Childcare Affordability in the U.S.

Inflation being a hot topic as of late, a concern for much of the US is the price of Childcare. There is a concept in inflation, where not everything rises by X amount. Instead, some prices go up (and maybe even down) at a higher or lower rate than inflation. For example, we can all acknowledge that TVs seem to be getting cheaper. So what is getting more expensive? What is getting less affordable? What is outpacing our salary increase? It is my suspicion that the price of Childcare in the US is increasing at a faster rate than our income. Anecdotally, my child's daycare goes up 7% a year and I don't know too many people making 7% more each year. Let us dive into the trends of childcare affordability in relationship to median household income.

The Data

We will be looking at data provided by U.S. Department of Labor's Women's Bureau. The data is provided through an excel document titled "National Database of Childcare Prices" and it covers data from 2008-2018. https://www.dol.gov/agencies/wb/topics/featured-childcare

Definitions for columns can be found:
https://www.dol.gov/sites/dolgov/files/WB/media/NationalDatabaseofChildcarePricesTechnicalGuideFinal.pdf

Definitions

- Childcare centers: typically located in commercial buildings and serve multiple groups or classrooms of similarly aged children.
- Family childcare homes: typically for small groups of children in a residential building, such as a house, apartment, or condo unit.
- MHI: Median household income.
- TotalPop: Total population.
- Households: Number of household.
- MCInfant: Aggregated weekly, full-time median price charged for Center-based Care for infants (i.e. aged 0 through 23 months).
- MCToddler: Aggregated weekly, full-time median price charged for Center-based Care for toddlers (i.e. aged 24 through 35 months).
- MCPreschool: Aggregated weekly, full-time median price charged for Center-based Care for preschoolers (i.e. aged 36 through 54 months).
- MFCCInfant: Aggregated weekly, full-time median price charged for Family Childcare for infants (i.e. aged 0 through 23 months).
- MFCCToddler: Aggregated weekly, full-time median price charged for Family Childcare for toddlers (i.e. aged 24 through 35 months)
- MFCCPreschool: Aggregated weekly, full-time median price charged for Family Childcare for preschoolers (i.e. aged 36 through 54 months).

Data Wrangling

The first step I took was to download the data from U.S. Department of Labor's Women's Bureau's website. The original data was provided in an excel document and contained data from all of the United States. There were 34,568 rows and 227 columns. I combed through an excel file and removed all but 13 columns which focused on the data I wanted to observe.

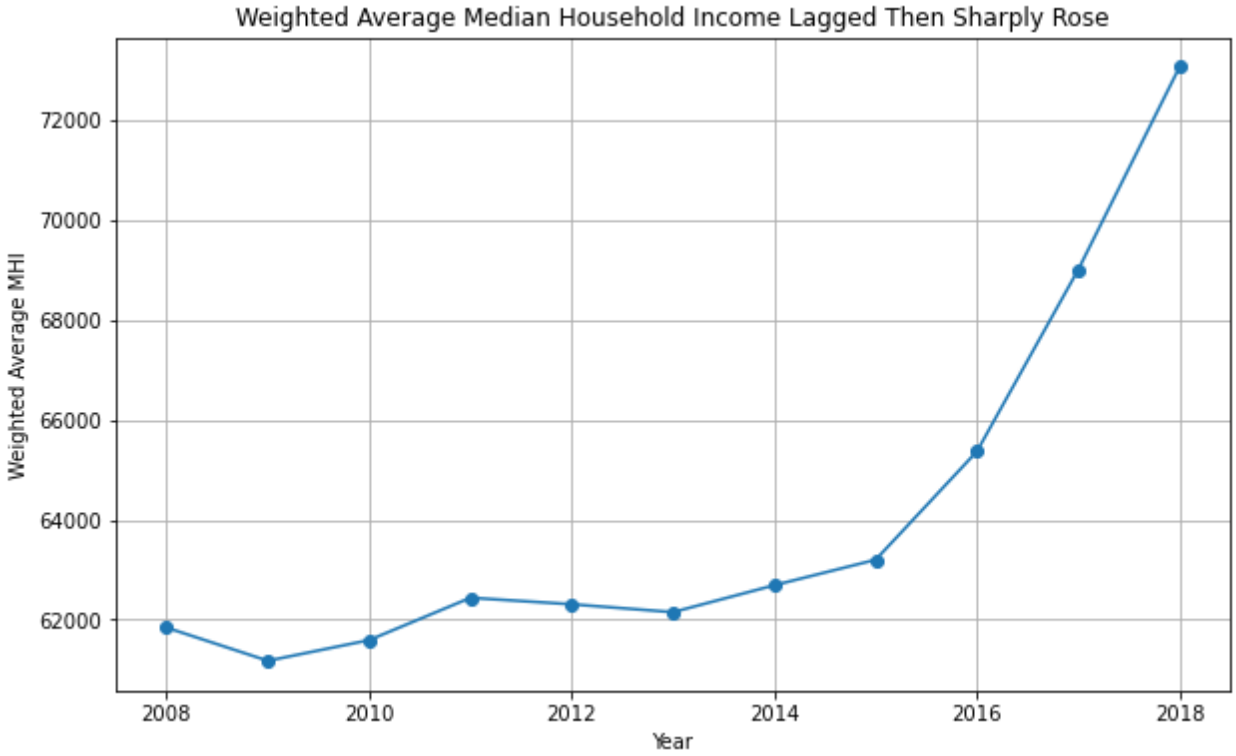
Once that was complete, after looking at missing values as well as making this project more relevant to my location, I decided to focus on California. From then on, I continued by removing non-California data. Following that, I changed some types from float to int since they needed to be whole numbers.

