

Unemployment Trends by Age and Gender (2005–2015)

MSDS670 – Data Visualization

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Problem/Situation

Understanding unemployment trends is crucial for policymakers, economists, and workforce planners. This project aims to analyze how unemployment evolves across different age groups and genders over time, identifying which populations are most affected and during which periods. This insight can help guide interventions to support vulnerable groups during economic downturns.

Research Question

How has unemployment changed over time across different age groups and genders, and which populations experience the most significant fluctuations?

Data

The dataset used contains unemployment rates from 2005 to 2015, categorized by age group and gender. Key variables include:

- Age group (16–19, 20–24, 25–34, 35–44, 45–54, 55–64, 65 and over)
- Gender (male, female)
- Monthly unemployment rates

This dataset allows for both time series analysis and cross-sectional comparison by age and gender.

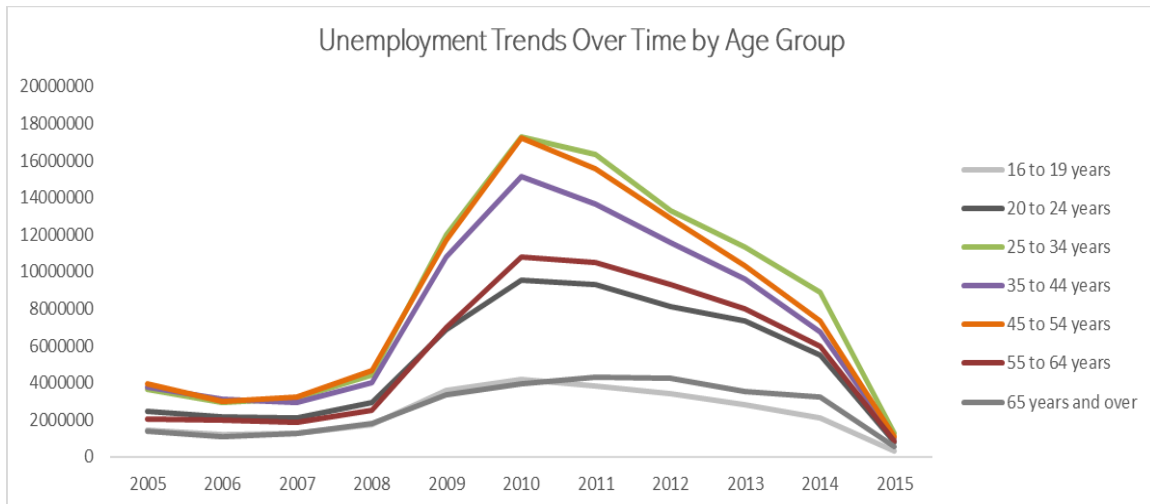
Methodology

The data analysis was performed using Microsoft Excel, and three main visualizations were created to explore unemployment trends:

1. Line plot – to show unemployment trends over time across different age groups, highlighting fluctuations and patterns during economic cycles.
2. Horizontal bar chart – to compare unemployment by gender within each age group, allowing for clear visualization of gender gaps.
3. Heat map – to provide a comprehensive overview of unemployment rates across all age groups and genders over time, making it easier to identify patterns, peaks, and disparities briefly.

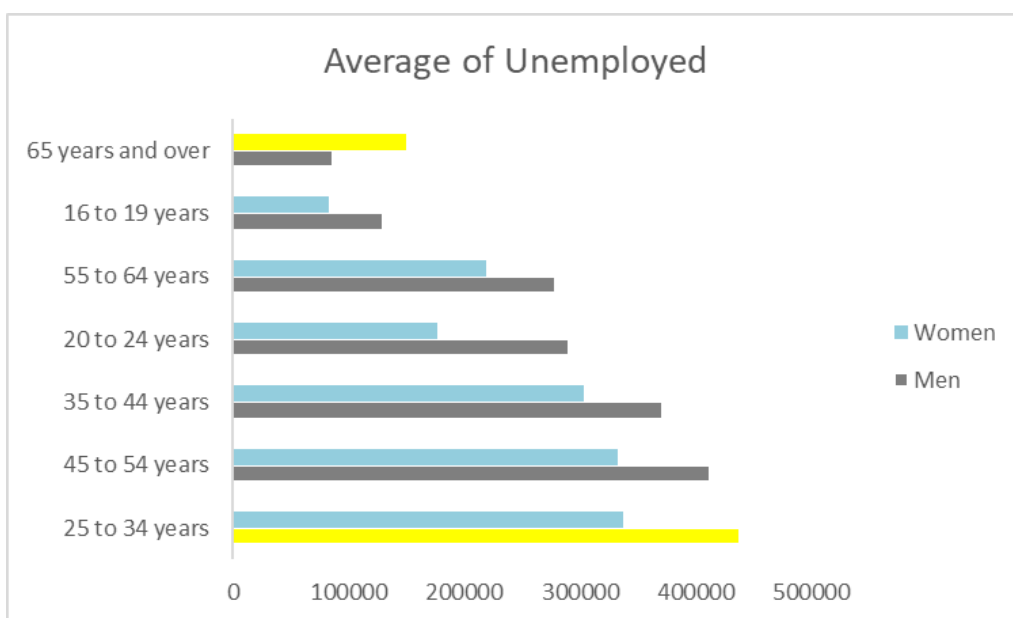
Results

Visualization 1 – Unemployment Trends over time by age group



- All age groups follow the same economic cycle.
- Ages 25–54 show the largest fluctuations over time.
- Younger and older groups change less, showing greater stability.

Visualization 2 – Average Unemployment by Age Group and Gender



- Men have higher unemployment than women in most age groups.
- The 25–34 age group has the highest unemployment among men, despite being a highly productive age.
- The lowest unemployment appears among women 16–19 and men 65 and over.

Visualization 3 – Unemployment Intensity by Age Group and Period

AGE	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
16 to 19 years	1442000	1236000	1269000	1756000	3620000	4185000	3820000	3405000	2795000	2109000	333000
20 to 24 years	2441000	2148000	2082000	2945000	6894000	9552000	9300000	8129000	7335000	5471000	780000
25 to 34 years	3663000	2959000	3177000	4448000	11972000	17294000	16338000	13301000	11318000	8918000	1277000
35 to 44 years	3751000	3100000	2909000	4010000	10801000	15120000	13681000	11558000	9601000	6763000	1027000
45 to 54 years	3941000	3001000	3215000	4687000	11662000	17235000	15553000	12892000	10318000	7362000	1071000
55 to 64 years	2013000	1985000	1851000	2540000	6985000	10798000	10473000	9333000	7981000	5975000	833000
65 years and over	1370000	1094000	1276000	1817000	3364000	3946000	4281000	4240000	3554000	3256000	528000

- Overall, unemployment remained relatively stable from 2005 to 2008.
- The largest increases occurred between 2009 and 2013, with a peak in 2010.
- Data for 2015 only includes January and February, but the trend appears to stabilize again.

Conclusions

1. Ages 25–54 are the most exposed to economic changes, showing both the highest unemployment levels and the strongest fluctuations over time.
2. The highest unemployment among men occurs at ages 25–34, a stage often considered highly productive, particularly for men, which highlights unexpected economic vulnerability in this age group.
3. Gender gaps in unemployment are consistent across most age groups, with men generally experiencing higher unemployment than women, except in the 65 and over category.