

**POLS 205**  
**Political Science as a Social Science**

**Music Preference Model Results**

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  - ▶ Out of Sample Performance
  - ▶ Substantive Results
  - ▶ Summary & Critique
- 2 Predictive Models
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	Residence	Instrument	Race	Region	Parents	Religious	Party	Male	Density
Team 6	■								
Team 5	■	■							
Team 7					■				
Team 3		■	■		■				
Team 2		■	■						
Team 1			■						
Team 4			■						
Team 9			■	■	■				■
Team 8			■					■	■
Adolph Post			■		■		■	■	■
Adolph Prior			■		■	■	■	■	■

9 Groups, and 9 different explanatory variables in different combinations

	Residence	Instrument	Race	Region	Parents	Religious	Party	Male	Density
Team 6	■								
Team 5	■	■							
Team 7					■				
Team 3		■	■		■				
Team 2		■	■						
Team 1			■						
Team 4			■						
Team 9			■	■	■				■
Team 8			■					■	■
Adolph Post			■		■		■	■	■
Adolph Prior			■		■	■	■	■	■

9 Groups, and 9 different explanatory variables in different combinations

Which models best predict the out of sample data?

## Out of sample tests

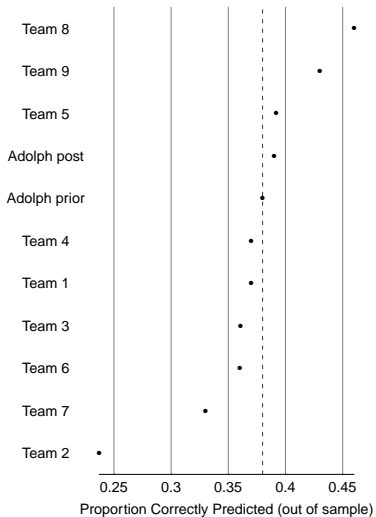
Amanda reserved 100 observations, randomly selected

How do our models estimated on the remaining training observations predict the left-out data?

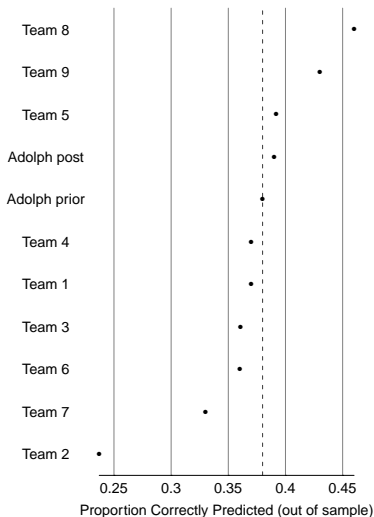
Use the model to fit the probability that each left-out individual prefers each genre

Call the most likely category the model prediction

Calculate the percent of cases correctly predicted

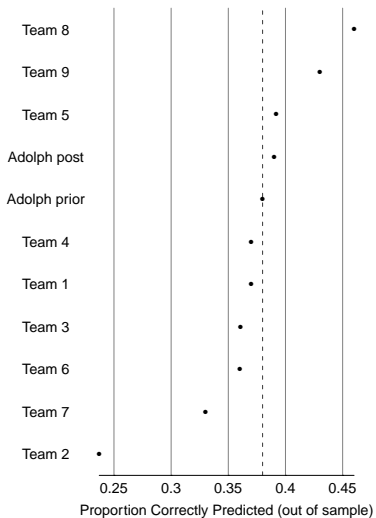


Models ranked by out of sample prediction



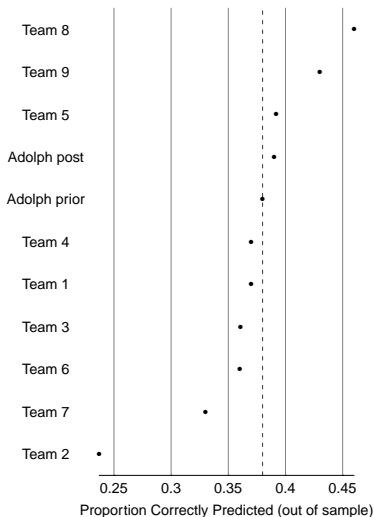
Models ranked by out of sample prediction

The dashed line corresponds to predicting everyone prefers rock, the modal category in the training sample



How is our performance?



