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PLATONIC SURVEY OF REAL ESTATE'S PURPOSE

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Real Estate and First Principles Reasoning
"Where there is no vision the people perish." Proverbs 29:18

In the following paper, I will be conducting a unique examination of real estate through a means and method not often applied to the subject. As a person who finds great enjoyment

exploring the intersection between subjects such as philosophy, history, art, and science, I find that these fields are not applied to the field of real estate nearly as often as they should be, especially when dealing with nuanced, complex issues that warrant this type of interdisciplinary thinking. Within the financial world, real estate is often thought of as the "entrenched" field that does things as they always have – we are slow to adapt technology; business is largely still relationship-driven; and there are often huge information asymmetries as we hesitate to publicly share information. Unlike other sectors of our economy, the buying/selling of real estate has stayed relatively isolated from the accelerations of our digital economy and for the most part, real estate businessmen are content to keep it that way as long as they maintain the competitive advantage that comes with their age, power, or relationships. The danger of this isolationism, however, is that real estate professionals cease to ask questions of philosophy, morals, or purpose that drive where the industry *should* go. In other words, what is the ideal role of real estate in our world?

In light of this reality, my desire in this paper is to open up real estate to the diverse possibilities available through multidisciplinary thinking. Employing an ages-old process of exploration, I will evaluate real estate through an inductive, Platonic method with the goal of arriving at innovative applications capable of promoting a higher form of human flourishing around us. Led by questions, this paper will explore real estate in the context of philosophy, history, civics, science, psychology, urban planning, and more. Instead of starting with quantitative assessments of markets, ratios, and trends, we will take a qualitative approach by asking why real estate exists and what makes it unique. We will hear stories of people, identify problems real estate is equipped to solve, propose and analyze policy, and hopefully come out with practical, well-informed insights that can lead our advancement into the future.
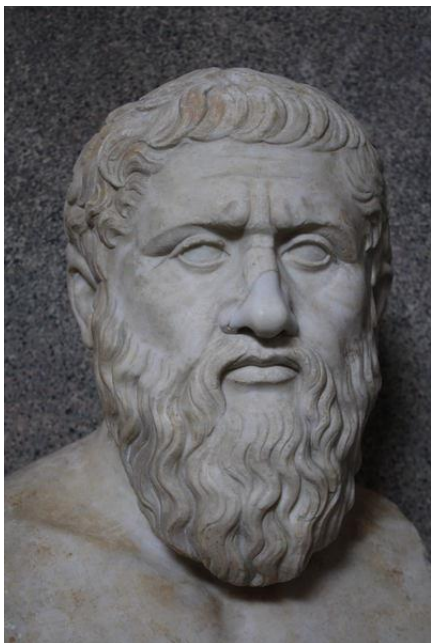
Bust of Plato, Source: Mark

To begin our journey, I will start by providing some background on the philosophical method I will be following, which Plato coined as "first principles reasoning." In Plato's philosophy, first principles are what he considered the highest universals in which all things find their origin and purpose. Plato believed that all things find a common tie to *Oneness* and *Goodness,* two of the highest universals which represent the most real and intelligible concepts in existence (Cleary 441). First, Plato believed that all things find their *truest* form in being part of *one* universal system. For instance, a leaf is a part of a branch's system. A branch is a part of a tree's system. As you start to examine all of the systems a leaf contributes to (e.g. leaf → branch → tree → forest → continent → planet → solar system → galaxy → universe), Plato would assert that what many perceive to be an individual leaf actually finds its *trust* form in its role in the one universal system. Plato also believed that all things find their truest form in the *good* version of themselves. For example, even though a rotten egg is considered real in our experience, a rotten egg finds its

truer form in a fresh egg, which anyone would readily agree is a *better* (more fully good) form of an egg.

Based in Plato's philosophy, a person was then expected to extrapolate the highest form of *unification and goodness* in all things that surround them. Their task was then to consider how to fill the gap between that perceived form of unification and goodness and the less-than-ideal reality they experience around them (441). In this position, one might ask, "are there any individual parts/systems of the universe that should be more cohesively unified into the grander system of the universe?" For instance, just because the field of anti-trafficking advocacy exists does not mean it is ideally situated/unified with the universe to accomplish its task. In fact, compared to other less important matters in the world, it might be relatively isolated from the systems, resources, governments, and/or people it needs to appropriately function. Through the activism of people who recognize its importance, the field of anti-trafficking advocacy can become *more unified* with the systems, resources, governments, and people that are essential for the field to fulfill its intended purpose.

Plato's first principles reasoning would juxtapose with its counterpart, analogical reasoning, which seeks to arrive at conclusions by citing accepted structures/relationships that exist in current systems to support the plausibility of a claim (Bartha, par. 1). Many would argue that humans (and animals for that matter) most naturally default to analogical thinking when solving problems in everyday life. We practice analogical reasoning anytime we decide what college to go to, what grocery store we visit, or what mode of transportation to take. In essence, anytime we refer to an accepted or existing system when determining how to solve a problem (acquire an education, get food, travel a distance), we are utilizing analogical reasoning.

When Elon Musk was asked about how he resurrected the space industry by manufacturing the world's first reusable rockets, Elon responded by referring to his application of first principles to physics.

> "Physics teaches you to reason from first principles rather than by analogy. So I said, okay, let's look at the first principles. What is a rocket made of? Aerospace-grade aluminum alloys, plus some titanium, copper, and carbon fiber. Then I asked, what is the value of those materials on the commodity market? It turned out that the materials cost of a rocket was around two percent of the typical price."' (Clear, par. 5)

Tying Elon's response to what we have covered about first principles reasoning, recognize the process he employed: 1) Elon recognized that the space industry was less unified with the systems of the world than it should be, 2) he set out to deconstruct the "system" of the rocket to its bare, individual parts for reevaluation, 3) he established a rocket design according to a more robust vision of what he defined as *good*, and 4) the rocket's revolutionary design now allows for space travel to be more

Elon Musk's BFR Rocket, Source: O'Kane

unified/accessible to the systems of our world. Instead of employing analogical thinking, which would have limited him to faulty assumptions that were already present in former rocket designs, Elon applied first principles reasoning to deconstruct the essential elements of space rockets for the sake of building a rocket that was more unified and ideal for the future of the industry.

