Community Cycling Program Brampton Caledon

Year Two Final Report

February 26, 2021

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CCP Year Two Program Summary, Challenges and Opportunities

The Community Cycling Program (CCP) as supported by the Region of Peel is intended to increase the number of people cycling as their chosen mode of transportation in Peel Region by:

- Building familiarity, comfort and confidence using the existing road & trails network,
- Providing increased access to a working bicycle, bike maintenance skill and access to the necessary tools and materials,
- Building community around cycling, making cycling to nearby destinations a social norm.

The CCP in Brampton and Caledon has now completed 26 months of operation through a contractual agreement between the Region of Peel and Punjabi Community Health Services (PCHS), with support from members of BikeBrampton. Town of Caledon and City of Brampton provided program support.

Delivered activities fell into four categories:

- **Pedalwise** – a bike host program where mentors are teamed with protégés to increase cycling skills, confidence, and knowledge of the practicalities of riding on the roads and trails in Brampton and Caledon. For new cyclists, mentor training was augmented with more formalized instruction from a CAN-BIKE certified instructor.
- **BikeWrx** – a DIY bike repair and bike mechanics training program using the experience of a certified bike mechanic and the provision of tools and minor parts.
- **Bike Library** – ability to borrow a bike for an extended period with a small deposit.
- **Bike Hub** – a program that provides a place for protégés, mentors and drop-ins to mingle in a social atmosphere creating a support network that helps normalize cycling for transportation behaviours.

The restrictions imposed by the COVID-19 pandemic meant that all Brampton and Caledon Bike Hub activities after the 20th of March 2020 were delivered either virtually, or in an outdoor setting.

The indoor Bike Hubs in Brampton and Caledon were closed. In person social activities and larger organized group rides were not allowed. Pedalwise activities were severely curtailed. Mentors were required to restrict their activities, some did so severely due to heightened family or personal risk concerns.

We developed a workplace safety plan with personal protective equipment using protocols developed in accordance with both Regional and Provincial Public Health guidelines. We pivoted to offer on-line workshops, video training, outdoor BikeWrx pop-ups, limited mentoring and one-on-one in-person skills assessments and training sessions by appointment only. The bike library cage continued to function by appointment only. The underground garage space with the overhead door open for good ventilation, was used for bike donations, lending, and fitting.

The City of Brampton's decision in the spring to create COVID-19 temporary bike lanes helped give cycling a boost. We saw a significant uptick in cycling popularity overall. Combined with bicycle supply chain disruptions that meant our bicycle library was remarkably busy. Joining Pedalwise is a prerequisite

to borrowing a bicycle, so the demand for bicycles also meant a dramatic increase in Pedalwise participants.

The bulk of our activities were delivered in the spring, summer and fall of 2020. Detailed information about these activities was captured in an interim report submitted to the Region of Peel on October 24, 2020. That report can be viewed here.

Figure 1 Brampton Bike Hub BikeWrx Pop-up Café along Etobicoke Creek Trail, Duggan Park – photo credit: Dayle Laing

Figure 2 Caledon Bike Hub BikeWrx Pop-up Café along Caledon Trailway, Inglewood – photo credit: Dayle Laing Bike Hub BikeWrx Pop-up Café along Caledon Trailway, Inglewood – photo credit: Dayle Laing

We continued marketing the program on the BikeBrampton website, through social media and community groups. The City of Brampton promoted our programs on the City's website. We also had some of our materials translated into Punjabi. Despite that, we found during the BikeWrx pop-up sessions, that many Brampton and Caledon residents were unaware of our programming. For last year that was a good thing as more demand may have swamped our limited resources for each event. But promotion and maintaining momentum and growth for the programs will be a priority for 2021.

Activities Since the Interim Report

Pedalwise and BikeWrx Update

Bike Cage Clean up and bike repair continued through November and December. Gerald continued to repair bikes in the cage. He has completed more than 20 since the end of November.
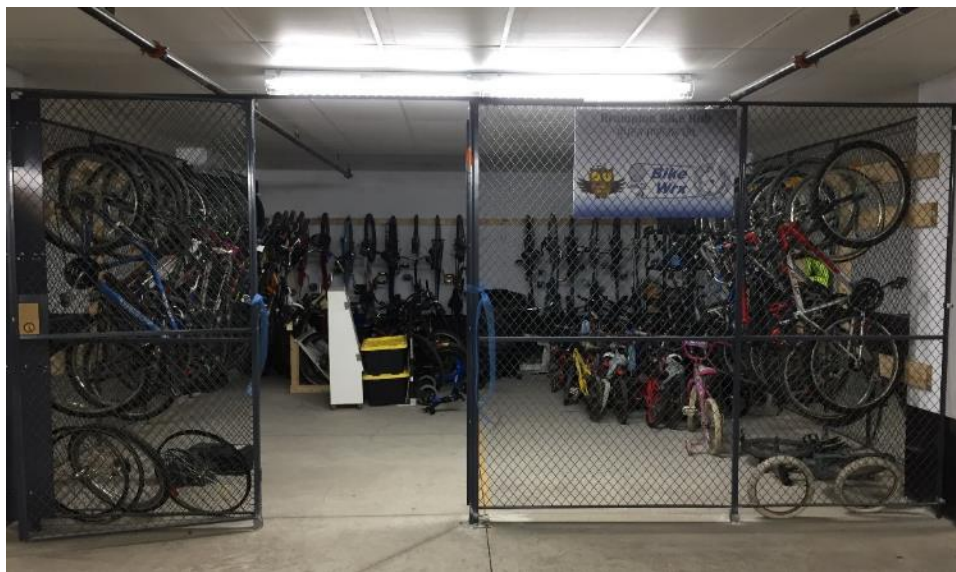
Figure 3 Brampton Bike Hub Sunny Meadow bike library cage – photo credit: David Laing

In November we held a mentor debrief meeting via Zoom. Ten mentors participated. The following week we had physically distanced driveway visits with each mentor to deliver a custom calendar as a thank-you gift for their support for the program.

In mid-December we hosted a virtual Holiday party. Twenty-two mentors and protégés attended this social event. Councillor Santos joined us.

In January 2021, the bike cage at Sunny Meadow was broken into and two of the recently repaired bikes were stolen. We had pictures of the bikes and their serial numbers. The incident was reported to Peel Regional Police. There has been no word so far on the missing bikes.

Wayfinding Pilot Program with TRCA

In November and January, we teamed with TRCA to deliver virtual bike safety messaging to students in Public and Catholic primary and middle schools in Brampton and Caledon. This was a pilot program that

also included a wayfinding stencil kit, climate change orientation and the importance of active transportation in reducing carbon emissions. The pilot schools were:

- Hewson Public School, Brampton
- Copeland Public School, Brampton
- Eldorado Public School, Brampton
- Pte Buckham Singh Public School, Caledon
- Mount Pleasant Village Public School, Brampton
- St. John the Baptist Elementary School, Catholic Caledon
- St. Cornelius Elementary School Catholic, Caledon

Figure 4 EcoSchools Wayfinding Pilot Program – photo credit: David Laing

SmART Ride Contest and the Advance Brampton Fund micro grant

In August we applied for an Advance Brampton Fund micro grant to help financially support the SmART Ride contest promotion. In October we heard our application was approved. We launched the contest to run for the month of November in partnership with the City of Brampton Arts and Culture department.

The contest had three objectives:

1. Bring a social media buzz and excitement to cycling in Brampton,
2. Engage the arts community in the CCP and attract new program participants,
3. Allow Brampton residents who are not regular cyclists to experience the pleasures of cycling through art.

"BikeBrampton and the Arts have a lot in common. They're both exhilarating. They both add beauty to our City and stimulate our imagination. Both are champions for social and environmental change."

- ***Steven Schipper, CM, O.M.***
- ***Executive Artistic Director, Performing Arts, Community Services, City of Brampton***

The contest delivered on the first two objectives. It generated the single biggest response on the various BikeBrampton media platforms and significant traffic through the City's and the Rose Theatre's feeds.

Four contest winners were selected by the panel from the entries received. Given the COVID-19 restrictions it was decided to hold a virtual awards ceremony instead of the planned live event in Garden Square. The winning contestants submitted video segments describing their art and the panelists provided artistic feedback. We are now waiting for the City's videographer to compose these segments into a short documentary video. The YouTube premiere of the documentary is now planned for mid-April, when we anticipate that the third objective will be met.

Figure 5 smART Ride social media infographic created by City of Brampton

Summary Program Results

Program Activities	Detail	Target	Actuals – Feb 20
Marketing and Outreach			26,953 (aggregate of contacts, impressions, reaches)
@BikeBrampton Instagram	Social media		Followers 274 (24 posts, 1,351 impressions)
@BikeBrampton Twitter	Social media		Followers 1,135 (28 tweets, 12,057 impressions, 506 engagements)
BikeBrampton Facebook page	Social media		Followers 520 (25 posts, 7,301 reaches, 558 engagements)
BikeBrampton.ca	Blog posts	12	20 posts
BikeBrampton.ca	e-Newsletters	12	12 e-Newsletters – Total opened 3,237 (517 subscribers, open rate range 46%-70%, open rate median 58%,

Program Activities	Detail	Target	Actuals – Feb 20
			click rate range 5%-18.3%, click rate median 12%)
BikeBrampton.ca	Search engine		21,480 Total Referrals to website, (1,202 from Facebook, 345 from Wordpress, 236 from Twitter, 87 from walkandrollpeel.ca, 12 from ecoaction.bikebrampton.ca)
Videos	Youtube		2020 Year Review (69 views)
Pop-up Café booth materials	For outdoor physical distance delivery		3 A-frame Brampton Bike Hub & Caledon Bike Hub poster signs, Brampton & Caledon Bike Hub trifold brochures, Outdoor tent, tablecloth, (PPE: Face shields, disposable masks, emergency cones for line-up control, sidewalk chalk)
Ad-hoc Community Presentations and Discussions	Sri Guru Nanak Sikh Centre		Meeting with Principal Harman for programming synergy (immediately before COVID shut down)
	Peel Climate Council Presentation		Number of participants - 22
	Catholic Cross Cultural Services Presentation		Number of participants - 20
	Meeting with MP Ruby Sahota and Executive Director, Punjabi Seniors		Number of participants - 4
Community Meetings	Bramalea Community Network McMurchy Community Network Brampton Springdale Community Network	25	25 community meetings attended through 2020
smART Ride Contest	Celebrate the beauty of cycling through art partnered with The Rose, City of Brampton		4 winners to be honoured at YouTube Premiere in April, 2021 3,907 total social media impressions/engagements to date (included in above totals)
Pedalwise Program			
Strava	Protégés and mentors log their cycling trips on Strava		Number of commute trips recorded 1,599 Average per trip distance travelled 13.32km

Program Activities	Detail	Target	Actuals – Feb 20
			Total km logged for both commute and recreational cycling 90,700 Percentage of Pedalwise participants reporting 39%
Pedalwise Protégé Recruitment		25	59 new Protégés of 146 total (68% increase over year one)
Pedalwise Mentor Recruitment		11 Brampton 4 Caledon	13 in Brampton, 4 in Caledon. Total 17. Two graduated from the Pedalwise program to become Mentors. 4 new Mentors from last year.
Protégé & Mentor virtual Training		15	158 Protégés & Mentors participated in 8 ZOOM sessions
Establish Pedalwise activity groups	Brampton north-east	6	Mentor Lisa led, riders met regularly. Frequency and group size affected by COVID-19.
	Brampton north-west. Pedalwise Protégé Assessment & Training Clinic at Cassie Campbell Recreation Centre.		15 participants initially. By individual appointment. Louis offered to lead, but withdrew due to personal situation. There were some follow-on rides but greatly affected by COVID-19 and lack of both leader and mentor.
	Brampton south-east		Brampton south-east riders. Steve led. Often teamed with Brampton north-east.
Pedalwise October Cycling Challenge	Protégés who logged kilometres in October shared a cash prize.		17 Protégés – 2,707 kilometres
Wayfinding Pilot for Peel Eco-Schools	Presentations partnered with TRCA		6 Schools – Hewson PS, St John the Baptist, Copeland PS, St Cornelius, Eldorado PS, PTE Bucham Singh PS, Mount Pleasant Village PS - number of students - 150
Pedalwise Training Safety Tips Videos	YouTube		7 Videos – Total 306 views ABC Quickcheck, Bike Lane Tips, Bike Lane Tips – Punjabi, 4 mini videos in partnership with TRCA: Quick Check, A, B, C
BikeWrx Program			
Bikes Donated			38

Program Activities	Detail	Target	Actuals – Feb 20
Bikes Repaired for Lending			60 ~90 minutes to repair each donated bike
Bikes Lent to Protégés		24 (based on previous year)	35 ~40 minutes to fit each lent bike
Bikes dismantled for parts & scrap metal			40 ~30 minutes to dismantle each bike plus time to take to recycler
Brampton Bike Hub, Caledon Bike Hubs		96	Total 14 BikeWrx sessions Sunny Meadow 6 sessions, Southfields 4 sessions, Bolton 4 sessions (61 participants before COVID shut down)
Bike Hub Cage in-person visits, Sunny Meadow	Arranged by appointment to take in donated bikes or fit loaner bikes		Total 16 sessions of approximately two hours each, total of 32 hours. 137 total participants at cage, after COVID shut down bike hubs
BikeWrx Pop-up Cafés along the trails	6 in Brampton, 4 in Caledon,	10	10 total cafés 300 participants, 200 Region of Peel bells installed, 68 bikes tuned or repaired
Evaluation and Reporting	Revise existing surveys. Administer interim survey in September 2020. Deliver an interim report in November 2020 and final report in March 2021		Surveys were re-designed. Exit survey administered in December. Interim report delivered in November. Final report delivered in March.
Exit Survey Results			
Independent Variable	**Dependent Variable**		**Results**
Length of Participation: Multiple years Vs. Current Year (CYRECODE)	Number of Barriers reduced (BRSUM) **(Refer to Appendix C 1.)**		Cyclists who have been involved for multiple years reported a greater number of barriers reduced (to cycling behaviour) after participating in the Pedalwise program than cyclists new to the program in 2020.
Number of utilitarian cycling behaviours increased (UTILCYC) as defined by the total "Yes" responses to the following: 1. Shoulder season riding (n=47), 2. Riding more often (n=54),	Number of Barriers reduced (BRSUM) (**Refer to Appendix C 2.)**		Cyclists who reported an increase in 4/4 of the utilitarian cycling behaviours were more likely to report a greater number of barriers reduced to cycling behaviour after participating in the Pedalwise program than

Program Activities	Detail	Target	Actuals – Feb 20
3. Riding longer (n=48), 4. Riding for transportation (n=50)			those who reported 1/4 and 3/4. Additionally, cyclists who reported 3/4 utilitarian cycling behaviours scored more highly on barriers reduced than those who reported 0/4
Number of expectations met by participating in the pedalwise program (#EXPMET)	Level of satisfaction with participation in the Pedalwise program (PROGEXP) **(Refer to Appendix C 3.)**		Cyclists who reported a high and moderate number of expectations met were more likely to report a greater level of satisfaction with the Pedalwise program.
Mentor Frequency (FREQMEN)	Mentor Satisfaction (MRSUM) **(Refer to Appendix C 4.)**		Cyclists who were contacted rarely by their mentor reported a significantly lower mentor satisfaction score than those who were contacted weekly, monthly, and occasionally.
Shoulder Season Riding (S.S)	Number of barriers reduced (BRSUM) **(Refer to Appendix C.5 a.)**		Cyclists who ride in the shoulder season reported a greater number of barriers reduced after participating in the Pedalwise program than cyclists who report not riding in the shoulder season.
Healthier	Number of barriers reduced (BRSUM) **(Refer to Appendix C.5 b.)**		Cyclists who report feeling healthier also report a greater number of barriers reduced than those who did not report feeling healthier.

