 2014	TARGET	July 2015 to July 2016
Number of collisions (all modes)	63 (range: 53-79)	57	63



Stephen Avenue Shared Space

Destinations along this route:

Telus Convention Centre, Glenbow Museum, City Hall, Scotia Centre, The CORE, Bankers Hall, Central Library, Olympic Plaza shops and restaurants.

Fast facts:

- Bylaw changed to allow cycling during the day and gates replaced to facilitate better access.
- People cycling make up 2% (161) of all people (8,480) on Stephen Avenue on a typical summer weekday during lunch (11 a.m. to 2 p.m.).

From Canada Day through the end of Stampede there was a daily cycling restriction from 10:30 a.m. to 2 p.m.

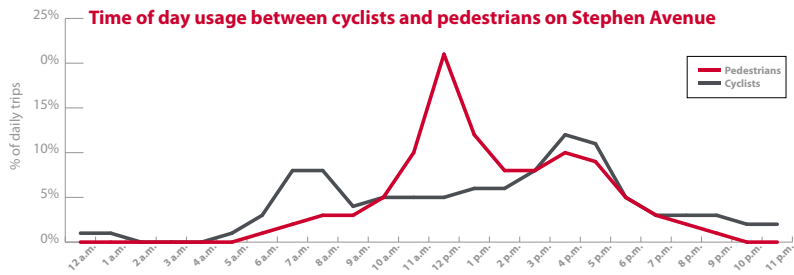


Stephen Avenue



Bicycle Volumes (16-hr)	2014	TARGET	2016
East of 1 Street S.W.	380	1200	640

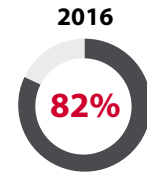
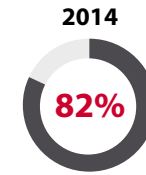
Pedestrian Volumes	2014	TARGET	2016
East of 1 Street S.W.	4500	4500	4060



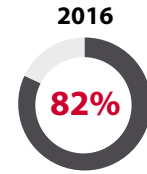
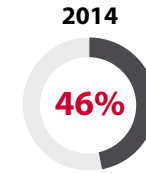
Satisfaction

% of users that liked their last travel experience

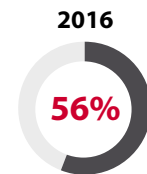
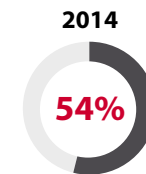
Walking



Cycling



Driving



Safety

Number of collisions (all modes)



Annual average as of June 2014	TARGET	July 2015 to July 2016
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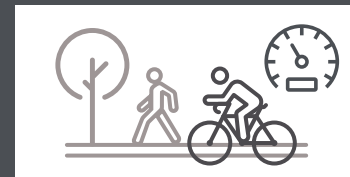
24 (range: 19-36)	20	30
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Observed near misses involving bicycles
(# of events and % of near miss events compared to # of bicycles) during data collection

TARGET	Sept. 2016
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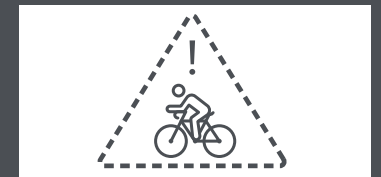
0% (0)	≤1% (6)	0% (0)
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Bicycle Speeds



TARGET < 25 km/hr	2015	19.5 km/hr
	2016	18.7 km/hr

Observed careless bicycle riding



TARGET ≤1%	2014	0%
	2016	0%

(Data collected during 6 hours on a single day)

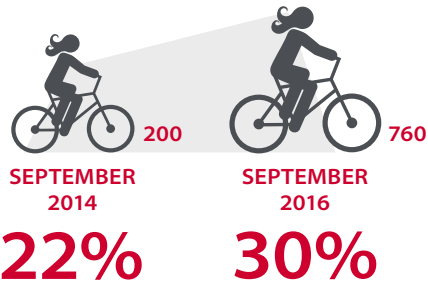
Demographics

Before the pilot network people cycling in the Centre City had little dedicated infrastructure to ride on, leading to more confident people cycling with traffic. Before the cycle track, 78% of people cycling on the routes were men and 99.9% were adults on weekdays.

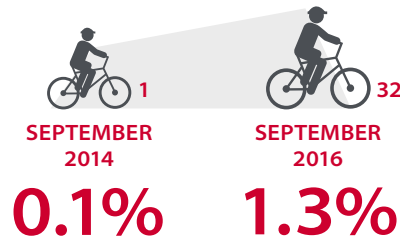
The cycle tracks bring the comfort of the pathway to the streets. During the pilot, the number of women and children cycling increased substantially, demonstrating a higher feeling of safety.

Weekday bicycle trips at the three middle count locations:

The percentage of women riding on the corridors increased.



The percentage of children riding on the corridors increased.



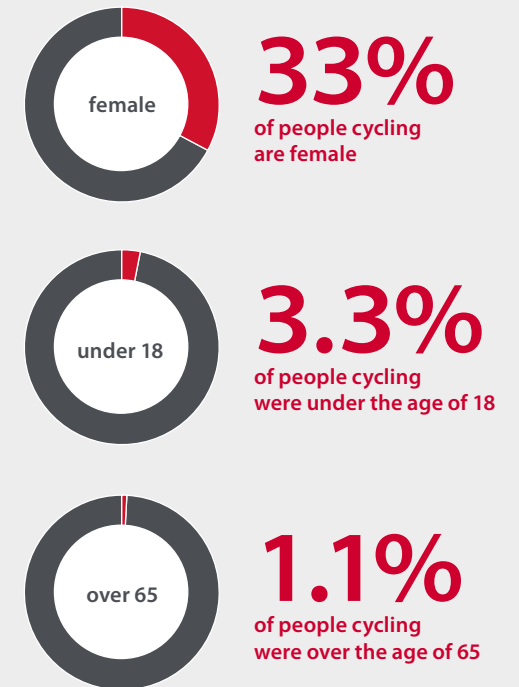
Weekday and weekend data collected during 6 hour manual count on a single day.



Who is riding on weekends?

Demographic data for the Evaluation Plan was collected on a weekday in September 2016. Additional data was collected on a Saturday in August 2016 to track trends during weekends.

At the three middle count locations:



Economic vitality

To evaluate impacts to business, pedestrians and merchants were surveyed before and during the pilot.

Many factors influence our local economy and the city has seen many shifts in employment and spending since the pilot project baseline data was collected in September 2014.

PEDESTRIANS SURVEYED ALONG CYCLE TRACK ROUTES REPORTED:

Average number of visits per week

	2014 (n= 239)	2016 (n= 141)
12 Avenue	3.9	4
5 Street	3.3	3.5
8 Avenue	3.3	3.4
Stephen Avenue	3.6	3.1
Average	3.5	3.5

Average amount of dollars spent per month

	2014 (n= 239)	2016 (n= 141)
12 Avenue	\$176	\$160
5 Street	\$73	\$61
8 Avenue	\$161	\$122
Stephen Avenue	\$202	\$183
Average	\$153	\$131

Pedestrians surveyed along corridors reported visiting businesses the same number of times per week and spending about **\$20 less per month.**



MERCHANTS ALONG CYCLE TRACK ROUTES REPORTED:

Average number of customers per day

	2014 (n= 116)	2016 (n= 135)
12 Avenue	70	71
5 Street	113	94
8 Avenue	116	86
Stephen Avenue	148	117
Average	112	92

3/4  of merchants surveyed reported that the cycle tracks brought them a similar number of, or more customers daily.

