

TODAY'S WEBINAR AGENDA

- 3:00 pm: Introduction
- 3:05 pm: Presentation
- 3:45 pm: Questions
- 4:00 pm: Webinar Ends

For technical assistance during the webinar:
1-800-283-6317
Choose these prompts: 1, 1, 1



1

CONTINUING EDUCATION

To document Professional Development Hours (PDH) or Certification Maintenance (CM) credit for the AICP:

- For group viewings: log your attendance on the host's sign-in sheet
 - **Site hosts:** return the completed sign-in sheet to APBP after the webinar (fax to 859-514-9188 or e-mail webinars@apbp.org)
- A Certificate of Attendance may be downloaded and printed at www.apbp.org/webinar-downloads
- **Planners:** APBP has applied to the AICP for 1.0 CM credits for this live webinar.



2

UPCOMING WEBINARS FROM APBP:

<p>OCT 20</p>	<p>Defining the Relationship between Bicycle Infrastructure and Gentrification</p>
<p>NOV 17</p>	<p>Walking & Biking in Rural Communities: How Planning, Partnerships & Equity Play a Role</p>
<p>DEC 15</p>	<p>City as a Canvas - How Three Florida Cities Approach Placemaking</p>

Visit www.apbp.org/webinars to view webinar titles, full descriptions, and speakers for the 2021 series



3

YOUR VOICE MATTERS!

Please provide feedback on the Equity & Inclusion survey by September 22.

Your input will help APBP shape our equity and inclusion efforts going forward!

apbp.org >
Committees >
Equity and Inclusion Task Force

Take the APBP Equity & Inclusion Survey!



5

THANK YOU TO OUR GENEROUS SPONSORS

SUPPORTER LEVEL










6

apbp ASSOCIATION OF PEDESTRIAN & BICYCLE PROFESSIONALS
Expertise for Active Transportation

**LINEWORK, MODELS, COUNTERS... OH MY:
A UTAH STORY OF MULTI-AGENCY COLLABORATION TO
DEVELOP ACTIVE TRANSPORTATION DATA AND TOOLS**

SEPTEMBER 15, 2021

For technical assistance during the webinar:
Call 1-800-263-6317
Choose audio prompts: 1, 1, 1

7

TODAY'S WEBINAR PRESENTERS

Stephanie Tomlin
Utah Department of Transportation (UDOT)

Stephanie Tomlin is the GIS, Data, and Modeling Program Manager for the central planning group at the Utah Department of Transportation (UDOT). Stephanie specializes in active transportation data analytics, multi-modal transportation planning and the integration of big data in planning initiatives. Stephanie also manages the UDOT Transportation Investment Fund program models. These models are used to prioritize projects for funding throughout the state annually. Stephanie is the current Board Chair of Bike Utah.

apbp ASSOCIATION OF PEDESTRIAN & BICYCLE PROFESSIONALS
Expertise for Active Transportation

8

TODAY'S WEBINAR PRESENTERS

Bert Granberg
Wasatch Front Regional Council (MPO)

Bert Granberg leads the Analytics Group at Wasatch Front Regional Council, the metropolitan planning organization (MPO) for the Salt Lake City, Ogden Layton urban area. Previous appointments include directing Utah's state GIS office (UGRC) and serving on the National Geospatial Advisory Committee.

apbp ASSOCIATION OF PEDESTRIAN & BICYCLE PROFESSIONALS
Expertise for Active Transportation

9

TODAY'S WEBINAR PRESENTERS



Ben Stabler
RGS

Ben Stabler is a Senior Director at RSG and specializes in transportation modeling and software development. He has 20 years of industry experience and previously worked in software development for PTV and in transport modeling for the Oregon Department of Transportation.



