Visualizing gender wage gaps using transactional data from Mexican Financial Institutions



Amado Esquer, National Institute of Statistics and Geography (INEGI), amado.esquer@inegi.org.mx Alejandro Ruiz, National Institute of Statistics and Geography (INEGI), alejandro.ruizs@inegi.org.mx

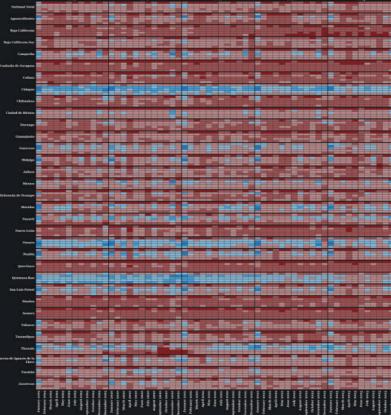
In 2020, INEGI, BBVA, Banorte and Santander agreed to work together to publish aggregated transactional data for payroll disbursement. Since then, INEGI has been working on processing, analyzing, visualizing, and publishing this information. The challenge arises when trying to represent as many aspects of the information as possible in a sensible manner, as the information is provided by the banking institutions every month and contains variables as gender, age, and municipality.

The richness of this information allowed for a detailed visual analysis of gender wage gap spanning several years and the whole Mexican territory. Understanding the variables and socioeconomic groups where this gap is more prominent will allow to create better politics against systemic discrimination, allocation of human capital and resources, poverty reduction, increase of health and well-being, increase social justice and a more inclusive and sustainable economy.

The visualization below shows the gender wage gap as a percentage calculated with the following formula:

$$Gender\ wage\ gap = \left(\frac{Women's\ wage}{Men's\ wage} - 1\right) \cdot 100\%$$

This indicator can be interpreted as the percentage of the men's wage earned by women. Positive values meaning women in certain group and date earn more than men, and negative values mean the opposite.



In the visualization, each month since January 2019 until November 2023 (the latest month when data is available) is represented by a column. States are represented in rows, with the first row being the aggregation for the whole country. These two variables form cells and within each cell there are five rectangles. The lowermost rectangle represents the first quintile and the uppermost represents the fifth quintile. Gender wage gap is represented by shades of blue for positive values and red for negative ones. The lightest shade of color represents a wage difference between 0% and 10%, the next darker between 10% and 20%, and the darkest 20% or more.

On the sides of this poster there is a visualization ranking 677 municipalities of Mexico by their average gender wage gap value (length of bar) from December 2022 to November 2023 (one year). The width of the bar corresponds to the total population of each municipality. The rest of the municipalities are not shown due to there being very few people in each municipality, thus not satisfying the confidentiality criteria for their publication.

- Several interesting remarks can be made from the visualization. Here are a few:
 Chiapas, Oaxaca and Quintana Roo are the states where the wage gap favors women the most, mainly in

- Cinapas, Oxacca and Quintaina Roo are tine states where the wage gap favors women the most, manny in quintiles it through 4.

 In general, the fifth quintile (uppermost rectangle) shows the highest wage gap affecting women.

 The gap reverses in many states during January, mainly for quintiles 3 and 4. Although it may seem positive at first glance, it could indicate end-of-year liquidations due to unchical and poor business practices.

 April presents an increased wage gap against women (markedly 2020 and 2023) in most states. This is the month of tax returns in Mexico and the increase of the gap suggest yet another disparity between men and vectors in the word-freeze. women in the workforce.
- On the sides of this poster there is a visualization ranking the municipalities of Mexico by their gender wage gap value for November 2023. The width of the bar corresponds to the total population of each municipality.

The depth of this analysis will be further improved with statistical methods and dynamic visualizations, as well as proposals for analysis of these novel data sources with high frequency and granularity, which are in the works inside the Research Department at INEGI.