The Impact of Public Transit on Rideshare Demand in Austin, Texas

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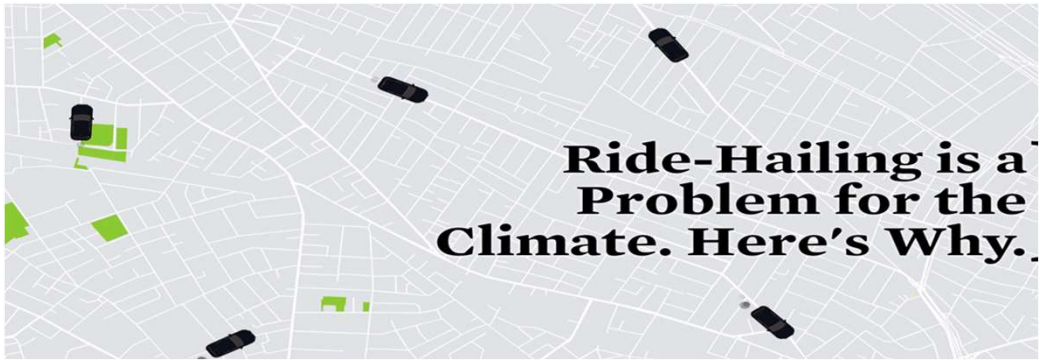
Overview of Project

Problem overview

- Average U.S. “ridesharing” trip results in 69% more pollution than the transportation choices
  - Rideshare- 683 g CO_2
  - Public Transit - 103g CO_2
- City of Austin to be opportunity to analyze ridesharing and public transit
- Do rideshare services serve as a complement to public transportation or cannibalize public transit utilization?
- What motivates a passenger to switch mode of transportation?



Problem Statement

Identify the potential complementary or substitution effects among public transit and rideshare usage in Austin to suggest strategies to convert rideshare rides to public transit rides in order to help meet the city's 50/50 mode share target by 2039.

Key objectives:

- Reduction in harmful emissions
- More affordable and accessible transit services to citizens.
- Less traffic congestion as rideshare rides decrease

Approach

1. Exploratory analysis on rideshare data, identify potential variables that explain rider's behavior of using the service
2. Apply the same potential variables to bus ride data to assess if there are consistent compact to bus rider's behavior of using public transit
3. Merge the two dataset to run linear regression bus ride against rideshare, controlling on the potential variables identified. Check model significance
4. Determine if complementary or substitution effect exists among rideshare and bus services
5. Apply high level CO2 emission reduction calculation and estimate social cost saving through benchmark from existing research

Overview of Data

Dataset Description

Austin Ride Volume - summarizes the total volume of rideshare on each day from June 16th,2016 to August 31st, 2016.

RideAustin_Weather - contains individual rideshares information such as start/end location coordinates, weather conditions, vehicle type

Fuel economy Vehicle - fuel consumption in both city and highway with CO2 emission on each specific vehicle.

CapMetro Shapefile - CapMetro detailed operation information which contains passenger volume at each station from June 2016 to January 2017

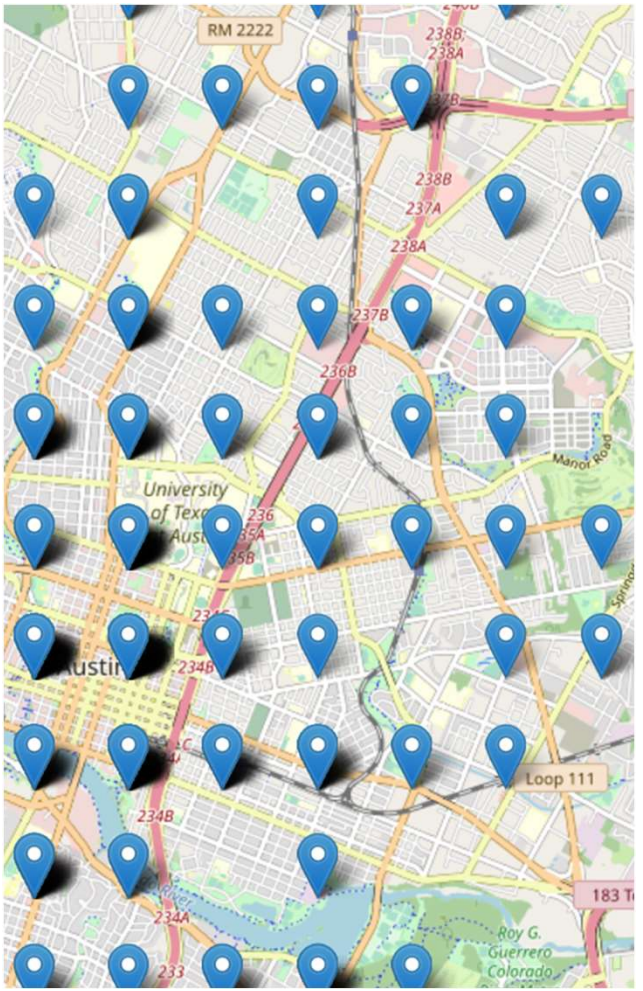
Census Dataset - The American Community Survey shows population density (ppsm) and median household income by census tract.

