

Capstone Project

Executive Summary

This article explores the age demographics of tech workers and compensation findings by age. Compared to age demographics, a majority of workers are under 45. Workers aged 35 to 44 earn an average salary on the higher end. Workers aged 45-54 earn the highest average salary. Workers under 25 earn significantly less. This is due to younger workers having less experience. Yet a gap persists, regardless of the knowledge gained. Such findings imply a disproportionate equity in salary determinations. Such findings warrant further research into industry hiring, promotion, and compensation practices.

Introduction

Tech companies are constantly expanding and increasingly relying on larger workforces with extensive technical knowledge. Many companies want rapid shifts and hours and hours of work. Such wants translate to desires for a younger population. However, this raises questions about age statistics in the workforce and whether there are equity measures for compensation. Age discrimination in technology, for example, is something often spoken about amongst older workers and potential applicants. Age-group tendencies in compensation help assess whether disparities in treatment are appropriate. The current literature review addresses a single research question. What are the trends and age demographics of technology workers, and is there evidence of age discrimination based on compensation? This research question is relevant to the literature because managers, policymakers, and employees want clear equity in compensation.

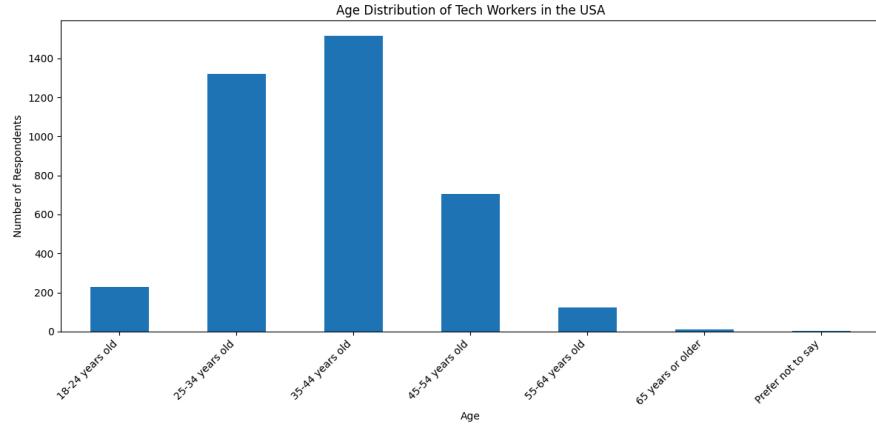
It's also appropriate to anticipate future workforce needs, as inequitable practices reduce access to talent for all. Understanding trends in this respect can help a company avoid high turnover and foster a culture of trust in management.

Data and Methods

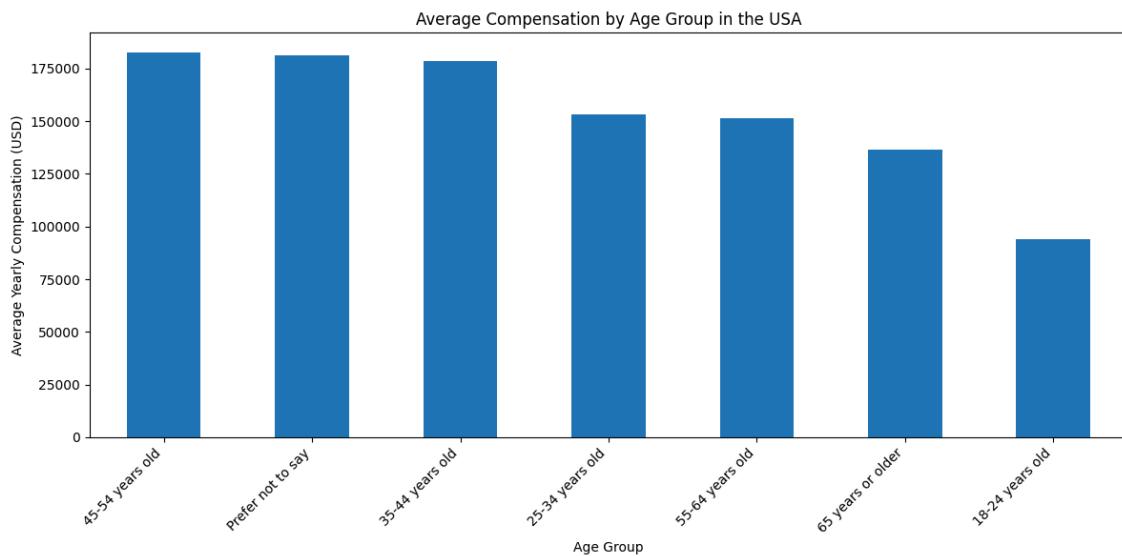
The research uses a questionnaire of American technology employees. It notes age group, yearly salary, years of experience, field of work, and other demographic factors. All respondents are full-time employees. Respondents note their wages, years of experience, and fields of work, including but not limited to software engineering, data engineering, technical support, and related fields. The dependent variables are age and salary. The hypothesis is that salary differs by age, and the question is whether the difference can be attributed solely to experience.