In the following paper, I am inviting you to come along in a serious and honest journey to evaluate real estate, my field of study, through the eyes of first principles. Applying such a philosophical framework to such a seemingly non-philosophical industry may be asking a lot of readers but hopefully it will be a practice of interdisciplinary thinking that will be useful for all. As Proverbs 29:18a says, "Where there is no vision the people perish." As we dive into real estate's first principles, my hope is that we come to a simpler place; not one that is filled with practicalities and limitations but one filled with inspiration and vision. Out of a place of genuine vision, I believe the most insurmountable, complex problems can be refashioned into beautiful expressions of humanity's creativity and ingenuity. Yet, this brings us to the question, what are real estate's first principles?

Building Blocks of Real Estate

"People suppose that the new societies are going to change shape daily, but my fear is that society will end up by being too unalterably fixed with the same institutions, prejudices, and mores, so that mankind will stop progressing and will dig itself in. I fear that the mind may keep folding itself up in a narrower compass forever without producing new ideas, that men will wear themselves out in trivial, lonely, futile activity, and that for all its constant agitation humanity will make no advance"
~Tocqueville, Democracy in America

Understanding real estate's first principles requires us to know the beginnings of the real estate industry and the events that drove its formation. Following the example of Elon

Musk and other innovators who have cast vision in otherwise stagnant industries, it often takes reducing a system to its essential features before it is possible to reconstruct a compelling, relevant vision for the future. Granted that we are operating in the context of the Western world, we will begin by breaking down real estate's first principles from the vantage point of a Western worldview, Western history, and the principles of progressivism that are prominent in the West. My goal will be to identify values that underlie a *good* and *unified* Platonic approach to real estate.

Taking a deep look at real estate, one cannot break down the essential components of the industry without examining the laws that contributed to its inception at the beginning of our nation. Within real estate today, many leaders in the field forget the essential role real estate played in the formation of our nation and for that matter, the emergence of the Western world. On the heels of the Revolutionary War with England, the founders of the America drafted a series of

Thomas Jefferson and the Continental Congress, Source: Costly

groundbreaking documents that outlined the protection of life, liberty, and property for all. Responding to the tyranny experienced under the British Empire, they held the protection of these principles at the core of ensuring the people of our nation would grow and flourish (Powell, par. 2). In Jefferson's view, the protection of private property was absolutely necessary to foster an ethic of personal and economic independence that was essential for virtuous and self-governing citizens. Without personal property, Jefferson stated that the people would fall into economic dependence which "begets subservience and venality, suffocates the germ of virtue, and prepares fit tools for the designs of ambition" (Jefferson, Query XIX). Jefferson later wrote "It is the manners and spirit of a people which preserve a republic in vigor. A degeneracy in these is a canker which soon eats to the heart of its laws and constitution" (Query XIX).

From the vantage point of the Founding Fathers, we first see that the real estate industry (the ownership and free exchange of real property) was set apart in their minds as an industry *essential* for the preservation of democratic and economic flourishing. When people owned land, Jefferson saw a mindset shift among fellow citizens that reflected personal responsibility, discipline in virtue, and resistance to being used by the power-hungry. Assuming that our ideal vision of the real estate industry would retain all these principles, I would venture to claim that a good and virtuous pursuit of the industry will seek to preserve the *economic independence* of its stakeholders.

Also intimately tied to the genesis of the West's approach to real property was the principle of *human dignity*. As the Founding Fathers were introducing a system which allowed

for the privatized, independent, free use of property, their approach was tied to a belief that the freedom and flourishing of a nation should be accessible for all men. In the Declaration of Independence, the Founding Fathers introduced the great American principle "that all Men are created equal" (US 1776). As colonial Americans settled in the New World, it was largely their experience with land that spawned an insatiable taste for freedom and equality.   As Patrick Henry biographer Henry Mayer wrote:

> "For [Patrick] Henry, as for the vast majority of his countrymen, land held the key to happiness and prosperity. Nine out of every ten Americans lived – and made their livings – on farms, and very few doubted the moral superiority of the agrarian way of life. To own land enough to feed and clothe the family and raise enough of a marketable crop to trade or sell for what the land could not yield seemed close enough to paradise for anyone. The crowds and corruption of city life, and the dubious manipulations of merchant princes, struck most yeomen as unsavory and threatening" (The Lehrman Institute, par. 12).

As we see, land played a vital role in granting Americans their first taste of freedom, independence, and ultimately, dignity. For the first time, people who had been under oppression and/or unable to care for their families were offered a chance to protect and provide for their families on their own lands with rights and freedoms that were legally protected under law. America became the "land of opportunity" where people from all over the world could hope for a better life, no matter what means or background they came from. This was seen all over the literature of these early days as seen here in an early ad published by the State of Minnesota:

> "To Laboring Men, who earn a livelihood by honest toil; to Landless Men, *who aspire to the dignity and independence which comes from possession in God's free earth*; to All Men of moderate means, and men of wealth. . . . It is well to exchange the tyrannies and thankless toil of the old world for the freedom and independence of the new" (Core Knowledge 2).

Today, we often take it for granted that land is freely acquirable and transferable. In the beginning of our country, however, the free exchange of real property brought new levels of dignity, honor, and pride that were revolutionary to individuals accustomed to living under the whims of power.

Lastly, I think it is vital to point out that the field of real estate has been intimately tied to humanity's concept of *progress* throughout history. From the earliest humans migrating from Northern Africa to the Middle East, Europe, and Asia; to early colonizers arriving in North and South America and expanding west; to our present day where humans still make plans to develop barren parts of our planet, other planets, and moons around our solar system; it seems that taming the outer most portions of civilization represents the cutting edge of human progress.

Today, I would assert that humans are no less driven by pushing the boundaries of human civilization in remote places than improving the quality of life where we reside today. Since the First World Climate Conference was hosted by the WMO in Geneva in February of 1979, scientists, governments, and companies have been working tirelessly to reimagine how we can live

Sustainable City Artwork, Source: SIWI Swedish Water House

in cities in a way that will sustainably care for the Earth. With 68% of the world population predicted to live in cities by 2050, experts are working hard to focus on progressing our concept of sustainable urban living (United Nations, para.1). Rohit Aggarwala from Sidewalk Labs, an innovative urban research and design company started by Alphabet, says,

> "It's been clear for a long time that cities are critical to the global fight against climate change, both because they account for a large portion of global emissions and because they are where some of the biggest, fastest, and easiest gains can be made . We also know that dense urban living is the only sustainable way for the world's growing population to achieve a high standard of living and a sustainable one at the same time" (Aggarwala, para. 3).

Today, the great draw towards *how* we live on real estate seems just as progressive and revolutionary as *where* we live on real estate. As we continue to populate, densify, and develop new areas around the globe, greater attention has been placed on *how* to live with greater symbiosis on the Earth as our care for the planet will directly impact our growth, efficiency, and ultimate flourishing.