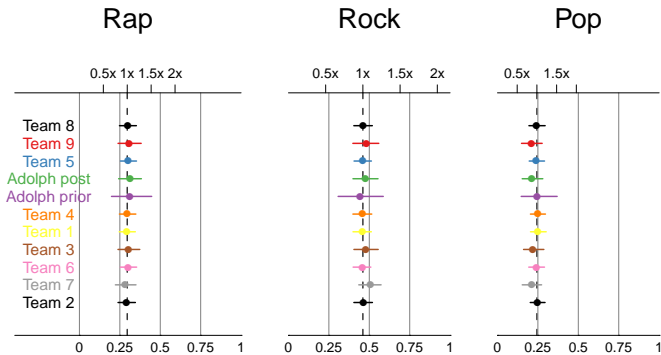


One challenge: our test dataset differs more than we might expect

	pop	rap	rock
train	24%	30%	46%
test	22	40	38

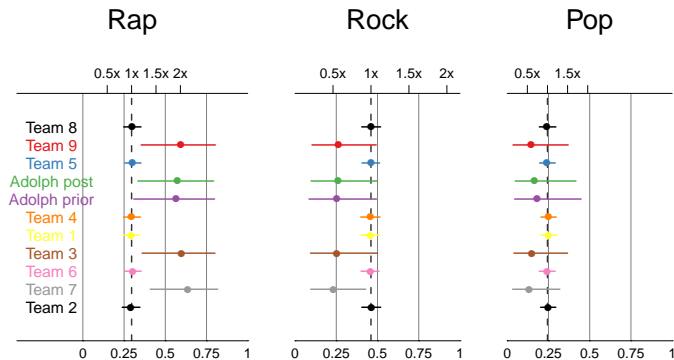
# Parents' Preferences

Parents Prefer Rock

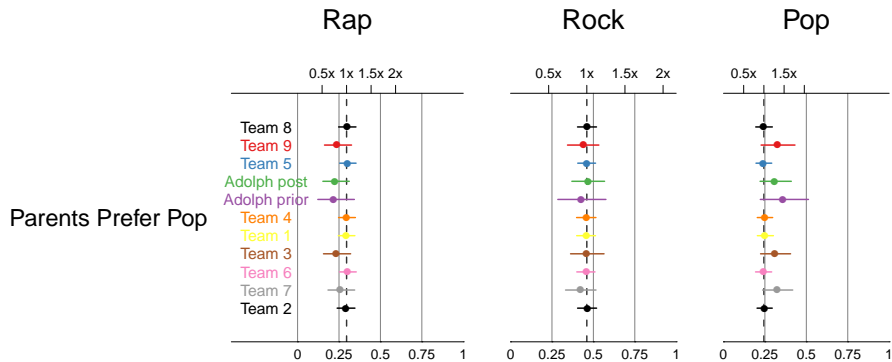


# Parents' Preferences

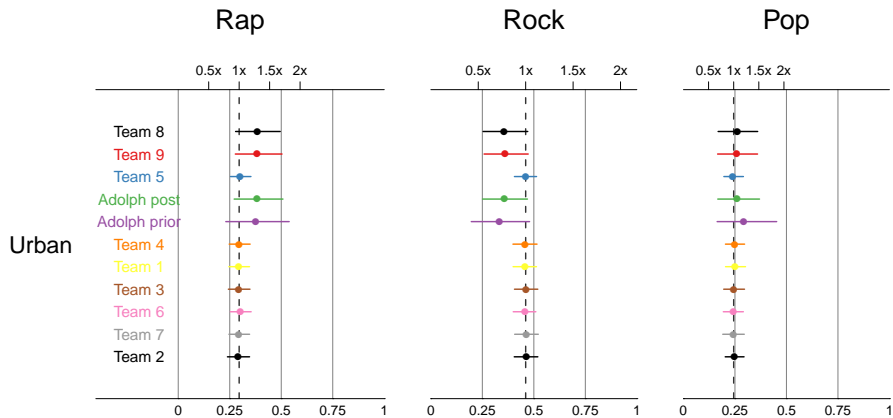
