PROJECT PRESENTATION

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1

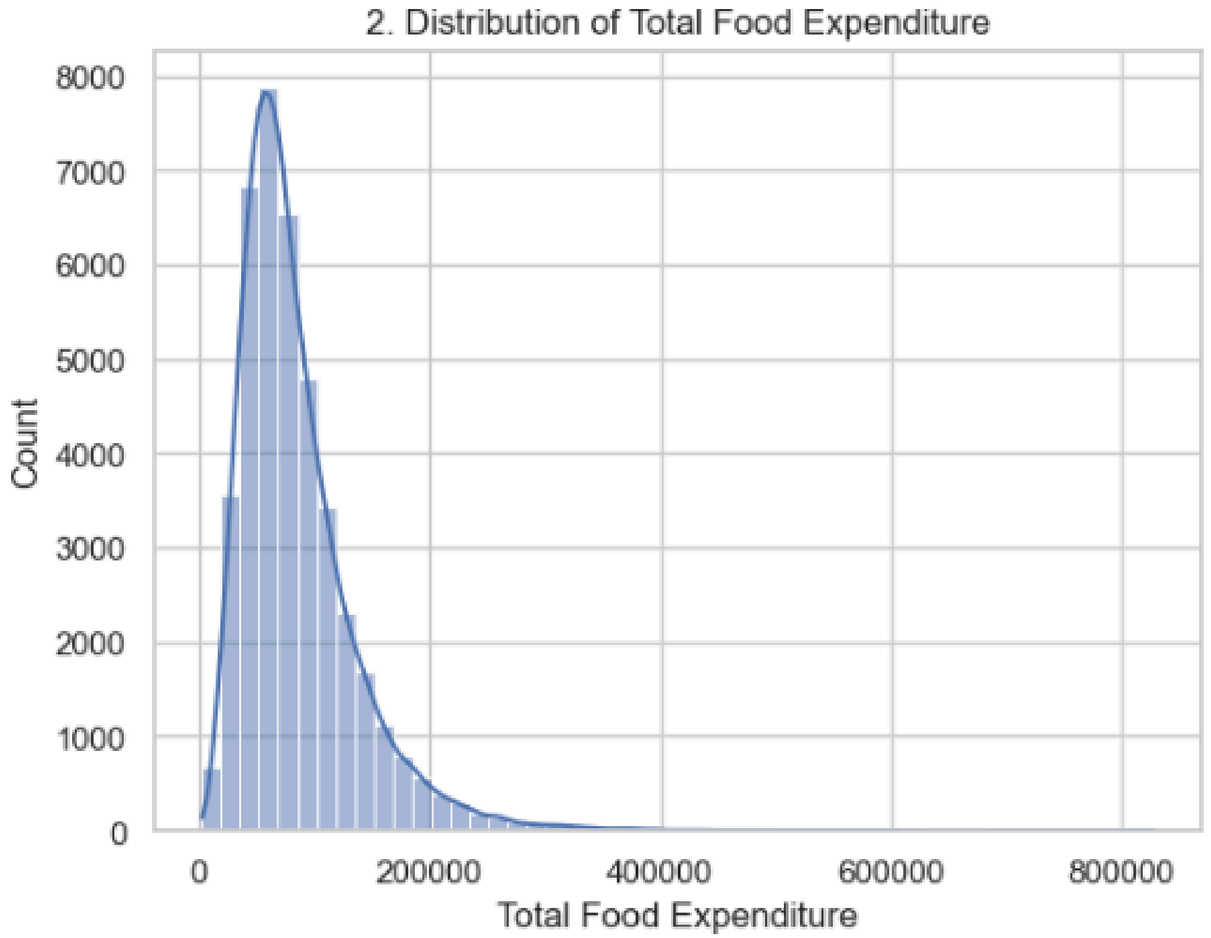
Problem

What is the distribution of total food expenditure among households?