With some groundwork laid for our research, we are now in a better position to assess how real estate can align with a Platonic approach in bringing a better sense of *goodness* and *unification* to the world. In this section, we have outlined three essential values that the field of real estate has contributed to our modern world including economic independence, human dignity, and progress. Moving forward, our goal will be to identify an area in real estate where these principles are inadequately *unified* with the systems of the world and, proceedingly, seek to propose a robust, innovative solution to mend this gap through the means and expertise of real estate.

Defining the Problem: Existence From Necessity

"Home is where one starts from."

~T.S. Eliot

As we have set some parameters for our inquiry, we are now in a place to determine what *problems* in the world are best suited to be solved by the real estate industry. In other words, what would be the ideal focus of real estate today? As we previously examined, Plato believed that first principles reasoning could be used to identify the highest, best function for anything in the universe. From Plato's understanding, the highest form of existence is that which brings all people, objects, and systems into the greatest expression of goodness and unity. As goodness and unity are general terms that can be understood differently across times, cultures, and contexts, our task in this section will be to properly define goodness and unity in relation to modern real estate.

If you are anyone who watches news, follows politics, or runs a business, you may be familiar with the importance of properly defining a problem. Misidentifying a problem can lead to huge ramifications in product design, business strategy, and ultimately, outcome. Often the most minute nuances can lead to vastly different implementations of policy, resources, and structure. Consequently, it becomes imperative that people know the intended role of the thing -- as common agreement concerning an object's role allows for all parties to accurately identify the problem hindering that role from taking effect.

Consider, for example, the U.S. government. Historically, our government has functioned as a two-party system where both parties hold vastly different beliefs regarding the *role* of government. When our country faces a lagging economy, the Republican Party traditionally holds that the role of government should be to *step away* and allow business/consumer spending to rectify the lag. The Democratic Party, on the other hand, argues that the government should *step in* to introduce stimulus, subsidies, and bailouts to remedy the problem. Whereas the Republican Party will identify government as *the problem*, the Democratic Party will see government as *the solution*. As a result, both parties will often introduce remedies that differ by billions of dollars, millions of man hours, and vastly different allocations of power all because of the difference in understanding the core *problem*.

The same holds true in real estate. Any group of people can look at the industry and suggest pressing problems in a whole array of areas. In order to properly identify real estate's *most pertinent* problem, we must come to an agreement of real estate's essential role in the world. What is the industry's essential purpose? We have already examined the three primary values real estate has introduced into the Western world. While these values are helpful guide posts to demonstrate *how* real estate should be conducted, we still have not answered the question of *why* real estate exists.

The good news for us is that the answer to this question is relatively straight forward rooted in the truth that real estate is *not* an industry existing out of contingency but out of necessity. Whereas the institution of government emerged from a long history of humans learning how to organize themselves for the sake of *better* living, real estate (the act of possessing land and the improvements to that land) emerged from the humans' *need* to live.

Thus, where the fundamental role of government can be debated and disagreed upon because of its contingency on human will, the fundamental role of real estate cannot be argued because without it, humanity could not exist. *In essence, real estate serves to supply one of humans most basic needs: a home*. In his poem, Four Quartets, T.S. Eliot states, "Home is where one starts from." In this spirit, we will also begin our inquiry into real estate's most pertinent problem by examining the status of homes throughout the world.

Tent Home for Global Homeless, Source: Jean

Conducting a macro survey of homes in the world, we see that there is still a major lapse where real estate is not serving its fundamental role for humans. In a report conducted the United Nation Economic and Social Council, estimates indicate that approximately 100 million people worldwide are without a place to live (Kothari, p. 6). In that same report, estimates indicate that over 1 billion people worldwide are inadequately housed (Kothari, p. 6). Due to the wide array of languages, cultures, socio-economic conditions, cultural norms, and groups affected, the U.N. identified the need to establish a multi-dimensional definition of homelessness that includes more than just those that live without a roof over their heads (Kothari, p. 6). In most countries, many who are considered homeless include those with an array of social, economic, psychological, and physical needs that may not fit into a cut-n-dry definition of "those without a place to live." As such, the U.N. sought to establish a three-pronged definition of homelessness that rejects causes of homeless as personal ineptness and instead embraces a human rights approach (Farha, p. 1). This definition of homelessness includes the following:

1) Absence of home in terms of both its physical structure and its social aspects;

2) Form of systemic discrimination and social exclusion, whereby "the homeless" become a social group subject to stigmatization;

3) The struggle for survival and dignity and potential agents of change as rights holders. (Farha, p. 1)

With a more robust definition of homelessness, the U.N. concluded that the most accurate figure to attribute to global homelessness is approximately 1 billion (Kothari p. 6).

At this point in our speculative journey, it seems appropriate to pause and remember why we set out to consider real estate through the lens of Plato's first principles. As I sit here in a New York coffee shop, I look around and I am taken in by the sheer magnificence of the common cultural perception of the real estate industry: sparkling office buildings, global corporate brands, rattling jackhammers, towering cranes. These images are often evoked in people's minds when someone mentions "real estate." In many ways, New York represents the pinnacle of real estate in the world. Donald Trump, Chinese companies, and sovereign wealth funds battle over ownership for the world's premier assets. Facebook, Amazon, and Uber fight over the world's premier lease arrangements. In many ways, however, the ocean of world's potential in real estate can become reduced to the template set by 23 square miles of steel and concrete.

In this vein, Plato's first principles allows us to break free of such a narrow vision of real estate and replace it with questions of how to unlock cultural, economic, and human potential around the world. As we have seen thus far, nearly 20% of the world's population is still considered homeless without access to one of humans' most basic needs. *As Plato would assert, that is nearly 20% of the world's population that is not adequately unified with systems for the world.* In addition, we have recognized that three of real estate's ungirding principles lie in its power to promote economic independence, human dignity, and technological/cultural progress. With one billion people living without such a basic need as a home, this figure represents 1 billion people living with enormous yet unrealized economic potential waiting to be unleashed through real estate.

Now that we understand the scope of the problem we are facing, the next question becomes, "how do we unlock this cultural, economic, and human potential for those around *us*?" Up till this point, we have taken a largely philosophical, historical, and academic approach to understanding real estate and the most essential contributions it makes in our world today. We have deduced that out of all its functions, providing a home seems to be the most critical functions it serves to unlock the very best humanity has to offer. Turning our focus to more practical matters, our next focus will be to seek solutions in how to better provide housing to the homeless around us. For myself, that context is New York. The next questions we will be asking is "how urgent is the problem of affordable housing in New York?" and "what are the most compelling ways it can be improved?"

