DRCOG Active Transportation

Bicycle Facility Inventory and Micromobility

Presented by:

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March 27, 2019

Agenda

- Active Transportation Plan
- Stakeholder Input
- Bicycle Facility Data
- Micromobility

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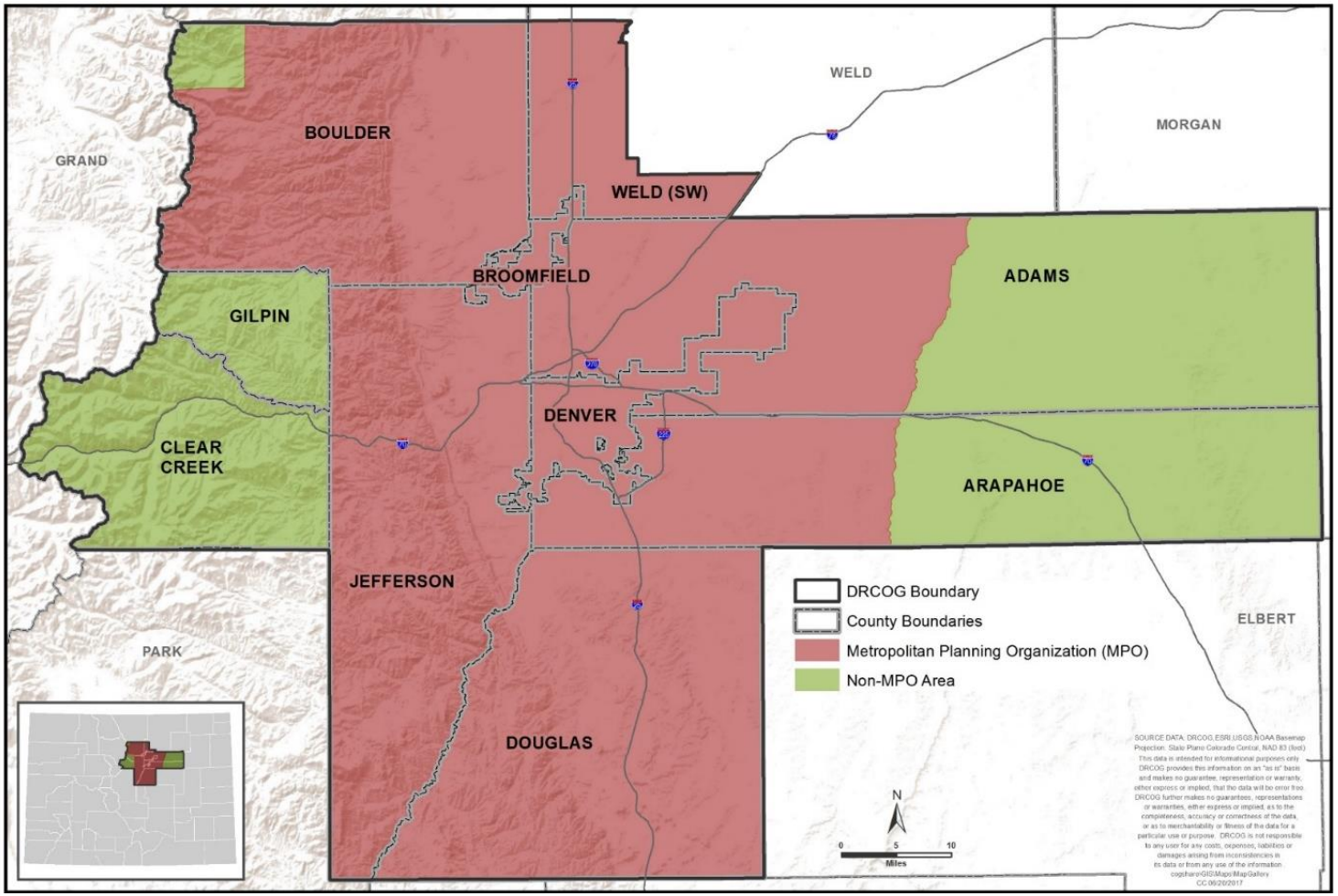
DRCOG Planning Area



Today

3.1 million people

1.7 million jobs

2040

4.3 million people

2.4 million jobs

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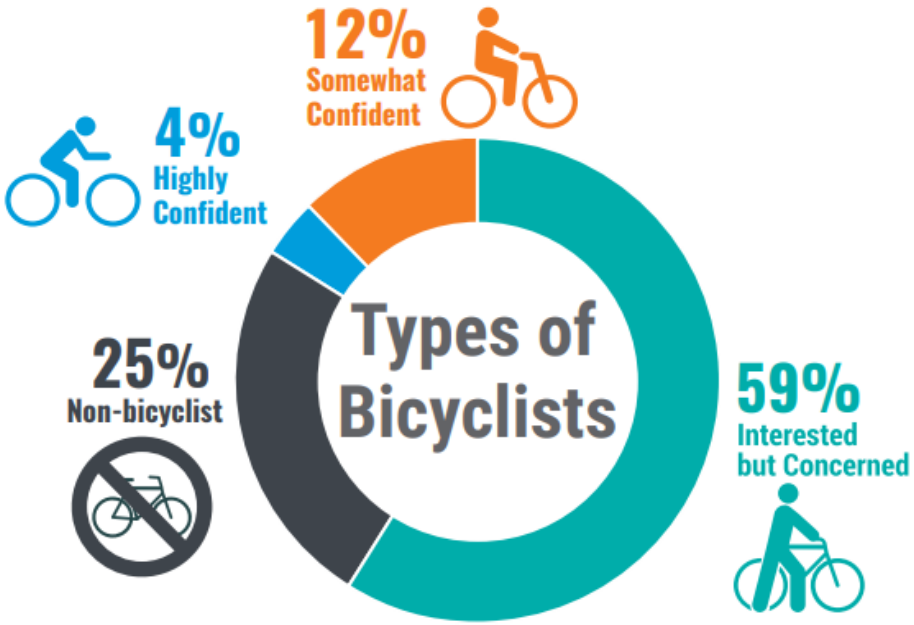
Active Transportation Plan – Who are we planning for?



Highly Confident bicyclists are willing to ride on almost any type of street.

Somewhat Confident bicyclists will ride on most streets, but prefer trails or streets with bicycle infrastructure.

Interested but Concerned bicyclists would like to ride but are concerned about safety.

Non-bicyclists do not currently ride bicycles and are not interested.

Source: National Research Center. Survey of Residents about Active Transportation: Report of Results. 2018.