Insight

Most households spend less than 150,000 PHP/year on food.

```
sns.histplot(fam["Total Food Expenditure"], bins=50, kde=True)
plt.title("2. Distribution of Total Food Expenditure")
plt.show()
```



2

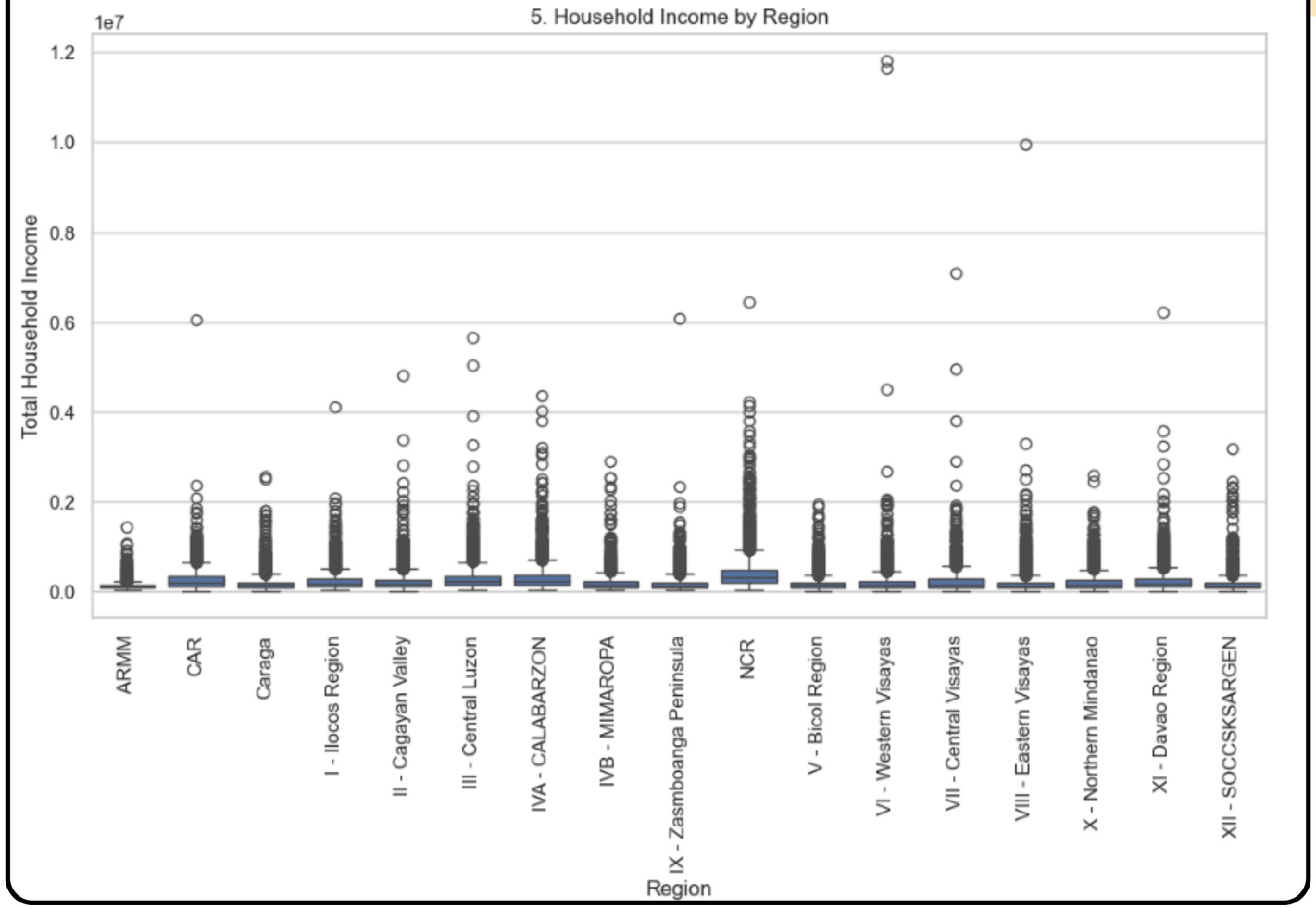
Problem

How does household income vary across different regions?

Insight

NCR and CALABARZON show higher income distributions

```
plt.figure(figsize=(12,6))
sns.boxplot(data=fam, x='Region', y='Total Household Income')
plt.xticks(rotation=90)
plt.title("5. Household Income by Region")
plt.show()
```