New York City: Homeless Population Interviews

Suppose there are brothers or sisters who need clothes and don't have enough to eat. What good is there in your saying to them, "God bless you! Keep warm and eat well!" – if you don't give them the necessities of life? James 2:15-16

To understand the scope of homelessness in a city as large, diverse, and complex as New York, I first decided to ask the primary stakeholders, the homeless, about their experiences with housing. Conducting numerous interviews throughout New York, I was interested to learn what kind of people they were. How did they become homeless? Are they capable of supporting themselves? What kind of pathways are available for them to escape homelessness? I figured that if anyone knew the most practical ways to improve access to housing, it would be the people who are closest to the systematic brokenness that brought them to their homelessness.

Over the course of my research, I was able to interview 8 homeless individuals and have included six of the most insightful interviews in this paper. For their safety, I have shielded their names but we will call them Molly, Chris, Paula, Dillon, Eddie, and Jose.

Homeless Woman, Source: Simon

Molly

First, I met Molly. Molly was about 30 years old, Caucasian, and bundled up behind her sign in Times Square. Striking up a conversation with Molly, I asked her if she'd be willing to describe a bit of her background for me. She began telling me her story:

> "Originally, I'm from South Carolina. I met my husband in college and after we got married, I became a writer and worked for a number of different magazines. About 9 years ago, we became pregnant while I was working for a magazine here in New York called Sorority Life. When our daughter was 13 months old, she

was diagnosed with B-Cell Acute Lymphoblastic Leukemia, which ended up requiring everything from us to cover her medical bills. Right before she turned 3, she passed away and in my husband's grief, he turned to drinking and drugs and he started hitting me. I left him shortly after and started staying with different friends, however, eventually my money ran out so that's how I ended up where I am. Now, I'm been on the streets for the last 15 months."

Next, I asked Molly if she had any experience with the homeless shelters of New York. She replied,

"I have and they're awful. I try not to use shelter facilities when I can help it. They're dirty, violent, and the workers are mean. During the first night I stayed in a shelter, I stepped on a crag pipe bottle and had to get 14 stitches in my foot. I remember there were roaches and mice. It's absolutely disgusting. They pack about 40 women into a room and they don't separate those who are mentally impaired so I barely got any sleep. There was one woman who kept crawling in bed with me. Also, I don't think there's hardly any requirements for those who become DHS guards. They were young, unexperienced, and cruel. Overall, it's just uncomfortable and depressing."

Lastly, I asked Molly about her employment status and what kind of housing she'd ideally be looking for. She replied,

"I'm currently unemployed but I'm looking for a means to work. Ideally, I'd like to live in a safe haven where they have supportive housing. In these shelters, you get your own room and it's way better than a shelter. I'm on the waitlist at Breaking Ground but they said it could be as soon as tomorrow or two years from now. If I were to gain employment, I'd probably look for something $700-$800 that was anywhere from 30-45 minutes away from the city. That would probably be the farthest I'd be willing to go."

Coming away from my interview with Molly, I was immediately struck with how normal, measured, and reasonable she was. This was not someone who was incapable of relating to others, providing for herself, or finding a job. She had merely found herself in a tough life spot and did not have the means to pay for housing.

Chris and Paula

Other interesting perspectives came from two relatively capable homeless individuals named Chris and Paula, two friends who I interviewed sitting together in Times Square. As I talked to the two of them, it became clear that they also were capable of work, however, they too had had extremely poor experiences with the New York housing system. Even though they

could not have been older than 30, they both stated that they *preferred* to live on the streets. Chris began by telling me their story:

> "I grew up in Florida. I lived there for 21 years until I lost my job in the Everglades so I went on a journey up the east coast. First, I went to Maine where I lived with my dad. There I met a girl, lived together for a year, but eventually hitchhiked down to New York and I've been here since. Paula and I met three months ago. She's been on and off the streets since she was 13 when she had a pretty traumatic life event. Now we live on the streets and we love it out here."

When asked about their experience with housing, Paula chimed in,

> "Every time I've gotten a place of my own, there's been trouble. It brings problems, heartaches, bills, and drama – then I lose it again. Now I figure I'm just better off on the street. I can help more people on the street. The rents are just too high in New York – why can't they make them lower? The minimum wage of $15 is nice and would certainly be a living wage for most places around the country but here, it barely allows you to scrape by."

When asked about their desire for a job, Paula continued,

> "I am looking for a job. Chris is going back to Florida soon so he's not. In terms of a commute, I'd probably be willing to live up to an hour away if I could get rent that was around $700-$800. I think that would be pretty reasonable for me. Right now, I have a place with Breaking Ground, one of the supportive housing organizations of New York. It's great but I'm not there much. I just have to make sure I go back once every three days or else I'll lose it before the snow comes."

New York Homeless Shelter, Source: Homeless Shelter Directory

From my interview with Chris and Paula, I saw two more people who had merely given up on New York's short-term housing solutions. For the most part, they had settled into their identity as homeless and found ways to comfortably live on the street because of their frustration with New York's public services. Still, it was interesting to hear from these various people who were capable of generating income for themselves but just could not manage to maintain long term housing arrangements.

Dillon

Next, I interviewed Dillon. Dillon and I were talking right in the midst of the Times Square bustle and were in front of his humble sign in the sub-freezing temperatures. As Dillon began, I observed him continuing to step back and forth to keep himself warm:

>"Overall, I'm in a sticky situation. I'm 22 years old and from Missouri originally. A few months ago, my mom passed away from a heroin overdose and I found myself alone. At the time, I was working at Jack-In-The-Box and had just gotten a place of my own. When she passed, I was heartbroken but I thought I'd at least get the house, the car, and whatever was in the house as a means to survive. As it turned out, she still had a lot of debt so they repossessed everything. I didn't receive a dime. Since my dad had died when I was 13, I didn't have anyone in Missouri anymore. I felt like I was under a blanket and never could have known everything that was coming to me. I made up my mind, "I'm going to NYC." Long story short, I came here, got beaten up and robbed 4 months ago. Now I'm without an ID and without a way to get a job so I'm homeless."

After this, I asked Dillon if he had been in a homeless shelter here in NYC. He answered,

>"I have. I've been at one they call The Castle but let me tell you – they're dangerous. They are not what they make them out to be. Yes, they give people a warm place to stay but they're housing a bunch of criminals in the same spot: drug dealers, crips, etc. How

can you reassure someone they're safe when they have bloods
and crips sleeping right next to them. I'm way safer out here
sleeping on the street because when you're housed with 30-40
people in a room, there's not many places you can run... People
get stabbed in shelters all the time. I've been stabbed. I was
stabbed in the chest with a fork. I would rather worry about the
cold ad freeze to death than worry about somebody stabbing me
in my back while I'm sleeping."

