

# US Poverty Analysis

By Max Lan

# Objective



United States Senate Budget Committee

**JEFF SESSIONS** | Ranking Member

CRS Report: Welfare Spending The Largest Item In The Federal Budget

- **\$1.03 Trillion** spent in 2011
- **39.7 Million** people in poverty in the US in 2017
- How do we maximize policy efficiency to help those in poverty?
  - Identify important features relating to poverty from [IPUMS.org](http://IPUMS.org)

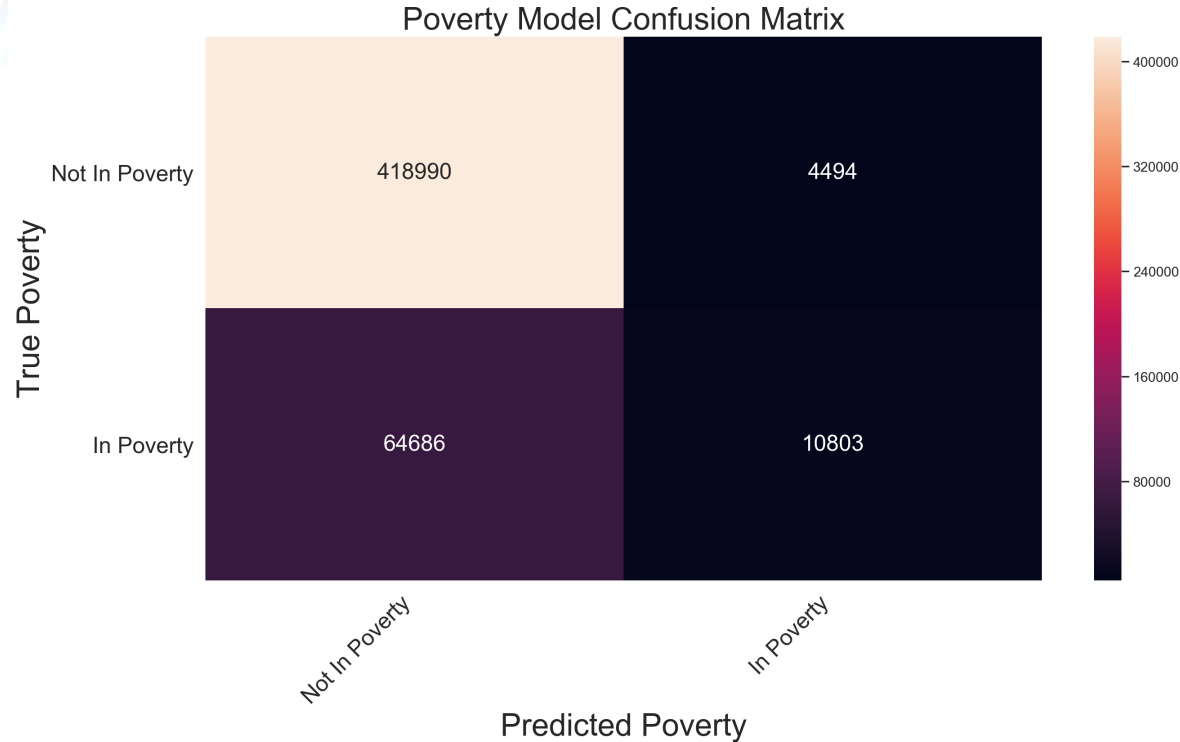


# Methodology

- Classification Modeling - XGBoost
- Key Features:
  - Age
  - Birthplace and Immigration
  - Education and Employment
  - Insurance
  - Marriage and Number of Children
  - Sex
- Software Packages:

