





Adults Income Analysis

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Agenda

- Welcome & Introduction to Analytics
 - Overview of the Dataset
 - Business Questions & Key Visualizations
 - Summary
 - Recommendations
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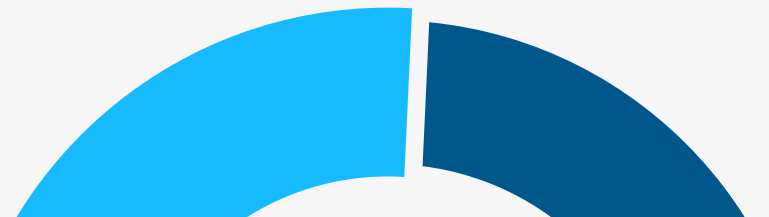


Hello everyone. Today, I will present a Streamlit dashboard that analyzes adult income data to extract valuable insights.



What is the project about?

The project focuses on analyzing a dataset about adults aged **18 and above**. The primary goal of the analysis is to predict whether a person earns **more** or **less** than **\$50,000** per year, based on a variety of demographic and employment-related features such as **age**, **education**, **occupation**, **marital status**, **race**, and **working hours**. To achieve this, I designed a dashboard that combines:

- **Data filtering** (by gender, race, and country),
 - **Data visualization** (with and without outliers),
 - **A summary with recommendations** based on the insight.
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Overview

Dataset source

Kaggle

Key features

Columns like age, education, job, etc

Number of rows/columns


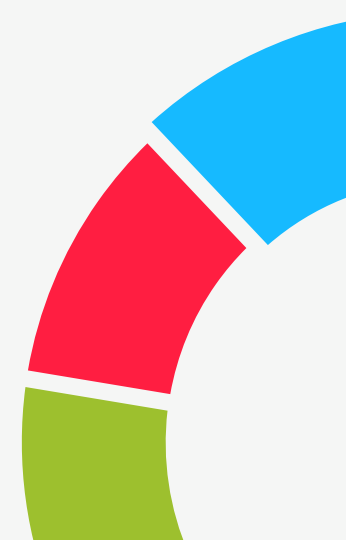
Rows: 48,842
Columns: 15

Target

Income > 50k or <= 50k



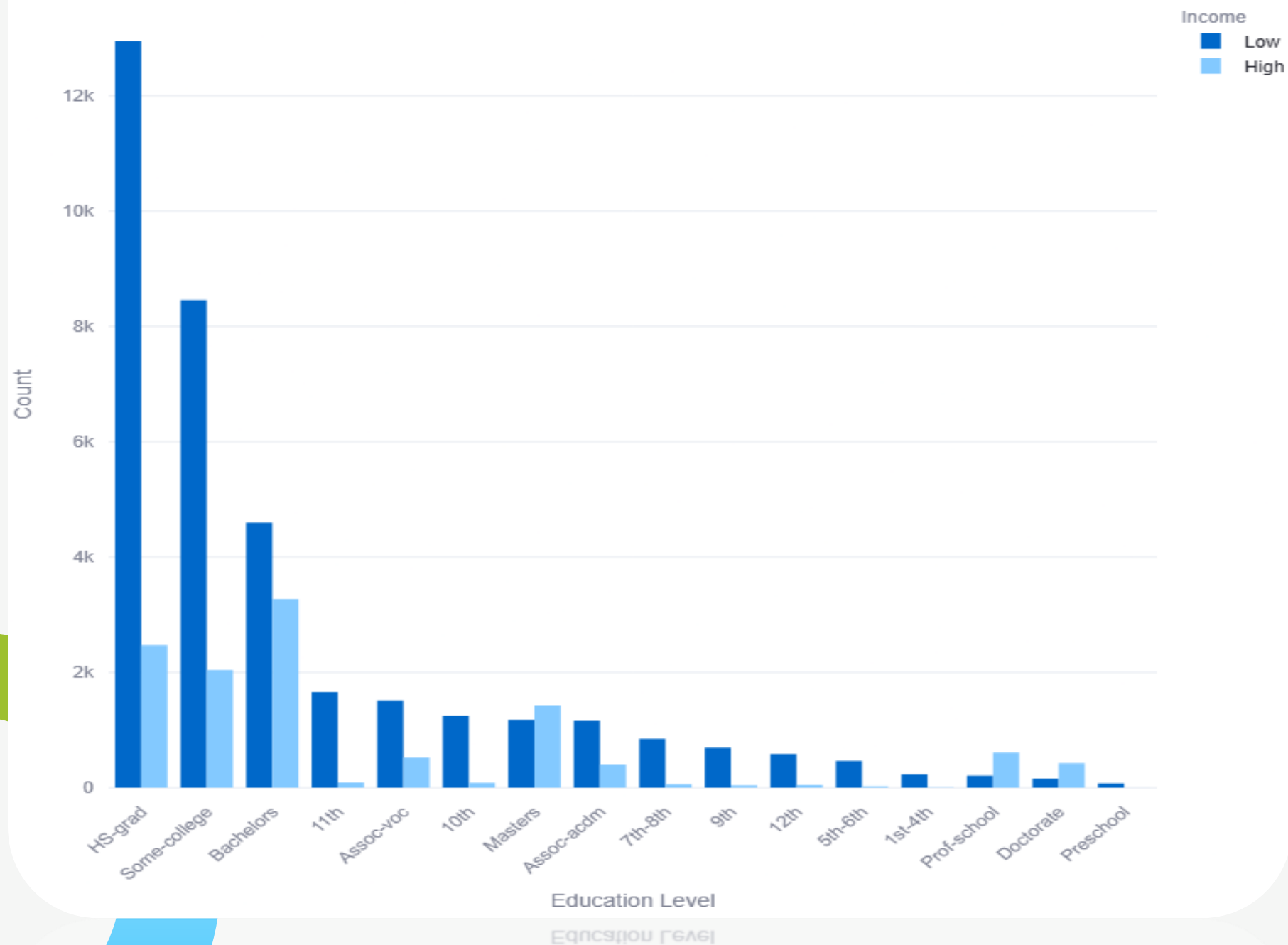
Business Question

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- What is the distribution of income levels across different education levels?
 - What is the gender distribution among high-income earners?
 - Which occupations are most represented among those earning >\$50K?
 - What is the correlation between weekly work hours and income?
 - Which top 10 countries are most common among high-income individuals?
 - Does marital status influence income level?
 - How does education-num relate to income?
 - What is the average work hour per week per workclass?
 - Which race groups are most likely to earn above \$50K?
 - Which employment types (workclass) are most associated with high income?
 - What are the top 5 most common occupations among females?
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Education Level vs. Income