Cleaning Process

- Remove rideshare trips that travelled >11km or last more than 120 minutes. Assumed those trips cannot be replaced by public transit.
- Align time frame from Austin ride volume and CapMetro datasets; summarize the passenger volume from June to end of August,2016.
- Rounded lat, long of bus volume dataset to 2 decimal places to group alongside rideshare volume

Estimating Walking Distance

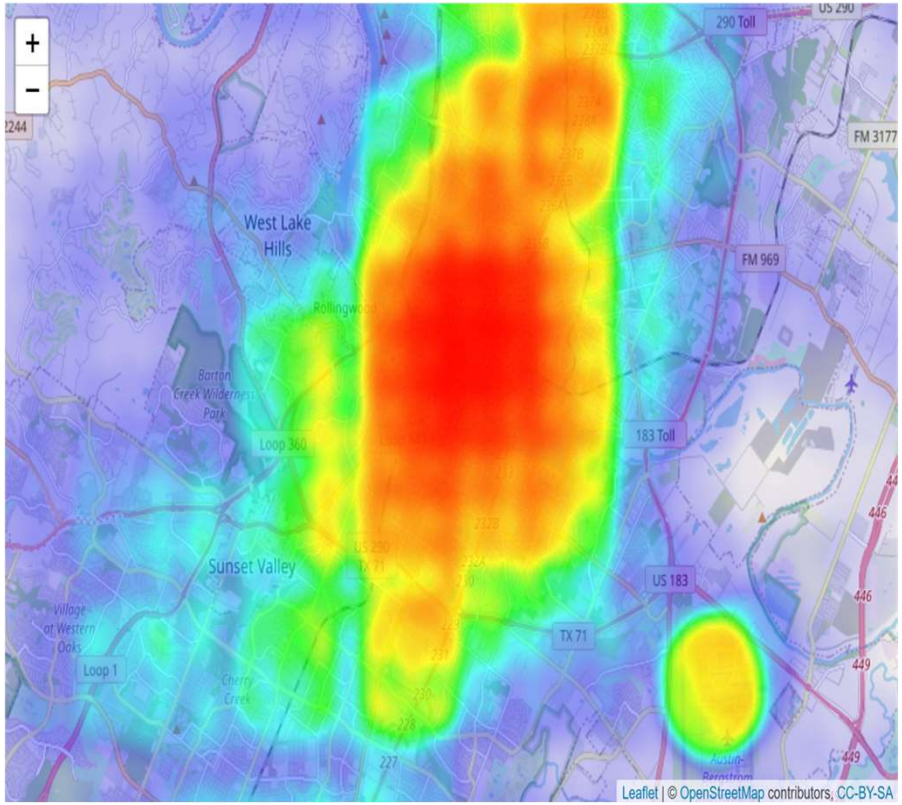
- Variable to determine if walking distance is a factor in choice of transportation
- Calculate average distance from rideshare pick- up location to nearest bus stops
- Straight-line euclidean distance method calculated for each data point to each bus stop location
- Average distance of 3 nearest bus stops
- Coarse coordinates: rideshare data only accurate to 2 decimal places or up to a km inaccurate
  (ex: Lat: 30.23, Long: -97.54)
- Euclidean method imperfect for route distance



Rideshare coordinate precision is coarse

Spatial Binning of Coordinates

- Spatial binning method applied to compiled rideshare/bus volume dataset for further analysis
- Locations divided in a 5 x 5 grid resulting in 25 unique categorical variables
- Grouped data regions providing more related and relevant data points
- The result shows that bus volume has a negative relationship with rideshare volume and is somewhat significant with an R-squared value > 0.5



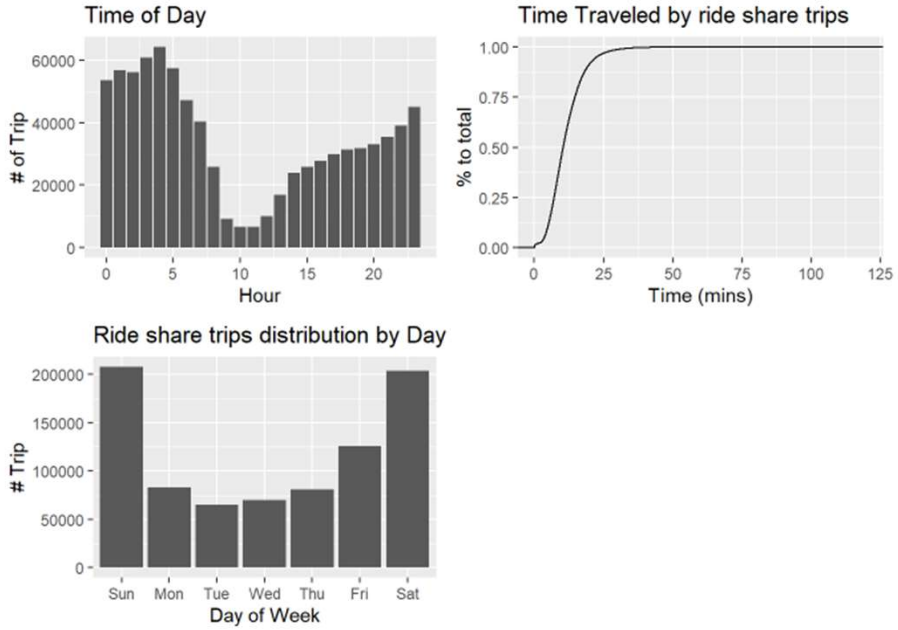
Heatmap showing density of rideshare pick-up locations

