

# The Gender Pay Gap

## Insights for Equity and Action

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# How far have we come?

*Late 1800s- Early 1900s*



**WOMEN'S  
SUFFRAGE  
MOVEMENT**



**SECOND-WAVE  
FEMINISM**

*1960-1980*

*1975 – 1985*



**UN INTERNATIONAL  
WOMEN'S YEAR**



**#METOO  
MOVEMENT**

*2007 - now*

# Where are we now?

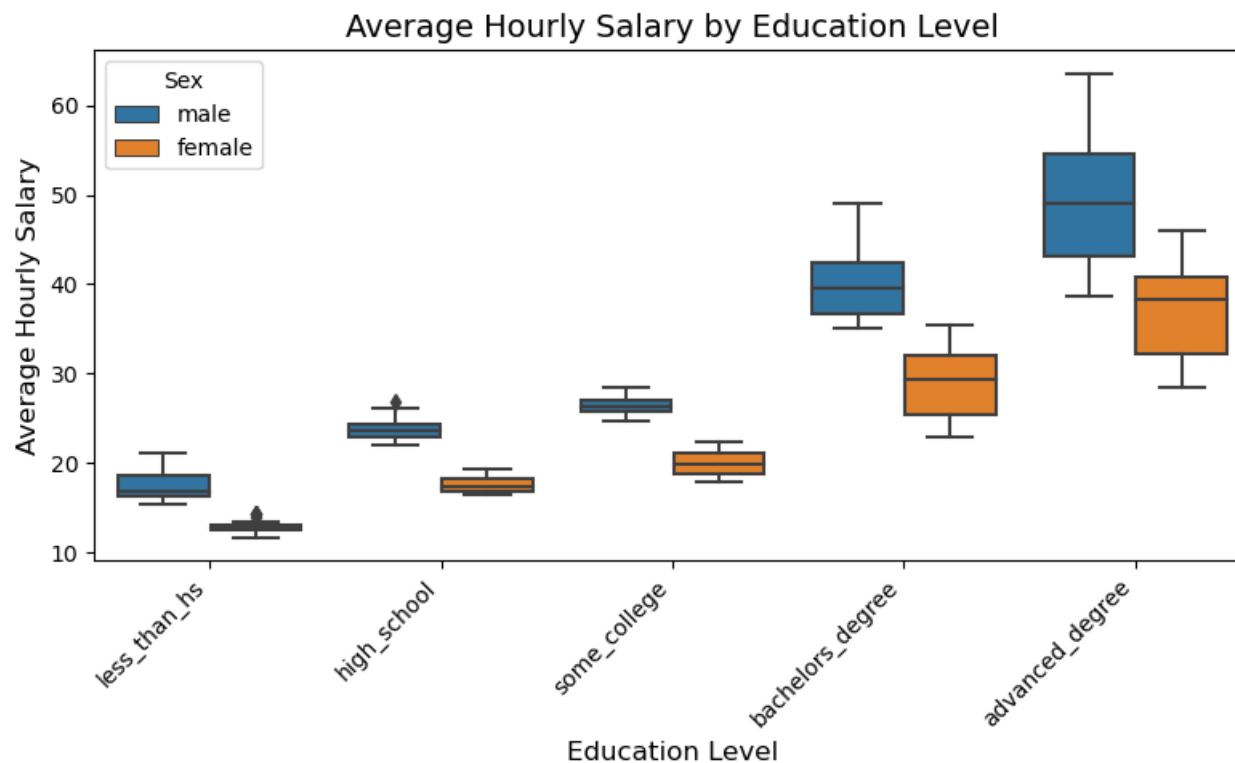
- ▶ In 2024, women earned 85% of what men earned (Pew Research).
- ▶ Progress is slow across industries and education levels.
- ▶ Goal: Quantify the gap, raise awareness, and empower women.

# Dataset

- ▶ Source: Kaggle - [Wages by Education](#) (1973–2022)
- ▶ Clean data, minimal wrangling, reshaped for modeling.