Safety

Ensuring that Calgarians are travelling safely on our roadways is a City priority. Safety along the network was closely monitored during the pilot period.

Collisions involving bicyclists

During one year of the pilot period (June 18, 2015 – June 18, 2016) there were 39 reported bicycle collisions and zero fatalities along cycle track corridors. This is an increase in the number reported bicycle collisions along cycle track corridors from before the pilot; however, the number of bicycle trips also increased over the same period of time (graph below). In many instances, the project team reviewed locations where an incident occurred and made adjustments. This included additional dashed green paint at alleys and driveways, parking changes to improve sight lines for turning vehicles, or additional signage.



90% of people walking, cycling & driving reported feeling safe

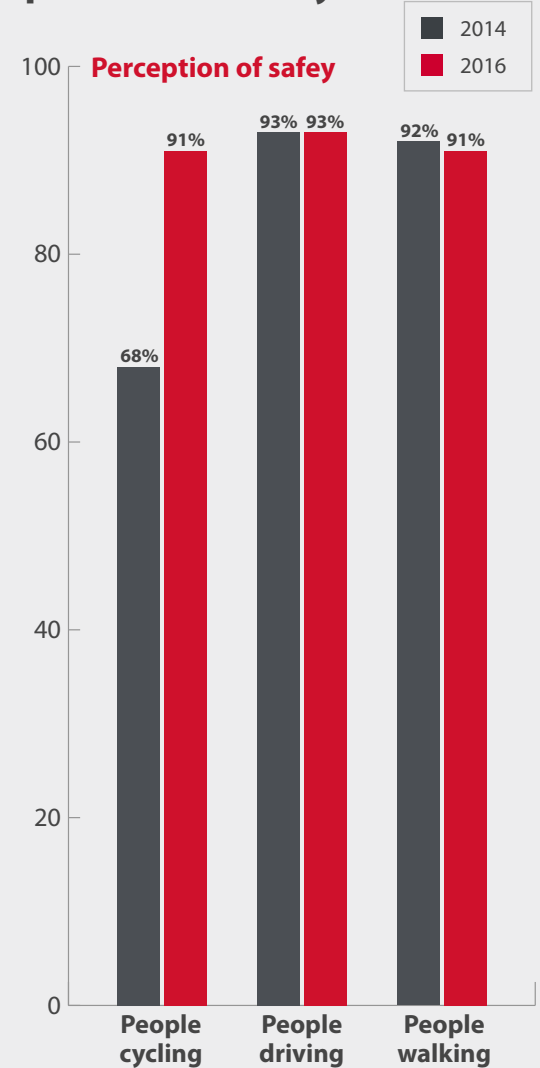
travelling on the pilot corridors after the cycle tracks were installed.
(Ipsos Telephone Survey)

Collisions for all modes

The number of total collisions (as shown in Appendix A) decreased or remained the same on each cycle track corridor. A road safety review was conducted by a consultant and found no major issues but it did identify items for future adjustments to continue to improve travel experience, traffic operations and safety. The pilot network is still new and The City will continue to collect safety data and monitor the network to ensure a safe travel experience for everyone.

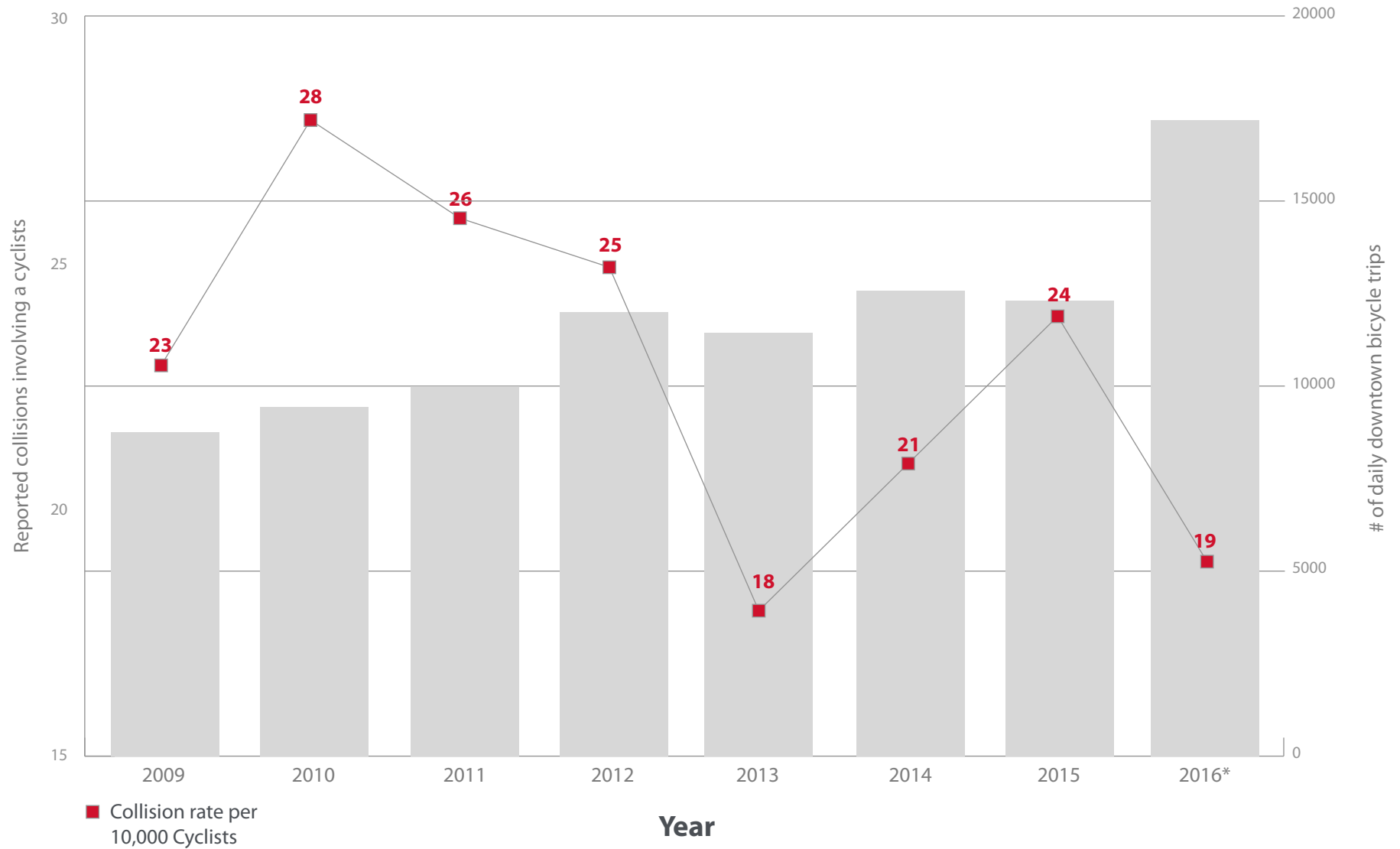
The number of collisions on Stephen Avenue involving motorists increased slightly, though there were no reported collisions involving a cyclist.

