GTFS-flex

Trip planning for demand-response transportation

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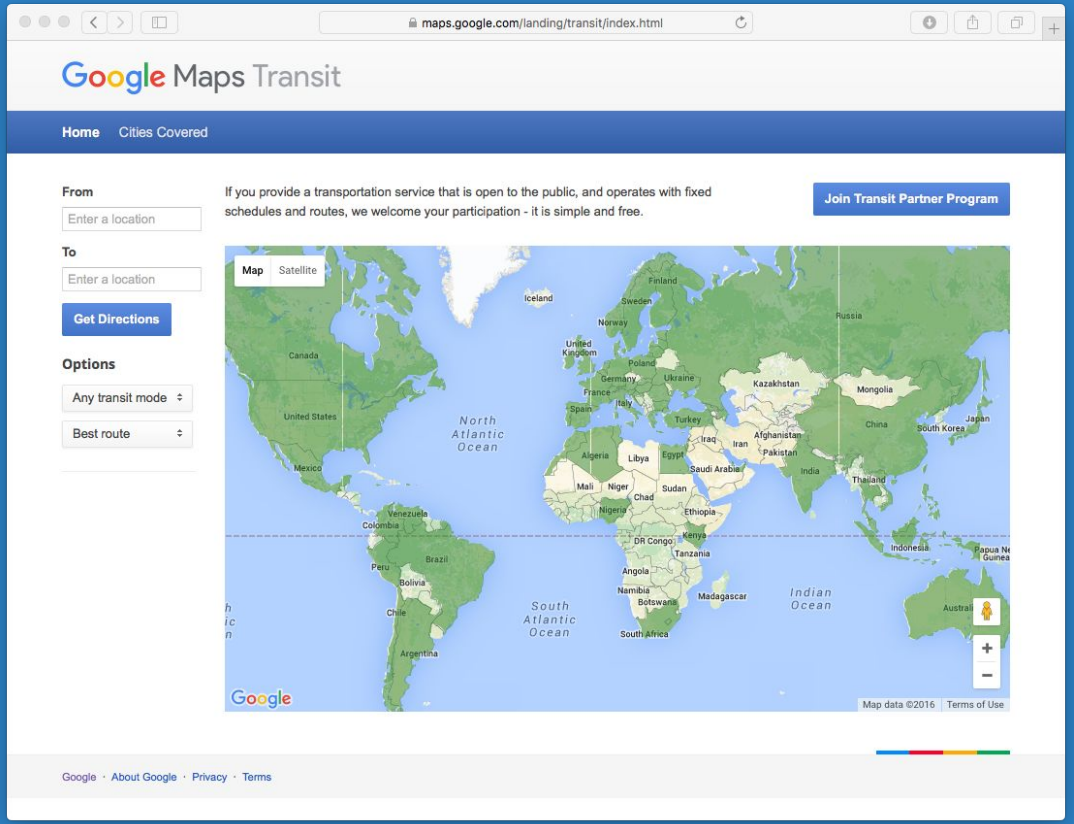
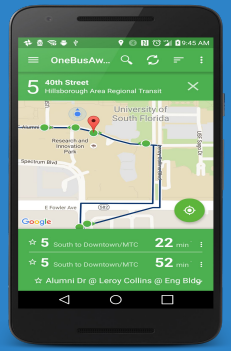
What is GTFS-flex?

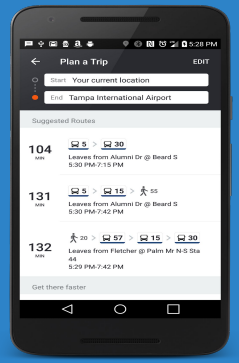
GTFS is behind transit in Google Maps:
6 continents, **~7,000** cities, **1 million+** transit stops



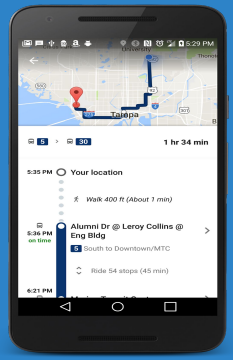
GTFS is also used in *hundreds* of apps



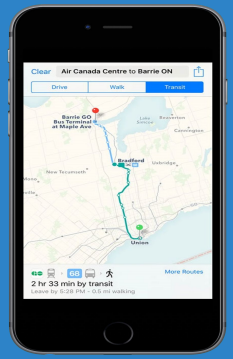
OneBusAway



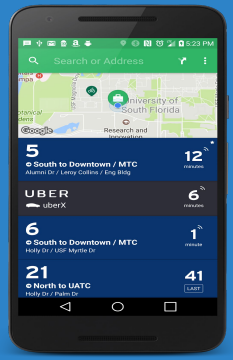
Moovit



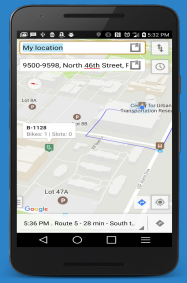
Google Maps



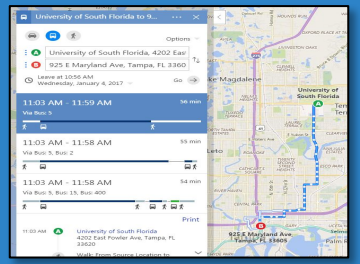
Apple Maps



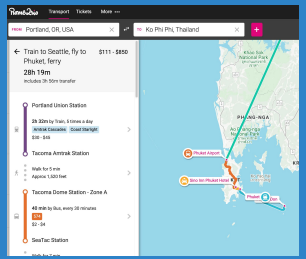
Transit



OpenTripPlanner



Bing Maps



Rome2Rio

But trip planning isn’t available for all transit riders.

Trip planning is an option if there’s

- Fixed routes
- Fixed times
- Fixed stops
- (Plus user access to software and hardware.)