10

Linework, Models, Counters... OH MY

A Utah Story of Multi-Agency Collaboration to Develop Active Transportation Data and Tools

Association of Pedestrian and Bicycle Professionals
Webinar Series
September 15th, 2021

Bert Granberg | Wasatch Front Regional Council Stephanie Tomlin | Utah Department of Transportation Ben Stabler | Resource Systems Group





11

Presenters



Stephanie Tomlin
UDOT
Data, Modeling, and GIS Program Manager



Ben Stabler
RSG, Inc.
Senior Director



Bert Granberg,
WFRG
Analytics Director

12

Geographic Context:

Wasatch Front Metropolitan Planning Organizations:

- **WFR**
Salt Lake City - Ogden area
~53% of Utahns
- **MAG**
Provo - Orem area
~20% of Utahns

Wasatch Front Regional Council (WFR)
Pop. 1,867,000 (2021 est.)

Mountainland (MAG)
Pop. 673,000 (2021 est.)

13

The Story:

**Good data =
Good planning =
Funding for projects**

14

The Story:

The subject of today's presentation

**Good data =
Good planning =
Funding for projects**

TLC/Local AT Plans

TIF/T TIF \$35M

Starting in 2016 Roughly \$150,000 and 1,500 hours annually invested between agencies on AT data the work we are going to highlight

15

Linework Utah Bike Demand Model Observed Data

16

Learning Objectives

- Innovative active transportation data developments and tools that are happening in the state of Utah
- Agency collaboration is critical in data and tool development
- Utah has leveraged these data and tools to fund and construct projects

17

Linework

18

Challenge: Inventorying Active Transportation System

- Partial network, maturing quickly
- Regional network, but tracked only at local level, and only by some
- Presenting existing and planned networks
- Identifying gaps and projects
- Prioritizing, phasing, and funding projects
- Bike focus, pedestrian, or multi-use?

19

Challenge: Inventorying Active Transportation System

- Partial network, maturing quickly
- Regional network, but tracked only at local level, and only by some
- Presenting existing and planned networks
- Identifying gaps and projects
- Prioritizing, phasing, and funding projects
- Bike focus, pedestrian, or multi-use?

-- AT is real infrastructure, we should map it and plan for it like we do other modes

20

Key Linework Decision Points

Stewardship: authoritative or shared?

Who's in the partnership for collaboration and funding?

Standardized data structure?

Access to data: who, when?

Types of users?

Overlapping & conflicting plans

Bike or pedestrian focus?

Investment path: existing inventory? planned projects? observed travel behavior? travel models?

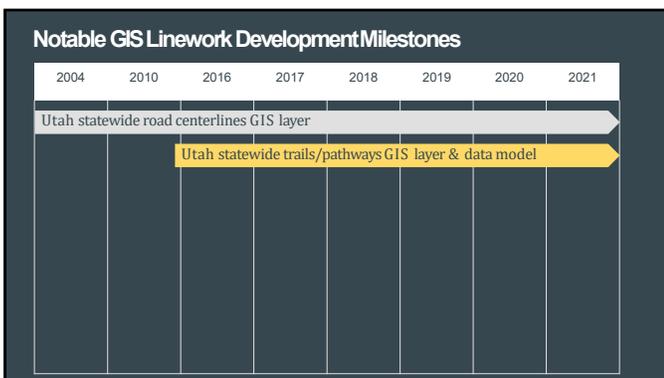
Data management platform?

Data refresh cycle?

21



22



23



24

Active Transportation GIS Layers

UTRANS GIS Database

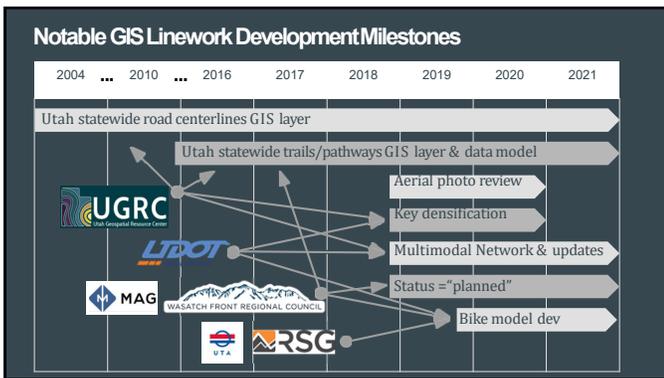
- Hosted by **UGRC** (state GIS office)
- Layers updated & published monthly
- Multiuser editing using Esri AGS/SDE
 - County road updates
 - UDOT updates
 - MPO updates
- Monthly rebuild of Multimodal Network analysis dataset



