PROJECT I

UBER V/S WEATHER

NEW YORK CITY, 2009-14

SOURCED THE DATA OF 200K ROWS OF UBER BOOKING IN NEW YORK CITY FROM JANUARY 2009 – JUNE 2015

kaggle

WE FOUND INCORRECT VALUES IN THE DATA

VALIDATED THE DATA:

REMOVED THE OUTLIERS USING: IQR RULE FOR LATITUDES AND LONGITUDES

REMOVED ROWS WITH NEGATIVE AND NEGLIGIBLE FARE VALUES

REMOVED ROWS WITH '0' DISTANCE

DATA FOR 2015 WAS FOR 6 MONTHS; HENCE DECIDED TO WORK ON THE DATA 2009-2014 FOR BETTER MONTH-ON-MONTH COMPARISON, IF NEEDED

RETAINED COLUMNS:

PICKUP DATETIME

PICKUP LATITUDE

PICKUP LONGITUDE

DROPOFF LATITUDE

DROPOFF LONGITUDE

PASSENGER COUNT

FARE AMOUNT

ADDED COLUMNS:

DISTANCE (MILES) USING PICKUP AND DROP OFF COORDINATES

USING BINS: TIME (INTERVAL), FARE AMOUNT GROUP, YEAR, MONTH USING BINS

TIMESTAMP – TO FETCH THE WEATHER DATA FOR EACH ROW USING OPENWEATHER API

SAMPLE HISTORICAL API RESPONSE


```
"lat": 52.2297,
"lon": 21.0122,
"timezone": "Europe/Warsaw",
"timezone_offset": 3600,
"data": [
  {
    "dt": 1645888976,
    "sunrise": 1645853361,
    "sunset": 1645891727,
    "temp": 279.13,
    "feels_like": 276.44,
    "pressure": 1029,
    "humidity": 64,
    "dew_point": 272.88,
    "uvi": 0.06,
    "clouds": 0,
    "visibility": 10000,
    "wind_speed": 3.6,
    "wind_deg": 340,
    "weather": [
      {
        "id": 800,
        "main": "Clear",
        "description": "clear sky",
        "icon": "01d"
```


SOURCED THE JSON RESPONSE USING OPEN WEATHER API TO UNDERSTAND THE AVAILABLE PARAMETERS

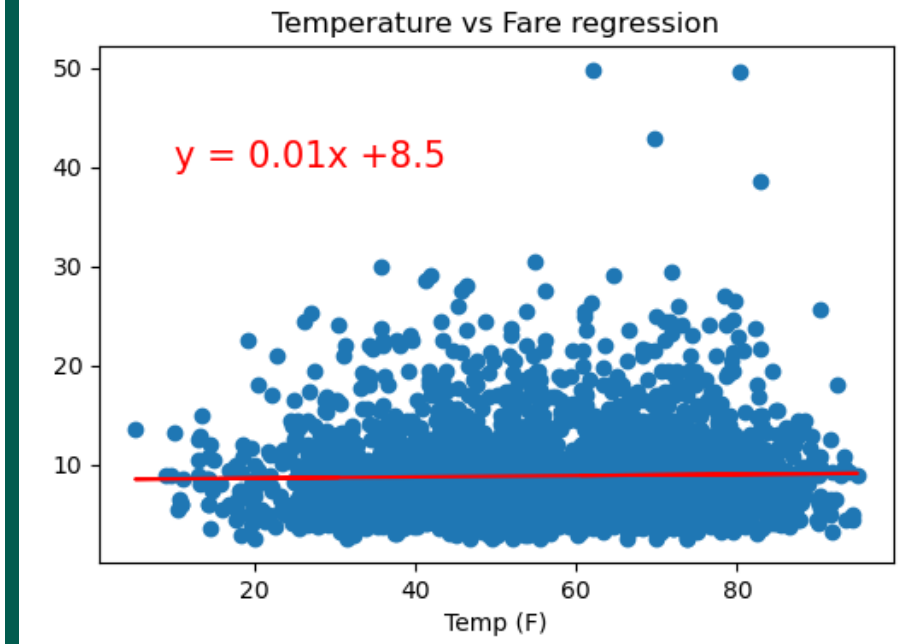
DUE TO API LIMITATION: WE DECIDED TO WORK ON A SAMPLE OF 2900 ROWS WITH ~950 ROWS PER TEAM MEMBER TO WORK ON AND FETCH THE DATA USING TIMESTAMP, PICKUP LATITUDE AND PICKUP LONGITUDE