Parents Prefer Rap



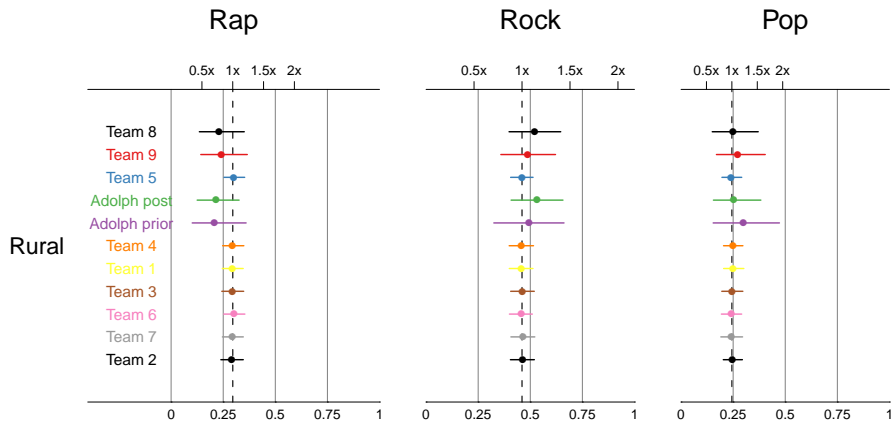
# Parents' Preferences



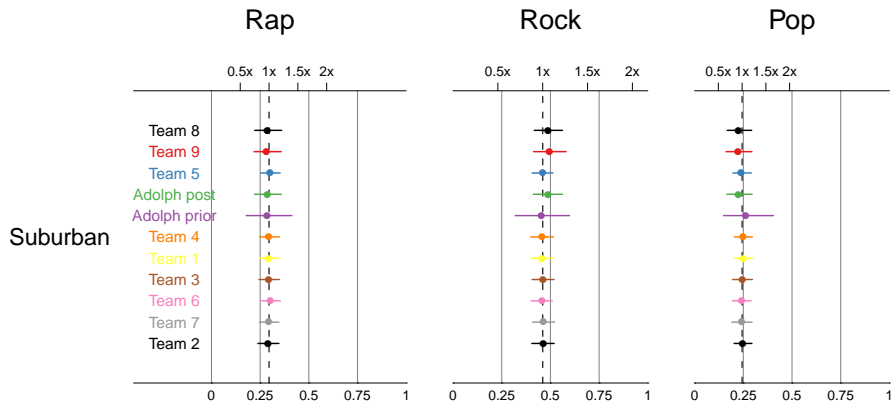
## Density



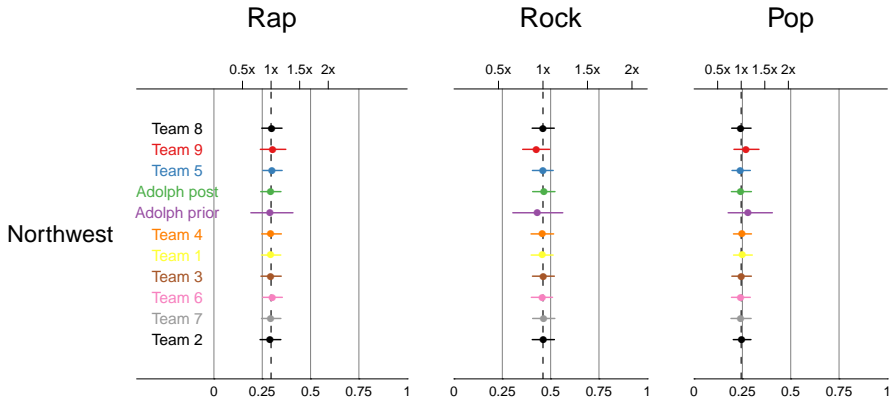
## Density



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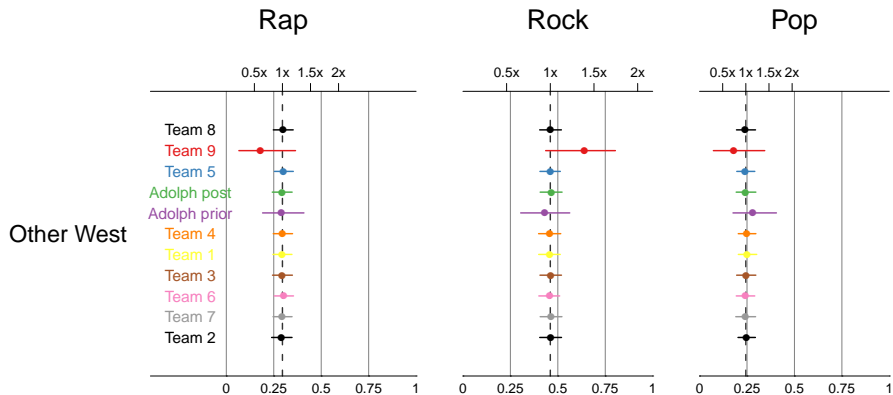


