

InterPlan



7719 South Main Street
Midvale, Utah 84047

MEMORANDUM

To: Heinrich Deters, Trails and Open Space PM, Park City Municipal Corp.

From: Kai Tohinaka, InterPlan

Date: October 15, 2015

Subject: **PCMC Sharrow Pilot**

Introduction

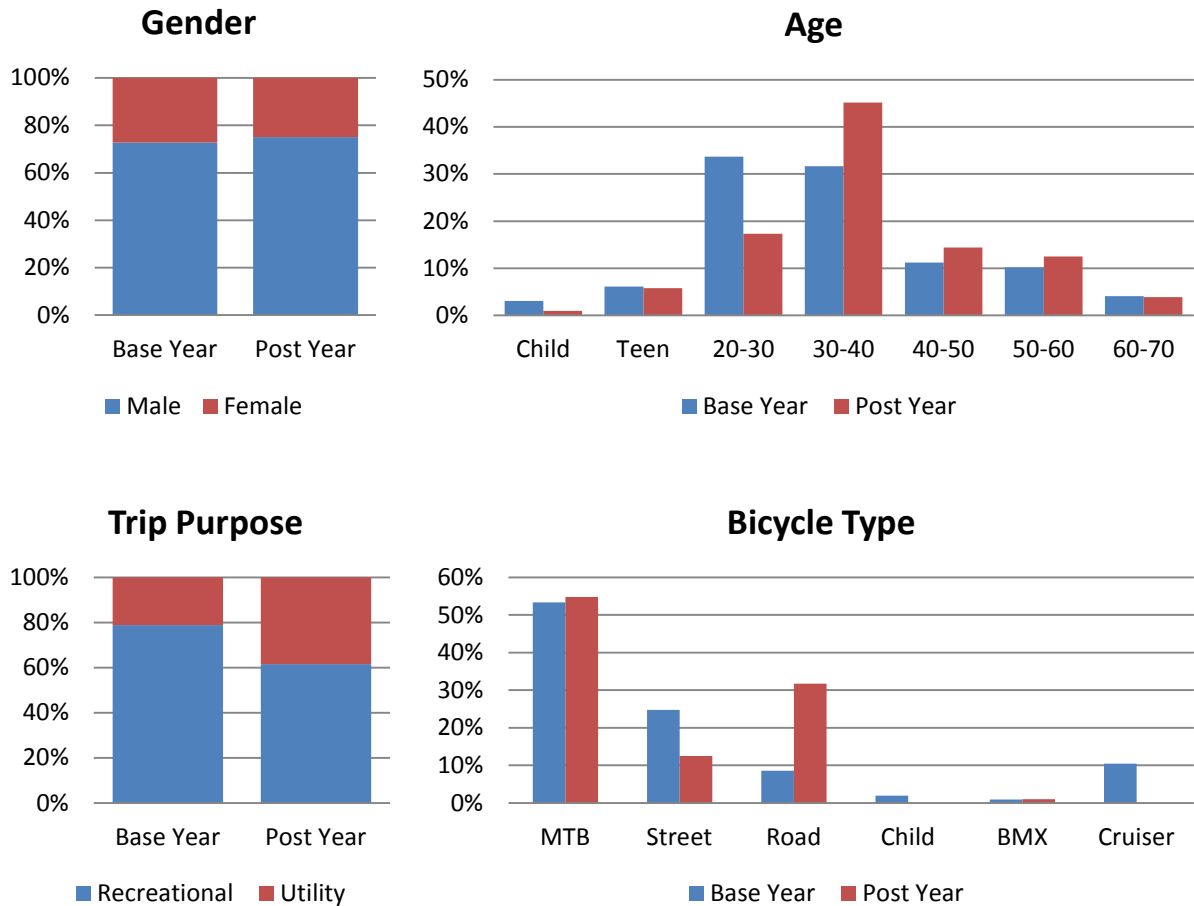
InterPlan was selected to conduct a pilot study of the implementation of Shared Use Lane Markings (Sharrows) on three selected test roads in Park City. With guidance from city staff and the City Council, Park Avenue (Deer Valley Drive to Heber Avenue), Prospector Avenue (Bonanza Drive to Sidewinder Drive), and Sidewinder Drive (Kerns Boulevard to Comstock Drive) were selected. Both Prospector Avenue and Sidewinder Drive meet Park City's Policy for Shared Use Lane Markings, while Park Avenue does not. Park Avenue is too steep and too heavily trafficked, per the policy, and was selected to test the policy's guidance.

