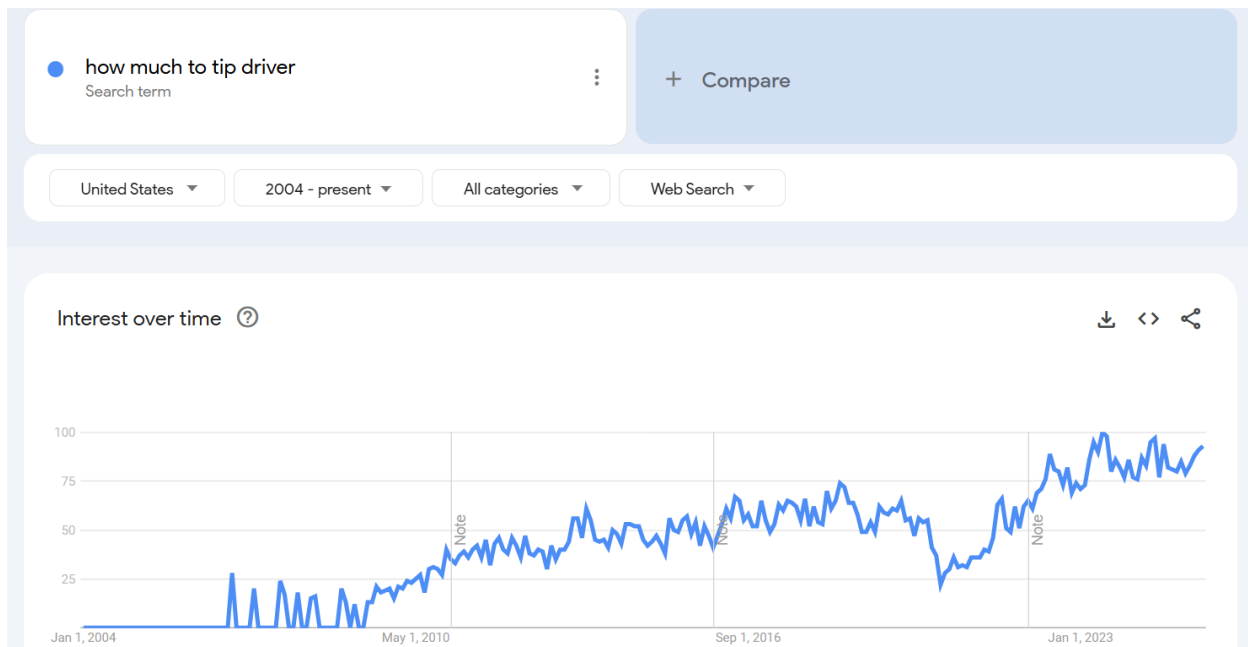


Does Reported 'Tip Fatigue' affect Yellow Taxis Cabs?

1. What is your research question, hypothesis and assumptions? Is your result significant?

Tip fatigue has been reported on after the COVID pandemic lockdowns in the Spring of 2020. The WSJ [wrote](#) that average tips at full-service restaurants fell to 19.3% in 2024, from a peak of 19.9% in 2021. Illustrated below is a Google Trends search for “How much to tip driver” which shows a steep decline in May of 2020, with the search term peaking in June 2023, which corroborates with the WSJ story.

In this demonstration, I explore whether tip fatigue affected yellow taxi cabs. The results suggest that the effect size of tips as a percentage of the total fare to be marginal, with tips declining by nearly 1 percentage point in April 2024. While the results are statistically significant, the model's explanatory power shows an R^2 of 2.3%, suggesting that the vast majority of the contributions of yellow cab tips are not found in the data.



A. Methodology

The data is a sample of yellow cab rides from the months of April, which coincides with the start of COVID lockdowns, from years 2020 through 2024. Exploratory data analysis, examining average tips, suggested that in 2023-2024 the tip rate declined slightly. Further, two-sample t-tests

determined that the decline was statistically significant. The data was processed in Python with explanations notated in the code.

An OLS model from statsmodels was used where the years 2020 through 2024 are the main points of interest. To control for factors that may be a reasonable proxy for ride quality, such as trip distance, trip duration, passenger count, congestion surcharge, and airport fees were included in the model.

Chat GPT was used to reference code syntax and troubleshoot. I wrote the code, set up the methodology, and interpreted the results.

B. Results

OLS Regression Results						
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Dep. Variable:	tip_pct	R-squared:	0.023			
Model:	OLS	Adj. R-squared:	0.023			
Method:	Least Squares	F-statistic:	388.4			
Date:	Sun, 04 May 2025	Prob (F-statistic):	0.00			
Time:	09:58:59	Log-Likelihood:	2.1548e+05			
No. Observations:	150000	AIC:	-4.309e+05			
Df Residuals:	149990	BIC:	-4.308e+05			
Df Model:	9					
Covariance Type:	nonrobust					
=====						
	coef	std err	t	P> t	[0.025	0.975]

Intercept	0.1406	0.001	199.783	0.000	0.139	0.142
y_2021[T.True]	-0.0028	0.000	-6.023	0.000	-0.004	-0.002
y_2022[T.True]	-0.0013	0.000	-2.795	0.005	-0.002	-0.000
y_2023[T.True]	-0.0091	0.000	-19.156	0.000	-0.010	-0.008
y_2024[T.True]	-0.0097	0.000	-20.401	0.000	-0.011	-0.009
passenger_count	0.0005	0.000	3.120	0.002	0.000	0.001
trip_distance	-0.0016	4.78e-05	-33.866	0.000	-0.002	-0.002
trip_duration	-0.0019	0.000	-9.550	0.000	-0.002	-0.001
congestion_surcharge	0.0083	0.000	33.270	0.000	0.008	0.009
airport_fee	0.0140	0.001	25.540	0.000	0.013	0.015

2. Do you think this analysis can inform policymaking? If so, in which way?

The policy implications of the questions raised here is part of an on-going debate about tipping in the United States. Many argue that tips should be abolished for higher service prices, while others support tips as a way to pay for exceptional service. With any policy, there are trade-offs between stability and potential earnings.

The analysis may inform policy in supporting neutrality for yellow taxi cabs tip rates. The evidence is not strong enough to propose any intervention because the effect size is marginally negative over time, statistically significant, and the overall model lacks explanatory power. Most of the variation is explained by interactions outside of the data, such as driver friendliness and ride quality.

However, there may be a possibility that the trend will continue in the future, which may have a real impact on driver earnings.

3. What, if any, are your concerns with the data in hand? What other data could be useful for your analysis?

There were some concerns with the data quality and hygiene. The data came with outliers, such as extreme distances traveled. Missing values were also an issue with some columns, such as the airport fee and congestion surcharge. Tips were only available by credit card payments, and all other payments were filtered out, potentially leading to a rider bias issue.

Data on the quality of the rides, driver friendliness, and rider satisfaction, would have probably made the model more powerful, and may even completely erase the effects of tips over time in the model.

4. If you had more time, what would you have added to your analysis?

If I had more time, I would have done the analysis with more popular services like Uber and Lyft. I would also factor in macroeconomic indicators, like inflation and employment, which may be tied to the usage of private rideshares. I would also use entire calendar years rather than only April. If more data were available, I would include controls for passenger satisfaction and other indicators of ride quality.