People cycling report the greatest change in perceived safety:



(Ipsos Telephone Survey)

Collisions Involving Cyclists | Rates in Central Business District (2009-2016)



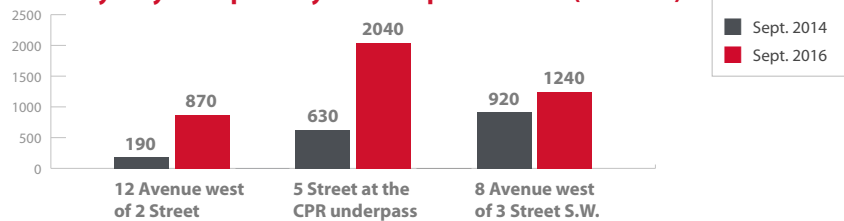
* 2016 reported collisions as of October 20, 2016

Network results

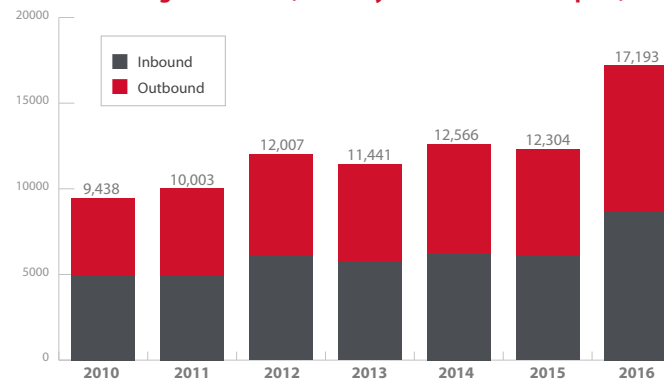
While some of the ridership targets were not met during the pilot, the impact of a network of cycle tracks is clear:

- Ridership has tripled along the network.
- 2016 saw the largest increase in cycling into downtown (40% increase over 2015 bicycle trips) and has gotten Calgary closer to achieving the 2020 Target for bike trips set forward in the Cycling Strategy.
- People are going one or two blocks out of their way to use the cycle tracks, as seen in the Downtown Bicycle Volume Map found in the Appendix B.
- The highest ridership occurs where cycle track routes are closer together (8 Avenue near 7 Street and 5 Street S.W.), and lowest where the network reaches fewer destinations (9 Avenue, 12 Avenue near 3 Street S.E.).

Daily bicycle trips on cycle track pilot routes (16-hour)



Annual May count of the total number of bicycles entering and exiting downtown (weekdays from 6 a.m. to 10 p.m.)



Significant progress towards the 2020 Cycling Strategy bicycle mode share target during the pilot.

Centre City bicycle mode share (a.m. peak, inbound)

2010
BASELINE
1.9%

2015
2.4%

2016
3%

TARGET
4%



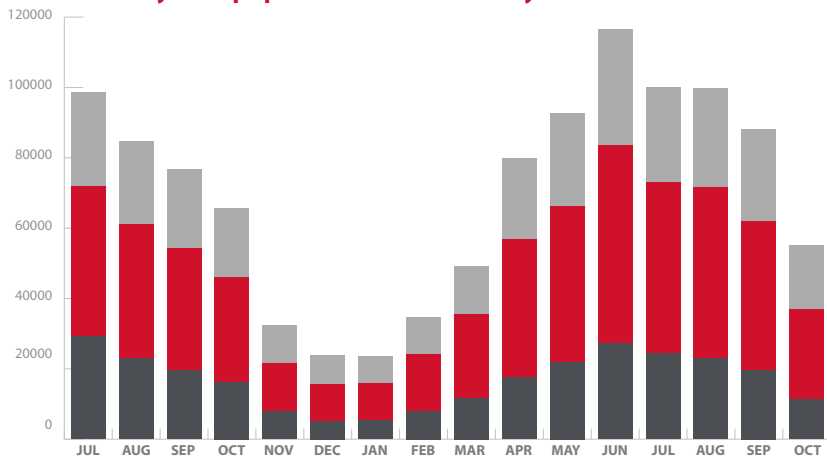
Year-round access

Cycle tracks provide Calgarians with an affordable and healthy year-round transportation choice, allowing them to get to work and other destinations in the Centre City at any time of the year by bike.

- On average, there are four times as many daily winter bicycle trips than before the cycle track was installed when comparing January 2015 (before the cycle) and January 2016 (after the cycle).
- The cycle track network, like the pathways that reach downtown, are cleared of snow and ice within 24 hours of the end of a snowfall helping provide a safe and predictable travel experience for people cycling downtown.
- Over 160,000 bicycle trips occurred between November 2015 and the end of March 2016.



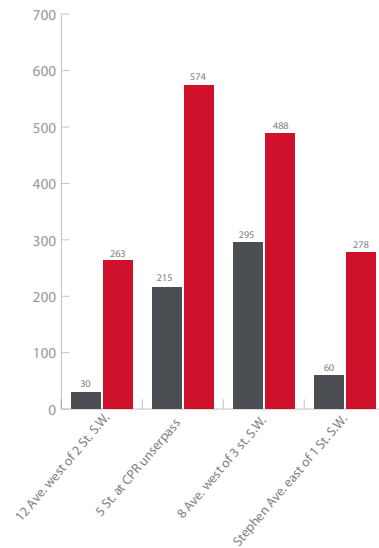
Total bicycle trips per month between July 2015 - October 2016



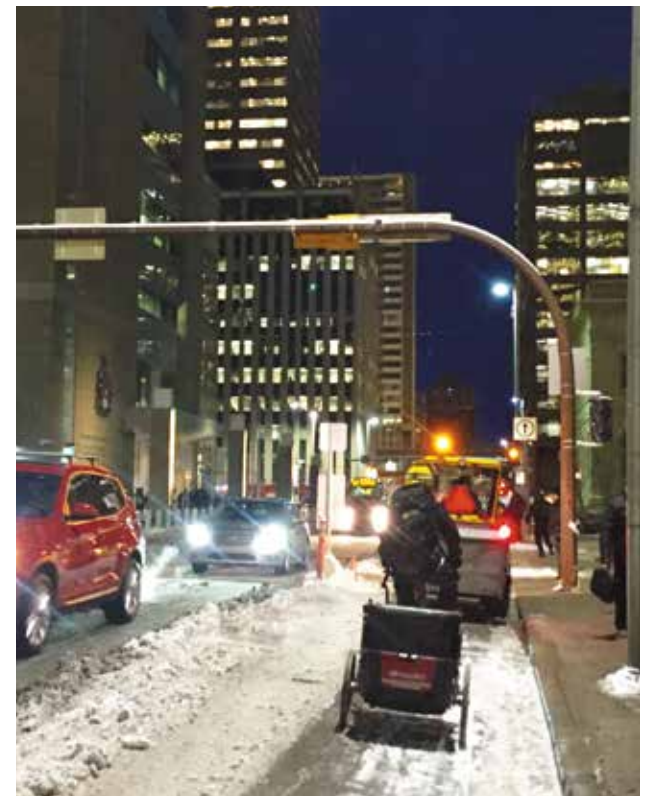
All cycle tracks opened by June 18, 2015.
Data has been collected from tube and automated bicycle counters.

