



# WA State Proviso Uniform Statewide Sidewalks Data Collection PROJECT STATUS Meeting 2024-6-25



# AGENDA



- Welcome and Intros
- Current Project Overview (18 minutes)
  - Review goals (5 min)
  - Imagery Consortium (3 min)
  - Priority areas: Population Centers Methodology (5 min)
  - Recent developments and status update (5 min)
- Incorporating Accessibility Pedestrian Data (20 minutes)
  - King County Metro / Health Through Housing (Nick Abel, KCM 10 min)
  - Discussion of project goals and expected outcomes (5 min)
  - Discussion on integrating accessibility pedestrian data, Walksheds (5 min)
  - Addressing potential challenges
- Open Discussion and Next Steps (10 minutes)



# Sidewalks Collection Project Main Goals

## Extensive and High Quality Data is key

The success of downstream analyses through applications like Conveyal, AccessMap, Walksheds, Find-A-Ride, etc rely on the ability to ***produce, access and consume*** extensive and ***high quality data*** about the built environments in a ***standardized format***.

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## Proviso PROJECT GOALS







# Proviso Project Workstreams

## 1. Data Collection and Compilation:

- Identify the counties and order of counties to be included in the analysis based on defined criteria.
- Collaborate with selected counties and other relevant agencies to access existing sidewalk data.
- Develop a standardized data collection methodology for areas where data is incomplete or unavailable.
- Compile and integrate data from multiple sources to create a comprehensive statewide inventory of “**baseline pedestrian graph**”

## 2. Accessibility Analysis and Mapping: Exploration in 3-5 select regions

- Incorporate accessibility analysis into the dataset, considering suitability for individuals with disabilities.
- Identify and integrate relevant data on vulnerable populations, tribal lands, and essential service locations.
- Apply the Safe System Approach principles to assess sidewalk safety for pedestrians and bicyclists.

## 3. Data System Development:

- Establish a data management system to store, update, and maintain the statewide sidewalk inventory.
- Develop an open data specification for publishing the dataset and ensure compliance with open data principles.
- Implement appropriate data security measures and protocols to protect sensitive information.
- [ WSDOT partners intend to: Design user-friendly interfaces and tools to facilitate access and utilization of the sidewalk data by stakeholders.]

## 4. Stakeholder Engagement for Deep Dives in 3-5 Locales:

- Engage with local jurisdictions, tribal governments, and transportation agencies throughout the project.
- Conduct outreach and training sessions to do deeper mapping per community concerns and promote local vetting through use of the statewide sidewalk dataset and tools.

# UW ITS4US Project Main Goals



The transportation data equity initiative is a project designed to create, modify and improve data standards and data integration, validation and maintenance tools necessary for modern applications to provide mobility benefits more equitably and accessibly.

Coordinate collaborative releases of data standards

OpenSidewalks

GTFS-Pathways

GTFS-Flex

Publish and maintain interoperable data infrastructure

Data Collection

Data Vetting

Data Provisioning Services

Deploy and sustain three accessible mobility applications

AccessMap Multimodal

Walksheds

Audiom

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## Imagery Consortium





# Hexagon Data Access and Validation summary

## Summary

- Access finally permitted 6/14 (7 working days ago)
- Access to the data works as expected (via username/password credentials)
- The Streaming API works as needed
- We can use the Streaming API for training and for mapping (in-editor)
- 15 cm imagery seems to be available for most of WA (every area we prioritized so far)
- The clarity of Hexagon's 15 cm imagery is not impressive when compared to the 7.5 cm of Vexcel or King County, but it may be usable





# Sample Hexagon 15cm

The screenshot shows the QGIS desktop application. The main map area displays an aerial view of a city with a white hexagonal grid overlaid. The grid cells are approximately 15cm in size. The interface includes the following components:

- Menu Bar:** Project, Edit, View, Layer, Settings, Plugins, Vector, Raster, Database, Web, Mesh, Processing, Help.
- Toolbars:** Multiple toolbars for navigation, editing, and processing.
- Browser Panel:** Located on the left, it shows a tree view of data sources including Terrestrial, Vector Tiles, XYZ Tiles (with Bing Maps Aerial, Hexagon WMTS (localhost), King County Orthoimagery (2019), King County Orthoimagery (2021), Mapzen Global Terrain, and OpenStreetMap), WCS, and WFS / OGC API - Features.
- Layers Panel:** Also on the left, it shows a list of layers: Bing Maps Aerial, HxGN Imagery (checked), HxGN\_RGB\_15cm\_Urban, HxGN\_RGB\_30cm, and HxGN\_RGB\_15cm.
- Advanced Digitizing Panel:** Located at the bottom left, it contains icons for digitizing tools and a message: "CAD tools are not enabled for the current map tool".
- Status Bar:** At the bottom, it displays the coordinate (-13618892.7, 6042097.0), scale (1:2468), magnifier (100%), rotation (0.0°), and render status (checked).