Initial Hypothesis

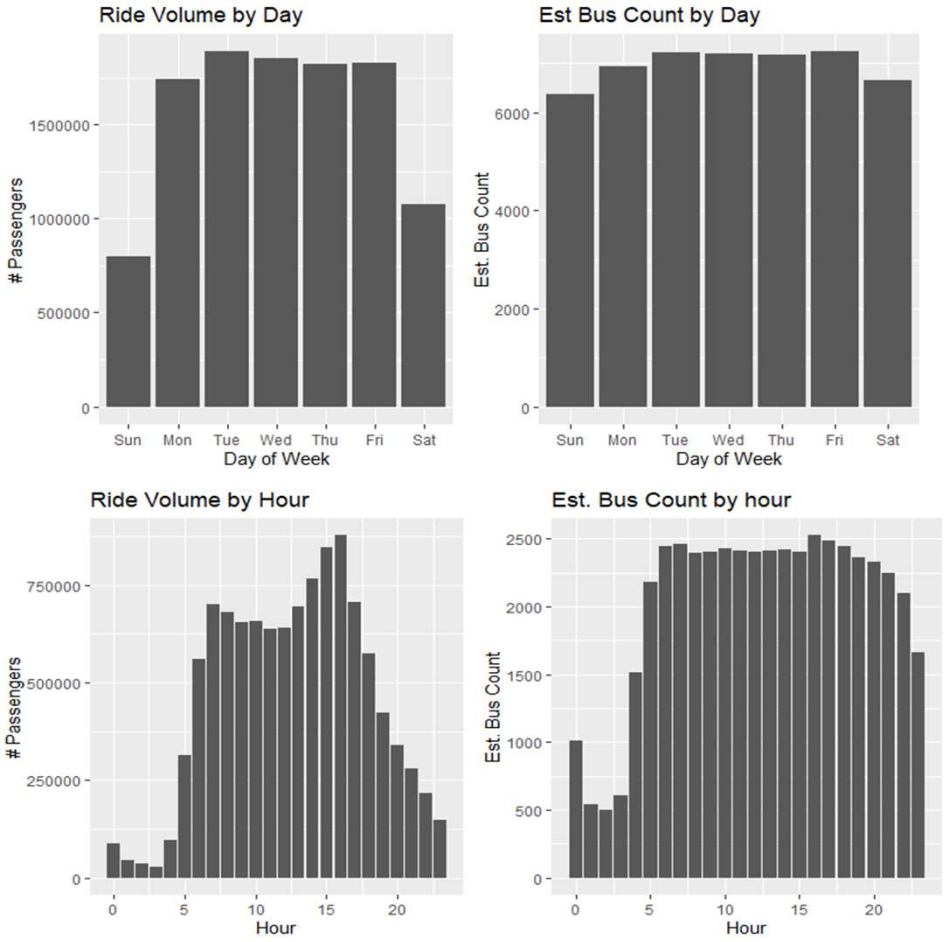
- Control on day of week, hour of day, and weather condition, **higher** bus ride volume lead to **lower** rideshare volume (negatively correlated).
- For the same to and from location, the **longer** the difference in traveled time among rideshare and public transposition, the **higher** the rideshare volume.
- The shorter the distance between a pickup/dropoff location from a bus stop, the **lower** the share ride volume.
- The **fewer** rides on the road through rideshare the **less** fuel consumed and **less** CO2 emissions (positive correlation).

EDA

Rideshares Volume Pattern



Bus rides Volume Pattern

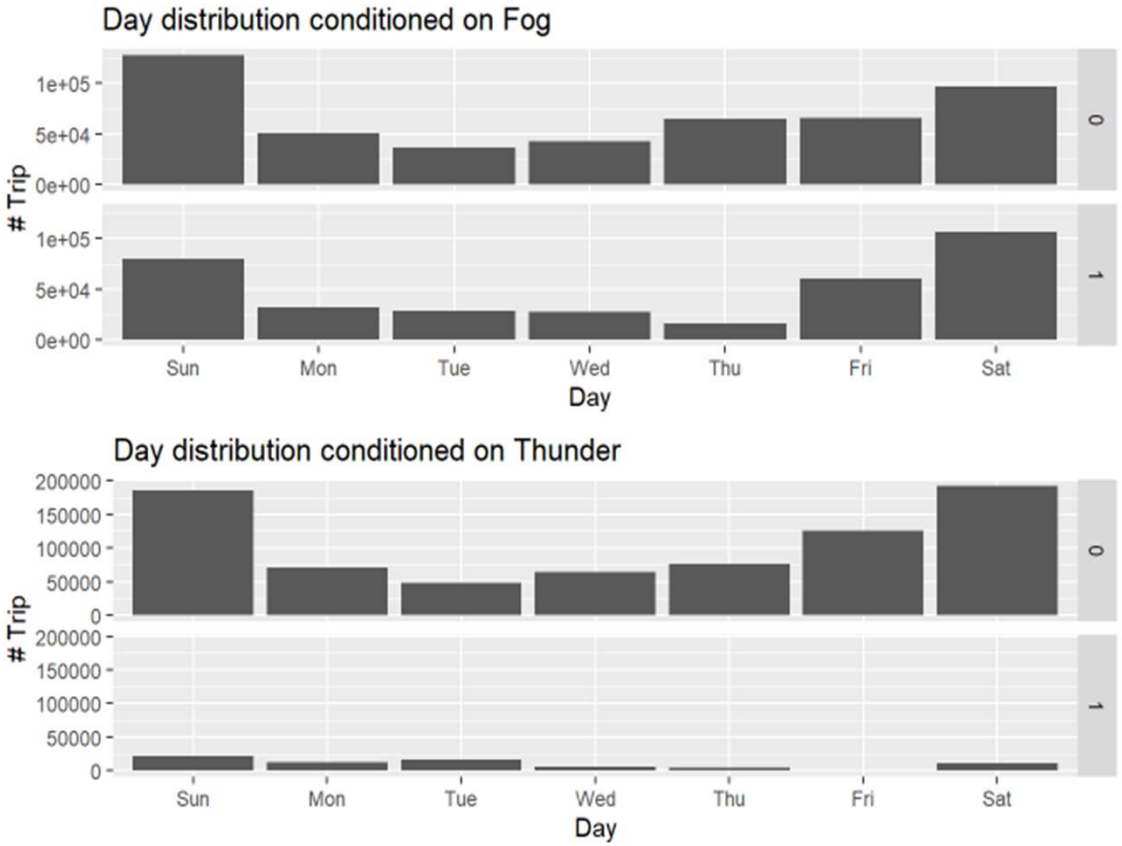


Observe inverse relationship among rideshare and bus ride volume, implies the possibility of substitution effect

EDA (cont)

Existence of weather conditions do not appear to affect rideshare usage distribution

Rideshares Volume Pattern



Modeling

Key Variables

- Rideshare volume (ride_vol) - Target
- Bus ride volume (bus_vol)
- Weekend/Weekday (wkd_end): Mon-Fri (weekday), Sat/Sun(weekend)
- Hour of day (hr_cat): 4 categories (Midnight - 6am, 6am to 12noon, 12noon to 6pm, 6pm to midnight)
- Weather conditions (Fog, Thunder)
- Spatial binning (start_grid_cell)