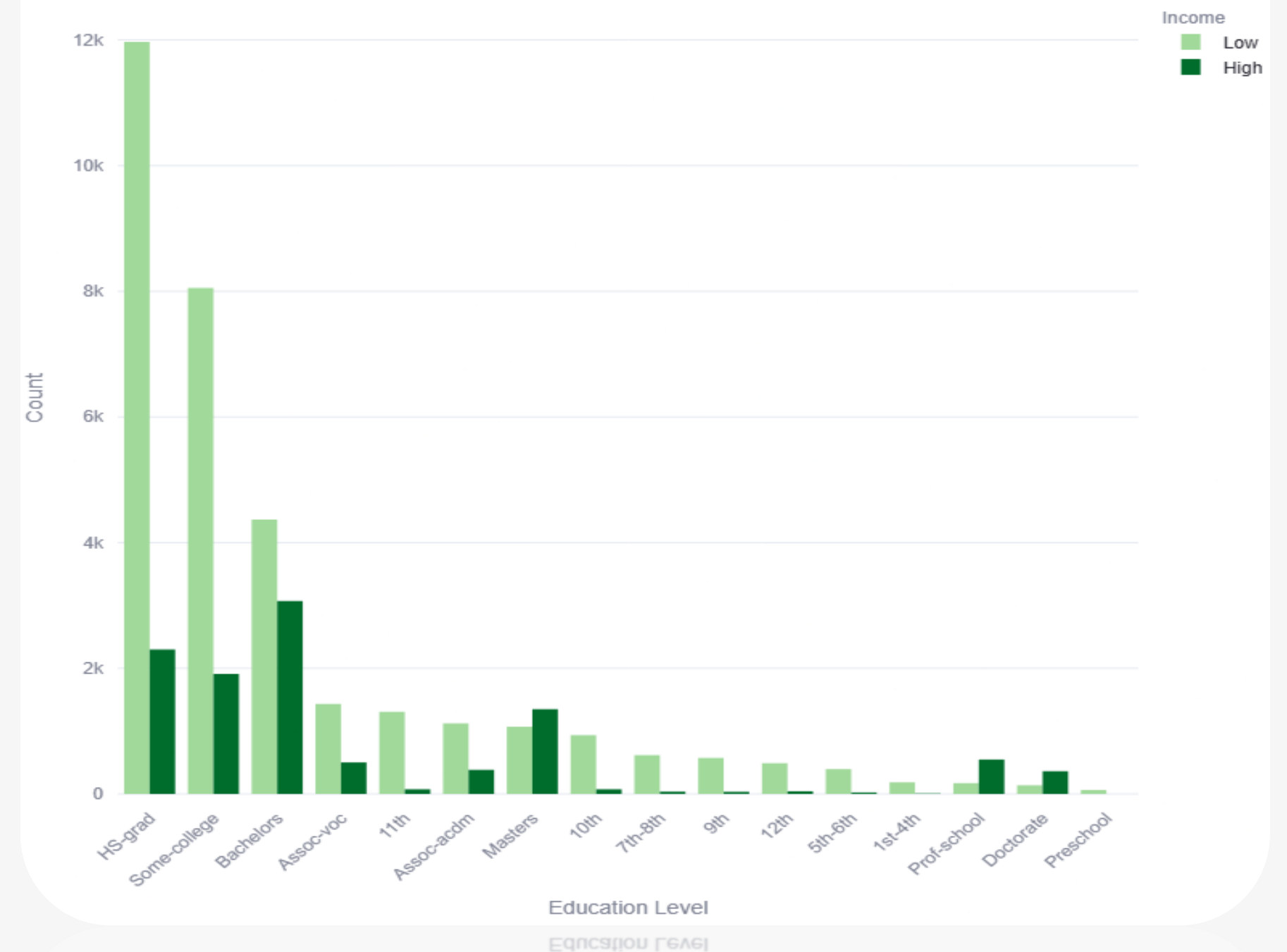
With outlier

Income Distribution by Education Level



Without outlier

Income Distribution by Education Level

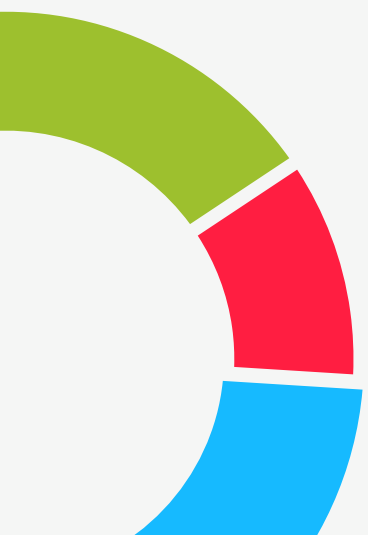




Education Level vs. Income



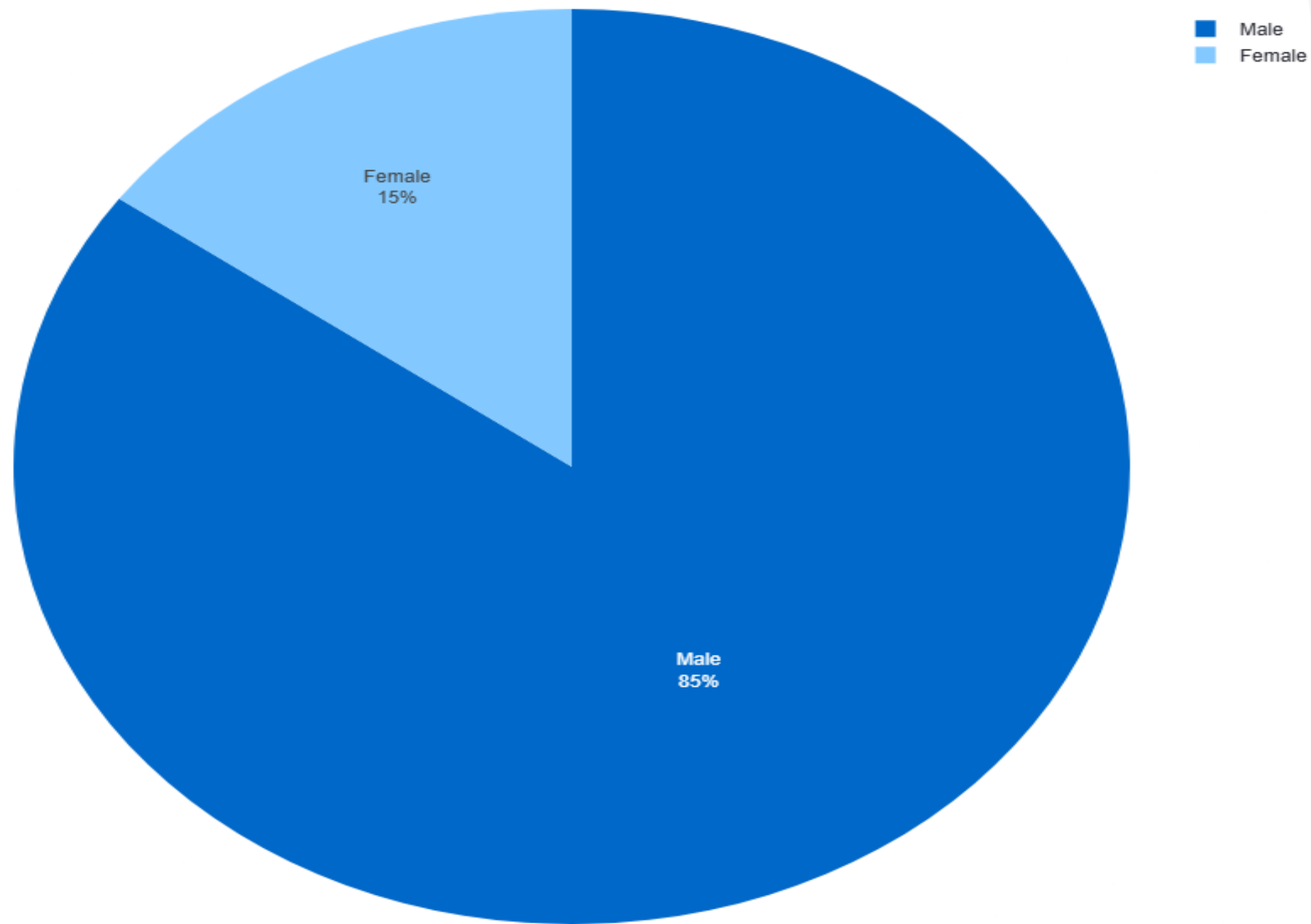
Higher education levels such as Bachelor's and Master's degrees are associated with higher income. Removing outliers does not change this trend significantly.



Gender Distribution

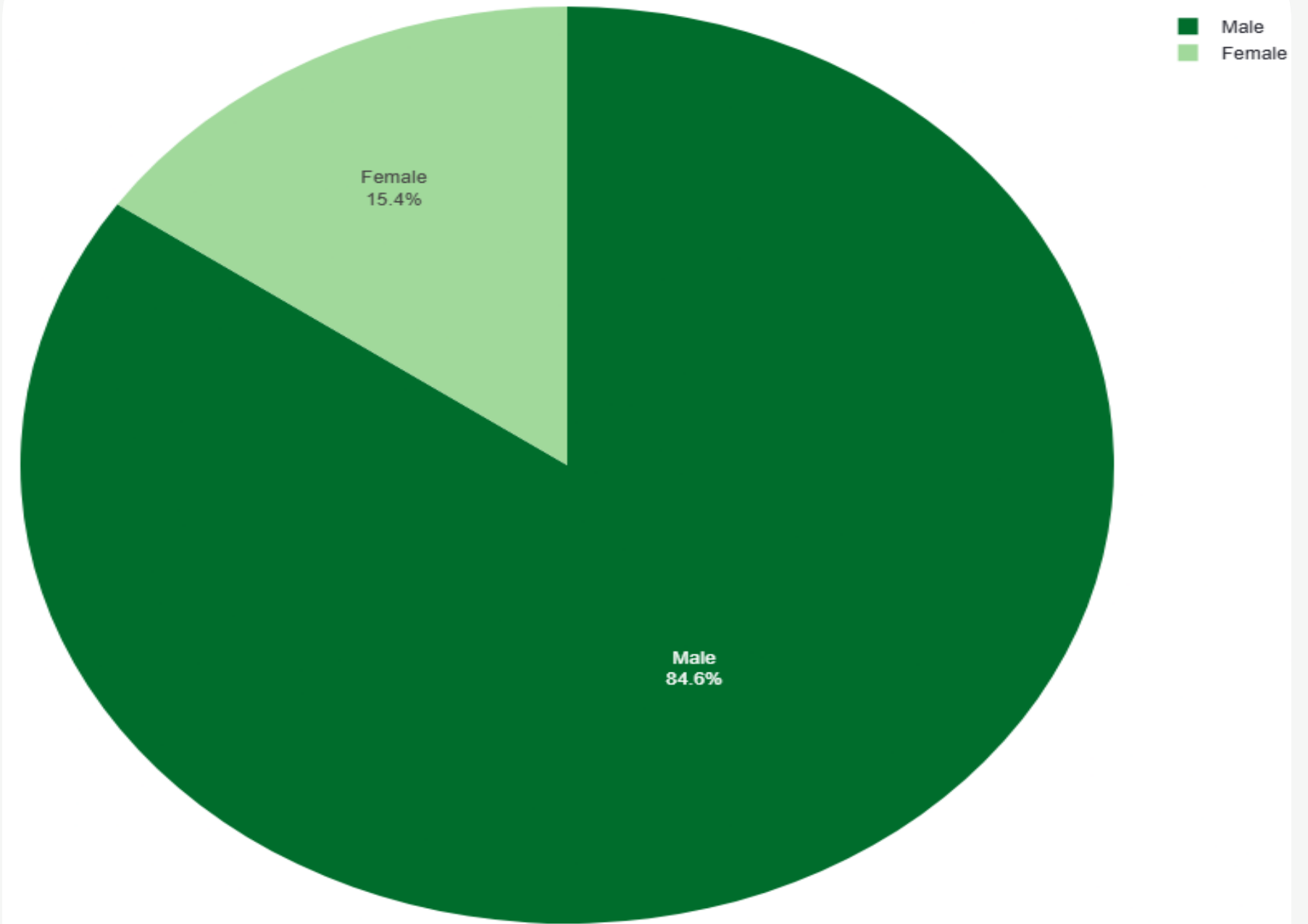
With outlier

Gender Distribution (High Income)



Without outlier

Gender Distribution (High Income)







Gender Distribution



Insight

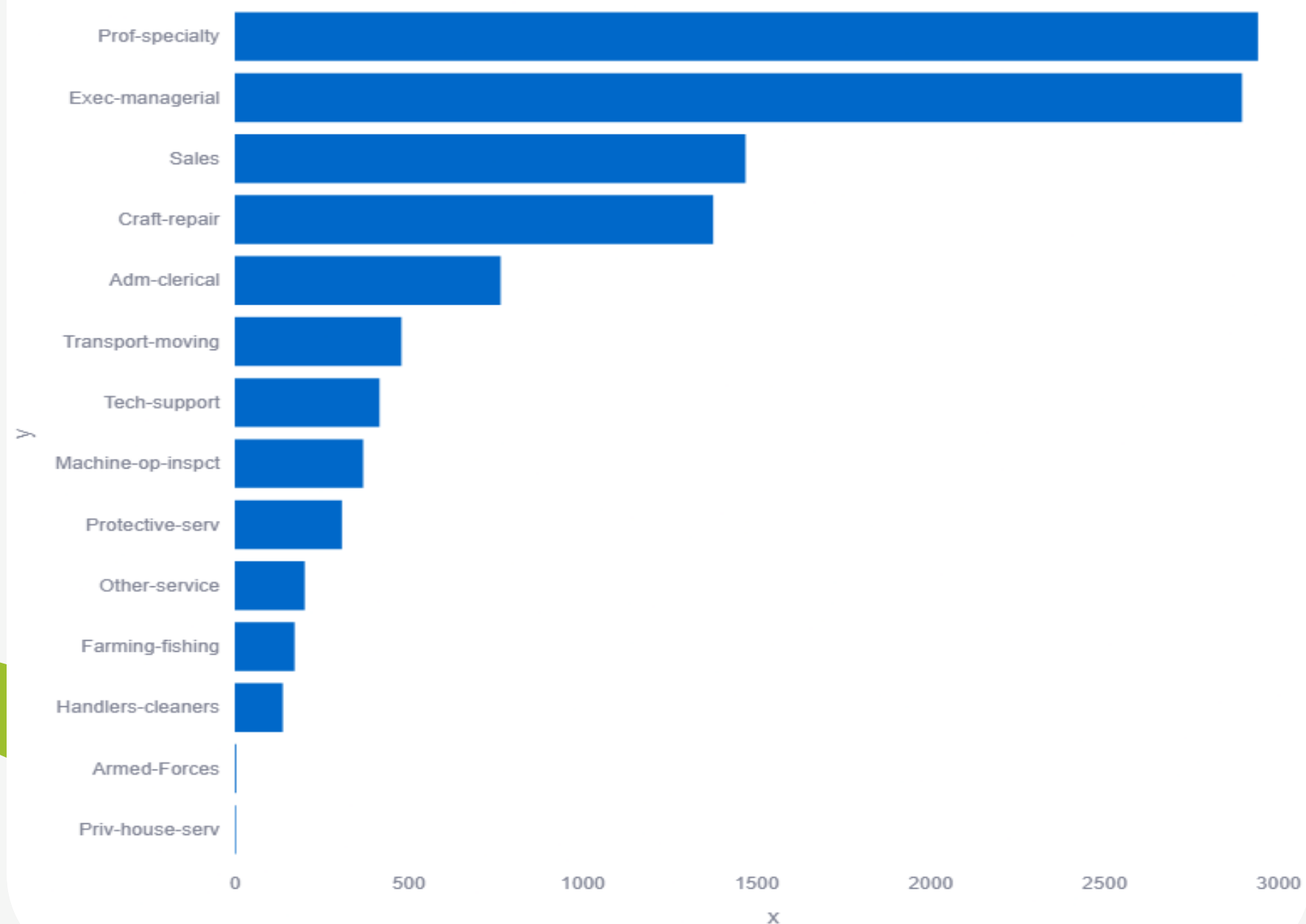
Males dominate the high-income group in both datasets. The gender gap remains almost unchanged even after removing outliers.



