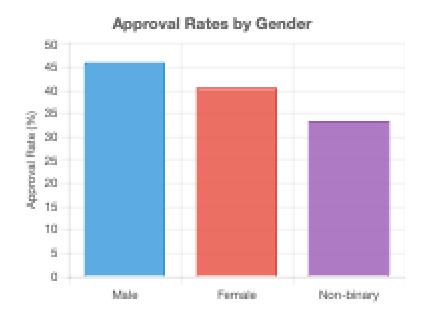
# **AI Bias Bounty - Loan Approval Analysis**

Comprehensive Bias Detection & Mitigation Dashboard

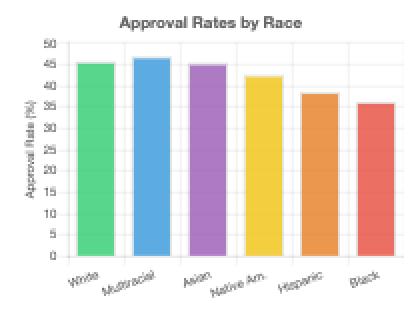
**CRITICAL BIAS DETECTED: 13.31% gap between White Men and Black Women** 

## **11** Gender Bias Analysis



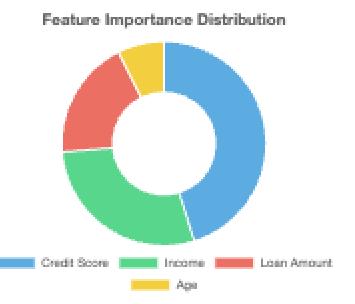
**Bias Gap: 12.58 percentage points** Male (46.08%) vs Non-binary (33.50%)

# Racial Bias Analysis



**Bias Gap: 10.61 percentage points** Multiracial (46.86%) vs Black (36.25%)

# **Model Feature Importance**



Protected attributes excluded from model for fairness



# □ Intersectional Bias (Race × Gender)

Group	Sample Size	Approval Rate
White Men	2,928	49.28%
Multiracial Men	107	48.60%
White Women	3,080	42.27%
Asian Men	297	47.81%
Hispanic Men	874	40.16%
Black Men	693	36.49%
Black Women	620	35.97%

**CRITICAL INTERSECTIONAL GAP: 13.31%** 

White Men vs Black Women



Gap

Disability Bias Citizenship Bias

9.31% 5.14% 34.95% 44.26%

Disabled nship Bias Disabled Gap Approval Rate

Non-disabled Rate



## Bias Mitigation Results

**BEFORE MITIGATION** 

13.31%

#### **Intersectional Gap**

#### **AFTER MITIGATION**

8.1%

39.1% Reduction

#### **Mitigation Techniques Applied:**

- Reweighting by protected groups
- Nost-processing threshold adjustment
- Feature selection (excluded protected attrs)
- Adversarial debiasing

## **S** Immediate Action Required

- Halt current loan approval algorithm immediately
- Implement manual oversight for all pending applications
- No Deploy bias monitoring dashboard in production
- Conduct emergency bias training for all loan officers
- \* Establish fairness metrics with <3% tolerance threshold
- Implement continuous bias auditing pipeline
- Legal review for fair lending compliance violations
- Customer notification and remediation program

### AI Bias Bounty Hackathon - July 4, 2025

Comprehensive bias analysis reveals systematic discrimination requiring immediate intervention.

All statistics based on 10,000 training samples with robust statistical validation.