

Self-Storage Nation

Visualizing survey and industry data, this project examines how America's self-storage industry may be a window into America's relationship to consumption.

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Abstract

First developed in the 1960s and predominantly a United States-based industry, self-storage at first glance is a simple a real estate business where storage space (this includes rooms, lockers, containers, and/or outdoor space), also known as "storage units", are rented to tenants and businesses. It has since mushroomed into a \$36 billion dollar market arguably mirroring America's rise of consumption as it caters to America's material overflow. This industry now outperforms all the other real estate classes in terms of financial and revenue growth. Nearly 1 out of 10 American households currently rent a self-storage unit and continually growing. This project aims to discuss and explain through visualizations the scale of rentable self-storage space and its growth, gleaned from insights drawn from studying the 2017 Self-Storage Demand Study survey, as well as industry data and secondary research. This paper discusses the self-storage industry through brief background and current information, its customers by generation and what they are storing and the reasons why through examination of survey data. Considering the overwhelming usage of self-storage in America, further investigations of whether or not it's worth participating in it are explored. By focusing and visualizing the industry in this way, this project reveal how the self-storage industry is a window into America's relationship to consumption while reflecting on the costs of keeping material items in this way.

Introduction

“How many people ruin themselves by laying out money on trinkets of frivolous utility? What pleases these lovers of toys is not so much the utility, as the aptness of the machines which are fitted to promote it. All their pockets are stuffed with little conveniences. They contrive new pockets, unknown in the clothes of other people, in order to carry a greater number. They walk about loaded with a multitude of baubles... some of which may sometimes be of some little use, but all of which might at all times be very well spared, and of which the whole utility is certainly not worth the fatigue of bearing the burden.”

— Adam Smith, The Theory of Moral Sentiments

In January of 2019, I, like millions of Americans, watched the Marie Kondo Netflix show *Tidying Up with Marie Kondo*, a show focused on Marie Kondo who is a Japanese organizing consultant and creator of the KonMari method. In her show, she visits families to help them organize and tidy their homes. Millions watched individual Americans pile up their personal belongings and decide to finally rid themselves of all the extreme excess they knew they had but didn't know how to shed. Watching this led me to wonder: are Americans were really getting rid of their stuff? Swift internet research lead me to learn that, in fact, no, they are not. Instead, Americans have been storing their stuff in the self-storage industry.

For over four decades, the self-storage industry has catered to America's material overflow. A predominantly United States-based industry, the self-storage industry is essentially a real estate business where storage space (this includes rooms, lockers, containers, and/or outdoor space), also known as "storage units", are rented to tenants and businesses. Self-storage was originally intended for use on a short-term basis (generally month-to-month), but ince expanded into multi-year spans. Self-storage tenants include businesses and individuals, the units providing an empty space for private possessions in a secure and often climate-controlled environment, holding people's stuff as they go through the various stages of life (death, divorce, dislocation, displacement, births, and college to name a few).

Developed in the 1960s, self-storage has become one of the most lucrative sectors of commercial real estate in America, proving itself to be a unique industry that benefits from any which way the economy may oscillate, and comprising of a range of generations from the Millennials to retirees. Almost mirroring the growth of self-storage industry, Americans are consuming at records rates.¹ According to a Morgan Stanley index, “over the 1996 to 2004 period, annual growth in US personal consumption expenditures averaged 3.9% — nearly double the 2.2% pace recorded elsewhere in the so-called advanced world.”² And as prices for consumer goods fall, Americans have purchased more than ever before. American households spent nearly \$4.6 trillion on their expenditures on goods, \$1.7 trillion on durable goods and \$2.9 trillion on non-durable goods which include clothing.³

Good times and bad, the self-storage industry thrives as both a benefactor to and beneficiary of America’s material consumption. In the 2008 Great Recession people began to lose their jobs, many took their stuff out of self-storage space to save money, offsetting the need for people to store their stuff, even as others decided to downsize their homes for the very same reason.⁴ Thus, the industry thrived.⁵ Most recently consumer spending totaled \$14.2 trillion (as of 4Q18), which represents 68% of the \$20.9 trillion U.S. economy. Of that 68%, 2% (or some \$30 billion) was spent on storing consumer products purchased in previous quarters.

Created in the United States, with now over 45,000 facilities in comparison to Europe that has only a little over 3,300⁶, the self-storage industry is a uniquely American product and tangible evidence of America’s outstanding consumption levels.

¹ This is according to the U.S. Bureau of Economic Analysis.

² Vanderbilt, Tom. “Self-Storage Nation.” Slate.com, July 18, 2005. Accessed, March 20, 2019. <https://slate.com/culture/2005/07/self-storage-in-america.html>

³ Durable goods include items like furniture and automobiles. This data is from TheBalance.com, a personal finance company that features experts dedicated to giving financial and business advice. Amadea, Kimberly. “Personal Consumption Expenditures, Statistics, and Why It’s Important.” TheBalance.com. <https://www.thebalance.com/personal-consumption-expenditures-3306107> Accessed March 24, 2019.

⁴ Lifschutz, M. (2019). *Locked in: Low rental vacancies have paved the way for high demand for storage units*. Storage & Warehouse Leasing in the US. IbisWorld.

⁵ Though industry took about a 2 or 3% dip, stealing away from of the long-term customers (900 days+), a strong recovery in 2012 and 2013 the industry quickly recovered and blossomed. This is according to Ballard, Anne M. “Length of Stay.” Mini-Storage Messenger, December 2018. (page 11).

⁶ Total number of self-storage facilities in Europe as of 2018 according to statista: <https://www.statista.com/statistics/482583/self-storage-estimated-number-of-facilities-in-europe/>

Considering that nearly 1 out of 10 American households currently rent a self-storage unit, a number which is projected to continue to grow, this project aims to visualize the scale of the now massive and lucrative self-storage business. This project will also offer additional insights gleaned from the 2017 Self-Storage Demand Study survey data that examine customers by generation, to reveal what people are storing and why. Bearing in mind the overwhelming usage of self-storage in America, further investigations of whether or not it's worth participating in it are explored. The intention is that by focusing on and visualizing the industry in this way, this project will reveal how the self-storage industry is a window into America's relationship to consumption while reflecting on the costs of keeping material items through self-storage.

