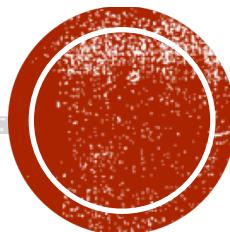
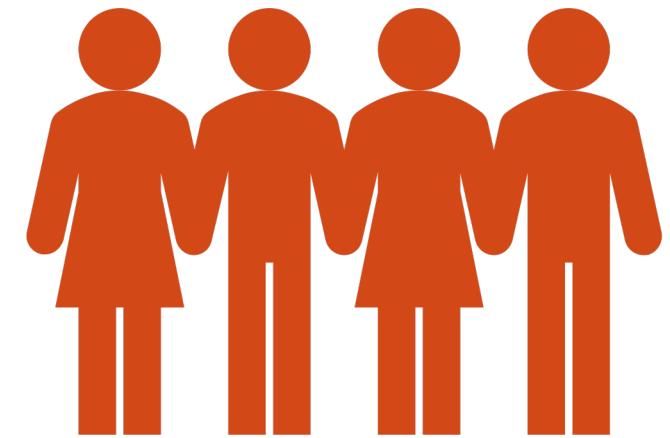


# **ROLE OF DEMOGRAPHICS IN SALARIES OF DEVELOPERS**

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University of Washington



# MOTIVATION & RESEARCH QUESTIONS

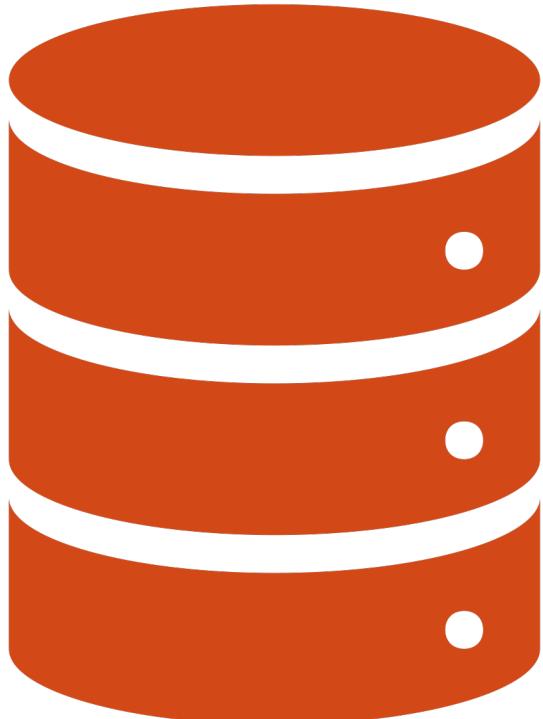


**Tech industry is one of the most prevalent industries of the 21<sup>st</sup> century and should hence lead by example when it comes to equity in pay based on demographics**

- ❖ Can your salary get influenced by your demographics such as gender, sexuality or ethnicity?
- ❖ Is the salary bias getting better or worse with time?
- ❖ Does demographics affect your job satisfaction and influence in workplace?