- 8 Avenue west of 3 Street S.W.
- 5 Street at the CPR underpass
- 12 Avenue west of 2 Street S.W.

Daily weekday January bicycle trips on cycle track pilot routes (16-hour)



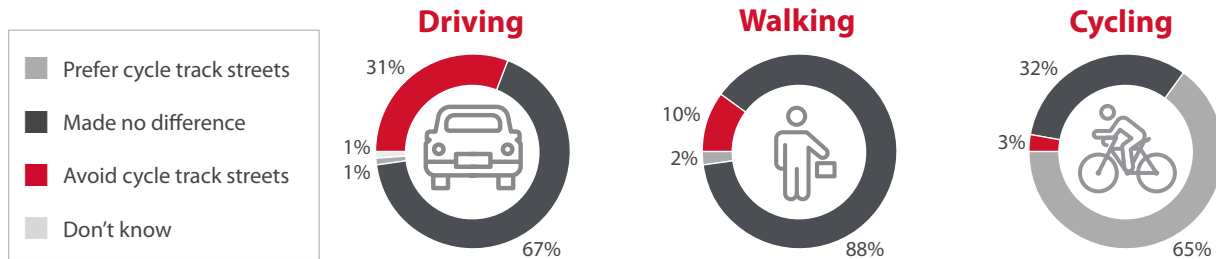
- 2015
- 2016



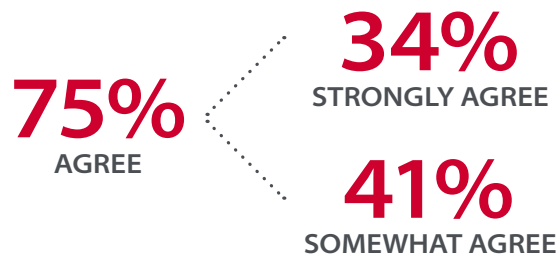
Telephone survey

The City conducted research with Calgarians using Ipsos (an independent research firm) to track awareness, understanding, attitudes and support for the project in 2014, 2015 and 2016. Feedback about the experience walking, cycling and driving along each pilot corridor is used as part of the evaluation but the survey provides additional information.

Impact on route choice:



It is important for The City of Calgary to make Calgary a more bicycle friendly city.



Note about telephone survey methods:

In 2016, 1,102 Calgarians participated in the survey and the final data is weighted to ensure the overall sample's quadrant and age/gender composition reflects that of the actual Calgary population. The margin of error for the total sample of 1,102 is +/- 3.0 percentage points, 19 times out of 20.

Complete survey results are available on calgary.ca/cycletracks.

Telephone Survey: experiences from people who have...

Driven along the cycle track routes:

- 54% of people driving on cycle track streets report their experience is the same or better.
- A low number of Calgarians say it has been difficult to 'understand new traffic signals' (16%), get out of a vehicle next to a cycle track (16%) or park beside a cycle track (33%).
- 37% of people driving say it has been difficult making a left turn across a cycle track at intersections and driveways.

54%

of people driving on cycle track streets report their experience is the same or better.



Walked along the cycle track routes:

- 84% of people walking on cycle track streets report their experience is the same or better.
- 95% of people walking on Stephen Avenue feel safe (daytime).
- Relatively few Calgarians say it has been difficult to 'understand new traffic signals' (11%), cross cycle tracks at intersections (12%), or share sidewalks that allow cycling (21%) when walking along cycle track routes.

84%

of people walking on cycle track streets report their experience is the same or better.



Cycled along the cycle track routes:

- 77% of people cycling say cycle tracks have made the cycling experience better downtown.
- 65% prefer to cycle on streets with cycle tracks.
- 92% of people who have cycled on cycle tracks support the project.
- 57% of cycle track users started cycling in the Centre City after 2011.

92%

of people who have cycled on pilot routes support the project.



Project adjustments

The cycle tracks were constructed using temporary treatments to separate people cycling from people driving and walking. The inexpensive treatments allowed The City to make adjustment throughout the pilot. Thanks to monitoring and feedback from residents, commuters, businesses and stakeholders, more than 100 adjustments were made during the pilot period.

Example Adjustments

Parking and loading



- In September 2015, 8 Avenue was re-designed between 8 Street and 11 Street S.W. to narrow the cycle track and re-introduce 23 parking stalls to better serve the needs of businesses.

Traffic operations



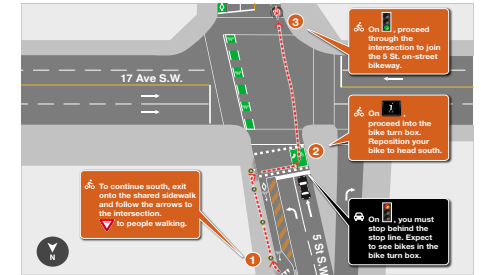
- In March 2016, an advanced left turn signal was installed on 8 Avenue at 5 Street S.W. for people driving and cycling westbound and turning south, to reduce congestion out of The CORE parkade.

Reducing conflict



- After hearing of a collision between a car exiting a parkade or driveway across the cycle track and colliding with a cyclist, The City added dashed green pavement markings to raise awareness of potential for conflict at these locations:
 - 12 Avenue for driveways between 2 Street and 1 Street S.W.
 - 5 Street just north of 11 Avenue S.W.

Cycling experience



- In August 2015, 5 Street S.W. was re-designed between 15 Avenue and 17 Avenue to improve the transition near the end of the cycle track.

Planned adjustments

Certain issues were not addressed during the pilot because the work was more costly or substantial, but can be upgraded after the pilot.

Parking and loading



- To help address parking and loading issues, The City can re-design 8 Avenue from 4 Street to 5 Street S.W.

Traffic operations



- To help improve the experience for people driving along 12 Avenue S., The City will work with residents and businesses to consistently place parking along the corridor and remove the lane shift.

Cycling experience



- There are two bus stops on the 8 Avenue track (east of 8 Street S.W. and 6 Street S.W.). People cycling share the space with buses with no separation. Installing a physical separation between buses and people cycling will provide a smooth travel experience for everyone.


Reducing conflict



- Installing advanced protected left turn signal phases at key intersections will help reduce conflicts with people cycling and walking and keep traffic moving efficiently. Locations to consider in the short term include:
 - 8 Avenue and 7 Street S.W.
 - 5 Street and 10 Avenue S.W.