Suggested Work Plan for CCP Year Three

Listening to the experts, we expect easing of lockdown restrictions to begin in mid-to late March and that conditions will continue to improve with the warmer weather. We expect in-person outdoor activities of small groups will be allowed starting in May and that limited indoor activities will be allowed by late summer or early fall once most Canadians have been vaccinated for COVID-19.

We believe the demand will be even greater for our outdoor BikeWrx sessions if the schedule is better publicized and sessions return regularly to the same site. Even though the events were publicized on the BikeBrampton website and through social media, many people indicated they were unaware of our schedule. They mentioned they had bikes for repair but didn't have them with them or asked when we were coming back. The pandemic forced inadequate lead time for proper publicizing of pop-up cafés.

We have also applied to the Advance Brampton Fund, Amplify Stream to augment funding for the program. Based on the above COVID-19 assumptions and being awarded the ABF grant, we are planning the following activities for CCP Year Three.

Activity	Target	Details	When	By Whom
Marketing and Outreach				
@BikeBrampton Instagram, Twitter, Facebook				SM
BikeBrampton.ca				SM
Video production		Changing gears Showcasing new infrastructure BTC virtual ride		SM
Hand-out materials		10 pieces in Brampton 2 pieces for Caledon		SM
Promotional events		SNAP Bramalea SNAP Bolton		SM
Participate in Art & the Environment promotion - COB				SM
Community presentations		LINC, Newcomer etc.		SM
Community meetings	25	BSN, BCM, MCN		SM
Community events		Bike month, bike to school and bike to work day activities		SM, SS
Promotional contest	3	smART Ride		SM
Door knockers	12,000	Delivered to households in pop-up areas		SS
Pedalwise Program				
Mentor Recruitment				SM
Mentor Training		CAN-BIKE 4, Virtual, classroom On-road practical training		SM, KM, LS, BL, SL
Protégé Recruitment				SM
Protégé orientation		In person meeting to introduce Protégé and Mentor, set up Strava		SM
Protégé encouragement contests	2	Summer/Fall/Winter Cycling challenge		SM
Protégé safety training	3	Three training hours either virtual or in-person		LS
Create Pedalwise sub-chapters - where high concentration of Protégés		Create mini-bike hubs in different areas of Brampton and guide them towards self-sufficiency. Pattern after what is currently occurring in Brampton north-east. Add for Caledon as demand increases.	May – December	SM, LS, AG

Pedalwise Protégé Assessment & Training Clinics	20	Part of Bikes in roadshow		AG, LS
Wayfinding Program	10	Follow up to the pilot with TRCA		SM
Virtual bike repair coaching sessions	3	Encourage Brampton residents to get their bikes ready for the nicer weather. Available to all Brampton/Caledon residents. On-line registration. Virtual break-out room where mechanics will help coach the participant in DIY minor bike repairs.	March-April	SM, PB, GP
BikeWrx Program				
Deliver "Bikes in Brampton" & "Bikes in Caledon" outdoor roadshow. Three, 2-hour sessions per week for 20 weeks in Brampton and one session every other week, (average) in Caledon. **10 Targeted areas in Brampton, 3 targeted areas in Caledon**	70	On-line registration as well as "drop-in" following COVID-19 protocols. Services delivered will include minor bike repair and adjustments, proper bike fitting, cycling skills assessment and training, safe route planning to destinations, and tips on equipment and clothing selection. Tailored handout materials, highlighting current and planned bicycle infrastructure. Information, training, and resources to educate both cyclists and non-cyclists on maintaining safe and respectful interactions Led, group or individual rides may also be offered depending on the status of the COVID-19 restrictions. Events promoted through neighbourhood flyers. Deliveries to engage existing and newly recruited Pedalwise participants and general public. Complements COB Recreation planned cycling programs.	May-September	Project Team (See below)
Resume Bike Hub Activities		Reopen the physical Hubs at Sunny Meadow and Southfields once COVID-19 restrictions allow. Reassess Ardglen. Potentially DT Brampton	October - March	SM, PB, GP, JC, KM
Bike lending library		Donated, repaired, lent, dismantled	April - December	SM, PB, GP, JC, KM
School bike swap programs		Massey St. PS		SM, PB

Job Title	Team Member	Key Responsibilities	Qualifications
Program Manager	Sonia Maset	Overall management of the program and its deliverables	BSc in Psychology 4 yrs program coordination and operations support Member of B!KE Peterborough since 2014 2 yrs statistics tutor 2 yrs experiencing bike culture in Taiwan Regular commuter cyclist Passionate about active transportation
CAN-Bike Instructor	Kevin Montgomery	Cycling skills instruction	Certified CAN-BIKE instructor 2 yrs child and adult bike skills training
Website Technical Manager	Kevin Montgomery	BikeBrampton web-site management	Certified user experience designer Experience working with large data sets
Bike Mechanic	Gerald Pyjor	Hands on support for the Pedalwise & BikeWrx programs	Certified bicycle mechanic Experience delivering bicycle mechanics training Experience providing bicycle repair services
Bike Mechanic	Peter Bolton	Hands on support for the Pedalwise & BikeWrx programs	Certified bicycle mechanic Experience delivering bicycle mechanics training Experience providing bicycle repair services
Cycling skills instructor	Alina Grzejszczak	Ensure program safety. Provide bicycle skills training. Provide coaching & encouragement	Experience with both child and adult education Certified CAN-BIKE instructor
PCHS Liaison	Amanjit Kahlon	Manager of Operations	

Appendix A: Photographs and Testimonials

"The willingness to the volunteers to help is inspiring. When I initially started the program, I was nervous to ride on public roads. I am so grateful to this amazing opportunity that empowered me to finally be able to use a bike for transportation purposes (errands, shopping, going to work when not in a hurry)." Louis

"What a wonderful and supportive cycling community!" Nosheen

"I like the informal atmosphere of the hub, being able to drop in when I can without minimum attendance requirements or anything like that. I like the instruction on bike repairs, and learned a lot from the instructors and even other participants." Steve F

Figure 6 Sunny Meadow BikeWrx session before shut-down, Brampton Bike Hub – photo credit: Dayle Laing

"My neighbor is also part of the Pedalwise Program, I enjoyed going for rides with her in the community, exploring new trails and accessing a fun way to exercise!" Sheldon

Figure 7 Pedalwise small group ride on trails – photo credit: Lisa Stokes

"I loved everything about it. I met so many wonderful people, I enjoyed the group rides, the camaraderie and riding the trails." Penny

Figure 8 Pedalwise small group ride to Vaughan - photo credit: Lisa Stokes

"The kindness and encouragement of the mentors. It was really nice to have mentors that really enjoy biking. They even encouraged me to bike in the winter!" Raman

"It was great getting a bike from Pedalwise and actually getting back into cycling after not having done it for a few years. Joining the program made me realize how enjoyable bike riding is." Dharminder

Figure 9 Protégé borrowing bike from Sunny Meadow bike cage – photo credit: Dayle Laing

"1) Met people who invited me to ride with them. I have ridden longer distances and in colder weather than I ever thought I would ever want to! 2) Discovered parts of Brampton I've never visited before even though I've lived here my whole life"
Cindy

Figure 10 Pedalwise small winter group ride – photo credit: Dayle Laing

"Loved the support and enthusiasm from David and Dayle and of course my mentor Yvon. This is a great initiative and it helped take up biking which I have been thinking about for years and never really got around it." Dannie

"The programme was quite impressive. I had the opportunity to learn more about safe bike riding practices which made me a good bike rider. Also, learning about how to use the bike gears was quite useful as a daily bike rider." Manjinder

"I enjoyed the online training seminars" Danesa, Caledon
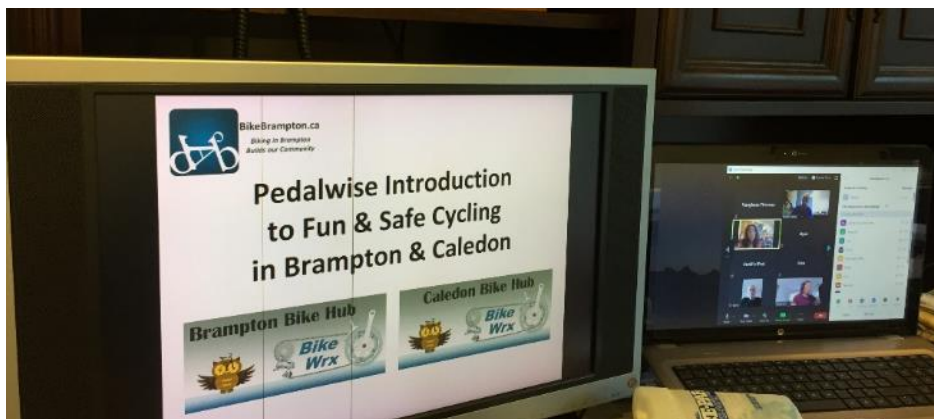
Figure 11 Pedalwise Protégé & Mentor Virtual training session – photo credit: David Laing

"It was good as they gave a bike for you to actually practice cycling. I also learned more about cycling and how to repair a bike if I needed to." Jareb

"Program helped my get in shape by having fun. October challenge was amazing it motivated me to ride more. Posting kms on the board was brilliant idea. Group rides are amazing, keep that up." Gurpreet

"Meeting wonderful people along with taking care of my health. I was able to explore Brampton and learnt a lot about the city." Renuka

"Improve confidence while riding in road traffic" Newman

"The programme encourages people to use cycles as a part of their lifestyle and not just for exercise or a sport." Ancy

"Support in finding the right bike size and offering information on better biking" Bishnu

Figure 12 Pedalwise Protégé Training Assessment, Cassie Campbell Rec Centre lot – photo credit: Dayle Laing

"The community feeling, expand my skills, having a bike loan, the recognition and rewards" Alex

"It helped a lot with understanding the importance of riding bikes and what we have to do while riding our bikes." Hannah

"The variety of topics. Knowledge of the trails and what Brampton was doing to improve cycling" Tracy

Figure 13 Protégé navigating new Howden Street bike lane behind Mentor – photo credit: Dayle Laing

"My mentor was fantastic. She was eager to help me meet my goals, but didn't overwhelm me. I was really motivated by borrowing a bike from the library. I wanted to know I could ride safely in Brampton before buying a bike of my own, and I would have never come to that conclusion without borrowing a bike from the library or without the guidance of my mentor to help identify safer routes for my bike commutes. Not specific to pedal wise, but I really enjoyed the community rides too. I Have only lived in Brampton for a few years and still don't know many people or many bike routes. It was really nice to meet people and learn new ways around the city by bike." Kelly

Appendix B: Detailed Evaluation

Pedalwise Survey Data Analysis

In December 2020 we sent out 123 exit surveys to Pedalwise Protégés. Surveys were not sent to protégés whom we knew had moved away from Brampton or had graduated to become a mentor. Of the total, 55 went to protégés who started the program this year. The balance of 68 went to protégés who joined the program prior to the beginning of 2020.

A total of 60 surveys were completed, 21 from the protégés who joined the program in 2020 and 39 from those who joined the program prior to the beginning of 2020.

	Sent	Returned	% Returned
Prior to 2020	68	39	57%
2020 only	55	21	38%
Total	123	60	49%

The lower rate of survey return for the new protégés who joined the program appears to indicate they joined only to get access to a bicycle and were not committed to the other responsibilities of being a protégé.

Evaluation Criteria

Outcomes	Key Indicators	Tools
People have more access to bicycles	# of bicycles on long-term loan, # of bicycles given away, # of bicycles tuned at BikeWrx pop-up events	Count through program and event registration.
People have greater cycling knowledge and skill	# of virtual training, skills assessment workshop, and repair participants including staff, students, protégés and the public	Count through registrations
	Change in knowledge and confidence related to cycling	Exit survey responses

More people are biking more often	Change in cycling behaviour: cycling frequency, general, cycling for transportation, cycling longer distances, and winter / shoulder season cycling	Exit survey responses
	Change in cycling distance	Strava data
	Change in cycling attitudes including removed barriers and feeling that friends and family are more supportive of cycling	Exit survey responses
People have built community around cycling that is improving their sense of health and well-being	Change in sense of belonging,	Exit survey responses
	Change in perception of their own health	Exit survey responses
Program Improvement	Participant and mentor satisfaction and feedback	Exit survey Mentor feedback session Protégé interviews (2)
Other key findings	Relationships between and among multiple variables	Exit survey statistics. Refer to Appendix C

Program Results

People have greater access to bicycles

Number of bicycles on long-term loan

More bikes have gone out on loan each year of the program. Bike loans grew 440% year over year from 2018-2019 and 115% between 2019 and 2020. We now have 58 bikes on long-term loan.

Cumulative Bike Loans 2018-2020
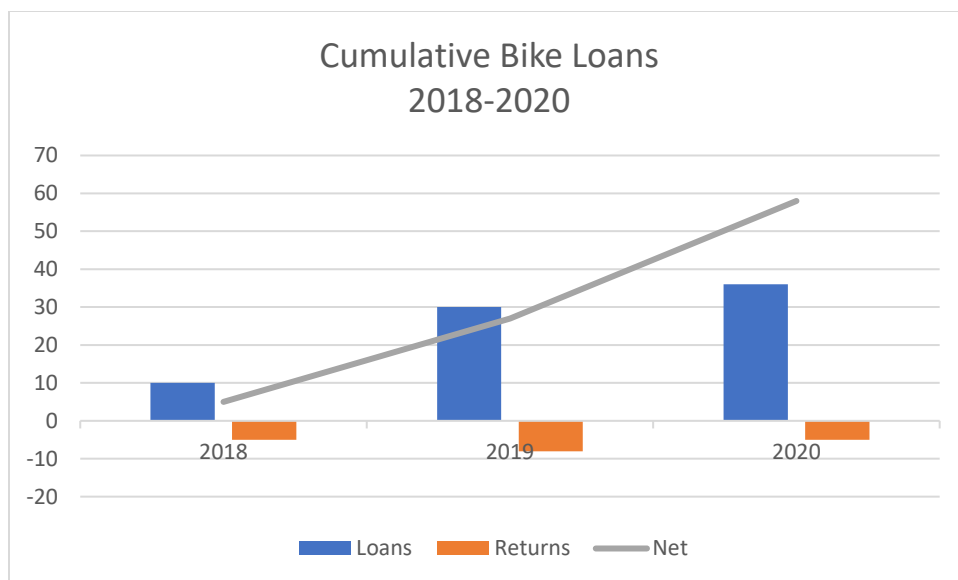
We started the year with only a few bikes in "loan-ready" condition. We were fortunate to receive 34 bike donations in 2020, mostly from individuals in the community. We were able to repair 60 bikes but many of the donations were not worth repairing. Forty bikes were dismantled for parts and scrap. Proceeds were returned to the program. We scrambled and were able to meet the demand for loans. For 2021 we have approximately 20 "road-worthy" bikes available which should better position us for the upcoming season.