Top Occupations

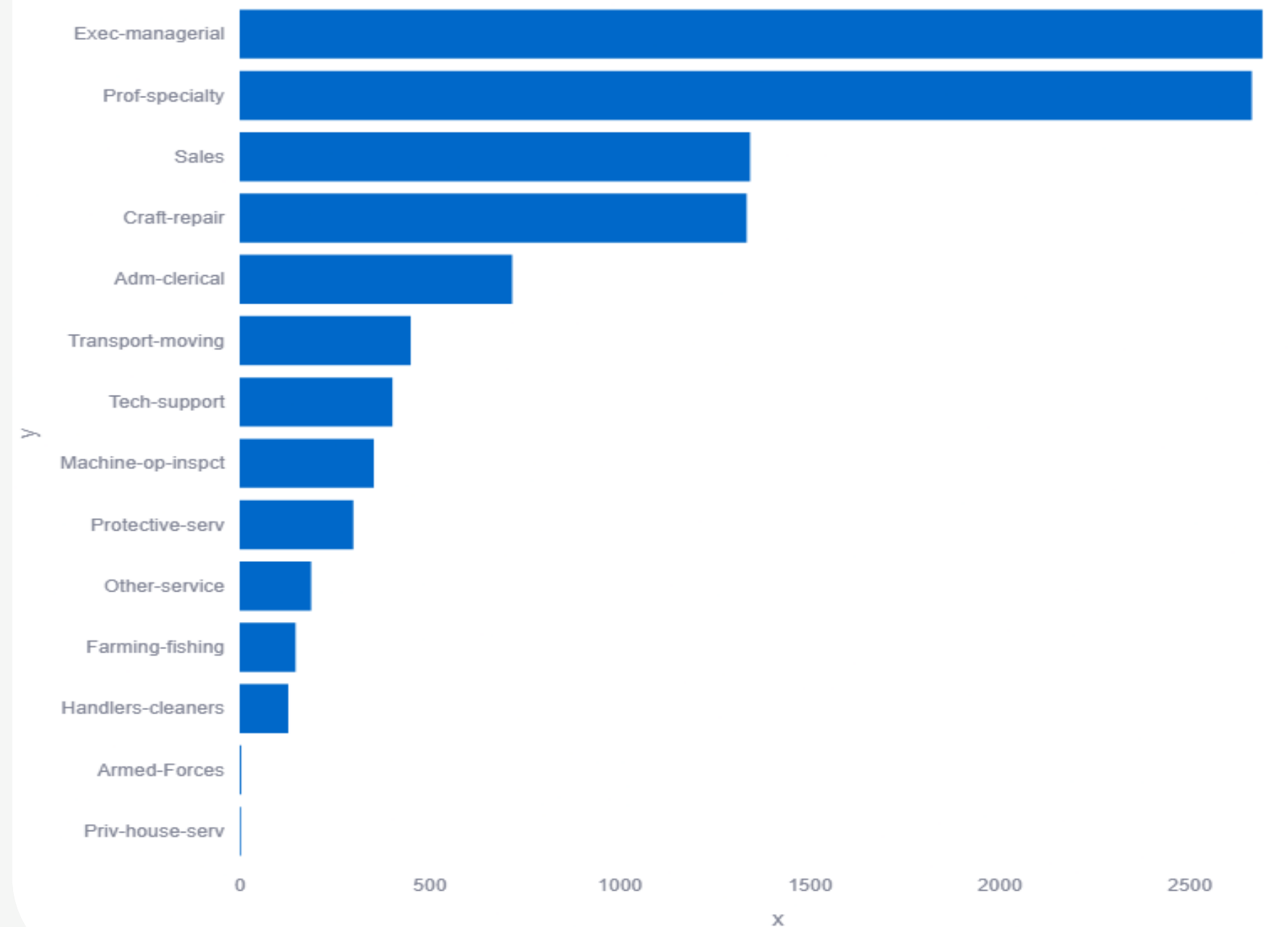
With outlier

Top Occupations (High Income)



Without outlier

Top Occupations (High Income)




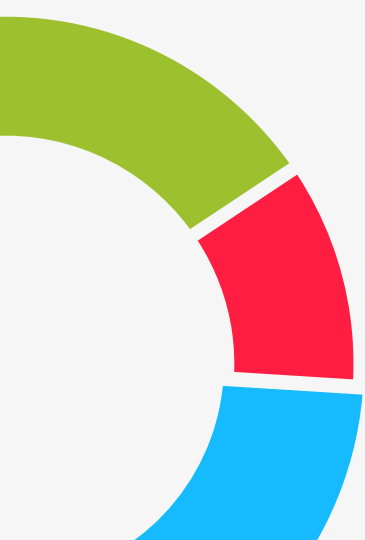


Top Occupations



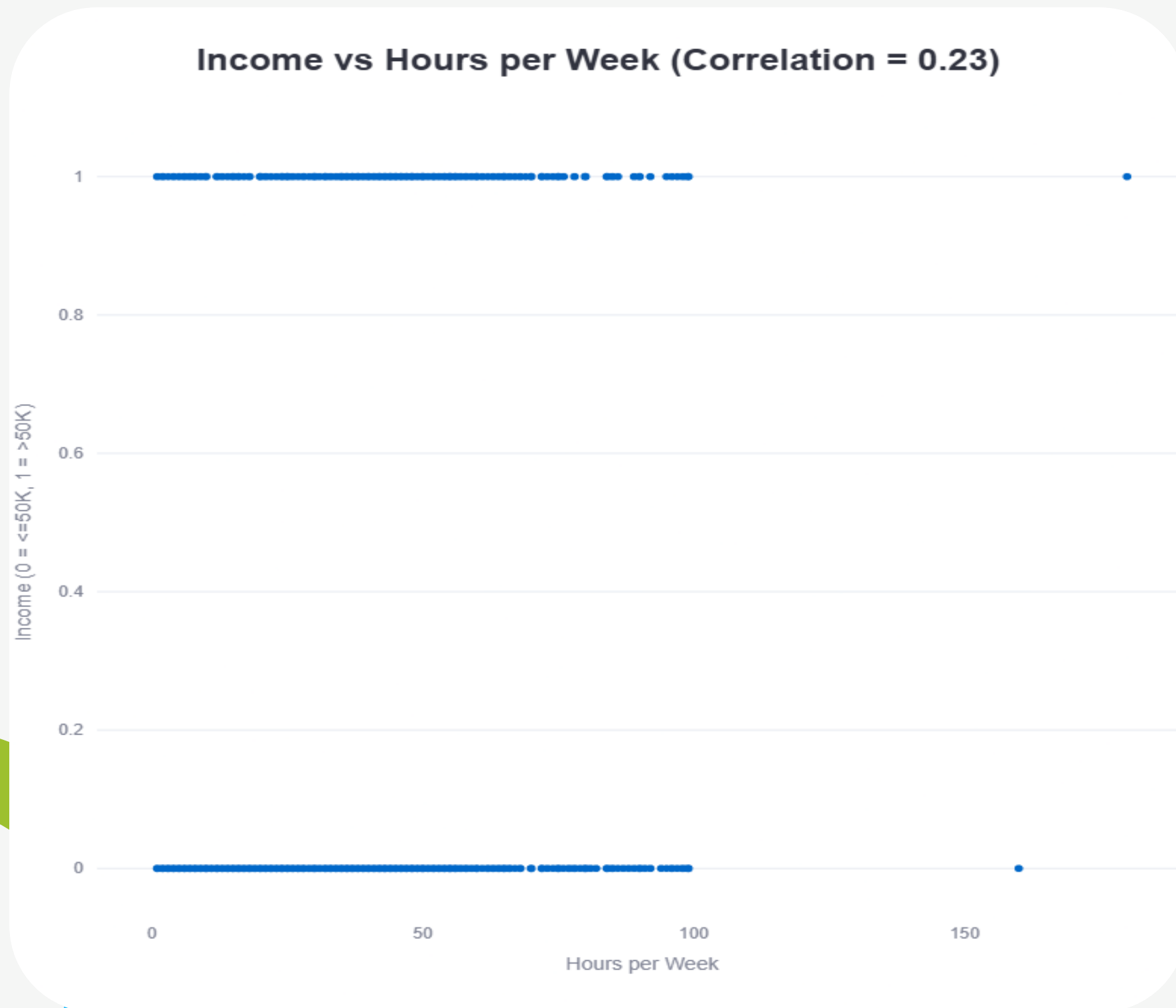
Insight

Executive-managerial and professional-specialty jobs are the most common among high earners. The ranking remains consistent regardless of outliers.