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## Priority Areas





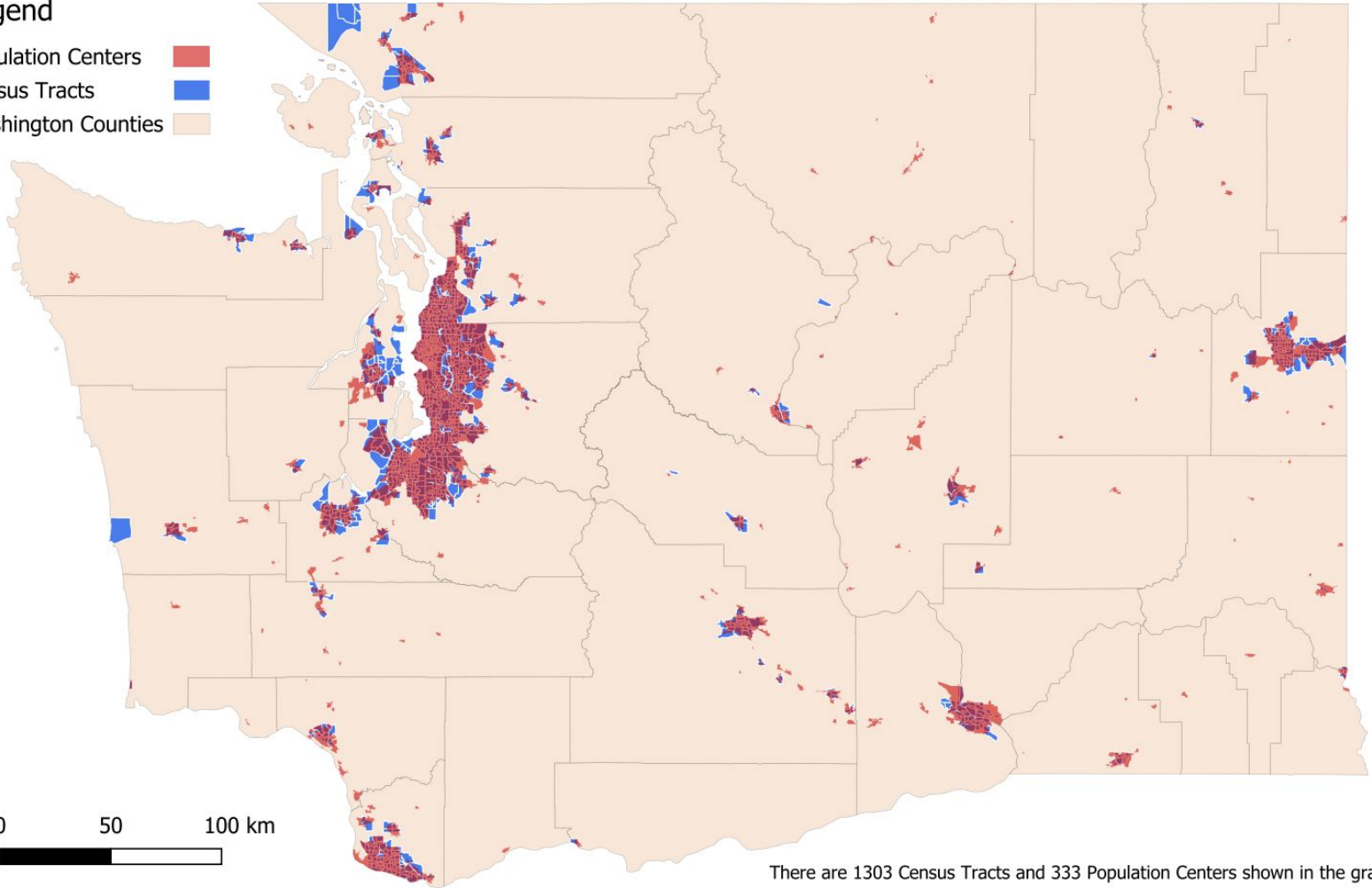


# What are we collecting? Census Tracts + Population Centers

## Densest Census Tracts and Population Centers Up to 76% of Population

Legend

- Population Centers ■
- Census Tracts ■
- Washington Counties ■



<https://tinyurl.com/WACensusTractPriority>

**+ Population Centers**

**+ Population Centers  
from 6  
underrepresented  
counties**

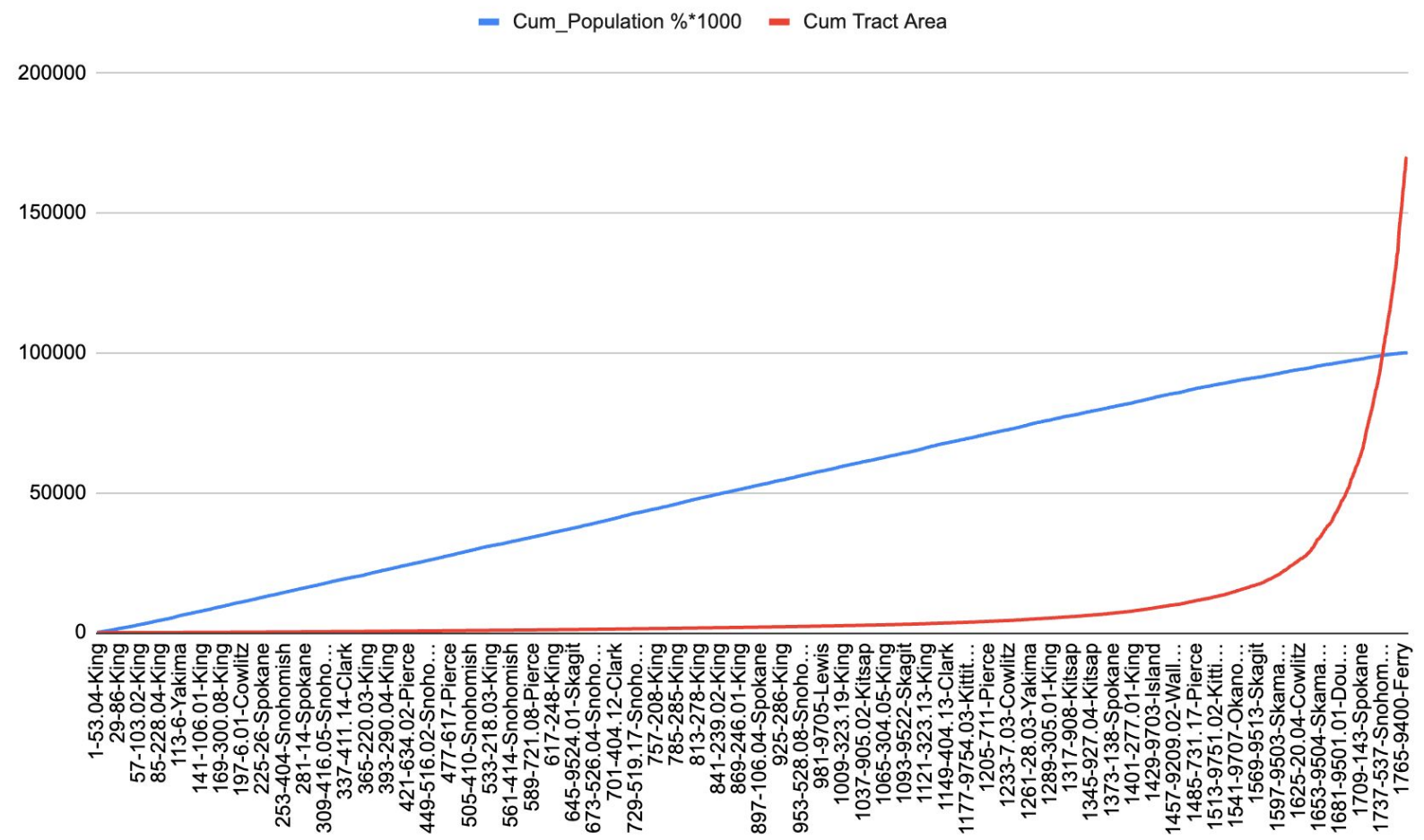
credit: Cole A., Suresh D



There are 1303 Census Tracts and 333 Population Centers shown in the graphic.



# What are we collecting? Census Tracts + Population Centers



<https://tinyurl.com/WACensusTractPriority>

+ Population Centers

+ Population Centers from 6 underrepresented counties

credit: Suresh D



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## Recent developments and status update





# What has been collected?

Regions	4	Regions	Country
Countries	1	Seattle, WA	USA
Total area (sq mi)	231	Bellevue, WA	USA
Total area (sq km)	598	Mt. Vernon, WA	USA
		Toppenish, WA	USA

“collected” defined:  
 collected (org or ML)  
 + vetted for geometric fidelity

credit: Wisam Y.

OSW Entities	Sub-entity	Sub-entity	Count	Length (km)	Length (miles)
Footway (plain)			35,372	823	511
Sidewalk					
	Link		35,891	86	53
	Link Corners		4,212	14	9
	Other		73,020	3,899	2,423
Crossing			68,979	396	246
Traffic Island			376	2	1
Pedestrian Road			829	29	18
Steps			3,674	38	24
Living Street			54	2	1
Motor Vehicle Roads					
	Primary Street		4,960	178	110
	Secondary Street		14,338	532	331
	Tertiary Street		16,000	695	432
	Residential Street		67,549	3,188	1,981
	Service Road				
	Driveway		23,908	715	445
	Alley		9,496	493	306
	Parking Aisle		15,665	612	380
	Other		34,077	1,284	798
	Unclassified Road		2,589	136	84
	Trunk Road		326	22	14
Pedestrian Zone			81,858	1,902	1,182
<b>Other Entities</b>					
Railways			517	134	83
Pathways			148	1	1
Cycleways			4,165	216	134
<b>Total</b>			<b>498,003</b>	<b>15,397</b>	<b>9,567</b>



# How is "collection" Vetted?

#14 | OpenSidewalks

HIGH

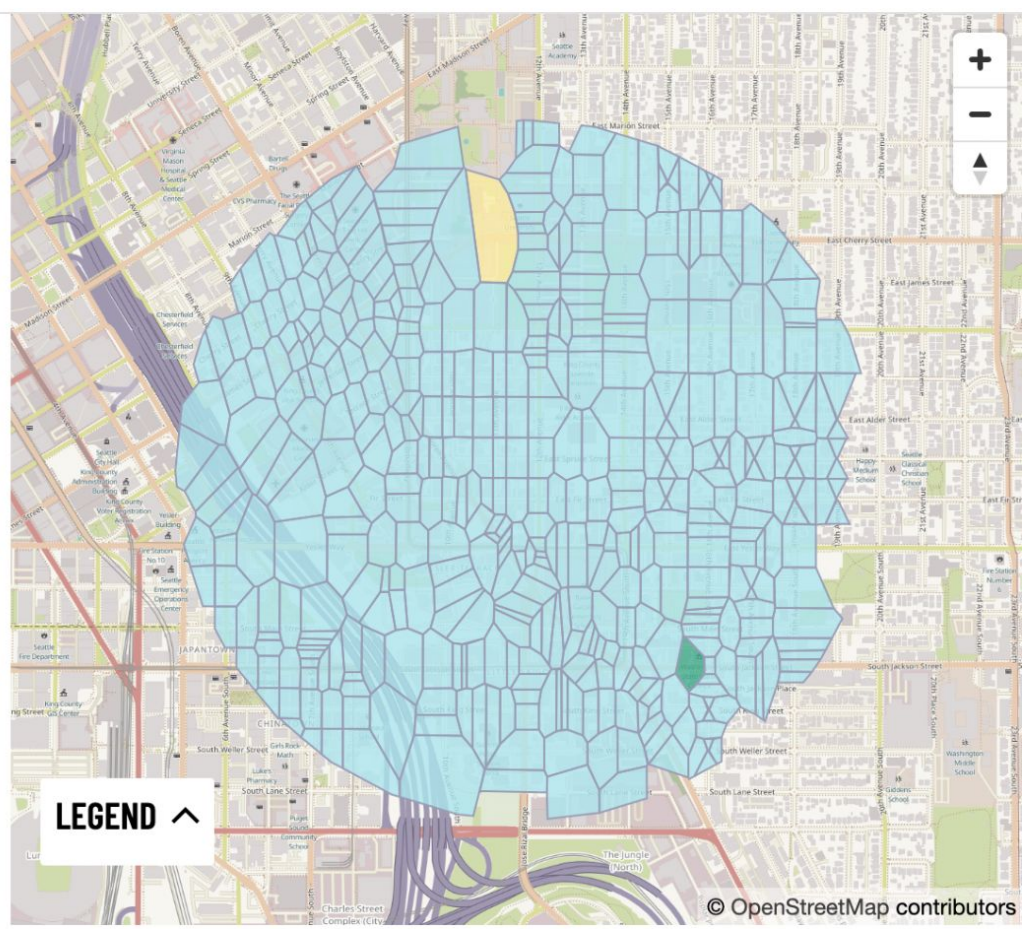
## HEALTH THROUGH HOUSING, BERTHA PITTS LOCATION - VALIDATE PREDICTIONS

HTH King County · United States

TASKS INSTRUCTIONS CONTRIBUTIONS

Filter tasks by id...  All ▾ Most recently updated ▾

- Task #298 · Last updated by Su... More map...
- Task #428 · Last updated by Ga... Ready for ...
- Task #86 · Last updated by Cole... Ready for ...





