



MPO Autonomous Transit Feasibility Study for USF Campus

MPO Committees

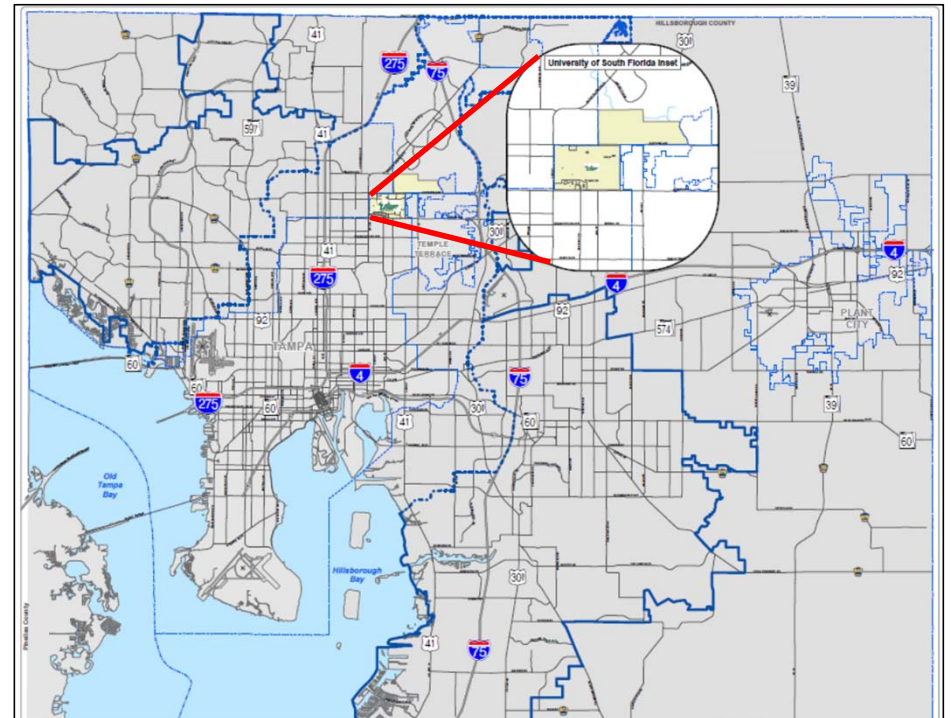
October 2018



Hillsborough MPO
Metropolitan Planning
for Transportation

USF Quick Facts

- 43,500 students and 14,000 faculty and staff
- 3 square mile campus
- Existing mobility options include
 - Bull Runner bus
 - Share-a-Bull Bike Share
 - Walk
- Campus wide 25 mph speed limit
 - ideal for testing autonomous shuttles



Autonomous Shuttles in (or close to) operation





Gainesville Driverless Shuttle Testing

https://www.youtube.com/watch?v=90YhyP_iNJc



Three Study Purposes

1. Identify the areas of campus that would best be served by an autonomous shuttle.



Marshall
Center



Rec
Center



Library



Sun Dome

Three Study Purposes

2. Identify any legal and insurance restrictions to operating an autonomous shuttle on campus.



Three Study Purposes

3. Identify 2 to 3 potential service options for autonomous shuttles.





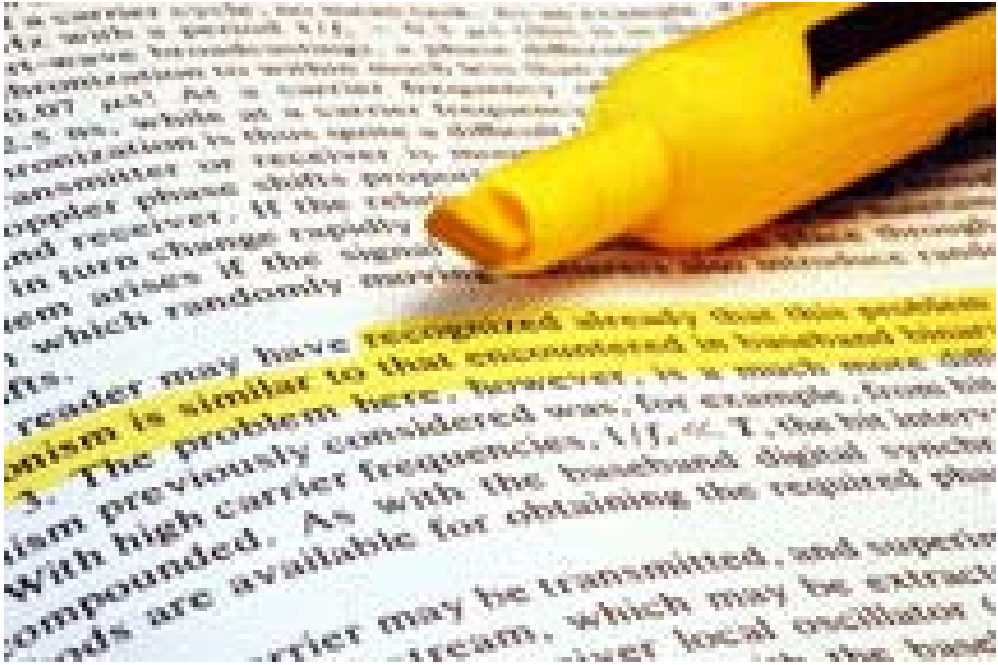
Student Outreach Results



Summary of Outreach to Students

- 3 student surveys conducted
 - Paper surveys distributed to classes taught by CUTR faculty
 - Online survey distributed by USF Student Government
 - Online survey distributed by USF Students with Disabilities Services
 - 374 surveys total completed
- Presentation made to Student Government New Initiatives Council
- Met with USF Director of Students with Disabilities Services

What were the survey highlights?