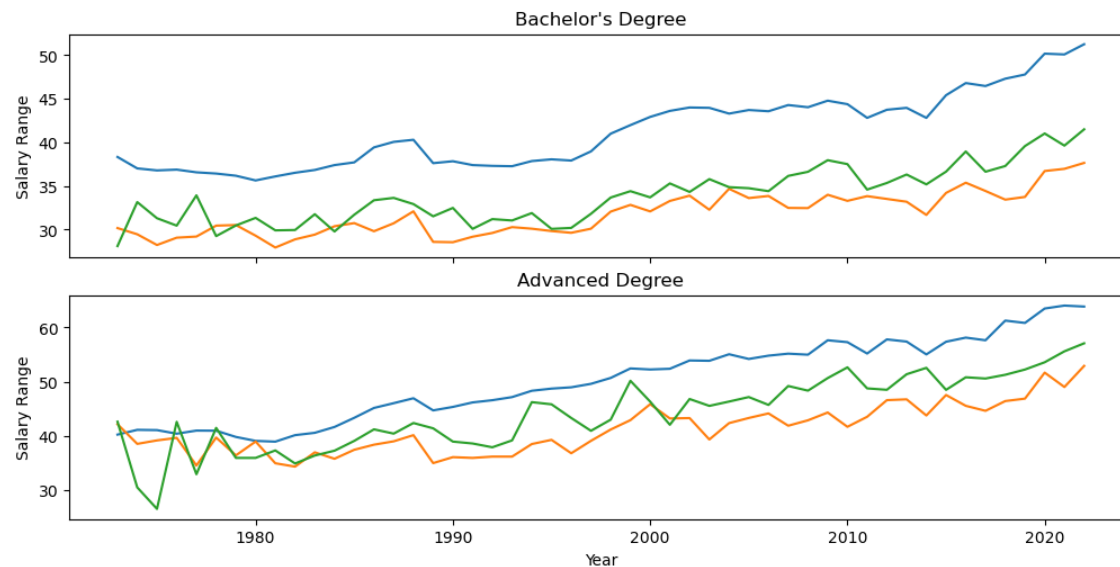
# Gender Disparity

- ▶ Women earn less than men at all education levels.



# Racial Inequality

- ▶ White men earn more than Black or Hispanic men.
- ▶ Same trend for women, though less pronounced.
- ▶ Example for “men” with bachelor's and advanced degrees



# Modeling Approach

- ▶ Goal: Predict wages from demographics and education.
- ▶ Variables:
  - ▶ Independent: Gender, Race, Education
  - ▶ Dependent: Hourly Wages
- ▶ Compared: Linear Regression, Decision Trees, Random Forests.

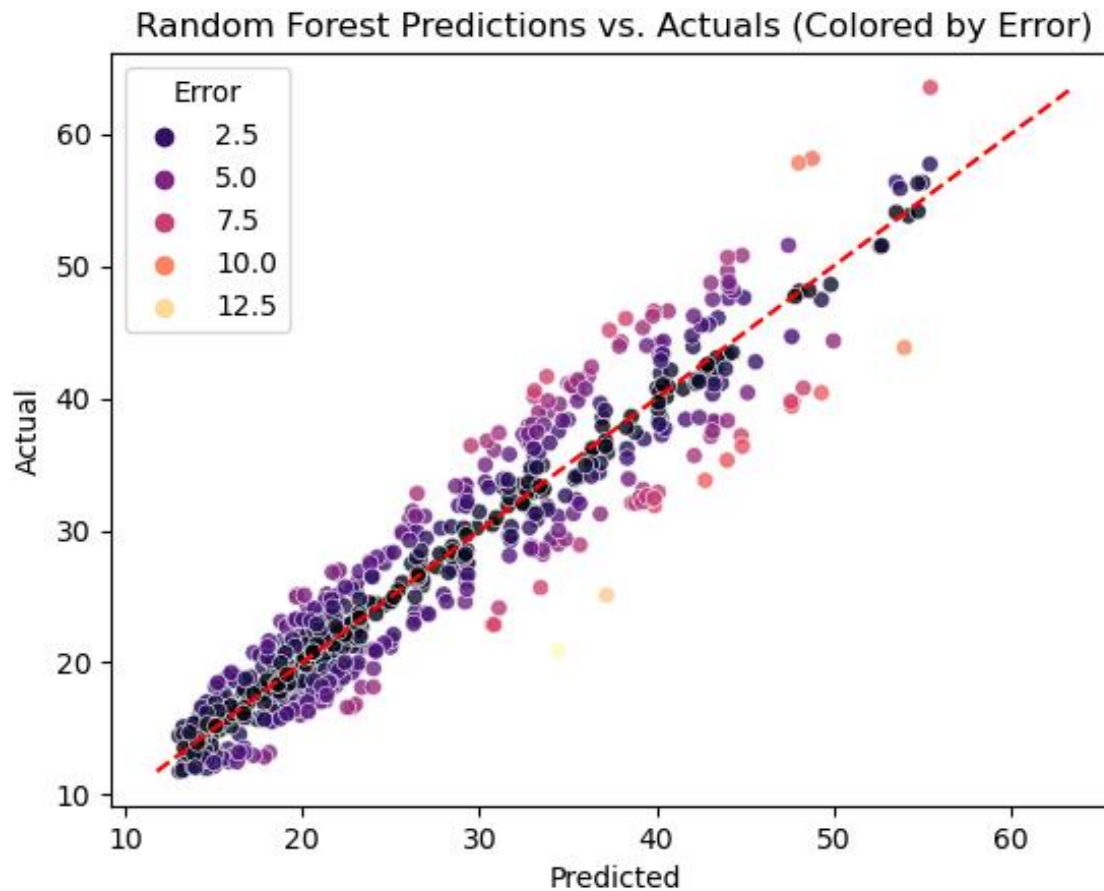
# Model Performance

Model	RMSE	R-squared
<b>Tuned Random Forest</b>	<b>3.108835</b>	<b>0.909929</b>
Tuned Decision Trees	3.217546	0.903520
Linear Regression	3.526582	0.884097
Random Forests	3.740412	0.869615
Decision Trees	4.031768	0.848512

