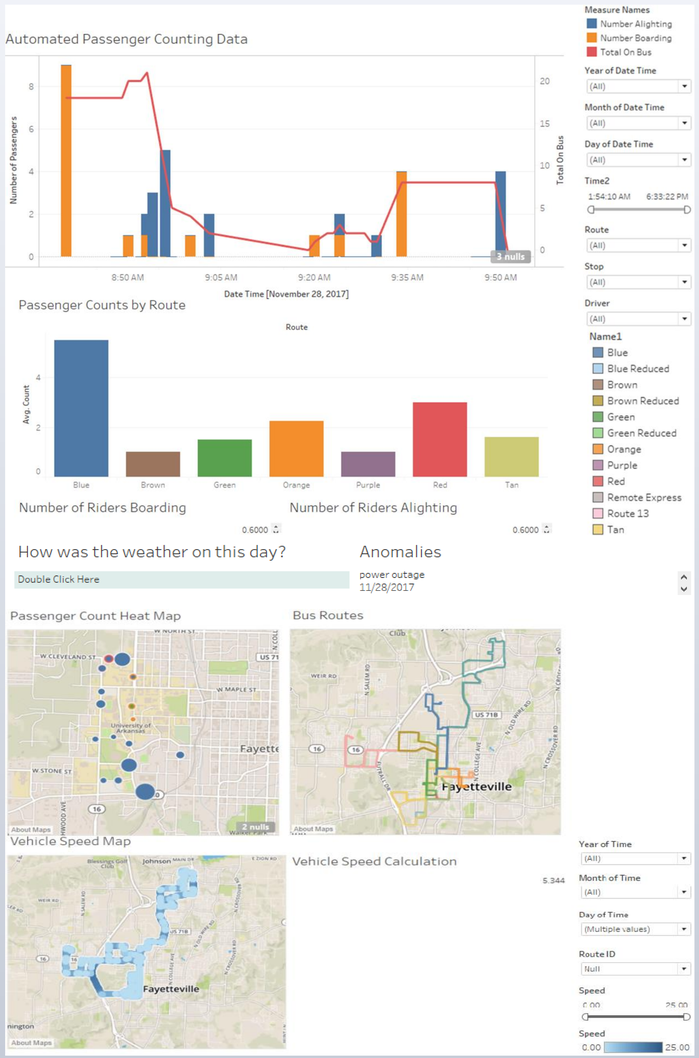
Providing Insight on Automated Passenger Counting (APC) Data to Increase Bus Utilization

Project Manager: Allison Morast | Team Members: Austin Talley, Blake Dougan, and Victoria Goethel

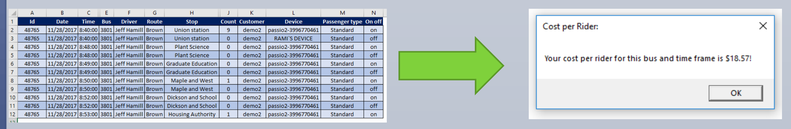
Faculty Advisor: Dr. John English | Industry Partners: Gary Smith, Adam Waddell, Colton Duke

University of Arkansas Transit and Parking

Tableau Dashboard



Excel VBA Cost per Rider Calculation



M	Date	Time	Bus	Driver	Route	Stop	Count	Customer	Device	Passenger type	On off
48765	11/28/2017	8:40:00	3801	Jeff Hamill	Brown	Union station	9	demo2	passio2-3996770461	Standard	on
48765	11/28/2017	8:40:00	3801	Jeff Hamill	Brown	Union station	0	demo2	RAMI'S DEVICE	Standard	off
48765	11/28/2017	8:48:00	3801	Jeff Hamill	Brown	Plant Science	0	demo2	passio2-3996770461	Standard	on
48765	11/28/2017	8:48:00	3801	Jeff Hamill	Brown	Plant Science	0	demo2	passio2-3996770461	Standard	off
48765	11/28/2017	8:49:00	3801	Jeff Hamill	Brown	Graduate Education	0	demo2	passio2-3996770461	Standard	on
48765	11/28/2017	8:49:00	3801	Jeff Hamill	Brown	Graduate Education	0	demo2	passio2-3996770461	Standard	off
48765	11/28/2017	8:50:00	3801	Jeff Hamill	Brown	Maple and West	1	demo2	passio2-3996770461	Standard	on
48765	11/28/2017	8:50:00	3801	Jeff Hamill	Brown	Maple and West	0	demo2	passio2-3996770461	Standard	off
48765	11/28/2017	8:52:00	3801	Jeff Hamill	Brown	Dickson and School	0	demo2	passio2-3996770461	Standard	on
48765	11/28/2017	8:52:00	3801	Jeff Hamill	Brown	Dickson and School	0	demo2	passio2-3996770461	Standard	off
48765	11/28/2017	8:53:00	3801	Jeff Hamill	Brown	Housing Authority	1	demo2	passio2-3996770461	Standard	on

