MEMO

TO: Bert Granberg
FROM: R. Chamberlin, B. Stabler, M. Bradley
DATE: September 12, 2019
SUBJECT: Micromobility Toolset Workshop Summary and Key Take-Aways

The purpose of this memorandum is to summarize the key findings and take-aways from Micromobility workshop that took place at the WFRC office on September 5, 2019. Workshop attendees are listed on the last page of the memo.

The agenda of the workshop was as follows:

- Introductions/Background – Bert Granberg (30 mins.)
    - What is Micromobility?
    - Project Goals
    - Purpose of Workshop
- Survey of Stakeholders – Robert Chamberlin (30 mins.)
- Ideas, Concepts and a National Scan – Mark Bradley (30 mins.)
- Break (15 mins.)
- What Data is Out There? – Robert Chamberlin (30 mins.)
- Other Examples – Ben Stabler (15 mins.)
- Facilitated Discussion on Software Requirements -- Ben Stabler (45 mins.)
- Wrap Up—Comments and Observations on Next Steps (RSG, All)

PROJECT BACKGROUND AND GOALS

Bert provided project background which included references to prior studies including the Utah Active Transportation Benefits Study, UCATS and the recent UDOT Multimodal Network Connectivity grant from FHWA. Data availability including GIS and count resources is also increasing.

The Micromobility Toolset project has four key goals:

- Plan and produce a shared toolset that makes use of growing data to improve understanding of current AT landscape and opportunities
- Support prioritization & decision-making for AT infrastructure

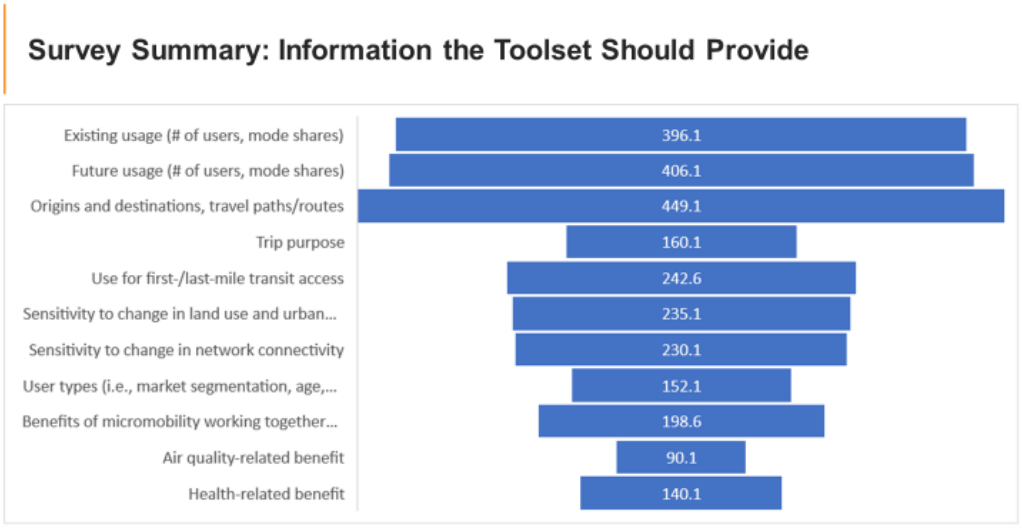
- Better accounting for micromobility travel modes and urban form in regional travel modeling
- Enhanced interagency coordination of AT data collection and applications.