Next, I asked Dillon what he would go about making the shelters better. He replied,

"I would tell them to do it by background. You need to categorize
people: people that aren't gang-bangers; people that aren't
violent offenders; people that don't sell drugs. They're putting
good people that have been in a bad situation (and it's not their
fault) in a worse situation that could lead them to following the
leader that sells drugs. Do you know how gang-bangers become
gang-bangers? They go to homeless shelters and feel like they
don't have a choice. They find family within bloods and crips.
They are told I've got your back. I'll be there when you need me.'
Then they feel like they have family because when you feel like
you don't have a family anymore, it's almost like there's a hole
here and it feels like you have to fill it."

Leaving my conversation with Dillon, I felt a mixture of feelings including horror,
sympathy, and heartbreak. Here was young guy about my age who was competent, intelligent,
and well-spoken, yet, who had been dealt a hand of circumstances that forced him to struggle
with some of the hardest circumstances in our country. I was intrigued with his perception and
experience with the New York shelter system. Out of the four months he had been in New
York, he had only spent one of those nights in a shelter and yet, in that one night, he had seen
criminals, a lack of oversight, and had ultimately been stabbed. Consequently, someone like
Dillon who should not be homeless now feels it necessary to avoid places of public support
because of the danger they pose to him. I was impressed by his insightful propositions of
separating homeless candidates based on their cognitive abilities, records, etc. considering he
had only spent one night in a shelter. Leaving Dillon, I gave him a pair of cheap gloves I had in
my pockets and the number of a ministry who I thought could offer more support than the
shelters. Overall, the experience was a harrowing encounter.

Eddie

Next, I talked to Eddie. Eddie appeared to be about 35 and of Latino decent. Eddie was
a friend of Dillon and was also sitting right in the bustle of Times Square. First, I asked Eddie
how he became homeless. Eddie replied,

"I became homeless when I lost my job. I couldn't find a job that
would equal enough money for me to pay my rent and I couldn't

find it fast enough to keep my apartment. That's what happened. That was 8 months ago. I was living in Queens. I grew up in Queens. The rent is high out there because a lot of people want to live out there. I was paying $1500 for a studio. I was trying to look for something that was around $800-900 to help me pay my rent. It didn't happen. I didn't want to go work in McDonalds. I was not going to make the same amount of money. Here, in NYC, you gotta make more than $25 an hour. $15 / hour isn't going to pay for yourself. You gonna struggle. You probably not going to eat. You're definitely not going to have your own apartment. I've seen that happen. People get paid $15 / hour – they barely eating. Eight months ago was the first time I've ever been homeless.

Next, I asked Eddie if he had been to the local shelters. Eddie answered,

"Personally, I don't like the shelters cause you gotta come back in. I'm not that kind of guy who likes schedules. If I'm really tired, I'll come in at 10pm and sleep. Plus, you're in these shelters with a bunch of people who shouldn't be there – people who are mentally ill, older people – you're sleeping all together rather than you sleeping by yourself in a separate room. Overall, I'd like to look for my own place. I'd much rather have my own place than just have a room."

Coming away from my conversation with Eddie, there were a couple of points that seemed significant in adding to the advancement of our research. First, Eddie demonstrated how hard it can be for someone to find a decent job within the reasonable distance from the city. Given the fact that Eddie was freshly homeless, it was clear that Eddie had the capacity to work but was also caught in between the tense forces of low wages, long commutes, and low supply of affordable housing. For Eddie, he knew he had the capacity to work a minimum wage job, but a minimum wage job was simply not be enough to support him in Queens. Even though the majority of Queens is a good 40-50 minute commute from New York's central business district, rents are still far too high for individuals like Eddie to survive in a low-income environment. Second, similarly to Dillon, Eddie felt an aversion to having anything to do with New York's homeless shelter system because of the lack of separation and privacy that Eddie would be forced to tolerate. With 30-40 people sleeping in the same room, Eddie felt hesitate to compromise his privacy for sleeping next to people who may possess a variety of volatile conditions.

Jose

My last interview came from a gentleman named Jose who further confirmed what I had been hearing. I ran into Jose fairly close to Washington Square Park. Jose is 68 years old and has been living on the streets for the last 13 years. When I asked him if he's ever lived in a shelter, he replied,

> "Oh, I would never go into one of those places because 1) I don't socialize or have anything to do with that kind of attitude and 2) I do not come from that kind of social level. I'm of European descent – I come from Santo Domingo. For me, where I choose to live depends on the type of people that are there. When you are surrounded by people who are morally poor in values, who want to live there? I would refuse to live in a ghetto. The people who live in these places have very little value for the life of others, their morale is very poor, and I'm not a guy from the street. I live on the street but I am not from the street. When they encourage me to go to a shelter or a place where you feel like you are in captivity, I refuse because whatever system that they want you to comply with is immoral. If it's immoral, I have a choice to say, "no thank you."

Naturally, I wanted to learn more so I asked Jose, "What would you say is immoral?" He answered,

> "They are giving you nothing. They overall exploit you."

Next, I asked Jose how the city could format homeless shelters in a way that would be helpful for him. He answered,

> "I would like to live like a normal person. A place that you have to be supervised. The worst part is that they have to have a key to your door. They can go and open your door whether you are there or not – it's all very intimidating. You are now more or less vulnerable to the other people and you do not know what they are capable of."

In Jose's case, I observed a man who was also very astute, capable, and self-aware. As I talked with Jose, I observed that if it were not for his tattered coat, gruff beard, and bag of empty bottles on his back, I never could have distinguished that he was homeless. In my conversation with Jose, he had told me that he had not lived his whole life as a homeless man and had previously had a flourishing career as a designer and then sheet-rocker. Given his beautiful smile, high energy, and thoughtful demeanor, I would have never assumed that he could have been living without real shelter for as long as 13 years.

Coming away from my interviews with the homeless, one thing was clear; New York City's homeless shelter program is broken. In total, I interviewed 8 individuals. Out of these eight individuals, two were mentally handicapped in a way that made their input hard to include. The other six clearly stated that they wanted nothing to do with the public shelter system.

