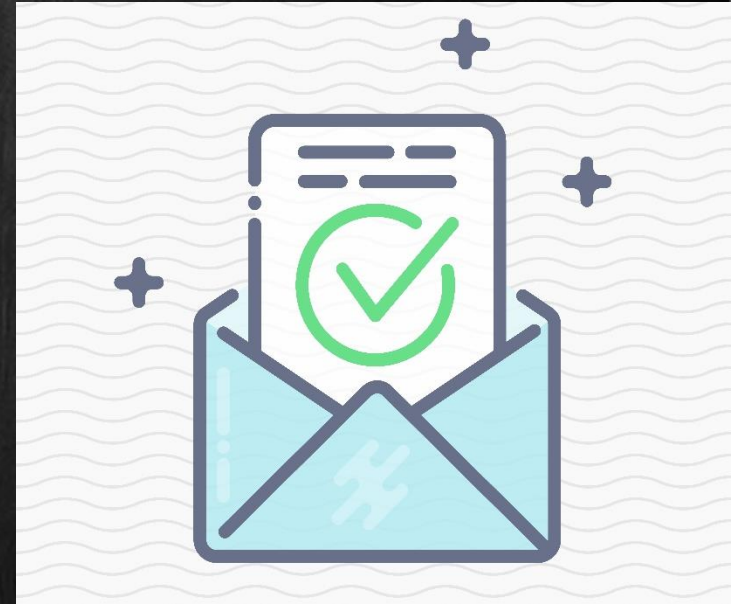


# Predicting PA Program Matriculation Among Diverse Applicants



**Cynthia X. Yuen MA**  
PAEA

**Trenton Honda PhD, MMS, PA-C**  
University of Utah

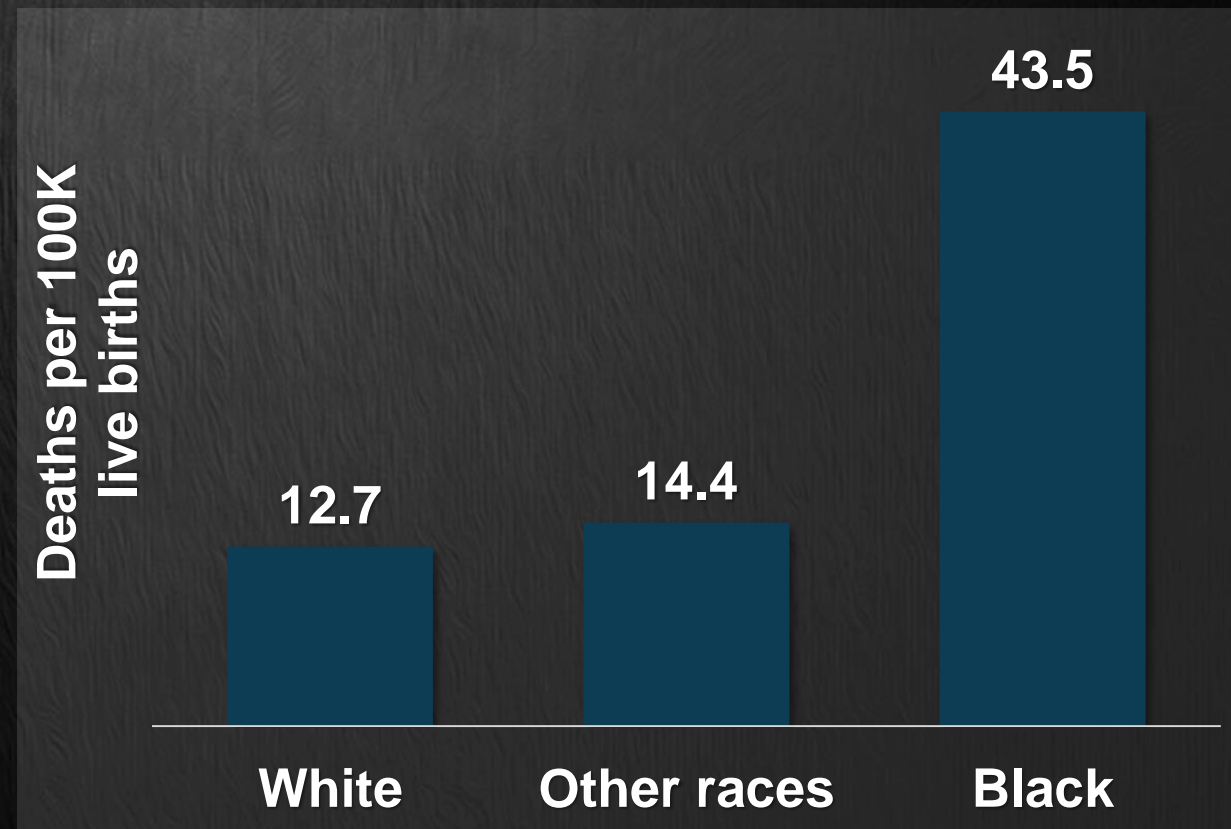


# Health Disparities Harm Patients

## Disparities in quality of care

- Across disease areas, minorities less likely than Whites to receive needed services<sup>1</sup>
- Physicians 2x more likely to underestimate Black patients' pain<sup>2</sup>
- Clinicians' racial biases → poorer quality of care, especially among Black patients<sup>3</sup>

## Disparities in health outcomes<sup>4,5</sup>



# **One Solution: Diverse Health Care Workforce<sup>1</sup>**

- **Minority clinicians more likely to<sup>2</sup>:**
  - **Practice in underserved areas**
  - **Serve patient populations with a higher percentage of minorities**
  - **Serve lower income patient populations**
  - **Practice in primary care**