3

Problem

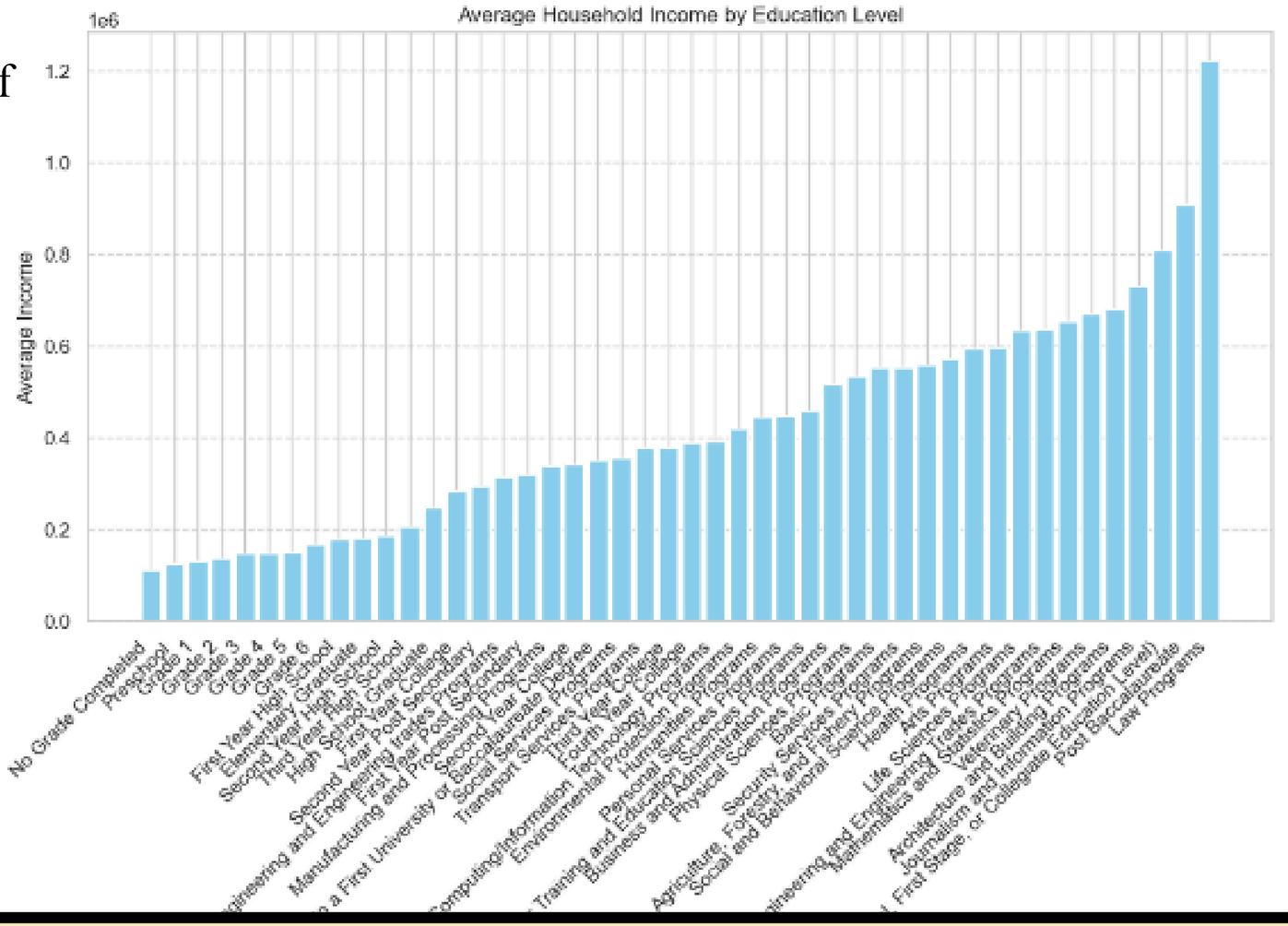
How does educational attainment of the household head influence income?

Insight

Higher educational attainment of the household head is strongly associated with higher household income.

```
edu_income = fam.groupby("Household Head Highest Grade Completed")["Total Household Income"].mean().sort_values()

plt.figure(figsize=(12, 6))
plt.bar(edu_income.index, edu_income.values, color='skyblue')
plt.title("Average Household Income by Education Level")
plt.xticks(rotation=45, ha='right')
plt.ylabel("Average Income")
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()
```