25



26



27

Acknowledgements - Valuable Starting Points

Initial model estimation HTS (SACOG, Sacramento MPO)

Bike model base code (AMBAG, Monterey MPO)

Generalized bike travel costs (LA DOT)



Thank you !!!

34

Utah Bike Demand Model Components

Prepare Network	Prepare Microzones	Trip-based Model*	Output Processing
GIS Road Centerlines with Left/Right Bike Facilities GIS Multi-use Pathways Key Attributes: <ul style="list-style-type: none"> Bike Facility Types Canford Levels (traffic volumes) Elevation Change Signal Intersections 	Create 'Blocks' from Roads Key Attributes: <ul style="list-style-type: none"> Demographics, Income Job Count By Sector Park Score, Trailhead, & Transit station presence School & College Enrollment, Dorms Jobs/Housing Mix 	3 Step Model <ul style="list-style-type: none"> Trip Generation Destination Choice Network Assignment → Segment Volumes → Trip Production & Attraction (Origins & Destinations)	Total trips, BMT GIS Polylines → Segment-level Volumes GIS Polygons → Origin/Destination by trip purpose type <ul style="list-style-type: none"> - Trips Production - Trips Attracted

*a.k.a. Micromobility Toolset

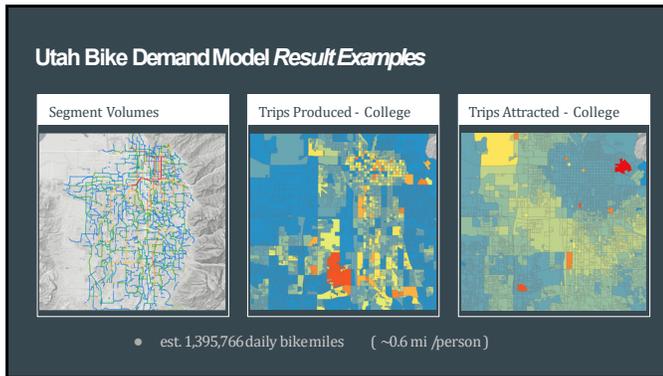
[Input Prep & Config. GitHub Code Repository](#)
Easi arcpy
python only
[Trip-Based Model GitHub Code Repository](#)

35

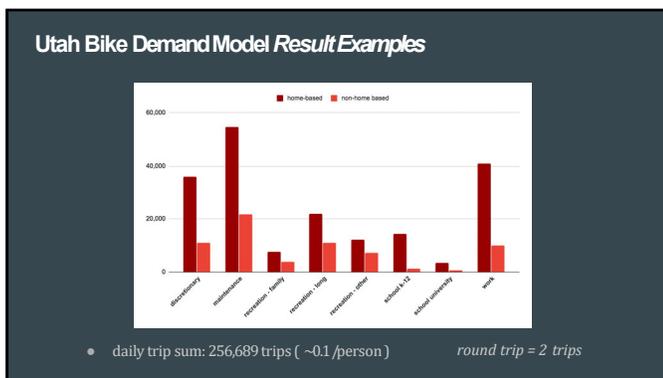
Utah Bike Demand Model Input Examples

Bike & Roadway Facilities	Job Density (by microzone)	Average Slope (directional)
		