SURVEY OF STAKEHOLDERS

Key takeaways from the stakeholder survey include:

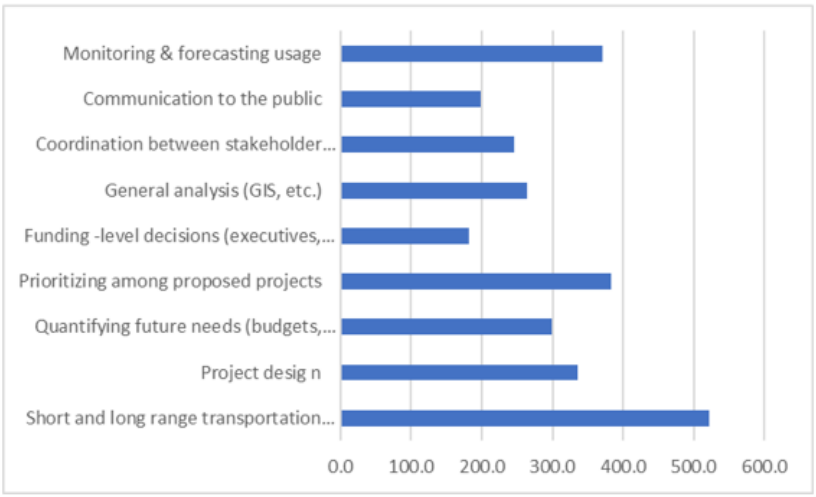
Toolset should provide micromobility demand estimates/forecast to assist with:

- Project prioritization
- First mile/last mile transit analysis
- Understanding network- and land use-related impacts



Toolset should primarily be applied for short- and long-range transportation planning, including prioritization and identifying network gaps and future needs.

Survey Summary: Application Areas the Toolset Should Address



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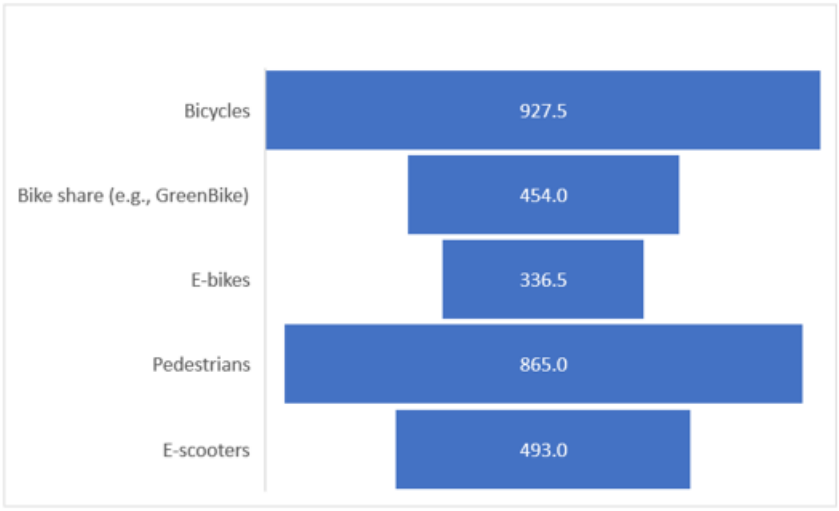
Toolset should first address bicycle demand. Pedestrian was a strong second.

Survey Summary: Modes the Toolset Should Address



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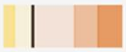
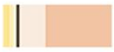
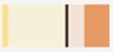
Other modes such as ebike, GreenBike, escooter “fit” within the bike mode.

Toolset will be most useful in corridor and small, zone-based analysis.

Item	Overall Rank	Rank Distribution	Score
Corridors (user defined)	1		123
Transportation Analysis Zones (consistent with the Wasatch Front Travel Model)	2		103
Neighborhoods (user defined)	3		100
Cities	4		85
Counties	5		61
Multiple Counties (Regions)	6		43
Other (please specify in comments)	7		6

IDEAS, CONCEPTS AND A NATIONAL SCAN

Key variables in Micromobility Infrastructure for bike and walk are shown below:

Bike

- Class I bike paths
- Class II bike lanes
- Bike boulevards
- Other types of bike lines?
- Bike path/lane width
- Type of physical separation
- “Sharrows” / lane markings
- Bike route signage
- Bike boxes at intersections
- Bike-specific traffic signals

- One-way vs. two-way traffic
- Dangerous/stressful “gauntlets”
- Number, width of auto lanes
- Availability/type of bike parking