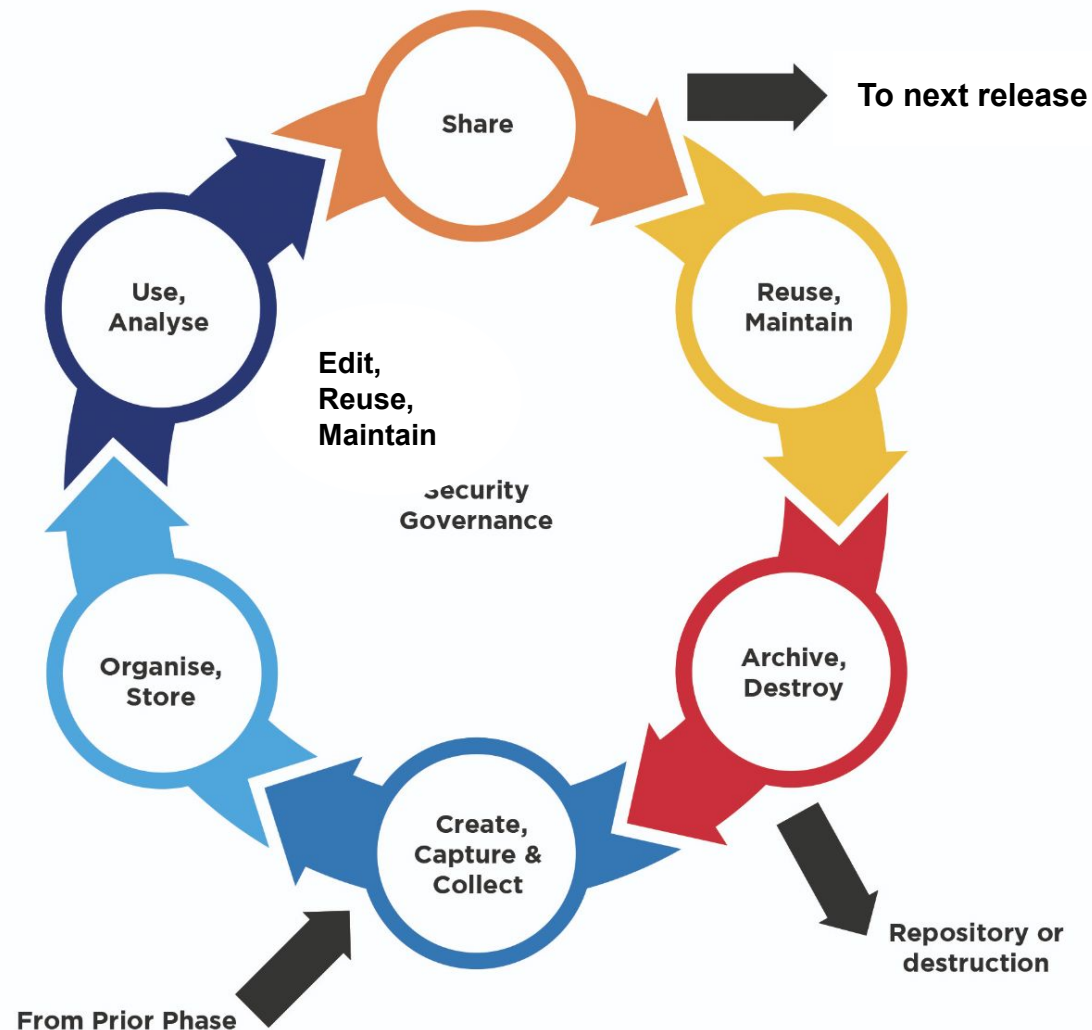


# What can we already do with what's collected?

Data Stakeholders need reliable & consistent data release management, security, licensing & governance of data.

We have *two* downstream applications in our tool ecosystem (e.g., AccessMap & Walksheds), as well as tested integration with Conveyal

## Accessmap.app







# User Management Front End

Allows your organization / agency to:

- Register Users
- Assign a Point of Contact for your organization
- Designate who can upload data for your organization
- Manage Users



Welcome!

Please login to your account.

Email Id

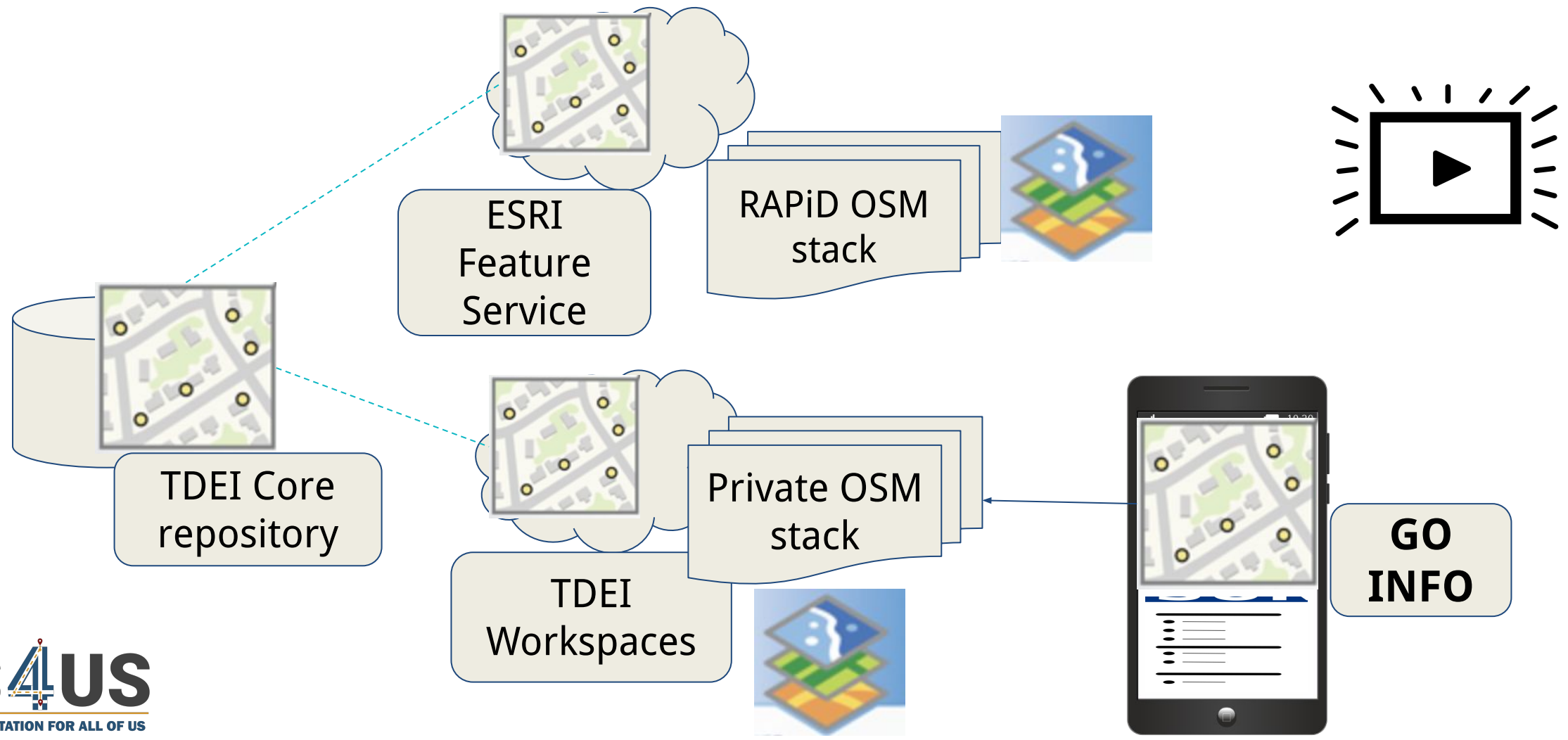
Password

Sign In

New to TDEI? [Register Now](#)



# Ability to add features/tags for deep dive areas





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# Sample Deep Dive: Incorporating Accessibility Pedestrian Data





# King County Metro / Health Through Housing

Mapping our world together

[OpenSidewalks Website](#)

OpenSidewalks Tasking Manager

[EXPLORE PROJECTS](#)

[MY CONTRIBUTIONS](#)

[MANAGE](#)

[LEARN](#)

[ABOUT](#)



