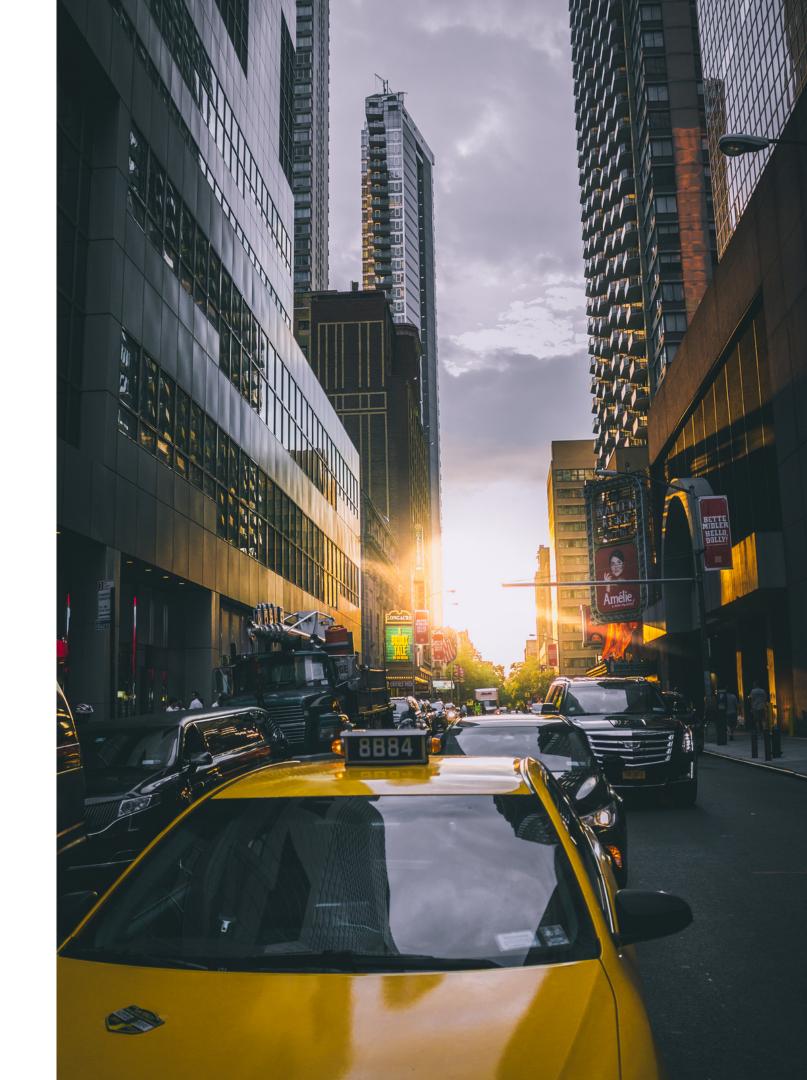
### TLC Trip Record Data Yellow Taxi



#### Outlines

1 Introduction

2 Purpose of the project

3 Chosen year and month

4 EDA

5 Data model

6 Result

#### Introduction

The New York City Taxi and Limousine Commission (TLC), Over 200,000 TLC licensees complete approximately 1,000,000 trips each day. According to TLC the data it is recorded since 2009 - 2021 preprocess

## Purpose of the project

Predict the fare amount of the ride.

Who effects on the fare amount

3 Visiualize the features

#### Chosen year and month

In this project the prediction and visualization will be on the dataset of October 2019