Walk

- Sidewalk coverage
- Sidewalk width
- Width of road crossings
- Presence of crosswalks
- Crosswalk markings
- Crosswalk/safety signage
- Flashing pedestrian beacons
- Median islands
- Signal timings for pedestrians
- Traffic speed limits
- Mixed use of sidewalks (bikes, scooters, skateboards, etc.) >>>
- Enforcement of traffic laws (how people use the infrastructure)

Some factors influence both modes:

- Street pattern and density (grid vs cul de sacs, etc.)
- Grade and elevation change
- Presence of street trees
- Other landscaping
- Physical barriers (rivers, freeways, railroads, airports, military bases)
- Pedestrian plazas and paths
- Spacing/attractiveness of transit stops
- Street furniture and art
- Building setbacks / footprints
- Building heights
- Land use density
- Land use mix, preferably balanced mixes of residential, retail, service, food, office, parks and schools

Micromobility Modeling Options

Modeling options include Trip-based models, activity-based models (AMB) and direct demand models. Practical models benefit from greater spatial detail:

- Use of smaller zones and/or a separate “microzone” system (e.g. Census blocks)
- Use of an all-streets network with bicycle and pedestrian infrastructure coded.
- Use of buffered measures of key land use variables (mixed use measures, densities of various land uses, open space measures, etc.)

MICROMOBILITY DATA IN THE REGION

There are several parts to the micromobility data situation in the WF region:

- Multimodal Network Connectivity
- STRAVA
- Bicycle Counts Existing and Future
- E-Scooters (Lime)
- Household Diary Survey (2012 & Future)
- Big Data

Multimodal Network Connectivity

This is a GIS network dataset for bike and pedestrian travel, including pathways, bike facilities, speed limits and number of through lanes. Other metrics include:

- % street miles w/ designated bicycle facilities (hex grid)
- Intersection density (street connectivity)
- Micromobility travelsheds (accessibility to jobs/amenities)
- Level of stress routes(% of shortest route)

STRAVA

UDOT has a subscription to the STRAVA data product, which provides GIS traces and origin-destination estimates of users of the STRAVA smartphone app. STRAVA data have been used to understand bicycling patterns, where the data can be classified as having a commuter, recreational or a mixed tendency. STRAVA data have also been used to warrant pedestrian/bicycle crossing facilities on high traffic roadways in Utah.

There is a broad range of STRAVA penetration rates, as indicated by bicycle counter data on the Murdock Canal Trail in Utah County, where STRAVA usage ranges between 1-11% of actual bicycle usage.