# One Solution: Diverse Health Care Workforce

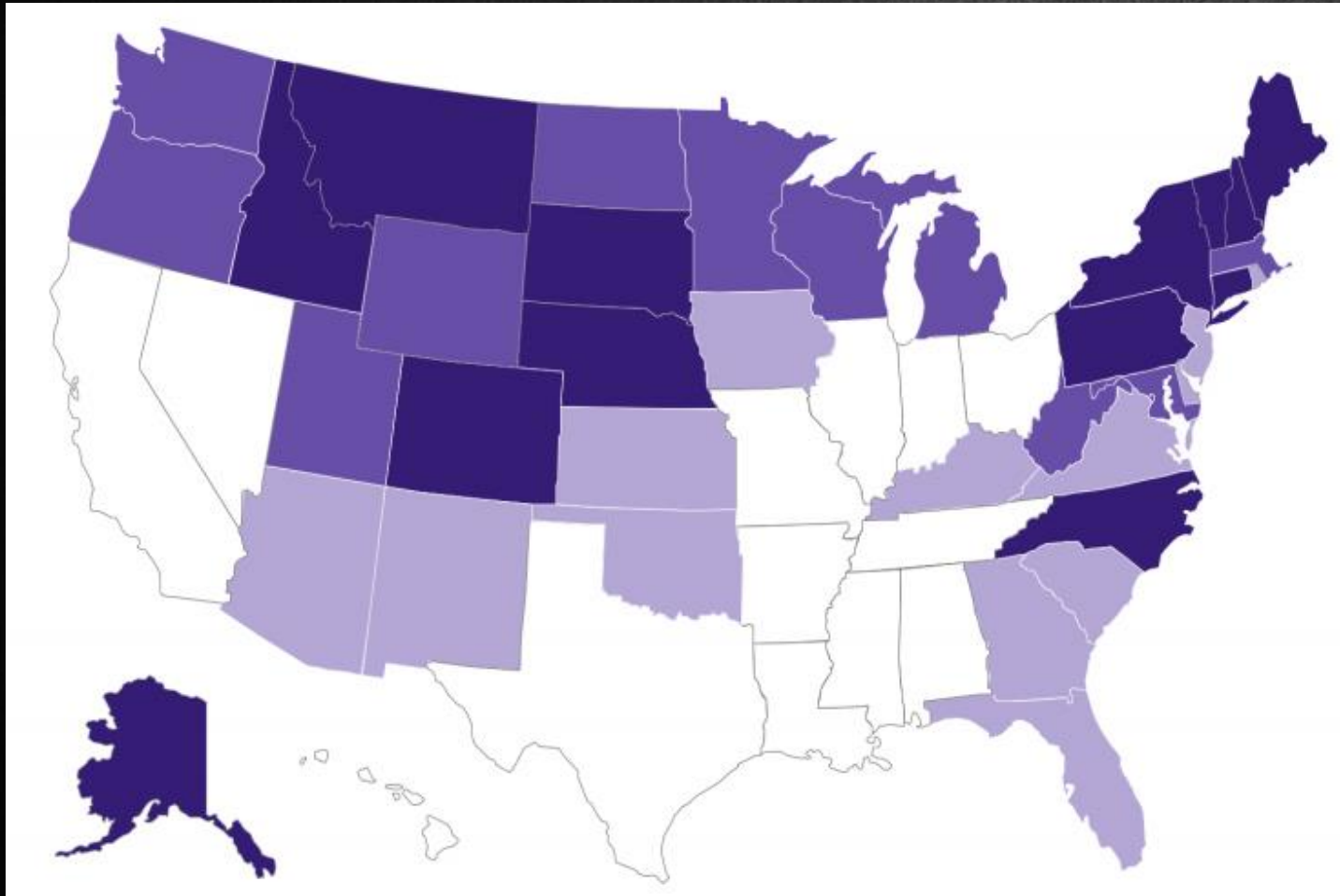
- Patients **want** and **benefit** from a diverse health care workforce:
  - Black and Hispanic patients preferentially seek same-race physicians<sup>1</sup>
  - Black and Hispanic patients report higher satisfaction with same-race physicians<sup>2</sup>
  - Black patients with same-race physicians more likely to report receiving preventive care during previous year<sup>2</sup>

# Other Aspects of Diversity

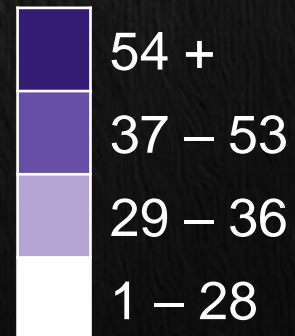
- Patients have **gender preferences** for their health care providers:
  - Gender preferences are stronger for those treating intimate/psychosocial health problems<sup>1</sup>
  - Differential symptom reporting by clinician sex<sup>2</sup>
- And **age preferences**:
  - 24% of patients treated in an Emergency Department reported a provider age preference<sup>3</sup>

# PA Workforce<sup>1</sup>

PA-Cs per 100K population (2016)



- 115K+ certified PAs
- 28% work in primary care, with many working in underserved areas
- Majority non-Hispanic White, trending younger, trending female



# Role of PA Programs

- Help foster a diverse medical workforce by **ensuring equal access to education** for students from diverse backgrounds

# Current Study

- Do odds of matriculation into PA school differ by student demographics?
  - Underrepresented minority (URM) status
  - Age
  - Gender



# 2015 – 2016 CASPA

**22,432**  
**applicants**

**7,162 (31.9%)**  
**matriculants**

# CASPA Application

## Demographics

- Race & ethnicity → URM
- Age
- Gender

## Academic achievement

- Undergraduate GPA
- GRE percentiles

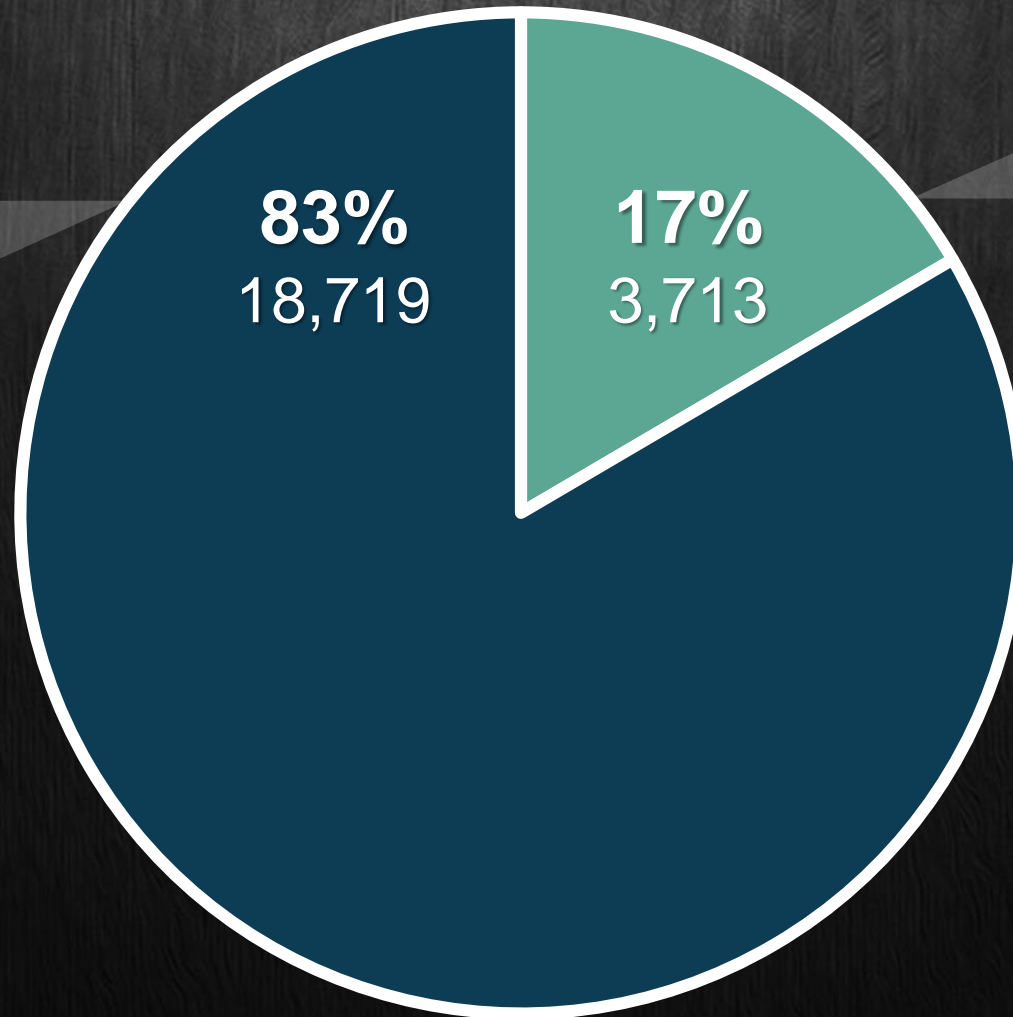
## Other covariates

- Number of designations
- Patient care hours

# URM Status

## Non-URMs

- **Non-Hispanic White**
- **Asian** (alone or in combination with White)



