From Curriculum to Community:
Encouraging Faculty and Students to Change the World

Periclean Colleges and Universities

Allegheny College • Bates College • Berea College • Bethune-Cookman University
Carleton College • Chatham University • Dillard University • Drew University
Elon University • The Evergreen State College• Goucher College • Hampshire College
Hendrix College • Macalester College • Morehouse College • New England College
The New School • Occidental College • Pace University • Pitzer College • Reed College
Rensselaer Polytechnic Institute • Rhodes College • St. Mary's College of Maryland
Skidmore College • Swarthmore College • Ursinus College • Wagner College
Whitman College • Widener University • The College of Wooster

Project Pericles appreciates the generous support of
The Arthur Vining Davis Foundations, The Teagle Foundation, and the Eugene M. Lang Foundation

Community Partnerships and Data Analytics

Phong Le, Goucher College

BALTIMORE CITY DEMOGRAPHICS AT A GLANCE:

A closer look at the composition of Baltimore City.

Population

Estimates:

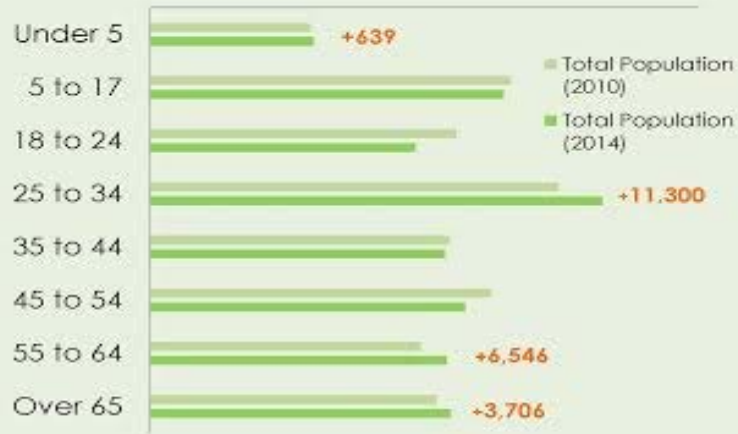
Total Population:
621,849

No. of Households:
238,897

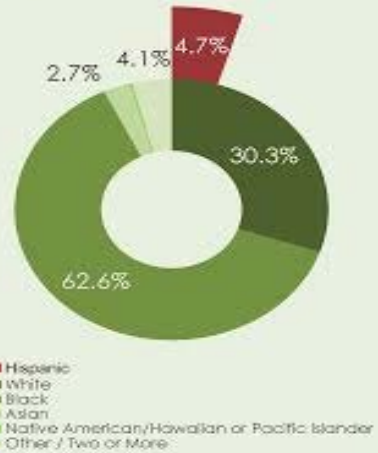
Median Age:
34.6

% Born outside of US:
8%

By Age:



By Race:



Education, Employment and Income

Median Household Income:
$42,665

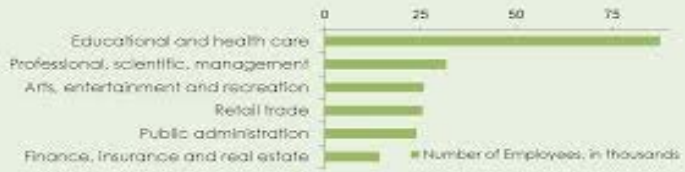
% Unemployment:
11.8%

% with College or Advanced Degree:
30%

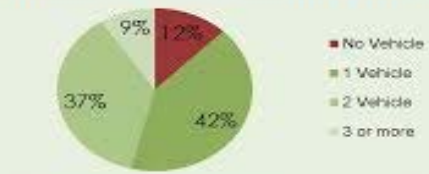
% with no HS Diploma/GED:
16%

Income by Education:

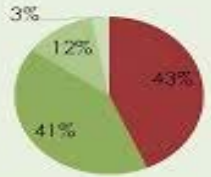
Top Employment Sectors:



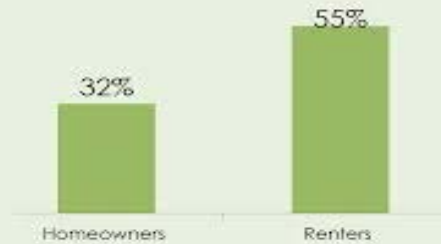
Housing & Transportation



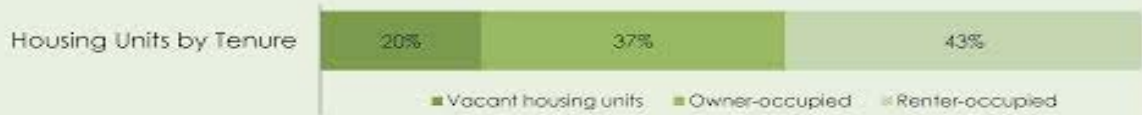
% Owner Occupied-Households without a Car:



% Renter Occupied-Households without a Car:

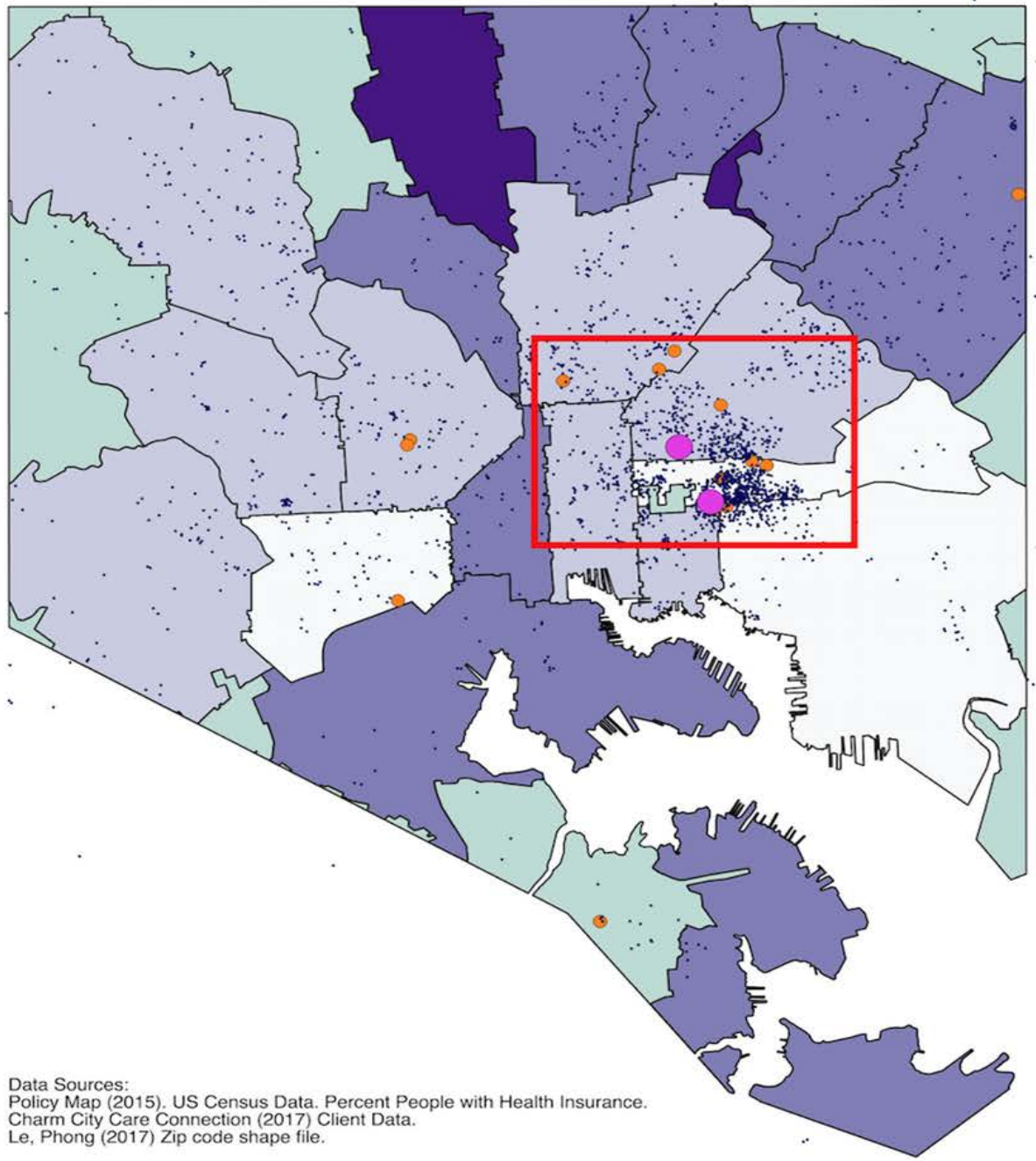


% Housing Cost Burdened (>30% of Income on Housing)



Sources: U.S. Census Bureau. 2014 American Community Survey and 2015 Population Estimates.