Methods

Cyclist observations were collected on September 10, 2014 and September 21, 2015 at 12:00 PM, 3:00 PM, and 5:00 PM for one hour periods along Park Avenue, Prospector Avenue, and Sidewinder Drive. The times were selected with the intention to capture the lunch hour, school closure, and PM peak hour. The dates were selected to allow for pre and post bicyclist observations at similar times of year during optimal weather conditions. Data was collected on travel positioning and cyclist characteristics. Travel position was categorized in one of four positions: travel lane, shoulder, dooring zone, and sidewalk. Data collected on cyclist characteristics was for gender, age, trip purpose, and bicycle type. Additionally, an electric survey was distributed via the city's website to collect cyclist and driver feedback on the new markings.

Cyclist Characteristics

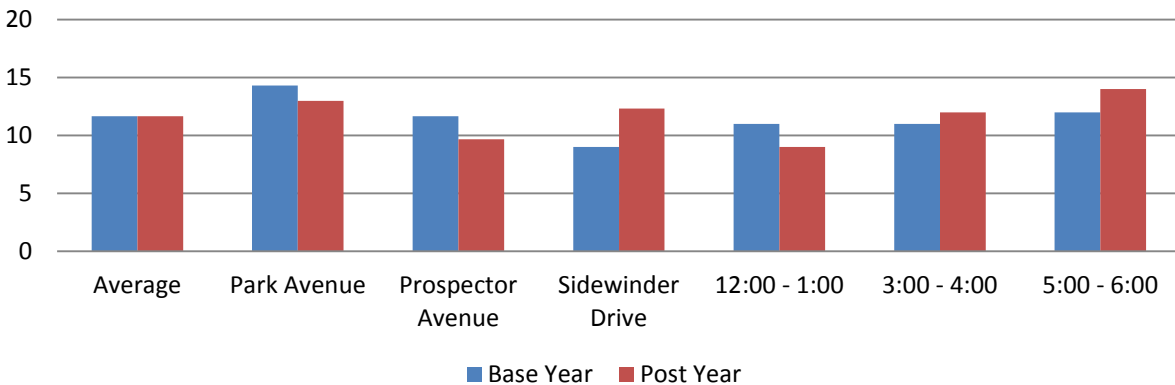
Data collected for cyclist characteristics was observational in nature and was, by and large, assumed. In general, the observations point to an adult male population, which utilize these corridors as a means to get to and from recreational mountain biking destinations. Of the observed, over 70% were male and more than 60% were between 20 and 40 years old. During the 2014 baseline observations, nearly 80% of the trips were observed to be recreational, which decreased to 60% in 2015. Mountain bikes were by far the most common bicycle type, comprising of over 50% of all bikes in both years.



Bicycle Traffic

Bicycle traffic was fairly regular with an average of just over 11 cyclists per hour in both years. Park Avenue had the most traffic in both years, with Sidewinder trading with Prospector for second busiest in 2015. Traffic was highest between 5:00 and 6:00 pm with an average of 12 cyclists per hour in 2014 and 14 cyclists per hour in 2015.

Cyclists per Hour



Road Position

Road positioning is the key factor of success when looking at Sharrow implementation. Although the markings help with wayfinding and automobile awareness, their greatest benefit comes with providing a visual cue to cyclists on where to properly position themselves. These observed road positions are discussed below.