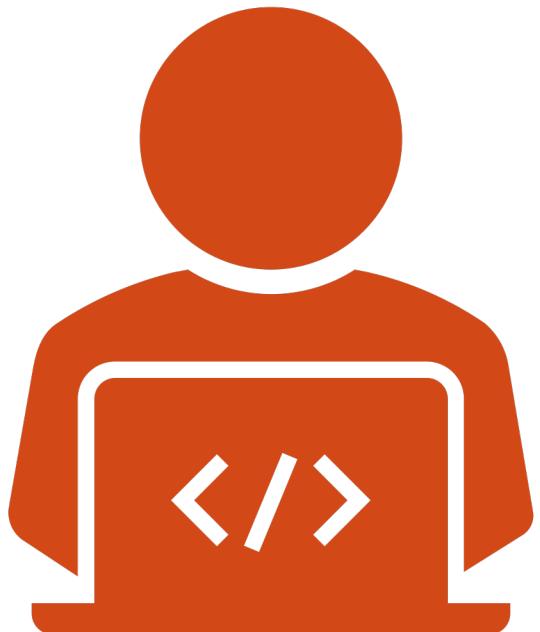
# DATA



- ❖ **Stack Overflow Annual Developer Survey** that was conducted by Stack Overflow from February 5 to February 28 in 2020.
- ❖ The data contains response of 65,000 professional and aspiring software developers, representing 186 countries around the world.
- ❖ The dataset contains demographics of the respondents such as gender, nationality, ethnicity, years of experience, education, compensation, etc.
- ❖ The survey was anonymous and does not contain any personally identifiable information.



# METHODOLOGY



- ❖ Regression analysis after feature engineering of survey responses
- ❖ Z-test statistics to check the statistical significance of several results
- ❖ Historical analysis to find trends and patterns over time
- ❖ Exploratory and descriptive analysis to understand data and uncover insights