We need to provide equal access

Fixed route users with smartphones get a simple process

- Enter origin
- Enter destination
- Get on your way

All users deserve equal access to trip planning.

So what about?

Hail-and-ride (flag stops)

Deviated Fixed-Route

Point deviation & checkpoint service

Zone-Based (Dial-A-Ride)

Problem

Many don’t know that flexible transit even ***exists***.

Solution

Make demand responsive transit more ***discoverable.***

Enter: GTFS-flex (gtfsflex.com)

Adds to GTFS

- Service areas and locations
- Service times
- Travel speeds
- Rider instructions

Option 1: departs approximately Oct 4th 7:07am — 1 hr, 55 min +

84

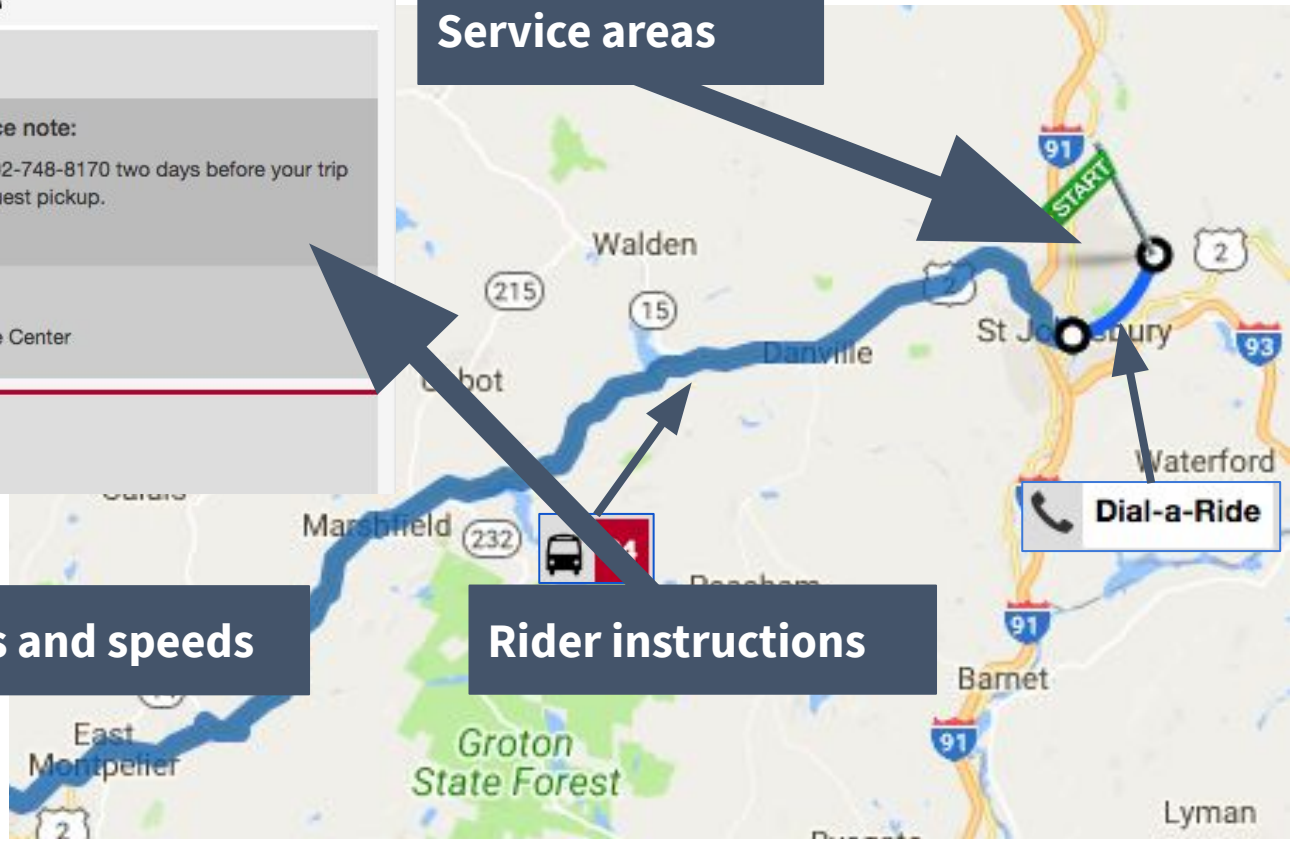
Rural Community Transportation — **Dial-a-Ride**

Depart	From	Service note:
approximately Oct 4th 7:00am to 7:13am	Spaulding Road	Call 802-748-8170 two days before your trip to request pickup.