Chapter 1

Background

This chapter discusses what exactly self-storage is, the industry's size and revenue growth, as well as its current makeup.

1.1 What Self-storage Is

At first glance, the self-storage may seem simple: it is an industry that rents and leases empty space to individuals and businesses. A unique American creation, the industry has its roots in the 1960s⁷ in Odessa, Texas with the first business, A-1 U-Store-It-U-Lock-It-U-Carry-the-Key, a company that catered the oil industry⁸. It is comprised of establishments that provide a secure, relatively conveniently-located (usually 1-5 mile radius), often windowless, square or rectangular space⁹ where customers can store their possessions securely.¹⁰ It is an attractive property type because they're usually well-located in attractive neighborhoods and are suited to fill in old warehouses and buildings. Consequently, self-storage prices can demonstrate the demand of their rent locations.

1.2 Self-Storage Size

Mushrooming into a \$36.8 billion industry¹¹, approximately 9.4% of households in America currently rent a self-storage unit for an average monthly cost of \$88.85.¹² IBISWorld, an industry

⁷ Though some believe the first self-storage was created in Omaha, Nebraska in 1891 by Martin and Josh Bekins who created the business to help facilitate the migration of Americans to California in early 20th century. Source:

<https://www.curbed.com/2018/3/27/17168088/cheap-storage-warehouse-self-storage-real-estate>

⁸ Though the unit eventually closed, the same facility was later re-purchased and renovated a new self-storage unit in 2013. Source:

<https://www.curbed.com/2018/3/27/17168088/cheap-storage-warehouse-self-storage-real-estate>

⁹ Units vary in space that include rooms, compartments, lockers, containers and outdoor space.

¹⁰ The unit sizes for self storage are 5x10, 10x10, 5x5, 10x20, 10x15. Source: Harrison, Alexander. "U.S. self-storage industry statistics" News. SpareFoot. March 11, 2019.

<https://www.sparefoot.com/self-storage/news/1432-self-storage-industry-statistics/>

¹¹ 2018 annual industry revenues slightly vary. Sparefoot, the online marketplace for the self-storage industry reports \$38 billion dollars in revenue.

¹² Harris, Alexander. "U.S. self-storage industry statistics" News. SpareFoot. March 11, 2019.

<https://www.sparefoot.com/self-storage/news/1432-self-storage-industry-statistics/>

and market research company, accounts for 58,455 self-storage establishments¹³, which is nearly double the amount of the ubiquitous Starbucks and McDonalds units combined¹⁴. In addition to number of locations, McDonalds and Starbucks also dwarf in the aggregate square footage of their locations. The total rentable self-storage space in America is reported at 1.7 billion square feet, which is more than ten times the amount of Starbucks and McDonalds total.¹⁵ Designed for America's stuff, self-storage has now become part of America's national infrastructure.

1.3 Geographic emphasis

Self-storage has developed in more urban areas following the patterns of population density and migration in America.¹⁶ The industry is also referred to as “the lowest-basis commercial property type,”¹⁷ This means that for cities that want the businesses' benefits of revenue and income tax of companies located there, self-storage isn't always attractive. Considering that an individual self-storage facility typically employs less than a handful of employees¹⁸ combined with low overhead costs, this has made the self-storage industry more unattractive to city officials in locations where they are set to make the most profit in. They've been described “cash cows” due

¹³ IbisWorld defines “establishments” as “the smallest type of accounting unit within an enterprise, an establishment is a single physical location where business is conducted or where services or industrial operations are performed. Multiple establishments under common control make up an enterprise.” It should be noted that Sparefoot estimates that the total number of self-storage facilities is between 45,000 and 52,000.

¹⁴ This is based on 2015 numbers of Starbucks and McDonalds. Eagon, John. “Guess How Many U.S. Storage Facilities There Are Versus Subway, McDonalds's and Starbucks” Blog. Sparefoot. May 11, 2015. <https://www.sparefoot.com/self-storage/blog/7775-how-many-storage-facilities-are-in-the-us/>

¹⁵ McDonald's square footage is based on 2016 estimates of average floor space (Data source for floor space of McDonalds: <https://www.statista.com/statistics/587130/average-floor-space-qrs-us/>) of 4500 times the number of locations in 2016, 14,146 (Data source of total number of McDonalds in the United States: <https://www.statista.com/statistics/256040/mcdonalds-restaurants-in-north-america/>) which equals 63,657,000. For and Starbucks for footage, I took the the number of average floor space (2014: <https://stories.starbucks.com/stories/2014/three-starbucks-stores-that-inspire-one-of-the-most-creative-peoples-in-busi/>) and times it by the number of locations (Data source of number of starbucks locations: <https://www.statista.com/statistics/218366/number-of-international-and-us-starbucks-stores/>) which equals 24,830,200.

¹⁶ This is from Yardi Matrix, a Santa Barbara, California software company focused on commercial real estate industry applications. Source: Yardi Matrix. Self Storage Industry Overview & Analysis. Santa Barbara, California, Summer 2017.

¹⁷ Ibid.

¹⁸ The industry employees has grown at an annualized rate of 2.1% since 2013. Employment growth has been able to keep up with the pace of the industry due to advanced technology, reducing the need for on-site staff support.

to the fact that their sheer market structure puts them in a better financial situation to meet higher price demands for land¹⁹. For an industry that cannot bring job growth nor the kind of retail and sales taxes of a typical commercial unit, it's no surprise that city officials in demand locations like New York, San Francisco, and Los Angeles view the industry in a negative light. Yet the demand is high, especially in space-challenged areas. According to the Self-Storage Association, distribution of U.S. self-storage facilities is mixed: 32% urban, 52% suburban, and 16% rural.

¹⁹ Hu, Winnie. "Self-Storage Offers Space for Stuff. But It Gobbles Up Space." *New York Times*. April 13, 2017. <https://www.nytimes.com/2017/04/13/nyregion/self-storage-new-york-city.html>

Chapter 2

The Demand for Self-Storage

Timothy J. Dietz, the president and chief executive of the Self-Storage Association, has noted that “self-storage has become part of the fabric of our culture,” he said. “It helps families in transition, businesses, soldiers, retirees.”²⁰ This chapter discusses the growth of the self-storage industry, its low-cost business structure, and market makeup, as well as the array of reasons for why Americans turn to self-storage.