Now, we will be looking at the following data: County_Name, StudyYear, MHI, MHI_2018, TotalPop, Households, MCInfant, MCToddler, MCPreschool, MFCCInfant, MFCCToddler, MFCCPreschool. These are all defined above.

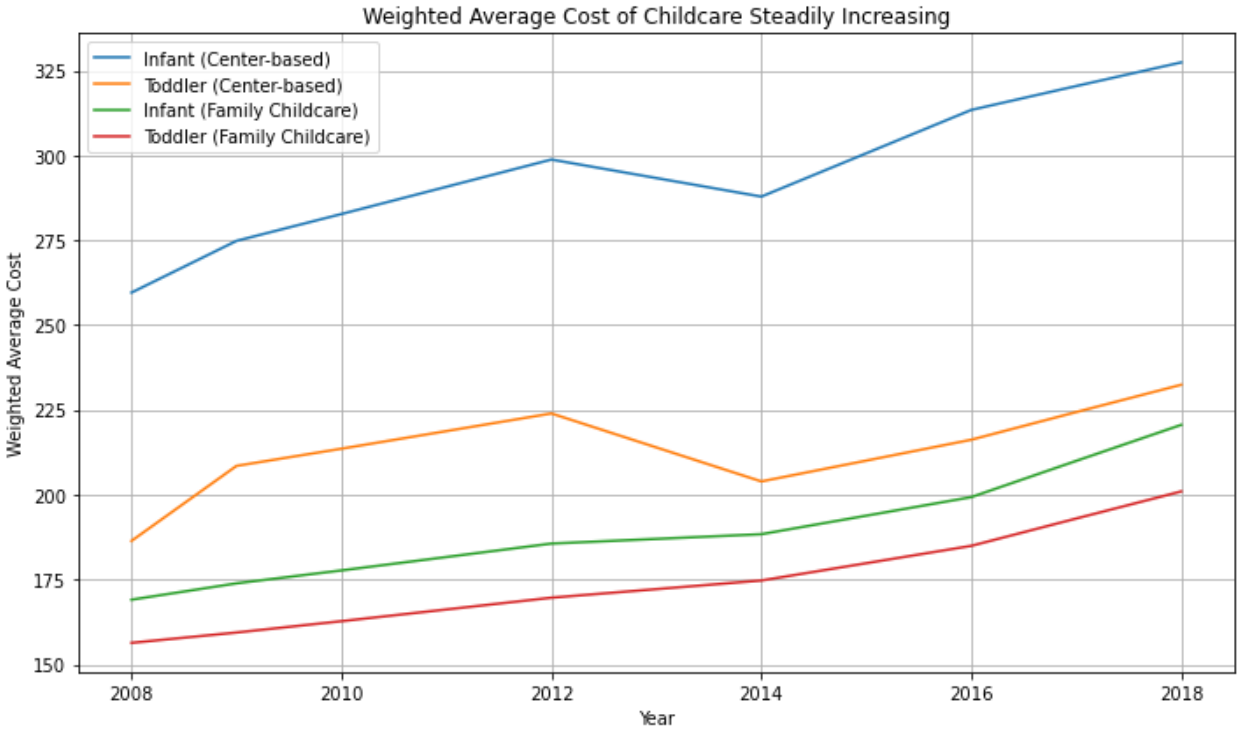
Exploratory Data Analysis

While graphing the data, there seemed to be a lot of overlapping results between age