Arrive	To
approximately Oct 7:26am to 7:40am	St. Johnsbury Welcome Center

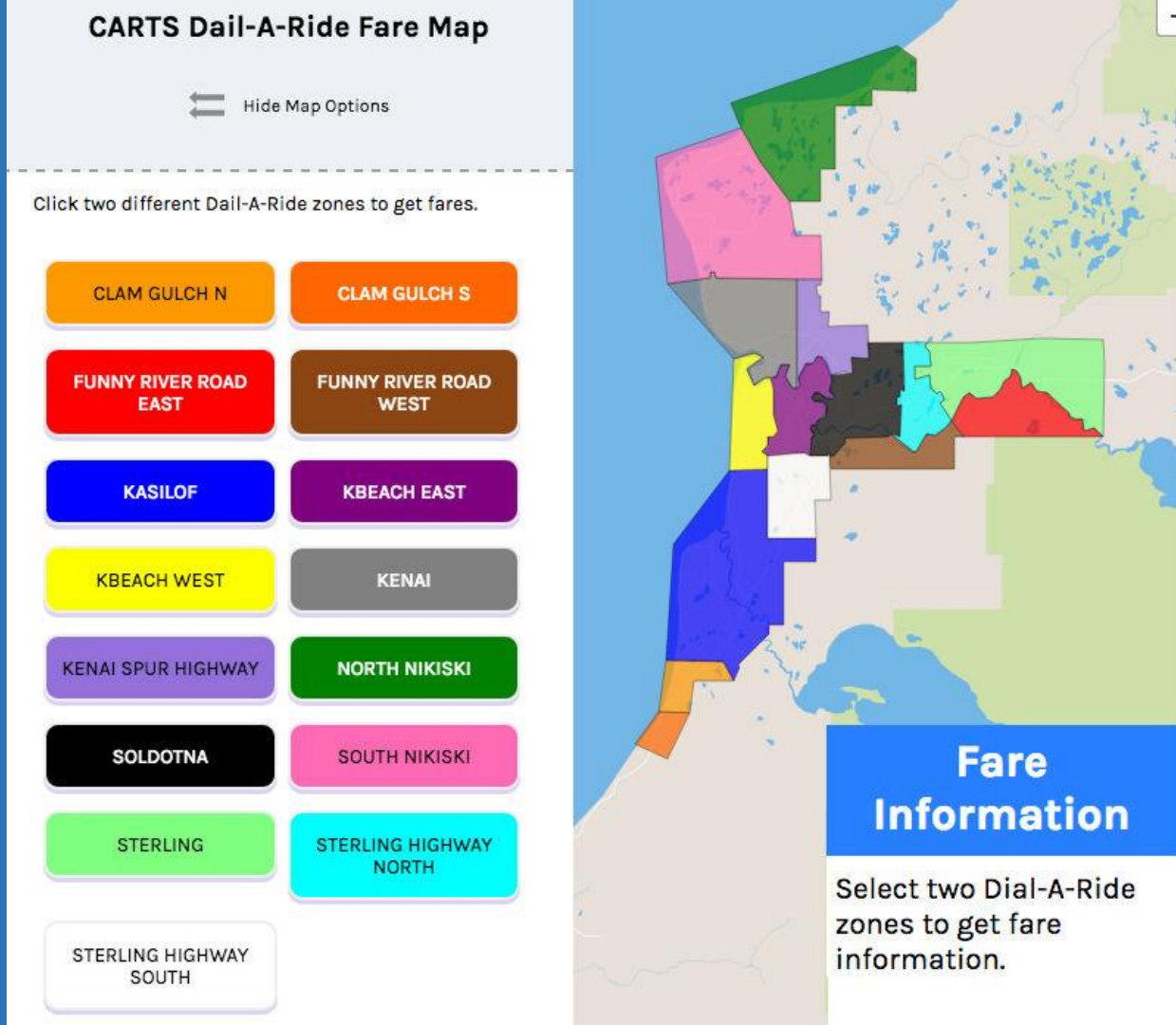
Green Mountain Transit 84

to National Life

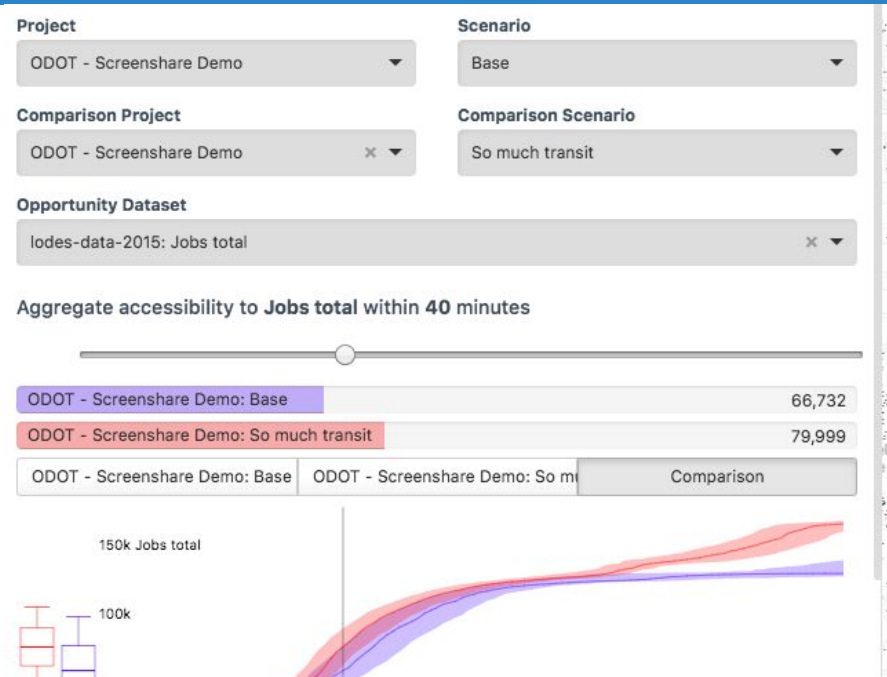


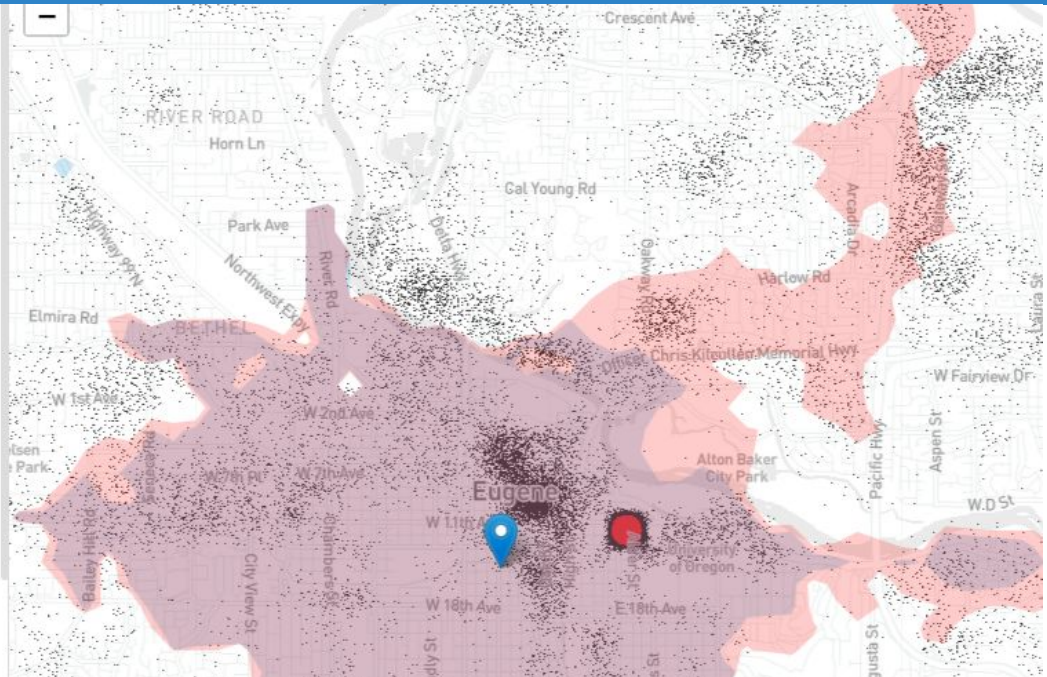
So we can understand systems like **CARTS** *Soldotna, Alaska*

map.ridecartsak.org



GTFS-flex also seeks to allow visualization and analysis





Current Projects

TCaT
TULARE COUNTY AREA TRANSIT

FIXED ROUTES | FARES | DIAL-A-RIDE | HOW TO RIDE | ESPAÑOL

From: 17873 Rd 24, Corcoran