Highlight No. 1

Students are tech savvy and willing to ride in automated vehicles even if they don't know a lot about them.

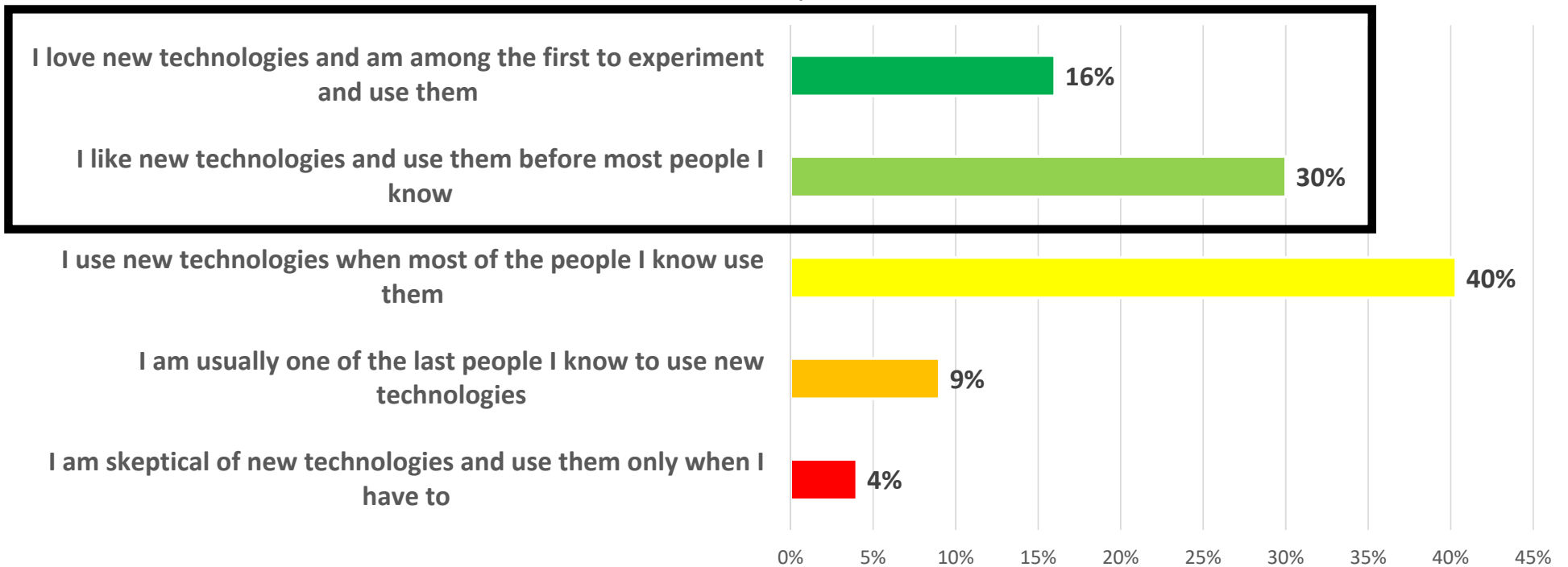


When it comes to new technology, what best describes you?

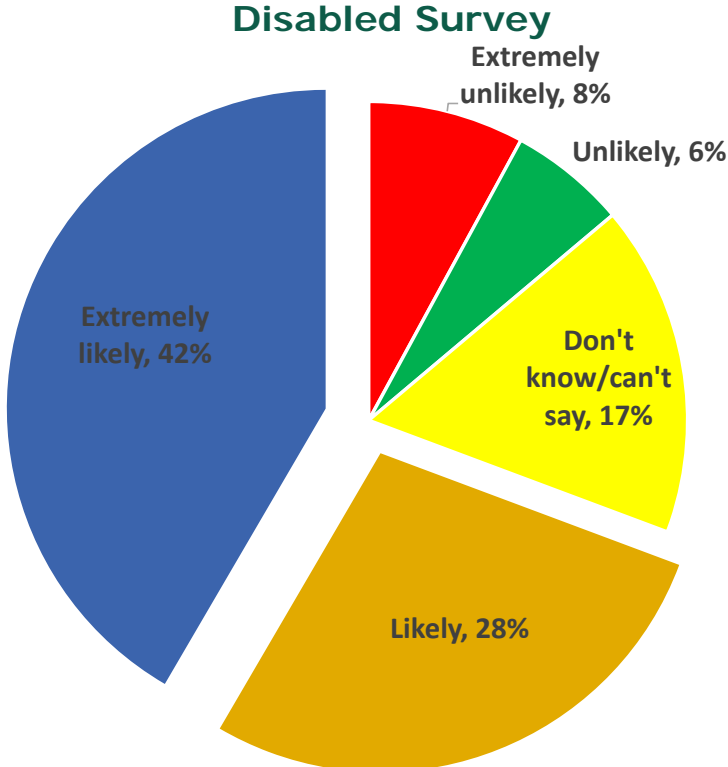
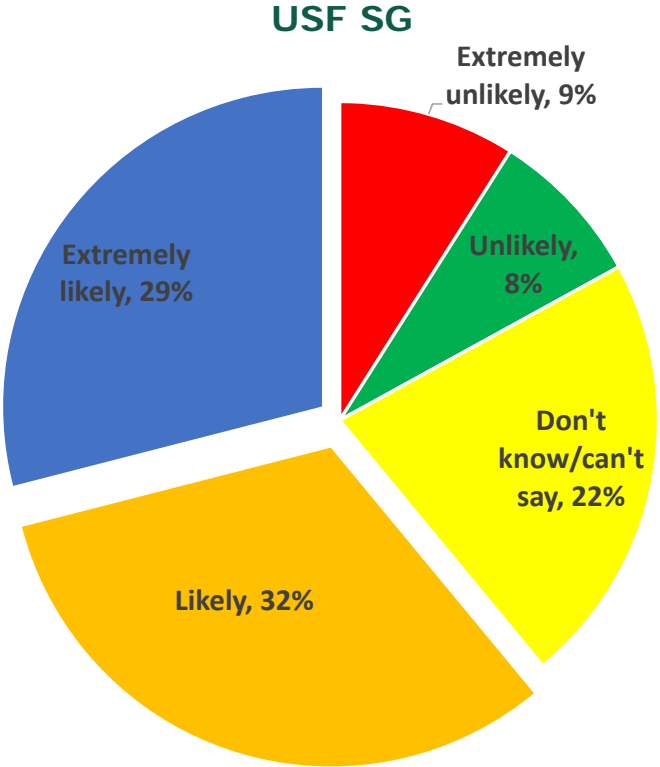
USF SG Survey

46% said they use new technology before their peers.