CCCC Client Insurance Rate



Legend

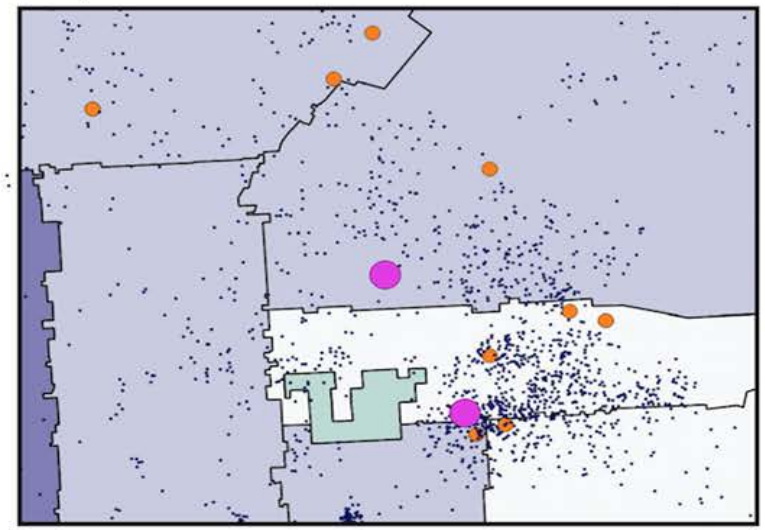
- CCCC Clinic Location

CCCC Clients

- Insurance Concern or Request
- Client Location

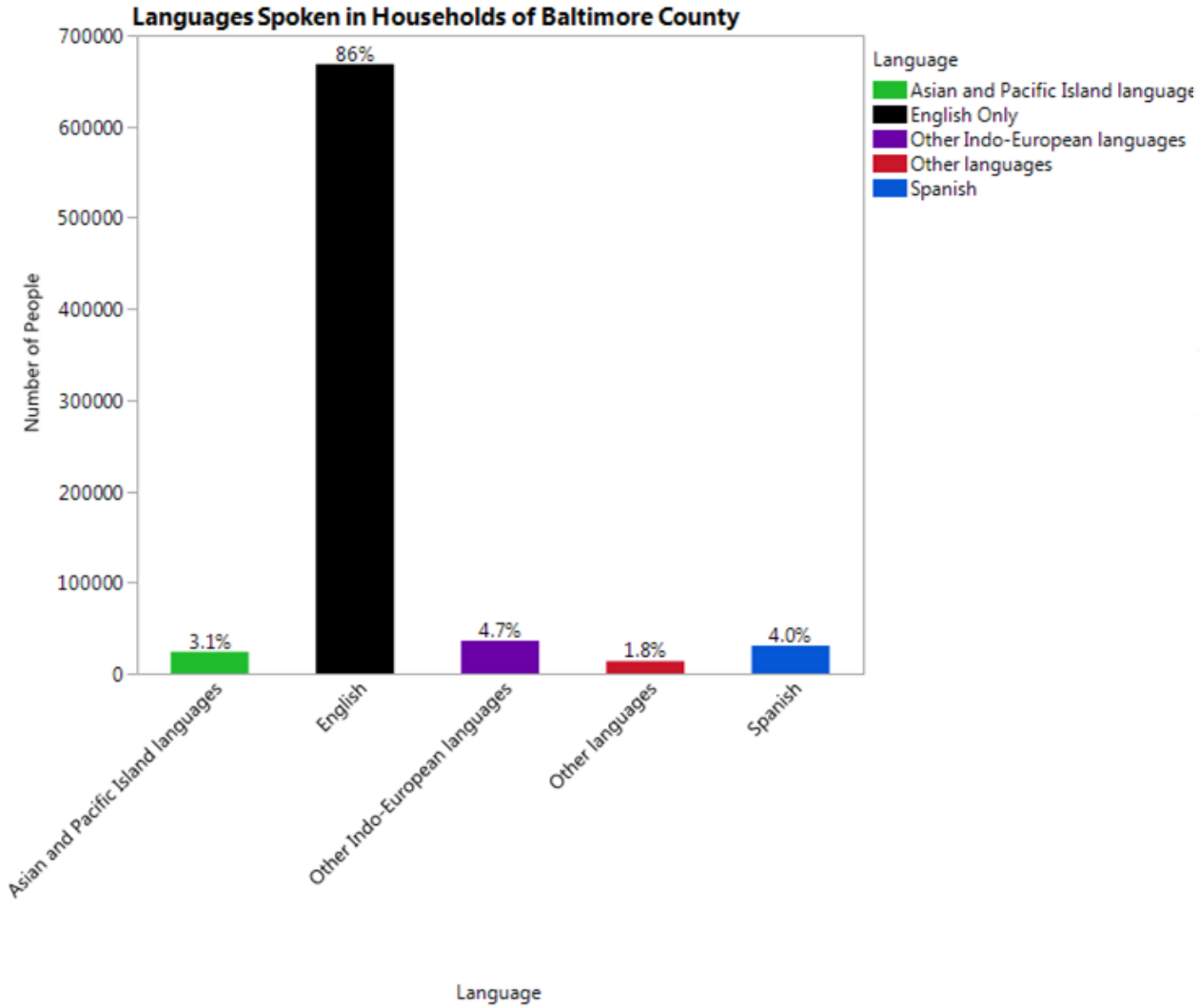
Estimated Percent of People with Health Insurance, 2011-2015

