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# China's Educational Inequality: Evidence from College Entrance Exams and Admissions

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率先获得AACSB和EQUIS两大全球管理教育顶级认证的中国内地商学院  
The first school on the Chinese mainland to attain both AACSB and EQUIS accreditation



清华经管学院  
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# China's Inequality

- High and rising
  - Income, wealth, consumption
  - Inter-generational inequality
- But, no one knows the country's Gini coefficient
- Another type of inequality has caught a lot of attention in recent years—educational inequality
- Our focus: educational inequality reflected in college entrance exams and admissions



# China's Education System

- 9 years of compulsory education
  - 6 years of primary school
  - 3 years of junior high school
- High school: 3 years
  - Sciences (physics, chemistry, biology, difficult math)
  - Arts/social sciences (geography, history, easy math)



# College Entrance Exams (CEE)

- To get into college, most students need to take the College Entrance Exams (CEE) on June 7-9
  - Math
  - Chinese
  - English
  - Composite (one of the two)
    - Sciences
    - arts/social sciences
- Fate-determining exams for Chinese



# CEE: Students



# CEE: Parents



# CEE: Parents



# I would be late!!!





# Applications and Admissions

- Before/after the exams (before/after scores known), students need to fill in their
  - *college preferences* in order
  - *Major preferences* in order
- Scores are known
- Each college sends an admission team to every province (where it has admission quotas)
- The quotas and distribution are ultimately set by the Ministry of Education, but colleges have some freedom

# Data: CEE Takers in 2003

- The population of all CEE takers
- 6.2 million students in 2003
- Information
  - Exam takers: high school name, location, hukou, birth date, gender, ethnicity, health status, repeating taker, science, scores of College Entrance Exams (CEE)...
  - Admissions: university name, major
- Could get access more years potentially



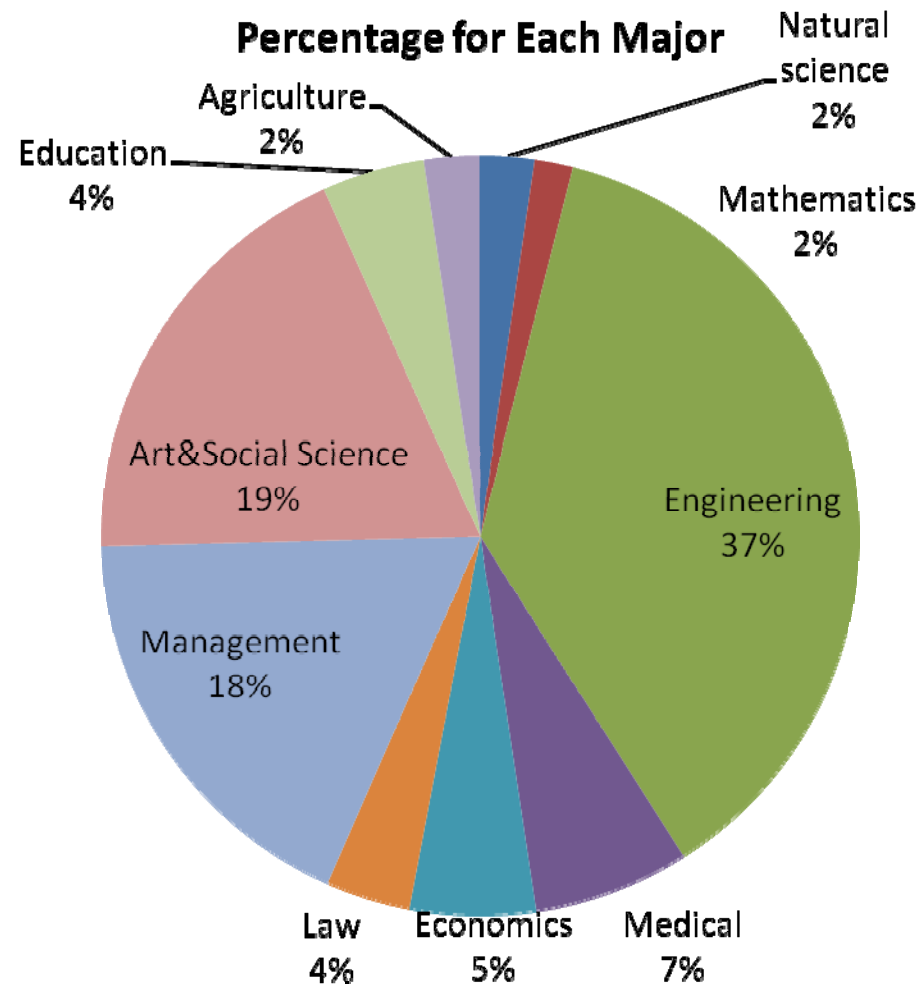
# Supply of Higher Education

- Two categories of higher education
  - Colleges (2-3 years)
  - Universities (4 years)
- Universities
  - 985 universities (in **May 1998**, President Jiang's speech: build world-class universities)
  - 211 universities (**21<sup>st</sup>** century: invest in **100** universities)
  - Other universities

# Supply of Higher Education 2003

Type	Number of colleges	Number of students	Percent of the population
Not Admitted	0	1960199	0.316
College	1123	2424147	0.391
University	602	1365827	0.220
211 Universities	76	284212	0.046
985 Universities	29	138686	0.022
Top 9 Universities	7	26672	0.004
Top 2 Universities	2	6497	0.001
Total	1839	6206240	1

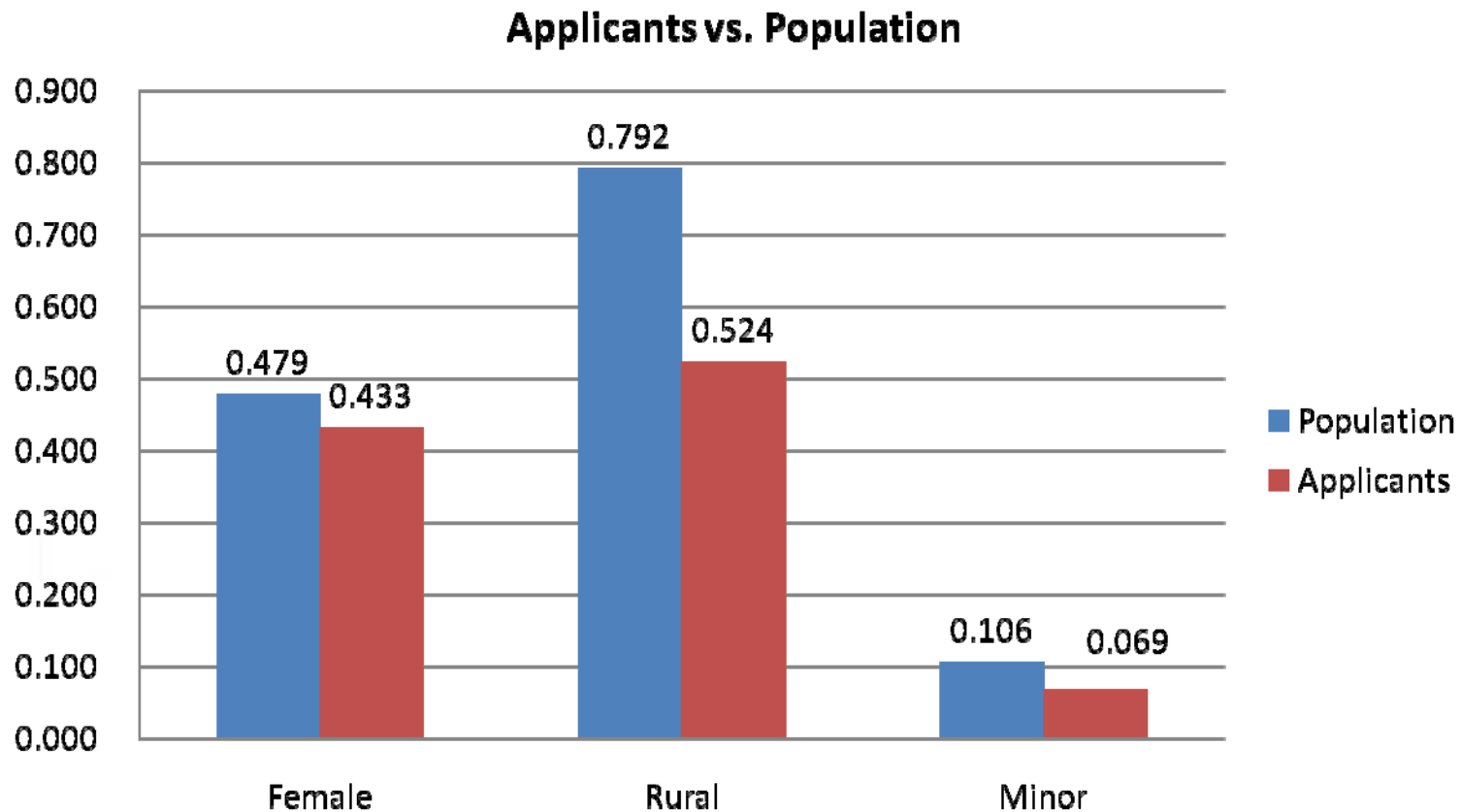
# Major Allocation



# Demand: Exam Takers (applicants)

Variable	Mean
Age	18.682
Female	0.433
Rural	0.524
Minor	0.069
Repeating students	0.224
Science (vs. arts/social sciences)	0.733
Rate of getting bonus scores	0.084
Rate of going to local colleges	0.483

# Applicants vs. Population



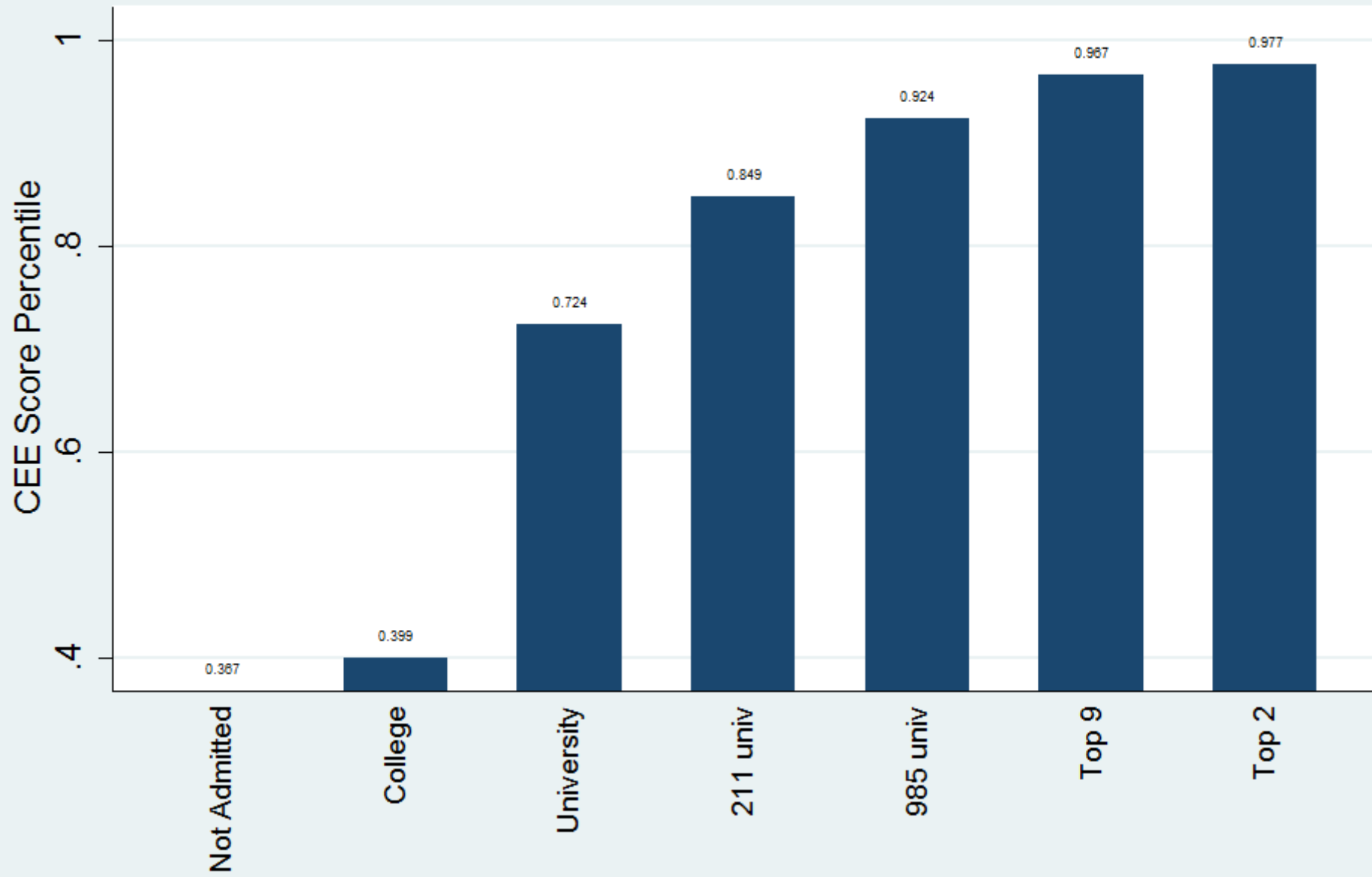
# Equilibrium (matching)