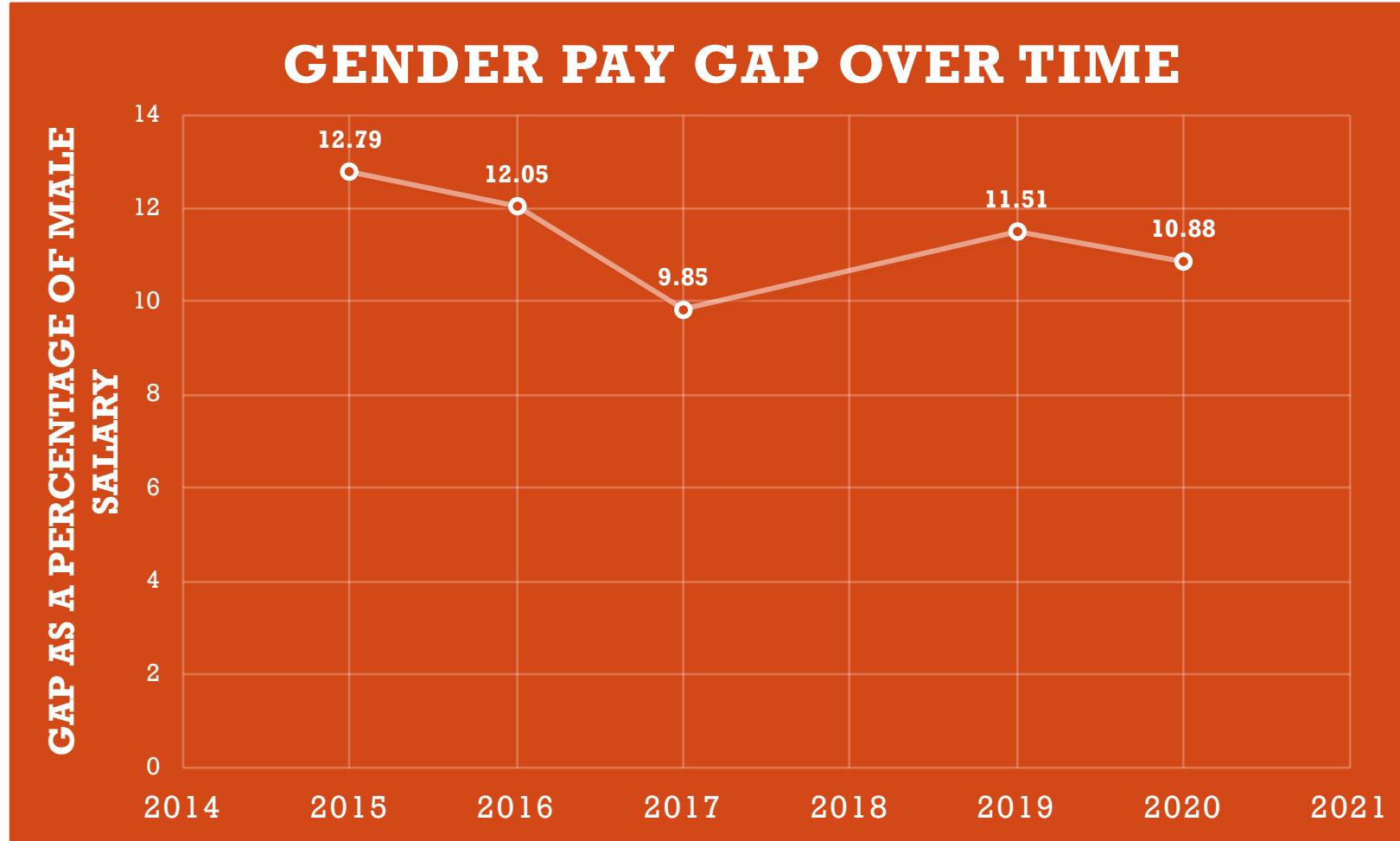
# THE SALARY EQUATION

Total compensation =

$$\begin{aligned} & \$ 106,443 \quad \times \quad \text{Intercept} \quad (\text{for White - Heterosexual - Man}) \\ + & \$ 2,197 \quad \times \quad \text{Years of professional experience} \\ - & \$ 9,447 \quad \times \quad \text{Gender = woman} \\ - & \$ 3,637 \quad \times \quad \text{Ethnicity = Black or African} \\ - & \$ 15,810 \quad \times \quad \text{Ethnicity = Hispanic or Latin} \\ + & \$ 16,746 \quad \times \quad \text{Ethnicity = South Asian} \\ + & \$ 28,390 \quad \times \quad \text{Ethnicity = East Asian} \\ - & \$ 848 \quad \times \quad \text{Ethnicity = Other} \end{aligned}$$



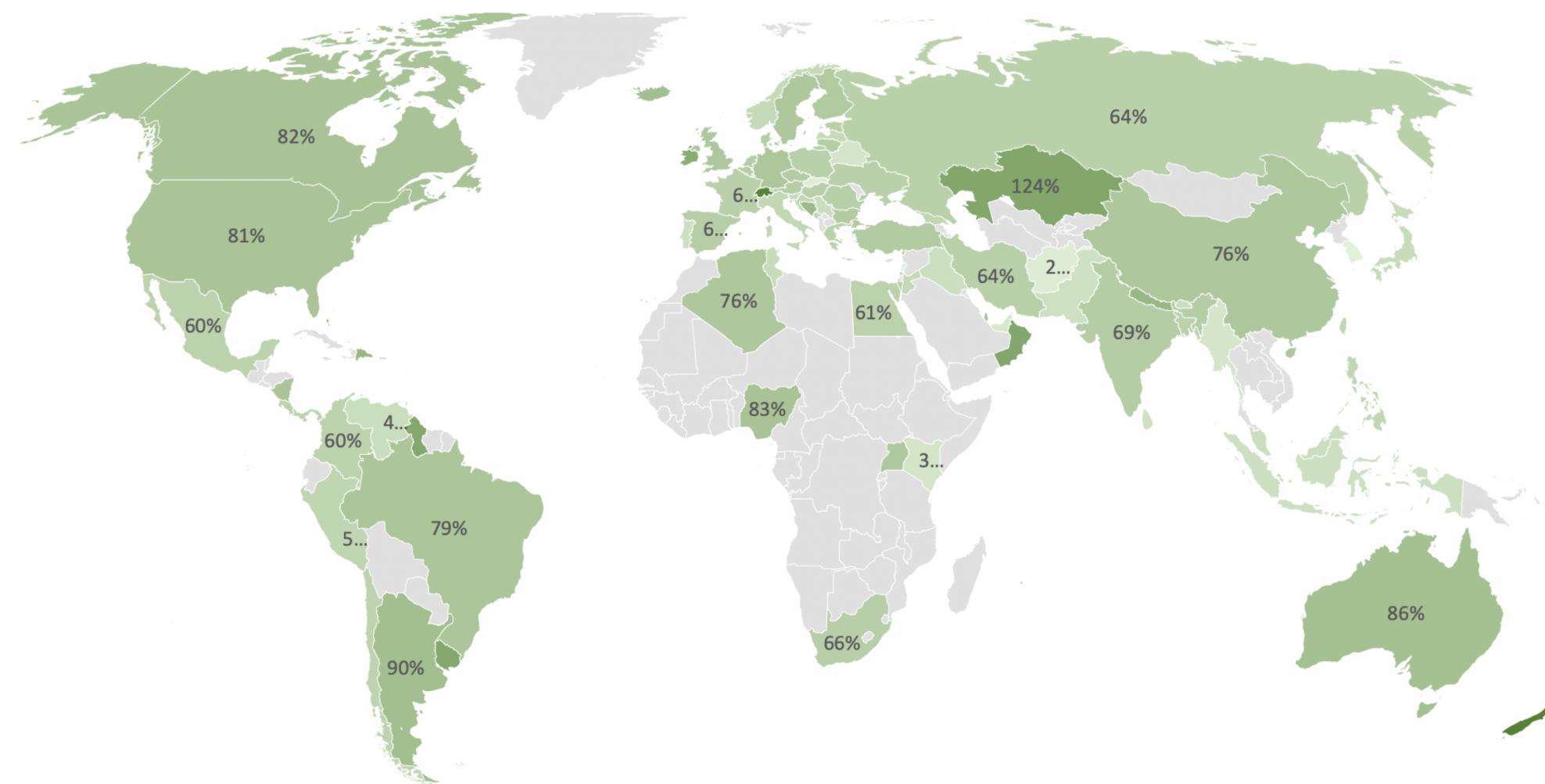
# IS IT GETTING ANY BETTER ?