Taskar Center ▾

Difficulty level ▾

Any project ▾

More filters

Sort by ▾

🔍 Health ✕

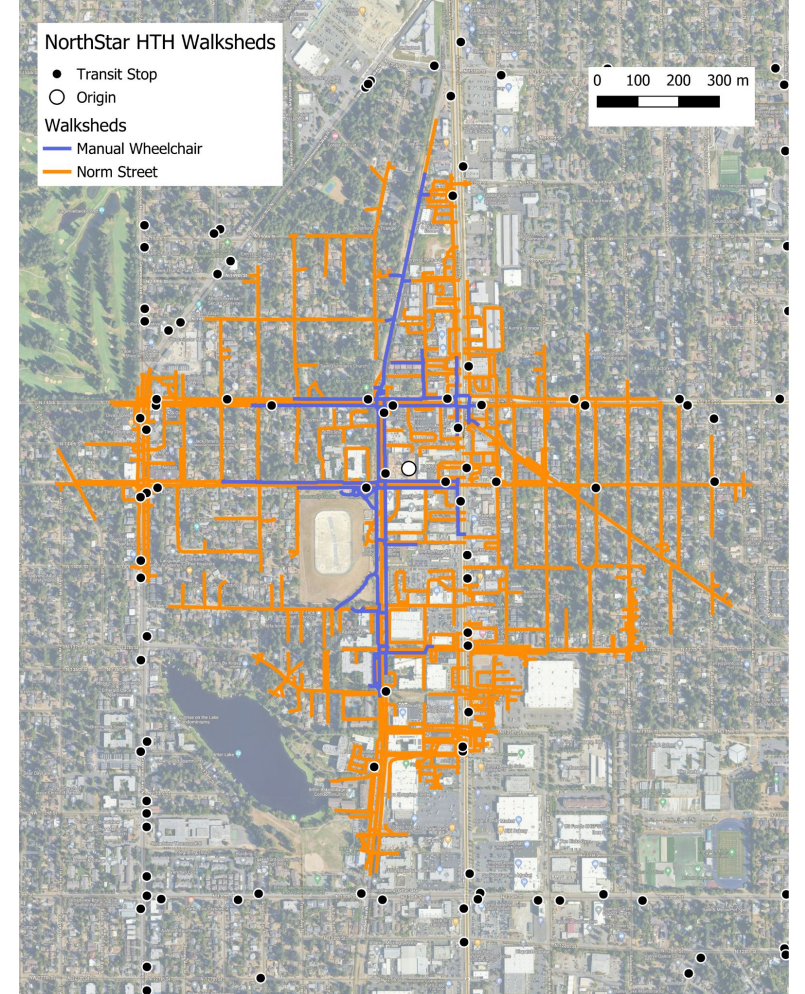
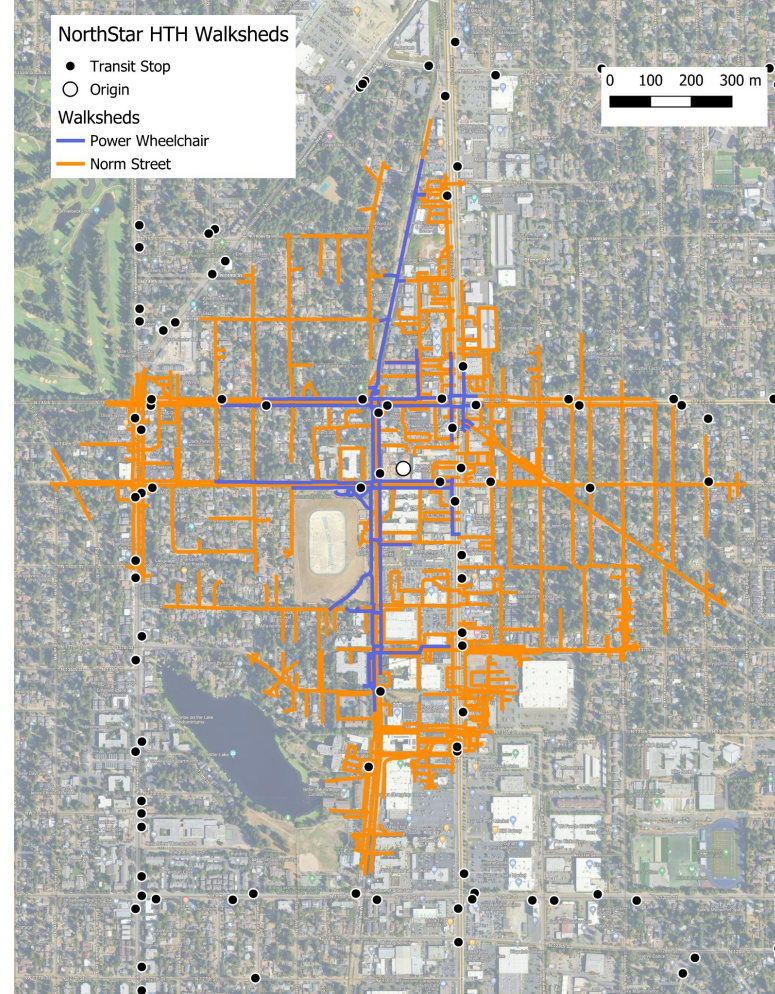
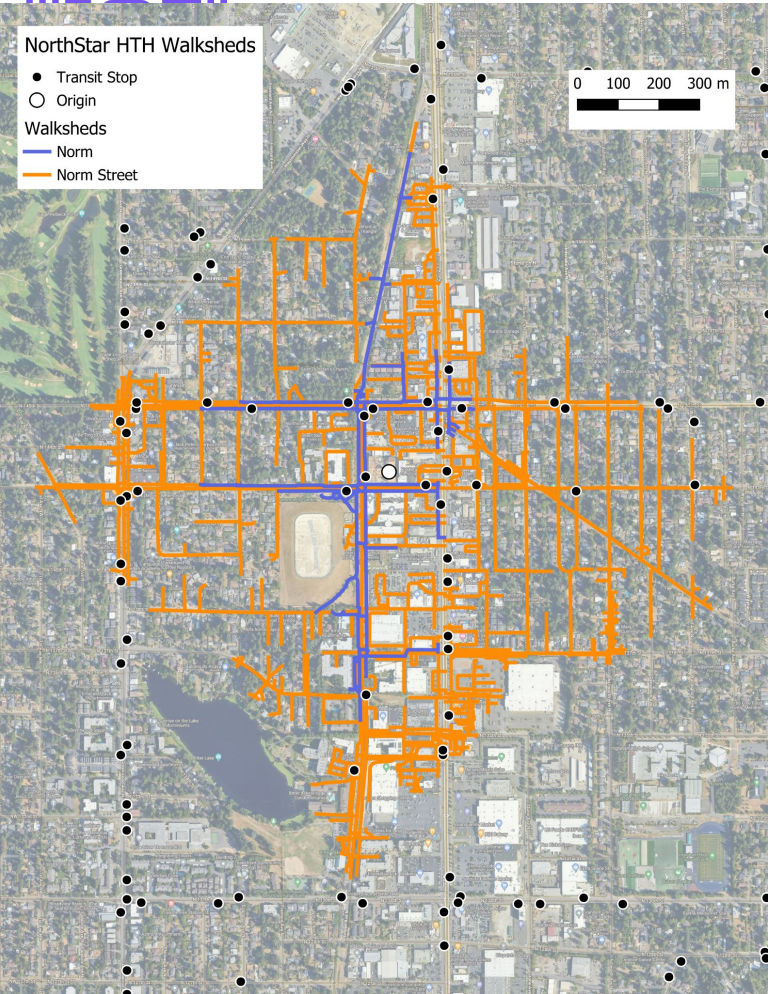
[Clear filters](#)

Show map

showing 14 of 15 projects

<p>#13</p> <p><b>Health Through Housing, Argyle Location - Validat...</b></p> <p>Help us validate Prophet V2 predictions around the Argyle Health...</p> <p>Last contribution 3 minutes ago</p> <p>Moderate</p>	<p>#14</p> <p><b>Health Through Housing, Bertha Pitts Location - ...</b></p> <p>Help us validate Prophet V2 predictions for the area around the...</p> <p>13 total contributors</p> <p>Moderate</p>	<p>#15</p> <p><b>Health Through Housing, Burbridge Location - Validat...</b></p> <p>Help us validate Prophet V2 predictions for the area around the...</p> <p>Last contribution 4 hours ago</p> <p>Moderate</p>	<p>#16</p> <p><b>Health Through Housing, Burien Location - Validat...</b></p> <p>Help us validate Prophet V2 predictions around the Burien Health...</p> <p>Last contribution 1 month ago</p> <p>Moderate</p>	<p>#17</p> <p><b>Health Through Housing, Don's Place Location - ...</b></p> <p>Help us validate Prophet V2 predictions around the Don's Place...</p> <p>Last contribution 1 month ago</p> <p>Moderate</p>	<p>#18</p> <p><b>Health Through Housing, E. Republican...</b></p> <p>Help us validate Prophet V2 predictions around the E. Republic...</p> <p>Last contribution 1 hour ago</p> <p>Moderate</p>	<p>#19</p> <p><b>Health Through Housing, Ext. Stay Location - Validat...</b></p> <p>Help us validate Prophet V2 predictions around the Extended...</p> <p>11 total contributors</p> <p>Moderate</p>	<p>#20</p> <p><b>Health Through Housing, Gateway Location - Validat...</b></p> <p>Help us validate Prophet V2 predictions around the Gateway...</p> <p>5 total contributors</p> <p>Moderate</p>
<p>#21</p> <p><b>Health Through Housing, Kirkland Location - Validat...</b></p> <p>Help us validate Prophet V2 predictions for the community of...</p> <p>5 total contributors</p> <p>Moderate</p>	<p>#22</p> <p><b>Health Through Housing, Mary Pilgrim Location - ...</b></p> <p>Help us validate Prophet V2 predictions around the Mary Pilgr...</p> <p>Last contribution 1 week ago</p> <p>Moderate</p>	<p>#23</p> <p><b>Health Through Housing, NorthStar Location - Validat...</b></p> <p>Help us validate Prophet V2 predictions around the NorthStar...</p> <p>Last contribution 1 hour ago</p> <p>Moderate</p>	<p>#24</p> <p><b>Health Through Housing, Redmond Location - Validat...</b></p> <p>Draft</p> <p>7 total contributors</p> <p>Moderate</p>	<p>#25</p> <p><b>Health Through Housing, Sacred Medicine Locatio...</b></p> <p>Help us validate Prophet V2 predictions around the Sacred...</p> <p>Last contribution 3 hours ago</p> <p>Moderate</p>	<p>#26</p> <p><b>Health Through Housing, Salmonberry Loft...</b></p> <p>Help us validate Prophet V2 predictions around the Salmonberr...</p> <p>Last contribution 7 days ago</p> <p>Moderate</p>		