## Region

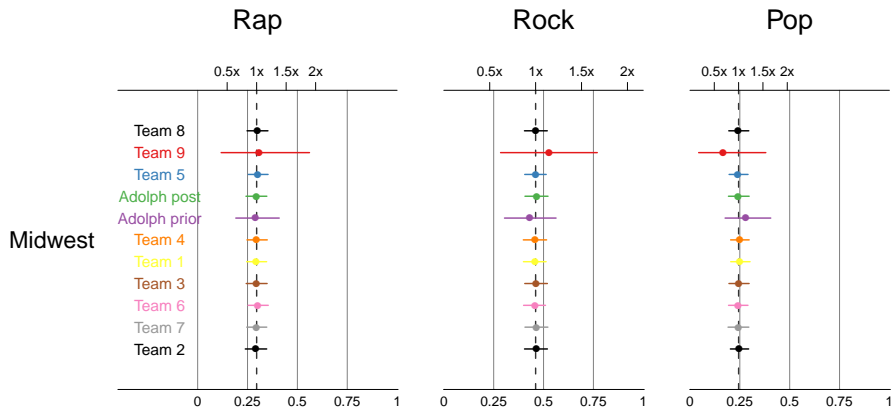




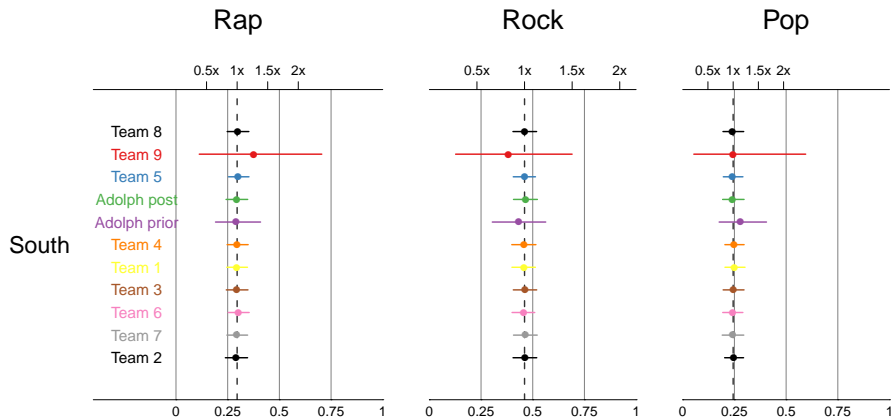
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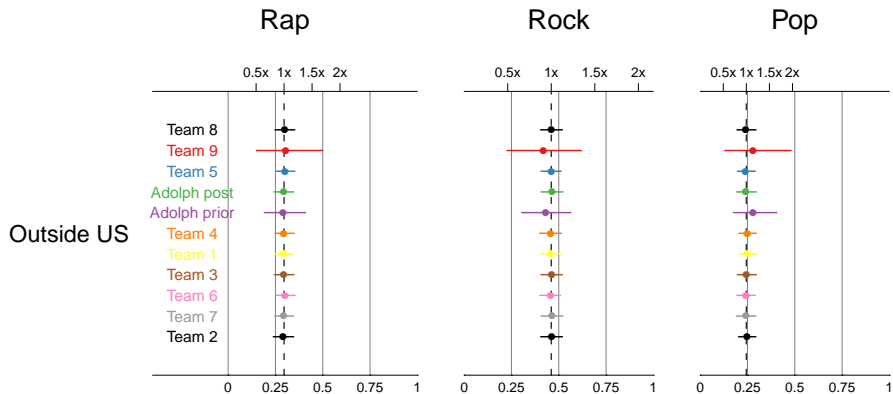
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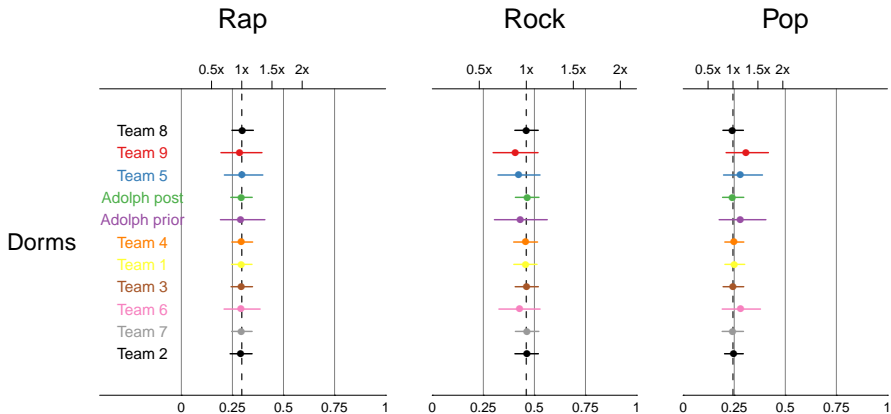
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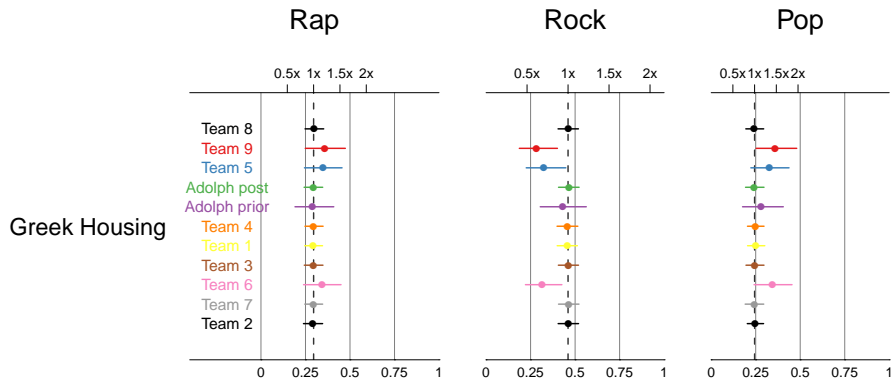
## Region



## Residence

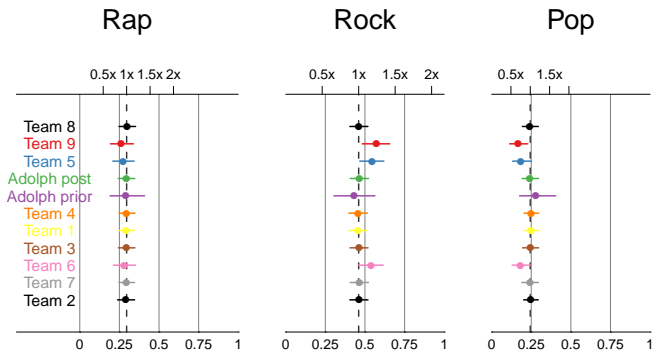


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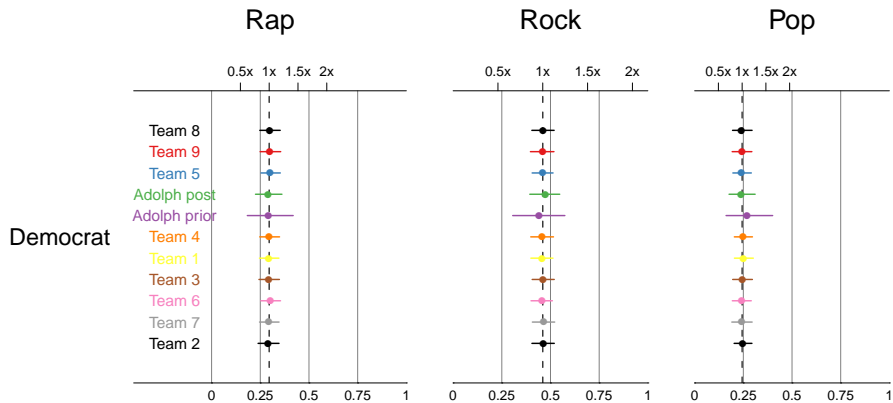