4

Problem

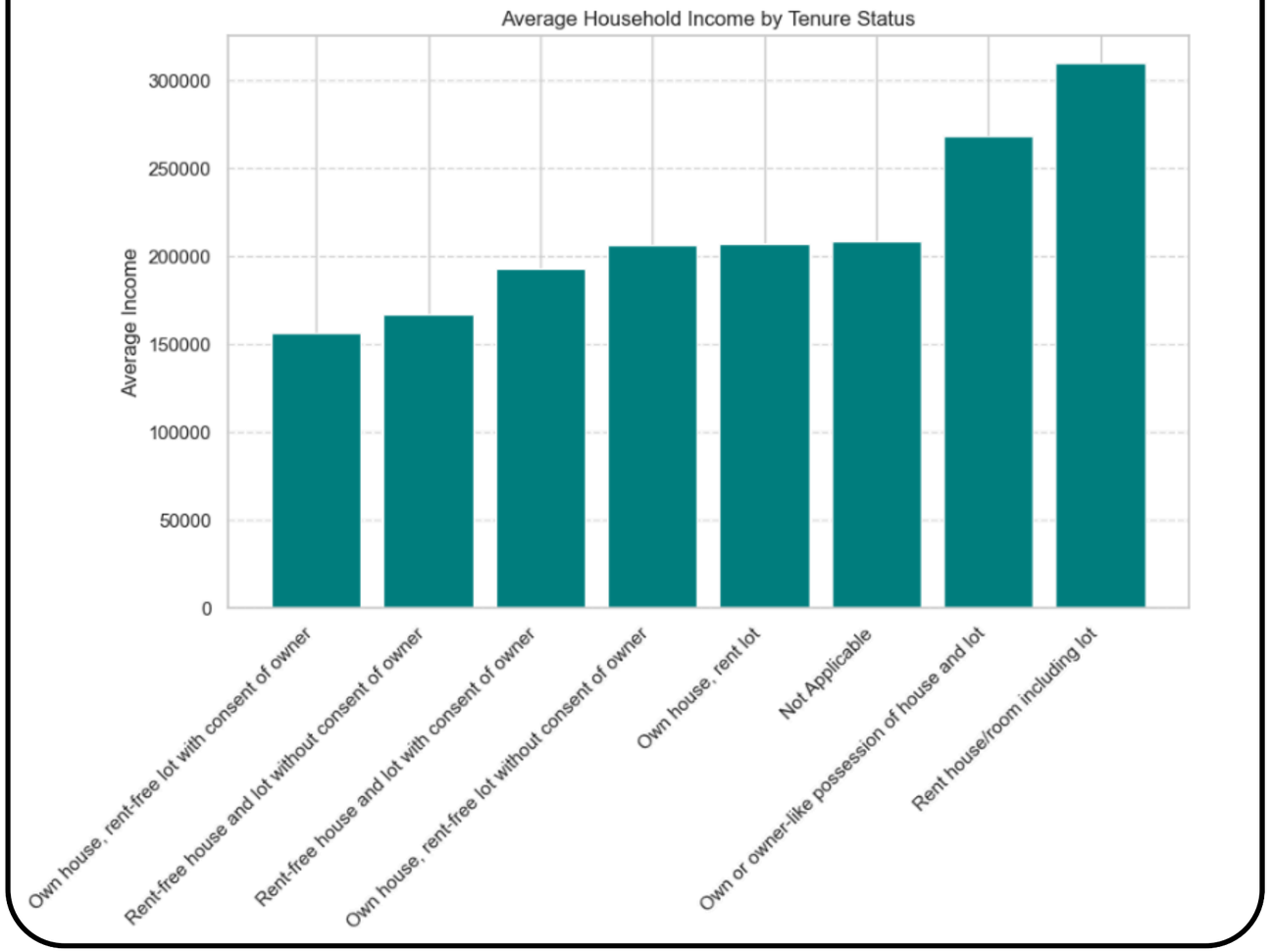
What is the relationship between housing tenure and household income?

Insight

Households that own their home or occupy rent-free tend to have higher average income.

```
tenure_income = fam.groupby("Tenure Status")["Total Household Income"].mean().sort_values()

plt.figure(figsize=(10, 6))
plt.bar(tenure_income.index, tenure_income.values, color='teal')
plt.title("Average Household Income by Tenure Status")
plt.ylabel("Average Income")
plt.xticks(rotation=45, ha='right')
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()
```