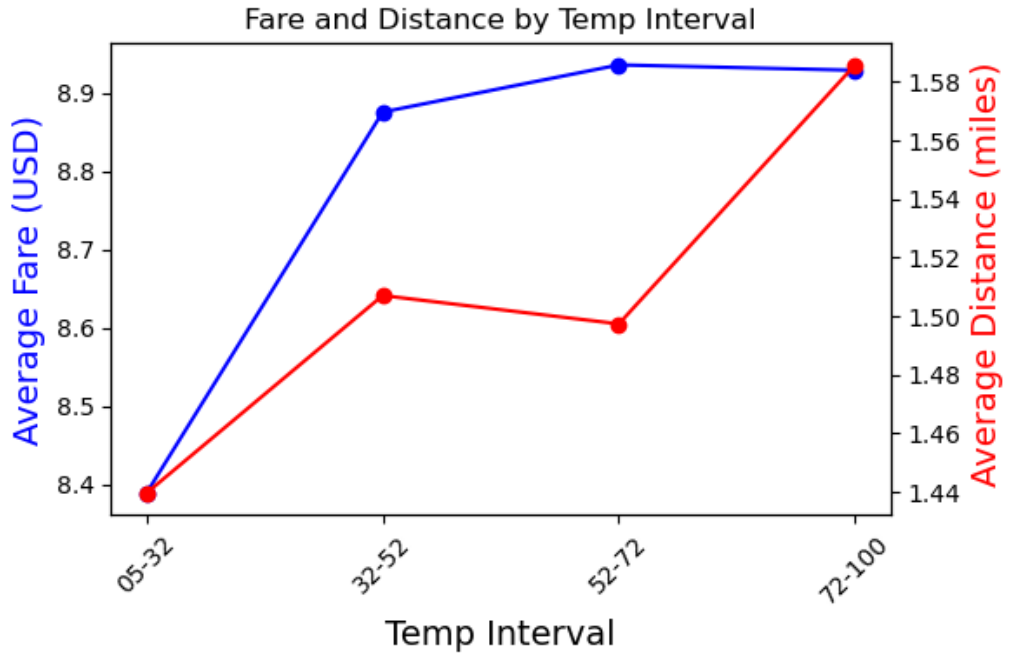
OpenWeather

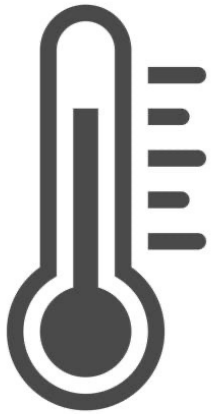
DATA RETRIEVED FOR EACH ROW FOR:

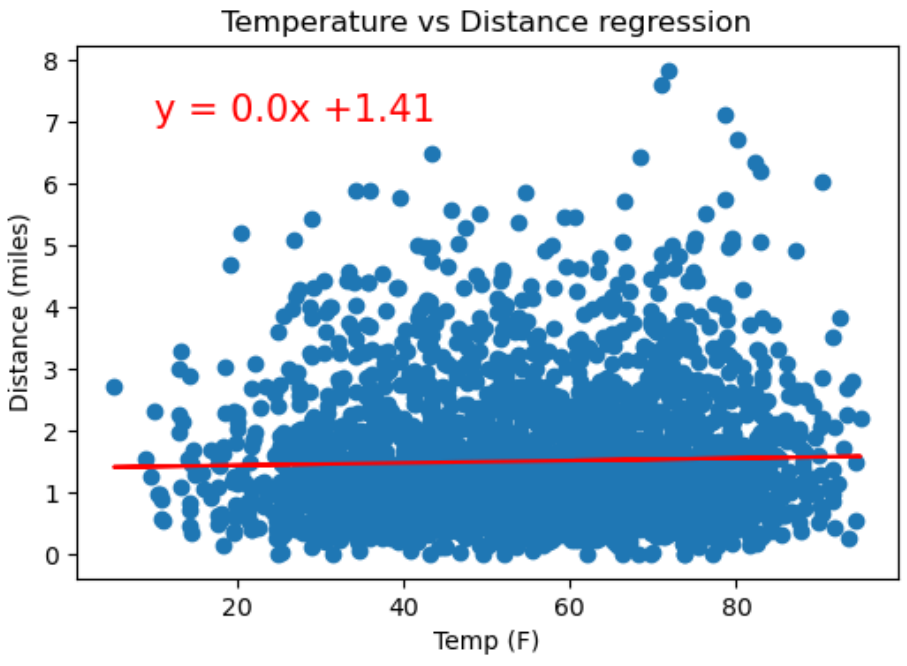
- CLOUDS
- DEW POINT
- FEELS LIKE
- HUMIDITY
- PRESSURE
- SUNRISE
- SUNSET
- TEMPERATURE
- VISIBILITY
- WEATHER DESCRIPTION
- WEATHER ICON
- WEATHER ID
- WEATHER MAIN
- WIND DEGREE
- WIND SPEED
- DATA RAIN
- DATA SNOW

ANALYSIS – EFFECT OF TEMPERATURE ON UBER BOOKINGS









REGRESSION ANALYSIS SHOWS NO / WEAK CORRELATION BETWEEN TEMPERATURE V/S FARE AND DISTANCE

WE DECIDED TO PLOT A DUAL AXIS CHART TO ANALYZE THE TREND BETWEEN FARE AND DISTANCE AS PER THE CREATED TEMPERATURE INTERVALS.