Best Model: Tuned Random Forest



# Model Performance (Cont.)

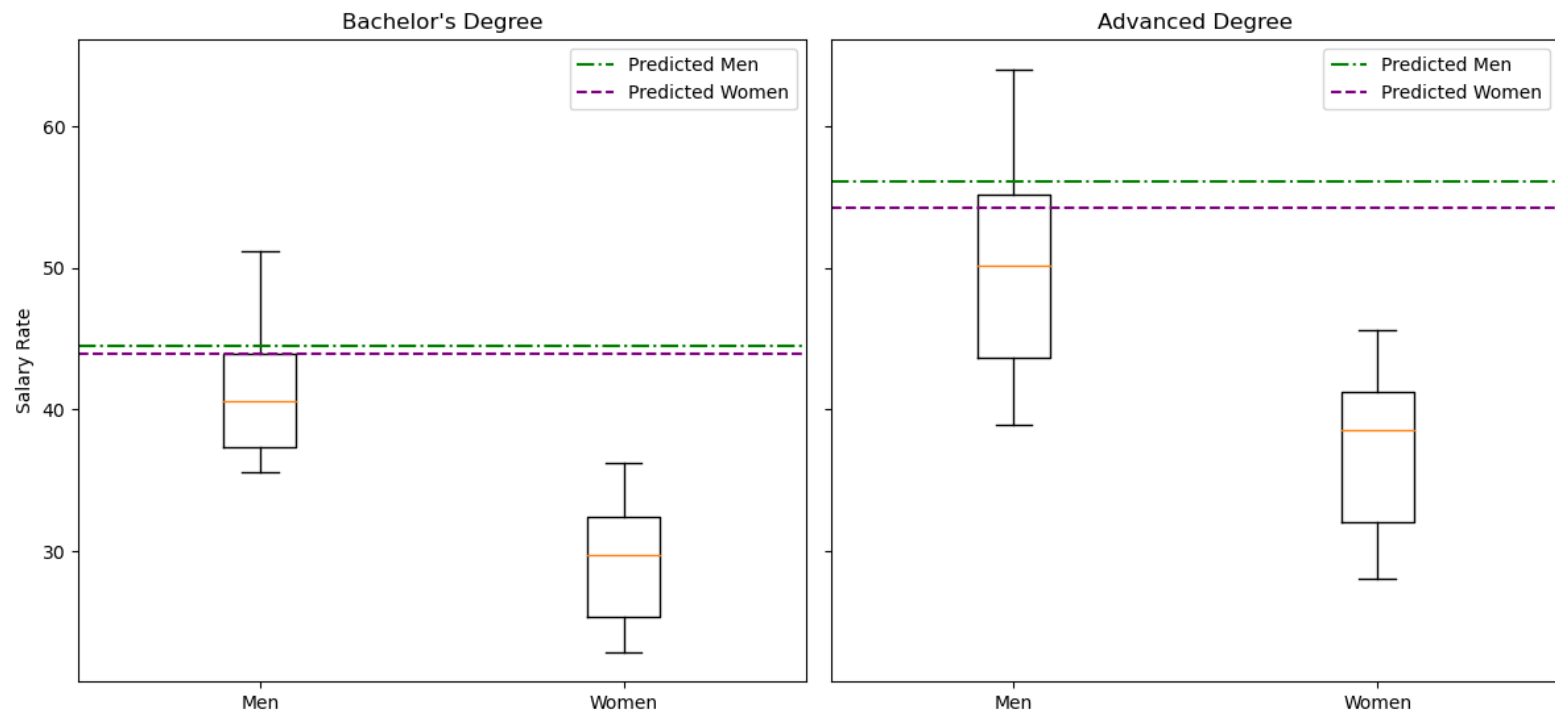


# Predictions for 2050

Gender	Race	Education Level	Current Average Salary	Predicted Salary
Male	White	Bachelor's Degree	\$41.23	\$44.45
Female	White	Bachelor's Degree	\$29.18	\$43.98
Male	White	Advanced Degree	\$50.17	\$56.10
Female	White	Advanced Degree	\$36.98	\$54.27

# Predictions for 2050 (Cont.)

Prediction for year 2050



# What's Next?

- ▶ Work with more raw, real-world data.
- ▶ Compare with other countries.
- ▶ Reframe as classification/clustering.
- ▶ Improve tuning using methods like GridSearchCV.

# Final Thoughts

- ▶ Even in 2025, women will still fight for equal pay.
- ▶ Hope this inspires awareness, advocacy, and change.