2.1 Unprecedented Growth

The demand for storage is high. The industry boasts a low 10% vacancy rate for 2018; a satisfying ratio according to experts. The industry picked up in the ‘90s and early aughts, mirroring the surge of residential growth in cities. Providing an affordable space for people to store their things, self-storage advanced into neighborhoods with abundant warehouse space perfect for this kind of industry. From 2000 to 2005, over 3,000 new facilities were built every year in America. Most recently, self-storage industry development and investment has reached record levels. In 2017, the industry created 49 million new rentable square feet—which is up almost 100 percent from the 26 million added in 2016.²¹ 2018 has kept up with this developmental fervor, as the industry is already projected to make at least 60 million net rentable square feet.²² Alexander Harris, editor of *The Spare Foot Storage Beat*, a publication focusing on self-storage and provides listings for self-storage marketplace, says that “right now we are in a peak year of construction of deliveries as far as new facilities opening.”²³ This unprecedented growth continues to be encouraged by a “steady population growth, a strong residential rental

²⁰ Hu, Winnie. “Self-Storage Offers Space for Stuff. But It Gobbles Up Space.” *New York Times*. April 13, 2017. <https://www.nytimes.com/2017/04/13/nyregion/self-storage-new-york-city.html>

²¹ Page 19, from the 2019 *Self-Storage Almanac*, which features recent self-storage industry data, statistics and analysis for self-storage owners, operators, investors, developers and appraisers.

²² *Self-Storage Almanac*, 2019

²³ Harrison, Alexander. Interview by Grace Martinez. Personal interview. New York, March 15, 2019.

market, rising per capita disposable income and an increasing number of relocations”²⁴ that will continue the high demand for the next five years.

As America’s consumption rates rise, the self-storage industry continues to soar. According to industry research from IBISWorld, the self-storage business grows alongside a robust economy and projects that revenue will continue to rise at an annualized rate of 0.9% over the five years to 2023 to \$38.5 billion. Now a boundless industry that continues to outperform all other real estate classes in America, self-storage has over 45,000 locations, and \$36.8 billion dollars in revenue, (15.2 billion profit). Industry expert, Erica Shatzer, notes that from an “investor point of view, [the self-storage unit industry] is a very lucrative business to get into.” IBISWorld industry report further supports this claim in their most recent research that highlights how the “profitability for operators in the Storage and Warehouse Leasing industry has historically been high relative to other real estate rental and leasing industries.”²⁵ This report estimates that industry revenue has increased at an annualized rate of 3.8% since 2013 including a 2.4% boost in 2018. This is partly due to the industry’s unique ability to endure periods of slow economic growth, as self-storage operators are able to continually benefit from the strong market for storage space even as the large-scale economy fluctuates, protecting the industry from any turbulent rotations that at times occur cyclically in the economy.

2.2 Reasons for Sustainable Growth

Self-storage industry growth is also due to its minimal business structure. The combination of low overhead costs, small staff, few utilities and low maintenance costs all contribute to substantial profit margins. The bulk of industry spending is associated with the real estate investment, wages and utility costs. The property maintenance is generally low cost, and because of security technology, facilities normally only employ 3 workers per facility according to the Self-Storage Association. Other factors that contribute to this distinct growth are the industry’s

²⁴ Lifschutz, M. (2019). Locked in: Low rental vacancies have paved the way for high demand for storage units. *Storage & Warehouse Leasing in the US*. IBISWorld. PG 10

²⁵ Lifschutz, M. (2019). Locked in: Low rental vacancies have paved the way for high demand for storage units. *Storage & Warehouse Leasing in the US*. IBISWorld.

ability to offer a flexible leasing schedule. According to IBISWorld, the self-storage industry's unique ability to negotiate leasing schedules with customers enables them to modify rental rates in order to adjust to unfavorable market fluctuations.

However, the industry's most recent unprecedented growth has been largely due to intense consumer spending and robust economy. As economic conditions continue to rise, the demand for self-storage space has followed the same upwards trajectory of economic growth as well as housing sales.²⁶ Self-storage demand increases to temporarily help new homeowners temporarily store their stuff in between moves. At the same time, the rental vacancy rate decline in recent years has also boosted the self-storage industry. This is due to the fact that renters are more likely to have smaller living spaces than homeowners. Thus the self-storage industry has benefited from both lower rental vacancy rates and increased housing market activity. Additionally, industry report also indicate that the self-storage industry growth is also indicative of the house price index, which is a key indicator of housing affordability. As housing prices increased, narrowing the amount of individuals who are able to purchase property, self-storage demand rises.²⁷

According to IBISWorld, other factors that have reportedly contributed to self-storage growth is rising job growth, as this results in more individuals moving to new locations for employment. The commercial use of storage facilities (which accounts for an approximately 18.4% of industry revenue in 2018) has also grown in recent years.²⁸ Small businesses, in particular small online retailers that are found on Etsy and eBay, are increasingly leaning on self-storage to store their products. Just as retail businesses benefit from higher spending as a result of Americans' more favorable outlook on the economy, the self-storage industry grows in tandem within the commercial business sectors. Thus rising demands from both the residential and business aspects have strengthened industry revenue especially in the past five years.

In some ways, the industry seems foolproof. Industry reports boast that "as disposable income rises, individuals are able to afford secondary storage units, driving up industry demand"

²⁶ Lifschutz, M. (2019). Locked in: Low rental vacancies have paved the way for high demand for storage units. *Storage & Warehouse Leasing in the US*. IBISWorld., page 7.

²⁷ IbisWorld, page 6.