Number of bicycles given away.
In past years we worked with Massey St. Public School to donate bikes through their bike swap program. This was not possible this year due to the school being closed for much of the year. We have 15 junior youth and kids bikes that are in a condition ready to donate for 2021.

Number of bicycles tuned or Repaired

Event	Number of bikes tuned or repaired
Bike Cage Bike Library	60
Brampton BikeWrx Sessions (5 Sunny Meadow)	2
Caledon BikeWrx Sessions (4 Southfields, 4 Bolton)	2
Brampton BikeWrx pop-up sessions (6)	39
Caledon BikeWrx pop-up sessions (4)	29
Total	132

People have greater cycling knowledge and skills

Participation in skills and repair workshops

Event	Participation
Pedalwise Training safety tip videos	306 (views)
Skills assessment workshop (Cassie Campbell Rec Ctr)	15
Protégé and Mentor virtual training sessions	158
Brampton and Caledon Bike Hubs	57
Total	536

Change in Pedalwise protégé cycling confidence knowledge

95% of the protégés that have been in the Pedalwise program for multiple years reported that the program helped them to be a more confident cyclist. 100% of the protégés who joined the program this year reported the same.
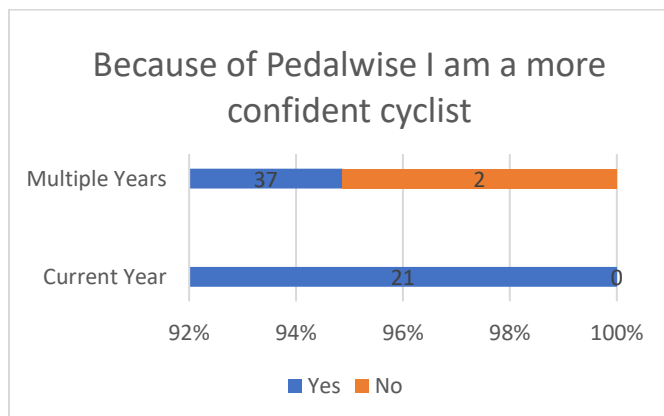
The majority of the protégés reported that Pedalwise reduced barriers to cycling that involved increased knowledge.

The majority of the Pedalwise participants reported they felt the Pedalwise program increased their confidence as a cyclist.

Survey knowledge or skills questions	Percent reporting in the affirmative (N=60)
Because of Pedalwise I am a more confident cyclist	97%
Which (knowledge based) barriers did Pedalwise help remove for you?	
Concern about sharing the road	70%
Lack of knowledge of road rules	63%

Not knowing about safe bike routes	50%
Lack of knowledge about equipment or clothing	40%
Concern about bike theft	20%
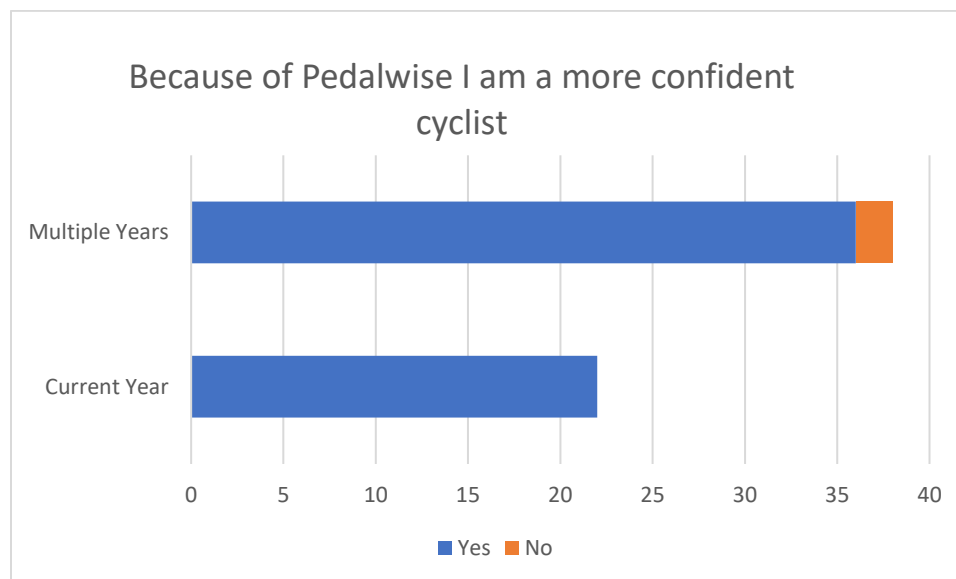
More people are biking more often

Changes to cycling behaviour, Exit survey responses

As can be seen in the chart below, the exit survey responses indicate that participation in Pedalwise positively impacts the frequency, distance, seasonality, and functionality of cycling. This impact is not affected significantly by time in the program.

Because of Pedalwise	Current Year Yes, (n=21)	Multiple Years Yes, (n=39)	Total Yes, (n=60)
I ride more often	100%	85%	90%
I am more likely to use a bicycle for transportation	81%	85%	83%
I ride longer distances	81%	79%	80%
I am more likely to ride in the winter or shoulder seasons	79%	76%	78%

Because of Pedalwise I am more likely to use a bicycle for transportation

Because of Pedalwise I am more likely to ride in the winter or in the "shoulder seasons" (fall, spring)
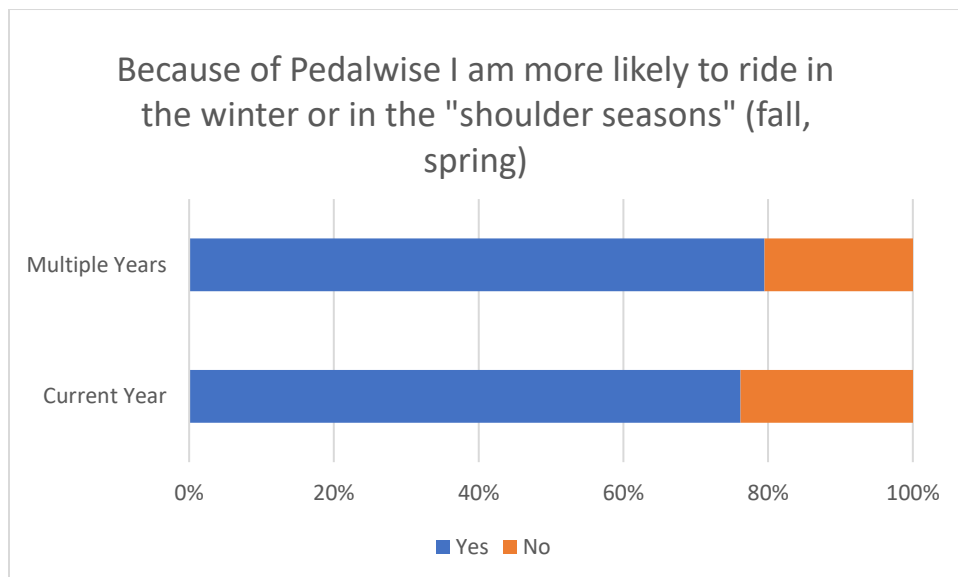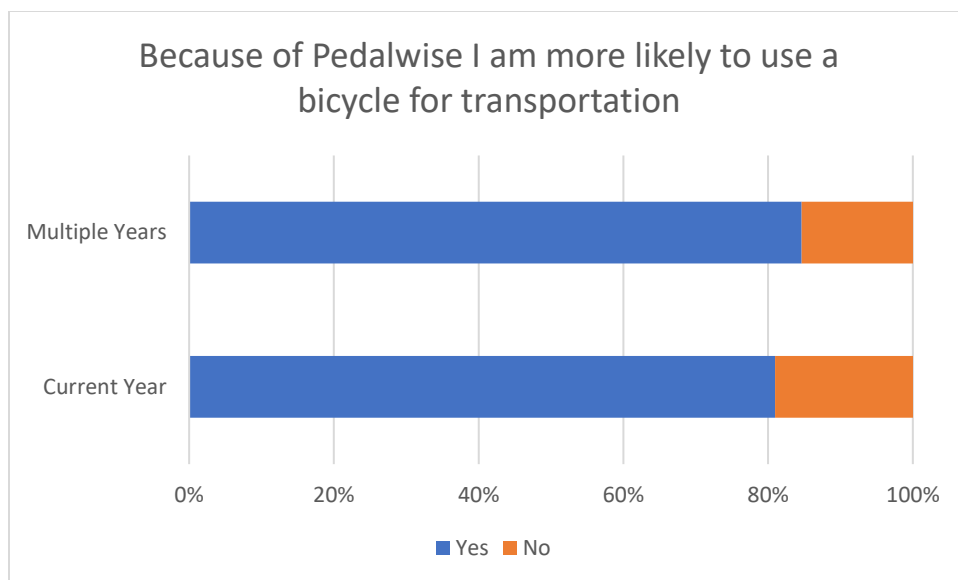
Change in Cycling Distance Strava data

Analysis of the Strava data between 2019 and 2020

Strava data indicates an increase in cycling	Current Year	Multiple Years	Total
Number of protégés reporting in Strava	16	27	43
% of protégés reporting in Strava	27%	31%	29%

% of protégés reporting Strava kilometres increase 2019 to 2020	100%	70%	81%
Average increase in Kilometres reported	369	161	256
Standard deviation in Kilometres reported	589	1,381	1,510
Average total kilometres reported	369	1,842	1,169
% of Protégés in Strava who also borrowed a bike	59%	50%	53%

Forty-four of the 146 protégés (29%) reported at least some of their kilometres in Strava in 2020. This is disappointing as we communicated that Strava reporting is a prerequisite to participation in Pedalwise and we made several attempts to increase compliance during the year.

It was interesting to see that new protégés jumped from zero to an average of 369km in 2020, particularly when considering that 59% of them borrowed a bike from the library to ride those kilometres. There was a large spread in kilometres reported with a standard deviation of 589.

Protégés in the program for more than a year on average showed a much more modest increase of 161km. But that was starting from a much larger base which averaged 1,842km. This indicates protégés continue to increase the distance they travel per time period, the longer they are in the program.

That said, there was a large deviation for the multi-year protégés with some dropping to a much lower number of kilometres in 2020 compared with 2019. Of course, 2020 could not be considered an average year. The pandemic dramatically altered cycling patterns for many of the protégés. The results were affected by the lack of community and group ride opportunities, changes to participants' commuting habits as well as changes to the way that participants adapted to the restrictions.

Change in Cycling Attitudes, Exit Survey
Removed Barriers

Our goal is to remove the perceived barriers that ultimately result in people choosing bikes over cars. Pedalwise had to pivot this year in its consistency with its programming, but Behaviour Change Theory suggests that individuals who had engaged in the Pedalwise program from years prior may continue to experience a reduction of perceived barriers. We wondered whether there was a statistically significant relationship between cyclists who had been involved for multiple years and those new to the Pedalwise program in 2020 and the number of perceived barriers reduced because of engagement with the Pedalwise program. After conducting a Wilcoxon-Mann-Whitney Test, we found that cyclists involved

for multiple years (*M* = 4.18) reported a significantly greater reduction to perceived barriers to cycling than those new to the program this year (*M* = 2.90) (*U* = 640.5, *p* < .05).

Compare Two Independent Samples			
Sample size #1 (Multiple Years)	39	Sample size #2 (Current Year)	21
Mann-Whitney U Test			
U (larger)	568.5000	U	250.5000
W1 Sum of Ranks (series 1)	1,348.5000	W2 Sum of Ranks (series 2)	481.5000
W1 Mean	1,189.5000	W2 Mean	640.5000
Standard Deviation W	63.5395	Multiplicity Factor	6,756.0000
Z	2.4642	p-value	0.0137
Kolmogorov-Smirnov Test			
Maximal Difference	0.3956	p-value	0.0196
Wald-Wolfowitz Runs Test			
Runs count R	8	Z	2.8379
p-value	0.0045		
Rosenbaum Test			
Rosenbaum Q	2	Critical value	#N/A

Additionally, we looked at the relationship between the number of utilitarian cycling behaviours and total barriers reduced by participating in the Pedalwise program. A Kruskal Wallace test for Independence indicated that there was a statistically significant difference between number of reported barriers and engaging in utilitarian cycling behaviour. Those who reported an increase in 4/4 of the utilitarian behaviours were more likely to report a greater number of barriers reduced to cycling behaviour after participating in the Pedalwise program than those who reported 1/4 and 3/4.

