

# Identifying Disparities in Medical Education Using Big Data



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9/19/2016**

# Agenda



- **Medical Student Performance Evaluations (MSPE)**
- **Alpha Omega Alpha (AOA) Selection**
- **Future Research**

# Our Dataset



| <b>Study Cohort</b>                    |              |
|--|--------------|
| <b>N=</b>                              | <b>6,000</b> |
| <b>Sex (Female)</b>                    | <b>45%</b>   |
| <b>Race</b>                            |              |
| <b>Black</b>                           | <b>7%</b>    |
| <b>Hispanic</b>                        | <b>4%</b>    |
| <b>Asian</b>                           | <b>24%</b>   |
| <b>White</b>                           | <b>55%</b>   |
| <b>USMLE Step 1 (mean)</b>             | <b>237</b>   |
| <b>USMLE Step 2 (mean)</b>             | <b>247</b>   |
| <b>AOA %</b>                           | <b>19%</b>   |
| <b>Top 40 Med School (NIH) Funding</b> | <b>36%</b>   |
| <b>%Ph.D</b>                           | <b>4%</b>    |

# Our Dataset



|  | <b>Study Cohort</b> | <b>US Seniors Nationally</b> |
|--|---------------------|------------------------------|
| <b>N=</b>                              | <b>6,000</b>        | <b>16,362</b>                |
| <b>Sex (Female)</b>                    | <b>45%</b>          | <b>47%</b>                   |
| <b>Race</b>                            |                     |                              |
| <b>Black</b>                           | <b>7%</b>           | <b>5%</b>                    |
| <b>Hispanic</b>                        | <b>4%</b>           | <b>5%</b>                    |
| <b>Asian</b>                           | <b>24%</b>          | <b>21%</b>                   |
| <b>White</b>                           | <b>55%</b>          | <b>58%</b>                   |
| <b>USMLE Step 1 (mean)</b>             | <b>237</b>          | <b>229</b>                   |
| <b>USMLE Step 2 (mean)</b>             | <b>247</b>          | <b>242</b>                   |
| <b>AOA %</b>                           | <b>19%</b>          | <b>15%</b>                   |
| <b>Top 40 Med School (NIH) Funding</b> | <b>36%</b>          | <b>33%</b>                   |
| <b>%Ph.D</b>                           | <b>4%</b>           | <b>4%</b>                    |