²⁸ IbisWorld, page 8.

and at the same time “increased disposable income enables consumers to acquire more material possessions, often lifting demand for self-storage facilities because some individuals lack the space in their homes for additional belongings.” Though customers may cut back on their storage units to save money when disposable income is in decline, the current optimistic economy and the projected increase of per capita disposable income has fortified this industry. Thus self-storage is projected to continue stable growth all the way into year 2023 as it will continue benefit from an improved economy, growing alongside per capita disposable income and consumer spending.²⁹

2.3 Fragmented Market

Even though there's a high level of acquisitions in recent years, industry ownership remains to be extremely fragmented, with 18% of facilities owned by the six largest public companies, 9% owned by the next top 100 operators (minus the REITs), and 73% owned by small operators³⁰. In an environment where larger corporations tend to take over smaller businesses, mom-and-pops continue to dominate the self-storage industry (though they are mostly located outside the metro areas).³¹ This is surprising to see in such a profitable market, but, according to Shatzer, considering that many self-storage establishments got their start in the 1970s, a lot of them don't feel the need to until they decide to retire. Also, a lot of the mom-and-pop facilities are family business that are carried down. StorageMart is a prime example of this. Founded in 1999, StorageMart was created by Gordan Burnam in Columbia, Missouri and has kept it a family business ever since (all his children now executive positions within the company). In addition, the top operators (the REITs³²) don't feel the need to buy the mom-and-pop markets that are more in the suburban/rural areas because they simply won't turn around a big enough profit. Shatzer notes that the REITs “want to stick with the urban markets where they can have higher rental rates, where they have customers who can afford to use self-storage and they don't become delinquent tenants.

²⁹ IbisWorld, page 6.

³⁰ Self-Storage Almanac, 2019

³¹ This makes sense considering that 52% of the market

³² REITs stand for real estate investment trusts.

Chapter 3

Self-storage Customers and American Consumerism

This chapter is about how the self-storage industry customer base and how it is synonymous with American consumerism.

3.1 Demographic of Customers

The U.S. population grew from 309.3 million in 2010 to 325.7 million in 2017, a 5.3 percent increase. Surpassing the 75 million boomers, Millennials dominate as the biggest generation at a total of 83 million.³³ Because of the large age range of the Millennial generation (currently late teens to 38-years-old), Millennials will continue to shape the economy and thus the storage industry in the years to come. According to the Census Bureau, more than 40 million move every year, that is equal to 14 percent of the population. People move for a variety of reasons, including housing, jobs, and family.

Furthermore, self-storage customers fall into one of four main categories: commercial, military, students, and residential renters³⁴. Commercial tenants at self-storage properties are made up of area businesses and contractors who rent space to store goods off site³⁵. Residential customers make up approximately 77 percent of a facility's customer base, while business customers represent approximately 19 percent of the tenants.

3.2 Related to Consumerism

Americans consume lot of stuff. Representing over 26% of the entire global consumer market, the U.S. is the world's single largest consumer market. In 2017 alone, U.S. consumers spent over \$12.5 trillion, nearly three times as much as the second largest consumer market, China. Between 1970 and 2008, real disposable personal income per capita doubled, and by 2008 we were

³³ Millennials were born between 1980 and 2000

³⁴ Self-Storage 2019 Almanac.

³⁵ This is often a cost savings when compared to the price per square foot of self-storage versus the cost per square foot when housing the same items at the business location

spending nearly all of it — all but 2.7 percent — each year. Meanwhile, the price of much of what we were buying plunged. Even by the early '90s, American families had, on average, twice as many possessions as they did 25 years earlier.

3.3 Saturation Point

However, many major population centers have begun to reach market saturation and industry operators will likely branch out into different regions to seek growth opportunities. Competition in metropolitan areas is already intense and will heighten in other areas as different companies seek to expand into similar markets. Consequently, rental rates will drop as operators keep prices low to draw in business, curbing revenue growth potential. IBISWorld estimates that revenue will rise at an annualized rate of 0.9% over the five years to 2023 to \$38.5 billion, but industry analysts warn a saturation point in the near future. Patrick Sisson in “Self Storage: How warehouses for personal junk become a \$38 billion industry” hints that the market might be heading toward full saturation. When asked what could possibly derail the industry from its projected growth, experts, Erica Shatzer and Alex Harrison, both agree that overbuilding could tip the supply and demand unfavorably. Erica notes that the domino effect of when this happened. When a facilities try to lower their prices to attract customers, it hurts all the other businesses. However, back in 2009, as America was still reeling from the Great Recession, similar alarms around oversaturation were rung proved benign in the years after.

Chapter 4

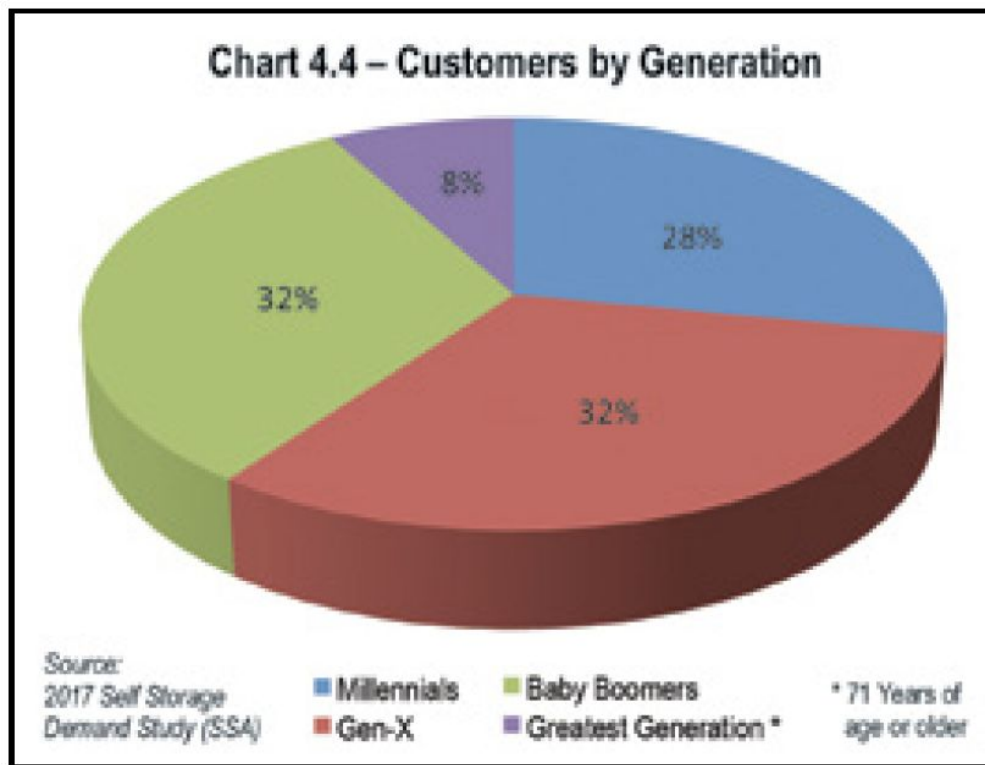
The self-storage industry has a plethora of data on it, from industry to market data, from location to global perspectives. This chapter is about the data I ultimately decided to examine and visualize for my final thesis.