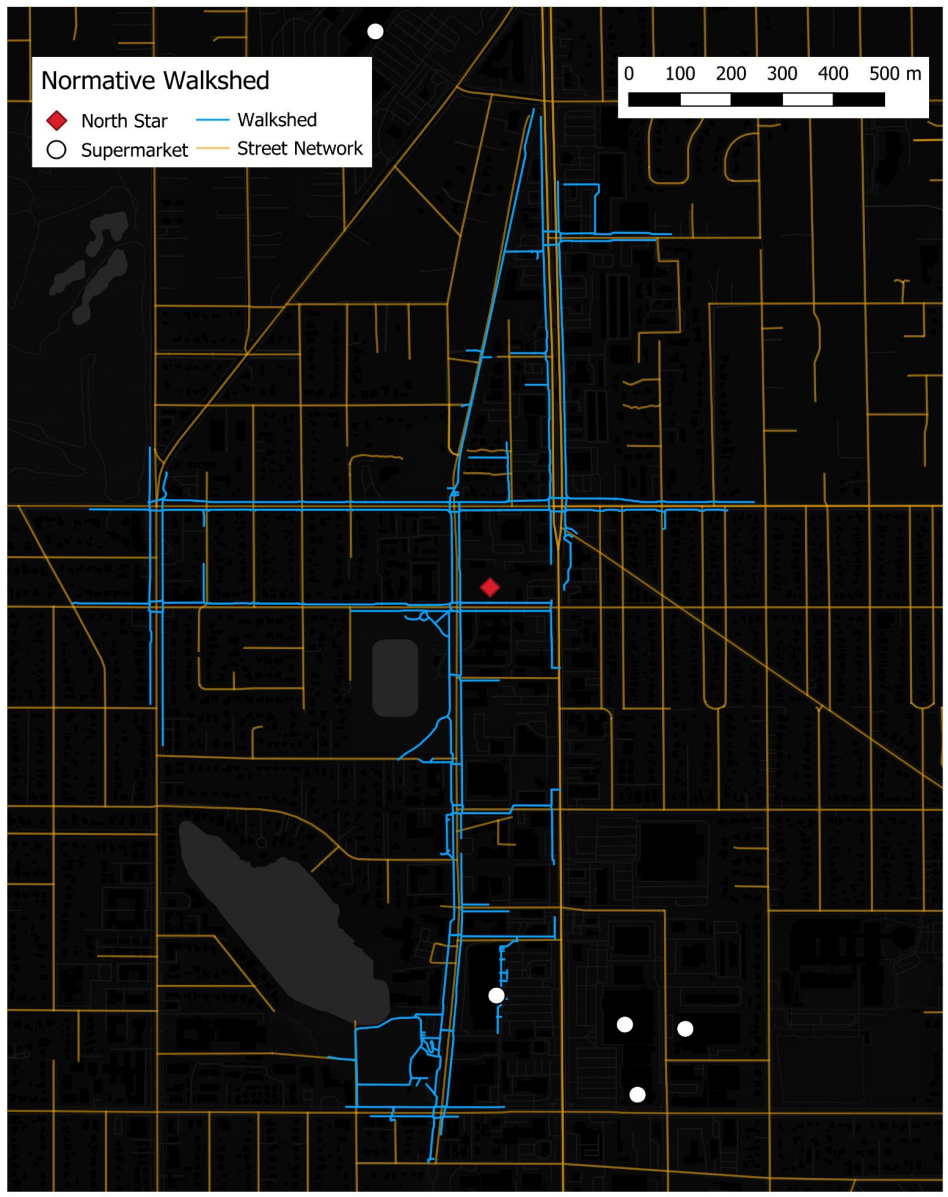
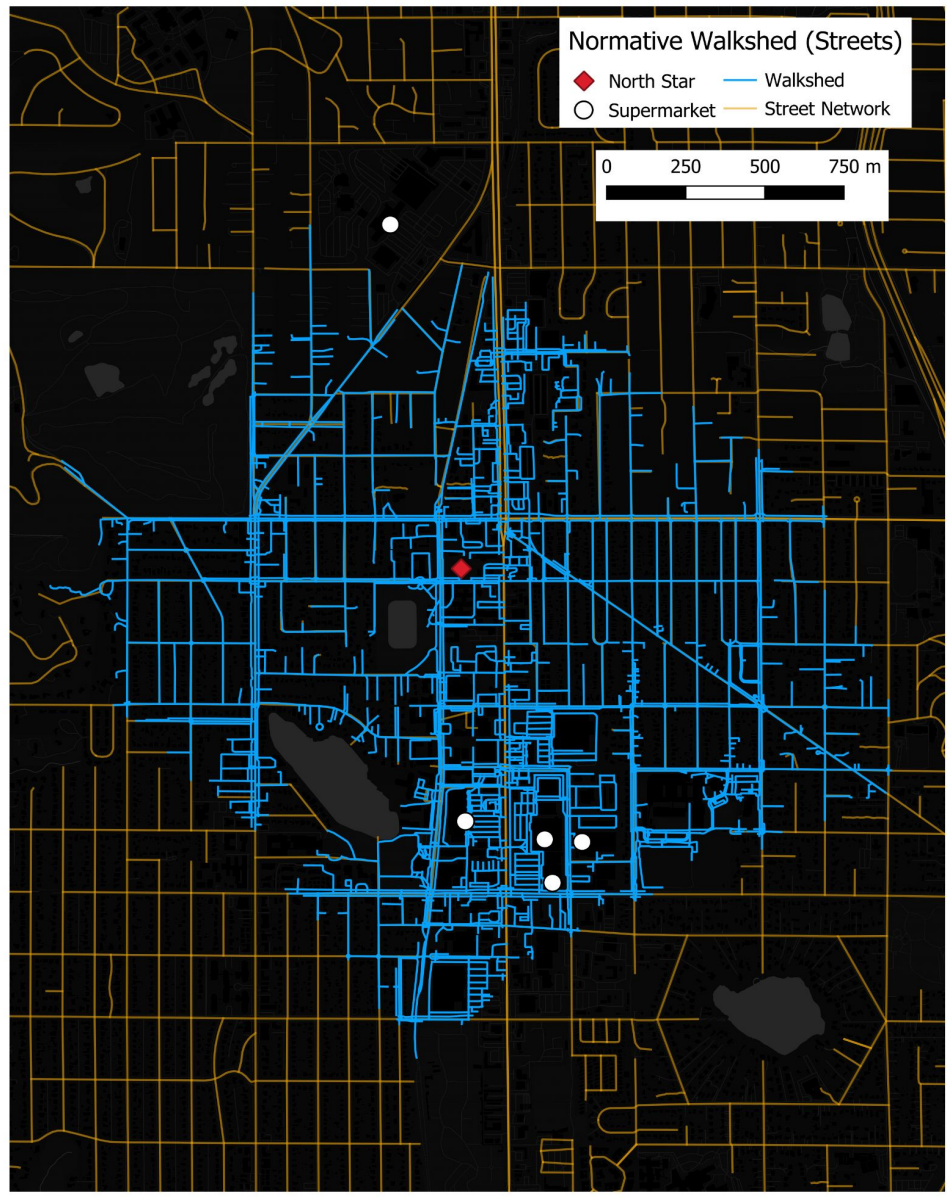