Statistical Tests

K-S Test on weather conditions

Not significant

Fog	Thunder
data: no_fog$n and fog$n D = 0.28571, p-value = 0.9627 alternative hypothesis: two-sided	data: no_thunder$n and thunder$n D = 0.2381, p-value = 0.9627 alternative hypothesis: two-sided

Pearson Test on bus_vol

Significant

```
data:  final_df$bus_vol and final_df$ride_vol
t = -6.3726, df = 166, p-value = 1.762e-09
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.5573409 -0.3129403
sample estimates:
       cor
-0.4433435
```

Regression Test on hr_cat, wkd_end

Significant

```
Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)       8899.7      614.8  14.475  < 2e-16 ***
wkd_endweekend    6610.6      648.8  10.188  < 2e-16 ***
hr_catevening    -4468.9      829.0  -5.390 2.43e-07 ***
hr_catrush_hour  -6689.0      829.0  -8.068 1.47e-13 ***
hr_catwork_hour  -6957.1      829.0  -8.392 2.19e-14 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 3799 on 163 degrees of freedom
Multiple R-squared:  0.5437,    Adjusted R-squared:  0.5325
F-statistic: 48.56 on 4 and 163 DF,  p-value: < 2.2e-16
```

Linear Regression Model

Ride_vol ~ Bus_vol + wkd_end + hr_cat + start_grid_cell

Controlling on day of week, hour of day, and location factor, *bus_vol* is **significant** to predict *ride_vol*.

The effect is about **-4%**

R2 - 0.54

```
Call:
lm(formula = ride_vol ~ bus_vol + wkd_end + hr_cat + start_grid_cell,
    data = final_df_1)

Residuals:
    Min      1Q  Median      3Q     Max
-3002.7  -369.2    58.3   267.9  8721.8

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)         6.769e+02  9.292e+01   7.284 5.02e-13 ***
bus_vol            -4.329e-02  3.418e-03 -12.666  < 2e-16 ***
wkd_endweekend      6.190e+02  5.522e+01  11.210  < 2e-16 ***
hr_catevening      -3.676e+02  7.509e+01  -4.896 1.08e-06 ***
hr_catrush_hour    -3.898e+02  7.991e+01  -4.878 1.18e-06 ***
hr_catwork_hour    -3.459e+02  8.079e+01  -4.282 1.96e-05 ***
start_grid_cell2-B -2.046e+02  1.116e+02  -1.833 0.067053 .
start_grid_cell2-C -3.946e+02  1.188e+02  -3.323 0.000912 ***
start_grid_cell2-D -6.452e+02  2.947e+02  -2.190 0.028677 *
start_grid_cell3-A  1.772e+03  1.116e+02  15.880  < 2e-16 ***
start_grid_cell3-B  3.822e+03  1.434e+02  26.657  < 2e-16 ***
start_grid_cell3-C -4.412e+02  1.117e+02  -3.950 8.14e-05 ***
start_grid_cell3-D -5.326e+02  1.840e+02  -2.894 0.003852 **
start_grid_cell4-A -4.301e+02  1.156e+02  -3.720 0.000206 ***
start_grid_cell4-B -7.122e+01  1.111e+02  -0.641 0.521743
start_grid_cell4-C -4.739e+02  1.130e+02  -4.193 2.91e-05 ***
start_grid_cell4-D -6.739e+02  1.020e+03  -0.660 0.509078
start_grid_cell5-A -5.619e+02  1.213e+02  -4.632 3.91e-06 ***
start_grid_cell5-B -3.132e+02  3.939e+02  -0.795 0.426611
start_grid_cell5-C -6.149e+02  7.240e+02  -0.849 0.395836
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1016 on 1623 degrees of freedom
Multiple R-squared:  0.5511,    Adjusted R-squared:  0.5458
F-statistic: 104.9 on 19 and 1623 DF,  p-value: < 2.2e-16
```

Recommendation

Public Transit Expansion Opportunity

Can we add variables that allow us to predict public transportation use in areas without service?

2020 US Census: American Community Survey

Variables that significantly predict public transportation use:

- Median household income
- Population density (people per square mile)

\+ Diversity of demand for rideshares: many times of day, days of week, and geographical locations within a given census tract

Public Transit Expansion Opportunity

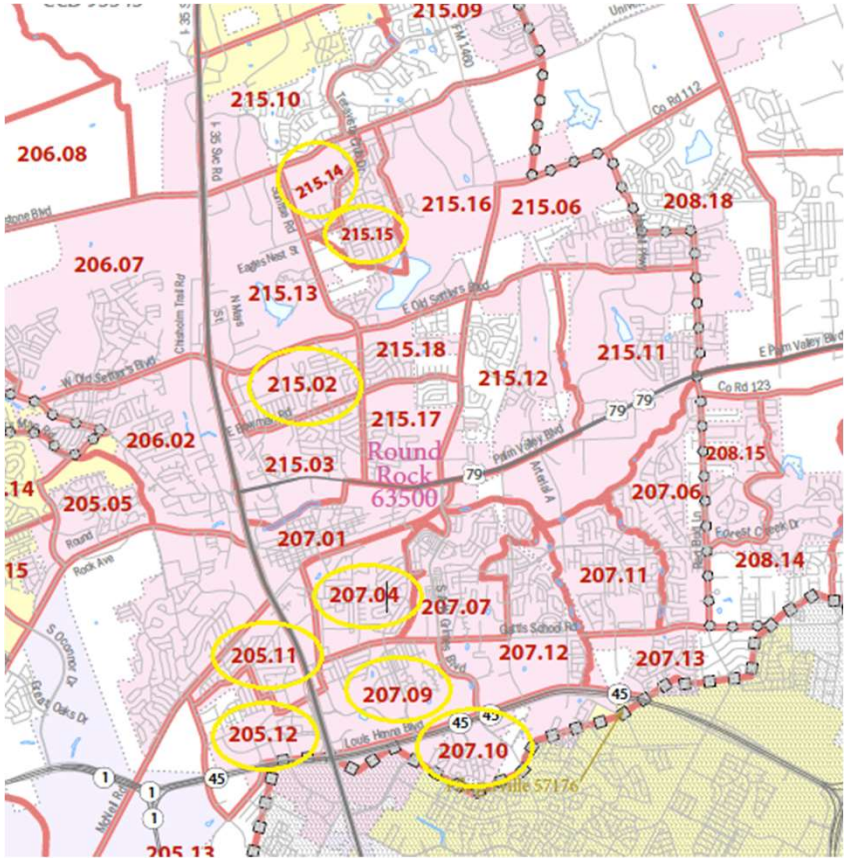
Best potential locations for expanding public transportation are those with:

- High demand for ridesharing (passgrs)
- High population density (ppsm)
- Low median income (median_hincome)
- Use rideshares in variety of ways (n_var)

```
Call:
lm(formula = rides_on ~ passgrs + ppsm + median_hincome + n_var,
    data = master_grp)

Residuals:
    Min      1Q  Median      3Q     Max
-254352  -31992   -7874   21262  491868

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)   5249.4874 20410.2518   0.257  0.79730
passgrs          4.5259     0.4132  10.952  < 2e-16 ***
ppsm             6.4172     1.7971   3.571  0.00045 ***
median_hincome  -0.5114     0.1832  -2.792  0.00577 **
n_var          127.2927    28.6557   4.442  1.5e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 74510 on 192 degrees of freedom
  (2 observations deleted due to missingness)
Multiple R-squared:  0.5347,    Adjusted R-squared:  0.525
F-statistic: 55.15 on 4 and 192 DF,  p-value: < 2.2e-16
```

Public Transit Expansion Opportunity

Rank	Census Tract	Predicted Public Transportation Use per Year
1	215.14	74,046
2	23.13	65,262
3	205.12	58,937
4	207.04	47,328
5	205.11	36,265
6	215.02	31,491
7	207.1	14,350
8	215.15	13,669
9	207.09	10,874



Predicted Business Outcomes

Recommendation: Add a route connecting these eight census tracts in the Round Rock neighborhood north of Austin.

Total new annual public transportation use: 286,958

Replaced rideshare use: 12,422

Estimated replaced private vehicle trips: ~150,000

Cost of constructing eight new bus stops: ~$280,000-$400,000

CO_2 emissions saved: ~98 tons per year, or $18,600 in terms of social value

August 2017: CapMetro Expands into Round Rock

Capital Metro arrives in Round Rock

MONDAY, AUGUST 28, 2017 BY CALEB PRITCHARD

Challenges

- Imprecision of location data - distance variable couldn't apply
- Passenger's behavior data - omitted from model due to time constraints on gathering the needed data
- Austin population & economic growth impacts are ignored in the model
- Rate of return on CO2 emission need more refinement to ensure that the recommendation is economically and socially attractive for the needed capital investment

Appendix

Linear Regression Model

Ride_vol ~ Bus_vol + wkd_end + hr_cat

Bus_vol, while shows negative coefficient as agreed with Pearson test, is **not significant**

Consider adding new variables to refine the model

```
Call:
lm(formula = ride_vol ~ bus_vol + wkd_end + hr_cat, data = final_df)

Residuals:
    Min      1Q  Median      3Q     Max
-7700.1 -1794.7  -298.4  2041.2 13080.3

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)      8.981e+03  6.440e+02  13.947  < 2e-16 ***
bus_vol         -4.980e-03  1.137e-02  -0.438    0.662
wkd_endweekend   6.576e+03  6.552e+02  10.036  < 2e-16 ***
hr_catevening   -4.306e+03  9.104e+02  -4.730 4.86e-06 ***
hr_catrush_hour -6.300e+03  1.216e+03  -5.182 6.45e-07 ***
hr_catwork_hour -6.492e+03  1.348e+03  -4.815 3.35e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3809 on 162 degrees of freedom
Multiple R-squared:  0.5443,    Adjusted R-squared:  0.5302
F-statistic: 38.69 on 5 and 162 DF,  p-value: < 2.2e-16
```

Austin Ride Volume

The data set summarizes the total volume of rideshare on each day from June 16th,2016 to August 31st, 2016. Number of rideshare will be the response to the model to be trained for.

Ride Volume									
Date	Rides		Weekend	Total for Week	Running Total				
Thursday, June 16	190				190			Day 1	190
Friday, June 17	345				535			Day 2	535
Saturday, June 18	411				946			Day 3	946
Sunday, June 19	202		958	1148	1148			Day 4	1148
Monday, June 20	100				1248			Day 5	1248
Tuesday, June 21	124				1372			Day 6	1372
Wednesday, June 22	220				1592			Day 7	1592
Thursday, June 23	144	-24%			1736			Day 8	1736
Friday, June 24	397	15%			2133			Day 9	2133
Saturday, June 25	503	22%	21%	52%	2636			Day 10	2636
Sunday, June 26	256	27%	1156	1744	2892			Day 11	2892
Monday, June 27	97	-3%			2989			Day 12	2989
Tuesday, June 28	108	-13%			3097			Day 13	3097
Wednesday, June 29	122	-45%			3219			Day 14	3219
Thursday, June 30	203	41%			3422			Day 15	3422
Friday, July 1	514	29%			3936			Day 16	3936
Saturday, July 2	767	52%	65%	40%	4703			Day 17	4703
Sunday, July 3	622	143%	1903	2433	5325	297		Day 18	5325
Monday, July 4	402	314%			5727			Day 19	5727
Tuesday, July 5	199	84%			5926			Day 20	5926
Wednesday, July 6	195	60%			6121			Day 21	6121
Thursday, July 7	248	22%			6369			Day 22	6369
Friday, July 8	450	-12%			6819			Day 23	6819
Saturday, July 9	654	-15%	-22%	4%	7473			Day 24	7473
Sunday, July 10	378	-39%	1482	2526	7851			Day 25	7851

