Lab 1
Introduction & Transportation Data

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About me

Yufeng Zhang

- Ph.D. student in Transportation Engineering
- Work with Dr. Alireza Khani (Transit Lab)
- Lab instructor and lab report grader
- See syllabus for more info

Lab objectives

- Get hands on and learn software and practices that a transportation engineer would use
- Analyze data and make interpretations
- Synthesize information in reports

Assignment

5 reports in total

- Reports will combine work from multiple sessions
- I will clearly indicate what is due for each report
- Reports can be completed during lab
- Reports should be submitted through Canvas and must be in .pdf form

Work individually or in pairs

Due times are **midnight on Wednesday**

Assignment

Expectations:

- Reports should address all questions posed in assignment
- Use complete sentences and good grammar
- Clearly label all charts and graphs with titles, axis labels, legends, units...
- Group's work must be clearly different from each other — plagiarism will be reported
- Read "CEGE Guidelines for Writing Lab Reports" for more instructions on lab reports

Special Announcement

- These computers don't have logins
- Please do not shutdown or logout of the computers at the end of the day
- You are suggested to bring a portable storage device to save your work finished during the lab (files get wiped and forgetting to save files appropriately is not a valid excuse for late work)

Lab Format: Time

- (10%) Announcements
- (20% - 50%) Go over topic/assignment
- (40% - 70%) Time to work

Tentative Schedule

See the lab syllabus.

Lab material may not be relevant to class materail for each week, but I tired my best...

Objective

- Become familiar with transportation data (Travel Behavior Inventory)
- Understand the concept "trip"
- Understand transportation mode shares in the Twin Cities Region
- Learn about the PivotTable in Excel

Travel Behavior Inventory(TBI)

- Survey of travel patterns in the Twin Cities metro area from 2010
- Comprehensive assessment of travel patterns in the Twin Cities
- Conducted by the Metropolitan Council every 10 years
- Multiple types of survey: household interview survey (HIS), transit on-board survey, airport survey, ...

Data

- Organized by Transportation Analysis Zones (TAZs)
- Contains data aggregated at household, person, and trip levels (3 different tabs of the same data)
- Contains "weights" to aggregate sample up to population size
  - Sample size = 10,363 HHs
  - Population of Twin Cities $\approx$ 3 million

Transportation analysis zones(TAZs): Most commonly used unit of geography in conventional transportation planning models. Zones may be a single building, or may include a region of buildings.

Trip: one leg of a journey; e.g., going from home to the supermarket, bank, dry cleaner, and back home counts as four trips.

