**DATA VISUALIZATION**

**(BA 54050 – 001)**

**CREATING AN EFFECTIVE VISUAL**

**DIVYA CHANDRASEKARAN**

**ID: 811284790**

**A graph of a number of men and women

Description automatically generated**

**TITLE**

**“Dramatic Demographic Shifts in the U.S. Age and Gender Demographics from 1900 to 2000.”**

Let’s start by asking an **appealing question**,

*"How has the age distribution of the U.S. population changed over the course of a century (1900 to 2000)?"*

**REASON FOR CHOOSING THIS QUESTION:**

I chose this question because while examining the visualization, the most important aspect is that it provides crucial insights into broad demographic shifts that have significant social and economic impacts. Examining how the age structure changes over extended periods reveals key trends in birth rates, life expectancy, and generational dynamics.

**VISUALIZATION:**

I chose to create a **“clustered bar chart”** with two clusters, each representing different ages within the years from 1900 to 2000, and the people. Within each cluster, bars would be grouped by age groups, and within each age group, there would be subgroups of sex 1 which is male, and sex 2 which is female, differentiated by different colors.

The x-axis contains the age, and the y-axis contains people.

Additionally, the differentiation of male and female populations within each age group through color-coded subgroups facilitates interpretation. The male is represented using orange color, and the Female is represented using yellow color.

A clustered bar chart effectively compares the demographic composition of the United States in 1900 and 2000 across different age groups while also highlighting the gender distribution within each age group. This visualization allows for a clear comparison of population counts between the years and within different age groups.

The use of clusters separates the data for each year, making it easier to discern differences and similarities in population distribution. Within each cluster, the grouping of bars by age group aids in understanding the population structure across different generations. This visualization type is suitable for summarizing the high-level census data for two specific years, effectively.

This type of chart is effective for making comparisons between different categories across an ordered axis. The age groups are organized chronologically, allowing us to see the shifts in population count as age increases. The gender clusters showcase male and female differences within each age bracket.

ANSWER TO THE QUESTION:

To answer the question of how the age distribution of the U.S. population has changed over the course of the century, we can observe that the clustered bar chart visualization highlights major shifts between 1900 and 2000:

- In 1900, the male and female bars followed similar trajectories, with a higher male population until later life.

- The 1900 distribution displays the classic pyramid shape - high bars for the young ages representing a large youth population, rapidly declining for older ages.

- By 2000, the female bars surpass males for most adult age groups, showing higher female longevity.

- The 1900 pyramid shape-shifted to a more rectangular distribution by 2000 as birth rates declined and life expectancy grew.

- Variation within age groups is hidden through aggregation. For example, different trends for 65-69 versus 90-94 are not visible.

- The impact of events like wars, epidemics, and economic conditions are smoothed out over a long time scale. Short-term fluctuations are obscured.

- The lines for males and females follow similar trajectories, though males had a higher population count in 1900 while females outnumbered males in 2000.

However, the aggregation into 5-year age groups smooths out more granular trends. The longer time horizon obscures short-term fluctuations. The scope is limited to gender and age, excluding other demographic factors.

**CONCLUSION**

Therefore, the visualization reveals potential growth areas versus declining markets. The growth in older segments may present opportunities in healthcare, insurance, and retirement services. However, businesses targeting infants and children face saturation and contraction in their traditional customer base due to lower birth rates. Overall, the bar chart points to shifting spending power and needs between generations.

For businesses, the visual shows opportunities to target the fast-growing older female demographic. However, the shrinking youth population poses risks for child-focused sectors. Companies that understand and adapt to these demographic shifts will have a competitive advantage.

In summary, the clustered chart effectively communicates the shifting age-gender structure over time. However, tracking with graphics showing subgroups, short-term dynamics, and other demographic factors could reveal a more nuanced narrative. The visualization provides a launching point for further multifaceted analysis.