To: 22223 Carson Ave, Visalia
Departing after 7:51 PM on June 16th

Show trip on Interactive Map

Edit Trip

Here are the best trips for you:

Some of your trips leave on a different day than your request.

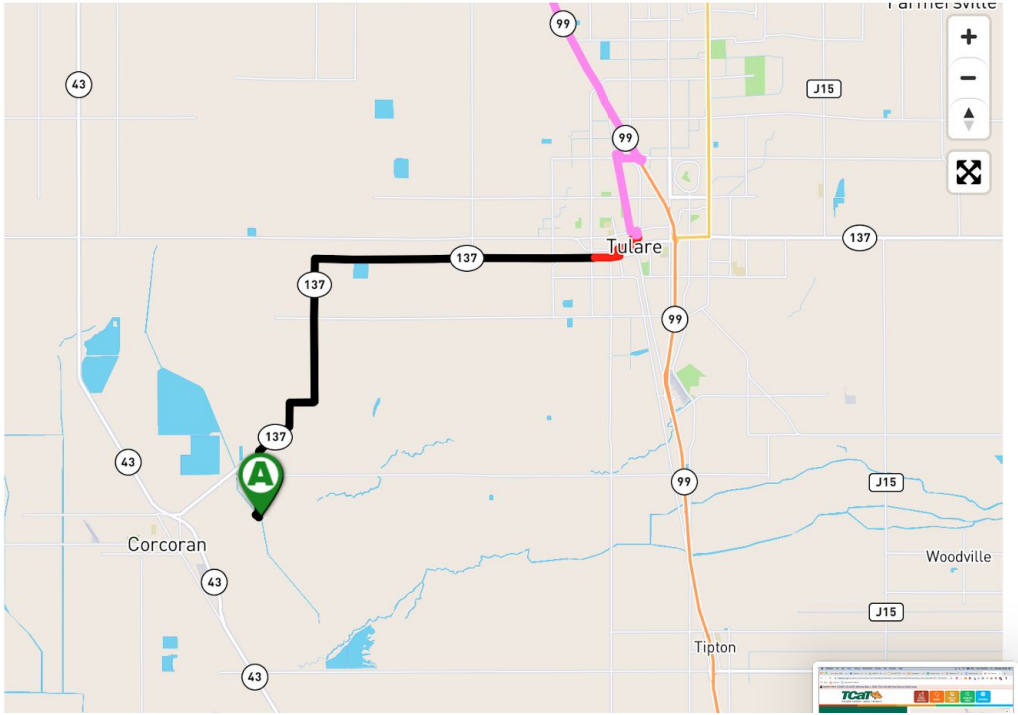
Some of your trips require advance reservation.

1 7:05 am - 9:35 am > 3 > > Rt 11X > 2 hr 29 min

Trip Date: Th, 06 18th

7:06 am • **Board Dial-a-Ride**

Call 1-800-431-9711 at least one day in advance to schedule your ride.
Service provided by Tulare County Area Transit