4.1 Storage Unit Industry Data and Process

I intentionally focused on the scale (square footage and economic scale) and survey data of customers as it represented both sides of the industry (size and personal intention) that I was most interested in uncovering. survey data from the 2017 Self-Storage Demand Study, paint a picture of the consumers of this industry and offer a glimpse into America's relationship to their stuff. The survey data was taken from the 2017 Self-Storage Demand Study found in the 2019 Self-Storage Almanac. This almanac (usually priced at \$150) was generously provided to me by the editor Erica Shatzer upon my research interview with her regarding this project. This survey data screened more than 13,000 households and businesses, with an in-depth survey of 1,502 consumers and 501 businesses.

The report indicated that the average self-storage renters tend to be younger, married, college-educated adults and generally gender equal (The *SSA Demand Study* notes that 52 percent of all renters are men, with 48 percent of renters being women). The 2019 Self-Storage Almanac from which I was able to obtain this data indicates that unlike in past editions of the *SSA's Demand Study*, the 2017 edition analyzes consumer data on a generational basis. These generations are broken down as follows:

- Millennials
- Generation X (Gen-X)
- Baby Boomers
- The Greatest Generation (71-plus years of age)



The report indicates that Millennials, also known as Generation Y, are those people who were born just before the new millennium started—somewhere between 1980 and 2000

Generation X are those born between 1965 - 1979. Baby Boomers are those born between 1946 and 1964. The almanac indicates that the Greatest Generation are those of 71 years of age and older and are typically born between 1890 and 1915 as “they grew up during the Great Depression and fought World War II, or those whose labor helped win it.” However, considering that the age (at least 71) and year born are so disparate, I believe this was a mistake that really meant between the years 1890 and 1945.

The self-storage almanac indicates that Baby boomers and Gen-X renters make up the majority of the self-storage customer base as seen in Chart 4.4 from the almanac, but considering that Boomers are 28% of the customer base (only a 4% difference), I’d argue that it’s actually pretty generationally mixed (with the exception of the Greatest generation).

To explore how America's use of the self-storage industry was related to their rate of consumption, I needed to find out how much people were actually consuming. I obtained U.S. consumption data from Worldbank.org where I found specifically how that based on household final consumption expenditure³⁶, in 2017 alone, U.S. consumers spent over \$13 trillion, nearly three times as much as the second largest consumer market, China. This is particularly shocking considering that China has the largest population (1.3 billion) in comparison to the the United States which only has 325 million³⁷. With so much consumption, it is in some ways not surprising that the self-storage industry has been following and catering to that growth. For my visualization, I created side by side sparklines that emphasize their adjacent growth.³⁸

The online self-storage industry publication site, Sparefoot, touts that the industry had over 1.7 billion square feet of rentable self-storage space as of March 2019. Large numbers are difficult to attain a sense a scale of without comparison, so with encouragement of Christian Swinheart I decided to plot this on to something more tangible like a city map. Serendipitously, Washington D.C. was not only similar in size at 68.34 square miles (of which 61.05 square miles is land and 7.29 square miles (10.67%) is water³⁹) but was also an ideal size because of it square shape. I utilized a number programs in order to create my map of Washington D.C. I first analyzed my data in google sheets and then brought the data into Illustrator and Indesign for svg creation (from there I copied the svg output code placed into my html and jquery code for final display). Using illustrator, I assigned 1 square box to equal 1 square mile and mapping over that a map illustration of D.C. I went through a number of maps for this, as I wanted to ensure I

³⁶ Source: <https://data.worldbank.org>. Household final consumption expenditure (formerly private consumption) is the market value of all goods and services, including durable products (such as cars, washing machines, and home computers), purchased by households. It excludes purchases of dwellings but includes imputed rent for owner-occupied dwellings. It also includes payments and fees to governments to obtain permits and licenses. Here, household consumption expenditure includes the expenditures of nonprofit institutions serving households, even when reported separately by the country. Data are in current U.S. dollars.

³⁷ Source: "Country Comparison China vs United States Population 2019." Countryeconomy.com. Accessed April 1, 2019. <https://countryeconomy.com/countries/compare/china/usa?sc=XE23>.

³⁸ The analysis was originally done in google sheets and then brought into Illustrator for final svg design.

³⁹ Source: "Washington, D.C." Wikipedia. March 24, 2019. Accessed March 30, 2019. https://en.wikipedia.org/wiki/Washington,_D.C.

included a map with sufficient identifiable land detail. I then did the same for McDonalds and Starbucks.

For further perspective, I decided to compare the industry to other ubiquitous brands like Starbucks and McDonalds.⁴⁰ I found out that the total square footage of Starbucks and McDonalds combined were only a fraction of the amount compared to the total square footage of rentable space of the self-storage industry. In my final visualization, I added that upon the total rentable self-storage space for visual comparison.

Furthermore, after examining and visualizing the total financial growth (alongside consumerism) and land size of the self-storage industry, I wanted to explore the personal aspects of this product. For this I turned to the survey data mentioned above, for which I made a number of amendments to the survey data for visual clarity. The original data had a total of 19 categories (Table 4.7). I collapsed them into 12 so that visually it would read better and also by category of home materials to avoid repetition of kinds of items.

⁴⁰ To do this, I had to take the it is a Mcdonald's square footage which is based on 2016 estimates of average floor space of 4500 square feet and multiply that by the number of locations in 2016, 14,146 which equals 63,657,000. To attain aggregate Starbucks square footage, I took the the number of average floor space (2014: <https://stories.starbucks.com/stories/2014/three-starbucks-stores-that-inspire-one-of-the-most-creative-pe-ople-in-busi/>) and multiplied it by the number of locations (Data source of number of starbucks locations: <https://www.statista.com/statistics/218366/number-of-international-and-us-starbucks-stores/>) which equals 24,830,200.