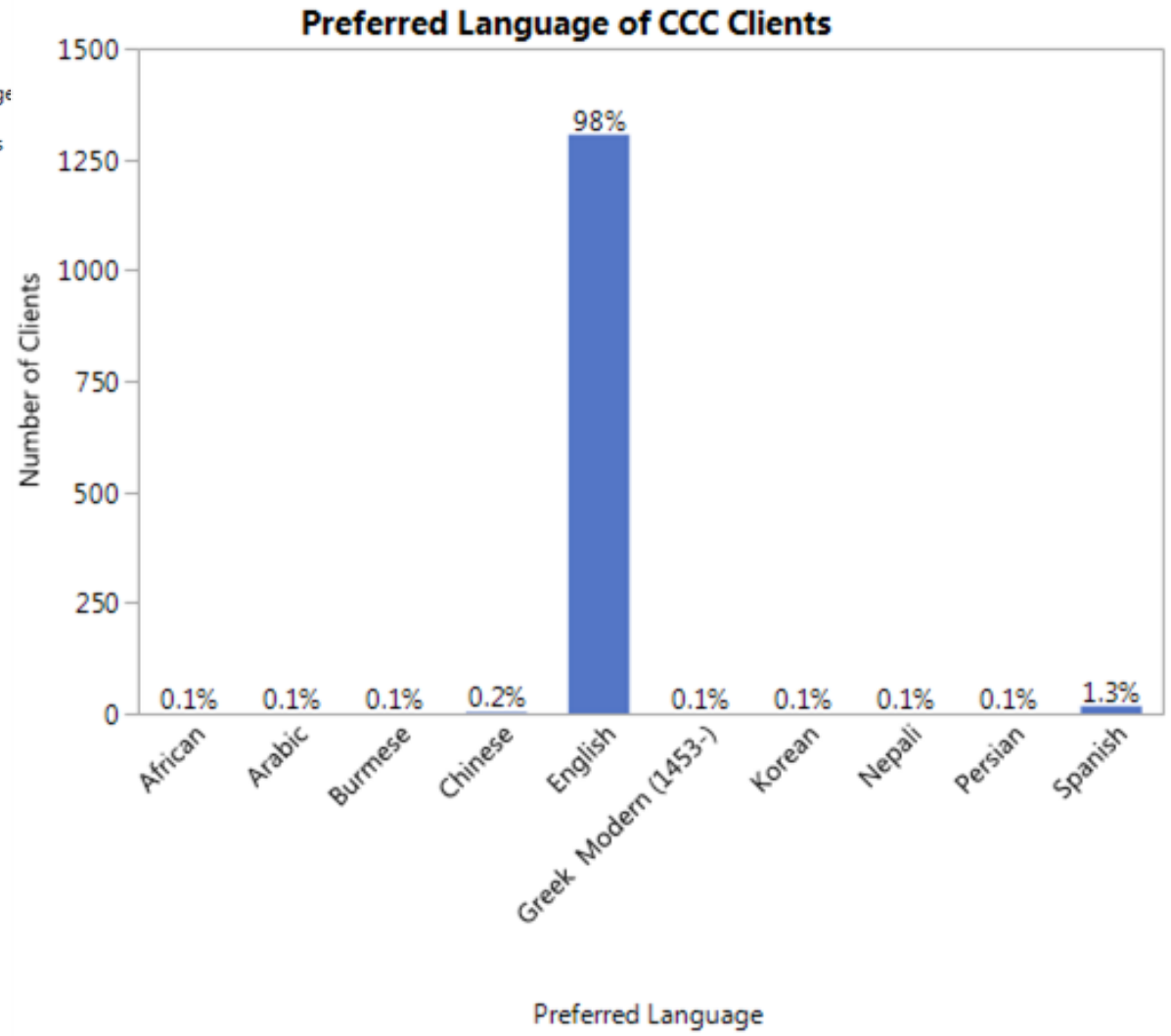
- 83.6 - 87.2
- 87.2 - 90.8
- 90.8 - 94.3
- 94.3 - 97.9
- Baltimore City Zip Codes



