

Lyft & Uber Driver Perspective: Travel Times, Distances, and Earnings

Alejandro Henao
 Doctoral Student, Civil Engineering
 alejandro.henao@ucdenver.edu
 www.alehenao.com

Wes Marshall, PhD, PE
 Associate Professor, Civil Engineering
 wesley.marshall@ucdenver.edu
 transportationresearch.center



Transportation Research Board
 96th Annual Meeting
 Paper No. 17-06830



ABSTRACT

The transportation sector is currently experiencing a disruption with the introduction and evolution of services such as bikesharing, carsharing, on-demand ridesourcing, and microtransit. As these new layers of technology-based transportation options begin to flourish, it is important to understand how they impact our transportation systems. This study employs an innovative approach from data collected by one of the authors driving for Lyft and Uber. The dataset from 416 rides (Lyft, UberX, LyftLine, and UberPool) includes actual travel attributes such as times, distances, cost, and earnings. From the driver perspective, this study shows that the overall efficiency rate based on time is 39.3% and 59.2% based on distance, meaning that the ridesourcing total distance is 169 VMT per every 100 with-passenger miles traveled (WPMT). The gross earning rate including tips is \$15.69 per hour and the net earning rate after expenses are taken into account is, on average, \$7.94 per hour, with an important difference in earnings between Lyft and Uber due to the tip option provided on the Lyft app. These results give us insights to better understand the impacts of ridesourcing on VMT and transportation, including an important labor force as the driver-contractors. This, in turn, will help cities and transportation organizations better account for the impacts of ridesourcing, as well as inform the driving labor market on the complicated issue of earnings and expenses.

DATA METHODS

DATA ANALYSIS

TRAVEL DISTANCES

$$d_{shift} = \sum (d_1 + d_2 + d_3) + d_4$$

$$d_T = \sum d_{shift} = \sum d_1 + \sum d_2 + \sum d_3 + \sum d_4$$

$$VMT_T = \sum d_1 + \sum d_2 + WPMT_T + \sum d_4$$

$$VMT_T = WPMT_T + \text{Additional VMT}$$

$$\text{Ridesourcing Efficiency Distance} = \frac{\sum d_3}{d_T} = \frac{WPMT_T}{VMT_T}$$

TRAVEL TIMES

$$t_{shift} = \sum (t_1 + t_2 + t_3 + t_4) + t_5$$

$$t_T = \sum t_{shift} = \sum t_1 + \sum t_2 + \sum t_3 + \sum t_4 + \sum t_5$$

EARNINGS

$$\text{Gross Earnings } (\$/hr) = \frac{\sum \text{Driver Earnings (incl. tip)}}{t_T}$$

$$\text{Gross Earnings } (\$/mile) = \frac{\sum \text{Driver Earnings (incl. tip)}}{d_T}$$

$$\text{Net Earnings} = \text{Gross Earnings} - \text{Expenses}$$

ADDITIONAL PERCENT OF WPMT

$$\frac{\text{Additional VMT}}{WPMT_T} = \frac{VMT_T}{WPMT_T} - 1$$

$$\text{Total Miles per 100 WPMT} = \frac{100 * VMT_T}{WPMT_T}$$

RESULTS

Travel Times and Distance Summary Statistics

	Waiting/Cruising for a ride	From Request to Pick-up (en-route to passenger)	Waiting for Passenger	From Pick-up to Drop-off (WP ride)	From last Drop-off to End Location	Totals (t _T & d _T)
Time (minutes)						
Total (Σt)	4965	2511	531	6106	1416	15529
Mean	11.94	6.04	1.28	14.68	21.78*	37.33
St. Dev.	15.46	3.65	2.10	10.04	12.27*	20.30
Median	7.50	5.00	1.00	11.50	20.00*	32.83
Distance (miles)						
Total (Σd)	635.9	600.6		2929.9	784.3	4950.7
Mean	1.53	1.44		7.04	12.07*	11.90
St. Dev.	3.94	1.44		8.60	7.43*	10.37
Median	0.20	1.00		3.55	12.00*	8.30
Average mph		14.4		28.8	33.2	19.1

n=416 (Lyft: 198, LyftLine: 39, UberX:164, UberPool: 15)

* Commute based on 65 shifts

Time and Distance Efficiency

	WP Ride (Σd ₃ & Σt ₄)	Total minus Commute at End	Efficiency (WP/Total minus Commute at End)	Totals (t _T & d _T)	Overall Efficiency (WP/Total)	Additional Percent of WPMT	VMT per 100-WPMT
Time (minutes)	6106	14767	41.3%	15529	39.3%		
Distance (miles)	2929.9	4482.9	65.4%	4950.7	59.2%	69.0%	169.0

RIDESOURCING EARNINGS

Lyft/Uber Fares and Driver Commission

Lyft/Uber Service Fee	Passenger Cost*				To Driver**	Lyft/Uber Commission**
	Base Fare	Cost per Minute Fare	Cost per Mile Fare	Minimum Paid by Passenger (Fee + Fare)		
Lyft	\$2.10	\$0.50	\$0.12	\$1.01	\$7.10	80% Fare + 100% Service Fee
UberX	\$1.95	\$0.75	\$0.13	\$1.00	\$6.95	+ 20% Fare