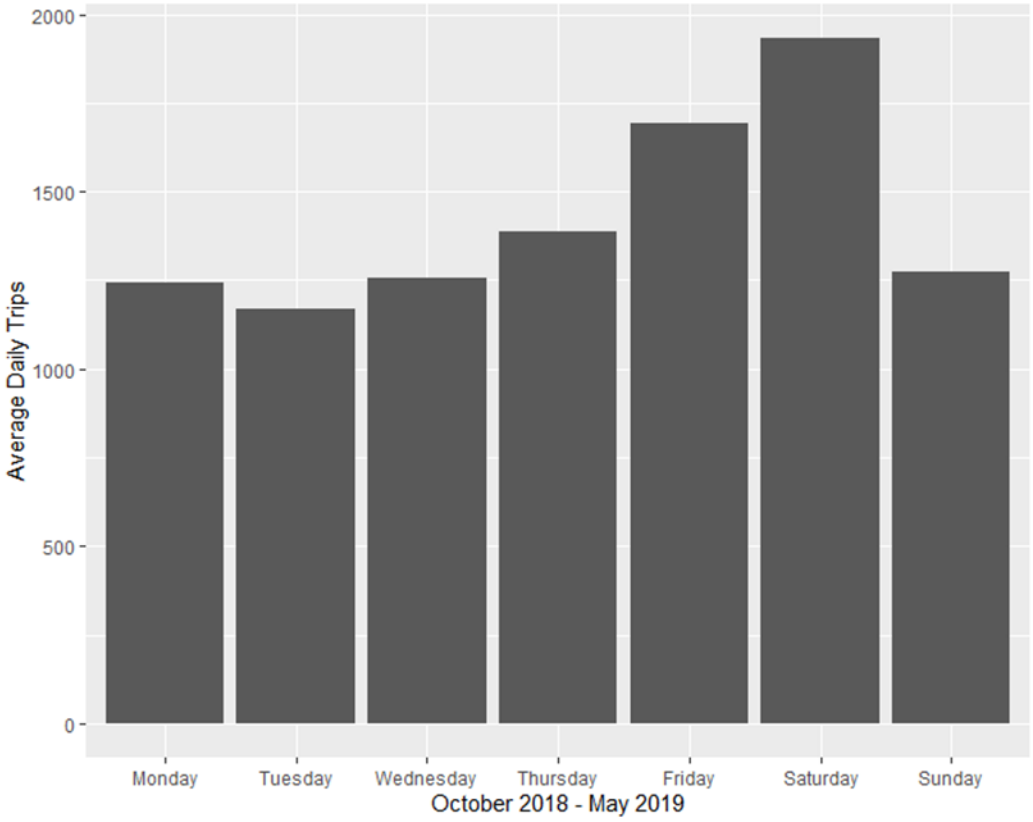
Bicycle Counts

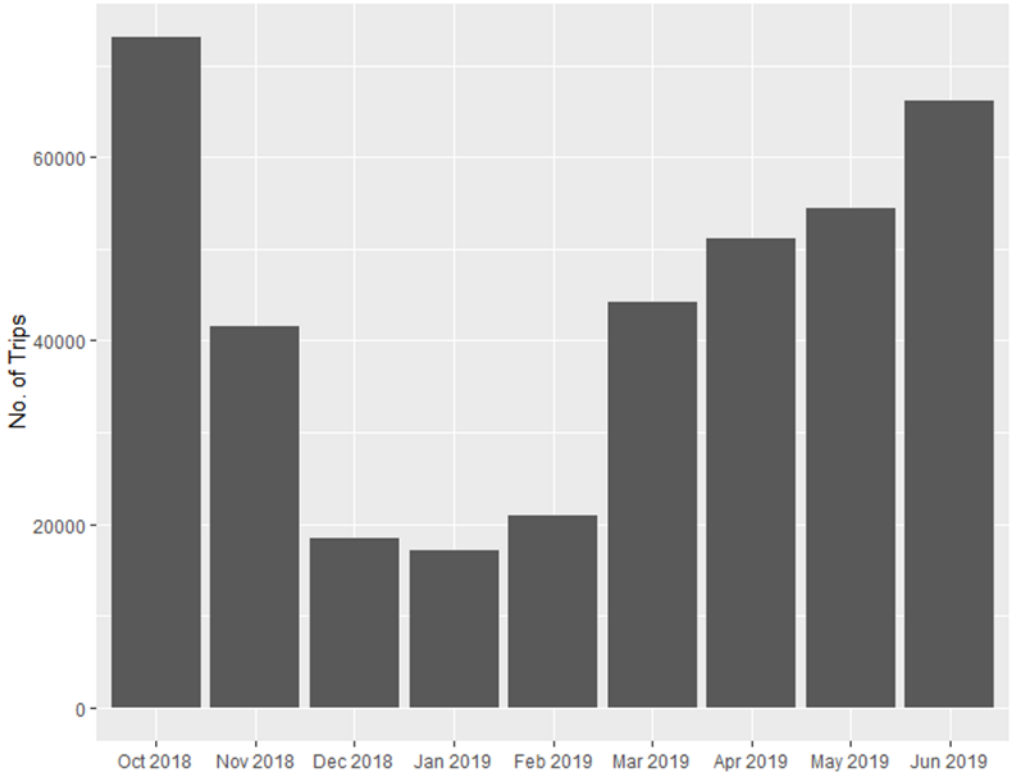
Currently there are 5 bicycle count sites in Salt Lake City, all of which are on multiuse paths. WFRC has made a grant to Salt Lake County to purchase and install approximately 18 additional counters, which will be a mix of trail counters (7) and on-street counters (11). In addition, portable counters will be obtained enabling short-duration counts to be scheduled.