Example website integration: ridetcat.org

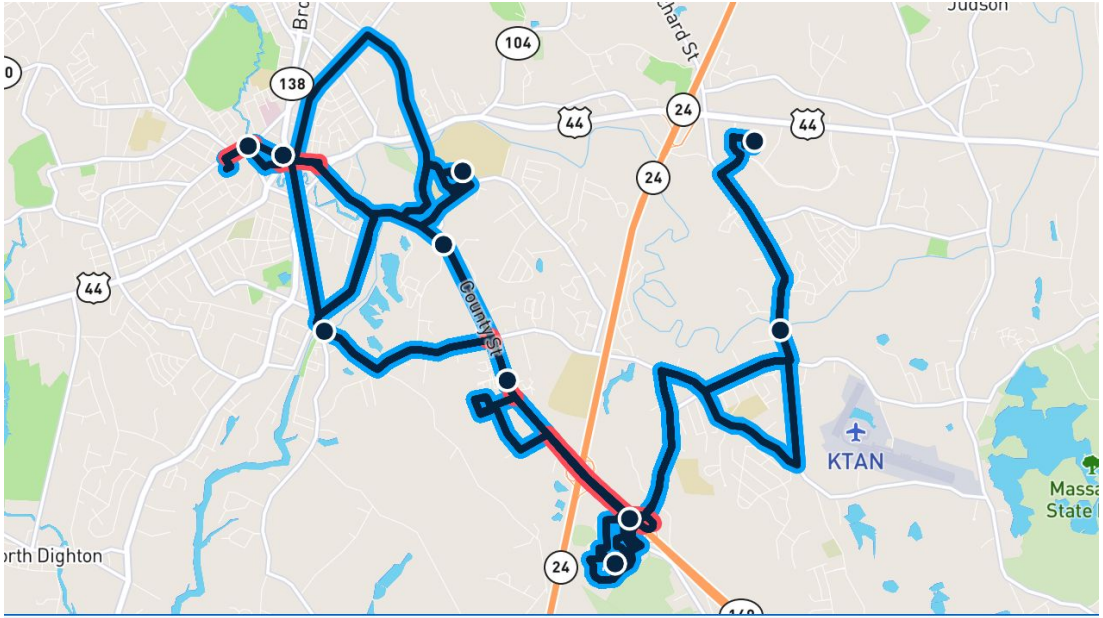
Mobility as a Service or MaaS

Stanislaus County and San Joaquin County in California

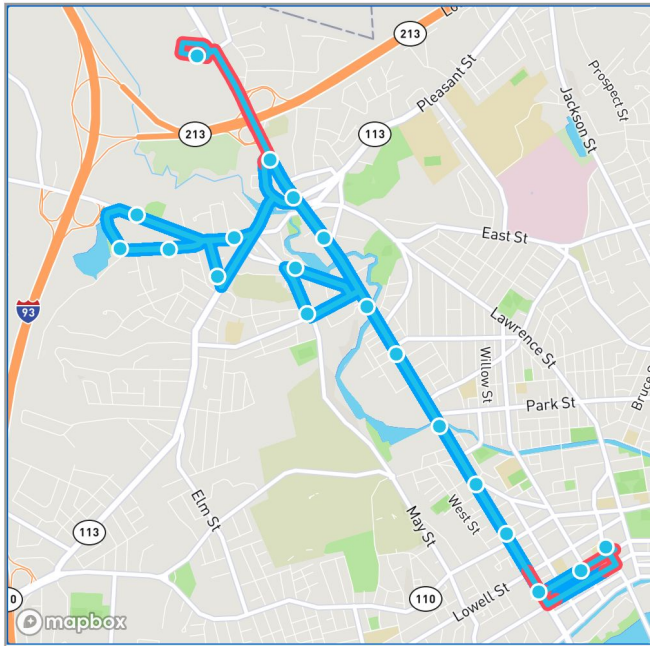
National Center for Sustainable Transportation

ITS UCDAVIS INSTITUTE OF TRANSPORTATION STUDIES

3 REVOLUTIONS SHARED AUTOMATED ELECTRIC



Village Plaza, Methuen			6:24am
Oakland Ave and Railroad St, Methuen	5:24am	5:54am	6:31am
Buckley Transportation Center, Lawrence	5:35am	6:05am	6:43am



Stop Zone Legend

- Flag stop zone: Flag down the bus anywhere along this segment to ride.
- No stop zone: Bus will only stop at marked, designated stops in this area.

Flag stopping maps (gatra.org and mvrta.com)

What can **you** do right **now**?

Small Dial-a-ride or paratransit providers

Problems

- You have no good way to **allow users to book trips** themselves.
- You **don’t have extra budget** to spend on expensive technology.
- You **can’t easily collaborate** with fixed-route services.

Small Dial-a-ride or paratransit providers

Solutions

- GTFS-flex could allow you to **show up in trip planners**.

… if those trip planners existed.

Small Dial-a-ride or paratransit providers

Next steps

- **Complain!** You and your riders should have trip planning too.
- GTFS-flex is a partial solution, but more (e.g. booking software) is needed.
- Lobby larger organizations to lead, or **organize with others**.

Questions?

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National RTAP
Rural Transit Assistance Program