- Rates of admission
- Major and student match

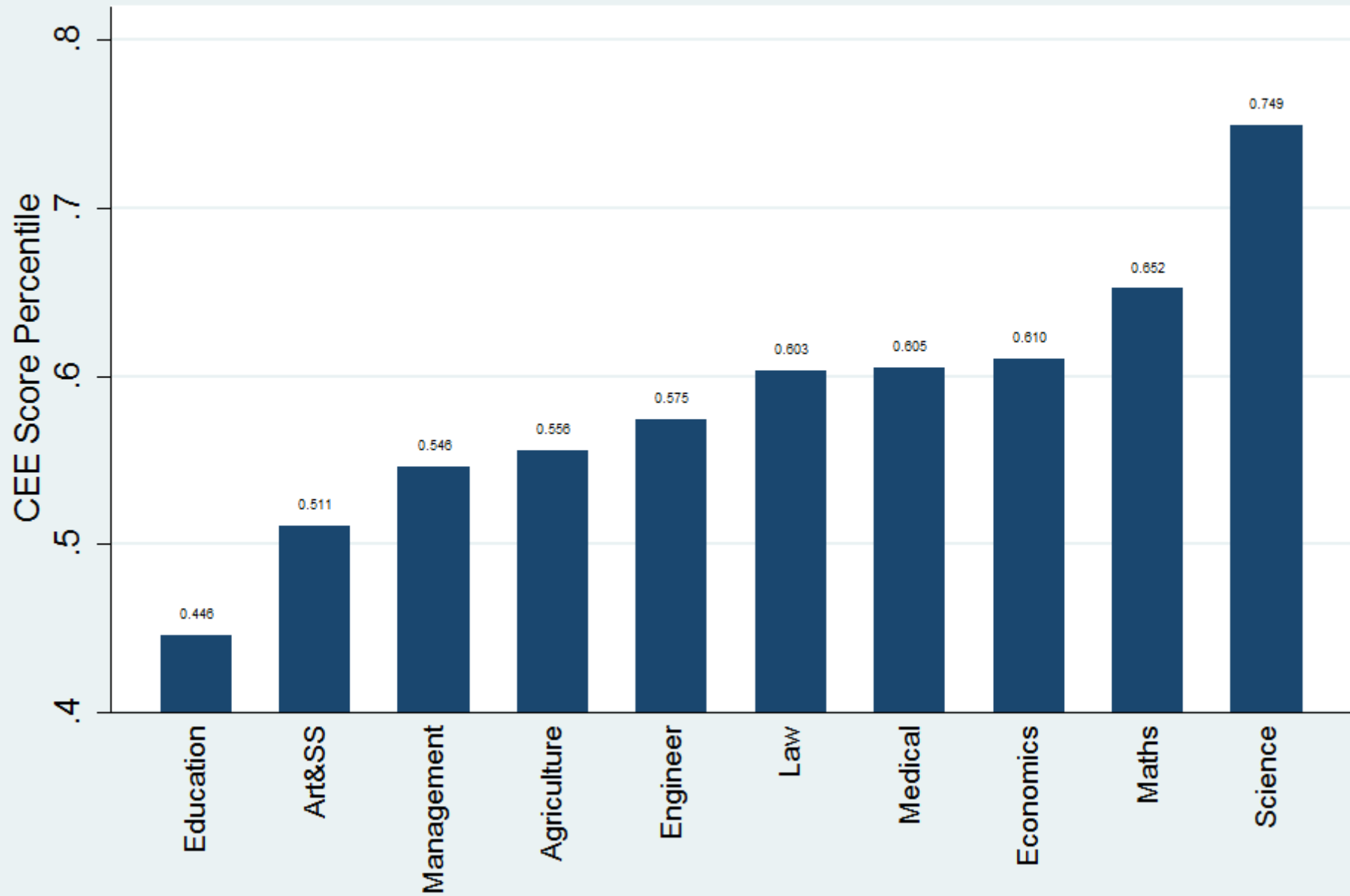




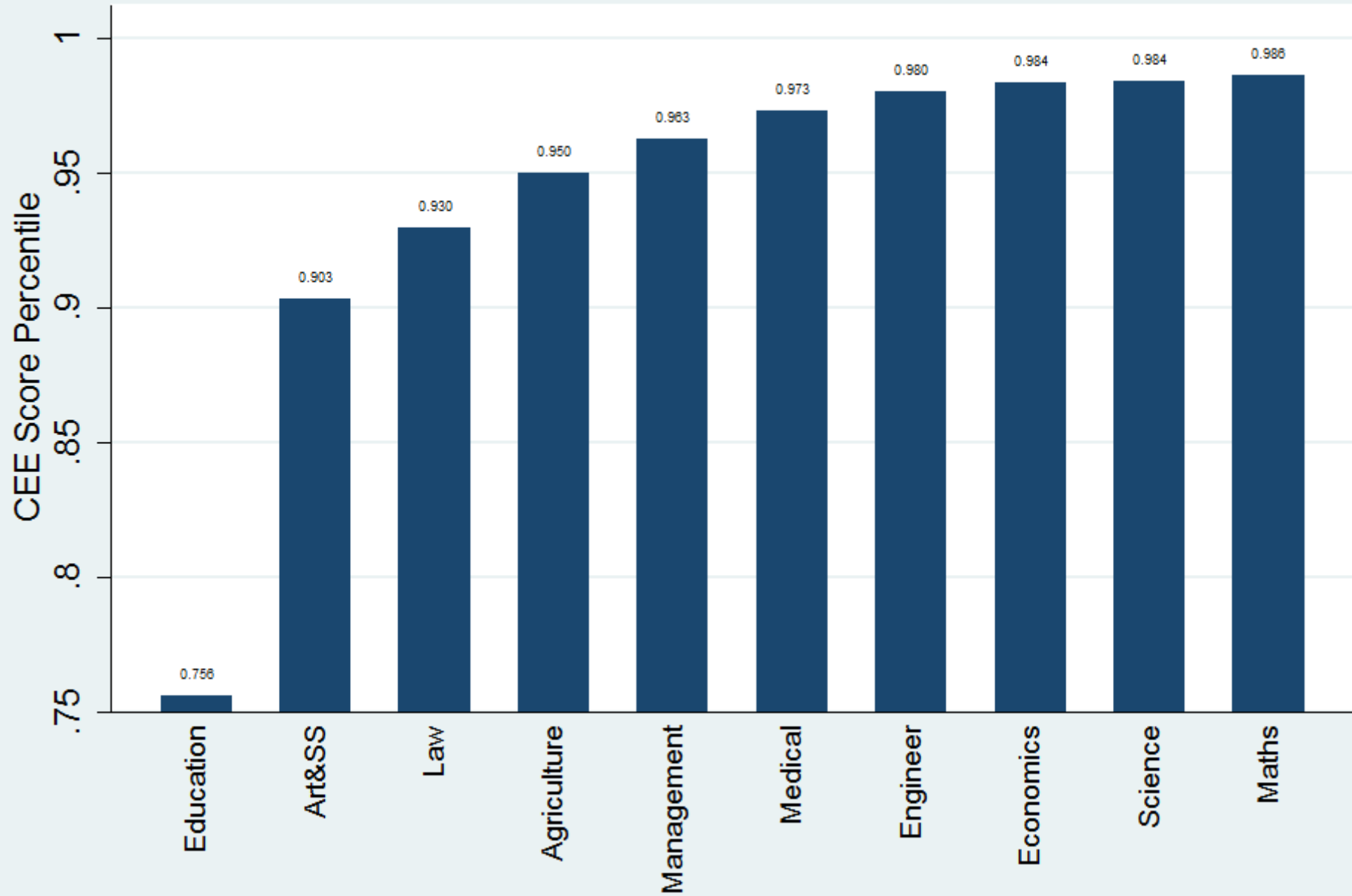
## Percentile of CEE Scores by College Type



## Percentile of CEE Scores by Major



## Percentile of CEE Scores of Top 9 Universities

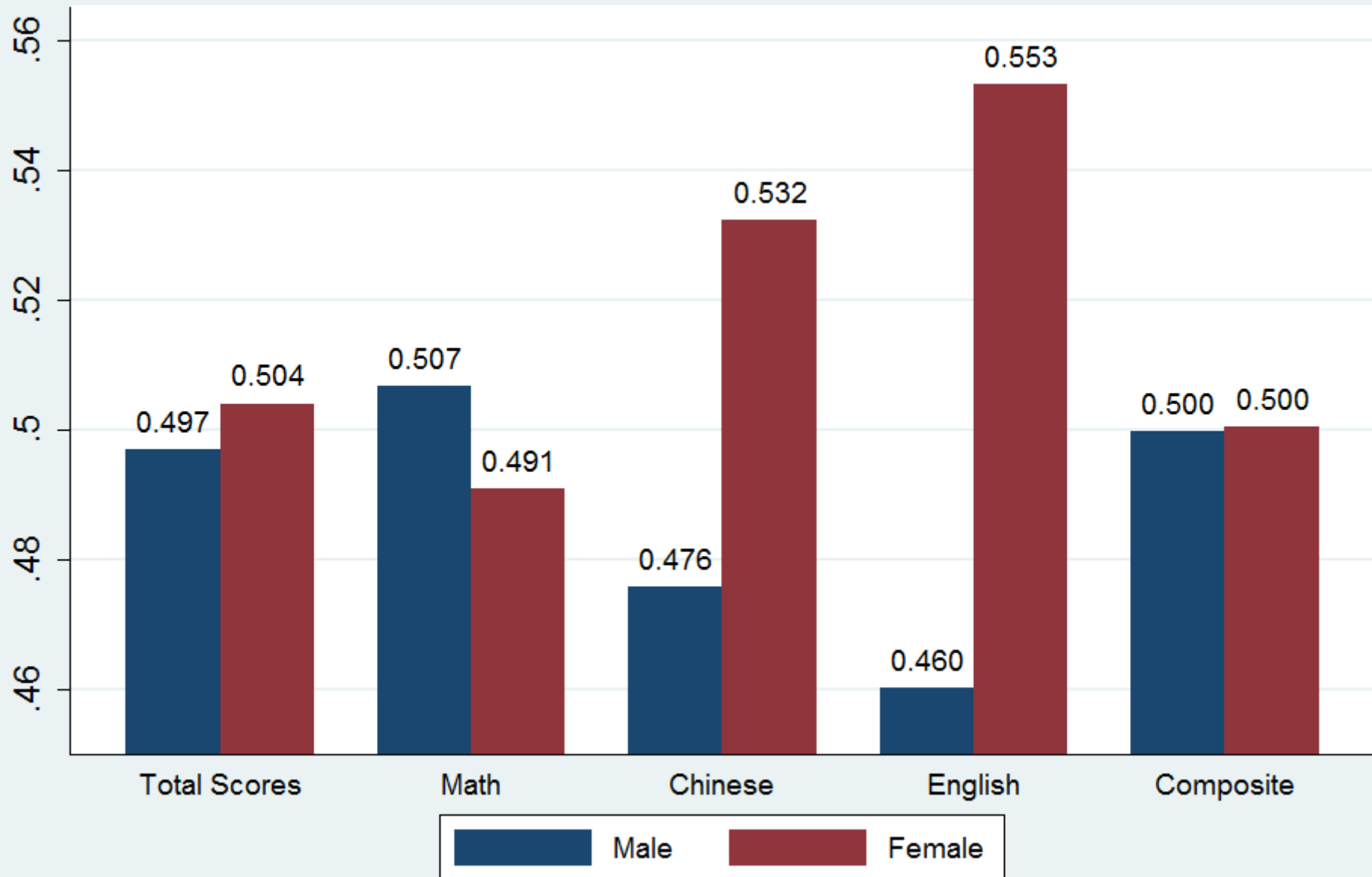


# Educational Inequality

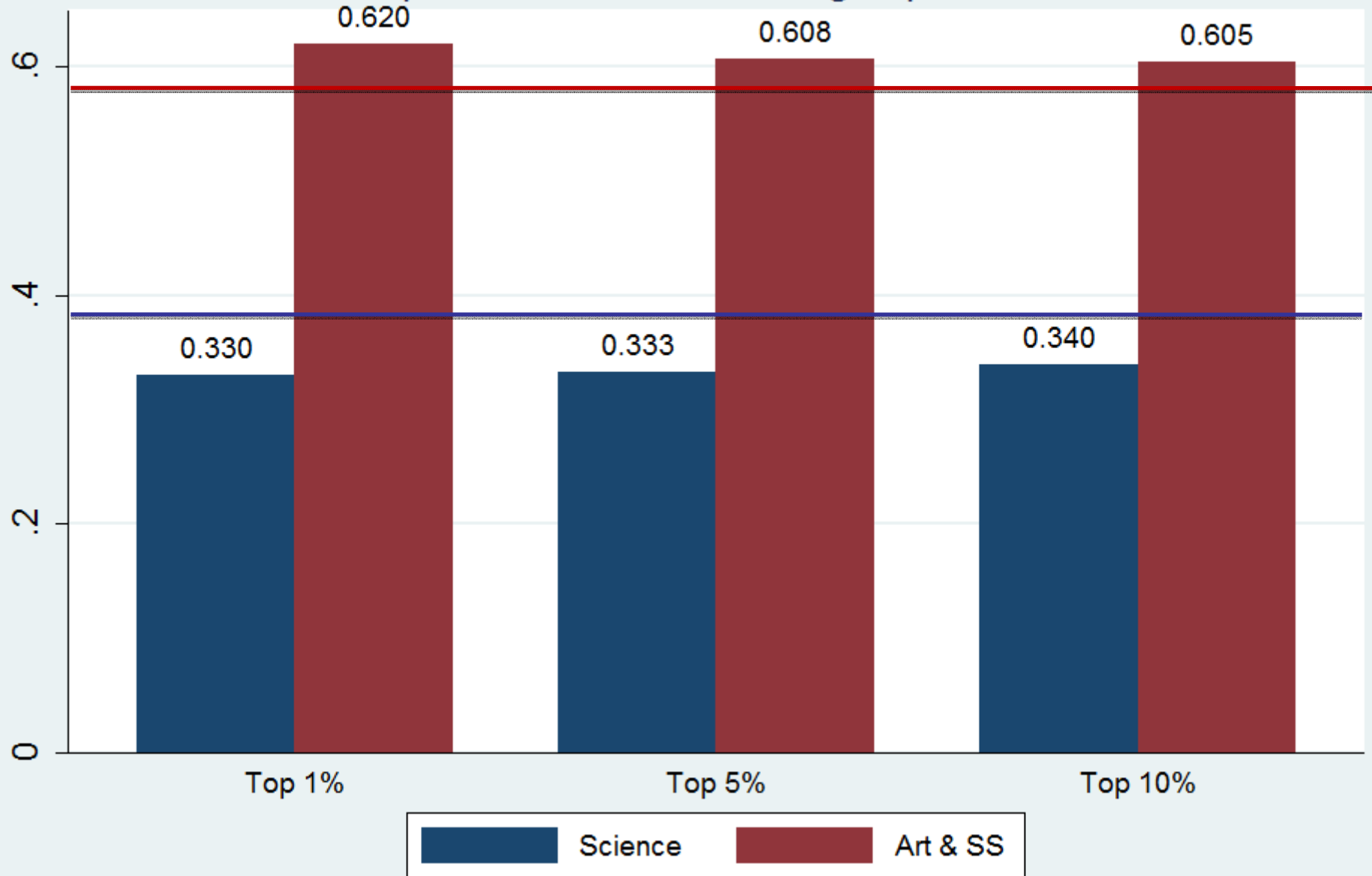
- **Gender bias**
- Hukou (urban vs. rural) bias
- Affirmative policy
- Training bias
- Home bias
- High school bias