5

Problem

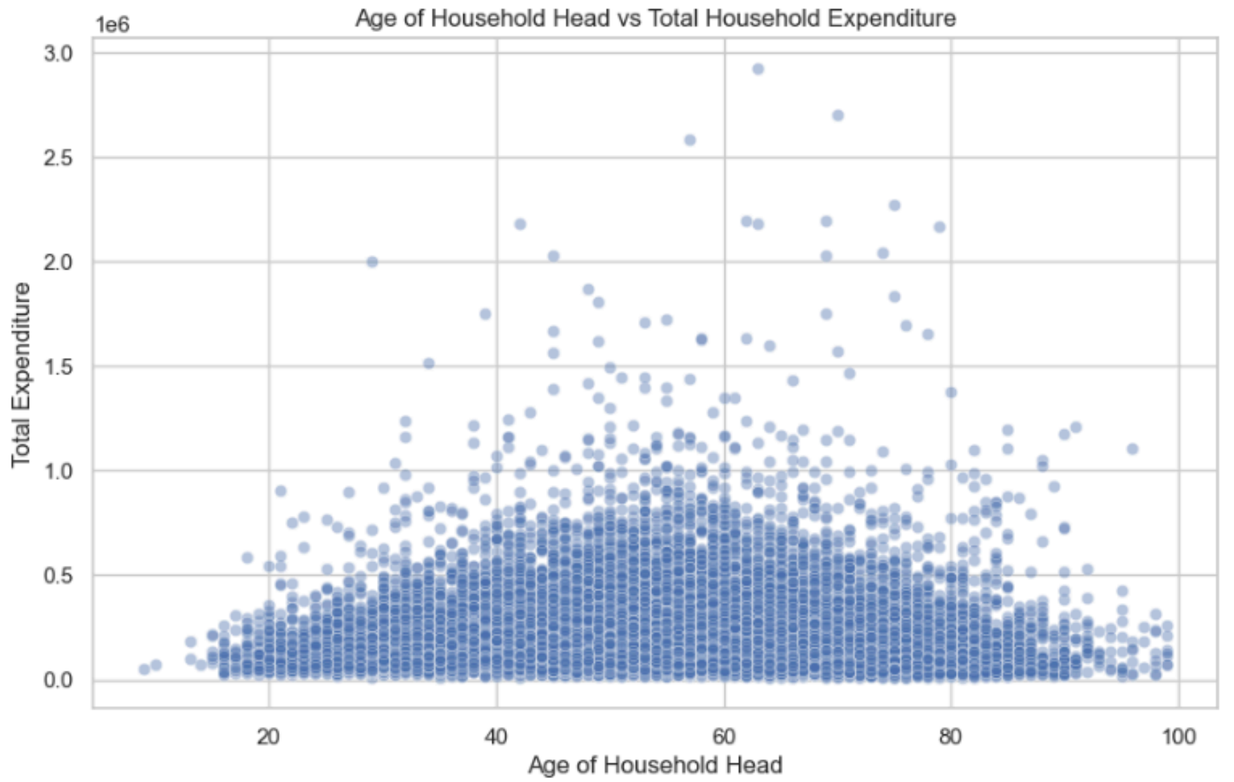
Does the age of the household head affect total household expenditure?

Insight

Spending increases with age until around 60, then declines or plateaus.

```
fam["Total Household Expenditure"] = fam[[
    "Total Food Expenditure", "Clothing, Footwear and Other Wear Expenditure",
    "Housing and water Expenditure", "Medical Care Expenditure", "Transportation Expenditure",
    "Communication Expenditure", "Education Expenditure", "Miscellaneous Goods and Services Expenditure"
]].sum(axis=1)

plt.figure(figsize=(10, 6))
sns.scatterplot(x="Household Head Age", y="Total Household Expenditure", data=fam, alpha=0.4)
plt.title("Age of Household Head vs Total Household Expenditure")
plt.xlabel("Age of Household Head")
plt.ylabel("Total Expenditure")
plt.grid(True)
plt.show()
```



6

Problem

Do agricultural households spend more on food than non-agricultural ones?

