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Affordability in Charlotte

Introduction

As college students graduating within the next 4 years, the affordability and economic strength of Charlotte is of paramount importance. We know from census data that our population (Individuals 16 years and above who are employed) of Charlotte has grown from about 580,000 in 2011 to around 704,000 as of 2021. The evolution of the financial landscape for the city of Charlotte is responsible for generating large-scale changes in median income and the cost of living, which presents itself naturally as a topic of interest for anyone who works in Charlotte. If the cost of living is growing at a disproportionate rate compared to the median income, affordability will not be sustainable. Considering the importance of the concepts of affordability and cost of living, it is evident that a comprehensive understanding of the recent history of these metrics will be invaluable to the stakeholders of this project. Arising from the consequentiality of these questions comes the foundation for our research question and the basis for our social, mathematical, and historical evaluation of Charlotte. To explore affordability we inquire that as Charlotte has grown in the last ten years, has the median income of Charlotte residents increased at the same rate as the cost of living?

Theory

Conceptualization:

As we move into our research it is important to conceptualize topics to ensure that readers have a clear understanding of our methodology. The first topic that we are conceptualizing is median income. Since we are using data collected from the census, median income includes that of all individuals over the age of 16 that have a non-zero income. This should cover anyone in our population of employed Charlotte residents.

The next term to address is cost-of-living. We are conceptualizing cost of living as “the cost of purchasing those goods and services which are included in an accepted standard level of consumption” (“cost-of-living"). Our cost of living value is derived from the EPI family budget calculator for Charlotte/Gastonia/Concord utilizing the cost of living for a single adult with no dependents living under modest conditions. We’ll explore more about the way that variable is defined in our Data section.

Next we conceptualize the idea of affordability as being able to budget for cost-of-living, savings, and wants, with remaining surplus income. To be sure a working Charlotte resident’s income exceeds the cost of living with an additional 20% for savings, and 30% for “wants” (Warren). Savings are initial liquid investments towards retirement accounts and investment portfolios and do not consider capital assets the individual has already invested towards. Necessities are basic requirements for living, such as housing, health care, water and food, access to transportation, clothing, and personal hygiene products which are included in our cost of living variable. Finally, wants are conceptualized as purchases that lead to personal satisfaction but are not

critical to survival. We consider each of these aspects essential to the fiscal well-being of our population.

Operationalization:

After conceptualizing topics for clarity, we operationalized important topics in our study. We operationalize median income in 2021 dollar values using the central income in the city of Charlotte, NC developed by the Census. Our next concept, the cost-of-living, is the average price in 2021 dollar value of necessary goods and services in Charlotte/Gastonia/Concord developed by EPI's family budget calculator. Lastly, affordability is operationalized as the surplus 2021 dollar value when comparing the difference between median income and cost-of-living plus our additional budget parameters.

Measurement:

After operationalizing our concepts, we must determine how to measure them. We measured the cost of living by using the Economic Policy Institute's family budget calculator for the areas of Charlotte/Gastonia/Concord. Despite the area not being perfectly matched to our population, we believe it presents the most objective and accurate representation of our target topic available because it utilizes the same costs that we defined as necessities in extremely modest living conditions. The data is only available for the year 2020 so we used the Bureau of Labor Statistics' inflation calculator to convert those prices to 2021 dollar values, so that they would be more accurately compared to our other variables.

The median income was measured and obtained from Census data for Charlotte exploring a span of ten years. These dollar amounts were also adjusted from 2011-2016

utilizing the BLS inflation calculator since they were reported in 2011 and 2016 dollar values respectively. We will measure the difference of our adjusted median income variable with the cost of living, plus “savings” and “wants” to obtain our variable of affordability.

Affordability=(Median Income)-(Cost of living + Savings budget + Wants budget)

Framework:

For our theoretical framework we determined our definition of affordability based on the 50/30/20 model that has been popularized as an accepted measure of affordability by the book The Ultimate Lifetime Money Plan. We can see how well Charlotte fits the measure of affordability we have defined based on the 50/30/20 split that the average person should be able to afford in order to avoid living pay-check to pay-check.

We utilized the metrics of median income and determined our best cost-of-living measure from the resources used to explore the growth of similarly growing cities in our literature review. In a similar study, researchers explored the change in cost of living during a period of vast population growth in cities like San Francisco and Boston by comparing various cost-of-living models and median income (Curran). Of those they explored, we chose to mimic the use of EPI’s family budget calculator as we felt it matched our cost model best. We expect, like theirs, our research will determine periods of economic growth outpace income growth of residents resulting in a decrease in affordability.

Our framework to explore the interests of our stakeholders in the Context and Implication section were developed by considering the interests of different classes. Our literature review identified a strong correlation between a city’s rapid economic growth

and unaffordable housing with a disinvestment in low-income areas and an increase in social problems like crime in low income neighborhoods (Voith). Branching off research establishing that city investment in the lowest income population becomes deprioritized in periods of rapid urban economic growth, we will explore Charlotte's cash assistance program.

Context and Implications

It is important for us to emphasize that the research of this paper is limited to the population of employed individuals over the age of 16 years old residing in Charlotte. The primary stakeholders of this research are our sample's population, residents approaching their retirement on a fixed income, and organizations with interest in creating financial equity for the employed portion of Charlotte residents. The secondary stakeholders include Charlotte's governing authorities. The tertiary stakeholders are people considering a move to Charlotte and commuters that reside outside of the city limits but work within them. The establishment of the stakeholders leads to our identification of stakeholder interests in the affordability of Charlotte.

We can discern that there are differing interests within our population in regard to the affordability of Charlotte. We define the interests of the wealthiest residents of Charlotte as those making over $200,000 a year as of 2013. At that time residents making over $200,000 a year were a statistically insignificant portion of Charlotte's entire population (Jensen). Though $200,000 went further in 2013 than it does today we are confident that marker puts you in a financially secure enough position to not be concerned with your survival needs in Charlotte. The wealthiest residents of Charlotte

may not be concerned with affordability in terms of survival, however they are interested in the opportunities for leisure and investment. As their subpopulation grows, so do the chances for those burgeoning industries. We assume that we will find that as median income increases, so does the percentage of the wealthiest population and the industries they consume.