Difference in the mean total number of barriers reduced for those who engage in utilitarian cycling behaviours
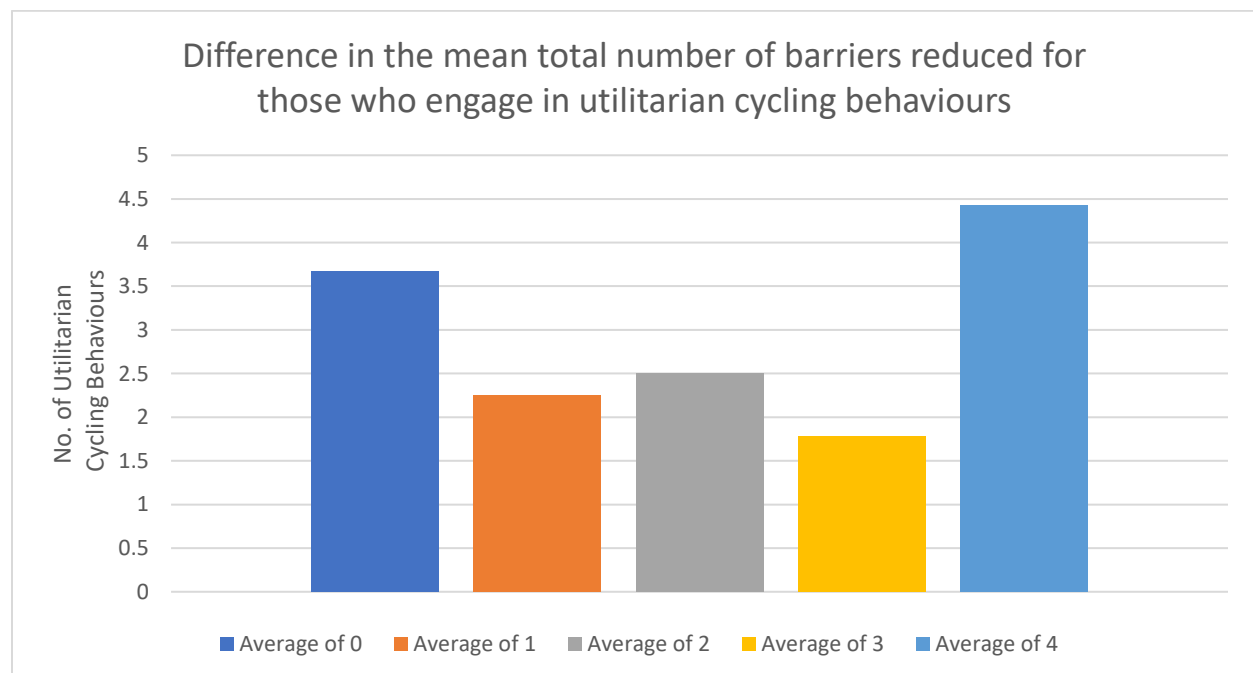
Friends and Family are more supportive of cycling

It is evident that the Pedalwise program positively impacts attitudes of the protégés' friends and family members. Eighty percent of the protégés completing the exit survey reported their friends and family were more supportive of them cycling than before they joined the Pedalwise program. Time in the program is not a significant factor in this shift of attitude.
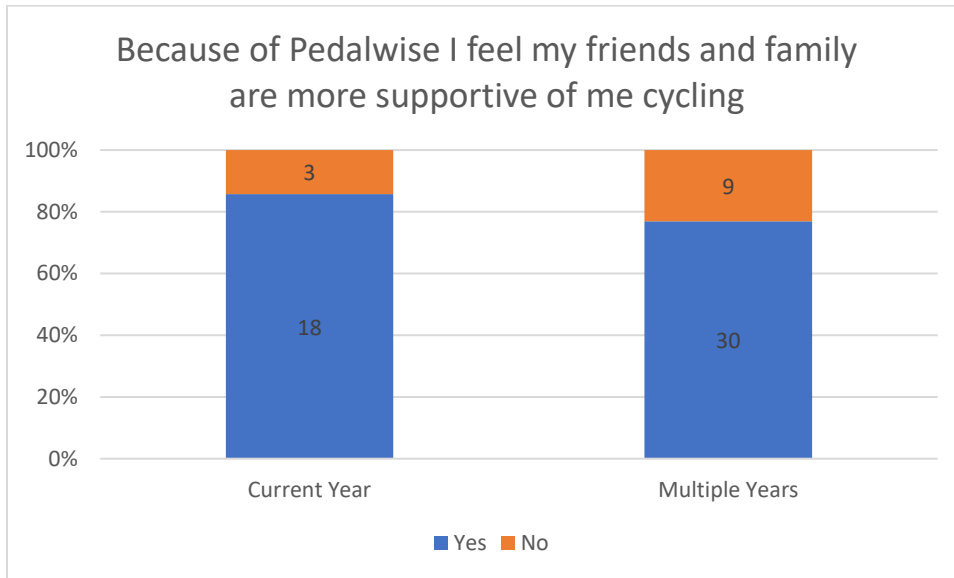
People have built community around cycling

Change in sense of belonging

Eighty-two percent of survey respondents indicated they felt more connected to their community, as a result of participating in Pedalwise.
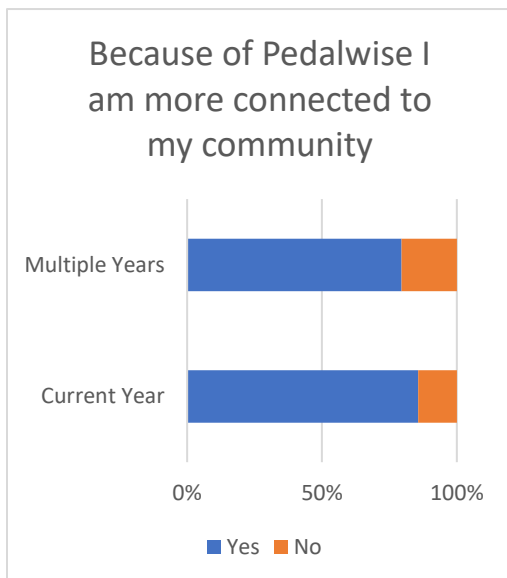
Change in sense of health

Eighty-two percent of survey respondents indicated they felt healthier after participating in the Pedalwise program. There was a statistically significant relationship between reporting feeling healthier and reporting a greater number of barriers reduced to engaging in cycling (Refer to section C, 5. B.).
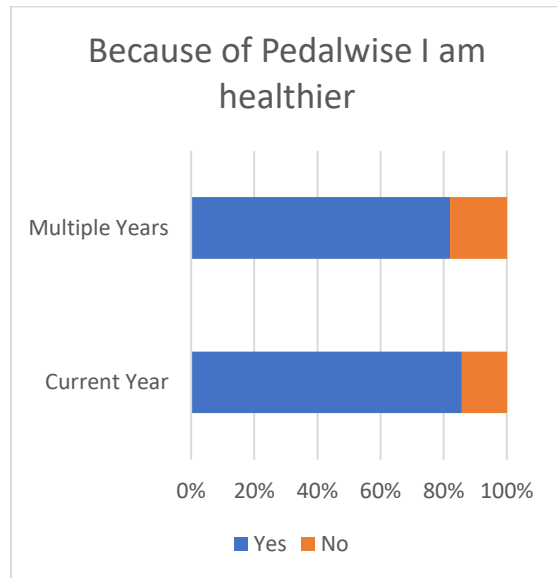
Program Improvement

Exit survey

The majority of Pedalwise participants reported that the program met their expectations. The response average was 4.6 out of 5, with 5 being completely satisfied. The following responses were reported as expectations of the program: Help the environment, improve cycling skills, improve health through exercise, fun, and meeting new people, participation in events, learning bike maintenance, and feeling a sense of community. Of all the expectations, the least cited were participating in events, learn bike maintenance, and feeling sense of community. This is consistent with our expectations, as we did not provide community spaces and bike maintenance workshops due to the COVID-19 lockdown.

In addition, we wanted to determine whether the number of expectations satisfied was dependant on the level of satisfaction after participating in the program. We determined a statistically significant relationship between the number of expectations the Pedalwise program met and Pedalwise satisfaction. Specifically, we found that those who reported a greater number of expectations met, also reported a higher level of satisfaction with the program. Please refer to Appendix C 5. for complete statistical report and analysis.

The Pedalwise Program Met My Expectations

	1 Not at all	2	3	4	5 Absolutely	Average
Current Year	0	0	1	5	15	4.7
Multiple Years	0	1	6	4	28	4.5

Legend: Current Year, Multiple Years

What factors would encourage you to ride your bicycle more often for transportation?

Factor	Current Year	Multiple Years
Nothing stops me	0	1
Bike equipment, reflectors, carriers	0	1
Motorist share the road education	0	1
Security at destinations	1	0
Cross-rides at intersections	3	13
Curb-cuts at path/road intersections	4	19
A better bicycle	12	12
More skills training	6	13
Incentive programs at work	2	13
Bike friendly facilities	3	20
More/better bike parking	6	17
Better way-finding trail signage	7	16
More trails and multi-use paths	10	29
More on-street bike lanes	10	32
Better maintenance of bike infrastructure	8	17
Better route conditions	8	27

Legend: Current Year, Mulitple Years

Not surprisingly the top three factors reported by respondents that would encourage more transportation cycling have to do with infrastructure.

Protégé Survey comments

The vast majority of protégé comments were positive, even for the question, "What, if anything, did you dislike about the Hub or the Pedalwise program?" The chart below categorizes the few critical comments that were submitted.

Category	Details	Recommendation
More group rides and events	Participants understood that COVID restrictions prevented gathering people together. The few comments in this area seemed more an expression of the desire to return to these types of events as soon as possible	Organize group rides and events as COVID-19 restrictions allow.
More contests and challenges	One participant expressed a desire for more contests to motivate people or move existing contest to the summer	We are planning two contest events in 2021
Concerns about mentors	Some protégés expressed concern that their mentors were not present or not helpful.	We continue to focus on mentor recruitment and training. Group events and setting up area chapters should also improve consistency of mentor help.
Choice of library bike limited	Received from one protégé	We are limited in what we can do as we rely on bike donations.

Protégé interviews

We conducted in depth interviews two with survey respondents whose survey scores suggested lower satisfaction with the Bike Hub program. Concerns raised were as follows:

Category	Details	Recommendation
Mentor communication	Mentor did not initiate contact. Protégé blamed themselves for not following up more.	Train mentor to initiate contact and follow-up.

	Would like someone to ride with them to the meetings	Look for opportunities to increase protégé confidence in riding to Bike Hub sessions.
Hub meetings BikeWrx Training	Novices feeling left behind. Felt welcome, "but on the fringe". Training schedule not adhered to. Shouldn't rely on the mentor for all communication about biking skills other than mechanics. Example, route planning, get groceries, bike locking, etc. Need to give permission for local groups to organize themselves to focus on things important to them. New people are intimidated by the language, acronyms used. Creates a barrier to understanding and participation.	Have a structured and unstructured portion of each meeting. Hive off an area for structured instruction. Have discussion topics at each meeting to draw on "collective wisdom" or hold workshops if there is sufficient interest. Set up local Bike Hub chapters Provide organization kits. Divide the roles. Have groups report at BikeBrampton or Hub meeting. Simplify language. Make it clear what activities go on at the Bike Hub vs BikeBrampton meetings.
BikeBrampton Meetings	Too much information presented for those only casually interested. Need to better communicate the importance of policy in helping remove infrastructure related barriers to cycling, (maintenance, signage, etc.)	Separate BikeBrampton meetings from the rest of the group. Have actions from the meeting that everyone can engage in. Example: take these three bike parking options to store owners and encourage them to pick one
Strava recording	Feels foolish if only logging a short ride	Better communication that short rides are important to track

What factors would encourage you to ride your bicycle more often for transportation?

Legend: ■ Current Year ■ Mulitple Years
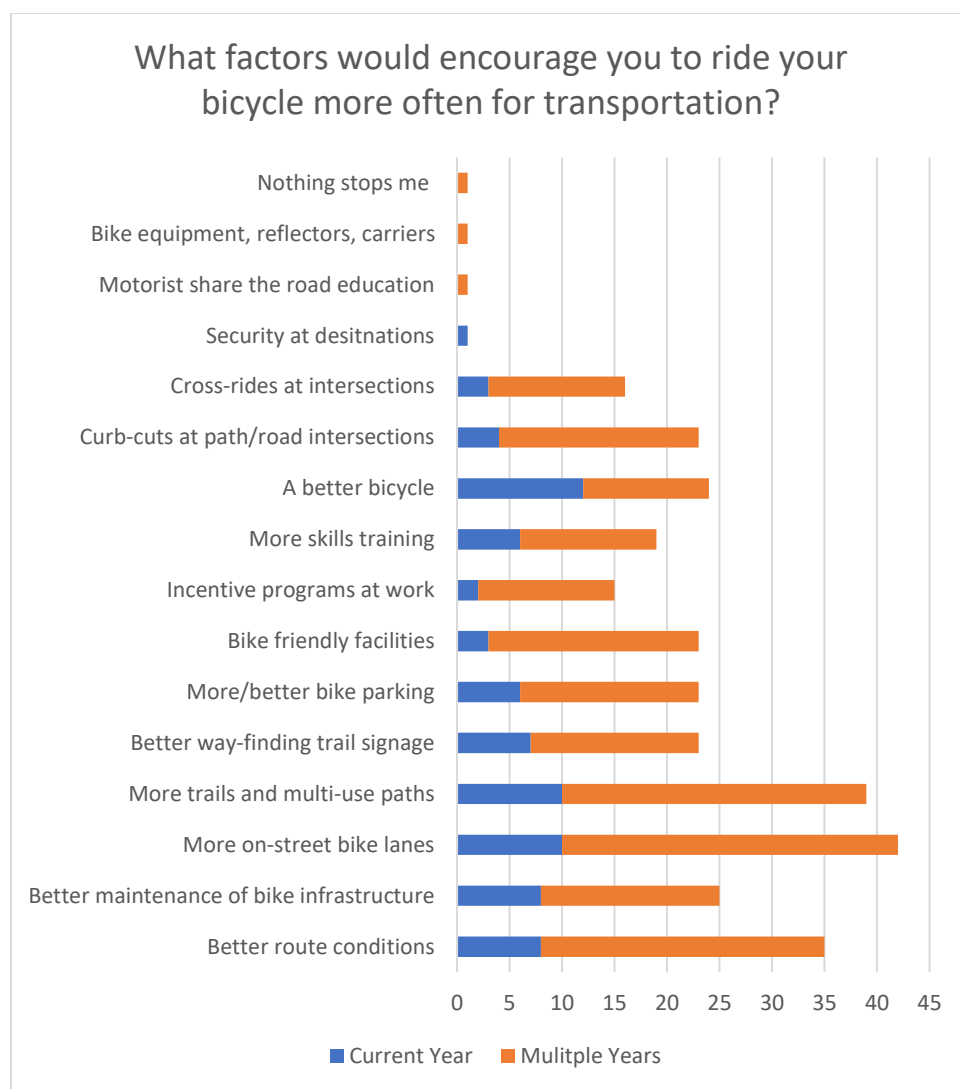
Mentor Feedback Meeting and Interviews

On November 4th we hosted a mentor year end virtual event. Four mentors participated. In addition, we had brief meetings with all 14 of 15 mentors during virtual driveway visits as we handed out year-end thankyou gifts. Feedback highlights.

- Several mentors reported interaction with protégés was much more limited this year. The mentors felt that both they and their protégés were stretched for time due to family and job pressures, exacerbated by the uncertainties of COVID-19.
- Several mentors felt that their new protégés did not want to be mentored, they only wanted to borrow a bike from the library. Several protégés did not respond to requests to meet up.
- Other mentors would not ride with more than one protégé. They felt they couldn't properly control physical distancing. One mentor felt so uncomfortable he wouldn't ride with anyone.
- There were notable exceptions.