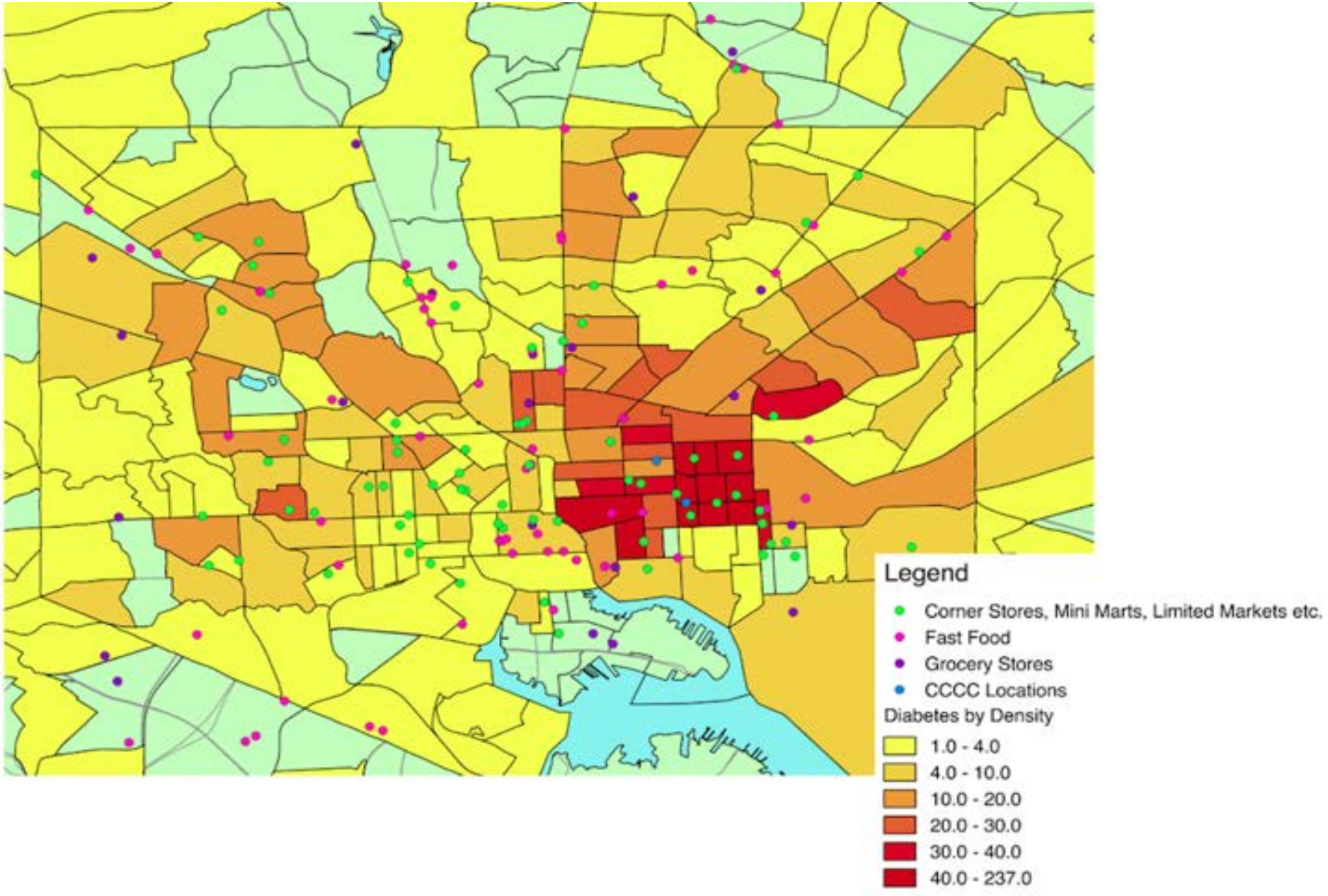
Data Sources:
Policy Map (2015). US Census Data. Percent People with Health Insurance.
Charm City Care Connection (2017) Client Data.
Le, Phong (2017) Zip code shape file.