On the opposite end of the income spectrum, we are grouping a subset of our population by those employed yet still requiring government assistance- often referred to as the working poor (Ritzer). Their interests are concerned with meeting their survival needs, access to aid, and opportunity for class mobility. Class mobility lends itself towards economical access to education, programs that create equity within a community, and career opportunities. We're exploring how the Charlotte cash assistance program investment has changed during this time period in comparison to the population of povertous residents as defined by the census, since we could not find publicly available data to explore the working population of Charlotte receiving government aid.

Anyone that is employed, over the age of 16, and lays outside of the bounds we've defined for the wealthiest and the working poor are being grouped as middle class. The middle class will share the interests of the working poor like economical access to education and career opportunities and interests with the wealthiest residents of Charlotte in terms of investment opportunities and recreation. Therefore we will not explore separate interests for this class.

Other subcategories of stakeholders exist which may have conflicting interests including homeowners versus renters and those reliant on public transportation versus

drivers. Homeowners may be thrilled to see their equity grow as renters are priced out of their neighborhoods. Anyone on a fixed income, like retirees, and those who own assets that are appreciating at a rate beyond their ability to pay property taxes are also displaced by growth in home equity. Those who rely on public transportation may be elated with a greater investment in transportation infrastructure as population density grows, while drivers become frustrated by the increase in cars on the road lengthening their commutes due to increased traffic. Within our class definitions exist some conflicting interests as well. As the opportunity for investment in real estate or leisure industries increases for the wealthy and upper middle class, access to affordable housing and diversified sectors of labor decreases for the working poor and lower middle class. This is why exploring the differing sizes of these subpopulations should lead future decision making.

This research is not intended to represent the social impact of Charlotte's growth outside of the affordability for our specific population. It's important that we acknowledge the flaws that inherently exist within our population data sourced from the census, or limitations that exist within the Bureau of Labor statistics. We are not examining the most vulnerable citizens of Charlotte including those who are unemployed, uncounted, and unrepresented due to their citizenship or legally unrecognized forms of employment like undocumented labor and sex work. Therefore, this research should not be used to identify the needs of those outside of our population. We also concede that affordability is a desirable trait in a growing city, and leads to gentrification.

Charlotte has been a banking hub since 1982 ("The History of Charlotte"). Like most cities with existing tech or financial industries, we can assume phenomena like the

inception of Financial Tech contributed to Charlotte's growing economy. We could also assume this leads to demographic changes in population based on the available talent to fill these new positions, an increase in median income, and a higher rate of inflation in comparison to other cities. We do not plan on exploring demographic changes outside of income, even though we should assume there are larger implications to those changes. We do, however, see the value of these demographic changes being studied by future researchers.

We can best describe our ethically significant benefit as an understanding of economic efficiency, because our goal is to uncover if Charlotte's policies and processes align with the needs of the working population of Charlotte (Vallor). On the other hand, it's imperative that our research not be used outside the context in which we explore these variables due to the risk of enforcing disparities in vulnerable communities (Boyd) .

When looking at ethically significant harms and benefits of our research, we can infer how ethical lenses shaped our data and contextual analysis. The main ethical frameworks that relate to our research are deontological ethics, the ethics of justice, and consequentialist ethics. Deontological ethics relates to moral rules/rights in society and authoritative institutions as well as acting in ways that we would want other people to mirror. Through our research and data collection, we made sure to collect our data from governmental websites with data publicly available to ensure we limit harm of any individual that could result from studying them without their consent.The ethics of justice is similar, but emphasizes that all people are treated fairly and equally. We considered the fairness and equality of our research by ensuring it is explored on a landscape that

includes consideration for all income levels. Finally, consequentialist ethics has to do with considering the consequences or results of our research. Where we identified potential harms we attempted to mitigate them through recognizing the value of analyzing data unavailable to us.

Data

In relation to our research question and our scientific exploration and analysis, we used a variety of data sources to provide a firm foundation for our conclusions, analysis, and ethical implications for our stakeholders. Some of the data used was able to be applied directly from the data source without modification or adjustment, while other parts of the data needed some changes to accurately reflect their values in the current year. In addition, there were certain elements of the data that we were not able to find in any trusted databases, or certain data components that were missing from existing and accessible data sets. All of the relevant considerations for the data collection and usage, including any reservations regarding the data's validity, will be noted alongside the data sources as they are described.

Data Sources

The first of our data sources was the Economic Policy Institute (EPI) which we used to collect data on the Cost of Living for a highly minimalistic lifestyle. We use this data as a reference variable for our concept of Affordability.This Cost of Living represents not only Charlotte, but also parts of the surrounding regions, including Gastonia and Concord. While this doesn't purely represent the Charlotte population, it was the most targeted and focused metric that we could find for the Cost of Living in

Charlotte. Our data set is based on the EPI family budget calculator which was set with the assumption of a single-person household living in a studio apartment with a low-cost food plan. We chose to use this sample because it most closely represents our conceptualized notion of a single individual who is only responsible for supporting themselves and not any family. Because the EPI Family Budget Calculator provides a value for 2020, we adjusted this metric based on CPI data for the past ten years using the Bureau of Labor Statistics's inflation calculator to record the Cost of Living in Charlotte.

The EPI collects their data from a variety of sources, including the Bureau of Labor Statistics Productivity Data, as well as the Bureau of Labor Statistics Current Employment Statistics. They also use the Current Population Survey (CPS) for their Annual Social and Economic Supplement microdata. The timescale on which they collect data varies by the different metrics they report, with certain values being reported on a monthly basis, while others are reported annually.

We also excluded any data from the year of 2020 because almost every data set we utilized had a gap in their data for 2020, presumably because of the COVID-19 pandemic and the difficulty in collecting data during that year. As the EPI uses data that is reported by other trusted sources, (several of which we use for other measurements) we can say that there is a noticeable effort to reduce bias and produce a fair, representative, and accurate data set.

The second source we use is the Bureau of Labor Statistics (BLS) which we use for the annual Consumer Price Index. This data is used as a reference variable for the Cost of Living. We collected and processed this data on the BLS website on our own,

and hence there is not an official csv file that contains the CPI information from the BLS. The data set contains CPI data for Charlotte, and this sample was chosen because it is the best and most reliable source that we could find that would present significance to track the Cost of Living in the past 10 years. This data was collected by the BLS who used Consumer Expenditure Surveys to survey individuals on a large scale across the country. This data was collected in the past ten years and was processed to represent a 2021 dollar value. As mentioned previously, no data for 2020 is utilized. In addition, while we recognize the survey method of data collection opens the opportunity for a degree of bias or error, the BLS has routinely worked to ensure that the data collected is an accurate and unbiased representation of the CPI in each of the regions that they survey (Boskin).