Perception



How likely do you see yourself using driverless vehicles when they become available?



Over 60 percent of students said they were likely or extremely likely to use driverless vehicles.

Highlight No. 2

A third of the students say it is hard to get to class from where they park.

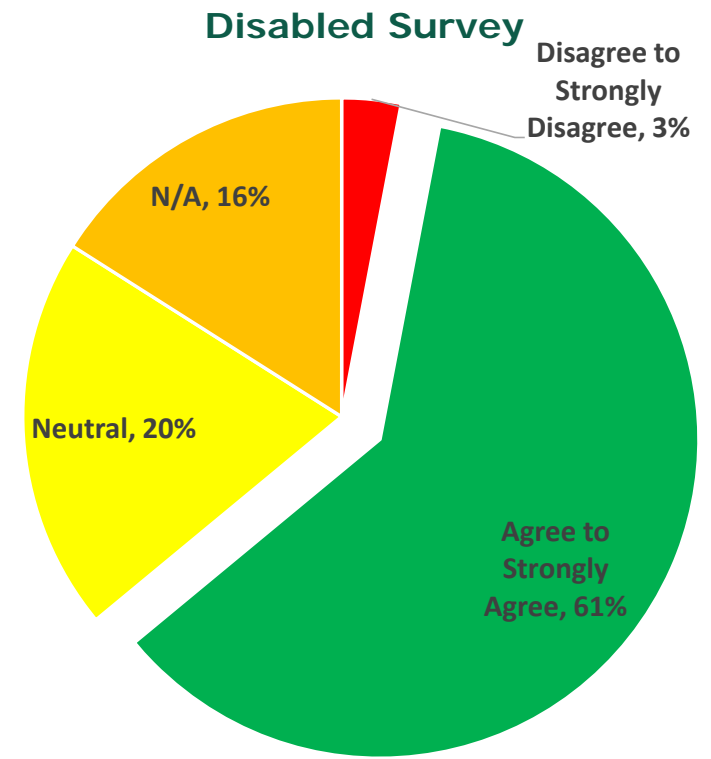
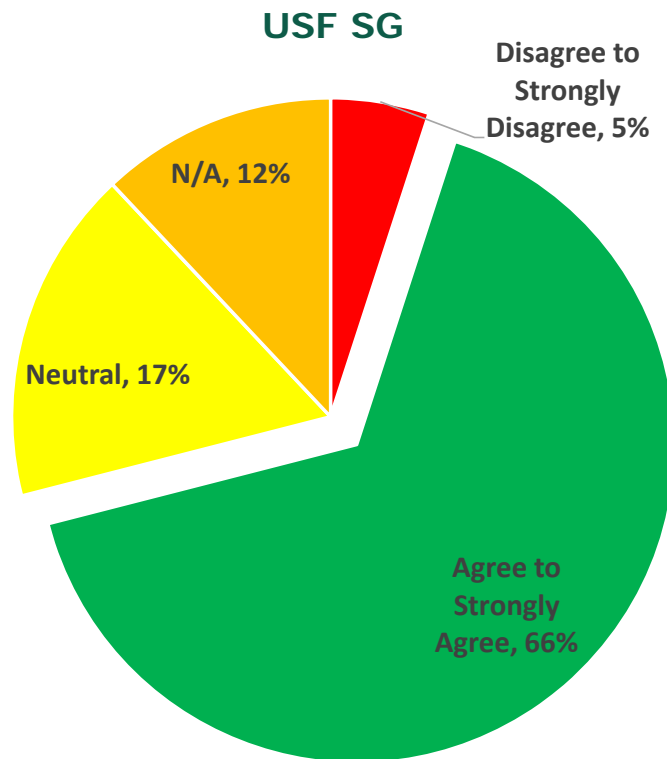


Highlight No. 3

There is a demand for night time bus service combined with a sense that the campus is not safe to walk on at night.