# Who effects on the target?

1 Distance

2 Taxi car size

3 Peak hours

4 Peak days

5 Rate code id

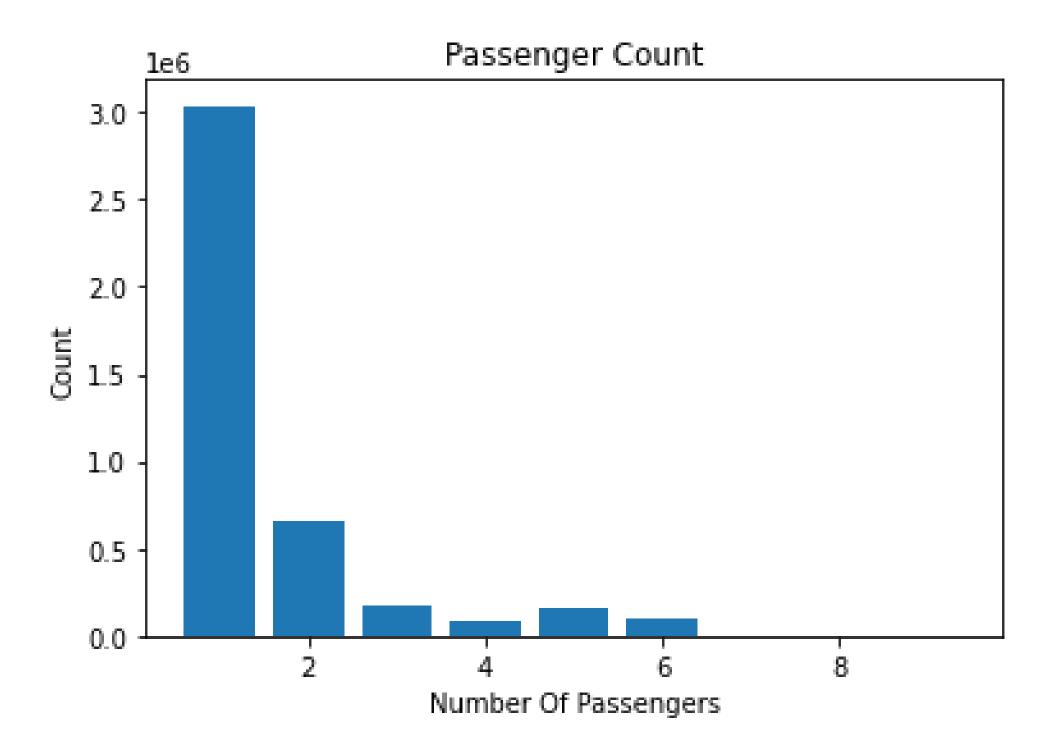
6 Duration

Correlation between distance and fare amount

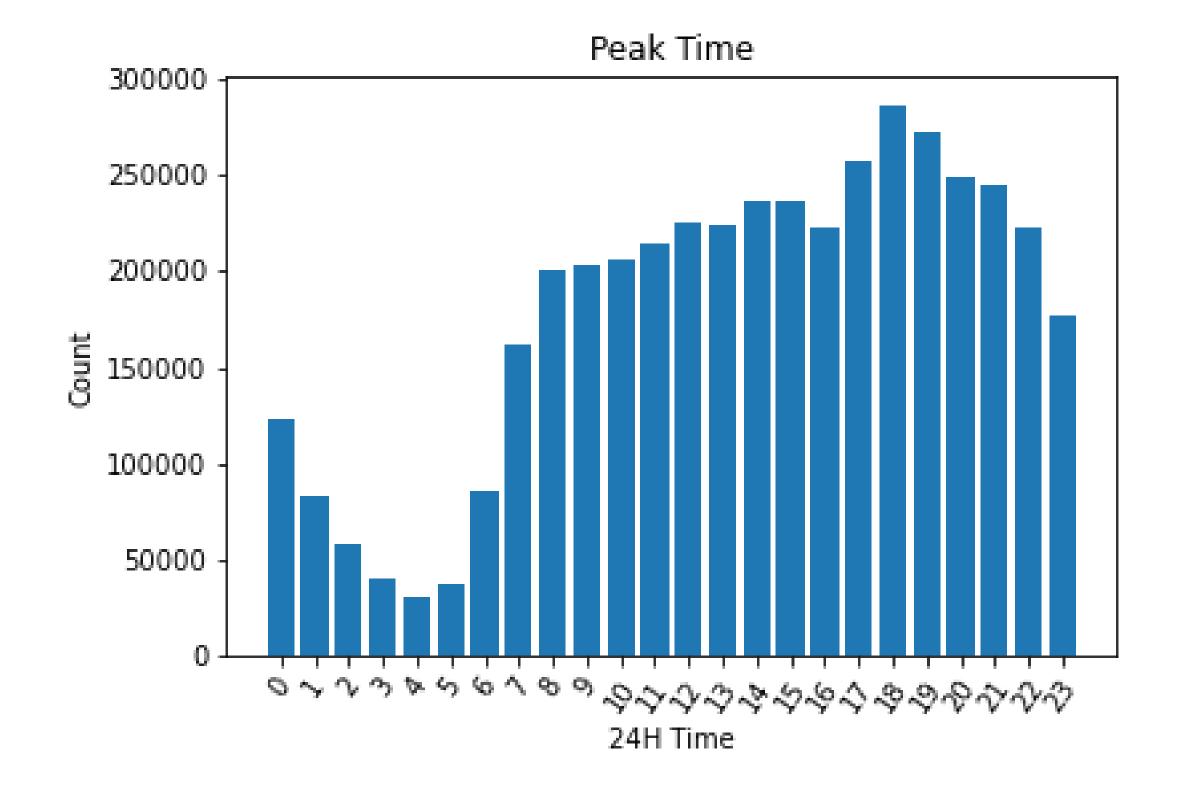
scatter plot between fare amount and trip distance



### Passengers count



## What are the peak hours?



#### Rate code Id

Rate code in effect at the trip.

