Software Tools for Data Analysis, Spring'19

Course Overview

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The Team

- Me
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- You guys
  - ▶ Background — degree(s), work experience?
  - ▶ Experience with data analysis software (Excel, Stata, R, Matlab, SAS, SQL)?
  - ▶ Past and current courses in MSAE program?

Course Objectives

There are two main goals this course aims to achieve:

- Provide you with an introduction to a set of software tools commonly used today for performing data analysis (both in academic research and business applications).

- Serve as a support course for your other courses in MSAE program.

Course Agenda

We will learn how to use Excel, Tableau, R and SQL to do the following:

- Load, clean and prepare data for further analysis.
- Create various kinds of numerical and visual data analytics.

Course Outline

- Part I: Excel and Tableau
  - Pivot tables in Excel
  - Data visualization in Tableau
- Part II: R
  - Intro to R and RStudio
  - Basic data management & visualizations
  - Advanced data management & visualizations
- Part III: SQL
- Part IV: Course Project

Course Overview

Homework

- There will be a total of 5 homework assignments: 1 for Excel, 1 for Tableau, and 3 for R.

- Each homework will typically be assigned after we complete a certain topic or part of the course.

- Each homework will be submitted twice: first time as a draft and second time as a final version.

- All homework will require you do some kind of data manipulation and analysis with regards to Iowa liquor sales data.

- Detailed description will be provided in each assignment.

Course Project

Your course project will include the following components:

- merging social and demographic data on Iowa zipcodes, cities and counties from ACS with Iowa liquor sales data

- performing visual and numerical analysis of the merged data

Project will be made available once we finish Tableau. More detailed information to follow.

Preliminary Course Schedule

Date/Week	Topic	Assignment
Jan 18 / W1	Course Introduction + Excel	
Jan 28 / W2	Excel	Excel HW
Feb 1 / W3	Tableau	
Feb 8 / W4	Tableau	Tableau HW
Feb 15 / W5	Tableau / R	Course Project
Feb 22 / W6	R	
Mar 1 / W7	R	R HW #1
Mar 8 / W8	No class - Spring Break	
Mar 15 / W9	R	
Mar 22 / W10	R	R HW #2
Mar 29 / W11	R	
Apr 5 / W12	R	
Apr 12 / W13	R / SQL	R HW #3
Apr 19 / W14	No Class - Easter Break	
Apr 26 / W15	SQL	
May 3 / W16	SQL	