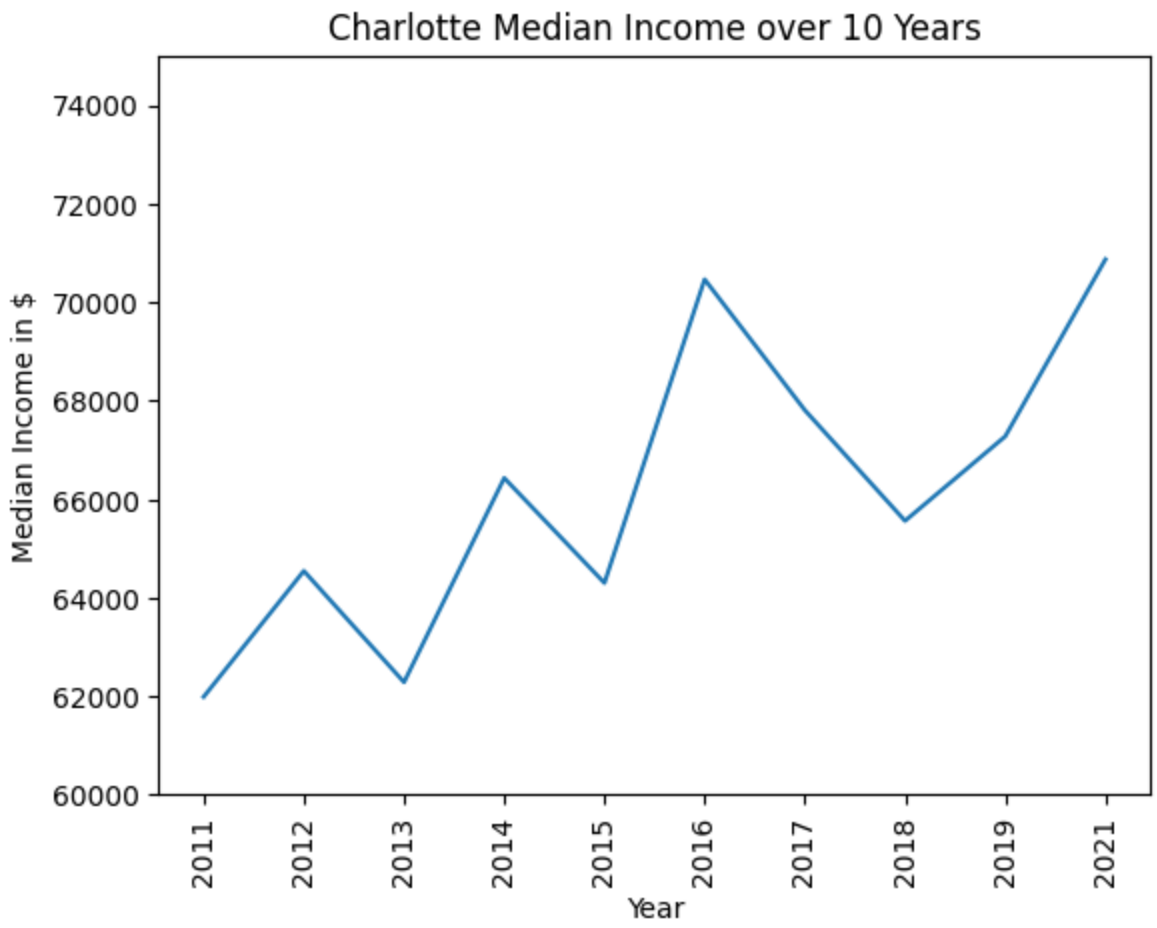
Our third and most important data source is the United States Census website. The US Census collects data from the entirety of the country, and is well renowned for usefulness in statistical analysis. We use Census dataset CP03 for the “Cash Public Assistance Income " variable, and “Total Retirement Income” variable. This data was collected by Census officers and employees who administered the census across the US. The Census also collects statistical data with other surveys in addition to the regularly scheduled US Census, and our data uses a mixture of these timelines. The primary use for our Census data is the Median Income of Charlotte, which we are using as a reference variability for affordability. The Census institution has been frequently criticized for potential biases or questions that might infringe on personal privacy (O’Hare). However, the Census does change and adapt to these criticisms to be a more

fair survey, and they are also the only entity that collects such specific data on such a massive scale, so they are the best choice for our data collection needs.

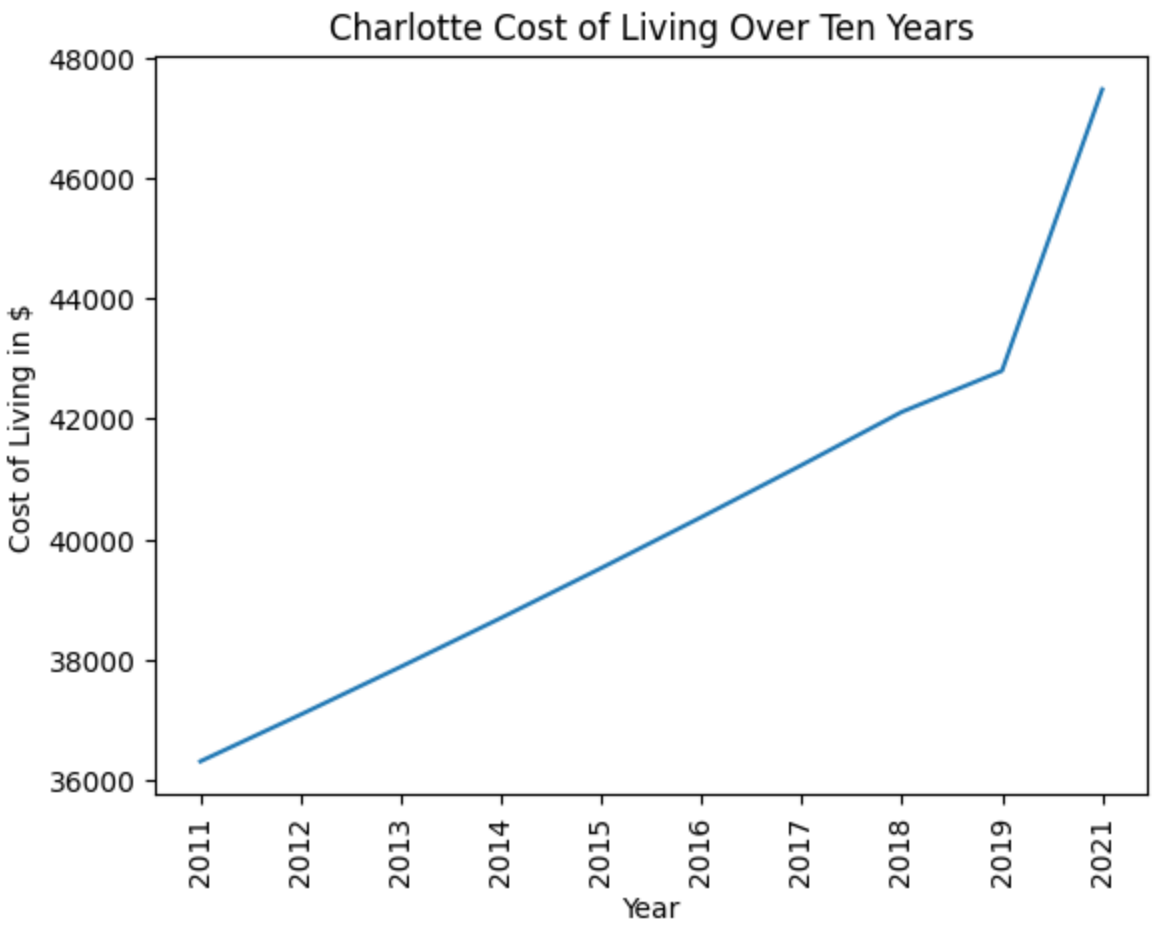
We also want to note that our data on affordability was hand-constructed using our predefined parameters for this measurement, which was “Median Income minus Cost of Living plus 20% Savings + 30% Wants.” This data indicates that if the value is trending upwards, then affordability is increasing, while if the value is decreasing then affordability is decreasing as well.