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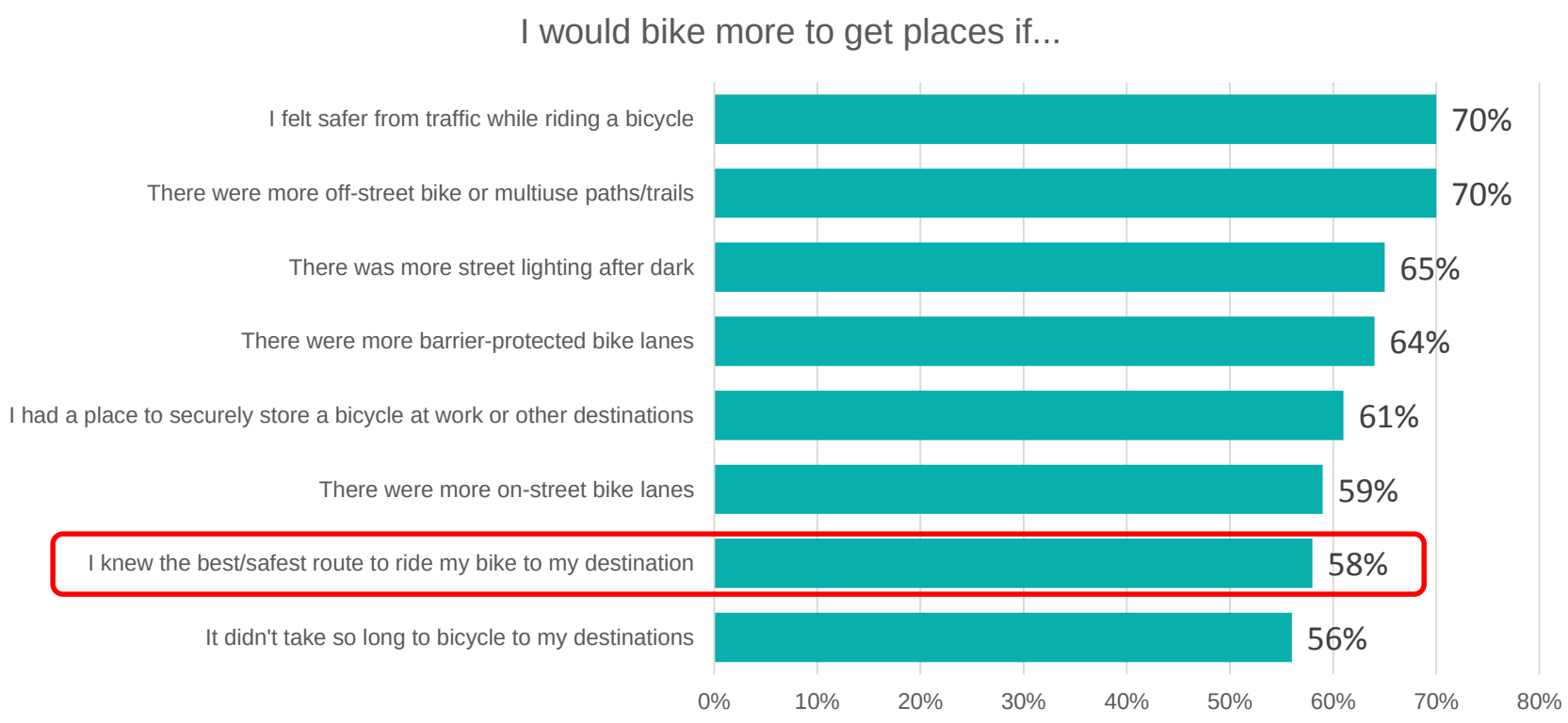
Bicycle facility types

Resident Survey



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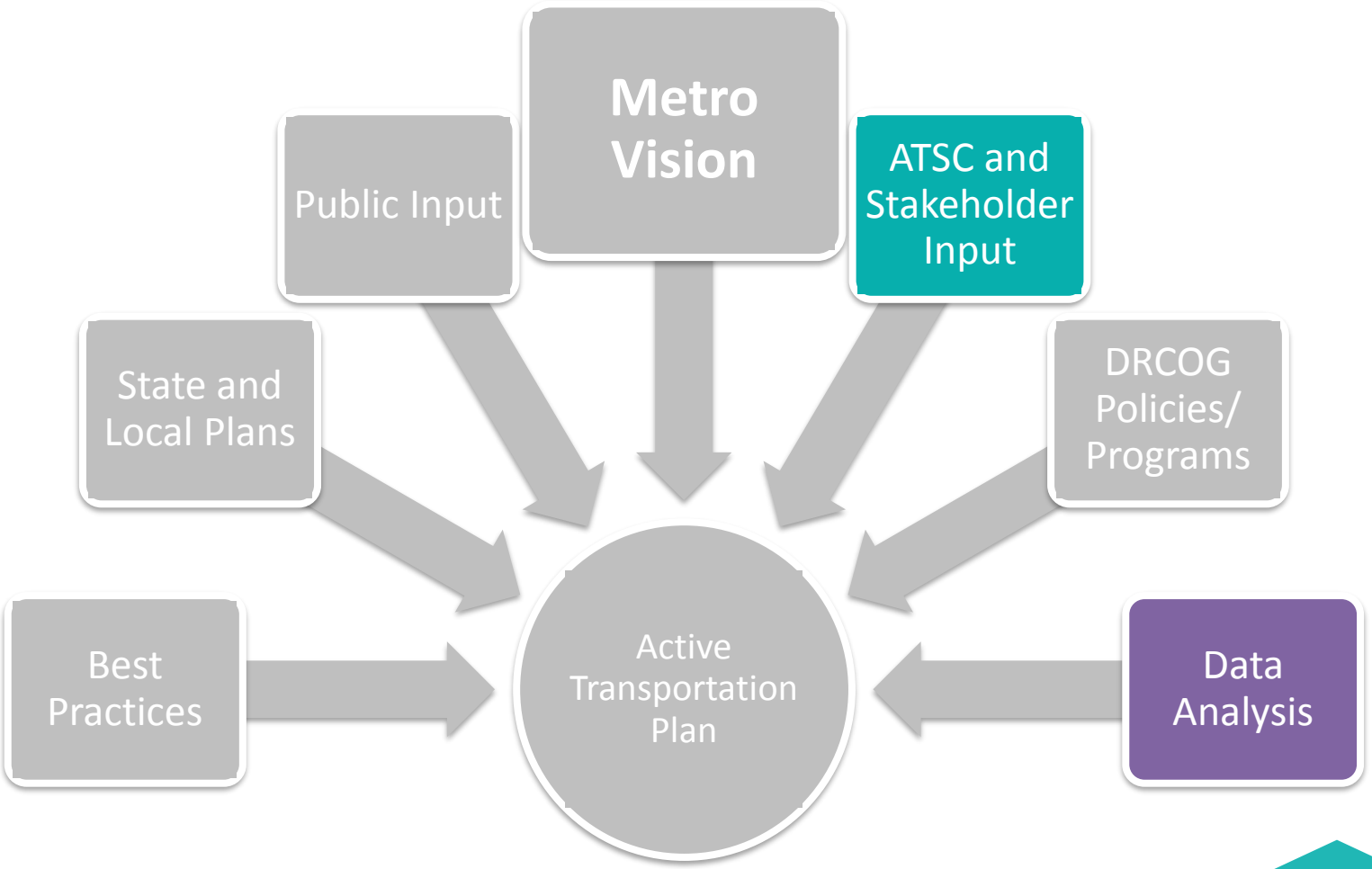
ATP Inputs



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Key ATP Datasets

- **Existing Bicycle Facilities (on- and off-street)**, for example:
  - Shared use paths/multi-use trails and sidepaths
  - Buffered, separated and traditional bicycle lanes
  - Neighborhood bikeways and signed bicycle routes
- **Planned/Proposed Bicycle Facilities**
- **Bike Share Stations and Service Areas**
- **Crash Data**
- **DRCOG Travel Model Data**
- **Bicycle Count Data**
- **CTPP TAZ-Level Data**
- **Population** and **Employment Data**
- **Origin/Destination Data**
- **Strava Metro**

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Stakeholder Input

Active Transportation Stakeholder Committee (meet every other month)

Local Government Workshops (5x meetings in one month across the region)

- Stakeholders were involved in data discussions throughout the planning process – first as part of the **existing conditions** assessment and later in assessing **connectivity** of the regional active transportation **corridors**.

