

## ✓ Income relative to housing and rent prices

The average lowan is noticing house prices rising faster than incomes. Housing affordability has changed in Iowa. This is more evidence that housing is becoming less affordable for lowans. Home value increased more income from 2019-2022. Low interest rates certainly are a good explanation for this. Demand changes due to population changes may be another good reason for this, both of which we will touch on in later sections.

The rental market presents a contrasting narrative to homeownership. While housing prices surged during the pandemic, rental costs remained relatively stable. However, recent data indicates a shift in this trend. Rents in Iowa have experienced rapid growth in 2023 and 2024, coinciding with the Federal Reserve's interest rate hikes.

### important consideration

The graph i'm referencing below is for median income, which for decades has been relatively stagnant when you account for inflation. However the mean income has been on the rise and may actually be rising at the same rate as increasing housing prices. If this were to be the case it would explain why houses are able to rise in price despite the median person not making enough to afford the houses.

## ✓ Income insight

The cost to buy a home has far exceeded incomes while incomes have kept up with the cost of renting. This is further evidence that housing is becoming less affordable and could explain the downward trend of homewonership rates since 2000.

```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
from matplotlib.ticker import FuncFormatter

# Load the U.S. Census Bureau data
file_path = '/content/income_house_rent.xlsx'
df = pd.read_excel(file_path)

# clean data
dates = df["Date"]
income_change = df["Change in Income"]
home_value_change = df["Change in Home Value"]
gross_rent_change = df["Change in Gross Rent"]

def add_percent(y, _):
    return f'{int(y)}%'

# Create the bar chart
plt.figure(figsize=(12, 6))
bar_width = 0.25
r1 = np.arange(len(dates))
r2 = [x + bar_width for x in r1]
r3 = [x + bar_width for x in r2]
bars1 = plt.bar(r1, income_change, color='silver', width=bar_width, label='Change in Income', alpha=0.6)
bars2 = plt.bar(r2, home_value_change, width=bar_width, label='Change in Home Value')
bars3 = plt.bar(r3, gross_rent_change, width=bar_width, label='Change in Gross Rent')

# labels and legend
plt.xlabel("Year", fontsize=14)
plt.ylabel("% Change", fontsize=14)
plt.title("Iowa Household Income Vs. Median Home Value Vs. Median Gross Rent", fontsize=16)
plt.xticks([r + bar_width for r in range(len(dates))], dates.astype(str).tolist(), rotation=45 if len(dates) > 5 else 0)
plt.legend()
plt.grid(False)
plt.axhline(y=0, color='lightgray', linestyle='-')
plt.gca().yaxis.set_major_formatter(FuncFormatter(add_percent))

plt.show()
```



Iowa Household Income Vs. Median Home Value Vs. Median Gross Rent