1= Standard rate

2=JFK

3=Newark

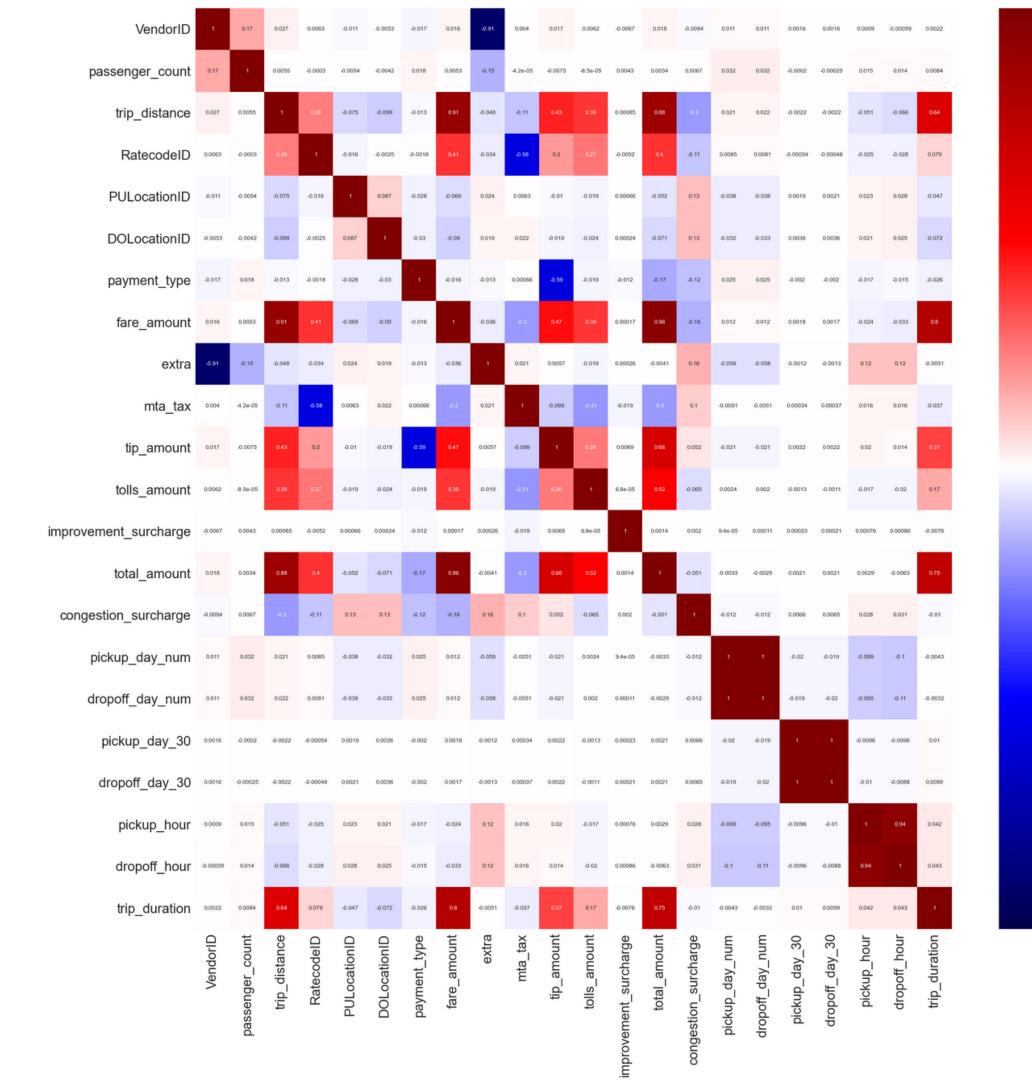
4=Nassau or Westchester

5=Negotiated fare

6=Group ride

#### Data model

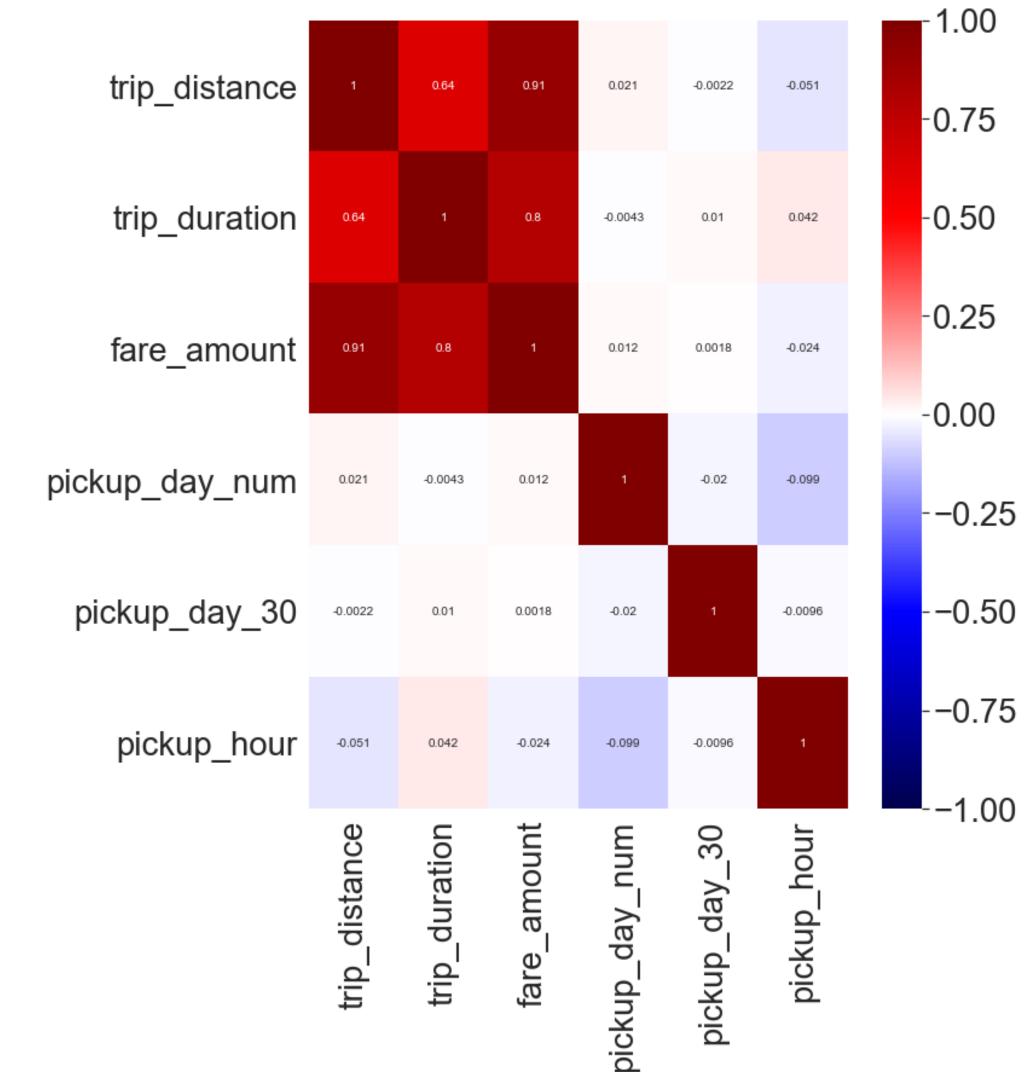
## All the features in the dataset



-0.50

-0.25

### Chosen features



#### Model used

- 1 Ordinary least square regression
- 2 Linear regression

3 Polynomial Regression

4 Evaluation regression (RMSE - MAE)

#### Linear Regression

Ordinary least square regression

**OLS Regression Results** 

0.970	ared (uncentered):	R-squ	fare_amount	Dep. Variable:
0.970	ared (uncentered):	Adj. R-squ	OLS	Model:
8.957e+07	F-statistic:		Least Squares	Method:
0.00	Prob (F-statistic):		Sun, 05 Dec 2021	Date:
-1.2194e+07	Log-Likelihood:		09:28:01	Time:
2.439e+07	AIC:		5548803	No. Observations:
2.439e+07	BIC:		5548801	Df Residuals:
			2	Df Model:
			nonrobust	Covariance Type:
	[0.025 0.975]	t P> t	oef std err	C

	coef	std err	t	P> t	[0.025	0.975]
trip_distance	2.0053	0.001	3596.147	0.000	2.004	2.006
trip_duration	0.4802	0.000	3977.076	0.000	0.480	0.480

Omnibus:	10228504.495	Durbin-Watson:	1.913
Prob(Omnibus):	0.000	Jarque-Bera (JB):	19766216669.659
Skew:	13.829	Prob(JB):	0.00
Kurtosis:	294.082	Cond. No.	8.79

### Polynomial regression

- Categorical feature to dummy variables
- Polynomial transformation
  - 3 Interaction term

Standard scaling features

## Evaluation regression (RMSE - MAE)

#### **RMSE**

- 1.4086979799510435

MAE

- 0.41391811577253645

#### Conclusion

The Followed benchmarks in choosing the best model

Baseline feature set: ~.90789 R^2
Add Category features (RatecodeID,VendorID): ~.95340 R^2
Add polynomial features: ~.95349 R^2
Add Several interaction terms: ~.95352 R^2