# MSPE or Dean's Letters



# Word Categories



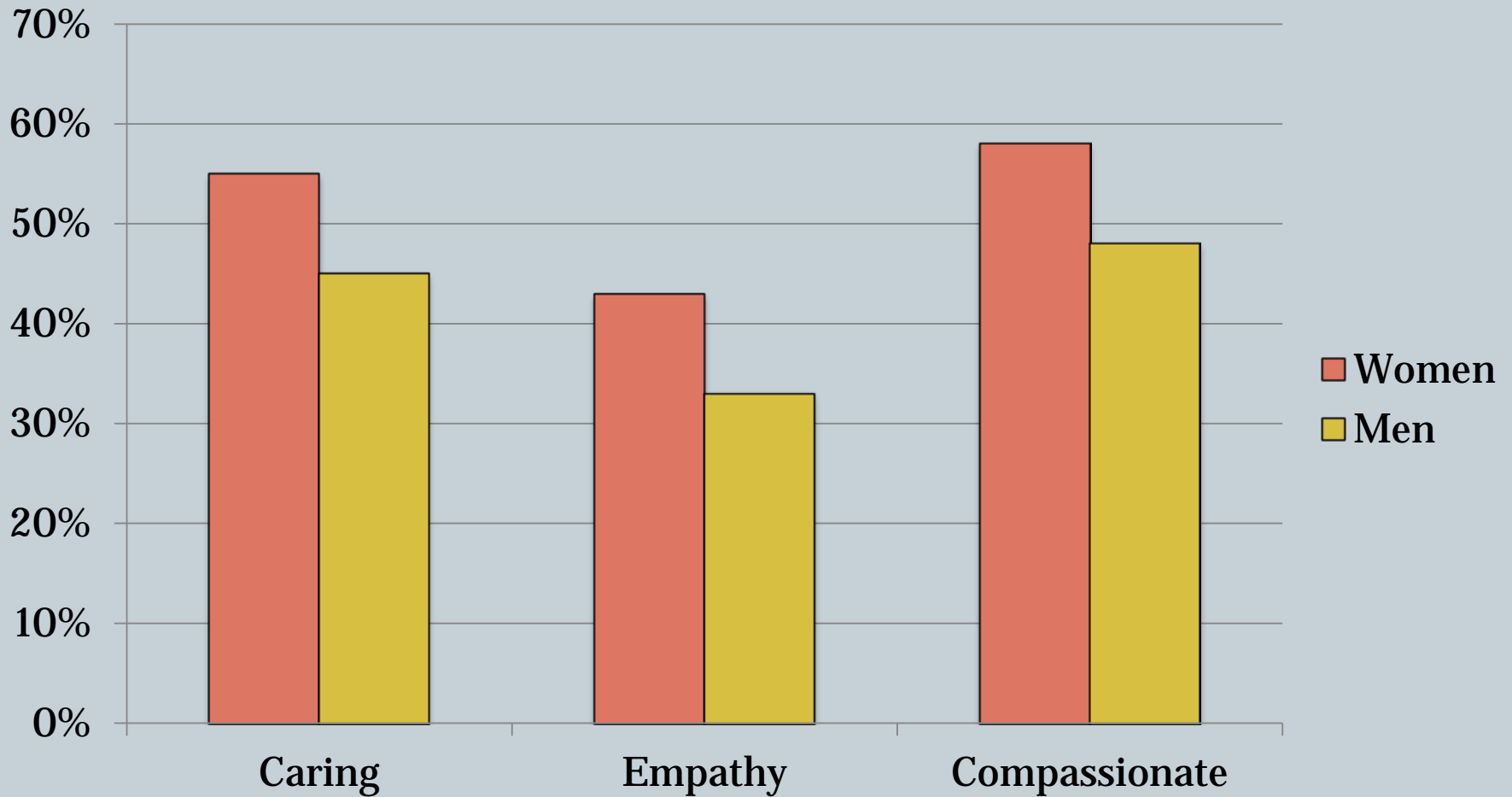
- **Standout Words**
- **Ability**
- **Grindstone**
- **Compassion**

# Methods



- Chi-squared tests performed to analyze the frequency with which words from the four thematic categories were used at least once to describe applicants by sex and race/ethnicity
- Bonferroni adjustment incorporated to account for multiple comparisons.