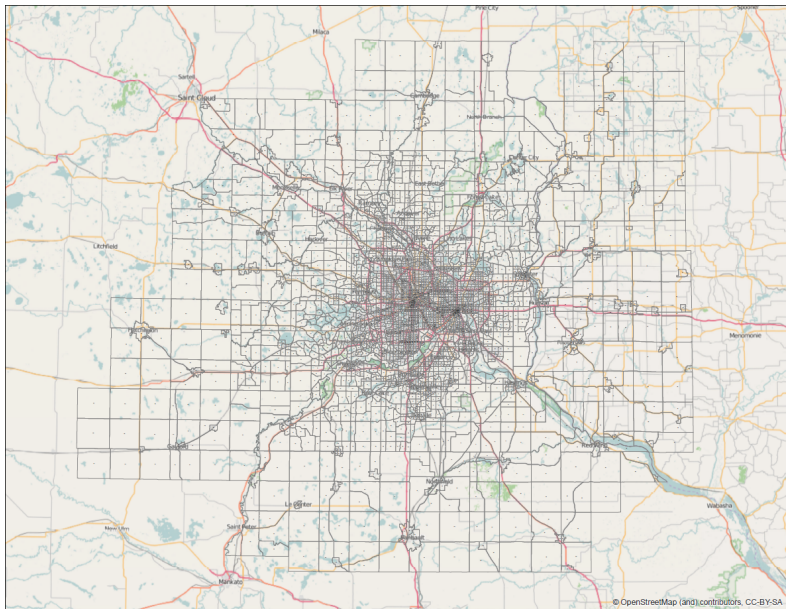

Figure: Metropolitan Area TAZs

Example of a travel day

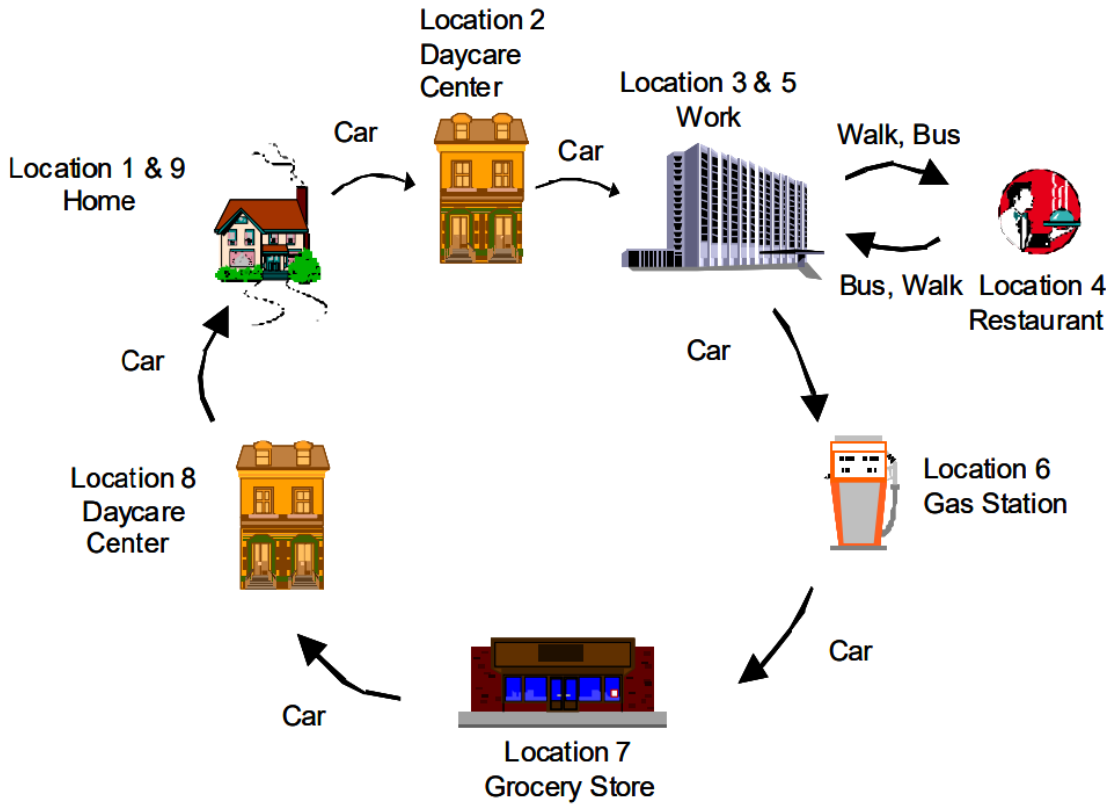

Figure: Chris's one-day travel diary[1]

How many trips did Chris make in the day?

[1] Metropolitan Council, One-Day Travel Diary, https://metrocouncil.org/Transportation/Publications-And-Resources/TBI-Final-One-Day-Diary-Survey-Form.aspx

Excel PivotTable

- Powerful aggregation tool for data
- Select columns of data for filters, rows, columns, and values
- We will only be adding data to rows and values and applying filters for today

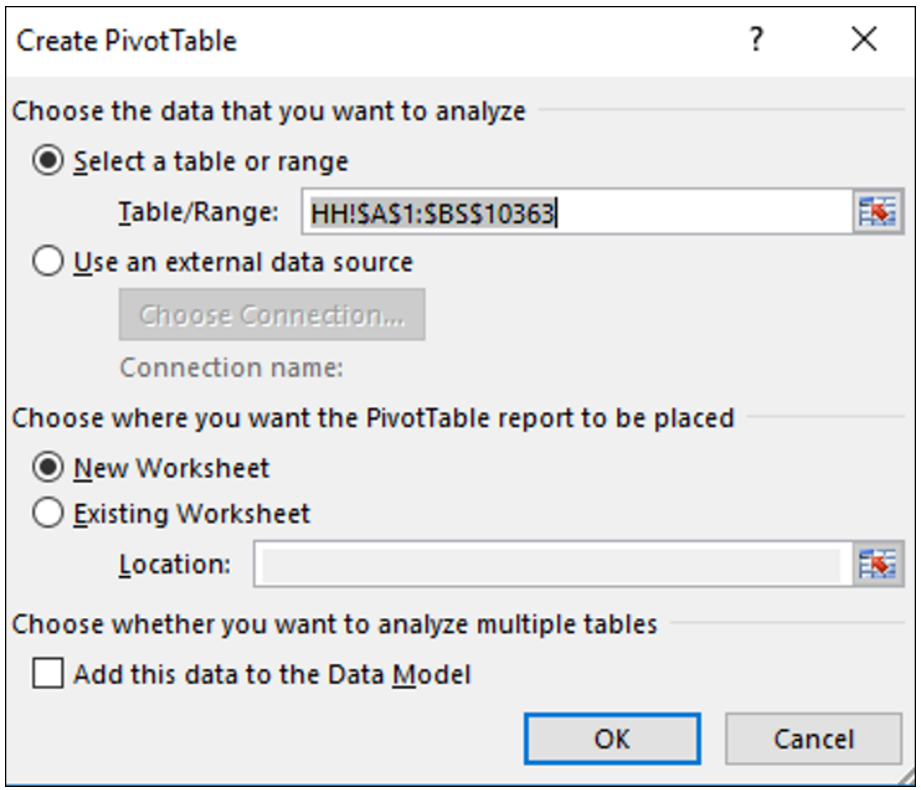

Figure: Ctreating a PivotTable in Excel

A couple of reminders

- Save the work from this lab in a safe place. I suggest making this your working report and adding work from Lab 2 and Lab 3 to this document.
- Work from a folder on the computer's desktop, not from the browser
- Use the "TRIP" tab of the excel document
- Make sure to include data labels in charts (especially pie charts). Please use category, value, and percentage labels
- Double check that labels are readable (especially after saving to .pdf)