- Early on in the process became clear that **different** communities call **different** facilities **different** things. Our current bicycle facility inventory also used **different** facility types.

- Would improve our collaborative processes and bicycle facility inventory if there was a more consistent approach and a **standard** set of facility types were referenced.

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Data Assessment

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Bicycle Facility Data

- Data are requested **annually** from 58 member governments. Of those 58, **42 are expected** to give geospatial data. In 2019, DRCOG received bike data from **26 jurisdictions**.

- Data processing can be **time consuming** – most features are verified using various **imagery** sources. In rare cases, facilities have been **field verified**. There are over **18,000 records** in the dataset.

- The bicycle facility layer is available for download at **Regional Data Catalog**.

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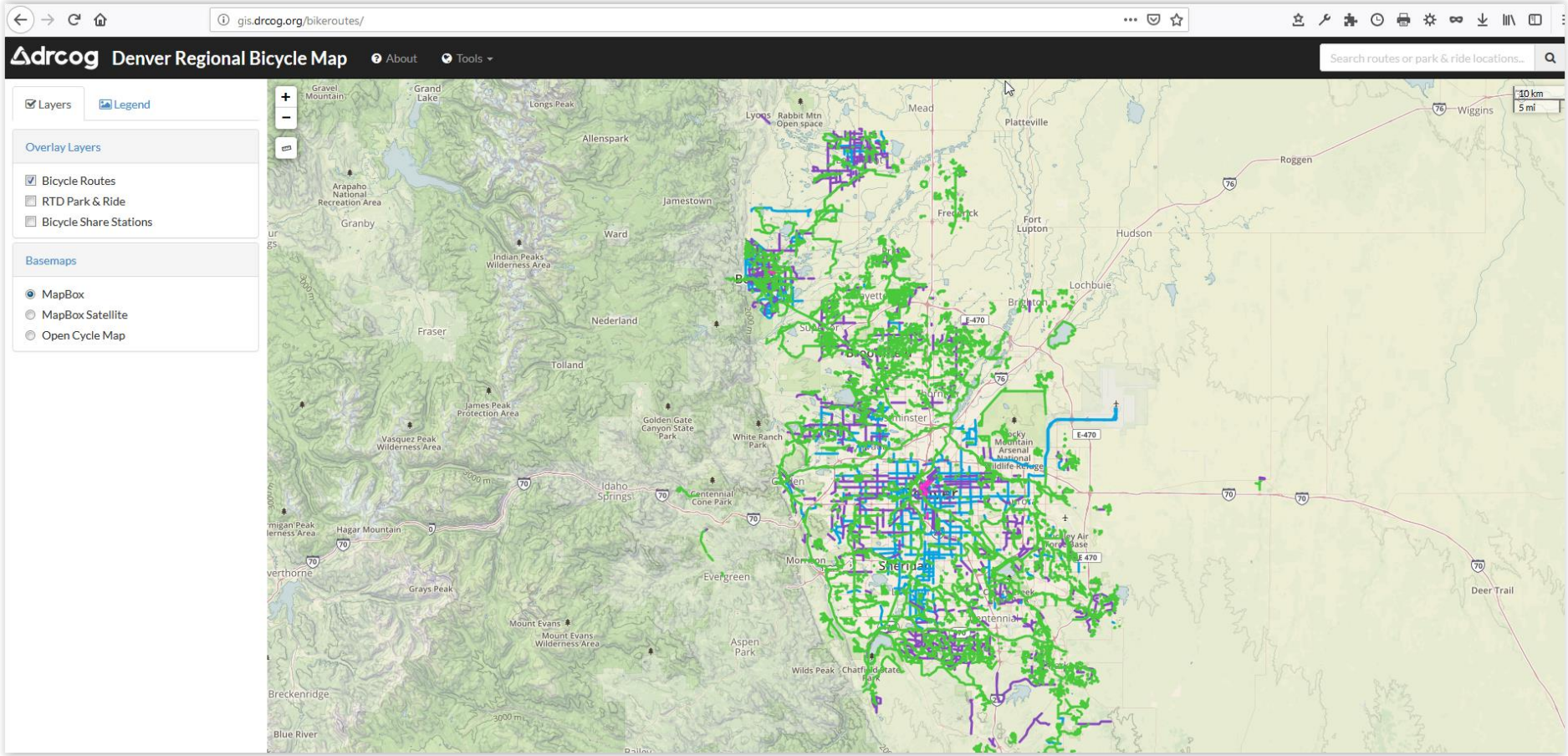
Bike Map



http://gis.drcog.org/bikeroutes/

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Data Issues

- Inventory data has been difficult to analyze. **Inconsistent naming** conventions made querying specific routes challenging. We **cannot calculate miles** of bicycle facilities.

- Facility **types** have been developed internally over time and are **not consistent with industry standards**

- Data available for download and on the web map data are **different** from our internal dataset. Differences have been **not communicated well** with the public and has caused concern that DRCOG is not **capturing local data**.

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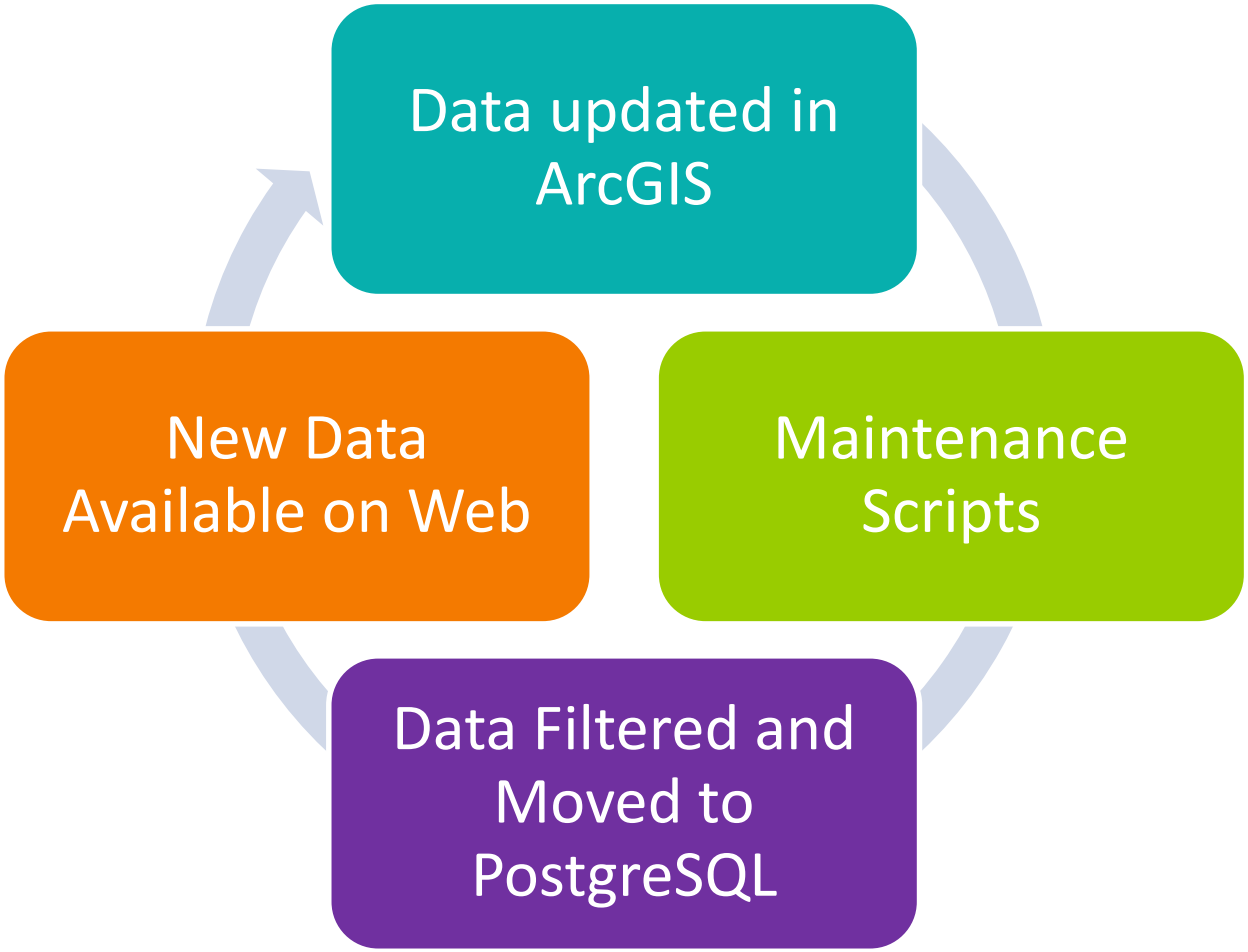
Inventory Update Workflow



