At the back/as we get settled

- Handout at back

- Open up RECS data.xlsx. If you do not have a laptop/tablet, sit near someone who does.

Administrivia I

- HW3, Project 1 due today. Project 1 – upload to Blackboard AND paper copy, one of each per group.

- Project 1 Peer Evaluation
  - Should receive an email to your andrew address from CATME, Subject: "Please complete CATME activity" with a link to complete the evaluation.
  - If your teammates are incorrect, do not complete evaluation and let me know ASAP so I can fix.
  - Individual points for *completing* the evaluation appropriately and honestly. Must include comments.
 - Group points for having been a good teammate.

Administrivia II

- □ Project 1 peer evaluation instructions
- □ …rate each of your teammates (including yourself)… that most closely describes how that team member behaved.

- □ At the end, **enter brief written comments** about your team overall, individual team members, and the process of completing the project.
- □ **You** *must* **include one constructive suggestion** for each of your teammates (including yourself) to consider as we move into the next project.
  - ◘ "Be upfront with your group that you have a job with inflexible hours that limits your worktime on Saturdays."
  - ◘ "You had great ideas on how to organize the project, so make sure you suggest them even if another student seems to be taking the lead."

TOOL FOR ANALYSIS

19-101 Spring 2016

Organization of the Course
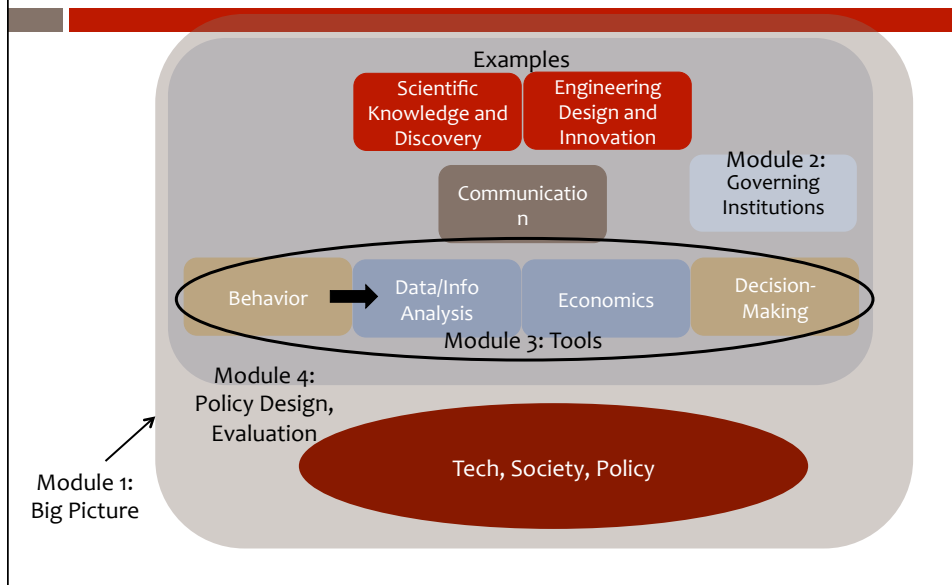
Objectives for today

- □ Describe some basic descriptive statistics and distributions (done)
- □ Examine a government data source for its (done)
  - ◘ Sample methodology
  - ◘ Use of standard errors
- □ Demonstrate "good modeling" techniques (begun)
- □ Describe the difference in absolute vs relative data and why the latter may be important (today)

Two Policy Questions to Examine

- If we have $1B to invest in residential energy savings programs, where should we focus our efforts?

- What data or statistics might we want to help answer this question? What numbers would we want to compare?

- Looked at:
  - % of energy to HVAC, H2O heating, refrigerators, "other"
  - Considered confidence interval of the data, none overlapped.
- Evaluation: have made strides in HVAC (down 10%) but total energy about the same. Now might want to focus on "other."
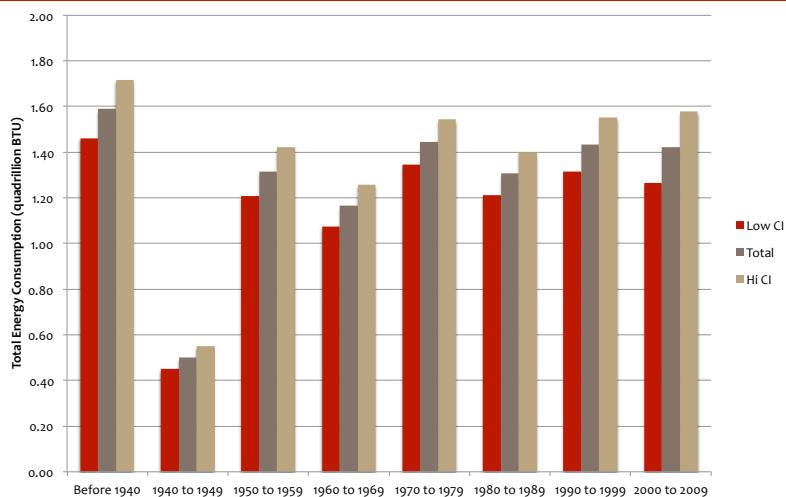
Two Policy Questions to Examine

- Energy consumed for HVAC is now <50% of total residential consumption. Does this mean that policy efforts to improve energy efficiency via insulation, window upgrades, etc. are working?