Elderly Homeless Man, Source: VanTol

Doing more research into the NYC Department of Homeless Services (DHS) homeless shelters, I found that the grievances that had been expressed are felt across the city. According to the City of New York, about 60,000 homeless visit the shelters every day (DHS, p.1, 2019). According to the Coalition for the Homeless, this figure represents a 75% increase in NYC homeless over 10 years (Abraham, para. 6, 2019). With baby boomers aging and many without adequate savings for retirement, the homeless shelters have seen a 100% increase in those aged 65 and older in homeless shelters since 2014, with figures of around 1,450 individuals served daily (Abraham, para. 7, 2019). By 2030, that figure of the 65+ demographic is expected to increase 5x to 7,000 (Abraham, para. 8, 2019). With such a dramatic influx of people needing to be served, it becomes easier to understand why my interviewees came away with such negative impressions of the DHS's shelters. Abraham (2019) states in his article, "The city's shelter system has been ill-equipped to handle a web of illnesses and disabilities that come with age, and the impact is felt by homeless elders, some of whom have been weathered by years of homelessness" (para. 8)

With these figures in mind, I came across a number of specific problems that were highlighted regarding the shelters. These problems include:

1) Outdated Medical Policy: Certain elderly residents with breathing diseases such as COPD have been barred from entering the DHS shelters with their oxygen tank, sometimes forcing them to remain in cold environments of single digit temperatures (Abraham, para. 5, 2019).
2) Poor Management: Residents report broken elevators, broken air conditions, and poor overall conditions. Repairs often take weeks or months (Abraham, para. 15, 2019).
3) Slow Intake Processes: Individuals are often forced to wait from 6 to 12 hours in plastic chairs as they complete the intake process. Many of the elderly individuals can simply not sit for that long (Abraham, para. 45, 2019).
4) Haphazard Expansion: In a 2017 statement, a DHS spokesperson stated that the shelter system has been built in a "haphazard way over decades" that has resulted in poorly upkept buildings that have not had necessary repairs of accessibility updates for decades. (Abraham, para. 22, 2019).

Ultimately, I resolve that even with some major changes in policy, the problems with the public shelters would continue to keep people away like those I interviewed. Considering that

the majority of individuals I spoke to relatively young and capable of working, they were not willing to tolerate the safety risk, poor management, or lack of privacy that comes along with public shelters. Next, I wondered what kind of options were available for people who might have a second chance of getting back on their feet. Continuing in my research journey, I resolved to inquire into what kind of private nonprofit and for-profit models existed to provide affordable housing in New York.

Non-Profit Approach: Organization Interviews

"If you love those who love you, what credit is that to you? Even sinners love those who love them." Luke 6:32

My next interviews were with those of the private non-profit sector in affordable housing. I wanted to learn what models are available, how they functioned, and what was essential for their success. During my research, I was able to interview employees from two organizations that represented distinct models. The first model was a private women's shelter called The Dwelling Place NYC that is run through the Catholic Church. The second is a nonprofit developer called Breaking Ground, which two of my interviewees had mentioned and develops permanent, supportive, and transitional housing units in New York.

First, I interviewed Sister Joann from The Dwelling Place NYC. According to Sister Joann, The Dwelling Place NYC is a private women's homeless shelter that has been helping women transition from "homelessness" to "home" over the past four decades. As a private homeless shelter operated by the Franciscan Sisters of Allegany, Sister Joann stated that there were three crucial elements for the success of their shelter:

The Dwelling Place Living Room, Source: The Dwelling Place of NY

1) Funding: According to Sister Joann, as a private institution, funding represents the biggest impediment towards their impact. Since they are unable to benefit from government dollars, all funding has to come from private donations or fundraising, which can be slow and difficult to acquire. Based on their current model, The Dwelling Place NYC is able to offer about 10 women the housing and support they need to get back on their feet. In the future, they hope to grow that number with more funding.

2) Safety: Sister Joann said that safety is one of the most critical things to be able to offer these women coming off the street. When these women can be offered a safe environment where they're ensured that they and their belongings are safe, their chances of escaping homelessness exponentially increase. Consequently, The Dwelling

Place NYC ensures to have someone on duty 24/7 and has a strict no tolerance policy for drugs, alcohol, or inappropriate behavior. If a resident continues to act up after 1-2 warnings, the shelter will usually let them go.

3) Structure: Sister Joann mentioned that in maintaining a highly structured environment, the shelter is able to help them refocus their life. With breakfast, dinner, programming, and lights out all on a strict schedule, Sister Joann mentioned that the residents are given a reason to get up, come home, and work hard to rebuild their life again.

Although my interview with Sister Joann was pleasant and I was impressed by the level of care and structure they administered in the shelter, I came away from the interview skeptical that this model could be scalable for homelessness around New York. With only 10 residents in their program and heavily reliant on private donations, it did not seem their model would offer solutions for the 60,000+ that are homeless around the city.

Next, I interviewed Steve Miller (name changed) from Breaking Ground. From my interviews with Molly and Paula, I already had heard good things and had the impression they would be one of the more innovative nonprofits in New York City.

In the beginning of my interview with Miller, he began telling me about mission and impact of Breaking Ground.

"Breaking Ground is a nonprofit housing developer that has been able to see amazing results in its residents because of its humane, cost-effective means of addressing homelessness. Since

its launch in 1997, Breaking Ground has been able to build 307 transitional housing units, 3625 permanent housing units, and has nearly 1000 more housing units in the pipeline over the next several years."

He went on,

"We are able to save the public money because the annual cost to provide a single adult with supportive housing costs $24,000, whereas the average cost to provide homeless adults with emergency, inpatient, or other crisis services can be nearly double that. The value we add is that we're able to provide safe, permanent homes without conditions like most other programs while also providing the types of services they need to get back on their feet" (Miller, 2019).

Despite their relative success, Miller also admitted to some major limitations that the organization faces in the years to come. I asked Miller about some of the most pressing problems they face and Miller replied with three of the primary issues Breaking Ground will be facing in coming years:

1) Price of land: According to Miller, the rising price of land will be a major hurdle for them to overcome. In 2012, Miller stated that Breaking Ground bought a plot of undesirable land with environmental remediation issues and no access to public transit for $7.2 million. 7 years later, that same plot is valued at $20 million. "With these types of land price escalations, it makes it very hard to find land to develop. We're having to look farther and farther out" stated Miller.

2) Cost of construction: According to Miller, the escalating cost of construction will represent a major hurdle on top of the increasing cost of land. Not only is New York the most expensive city in the world to build in; in addition, construction costs have steadily risen 4-5% / year for the last 7 years (Zarenski, para. 6, 2019). Miller remorsed, "escalating construction costs really represent a burden for developers. For the most part, we are required to build for durability to retain resale value. Overall, it doesn't end up costing to much less to build affordable housing compared to ultra-luxury housing."