## URMs

- **Hispanic** (regardless of race)
- **Non-White**
- **Non-Asian**

# Age

Min = 18

Max = 65

$M = 25.9$

$SD = 5.8$

## Percentiles

25<sup>th</sup>

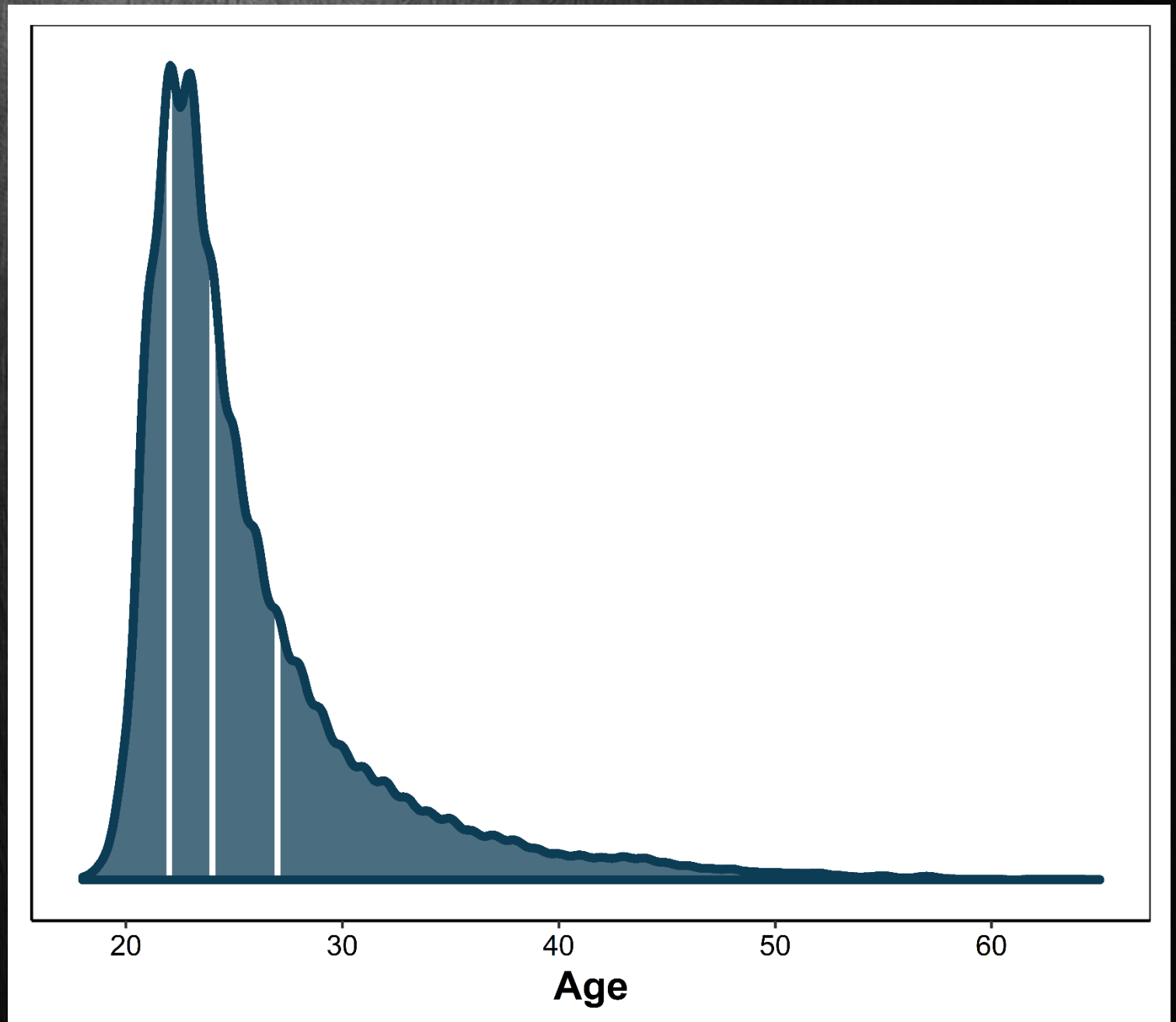
50<sup>th</sup>

75<sup>th</sup>

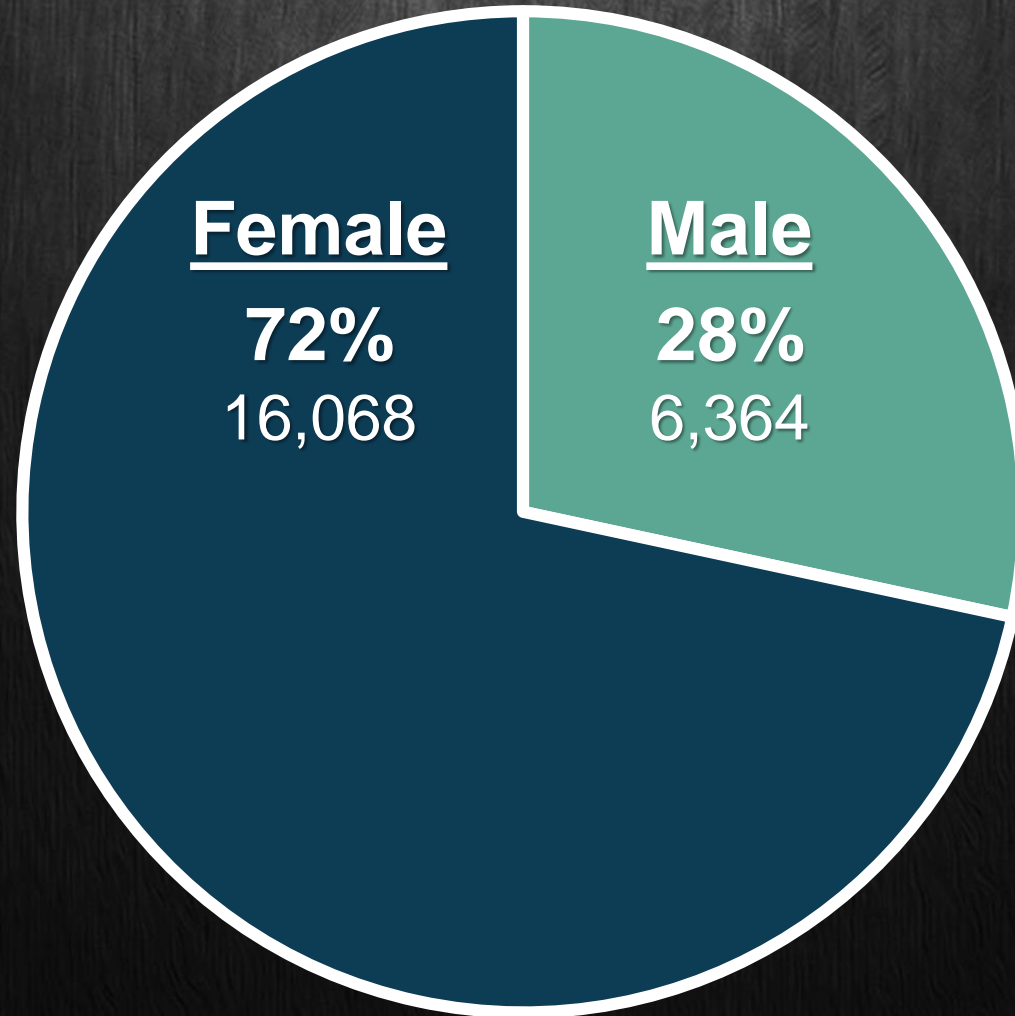
**22**

**24**

**27**

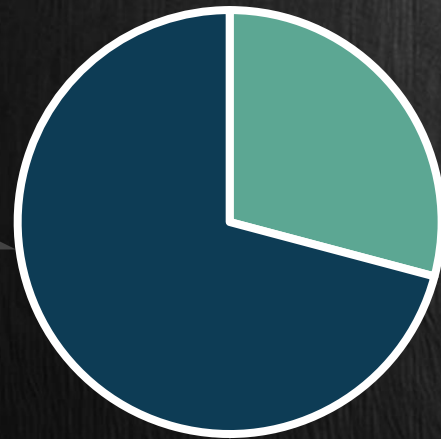


# Gender



# Academic Achievement

## GRE



GRE

71%  
15,897

No GRE

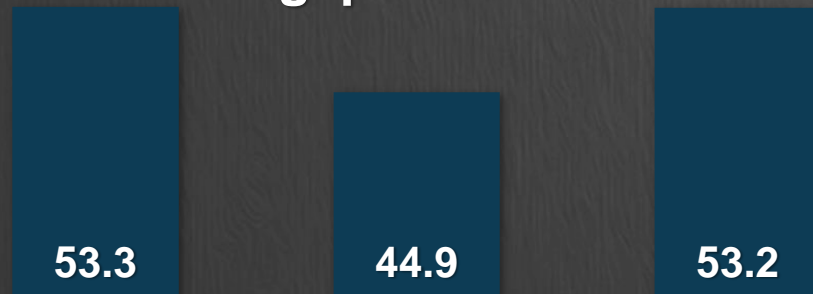
29%  
6,535