## Residence

Off-campus Housing

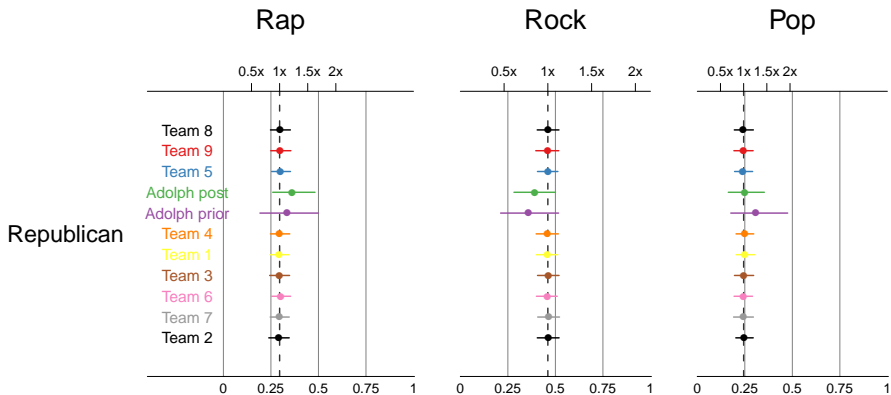


## Party

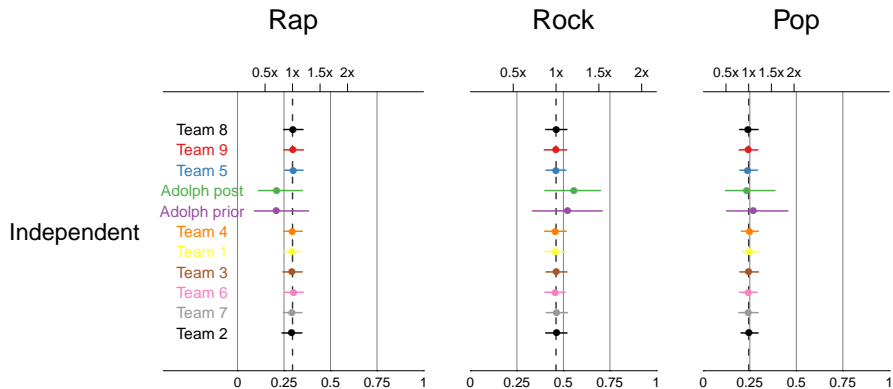




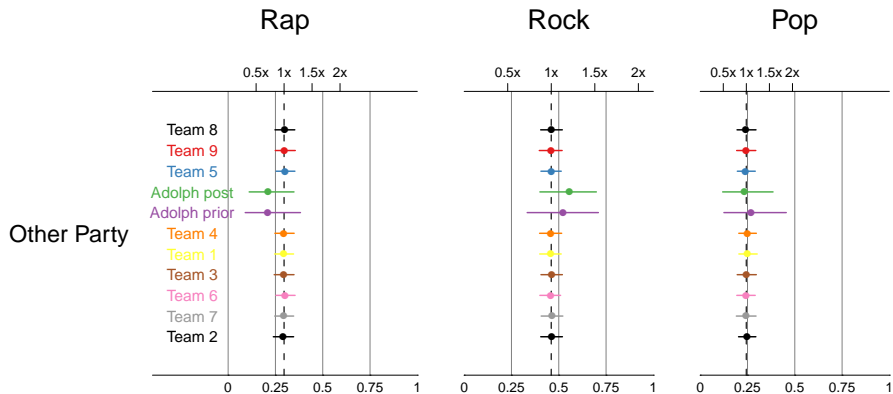
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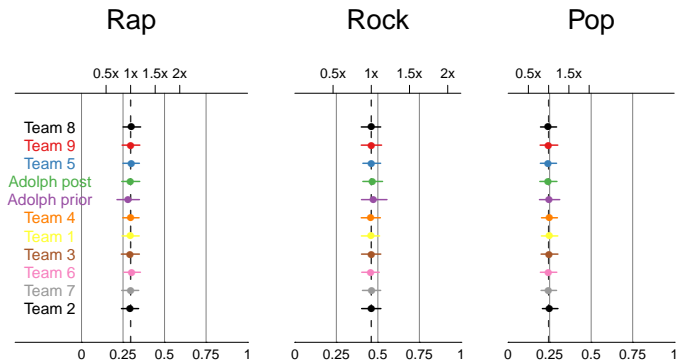


