

Fall 2025

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Income Inequality In Chicago

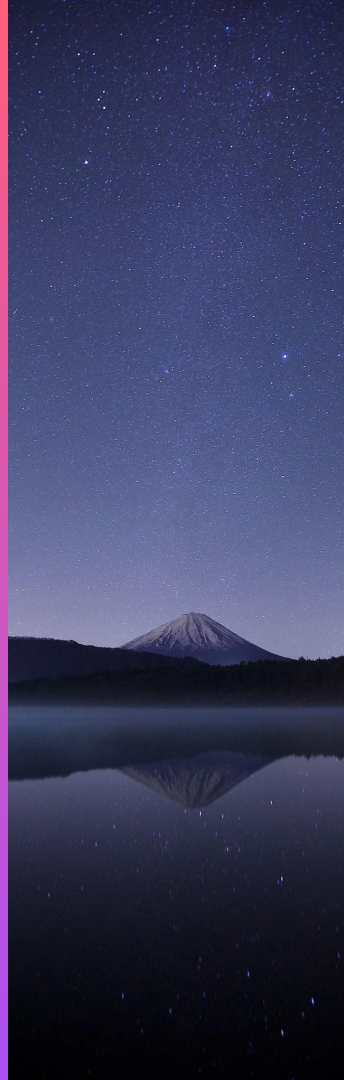
Motivation

Chicago is a city defined by its divisions.

North/South/West Sides

Income inequality is often linked with demographics.

I want to investigate how Gender impacts income trends in neighborhoods across Chicago.



Research Question

Does the percentage of female residents in a neighborhood predict household income trends?

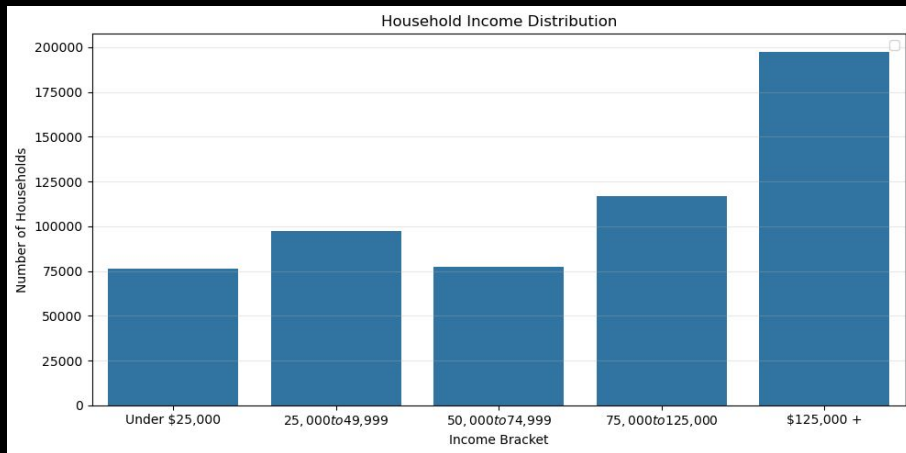
Dataset

2023 American Community Survey

<https://www.kaggle.com/datasets/aniket0712/acs-5-year-data-by-community-area>

Contains demographic information for the 77 neighborhoods.
Income brackets from <25k to >125k+
Age/Gender brackets "Males 18 to 24"
Ethnicity: White/Black/Asian as well as Hispanic Yes/No

	ACS Year	Community Area	Under \$25,000	\$25,000 to \$49,999	\$50,000 to \$74,999	\$75,000 to \$125,000	\$125,000 +	Male 0 to 17	Male 18 to 24	Male 25 to 34	Male 35 to 49	Male 50 to 64	Male 65+	Female 0 to 17	Female 18 to 24	Female 25 to 34	Female 35 to 49	Female 50 to 64	Female 65 +	Total Population	White	Black or African American	American Indian or Alaska Native	Asian
0	2023	ALBANY PARK	1269	1916	1801	2306	3379	4799	2955	4513	5442	4354	2287	4913	2405	4116	5228	3764	3054	47830	21496	2228	759	7124
1	2023	ARCHER HEIGHTS	223	752	441	795	739	1927	732	1102	1240	1417	1035	1502	899	978	1167	854	1021	13875	6232	10	108	679
2	2023	ARMOUR SQUARE	701	798	370	637	597	1300	487	871	1174	1177	1032	1022	517	965	1163	1378	2063	13149	2556	1487	107	8402
3	2023	ASHBURN	797	1351	1985	3014	2735	5150	1964	2881	4178	4228	2473	5138	2248	2774	4582	4044	3184	42842	11297	18124	697	436
4	2023	AUBURN GRESHAM	2541	2451	1592	2202	1850	5803	1836	2964	3431	3469	3223	5305	2304	3057	4522	5213	5357	46483	760	43414	119	399