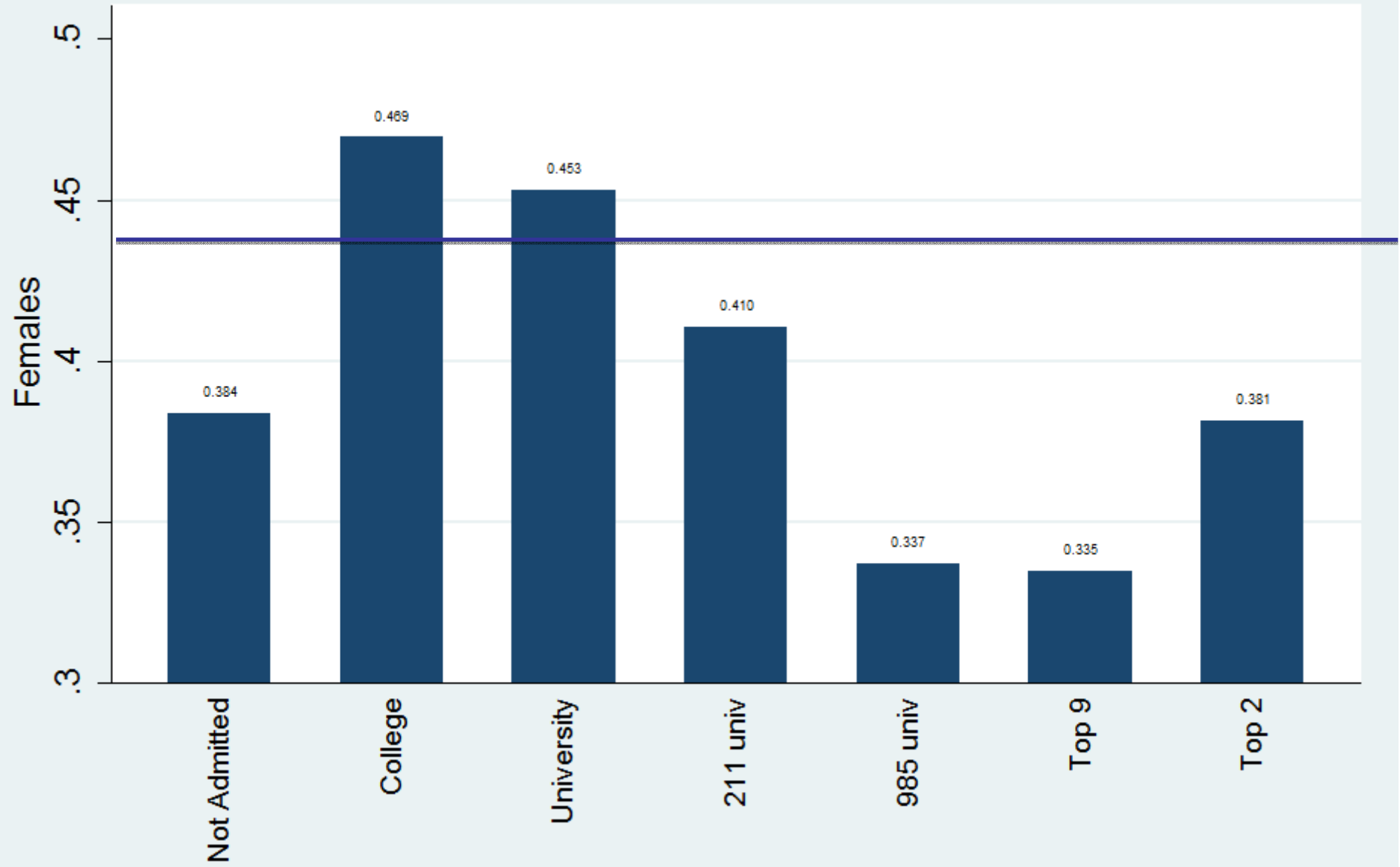
## CEE Scores for Males and Females



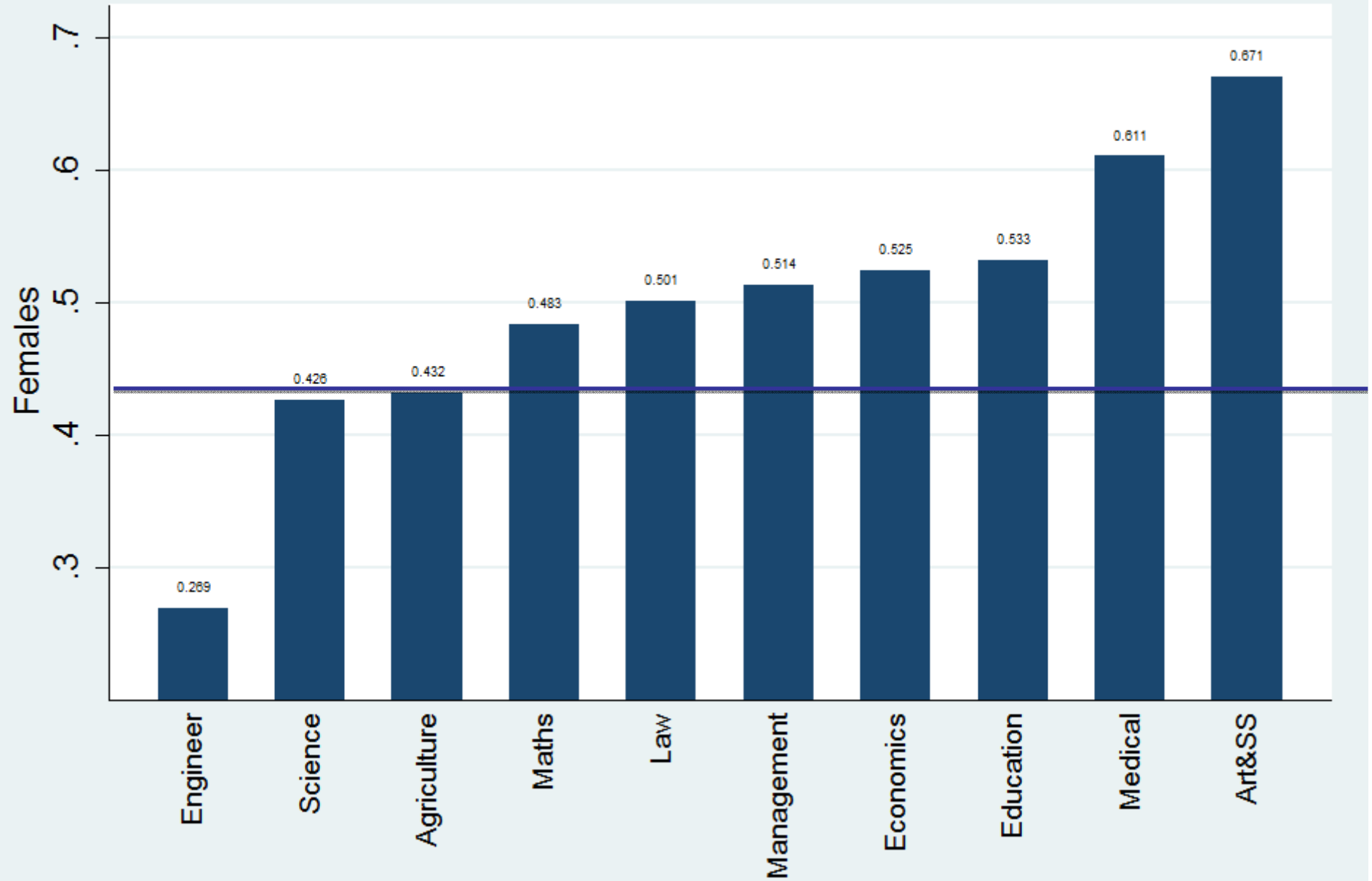
# Proportion of Females among Top Students



## Proportion of Females by University Type



## Proportion of Females by Major



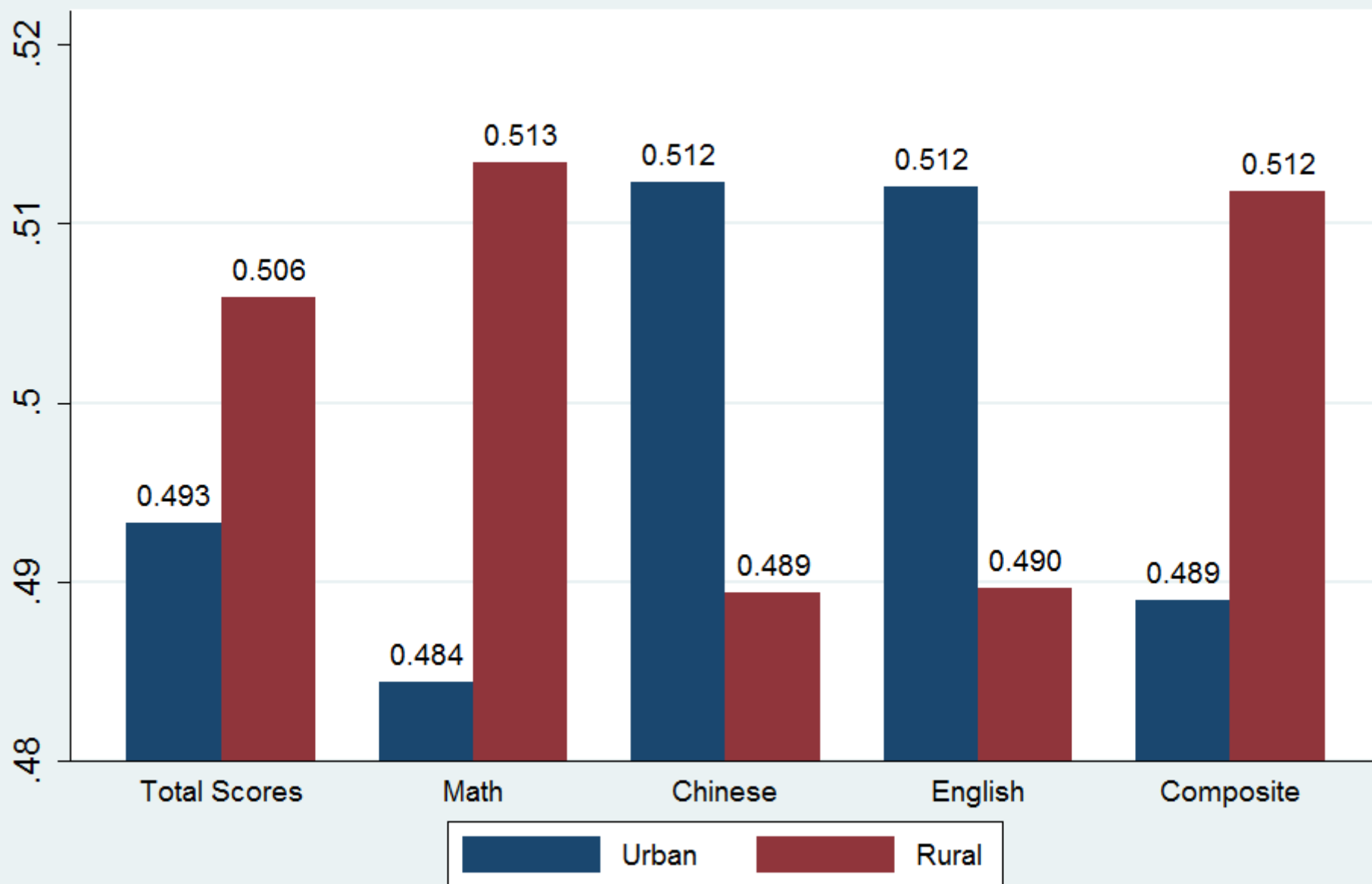


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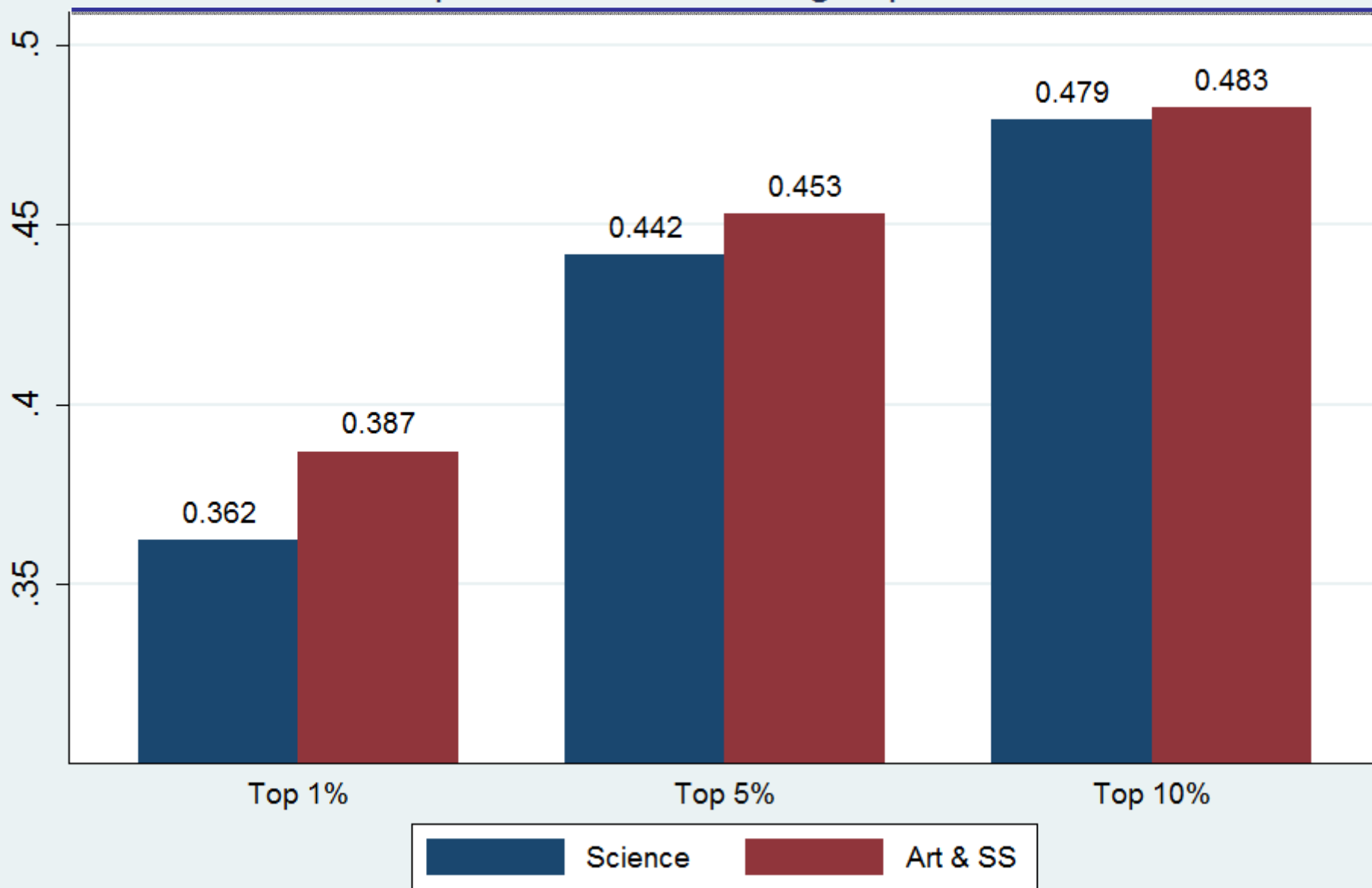
- Gender bias
- **Hukou (urban vs. rural) bias**
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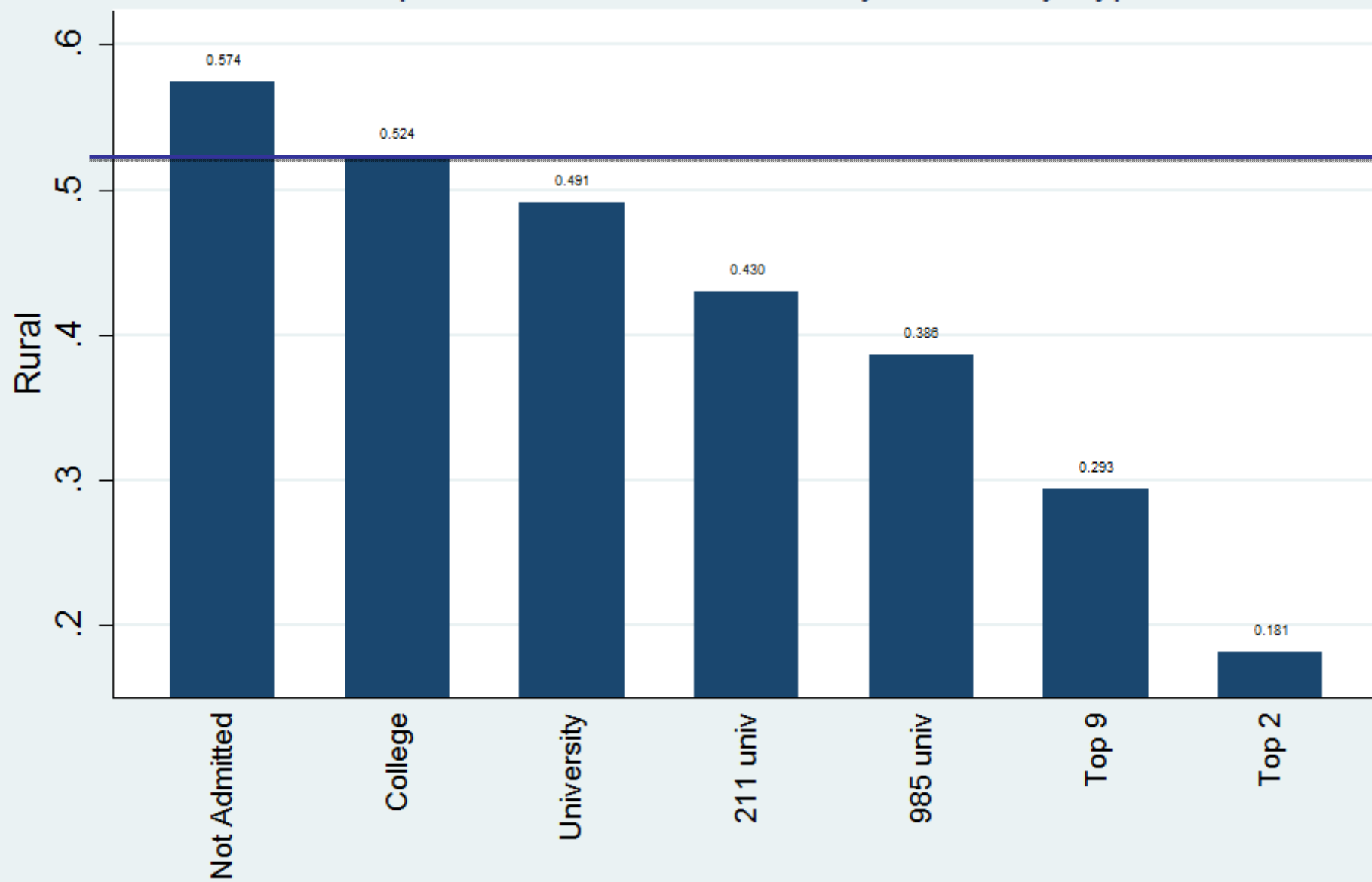
## CEE Scores: Urban vs. Rural