## Party



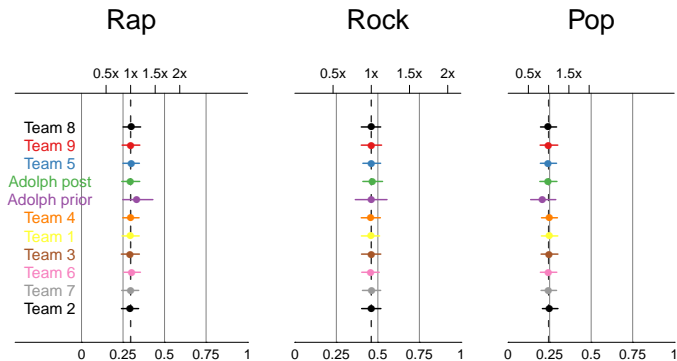
# Religious Days

Religious Days = 0



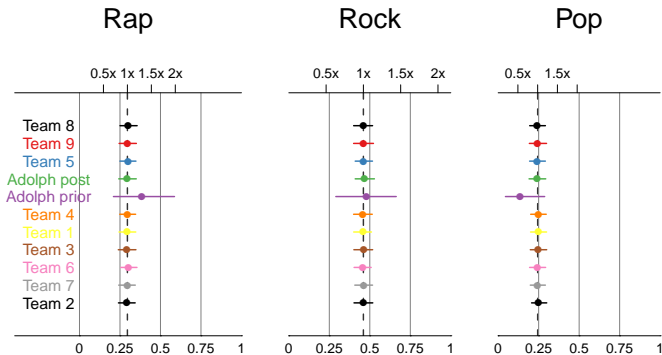
# Religious Days

Religious Days = 4

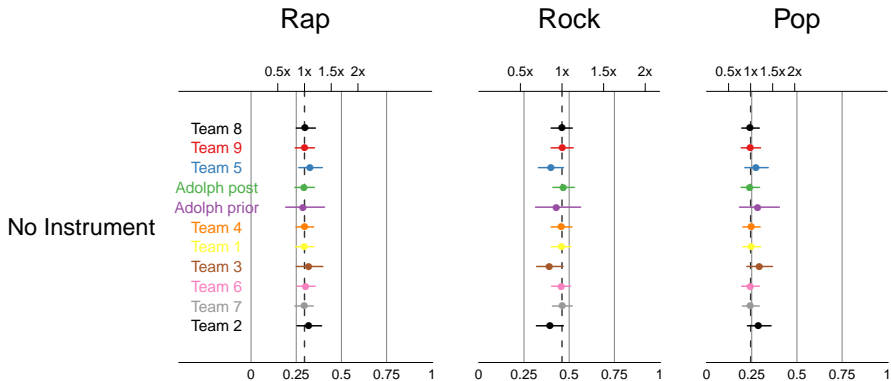


# Religious Days

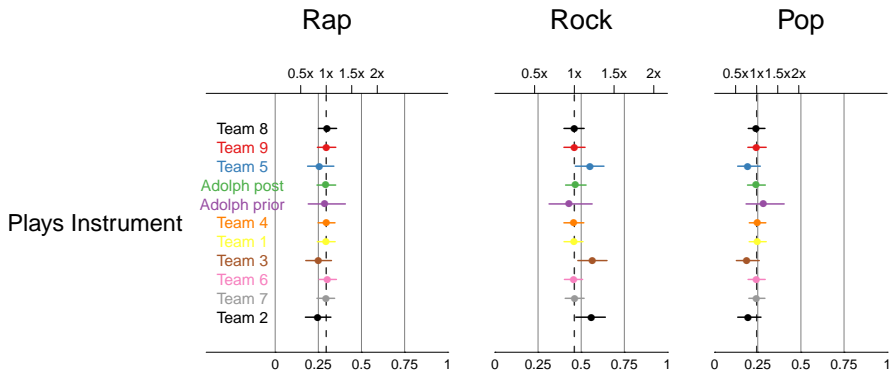
Religious Days = 12



# Musical Instrument

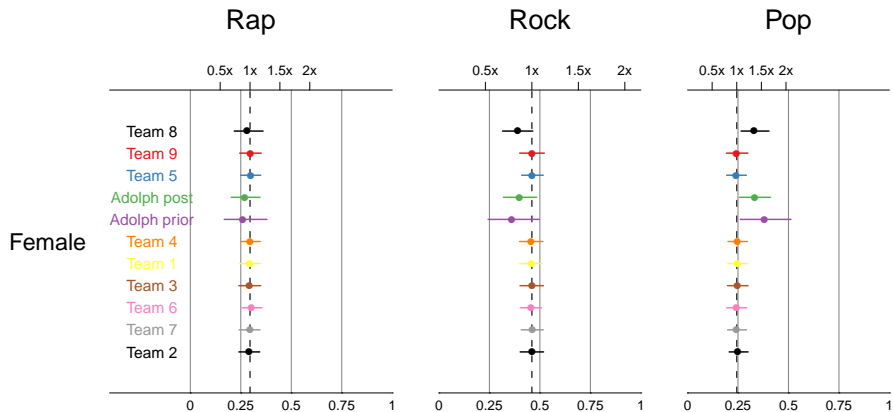


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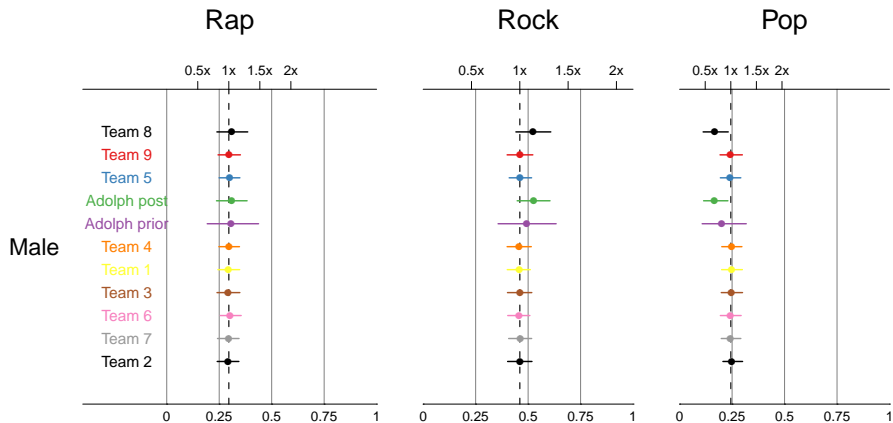