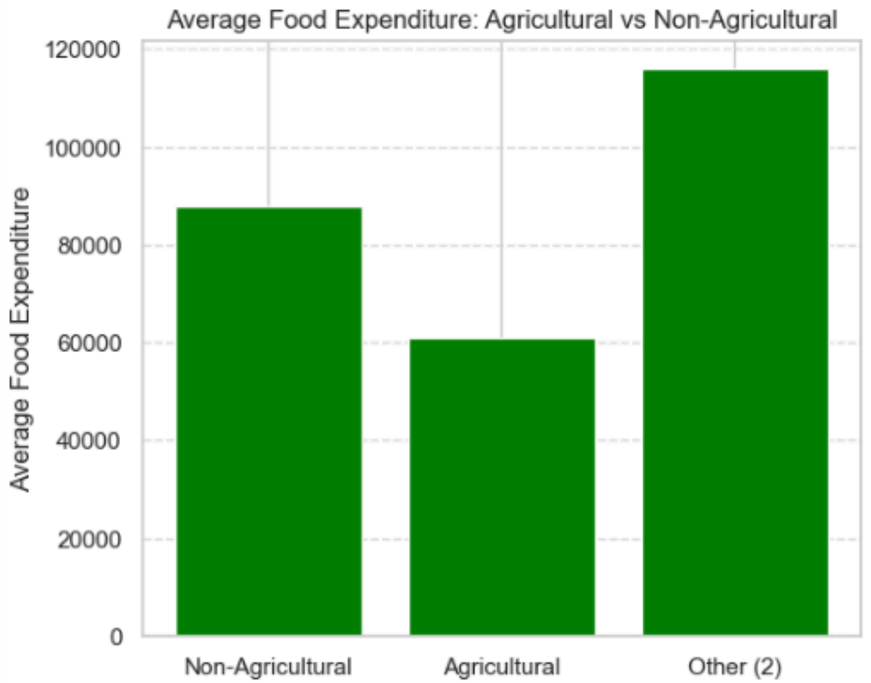
Insight

Agricultural households tend to spend more on food than non-agricultural households

```python
# Group and compute average food expenditure
agr_food = fam.groupby("Agricultural Household indicator")["Total Food Expenditure"].mean()

# Convert index to readable labels
labels = ['Non-Agricultural' if i == 0 else 'Agricultural' if i == 1 else f'Other ({i})' for i in agr_food.index]

# Plot
plt.figure(figsize=(6, 5))
plt.bar(labels, agr_food.values, color='green')
plt.title("Average Food Expenditure: Agricultural vs Non-Agricultural")
plt.ylabel("Average Food Expenditure")
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()
```



7

Problem

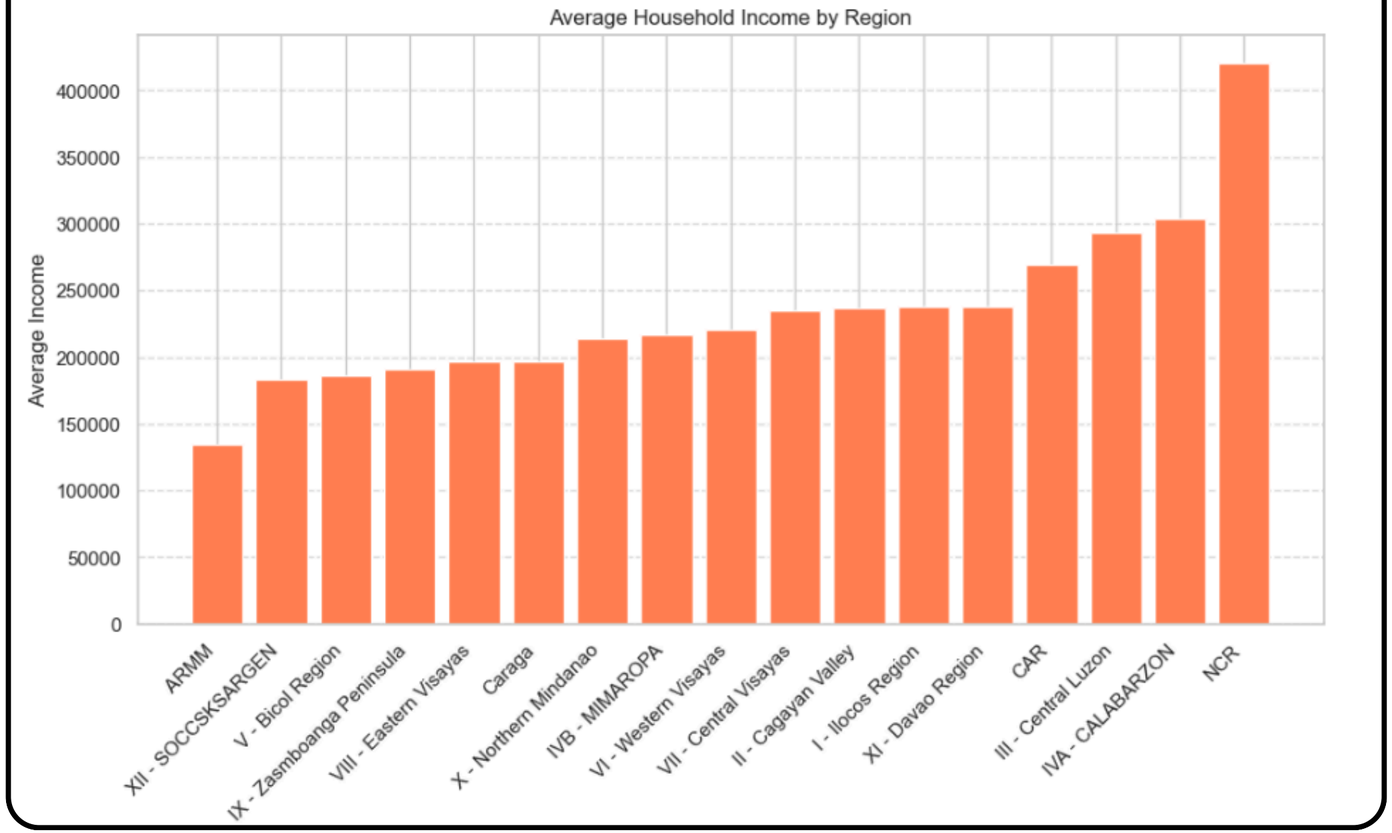
How unequal is household income across regions?