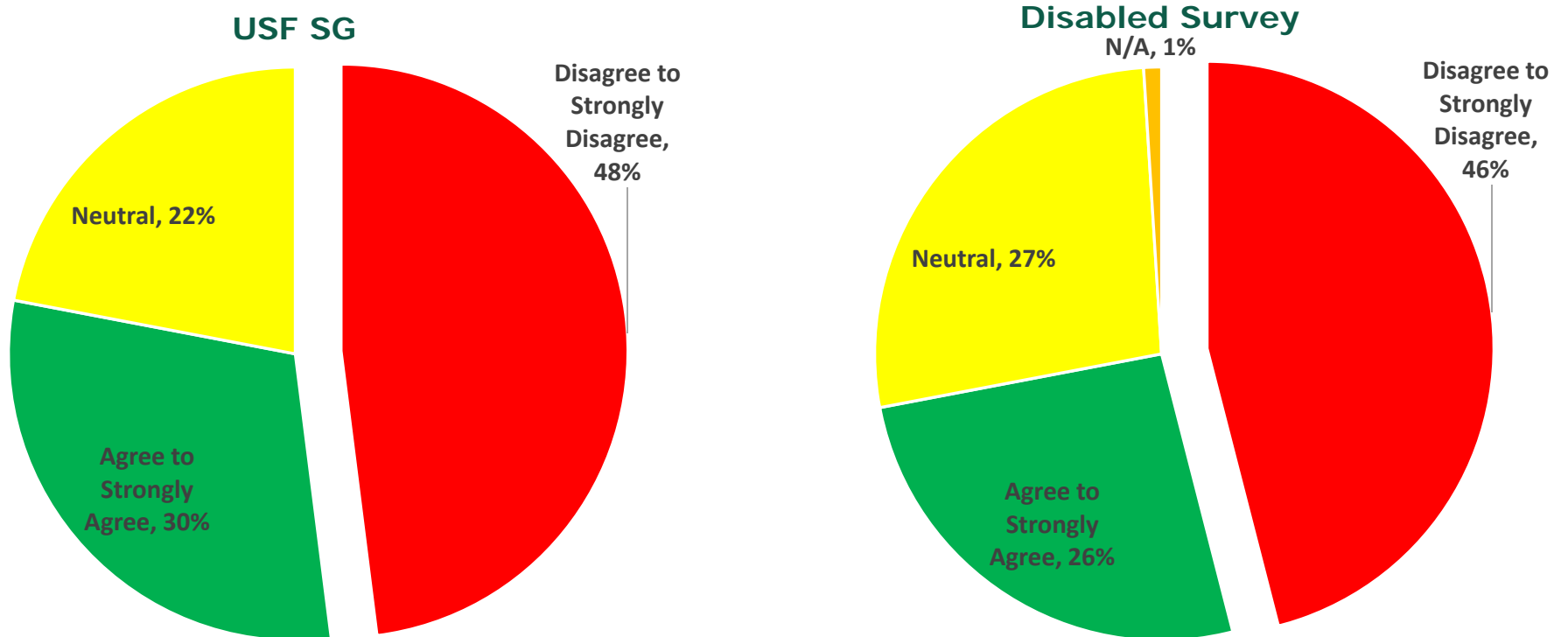


I wish the Bull Runner ran at night



More than 60% of respondents wished the Bull Runner ran at night.

I feel safe walking on campus at night (women only)



Almost 50% of the female respondents do not feel safe walking on campus at night.

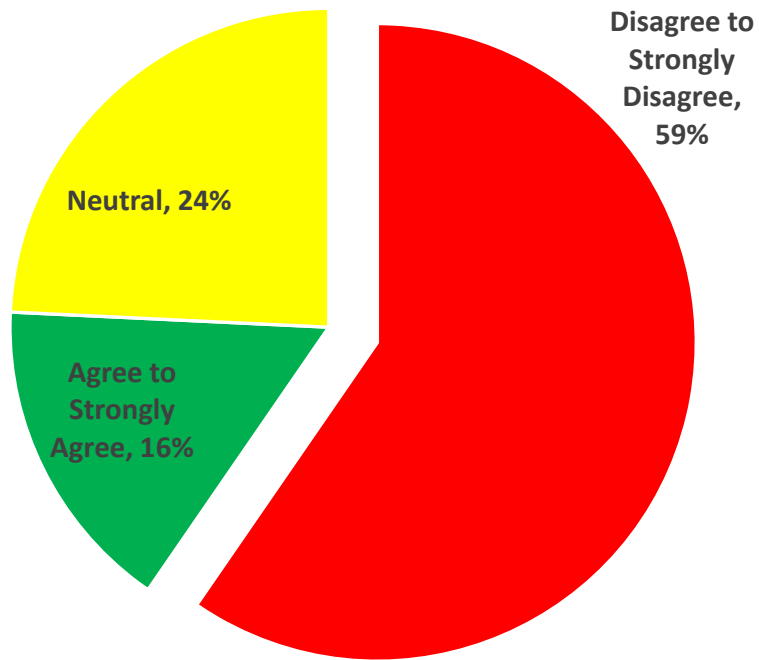
Highlight No. 4

Students do not want to pay extra fees for autonomous shuttle service.

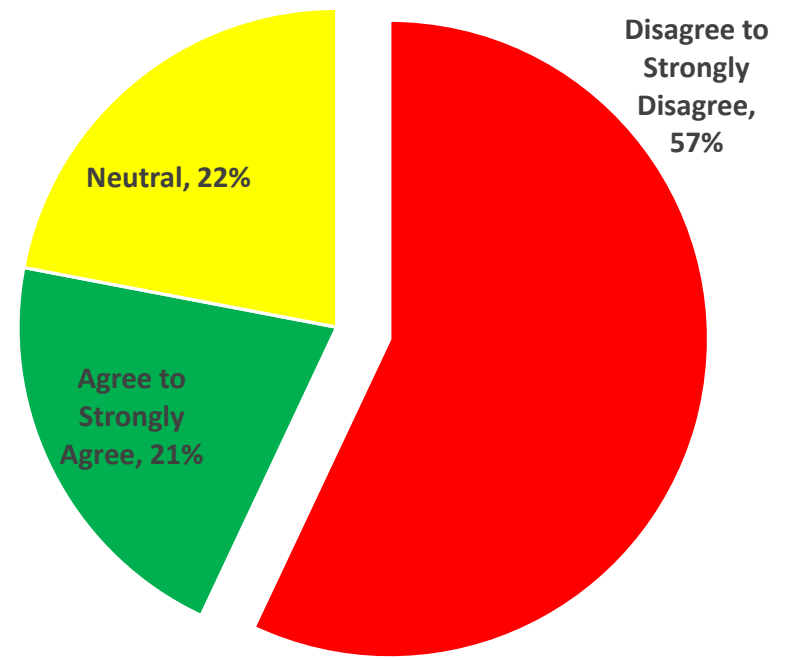


If necessary, I would be willing to pay a nominal fee to use the driverless shuttle

USF SG



Disabled Survey



Only 16% to 21% said they would be willing to pay a nominal fee.