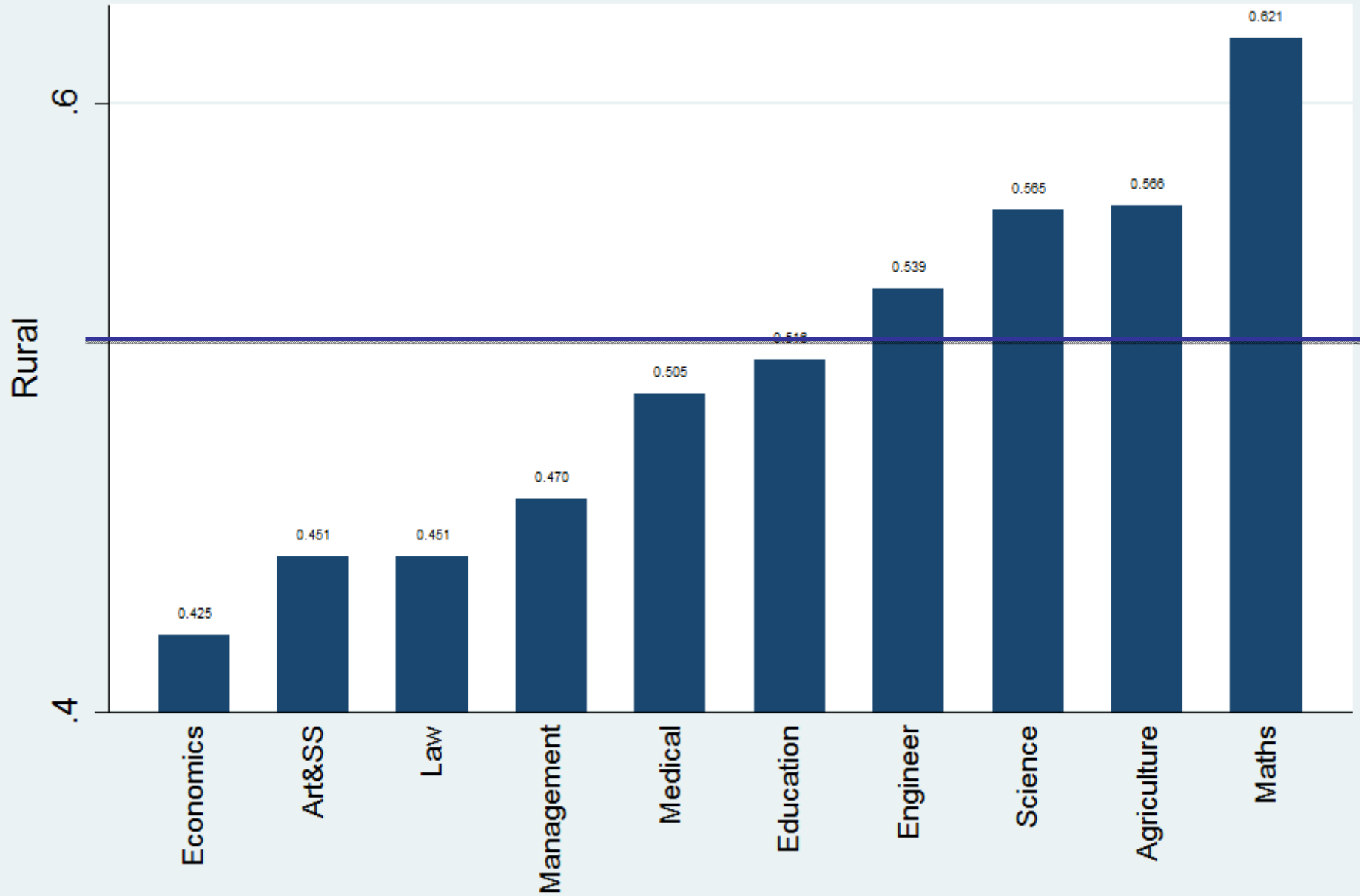
## Proportion of Rural among Top Students



## Proportion of Rural Students by University Type



## Proportion of Rural Students by Major

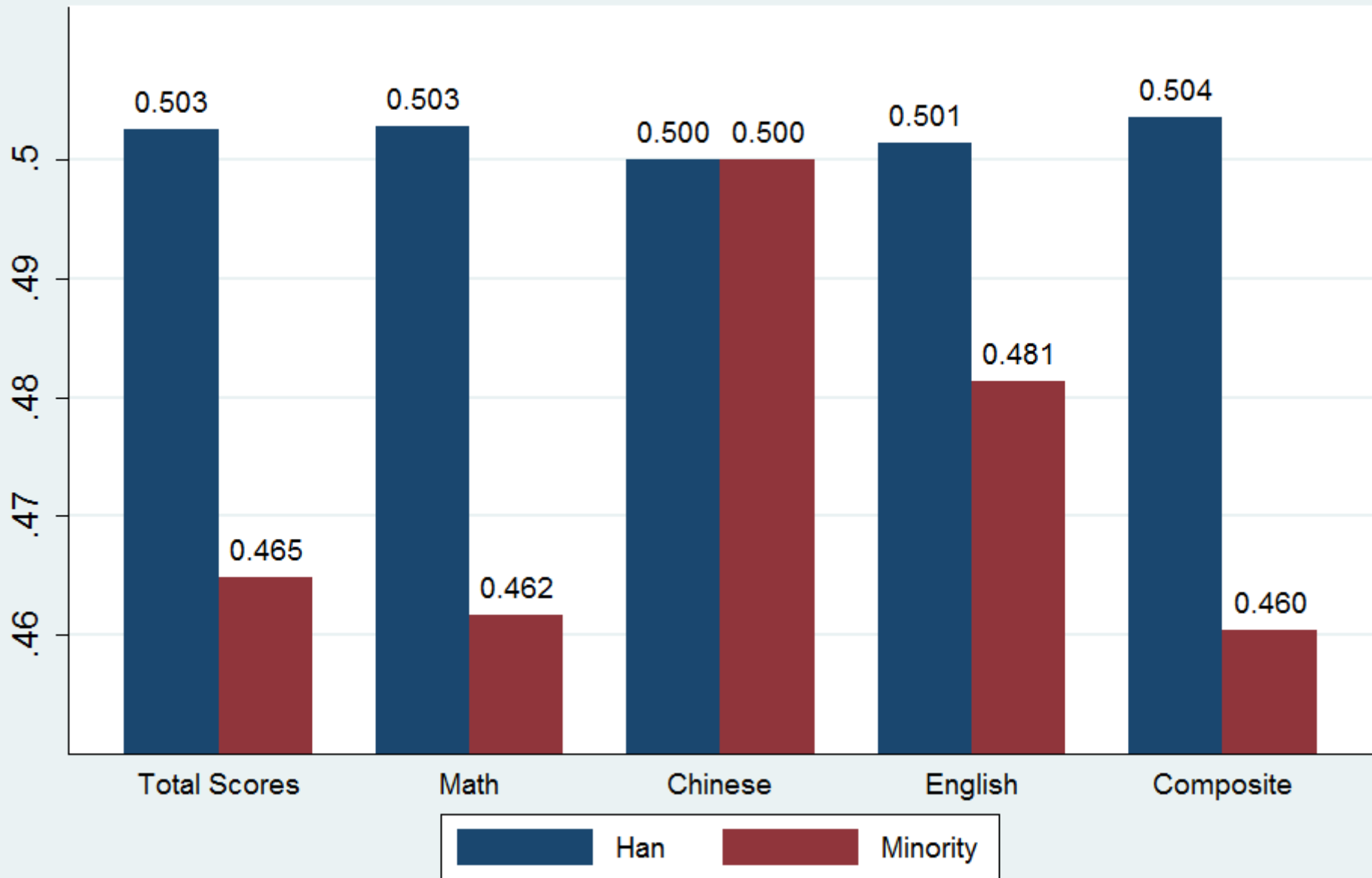


# Educational Inequality

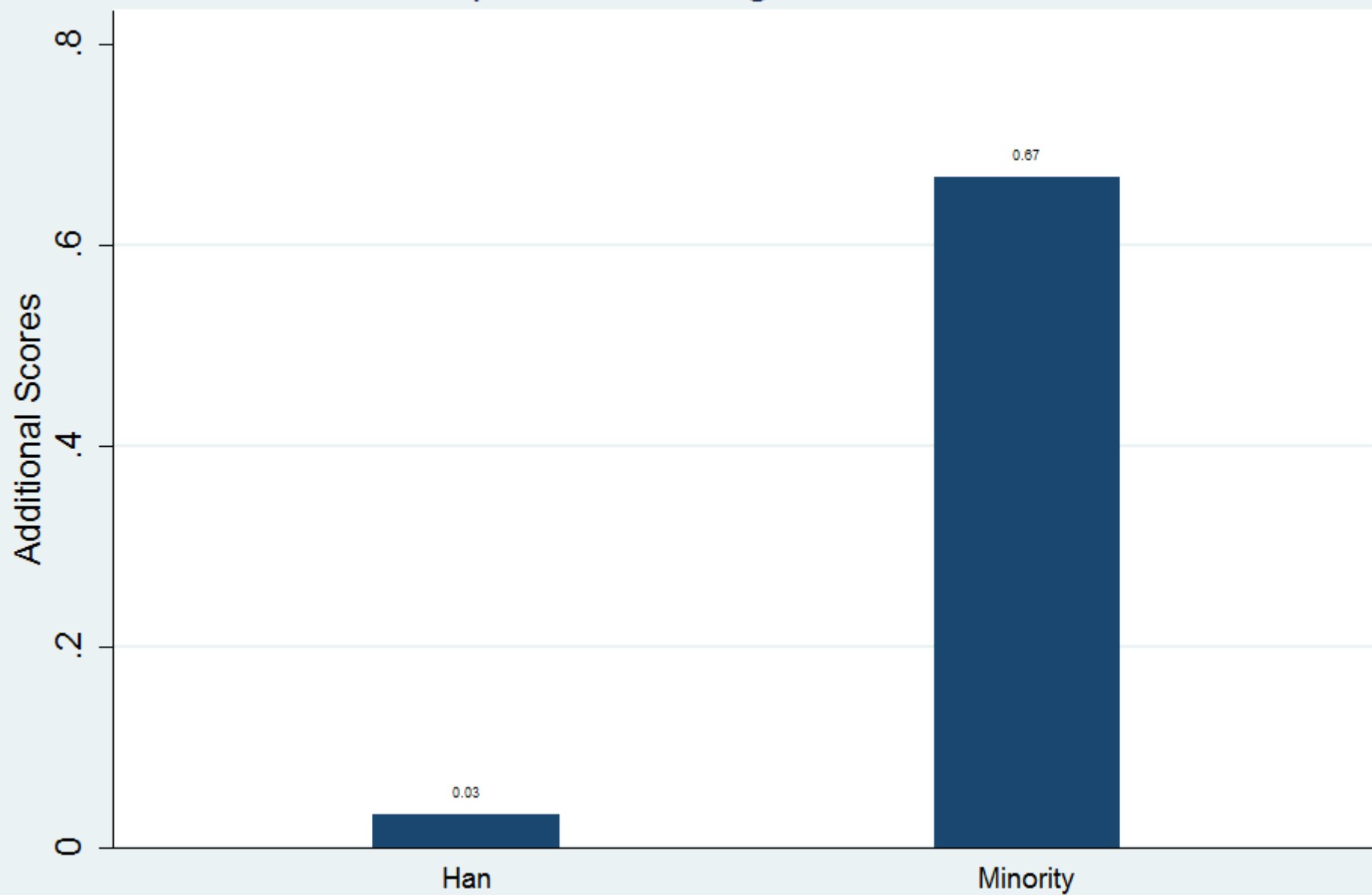
- Gender bias
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- **Affirmative policy**
- Training bias
- Home bias
- High school bias