VBA is able to calculate the cost per rider based off the APC data downloaded from Passio's server. Since Razorback Transit is a fare-free service with no potential for profit, this is the approach they can take to analyze performance from an economic perspective.

Abstract

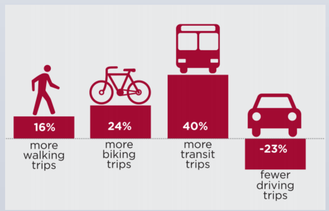
Results from 2015 Campus Transportation Plan

Inevitable Parking Crunch

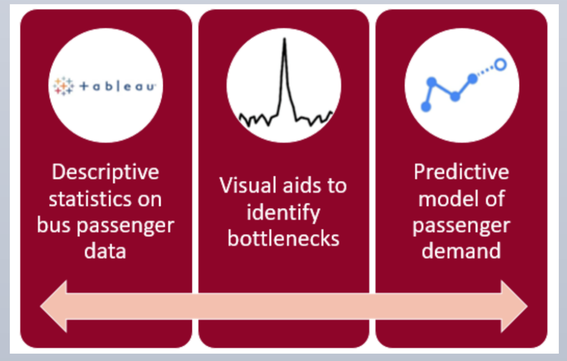
Barriers to Campus Entry

Improved Communication

Increased Campus Transportation



Deliverables

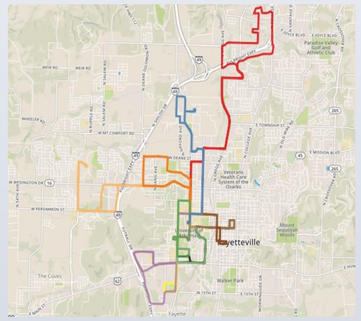


To help Razorback Transit accomplish this, we have created an interactive Tableau dashboard that calculates key performance indicators and visual aids, as well as a predictive model of passenger demand that will assist Razorback Transit in deciding where to place new bus stops.

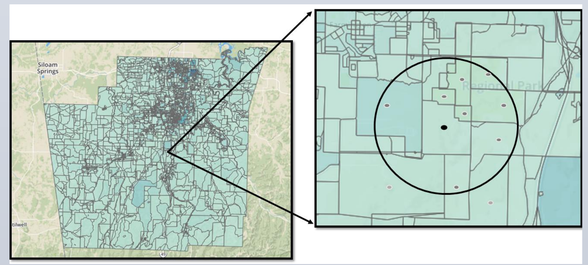
Predictive Model of Passenger Demand

Data Sources

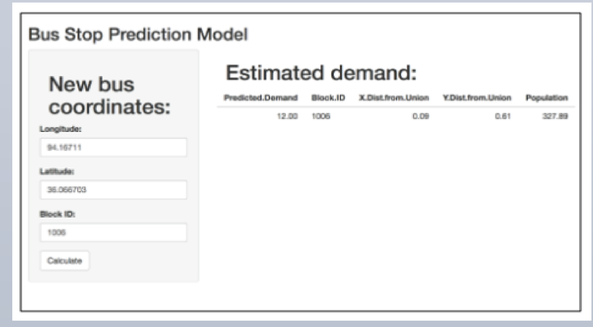
- APC data
  - Passio, the APC Provider, sent us a template of their APC data, which we modified to reflect the data we collected from the Brown route at the University of Arkansas. From this, we used three relevant headers: stop, count, and on/off.
- Current Bus Stop Information



- 2010 Census Data



Predictive Model Output



The final output shows the population within 3/10 of a mile from the selected location, the expected ridership for a stop at that point, and the distance from the Union Station.