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Old Schema

Field Name	Field Description
TYPE_FX_NO	Type description number
TYPE_FX	Type description
STATUS	Facility status (Existing, Proposed)
NAME	Facility Name
SIGN	Indicates presence of signage
FX10TYPE	No signage subtype
WIDTH_FAIL	Is width less than 8 feet
FAC_SOURCE	Facility source
FAC_VALID	Indicates if facility is valid by DRCOG
SOURCE	Source
NOTES	Notes
UPDATED	Indicates if feature has been updated

Field Name	Field Description
ALIGN_CHK	Check alignment with imagery
LOCAL_REVI	Edit prompted by local member
COMMUNITY	Community
COUNTY	County
LENGTH_FT	Segment length in feet
LENGTH_MI	Segment length in miles
SIGN_LOC	Sign location
RESTRICTIO	Sharing restrictions of data

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Old Facility Types

Type	Description
Shared Lane	Lanes that are marked with bicycle route signage. “Share the Road” signs do not count. Sharrows are not included. Signed bike routes without any dedicated bike facility.
Shoulder	Marked shoulders that are also marked with signage, but will not have visible markings such as a bike icon on the pavement. 4’ wide minimum.
Bike Lane	A path that is clearly marked on the road with the bike symbol (or by a Bike Lane Sign).
Multi-Purpose Sidewalk	Sidewalk that is off street and adjacent to the road. Greater than 8’ with no grassy median.
Separated Multi-Purpose Sidewalk	Sidewalk that is off street and adjacent to the road. Greater than 6’ with grassy median.
Paved Trail Next to Road	Similar to Separated Sidewalk, but with very few road crossing points. 8’ minimum. Another feature is it is generally further from the road than a Separated Sidewalk would be.
Unpaved Trail Next to Shoulder	Same definition as FX6, but unpaved. In many cases it will be the same as FX9 with the only difference being that it is located next to freeway.
Paved Trail - Waterway, RR, Utility	Off Street. This path will mainly not follow a road and will generally be out in the open field and could follow a river, rail or utility, but not necessarily. No longer needs to be signed.

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Old Facility Types

Type	Description
Unpaved Trail - Waterway, RR, Utility	Off Street. This is similar to Unpaved Trail Next to Road and many cases the path will be both. Greater than 8'.
No Route Signage	Facilities that are shown by jurisdictions as existing bike/ped facilities. There will generally be visible on street markings (marked shoulder, white line etc. that looks like a shoulder line). There will be no signage.
Neighborhood Trail	Narrow paths generally under 8 ft. wide in a residential neighborhood. Not to be confused with Road or Cul-De-Sac Links that are designed just to connect a road or cul-de-sac with a trail system. Or short links from one neighborhood road to another as a shortcut.
Other/unknown	Include certain types previously coded as "recreational". These paths usually won't be something bikers will use to get to places at all. There will be no connections to other facilities and are only used for recreational activities.
Path or Cul-De-Sac Links	Paths that have the sole purpose of leading from a roadway to a valid off-street path.
Protected Bicycle Lane	An on street/off Street Bike lane that cars cannot physically cross over onto. Sometimes these will be on the road with a barrier between the car lane and bike lane, or other times the bike lane will be up on the curb. Currently Cycle Tracks are included in this type.
Bike Boulevard	Low volume streets that have signage and pavement markings to allow bicycle priority.
Connector	Off Street. This path will mainly not follow a road and will generally be out in the open field and could follow a river, rail or utility, but not necessarily. No longer needs to be signed.

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New Schema

Field Name	Field Description
FAC_NUM	Type description number
FAC_TYPE	Type description
STATUS	Facility status
NAME	Facility Name
ALT_NAME	Alternate facility name
ROUTE	Route name
CROSSING	Indicates if segment is a crossing
SIGN	Indicates type of signage
SBSTNDRD	Indicates if the segment is considered substandard
NUM_SDS	Number of sides
TRVLWYS	Number of travel-ways
ON_ST_PK	Is on-street parking available
SURFACE	Surface type

Field Name	Field Description
SOURCE	Data source
NOTES	Notes
RSTRCTNS	Sharing restrictions of data
PLN_YR	Proposed plan year
PRPSD_PLN	Proposed plan web link
HORIZ_BUF	Horizontal separation width (feet)
VERT_BAR	Indicates if vertical barrier is present
WIDTH	Segment width
RUM_STRPS	Indicates if rumble strips are present
COUNTY	County
ON_OFF	Indicates if segment is on or off street
LENGTH_FT	Segment length in feet
LENGTH_MI	Segment length in miles

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New Facility Types

Type	Description
Paved Shoulder	Marked shoulders with a minimum of 4’ from edge of pavement to shoulder marking or rumble strips.
Bicycle Lane	Lane or portion of the roadway designated for bicyclists. This includes conventional bicycle lanes and those with no vertical buffer (i.e. painted buffered bicycle lanes).
Shared Use Path	A paved path used by bicyclists and pedestrians that is physically separated from motor vehicle traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way.
Sidepath	A specific type of shared use path that is adjacent to the roadway. Sidepaths typically have regular at-grade crossings, such as at driveways and intersections.
Unpaved Path	Similar to a shared use path, but unpaved. Generally >8' width and used in a similar fashion to shared use path.