## GPA

Min = 1.39  
Max = 4.00

$M = 3.36$   
 $SD = 0.35$

### Avg. percentiles



Verbal Reasoning

Quantitative  
Reasoning

Analytic Writing

## Percentiles

25<sup>th</sup>

50<sup>th</sup>

75<sup>th</sup>

**3.14**

**3.39**

**3.62**

# Designations

Min = 1

Max = 77

*M* = 6.7

*SD* = 6.0

## Percentiles

25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>
2	5	9

# Patient Care



# Analytic Plan

1 Univariate diversity variable

2 Covariates

3 Other demographics

4 Academic achievement

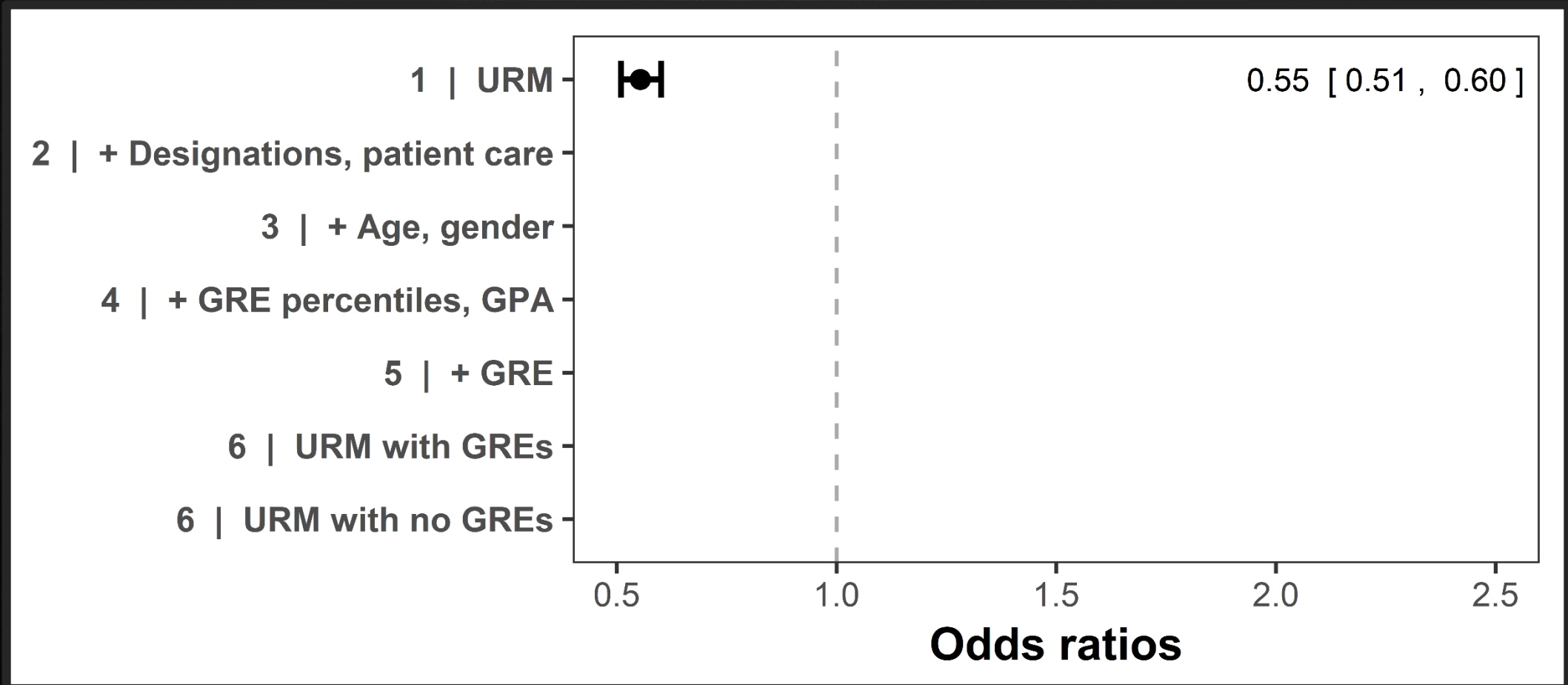
5 GRE01

6 GRE01 × diversity variable

Odds of  
matriculation

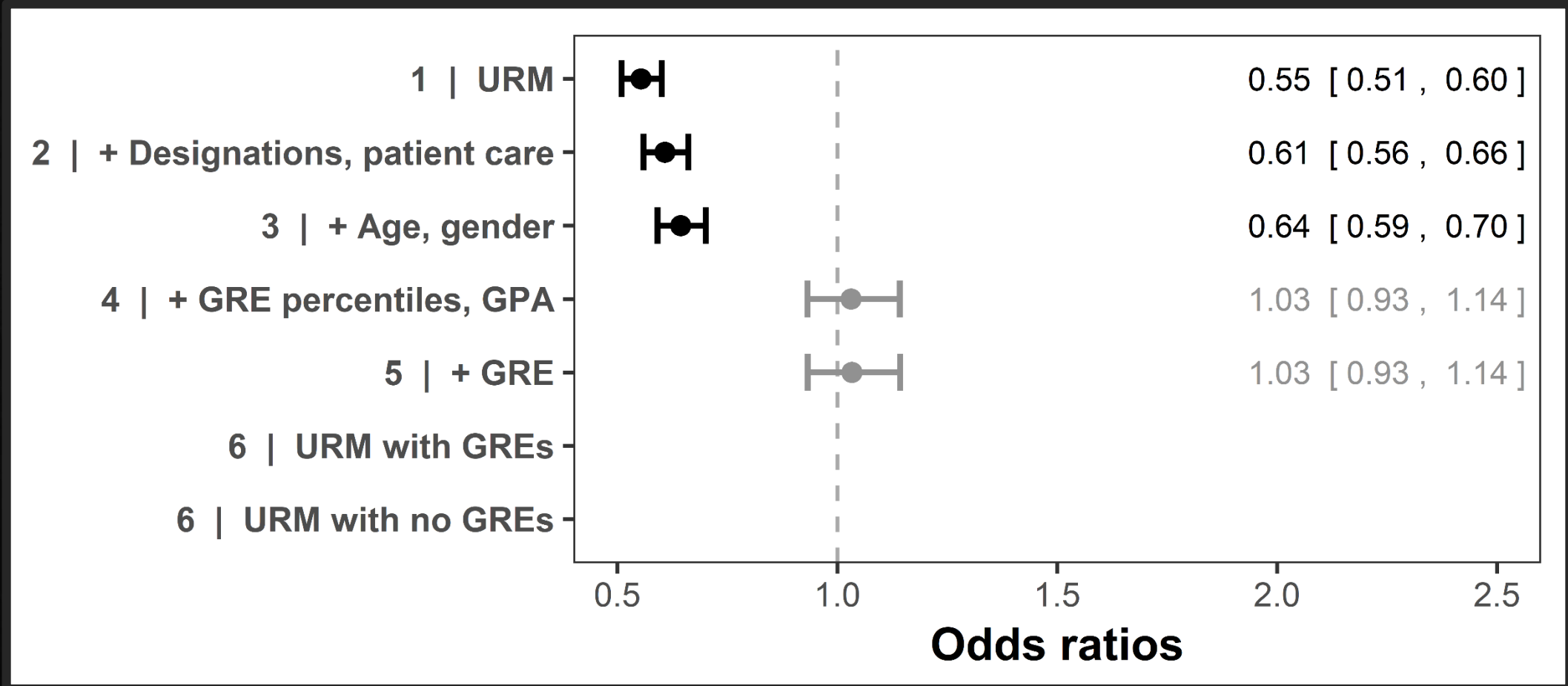


# URM Status



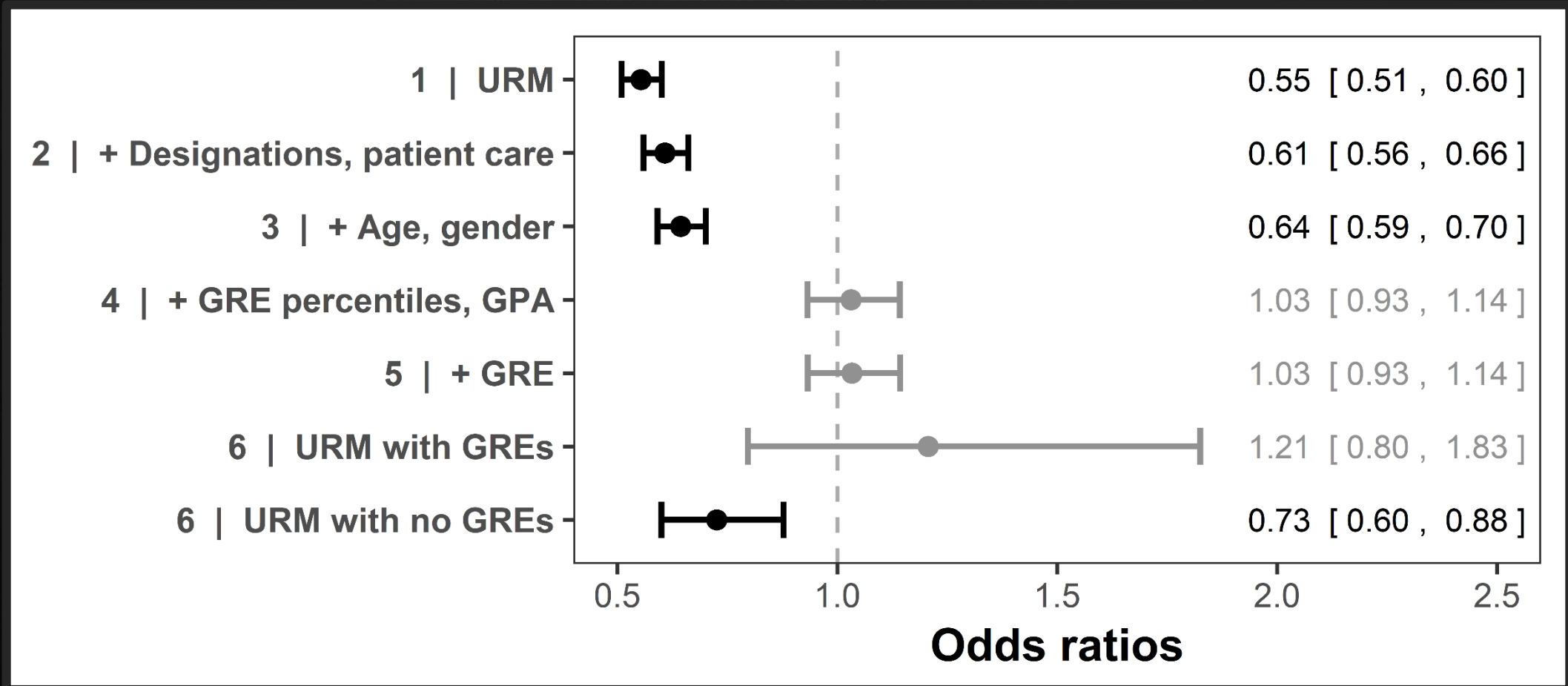
Odds of matriculation were **45% lower**  
for URM vs. non-URMs

# URM Status



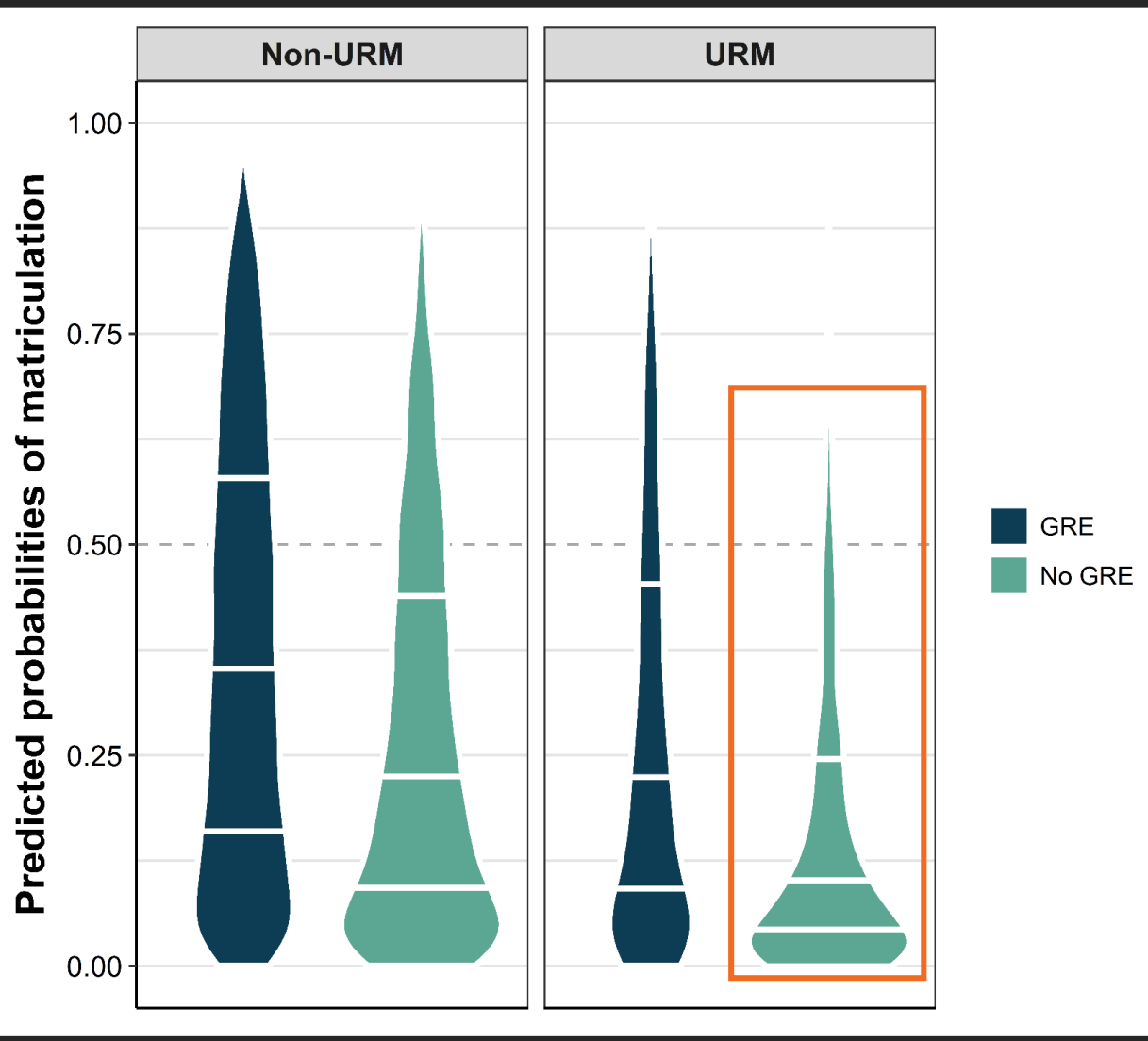
**Difference in odds of matriculation becomes non-significant after controlling for academic achievement**