## CEE Scores: Han (Chinese) vs. Minority

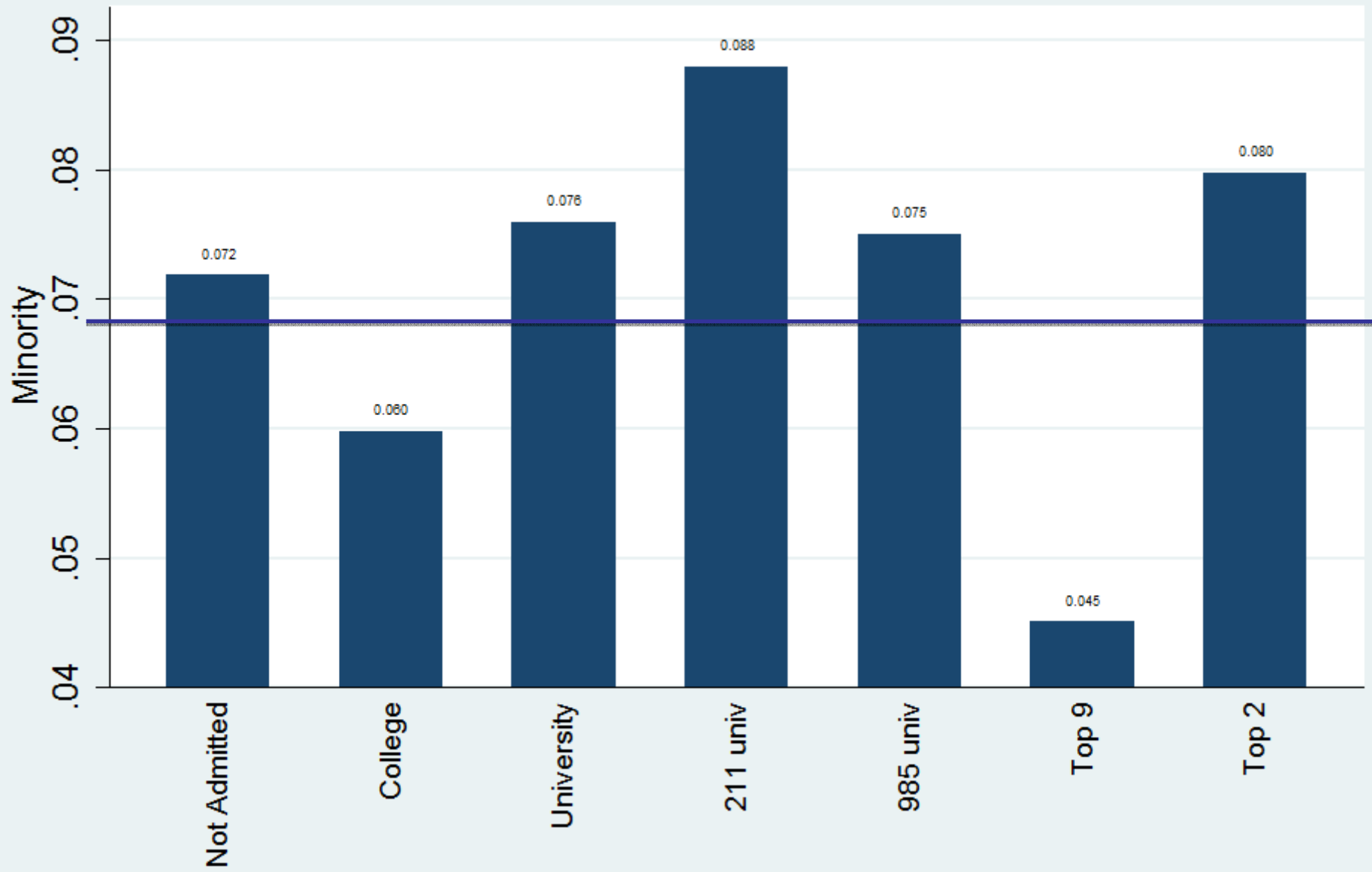


## Proportion of Getting Additional Scores

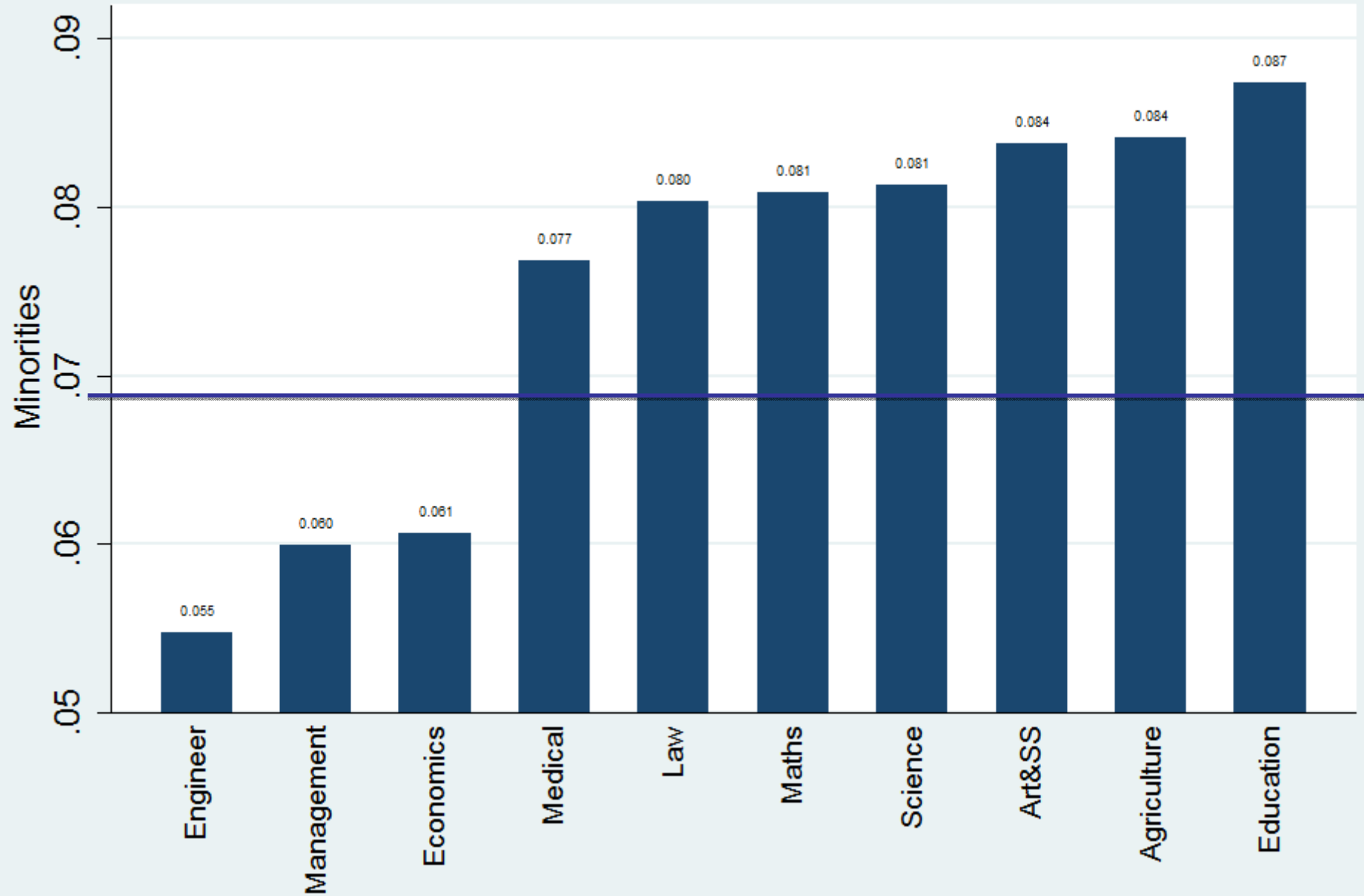




## Proportion of Minorities by University Type



## Proportion of Minority Students by Major

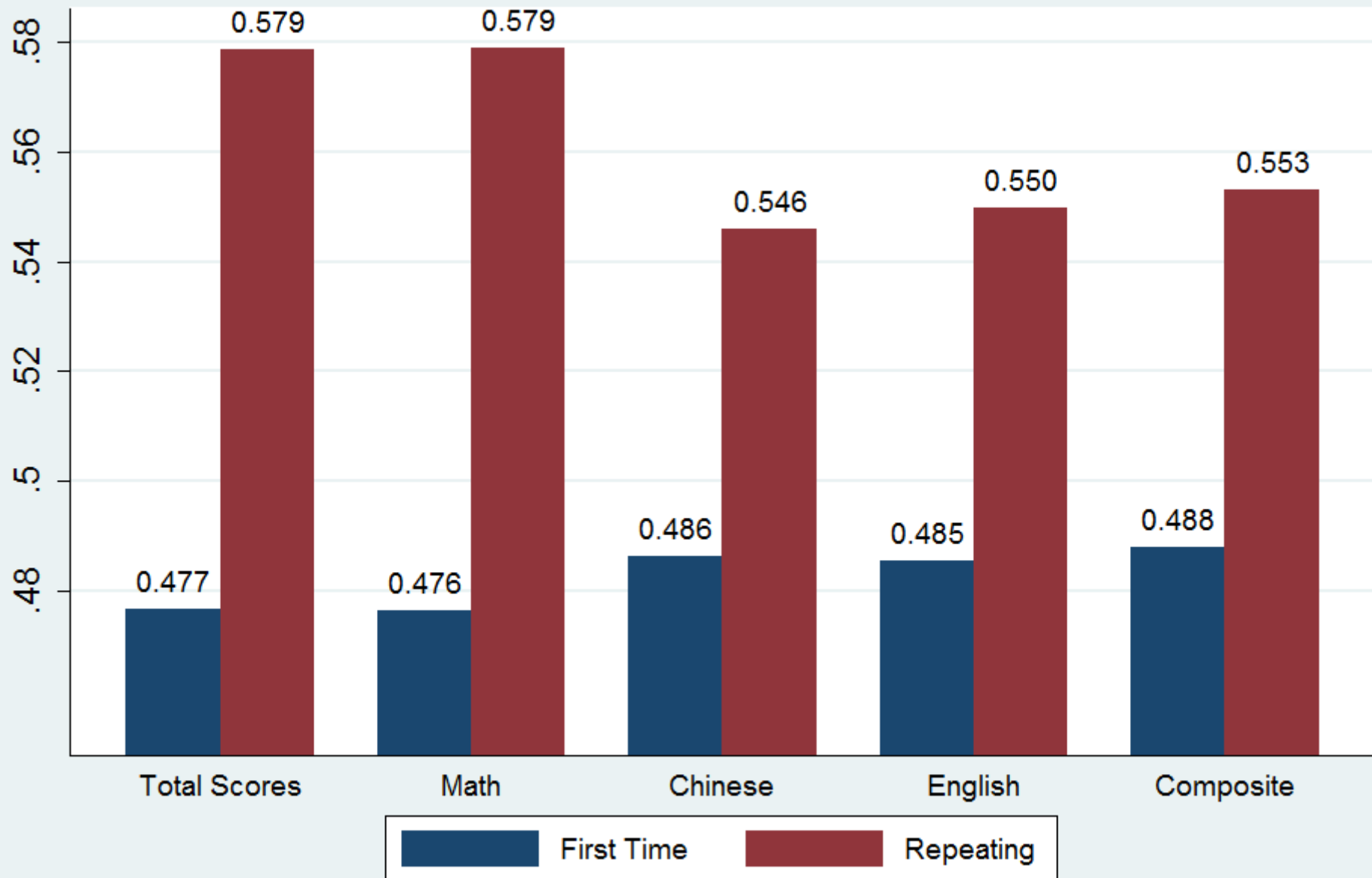


# Educational Inequality

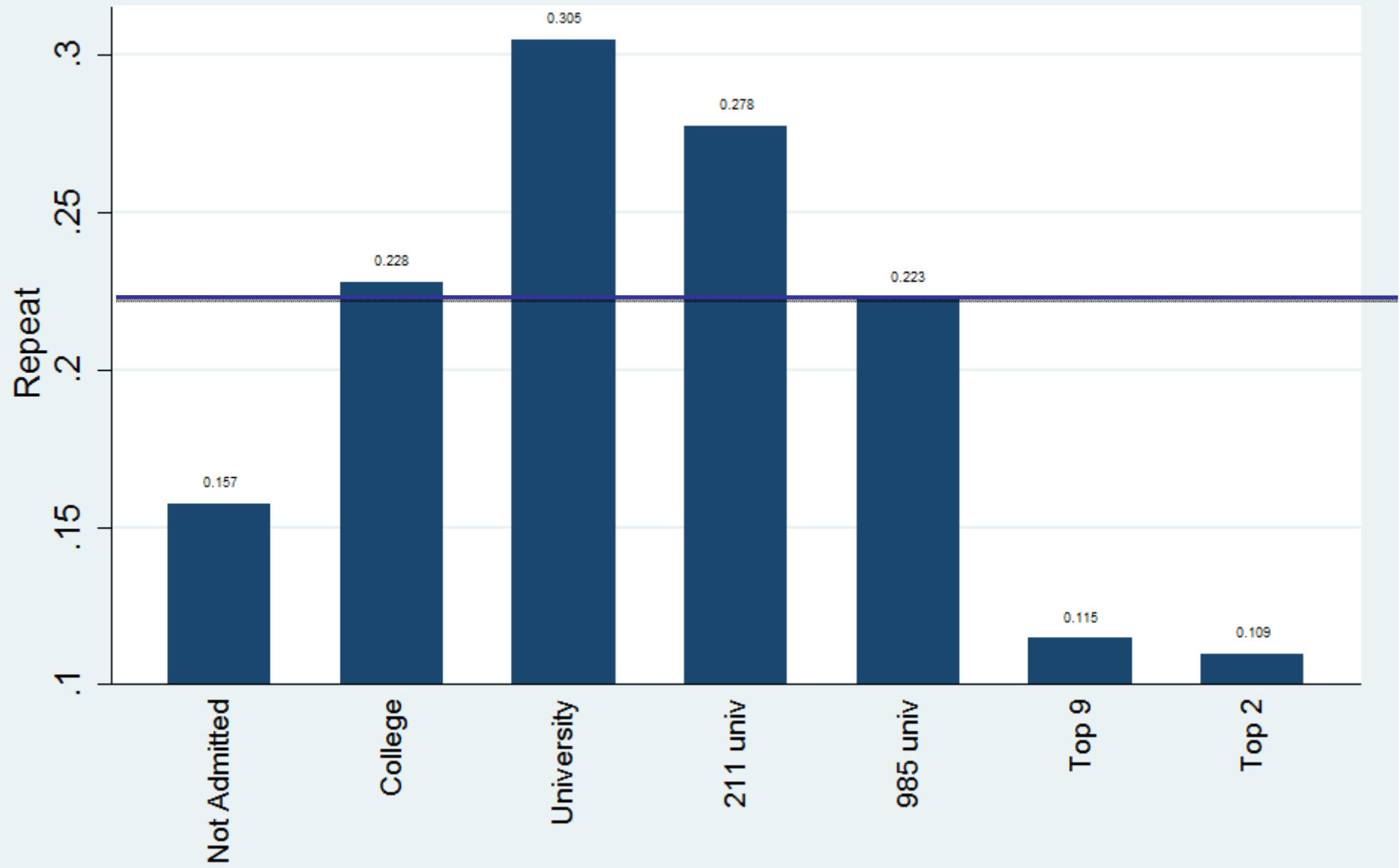
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- Home bias
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## CEE Scores: First Time vs. Repeating Students



## Proportion of Repeating Exam Takers

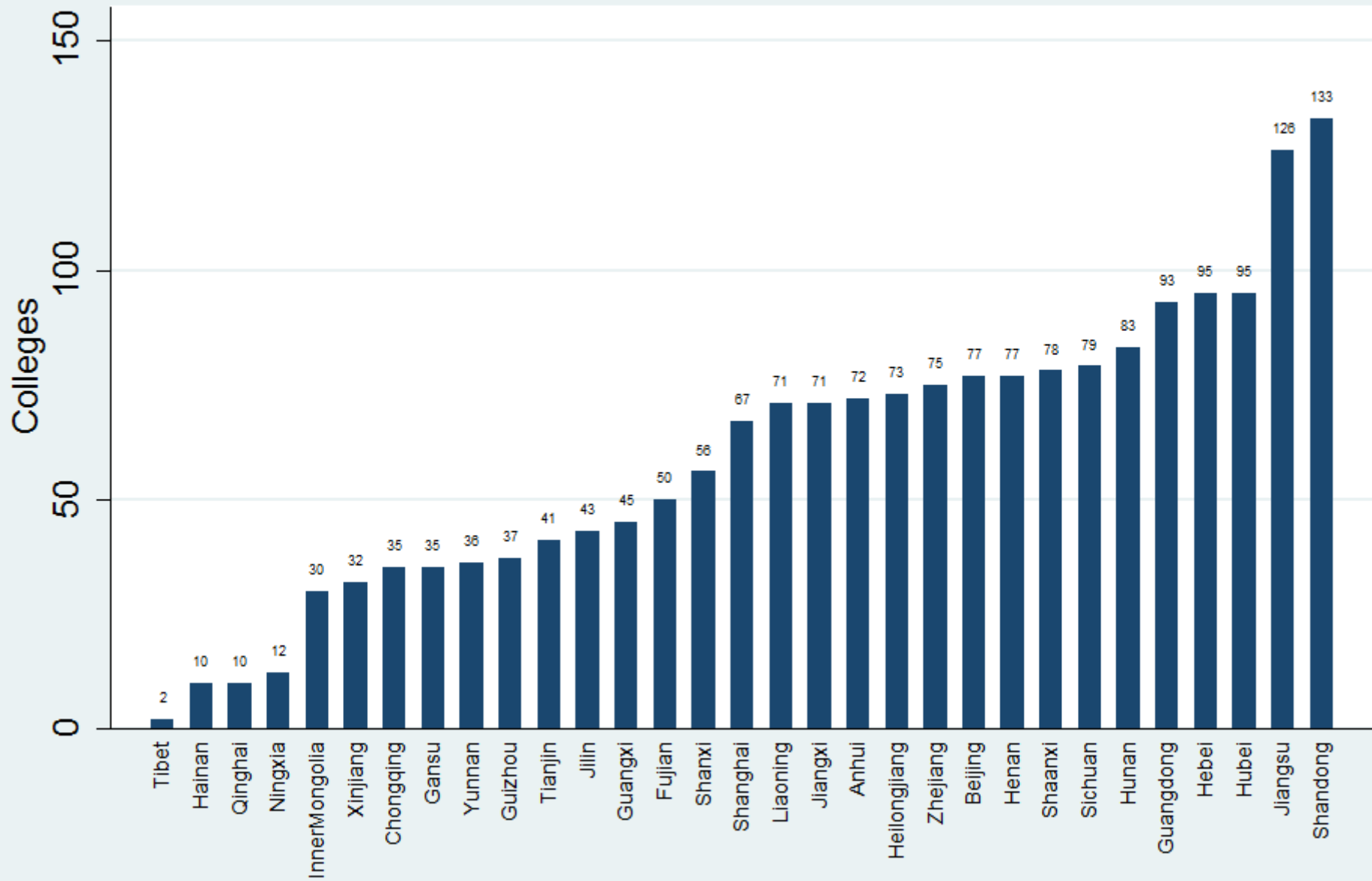


# Educational Inequality

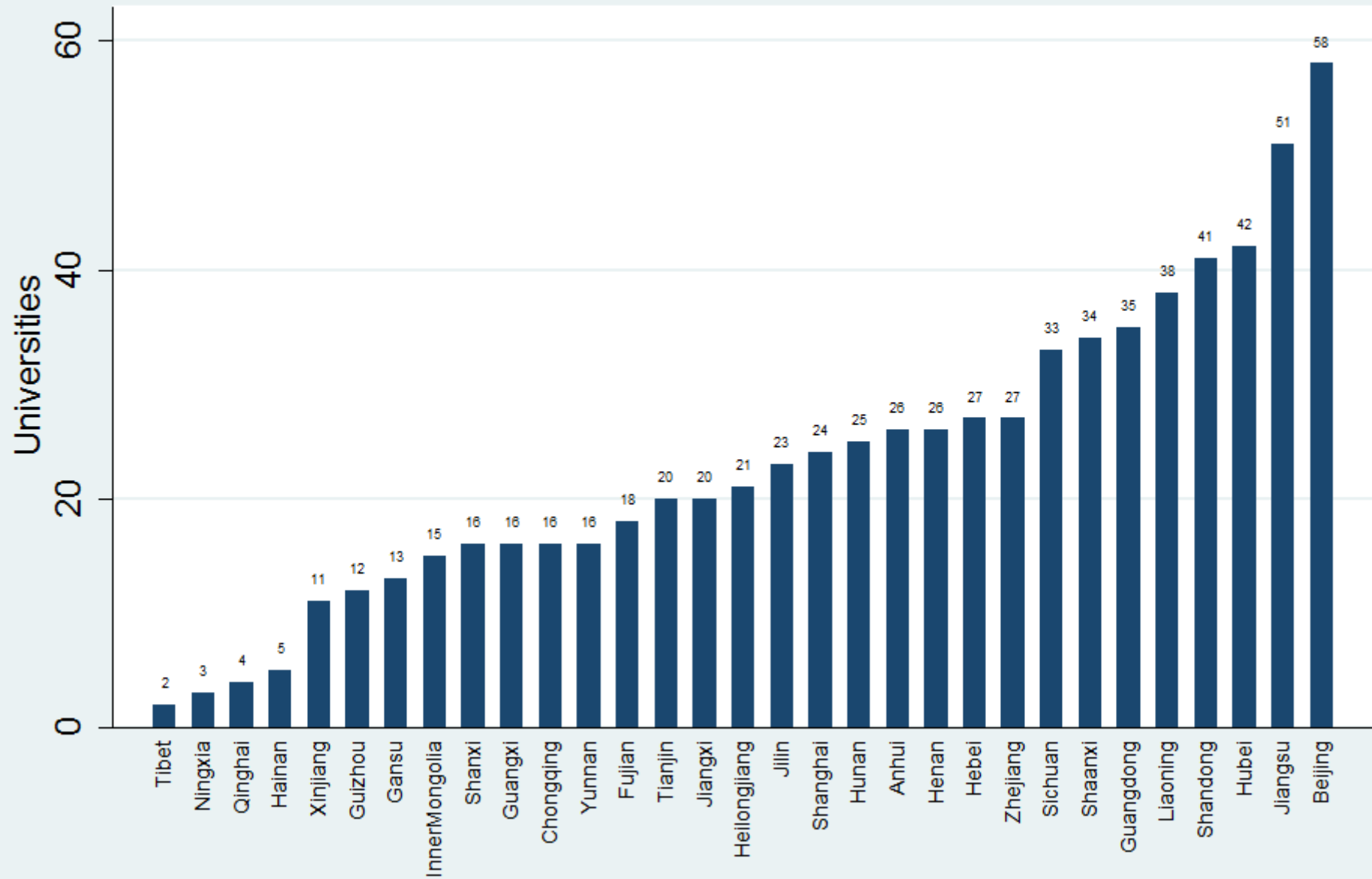
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## Number of Colleges in a Province