3) Regulatory Hurdles: On top of rising costs, Miller stated that changing regulatory requirements and a shortage of RFP's from the NYCHA represents an ongoing hardship.

Coming away from my interview with Miller, I was encouraged that the private nonprofit sector had found a way to create sustainable means to develop *attractive* affordable housing for the homeless. Considering that Breaking Ground had been mentioned by two of my eight interviewees, it was obvious that they were capable of appealing to the masses and actually had the resources to help them get back on their feet. Also, with nearly 5,000 units

currently built or in the pipeline, Breaking Ground was already putting a dent in the problem relative to NYC's 60,000+ homeless population.

The other element that surprised me about Breaking Ground was their business model. Even though they are a non-profit, Breaking Ground primarily depends on revenue generated from their units to sustain their organization rather than raising donations. With many of Miller's stated limitations sounding like what one would expect to hear from a for-profit developer, I was intrigued to contrast Breaking Grounds model with the for-profit affordable housing developers in New York.

For-Profit Approach: Developer Interviews

"Abandon the urge to simplify everything, to look for formulas and easy answers, and to begin to think multidimensionally, to glory in the mystery and paradoxes of life, not to be dismayed by the multitude of causes and consequences that are inherent in each experience -- to appreciate the fact that life is complex."
~ M. Scott Peck

Contacting for-profit affordable housing developers in New York, I was able to conduct interviews with two of the more renown for-profit affordable housing developers in New York. In my first interview, Jeffrey Peters (named changed) provided his perspective as a Managing Director of one of New York's larger affordable housing developers, L+M Development Partners. In the second interview, Ben Kline (named change) provided his insight as a Project Manager at Camber, one of New York's fastest growing affordable housing developers. Collectively, both interviewees provide over 14 years of experience in the affordable housing sector and a rounded perspective on the issues coming from both a financing and construction prospective.

Laying groundwork at the beginning of our interview, Peters first explained some fundamental principles that drive the need for affordable housing in cities. Peters introduced the issue by stating,

> "Before talking about the problems with affordable housing development, you need to understand the number one driver of real estate: Location, location, location. What's significant about location? Location determines commute time, which is a vital component of understanding affordable housing. In any city, the closer you live to work, the more time you save. Therefore, the closer one is to the urban core, the higher the property values. Affordable housing tends to get pushed outward until it is no longer practical for lower income demographics to commute into the city. But what happens when those urban core residents need workers to take out the trash, clean windows, or

park a car? These are lower paid jobs that are vitally needed in the city. This is where affordable housing becomes vital. When the forces of capitalism and the marketplace become bumpy, the government needs to step in to provide affordable housing to keep economic balance in place."

Here we see an interesting perspective from the beginning; from Peters' perspective, he acknowledges that the city plays a vital role when addressing the issues of affordable housing.

In my interview with Kline, Kline affirmed the same idea when he stated,

"affordable housing cannot be separated from the question of determining the proper role of the city. Delineating the nature of the city from the nature of the real estate industry is vital because while the city exists to ensure that the forces of supply and demand are in balance, the real estate industry exists to maximize shareholder value. If developing affordable housing does not offer investors a means to generate attractive returns, investors will not be drawn to the market even with the city's intervention."

Contrary to what we might expect coming from developers who are supposed to represent the capitalist, anti-government approach to housing, we see an affirmation from both Kline and Peters in just how important the government's involvement is in their work. According to them, the city plays a vital role in tackling New York's crisis.

City Factors

According to Peters, he believes that a city basically has two levers to pull when facing a lack of affordable housing. When these levers are not being appropriately drawn, a city will face an affordable housing crisis. These levers are 1) public transportation and 2) densification. Let us take a deeper look at both:

Public Transportation: According to Peters, when cities continue to attract capital and property values increase, lower income demographics will naturally feel the push away from the urban core. In the beginning, this typically does not represent a major issue until transit times begin to become unrealistic. As development continues to expand and densify, highways become more congested and what was once a 30-minute commute becomes a 50-minute commute. As cities like New York face this phenomenon, they increasingly turn towards public transportation like trains, subways, and light rails as a means to ease the congestion, however,

cities are not always able to keep up. Peters points to this phenomenon as one of the underlying factors in how affordable housing becomes an issue,

> "Once commuter times exceed one hour you really start
> to see behavior change. Cities often don't address public
> transportation until it become too late. Everything seems to be
> going well in transportation until commutes exceed one hour.
> One hour seems to be the breaking point. Once commutes
> exceed this mark, workers will typically start looking for
> opportunities elsewhere."

According to US Census (2017) data, more than 21% of New Yorkers already face a commute longer than one hour. Compare this to the 1.4% national average of commuters that face more than 1-hour commutes in medium to large cities and it's easy to see why New York carries such a need for affordable housing (US Census, 2017). When public transportation has not been built for 1/5 New Yorkers to access the city, the likelihood for developers to expand developments to the outer reaches of these suburbs becomes even less likely.

Densification: The second problem developers face is that there is simply not enough land zoned for densified affordable housing. According to Kline, the supply of land for developers represents a major constraint in meeting the need for affordable housing. Kline explains,

> "For affordable house developers, the majority of plots
> are made available directly through the NYCHPD and the
> NYCHA. Only about 10 of these plots come onto the market
> every year and when they do, there is a flurry of competition for
> those bids."

Even for the plots available, affordable developers are also constrained by what they can build on each of these plots. Kline states,

> "There is a lot of wasted space in these buildings.
> Between the city's requirements for affordable units and the
> limitations on building height, footprint, and setbacks,
> developers tend to feel very constrained in what they can build
> on a given site."

Consequently, plots that could have easily provided 500 units end up only providing 200 units even though the demand is extravagant. "We recently just built a development with 200 units" states Kline, "for those 200 units, we received over 6,000 applications. The demand is overwhelming."

Model Flaws:

With an awareness of some of fundamental issues that are causing a shortage of affordable housing, let us next turn to how the for-profit affordable housing development model is affected. Between my interviews with Peters and Kline, two major issues seemed to arise concerning the for-profit model of affordable housing development.

Fee Based vs. IRR Driven Model: As the affordable home sector is so intimately tied to decisions of the city, Peters claims that one major problem is that developers have to function within a fee-based model built around the city's financing packages. He states,

> "What market developers often don't realize about affordable housing is that there is no IRR. Most affordable housing projects are funded through government resources so returns are often capped from the beginning. Instead of projecting what kind of returns we can make, we are merely charging a fee to the government for our development services. This fee then covers our overhead and profit."