IT SEEMS LIKE THERE IS SOME TREND BETWEEN THE FIRST TWO INTERVALS; HOWEVER, WE WOULD LIKE TO DEEP DIVE AND FIND IF THERE IS SOME CORRELATION WITH THE HELP OF STATISTICAL TESTS.

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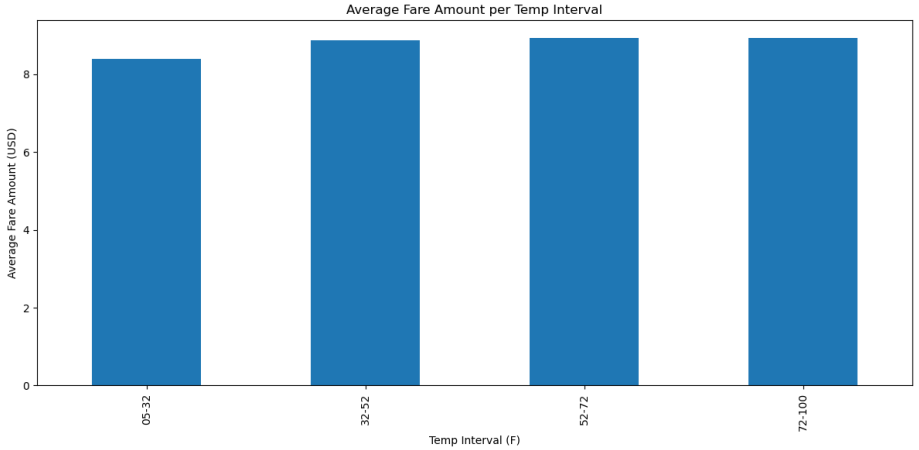
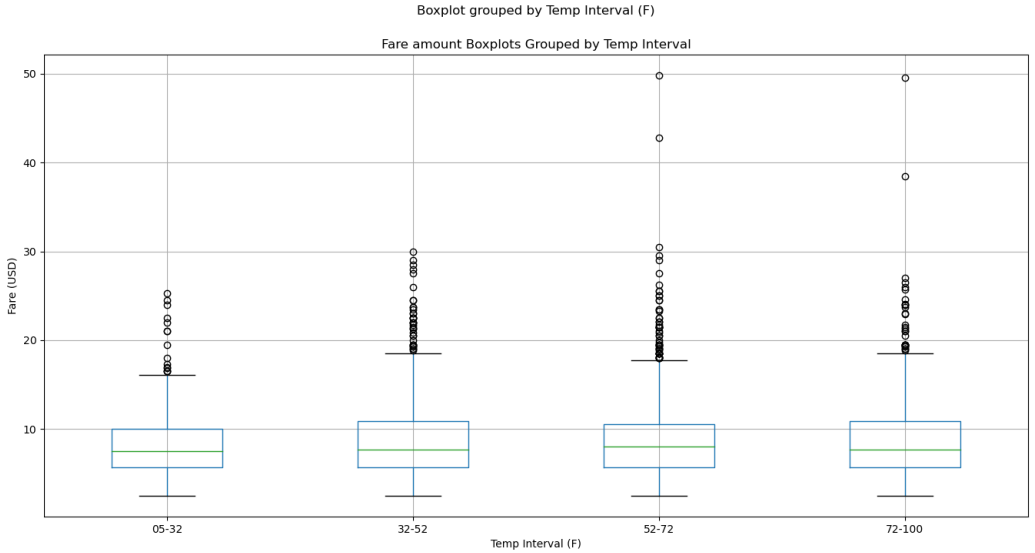