RideAustin_Weather

This data set contains key information which includes geographic start and end locations of the rideshare, detailed vehicle list and weather condition for each registered rideshare.

completed_on	distance_tr	end_locati	end_locati	started_on	driver_ratir	rider_ratin	start_zip_c	end_zip_cc	charity_id	requested_	free_credit	surge_fact	start_locati	start_locati	color	make	model	year
2016/6/4 4:35	285	30.27	-97.75	2016/6/4 4:34	5	5				REGULAR		0	-97.75	30.27	Black	Cadillac	XTS	2013
2016/6/4 4:51	1029	30.27	-97.74	2016/6/4 4:45	5	5				REGULAR		0	-97.75	30.27	Black	Cadillac	XTS	2013
2016/6/4 5:27	8459	38.68	-121.04	2016/6/4 5:18	5	5				REGULAR		0	-121.07	38.65	Gray	Bentley	Continenta	2013
2016/6/4 6:51	443	38.68	-121.04	2016/6/4 6:50	5	5				REGULAR		0	-121.04	38.68	Gray	Bentley	Continenta	2013
2016/6/4 8:17	568	38.68	-121.04	2016/6/4 8:16	3	5				REGULAR		0	-121.04	38.68	Gray	Bentley	Continenta	2013
2016/6/4 15:13	4051	30.27	-97.74	2016/6/4 15:05	5	5				REGULAR		0	-97.76	30.25	Black	Cadillac	XTS	2013
2016/6/4 15:26	790	30.27	-97.75	2016/6/4 15:24	5	5				REGULAR		0	-97.75	30.27	Black	Cadillac	XTS	2013
2016/6/5 3:50	2171	30.27	-97.75	2016/6/5 3:40	0.5	5				REGULAR		0	-97.75	30.26	Black	Cadillac	XTS	2013
2016/6/5 4:33	10260	30.27	-97.75	2016/6/5 4:17		5				REGULAR		0	-97.77	30.2	Black	Infiniti	QX60	2015
2016/6/5 7:12	5294	30.24	-97.78	2016/6/5 6:57	3	5				REGULAR		0	-97.75	30.27	Black	Cadillac	SRX	2012
2016/6/5 7:36	9768	30.2	-97.77	2016/6/5 7:26	4.5	5				REGULAR		0	-97.74	30.27	Silver	Toyota	Highlander	2008
2016/6/5 20:59	12169	30.2	-97.67	2016/6/5 20:47	5	5				REGULAR		0	-97.75	30.24	White	Nissan	Murano	2015
2016/6/5 21:12	9859	30.27	-97.74	2016/6/5 20:56	5	5				REGULAR		0	-97.8	30.21	Black	Cadillac	XTS	2013
2016/6/5 22:19	4289	30.31	-97.75	2016/6/5 22:11	5	5				REGULAR		0	-97.74	30.29	Black	Cadillac	XTS	2013
2016/6/5 23:35	3305	30.29	-97.74	2016/6/5 23:29	3	5				REGULAR		0	-97.75	30.31	Black	Cadillac	XTS	2013
2016/6/5 21:55	2290	30.27	-97.75	2016/6/5 21:47		5				REGULAR		0	-97.74	30.26	Black	Cadillac	SRX	2012
2016/6/5 22:23	2411	30.27	-97.75	2016/6/5 22:15	3	5				REGULAR		0	-97.75	30.25	Black	Cadillac	SRX	2012
2016/6/5 23:57	2107	30.25	-97.75	2016/6/5 23:51		5				REGULAR		0	-97.75	30.27	Black	Cadillac	SRX	2012
2016/6/5 23:33	2120	30.27	-97.74	2016/6/5 23:24	5	5				REGULAR		0	-97.75	30.27	Gray	Toyota	Highlander	2012
2016/6/6 0:07	9771	30.26	-97.75	2016/6/5 23:47		5				REGULAR		0	-97.77	30.31	White	Nissan	Murano	2015
2016/6/6 1:28	3468	30.31	-97.73	2016/6/6 1:20		5				REGULAR		0	-97.75	30.29	White	Chevrolet	Tahoe	2013

Fuel economy -Vehicle

This will help to get fuel consumption in both city and highway with CO2 emission on each specific vehicle.

barrels08	barrelsA08	charge120	charge240	city08	city08U	cityA08	cityA08U	cityCD	cityE	cityUF	co2	co2A	co2Tailpip	co2Tailpip	comb08	con
14.16714	0	0	0	19	0	0	0	0	0	0	-1	-1	0	423.1905	21	
27.04636	0	0	0	9	0	0	0	0	0	0	-1	-1	0	807.9091	11	
11.01889	0	0	0	23	0	0	0	0	0	0	-1	-1	0	329.1481	27	
27.04636	0	0	0	10	0	0	0	0	0	0	-1	-1	0	807.9091	11	
15.65842	0	0	0	17	0	0	0	0	0	0	-1	-1	0	467.7368	19	
13.52318	0	0	0	21	0	0	0	0	0	0	-1	-1	0	403.9545	22	
11.9004	0	0	0	22	0	0	0	0	0	0	-1	-1	0	355.48	25	
12.39625	0	0	0	23	0	0	0	0	0	0	-1	-1	0	370.2917	24	
11.44269	0	0	0	23	0	0	0	0	0	0	-1	-1	0	341.8077	26	
11.9004	0	0	0	23	0	0	0	0	0	0	-1	-1	0	355.48	25	
11.44269	0	0	0	23	0	0	0	0	0	0	-1	-1	0	341.8077	26	
14.16714	0	0	0	18	0	0	0	0	0	0	-1	-1	0	423.1905	21	
12.39625	0	0	0	21	0	0	0	0	0	0	-1	-1	0	370.2917	24	
14.16714	0	0	0	18	0	0	0	0	0	0	-1	-1	0	423.1905	21	
22.88538	0	0	0	12	0	0	0	0	0	0	-1	-1	0	683.6154	13	
12.93522	0	0	0	20	0	0	0	0	0	0	-1	-1	0	386.3913	23	
14.8755	0	0	0	18	0	0	0	0	0	0	-1	-1	0	444.35	20	
14.16714	0	0	0	19	0	0	0	0	0	0	-1	-1	0	423.1905	21	
15.65842	0	0	0	17	0	0	0	0	0	0	-1	-1	0	467.7368	19	
15.65842	0	0	0	17	0	0	0	0	0	0	-1	-1	0	467.7368	19	
18.59438	0	0	0	14	0	0	0	0	0	0	-1	-1	0	555.4375	16	
18.59438	0	0	0	14	0	0	0	0	0	0	-1	-1	0	555.4375	16	
22.88538	0	0	0	11	0	0	0	0	0	0	-1	-1	0	683.6154	13	
12.93522	0	0	0	21	0	0	0	0	0	0	-1	-1	0	386.3913	23	
15.65842	0	0	0	17	0	0	0	0	0	0	-1	-1	0	467.7368	19	
22.88538	0	0	0	11	0	0	0	0	0	0	-1	-1	0	683.6154	13	
14.16714	0	0	0	18	0	0	0	0	0	0	-1	-1	0	423.1905	21	

