

GBA 5140 Statistics Essentials for Business Analytics

Turo Project Description

Purpose

This project provides hands-on experience of working with real-world data collected from a popular peer-to-peer online car sharing platform. Using statistics knowledge and R programming skills you learned from this course, you will explore and clean the dataset, build multiple linear regression models, interpret the results, discuss business insights, and document the whole process and your conclusion in the form of a report.

Data

This dataset was collected from a popular car sharing website Turo.com. See examples of website at the end of this document.

Read dataset “turo.data.5140” into RStudio using “readRDS” function (note it is not in csv format).

The following table includes descriptions of all variables in the dataset.

Variable Name	Description
car.city	Car location (city)
car.deliver.airport.num	Number of airports the car can be delivered to
car.deliver.hotel.num	Number of hotels the car can be delivered to
car.deliver.to.you.num	Whether the car can be delivered to your address or not (0: No, 1: Yes)
car.deliver.train.station.num	Number of train stations the car can be delivered to
car.displayed.turo.review.num	Number of Turo reviews (trip cancelled by host) in total
car.displayed.turo.review.num.past.12m	Number of Turo reviews in past 12 months
car.displayed.turo.review.num.past.18m	Number of Turo reviews in past 18 months
car.displayed.turo.review.num.past.6m	Number of Turo reviews in past 6 months
car.displayed.user.review.num	Number of guest reviews in total
car.displayed.user.review.num.past.12m	Number of guest reviews in past 12 months
car.displayed.user.review.num.past.18m	Number of guest reviews in past 18 months
car.displayed.user.review.num.past.6m	Number of guest reviews in past 6 months
car.doors	Car door number
car.extra.beach.gear	Extra service availability – Beach Gear
car.extra.child.safety.seat	Extra service availability – Child Safety Seat
car.extra.cooler	Extra service availability – Cooler
car.extra.mile.fee	Fee per additional mile beyond miles included
car.extra.num	Number of extra services available
car.extra.one.way.trip	Extra service availability – One Way Trip
car.extra.pet.fee	Extra service availability – Pet allowed for a fee
car.extra.phone.mount	Extra service availability – Phone Mount
car.extra.portable.gps	Extra service availability – Portable GPS

car.extra.post.trip.cleaning	Extra service availability – Post Trip Cleaning
car.extra.prepaid.ev.recharge	Extra service availability – Prepaid EV Recharge
car.extra.prepaid.refuel	Extra service availability – Prepaid Refuel
car.extra.stroller	Extra service availability – Stroller
car.extra.unlimited.mileage	Extra service availability – Unlimited Mileage
car.faq.num	Number of FAQ (Frequently Asked Questions)
car.instant.book	Instant booking availability
car.insurance	Car insurance provider
car.make	Car make
car.miles.included	Miles included
car.model	Car model
car.photo.num	Number of car photos
car.photo.verified	Car photos verified or not
car.power	Car power type
car.rental.type	Car rental type
car.self.pickup.avg.price	Price for self pick up
car.self.pickup.num	Whether the car can be self picked up or not (0: No, 1: Yes)
car.state	Car location (state)
car.transmission	Car transmission type
car.trip.price	Car trip price
car.turo.go	Whether the car can be unlocked using Turo Go App
car.year	Car model year
host.all.star	Whether the host is an all star host or not
host.car.num	Total number of cars the host own
host.location.available	Whether host disclose his/her location or not
host.tenure.in.weeks	How long host has been operating on Turo (in weeks)
host.verified.approved.to.drive	Whether host was approved to drive or not
host.verified.email	Whether host email was verified or not
host.verified.fb	Whether host facebook was verified or not
host.verified.phone	Whether host phone number was verified or not

Instructions

Please construct a single R script file, which includes all your programs achieving the following tasks, in the corresponding order. Make sure your R script can be executed without any warning or error.

1. Load the data into RStudio.
2. Extract all the observations from the state your group is assigned to, and use this subset for the following tasks.
3. Compute summary statistics and generate charts for ALL variables in the dataset, after excluding missing values. For each continuous variable, compute min, first quartile, medium, third quartile, max, mean, standard deviation, and skewness as summary statistics, and draw histogram. For each categorical variable, compute frequency and relative frequency distributions, and draw bar chart.

4. Use Inter Quartile Range (IQR) method to identify outliers of all continuous variables, then remove all observations containing outliers.
5. Remove all observations with missing values.
6. Build a multiple linear regression model using car.trip.price as dependent variable. Select **at least five** independent variables. Treat each categorical variable as a single variable although it may be broken into multiple dummy variables. Try different models and choose the best one you can find.

