The Drivers of Social Preferences: Evidence from a Nationwide Tipping Field Experiment

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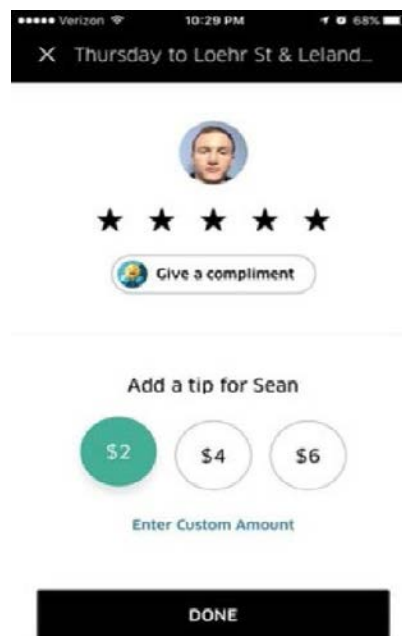OCTOBER 2019

Selected Figures and Exhibits

Figure 1: The figure shows an example of the screen riders are presented in the app upon completing a trip. Riders are only given the option to rate and tip after the trip is over and the driver has already rated them. At the time of our experiment, riders could choose from one of three default tip options, enter a custom amount, or enter no tip at all. In the above example, the default tip options shown are 2, 4, and 6.
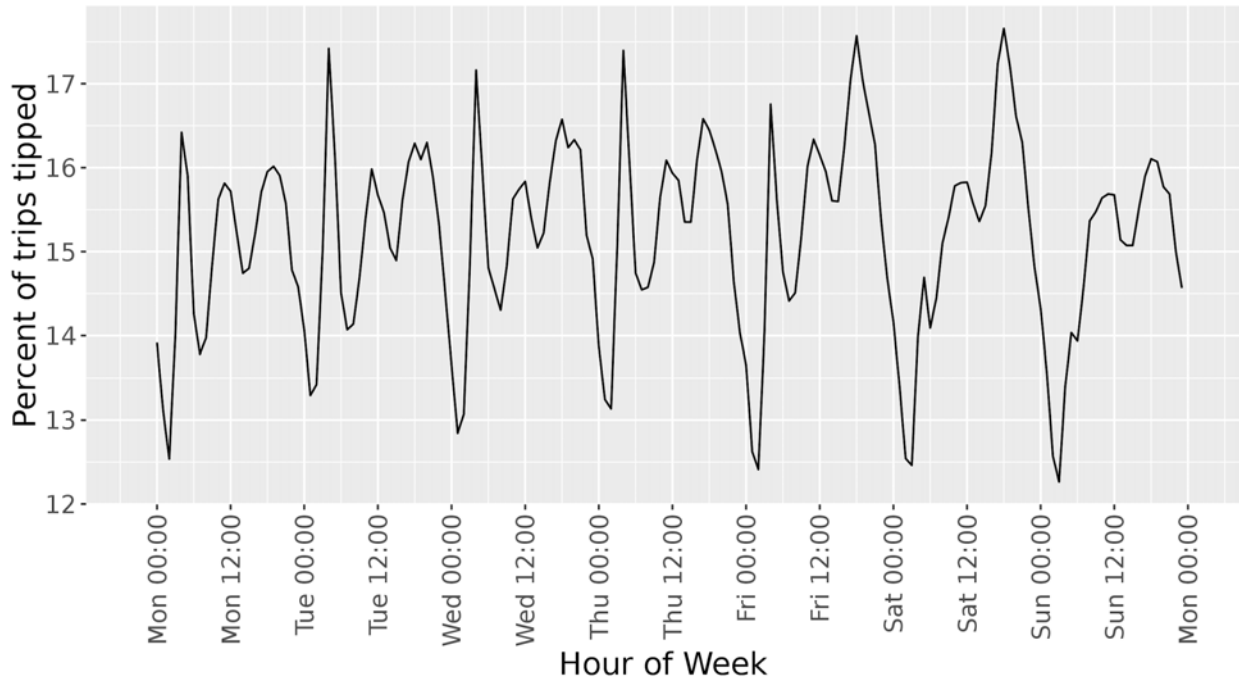
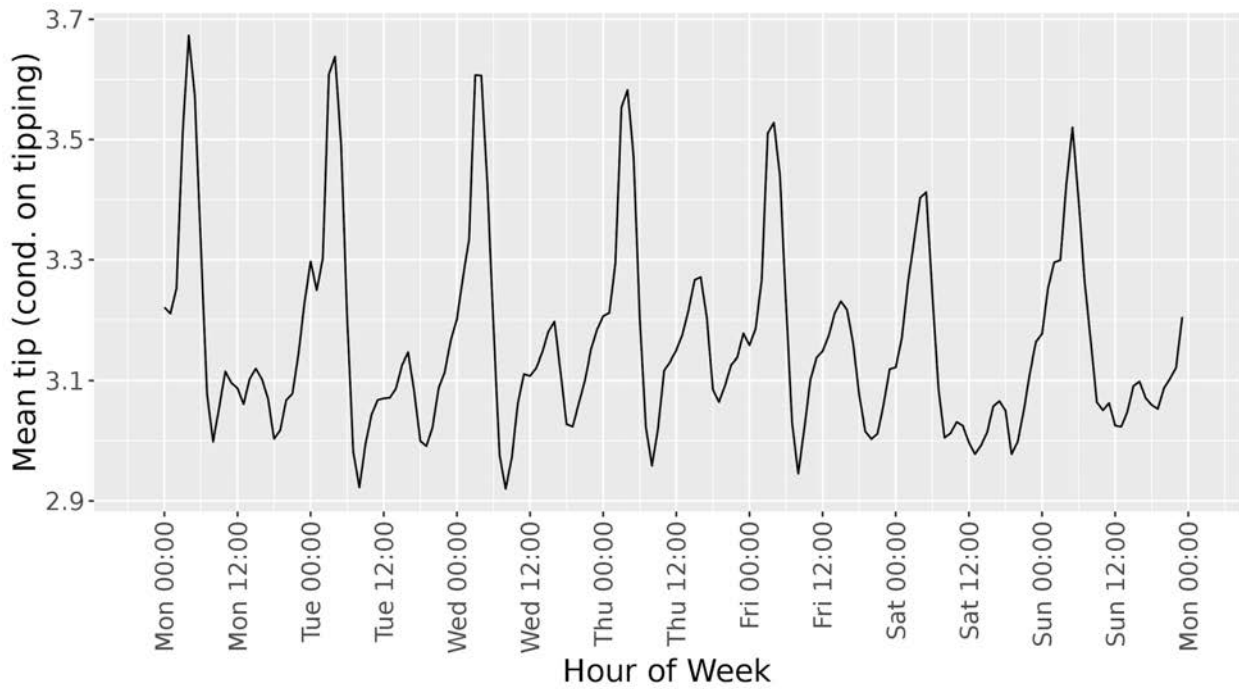Figure 2: The figure shows the percent of trips tipped by hour of the week across the United States.

