

# Understanding a New Public Bike Share Program in Vancouver: Motivators, Deterrents & Equity



**OUTPUTS** 

7 PUBLICATIONS

Therrien, S., Brauer, M., Fuller, D., Gauvin, L., Teschke, K., & Winters, M.

Use of a Public bike share System in Vancouver, Canada. Transportation

Winters, M., & Branion-Calles, M. (2017). Cycling safety: Quantifying the

(2014). Identifying the Leaders: Applying Diffusion of Innovation Theory to





# **MAIMS**

Goal

Examine the impact of

Vancouver's public bike share

program (PBS) on travel and

population, in users of the

program, and within key

population segments

**Objectives** 

physical activity &

population-level.

health outcomes in the general

1 > Estimate the impact of

public bikes hare on changes in

transportation outcomes at a

2 > Determine who uses

public bike share and its impact

on their individual health and

3 > Characterize barriers to

the adoption of public bike

share across socio-

demographic groups.

transportation outcomes.

# **INPUTS**

The Vancouver Public Bike Share Program (aka. Mobi by stations. As of June 2019, the bike share consisted of 1740 bicycles and 185 stations.

#### \$354,000 Funding

- \$200K (2013-2017)
- Mitacs & CycleHop

#### **7 years of study** 2012-2019

M Winters (PI), M Brauer, L Frank, D Fuller, L Gauvin, Y Kestens, K Teschke

#### 7 Student Trainees

S Vander Wekken (2013-MPH), M Zanotto (2014-MSc), N Buglioni (2017-BSc), S Javaheri (2018-BSc), K Hosford (2018-MSc) J McKeen (2019-MPH), M Branion-Calles (In progress, PhD)

#### **Research Personnel**

4 Part-time Coordinators: Therrien (nee Vander Wekken), Zanotto, Hosford, McKeen 9 Intercept Surveyors: Zanotto, Pugh, Hosford, DeVries, Rowlands, McKeen, Do, Chang, Mah Contractors: LegerWeb (Pop. Survey), Context Research

(Focus Group Facilitation)

#### 10,000+ SURVEYS

Surveys covered the collective topics of travel behaviour & physical activity, cycling patterns, safety & cycling incidents, bike share knowledge & perceptions, bike share use, helmet use motivators & deterrents of use, Mobi customer service, and demographics.

## 1> Vancouver Population

- Online panel (LegerWeb)
- Age-sex population
- representation.
- 5 timepoints: 2 weeks in Oct 2012, 2015, 2016, 2017, 2018.
- ~1000 completes each timepoint (~4500 total).

## 2> Bike Share Members

- Online (FluidSurvey, REDcap).
- All 3-month & annual pass
- holders invited by email. • 3 timepoints: 2 weeks in Nov 2016, and in Sept in 2017 &
- ~1500 each timepoint (~5000 completes total)
- Response rates: 36%-2016.

#### 39%-2017, 33%-2018.

#### 3> Casual Riders/

members.

stations).

- 24-hr Pass Aim to capture info on "casual" or "tourist" use to
- In person at point of use, 45 randomly assigned stations (including low to high traffic

contrast with regular local

- 2 timepoints: 4 weeks in Aug-
- Sept 2017, 2018.
- 7 surveyors, 279 field hours. • 162 surveys in 2017, 214 in
- 1/3 were casual users.

#### "The Intervention"

Shaw Go<sup>™</sup>) launched July 2016 with 250 bicycles and 23

- Canadian Institutes for Health Research
- City of Vancouver
- \$50 K (2013-2017) + \$59 K (2017-2018)
- \$45 K (2018-2019)

#### 7 Co-Investigators

# **ACTIVITIES & METHODS**

## 450+ HRS OBSERVATION

Research personnel hit the streets to observe real-life patterns of cycling and helmet use, and talk with Vancouver residents about their interaction with, perceptions and barriers to using bike share.