Deliverables

1. R script in the format of .R file. (1 copy per group)
2. Report typed using Microsoft Word, 1.5 lines of space, font size 12 (1 copy per group). In the report, please explain in words what you have done to achieve the tasks above. For task 6, please justify in details how and why you chose those independent variables, evaluate the performance of your multiple linear regression model, and interpret the results and summarize the managerial insights of your model.

Deadline: see Canvas.

Car listings search results:

TURO Where Map location From 10/19/2020 10:00 AM Until 10/22/2020 11:00 AM

Sort by

Price

Book instantly

Delivery

Distance included

More filters

Don't stress: you can cancel your trip for free, up to 24 hours before it starts.

Unlimited Distance

Volkswagen Jetta 2009
5.0★ (17 trips)
\$20 ~~\$18/day~~

Chevrolet Cruze Limited 2016
4.7★ (83 trips) ⚙️ All-Star Host
\$20/day

Car listing page:

TURO

City, airport, address, or hotel

[List your car](#)

[Learn more](#)

[Sign up](#)

[Log in](#)



THE CAR

Tesla Model 3 2020

~~\$110~~ **\$104** / day

THE CAR

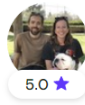
Tesla Model 3 2020

Long Range

5.0★ (40 trips)

 Electric 4 doors 5 seats

HOSTED BY



Maxx All-Star Host
40 trips • Joined Apr 2018
Typically responds within 1 minute






All-Star Hosts like Maxx are the top-rated and most experienced hosts on Turo.

[Learn more](#)

Maxx has completed training on enhanced cleaning and disinfection practices.

[Learn more](#)

DESCRIPTION

 Available 24 / 7  TESLA MODEL 3 

A Long Range Tesla Model 3 with the most up-to-date technology including:

- Autopilot

~~\$110~~ **\$104** / day
\$416 est. total + fees ⓘ

Trip start

10/19/2020 10:00 AM

Trip end

10/22/2020 11:00 AM

Pickup & return location

Los Angeles, CA 90016

PICKUP AT CAR LOCATION



Los Angeles, CA 90016
Free

We'll send you the exact address once your trip is booked.

DELIVERY LOCATIONS



Bob Hope Airport
Airport
\$100



Long Beach Airport
Airport
\$120



Van Nuys Airport
Airport

- Autopilot
- Dual Motor Drive
- 19" Performance Wheels
- Premium White Seats
- Internet Connectivity
- All Weather Floor Liners

Perfect for business or leisure. The white seats with the white exterior will make you feel like you're piloting a spaceship.

The Tesla's name is Murphy! Anything that can happen, will happen. (I'm also a fan of Interstellar)

Thinking about buying a Tesla? Use my referral code for some perks!

<https://ts.la/max91014>

Less

DELUXE CLASS This exclusive car has additional safety checks for guests under 30. ⓘ

FEATURES

- | | |
|---------------------|------------------------|
| Must be 25+ to book | Automatic transmission |
| All-wheel drive | AUX input |
| Blind spot warning | Bluetooth |
| Child seat | GPS |
| Heated seats | Keyless entry |



Airport
\$100



La Quinta Inn & Suites by Wyndham LAX
Hotel
5249 West Century
Boulevard, Los Angeles, CA
90045
\$50




InterContinental Los Angeles Century City
Hotel
2151 Avenue of the Stars, Los
Angeles, CA 90067
\$40





SIXTY Beverly Hills Hotel
Hotel
9360 Wilshire Boulevard,
Beverly Hills, CA 90212
\$40





SLS Hotel, a Luxury Collection Hotel, Beverly Hills
Hotel
465 South La Cienega
Boulevard, Los Angeles, CA
90048
\$40


-  Heated seats

 Keyless entry

 Long-term car

 Pet friendly

 USB charger

 USB input

Less

EXTRAS Add optional Extras to your trip at checkout. ?

Post-trip cleaning

Return the car hassle free, without worrying about cleaning up after your trip. Does not cover upholstery cleaning, spills, stains, pet hair, or smoke removal.

\$30/trip

Prepaid EV recharge


Save time and make dropoff a breeze by adding this Extra, which allows you to return my car without fully recharging. Please return with at least 30 miles of range.