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New Facility Types

Type	Description
Separated Bicycle Lane	Bicycle lanes which are separate from general travel lanes and the sidewalk. They are not the same as shared use paths because they are bicycle-only facilities. They are distinct from buffered bicycle lanes because there is a physical separation, such as a raised island or parked cars, between the bicyclists and the outside travel lane.
Bicycle Boulevard	Streets designed to prioritize bicycle traffic by minimizing motorized traffic volume to a maximum of 3,000 vehicles per day or less and operating speeds of 25 miles per hour or less. They are also referred to as neighborhood greenways, slow streets, or bicycle priority streets.
Local Path	A short off-street connection providing informal direct access between established facilities; may not meet minimum standards for a shared use path; could be paved or unpaved.
Shared Lane	Often times routes may not have a bicycle facility and local entities may designate shared lanes as preferred routes or as a connection between facilities. May not be coded on any segments where bicycles are expressly prohibited.
Other/ Unknown	Features not recognized as fitting into any other category. Features that bicycles wouldn't be able to use as a valid means of transportation for off-street. Could be used for on-street facilities where there is no evidence of anything existing at all and don't fall into the Shared Bicycle Route category.

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Migrating Data

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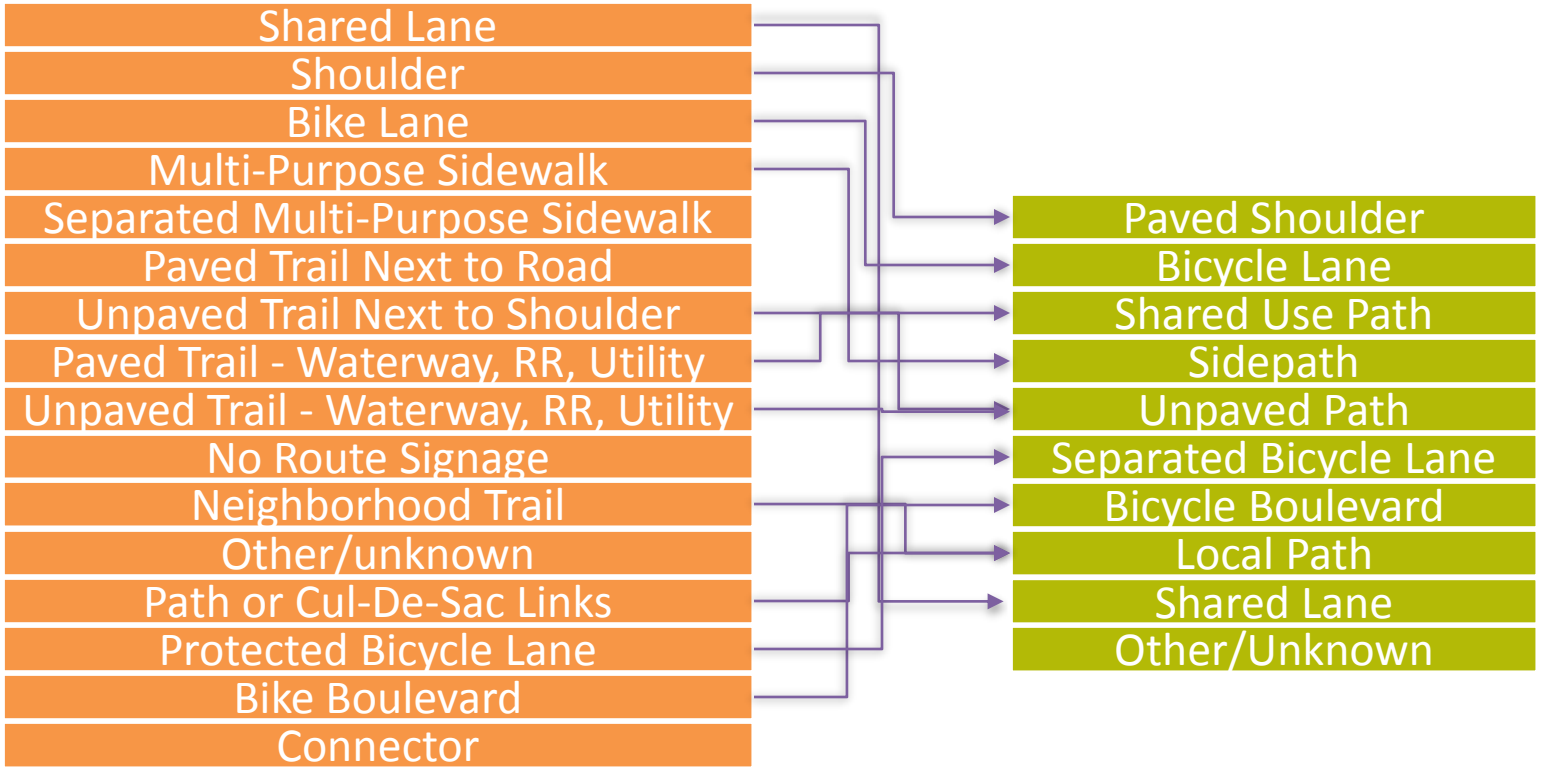
Cross-walking Facility Types



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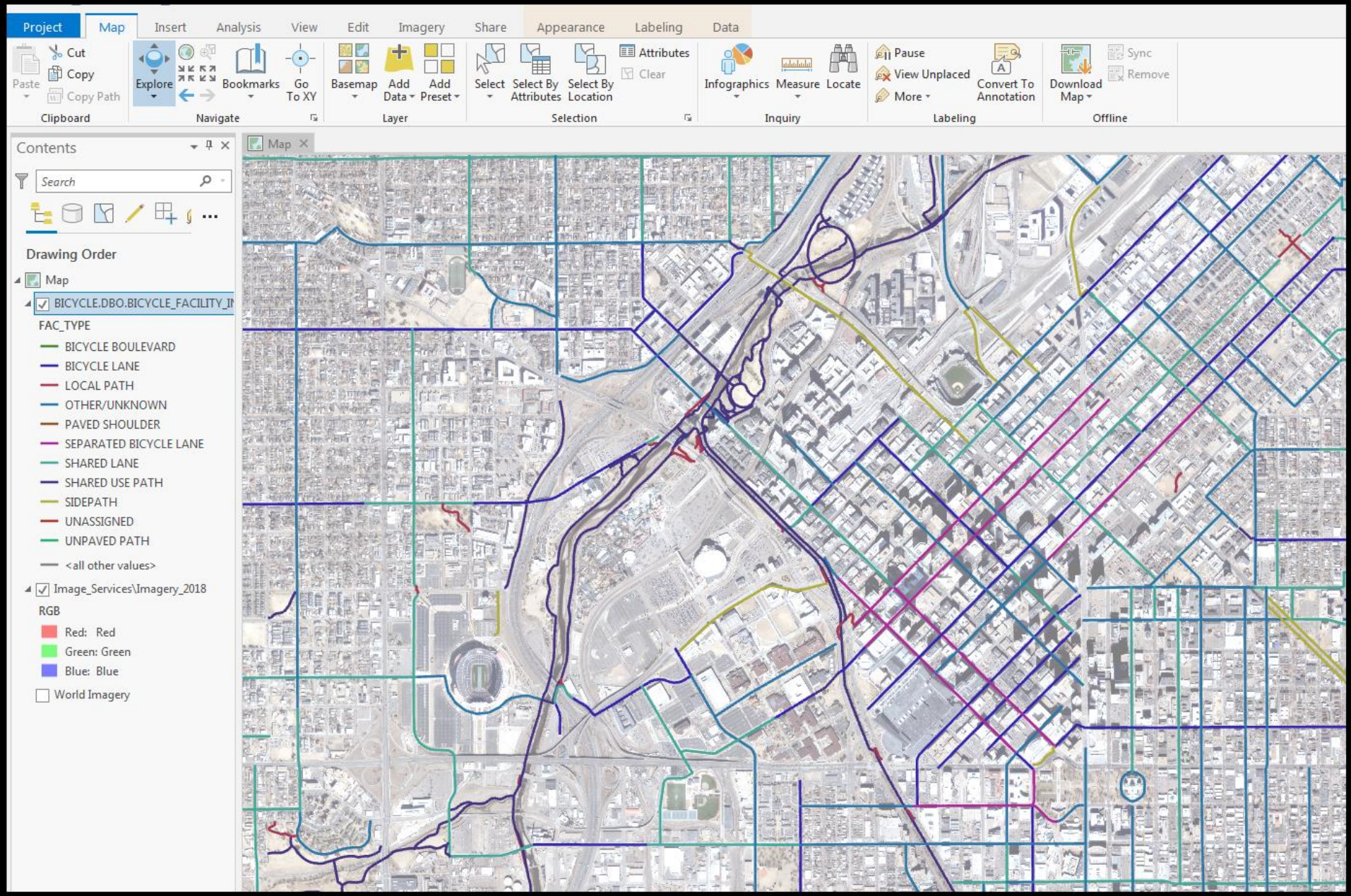
Project
Map
Insert
Analysis
View
Edit
Imagery
Share
Appearance
Labeling
Data
Paste
Cut
Copy
Copy Path
Clipboard
Explore
Bookmarks
Go To XY
Navigate
Basemap
Add Data
Add Preset
Layer
Select
Select By Attributes
Select By Location
Attributes
Clear
Selection
Infographics
Measure
Locate
Inquiry
Pause
View Unplaced
More
Convert To Annotation
Labeling
Download Map
Sync
Remove
Offline
Contents
Search
Drawing Order
Map
BICYCLE.DBO.BICYCLE_FACILITY_IN
FAC_TYPE
BICYCLE BOULEVARD
BICYCLE LANE
LOCAL PATH
OTHER/UNKNOWN
PAVED SHOULDER
SEPARATED BICYCLE LANE
SHARED LANE
SHARED USE PATH
SIDEPATH
UNASSIGNED
UNPAVED PATH
<all other values>
Image_Services\Imagery_2018
RGB
Red: Red
Green: Green
Blue: Blue
World Imagery
Map