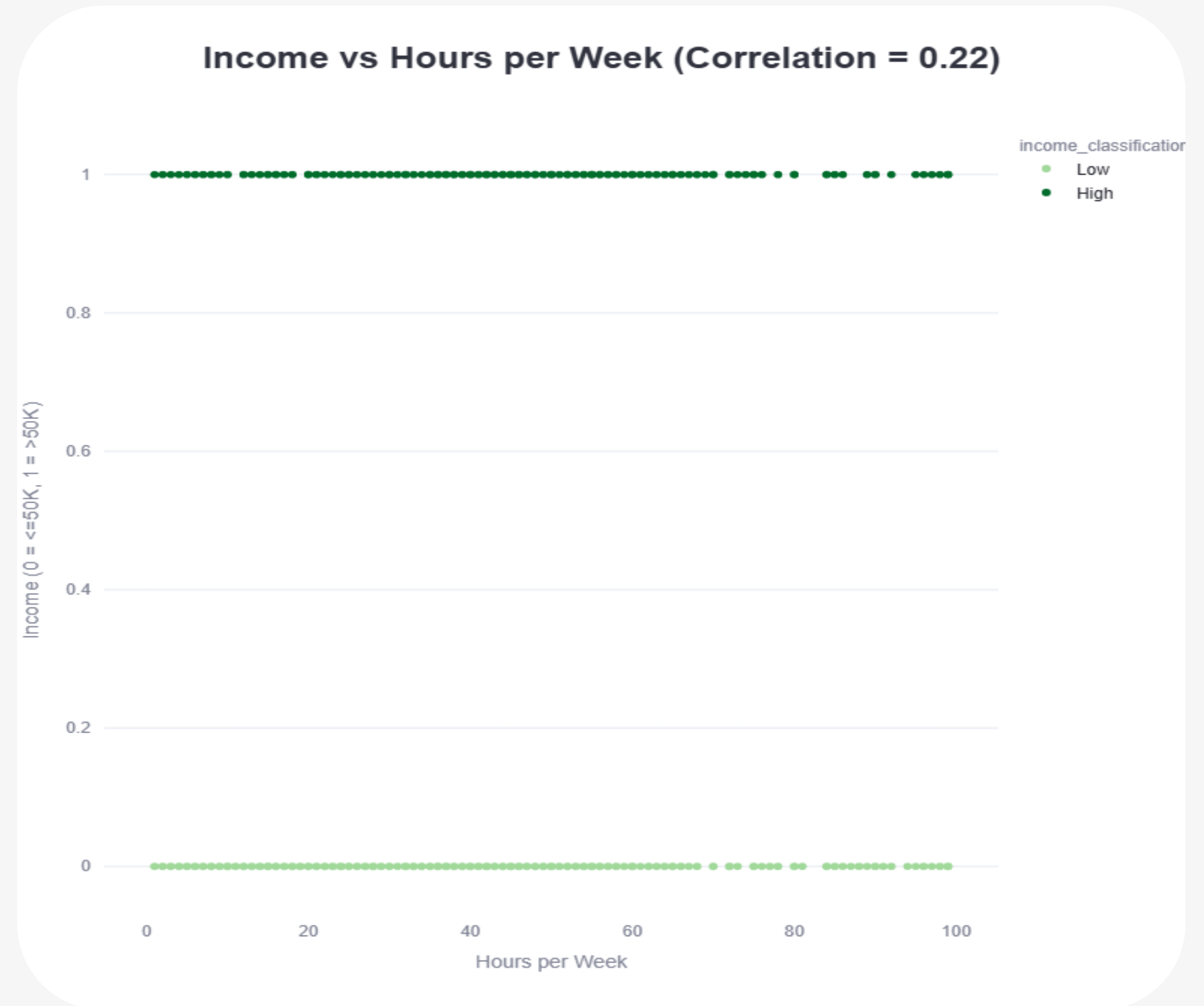


Work Hours vs. Income

With outlier



Without outlier







Work Hours vs. Income



Insight

There's a weak positive correlation, more hours can slightly increase income. Removing outliers makes no significant change.



High-Income Distribution by Country

With outlier Without outlier

Top 10 Countries with High Income



Top 10 Countries with High Income






High-Income Distribution by Country

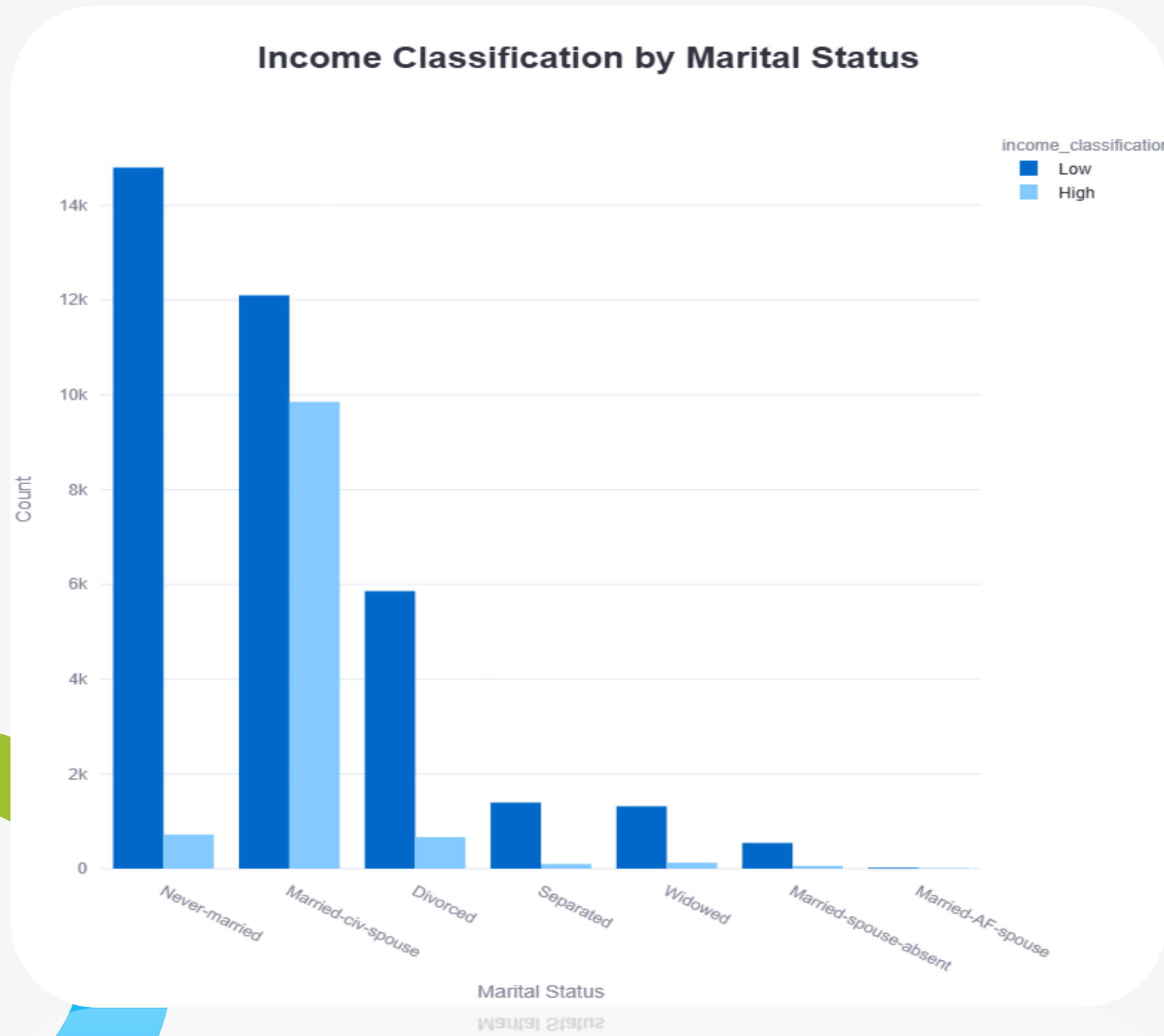


The United States leads with the highest number of high-income earners. This dominance is unaffected by outlier removal.