groups. As it turns out, California childcare for toddler and preschool either cost the same or have the exact same numbers across the board. For the sake of removing duplicated data, we will only look at toddler data.

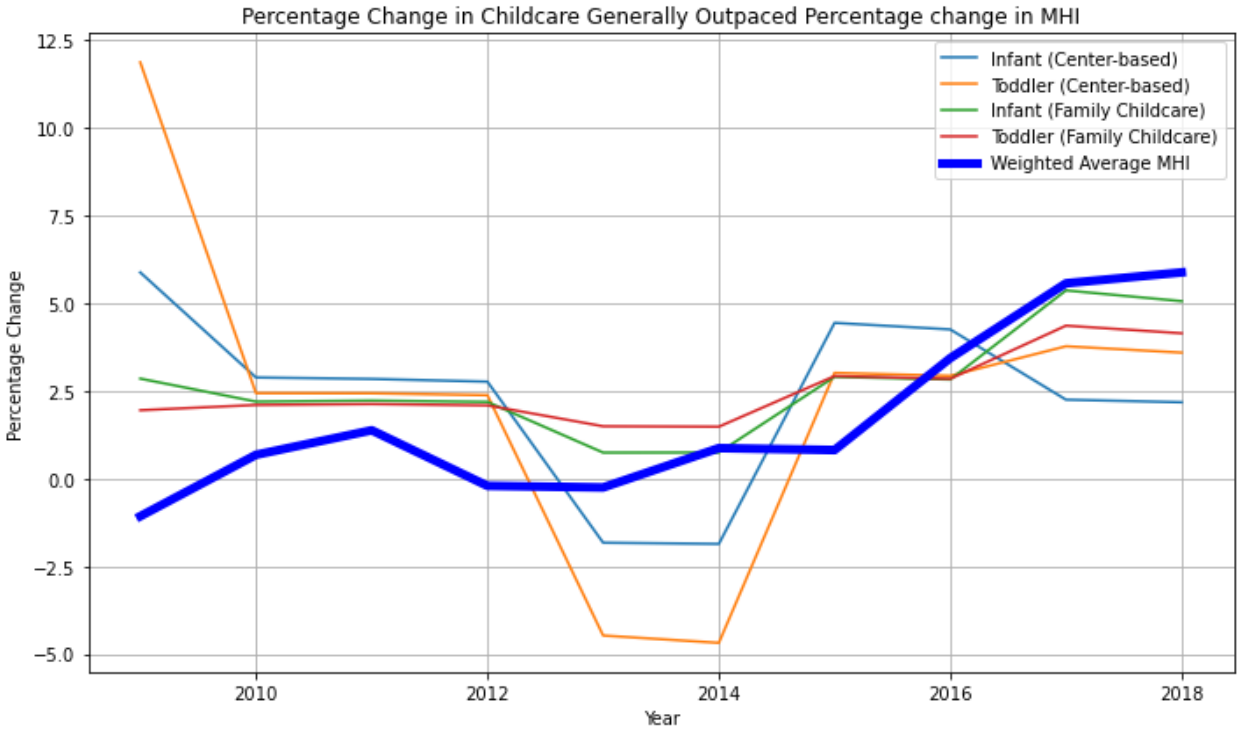
It is important to note that we will have to weigh a lot of the data in accordance to population.