Responses that were omitted from the original survey data are blank (i.e., if a respondent did not provide an age or if a respondent did not provide compensation). Ages were binned. Some of the bins were not of equal size; thus, they were standardized. Compensation was rounded to the nearest dollar, and anyone with an unrealistic compensation amount was excluded. The same with years of experience, which were binned into usable ranges. For this project, I used Python, pandas, and matplotlib to construct histograms, a bar chart, and a grouped bar chart to visualize the age and compensation distributions in the compensation survey data.

Results and Discussion



The initial results concern the age structure of tech employees. Employees aged 25-34 represent one of the largest populations in this census data. Employees aged 35-44 also represent a significant segment of the workforce. Between these two age ranges, most employees fall. The next youngest range, aged 18-24, represents a smaller population. The 55+ age group represents a smaller population. The 65+ age group appears only in small numbers. The relative conclusions drawn are that this is a mostly under-45 population.



The second set of results examines mean compensation by age bracket. The age bracket of 45 - 54 has the highest mean annual salary, at just under \$180,000 per year. This is closely followed by the age bracket of 35 - 44, with mean compensation slightly less than the first group but still relatively high. The next group, 25 - 34, is even younger and is relatively less compensated than these two older age brackets. Finally, the lowest bracket, 18 - 24, has the lowest average annual compensation, at just under 95000 dollars. Generally, this distribution makes sense over time, as increases are expected as people get older and gain more firm- and industry-specific experience; however, the drastic difference between older and younger workers raises questions about whether it's all experience or whether some of it is due to excessive pay differentials.

The third pattern of findings separates those 40 and younger vs. those 40 and older. This is controlled for experience. The income is the same across the board as they accrue more experience. Thus, income tends to increase with experience. Yet, those 40 and older bring in more income than those younger. The gap isn't substantial for the most experienced, yet it is for the least and moderately experienced. Thus, even controlling for experience does not negate the pay gap. The presence of the pay gap implies questionable equity in entry-level pay and in the leveling, promotion, and assignment of responsibilities. These things apply to a person over a lifetime of employment. The greater the gap, the more it appears to apply to those with less to start with.

A fourth wave of results confirms age demographics and the same findings. The industry is dominated by people under 40. 55+ remains a small share of the population. Such

demographics help support the conclusions for compensation amounts. It's challenging to determine firm-based compensation trends for older ages since older age cohorts are smaller in the workforce. In addition, it suggests that firms rely upon younger populations to satisfy major technological requirements. Those firms with this demographic have access to only a limited number of 55+ individuals.

Such conclusions validate two findings. The technology workforce is younger, and the age gap is small - salary increases with age, but the remaining differentials in tenure raise questions of equity. Furthermore, this means that the millennial generation enters the field at lower salaries and advances through salary grades without a system to assign a level at the beginning of one's career. Yet those over 40 may have higher wages, but it's less likely they'll get a new position within the organization or transition to a new one. These trends illuminate the potential sources of disparate treatment. Organizations need to regulate the emphasis placed on starting salaries for entry-level positions and on salary-based promotion. Salary should be based on merit and experience, not on age.

Limitations, Conclusion, and Implications

Limitations of this research come from the survey data. For example, some participants may guess their salary, round numbers, or inflate their efforts. Additionally, the information is not fully generalizable to all tech companies or all locations; it uses generalized age ranges, and the research does not employ regression to estimate results, so the findings are associative rather than causal. Finally, the information does not account for all potential variables that influence salary, such as degree, job level, negotiation, etc.

Key findings emerge. Most of the tech workforce is under 45. Compensation scales up to the mid-forties. Young employees earn less than older employees. Even after age adjustment, a disparity remains. These findings indicate an age bias in starting salaries and potential bias upon promotion. Companies should increase salary review efforts. Companies should step up their efforts to improve salary band transparency. Companies should assess internal salary gaps based on age. Companies should have their managers review hiring patterns to prevent inappropriate access to roles for both younger and older populations. Companies with lowered bias improve retention and minimize susceptibility. Companies benefit from enhanced access to a wider hiring pool. These changes promote a safer and fairer working environment.

Works Cited

Jantzi, Hunter, et al. "Project Notebook." *Google Colab*, Google, drive.google.com/drive/1R4zRUG1h9XSStbTd6IRPVhkj2-n_ciT6. Accessed 6 Dec. 2025.