NULL HYPOTHESIS

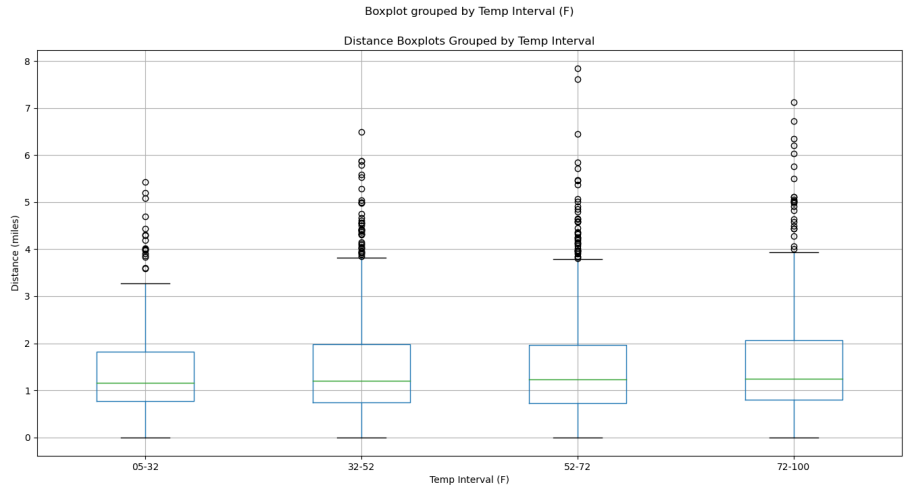
THERE IS NO SIGNIFICANT EFFECT OF TEMPERATURE ON THE FARE AND DISTANCE OF UBER

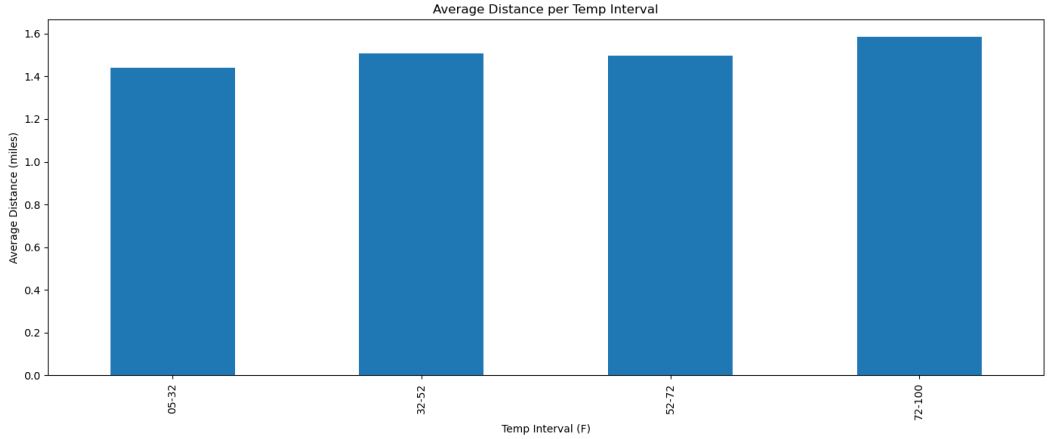
WE PERFORMED ANOVA TEST TO COMPARE THE AVERAGE FARE AND AVERAGE DISTANCE ACROSS TEMPERATURE INTERVALS

P-VALUE FOR AVERAGE FARE =0.313
P-VALUE FOR AVERAGE DISTANCE =0.21

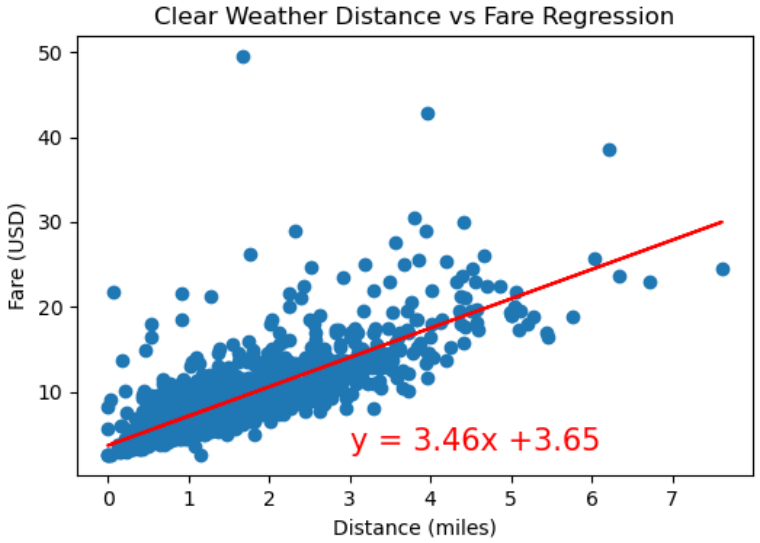
WITH THE ANOVA TESTS YIELDING A P-VALUE> 0.05, WE CANNOT REJECT THE NULL HYPOTHESIS.

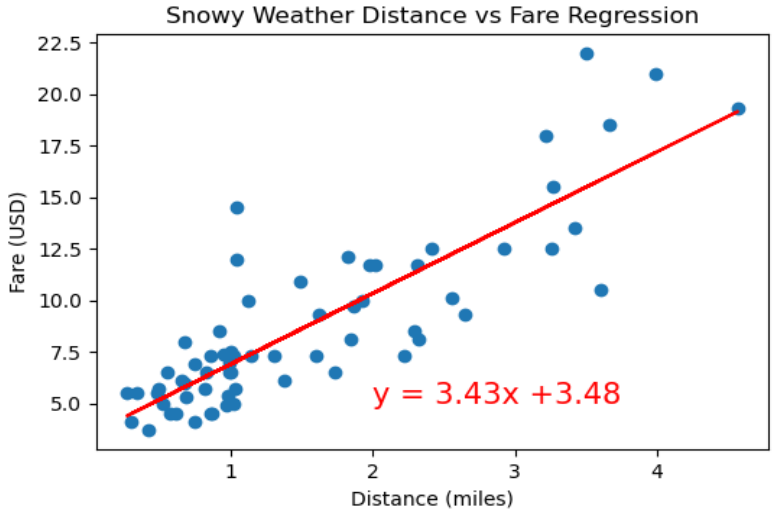
TEMPERATURE DOES NOT SEEM TO HAVE AN EFFECT ON THE FARE AND DISTANCE OF UBER TRIPS