We can see a small steady decrease in the gender gap over years, however the rate is very low and it could take years to cover the gap



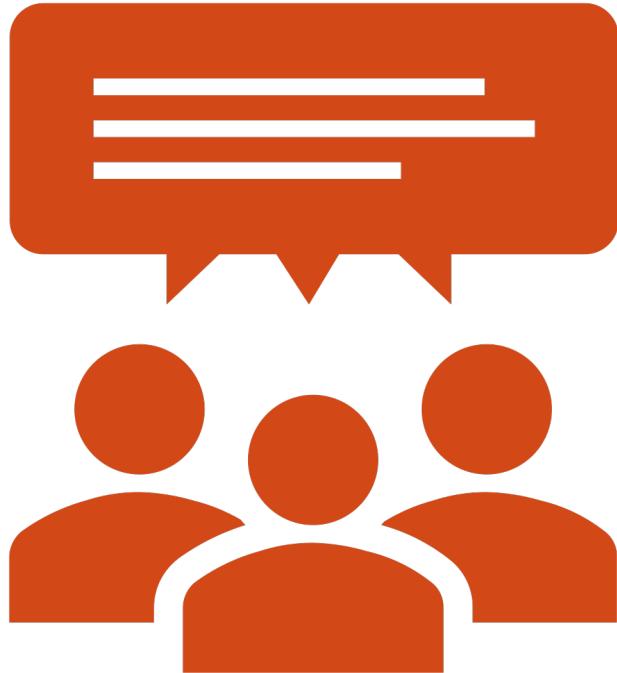
# GENDER PAY GAP IS UBIQUITOUS



Avg. female  
compensation as a  
percentage of avg.  
male compensation  
across countries



# CONCLUSION



- ❖ Pay gap is not limited to gender, but it is a significant issue based on sexuality and ethnicity as well.
- ❖ Pay gap due to gender and race are particularly very significant, as they can go up to an average of \$30,000
- ❖ Pay gap due to demographics is improving over time, but at a very slow rate



# THANK YOU

Encourage you to visit my GitHub repository for more insights and trends on this project

<https://github.com/mickkygoel/data-512-final>