#### > 367 hours on-street observation and in-person interviewing of cyclists

#### > 142 hours helmet counts

(2017-2018 Intercept Survey)

- 5 screen-line sites.
- N=23,123 cyclists observed • June-Sept 2012, 2014, 2016.
- Trip day and time (included peak travel times,
- midday and weekends).

#### > 13 hours group discussion:

- 2017-2018 90 participants in 13 groups:
- 1. Adults 50+
- 2. High school youth 3. Post-secondary students >25 years,
- 4. ESL students/newcomers to Canada 5. Newcomers (Mandarin-speaking)
- 6. Women
- 7. Women with low incomes
- 8. Men with low income 9. Minimum wage workers
- 10. Shift workers
- 11. Regular transit uses 12. Bicyclist commuters
- 13. Mobi bike share users

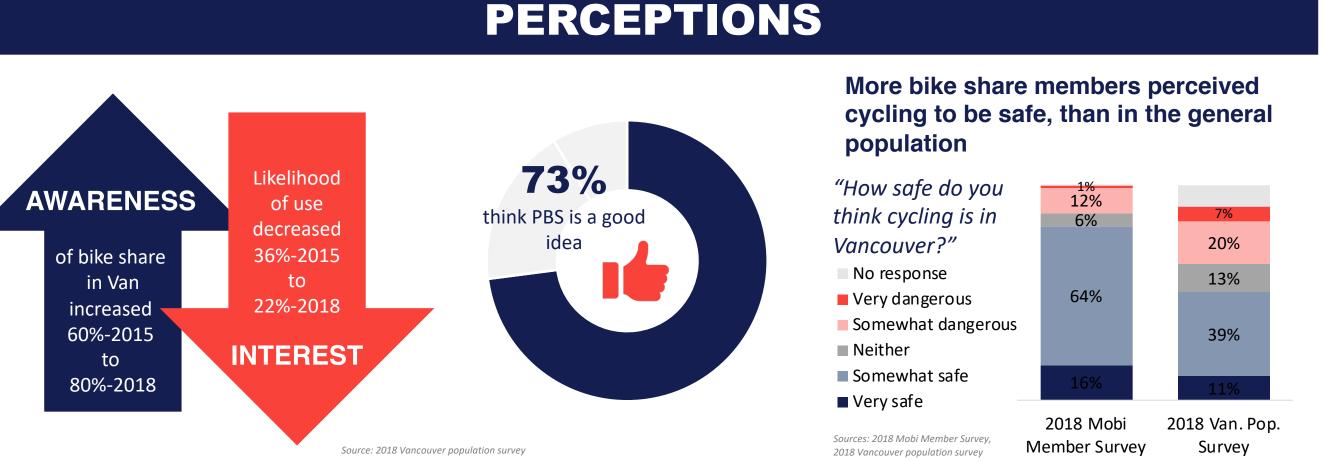
#### **OTHER ANALYSIS**

- Media Analysis (MZ): Content analysis of 62 articles on PBS from 2012-2014, assessing 7 topics (barriers, facilitators, tone etc.) to understand media & public perceptions.
- PBS System Usage (SJ): Used Tableau to explore system data visually and present trends in use including membership, trip usage per bike/member, seasonality, and comparison with other city systems.
- Spatial Equity Analysis (KH): Mapped spatial access to stations by neighbourhood deprivation (income, employment, education) in Vancouver, Toronto, Hamilton, Ottawa-Gatineau, and Montréal.