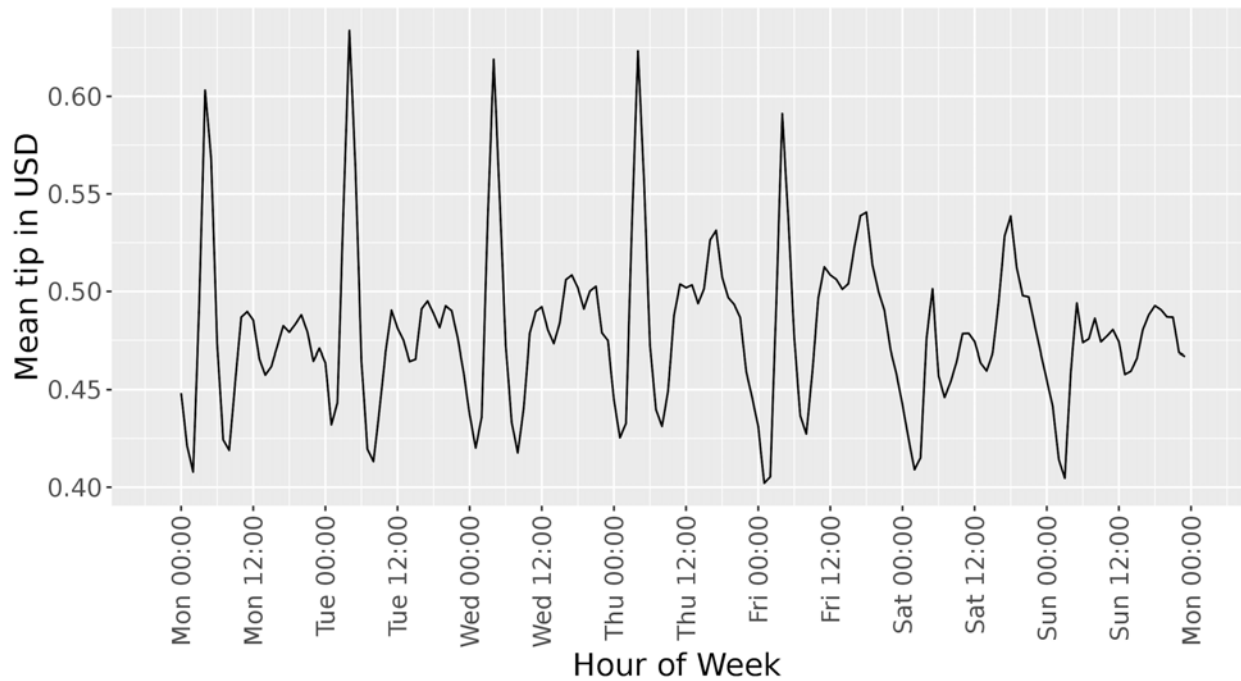Figure 3: Average tip by hour of week across the United States, including only trips that were tipped.

Figure 4: Average tip by hour of week across the United States, including trips that were not tipped (tipped $0).
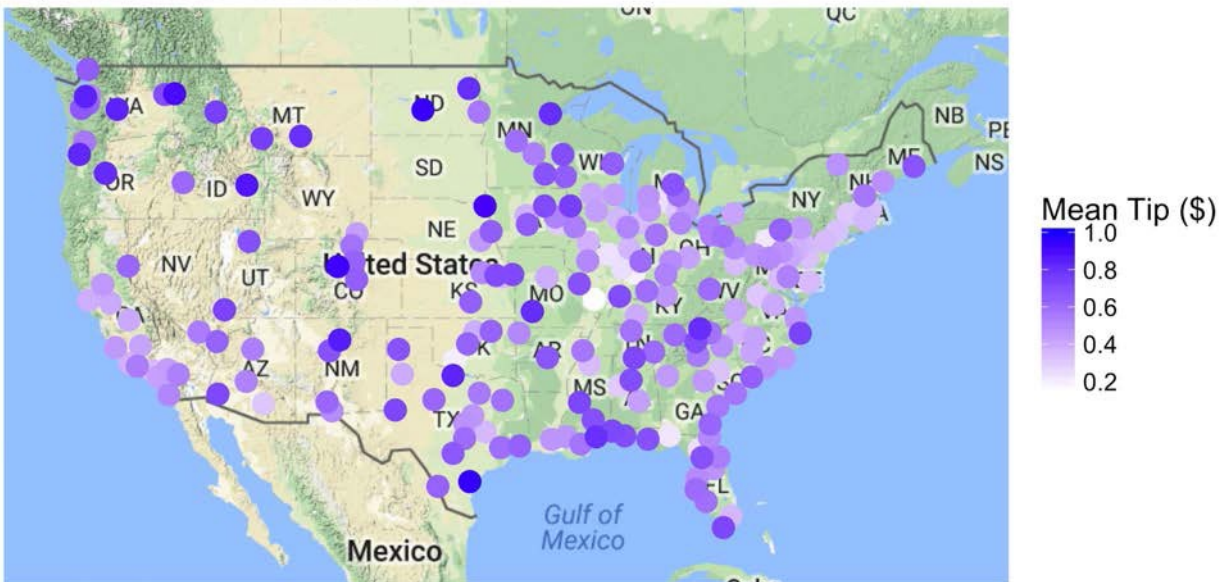

Figure 5: Average tips across cities in the United States. Tips tend to be highest in less dense areas in the middle of the country. They are lowest in many major cities along the Northeast and West Coast.
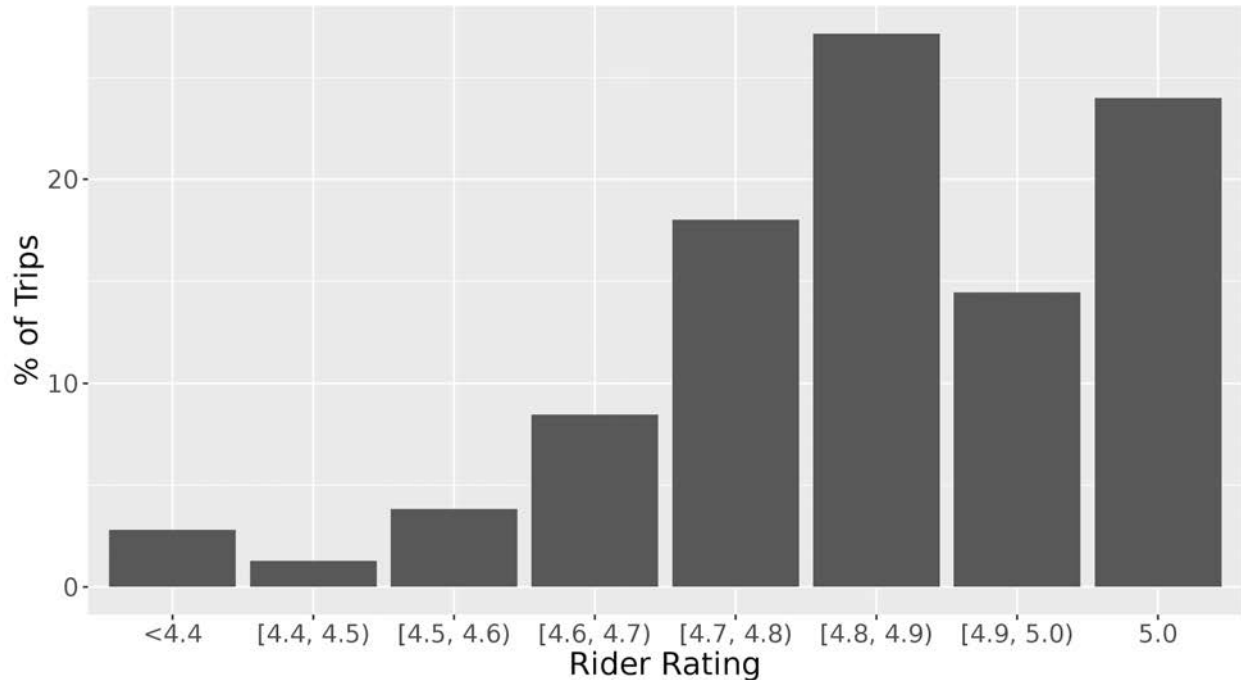
Figure 6: Distribution of rider lifetime ratings across trips, excluding missing ratings. A rider's lifetime rating is the average rating given to them by drivers over their past 500 trips. For riders that have taken fewer than 500 trips, their lifetime rating is their average rating over all of their past trips.