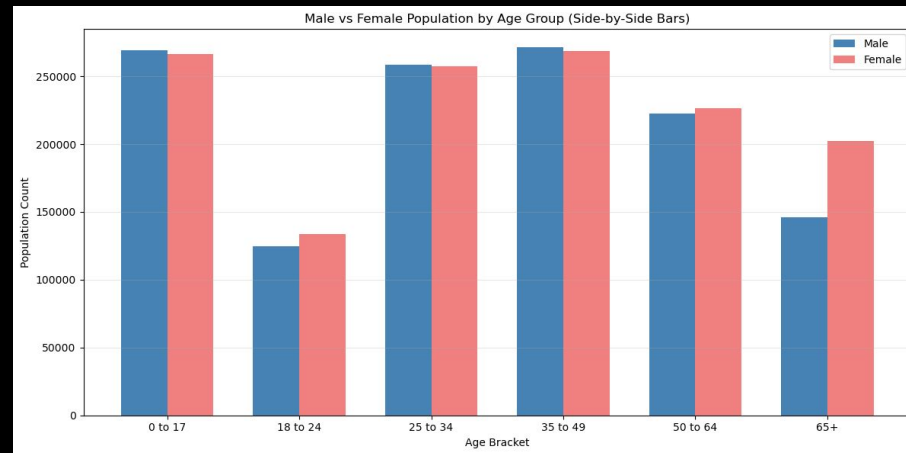


Income Distribution

Households earning more than \$125k is the largest population compared to the others.

Smallest income bracket is households making less than \$25k

Of note this dataset does not include information on family structure, dual income/married households or single parents.



Gender Distribution

Distribution of males and females by age bracket

All age brackets seem to be near 50% distribution of genders which makes logical sense

More women than men at 65+ again makes sense since women tend to live longer than men

Correlation

- Positive correlation between Percentage Female and percentage of households under \$25k
- Negative correlation with % of households above \$125k
- Middle income brackets show weak or no relationships



Regression

Run a linear regression for each income bracket compared to Female Percentage of Population

$H_0: \beta_1 = 0$ (No association between Percent Female and income)

$H_A: \beta_1 \neq 0$ (Income share depends on Percent Female)