CapMetro Ridership Data

This data set contains the number of passengers getting on or off the CapMetro public transportation system by latitude and longitude from June 2016 to January 2017.

act_trip_start_time	actual_sequence	apc_date_time	block_id	booking_id	booking_num	booking_start_date	bs_id	close_date_time	current_route_id	day_type_vs	direction_code_id	dwell_time	ext_trip_id	garage_id	headsign_route	import_error	i
20161124224222.000	28	20161125000023.000	1005	AUG16D 000	18	20161121000000.000	3148	20161125000023.000	1	3	4	158	1669703	1	1	0	
20161125000034.000	2	20161125000034.000	0		0	20161125000034.000	0	20161125000034.000	0	0	0	82	0	0	0	5	
20161124212802.000	4	20161125000125.000	4002	AUG16D 000	18	20161121000000.000	0	20161125000125.000	0	3	0	0	1676300	1	0	6	
20161124224222.000	29	20161125000130.000	1005	AUG16D 000	18	20161121000000.000	3150	20161125000130.000	1	3	4	9	1669703	1	1	0	
20161125000151.000	2	20161125000151.000	0		0	20161125000151.000	0	20161125000151.000	0	0	0	0	0	0	0	5	
20161124223655.000	20	20161125000155.000	1004	AUG16D 000	18	20161121000000.000	5545	20161125000155.000	1	3	6	91	1669678	1	1	0	
20161125000200.000	2	20161125000200.000	0		0	20161125000200.000	0	20161125000200.000	0	0	0	7	0	0	0	5	
20161124220912.000	3	20161125000258.000	350002	AUG16D 000	18	20161121000000.000	0	20161125000258.000	0	3	0	5673	1675507	1	0	0	
20161124224222.000	30	20161125000327.000	1005	AUG16D 000	18	20161121000000.000	4727	20161125000327.000	1	3	4	12	1669703	1	1	0	
20161125000402.000	2	20161125000402.000	0		0	20161125000402.000	0	20161125000402.000	0	0	0	63	0	0	0	5	
20161124225411.000	4	20161125000425.000	300005	AUG16D 000	18	20161121000000.000	0	20161125000425.000	0	3	0	381	1673635	1	0	0	
20161125000452.000	2	20161125000452.000	0		0	20161125000452.000	0	20161125000452.000	0	0	0	34	0	0	0	5	
20161124223655.000	21	20161125000602.000	1004	AUG16D 000	18	20161121000000.000	546	20161125000602.000	1	3	6	5	1669678	1	1	0	
20161125000619.000	2	20161125000619.000	0		0	20161125000619.000	0	20161125000619.000	0	0	0	724	0	0	0	5	
20161125000635.000	2	20161125000635.000	0		0	20161125000635.000	0	20161125000635.000	0	0	0	4	0	0	0	5	
20161124225411.000	5	20161125000658.000	300005	AUG16D 000	18	20161121000000.000	0	20161125000658.000	0	3	0	109	1673635	1	0	0	
20161124223655.000	22	20161125000703.000	1004	AUG16D 000	18	20161121000000.000	548	20161125000703.000	1	3	6	10	1669678	1	1	0	
20161125000739.000	2	20161125000739.000	0		0	20161125000739.000	0	20161125000739.000	0	0	0	0	0	0	0	5	
20161124224222.000	31	20161125000749.000	1005	AUG16D 000	18	20161121000000.000	2540	20161125000749.000	1	3	4	32	1669703	1	1	0	
20161124223655.000	23	20161125000803.000	1004	AUG16D 000	18	20161121000000.000	4381	20161125000803.000	1	3	6	12	1669678	1	1	0	
20161125000822.000	2	20161125000822.000	0		0	20161125000822.000	0	20161125000822.000	0	0	0	0	0	0	0	5	
20161124225411.000	6	20161125000827.000	300005	AUG16D 000	18	20161121000000.000	0	20161125000827.000	0	3	0	9	1673635	1	0	0	
20161124220912.000	4	20161125000843.000	350002	AUG16D 000	18	20161121000000.000	0	20161125000843.000	0	3	0	173	1675507	1	0	7	
20161124215503.000	4	20161125000857.000	300004	AUG16D 000	18	20161121000000.000	0	20161125000857.000	0	3	0	626	1673636	1	0	7	
20161124223655.000	24	20161125000936.000	1004	AUG16D 000	18	20161121000000.000	550	20161125000936.000	1	3	6	5	1669678	1	1	0	
20161124224222.000	32	20161125000941.000	1005	AUG16D 000	18	20161121000000.000	3036	20161125000941.000	1	3	4	9	1669703	1	1	0	
20161124215503.000	5	20161125001021.000	300004	AUG16D 000	18	20161121000000.000	0	20161125001021.000	0	3	0	8	1673636	1	0	6	