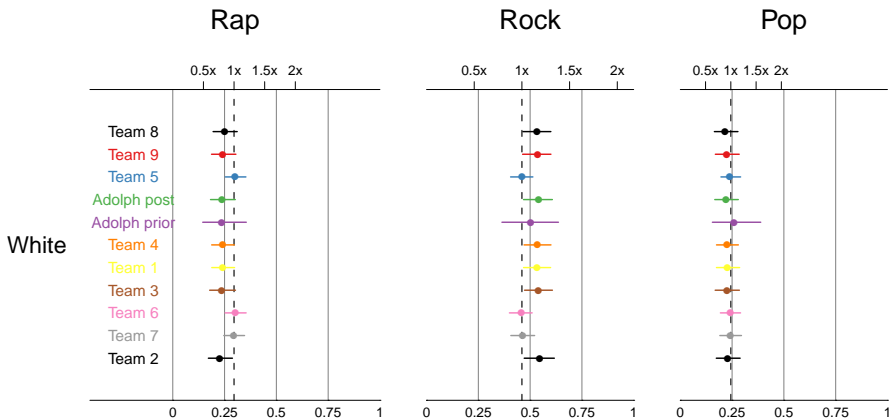
## Gender



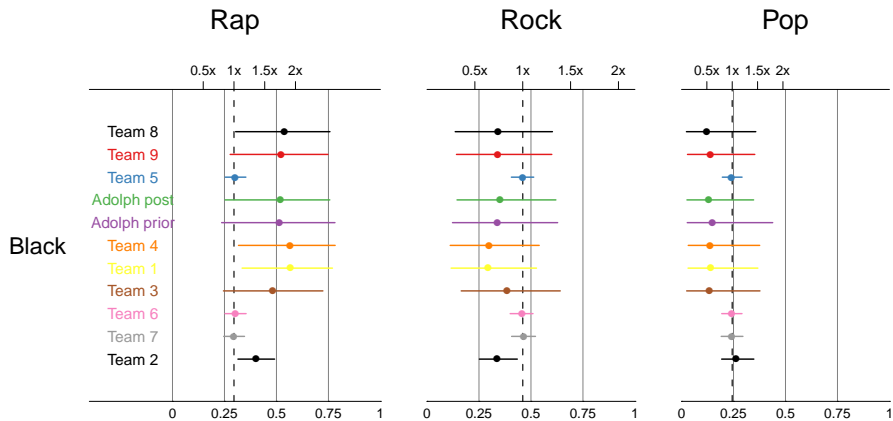
## Gender



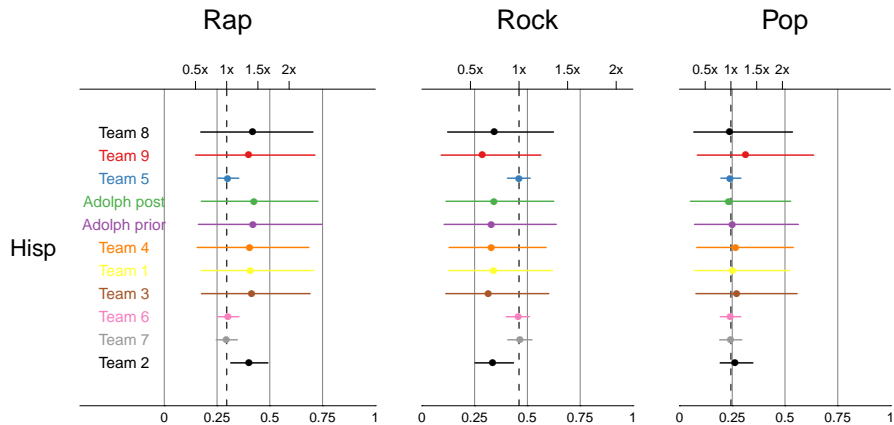
## Race



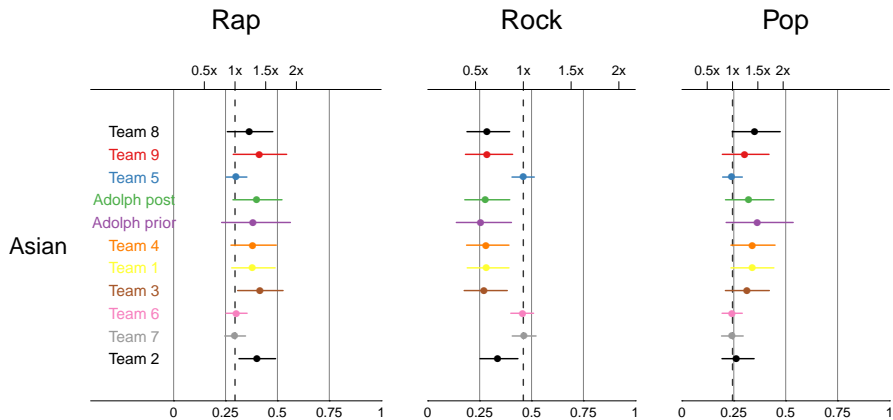
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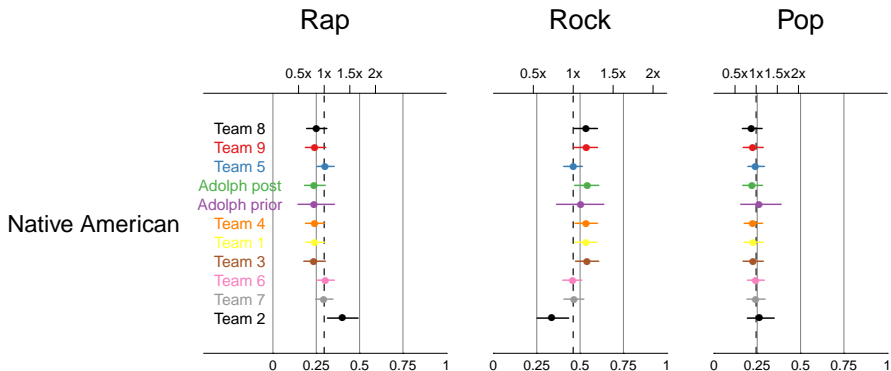
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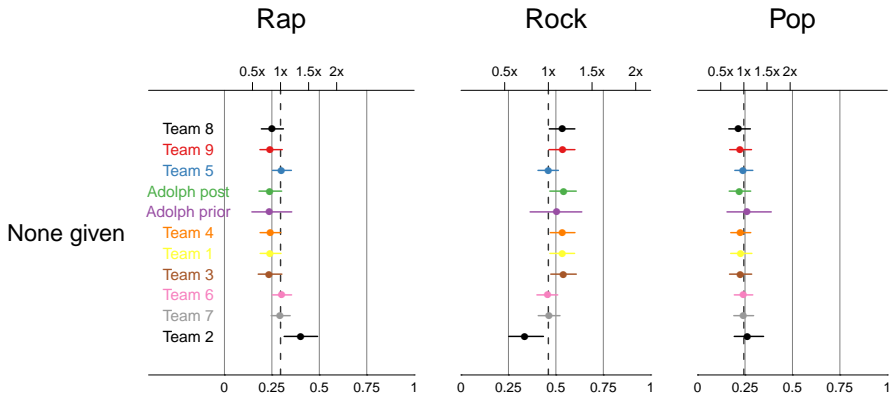
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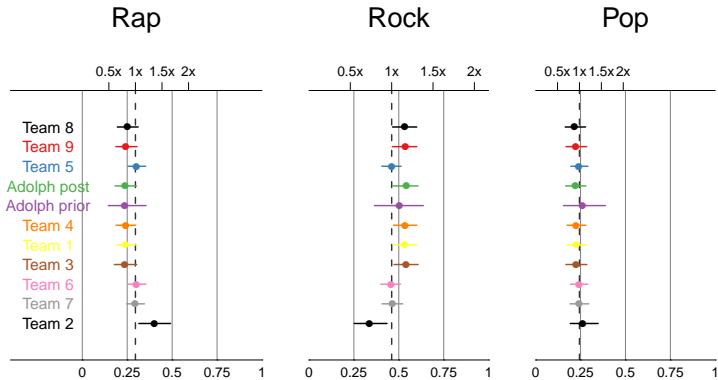
## Race





## Race

More than one



## Summary of Substantive Results

Mostly consistent but modest results across models

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Probability of liking Pop falls for Males, Musicians, Off-campus housing, and maybe Blacks



# Critique

Do you believe or doubt our results?

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Which of the following may be problems, and why?

- Selection bias
- Omitted variable bias
- Endogeneity / reverse causation
- Measurement error
- Unreliable measurement
- Spurious correlation

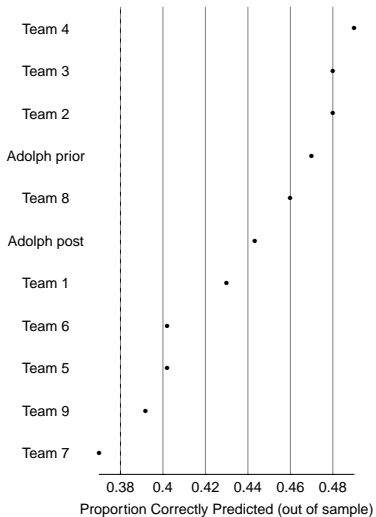
	Sports	TV	Parents	Bicycle	Instrument	Residence	Race	Party	Religious	Region	Trust	Movies	Grocery	Male	Density