Highlight No. 5

Across all three surveys, there is general agreement in how students would like to see autonomous shuttles used on campus.



Shuttle Services Requested by Students

Service	Student Government Survey	Students with Disabilities Survey	Paper Survey
After hours /nighttime shuttle	148	70	31
Remote parking lot shuttle	90	62	21
Campus circulator	84	41	22
Transportation for students with disabilities	79	54	16
Shuttle from HART bus stop on edge of campus to nearest Bull Runner stop or to center of campus	66	29	n/a
A shuttle operating between the soon to be constructed campus Publix and student housing	54	27	16
A short distance connector between campus buildings and Bull Runner bus stops	52	20	21
Special event service	37	15	10
Campus tours for prospective students	24	11	5



Yellow boxes represent Top 3 choices selected by students





Transportation Data

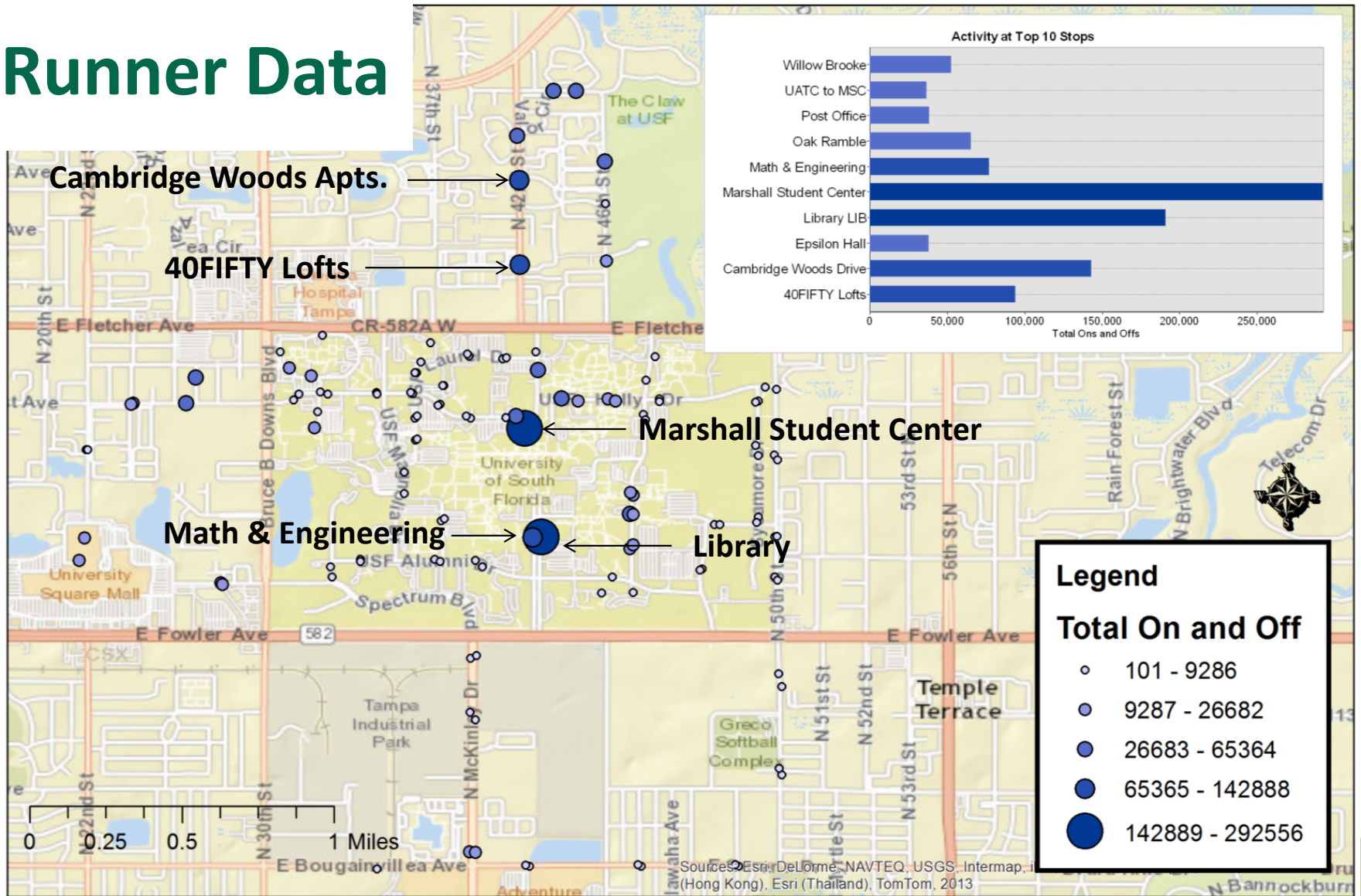


Used Existing Data Sources

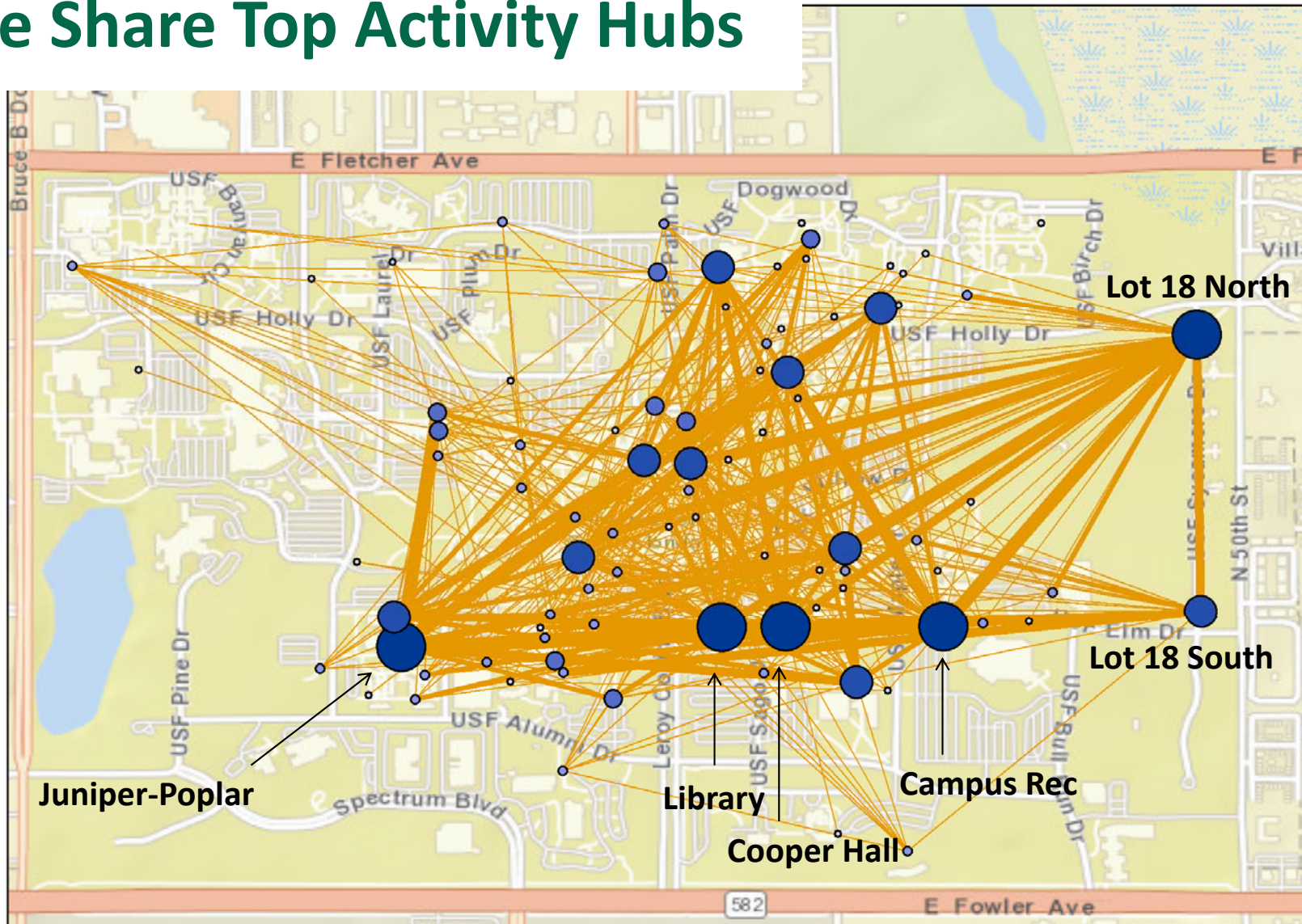


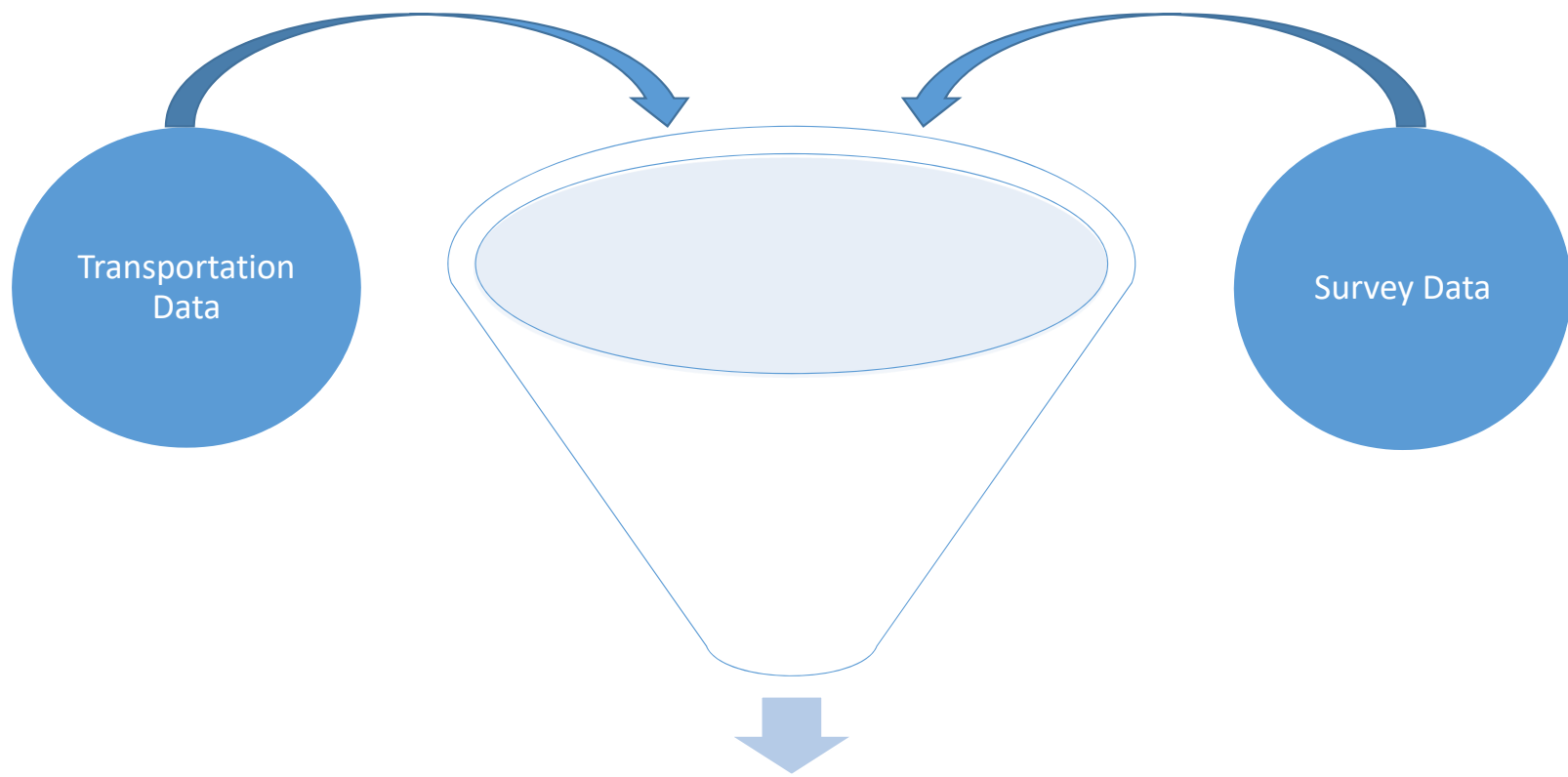
- Bull Runner Passenger On-Off Data
- SAFE Team Trip Log Data
- Share-A-Bull (Coast Bike Share) Data