Exploratory Analysis

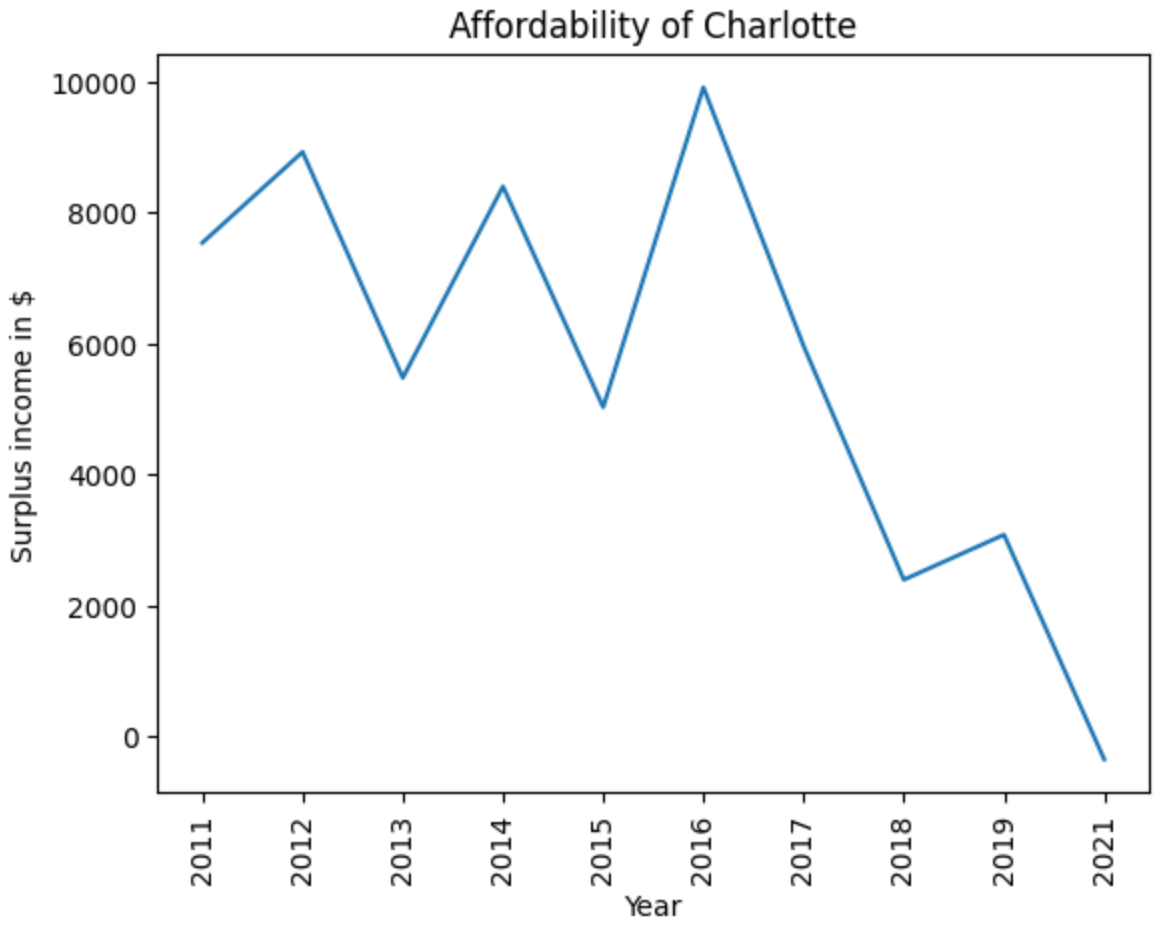
First we’ll explore Charlotte's median income from 2011-2022. Our reported values were obtained from the census. The range of our Median Income data goes from the minimum value of $61,990 to the maximum value of $70,869. Of the years we explored, Charlotte's reported median income is lowest in the year 2011 and highest in the year 2021. The total change in median income over ten years, rounded, is $8,879. This is about a 14% increase from its starting value. When looking at this variable alone, you may conclude that Charlotte’s economy is favorable, so let’s analyze our cost of living next to assess if that assumption will continue to hold true.