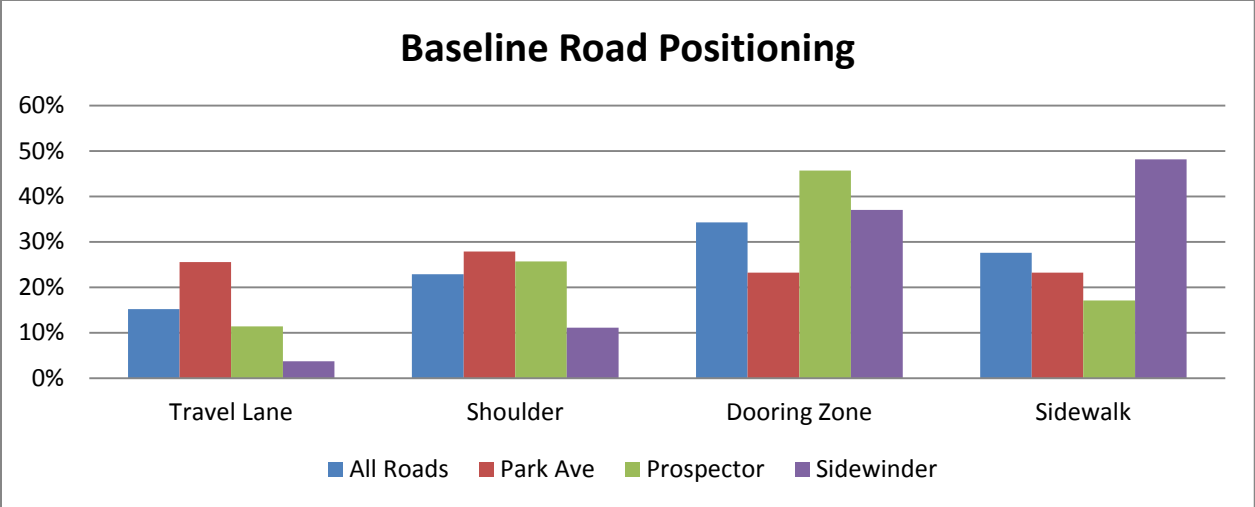
Sidewalk: Riding on the sidewalk is undesirable in a number of ways. It is dangerous for cyclists due to decreased sight distance and reaction time to vehicles in driveways and cross streets. It is also undesirable due to conflicts with, and increased danger to pedestrians, as sidewalks are commonly too narrow to allow passing maneuvers and there is often a high speed differential between pedestrians and cyclists.

Shoulder: This is the most natural place for cyclists to ride when there are no bicycle lanes, but because of the presence of on street parking along these three corridors, riding in the shoulder is not ideal. It forces irregular road positioning with cyclists coming in and out of the shoulder to overcome parked vehicles.

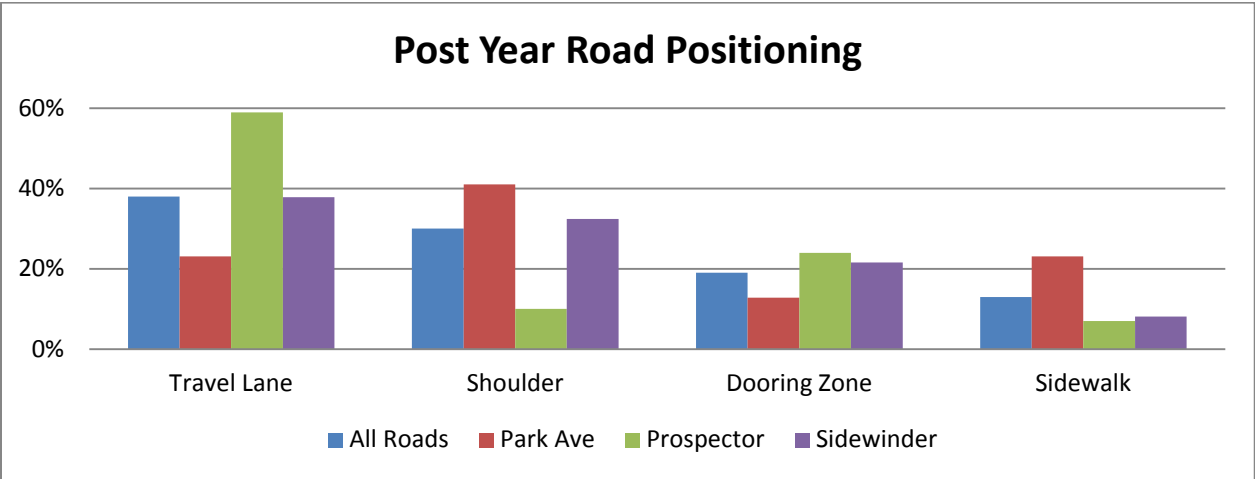
Dooring Zone: The dooring zone is the area directly adjacent to parked vehicles where a cyclist is at risk of being hit by opening doors on the vehicles. This is the least desirable and most dangerous position to be in as a cyclist. This is the default position for cyclists when there are no bike lanes and there are vehicles parked in the shoulder.