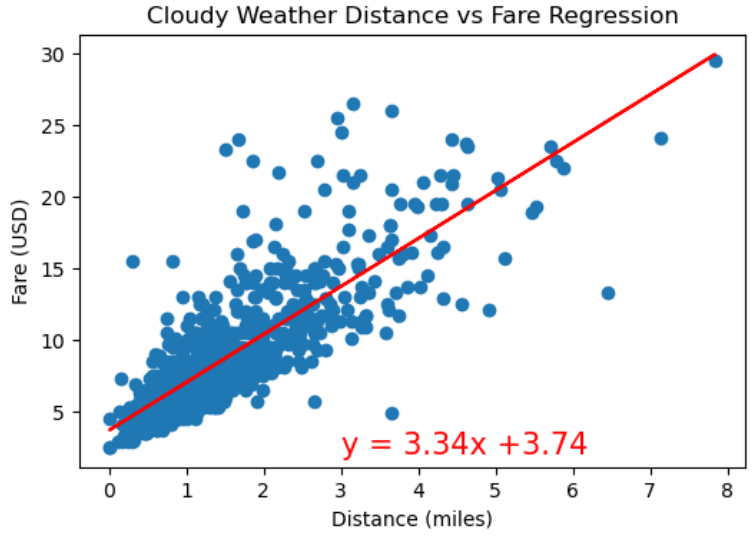


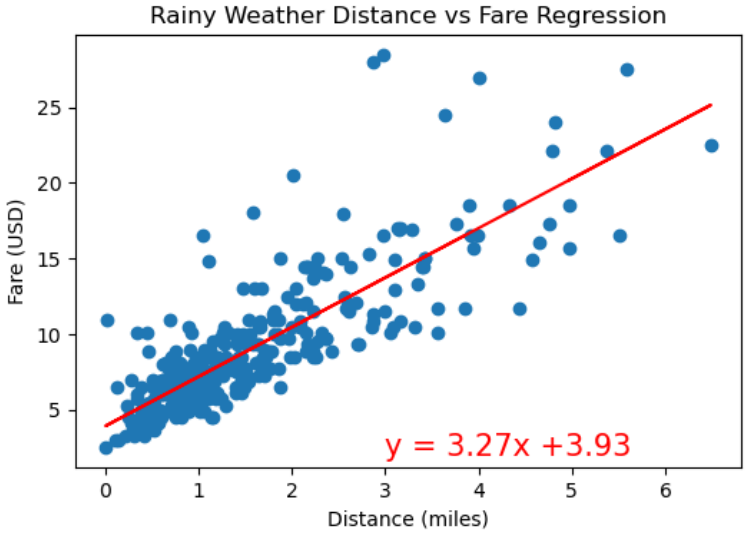
ANALYSIS – EFFECT OF WEATHER ON UBER BOOKINGS





PLACEHOLDER





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