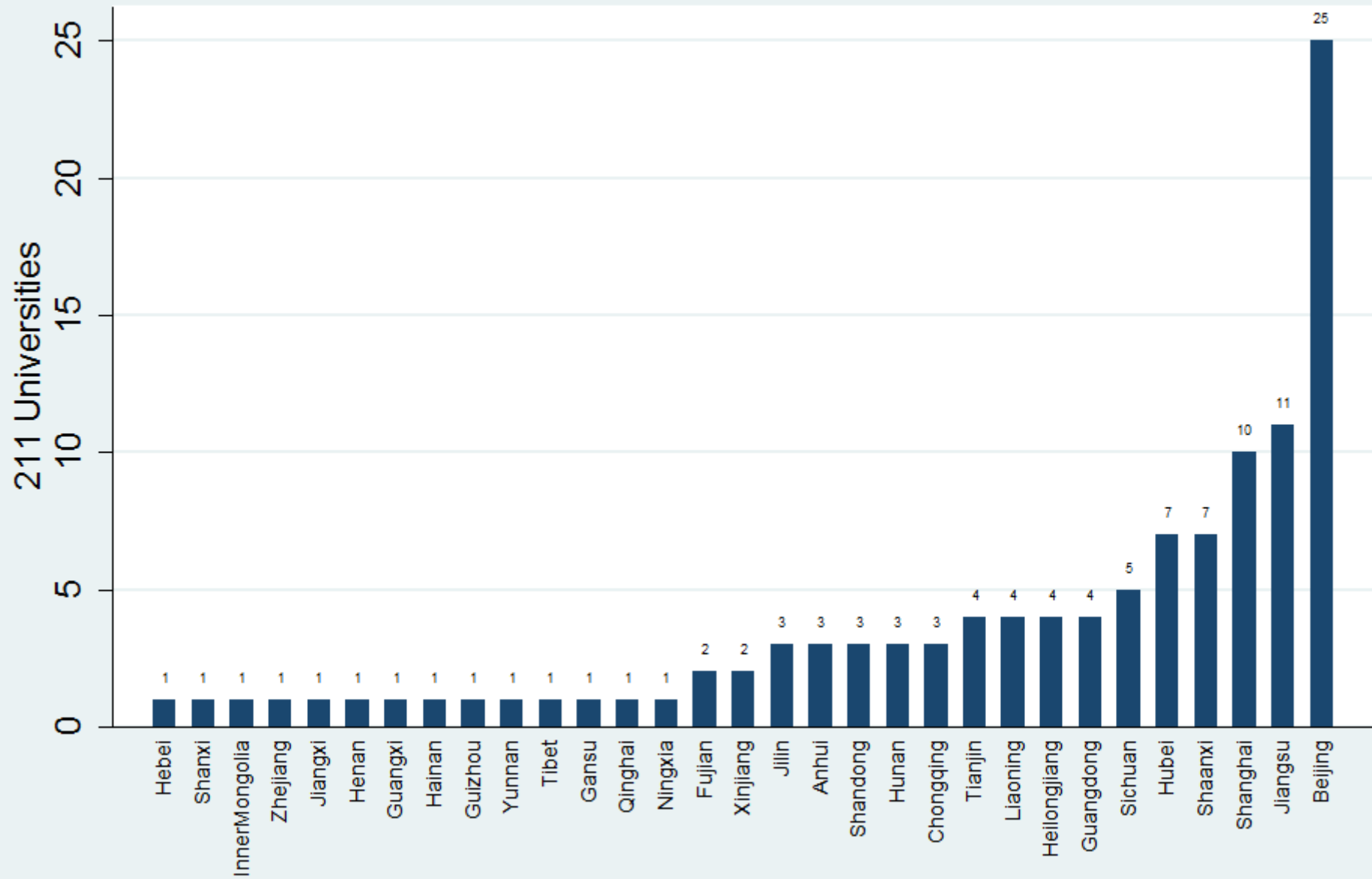


## Number of Universities in a Province

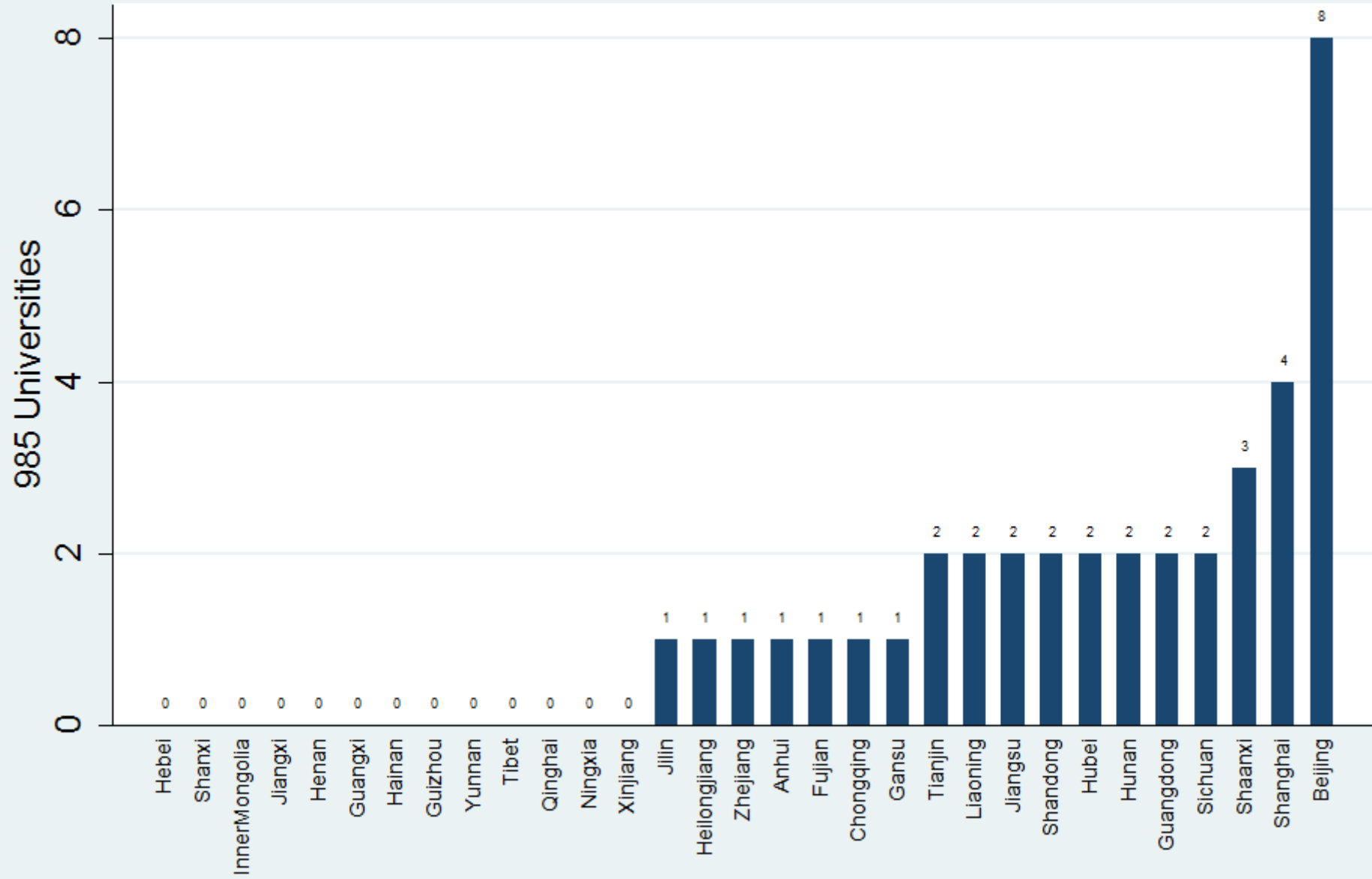




## Number of 211 Universities in a Province



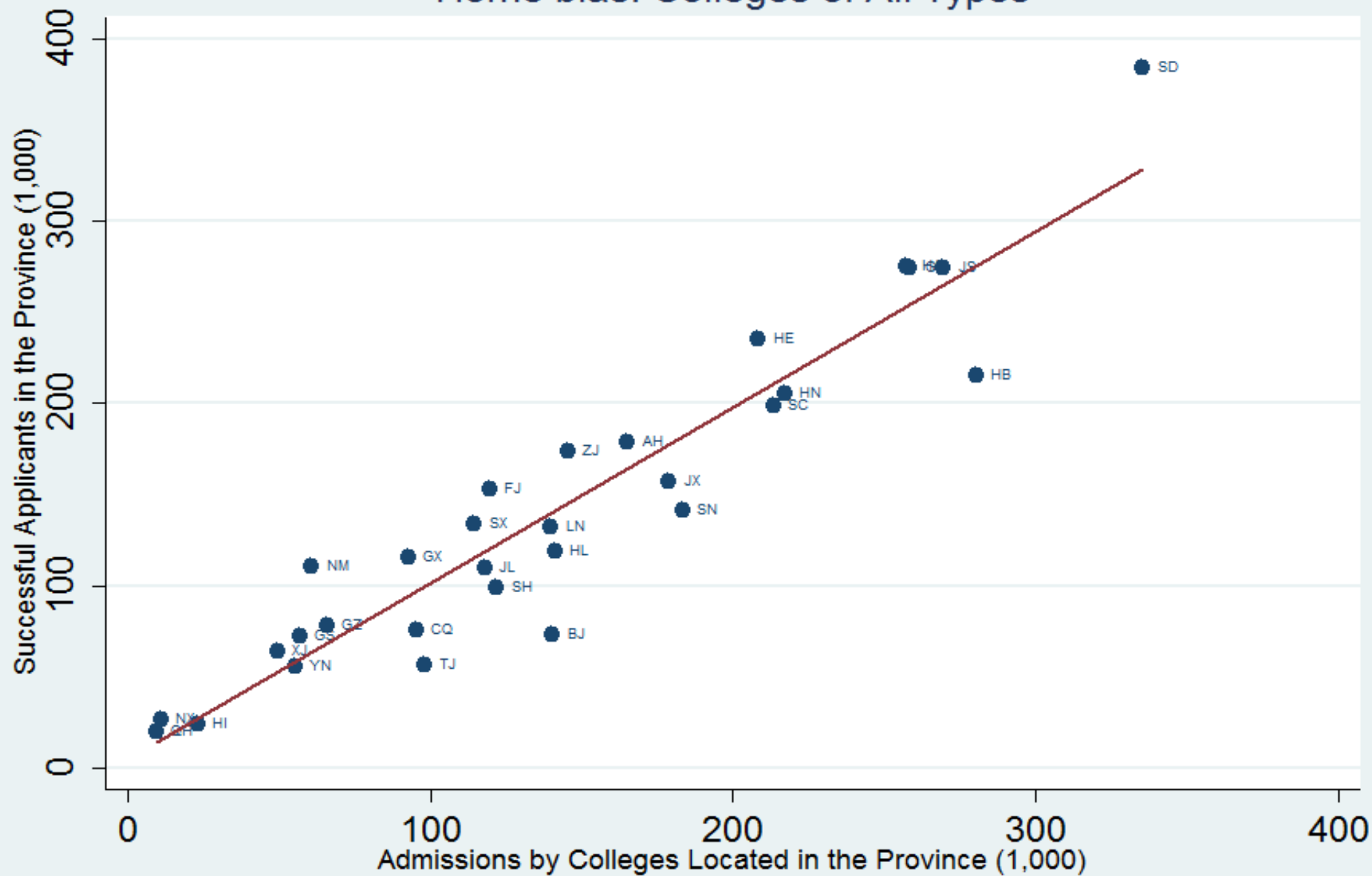
## Number of 985 Universities in a Province



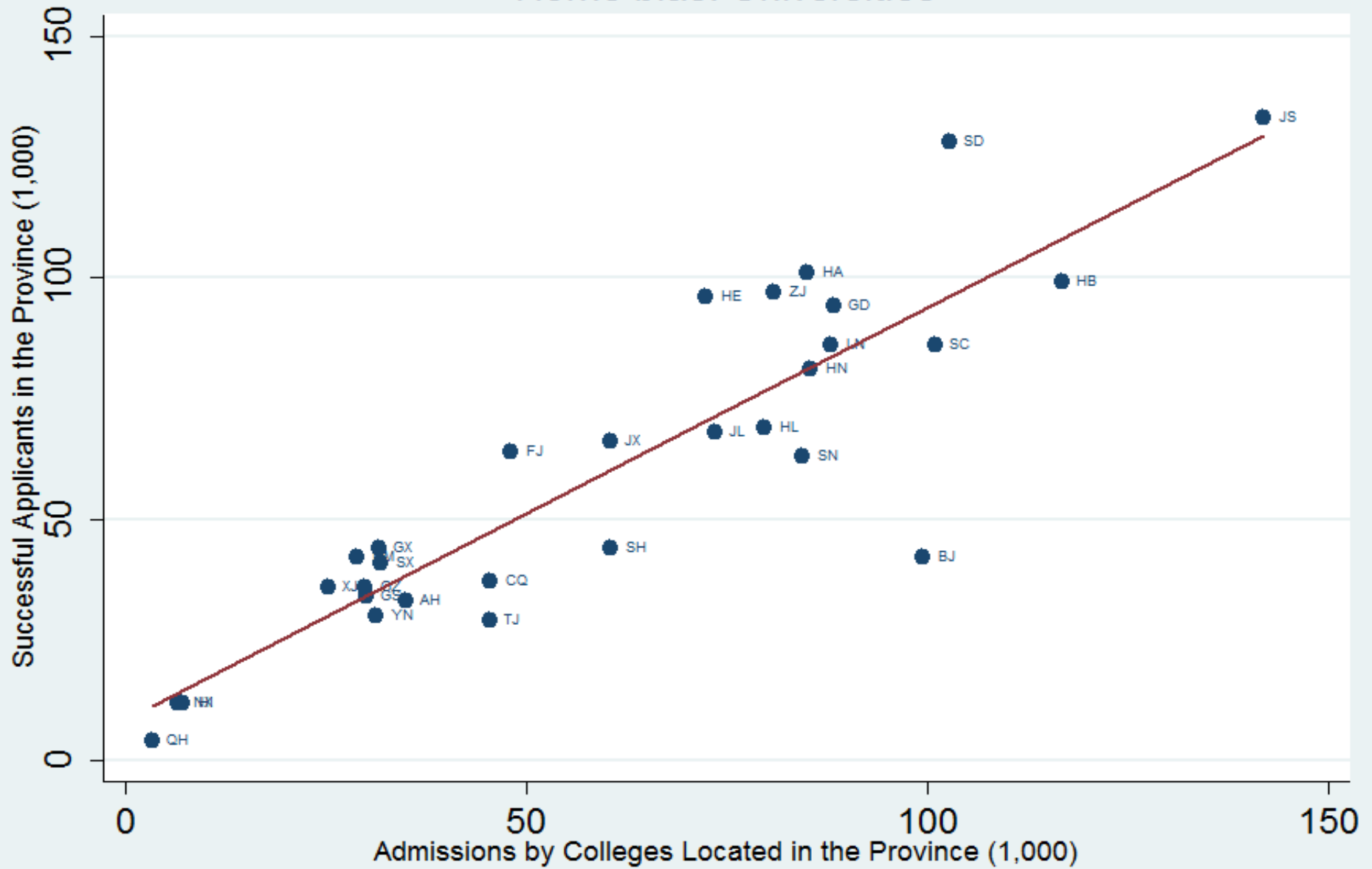
# Local Admissions of Each Type

Type (inclusive)	Percent of local admissions
College	0.658
University	0.667
211 Universities	0.456
985 Universities	0.393
Top 9 Universities	0.388
Top 2 Universities	0.209