Domains

SBSTNDRD
CURB LANE
SHARE THE ROAD
SHARROW
SHOULDER LINE ONLY
WIDTH FAIL
OTHER
NOT APPLICABLE
UNASSIGNED

CROSSING
MARKED
NO
UNMARKED
UNASSIGNED

SURFACE
PAVED
UNPAVED
UNKNOWN
UNASSIGNED

SIGN
YES
NO
UNSURE
SIDEWALK NO EVIDENCE OF SIGNAGE
HORSE TRAIL
NO BIKE ALLOWED
OTHER
UNASSIGNED

ON_ST_PK
NO PARKING
PARKING ONE SIDE
PARKING BOTH SIDES
NOT APPLICABLE
UNKNOW
UNASSIGNED

STATUS
EXISTING
PROPOSED
UNKNOWN
UNASSIGNED

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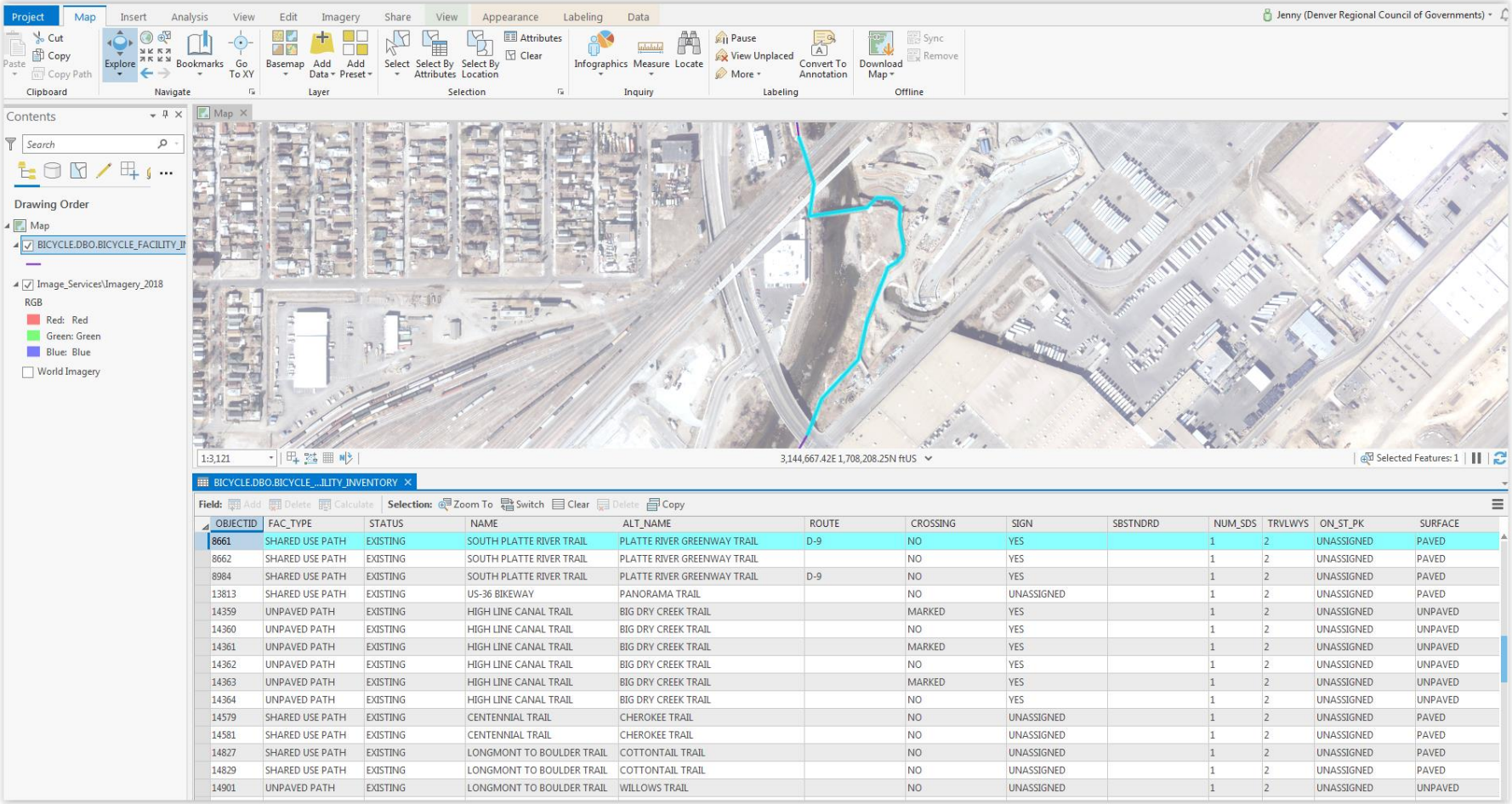
Naming Conventions