- o Steve and his new protégé Thomas rode together practicing a route to Thomas's work. Later that summer, Thomas called on Steve to help him ride a new route when he moved his residence, to Etobicoke! Steve was happy to help.
  - o Wayne helped protégés Ann and Amanda with bike skills even though they said they did not want to sign up to the Pedalwise program.
  - o Yvon felt a great sense of pride at being able to help his new protégé Fatima learn to ride. He said he got as much out of teaching her to ride as she did, learning to ride.
  - o Steve also had great success with his protégé Cindy who has been riding much more since she retired, longer distances and in all kinds of weather.
- Key Takeaways
  - o Recognize that not all mentor protégé relationships will be winners.
  - o There is a statistically significant relationship between mentor satisfaction and frequency of contact, with participants who were rarely contacted reporting a significantly lower level of satisfaction than those who were contacted weekly, monthly, and occasionally (see Appendix C 4 for findings).
  - o This year really cannot be compared to the previous one. Everyone is dealing with COVID-19 in their own way.
  - o We need a more structured approach that will grade and graduate protégés to mentors.
  - o The group mentoring session with two mentors doing skills assessments on a larger number of protégés worked and we should do more of them this coming year.
  - o Encourage mentors to regularly check up on protégés and track them through Strava.

Appendix C

1. Perceived barriers and years involved with Pedalwise.

We wanted to determine whether there was a difference in the number of reduced perceived barriers to cycling for those who have been involved with the Pedalwise program for multiple years *(n* = 39)*,* and new participants in 2020 *(n* = 21)*.* Participants chose from 9 perceived barriers to cycling that they felt their participation in Pedalwise helped eliminate for them. The number of perceived barriers was totaled and regrouped to BRSUM. Scores ranged between 1 to 8 perceived barriers reduced. A Wilcoxon-Mann Whitney Test was performed on BRSUM. The results revealed that a statistically significant difference in the number perceived barriers reduced for those who have been involved with Pedalwise for multiple years (*M* = 4.18, *SD* = 2.02) and those new to the program in 2020 (*M* = 2.86, *SD* = 1.59) (*U* = 250.5, *p* < .05). Specifically, cyclists who have been involved with Pedalwise for multiple years report a significantly greater reduction in perceived barriers for cycling behaviours.

	Multiple Years	Current Year
N	39	21
Mean	4.1795	2.8571
Mean LCL 99%	3.3005	1.8698
Mean UCL 99%	5.0585	3.8445
Variance	4.0985	2.5286
Standard Deviation	2.0245	1.5901
Mean Standard Error	0.3242	0.3470
Coefficient of Variation	0.4844	0.5566
Minimum	1.0000	1.0000
Maximum	8.0000	7.0000
Range	7.0000	6.0000
Median	4.0000	3.0000
Median Error	0.0651	0.0949
Percentile 25% (Q1)	3.0000	1.5000
Percentile 75% (Q3)	6.0000	4.0000
IQR	3.0000	2.5000
Median Absolute Deviation	2.0000	0.0000
Coefficient of Dispersion	0.3910	0.4286
Mean Deviation	1.5963	1.2925
Second Moment	3.9934	2.4082
Third Moment	0.1772	2.6064
Fourth Moment	35.7408	18.4798
Sum	163.0000	60.0000
Sum Standard Error	12.6429	7.2870
Total Sum Squares	837.0000	222.0000
Adjusted Sum Squares	155.7436	50.5714
Trimmed Mean (5%)	4.1439	2.7354
Geometric Mean	3.5589	2.4287
Harmonic Mean	2.8149	2.0304
Mode	4.0000	4.0000
Skewness	0.0222	0.6975
Skewness Standard Error	0.3684	0.4767
Kurtosis	2.2412	3.1866
Kurtosis Standard Error	0.6835	0.8310
Fisher's Skewness G1	0.0231	0.7523
Fisher's Kurtosis G2	-0.6948	0.5909

Normality Tests

Variable #1 (Current Year)

Sample size	21			
Mean	2.8571	Std Dev	1.5901	
Median	0.0000			
Skewness	0.6975	Fisher's Skewness G1	0.7523	
Kurtosis	3.1866			
Kurtosis Excess (-3)	0.1866	Fisher's Kurtosis G2	0.5909	

Test	Test Statistic	p-value	H0 (5%)
Shapiro-Wilk W	0.8946	0.0275	Rejected
Shapiro-Francia	0.8961	0.0310	Rejected
Anderson-Darling	0.7617	0.0399	Rejected
Cramer-von Mises	0.1140	0.0664	Cannot reject
Kolmogorov-Smirnov (Lilliefors)	0.1813	0.0699	Cannot reject
D'Agostino Skewness	1.5240	0.1275	Cannot reject
D'Agostino Kurtosis	0.8100	0.4180	Cannot reject
D'Agostino Omnibus	2.9786	0.2255	Cannot reject
Jarque-Bera	1.7330	0.4204	Cannot reject

Variable #2 (Multiple Years)

Sample size	39			
Mean	4.1795	Std Dev	2.0245	
Median	0.0000			
Skewness	0.0222	Fisher's Skewness G1	0.0231	
Kurtosis	2.2412			
Kurtosis Excess (-3)	-0.7588	Fisher's Kurtosis G2	-0.6948	

Test	Test Statistic	p-value	H0 (5%)
Shapiro-Wilk W	0.9437	0.0507	Cannot reject
Shapiro-Francia	0.9550	0.1096	Cannot reject
Anderson-Darling	0.6832	0.0687	Cannot reject
Cramer-von Mises	0.1030	0.0981	Cannot reject
Kolmogorov-Smirnov (Lilliefors)	0.1313	0.0877	Cannot reject
D'Agostino Skewness	0.0645	0.9485	Cannot reject
D'Agostino Kurtosis	-1.1039	0.2696	Cannot reject
D'Agostino Omnibus	1.2228	0.5426	Cannot reject
Jarque-Bera	0.9389	0.6253	Cannot reject

Sample size #1 (Multiple Years)	39	Sample size #2 (Current Year)	2
Mann-Whitney U Test			
U (larger)	568.5000	U	250.500
W1 Sum of Ranks (series 1)	1,348.5000	W2 Sum of Ranks (series 2)	481.500
W1 Mean	1,189.5000	W2 Mean	640.500
Standard Deviation W	63.5395	Multiplicity Factor	6,756.000
Z	2.4642	p-value	0.013
Kolmogorov-Smirnov Test			
Maximal Difference	0.3956	p-value	0.019
Wald-Wolfowitz Runs Test			
Runs count R	8	Z	2.837
p-value	0.0045		
Rosenbaum Test			
Rosenbaum Q	2	Critical value	#N/

2. Perceived barriers and overall utilitarian cycling behaviour

We wanted to determine whether there was a relationship between Pedalwise's impact on the reduction of barriers to cycling and self-reported utilitarian cycling. Overall utilitarian cycling (UTILCYC) is defined as the total "Yes" responses to the following: shoulder season riding (n = 47), riding more often (n = 54), riding longer (n = 48), and riding for transportation (n = 50). The Kruskal Wallis Test indicated that there was a statistically significant difference between number of reported barriers and engaging in utilitarian cycling behaviour, H(4) = 17.96, p < .01. Results from the Wilcoxon-Mann Whitney post hoc test, using Ryan's procedure, revealed cyclists who reported an increase in 4/4 of the utilitarian behaviours (n = 40, M = 4.43, SD = 1.85) were more likely to report a greater number of barriers reduced to cycling behaviour after participating in the Pedalwise program than who reported 1/4 (n = 4, M = 2.25, SD = 1.5) (U = 28.00, p' < .05) and 3/4 (n = 9, M = 1.77, SD = 1.09) (U = 40, p' = .0003). Surprisingly, cyclists who reported 3/4 utilitarian cycling behaviours scored lower on barriers reduced than those who reported 0/4 (n = 3, M = 3.67, SD = .58) (U = 28.00, p' < .05). Those who reported engaging in 2/4 (n = 4, M = 2.5, SD = 1.94) utilitarian cycling behaviours reported a similar number of barriers reduced by participation in the Pedalwise program than those who reported 0/4 (U = 3.50 p' > .05), 3/4 (U = 21.00 p' > .05), and 1/4 (U = 7.50 p' > .05) utilitarian cycling behaviours. In the future we hope to have more participants in this study to evaluate utilitarian cycling behaviour more robustly with parametric tests and understand this relationship further.

Frequency Tables				
Frequency distribution of BIKETRANSP				
No# of valid cases		60		
BIKETRANSP	*Count*	*Cumulative Count*	*Percent*	*Cumulative Percent*
No	10.	10.	16.6667%	16.6667%
Yes	50.	60.	83.3333%	100.0000%
Total	60.	60.	100.0000%	100.0000%
Frequency distribution of S.S.				
No# of valid cases		60		
S.S.	*Count*	*Cumulative Count*	*Percent*	*Cumulative Percent*
No	13.	13.	21.6667%	21.6667%
Yes	47.	60.	78.3333%	100.0000%
Total	60.	60.	100.0000%	100.0000%
Frequency distribution of R.O.				
No# of valid cases		60		
R.O.	*Count*	*Cumulative Count*	*Percent*	*Cumulative Percent*
No	6.	6.	10.0000%	10.0000%
Yes	54.	60.	90.0000%	100.0000%
Total	60.	60.	100.0000%	100.0000%
Frequency distribution of R.L.				
No# of valid cases		60		
R.L.	*Count*	*Cumulative Count*	*Percent*	*Cumulative Percent*
No	12.	12.	20.0000%	20.0000%
Yes	48.	60.	80.0000%	100.0000%
Total	60.	60.	100.0000%	100.0000%

Difference in the mean total number of barriers reduced for those who engage in utilitarian cycling behaviours

No. of Utilitarian Cycling Behaviours

■ Average of 0 ■ Average of 1 ■ Average of 2 ■ Average of 3 ■ Average of 4
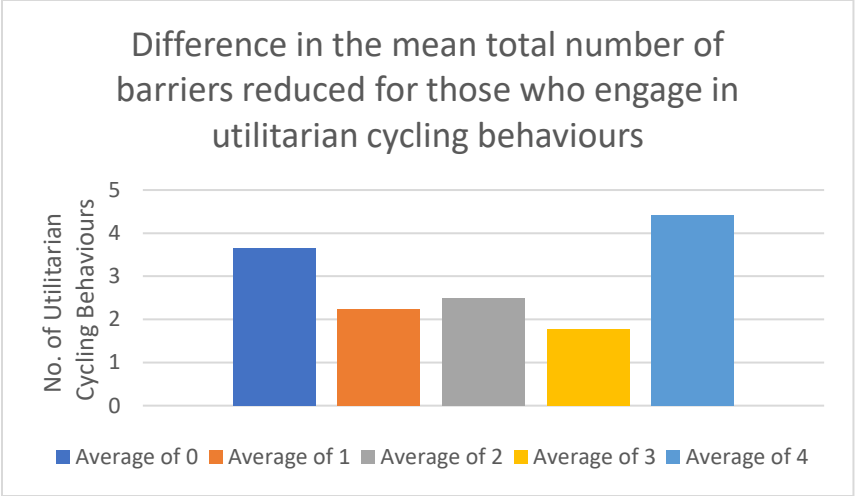
	UTILCYC - 0	UTILCYC - 1	UTILCYC - 2	UTILCYC - 3	UTILCYC - 4
N	3	4	4	9	40
Mean	3.6667	2.2500	2.5000	1.7778	4.4250
Mean LCL 95%	2.2324	-0.1368	-0.5470	0.9377	3.8327
Mean UCL 95%	5.1009	4.6368	5.5470	2.6179	5.0173
Variance	0.3333	2.2500	3.6667	1.1944	3.4301
Standard Deviation	0.5774	1.5000	1.9149	1.0929	1.8521
Mean Standard Error	0.3333	0.7500	0.9574	0.3643	0.2928
Coefficient of Variation	0.1575	0.6667	0.7659	0.6148	0.4185
Minimum	3.0000	1.0000	1.0000	1.0000	1.0000
Maximum	4.0000	4.0000	5.0000	4.0000	8.0000
Range	1.0000	3.0000	4.0000	3.0000	7.0000
Median	4.0000	2.0000	2.0000	1.0000	4.0000
Median Error	0.2412	0.4700	0.6000	0.1522	0.0580
Percentile 25% (Q1)	3.5000	1.0000	1.0000	1.0000	3.0000
Percentile 75% (Q3)	4.0000	3.2500	3.5000	2.0000	6.0000
IQR	0.5000	2.2500	2.5000	1.0000	3.0000
Median Absolute Deviation	0.0000	1.0000	1.0000	2.0000	1.0000
Coefficient of Dispersion	0.0833	0.6250	0.7500	0.7778	0.3563
Mean Deviation	0.4444	1.2500	1.5000	0.8642	1.4888
Second Moment	0.2222	1.6875	2.7500	1.0617	3.3444
Third Moment	-0.0741	0.4688	2.2500	1.1632	0.7342
Fourth Moment	0.0741	3.6445	12.3125	3.1614	25.9198
Sum	11.0000	9.0000	10.0000	16.0000	177.0000
Sum Standard Error	1.0000	3.0000	3.8297	3.2787	11.7135
Total Sum Squares	41.0000	27.0000	36.0000	38.0000	917.0000
Adjusted Sum Squares	0.6667	6.7500	11.0000	9.5556	133.7750
Trimmed Mean (5%)	3.6852	2.2222	2.4444	1.6975	4.4167
Geometric Mean	3.6342	1.8612	1.9680	1.5375	3.9757
Harmonic Mean	3.6000	1.5484	1.5789	1.3671	3.4293
Mode	4.0000	1.0000	1.0000	1.0000	4.0000
Skewness	-0.7071	0.2138	0.4934	1.0633	0.1200
Skewness Standard Error	0.7071	0.7171	0.7171	0.6325	0.3643
Kurtosis	1.5000	1.2798	1.6281	2.8045	2.3174
Kurtosis Standard Error	#N/A	0.5819	0.5819	0.9186	0.6772
Fisher's Skewness G1	-1.7321	0.3704	0.8546	1.2889	0.1248

Compare Multiple Independent Samples						
Sample	Sample size	Mean	Median	Sum of Ranks		
0	3	3.6667	4.0000	91.5		
1	4	2.2500	2.0000	69.		
2	4	2.5000	2.0000	80.5		
3	9	1.7778	1.0000	117.		
4	40	4.4250	4.0000	1,472.		

Kruskal-Wallis ANOVA

H	17.9563	H (corrected)	18.5362	
Degrees of Freedom	4	N	60	
p-value	0.0013			

Median Test

Overall Median	4.0000	Chi-square	17.9000	
p-value	0.0013			

	0	1	2	3	4	Total
<= Median						
observed	3.	4.	3.	9.	23.	42.
excepted	1.5	2.	2.	4.5	20.	
observed-excepted	1.5	2.	1.	4.5	3.	
> Median						
observed	0.	0.	1.	0.	17.	18.
excepted	1.5	2.	2.	4.5	20.	
observed-excepted	-1.5	-2.	-1.	-4.5	-3.	
Total : observed	3	4	4	9	40	60

Ryans Procedure.