There are approximately 20 bicycle counters deployed in Utah County, primarily along the Murdock Canal Trail, but with a more recent installations on State Street in Orem.

Lime Scooter Data

The e-scooter company, Lime, has made ridership data available to UDOT for analysis for the October 2018 to June 2019 time period. The following charts show monthly usage and average daily usage over that period:





An analysis of trip origins associated within 500 feet of a UTA transit stop (bus, light rail and commuter rail) and within 5 minutes of a scheduled arrival indicates that a high of 50% of origins, amounting to approximately 11,000 AM scooter trips and 34,000 PM scooter trips (over the 8-month period) are potentially associated with transit vehicle arrivals. This information is preliminary and will be validated against actual AVL data.

Household Travel Surveys

The 2012 Utah household travel survey included a special section on bicycle and pedestrian trips. A recent smartphone-based survey utilizing the rMove technology conducted in Park City found a much higher share of active transportation (bicycle and walking) trips in 2019 when compared to the 2012 data. This is due to the smartphone app tracking the respondents movements

Big Data

Use of “Big Data” for obtaining information on micromobility is in its infancy. Currently, big data is biased toward longer trips due to the irregular and sometimes infrequent sampling rate of smartphone apps with Location-Based Services.

FACILITATED DISCUSSION ON SOFTWARE REQUIREMENTS

Key aspects of the Micromobility Toolset were discussed and identified during a facilitated discussion.

Network:

There was consensus that the Multimodal Network (MMN) would be a base network for the toolset. In addition, the MMN would have substantial overlap with the network of the Wasatch Front Travel Demand Model and therefore there is a desire to closely link the Micromobility Toolset with the Travel Model.

Land Use Data:

The existence of parcel-based data due to the maintenance of the REM model provides a great source of highly detailed land use data that the Micromobility toolset can use for estimating demand.

Implementation:

There was general agreement that implementing the toolset within an ArcGIS framework utilizing modeling procedures implemented in ArcPy and python. The ArcGIS context would give the user the typical set of geographic tools for buffering and determining a geographic analysis area. Requiring a network analyst license is acceptable. Using additional open source mature Python libraries like pandanas and geopandas is possible as well.

Integration with the travel demand model was strongly supported, with data flow between the two model sets including networks, land use data, and matrices if needed. Data from the toolset back to the TDM could include intrazonal trips.

Data functionality was discussed with an eye toward tool and data maintenance. For example, transit stops could be supported within the ArcMap tool to contain stop-level data such as headways and transit fare cost since a transit lines management system is not present in traditional GIS tools.

There was interest in a potential implementation of the web-based Conveyal tool as well.

NEXT STEPS

The project team will proceed to document the needs and potential solutions with an eye toward recommending a draft set of solutions to the stakeholders in the October/November time frame. A final selection will be done in collaboration with WFRC and the project stakeholders.

A deliverable of this first phase is a work plan for the selected solution, including:

- Software Specifications

- Geographic resolution
- Input data requirements
- Analytical methods
- Software implementation and maintenance

Workshop Attendees:

Bert Granberg, WFRC
Chad Worthen, WFRC
High Van Wagenen, WFRC
Matt Silski, WFRC
Susie Swim, WFRC
Andy Li, WFRC
Ted Knowlton, WFRC
Julie Bjornstad, WFRC
Nicole Proulx, WFRC
Tim Hereth, MAG
Jim Price, MAG
Joe Taylor, UTA
Heidi Goedhart, UDOT
Mark Bradley, RSG
Ben Stabler, RSG
Nima Haghighi, RSG
Robert Chamberlin, RSG