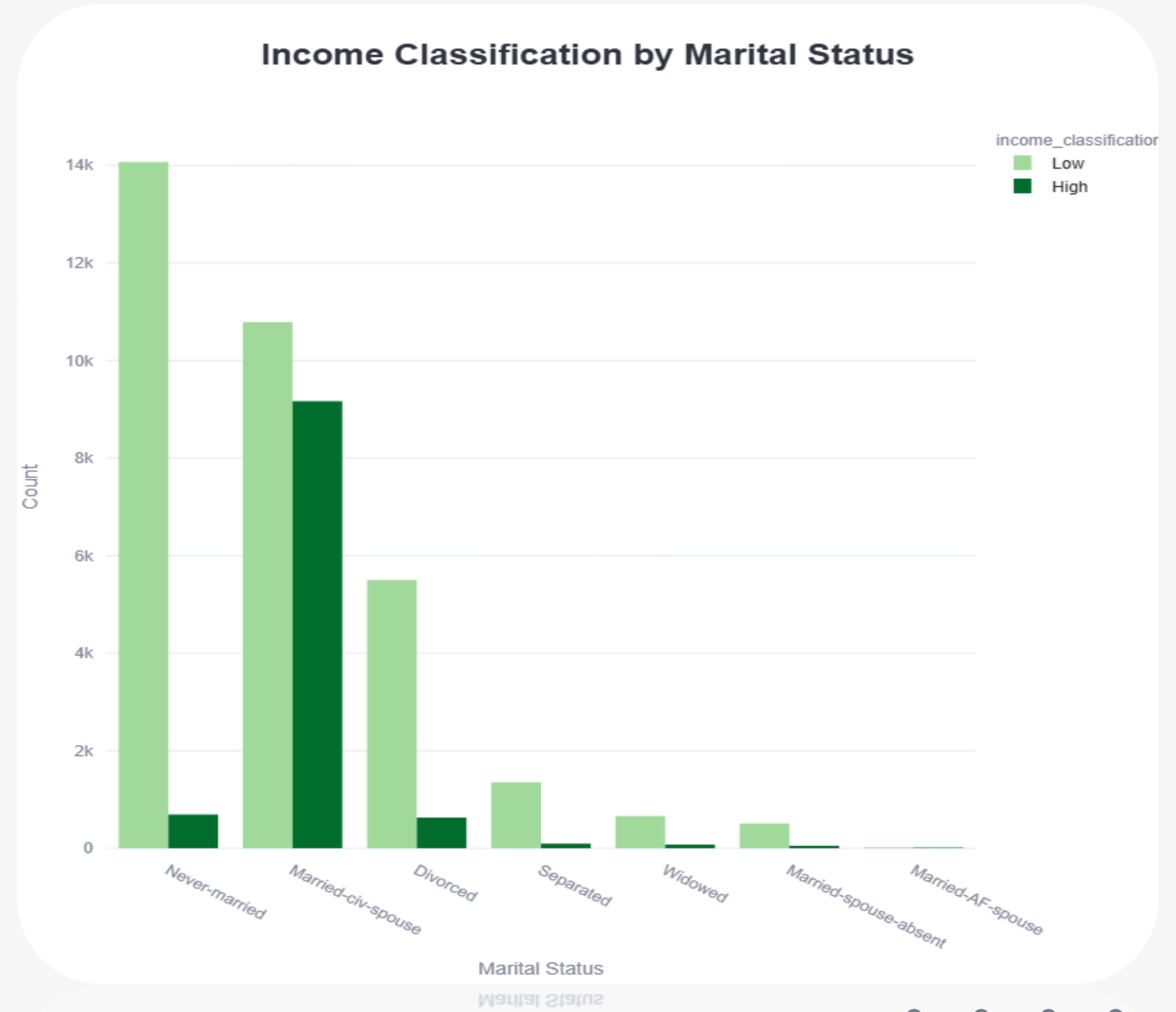


Income by Marital Status

With outlier



Without outlier



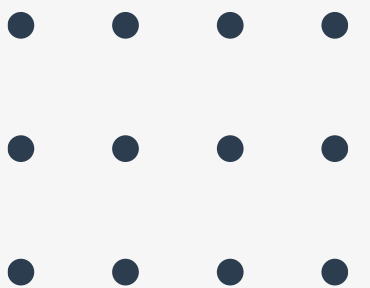


Income by Marital Status



Insight

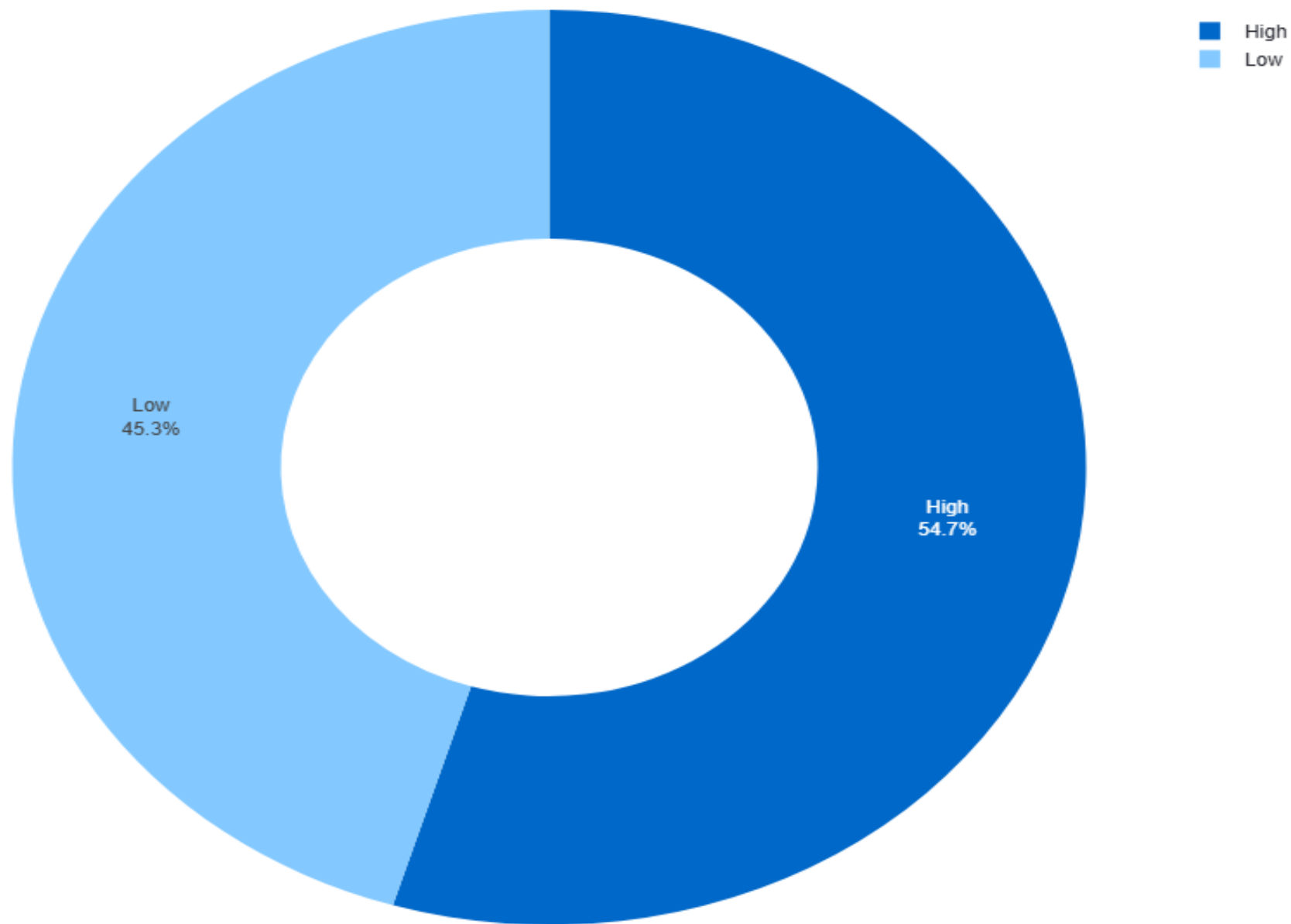
Married individuals (civil spouses) appear in both high and low-income groups. The trend remains the same with or without outliers.