Adolph Prior	■	■	■	■	■	■	■					■	■	■	■
Adolph Post	■	■	■	■	■	■	■				■	■	■	■	■
Team 7			■							■					
Team 8			■							■				■	■
Team 9		■	■	■	■	■	■			■					■
Team 6					■										
Team 5				■	■	■	■								
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Team 1	■					■	■							■	
Team 4		■	■			■	■		■						

9 Groups, and 15 different explanatory variables in different combinations

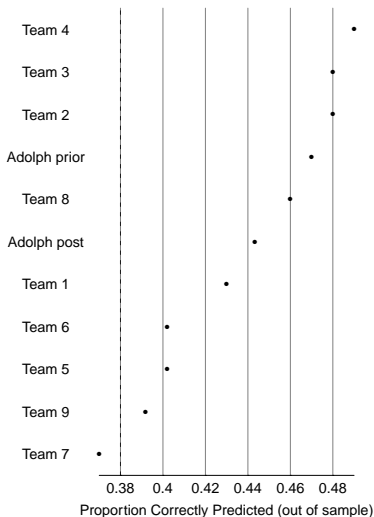
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Team 6					■										
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Team 2	■														
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Team 4		■	■			■	■		■						

9 Groups, and 15 different explanatory variables in different combinations

Which models best predict the out of sample data?



Models ranked by out of sample prediction



Models ranked by out of sample prediction

The dashed line corresponds to predicting everyone prefers rock, the modal category in the training sample

# Congratulations!

Congratulations to Groups 2, 3, 4, 5, 8, and 9!

Each of these groups beat the predictions of one of my models

Each of these groups will receive 5% extra credit on the final exam