CapMetro Shapefile

Dataset contains the geographic locations of current public transit stops in the Austin CapMetro public transit city

STOP_ID	STOP_NAME	STOP_ABBR	STREET_NMB	ON_STREET	AT_STREET	CITY	ZIP	BAY	STOP_TYPE	PLACEMENT	CORNER	STATUS	LATITUDE	LONGITUDE
66	4925 Craigwood/FM	CRFMS	4925	CRAIGWOOD	FM 969	AUSTIN	78725		Bus Stop	Nearside	Southeast	Active	30.2841709	-97.65985415
252	200 Trinity/2nd	2TRS	200	TRINITY	2ND	AUSTIN	78701		Bus Stop	Mid-Block	Northeast	Active	30.2638421	-97.74042677
462	851 Rutland/Park Vil	S1	851	RUTLAND	PARK VILLAGE	AUSTIN	78758		Bus Stop	Mid-Block	Southeast	Active	30.36547	-97.69752
466	8740 Lamar/Payton	S1801	8740	LAMAR	PAYTON GIN	AUSTIN	78758		Bus Stop	Mid-Block	Southwest	Active	30.35680916	-97.70106551
467	8630 Lamar/Fairfielc	S63	8630	LAMAR	FAIRFIELD	AUSTIN	78758		Bus Stop	Farside	Southwest	Active	30.35529611	-97.7031279
468	Lamar/Thurmond	S15	8400	LAMAR	THURMOND	AUSTIN	78758		Bus Stop	Farside	Southwest	Active	30.35313912	-97.70608203
469	8320 Lamar/Meadov	S62	8320	LAMAR	MEADOWLARK	AUSTIN	78758		Bus Stop	Nearside	Northwest	Active	30.3522556	-97.70729488
471	7720 Lamar/Stobaug	S1911	7720	LAMAR	STOBAUGH	AUSTIN	78757		Bus Stop	Mid-Block	Southwest	Active	30.34604	-97.71394
472	7520 Lamar/Morrow	S11	7520	LAMAR	MORROW	AUSTIN	78757		Bus Stop	Mid-Block	Southwest	Active	30.34313363	-97.71565611
474	6814 Lamar/Justin	S56	6814	LAMAR	JUSTIN	AUSTIN	78757		Bus Stop	Farside	Southwest	Active	30.33620568	-97.72000833
475	6600 Lamar/Brentwo	S54	6600	LAMAR	BRENTWOOD	AUSTIN	78757		Bus Stop	Nearside	Northwest	Active	30.33411003	-97.72132254
476	6200 Lamar/Denson	S7	6200	LAMAR	DENSON	AUSTIN	78757		Bus Stop	Nearside	Northwest	Active	30.33042504	-97.72363629
480	5528 Lamar/Koenig	S48	5528	LAMAR	KOENIG	AUSTIN	78756		Bus Stop	Mid-Block	Southwest	Active	30.32424886	-97.72752964
482	5300 Lamar/North Lc	S6	5300	LAMAR	NORTH LOOP	AUSTIN	78756		Bus Stop	Nearside	Northwest	Active	30.32130258	-97.72939072
483	5106 Lamar/51st	S44	5106	LAMAR	51ST	AUSTIN	78756		Bus Stop	Nearside	Northwest	Active	30.31904976	-97.73080613
484	Triangle Station (SB	S1805	4600	GUADALUPE	LAMAR	AUSTIN	78751		Rapid Station	Mid-Block	Southwest	Active	30.3146309	-97.73252431
485	4500 Guadalupe/45t	200SB	4500	GUADALUPE	45TH	AUSTIN	78751		Bus Stop	Nearside	Northwest	Active	30.311163	-97.73295788
486	Guadalupe/43rd Stre	S39	4300	GUADALUPE	43RD	AUSTIN	78751		Bus Stop	Nearside	Northwest	Active	30.30883127	-97.73439524
487	Guadalupe/41st Stre	S37	4100	GUADALUPE	41ST	AUSTIN	78751		Bus Stop	Nearside	Northwest	Active	30.30670338	-97.73575572
489	Guadalupe/Maiden	S1806	3500	GUADALUPE	MAIDEN	AUSTIN	78705		Bus Stop	Nearside	Northwest	Active	30.30167414	-97.73896028
490	Guadalupe/34th Stre	S31	3402	GUADALUPE	34TH	AUSTIN	78705		Bus Stop	Nearside	Northwest	Active	30.30045562	-97.73970878
492	Guadalupe/30th Stre	S27	3000	GUADALUPE	30TH	AUSTIN	78705		Bus Stop	Nearside	Northwest	Active	30.29680363	-97.74202809
494	Guadalupe/27th Stre	S14	2700	GUADALUPE	27TH	AUSTIN	78705		Bus Stop	Nearside	Northwest	Active	30.29219693	-97.74130995
495	Guadalupe/26th Stre	S2	2600	GUADALUPE	26TH	AUSTIN	78705		Bus Stop	Nearside	Northwest	Active	30.29067306	-97.74140804
497	UT West Mall Statior	S19	2246	GUADALUPE	23RD	AUSTIN	78705		Rapid Station	Mid-Block	Southwest	Active	30.28606366	-97.74181517

US Census Data

The ACS survey shows population density (ppsm) and median household income by census tract.

https://censusreporter.org

Census Tract 215.02, Williamson, TX

Census Tract in: Round Rock, TX, Williamson County, TX, Texas, United States

4,476
Population

0.8 square miles

5,778.7 people per square mile

Census data: ACS 2021 5-year unless noted

Economics

† Margin of error is at least 10 percent of the total value. Take care with this statistic.

Income

$25,393
Per capita income

about three-fifths of the amount in Round Rock: $40,197

about three-fifths of the amount in Williamson County: $42,959

$55,388
Median household income

about two-thirds of the amount in Round Rock: $86,587

about three-fifths of the amount in Williamson County: $94,705

Household income

Show data / Embed

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