OBJECTID	FAC_TYPE	STATUS	NAME	ALT_NAME	ROUTE	CROSSING	SIGN	SBSTNDRD	NUM_SDS	TRVLWYS	ON_ST_PK	SURFACE
8661	SHARED USE PATH	EXISTING	SOUTH PLATTE RIVER TRAIL	PLATTE RIVER GREENWAY TRAIL	D-9	NO	YES		1	2	UNASSIGNED	PAVED
8662	SHARED USE PATH	EXISTING	SOUTH PLATTE RIVER TRAIL	PLATTE RIVER GREENWAY TRAIL		NO	YES		1	2	UNASSIGNED	PAVED
8984	SHARED USE PATH	EXISTING	SOUTH PLATTE RIVER TRAIL	PLATTE RIVER GREENWAY TRAIL	D-9	NO	YES		1	2	UNASSIGNED	PAVED
13813	SHARED USE PATH	EXISTING	US-36 BIKEWAY	PANORAMA TRAIL		NO	UNASSIGNED		1	2	UNASSIGNED	PAVED
14359	UNPAVED PATH	EXISTING	HIGH LINE CANAL TRAIL	BIG DRY CREEK TRAIL		MARKED	YES		1	2	UNASSIGNED	UNPAVED
14360	UNPAVED PATH	EXISTING	HIGH LINE CANAL TRAIL	BIG DRY CREEK TRAIL		NO	YES		1	2	UNASSIGNED	UNPAVED
14361	UNPAVED PATH	EXISTING	HIGH LINE CANAL TRAIL	BIG DRY CREEK TRAIL		MARKED	YES		1	2	UNASSIGNED	UNPAVED
14362	UNPAVED PATH	EXISTING	HIGH LINE CANAL TRAIL	BIG DRY CREEK TRAIL		NO	YES		1	2	UNASSIGNED	UNPAVED
14363	UNPAVED PATH	EXISTING	HIGH LINE CANAL TRAIL	BIG DRY CREEK TRAIL		MARKED	YES		1	2	UNASSIGNED	UNPAVED
14364	UNPAVED PATH	EXISTING	HIGH LINE CANAL TRAIL	BIG DRY CREEK TRAIL		NO	YES		1	2	UNASSIGNED	UNPAVED
14579	SHARED USE PATH	EXISTING	CENTENNIAL TRAIL	CHEROKEE TRAIL		NO	UNASSIGNED		1	2	UNASSIGNED	PAVED
14581	SHARED USE PATH	EXISTING	CENTENNIAL TRAIL	CHEROKEE TRAIL		NO	UNASSIGNED		1	2	UNASSIGNED	PAVED
14827	SHARED USE PATH	EXISTING	LONGMONT TO BOULDER TRAIL	COTTONTAIL TRAIL		NO	UNASSIGNED		1	2	UNASSIGNED	PAVED
14829	SHARED USE PATH	EXISTING	LONGMONT TO BOULDER TRAIL	COTTONTAIL TRAIL		NO	UNASSIGNED		1	2	UNASSIGNED	PAVED
14901	UNPAVED PATH	EXISTING	LONGMONT TO BOULDER TRAIL	WILLOWS TRAIL		NO	UNASSIGNED		1	2	UNASSIGNED	UNPAVED

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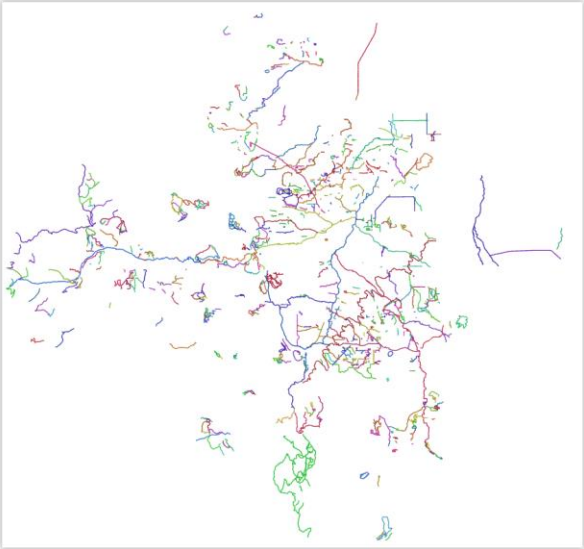
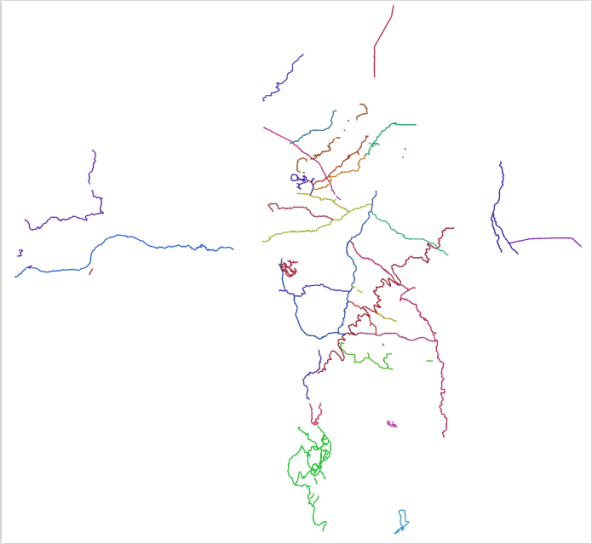
Grouping Facilities by Name