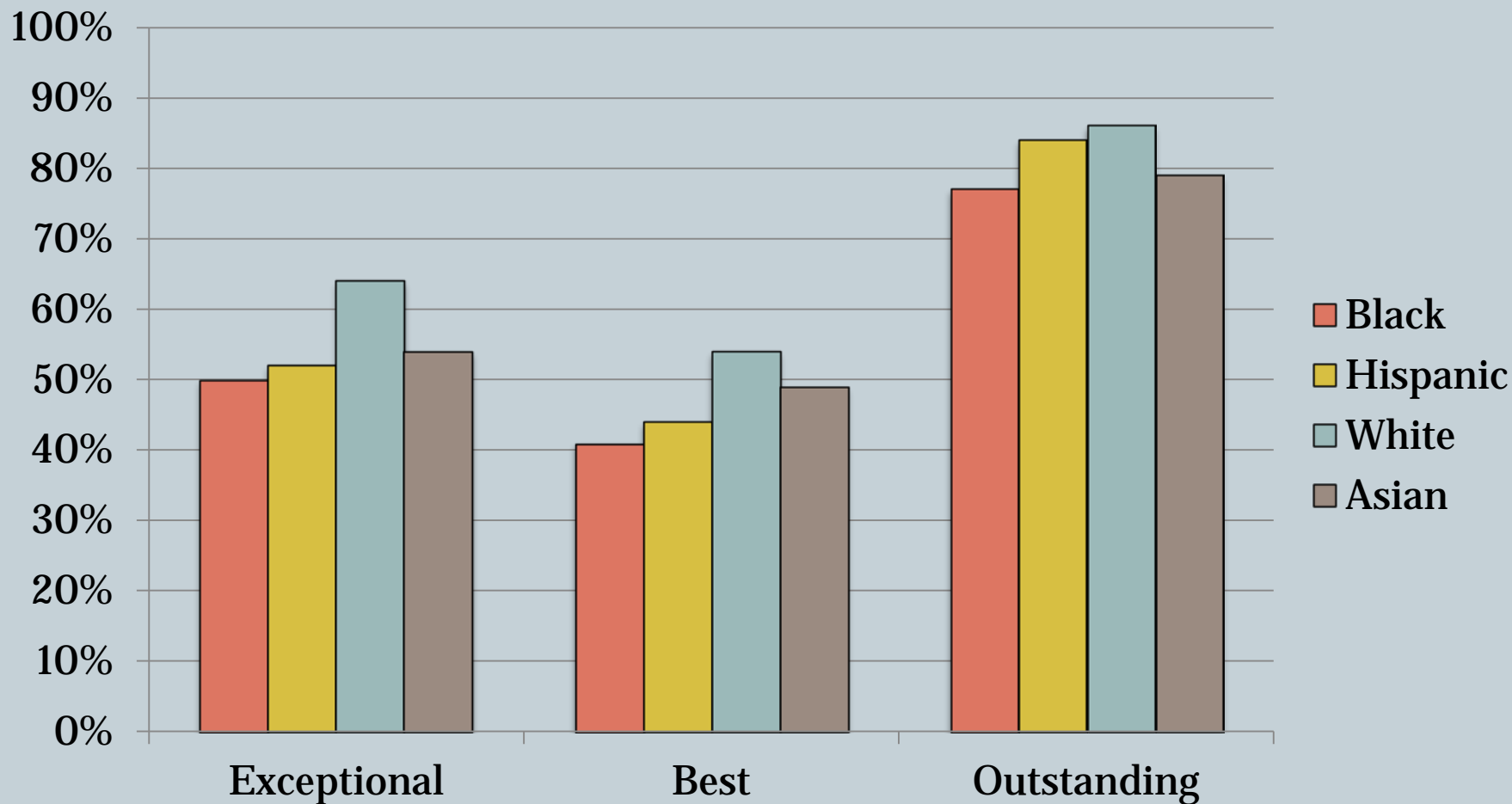
# Results by Sex



$p < 0.001$

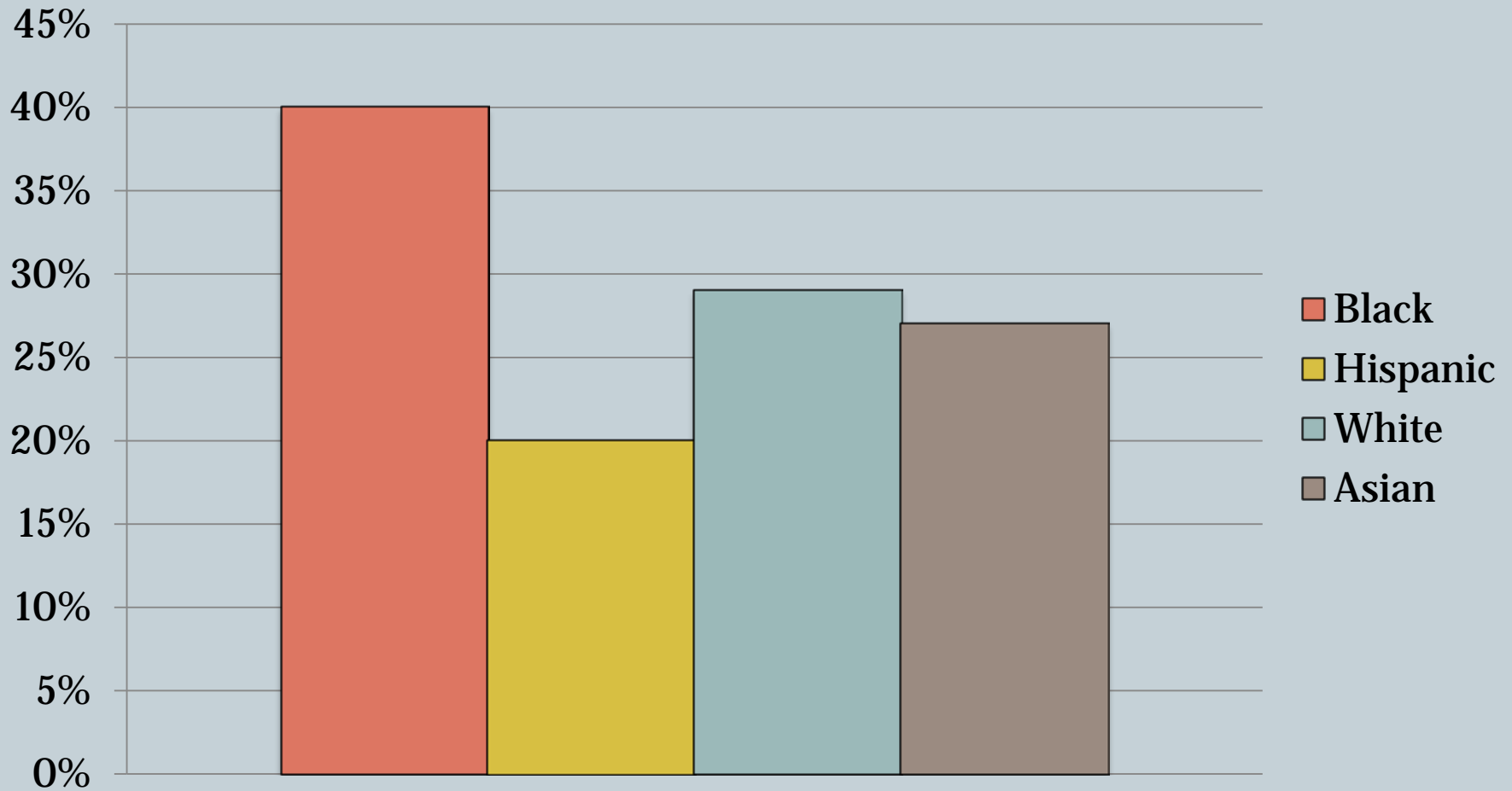


# Results by Race/Ethnicity



$p < 0.001$

# Use of Adjective “Competent”



$p < 0.001$

# Implications



# Selection into Alpha Omega Alpha (AOA)



# Why AOA Matters



## **AOA Members**

- **More likely to match into residency of choice**
- **More likely to pursue a career in Academic Medicine**
- **More likely to attain the rank of full professor, Dean, and Chair**