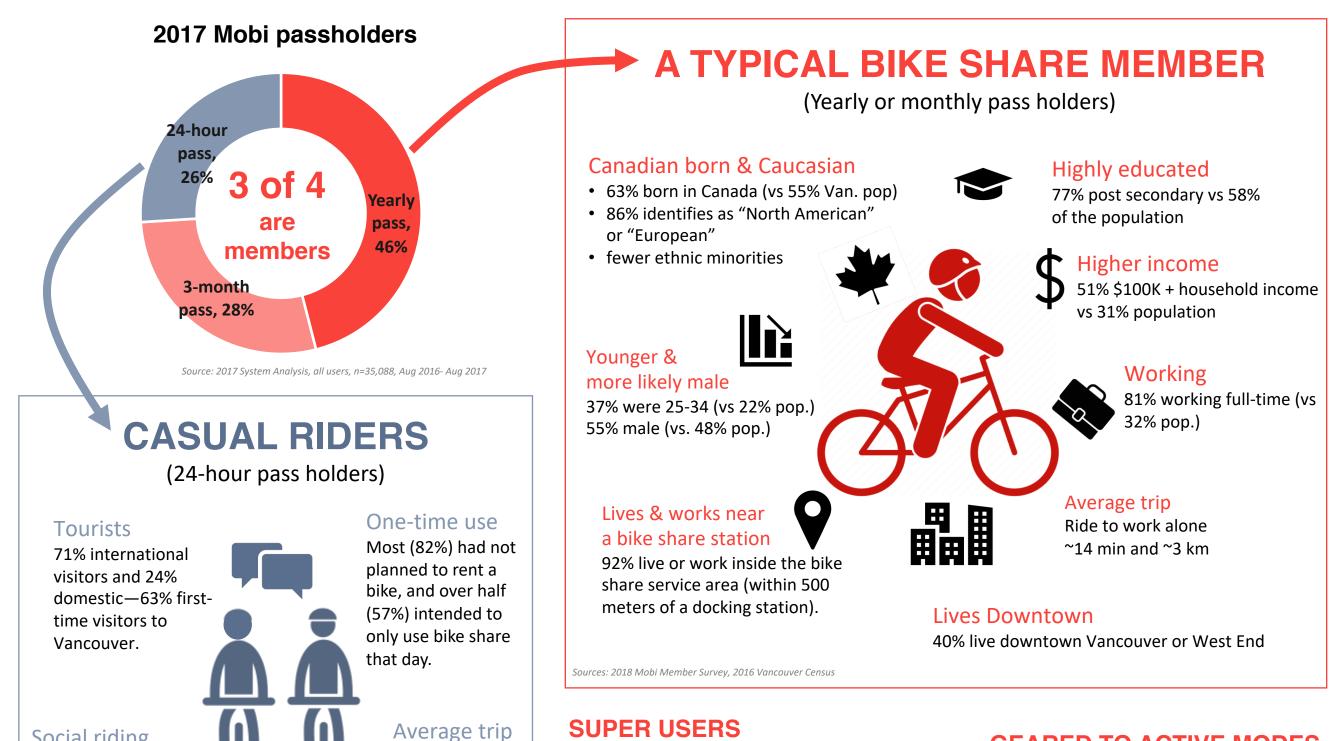
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#### KEY FINDINGS

Source: 2018 System Analysis



## WHO USES VANCOUVER BIKE SHARE?



 $oldsymbol{10\%}$  of bike share members ..

. make 50% of member bike share trips.

And those people tend to be lower income

## TOP MOTIVATORS

Helmets

helmet.

65% of casual riders

were wearing a

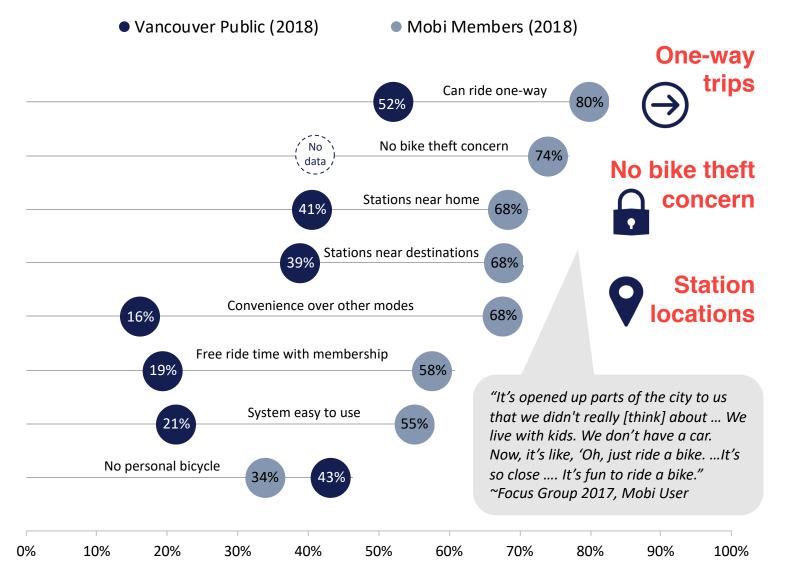
74% travelling in a group

of 2+ (vs. 10% members).