Let’s take a look at the data

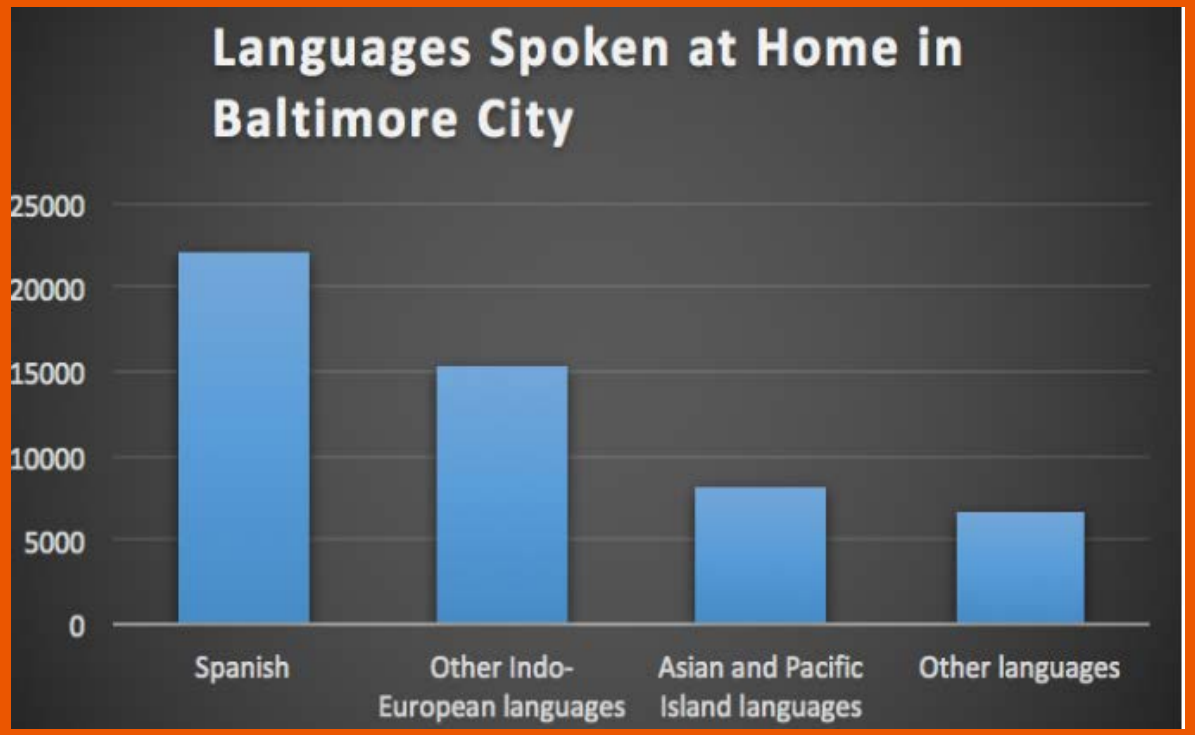


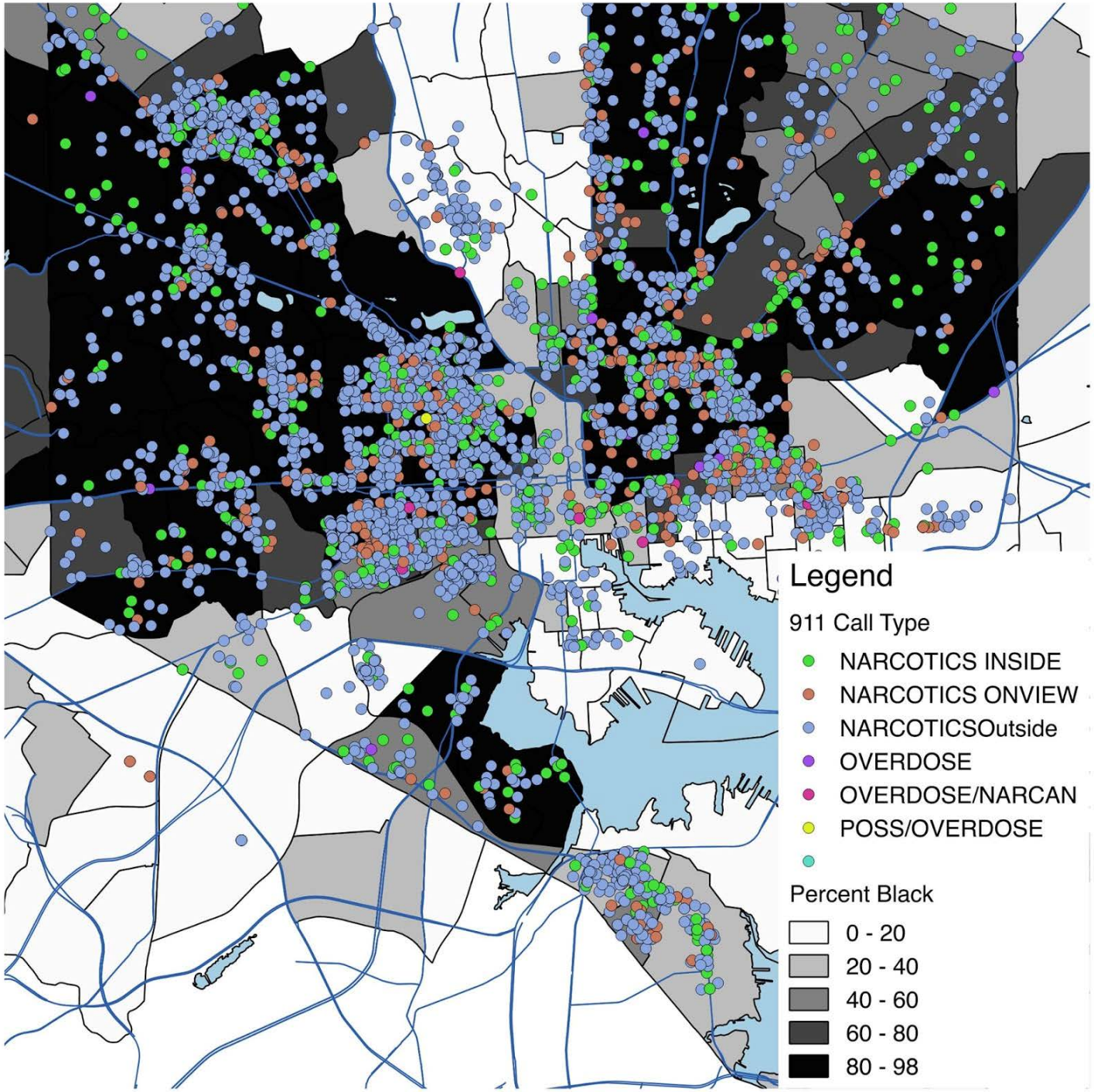


Food Desert


Legend
Corner Stores, Mini Marts, Limited Markets etc.
Fast Food
Grocery Stores
CCCC Locations
Diabetes by Density
1.0 - 4.0
4.0 - 10.0
10.0 - 20.0
20.0 - 30.0
30.0 - 40.0
40.0 - 237.0


Income Levels in Baltimore County
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
Less than $10,000
$10,000 to $14,999
$15,000 to $24,999
$25,000 to $34,999
$35,000 to $49,999
$50,000 to $74,999
$75,000 to $99,999
$100,000 to $149,999
$150,000 to $199,999
$200,000 or more


Languages Spoken at Home in Baltimore City
25000
20000
15000
10000
5000
0
Spanish
Other Indo-European languages
Asian and Pacific Island languages
Other languages



Opioid Distribution

Data taken from the 911 Database of Baltimore City.

Coding generated by 911 operators.

Who takes CBL courses in statistics? Could selection bias be a good thing?

Lynne Steuerle Schofield
Associate Professor of Statistics, Swarthmore College

Presented at the 2018 AAC&U Annual Meeting
January 25, 2018

Demographics

	Stat 31 (Traditional) (n=15)	Stat 41 (CBL) (n=13)	P-value (Fisher's Exact, Chi-square or t-test)