Figure 7: Percent of trips tipped by rider lifetime rating. A rider's lifetime rating is the average rating given to them by drivers over their past 500 trips. For riders that have taken fewer than 500 trips, their lifetime rating is their average rating over all of their past trips

Figure 8: Average tip conditional on tipping by rider lifetime rating. A rider's lifetime rating is the average rating given to them by drivers over their past 500 trips. For riders that have taken fewer than 500 trips, their lifetime rating is their average rating over all of their past trips
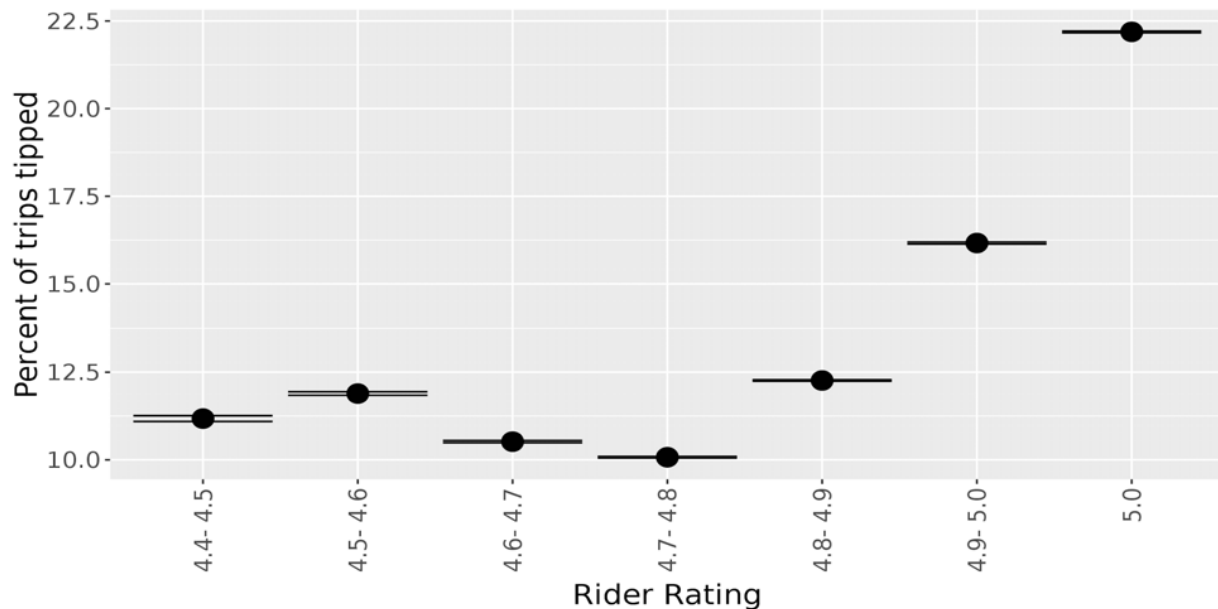