National RTAP - GTFS-Builder

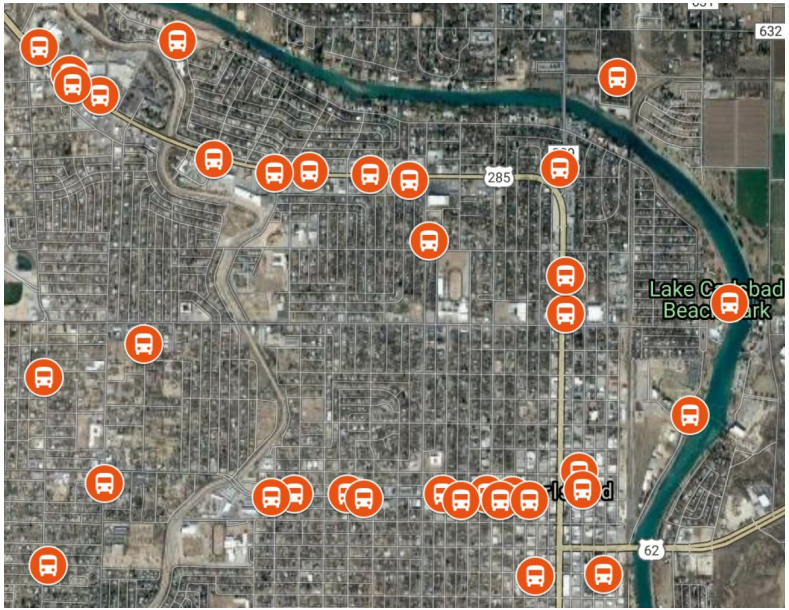
No-cost toolkit & technical support

Marcy Jaffe, MBA, MPA

Transnnovation Inc

Simple Excel-based toolkit = GTFS BUILDER

1. Locate bus stops
2. Build your schedule in Excel
3. Add holiday dates + other details



Schedules workbook - stops in stop order

Clallam_GTFSSchedules_V3_20201001_wDAR

	B	C	D	E	F	G	P	Q	R	S	T
1	route_id	service_id	direction_id	trip_headsign	stop_id	stop_desc	T01	T02	T03	T04	T05
176	Rt40	mtwtf	0	In-town Shuttle	333	Sequim Transit Ctr.	8:35:00	9:20:00	10:05:00	11:35:00	12:20:00
177	Rt40		0		40_1	Prairie & Sequim Ave	*	*	*	*	*
178	Rt40		0		40_2	Prairie & Sunnyside	8:38:00	9:23:00	10:08:00	11:38:00	12:23:00
179	Rt40		0		40_3	Sunnyside	*	*	*	*	*
180	Rt40		0		52E_1	E. Washington St At Pioneer Park	*	*	*	*	*
181	Rt40		0		40_7	Blake St	*	*	*	*	*
182	Rt40		0		40_15	Fir St	*	*	*	*	*
183	Rt40		0		40_8	Library	8:45:00	9:30:00	10:15:00	11:45:00	12:30:00

ImportExport workbook

Clallam_GTFSImportExport_20201001

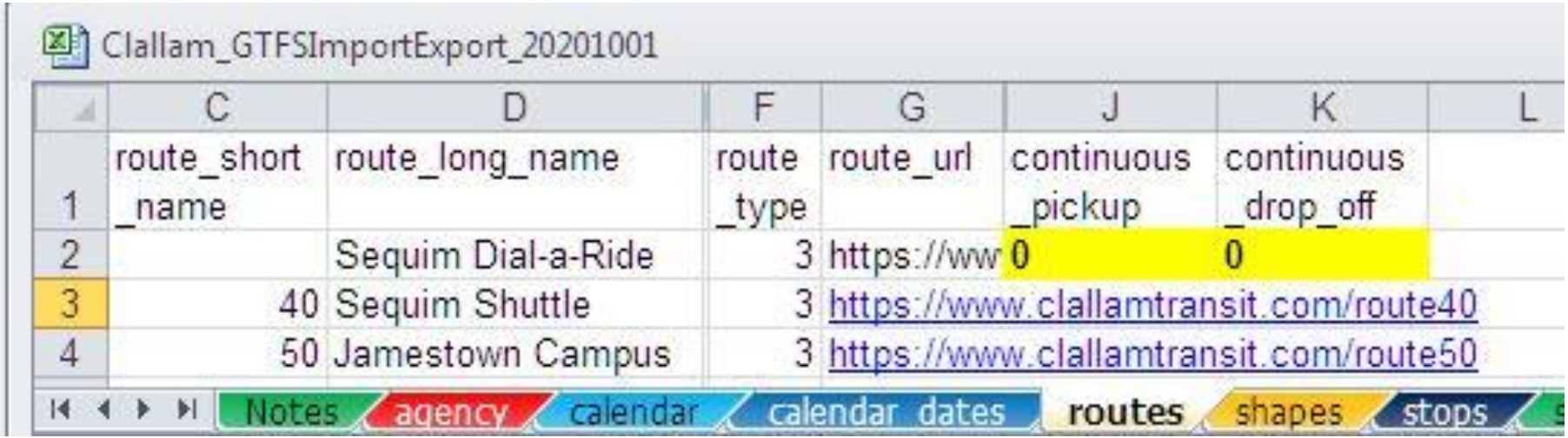
	A	B	C	D	E
1	service_id	date	exception_type		
2	mtwtf	20200907	2		
3	mtwtf	20201126	2		
4	mtwtf	20201225	2		

Notes | agency | calendar | calendar_dates | routes | shapes | stops | stop_times | trips