Passenger Cost, Driver Earnings, and Actual Commission

	Passenger Cost		To Driver		To Lyft/Uber	
	Total Paid (before tip)	Total Cost per WP Mile (before tip)	Total Earned (before tips)	Tips	Total Earned (with tips)	Actual Commission (before tip)
Lyft (n=237)	\$2,934.58	\$1.87	\$2,059.25	\$276.00	\$2,335.25	29.8%
Uber (n=179)	\$2,505.62	\$1.84	\$1,687.83	\$39.00	\$1,726.83	32.6%
All Trips (n=416)	\$5,440.20	\$1.86	\$3,747.08	\$315.00	\$4,062.08	31.1%

Gross Earnings

	Gross Earnings based on WP	Gross Earnings based in Total minus Commute	Gross Earnings based in Totals (t _T & d _T)
\$/hr	\$39.92	\$16.50	\$15.69
\$/mile	\$1.39	\$0.91	\$0.82

n=416. Earnings include tips (Year 2016 U.S. dollars)

Gross Earnings: Lyft compared to Uber

	Gross Earnings (before tip) (\$/hr)	Gross Earnings (with tip) (\$/hr)	Gross Earnings (before tip) (\$/mile)	Gross Earnings (with tip) (\$/mile)
Lyft (n=237)	\$14.38	\$16.31	\$0.77	\$0.87
Uber (n=179)	\$14.60	\$14.93	\$0.75	\$0.76
All Trips (n=416)	\$14.48	\$15.69	\$0.76	\$0.82

* Earnings based in Totals (t_T & d_T)
 ** Earnings in Year 2016 U.S. dollars

MORE RESULTS

Ridesourcing Expenses

Item	Basic Added Cost 1-15hr/week, ~11k miles/year	Most Drivers 16-49hr/week, ~33K miles/year	Standard Mileage Rate (2016)	Average Mileage Rate
Ownership				
Depreciation	\$1,320.00	\$3,960.00		
Finance Charge	-	\$500.00		
License, Registration & Tax	-	\$350.00		
Insurance	-	\$1,500.00		
Operating				
Gas	\$1,015.38	\$3,046.15		
Maintenance	\$589.60	\$1,768.80		
Miscellaneous	\$150.00	\$2,000.00		
Total	\$3,074.98	\$13,124.95		
\$/mile	\$0.28	\$0.40	\$0.54*	\$0.41
\$/hr	\$5.34	\$7.60	\$10.31	\$7.75

Assumptions: Car value: \$18,000; Lifetime mileage: 150,000; Work: 50 weeks/year; Gas price: \$2.40/gallon (Average in 2015); Gas efficiency: 26 MPG; Maintenance: 5.36 cents/mile; Miscellaneous include car wash & cleaning, mobile device & data fees, parking & traffic violations, risk of crash or injury;
 * 2016 U.S. Federal Standard Mileage Rate

NET EARNINGS

	Net Earnings		Net Earnings (before tip) (\$/hr)	Net Earnings (with tip) (\$/hr)	Tip Percent	
	Range (Low to High)	Average				
\$/hr	\$5.38 - \$10.36	\$7.94	Lyft (n=237)	\$6.63	\$8.56	29.1%
\$/mile	\$0.28 - \$0.54	\$0.41	Uber (n=179)	\$6.85	\$7.18	4.9%
n=416. Earnings include tips (Year 2016 U.S. dollars)			All Trips (n=416)	\$6.73	\$7.94	18.1%

* Earnings based in Totals (t_T & d_T)
 ** Earnings in Year 2016 U.S. dollars

CONCLUSIONS

- ### RIDESOURCING TIMES AND DISTANCES
- The overall time efficiency rate for this study, accounting for commute time at the end of the shift, is 39.3%. In other words, the ridesourcing drivers spent more time without a passenger than with one in their car.
 - The efficiency rate in terms of WPMT versus total mileage is 59.2%. This is slightly lower than the 61.0% utilization rate calculated by Cramer and Krueger (2016), but they did not include commuting distance at the end of the shift.
 - The overall efficiency rate could be even lower since, by research design, we minimized the cruising for a ride request, did not accept rides that were far for passenger pick-up, and used conservative commute distances at end of shifts.
 - Even with this conservative rate, drivers have to travel 69 extra miles in dead-heading for every 100 miles originally from WPMT.

RIDESOURCING EARNINGS

- Including all times and distances, the gross earnings for this study equals to \$15.69/hour, which might seem like a good hourly rate, but this does not include expenses. We estimated expenses to be between \$0.28 per mile to the U.S. Federal Standard 2016 mileage rate of \$0.54 per mile, so in reality ridesourcing drivers make between \$5.38 and \$10.36 per hour, with an average of \$7.94/hr (including tips).
- Uber net earnings before tips is slightly higher than Lyft earnings but completely change when tips are taken into account. Lyft tips in net earning equates to a 29.1% increase. Uber could also easily add a tipping option on their app to allow passengers add a tip in their credit card bill if they wish; this choice would increase drivers' earnings, but Uber has thus far refused to implement this option.

This study doesn't come without limitations. The main limitation is the trip sample size and diversification of drivers. Drivers might have different strategies such as searching for prime areas, cruising unlimitedly until they get a ride request, or limit the driving as much as possible. The study is also limited to the Denver metropolitan area so the Lyft/Uber costs and earnings are based on this area.

This research starts to fill a gap in the literature by identifying, measuring, and disentangling three very important aspects of ridesourcing. We hope this study helps cities and regional organizations better account for the impacts of ridesourcing on travel time and mileage efficiency, as well as inform the ridesourcing labor market on the complicated issue of earnings and expenses.

ACKNOWLEDGEMENTS

The authors would like to thank the U.S. Department of Transportation for providing funding through the *Dwight David Eisenhower Graduate Fellowship* and the *Mountain-Plains Consortium*.