36



37



38

Trip Purposes -- and Parameters Used

	Discretionary	Maintenance	Rac- Family	Rac- LongDist	Rac- Other	School K-12	College	Work
Trip Generation - Zone Attributes	Income 75-100 Income 0-25 Age Group 1 Age Group 3	Income 75-100 Income 0-25 Age Group 1 Age Group 3	Income 75-100 Income 0-25	Income 75-100 Income 0-25	Income 75-100 Income 0-25 Pop Life Cycle 2	Income 75-100 Income 0-25	Income 75-100 Income 0-25 Age Group 1 Age Group 3	Income 75-100 Income 0-25 Age Group 1 Age Group 3
Trip Generation - Buffer Attributes	Mixed Use Score	College Enrollment Mixed Use Score	Enrollment Elem Enrollment Middle Enrollment High	Households Trailhead Score	Park Score	Enrollment Elem Enrollment Middle Enrollment High	College Enroll	Job Sector 3 Job Sector 4 Job Sector 5 Job Sector 6
Destination Choice - Zone Attributes	Households Job Sector 3 Job Sector 7 Job Sector 9	Job Sector 4 Job Sector 7 Job Sector 9 Households Enrollment Elem Enrollment Middle Enrollment High	Households Enrollment Elem Enrollment Middle Enrollment High Park Score	Trailhead Score Park Size	Park Score	Job Sector 3 Enrollment Elem Enrollment Middle Enrollment High	College Enroll	Total Jobs Job Sector 3

Model Design Technical Document

39

Bike Network Cost Coefficients

Variable	Additional Distance (miles)	Notes
Turn	0.034	Presence of a turn
Stop sign	0.0037	Presence of a stop sign
Traffic Signal	0.017	Presence of a traffic signal
Parallel traffic L heavy	0.18	left turn parallel to heavy traffic, 20k+ AADT
Cross Traffic LS med	0.05	left turn or straight across medium traffic, 10-20k AADT

Variable	Length Multiplier	Notes
distance	1	default
Bike Blvd	-0.108	Bike class = 3b, 3c
Bike path	-0.16	Bike class = 1a, 1b, 1c, 1
Bike lane light	0	Bike class = 2a, 2b, 2, 3a and light traffic
Bike lane heavy	1.65	Bike class = 2a, 2b, 2, 3a and heavy traffic
No Bike lane heavy	7.157	Heavy traffic
Slope 2-4 percent	0.371	Percent slope (moderate hill)
Slope > 6 percent	3.239	Percent slope (steep hill)

40



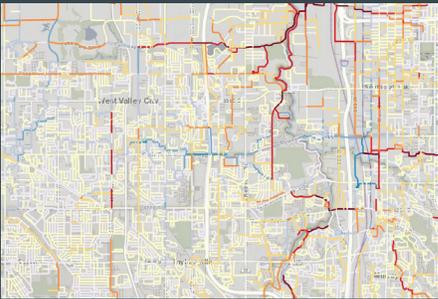
41



42

Scenario Comparison - 3900 South Bike Facility Upgrade

Winner and Losers



The map displays the Salt Lake City area with various colored lines representing different bike facility upgrade scenarios. Red lines indicate areas where the scenario is a 'winner', while blue lines indicate areas where it is a 'loser'. The map includes labels for 'West Valley City' and 'Salt Lake City'.

43

Bike Model v1.0 – Now What?

- Continue to explore model use for :
 - Volume estimates
 - Project scenarios
- 2021-22 model enhancements
- Incorporate "Bike-ability" into main Travel Demand Model
- Re-estimate and calibrate with Wasatch Front behavioral data
 - 2022-2023 household travel survey
 - Observed count program
- Seek additional collaborators

44

Observed Data.

45

Counter Data
 Strava Data
 Expansion
 What's Next...