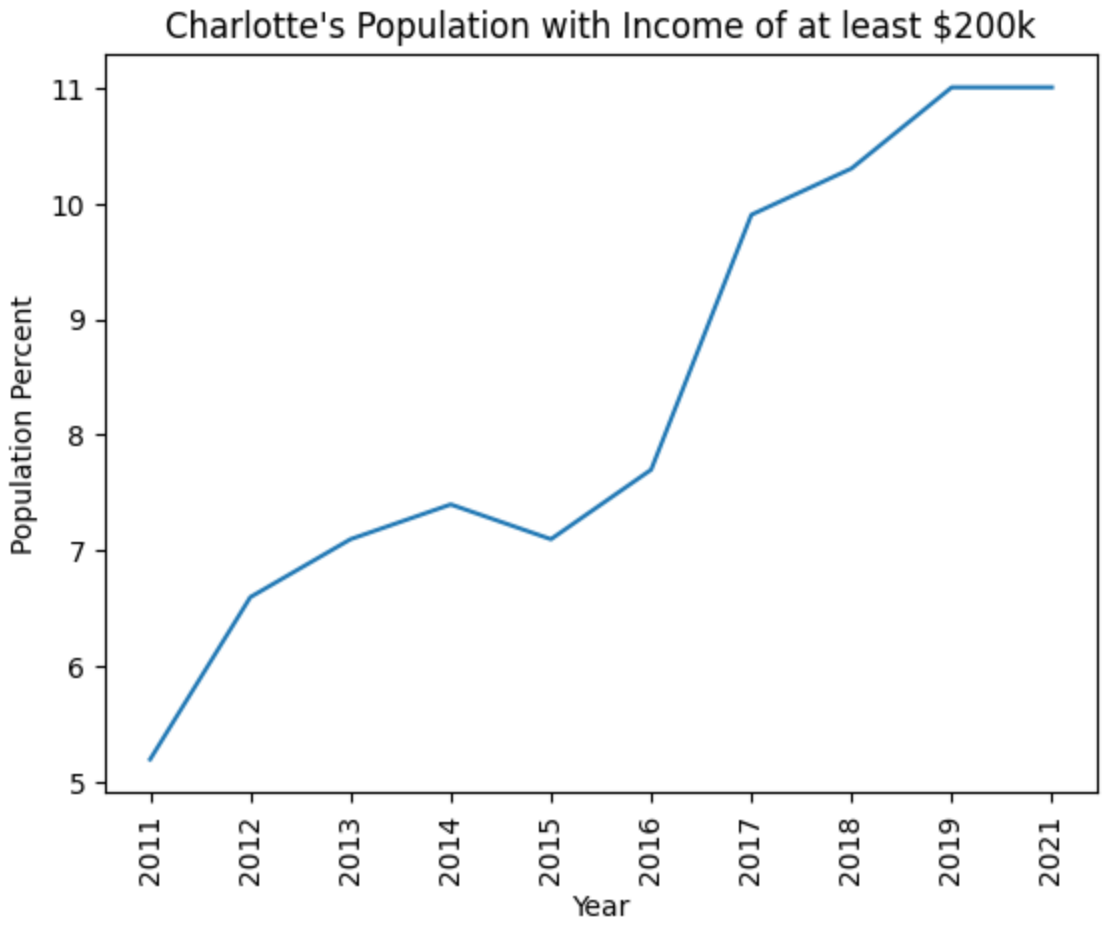
Our cost-of-living data was obtained from the Economic Policy Institute's family budget calculator for the year 2020 and adjusted for inflation per year using the Bureau of Labor Statistics inflation calculator. Due to the limitation of freely available data sets, we were forced to aggregate these values manually. The range of our Cost of Living data goes from the minimum value of $36,302 to the maximum value of $47,484. Cost of living is lowest in the year 2011 and highest in the year 2021. The total change in cost of living over ten years is $11,182 dollars. This is about a 30% increase from its starting value. Already we can see that the increase in cost-of-living exceeds the increase in median income by almost double the percent of change. We can explore this phenomenon more in depth by examining our affordability variable.



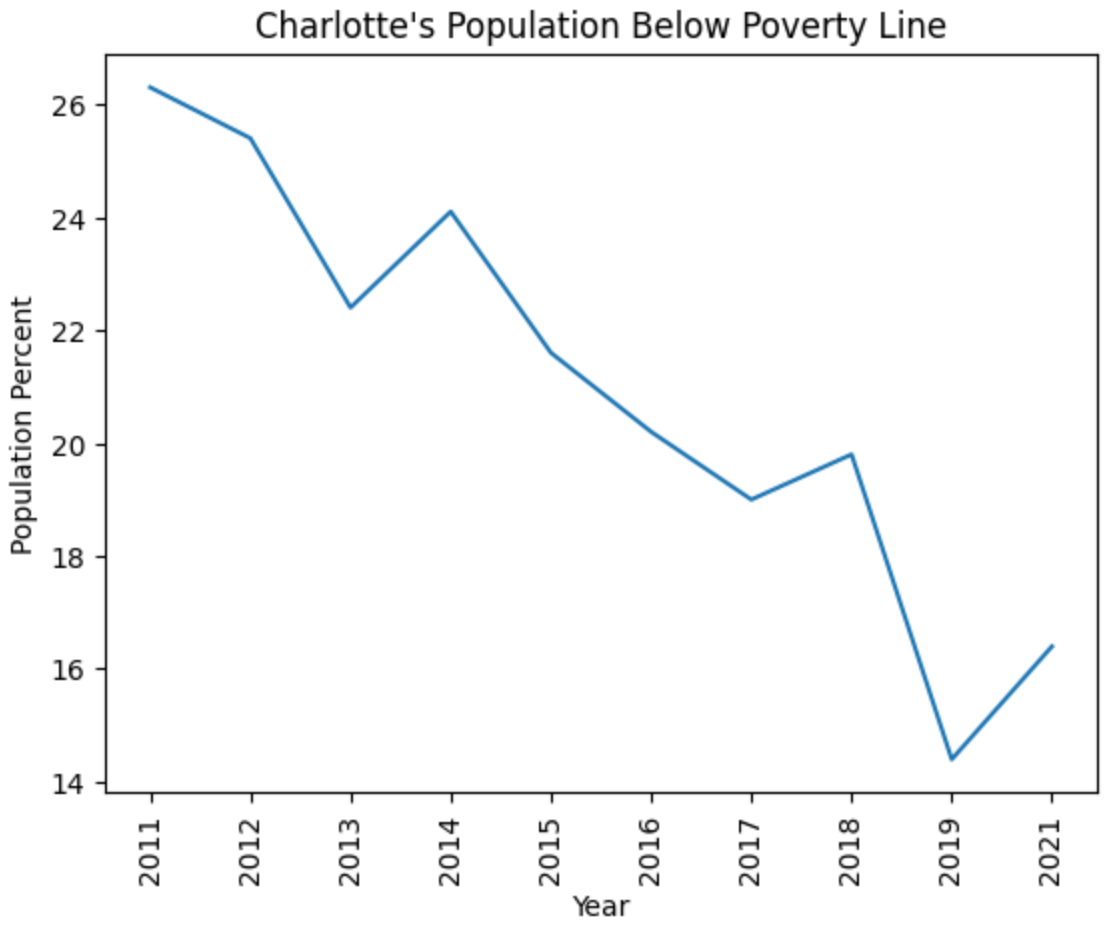
Affordability is the measure of surplus income in dollars after applying our budget parameters established by our theoretical model. The range of our Affordability measurement goes from the minimum value of -$357 to the maximum value of $9,913. Charlotte was most affordable in the year 2016 and least affordable in the year 2021. The rate of change for the affordability of Charlotte is a decrease of approximately $789 dollars per year. It's imperative to recognize that this rate of change would have been much higher for anyone with children considering the cost of childcare was not factored into our research for simplicity purposes. Especially when taking into consideration the well known pattern of families becoming single-income households due to lack of childcare availability as a result of the COVID-19 pandemic.



