# STOR 455 Homework 7

25 points - Due Friday 4/1 9:00am

**Are Emily and Greg More Employable Than Lakisha and Jamal?**

Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. *American Economic Review, 94*(4), pp. 991-1013.

*Abstract*

We perform a field experiment to measure racial discrimination in the labor market. We respond with fictitious resumes to help-wanted ads in Boston and Chicago newspapers. To manipulate perception of race, each resume is randomly assigned either a very African American sounding name or a very White sounding name. The results show significant discrimination against African-American names: White names receive 50 percent more callbacks for interviews. We also find that race affects the benefits of a better resume. For White names, a higher quality resume elicits 30 percent more callbacks whereas for African Americans, it elicits a far smaller increase. Applicants living in better neighborhoods receive more callbacks but, interestingly, this effect does not differ by race. The amount of discrimination is uniform across occupations and industries. Federal contractors and employers who list "Equal Opportunity Employer" in their ad discriminate as much as other employers. We find little evidence that our results are driven by employers inferring something other than race, such as social class, from the names. These results suggest that racial discrimination is still a prominent feature of the labor market.

| Variables | Descriptions |
|---|---|
| *call* | Was the applicant called back? (1 = yes; 0 = no) |
| *ethnicity* | indicating ethnicity (i.e., "Caucasian-sounding" vs. "African-American sounding" first name) |
| *sex* | indicating sex |
| *quality* | Indicating quality of resume. |
| *experience* | Number of years of work experience on the resume |
| *equal* | Is the employer EOE (equal opportunity employment)? |

Use the *ResumeNames455* found at the address below:

https://raw.githubusercontent.com/JA-McLean/STOR455/master/data/ResumeNames455.csv

1) An Equal Opportunity Employer (EOE) is an employer who agrees not to discriminate against any employee or job applicant because of race, color, religion, national origin, sex, physical or mental disability, or age. Construct a logistic model to predict if the job applicant was called back using *ethnicity*, *equal*, *sex*, and the interactions between *ethnicity* and *equal*, and *sex* and *equal* as the predictor variables.

2) Conduct a drop in deviance hypothesis test to determine the effectiveness of the *equal* terms in the model constructed in the previous question. Cite your hypotheses, p-value, and conclusion in context.

3) Based on your model from question 1, What is the probability of a male applicant with a "Caucasian-sounding" name getting a call back from an Equal Opportunity Employer (EOE)? What is the prob-

ability of a female applicant with an "African-American sounding" name getting a call back from an Equal Opportunity Employer (EOE)?

4) Does the number of years of work experience impact the relationship between *ethnicity*, *sex*, and an applicant getting called back? Construct a logistic model to predict if the job applicant was called back using *ethnicity*, *sex*, *experience*, and the interactions between *ethnicity* and *experience*, and *sex* and *experience* as the predictor variables.

5) Conduct a drop in deviance hypothesis test to determine the effectiveness of the *experience* terms in the model constructed in the previous question. Cite your hypotheses, p-value, and conclusion in context.

6) Construct a plot with *experience* on the horizontal axis and *call* on the vertical axis. Add to this plot four curves, made from the model constructed in question 4. Comment on the similarities or differences between the four curves.

   - For an male applicant with a "Caucasian-sounding" name, add to the plot a red logistic curve showing the probability of getting a call back based on experience.
   - For an female applicant with a "Caucasian-sounding" name, add to the plot a green logistic curve showing the probability of getting a call back based on experience.
   - For a male applicant with an "African-American sounding" name, add to the plot a blue logistic curve showing the probability of getting a call back based on experience.
   - For a female applicant with an "African-American sounding" name, add to the plot a orange logistic curve showing the probability of getting a call back based on experience.

7) Use an appropriate model selection method to construct a best model to predict if the job applicant was called back using any of the variables as predictors (except for *name*). You may also use interaction terms. Why would you not want to use *name* as a predictor?