Table 4.7 – Items Stored by Generation

| | Total | Millennials | Gen-X | Boomers | Greatest |
|--|--------------|--------------------|--------------|----------------|-----------------|
| Indoor furniture | 48.6% | 41.9% | 49.4% | 54.5% | 46.4% |
| Outdoor/seasonal furniture (lawn tables, chairs) | 24.2% | 20.5% | 26.6% | 25.2% | 23.8% |
| Vehicles (cars, boats) | 4.7% | 3.5% | 6.2% | 4.2% | 5.0% |
| Major appliances (refrigerators, dryers) | 14.0% | 13.1% | 14.4% | 16.3% | 6.8% |
| Electronic devices other than appliances (stereo, computers) | 25.7% | 21.4% | 27.4% | 27.3% | 27.5% |
| Clothing | 44.8% | 44.9% | 43.9% | 45.7% | 44.5% |
| Towels/Blankets/Linens | 33.2% | 31.0% | 33.5% | 36.5% | 27.4% |
| Books/Magazines | 34.8% | 32.3% | 35.7% | 36.4% | 33.9% |
| Sporting equipment | 28.0% | 25.2% | 27.1% | 30.9% | 30.0% |
| Family records (bank statements, tax filings) | 21.0% | 12.9% | 26.1% | 23.3% | 20.3% |
| Tools | 32.8% | 26.2% | 37.5% | 33.8% | 33.7% |
| Children's toys | 16.3% | 19.0% | 21.4% | 10.9% | 7.4% |
| Collectibles/Objects related to hobbies | 32.2% | 28.0% | 33.6% | 35.3% | 28.8% |
| Kitchenware (plates, pots, pans, utensils) | 44.7% | 43.2% | 41.7% | 49.5% | 43.6% |
| Non-perishable food (canned goods) | 6.7% | 7.7% | 4.8% | 9.5% | 0.0% |
| Household supplies | 40.6% | 41.7% | 38.7% | 41.9% | 38.7% |
| Pictures/Photos/Paintings | 42.3% | 37.4% | 41.4% | 47.1% | 43.6% |
| Holiday seasonal items (such as Christmas, Halloween, or Thanksgiving decorations) | 40.3% | 30.9% | 36.9% | 49.3% | 51.4% |
| Other | 4.9% | 2.2% | 5.2% | 6.2% | 8.6% |

Source: 2017 Self Storage Demand Study (SSA)

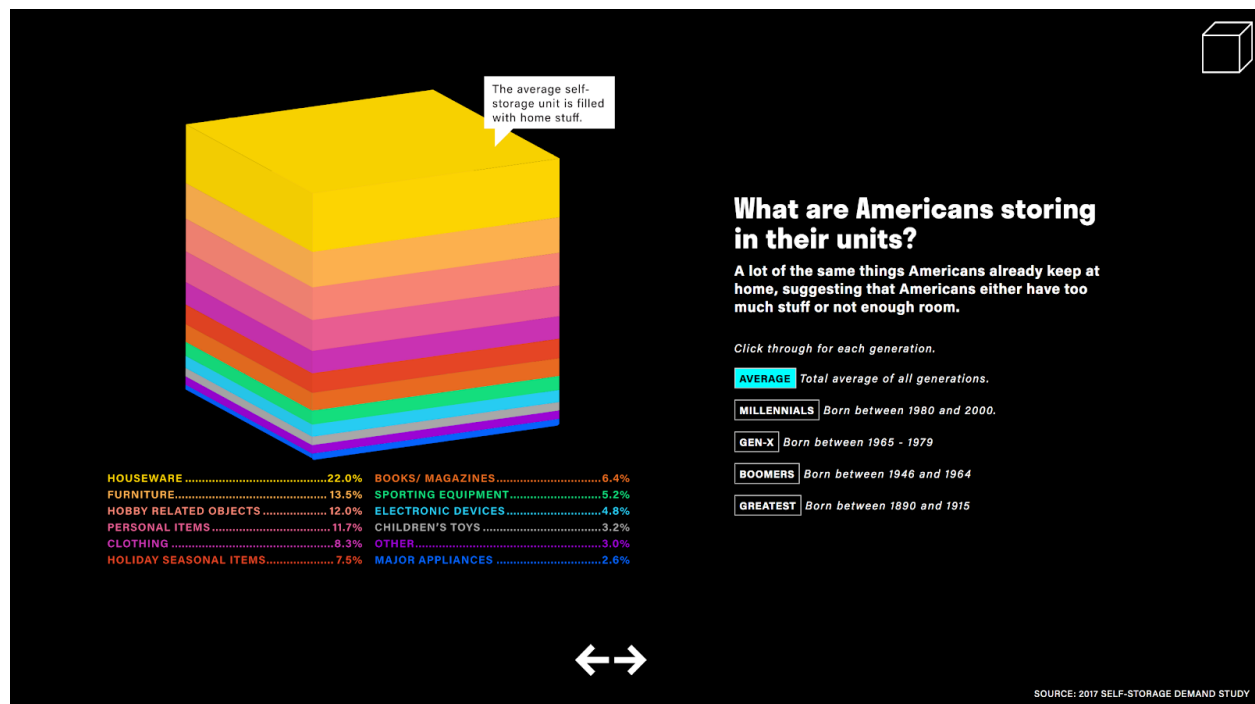
I revised the categories of items stored by generation based on similarity of categories, their use, and areas of which they would be stored at home. My revised breakdown of items stored included the following:

- A new category titled “Houseware” was created where I combined the categories of “Household supplies,” “Kitchenware (plates, pots, pans, utensils)” and “Towels/Blankets/Linens.”
- The “Furniture” category was revised to that it also included both indoor but also “Outdoor/seasonal furniture.”
- A new category titled “Hobby related objects” was created which encompassed “Collectibles/Objects related to hobbies” and “Tools.”
- “Personal items” was revised to include “Pictures/Photos/Paintings” and “Family records (bank statements, tax filings).”
- “Holiday seasonal items” include Christmas, Halloween, or Thanksgiving decorations

- “Other” includes “Non-perishable food” and “Vehicles (cars, boats).”

The survey data revealed that Americans stored a lot of the same things they already keep at home, suggesting that Americans either have too much stuff or not enough room. And when we look at what the average consumer is storing, it’s a lot of same stuff they have at home.