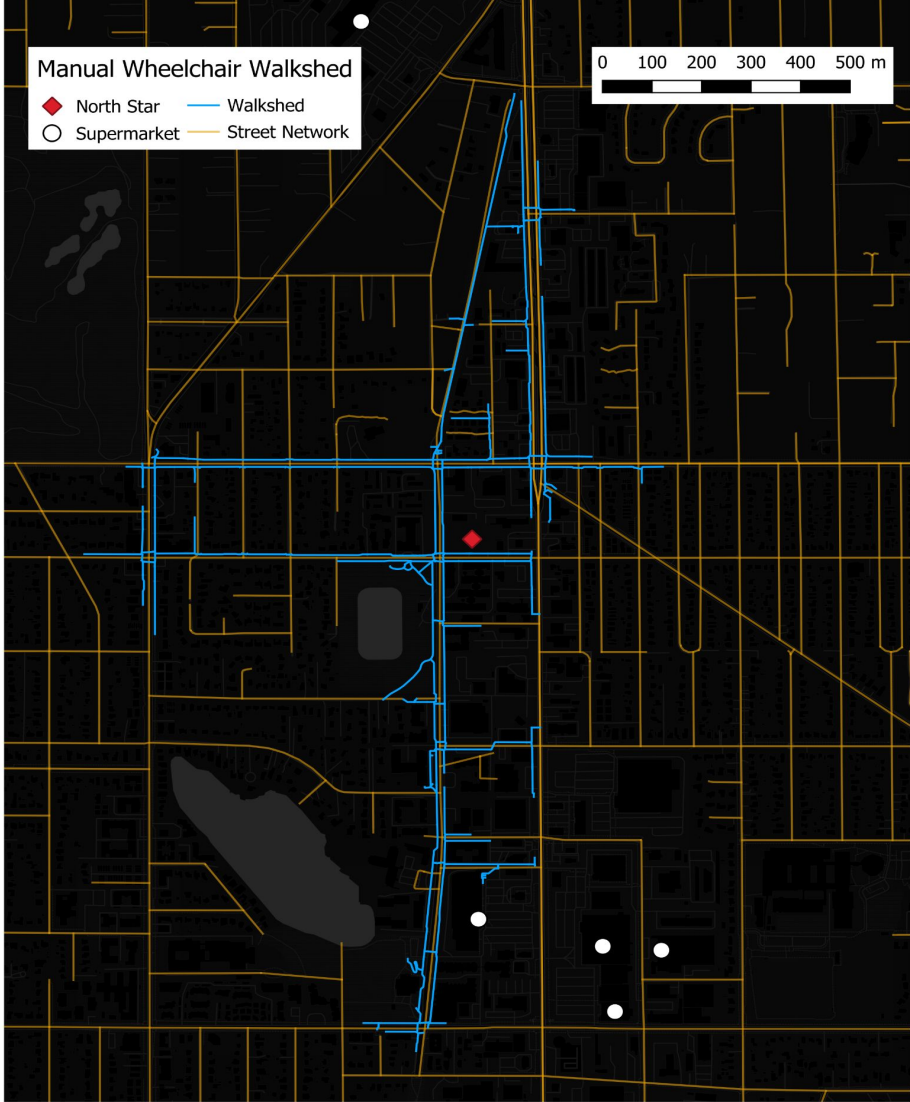
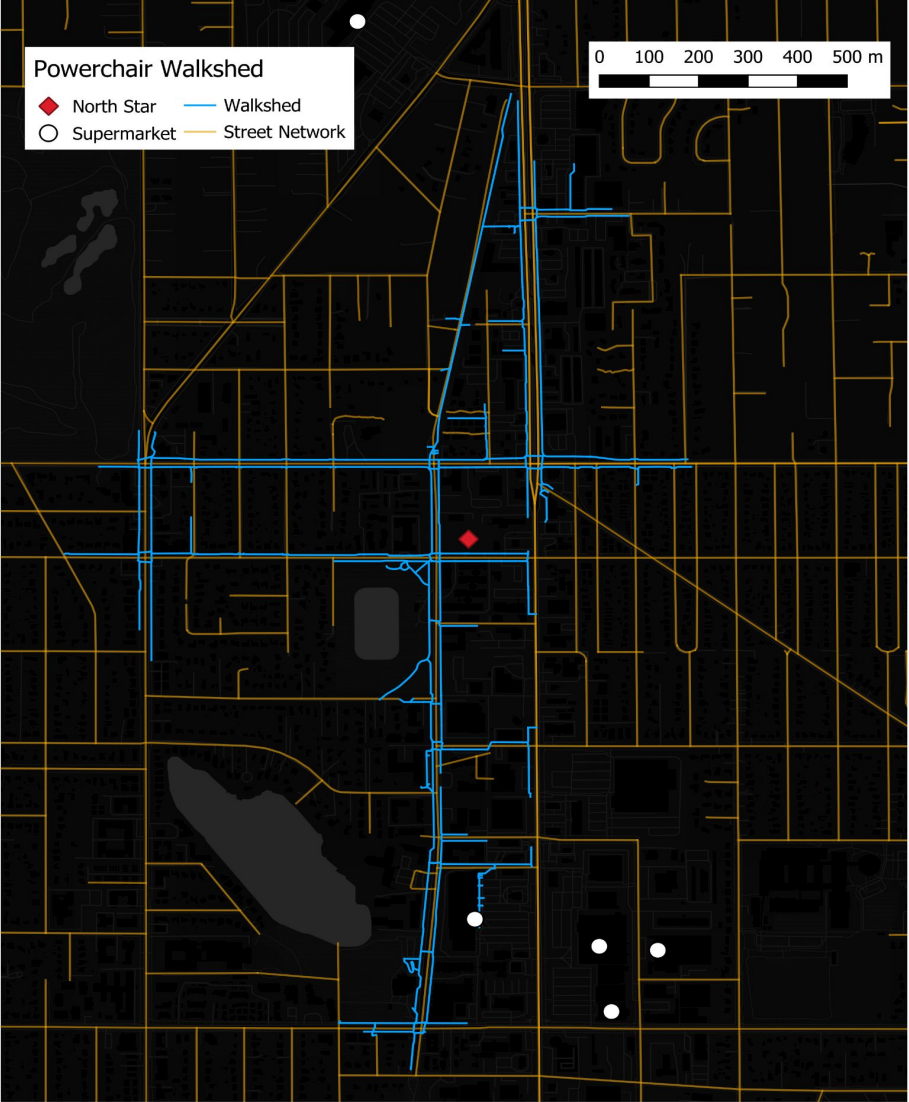




Location	Type	Uphill	Downhill	Avoid Curbs	Avoid Street	Cost	Length (m)	% Norm Street	% Norm
North Star	Norm Street	0.15	0.15	No	No	900	46,990	100	n/a
North Star	Norm	0.15	0.15	No	Yes	900	6,157	13.10	100
North Star	Powerchair	0.12	0.12	Yes	Yes	900	5,949	12.66	96.62
North Star	Manual Wheelchair	0.08	0.1	Yes	Yes	900	5,573	11.86	90.51



Credit: Cole A.



Type	Uphill	Downhill	Avoid Curbs	Avoid Street	Cost	Length	% Norm Street	% Norm	Groceries
Norm Street	0.15	0.15	No	No	1500	115,540 m	100	n/a	4
Norm	0.15	0.15	No	Yes	1500	14,639 m	12.7	100	1
Powerchair	0.12	0.12	Yes	Yes	1500	13,170 m	11.4	90	1
Manual Wheelchair	0.08	0.1	Yes	Yes	1500	11,701 m	10.1	79.9	0