Education-num vs. Income

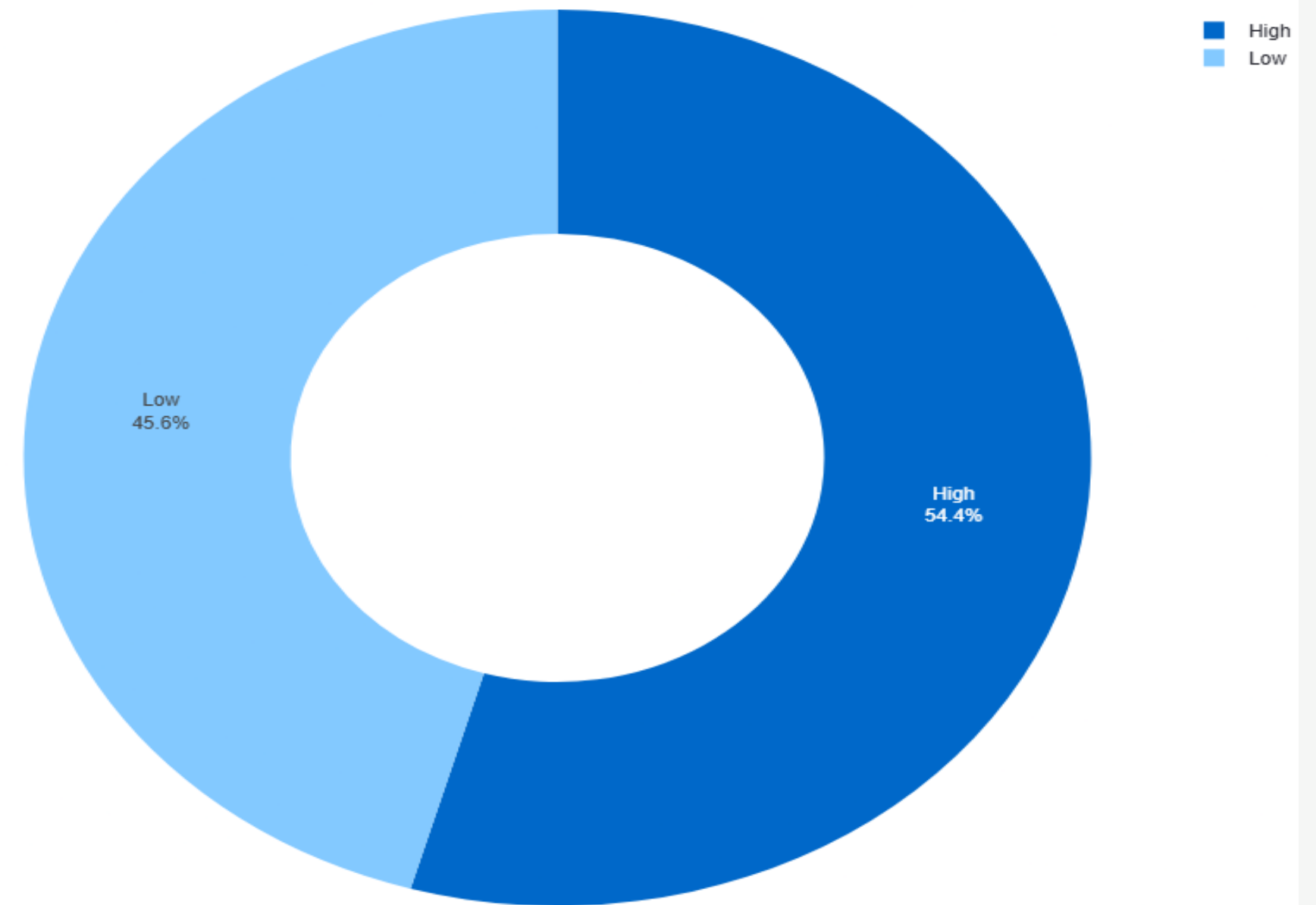
With outlier

Average Education Level by Income



Without outlier

Average Education Level by Income




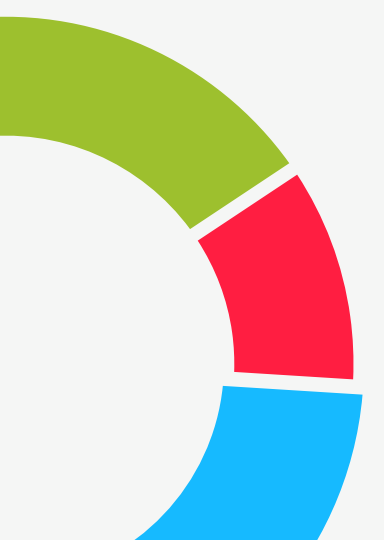


Education-num vs. Income



Insight

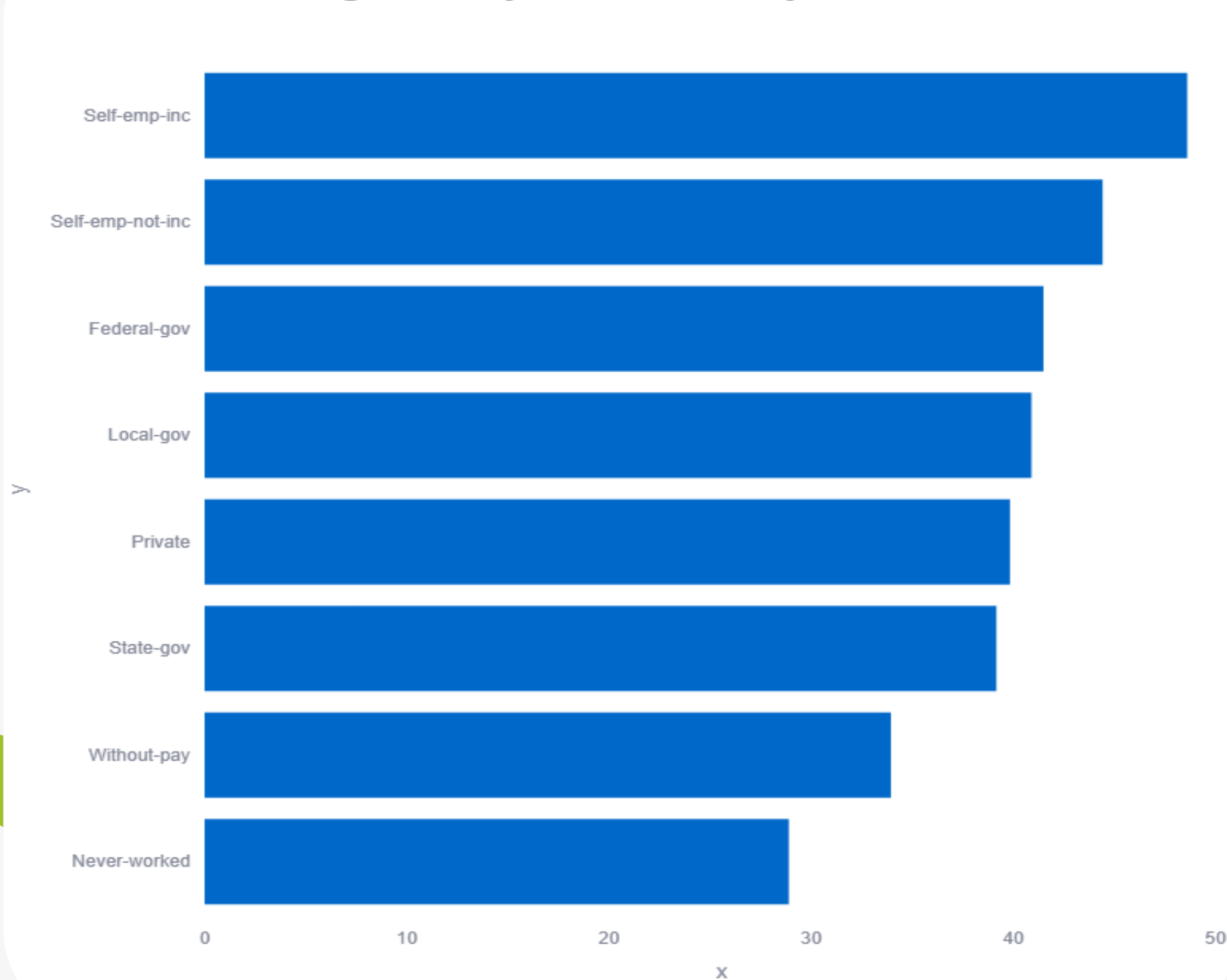
The average education-num is clearly higher among high-income individuals. This relationship stays consistent for both data.



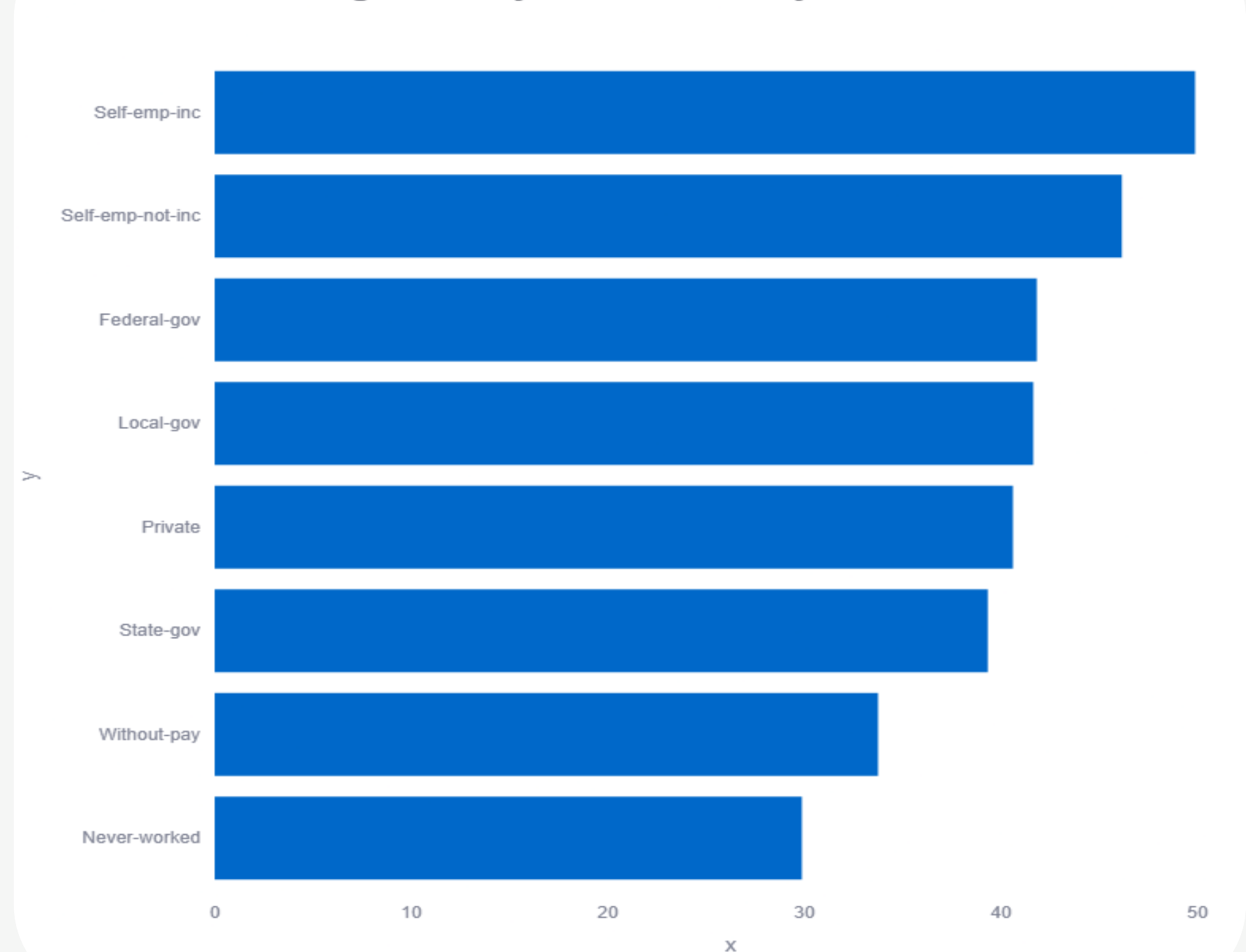
Average Work Hours by Workclass

With outlier Without outlier

Average Weekly Work Hours by Workclass



Average Weekly Work Hours by Workclass





Average Work Hours by Workclass



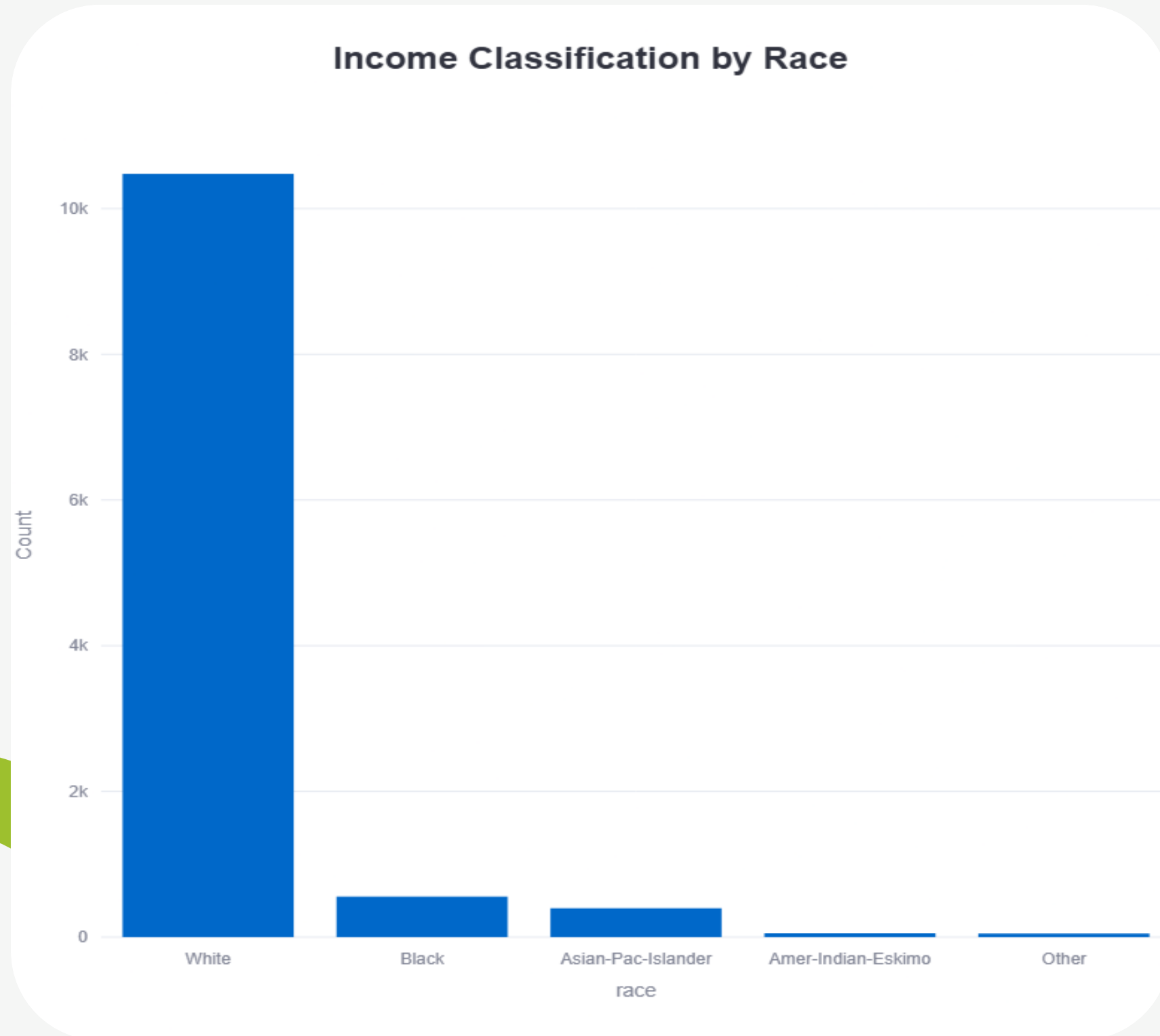
Insight

Self-employed (incorporated) individuals work the most hours per week. This insight is consistent in both versions of the data.