	Groups from lowest ot highest ranked							
			1	2	0	3	4	
$\alpha' = \dfrac{2\alpha}{A(r-1)}$	1		r= 2	r=3	r=4	r=5		
	2				r=2	r=3	r=4	
	0					r=2	r=3	
	3						r=2	
	4							

$\alpha'=$	r=	2	$\alpha'=$	0.020		
	r=	3	$\alpha'=$	0.010		
	r=	4	$\alpha'=$	0.007		
	r=	5	$\alpha'=$	0.005		

1	1	2	r=	2	$\alpha'=$	2%		0.020
2	1	0	r=	3	$\alpha'=$	1%		0.010
3	1	3	r=	4	$\alpha'=$	1%		0.007
4	1	4	r=	5	$\alpha'=$	1%		0.005
5	2	0	r=	2	$\alpha'=$	2%		0.020
6	2	3	r=	3	$\alpha'=$	1%		0.010
7	2	4	r=	4	$\alpha'=$	1%		0.007
8	0	3	r=	2	$\alpha'=$	2%		0.020
9	0	4	r=	3	$\alpha'=$	1%		0.010
10	3	4	r=	2	$\alpha'=$	2%		0.020

1

	1		2	α'=	0.0200
Compare Two Independent Samples					
Sample si:	4	Sample si:	4		
Mann-Whitney U Test					
U (larger)	8.5000	U		7.5000	
W1 Sum o	17.5000	W2 Sum o		18.5000	
W1 Mean	18.0000	W2 Mean		18.0000	
Standard L	3.2830	Multiplicity		66.0000	
Z	0.1443	p-value		0.8852	
Kolmogorov-Smirnov Test					
Maximal L	-0.2500	p-value		0.9969	
Wald-Wolfowitz Runs Test					
Runs coun	4	Z		0.1909	
p-value	0.8486				
Rosenbaum Test					
Rosenbau	1	Critical val		#N/A	

2

	1		0	α'=	0.0100
Compare Two Independent Samples					
Sample si:	4	Sample si:	3		
Mann-Whitney U Test					
U (larger)	3.5000	U		8.5000	
W1 Sum o	13.5000	W2 Sum o		14.5000	
W1 Mean	16.0000	W2 Mean		12.0000	
Standard L	2.7710	Multiplicity		18.0000	
Z	0.8839	p-value		0.3768	
Kolmogorov-Smirnov Test					
Maximal L	-0.5000	p-value		0.6160	
Wald-Wolfowitz Runs Test					
Runs coun	3	Z		0.3941	
p-value	0.6935				
Rosenbaum Test					
Rosenbau	2	Critical val		#N/A	

3

	1		3	α'=	0.0067
Compare Two Independent Samples					
Sample si:	4	Sample si:	9		
Mann-Whitney U Test					
U (larger)	15.5000	U		20.5000	
W1 Sum o	30.5000	W2 Sum o		60.5000	
W1 Mean	28.0000	W2 Mean		63.0000	
Standard L	6.0219	Multiplicity		348.0000	
Z	0.3858	p-value		0.6997	
Kolmogorov-Smirnov Test					
Maximal L	0.4167	p-value		0.5921	
Wald-Wolfowitz Runs Test					
Runs coun	4	Z		0.7042	
p-value	0.4813				
Rosenbaum Test					
Rosenbau	0	Critical val		#N/A	

4

	1		4	α'=	0.0050
Compare Two Independent Samples					
Sample si:	4	Sample si:	40		
Mann-Whitney U Test					
U (larger)	132.0000	U		28.0000	
W1 Sum o	38.0000	W2 Sum o		952.0000	
W1 Mean	90.0000	W2 Mean		900.0000	
Standard L	24.0966	Multiplicity		########	
Z	2.1229	p-value		0.0338	
Kolmogorov-Smirnov Test					
Maximal L	-0.4750	p-value		0.2807	
Wald-Wolfowitz Runs Test					
Runs coun	8	Z		-0.1103	
p-value	0.9122				
Rosenbaum Test					
Rosenbau	17	Critical val		#N/A	

5

	2		0	α'=	0.0200
Compare Two Independent Samples					
Sample si:	3	Sample si:	4		
Mann-Whitney U Test					
U (larger)	3.5000	U		8.5000	
W1 Sum o	14.5000	W2 Sum o		13.5000	
W1 Mean	12.0000	W2 Mean		16.0000	
Standard L	2.7710	Multiplicity		18.0000	
Z	0.8839	p-value		0.3768	
Kolmogorov-Smirnov Test					
Maximal L	0.5000	p-value		0.6160	
Wald-Wolfowitz Runs Test					
Runs coun	4	Z		-0.0303	
p-value	0.9758				
Rosenbaum Test					
Rosenbau	1	Critical val		#N/A	

6

	2		3	α'=	0.0100
Compare Two Independent Samples					
Sample si:	4	Sample si:	9		
Mann-Whitney U Test					
U (larger)	14.5000	U		21.5000	
W1 Sum o	31.5000	W2 Sum o		59.5000	
W1 Mean	28.0000	W2 Mean		63.0000	
Standard L	6.0219	Multiplicity		348.0000	
Z	0.5401	p-value		0.5892	
Kolmogorov-Smirnov Test					
Maximal L	0.4167	p-value		0.5921	
Wald-Wolfowitz Runs Test					
Runs coun	5	Z		0.3588	
p-value	0.7198				
Rosenbaum Test					
Rosenbau	1	Critical val		#N/A	

7

	2		4	α'=	0.0067
Compare Two Independent Samples					
Sample size #1 (2)	4	Sample size #2 (4)	40		
Mann-Whitney U Test					
U (larger)	123.0000	U		37.0000	
W1 Sum of Ranks (	47.0000	W2 Sum of Ranks (s		943.0000	
W1 Mean	90.0000	W2 Mean		900.0000	
Standard Deviation	24.1443	Multiplicity Factor		########	
Z	1.7555	p-value		0.0792	
Kolmogorov-Smirnov Test					
Maximal Difference	-0.3250	p-value		0.7483	
Wald-Wolfowitz Runs Test					
Runs count R	8	Z		-0.1103	
p-value	0.9122				
Rosenbaum Test					
Rosenbaum Q	11	Critical value		#N/A	

8

	0		3	α'=	0.0200
Compare Two Independent Samples					
Sample size #1 (0)	3	Sample size #2 (3)	9		
Mann-Whitney U Test					
U (larger)	2.0000	U		25.0000	
W1 Sum of Ranks (series 1)	31.0000	W2 Sum of Ranks (		47.0000	
W1 Mean	19.5000	W2 Mean		58.5000	
Standard Deviation W	5.2211	Multiplicity Factor		138.0000	
Z	2.1264	p-value		0.0335	
Kolmogorov-Smirnov Test					
Maximal Difference	0.7778	p-value		0.0623	
Wald-Wolfowitz Runs Test					
Runs count R	4	Z		0.4179	
p-value	0.6761				
Rosenbaum Test					
Rosenbaum Q	0	Critical value		#N/A	

	9				10		
0	4	$\alpha'=$	0.0100	3	4	$\alpha'=$	0.0200
Compare Two Independent Samples				**Compare Two Independent Samples**			
Sample size #1	3	*Sample size #2*	40	*Sample size #1*	9	*Sample size #2*	40
Mann-Whitney U Test				**Mann-Whitney U Test**			
U (larger)	77.0000	*U*	43.0000	*U (larger)*	320.0000	*U*	40.0000
W1 Sum of Rank	49.0000	*W2 Sum of Rank*	897.0000	*W1 Sum of Rank*	85.0000	*W2 Sum of Rank*	########
W1 Mean	66.0000	*W2 Mean*	880.0000	*W1 Mean*	225.0000	*W2 Mean*	########
Standard Deviation	20.5477	*Multiplicity Factor*	########	*Standard Deviation*	38.1940	*Multiplicity Factor*	########
Z	0.8104	*p-value*	0.4177	*Z*	3.6148	*p-value*	0.0003
Kolmogorov-Smirnov Test				**Kolmogorov-Smirnov Test**			
Maximal Difference	-0.3667	*p-value*	0.7431	*Maximal Difference*	-0.6139	*p-value*	0.0040
Wald-Wolfowitz Runs Test				**Wald-Wolfowitz Runs Test**			
Runs count R	8	*Z*	0.5886	*Runs count R*	8	*Z*	1.7568
p-value	0.5561			*p-value*	0.0790		
Rosenbaum Test				**Rosenbaum Test**			
Rosenbaum Q	17	*Critical value*	#N/A	*Rosenbaum Q*	17	*Critical value*	#N/A

3. Program satisfaction and number of expectations met.

To determine the relationship between Pedalwise program satisfaction (PROGEXP) and number of expectations met by participating in Pedalwise (#EXPMET), responses were divided into three groups (EXPGR). Responses between 0 and 4 expectations met was regrouped into Low (n = 18), responses between 5 and 6 expectations met was regrouped into Mod (n = 22), and responses between 7 and 11 expectations met was regrouped into High (n = 18). The Kruskal Wallis Test indicated a significant main effect for groups, $H(2)$ = 18.11, $p < .001$. Results from the Wilcoxon-Mann Whitney post hoc test, using Ryan's procedure, revealed that those who reported a low (M = 3.78, SD = .94) number of expectations met were more likely to rate their Pedalwise satisfaction as lower than those who reported a high (M = 5, SD = 0.00) (U = 351, $p' < .05$) and moderate (M = 4.82, SD = .40) (U = 369, $p' < .05$) number of expectations met. Cyclists who recorded a moderate and high number of expectations met by the pedalwise program reported similar levels of satisfaction (U = 430, $p' < .05$).

	#EXPMET
N	60
Mean	5.7833
Mean LCL 98%	5.0018
Mean UCL 98%	6.5649
Variance	6.4099
Standard Deviation	2.5318
Mean Standard Error	0.3269
Coefficient of Variation	0.4378
Minimum	1.0000
Maximum	11.0000
Range	10.0000
Median	6.0000
Median Error	0.0529
Percentile 25% (Q1)	4.0000
Percentile 75% (Q3)	7.0000
IQR	3.0000
Median Absolute Deviation	0.5000
Coefficient of Dispersion	0.3306
Mean Deviation	2.0050
Second Moment	6.3031
Third Moment	2.4905
Fourth Moment	91.5309
Sum	347.0000
Sum Standard Error	19.6110
Total Sum Squares	2,385.0000
Adjusted Sum Squares	378.1833
Trimmed Mean (5%)	5.7778
Geometric Mean	5.1285
Harmonic Mean	4.3111
Mode	6.0000
Skewness	0.1574
Skewness Standard Error	0.3035
Kurtosis	2.3039
Kurtosis Standard Error	0.5779
Fisher's Skewness G1	0.1614
Fisher's Kurtosis G2	-0.6507

Frequency Tables

Bin intervals	Left-closed (right open)				

Frequency distribution of #EXPMET (No# of valid cases : 60)

#EXPMET	Count	Cumulative Count	Percent	Cumulative Percent	
1 To 2	2.	2.	0.0333	0.0333	
2 To 3	4.	6.	0.0667	0.1000	Low
3 To 4	7.	13.	0.1167	0.2167	
4 To 5	5.	18.	0.0833	0.3000	
5 To 6	9.	27.	0.1500	0.4500	Mod
6 To 7	13.	40.	0.2167	0.6667	
7 To 8	6.	46.	0.1000	0.7667	
8 To 9	3.	49.	0.0500	0.8167	
9 To 10	4.	53.	0.0667	0.8833	High
10 To 11	6.	59.	0.1000	0.9833	
11 To 12	1.	60.	0.0167	1.0000	

	EXPGR - High	EXPGR - Low	EXPGR - Mod
N	20	18	22
Mean	5.0000	3.7778	4.8182
Mean LCL 98%	5.0000	3.2073	4.6063
Mean UCL 98%	5.0000	4.3482	5.0301
Variance	0.0000	0.8889	0.1558
Standard Deviation	0.0000	0.9428	0.3948
Mean Standard Error	0.0000	0.2222	0.0842
Coefficient of Variation	0.0000	0.2496	0.0819
Minimum	5.0000	2.0000	4.0000
Maximum	5.0000	5.0000	5.0000
Range	0.0000	3.0000	1.0000
Median	5.0000	4.0000	5.0000
Median Error	0.0000	0.0656	0.0225
Percentile 25% (Q1)	5.0000	3.0000	5.0000
Percentile 75% (Q3)	5.0000	4.7500	5.0000
IQR	0.0000	1.7500	0.0000
Median Absolute Deviation	0.0000	0.5000	0.0000
Coefficient of Dispersion	0.0000	0.1944	0.0364
Mean Deviation	0.0000	0.8025	0.2975
Second Moment	0.0000	0.8395	0.1488
Third Moment	0.0000	0.0151	-0.0947
Fourth Moment	0.0000	1.3178	0.0824
Sum	100.0000	68.0000	106.0000
Sum Standard Error	0.0000	4.0000	1.8516
Total Sum Squares	500.0000	272.0000	514.0000
Adjusted Sum Squares	0.0000	15.1111	3.2727
Trimmed Mean (5%)	5.0000	3.8086	4.8535
Geometric Mean	5.0000	3.6616	4.8012
Harmonic Mean	5.0000	3.5410	4.7826
Mode	5.0000	3.0000	5.0000
Skewness	#N/A	0.0196	-1.6499
Skewness Standard Error	0.4858	0.5056	0.4681
Kurtosis	#N/A	1.8698	3.7222
Kurtosis Standard Error	0.8412	0.8618	0.8210
Fisher's Skewness G1	#N/A	0.0214	-1.7732
Fisher's Kurtosis G2	#N/A	-1.0960	1.2496

Variable #3 (Mod)

Sample size	22			
Mean	4.8182	Std Dev	0.3948	
Median	0.0000			
Skewness	-1.6499	Fisher's Skewness G1	-1.7732	
Kurtosis	3.7222			
Kurtosis Excess (-3)	0.7222	Fisher's Kurtosis G2	1.2496	

Test	Test Statistic	p-value	H0 (5%)
Shapiro-Wilk W	0.4736	7.4895E-8	Rejected
Shapiro-Francia	0.4772	6.5393E-7	Rejected
Anderson-Darling	5.9664	0.0000	Rejected
Cramer-von Mises	1.1706	#########	Rejected
Kolmogorov-Smirnov (Lilliefors)	0.4956	0.0000	Rejected
D'Agostino Skewness	3.1647	0.0016	Rejected
D'Agostino Kurtosis	1.3212	0.1864	Cannot reject
D'Agostino Omnibus	11.7612	0.0028	Rejected
Jarque-Bera	10.4596	0.0054	Rejected

Variable #2 (Low)

