

An Introduction to Labs

In writing this textbook, a reader commented that a series of labs that helps professors and students see the implementation of the techniques in the book would be appreciated. What is included here is an attempt to respond to this request. In these six examples, I present a dataset with a series of questions that would be interesting to answer. Then, I choose a few of those questions to answer, walking through a basic process of exploratory analyses to inference to reach *an* answer. Additionally, I provide the code that I used to create the graphics and solutions included.

These labs can be used multiple times as students improve their techniques or progress further in the course. They can provide answers to labs using exploratory analyses only, and then return to them once they have experience with inferential techniques. Lastly, I should note that answering several of these questions requires techniques beyond this book. However, the basic options available in this book can give us some basic insights. So hopefully they help illustrate the principles of the process of Statistics in such a way that can help students understand the concepts.

The datasets (With their libraries) included in these labs are

- CollegeDistance (AER)
- CreditCard (AER)
- DoctorAUS (Ecdat)
- pitches (pitchRx)
- survey (MASS)
- Wages (Ecdat)

These datasets span topics in education, economics, finance, medicine, and sports. These are not the only datasets that are possible for labs. In choosing these six datasets, there were many datasets I removed that would also provide classes with excellent labs. Some of these datasets are listed below.

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|-------------------------|--------------------|--------------------|-------------------|
| • Arrests (carData) | • Baseball (vcd) | • Benefits (Ecdat) | • BEPS (carData) |
| • Boston (MASS) | • Caschool (Ecdat) | • CES11 (carData) | • Chile (carData) |
| • College (ISLR) | • Diamond (Ecdat) | • Greene (carData) | • GSS7402 (AER) |
| • HealthInsurance (AER) | • Hmda (Ecdat) | • monica (DAAG) | • Mroz (Ecdat) |
| • nlschools (MASS) | • NMES1988 (AER) | • Pima.te (MASS) | • Rossi (carData) |
| • spam7 (DAAG) | • Star (Ecdat) | • UN98 (carData) | • Wells (carData) |