Figure 9: Average tip by rider lifetime rating. A rider's lifetime rating is the average rating given to them by drivers over their past 500 trips. For riders that have taken fewer than 500 trips, their lifetime rating is their average rating over all of their past trips
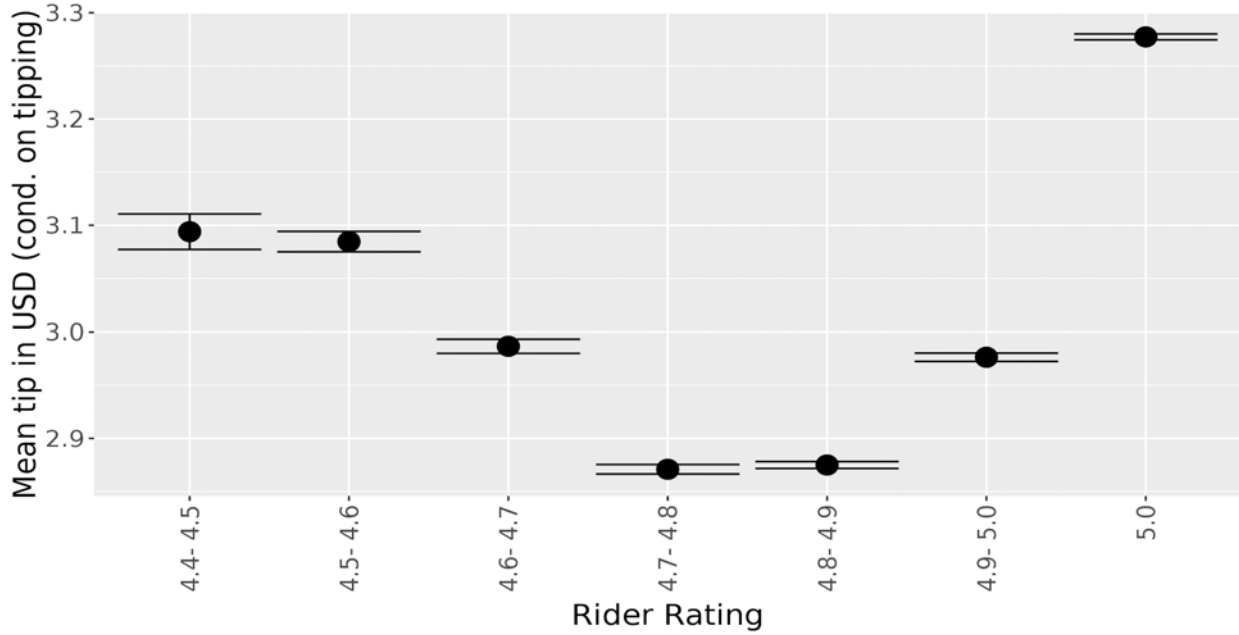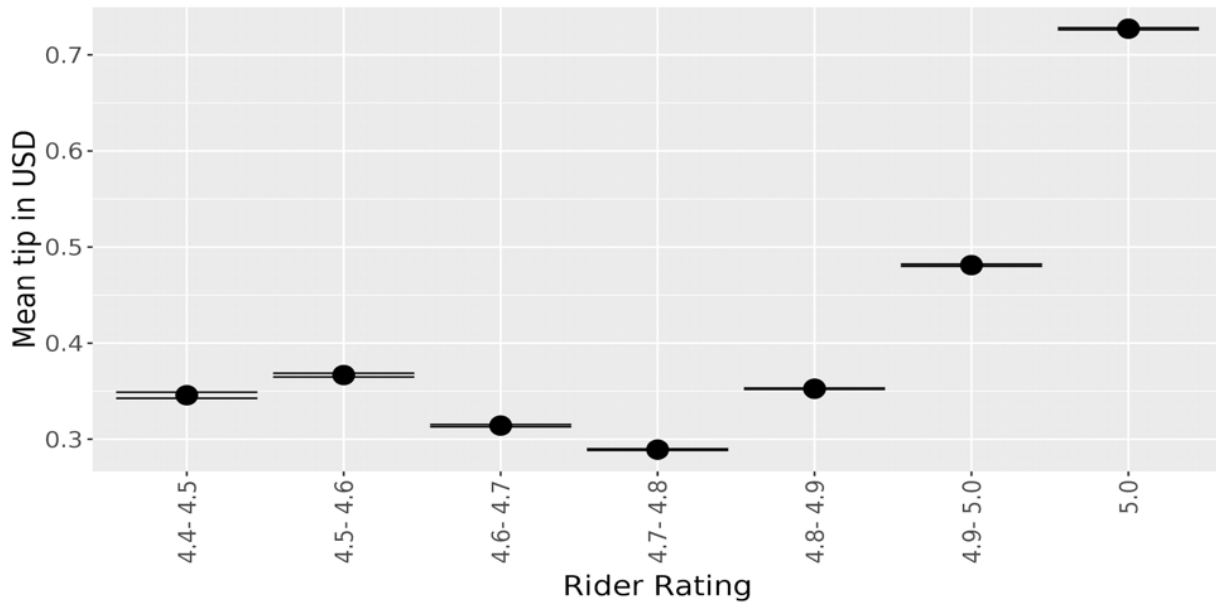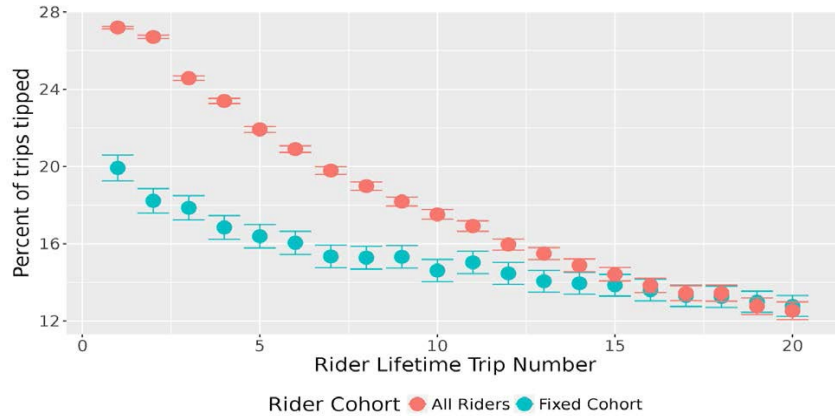
Figure 10: Probability of tipping by the number of trips a new rider has taken in their lifetime. The "All Riders" cohort includes all riders who took their first trip in the sample period. The "Fixed" cohort includes only riders who complete their first 20 trips in the sample period, so for that cohort each point includes the same set of riders.
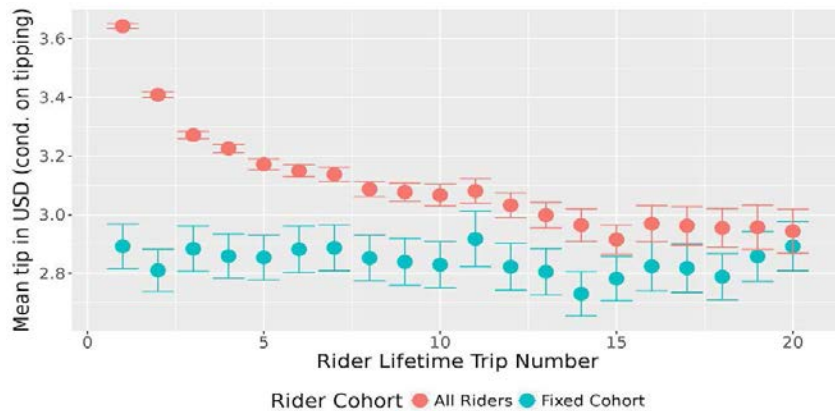
Figure 11: Average tip conditional on tipping by the number of trips a new rider has taken in their lifetime. The "All Riders" cohort includes all riders who took their first trip in the sample period. The "Fixed" cohort includes only riders who complete their first 20 trips in the sample period.
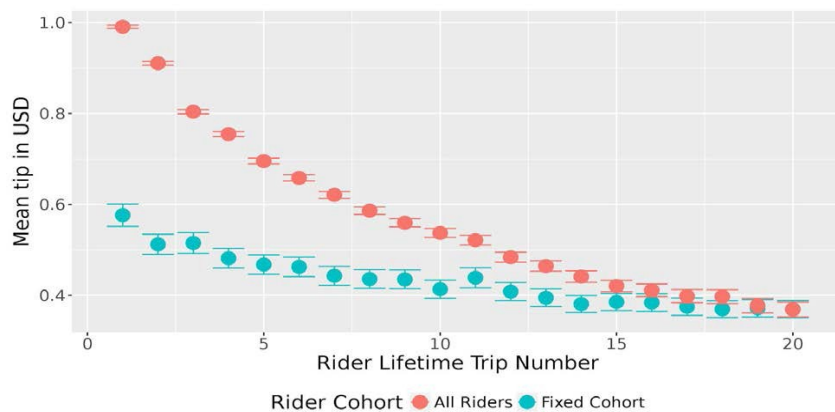
Figure 12: Average tip (including instances where the rider did not tip) by the number of trips a new rider has taken in their lifetime. The "All Riders" cohort includes all riders who took their first trip in the sample period. The "Fixed" cohort includes only riders who complete their first 20 trips in the sample period.
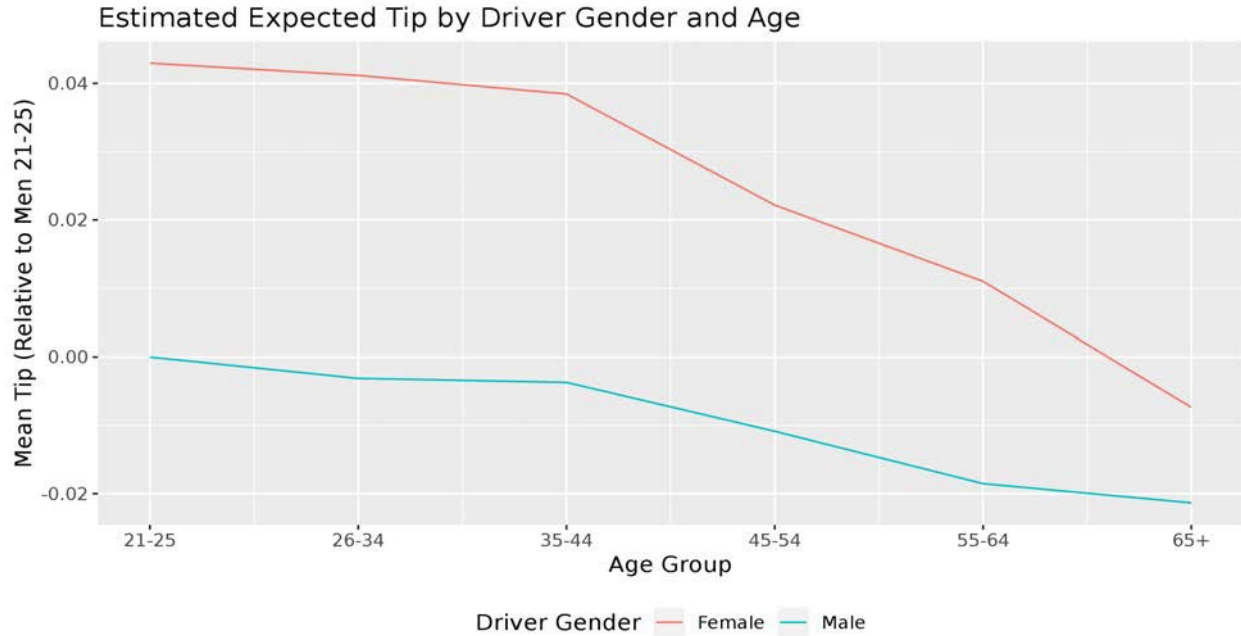
Figure 13: Fitted tip levels by the interaction of driver gender and age, controlling for time, location, and trip, rider, and driver covariates. Estimates are relative to male drivers between the ages of 21 and 25.
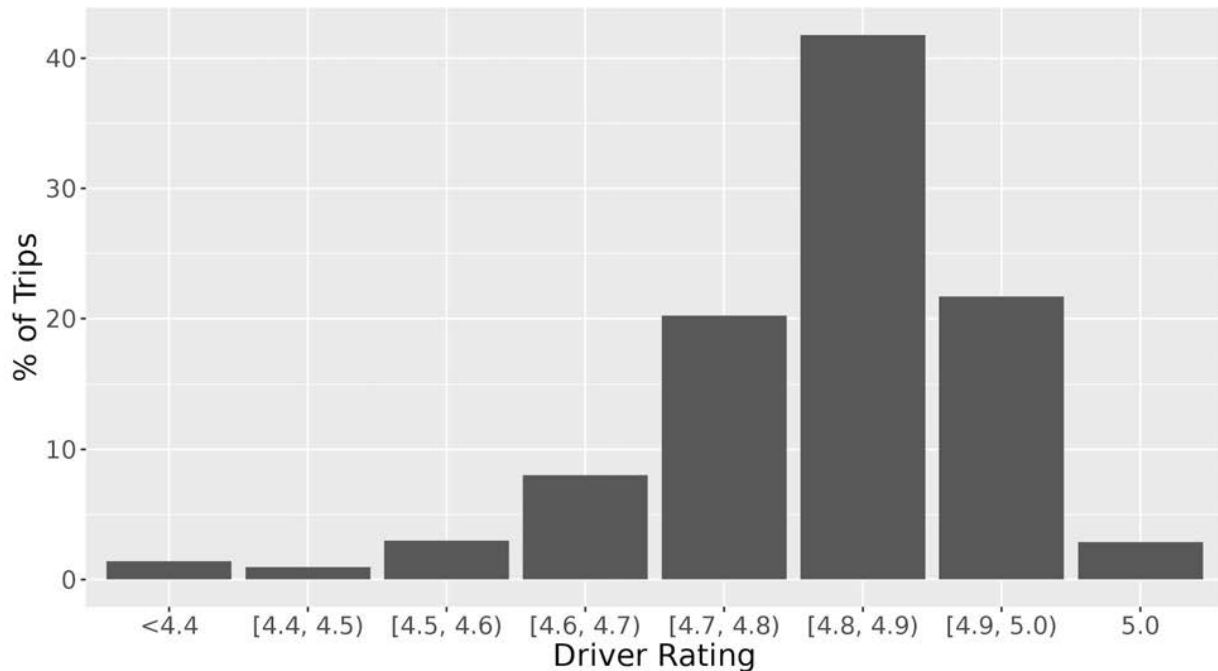