# Methods



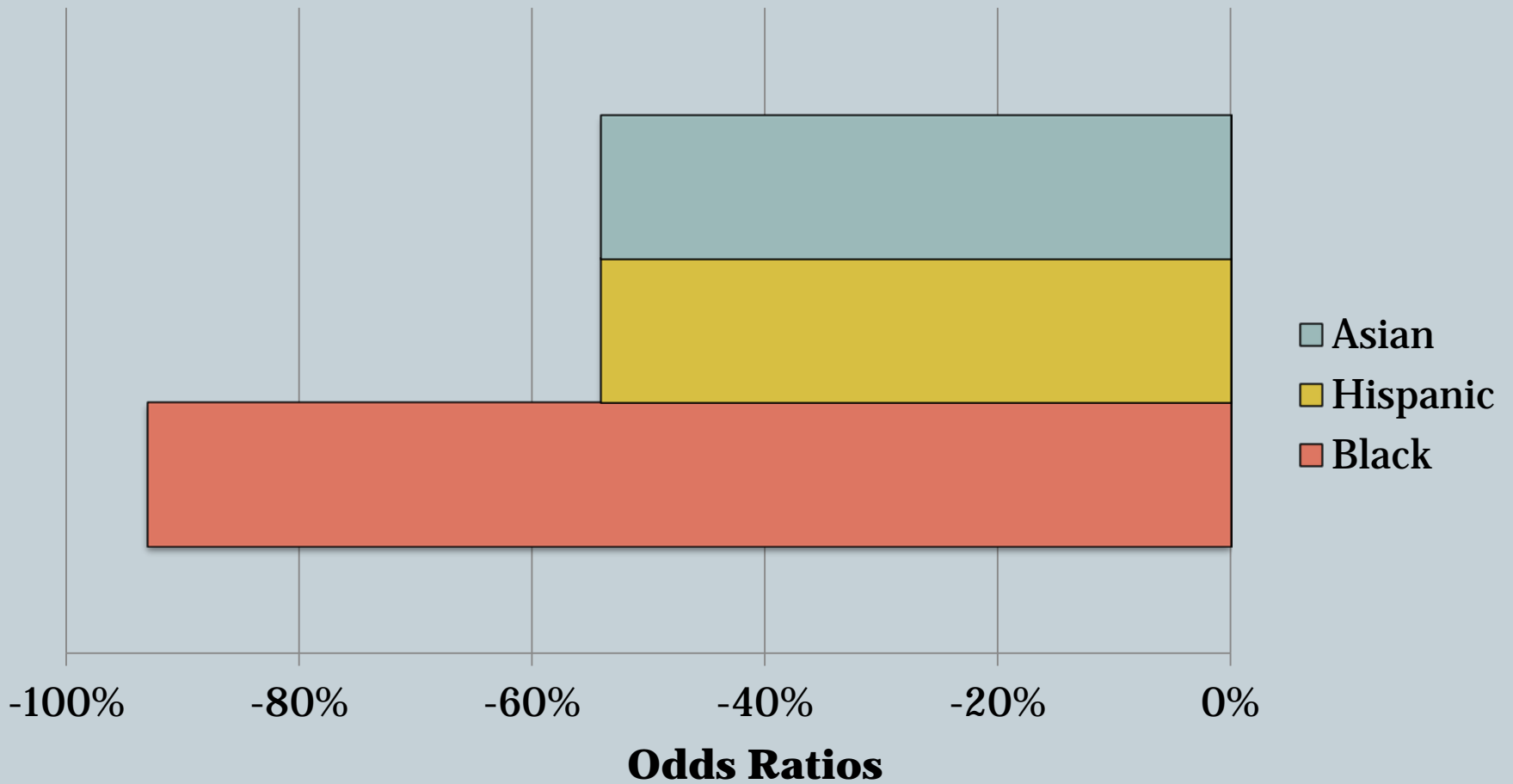
- **Retrospective cohort study**
- **Compared differences in demographic characteristics between AOA and non-AOA applicants**
- **Performed multivariable logistic regression**