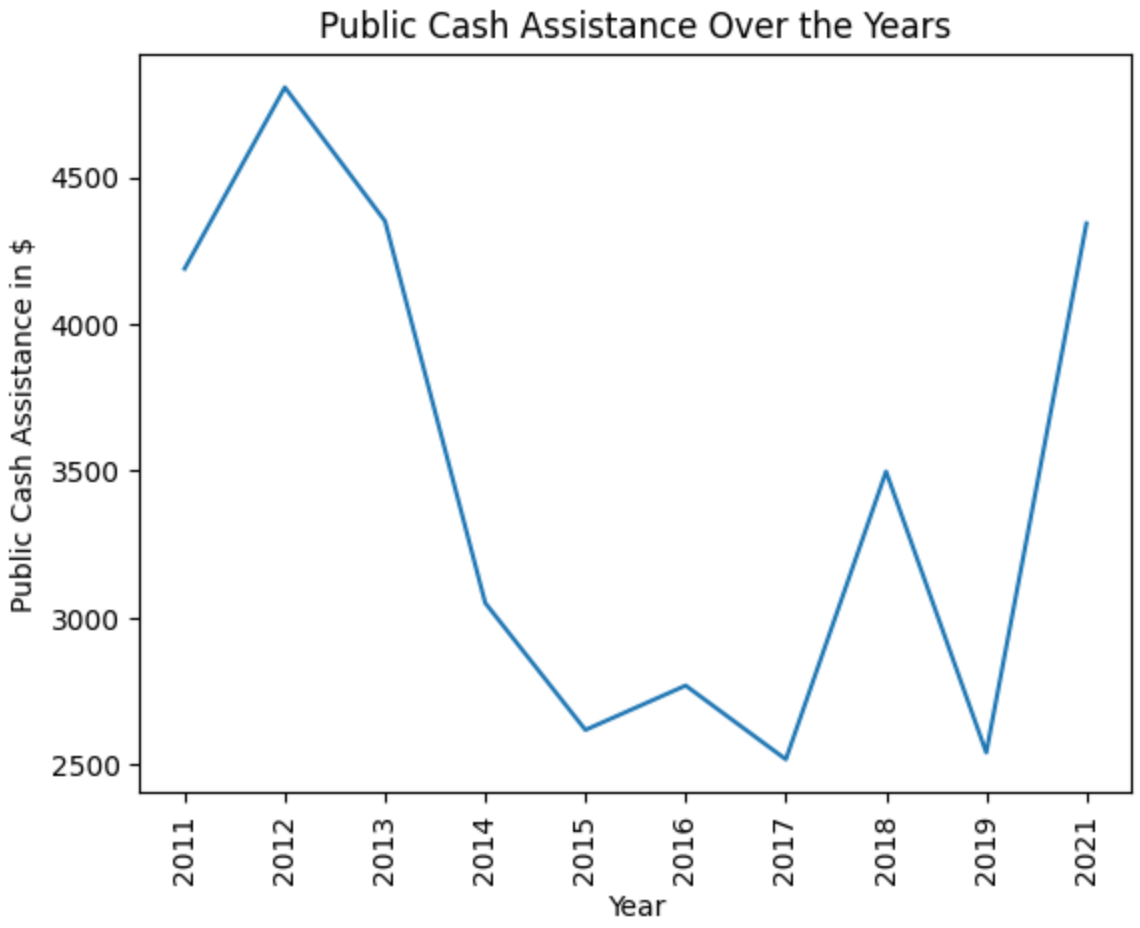
Now we'll explore some variables that can help paint a picture for each of our primary stakeholders, starting with the percentage of Charlotte's population with an income of at least $200,000. The range of the percentage of Charlotte's population goes from the minimum value of 5.2 % to the maximum value of 11.0 %, which are the starting and ending values respectively. This subpopulation experienced an increase of 5.8%. Similar to our Median Income data, alone this variable paints a picture of growing wealth. Let's see if it holds true when we compare it to the subpopulation of individuals under the poverty line and the retired.