Figure 14: Distribution of driver lifetime ratings across trips, excluding missing ratings. A driver's lifetime rating is the average rating given to them by riders over their past 500 trips. For drivers that have taken fewer than 500 trips, their lifetime rating is their average rating over all of their past trips.
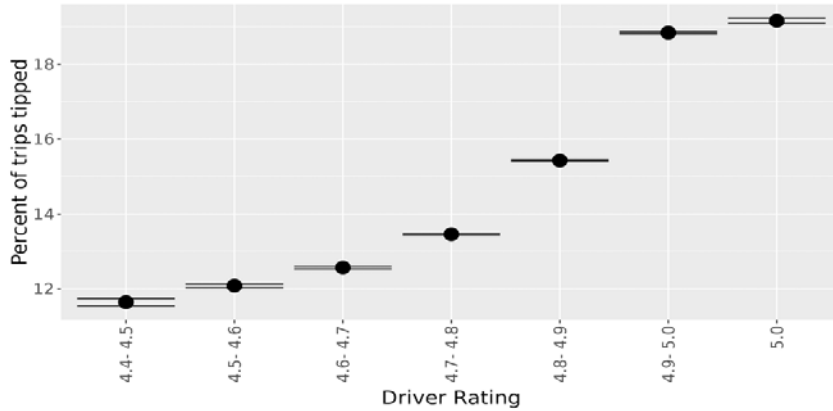
Figure 15: Percent of trips tipped by driver lifetime rating. A driver's lifetime rating is the average rating given to them by riders over their past 500 trips. For drivers that have taken fewer than 500 trips, their lifetime rating is their average rating over all of their past trips.
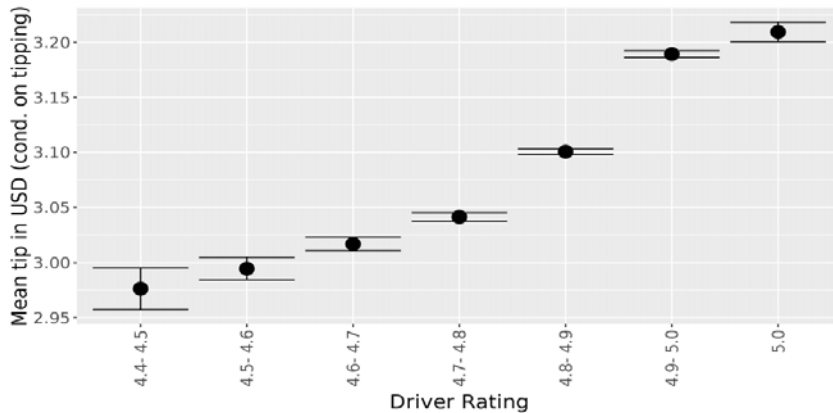
Figure 16: Average tip conditional on tipping by driver lifetime rating. A driver's lifetime rating is the average rating given to them by riders over their past 500 trips. For drivers that have taken fewer than 500 trips, their lifetime rating is their average rating over all of their past trips.
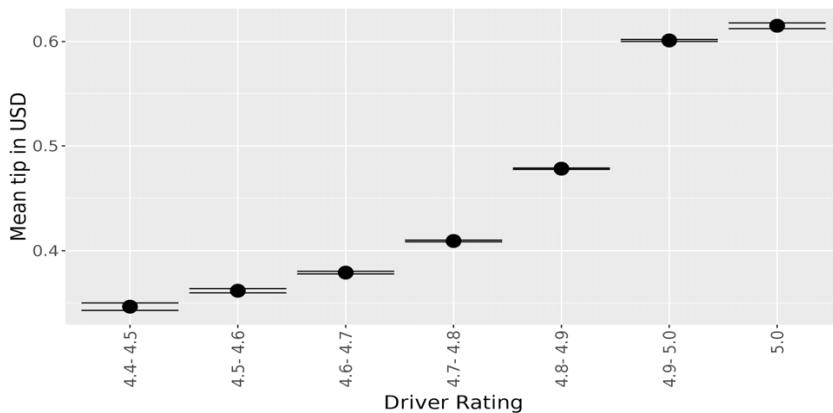
Figure 17: Average tip by driver lifetime rating. A driver's lifetime rating is the average rating given to them by riders over their past 500 trips. For drivers that have taken fewer than 500 trips, their lifetime rating is their average rating over all of their past trips.
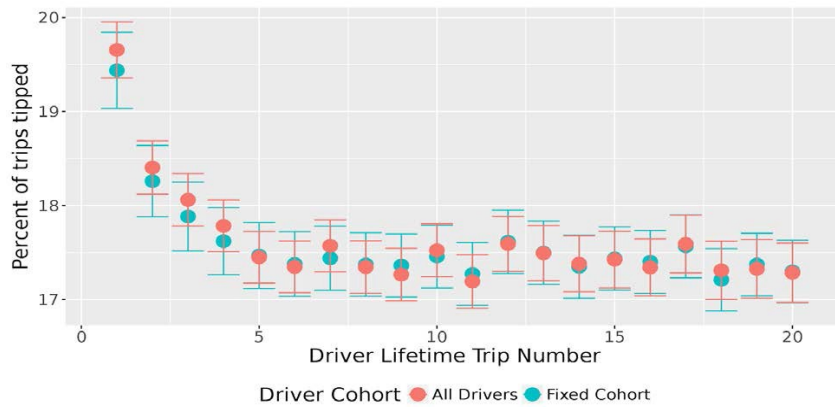
Figure 18: Probability of tipping by the number of trips a new driver has taken in their lifetime. Results are broken into two cohorts.**
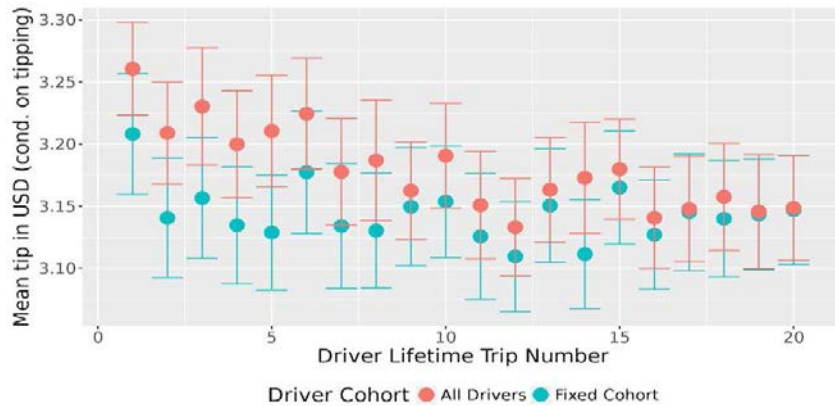
Figure 19: Average tip conditional on tipping by the number of trips a new driver has taken in their lifetime.**
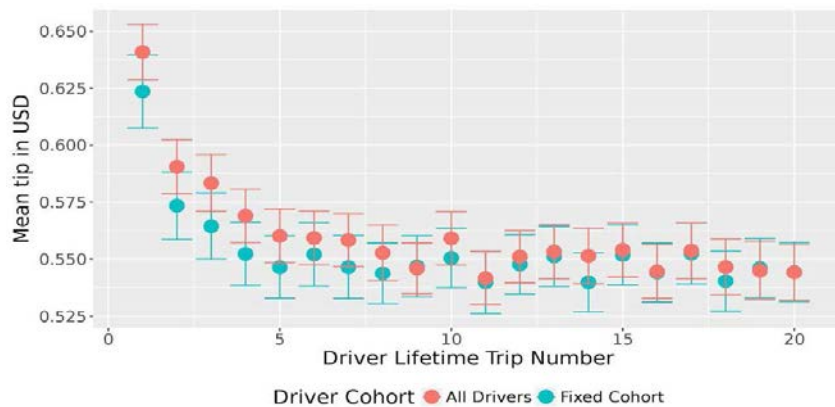
Figure 20: Average tip by the number of trips a new driver has taken in their lifetime.**