- What data or statistics might we want to help answer this question? What numbers would we want to compare?
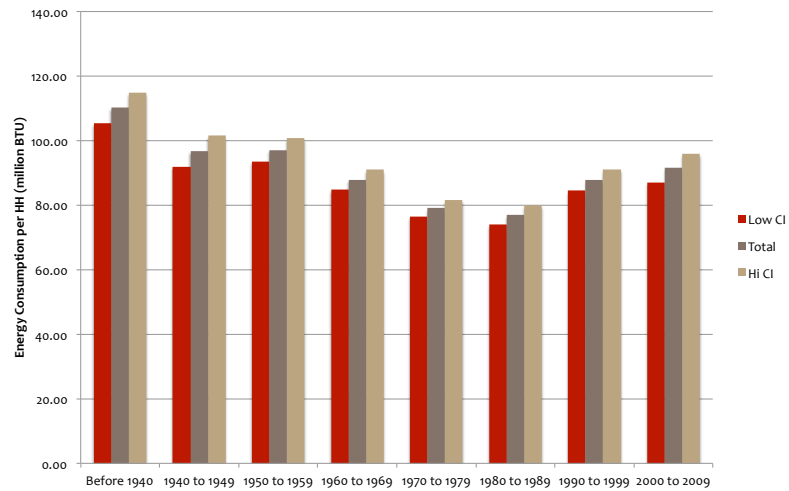
Using data to answer policy question

□ Follow handout instructions.
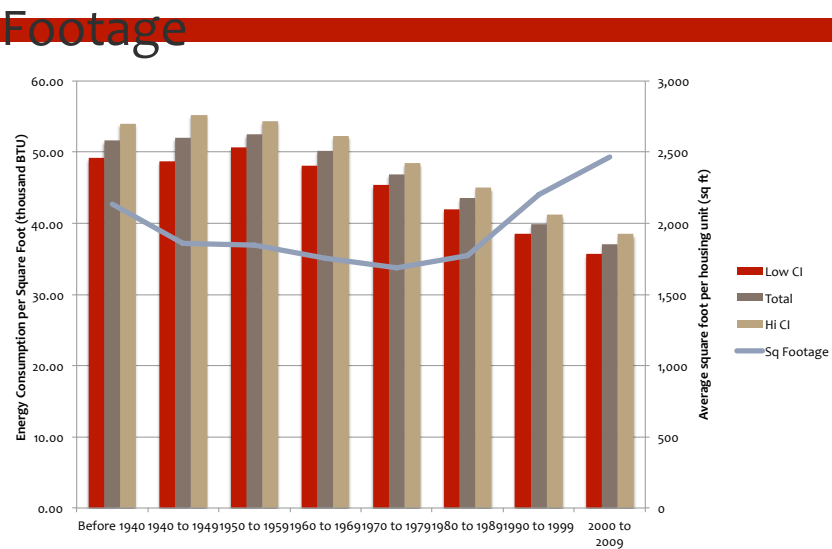
□ I will be building in excel in a few minutes.

Total HH Energy Consumption

Energy Consumption per HH

Energy Consumption per Square Footage and Average Square Footage

Two Policy Questions to Examine

- Energy consumed for HVAC is now <50% of total residential consumption. Does this mean that policy efforts to improve energy efficiency via insulation, window upgrades, etc. are working?

- It depends! If we consider that HH size is growing, and newer homes are larger, then these efforts are making a difference.

- *Why is it important to look at relative versus absolute numbers?*

Objectives for today

- Describe some basic descriptive statistics and distributions
- Examine a government data source for its
  - Sample methodology
  - Use of standard errors
- Describe the difference in absolute vs relative data and why the latter may be important

Objectives for today

- Identify different decision support tools
- Practice using decision trees
- Discuss the benefits and limitations of decision trees

Decision support tools

Decision Analysis

- Influence diagrams – or, concept diagrams, can help organize ideas and connections in a complex problem.

- Decision trees – compare alternatives when other related events are chance events.

Economic Analysis

- Net Present Value – determine if social benefits are greater than social costs considering time

- Cost-Benefit Analysis – compare alternatives based on monetary value
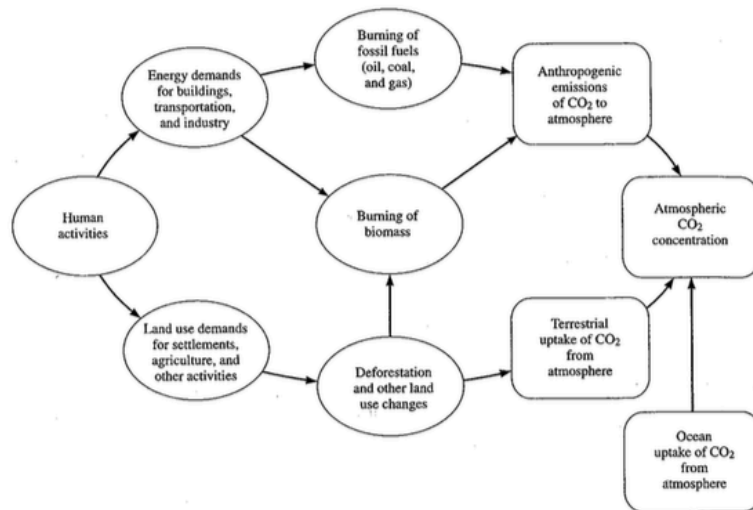
Figure 14.13   A simplified influence diagram for the buildup of CO_2 in the atmosphere (a major contributor to global warming). The climate change resulting from increased atmospheric CO_2 concentrations will feed back to, and influence, a number of the processes shown in this diagram.

Rubin text, p 620.

Influence Diagram for…

Expected value / Decision tree

- Odds of winning Powerball lottery on one ticket are 1 in 175,223,510.
- A ticket costs $2.
- The current jackpot is $40 million.
- Should you buy a ticket? Show answer mathematically.

Expected Value

- Expected Value =
- sum (Probability of outcome x Value of outcome)