Houseware (that’s pots, pans, linens, towels, kitchen stuff), furniture, personal items (photos, documents). I discovered a number of insights which I highlighted as captions in my final visualizations. These were: Millennials store the most houseware of all the generations. Gen-X users are among the highest percentage to store furniture. Boomers store the least amount of books and magazines. The Greatest generation store the highest percentage of holiday decorations. Below is my final visualization for this data. I chose squeaky colors to emphasize the scale and the bombastic essence of the self-storage industry. Though the colors for house-ware is much brighter than the rest, perhaps leading one to read it as a larger percentage than its actual existence, I wanted to emphasize this category and how these items were simply the same kind of things found at home.



After studying what people were storing, I also wanted to understand the reasons why. For this I used data (Table 4.6) found in the 2019 Self-Storage Almanac. I then brought this data into google sheets for analysis, re-ordered based on top percentages and examined that data based on generation. In addition to listing the generational preferences for storing, this data revealed the range of reasons why people use self-storage correlate to meaningful parts of everyone's life: family death to a growing family.

| | Total | Millennials | Gen-X | Boomers | Greatest |
|--|--------------|--------------------|--------------|----------------|-----------------|
| Temporary storage while changing residence | 38.8% | 44.3% | 35.9% | 36.9% | 38.9% |
| Temporary storage while remodeling home or residence | 7.1% | 7.5% | 8.4% | 5.6% | 6.9% |
| Temporary storage for valuables or other personal items while you are away from your home or residence (such as on vacation) | 5.7% | 7.7% | 6.3% | 4.2% | 1.3% |
| Temporary storage due to natural disaster (such as fire or flood at home or residence) | 3.1% | 5.1% | 2.5% | 2.6% | 0.0% |
| Storing a college student's things between semesters | 5.3% | 7.8% | 5.6% | 3.3% | 3.7% |
| Storing items that you don't have room for at home or residence | 39.4% | 36.3% | 37.1% | 42.6% | 46.5% |
| Storing items you no longer need or want until you find a buyer or another way to dispose of them | 14.6% | 9.2% | 15.5% | 15.2% | 27.6% |
| Storing items you inherited because of a death in the family | 8.8% | 6.3% | 4.6% | 12.9% | 17.4% |
| Storing a relative's items due to changes in the relative's living situation (e.g., parent moving from a home to an apartment) | 11.2% | 11.0% | 7.3% | 14.5% | 14.3% |
| Storing items usually kept in a vacation home | 3.7% | 5.2% | 5.4% | 1.6% | 0.0% |
| Storing items that require a controlled environment (e.g., wine) | 4.4% | 3.4% | 4.6% | 4.7% | 5.2% |
| Storing items because we had a baby/our family grew | 3.3% | 5.9% | 4.8% | 0.2% | 0.0% |
| Other | 4.9% | 2.4% | 5.8% | 5.6% | 8.0% |

Source: 2017 Self Storage Demand Study (SSA)

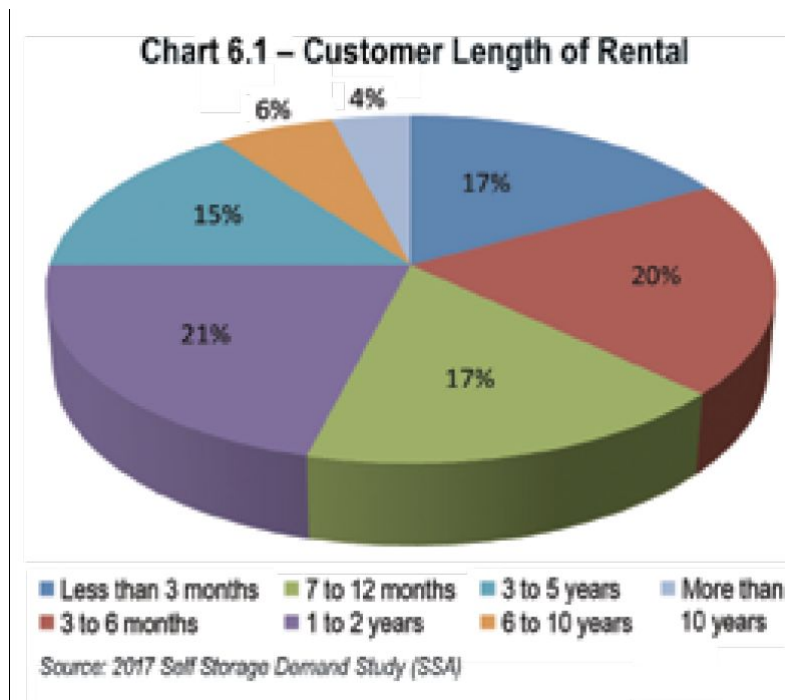
The top reasons are participating in the self-storage industry are that people don't have enough space at home and as a temporary storage as they change residence. The first reason suggests we are consuming more stuff than we have space and/or our living spaces have shrunk (which is true in the major cities where this industry thrives in).

The second reason suggests that these generations are migrating more, which we see the most with Millennials who are leading generation to use self-storage for this reason which suggests they migrate more. Other insights I discovered, are that Gen-X uses self-storage the least in the category of "Storing items you inherited because of death in the family," suggesting they have yet to inherit items and may not need them just yet like millennials. Boomers like the Greatest Generation use self-storage because they don't have enough room at their residence.

Greatest Generation leads in the category of “Storing items you no longer need or want until you find a buyer or another way to dispose them,” suggesting that this generation is holding on to a lot of stuff simply because they don’t know what else to do with them.

What I found found interesting about this data was how Americans turn to self-storage during very important parts of their lives, from death to a growing family, to relocating for a new job. That being said, turning to self-storage costs money, the longer you rent, the higher the costs. Leading me to ask is this worth it?

To answer, I needed to know the length of time people are renting. According to the 2017 Self-Storage Demand Study, the average is about 2 years, with half of customers visiting their unit at most only once a month (Chart 6.1, originally from 2019 Self-Storage Almanac).



The average monthly cost for self-storage is \$88.85.⁴¹ At the 2 year mark, and with the monthly average costs of nearly \$90 a month, the average self-storage customer is spending about \$2,100 total on their units. Considering that the longer the rental, the higher the costs, self-storage may be a reasonable solution or an over-indulgent monthly cost considering how long you rent for

⁴¹ Source from Sparefoot.com as of March 2018.

and how much your stuff is worth. That being said, I needed to find out how much a self-storage unit is actually worth. Considering self-storage is used at a mass scale, using another large ubiquitous retailer that many American used seemed most appropriate for price estimations.