# AOA and non-AOA Applicant Characteristics



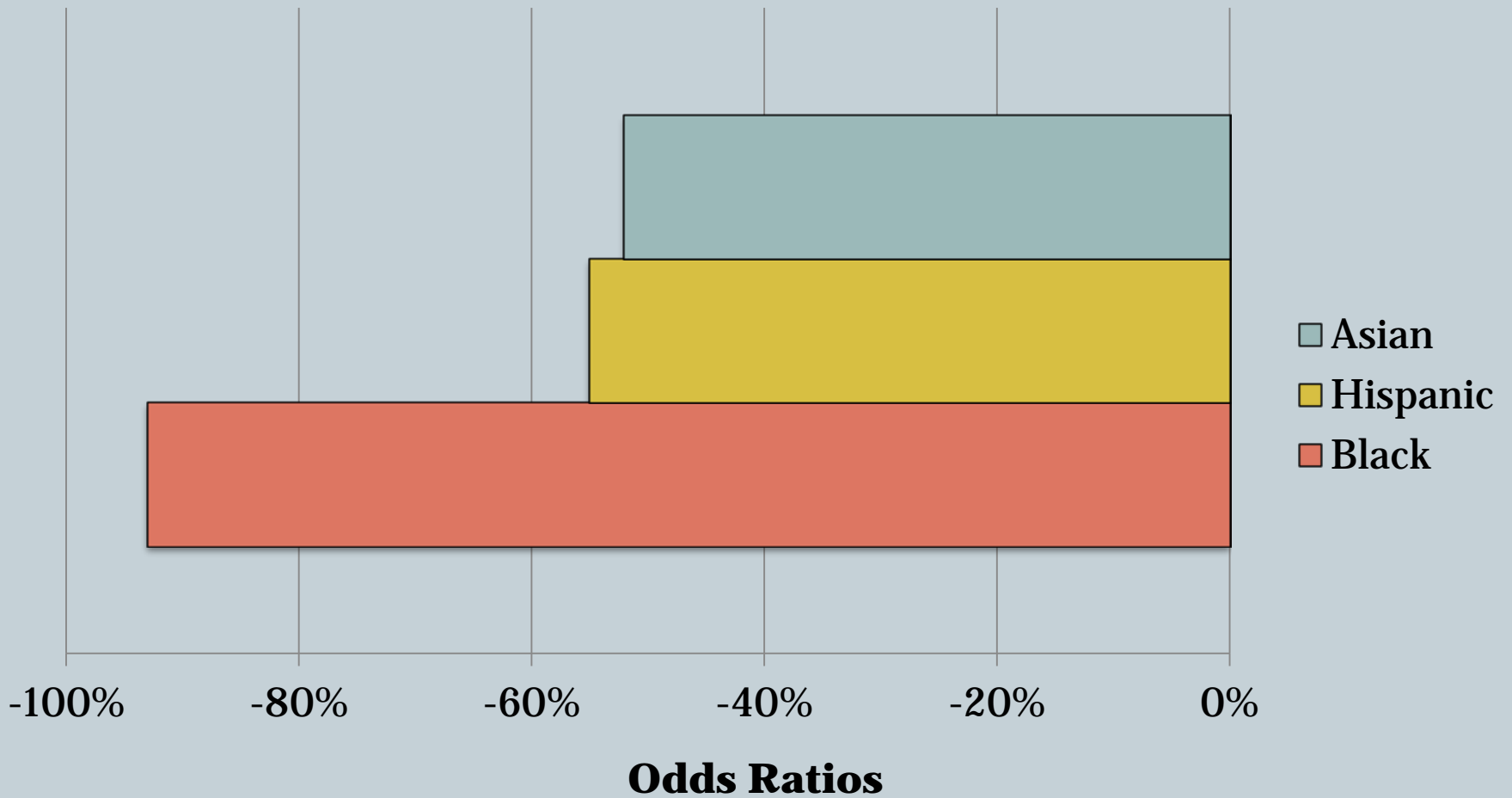
|                             | <b>Non-AOA</b> | <b>AOA</b> | <b><i>p</i>-value</b> |
|-----------------------------|----------------|------------|-----------------------|
| <b>Race/Ethnicity</b>       |                |            | <b>&lt;0.001</b>      |
| White                       | 51%            | 71%        |                       |
| Black                       | 7%             | 1%         |                       |
| Hispanic                    | 4%             | 3%         |                       |
| Asian                       | 28%            | 18%        |                       |
| <b>Sex (Female)</b>         | 47%            | 42%        | <b>&lt;0.001</b>      |
| <b>USMLE Step 1</b>         | 251            | 231        | <b>&lt;0.001</b>      |
| <b>Master's Degree</b>      | 19%            | 13%        | <b>&lt;0.001</b>      |
| <b>PhD</b>                  | 4%             | 2%         | <b>0.006</b>          |
| <b>Gold Humanism Member</b> | 9%             | 19%        | <b>&lt;0.001</b>      |
| <b>Publications</b>         | 30%            | 38%        | <b>&lt;0.001</b>      |
| <b>Leadership hours</b>     | 367            | 375        | <b>0.83</b>           |
| <b>Service hours</b>        | 1496           | 1356       | <b>0.09</b>           |