Feedback and communication during the pilot:

2,000+
311 calls 

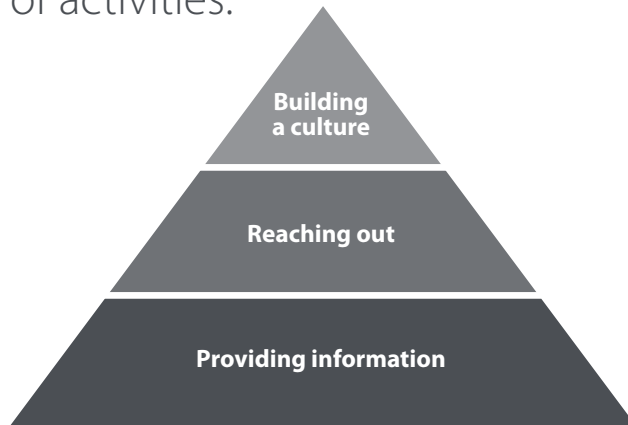
9 
advisory committee meetings attended by neighbourhood associations, BRZs, community organizations and members of the public.

17 
monthly newsletters sent to stakeholders.

150 
business visits in June/July 2016 to hear feedback and offer educational resources.

Education & enforcement

From construction through to the end of the pilot, education and communication tools were used to ensure the public was informed about the changes to the road with the addition of the three cycle track corridors. A comprehensive approach was developed and had three levels of activities:



Providing information

Educational resources reached thousands of Calgarians through:

- A Cycle Track Tips Guide
- Newsletters
- Project website and social media
- Parkade signage
- On-street signage
- Stickers on bike racks

Reaching out

Bicycle Ambassadors worked from May to August in 2015 and 2016

By **reaching out** to Calgarians, the Bicycle Ambassadors were able to have conversations about the project, answer questions, and provide resources in a variety of locations across the city at community events, road shows, festivals, on-street outreach, pop up events, visits to businesses along the cycle track network and targeted messaging.

Our small team of trained summer students interacted with 32,000 Calgarians during the pilot project.



85,000+
tip guides
distributed
city-wide

[available on-street at nine
brochure holders across
the cycle track network]



Building a culture

Building a culture was about creating a community and normalizing cycling through encouragement and awareness.

'Thank you' campaign

- In August 2015, the 'Move Together- Thank You' campaign thanked Calgarians for moving together safely along the network, whether they were walking, cycling, taking transit or driving.

1,000,000 cycle track trips event

- In August 2016, the 'One Million Trips' event celebrated a cycle track milestone, thanked Calgarians for using the network, and provided the opportunity to continue sharing information about data collection along the network.

32,000+ 
Calgarians &
visitors reached

by Bicycle Ambassadors
through their
outreach efforts

Enforcement

Targeted awareness campaign

Targeted awareness can help address undesired behaviours through developing a message to educate and encourage the road user to correct their behaviour in real time. **Examples where this approach was used:**

- Encouraging courteous cycling and walking on the Stephen Avenue shared space.
- Reminding people cycling to yield to pedestrians in crosswalks before turning at 7 Street and 8 Avenue S.W.
- Helping people cycling make the transition from the south bound 5 Street S.W. cycle track across 17 Avenue S.W. to the on-street bikeway on 5 Street S.W.
- Identifying wrong way cycling on 8 Avenue S.W.

Data about the behaviour was collected before and after the intervention. There was notable improvement in behaviours at all locations after the education.

Calgary Police Service & Community Standards -

- Partnering with the Calgary Police Services' Mountain Bike Unit and Community Standards' Bylaw Officers provided opportunities to communicate the rules of the road to people walking, cycling and driving through educational pop-up events. The Bicycle Program and the enforcement teams were able to reinforce how people can move together safely on Calgary's roads by thanking users for demonstrating safe and courteous behaviours, and educating people who demonstrated undesired behaviours.



The Bicycle Program and the enforcement teams were able to reinforce how people can move together safely on Calgary's roads.

Appendix

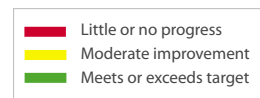
Appendix A Evaluation matrices29























Appendix B Bicycle trips downtown.....35





















Appendix A

5 Street S.W.























The matrices below provide additional detail on the data collected on a route-by-route basis as part of the Council approved Evaluation Plan.



Theme	Performance measures		Unit of measurement	Benchmark value ¹ fall 2014	Target ¹ by fall 2016	Data ¹ collected fall 2016
	No.	Primary Performance Measures				
Satisfaction ²	1	Satisfaction with the pilot cycle track street	percentage	walking: 52% bike riding ³ : 37% driving/passenger: 51%	walking: +10% = 62% bike riding: +30% = 67% driving/passenger: +0% = 51%	walking: 56% bike riding: 78% driving/passenger: 46%   
Safety ⁴	2	Collision rate	Collision Rate per 100k Entering Vehicles (EV)-Intersection ⁷ Collision Rate per 100k Vehicle Kilometres Travelled (Midblock) ⁷	0.19 Collisions/100,000 EV 0.20 Collisions/100,000 VKT	-10%: 0.18 collisions/100,000 EV -10%: 0.18 collisions/100,000 VKT	0.19 Collisions/100,000 EV 0 Collisions/100,000 VKT  
			number of collisions collisions per 100,000 km travelled on the route	average (As of June 2014) : 178 collisions/year (range: 161-200) vehicle collision rate: 0.64 collisions/100,000km VKT bicycle collision rate: 2.11 collisions/100,000km BKT	collisions: -10% = 160 collisions year vehicle collision rate: -10% = 0.58 bicycle collision rate: -10% = 1.90	140 collisions/year vehicle collision rate: 0.37 bicycle collision rate: 3.40  
Walking, cycling and auto activities	3	Bicycle volumes ⁵	number of bicycles/day	North of 5 Ave: 410 @ CPR underpass: 630 North of 15 Ave: 330	North of 5 Ave: 800 @ CPR underpass: 1,200 North of 15 Ave: 700	North of 5 Ave: 1280 @ CPR underpass: 2040 North of 15 Ave: 1040   
	4	Peak period travel time for drivers	minutes and seconds	6 mins southbound afternoon	≤7:30 mins	6:10 minutes 
	5	Unlawful bicycle riding ⁶	% riding on the sidewalk if >14yrs of age % riding against traffic flow	sidewalk riding: 19% riding against traffic flow: 2%	sidewalk riding: ≤2% riding against traffic flow: 0%	sidewalk riding: 1.3 % riding against traffic flow: 0%  
Secondary Performance Measures						
Economic Vitality ⁷	6	Intercept survey- adjacent patrons ³	# visits per week \$ spent per month	visits/week (n= 74): 250 Average visits per week: 3.3 \$ spent/month (n=74): \$5,400 Average \$ spent per month: \$73	# visits/week: +2% = 260 Average visits per week: +2%= 3.4 \$ spent/month +2% = \$5,500 Average \$ spent per week: \$74.50	visits/week (n= 55): 188 Average visits per week: 3.5 \$ spent/ month (n=15): \$3,300 Average \$ spent per month: \$61  
	7	Intercept survey- adjacent merchants ³	# customers/day ⁸	# customers/day ⁸ (n=16) : 1700 Average # customers per day⁸: 113	# customers/day +2% = 1,735 Average # customers per day⁸: 115	# customers/day ⁸ (n=14): 1,309 Average # customers per day⁸: 94 
Demographics ⁶	8	Gender	% and # of women bicycle riders/day	% women: 18% # women: 50	% women: 25% # women: 140	% women: 29% # women: 276  
	9	Children, Seniors (<18 years old, >65 years old)	% and # of bicycle riders under 18 / day % and # of bicycle riders over 65 / day	<18: 0.6%, 1 >65: 0.8%, 2	<18: 2x % = 1.5%, 8 >65: 2x % = 1.5%, 8	<18: 0.83%, 8 >65: 0.1%, 1    