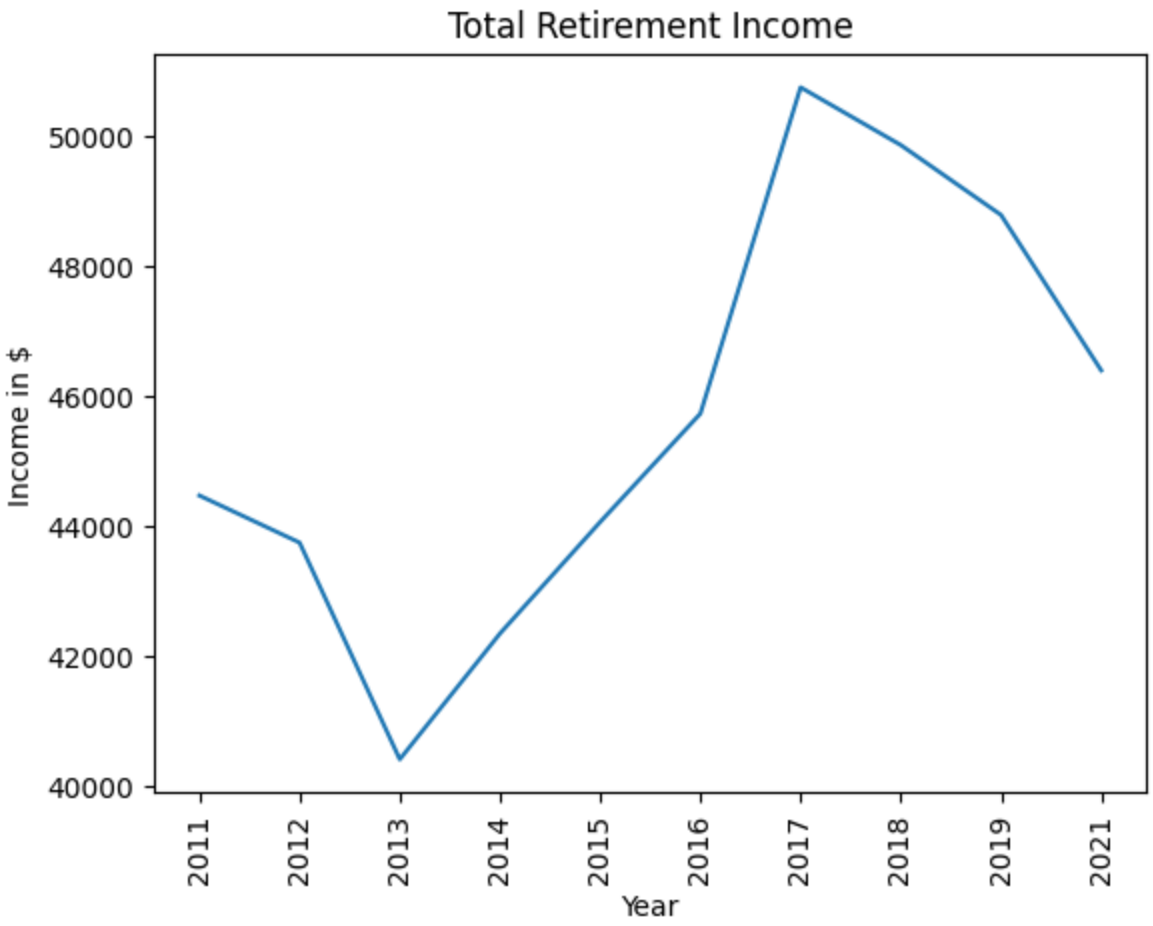
Since we couldn't find data specifically for the working poor, we're exploring how the population of Charlotte residents below the poverty line has changed, and the cash assistance program they rely on. The range of the percentage of Charlotte's population below the poverty line goes from the minimum value of 14.4 % to the maximum value of 26.3 %. This subpopulation experienced a decrease of 11.9%. This decrease in population percentage is almost double the increase of high earners.



Considering the povertous population of Charlotte is decreasing, it would logically follow to see a similar decrease in the Cash Assistance program income. The total change in Cash Assistance income received by Charlotte residents over ten years is -$154.0 dollars. Considering this 3% decrease is significantly less than the 11.9% decrease in percentage of poverty population, we could assume that those receiving aid have moved from below the poverty line to the class of the working poor. Future research is needed to confirm this assumption.



Lastly, we will explore the change in total retirement income. The range of total retirement income goes from the minimum value of $40,415 to the maximum value of $50,743. Charlotte's retired population experienced its lowest income in the year 2013 and its highest income in the year 2017. The change in Total Retirement income for Charlotte residents is an increase of $1923 dollars.This is about a 4% change from the starting value. Compared with the rate of decrease in affordability, this data paints a sobering picture for those about to retire and become reliant on a fixed income. It’s unlikely that the total income for the retired population will suddenly pick up pace with cost of living increases.



Conclusion

When analyzing data for our stakeholder subpopulations by class, as we've previously described, we were limited by the publically available data. However, we were able to observe an increase in the percentage of Charlotte's residents becoming high-income households. The lowest value in the data is the initial value and the highest is the final value signaling a consented trend upwards. We expect further research would show an increase in size or production of Charlotte's *'Arts, Entertainment, and Recreation'* and '*Finance, insurance, real estate, and rental and*

leasing' industries. The value in understanding the size of these industries is comparing them with the change in the size of industries concerning other stakeholder groups.

For the lowest-wage population of Charlotte we intended to observe the amount of investment in social programs and education. We see the value of these budgetary changes being studied by future researchers to analyze the interests of the working poor population of Charlotte. We discovered a significant decrease in the percent of Charlotte residents living below the poverty line. Since that trend was paired with an insignificant change in the Cash assistance program we believe the population receiving aid has moved from federally recognized poverty to the working poor. It is also possible that the cost-of-living has displaced previous low-income Charlotte residents into lower-cost areas outside city bounds forcing them to commute. The Census has commuter data available, but we're limited by time in this exploration, so this is another variable we would suggest for future researchers.

The last subpopulation we examined as stakeholders was the retiring population. To investigate their interest we used observations of retirement income and cost-of-living. Since the highest and lowest values do not occur at the initial value and the final value, we can conclude that even though the trend is slightly upward, retirement income is somewhat volatile. The total retirement income stream seems to follow general financial market trends. Therefore, we assert the rate of change in

cost-of-living makes Charlotte an undesirable location for retirement during this period of growth.

In response to our research question, we can discern that our original hypothesis on the affordability of Charlotte declining over this time period holds true. As a rate of change we saw affordability fall $789 dollars per year for a single person living in a studio apartment on a low-cost food plan- assuming they have no children, are enrolled in some form of medical insurance, and accrue minimal personal and transportation costs. We recognize in 2020 you see a noticeable decline in affordability, which follows the inflation resulting from the pandemic. Our conclusion further supports research on other metropolitan areas that grow in population correlating with a decrease in affordability.

Considering 2021 was the first year we witnessed a negative surplus of income according to our affordability variable, we determined that future research on this topic should continue to explore surplus income to investigate whether the trend continues downward and if the rate of that trend increases or decreases over time. If changes in this variable begin to plateau we could assume the pandemic contributed to the worst cost-of-living conditions and predict a return in positive surplus. If the trends continue in the pattern they display currently, we would urge the city to invest in affordable housing. The EPI family budget calculator identifies this expense as the biggest impact on total costs. When conducting our literature review it was also evident that an abundance of

research on affordable housing exists. This solidifies the idea that housing is an extremely important economic indicator. Furthermore, since homelessness is an extremely difficult social problem to gather data for and analyze, we assert that proactive economic measures are the best way to ensure the well-being of Charlotte's citizens. Also tied into affordability, future studies could include variables like transportation, rent vs. home sale prices, and health care costs to examine how these indicators are individually affecting household budgets in Charlotte.