46

State of the Counters Across the Wasatch Front

- Agency/Jurisdiction led
- Initial effort to work together but ran into funding difficulties
- Partial picture is valuable but we know it's flawed

Wasatch Front Counter Locations

Counter Locations

- Salt Lake County
- Boulder Valley County
- Utah County

47

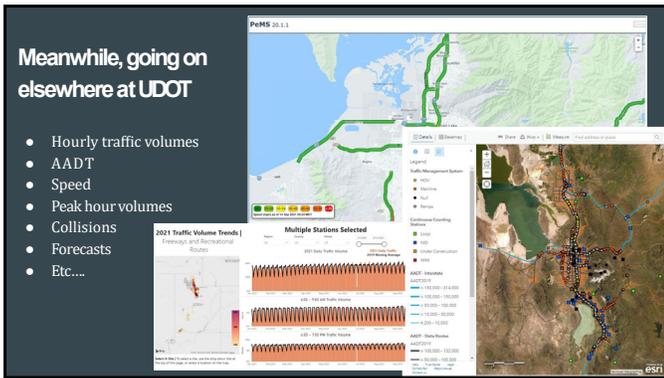
State of the Counters Across the Wasatch Front

- Snapshots in time at specific locations
- Good for making a high level assessment of AT usage at specific locations
- Don't necessarily show trends on the whole system

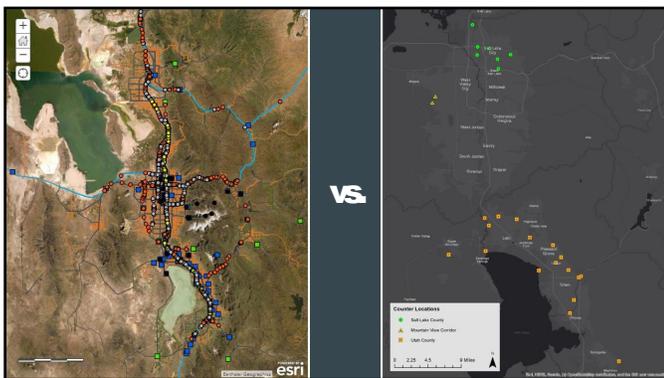
Comparison of Trail Usage During April of 2019 and 2020

Facility	April 2019	April 2020
Maribook Canal Trail	~20,000	~50,000
Provo River Trail	~20,000	~45,000
Jordan River Trail	~10,000	~20,000
Mappedon Lateral Canal	~5,000	~15,000

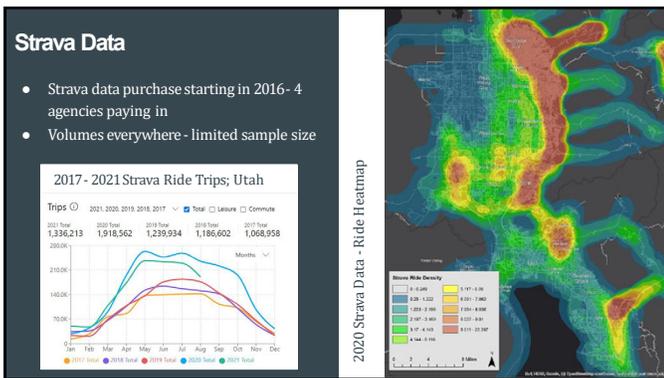
48



49



50



51

Strava in Action

Cottonwood Heights; Utah

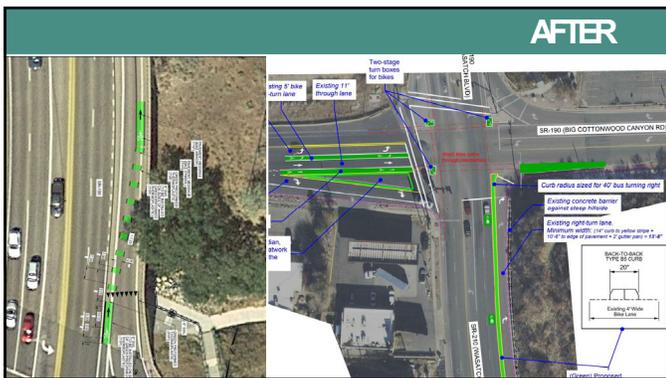
- High recreation area
- High strava recorded volumes
- UDOT roadway