Sample size	18			
Mean	3.7778	Std Dev	0.9428	
Median	0.0000			
Skewness	0.0196	Fisher's Skewness G1	0.0214	
Kurtosis	1.8698			
Kurtosis Excess (-3)	-1.1302	Fisher's Kurtosis G2	-1.0960	

Test	Test Statistic	p-value	H0 (5%)
Shapiro-Wilk W	0.8588	0.0117	Rejected
Shapiro-Francia	0.8707	0.0202	Rejected
Anderson-Darling	1.1215	0.0045	Rejected
Cramer-von Mises	0.1762	0.0094	Rejected
Kolmogorov-Smirnov (Lilliefors)	0.2397	0.0074	Rejected
D'Agostino Skewness	0.0425	0.9661	Cannot reject
D'Agostino Kurtosis	-1.3525	0.1762	Cannot reject
D'Agostino Omnibus	1.8310	0.4003	Cannot reject
Jarque-Bera	0.9592	0.6190	Cannot reject

Pedalwise Satisfaction levels among participants who scored a high, moderate, and low number of expectations met

Average of Low   Average of Mod   Average of High
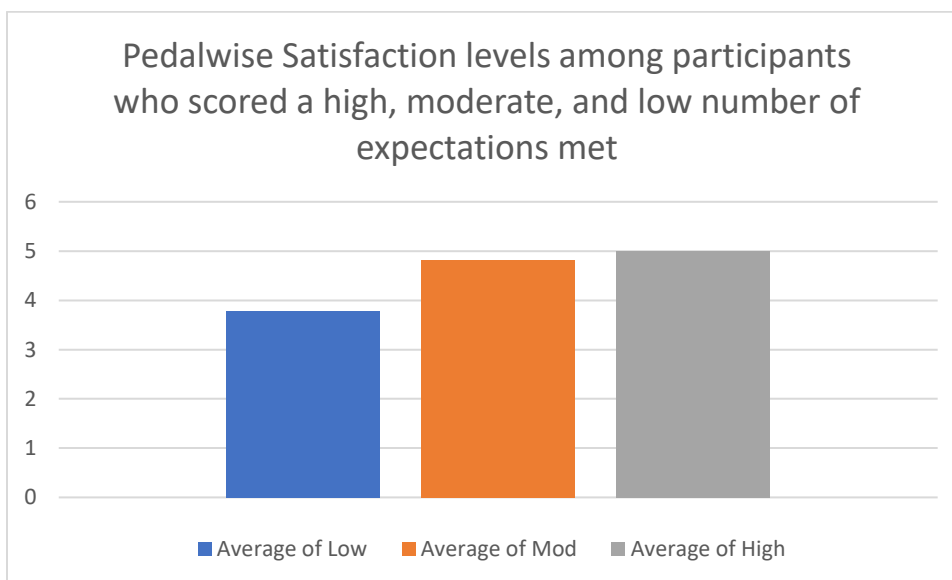
Normality Tests

Variable #1 (High)

Sample size	20			
Mean	5.0000	Std Dev	0.0000	
Median	0.0000			
Skewness	#N/A	Fisher's Skewness G1	#N/A	
Kurtosis	#N/A			
Kurtosis Excess (-3)	#N/A	Fisher's Kurtosis G2	#N/A	

Test	Test Statistic	p-value	H0 (5%)
Shapiro-Wilk W	#N/A	#N/A	(MAX-MIN=0)
Shapiro-Francia	#N/A	#N/A	Std Dev = 0
Anderson-Darling	#N/A	#N/A	Std Dev = 0
Cramer-von Mises	#N/A	#N/A	
Kolmogorov-Smirnov (Lilliefors)	#N/A	#N/A	Std Dev = 0
D'Agostino Skewness	#N/A	#N/A	
D'Agostino Kurtosis	#N/A	#N/A	
D'Agostino Omnibus	#N/A	#N/A	
Jarque-Bera	#N/A	#N/A	#N/A

Compare Multiple Independent Samples

Sample	Sample size	Mean	Median	Sum of Ranks
High	20	5.0000	5.0000	791.5
Low	18	3.7778	4.0000	293.5
Mod	22	4.8182	5.0000	745.

Kruskal-Wallis ANOVA

H	18.1072	H (corrected)	27.7629
Degrees of Freedom	2	N	60
p-value	0.0001		

Median Test

Overall Median	5.0000	Chi-square	60.0000
p-value	0.0000		

	High	Low	Mod	Total
<= Median				
observed	20.	18.	22.	60.
excepted	10.	9.	11.	
observed-excepted	10.	9.	11.	
> Median				
observed	0.	0.	0.	0.
excepted	10.	9.	11.	
observed-excepted	-10.	-9.	-11.	
Total : observed	20	18	22	60

Ryans Procedure.

	Groups from lowest ot highest ranked		
	Low	Mod	High
Low		r= 2	r= 3
Mod			r= 2
High			

$$\alpha' = \frac{2\alpha}{A(r-1)}$$

$\alpha'=$	r=	2	$\alpha'=$	3%
	r=	2	$\alpha'=$	3%
	r=	3	$\alpha'=$	2%

Mod	Low	r=	2	$\alpha'=$	3%
Mod	High	r=	2	$\alpha'=$	3%
Low	High	r=	3	$\alpha'=$	2%

Moderate x Low
Total Num Values: 40
Rank Sum 1: 246.0000
Rank Sum 2: 574.0000

Mean, : 369
St Dev: 36.78315
Test Statistic, z: -3.3439
Critical z: 2.132087

Reject the Null Hypothesis
Data provides evidence that the samples come from populations with medians that are not equal.

Moderate x High
Total Num Values: 42
Rank Sum 1: 470.0000
Rank Sum 2: 433.0000

Mean, : 430
St Dev: 39.70726
Test Statistic, z: 1.0074
Critical z: 2.132087

Fail to Reject the Null Hypothesis
Data does not provide enough evidence to indicate that the samples come from populations with different medians.

High x Low
Total Num Values: 38
Rank Sum 1: 221.0000
Rank Sum 2: 520.0000

Mean, : 351
St Dev: 34.20526
Test Statistic, z: -3.8006
Critical z: 2.38671

Reject the Null Hypothesis
Data provides evidence that the samples come from populations with medians that are not equal.

Critical Values, z: 1.960, and -1.960
Test Statistic, z: -3.344

Critical Values, z: 2.132, and -2.132
Test Statistic, z: 1.007

Critical Values, z: 2.387, and -2.387
Test Statistic, z: 3.801

4. Mentor satisfaction is related to mentor contact frequency.

When planning the mentorship program 2021, we wanted to determine whether mentor rating (MRSUM) was dependent on frequency of contact (MRFREQ). Mentorship contact frequency was measured as being contacted weekly (n = 23), monthly (n = 5), occasionally (n = 9), rarely (n = 5), and never being contacted (n = 3). The Kruskal Wallis Test indicated a significant main effect for groups, $H(4)$ = 16.16, $p < .05$. Results from the Wilcoxon-Mann Whitney post hoc test, using Ryan's procedure, revealed cyclists contacted rarely by mentors (M = 10.60, SD = 2.30) reported mentorship significantly lower than those who were contacted weekly (M = 14.95, SD = .05) (U = 0.00, p' = .0006), occasionally (M = 14.44, SD = .53) (U = .50, $p' < .05$), and monthly (M = 14.00, SD = 5) (U = 3, $p' < .05$). Surprisingly, those who were never (M = 10.00, SD = 25) contacted reported similar mentor ratings to those who were contacted weekly (U = 0.00 p' = .07), monthly (U = 3, p' = .18), and occasionally (U = 6, p' = .17). This may be due to a disproportionately larger number of protégé's being contacted weekly than any

other frequency. We look forward to evaluating this comparison again with a larger number of survey respondents to see if this relationship can be replicated.

Frequency of Mentor Contact
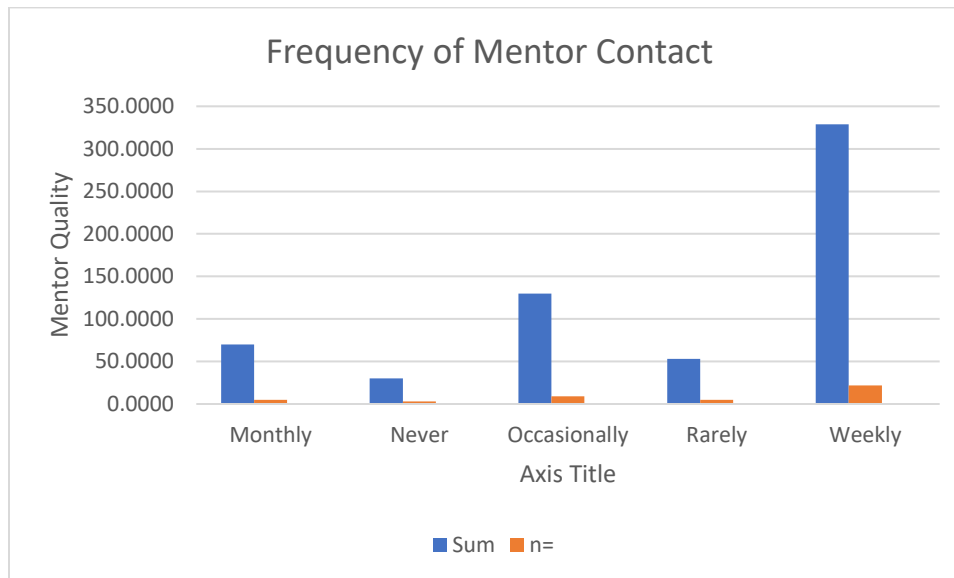
Monthly (14±2.2361)

N	5				
Mean	14.0000	Mean Standard Error	1.0000		
Mean LCL 95%	11.2236	Mean UCL 95%	16.7764		
Trimmed Mean (5%)	14.1667	Geometric Mean	13.8316	Harmonic Mean	13.6364
Median	15.0000	Median Error	0.5605	Mode	15.0000
Standard Deviation	5.0000	Variance	2.2361	Coefficient of Variation	0.1597
Range	5.0000	Minimum	10.0000	Maximum	15.0000
IQR	0.0000	Percentile 25% (Q1)	15.0000	Percentile 75% (Q3)	15.0000
Mean Deviation	1.6000	Median Absolute Deviation	0.0000	Coefficient of Dispersion	0.0667
Sum	70.0000	Sum Standard Error	5.0000		
Total Sum Squares	1,000.0000	Adjusted Sum Squares	20.0000		
Second Moment	4.0000	Third Moment	-12.0000	Fourth Moment	52.0000
Fisher's Skewness G1	-2.2361	Skewness	-1.5000	Skewness Standard Error	0.7071
Fisher's Kurtosis G2	5.0000	Kurtosis	3.2500	Kurtosis Standard Error	0.7500

Never (10±5)

N	3				
Mean	10.0000	Mean Standard Error	2.8868		
Mean LCL 95%	-2.4207	Mean UCL 95%	22.4207		
Trimmed Mean (5%)	10.0000	Geometric Mean	9.0856	Harmonic Mean	8.1818
Median	10.0000	Median Error	2.0889	Mode	#N/A
Standard Deviation	25.0000	Variance	5.0000	Coefficient of Variation	0.5000
Range	10.0000	Minimum	5.0000	Maximum	15.0000
IQR	5.0000	Percentile 25% (Q1)	7.5000	Percentile 75% (Q3)	12.5000
Mean Deviation	3.3333	Median Absolute Deviation	0.0000	Coefficient of Dispersion	0.3333
Sum	30.0000	Sum Standard Error	8.6603		
Total Sum Squares	350.0000	Adjusted Sum Squares	50.0000		
Second Moment	16.6667	Third Moment	0.0000	Fourth Moment	416.6667
Fisher's Skewness G1	0.0000	Skewness	0.0000	Skewness Standard Error	0.7071
Fisher's Kurtosis G2	#N/A	Kurtosis	1.5000	Kurtosis Standard Error	#N/A

Occasionally (14.4444±0.7265)

N	9				
Mean	14.4444	Mean Standard Error	0.2422		
Mean LCL 95%	13.8860	Mean UCL 95%	15.0029		
Trimmed Mean (5%)	14.4938	Geometric Mean	14.4277	Harmonic Mean	14.4106
Median	15.0000	Median Error	0.1012	Mode	15.0000
Standard Deviation	0.5278	Variance	0.7265	Coefficient of Variation	0.0503
Range	2.0000	Minimum	13.0000	Maximum	15.0000
IQR	1.0000	Percentile 25% (Q1)	14.0000	Percentile 75% (Q3)	15.0000
Mean Deviation	0.6173	Median Absolute Deviation	1.0000	Coefficient of Dispersion	0.0370
Sum	130.0000	Sum Standard Error	2.1794		
Total Sum Squares	########	Adjusted Sum Squares	4.2222		
Second Moment	0.4691	Third Moment	-0.2689	Fourth Moment	0.5496
Fisher's Skewness G1	-1.0143	Skewness	-0.8367	Skewness Standard Error	0.6325
Fisher's Kurtosis G2	0.1852	Kurtosis	2.4972	Kurtosis Standard Error	0.9186

Rarely (10.6±1.5166)

N	5				
Mean	10.6000	Mean Standard Error	0.6782		
Mean LCL 95%	8.7169	Mean UCL 95%	12.4831		
Trimmed Mean (5%)	10.5556	Geometric Mean	10.5176	Harmonic Mean	10.4396
Median	10.0000	Median Error	0.3801	Mode	10.0000
Standard Deviation	2.3000	Variance	1.5166	Coefficient of Variation	0.1431
Range	4.0000	Minimum	9.0000	Maximum	13.0000
IQR	1.0000	Percentile 25% (Q1)	10.0000	Percentile 75% (Q3)	11.0000
Mean Deviation	1.1200	Median Absolute Deviation	3.0000	Coefficient of Dispersion	0.1000
Sum	53.0000	Sum Standard Error	3.3912		
Total Sum Squares	571.0000	Adjusted Sum Squares	9.2000		
Second Moment	1.8400	Third Moment	1.8720	Fourth Moment	8.0032
Fisher's Skewness G1	1.1181	Skewness	0.7500	Skewness Standard Error	0.7071
Fisher's Kurtosis G2	1.4556	Kurtosis	2.3639	Kurtosis Standard Error	0.7500

Weekly (14.9545±0.2132)