National RTAP
Rural Transit Assistance Program

Interim Flex GTFS-Builder

ImportExport workbook - DAR - FlexRoute

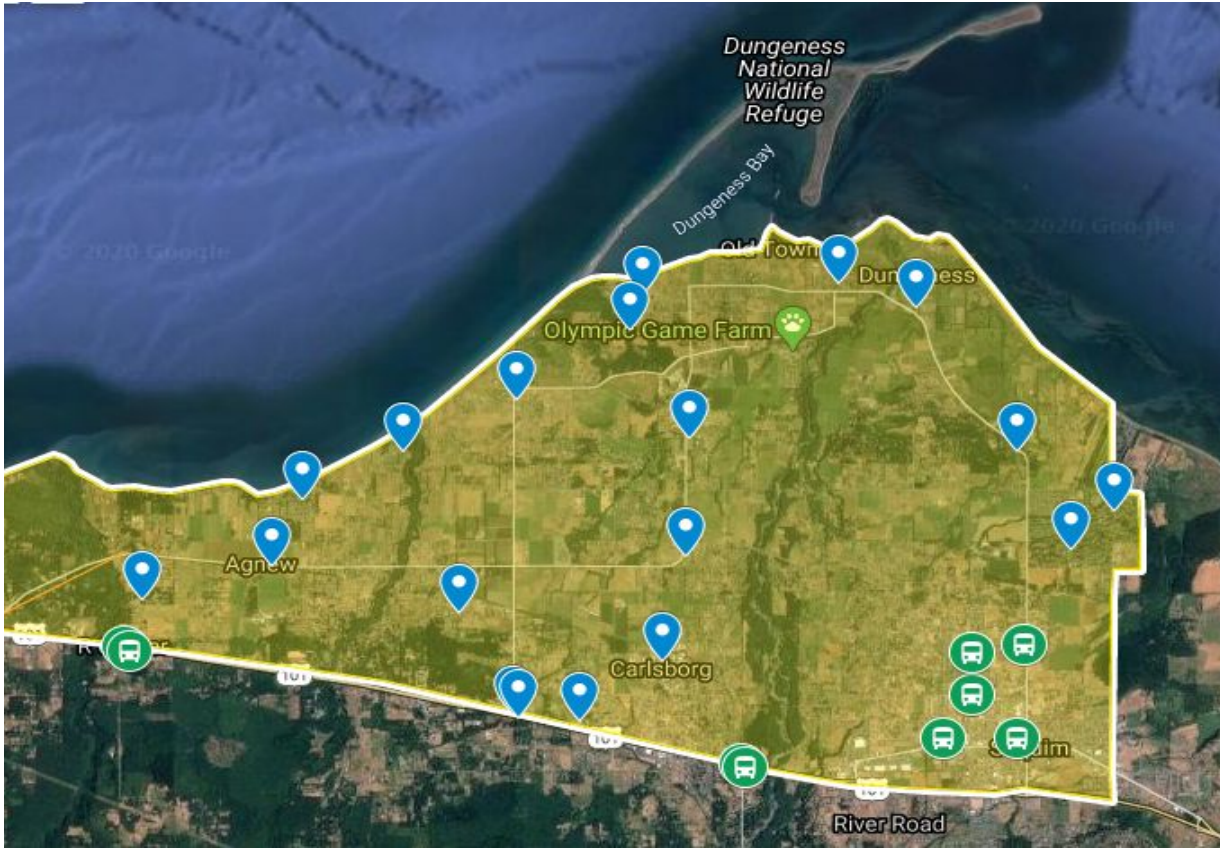


Clallam_GTFSImportExport_20201001

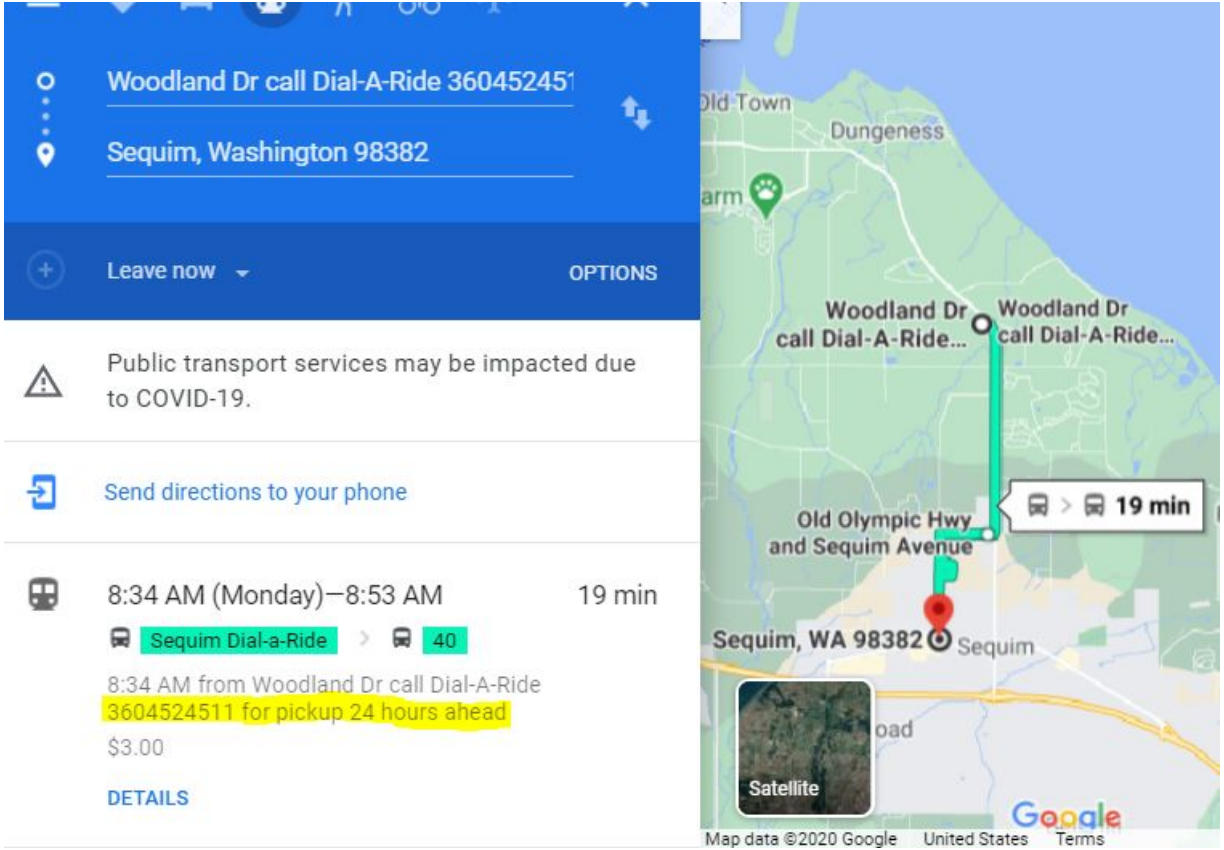
	C	D	F	G	J	K	L
1	route_short_name	route_long_name	route_type	route_url	continuous_pickup	continuous_drop_off	
2		Sequim Dial-a-Ride	3	https://ww	0	0	
3	40	Sequim Shuttle	3	https://www.clallamtransit.com/route40			
4	50	Jamestown Campus	3	https://www.clallamtransit.com/route50			