\$30/trip


Less

PARKING DETAILS There is usually parking available on the street at all hours. Please message me if street parking is unavailable

GUIDELINES No smoking. Please return the vehicle with the same charge you left with. Dogs are welcome but please bring a towel to sit


 Hilton Garden Inn LAX/El Segundo

Hotel
2100 East Mariposa Avenue,
El Segundo, CA 90245
\$50

 The Hollywood Roosevelt

Hotel
7000 Hollywood Boulevard,
Los Angeles, CA 90028
\$40

DELIVERED TO YOU

 Enter a delivery address

\$50

3+ day discount savings ? \$22
You saved 5%

Continue

Free cancellation
Full refund before Oct 18, 10:00 AM

GUIDELINES

No smoking. Please return the vehicle with the same charge you left with. Dogs are welcome but please bring a towel to sit on for the white seats.

REVIEWS

5.0 ★

34 reviews



★★★★★

Lyndsie F. Oct 4, 2020

Max was so helpful and easy to communicate with and we enjoyed using the car for our trip so much!



★★★★★

Oscar C. Sep 28, 2020

Excellent first experience. The car was very clean and comfortable. The whole process was very easy.



★★★★★

Mondo R. Sep 23, 2020

The car was amazing! It over exceeded my expectations of a Tesla. Working with Max the whole time was a pleasant, friendly and easy experience. He was very responsive during the whole time of the trip from pick up to drop off.



Turo Sep 6, 2020

The host cancelled this trip 3 months and 27 days before it started. This message was automatically posted by Turo.



Turo Sep 6, 2020

The host cancelled this trip 7 days before it started. This message was automatically posted by Turo.

Distance included 800 mi
\$0.52/mi fee for additional miles driven

INSURANCE & PROTECTION

Insurance via Liberty Mutual ⓘ

♥ Add to favorites

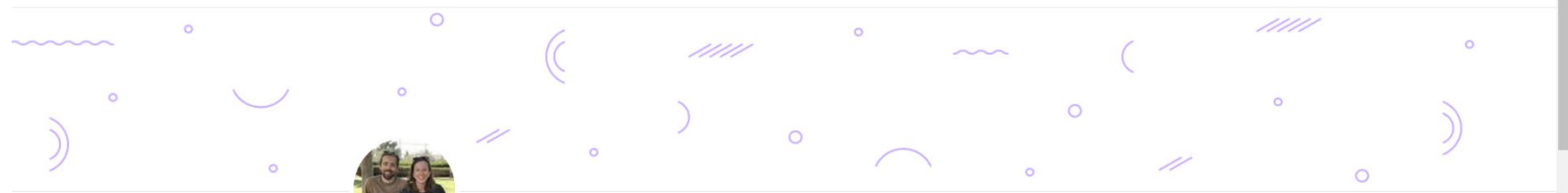
[Report listing](#)[Cancellation policy](#)


Car host profile page:

TURO

City, airport, address, or hotel

List your carLearn moreSign upLog in






5.0 ★

Maxx


Los Angeles, CA

40 trips • Joined Apr 2018



All-Star Hosts like Maxx are the top-rated and most experienced hosts on Turo.

Learn more



Maxx has completed training on enhanced cleaning and disinfection practices.

Learn more

VERIFIED INFO

Approved to drive

Email address

Phone number

✓


✓

✓

ABOUT MAXX

I've lived in Los Angeles a long time working in the entertainment, tech industries. I know my way around the city if you need any recommendations for food, coffee, hiking or sightseeing.

MAXX'S VEHICLES



Phone number 

LANGUAGES

English, French

WORKS

Music Industry

SCHOOL


Ohio State University

HOST STATS

Response rate 100%

Response time 0 minutes

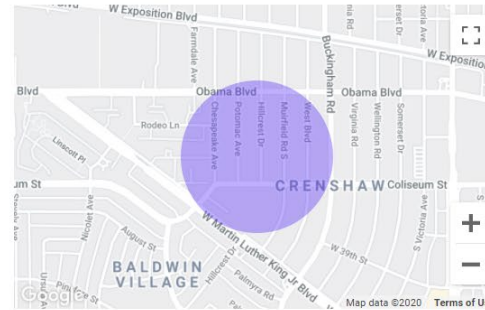
Share this Turo profile.



Tesla Model 3 2020
5.0★ (40 trips)

\$106/day

LOCATION



REVIEWS FROM GUESTS • 40 trips

5.0★ (34 reviews)



Lyndsie F. October 4, 2020

Max was so helpful and easy to communicate with and we enjoyed using the car for our trip so much!