Taking the average breakdown of items stored and using big box brands like IKEA and Michaels for estimated pricing, below is how are the calculations of what an average storage unit is worth.

⁴² Taking the average storage unit contents and the percentage of the items stored, I made a breakdown I made these very generous calculations. I characterize these calculations as “generous” simple considering the average price of a storage unit at auction is \$425⁴³ but I intentionally did this because I want to be sensitive to the fact that we tend to ascribe more value to items, simply because they own(ed) them and nostalgic value is very hard to quantify.

⁴² This was made in googlesheets, where the bulk of my data analysis was done:
<https://docs.google.com/spreadsheets/d/1i2-lazgyr7omRpMOrjbiEOEQgJOdNdWfUu2InJr2DkM/edit?pli=1#gid=1832707697>.

⁴³ Source: Statistic Brain, <https://www.statisticbrain.com/self-storage-industry-statistics/>

| Average Items Stored | % breakdown | Price breakdown | Size breakdown from 10'x10' | Price | Source | Breakdown |
|--|-------------|-----------------|-----------------------------|---------|----------|--|
| Houseware | 22.0% | | 2.2'x2.2' | \$300 | ikea | \$40 pots, \$10 plates (set of 4), \$12 towels (2), \$14 linens, \$6 cooking utensils, \$20 blanket, \$10 cleaning supplies, \$20 coffee maker, \$140 toaster oven |
| Indoor and Outdoor Furniture | 13.5% | | 1.35'x1.35' | \$150 | ikea | This is generous based on \$500 average furniture |
| Hobby related Objects | 12.0% | | 1.2'x1.2' | \$100 | michaels | Rough estimates based on tools |
| Personal Items | 11.7% | | 1.17'x1.17' | \$0 | | Considering personal items are not certifiable through the U.S. postal service, I valued this at \$0 |
| Clothing | 8.3% | | 0.83'x.83' | \$50 | | |
| Holiday seasonal items (such as Christmas, Halloween, or Thanksgiving decorations) | 7.5% | | 0.75'x0.75' | \$100 | michaels | Rough estimate, so priced generously here |
| Books/Magazines | 6.4% | | 0.64'x0.64' | \$100 | | Rough estimate, so priced generously here |
| Sporting equipment | 5.2% | | 0.52'x.52' | \$200 | | Rough estimate, so priced generously here |
| Electronic devices other than appliances (stereo, computers) | 4.8% | | 0.48'x0.48' | \$400 | best buy | Rough estimate, so priced generously here |
| Children's toys | 3.0% | | 0.3'x.3' | \$100 | | Rough estimate, so priced generously here |
| Other | 3.0% | | 0.3'x.3' | \$100 | | |
| Major appliances (refrigerators, dryers) | 2.6% | | 0.26'x.26' | \$400 | | Rough estimate, so priced generously here |
| | 100.0% | | | \$2,000 | | |

That being said, based on the generous calculations above, the point of which the average storage unit would start losing money is just below 2 years, where the average rental cost would accumulate to just above \$2,000 (\$2,043.55 to be exact). Considering that most customers visit their unit at most once a month and that the average worth of a storage-unit is shy of the costs of the average rental time, renting anything over than two years can be viewed as financially depreciating. Based on this insight, self-storage only seems financially advantageous if used for

very short periods of time and not as an extension of one's home.⁴⁴ Though there are exceptions to self-storage unit worth that are depicted on shorts like "Storage Wars," rarely are such treasures found in these units. The typical storage unit is filled with "junk" as characterized by Public Storage Chief Executive, Ronald L. Havner Jr who has been quoted for saying "I've sometimes said that we could put a torch to this building and it would have zero effect on the local economy — because that's how much junk is stored in our properties."⁴⁵ So unless you're using self-storage for its original intention, a truly temporary space to keep your stuff it can become akin to a gym membership, an often unused added subscription.

Aspects that I decided to not visualize were how self-storage industry's growth also represented e-commerce growth, migration, and population density, to the growing number of an industry that employs a relatively few people and what that means. My final web visualization was ultimately text light, as I wanted to give more emphasis to the visuals, and create a simple and direct approach to the story I was telling.

⁴⁴ Though it should be noted that many customers do use self-storage due to small living conditions (based on dense city dwellings with pricey living square footage space) and or dislocation due to economic misfortune. These sort of circumstances may make self-storage a cost-worthy endeavor.

⁴⁵ Source: Mooallem, Jon. "The Self-Storage Self" *The New York Times Magazine*, Sept. 12, 2009. Accessed March 15, 2019.
https://www.nytimes.com/2009/09/06/magazine/06self-storage-t.html?pagewanted=2&_r=1

4.2 Project Iterations and Limitations

I went through a number of wireframe options and prototypes (3 total) before deciding on my final version. Originally, I had intended on making the final site a scroll through experience, then decided on a more click through site, both of which I mocked up prototypes via the program Figma. I am a designer by profession and admitted novice coder so I created most of my final visuals using a combination of design programs (Figma, InDesign, and Illustrator). To create the final svgs, I first cleaned, organized and analyzed my data via google sheets, then brought them to illustrator to create representational graphics. I exported the svgs and copied, cleaned, and input the corresponding svg code into my site to enable interactivity with them using the javascript library jquery and css.

4.3 Conclusions

This project aims to simply provide a lens into American consumerism and consumption patterns through self-storage industry data. I wanted to provide perspective into American consumerism and culture through studying the very business that caters to it. This was done by examining and visualizing industry growth and customer base. To that aim, many aspects of this industry were not fully explored and realized within the timeline of this thesis semester. These include more full explorations into how self-storage is representative of migration and population density (though my data analysis make strong suggestions of this, it is not a full exploration.

Other aspects of self-storage global trends were not explored either. Neither did I get to visualize the ability to view this industry on a map, though I had state by state industry data that included rentable self-storage square foot data, facility count, average square foot per capita, and population. A map would have revealed a more micro level of how this industry operates in America and further analysis of this sort of data could have gleaned individual state industry insights. However, considering that the large scale of market and industry data, exploring the industry through this sort of lens may have been have been a digression from the main

perspective I was aiming to explore with this project and possibly become a regurgitation of the data from industry reports for facility operators that I kept finding.

I hope this examination of the self-storage industry provides an in-depth look into a vital aspect of American consumerism.

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