Theme	Performance measures		Unit of measurement	Benchmark value ¹ fall 2014	Target ¹ by fall 2016	Data ¹ collected fall 2016
	No.	Primary Performance Measures				
Satisfaction ²	1	Satisfaction with the pilot cycle track street	percentage	walking: 63% bike riding ³ : 53% driving/passenger: 60%	walking: +10% = 73% bike riding: +20% = 73% driving/passenger: +0% = 60%	walking: 59% bike riding: 79% driving/passenger: 54%   
Safety ⁴	2	Collision rate	Collision Rate per 100k Entering Vehicles (EV)-Intersection ⁷ Collision Rate per 100k Vehicle Kilometres Travelled (Midblock) ⁷	0.18 Collisions/100,000 EV 0.14 Collisions/100,000 VKT	-10%: 0.16 collisions/100,000 EV -10%: 0.13 collisions/100,000 VKT	0.15 Collisions/100,000 EV 0.20 Collisions/100,000 VKT  
			number of collisions collisions per 100,000 km travelled on the route	average : 153 collisions/year (range: 129-193) vehicle collision rate: 0.26 collisions/100,000km VKT bicycle collision rate: 2.51 collisions/100,000km BKT	collisions: -10% = 138 collisions/year vehicle collision rate: -10% = 0.23 bicycle collision rate: -10% = 2.26	133 collisions/year vehicle collision rate: 0.12 bicycle collision rate: 2.93  
Walking, cycling and auto activities	3	Bicycle volumes ⁵	number of bicycles/day	West of 8 St W: 140 West of 2 St W: 190 West of 3 St E: 220	West of 8 St W: 600 West of 2 St W: 800 West of 3 St E: 700	West of 8 St W: 890 West of 2 St W: 870 West of 3 St E: 470   
	4	Peak period travel time for drivers	minutes and seconds	11 ½ mins eastbound afternoon ¹³	+ ≤20% = 14 mins	7:20 min 
	5	Unlawful bicycle riding ⁶	% riding on the sidewalk if >14yrs of age % riding against traffic flow	sidewalk riding: 23% riding against traffic flow: 5%	sidewalk riding: ≤2% riding against traffic flow: 0%	sidewalk riding: 3.3% riding against traffic flow: 0%  
Secondary Performance Measures						
Economic Vitality ⁷	6	Intercept survey- adjacent patrons ³	# visits per week \$ spent per month	visit/week (n= 53): 210 Average visits per week: 3.9 \$ spent/month (n=53): \$9,300 Average \$ spent per month: \$176	# visits/week: +2% = 215 Average visits per week: +2%= 4.0 \$ spent/month +2% = \$9,500 Average \$ spent per month: +2%=\$180	visits/week (n= 30): 121 Average visits per week: 4.0 \$ spent/month (n=30): \$4,800 Average \$ spent per month: \$160  
	7	Intercept survey- adjacent merchants ³	# customers/day ⁸	# customers/day (n=48) : 3300 Average # customers per day: 70	# customers/day +2% = 3,400 Average # customers per day: +2%=71	# customers/day (n=23): 1,623 Average # customers per day: 71 
Demographics ⁶	8	Gender	% and # of women bicycle riders/day	% women: 23% # women: 25	% women: 25% # women: 95	% women: 29.6% # women: 140  
	9	Children, Seniors (<18 years old, >65 years old)	% and # of bicycle riders under 18/day % and # of bicycle riders over 65/day	<18: 0%, 0 >65: 1.1%, 1	<18: 2.2%, 9 >65: 2x % = 2.2%, 9	<18: 0.5%, 1 >65: 0.4%, 2  

8 Avenue S.W.

Theme	Performance measures		Unit of measurement	Benchmark value ¹ fall 2014	Target ¹ by fall 2016	Data ¹ collected fall 2016
	No.	Primary Performance Measures				
Satisfaction ²	1	Satisfaction with the pilot cycle track street	percentage	walking: 54% bike riding: 71% driving/passenger: 54%	walking: +10% = 64% bike riding: +10% = 81% driving/passenger: +0% = 54%	walking: 63% bike riding: 80% driving/passenger: 53%   
Safety ⁴	2	Collision rate	Collision Rate per 100k Entering Vehicles (EV)-Intersection ⁷ Collision Rate per 100k Vehicle Kilometres Travelled (Midblock) ⁷	0.15 Collisions/100,000 EV 0.76 Collisions/100,000 VKT	-10%: 0.14 collisions/100,000 EV -10%: 0.68 collisions/100,000 VKT	0.20 Collisions/100,000 EV 0.52 Collisions/100,000 VKT  
			number of collisions collisions per 100,000 km travelled on the route	average : 63 collisions/year (range: 53-79) vehicle collision rate: 2.41 collisions/100,000km VKT bicycle collision rate: 1.15 collisions/100,000km BKT	collisions: -10% = 57 collisions/year vehicle collision rate: -10% = 2.17 bicycle collision rate: -10% = 1.03	63 collisions/year vehicle collision rate: 1.87 bicycle collision rate: 3.01  
Walking, cycling and auto activities	3	Bicycle volumes ⁵	number of bicycles/day	West of 8 St W: 480 West of 3 St W: 920	West of 8 St W: 1,000 West of 3 St W: 1,800	West of 8 St W: 480 West of 3 St W: 1240  
	4	Peak period travel time for drivers	minutes and seconds	5:30 mins eastbound morning 5:30 mins westbound afternoon	+ ≤20% = 6:30 mins	5:15 mins eastbound morning 5:30 mins westbound afternoon  
	5	Unlawful bicycle riding ⁶	% riding on the sidewalk if >14yrs of age % riding against traffic flow	sidewalk riding: 7% riding against traffic flow: 3%	sidewalk riding: ≤2% riding against traffic flow: 0%	sidewalk riding: 1.5% riding against traffic flow: 0.1%  
Secondary Performance Measures						
Economic Vitality ⁷	6	Intercept survey- adjacent patrons ³	# visits per week \$ spent per month	visit/week (n= 24): 80 Average visits per week: 3.3 \$ spent/month (n=24): \$3,900 Average \$ spent per month: \$161	# visits/week: +2% = 82 Average visits per week: +2%= 3.4 \$ spent/month +2% = \$4,000 Average \$ spent per month: +2%=\$164	visits/week (n= 30): 102 Average visits per week: 3.4 \$ spent/month (n=30): \$3,650 Average \$ spent per month: \$122  
	7	Intercept survey- adjacent merchants ³	# customers/day ⁸	# customers/day ⁸ (n=14) : 1600 Average # customers per day⁸: 116	# customers/day +2% = 1,630 Average # customers per day: 2%=118	# customers/day ⁸ (n=39): 3,084 Average # customers per day: 86 
Demographics ⁶	8	Gender	% and # of women bicycle riders/day	% women: 20% # women: 80	% women: 25% # women: 200	% women: 24.4% # women: 145  
	9	Children, Seniors (<18 years old, >65 years old)	% and # of bicycle riders under 18/day % and # of bicycle riders over 65/day	<18: 0.4%, 1 >65: 0%, 0	<18: 2x % = 1.0%, 8 >65: 2x % = 1.0%, 8	<18: 1.7%, 11 >65: 0.3%, 2    