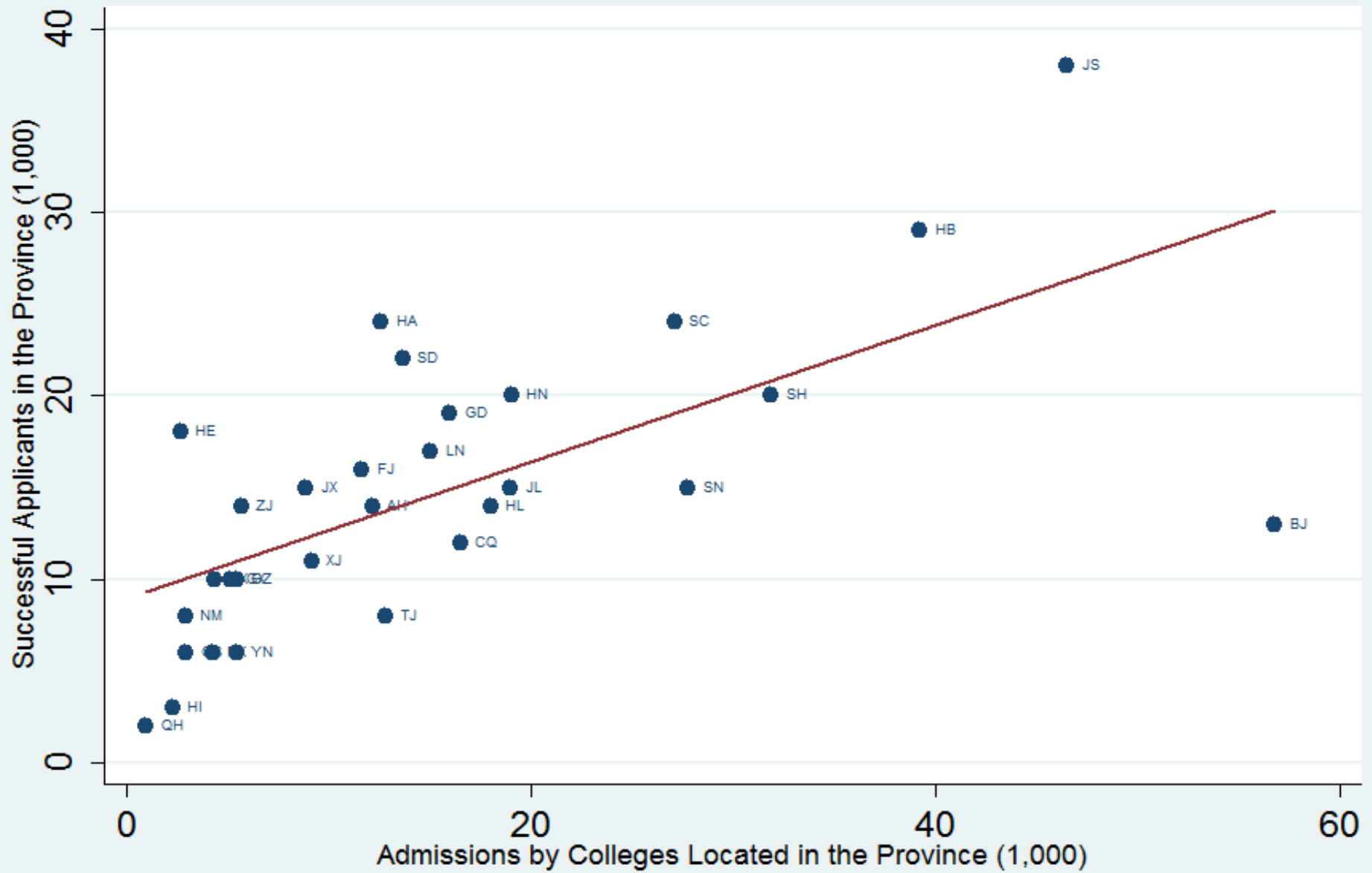
# Home bias: Colleges of All Types



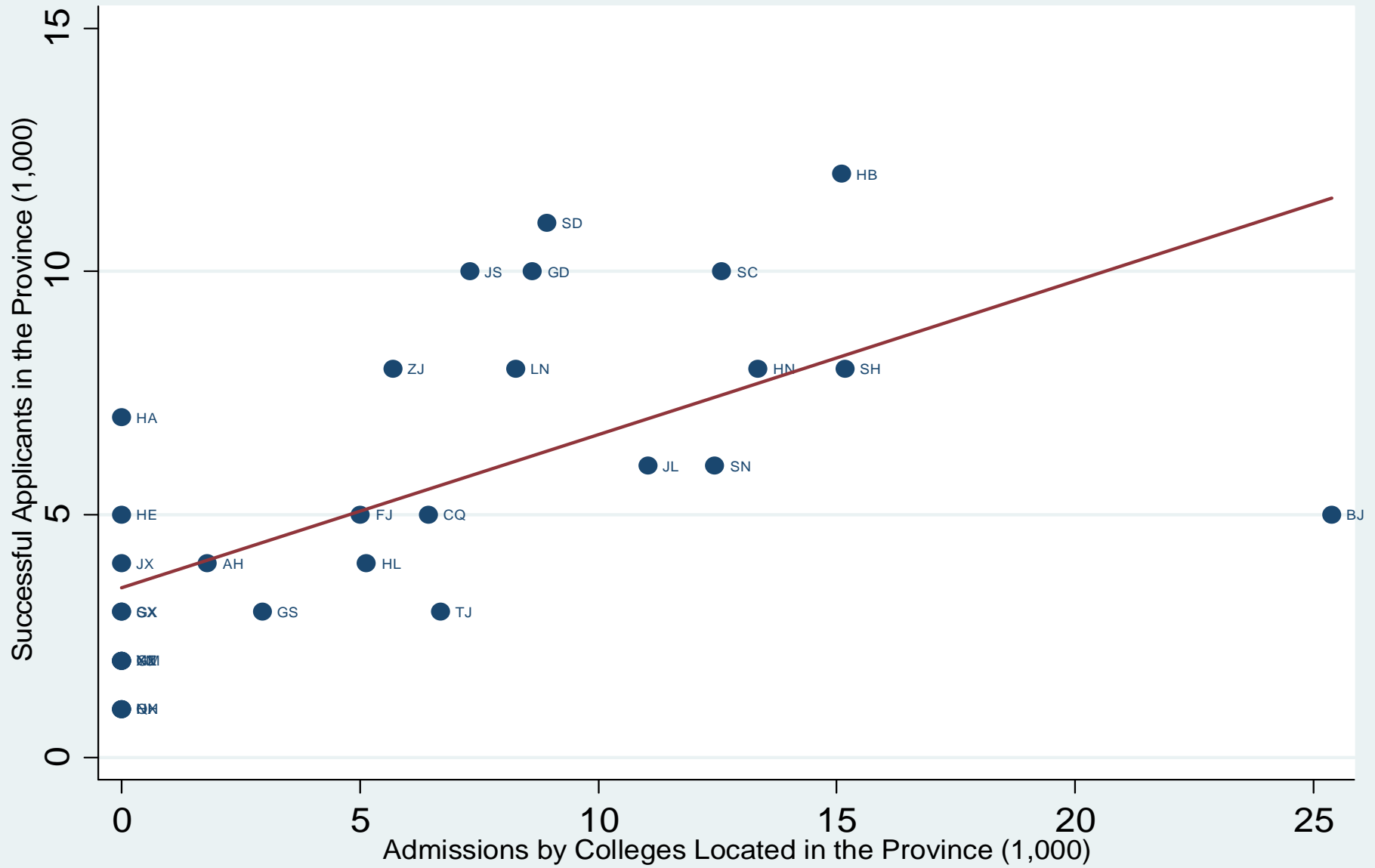
# Home bias: Universities



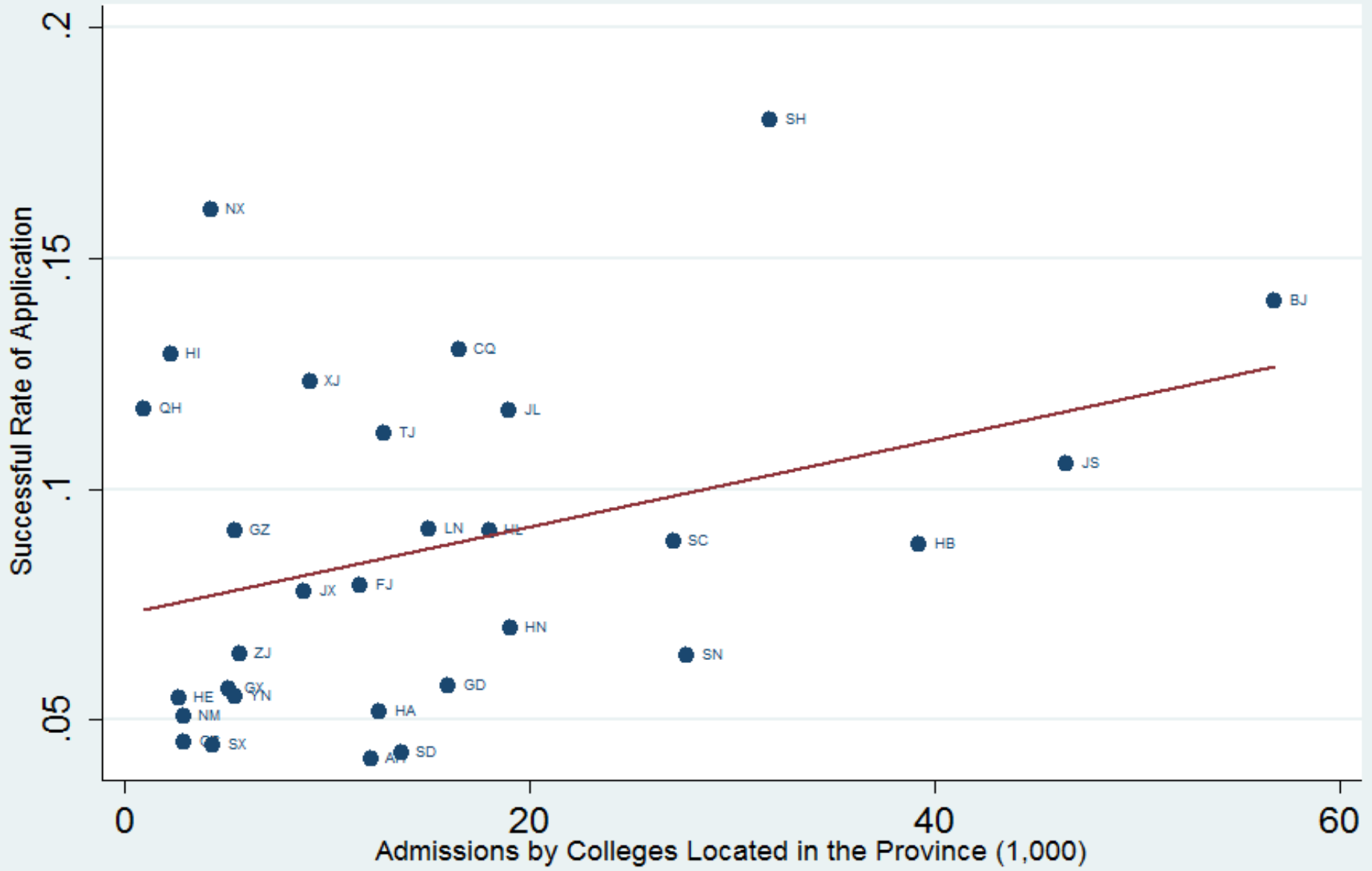
# Home bias: 211 Universities



# Home bias: 985 Universities

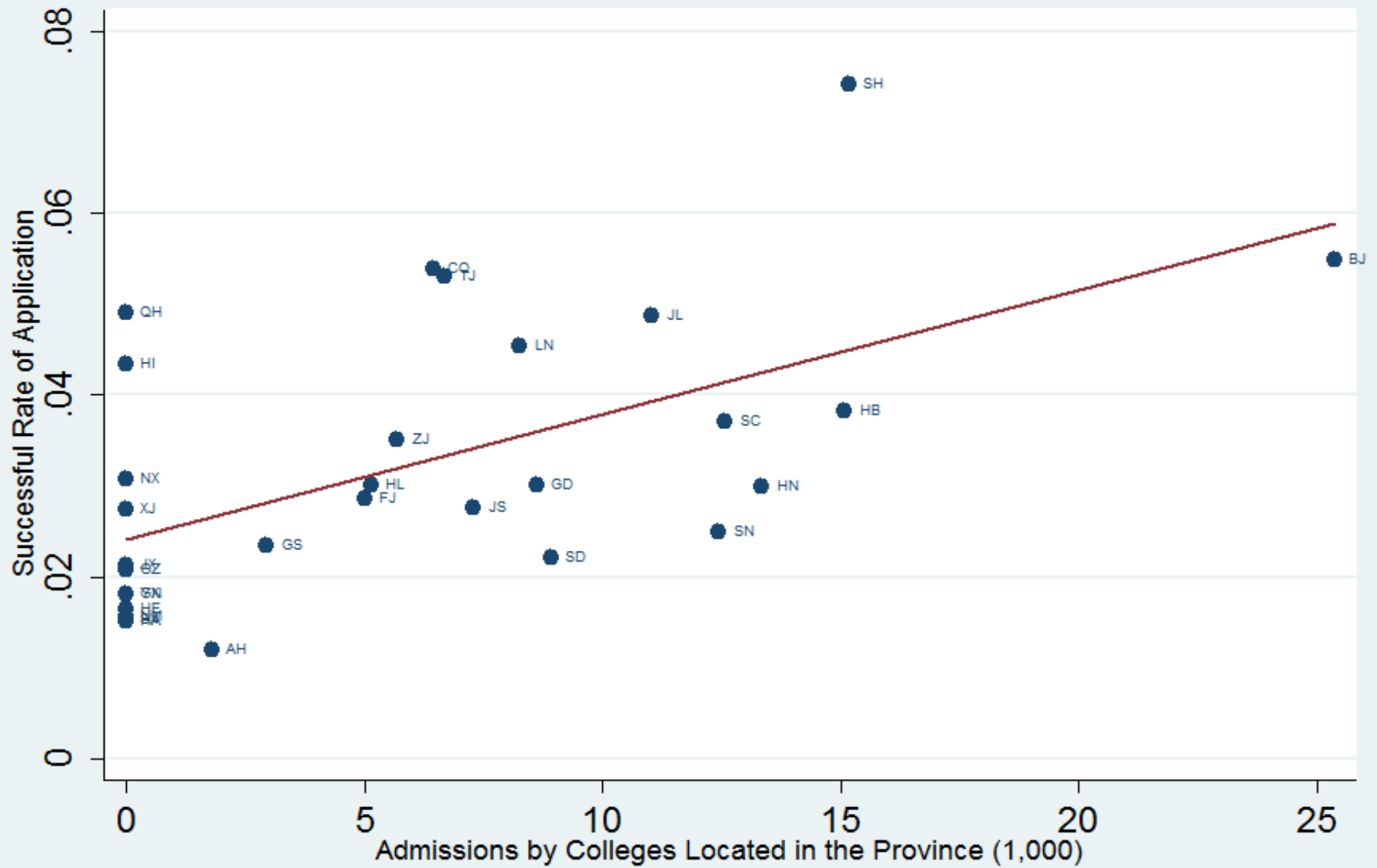


# Home bias: 211 Universities





# Home bias: 985 Universities

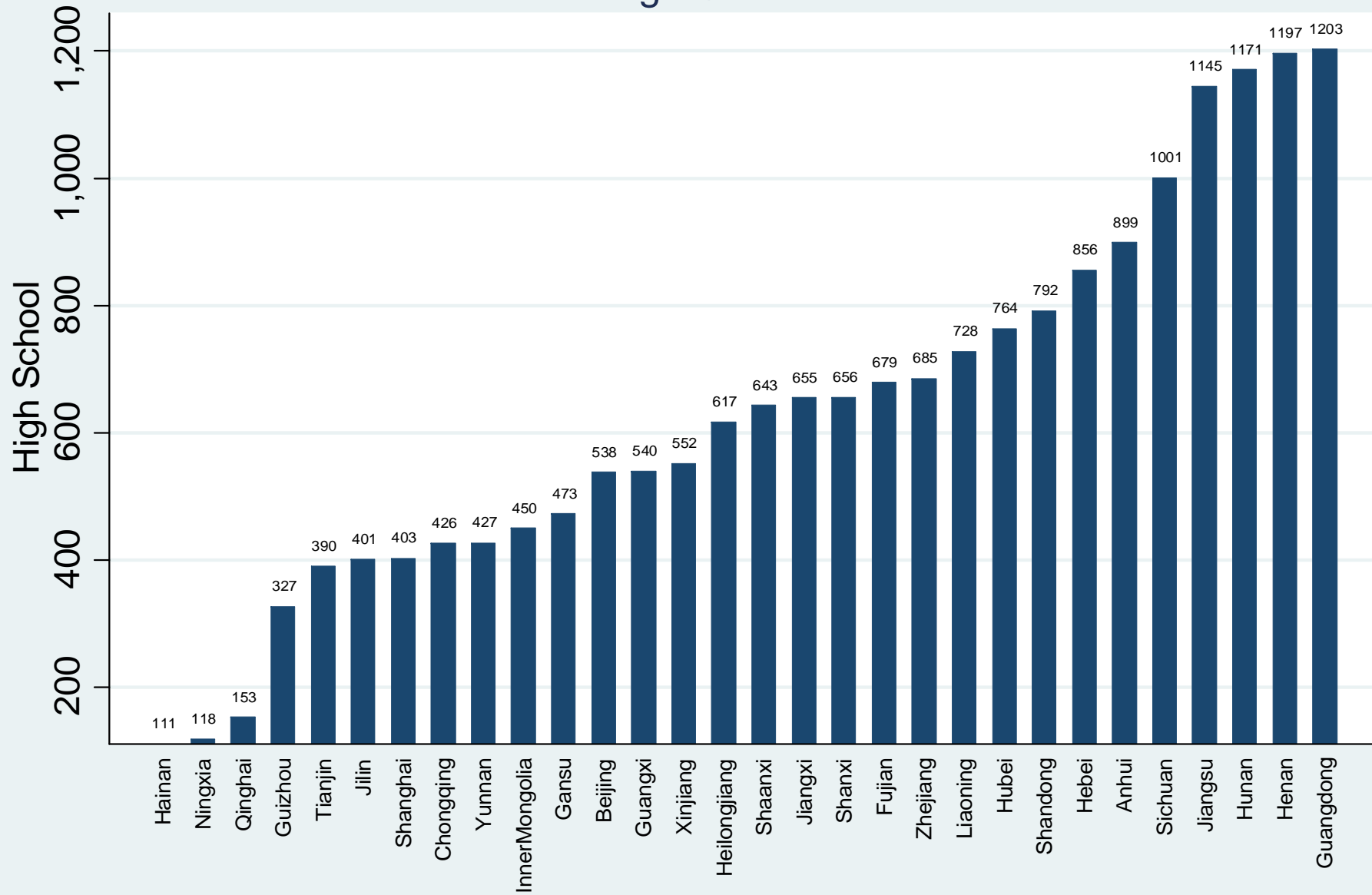


# Educational Inequality

- Gender bias
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- Home bias
- **High school bias**



## Number of High Schools in a Province



# High School Gini

- High school Gini coefficients for different level of colleges
- Eg: High school Gini for admission to Top-2 universities
  - Count the number of successful applicants of each high school
  - Calculate the Gini coefficients



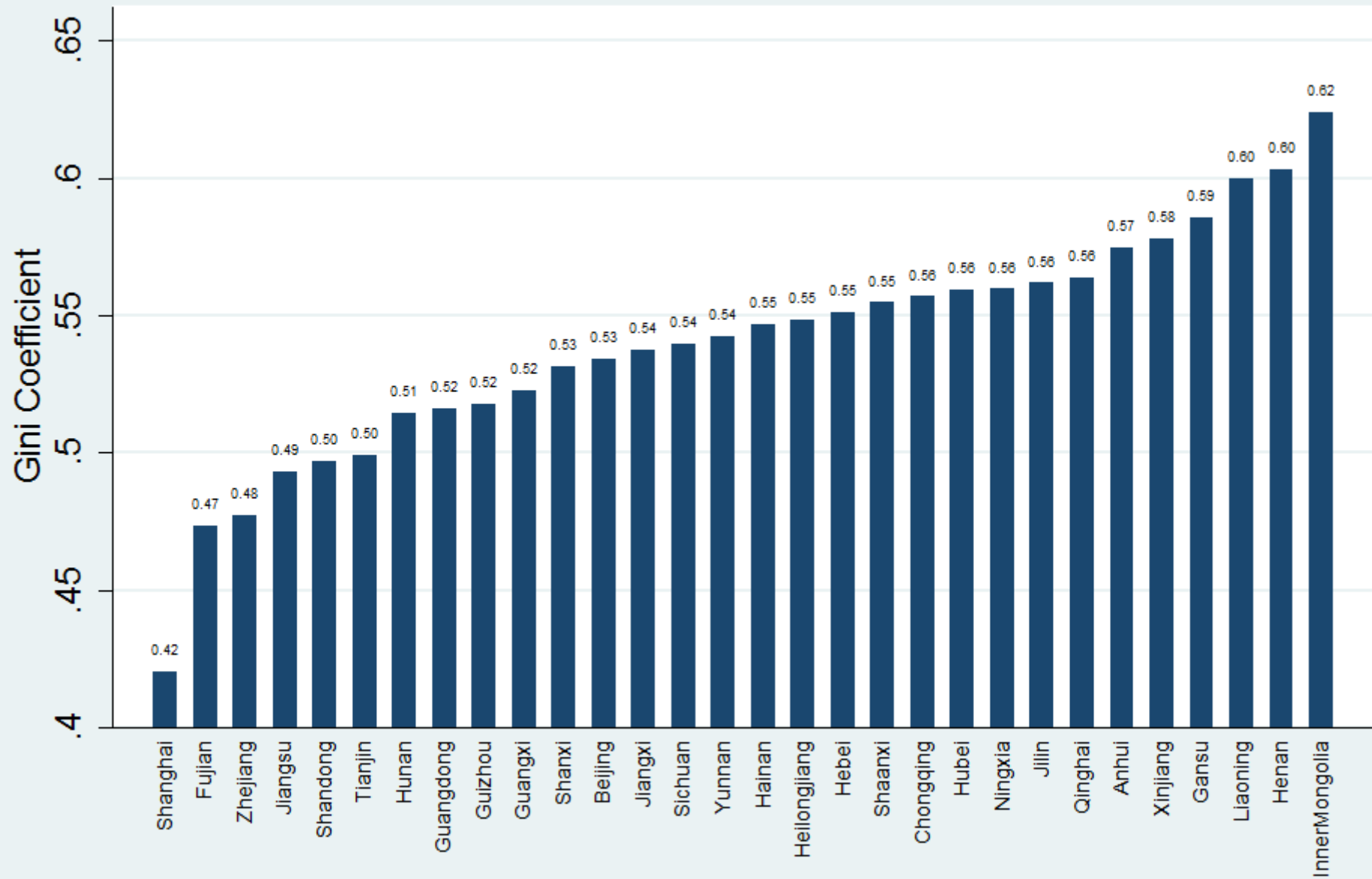