Travel Lane: This is the safest and preferred positioning for cyclists on roads with on-street parking and no bike lanes, provided that vehicle speeds and traffic volumes are low enough. This position is often uncomfortable and foreign to most riders, and so marking the lane with a Sharrow can help encourage this behavior.

In the baseline observations, typical riding behavior was observed with most cyclists riding in the dooring zone and on the sidewalk. Overall only 15% of cyclists were in the preferred travel lane position.



The post year observations saw great improvements in lane positioning. Positioning in the dooring zone and on the sidewalk was reduced by more than 50%, while positioning in the travel lanes increased to nearly 40%. This success was slightly tempered by Park Avenue, where positioning in the travel lane actually saw a slight decrease. The other two facilities both saw significant increases in travel lane positioning, highlighted by a near 6 fold increase on Prospector.



The decrease in travel lane positioning on Park Avenue is likely due to the relatively steep grades and higher traffic volumes found there. On roadways with these types of characteristics it is much more intimidating to take the lane as a cyclist, especially in the uphill direction. Although full bike lanes would be preferable on this type of roadway, space limitations exist. If possible, a configuration with one bike lane in the uphill direction and a Sharrow in the downhill direction would be helpful. This would allow the cyclists traveling at slower speeds uphill to have a space away from vehicle traffic, while limiting the space needed for bicycle infrastructure. Even so, the markings on Park Ave in their current state can still be considered a success. Although difficult to measure, the markings alert motorists to the presence of cyclists, empower and prioritize cyclists, and provide wayfinding to cyclists needing to find their way through the city.

Survey

The electronic survey was designed and administered through the Survey Monkey web service and was distributed via the City website. The survey asked the following multiple choice questions for each of the three roadways:

- As a cyclist, how comfortable do you feel riding on the following roads? (Very uncomfortable, Somewhat uncomfortable, somewhat comfortable, Very comfortable)
- As a cyclist, do you feel it is clear what is expected of you while riding along the following roads? (Very unclear, Somewhat unclear, Somewhat clear, Very Clear)
- As a driver, how comfortable do you feel driving along the following roads with cyclists? (Very uncomfortable, Somewhat uncomfortable, somewhat comfortable, Very comfortable)
- As a driver, do you feel it is clear what is expected of you while driving among cyclists on the following roads? (Very unclear, Somewhat unclear, Somewhat clear, Very Clear)

Additionally the survey asked the following two open answer questions:

- Are there additional roads within Park City where additional bicycle facilities such as Sharrows may be appropriate?
- Are there roads where cycling may not be appropriate due to safety concerns, such as speed and volume of traffic?

Although survey data would have been very helpful in supplementing the observational data collected for this study, the survey did not receive enough responses to reach any conclusions.

Conclusion

The findings of this pilot reinforce the need for bicycle infrastructure along these corridors and confirm their effectiveness when applied appropriately. Before the markings were in place, cyclists preferred undesirable road positions in every case, with 62% of riders positioned in these areas. With the markings in place, this number was halved, with proper lane positioning peaking at nearly 60%. This success, however, is limited to Sidewinder Drive and Prospector Avenue, with the markings having little impact on Park Avenue. This reinforces the importance of the policy guiding the proper usage of these markings. People are generally uncomfortable sharing the travel lane with vehicles, and this fact is compounded with the steeper grades and higher traffic volumes found on Park Avenue. To effectively serve cyclists on Park Avenue, which sees the most cyclists of the three facilities, alternative infrastructure should be explored. For facilities that are similar to Sidewinder Drive and Prospector Avenue, and which meet Park City's Policy for Shared Use Markings, this study indicates that the markings positively impact cycling behavior.