Stephen Avenue

Theme	Performance measures		Unit of measurement	Benchmark value ¹ fall 2014	Target ¹ by fall 2016	Data ¹ collected fall 2016
	No.	Primary Performance Measures				
Satisfaction ²	1	Satisfaction with the pilot street	percentage	walking: 82% (6 a.m.-6p.m.) bike riding ³ : 46% (6 a.m.-6p.m.) driving/passenger: 54% (6 p.m.-6a.m.)	walking: +0% = 82% bike riding: +30% = 76% driving/passenger: +0% = 54%	walking: 82% (6 a.m.-6p.m.) bike riding ³ : 82% (6 a.m.-6p.m.) driving/passenger: 56% (6 p.m.-6a.m.)
Safety ⁴	2	Collision rate	number of collisions	average: 24 collisions	-10%: 20 collisions	30 collisions/year
	3	Near-misses involving bicycle ⁹	# near-miss events % of near-miss events compared to #bicycles	0 near-miss events 0% of near-miss events compared to #bicycles	0 to ≤1% (6)	0 near-miss events 0% of near-miss events compared to #bicycles
	4	Speeds ⁹	85th percentile speed	19.5 km/hour	≤25 km/hr	18.7 km/hr
Walking, cycling and auto activities	5	Bicycle volumes ⁵	number of bicycles/day	380	1,200	640
	6	Pedestrian volumes ⁶	number of pedestrians	4,500	+ 0% = 4,500	4,064
	7	Careless bicycle riding ⁹	number of bicycles riding carelessly percentage of bicycles riding carelessly	bicycles riding carelessly: 0 bicycles riding carelessly: 0%	0 to ≤1% (6)	bicycles riding carelessly: 0 bicycles riding carelessly: 0%
Secondary Performance Measures						
Economic Vitality ⁷	6	Intercept survey- adjacent patrons ³	# visits per week \$ spent per month	visit/week (n= 32): 115 Average visits per week: 3.6 \$ spent/month (n=32): \$6,500 Average \$ spent per month: \$202	# visits/week: +2% = 120 Average visits per week: +2% = 3.7 \$ spent/month +2% = \$6,600 Average \$ spent per month: \$206	visits/week (n= 26): 80 Average visits per week: 3.1 \$ spent/month (n=26): \$4,600 Average \$ spent per month: \$183
	7	Intercept survey- adjacent merchants ³	# customers/day ⁸	# customers/day (n=29) : 4200 Average # customers per day: 148	# customers/day +2% = 4,300 Average # customers per day: +2% = 150	# customers/day (n=59): 6,213 Average # customers per day: 117
Demographics ⁶	10	Gender	% and # of women bicycle riders/day	% women: 12% # women: 24	% women: 25% # women: 150	% women: 25% # women: 102
	11	Children, Seniors (<18 years old, >65 years old)	% and # of bicycle riders under 18/day % and # of bicycle riders over 65/day	<18: 0%, 0 >65: 4.1%, 8	<18: 1.0%, 6 >65: 2x % = 8.2%, 50	<18: 0.9%, 4 >65: 0%, 0

9 Avenue S.E.

Theme	Performance measures		Unit of measurement	Benchmark value ¹ fall 2014	Target ¹ by fall 2016	Data ¹ collected fall 2016	
	No.	Primary Performance Measures					
Satisfaction ²	1	Satisfaction with the pilot cycle track street	percentage	walking: 38% bike riding: ² 12% driving/passenger: 60%	walking: +10% = 48% bike riding: +30% = 42% driving/passenger: +0% = 60%	walking: 60% bike riding: ² 65% driving/passenger: 53%	
Safety ⁴	2	Collision rate	Collision Rate per 100k Entering Vehicles (EV)-Intersection⁷ Collision Rate per 100k Vehicle Kilometres Travelled (Midblock)⁷ number of collisions collisions per 100,000 km travelled on the route	0.19 Collisions/100,000 EV 0.08 Collisions/100,000 VKT average: 62 collisions/year (range: 48-74) vehicle collision rate: 0.32 collisions/100,000km VKT bicycle collision rate: 0 collisions/100,000km BKT	-10%: 0.18 collisions/100,000 EV -10%: 0.07 collisions/100,000 VKT collisions: -10% = 56 collisions/year vehicle collision rate: -10% = 0.29 bicycle collision rate: -10% = 0	0.20 Collisions/100,000 EV 0.10 Collisions/100,000 VKT 42 collisions/year vehicle collision rate: 0.66 collisions/100,000km VKT bicycle collision rate: 10.84 collisions/100,000km BKT	
		Walking, cycling and auto activities	3	Bicycle volumes ⁵	number of bicycles/day	East of Macleod Trail: 290	East of Macleod Trail: 600
		4	Peak period travel time for drivers	minutes and seconds	5 mins westbound afternoon	+ ≤20% = 6 mins	6:30 min ¹¹
		5	Unlawful bicycle riding ⁶	% riding on the sidewalk if >14yrs of age % riding against traffic flow	sidewalk riding: 64% riding against traffic flow: 12%	sidewalk riding: ≤10% riding against traffic flow: 0%	sidewalk riding: 10% ¹² riding against traffic flow: 0.7%
Secondary Performance Measures							
Economic Vitality ⁷	6	Intercept survey- adjacent patrons ³	# visits per week \$ spent per month	visit/week (n= 56): 190 Average visits per week: 3.3 \$ spent/month (n=56): \$7,700 Average \$ spent per month: \$137	# visits/week: +2% = 195 Average visits per week: +2% = 3.4 \$ spent/month +2% = \$7,800 Average \$ spent per month: \$140	visits/week (n= 30): 96 Average visits per week: 3.2 \$ spent/month (n=30): \$700 Average \$ spent per month: \$24	
	7	Intercept survey- adjacent merchants ³	# customers/day ⁸	# customers/day (n=10): 450 Average # customers per day: 64	# customers/day +2% = 460 Average # customers per day: +2% = 65	# customers/day (n=4): 112 Average # customers per day: 28	
Demographics ⁶	8	Gender	% and # of women bicycle riders/day	% women: 27% # women: 41	% women: 30% # women: 120	% women: 31% # women: 47	
	9	Children, Seniors (<18 years old, >65 years old)	% and # of bicycle riders under 18/day % and # of bicycle riders over 65/day	<18: 2.6%, 4 >65: 1.3%, 2	<18: 2x%=5.0%, 20 >65: 2x%= 2.6%, 10	<18: 0.7%, 1 >65: 0%, 0	

Notes on the pilot evaluation matrices

1. The values of the data collected might vary depending on circumstances such as construction, weather, change in local economy, or unforeseen events.
2. Satisfaction survey includes pedestrians, cyclists, and motorists.
3. The number of responses is small at fewer than 100.
4. (a) Collision data can vary significantly from year to year. That's why collision data is usually analyzed over a longer time span, such as three years or five years.