# URM Status



Odds of a URM without GREs matriculating were **27% lower** than those of non-URMs

# URM Status



**URMs without GREs**  
had lower predicted  
probabilities of  
matriculation

# Age



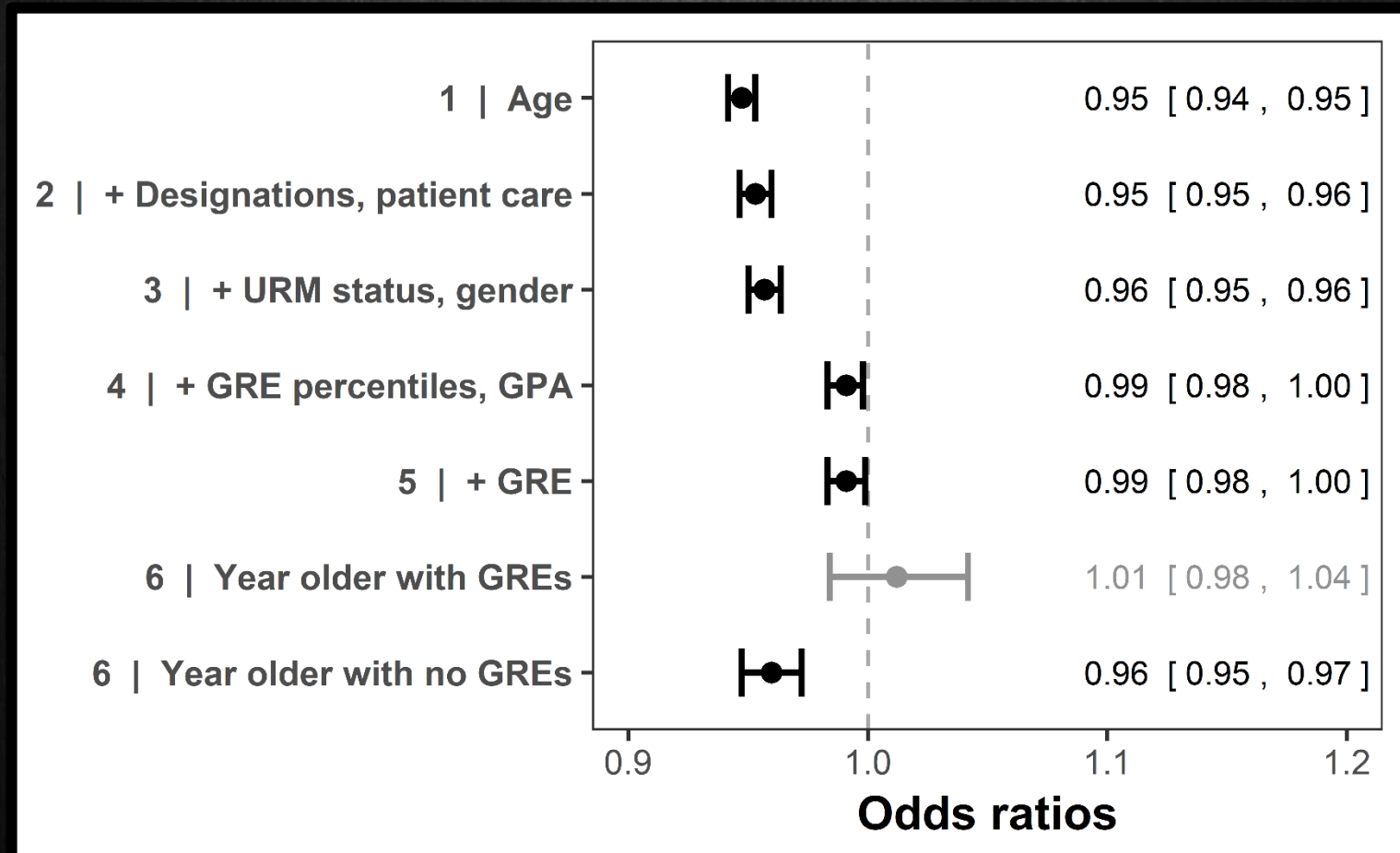
**Lower odds of matriculation for older applicants,  
decreasing 5% for each year over average age**