**The "All Drivers" cohort includes all drivers who took their first trip in the sample period. The "Fixed" cohort includes only drivers who complete their first 20 trips in the sample period, so for that cohort each point includes the same set of drivers.

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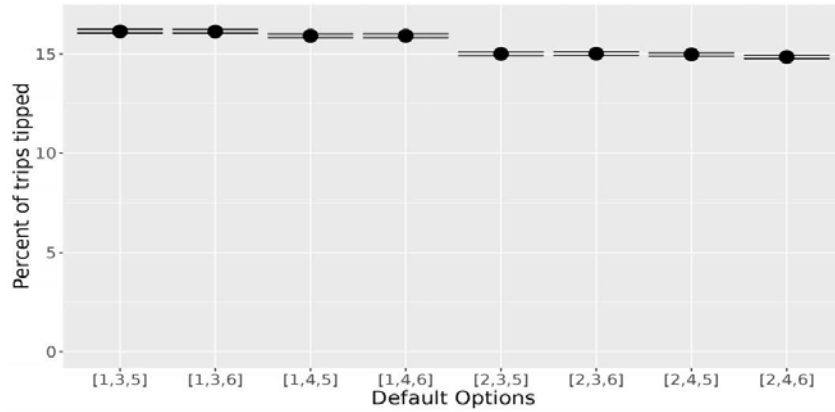
Figure 22: Percent of trips tipped by default options shown to the rider in the experiment. Estimates are clustered by rider.
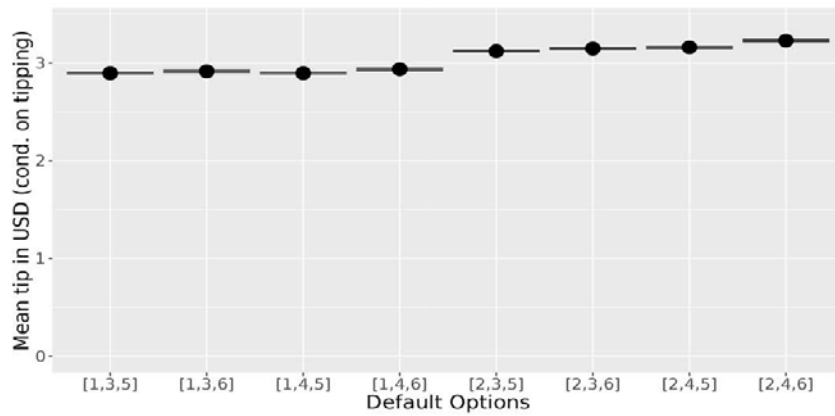
Figure 23: Average tip conditional on tipping by default options shown to the rider. Estimates are clustered by rider.
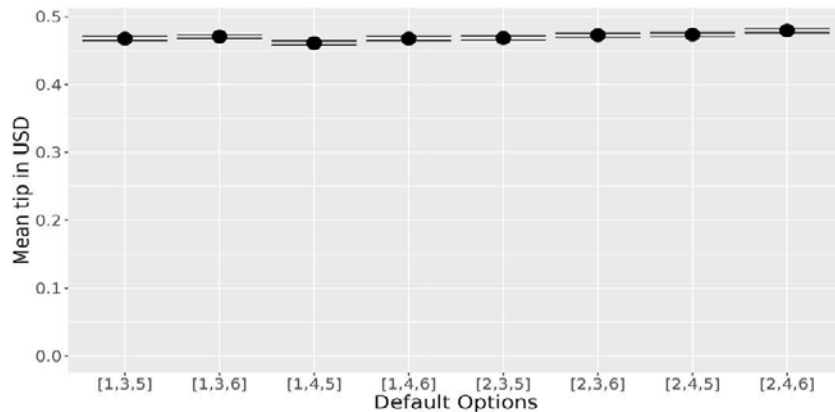
Figure 24: Average tip by default options shown to the rider. Estimates are clustered by rider.