Sources: 2018 Intercept Survey, 2017 System Data

sightseeing/fun

~30 min, ~5 km.



TOP BARRIERS

6% Not interested in cycling

No stations near destination

Destinations too far to bike

47% Bad weather

Vancouver Public (2018)

No stations near home

Sources: 2018 Mobi Member Survey, 2018 Vancouver population sur

Mobi Members (2018)

Prefer personal bike

Road safety concerns

were raised in all 13 focus

groups when asked about

barriers to using bike

Convenience of other modes

## **70%** of members say they wear a

**Prefer current** 

Environment

666

**Road safety** 

& topograph

helmet when using bike share. Of these, about 3 in 4 wear the provided Mobi helmet (1 in 4 with the provided liner), and the others brought their own helmet.

HELMET USE

**GEARED TO ACTIVE MODES** 

population Mobi members are more

Have a car share membership (65%

transportation mode (49% vs 19%)

3 of 4

than expected

members use Mob

as much as or more

Source: 2018 Mobi Member Survey

Own 1+ bicycles (68% vs 57%)

Walk or bike as their primary

90% were satisfied with their membership

Less often

and most use bike share as much or more than expected.

"Have you used Mobi

about the same as you

by Shaw Go more

often, less often, or

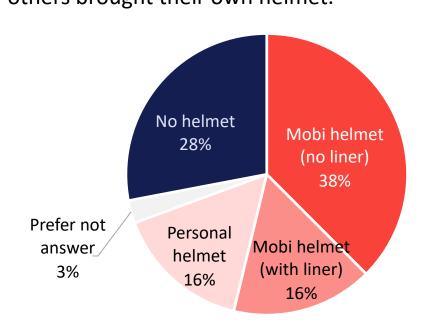
thought you would

when you first signed

up for Mobi by Shaw

Source: 2018 Mobi Member Survey

Compared to the Vancouver



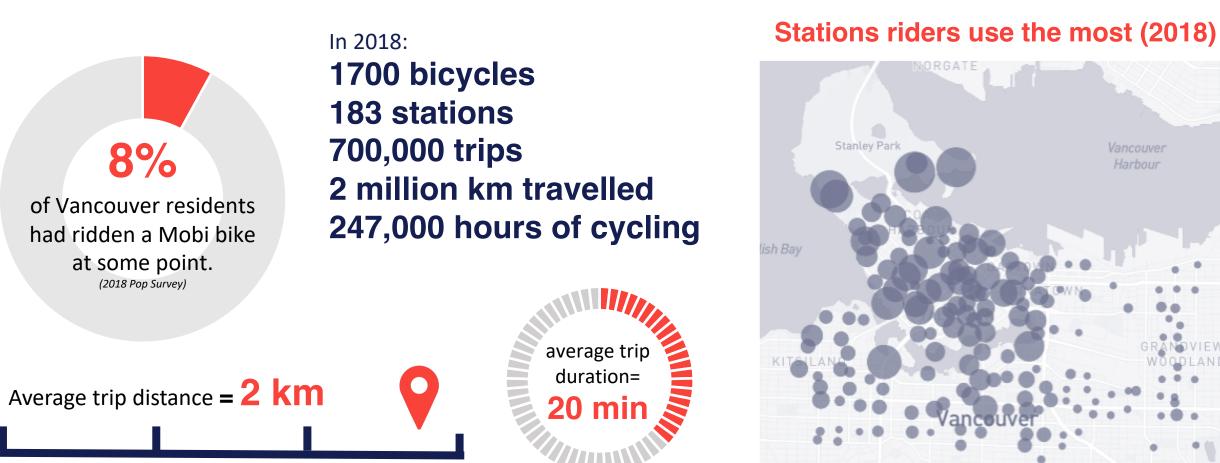
#### ource: 2018 Mobi Member Survey

64% of bike share riders were wearing a helmet, during on-street observations which was a lower prevalence than those on a personal bicycle (79%). Source: 2016 Screenline count observations n=10,704 on personal pikes and n=397 on bike share bikes.