Insight

Urban regions like NCR show both high median income and wider income gaps.

```
region_income = fam.groupby("Region")["Total Household Income"].mean().sort_values()

plt.figure(figsize=(12, 6))
plt.bar(region_income.index, region_income.values, color='coral')
plt.title("Average Household Income by Region")
plt.ylabel("Average Income")
plt.xticks(rotation=45, ha='right')
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()
```



8

Problem

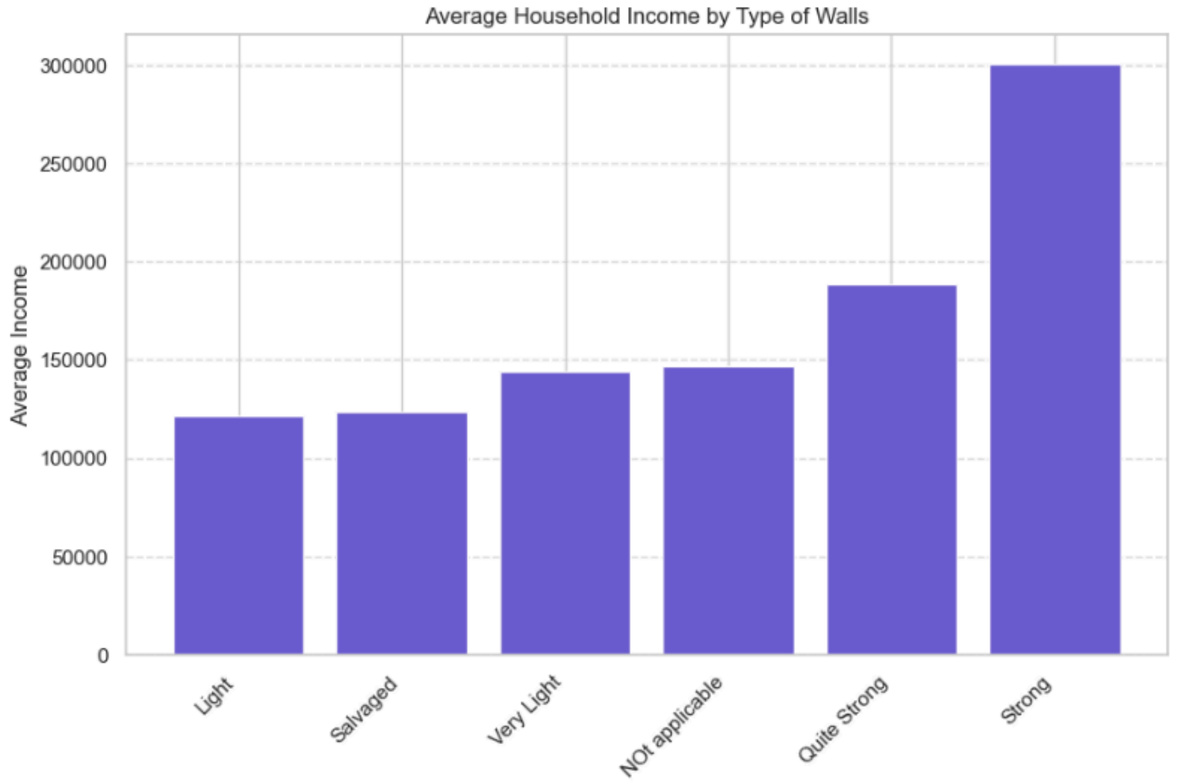
Does the type of house wall reflect household income levels?