Our research sought to determine if cost-of-living out paced median income in Charlotte, and attempted to create a budgetary model to measure how affordability in Charlotte has changed as it has grown. Similar to other researchers, we have established that over the past ten years cost-of-living has been increasing by an overall percentage that is more than double the percentage increase in median income. This is an expected yet disheartening trend for the current and future working population of Charlotte. As compassionate humans and citizens of Charlotte entering the workforce, we convict that every laborer deserves: compensation that meets reasonable financial need, the time and resources to seek personal fulfillment, and equal access to support services in the case that the first two convictions go unachieved. By our metrics Charlotte misses the mark and our hope is that efforts will be made by institutions, government and employers in particular, to rectify the challenges Charlotte's working population faces.

Annotated Bibliography

Boskin, Micheal. “Causes and Consequences of Bias in the Consumer Price Index as a Measure of the Cost-of-Living.” Atlantic Economic Journal, 2005.

This article provided insight into the bias that may exist in the CPI as a measure for inflation. It critically examined the accuracy of price data and explored the limitations of the Consumer Price Index largely hinging the analysis on the fact that the Bureau of Labor Statistics utilizes consumer surveys as a data collection tool. This article was written in 2005 and even now the BLS utilizes consumer surveys. We felt this researcher was reputable because an earlier critical publication resulted in efforts of the BLS to take action in decreasing data bias which the author recognizes as largely successful in this article.

Boyd, Dannah, and Kate Crawford. “CRITICAL QUESTIONS FOR BIG DATA.” *Information, Communication & Society,* vol. 15, no. 5, June 2012, pp. 662–679.

We utilized this journal to identify our ethically significant harms. It provided a solid framework for ethical concerns in all instances of data exploration. The authors are both well known and peer reviewed researchers with backgrounds exploring the ethical considerations in technology.

Curran, Leah Beth, et al. “Economic Wellbeing and Where We Live: Accounting for Geographical Cost-of-Living Differences in the US.” Urban Publications, 2006.

This source was a part of the literature review of similar studies. It explore the cost of living across the U.S. and compared methodology of a few

different cost-of-living measurements. It led us to utilize the EPI family budget calculator to determine the cost of living in the city of Charlotte. It also utilized the median household income of metropolitan areas to create an index value which compared the median reported cost-of-living data in order to determine affordability. It is the study most similar to our own but the scope and intention of the study was to determine the best measure of cost-of-living.

Jensen, Scott. “Here’s Why Charlotte Became One of the Fastest Growing Cities in the Country Recently.” *Charlotte Stories*, 19 Nov. 2018, www.charlottestories.com/heres-charlotte-became-fastest-growing-city-country-past-decade/.

This source was part of our initial literature review before deciding exactly what research questions we would ask. We also utilized it to inspire our definition of the upper class population in our stakeholders. We found it reputable enough to inspire our research question considering we weren’t utilizing it to determine any values or methodology.

“cost-of-living.” Marriam-Webster, 2022.

We decided to use Merriam-Webster as a source in our research to help us to conceptualize cost-of-living in our study. In conceptualizing and trying to get a working definition for an abstract term like cost of living we decided it would be best if we turned to one of the most recognized institutions for defining things in the world. Merriam-Webster is one of if not the most famous dictionary in the world and is also one of the most

respected. Merriam-Webster is recognized as one of America's oldest dictionaries that has been around since the 1830s. Merriam-Webster does not have a specific author today but a team of people who decide what words should be defined and how.

O'Hare, William P. *Differential Undercounts in the U.S. Census: Who is Missed?* Springer International Publishing, 2019. Accessed 13 December 2022.

We used this source mainly to bring up the fact that census data is not entirely accurate. This source is a book about the census and how data can be acquired in such a way that can lead to over and under representation. O'Hare is a social demographer who has worked for the past four decades using data to shine a light on underrepresented groups. He has his own data demographic company out of Cape Charles. This source helped us to point out how our census data is not bulletproof so that should be taken into account when looking at our research.

Ritzer, George, and J. Michael Ryan, editors. The Concise Encyclopedia of Sociology. 2011. Blackwell Publishing Ltd., 2011.

We utilized this source to define a subpopulation of our stakeholders. It was used to identify the working poor and how this class should be defined. We chose this source because it was a reputable source provided by the instructional team of our course to explore other concepts related to social research.

"The History of Charlotte - Google Arts & Culture." *Google Arts & Culture*, Google Arts & Culture, 2014,

artsandculture.google.com/story/the-history-of-charlotte-crva/IgUBgETWSkiLJA?hl=en%3A.

This source was a part of our initial literature review for exploring the historical context of our research. It was utilized to support the claim that Charlotte has a large financial industry which contributed to its recent growth. This content was developed by the Charlotte Regional Visitors Authority. As experts in the history of Charlotte, we are confident they provided accurate representation.

Vallor, Shannon, and William J Recak. “An Introduction to Data Ethics.” 2018.

This source was utilized to define our ethically significant benefit. We trust this as a reputable source because one of the authors in particular, Shannon Vallor, is widely respected as a leader in critical studies in ethics regarding Data and Technology in general.

Voith, Richard P., and Susan M. Watcher. “Urban Growth and Housing Affordability: The Conflict.” The Annals of the American Academy of Political and Social Science, 2009.

This source provided insight into the budgetary aspect of housing in growing cities. It provided us with a model of how cities change for our subpopulation of stakeholders. It explored how cities without affordable housing experience social issues related to poverty. The researchers identified that as population grew so did the price of homes which had an opposite correlation with investment in low-income neighborhoods. This

source inspired our call to action for the city budget to include investments in affordable housing.

Warren, Elizabeth, and Amelia Warren Tyagi. All Your Worth: The Ultimate Lifetime Money Plan. Free Press, 2006.

We used this book to help us define how people should save and spend on a “normal” basis. We thought that it would be helpful to have some text to help us make a working definition and conceptualize what should be an affordable spending plan for an average adult. This book helped us to conceptualize and operationalize affordability. One of the authors, Elizabeth Warren, is a well respected US senator who is likely to be familiar with what the average person in the US needs each month. This book is also commonly referred to by other financial literacy experts, so we were confident the 50/30/20 model was a strong choice in methodology.