Notes | agency | calendar | calendar_dates | routes | shapes | stops

Continuous-pick-up/drop-off = On-demand



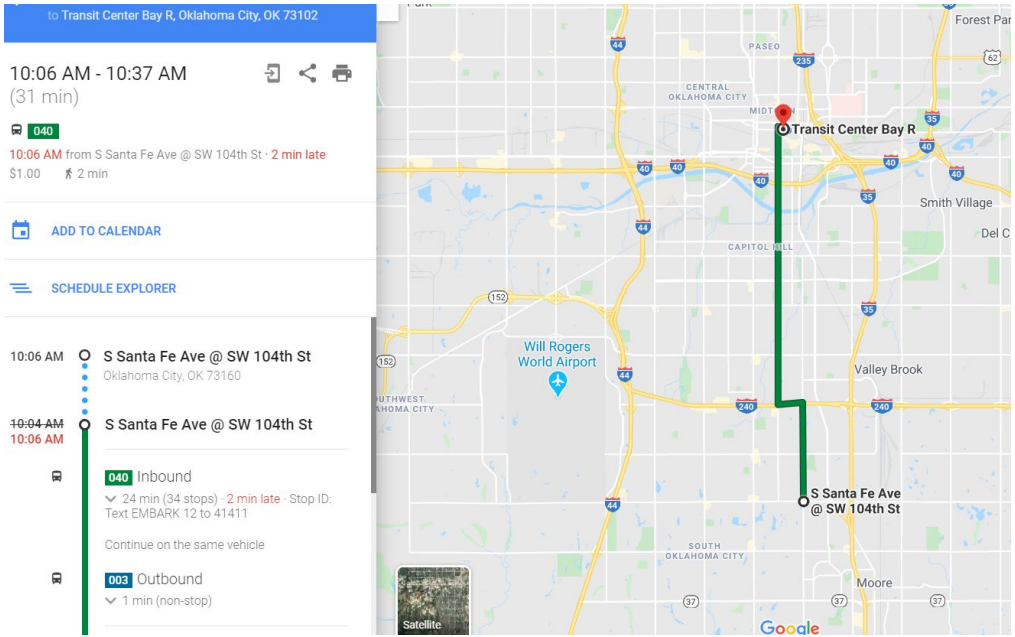
Riders Discover Flex DAR & Call in



Real-time Innovation @

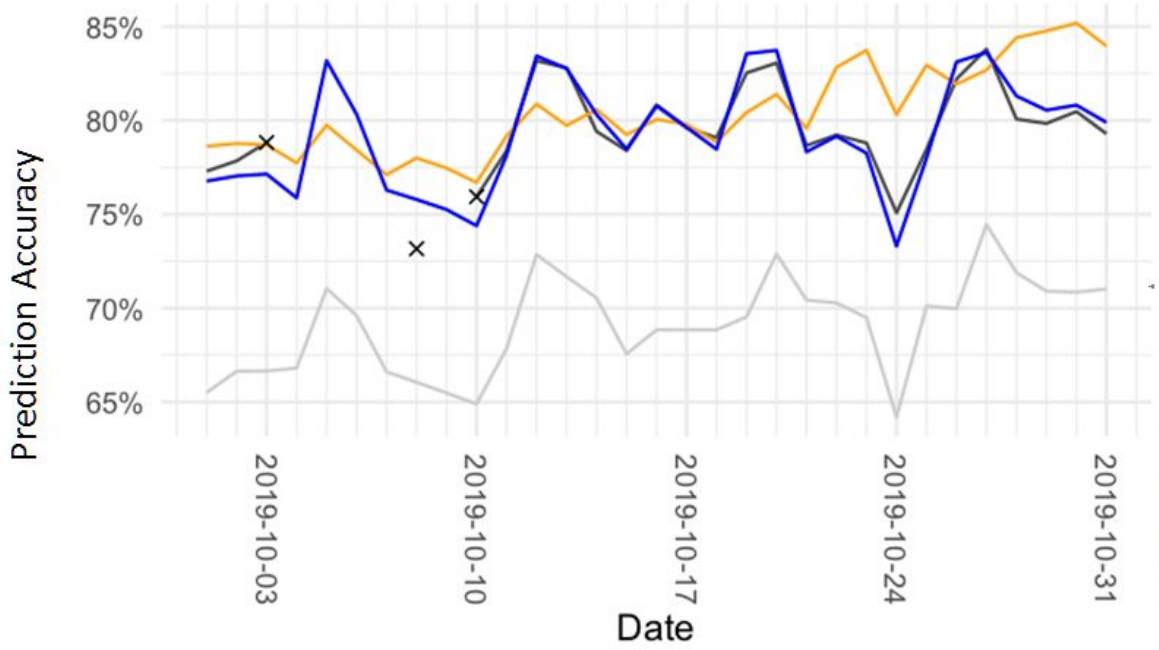
Will AVL* on the bus generate GTFS?

- Most AVL & fare services require GTFS-static
- Be aware many AVL do not generate real-time for Google Maps
- Learn more about TransitClock for Metro in Minn.



*Automated Vehicle Locator (AVL)

Case Study : Disruption & The TransitClock



Credit: Eric Lind, Metro Transit

On 2019-10-24, a protest combined with a football game disrupted transit service. Unlike other predictions methods, the Kalman Filter recognized unusual operating conditions and adapted predictions accordingly.

The Transit Clock @ Metro Transit

Key Staff:

Laura Matsen

Eric Lind

Joey Reid

Ben Rajkowski

The TransitClock

Sean Óg Crudden

Simon Berrebi, PhD

http://transitclock.org

National RTAP
Rural Transit Assistance Program

GTFS BUILDER

http://nationalrtap.org

888-589-6821

Demystifying Trip Planning License Agreements (Webinar)

Oct 27 2020

2pm EST

National RTAP
Rural Transit Assistance Program

http://nationalrtap.org
888-589-6821

GTFS BUILDER

https://www.nationalrtap.org/Web-Apps/GTFS-Builder

Questions?

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GET HERE