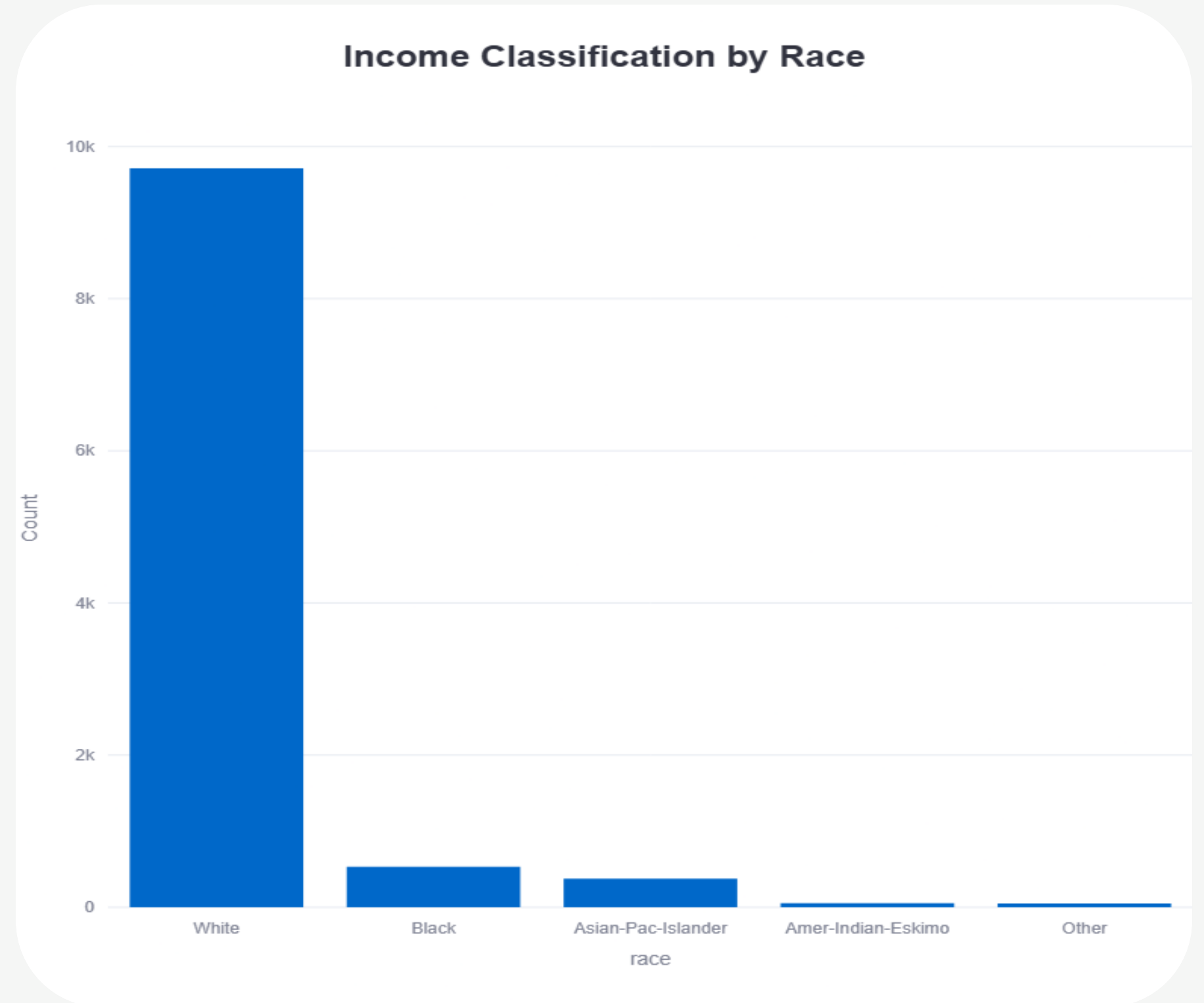


High-Income by Race

With outlier



Without outlier






High-Income by Race



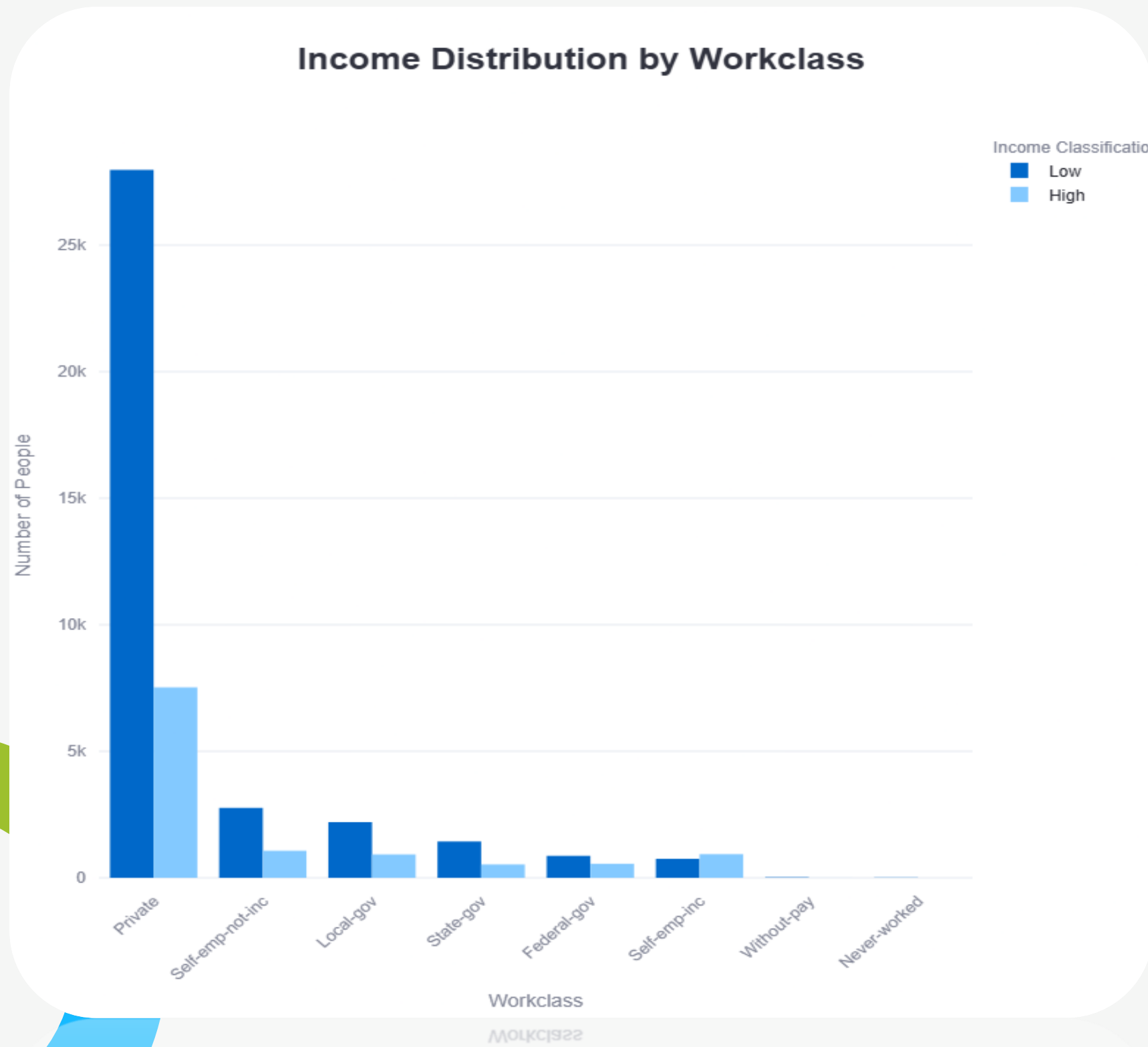
Insight

White individuals are the most represented among high-income earners. Removing outliers has no major impact on this distribution.

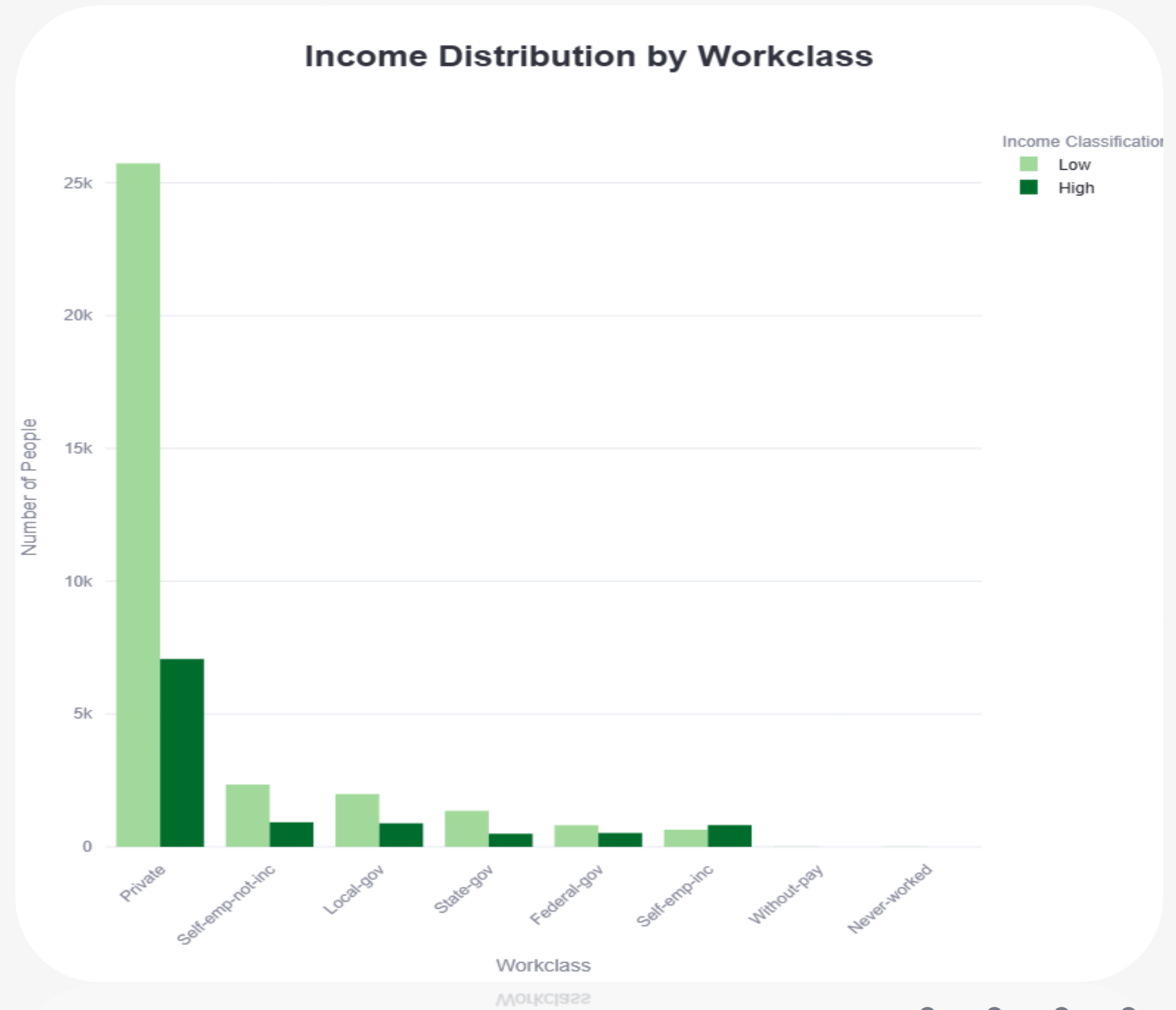


Income by Workclass

With outlier



Without outlier






Income by Workclass



Insight

Private sector dominates in both low and high-income groups. Self-employed and government roles show varying income levels. Pattern stays stable across both