Gender	7 (46.7%) women	6 (46.2%) women	0.978
Race	3 (20%) URM	2 (15.4%) URM	0.999
Class Year	0 Fr, 4 So, 6 Jr, 5 Sr	1 Fr, 5 So, 1 Jr, 6 Sr	0.144
Mean GPA	3.52	3.57	0.764
Mean math/stat GPA	3.19	3.44	0.378

Academic Interests

	Stat 31 (Traditional) (n=15)	Stat 41 (CBL) (n=13)	P-value (Fisher's Exact or t-test)
Econ Major	**10 (66.7%)**	**4 (30.8%)**	**0.064**
Interdisciplinary major/minor	**2 (13.3%)**	**7 (53.8%)**	**0.042**
AP Stat Only	**1 (6.67%)**	**6 (46.2%)**	**0.029**
Mean num. college math classes	**2.53**	**1.54**	**0.062**
Mean num. college math/stat courses	**3.53**	**2.23**	**0.076**
Reported feeling unprepared	3 (20.0%)	7 (53.8%)	0.114

Why Take CBL vs. Traditional

	Stat 31 (Traditional) (n=15)	Stat 41 (CBL) (n=13)	P-value (Fisher's Exact Test)
Considered other course	6 (40.0%)	8 (61.5%)	0.450
Real-world application	**0 (0.00%)**	**9 (69.2%)**	**<0.001**
"Pure" stat course	4 (26.6%)	0 (0.00%)	0.102
CBL-too much time	2 (13.3%)	0 (0.00%)	0.484

Student Goals

	Stat 31 (Traditional) (n=15)	Stat 32 (CBL) (n=13)	P-value (Fisher's Exact test)
Gain real world experience	**0 (0.00%)**	**9 (69.2%)**	**<0.01**
Learn stat modeling	11 (73.3%)	6 (46.2%)	0.246
Fulfill writing requirement	**5 (33.3%)**	**0 (0.00%)**	**0.044**