Controls: The table below shows the controls we include in regressions when estimating Equation 1.

Trip Controls

Control Variable	Explanation
Duration	Log of trip duration in seconds
Distance	Log of trip distance in miles
Fare	Log of fare
Distance to pick up	Distance from the driver's dispatch location to rider's pick up location in miles
Is airport start	
Is airport destination	
Surge	The surge multiplier for the trip, discretized into a factor variable. Includes a factor level for no surge on the trip.
ATA - ETA	Actual time of arrival to pick up the rider minus expected time of arrival to pick up, in minutes
ATD - ETD	Actual time of arrival to the rider's destination minus expected time of arrival to the destination, in minutes
Is business trip	Whether the rider used a payment profile tied to an Uber for Business expense account
Any hard accelerations	Whether Uber estimates that there may have been a hard acceleration. Estimates are imperfect.
Any hard brakes	Whether Uber estimates there may have been a hard brake. Estimates are imperfect.
Did speed	Whether Uber estimates that there may have been speeding. Estimates are imperfect.
Average speed	Distance to destination divided by time to destination.
Is car from before 2010	

Rider Controls

Control Variable	Explanation
Nudged rating screen	Rider's treatment status for the nudged rating screen experiment
Shown preset	The preset shown on the trip
Client OS	iOS or Android
Rider rating	Rescaled to be mean 0 and unit variance
Rider trip number	The number of trips the rider has taken, including the current trip. Rescaled to be mean 0 and unit variance.
Rider trips the month before	The number of trips the rider took in the month before the sample period
Rider gender (estimated)	
Rider home ZIP median income	Discretized by quintiles into a factor variable
Rider home ZIP % black	Discretized by quintiles into a factor variable
Rider home ZIP % Hispanic	Discretized by quintiles into a factor variable
Rider home ZIP % Bachelor's degree+	Discretized by quintiles into a factor variable

Driver Controls

Control Variable	Explanation
Driver's age	Discretized into a factor variable with six levels
Is driver app in English	
Driver rating	Rescaled to be mean 0 and unit variance
Driver trip number	The number of trips the driver has taken, including the current trip. Rescaled to be mean 0 and unit variance.
Driver trips the month before	The number of trips the driver took in the month before the sample period
Driver gender	
Driver home ZIP median income	Discretized by quintiles into a factor variable

Driver home ZIP % black	Discretized by quintiles into a factor variable
Driver home ZIP % Hispanic	Discretized by quintiles into a factor variable
Driver home ZIP % Bachelor's degree+	Discretized by quintiles into a factor variable

a. Driver home ZIP demographic quintiles (across trips)

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Median Income	$32,921.76	$45,058.39	$54,533.35	$67,108.86	$92,749.37
% Black	1.28	4.17	8.84	19.23	56.06
% Hispanic	2.09	5.83	11.48	21.44	51.35
% Bachelor's+	13.32	22.84	31.41	41.89	59.80

b. Rider home ZIP demographic quintiles (across trips)

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Median Income	$34,344.42	$49,545.73	$62,725.80	$78,724.89	$111,990.37
% Black	0.87	2.88	5.77	12.52	43.71
% Hispanic	1.85	4.55	8.00	15.08	43.03
% Bachelor's+	16.95	31.15	43.82	57.24	74.50

Table 1: Driver and rider ZIP demographic quantiles (across trips). Uber has access to drivers' home ZIP codes through documents filled out upon sign up. Rider's home zip codes come from the billing ZIP codes on their credit or debit cards. We observe rider and driver home ZIP information for more than 80% of trips. In the table we match home zip codes to demographic data from the US census and report mean within each quintile for each of the demographic variables. Quintiles are computed across trips.

a: Average tip amounts by driver ZIP demographic quantile.

Demographic	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Missing
Median Income	0.443	0.483	0.479	0.496	0.492	0.482
% Black	0.522	0.477	0.501	0.461	0.432	0.482
% Hispanic	0.510	0.507	0.49	0.461	0.425	0.482
% Bachelor's+	0.458	0.474	0.494	0.491	0.477	0.482

b: Mean tip amounts by rider ZIP code demographic quintiles.

Demographic	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Missing
Median Income	0.388	0.471	0.507	0.498	0.509	0.499
% Black	0.566	0.489	0.478	0.471	0.369	0.500
% Hispanic	0.543	0.494	0.468	0.48	0.388	0.500
% Bachelor's+	0.421	0.504	0.519	0.489	0.440	0.500

Table 2: Mean tip amounts ($) by driver and rider ZIP code demographic quintiles.

	N. Riders	Pct. Riders	N. Trips	Pct. Trips	Pct. Tipped	Mean Tip |Tip	Mean Tip
Male	4,119,667	52.4	12,161,837	52.5	17.0	3.129	0.531
Female	3,248,882	41.3	9,429,153	40.7	14.3	3.067	0.439
Unmatched	489,655	6.2	1,555,177	6.7	11.1	2.893	0.321

Table 3: Summary statistics by imputed gender for riders on Uber. Uber does not collect the rider's gender. We impute the rider's gender using their first names by matching with name and gender data from the Social Security Administration. Because the SSA data only includes names given to at least five babies per year, uncommon names are not matched. More details are in Appendix Section 3.

	Dependent variable:					
	Tip Amount					
	(1)	(2)	(3)	(4)	(5)	(6)
Female Rider	−0.092***	−0.092***	−0.093***	−0.068***	−0.068***	−0.060***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Unmatched Rider	−0.211***	−0.210***	−0.212***	−0.179***	−0.180***	−0.171***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	0.531***					
	(0.001)					
Date		X	X	X	X	X
Hour of Week			X		X	X
Pick-up Geo				X	X	X
Drop-off Geo						X
Observations	23,146,167	23,146,167	23,146,167	23,146,167	23,146,167	23,146,167
R^2	0.002	0.002	0.003	0.021	0.021	0.029
Adjusted R^2	0.002	0.002	0.003	0.020	0.021	0.028
Residual Std. Error	1.387	1.387	1.387	1.374	1.374	1.369
df	23146164	23146151	23145990	23140105	23139944	23133161

Note: *p<0.1; **p<0.05; ***p<0.01

Table 4: Regression output for tip differences between male and female riders Time and location controls are included. The fist column includes no controls. Estimates are relative to male riders. The second column includes controls for the date of the trip. Column (3) includes controls for the date and the hour of the week of the trip. Column (4) includes controls for the pick-up location (coded as a level 5 geohash) and the date of the trip. Column (5) includes controls for the pick-up location, date of the trip, and hour of the week. Column (6) includes controls for the pick-up location, date of the trip, hour of the week, and drop-off location. Results when including additional trip, rider, and driver controls are in Appendix Table 1.

