

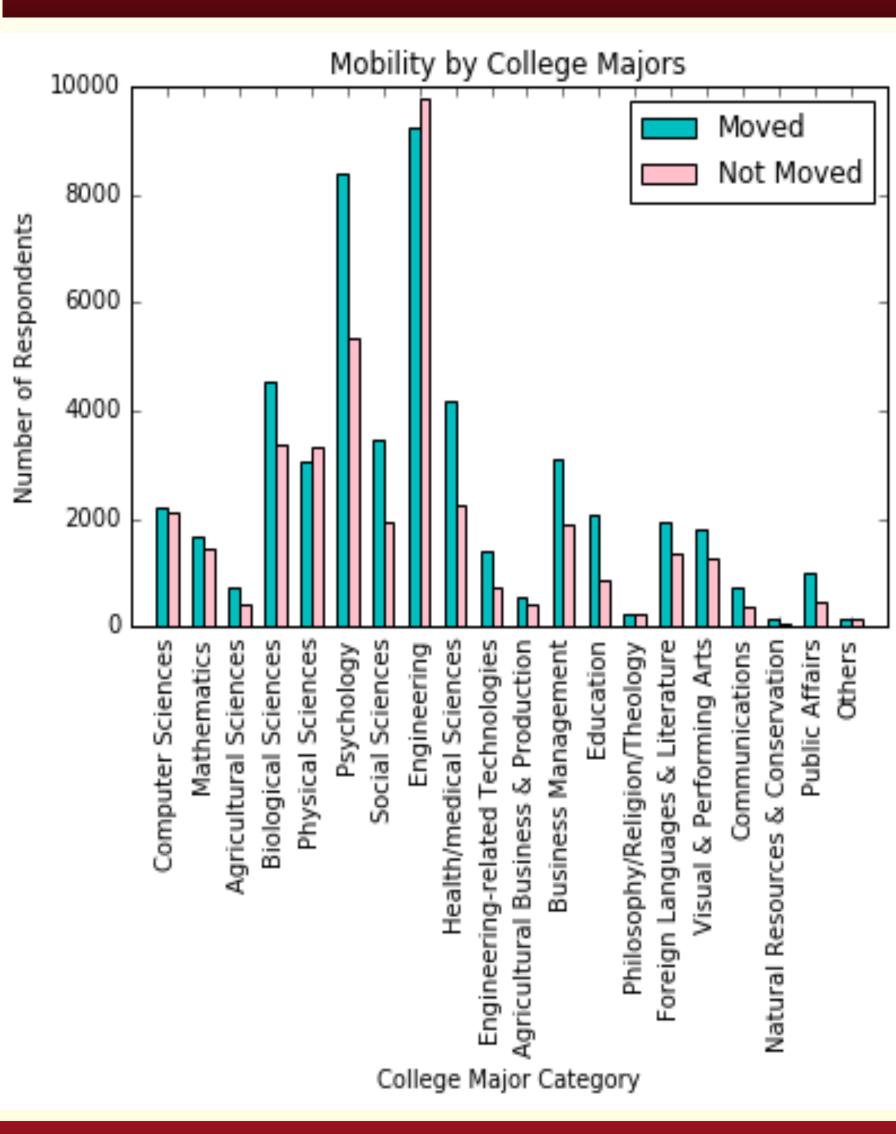
# To Move or Not to Move: College Major and Geographical Mobility

Xingyun Wu (xywu@uchicago.edu) MA in Computational Social Science Program, University of Chicago

#### Background

- **Education & Geographical Mobility**
- Education → geographical mobility (Bowles, 1970; Groen, 2004; Bernard et al., 2014)
- College Major & Mobility
- Mainly from the perspectives of social mobility rather than geographical mobility
- Major → social mobility (Berger, 1988; Wolniak et al., 2008; Altonji et al., 2015)
- Depends on whether occupation is related to college major (Robst, 2007)
- Lack analysis of this relationship:
- college major & geographical mobility?