Conclusions

- CBL students self-select into CBL courses
- CBL students differ in
  - prior mathematical and statistical training,
  - needs,
  - goals
- CBL instructors need to be cognizant of different training and needs of their students
- **CBL courses may provide a place for recruiting non-traditional students into the statistical pipeline.**

The Making of Stat 41

Stat 31: Data Analysis and Visualization

- Cleaned data from instructor
- Missing part of the research process

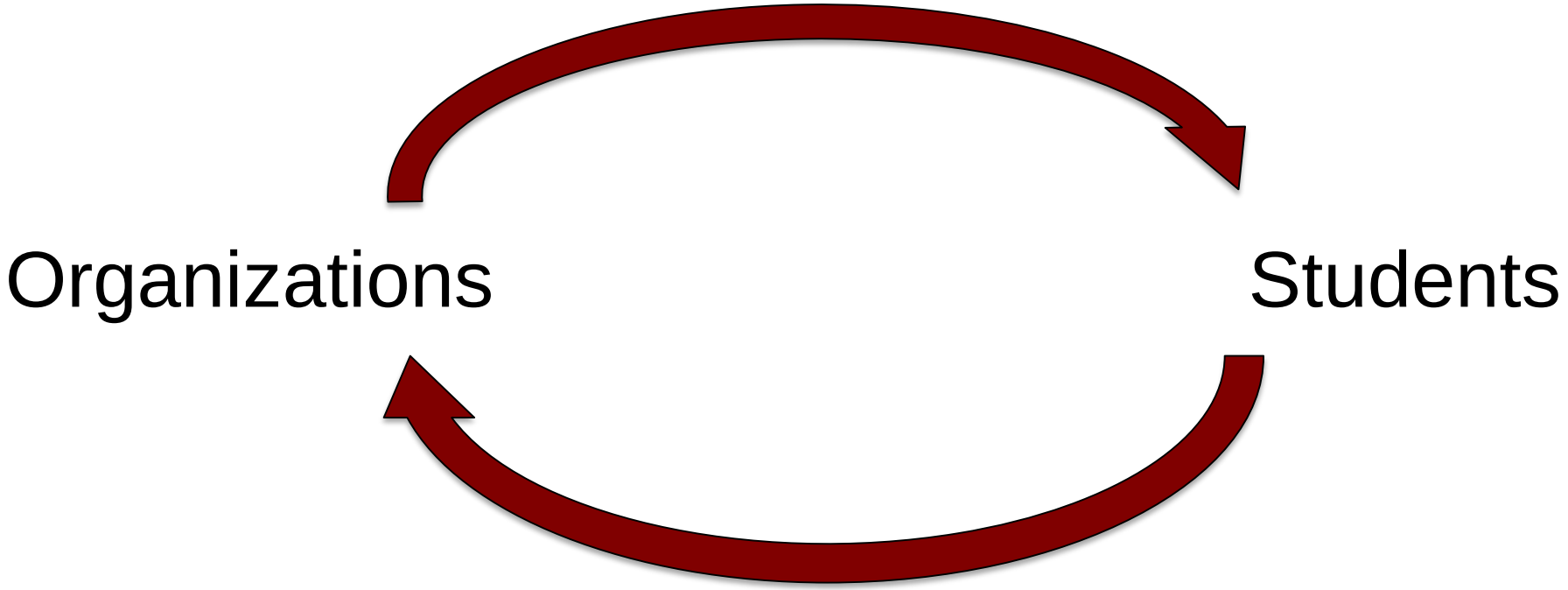
Added CBL

Stat 41: Data Analysis Policy Projects

- Data from local organizations
- Expose students to data analysis challenges

Stat 41: A Win-Win Situation

Opportunity for real-world application of statistical skills and methods



Free statistical consulting on problems of direct importance to the organizations

CBL vs Traditional Students?

- Are students who choose to take a CBL stat course different from those who choose a more traditional course?
- How are they different?
- What do the differences mean for instructors of CBL courses?

Data

- Demographic data (e.g., gender, race, class year)
- Institutional data (e.g., GPA, prior courses taken)
- Self-report end-of-the-year survey data
  - Students' goals in taking the course
  - Students' reasons for choosing the course they did

Stat 31 vs Stat 32

	Stat 31 (Traditional)	Stat 32 (CBL)
Differences		
Assignments and Projects	• 5 in-class “consultant” lab write-ups • Final paper student-selected topic	• Community org based, semester-long project
Similarities		
Topics	EDA; regression; ANOVA; ANCOVA; model building; logistic regression; PCA; HLM	
Pre-requisites	Stat methods, math stat, intro econometrics, or AP statistics	
Tests	In-class midterm and final	
Problem sets	Bi-weekly problem sets	

Challenges

- Finding organizations
- Organization and college schedules
- Confidentiality of data
- Course organization