	N. Drivers	Pct. Drivers	N. Trips	Pct. Trips	Pct. Tipped	Mean Tip |Tip	Mean Tip
Male	513,410	78.0	19,302,308	83.4	15.3	3.083	0.470
Female	144,502	22.0	3,843,859	16.6	16.8	3.143	0.527

Table 5: Summary statistics by gender for drivers on Uber. A driver's gender is recorded by Uber as part of the sign-up process.

|	Dependent variable:					
	Tip Amount					
	(1)	(2)	(3)	(4)	(5)	(6)
Female Driver	0.057***	0.057***	0.056***	0.047***	0.046***	0.048***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.470***					
	(0.0005)					
Date		X	X	X	X	X
Hour of Week			X		X	X
Pick-up Geo				X	X	X
Drop-off Geo						X
Observations	23,146,167	23,146,167	23,146,167	23,146,167	23,146,167	23,146,167
R^2	0.0002	0.0003	0.001	0.020	0.020	0.028
Adjusted R^2	0.0002	0.0003	0.001	0.019	0.020	0.028
Residual Std. Error	1.388	1.388	1.388	1.375	1.375	1.369
df	23146165	23146152	23145991	23140106	23139945	23133162

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table 6: Regression output for tip differences between male and female drivers. Time and location controls are included. The fist column includes no controls. Estimates are relative to male drivers.The second column includes controls for the date of the trip. Column (3) includes controls for the date and the hour of the week of the trip. Column (4) includes controls for the pick-up location (coded as a level 5 geohash) and the date of the trip. Column (5) includes controls for the pick-up location, date of the trip, and hour of the week. Column (6) includes controls for the pick-up location, date of the trip, hour of the week, and drop-off location. Results when including additional trip, rider, and driver controls are in Appendix Table 2.

Rider Gender	Driver Gender	N. Trips	Pct. Trips	Pct. Tipped	Mean Tip |Tip	Mean Tip
Male	Male	10,156,152	43.9	16.7	3.116	0.520
Male	Female	2,005,685	8.7	18.5	3.188	0.588
Female	Male	7,852,109	33.9	14.1	3.060	0.431
Female	Female	1,577,044	6.8	15.5	3.100	0.479
Unmatched	Male	1,294,047	5.6	11.0	2.878	0.315
Unmatched	Female	261,130	1.1	11.8	2.958	0.349

Supporting Results
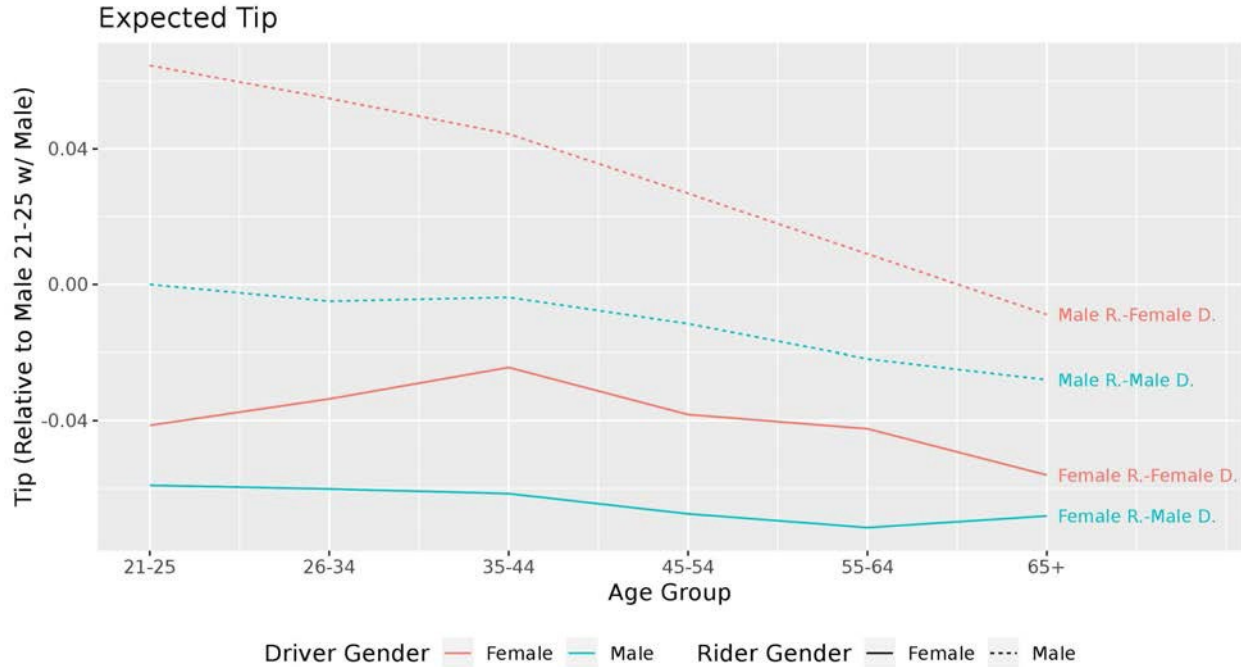
Appendix Figure 1: Fitted tip levels by the interaction of driver gender, rider gender, and age, controlling for time, location, and trip, rider, and driver covariates. Estimates are relative to male drivers between the ages of 21 and 25 matched with male riders.

	Dependent variable:		
	Tip Amount		
	(1)	(2)	(3)
Female Rider	−0.056***	−0.056***	−0.057***
	(0.001)	(0.001)	(0.001)
Unmatched Rider	−0.169***	−0.169***	−0.149***
	(0.002)	(0.002)	(0.002)
Date	X	X	X
Hour of Week	X	X	X
Pick-up Geo	X	X	X
Drop-off Geo	X	X	X
Trip Characteristics	X	X	X
Driver Characteristics		X	X
Rider Characteristics			X
Observations	23,146,167	23,146,167	23,146,167
R^2	0.042	0.043	0.055
Adjusted R^2	0.041	0.043	0.054
Residual Std. Error	1.360 (df = 23133125)	1.358 (df = 23133093)	1.350 (df = 23133052)

Note: *$p<0.1$; **$p<0.05$; ***$p<0.01$

Appendix Table 1: Regression output for tip differences between male and female riders. Controlling for time, location, and trip, rider, and driver covariates.

	Dependent variable:		
	Tip Amount		
	(1)	(2)	(3)
Female Driver	0.045***	0.037***	0.037***
	(0.001)	(0.001)	(0.001)
Date	X	X	X
Hour of Week	X	X	X
Pick-up Geo	X	X	X
Drop-off Geo	X	X	X
Trip Characteristics	X	X	X
Driver Characteristics		X	X
Rider Characteristics			X
Observations	23,146,167	23,146,167	23,146,167
R^2	0.041	0.042	0.055
Adjusted R^2	0.040	0.042	0.054
Residual Std. Error	1.360 (df = 23133126)	1.359 (df = 23133095)	1.350 (df = 23133052)

Note: $^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Appendix Table 5: Regression output for tip differences between male and female drivers. Controlling for time, location, and trip, rider, and driver covariates.

a. No controls added

	Male Rider	Female Rider	Unmatched Rider
Male Driver	0	-0.089	-0.205
Female Driver	0.068	-0.041	-0.171

b. Location and time controls added

	Male Rider	Female Rider	Unmatched Rider
Male Driver	0	-0.057	-0.167
Female Driver	0.058	-0.018	-0.135

c. Full set of controls added.

	Male Rider	Female Rider	Unmatched Rider
Male Driver	0	-0.054	-0.145
Female Driver	0.046	-0.026	-0.123

Appendix Table 6: Fitted values for interactions between driver and rider genders. Estimates are relative to male drivers matched to male riders. In table a no controls are added. Table b includes controls for the time and location of the trip. Table c includes controls for time, location, and other trip, rider, driver controls used in estimating Equation 1.