# Age



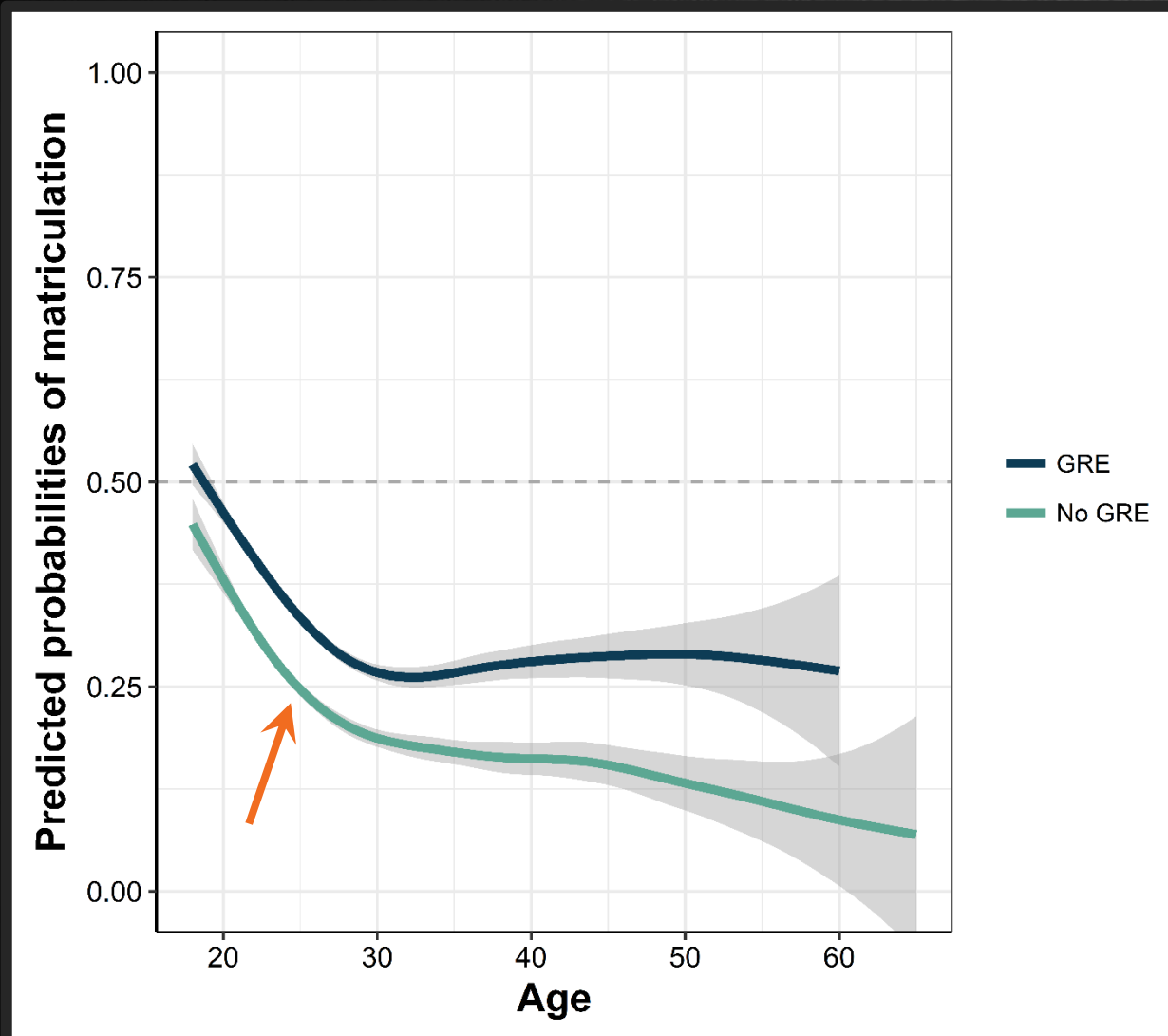
**Odds of matriculation for older applicants increase after adding covariates but remain significantly lower**

# Age



Significantly lower odds of matriculation only among **older applicants without GREs**