#### Distribution

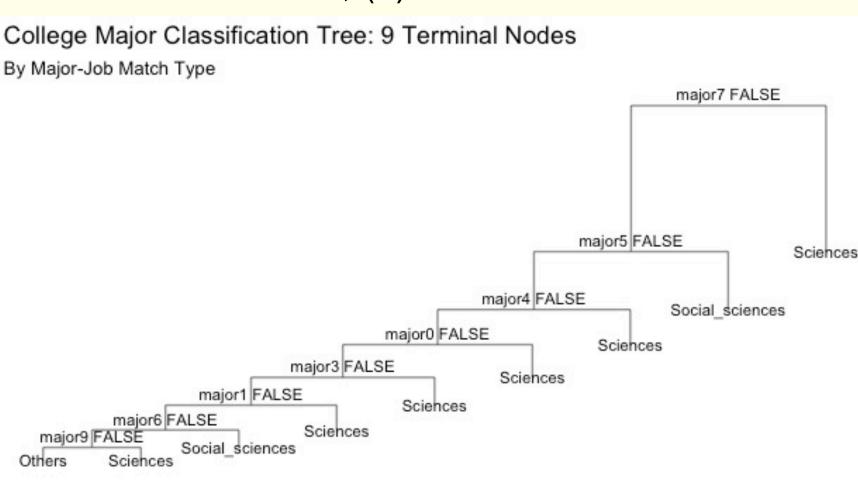


### Research Question

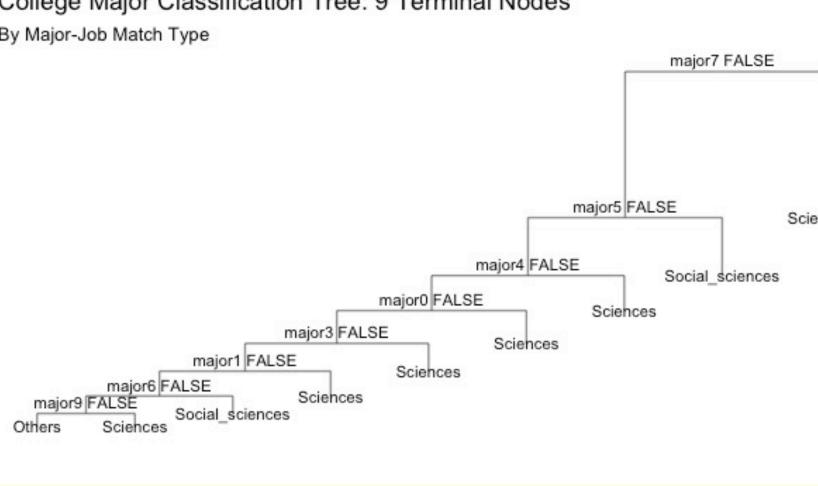
- What is the effect of college major on geographical mobility?
  - Original -> occupational location
- More specifically:
  - Geographical mobility means:
  - Location change from high school to occupation
  - Does the relationship remain the same among all majors?

#### College Major Classification

- Patterns of geographical mobility are different among college major categories
- College Majors could be classified
- Different majors provide different skills
- Use the skills required by individual's current job, to classify the 20 college major
  - Tree model to classify majors into 3 groups:
  - Fit jobs require (1) sci/tech skills, (2) social sciences skills, (3) other skills



- required by the labor market
- categories in the dataset



#### \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Limitations

The NSCG lacks specific geographical

The NSCG may not be representative

to population distribution. It has a

special interest in young college

graduate with sciences/technology

Would take the dimension of time into

have been applied, given better data.

consideration in the future.

information, only providing regions.

0.223\*\*\*

90,660

0.057

#### Data

 Hypotheses testing: Probabilities of geographical mobility are different among regions.

Conclusion & Discussion

- Majors of college education influences geographical mobility
- Mobility Prediction:
  - College major as single predictor could not lead to useful prediction
  - Combined with other factors, college major could provide information for prediction
  - College major is useful but not vital

- This study only provides a glimpse of the relationship between college major and geographical mobility
- Further Questions:
  - How does original location influence mobility? What role does it play
  - Does a specific category of college major provide great opportunity of social/geographical mobility?
  - e.g. computational social science ©
  - The association between social mobility & geographical mobility?

#### Hypotheses

#### H1: Location Dependence

- Original location has impact on geographical mobility
  - People from different regions may have different probabilities of mobility

#### H2: Influence of College Major

- Majors of college education has impact on whether geographical mobility occurs
- People with different college majors may have different probabilities of mobility

Results of Logistic Regression

-5.04e-05

0.00292\*\*\*

-0.0418\*\*\*

0.0160\*\*\*

0.292\*\*\*

0.0281\*\*\*

0.0685\*\*\*

**VARIABLES** 

Female

Black

Asian

Hispanic

Log(Income) with I\

Stable Relationship

Baseline: New England Region

Middle Atlantic

West North

South Atlantic

**East South Central** 

**West South Central** 

**Mountain Region** 

Foreign Country

Sci/Tech Skills

majors.

Method

Social Sciences Skills

Constant

R-squared

Observations

Pacific & US Territory

Dependent variable: Whether Moved

-0.000455\*

0.00157\*\*\*

-0.0241\*\*\*

-0.0174\*\*\*

0.00750\*

-0.00322

0.0154\*\*\*

-0.0117

-0.0510\*\*\*

-0.0575\*\*\*

-0.117\*\*\*

-0.0212\*

-0.130\*\*\*

-0.0288\*\*\*

-0.185\*\*\*

0.590\*\*\*

0.336\*\*\*

90,660

0.275

-0.000455\*

0.00178\*\*\*

-0.0142\*\*\*

-0.0183\*\*\*

0.00226

-0.00546

0.0151\*\*\*

-0.0112

-0.0496\*\*\*

-0.0556\*\*\*

-0.116\*\*\*

-0.0194\*

-0.0285\*\*\*

-0.186\*\*\*

0.591\*\*\*

0.0493\*\*\*

0.0426\*\*\*

0.289\*\*\*

90,660

0.277

## Data & Variables

NSCG with 91,000 observations:

#### The 2015 National Survey of College Graduates **Variables Description**

Whether Moved For logistic regression and prediction tree. 1 if moved, 0 if not Skills required by For college major classification. Categorical, types of skills

#### required by respondent's current job **Independent Variables**

**Dependent Variables** 

Categorical, 20 college major categories Continuous, age of respondents 1 if the respondent is female, 0 if is male Categorical, race of respondents 1 if in a stable romantic relationship, 0 if not Relationship Categorical, 1 to 9 for U.S. regions, 10 for foreign countries Continuous, logged annualized income in dollars Income Job Tenure Instrumental variable for income. Categorical, job tenure

#### Methods

#### Techniques:

- Logistic Regression: hypotheses testing
- Decision Tree: classification & prediction

#### Steps:

- College majors classification using tree model
- Hypotheses testing with logistic regression with instrumental variable
- Visualization & prediction of mobility with tree model

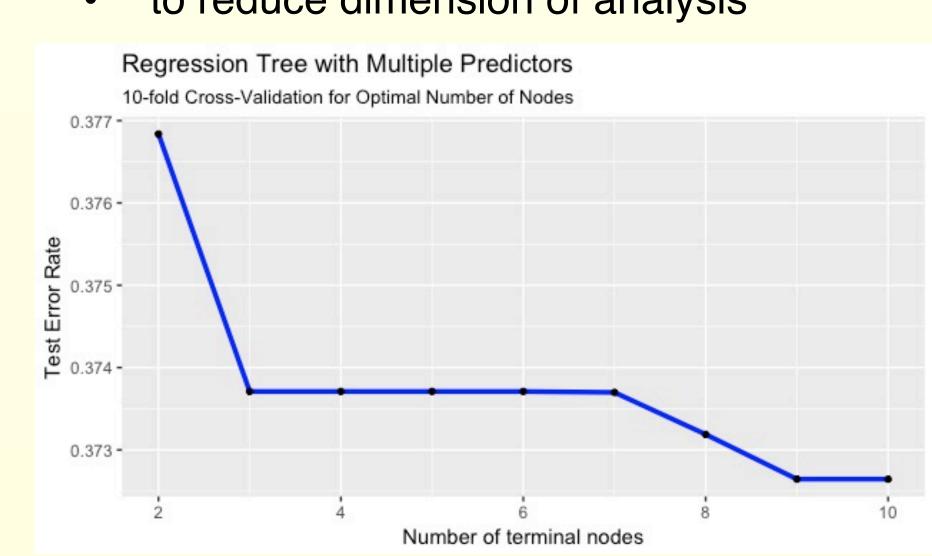
#### Tree Model: Visualization & Prediction

#### Use tree models to:

- (1) Visualize the relationship between college major and geographical mobility
- (2) Predict whether individuals would move, given college major
- (3) Predict whether individuals would move, given college major and demographic factors

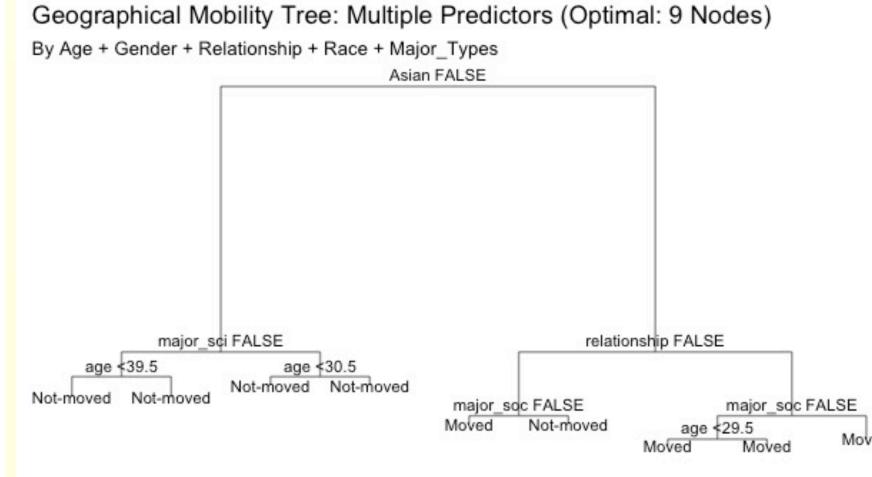
#### Use the classified college major:

to reduce dimension of analysis



# major\_sci FALSE

Geographical Mobility Tree: Single Predictor (All Nodes)



#### References

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[3] Bernard, A., Bell, M., & Charles-Edwards, E. (2014). Life-Course Transitions and the Age Profile of Internal Migration. Population and Development Review, 40(2), 213-239.

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[6] Robst, J. (2007). Education and job match: The relatedness of college major and work. Economics of Education Review, 26(4),

 More advanced techniques, such as [7] Wolniak, G. C., Seifert, T. A., Reed, E. J., & Pascarella, E. T. (2008). spatial analysis tools/models, could College majors and social mobility. Research in Social Stratification and Mobility, 26(2), 123-139.

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