Bull Runner Data



Bike Share Top Activity Hubs





Recommended Service and Routes

Remote Parking Shuttle



**Lot 18 North
(start point)**



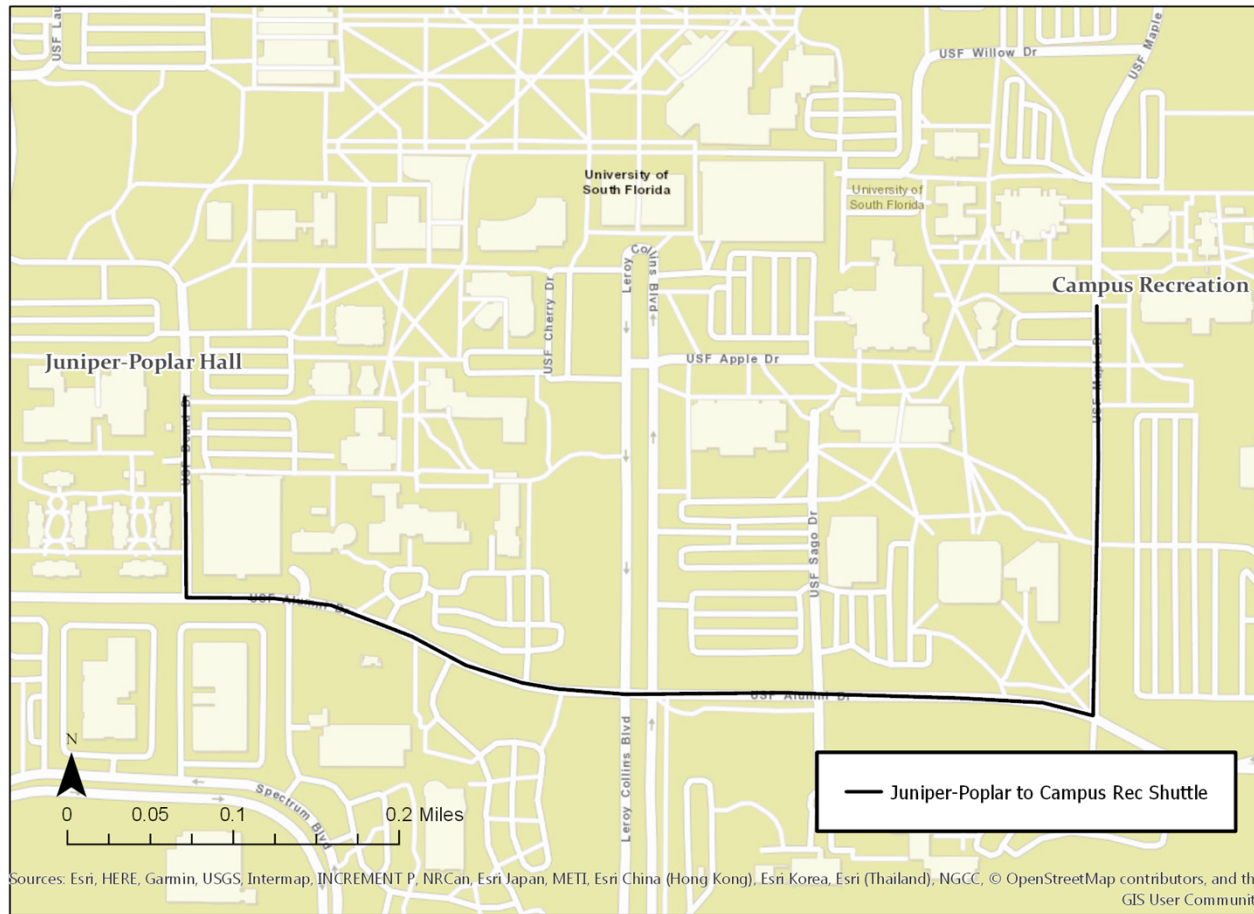
Lot 18 South

Remote Parking Shuttle



Library

Juniper-Poplar Hall to Campus Rec Shuttle



Juniper-Poplar Hall to Campus Rec Shuttle

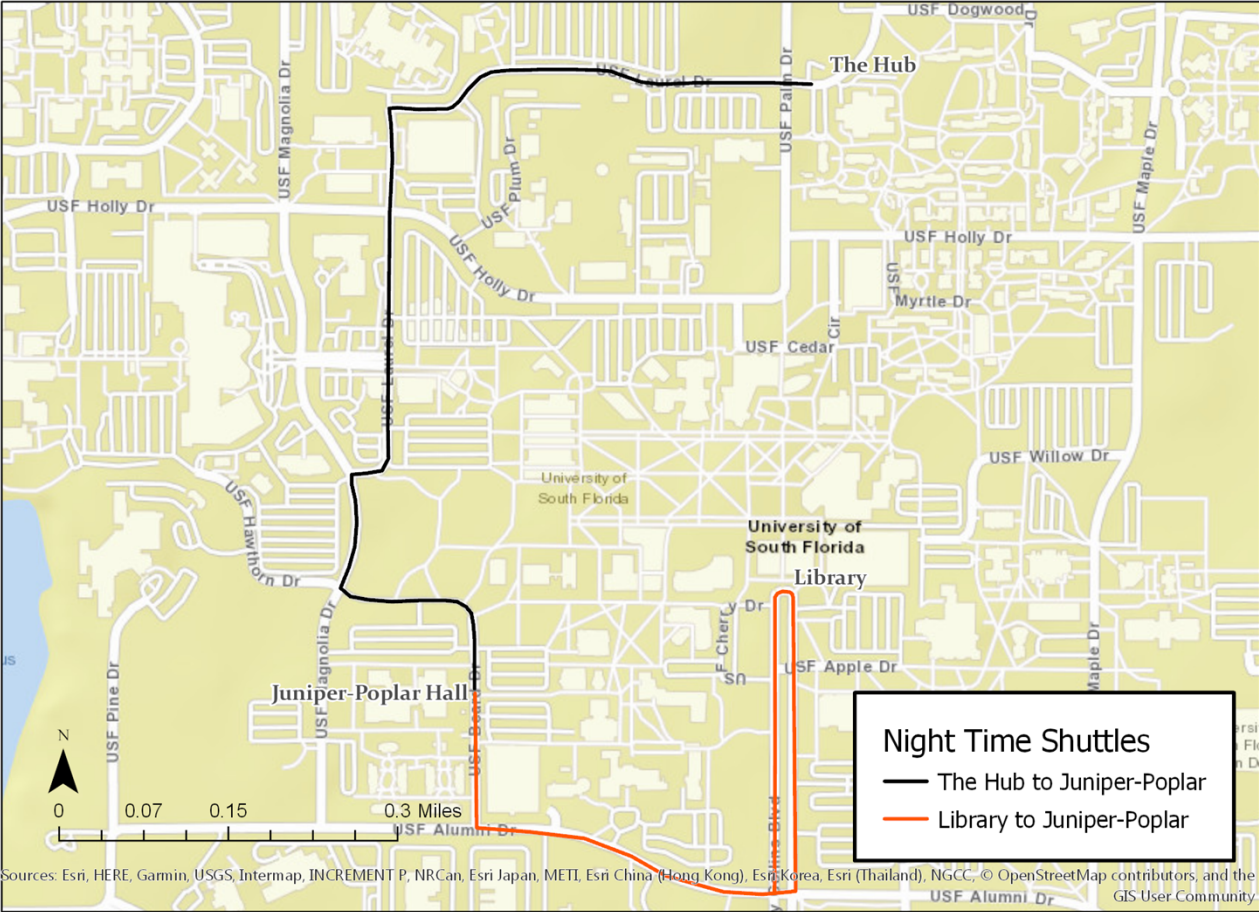


Juniper-Poplar Hall



Campus Rec

Night Time Shuttles



Night Time Shuttles



Library



The Hub



Legal and Insurance Issues



State Legal and Insurance Issues

- No permit required in Florida to test or operate AVs.
- \$5 Million insurance requirement eliminated in 2016.
- Florida treats registration and insurance for AVs the same as other vehicles.
- F.S. 320.01 limits low speed vehicles (>20 mph but <25 mph) to roads with posted speed limits 35 mph or less.
- 49 C.F.R. 571.500 lists some federal regulations for low speed vehicles.
 - Head/tail lights, turn signals, stop lamps, reflex reflectors

USF Legal and Insurance Issues

- USF's participation in AV initiative would be covered under the state's general liability insurance.
- USF General Counsel Office would require any transportation service provider to provide commercial liability insurance.
 - Similar to any contracted transportation service.
- Recommended considering signage at campus entrances alerting drivers to presence of autonomous shuttles