Insight

Households with concrete or brick walls earn more, while those with light materials earn less.

```
wall_income = fam.groupby("Type of Walls")["Total Household Income"].mean().sort_values()

plt.figure(figsize=(10, 6))
plt.bar(wall_income.index, wall_income.values, color='slateblue')
plt.title("Average Household Income by Type of Walls")
plt.ylabel("Average Income")
plt.xticks(rotation=45, ha='right')
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()
```



9

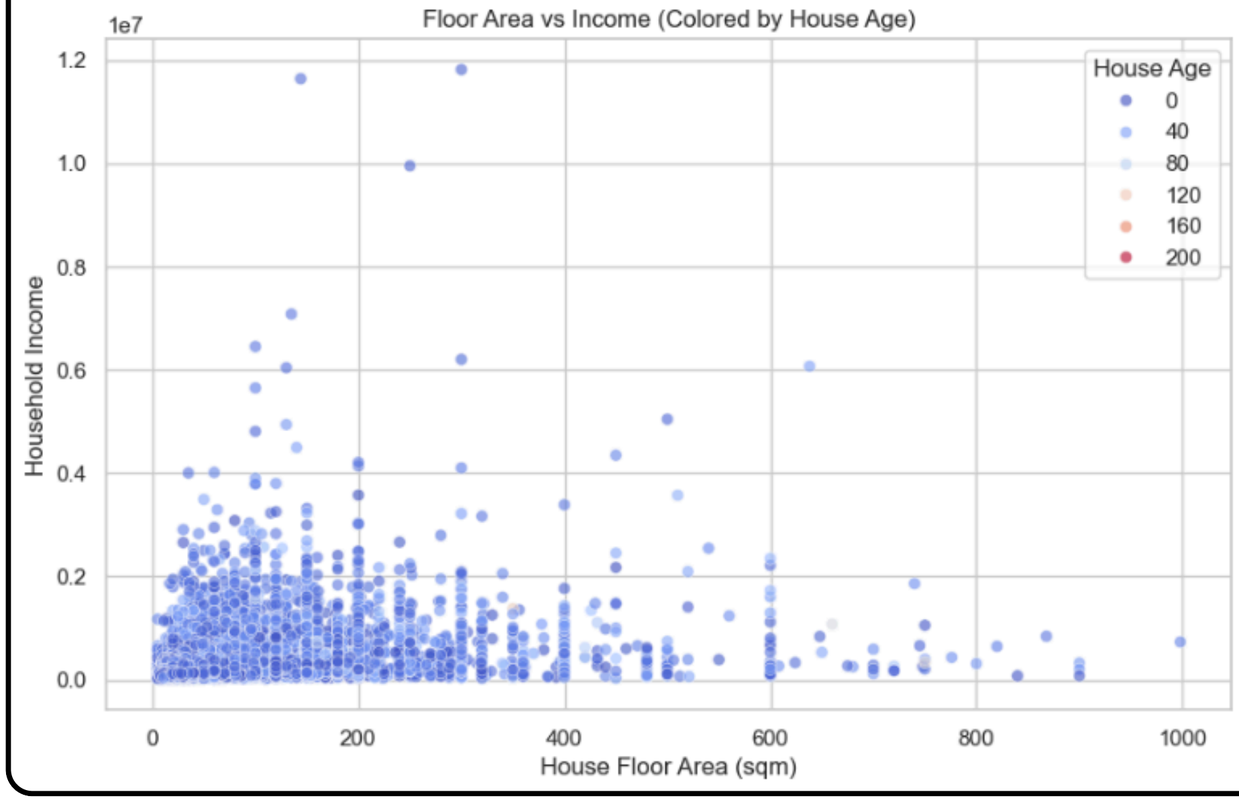
Problem

What is the relationship between house size, age, and household income?

Insight

Newer and larger houses are associated with higher income, while older and smaller homes cluster in lower-income groups.

```
plt.figure(figsize=(10, 6))
sns.scatterplot(data=fam, x="House Floor Area", y="Total Household Income", hue="House Age", palette="coolwarm", alpha=0.6)
plt.title("Floor Area vs Income (Colored by House Age)")
plt.xlabel("House Floor Area (sqm)")
plt.ylabel("Household Income")
plt.grid(True)
plt.show()
```



THANKS FOR LISTENING!!