\*Normative Street map is at **1:21000** scale, other maps at **1:13000** scale



# Identify Projects and prioritize via clear schema and increased reachability metrics

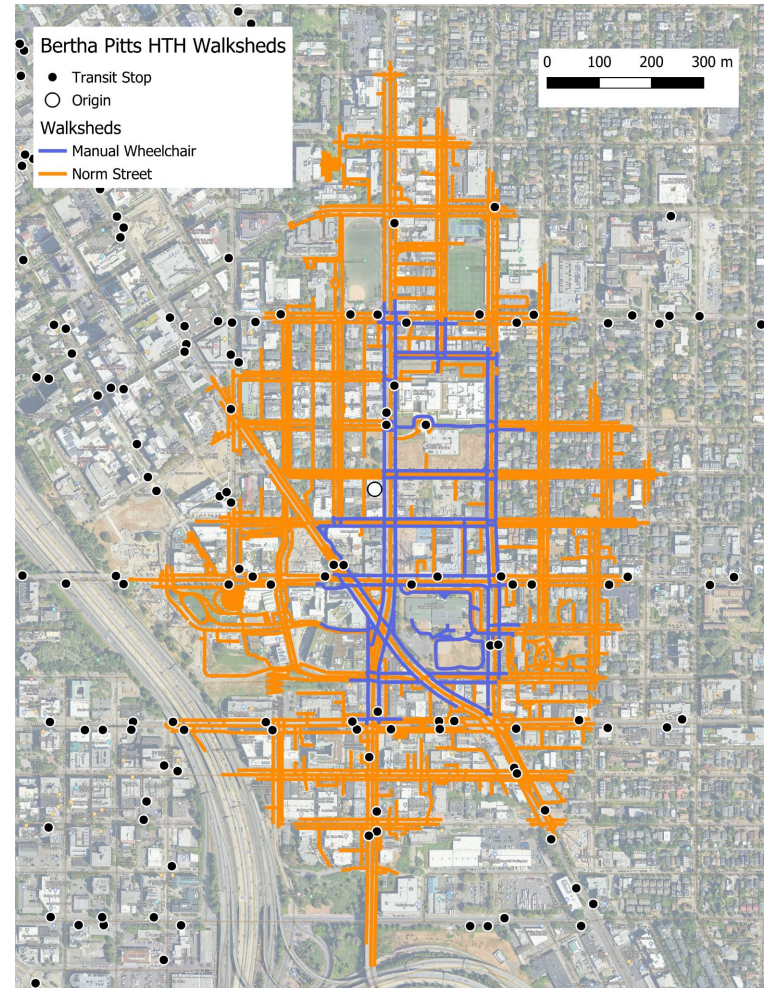
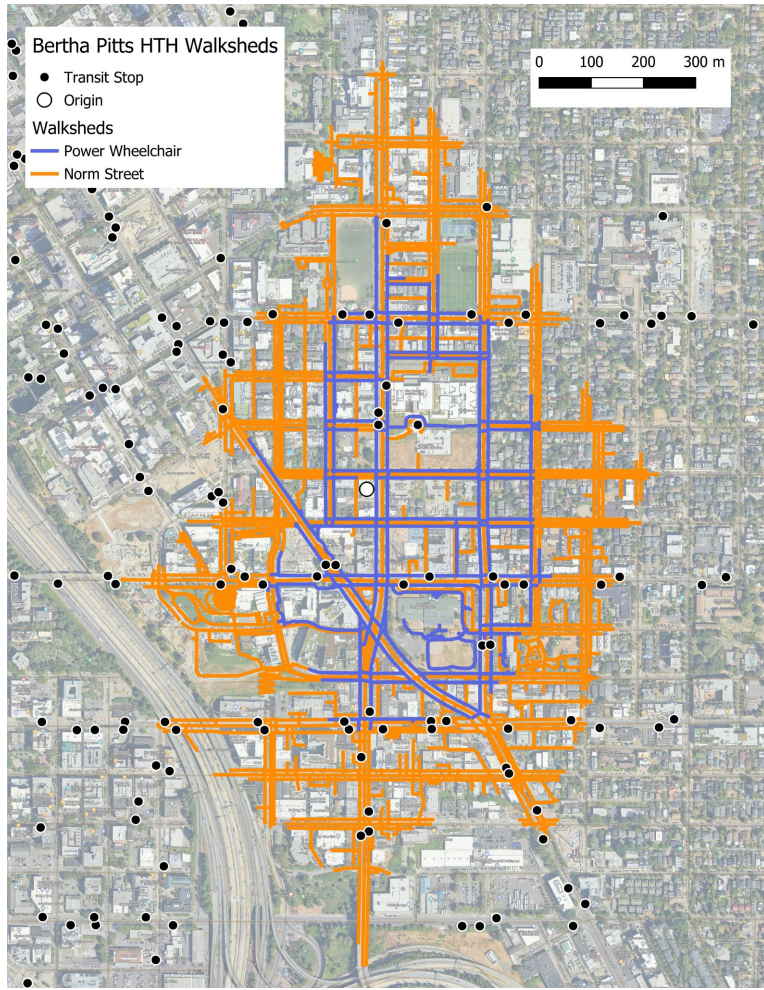
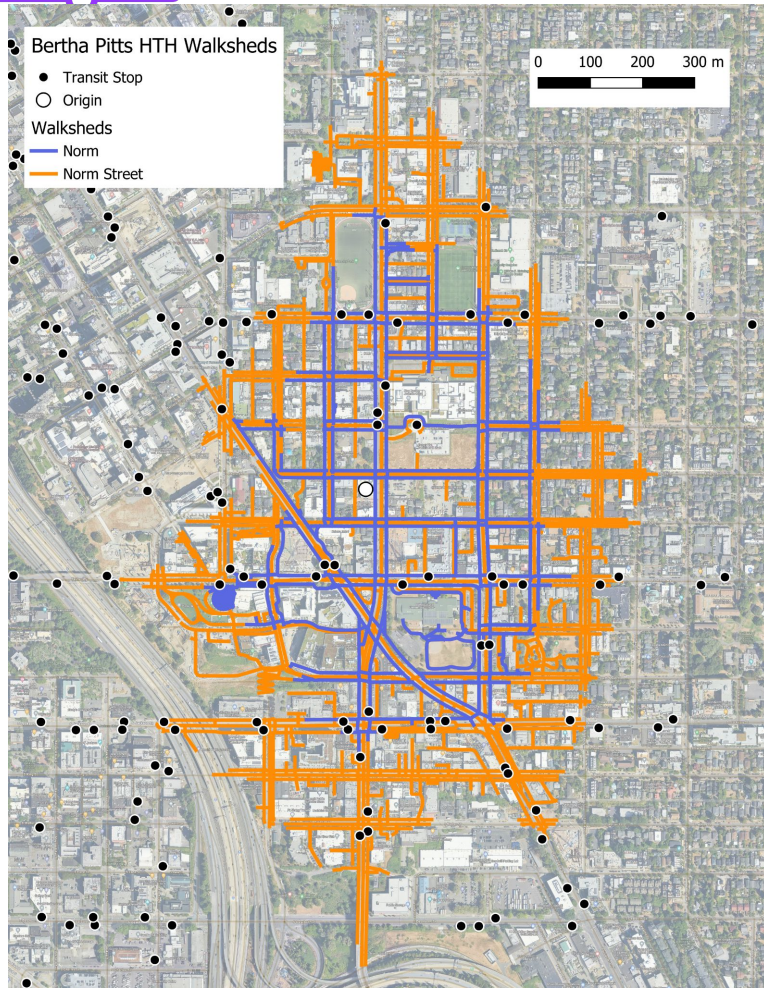
Example project:

Construct five foot bike lane, curb, gutter and six foot sidewalk along both sides, and other landscaping where feasible



Example new analysis:

Before and After Walksheds analyses demonstrating increased reachability metrics for different mobility profiles







<b>Location</b>	<b>Type</b>	<b>Uphill</b>	<b>Downhill</b>	<b>Avoid Curbs</b>	<b>Avoid Street</b>	<b>Cost</b>	<b>Length (m)</b>	<b>% Norm Street</b>	<b>% Norm</b>
Bertha Pitts	Norm Street	0.15	0.15	No	No	900	72,437	100	n/a
Bertha Pitts	Norm	0.15	0.15	No	Yes	900	27,069	37.37	100
Bertha Pitts	Powerchair	0.12	0.12	Yes	Yes	900	13,205	18.23	48.78
Bertha Pitts	Manual Wheelchair	0.08	0.1	Yes	Yes	900	8,501	11.74	31.40

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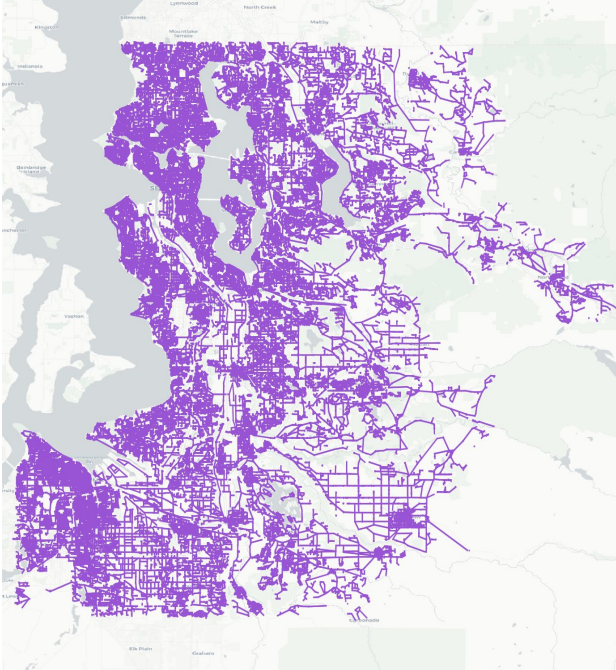
## Future Milestones



