Simplifying the Search for Housing

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Motivation

We wanted to create a tool that is...

- **Useful:** Helps students streamline the housing search process,
- **Relevant:** We use Zillow housing data in tandem with ACS and Census data and a simple utility function to evaluate preferences,
- **Fun:** As we draw closer to graduation and summer internship season, students will be looking to find housing.

Data

We use ZIP Code level data including...

- Zillow median rental price by number of bedrooms
- ACS demographic data
- US Census TIGER/Line shapefiles

Methods - Utility

$$Utility = U(d_z, t_z, \mathbf{P}_z, l_z, c) \tag{1}$$

where...

- d is distance from work ZIP Code to home ZIP Code,
- t is average commute time for residents in home ZIP Code
- $\mathbf{P}$ is a vector of demographic characteristics of the home ZIP Code (Pop ratio by age group, Marital status by age group, etc. . .)
- l is the proportion of people in home ZIP Code who speak your preferred language (Spanish, Other Indo-European, Asian & Pacific Island)
- and c is consumption of all other goods.

Methods - Budget Constraint

Your ability to consume goods that contribute to your utility is dependent on your budget constraint such that...

$$Income = \frac{Rent_{b,z}}{4} \times \sum_{n=1}^{4} Zip + P_c \times c \tag{2}$$

where...

- $Income$ is your monthly income,
- $Rent_{b,z}$ is the monthly rent for a b bedroom housing unit in ZIP Code z,
- Rent is divided by 4 since there are 4 Zip Code characteristics you "buy" with rent,
- Zip is the vector of ZIP Code characteristics d_z, t_z, $\mathbf{P}_z$, l_z
- and P_c is the price of consuming other goods c.

Limitations

- We can't perfectly model utility and we don't know the price of the consumption of other goods
- For now our algorithm is very basic - we hope to improve it
- We do not adjust for the local Consumer Price Index
- We have a small sample of "home" ZIP Codes due to Zillow's reporting procedure

Questions...