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Populating New Fields

NUM_SDS

TRVLWYS

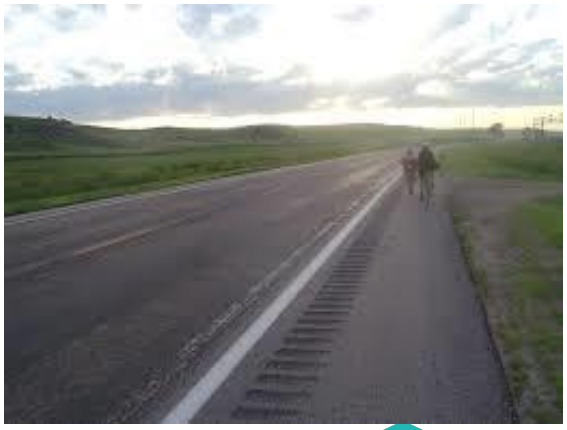
ON_ST_PK

HOR_BUF

VERT_BAR

WIDTH

RUM_STRPS



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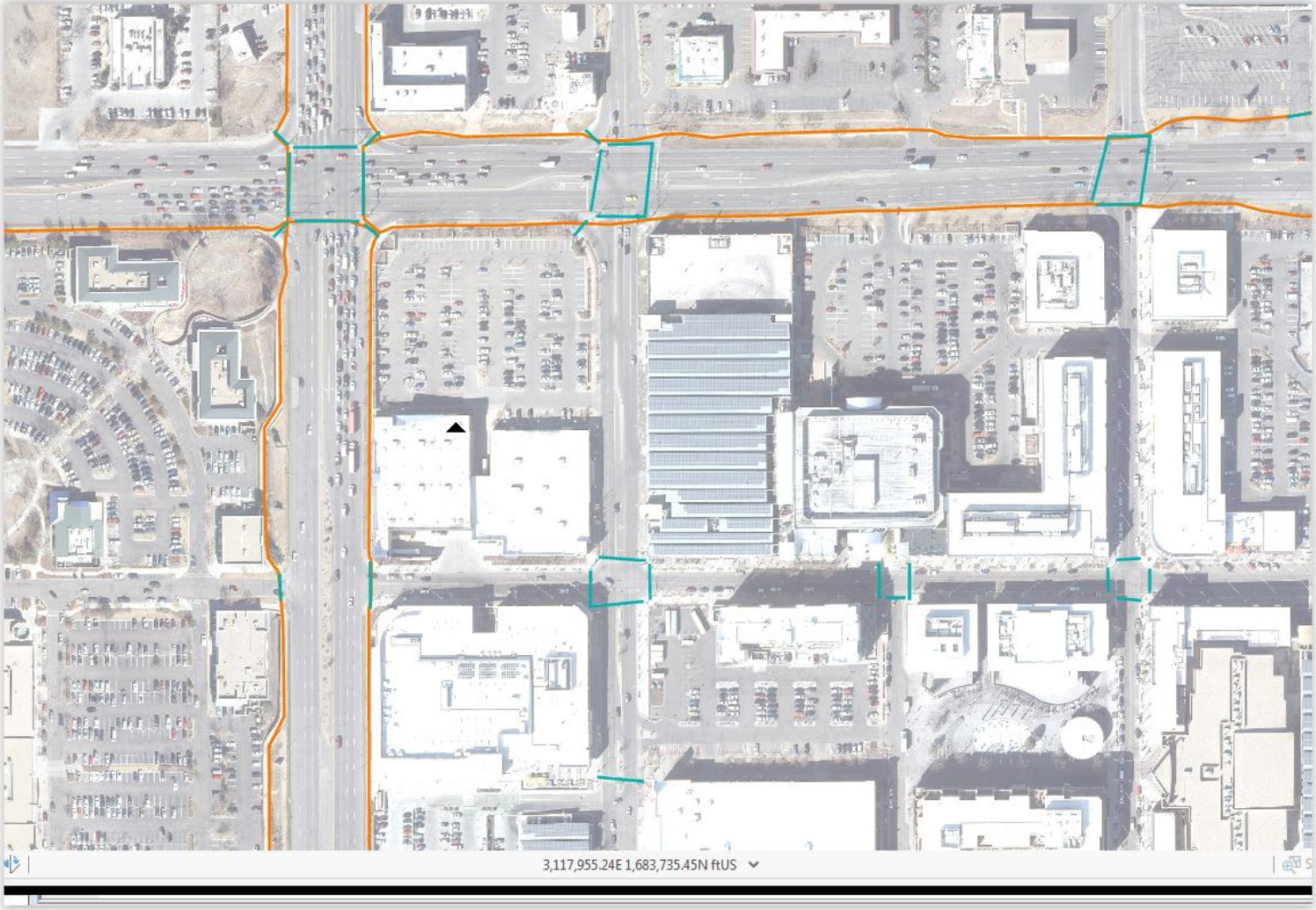
Crosswalks



- Planimetrics sidewalk centerline data
- 1,166 Sidepath and Shared Use Path
- 4,815 crosswalks that intersect (10 ft buffer)

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Finishing the Update

- Crosswalk remaining facility types and other fields
- Establish workflow for auto-populating fields
- Establish dataset creation efficiencies
- Update web map

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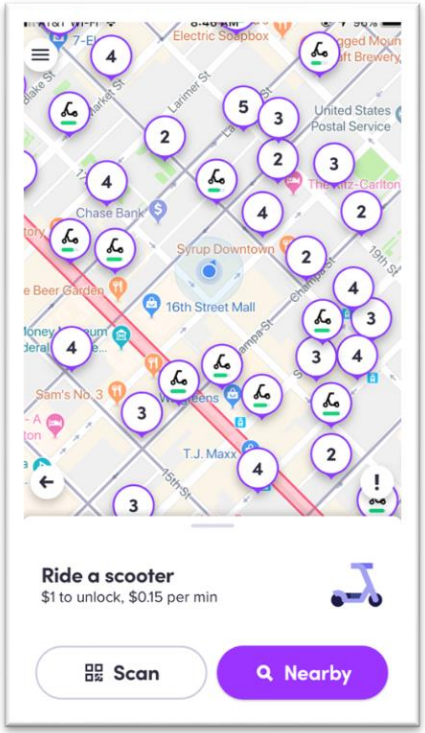
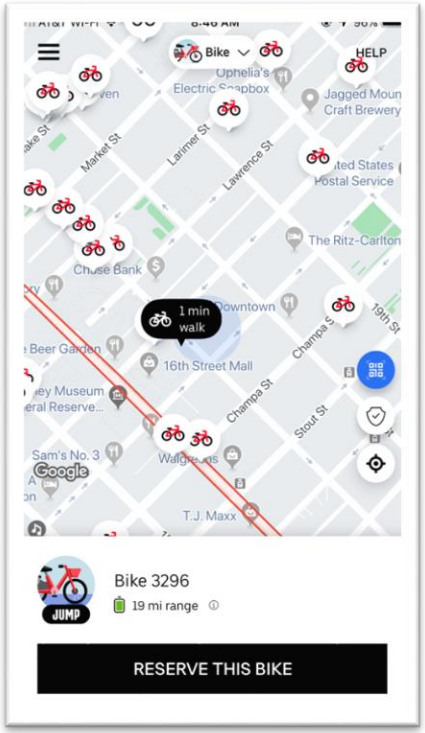
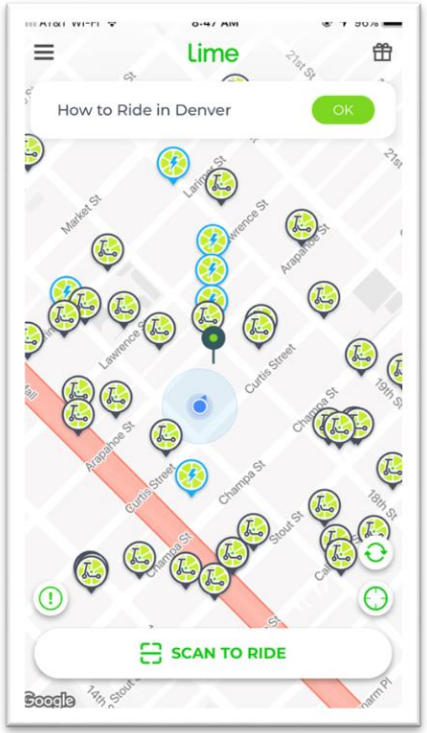
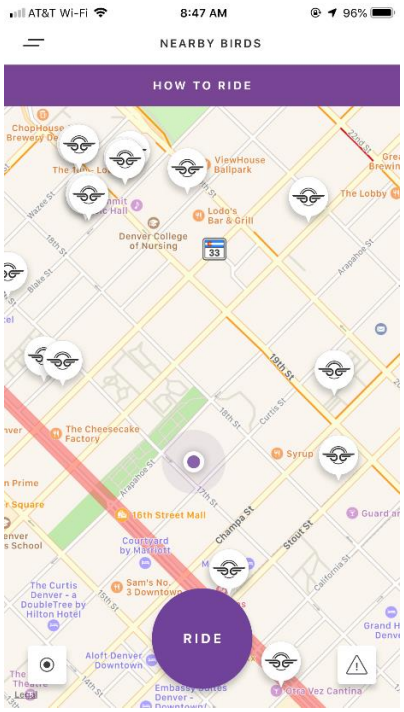
Micromobility in the Denver region









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Next Steps

- Share new bicycle facility inventory schema and updated products/documentation
- Stakeholder workshop
- Micromobility Work Group
- Micromobility data standards

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THANK YOU