# High School Gini: # Admitted

Type (inclusive)	Gini Coefficient
College	0.556
University	0.712
211 Universities	0.804
985 Universities	0.861
Top 9 Universities	0.929
Top 2 Universities	0.959

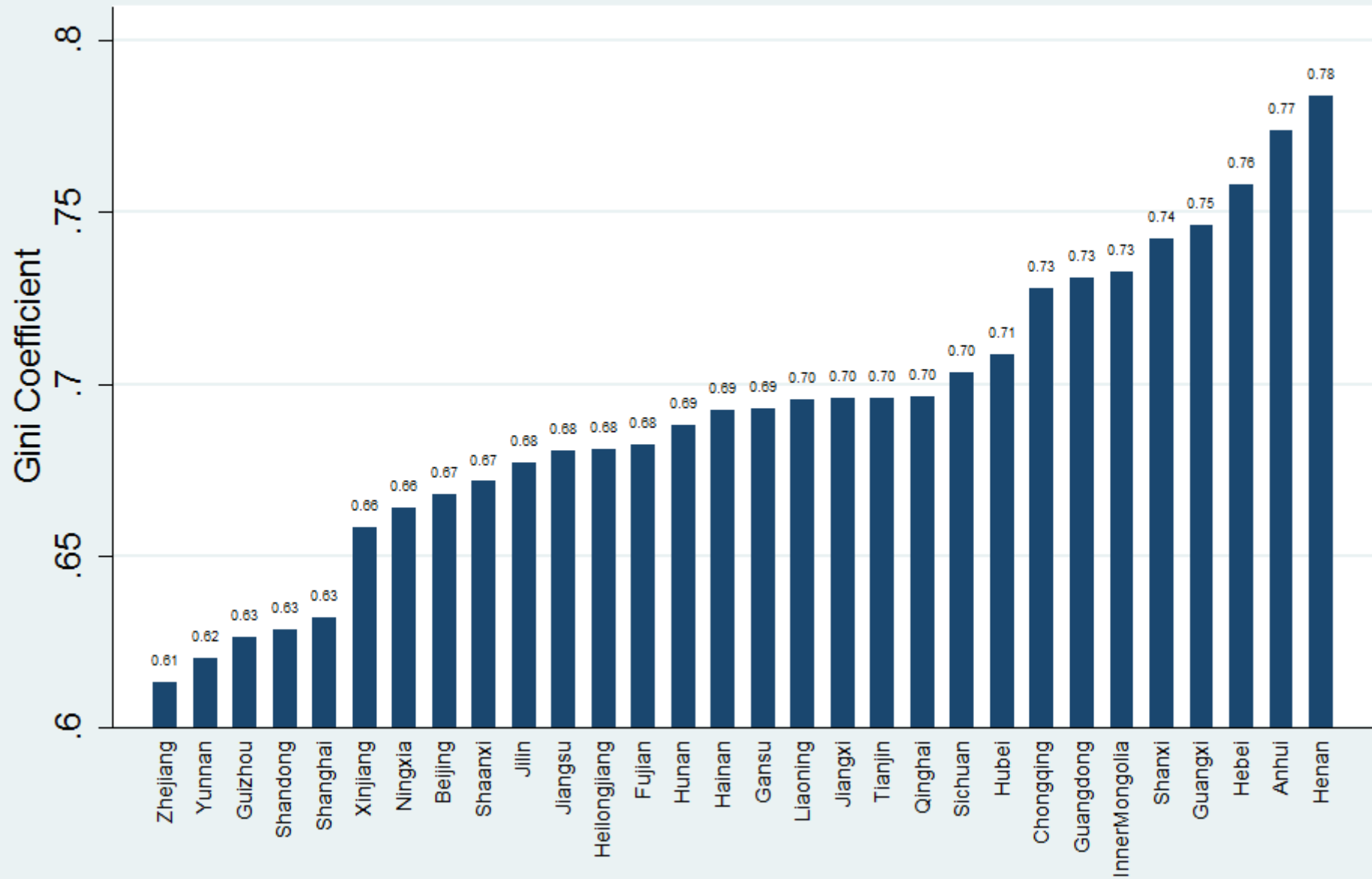
# Admissions from Top High Schools

Type	Top 10% of high schools	Top 5% of high schools
College	0.365	0.222
University	0.510	0.318
211 Universities	0.664	0.456
985 Universities	0.764	0.565
Top 9 Universities	0.914	0.756
Top 2 Universities	1	0.858

## Gini of High School Students Admitted by All Colleges

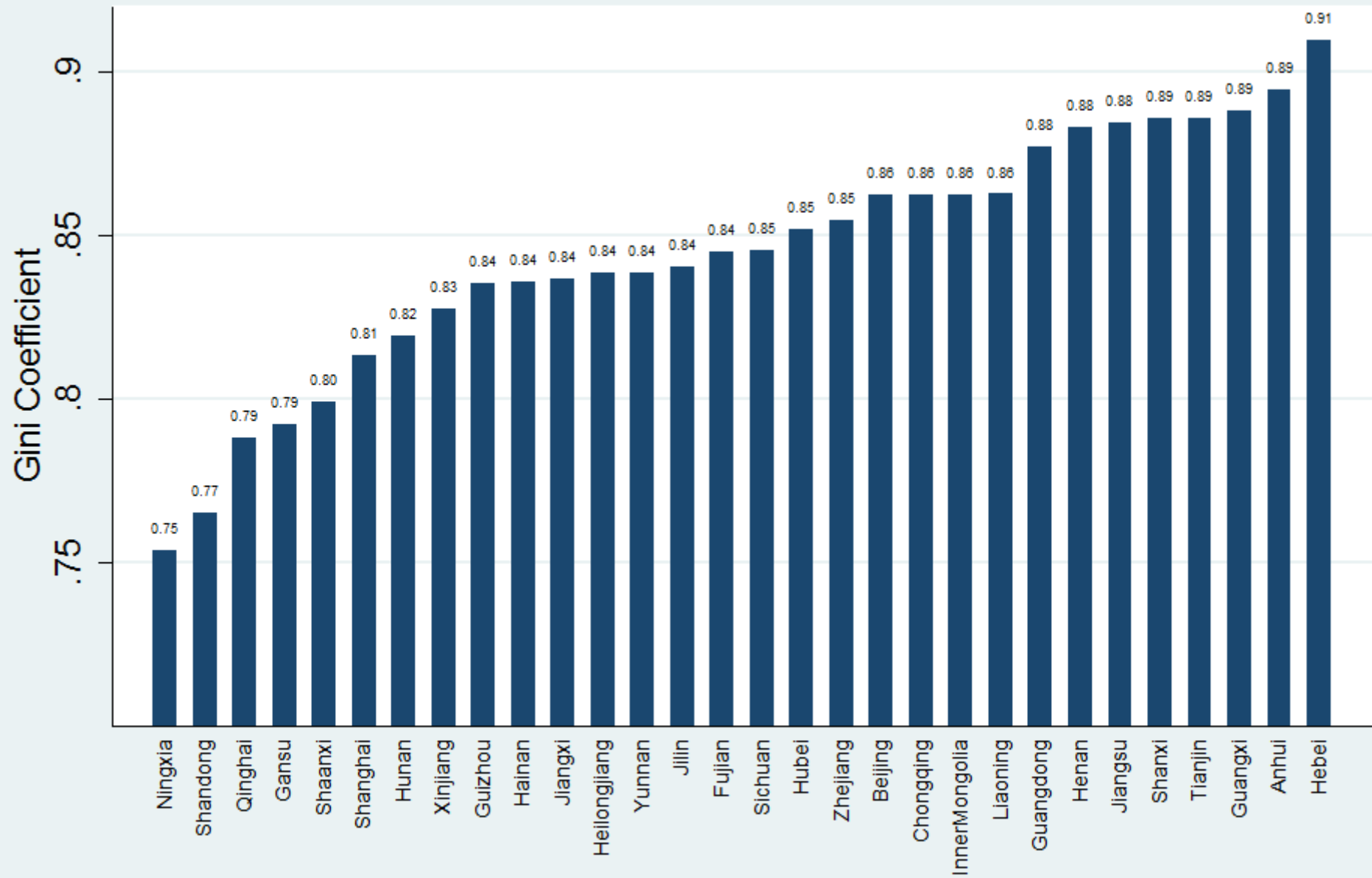


## Gini of High School Students Admitted by Universities





## Gini of High School Success by 985 Universities



# Conclusions

- What are important for the fate of CEE takers or college applicants?
  - Gender
  - Hukou (rural vs. urban)
  - Province where your hukou is
  - High school you are from
  - Times you have taken the exams