52



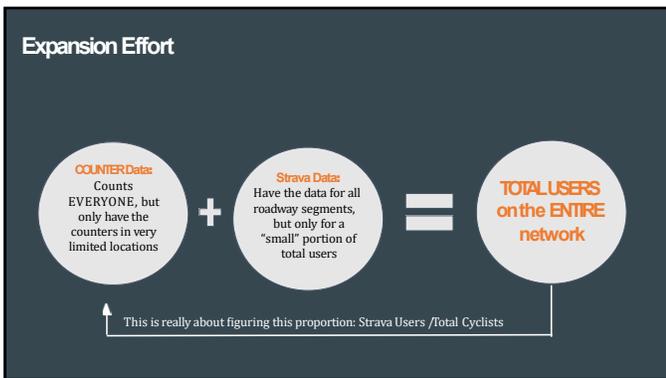
53



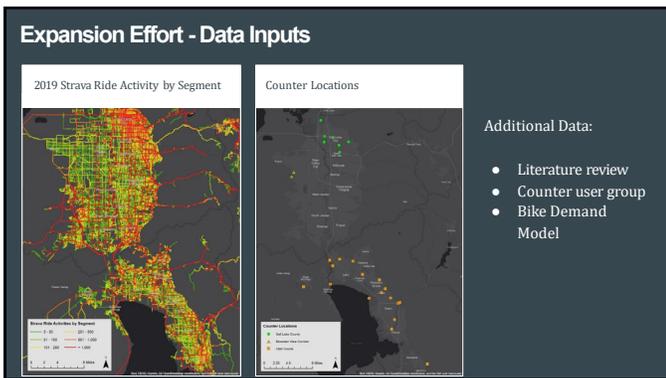
54

But we knew that we still weren't seeing the whole story...

55



56



57

Expansion Effort - Results

- Average percent of bicyclists at each count location using Strava varied considerably = limited predictive value
- A simple method to extrapolate the Strava data broadly is not yet identified
 - The close relationship between Strava volumes and observed counts = Noteworthy!
- Significantly more count locations are needed to derive reliable estimates of usage patterns

61

What's Next

- Collaboration to understand regional cross agency biking patterns
- Central repository of comprehensive, good observed AT volumes estimates
- Located where we need them - not based on jurisdiction or where it's easy
- Now also investigating StreetLight active transportation modes offering

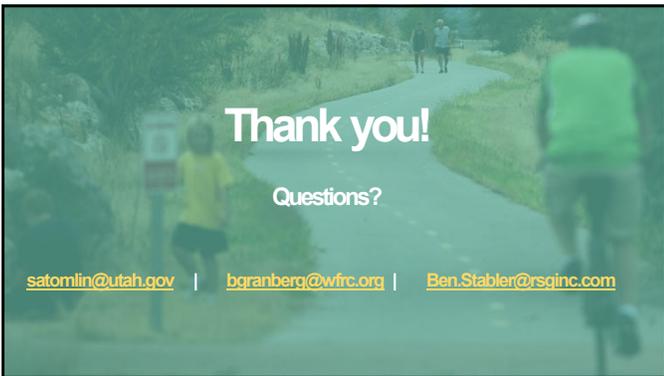
62

Takeaways.

63

- AT is real infrastructure, we should map it, and plan for it like we do other modes.
- Mature AT resources – many in GIS – facilitate discussion and agreement on existing conditions, needs, and priorities.
- Good data doesn't happen by accident!
- When we work together our collective investment goes further.

64



65



66

THANK YOU FOR ATTENDING

Please take a short survey to tell us what you think about today's presentation.

A link to the survey will be e-mailed to the site host. If you're the host, please forward the link to anyone who attended in the webinar at your site.

Return your sign in sheets promptly!