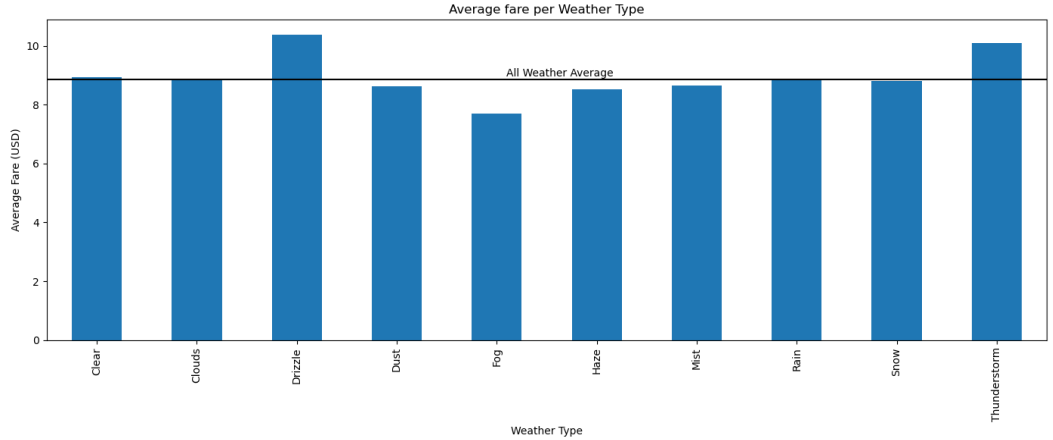
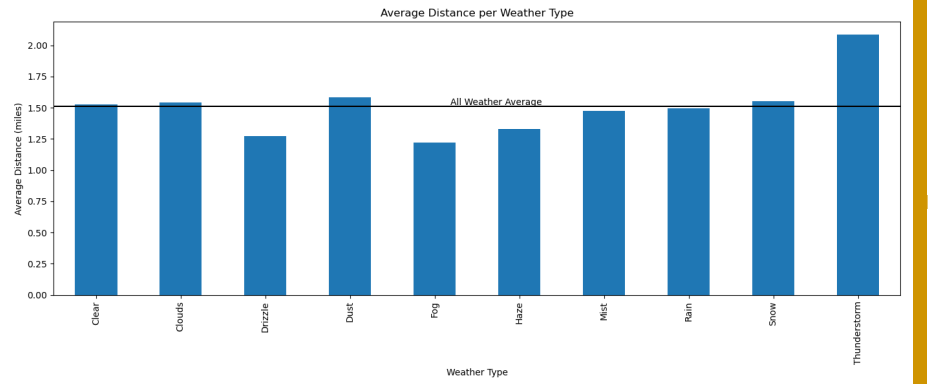
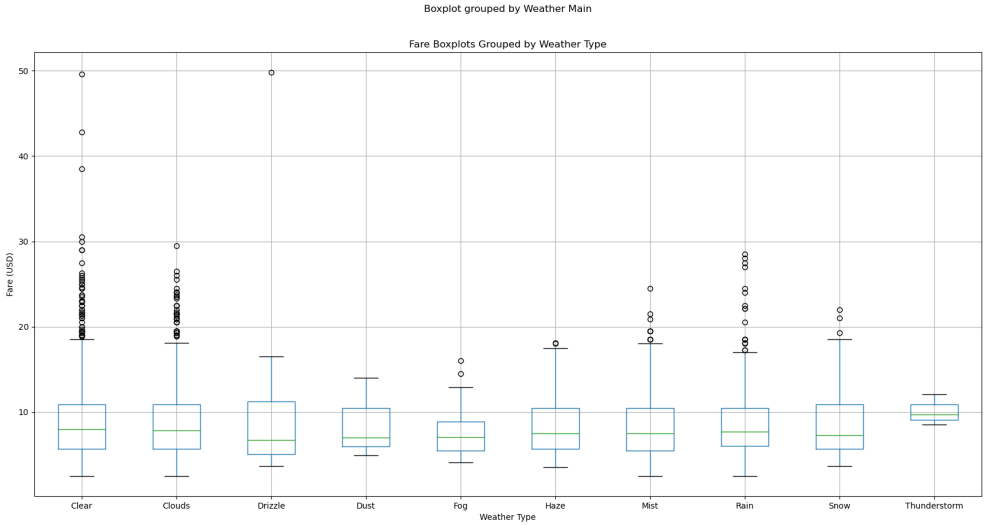
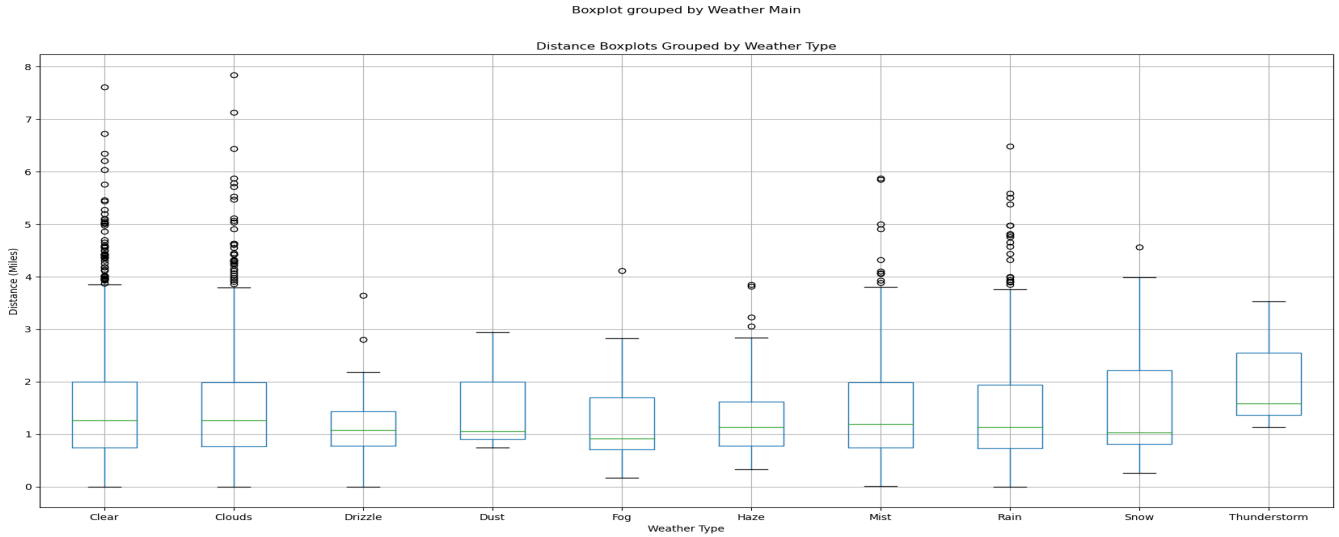