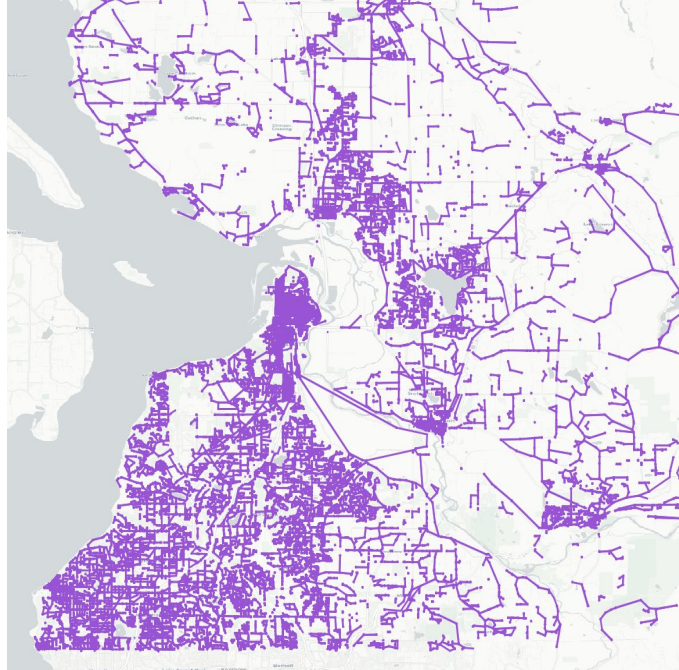




# Continue Data Production with Prophet



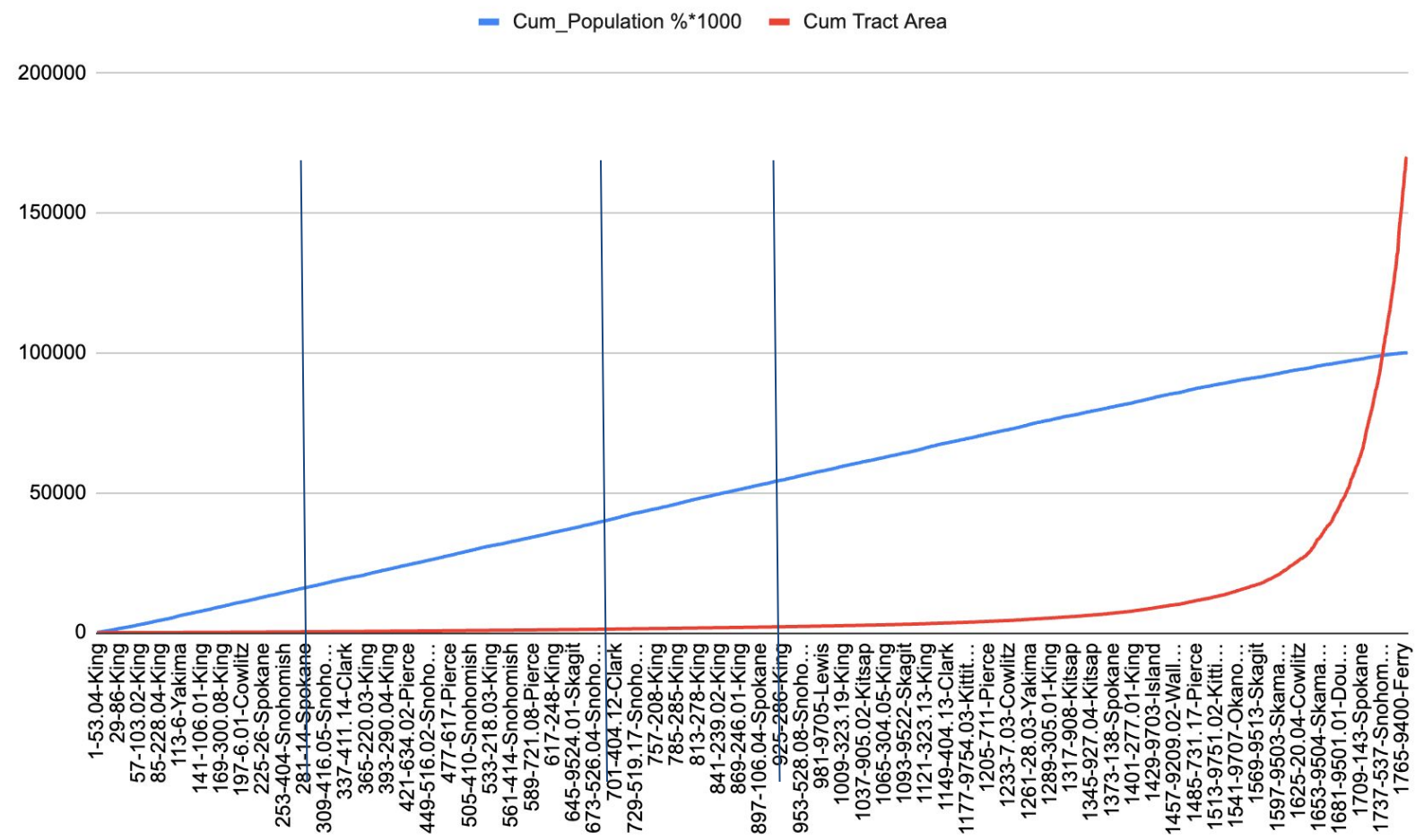
King County, WA



Snohomish County, WA



# Determining vetting milestones Census Tracts + Population Centers



<https://tinyurl.com/WACensusTractPriority>

+ Population Centers

+ Population Centers from 6 underrepresented counties

credit: Suresh D



# Practical questions from consumers

Jupyter notebook

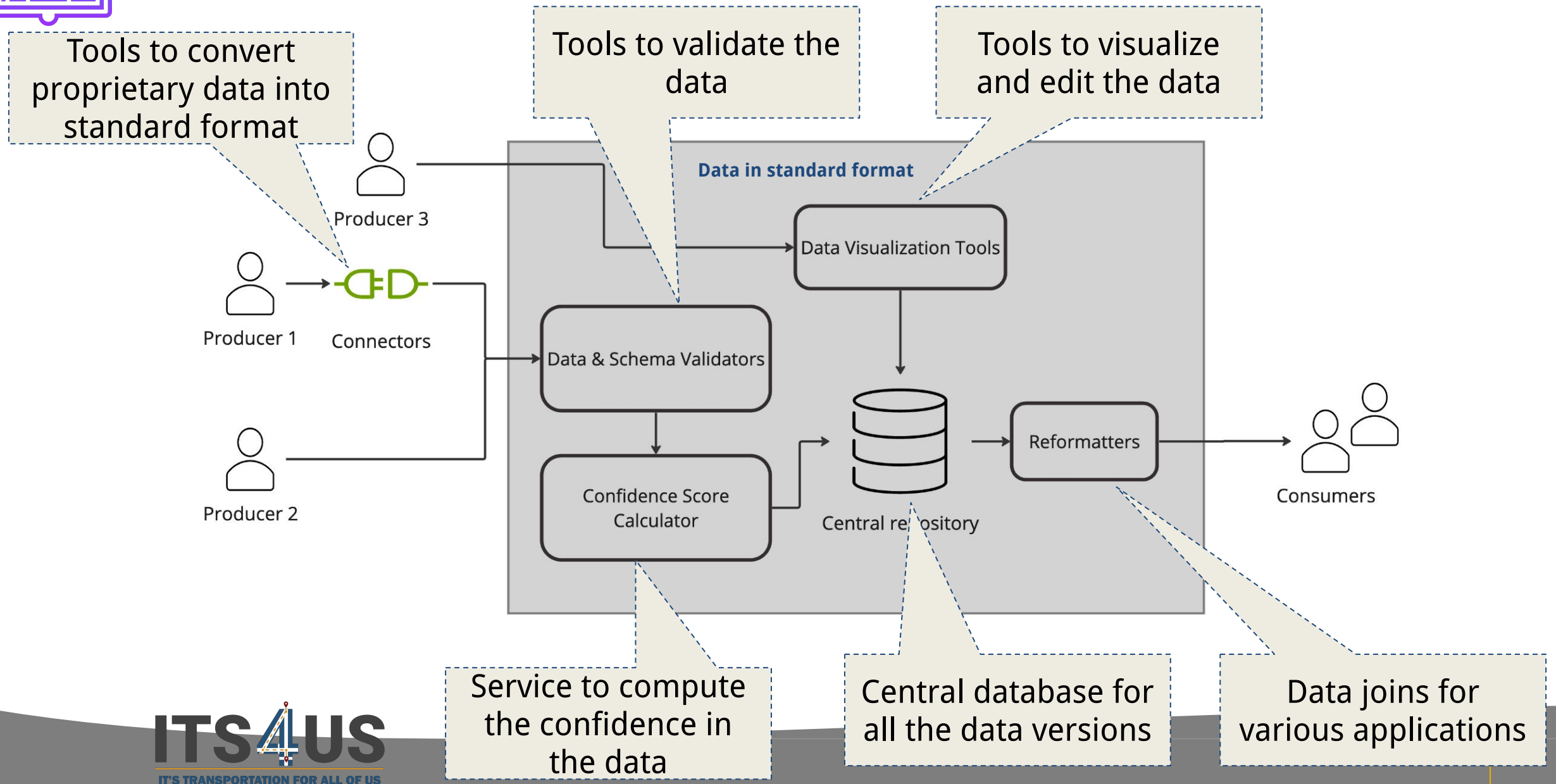
<https://tinyurl.com/otp24-tdei-demo>

## Data consumers want to:

1. Find all datasets available for a region via bounding box
2. Download a given dataset in osw format
3. Edit a dataset using osm tools, without downloading
4. Allow collaborators to edit a dataset in GoInfoGame
5. Allow collaborators to edit a dataset using RAPID + esri backend
6. (Discussion) Join two datasets to enrich metadata, conflate, etc.



# Functional Depiction of TDEI







# TDEI Components

## TDEI Platform

TDEIWorkspaces

TDEICore

TDEIQuery

API (Edits, OSM  
Integration)

API (User Mgmt,  
Datasets, Metadata)

API (Bbox, Join,  
Conflation)

## TDEI Tool Ecosystem

RAPID

OSW TaskingManager

GoInfoGame

GTFS Pathway Editor

## TDEI Deployment Applications

AccessMapMultiModal

Walkshed Analysis

Audiom

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## Open Discussion