N	22				
Mean	14.9545	Mean Standard Error	0.0455		
Mean LCL 95%	14.8600	Mean UCL 95%	15.0491		
Trimmed Mean (5%)	15.0000	Geometric Mean	14.9530	Harmonic Mean	14.9515
Median	15.0000	Median Error	0.0121	Mode	15.0000
Standard Deviation	0.0455	Variance	0.2132	Coefficient of Variation	0.0143
Range	1.0000	Minimum	14.0000	Maximum	15.0000
IQR	0.0000	Percentile 25% (Q1)	15.0000	Percentile 75% (Q3)	15.0000
Mean Deviation	0.0868	Median Absolute Deviation	0.0000	Coefficient of Dispersion	0.0030
Sum	329.0000	Sum Standard Error	1.0000		
Total Sum Squares	########	Adjusted Sum Squares	0.9545		
Second Moment	0.0434	Third Moment	-0.0394	Fourth Moment	0.0377
Fisher's Skewness G1	-4.6904	Skewness	-4.3644	Skewness Standard Error	0.4681
Fisher's Kurtosis G2	22.0000	Kurtosis	20.0476	Kurtosis Standard Error	0.8210

Compare Multiple Independent Samples

Sample	Sample size	Mean	Median	um of Ranks
Rarely	5	10.6000	10.0000	26.5
Never	3	10.0000	10.0000	34.
Monthly	5	14.0000	15.0000	118.5
Occasionall	9	14.4444	15.0000	185.5
Weekly	22	14.9545	15.0000	625.5

Kruskal-Wallis ANOVA

H	16.1618	H (correct	23.7064	
Degrees c	4	N	44	
p-value	0.0028			

Median Test

Overall Me	15.0000	Chi-squar	44.0000	
p-value	6.4158E-9			

	Monthly	Never	ccasional	Rarely	Weekly	Total
<= Median						
observed	5.	3.	9.	5.	22.	44.
excepted	2.5	1.5	4.5	2.5	11.	
observed-excepted	2.5	1.5	4.5	2.5	11.	
> Median						
observed	0.	0.	0.	0.	0.	0.
excepted	2.5	1.5	4.5	2.5	11.	
observed-excepted	-2.5	-1.5	-4.5	-2.5	-11.	
Total : obser	5	3	9	5	22	44

Ryans Procedure.

$$\alpha' = \frac{2\alpha}{A(r-1)}$$

		Groups from lowest ot highest ranked				
			Rarely	Never	Montlhy	Occasiona Weekly
		Rarely		r= 2	r=3	r=4	r=5
		Never			r=2	r=3	r=4
		Montlhy				r=2	r=3
		Occasionally					r=2
		Weekly					

α'=	r=	2	α'=	0.020
	r=	3	α'=	0.010
	r=	4	α'=	0.007
	r=	5	α'=	0.005

1	Rarely	Never	r=	2	α'=	2%
2	Rarely	Monthly	r=	3	α'=	1%
3	Rarely	Occasiona	r=	4	α'=	1%
4	Rarely	Weekly	r=	5	α'=	1%
5	Never	Monthly	r=	2	α'=	2%
6	Never	Occasiona	r=	3	α'=	1%
7	Never	Weekly	r=	4	α'=	1%
8	Monthly	Occasiona	r=	2	α'=	2%
9	Monthly	Weekly	r=	3	α'=	1%
10	Occasionally	Weekly	r=	2	α'=	2%

Mann-Whitney U Test

U (larger)	8.0000	U	7.0000	U (larger)	22.0000	U	3.0000
W1 Sum of Ranks (series 1)	23.0000	W2 Sum of Ranks (series 2)	13.0000	W1 Sum of Ranks (series 1)	18.0000	W2 Sum of Ranks (series 2)	37.0000
W1 Mean	22.5000	W2 Mean	13.5000	W1 Mean	27.5000	W2 Mean	27.5000
Standard Deviation W	3.2914	Multiplicity Factor	24.0000	Standard Deviation W	4.6912	Multiplicity Factor	48.0000
Z	0.1491	p-value	0.8815	Z	1.9845	p-value	0.0472

Kolmogorov-Smirnov Test

Maximal Difference	-0.4667	p-value	0.6567	Maximal Difference	-0.8000	p-value	0.0361

Wald-Wolfowitz Runs Test

Runs count R	6	Z	0.3090	Runs count R	5	Z	0.1677
p-value	0.7574			p-value	0.8668		

Rosenbaum Test | **Rosenbaum Test**

Mann-Whitney U Test (top left)

U (larger)	44.5000	U	0.5000
W1 Sum of Ranks (series 1)	15.5000	W2 Sum of Ranks (series 2)	89.5000
W1 Mean	37.5000	W2 Mean	67.5000
Standard Deviation W	7.3848	Multiplicity Factor	96.0000
Z	2.9333	p-value	0.0034

Kolmogorov-Smirnov Test

Maximal Difference	-0.8000	p-value	0.0136

Wald-Wolfowitz Runs Test

Runs count R	6	Z	0.2834
p-value	0.7769		

Rosenbaum Test

Mann-Whitney U Test (top right)

U (larger)	110.0000	U	0.0000
W1 Sum of Ranks (series 1)	15.0000	W2 Sum of Ranks (series 2)	363.0000
W1 Mean	70.0000	W2 Mean	308.0000
Standard Deviation W	12.6426	Multiplicity Factor	7,986.0000
Z	3.4330	p-value	0.0006

Kolmogorov-Smirnov Test

Maximal Difference	-0.8000	p-value	0.0042

Wald-Wolfowitz Runs Test

Runs count R	6	Z	0.8847
p-value	0.3763		

Rosenbaum Test

Mann-Whitney U Test (second left)

U (larger)	12.0000	U	3.0000
W1 Sum of Ranks (series 1)	9.0000	W2 Sum of Ranks (series 2)	27.0000
W1 Mean	13.5000	W2 Mean	22.5000
Standard Deviation W	3.1787	Multiplicity Factor	66.0000
Z	1.3416	p-value	0.1797

Kolmogorov-Smirnov Test

Maximal Difference	-0.4667	p-value	0.6567

Wald-Wolfowitz Runs Test

Runs count R	3	Z	0.5149
p-value	0.6066		

Rosenbaum Test

Mann-Whitney U Test (second right)

U (larger)	21.0000	U	6.0000
W1 Sum of Ranks (series 1)	12.0000	W2 Sum of Ranks (series 2)	66.0000
W1 Mean	19.5000	W2 Mean	58.5000
Standard Deviation W	5.2128	Multiplicity Factor	144.0000
Z	1.3868	p-value	0.1655

Kolmogorov-Smirnov Test

Maximal Difference	-0.3333	p-value	0.9076

Wald-Wolfowitz Runs Test

Runs count R	5	Z	0.0000
p-value	1.0000		

Rosenbaum Test

Mann-Whitney U Test (third left)

U (larger)	55.0000	U	11.0000
W1 Sum of Ranks (series 1)	######	W2 Sum of Ranks (series 2)	17.0000
W1 Mean	######	W2 Mean	39.0000
Standard Deviation W	8.0508	Multiplicity Factor	9,240.0000
Z	1.8397	p-value	0.0658

Kolmogorov-Smirnov Test

Maximal Difference	0.6212	p-value	0.1584

Wald-Wolfowitz Runs Test

Runs count R	4	Z	0.9172
p-value	0.3590		

Rosenbaum Test

Mann-Whitney U Test (third right)

U (larger)	16.5000	U	28.5000
W1 Sum of Ranks (series 1)	43.5000	W2 Sum of Ranks (series 2)	61.5000
W1 Mean	37.5000	W2 Mean	67.5000
Standard Deviation W	6.8426	Multiplicity Factor	######
Z	0.8000	p-value	0.4237

Kolmogorov-Smirnov Test

Maximal Difference	0.3333	p-value	0.7794

Wald-Wolfowitz Runs Test

Runs count R	4	Z	0.8937
p-value	0.3715		

Rosenbaum Test

Bottom left

Monthly	Weekly	α'=	0.0100

Compare Two Independent Samples

Sample size #1 (Monthly)	5	Sample size #2 (Weekly)	22

Mann-Whitney U Test

U (larger)	66.0000	U	44.0000
W1 Sum of Ranks (series 1)	59.0000	W2 Sum of Ranks (series 2)	319.0000
W1 Mean	70.0000	W2 Mean	308.0000
Standard Deviation W	9.4519	Multiplicity Factor	#########
Z	0.6866	p-value	0.4923

Kolmogorov-Smirnov Test

Maximal Difference	-0.6182	p-value	0.0507

Wald-Wolfowitz Runs Test

Runs count R	3	Z	1.8868
p-value	0.0592		

Rosenbaum Test

Rosenbaum Q	1	Critical value	#N/A

Bottom right

Occasionally	Weekly	α'=	0.0200

Compare Two Independent Samples

Sample size #1 (Occasionally)	9	Sample size #2 (Weekly)	22

Mann-Whitney U Test

U (larger)	######	U	56.5000
W1 Sum of Ranks (series 1)	######	W2 Sum of Ranks (series 2)	394.5000
W1 Mean	######	W2 Mean	352.0000
Standard Deviation W	16.3562	Multiplicity Factor	#########
Z	1.8496	p-value	0.0644

Kolmogorov-Smirnov Test

Maximal Difference	-0.6616	p-value	0.0035

Wald-Wolfowitz Runs Test

Runs count R	3	Z	2.2943
p-value	0.0218		

Rosenbaum Test

Rosenbaum Q	1	Critical value	#N/A

5. Number of barriers reduced by cycling program was related to several statistically significant findings.
    a. Shoulder Season Riding
        A Wilcoxon-Mann-Whitney Test indicated a statistically significant difference in the number of perceived barriers reduced from their participation in the Pedalwise program between those who ride in the shoulder season and those who do not (U = 131.00, p = .0017). Cyclists who ride in the shoulder season (n = 47, M = 4.13, SD = 1.94) reported a greater number of barriers reduced after participating in the pedalwise program than cyclists who report not riding in the shoulder season (n = 13, M = 2.23, SD = 1.30).

	Yes	No
N	47	13
Mean	4.1277	2.2308
Mean LCL 95%	3.5579	1.4447
Mean UCL 95%	4.6974	3.0169
Variance	3.7660	1.6923
Standard Deviation	1.9406	1.3009
Mean Standard Error	0.2831	0.3608
Coefficient of Variation	0.4701	0.5832
Minimum	1.0000	1.0000
Maximum	8.0000	4.0000
Range	7.0000	3.0000
Median	4.0000	2.0000
Median Error	0.0517	0.1254
Percentile 25% (Q1)	3.0000	1.0000
Percentile 75% (Q3)	5.0000	3.5000
IQR	2.0000	2.5000
Median Absolute Deviation	2.0000	2.0000
Coefficient of Dispersion	0.3723	0.5769
Mean Deviation	1.5192	1.1716
Second Moment	3.6858	1.5621
Third Moment	1.0119	0.5216
Fourth Moment	30.9099	3.4011
Sum	194.0000	29.0000
Sum Standard Error	13.3041	4.6904
Total Sum Squares	974.0000	85.0000
Adjusted Sum Squares	173.2340	20.3077
Trimmed Mean (5%)	4.0946	2.2009
Geometric Mean	3.5841	1.8715
Harmonic Mean	2.9471	1.5758

Mode	4.0000	1.0000
Skewness	0.1430	0.2672
Skewness Standard Error	0.3391	0.5669
Kurtosis	2.2752	1.3938
Kurtosis Standard Error	0.6372	0.9097
Fisher's Skewness G1	0.1478	0.3034
Fisher's Kurtosis G2	-0.6688	-1.7986

Compare Two Independent Samples			
Sample size #1 (No)	13	Sample size #2 (Yes)	47
Mann-Whitney U Test			
U (larger)	480.0000	U	131.0000
W1 Sum of Ranks (series 1)	222.0000	W2 Sum of Ranks (series 2)	1,608.0000
W1 Mean	396.5000	W2 Mean	1,433.5000
Standard Deviation W	54.8810	Multiplicity Factor	6,756.0000
Z	3.1311	p-value	0.0017
Kolmogorov-Smirnov Test			
Maximal Difference	-0.5401	p-value	0.0029
Wald-Wolfowitz Runs Test			
Runs count R	8	Z	2.4881
p-value	0.0128		
Rosenbaum Test			
Rosenbaum Q	18	Critical value	#N/A

b. Feeling Healthier

A Wilcoxon-Mann-Whitney Test indicated a significant difference in the number of perceived barriers to cycling behaviour reduced from their participation in the Pedalwise program between those who feel healthier (n = 50, M = 4, SD = 1.96) and those who do not (n = 10, M = 2, SD = 1.42) (U = 123.5, p < .05). Cyclists who report feeling healthier also report a greater number of barriers reduced than those who did not report feeling healthier. These findings may not be representative of the larger populations, and we look forward to replicating this finding.

	Yes	No	
N	50	10	
Mean	4.0000	2.3000	
Mean LCL 95%	3.4433	1.2855	
Mean UCL 95%	4.5567	3.3145	
Variance	3.8367	2.0111	
Standard Deviation	1.9588	1.4181	
Mean Standard Error	0.2770	0.4485	
Coefficient of Variation	0.4897	0.6166	
Minimum	1.0000	1.0000	
Maximum	8.0000	4.0000	
Range	7.0000	3.0000	
Median	4.0000	2.0000	
Median Error	0.0491	0.1777	
Percentile 25% (Q1)	2.0000	1.0000	
Percentile 75% (Q3)	5.0000	4.0000	
IQR	3.0000	3.0000	
Median Absolute Deviation	1.5000	1.5000	
Coefficient of Dispersion	0.3800	0.6500	
Mean Deviation	1.5200	1.3000	
Second Moment	3.7600	1.8100	
Third Moment	1.5600	0.4440	
Fourth Moment	31.8400	3.9817	
Sum	200.0000	23.0000	
Sum Standard Error	13.8505	4.4845	
Total Sum Squares	988.0000	71.0000	
Adjusted Sum Squares	188.0000	18.1000	
Trimmed Mean (5%)	3.9556	2.2778	
Geometric Mean	3.4409	1.8882	
Harmonic Mean	2.8120	1.5584	
Mode	4.0000	1.0000	
Skewness	0.2140	0.1823	
Skewness Standard Error	0.3298	0.6145	
Kurtosis	2.2522	1.2154	
Kurtosis Standard Error	0.6219	0.9224	
Fisher's Skewness G1	0.2206	0.2162	
Fisher's Kurtosis G2	-0.6981	-2.1907	

Compare Two Independent Samples			
Sample size #1 (No)	10	Sample size #2 (Yes)	50
Mann-Whitney U Test			
U (larger)	376.5000	U	123.5000
W1 Sum of Ranks (series 1)	178.5000	W2 Sum of Ranks (series 2)	1,651.5000
W1 Mean	305.0000	W2 Mean	1,525.0000
Standard Deviation W	49.6463	Multiplicity Factor	6,756.0000
Z	2.5092	p-value	0.0121
Kolmogorov-Smirnov Test			
Maximal Difference	-0.4800	p-value	0.0279
Wald-Wolfowitz Runs Test			
Runs count R	8	Z	2.1787
p-value	0.0294		
Rosenbaum Test			
Rosenbaum Q	18	Critical value	#N/A