# Age

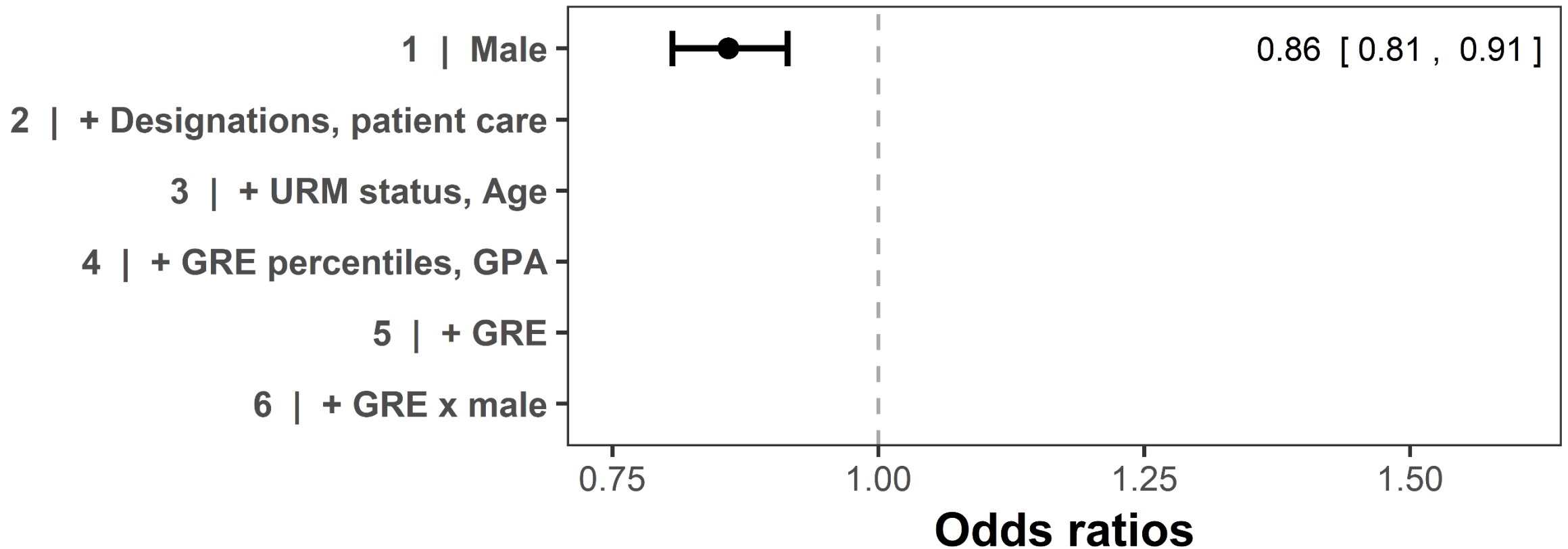


**Older applicants had lower predicted probabilities of matriculation**

**Effect especially pronounced for students without GRE scores**

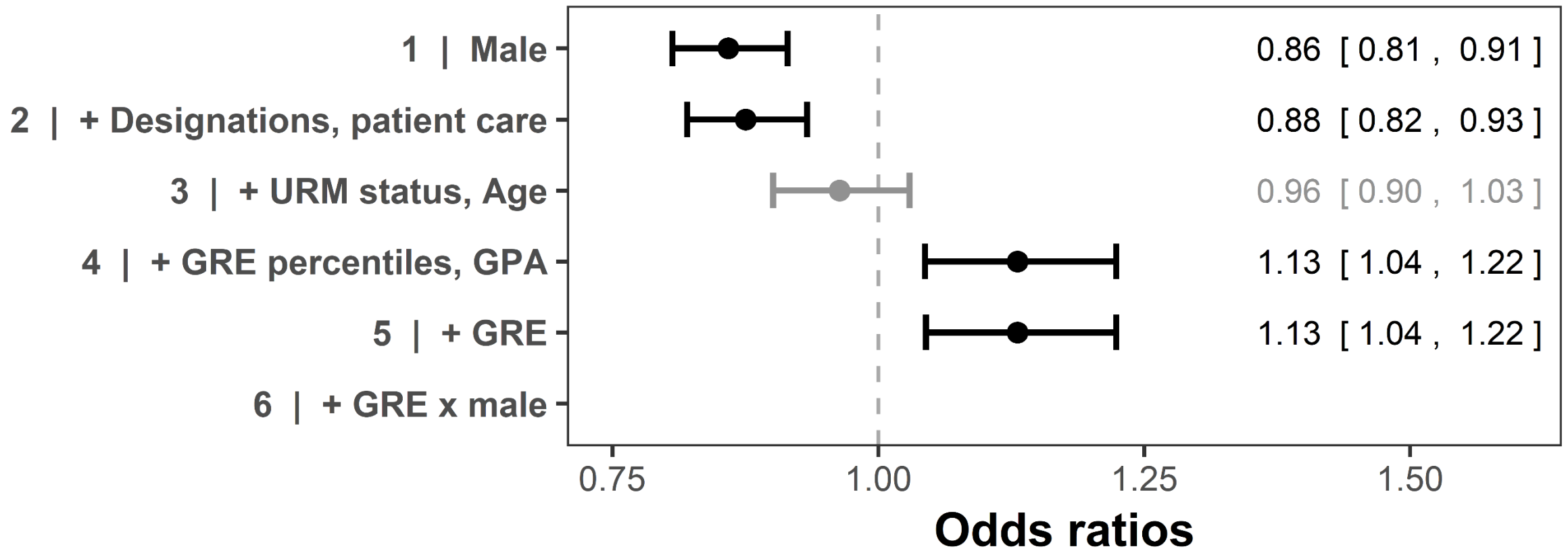


# Gender



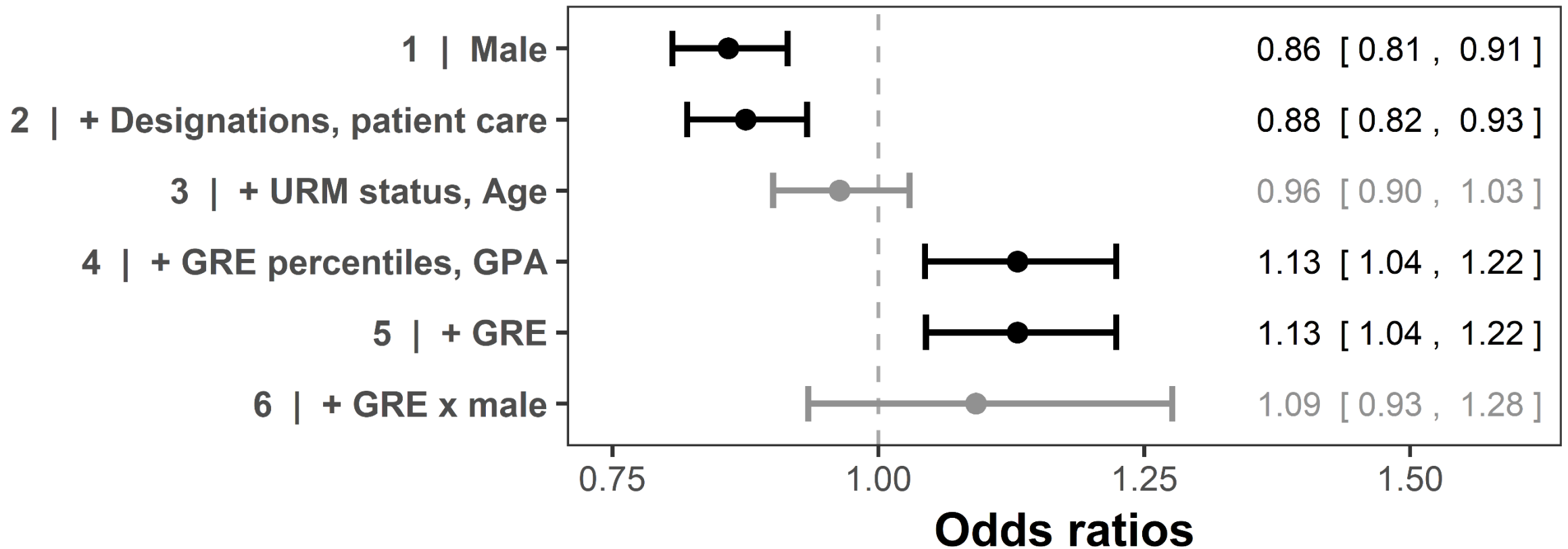
Odds of matriculation were **14% lower**  
for male vs. female applicants

# Gender



As covariates are added, pattern of results switch.  
Odds of matriculation become **13% higher** among males.

# Gender



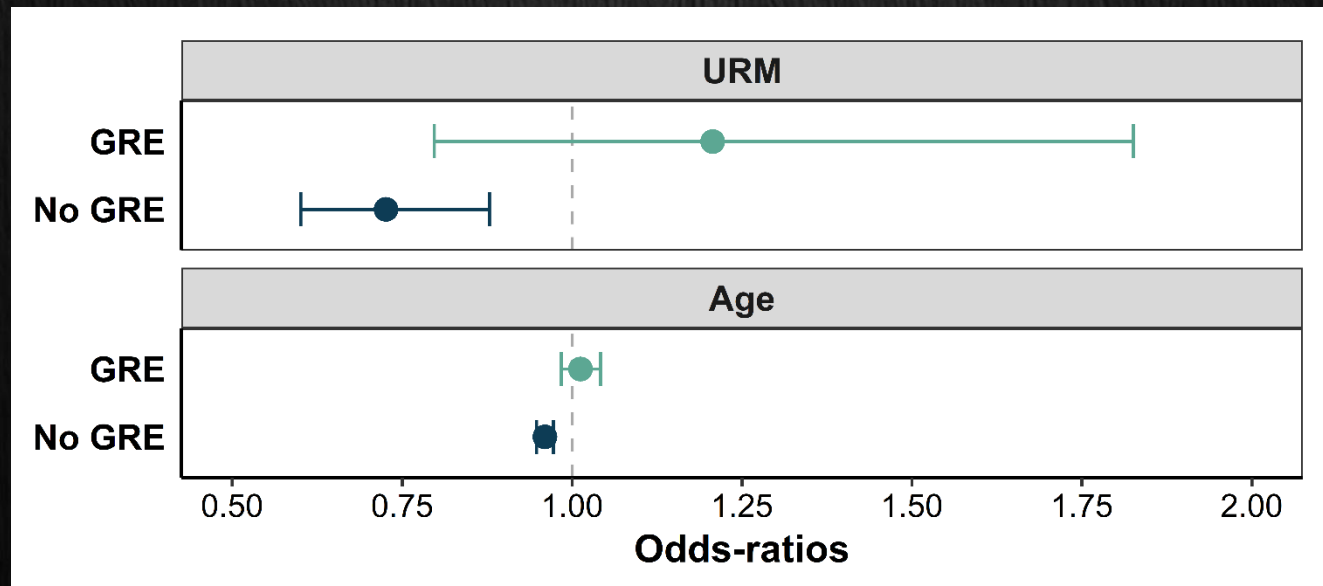
**Gender differences in odds of matriculation  
not contingent on having GREs**

# Summary

- On average, URMs, older applicants, males less likely to matriculate
- After controlling for key confounders, some patterns change:
  - URMs no less likely to matriculate
  - Older applicants remain less likely to matriculate
  - Males more likely to matriculate

# Summary

- Differences in odds of matriculation among URM and by age driven by GRE status
- URM and older applicants **without** GRE scores were less likely to matriculate into a PA program than those **with** GRE scores



# **Are GRE Requirements Hindering Diversity?**

- **Lack of current GREs limits possible pool of programs to apply to<sup>1</sup>**
- **GREs increase application costs**
- **Students with many years of professional work may experience a GRE requirement as a hindrance**
- **Systematic race, sex, SES biases in GRE scores<sup>2</sup>**

# Limitations

- **Single wave of applications**
- **Not all programs use CASPA**
- **Missing demographic data**
- **Predicting matriculation, not acceptance**

# Future Directions

- **Program attributes**
  - **Geography (population, urbanicity)**
  - **Type of program (public, private, academic health center)**
  - **Institutional ranking**





PAEA RESEARCH

**Curriculum Report 2** | **Didactic**

By the Numbers | Data from the 2016 Didactic Curriculum Survey



PAEA RESEARCH

**Faculty & Directors Report 3**

By the Numbers | Data from the 2017 Faculty & Directors Survey



PAEA RESEARCH

**Student Report 2**

By the Numbers | Data from the 2017 Matriculating Student and End of Program Surveys



PAEA RESEARCH

**Curriculum Report 3** | **Clinical**

By the Numbers | Data from the 2017 Clinical Curriculum Survey



PAEA RESEARCH

**Program Report 33**

By the Numbers | Data from the 2017 Program Survey

# Questions?