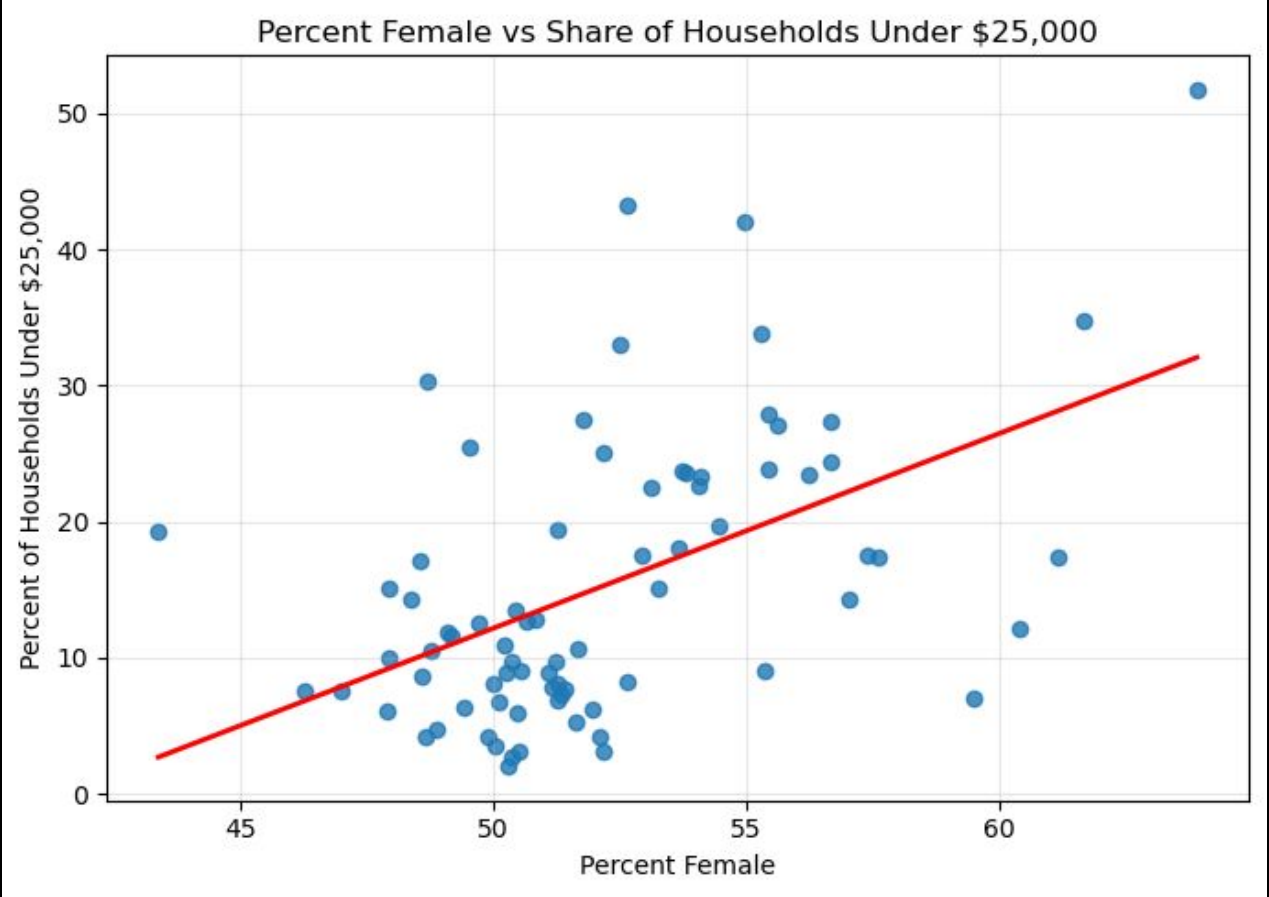
Low Income Households

Income < \$25,000

- Slope: +1.432
- p-value: < 0.001
- R²: 0.255

We Reject the null hypothesis, there is strong evidence that neighborhoods with more women have higher proportions of low-income households.

Although we are only accounting for ~25% of the variability with the % of female population.



Other Income Brackets

Income \$25,000 - \$125k

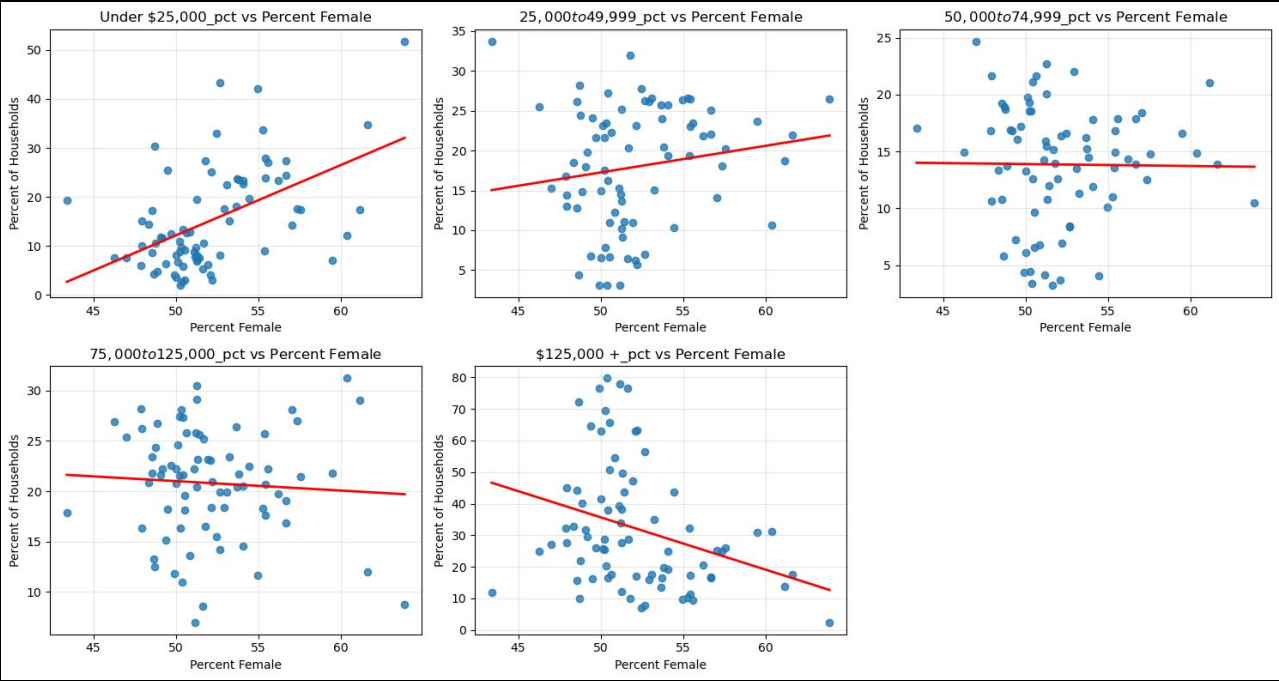
- p-values: 0.16, 0.92, 0.58

For all the middle income brackets we Fail to Reject the null hypothesis, there is not enough evidence to prove a relationship between female population and income

Income +\$125,000

- p-value: 0.0006
- Slope: -1.655
- $R^2 = 0.095$

We reject the null hypothesis: There is strong evidence for a negative relationship between income and female population. Although we are only accounting for less than 10% of the variability in income.



Conclusions

What did we learn?

A neighborhood's gender composition is associated with income distribution.

Neighborhoods that skew towards higher female populations have:

- Higher shares of low-income households
- Lower shares of high-income households
- No meaningful relationship observed in the middle-income brackets.

Implication:

While there is a relationship between gender composition and income inequality, there needs to be more information regarding household/family makeup to make more in depth observations.

THANK YOU

Any questions?