(b) For reference purposes, the collision rate or number of collisions per 100,000 population in Calgary is trending down every year, as described in the Safer Mobility Plan.

(c) Baseline collision data was exported on July 31, 2014 from the Reporting & Analysis of Collision Events (RACE) system. Collision records in RACE are collected and coded by the Calgary Police Service (CPS) for enforcement and legal purposes. Final data was exported October 31, 2016 from the RACE system. The CPS only provides The City of Calgary with records of collisions once the collisions have been processed, including completing any legal action that may be taken as a result of the collision. Consequently, The City of Calgary is delayed in receiving some collision records and recent data may be missing or incomplete. Therefore, minor discrepancies in data may occur due to exporting data on different dates.

(d) The benchmark is an annual average calculated over six years from 2009 to July 2014. The fall 2016 value will be one year of data after the pilot opens, from July 2015 to July 2016.

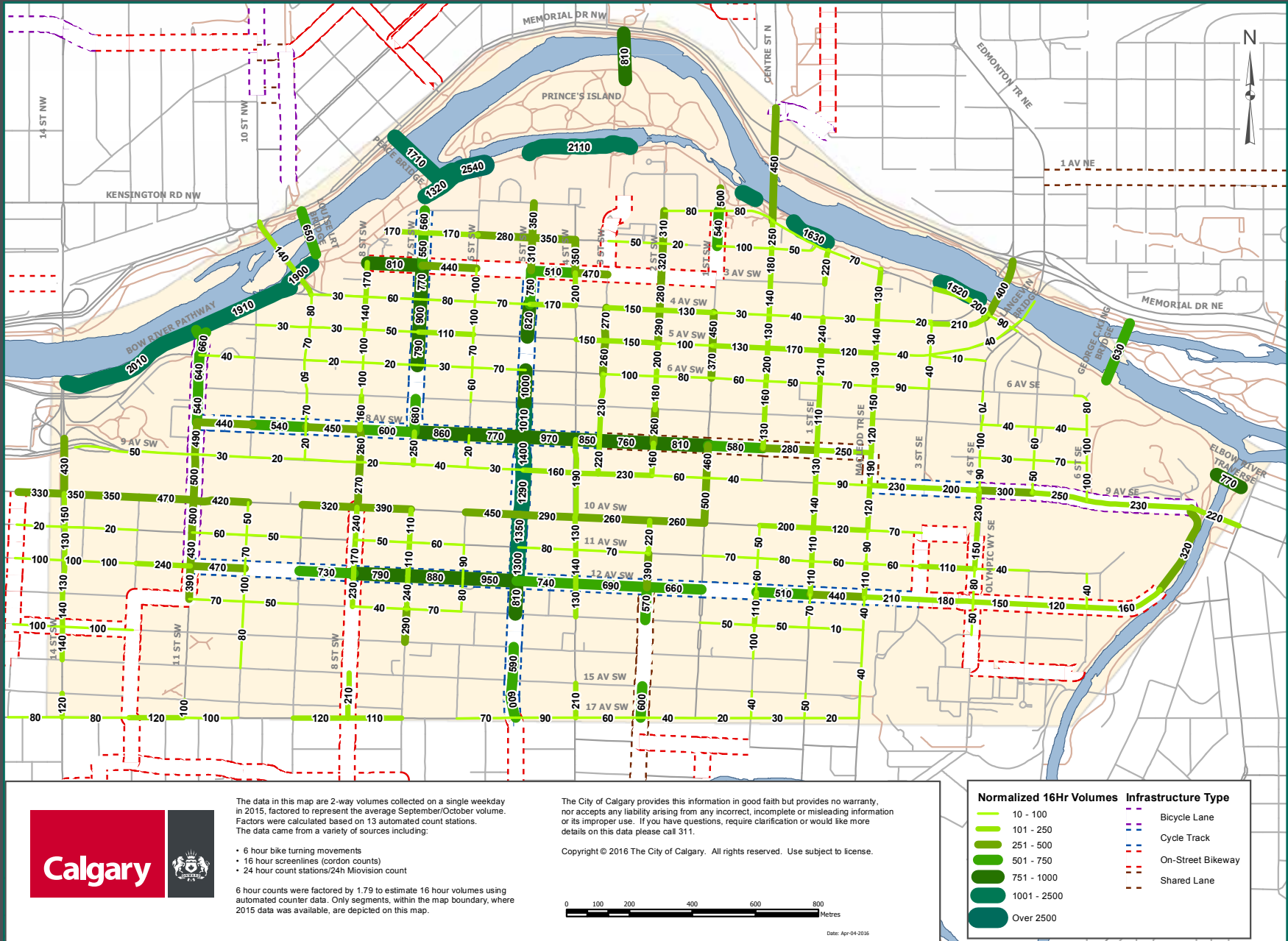
(e) VKT = vehicle kilometres travelled on the route.
BKT = bicycle kilometres travelled on the route.

5. 16 - hour volumes (6 a.m. to 10 p.m.)
6. 6 - hour weekday manual count (6:30-9:30, 15:30-18:30). For pilot routes with multiple counting locations, values are averaged.

7. The Collision Rate per 100k Entering vehicles (intersection) and Collision rate per 100k Vehicle Kilometres Travelled (midblock) provides more detailed collision information than one Collision rate per 100K vehicle kilometres travelled for the entire corridor.
8. Weekdays 6 a.m. to 6 p.m.
9. (a) Careless riding as defined by the Alberta Traffic Safety Act: "without due care and attention" and "without reasonable consideration for persons using the highway" and with reference to the Calgary Traffic Bylaw: the traveller "will not interfere with the pedestrian."

(b) Near miss events, careless bicycle riding and bicycle speed data was collected manually by a Data Technician on a weekday (6:30-9:30 and 15:30-18:30).
10. Ongoing construction at these count locations. Construction at 3 Street S.E. resulted in a lane closure related delays in 2016 p.m. period.
11. Design of cycle track at this count location allows for sidewalk riding on south side of 9 Avenue. Per cent displayed for sidewalk riding on the north side of 9 Avenue.
12. Likely Hotel Arts construction delays in 2014 baseline.

Appendix B Average September/October 2015 Bicycle Volumes



16 Hour (06:00-22:00) 2-Way Totals

Elements of the cycle track pilot