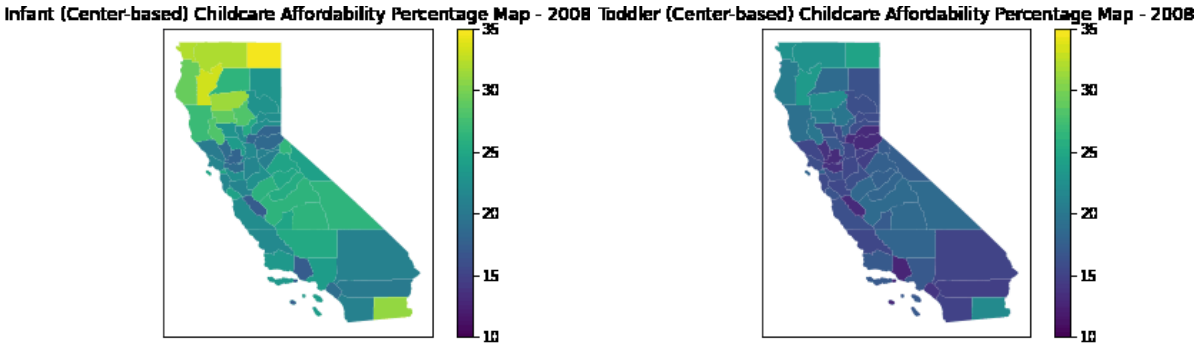
Here we see that wage growth lagged the first few years of our study and then went up sharply. This is most likely from a recovering economy after the Great Recession.

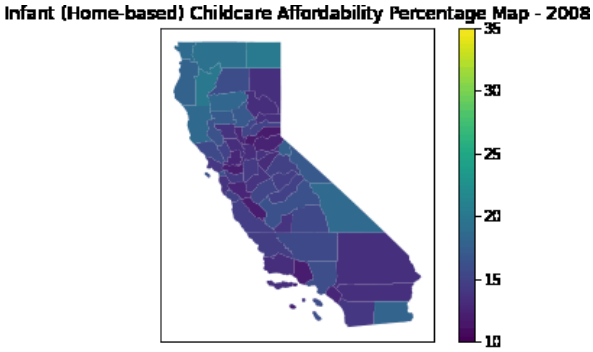


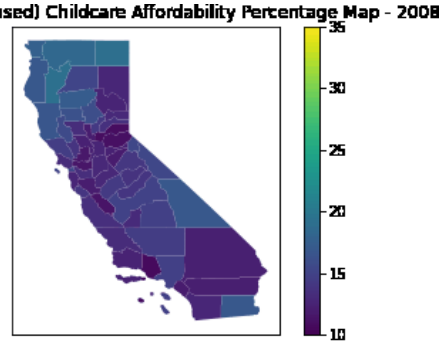
We can see that childcare costs generally went up most years at a steady rate.



Above we see that year over year salary percentage changes tend to be less than most childcare prices. Out of the 10 years of change we looked at, 5 of them weighted average MHI had a lower percentage change, 3 of them somewhere in between, and only outpaced childcare price change 2 times.







More populous areas seem to be relatively cheaper than other areas.

Conclusion

Thorough examination of the data we have uncovered some intriguing insights. Our main goal was to understand how Median Household Income (MHI) and childcare costs are connected. By creating visualizations for both sets of data, we gained valuable insights into their trends. Contrary to what we initially thought, wage growth showed a slow start in the beginning years, followed by a sudden rise. This could be due to the economy recovering after the Great Recession, resulting in unexpectedly strong MHI growth in recent times.

Analyzing childcare costs on their own showed a consistent increase each year, suggesting a stable trend. Comparing year-over-year salary changes with childcare price shifts brought up interesting findings. Over the ten years we studied, MHI had lower percentage changes in five instances, was in between in three cases, and exceeded childcare cost changes only twice.

Another surprising discovery came from looking at geographical influences. We found that regions with denser populations tended to have relatively lower childcare costs compared to income. This unexpected finding sheds new light on the relationship.

To sum up, there is an intricate connection between Median Household Income and childcare costs. These insights not only enhance our understanding of economic patterns but also highlight the various factors impacting childcare affordability.