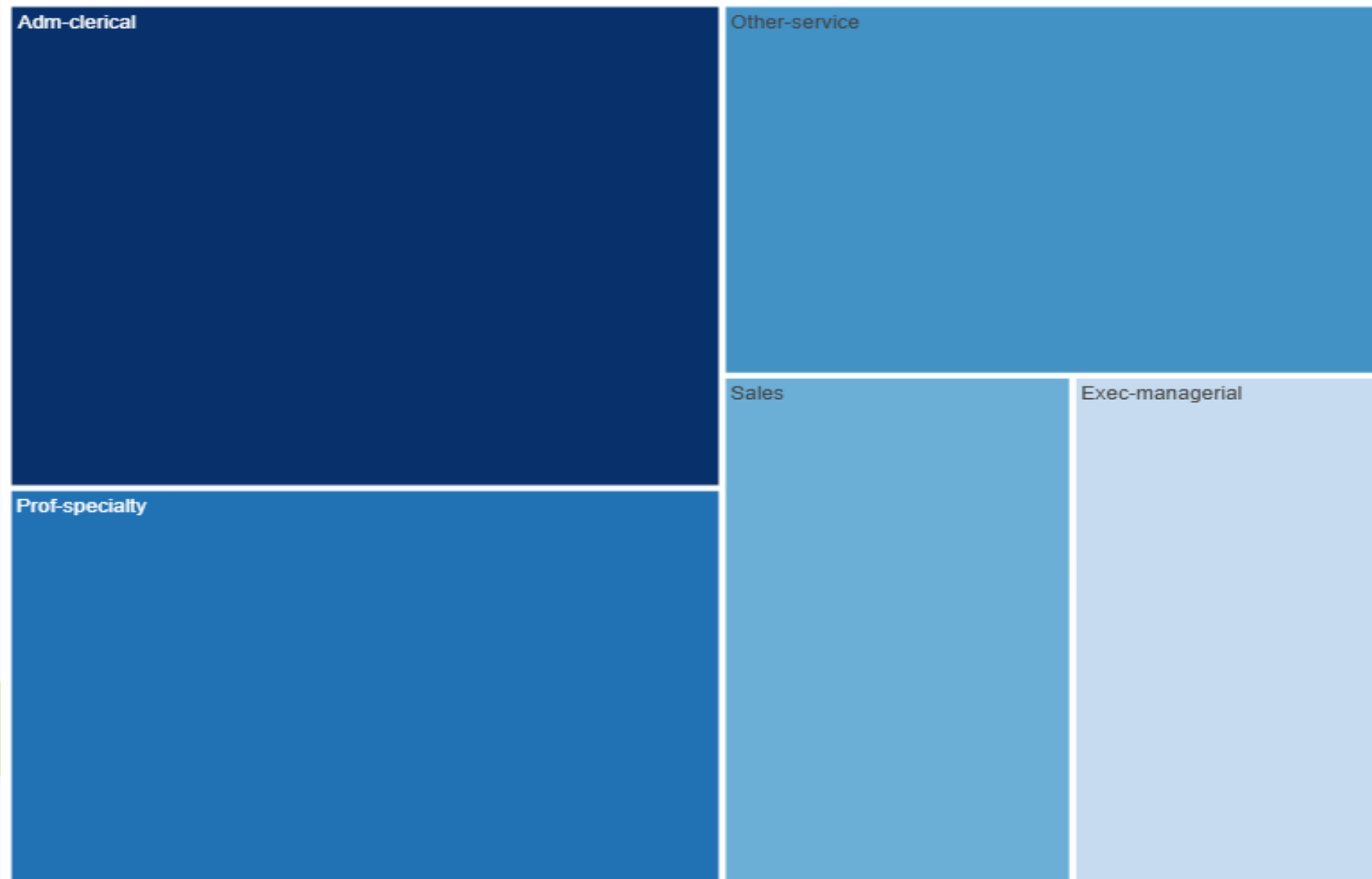


Top Occupations Among Females

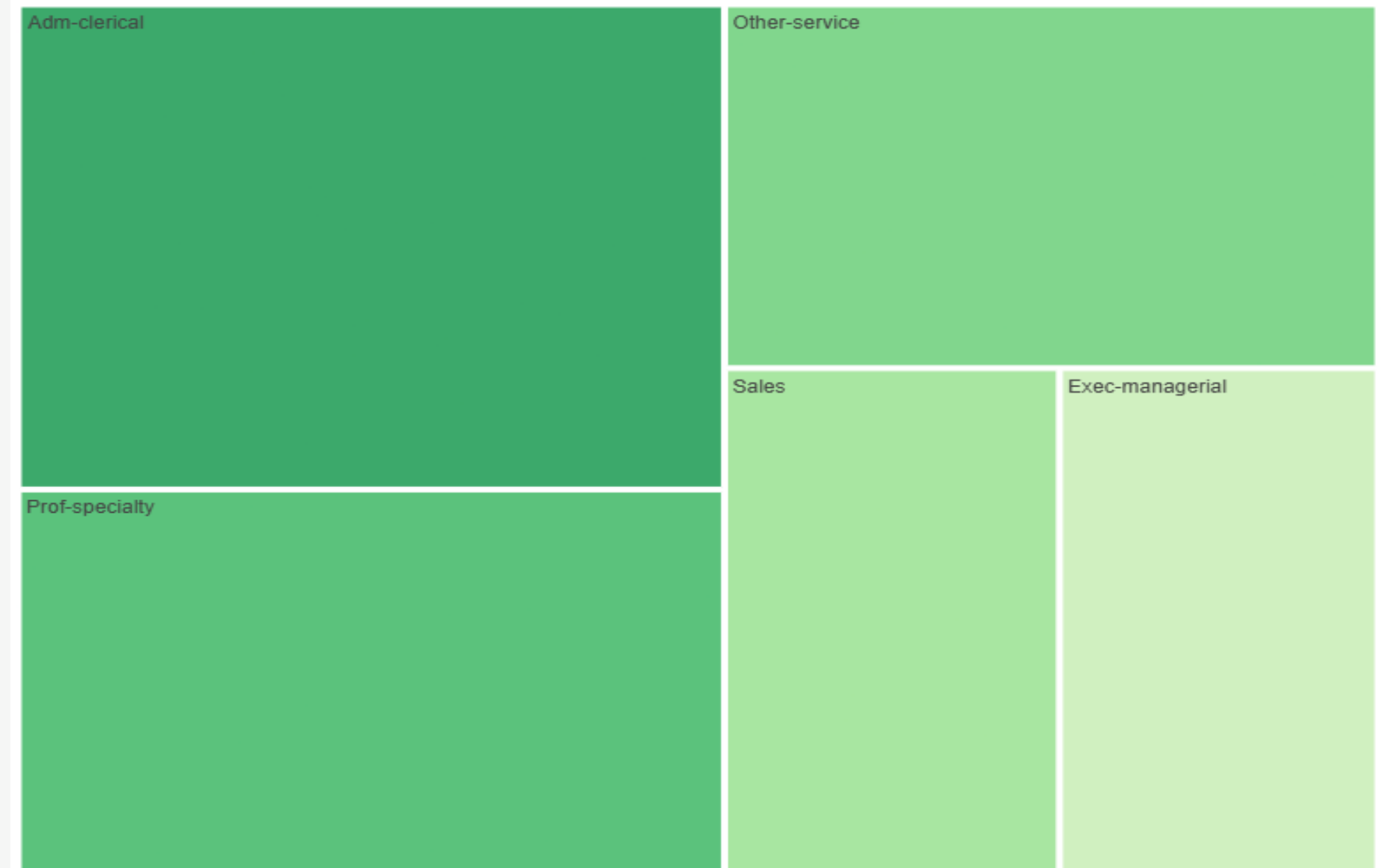
With outlier

Without outlier

Top 5 Occupations Among Females



Top 5 Occupations Among Females





Top Occupations Among Females



Administrative-clerical and professional-specialty jobs are most common among females. The top occupations remain unchanged with or without outliers.



Summary

1. Education and Income:

Higher education levels (**Bachelors , Masters**) correlate with higher income, while lower education levels (**High School**) are associated with lower income.

2. Gender Disparity:

Males dominate high-income groups compared to females.

3. Occupations:

Professional specialties and **executive-managerial roles** are the most common among high-income earners.





66 Summary:

4. Work Hours:

A weak positive correlation exists between weekly work hours and income.

5. Country Distribution:

The United States has the highest number of high-income individuals.

6. Marital Status:

Married individuals (civil spouse) have a significant presence in both high- and low-income groups.

7. Race:

White individuals dominate high-income groups with other races having lower representation.





Summary

8. Workclass:

Self-employed individuals with incorporated businesses work the most hours, while **private sector** workers dominate both income categories.

9. Female Occupations:

Administrative, **clerical**, and **professional specialties** are the most common occupations among **females**.

10. Outliers:

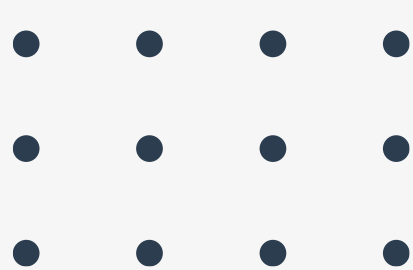
After analyzing the data, the difference between data **with outlier** and **without outlier** indicate that outliers have little significant impact on the overall trends and distributions.



Recommendations

- **Focus on Education:** Promote higher education programs, as advanced degrees strongly correlate with higher income.
- **Address Gender Inequality:** Develop policies to reduce income disparities, particularly supporting women in high-paying roles.
- **Target High-Income Occupations:** Encourage training in professional specialties and managerial roles to boost income potential.
- **Work-Life Balance:** Investigate the weak correlation between work hours and income to optimize productivity without excessive hours.
- **Diversity in Employment:** Increase representation of underrepresented races in high-income roles through targeted career development programs.
- **Support for Self-Employed:** Provide resources for self-employed individuals especially those in incorporated businesses to sustain high work hours and income.





Thank you!