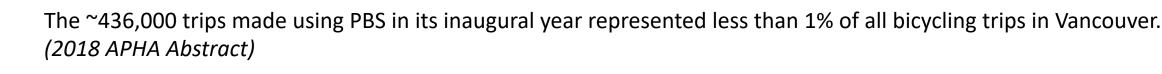
## Sanitary concerns

was the top reason for not wearing a helmet while on Mobi bicycle (indicated by 38%).

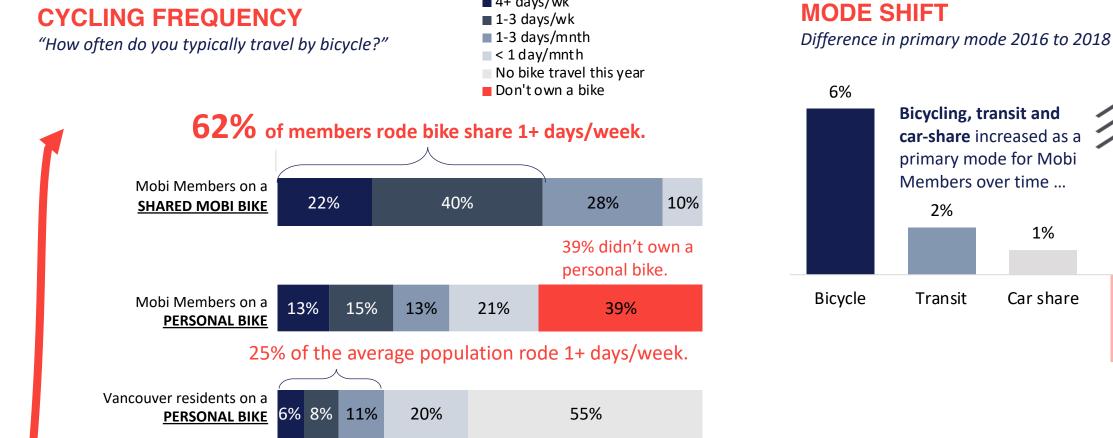
### SYSTEM TRENDS

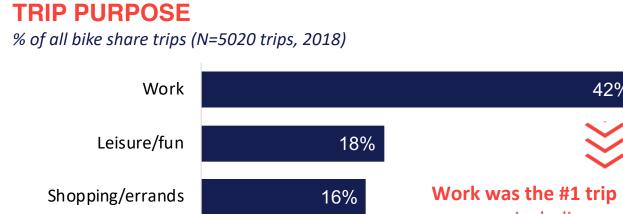


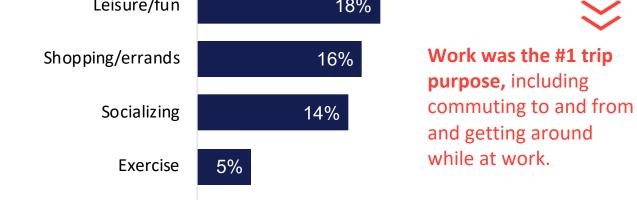
### TRANSPORTATION TRENDS & IMPACTS



■ 4+ days/wk



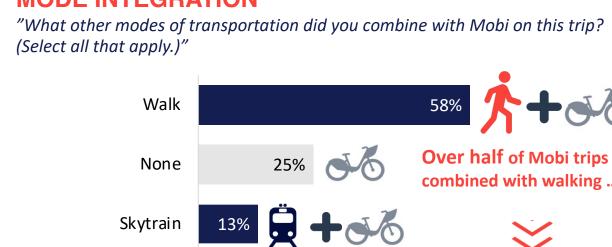


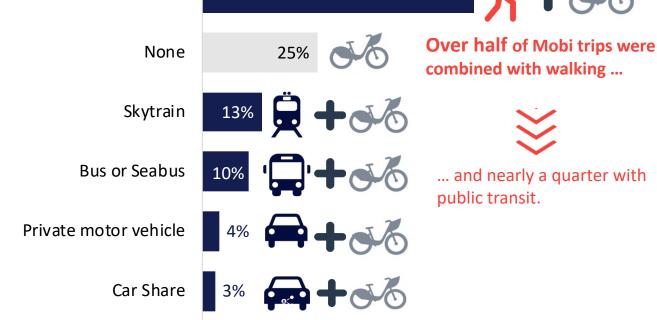


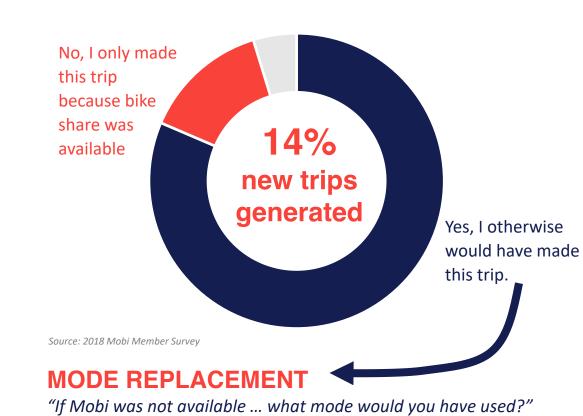
## **MODE INTEGRATION**

Personal bicycle

School 1%







Bicycling, transit and car-share increased as a

Car share

"If Mobi was not available ... would you have made this trip?"

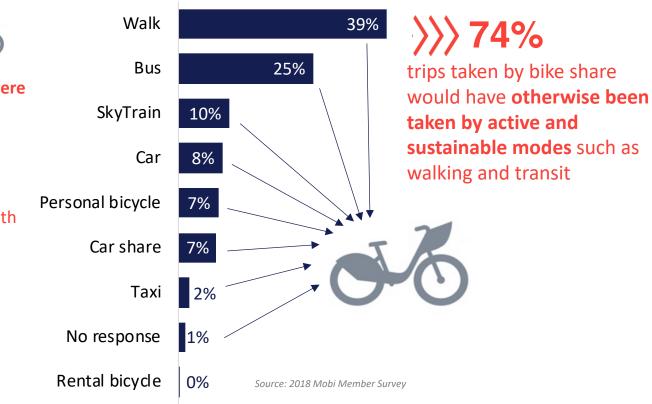
Bicycling, transit and

primary mode for Mobi

Members over time.

**GENERATING NEW TRIPS** 





## RECOMMENDATIONS TO INCREASE EQUITY & UPTAKE

Source: 2018 Mobi Member Survey

#### Six key themes emerged in the focus group discussions:

- 1. Potential users have a lack of knowledge and self-efficacy in using program. 2. Bike share equipment does not suit specific needs.
- 3. Bike share program does not suit needs: station locations, time limits, recreational use, and liability. 4. Potential users want different pass features: access method, type, price and payment method.
- 5. People that use bike share are active and care about their city. 6. There are general barriers to bicycling in Vancouver.

#### Recommendations to increase equity in uptake...

- 1. Provide ways to register that don't require technology, smart phones, or credit cards.
- 2. Provide subsidy programs for low-income, students and seniors. 3. Provide instructions in multiple languages.
- 4. Expand the service area further east and west to more socio-economically diverse neighbourhoods, and to university campuses.
- Recommendations to increase number of users and number of trips ... 1. Create a more user-friendly day pass (i.e. sign up on site, no 30-minute restriction).

#### 2. Integrate with current transportation systems. Market the program on campuses, and particularly near ESL schools. 4. Offer trial passes, "how-to" online videos, and in-person training opportunities.