- **NHTSA approval needed for any on-street testing**



Operational Considerations



Characteristics of a Good AV Route¹

- Less than 2 miles
- Paved roadway
- Traffic lights capable of Vehicle to Infrastructure (V2I) communication
- Minimal obstructions that could block line of sight to southern sky
- Roadways with posted speed limits 25 mph or below
- **Right turns preferred over left**

¹ Source: NAVYA



Finances

Estimated Costs & Potential Funding Sources



Gainesville Autonomous Transit Shuttle

- 3-year project
- \$2.5 Million FDOT Service Development Funds
- 15 minute service between Downtown and UF in mixed traffic
- 3 autonomous shuttles
- RTS contracted 3-year service lease with Transdev



Estimated Cost for USF Shuttle Project

- \$700,000 for 12 month pilot
- 2 shuttles
- 10 hours of daytime service
 - 8:00 a.m. – 6:00 p.m.
- 6 hours of night time service
 - 8:00 p.m. – 2:00 a.m.
- No summer service



Potential Funding Sources

- USF Student Green Energy Fund
- FTA Strategic Transit Automation Research (STAR) Program
- Grants from Foundations
- FDOT Service Development Funds
- Advertising Revenue
 - Interior Bus Cards
 - Route Sponsors

Next Steps

- Conduct 2-week demo Fall 2018
- Secure funding for 12-month demo
- Prepare and issue Request for Proposals (RFP)

Contact Information

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