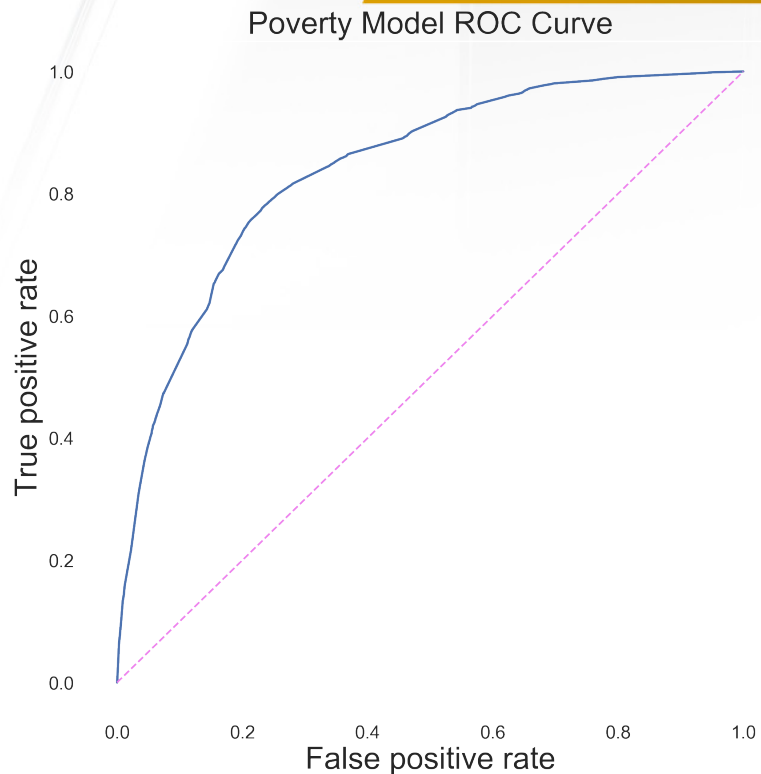


# Model Precision



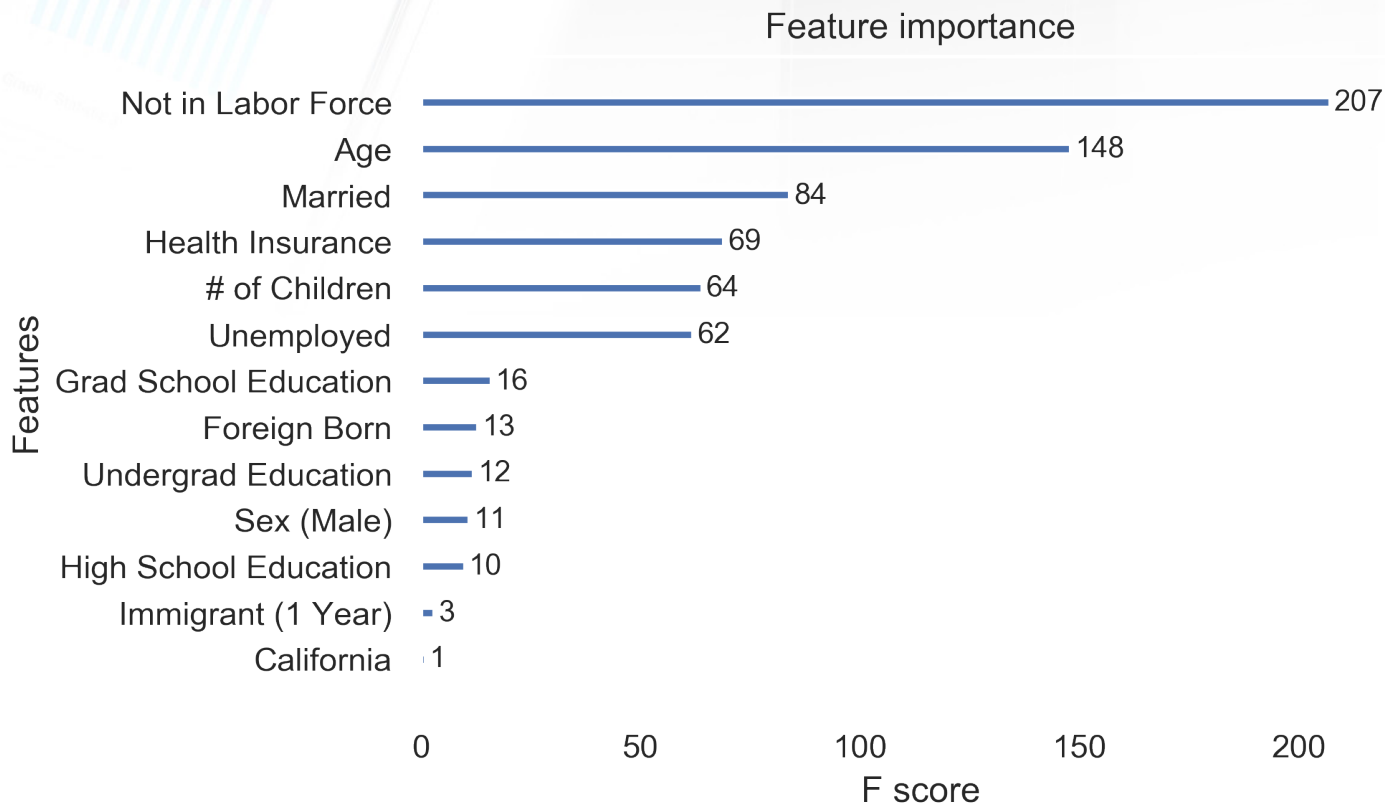
**Model Precision: 71%**

# Model AUC



**Model AUC-Score: 0.84**

# Feature Importances





# Feature Direction

Feature	Not in Labor Force	Age	Married	Health Insurance	# of Children	Unemployed	Grad School
Coefficient	0.96	-0.46	-0.74	-0.19	0.19	0.26	-0.51

- Feature importances do not indicate direction
- Directional impact from logistic regression



# Tableau Visualization

- Visualization of feature importances by state
  - Most important feature changes depending on the location
  - [Tableau Online](#)





# Recommendations

- For national policy:
  - Focus on those never employed or no longer looking for jobs
  - Age-based policies targeting drivers (e.g. debt)
  - Consider unmarried individuals for policy focus
- For state policy:
  - Examine the important features for each state



# Further Studies

- Further optimization using hyper-parameters
- Occupation and industry
- Ability to speak English
- Welfare spending by state