5. Make bicycles trendier and remove corporate branding. 6. Improve the utility of the bicycles.

under reporting of cycling incidents in Vancouver, British Columbia. Journal of Transport & Health.

. while **walking and** 

riving decreased.

8. Winters, M., & Zanotto, M. (2017). Helmet Use Among Personal Bicycle Riders and Bike Share Users in Vancouver, BC. American Journal of Preventative Medicine.

Research Record: Journal of the Transportation Research Board

- 4. Hosford K, Winters M. (2018). Who are public bike share programs serving? An evaluation of the equity of spatial access to bike share service areas in Canadian cities. Transportation Research Record.
- 5. Hosford K, Fuller D, Lear S, Teschke K, Gauvin L, Brauer M, Winters M. (2018). Evaluation of the impact of a public bicycle share program on population bicycling in Vancouver, BC. Preventive Medicine Reports. Hosford K, Lear S, Fuller D, Teschke K, Therrien S, Winters M. (2018). Who

is in the near market for bicycle sharing? Identifying current, potential, and

unlikely users of a public bicycle share program in Vancouver, Canada. BMC

Winters M, Hosford K, Javaheri S. (2019). Who are the 'super-users' of public bike share? An analysis of public bike share members in Vancouver, BC. Preventive Medicine Reports.

### 4 GRADUATE PROJECTS

- Who will use the Vancouver Bike Share Program? (Vander Wekken, 2013). 2. Facilitators and Barriers to Public Bike Share Adoption and Success in a City with Compulsory Helmet Legislation: A Mixed-Methods Approach (Zanotto,
- 3. Understanding a Public Bicycle Share Program in Vancouver, Canada: Program Uptake and Impacts on Bicycling (Hosford, 2018).
- 4. Understanding the Characteristics of New Public Bike Share Members in Vancouver over 2016-2018 (McKeen, 2019).

### CONFERENCES

2013 Bicycle Urbanism, Seattle, USA.

Victoria, CANADA

- 2016 International Conference on Transport & Health, San José USA 2016 International Society of Behavioural Nutrition & Physical Activity,
- 2017 VeloCity, Nijmegen, NETHERLANDS. 2017 International Conference on Transport & Health, Barcelona,
- 2018 Transportation Research Board Annual Meeting, Washington DC,
- Canadian Public Health Association, Montreal, CANADA

## 2018 American Public Health Association, San Diego, USA.

#### **PARTNER REPORTS**

- 2016 Mobi Members Online Survey Results (April 2017). 2018 Mobi
- Member Survey Results (June 2019). 2. 2017 Mobi Member Recommendations for Improvement (shared April 2017) A thematic summary with key quotes of the total of 1172 open-
- ended responses on recommendations to improve Mobi.
- 3. 2017 Focus Groups Findings (shared June 2017). 4. Mobi System Use Infographics Short Report (Presented to partners in person October 2017).
- 5. 2017 Mobi Intercept Survey Results (November 2017). 6. 2017 Mobi Member Survey Results (January 2018).
- 7. Presentation to City of Vancouver & Mobi Teams- Trending Findings over years and across surveys (February 2018).
- 8. 2017 Vancouver Population Survey Results (April 2018). 9. 2018 Focus Group Findings (June 2018).

11. 2018 Vancouver Population Survey Results (March 2019).

10. 2018 Mobi Intercept Survey Results (February 21, 2019).

## **MEDIA**

- . Winters M. Interview with CBC Radio. July 24th, 2018.
- 2. Hosford K, Winters M. Bike sharing isn't just for rich hipsters 'super users' have lower incomes. Article published in the Conversation. July 24th, 2019.

#### IMPACT

In the 7 years of conversations with stakeholders (City of Vancouver and Mobi by Shaw Go) we informed policy, program and rollout of input into local policy-makers decisions including:

- Equity considerations. Informing new station locations based on member needs.
- Providing evidence of who uses the system, how and why.
- Providing more evidence for the need to make the system more
  - financially accessible (e.g. VanCity pass).