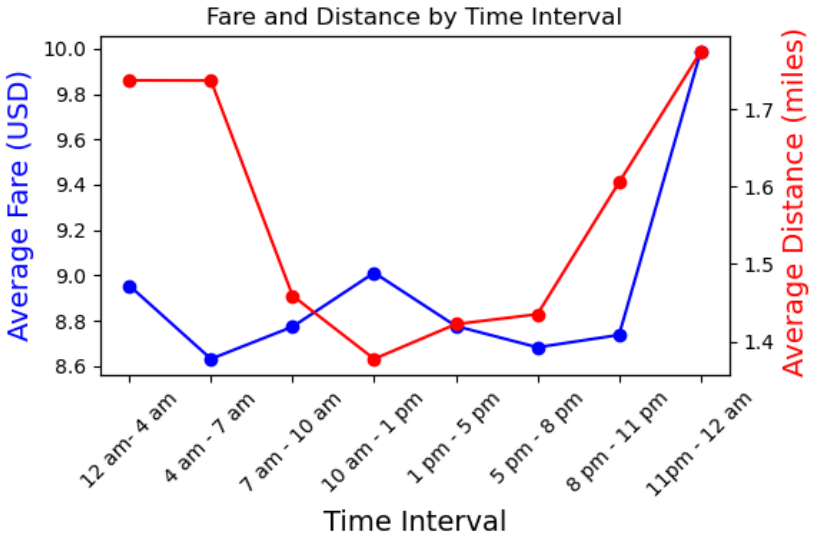
CONCLUSION

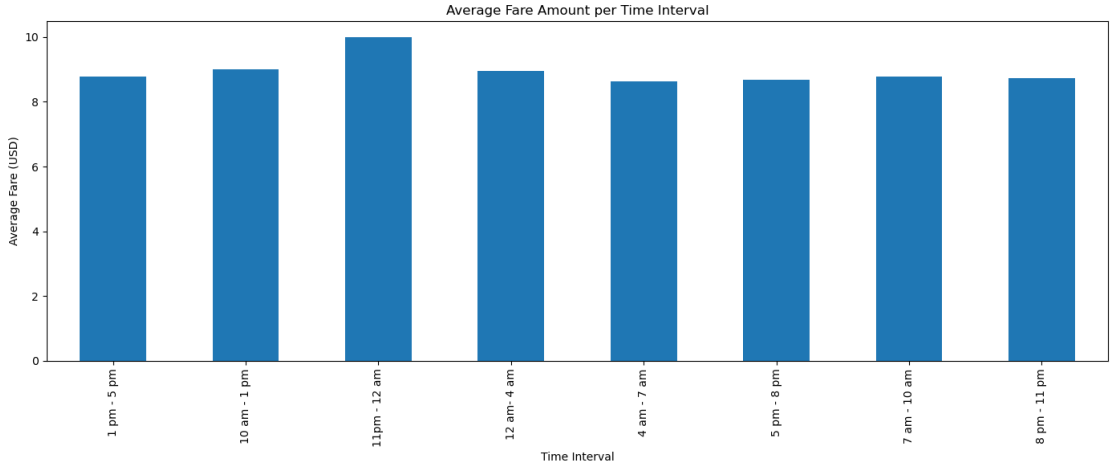
NULL HYPOTHESIS

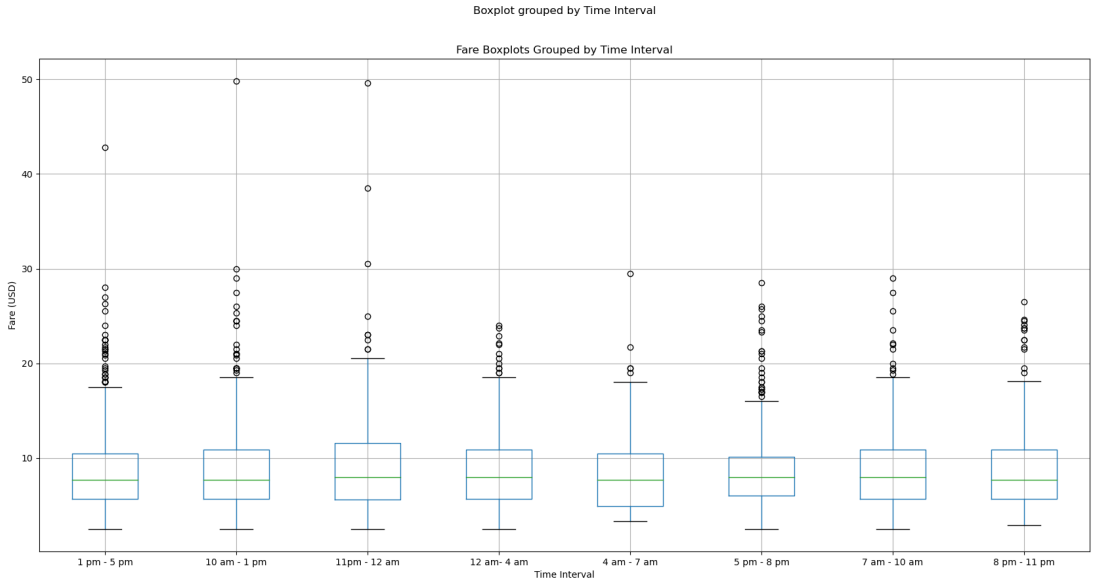




ANALYSIS – EFFECT OF TIME ON UBER BOOKINGS







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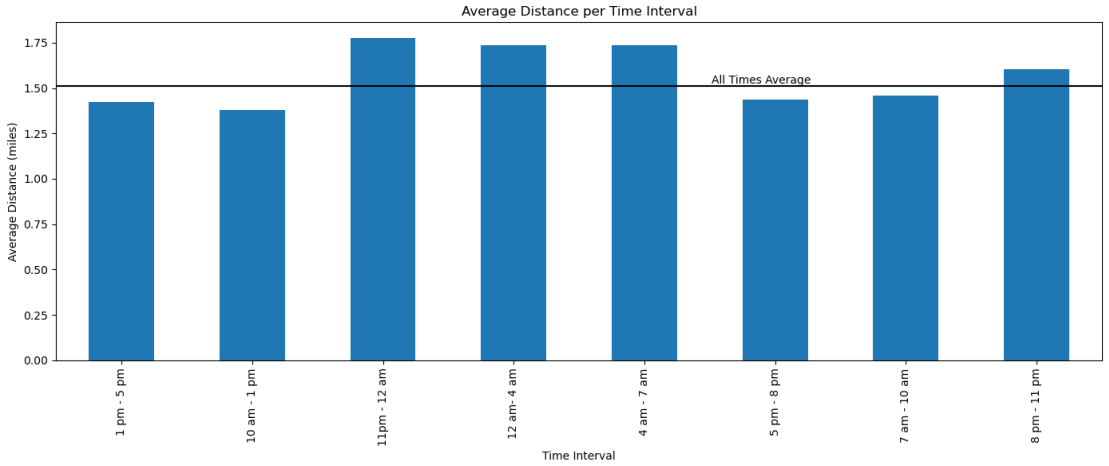

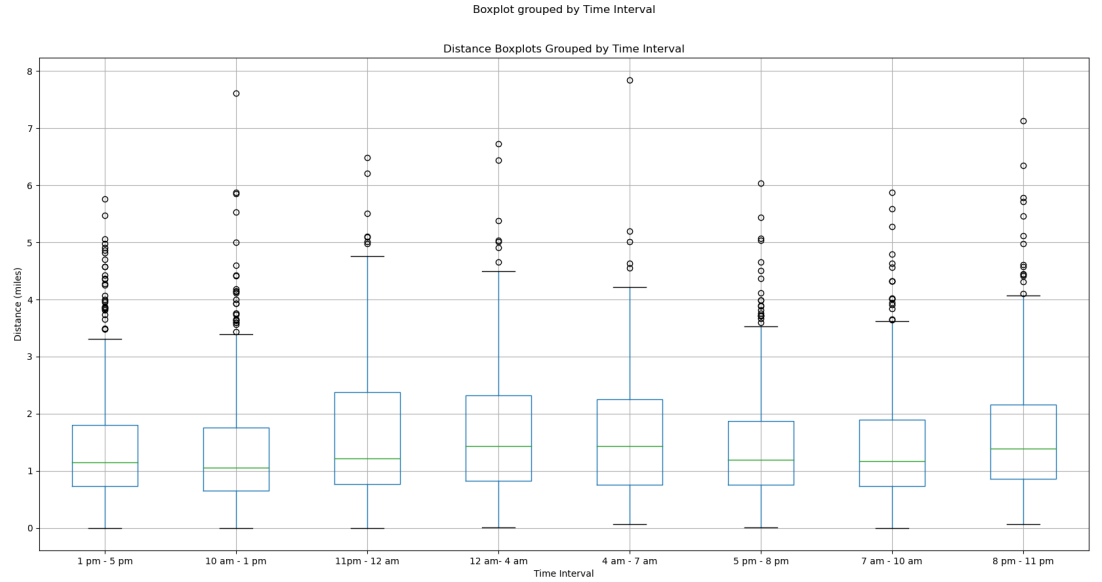

ANALYSIS – EFFECT OF TIME ON UBER BOOKINGS

OVERALL CONCLUSION

WE COULD NOT CONCLUDE THAT THERE IS ANY EFFECT OF TEMPERATURE OR WEATHER TYPE ON UBER FARE AMOUNT OR UBER TRIP DISTANCE.

HOWEVER, THERE SEEM TO BE AN EFFECT ON UBER TRIP DISTANCE FOR CERTAIN TIME INTERVALS.

LIMITATIONS

FOR MORE ACCURATE RESULTS, WE SUGGEST TO RUN THIS CODE ON A BIGGER SET OF DATA

QUESTIONS ARE WELCOME

FAHMIDA BILLA

KARAN ANAND

KEVIN MOSWEU