# Unadjusted Model

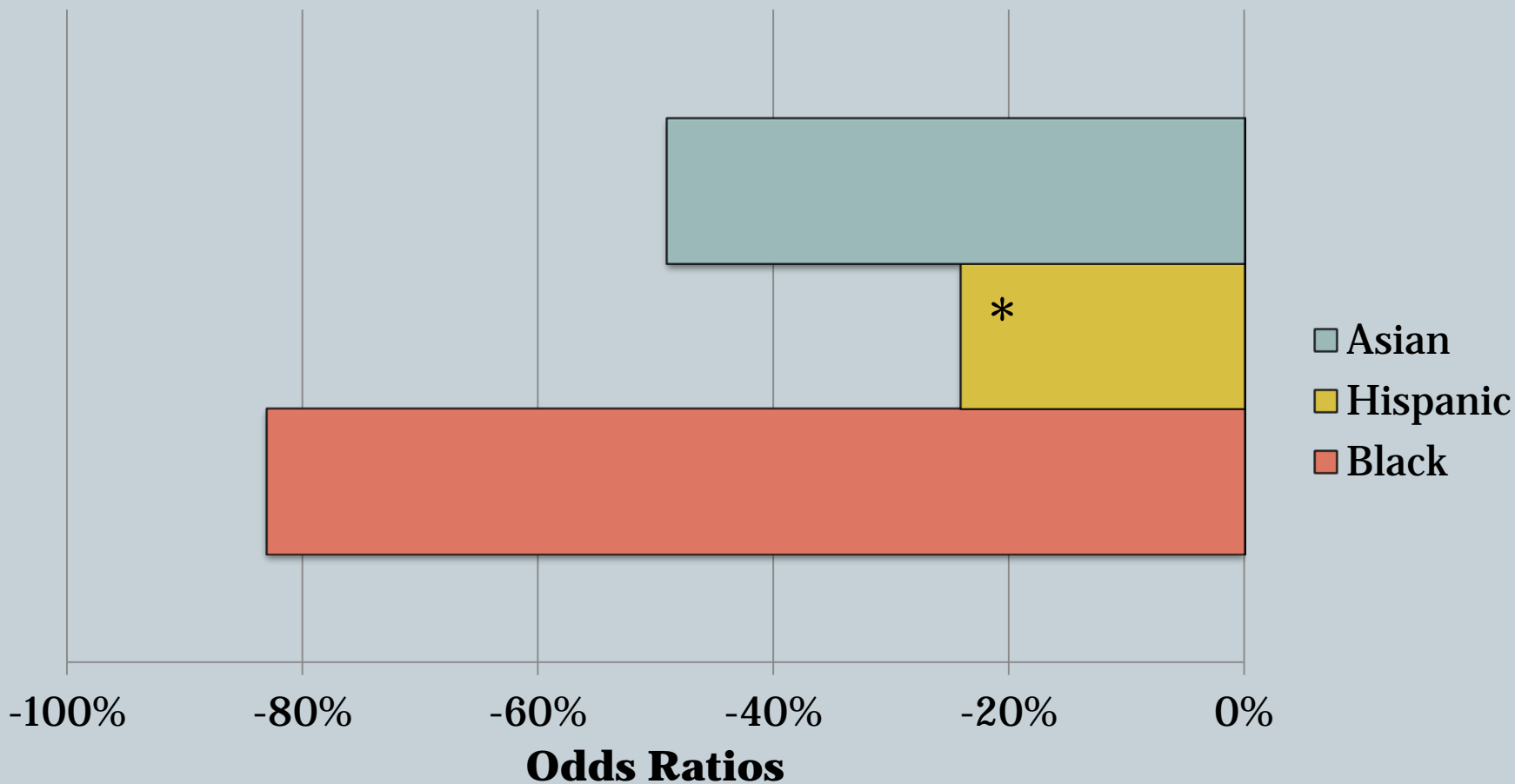




# Adjusted with AOA Proxies



# Fully Adjusted Model



# Implications



# Future Work



# Questions