In any traditional real estate deal, investors will typically use IRR as a thoroughly robust, complicated calculation to project returns that accounts for the 1) size of initial investment, 2) net cashflow from the investment, and 3) time the investment is held (Hayes, 2019, para. 3). Through this calculation, investors can see how modifying each input affects returns, which incentivizes them to maximize efficiency while undergoing a project.

Next, I asked Peters how this fee-based system would affect incentives for innovation within the sector. Peters replied,

> "it greatly inhibits incentive for innovation. For instance, say a developer came up with a way to develop affordable housing for 40% less cost than traditional building methods. Instead of that developer going to investors and making them 40% more return on their investment (as would be expected in an IRR-based system), the developer instead must go to the government and request 40% less funding to cover their project. As a result, this developer will make nearly the same returns on this project even though they are introducing a breakthrough innovation into the market. Their innovation will likely bring them more consistent business as they are saving the government money, however, there is minimal return to the developer in proportion to the value they are creating."

Through Peters' claims, I started to see why it is so hard to build affordable units.

Complicated Regulations: According to Kline, the next hurdle in developing affordable housing is that the process is immensely complicated. Kline stated,

> "The whole process tends to keep traditional investors away. Often, the only time traditional investors are drawn to the sector is when a recession is looming because affordable housing tends to be very stable. During these times, affordable housing developers tend to be hired as consultants to help them navigate all the rules. Otherwise, the sector is by no means formulaic. When new administrations come to office, they tend to change the rules, which makes it very important for affordable housing developers to always be attentive to the rules. The whole process is more of an art than a science. This tends to keep traditional investors away."

Coming away from my interviews with Peters and Kline, I was struck with how complex the affordable housing development process seemed. With all the complexities, I have to admit that I was struggling to follow how they managed to ever put a deal together. In addition, I also felt like I was just starting to scratch the surface for how for-profit developer financing compared to non-profit developer financing. Yet, when I looked at the broader picture, I certainly started recognizing some common themes between my interviews with Miller, Peters, and Kline. Ultimately, I found solace in the words of M. Scott Peck when he stated,

> "Abandon the urge to simplify everything, to look for formulas and easy answers, and to begin to think multidimensionally, to glory in the mystery and paradoxes of life, not to be dismayed by the multitude of causes and consequences that are inherent in each experience -- to appreciate the fact that life is complex"
> (para. 1).

Accepting the fact that understanding the whole system of affordable housing development would be a complex and labor-intensive process, I settled by noting two prominent observations. First, I noted that I felt far more confident that Miller, Peters, and Kline would be able to build better affordable housing than the city. Even though Miller, Kline, and Peters all expressed concerns over costs of development, financing, land availability, and regulation, the level of quality and expertise they demonstrated in approaching their craft seemed to far exceed the "haphazard" standard the city had employed thus far. Second, I recognized that both private non-profit and for-profit *developers* faced the same limitations. Both parties had expressed concern over costs, financing, land availability, and regulation, which gave me hope that certain, well-crafted policies could unleash even higher potential for some of New York's highest performing affordable housing developers. Next, we will consider what kind of policies could serve to assist these private developers to more effectively build housing.

Policy Propositions for NYC Affordable Housing

"Economics pretends to be a science. Its practitioners fill blackboards with equations and clog computers with data. But it is really a faith, or more accurately a set of overlapping and squabbling faiths, each with its own doctrines."
~ Alex Berenson

In formulating policy to address the problems of affordable housing in New York, any solution must consider all the issues brought up by Miller, Kline, and Peters. Considering New York against the backdrop of most other American cities, the city faces one characteristic that uniquely amplifies the issues of affordable housing: land scarcity. Unlike other cities that tend to sprawl, the central business district of New York, Manhattan, faces geographic restrictions that significantly limit its developments to just 23 square miles. As Peters reminded us, the most fundamental element playing into the valuation of real estate is "location, location, location." For New York affordable housing developers, these geographic limits may sometimes seem to exclude their work altogether.

Considering the cumulative importance of all issues we have covered thus far, I propose a 4-part policy approach to solving the affordable housing crisis in New York. These parts include 1) transitioning New York's fee-based system to an IRR based system, 2) deploying a streamlined e-government platform, 3) deploying innovative building methods for affordable home construction, and 4) building a high-capacity high speed rail between New York and Albany. In the following section, we will take a deeper look at each of these four elements.

Fee-Based to IRR-Based System:
As Peters outlined, one of the fundamental gaps between investors and investments in affordable home development is the fee-based system propagated by the government. Instead of presenting investments returns that are driven by the size, cash flow, and duration of the investment, investors are capped at a predetermined fee that is designated by the government's whims. In turn, many investors can tend to avoid affordable housing investing altogether. As Kline affirmed in his interview "affordable housing isn't an industry you go into if you're just looking for profit. Most people in the industry have to have a sense of responsibility towards what they're developing."

By returning New York's affordable home model to an IRR-based model, two things will be achieved, 1) investors will feel incentivized to engage with affordable housing through the familiarity they have with the IRR model and 2) affordable housing developers will be incentivized to consider innovating within their sphere to maximize investor returns (IRR). Currently, many investors are repelled by affordable housings fee-based system simply because of unfamiliar models and unattractive returns. By reforming the affordable housing model to emulate the traditional IRR model, New York will have a greater chance of harnessing

the extensive power of the private sector to combat the lack of affordable housing in the city.

Considering an IRR-driven model, many experts may criticize the departure from fees saying that without a government-driven model, investment in affordable housing will cease altogether. In some ways they would be correct if this were the only policy change that we were proposing. By coupling an IRR model alongside some other vital policy elements that encourage innovation, I believe that it will be possible to lower the cost of affordable housing development to a point where returns will be on par or even more attractive than traditional housing developments.

Streamlined E-Government Platform
Another major woe for investors considering affordable housing development is the sheer complexity of regulation. To curb this effect, I would propose that New York City develops a streamlined digital platform to allow New Yorkers to easily access anything they need related to the government.

Examples of e-government systems can be seen across the world. One of the most well-known e-governments is Estonia's e-government. Since its launch in 2003, it is estimated that Estonia's e-government has saved the 1.2 million people in the country up to 12 thousand years of work every year and that number continues to grow exponentially (Jaffe, 2016, para. 17). Integrating 99% of the government's services onto Estonia e-platform called X-Road, citizens can pay their taxes, access banking, register property, access data, access documents, vote, and do most other government functions online (Government of Estonia, para. 2).
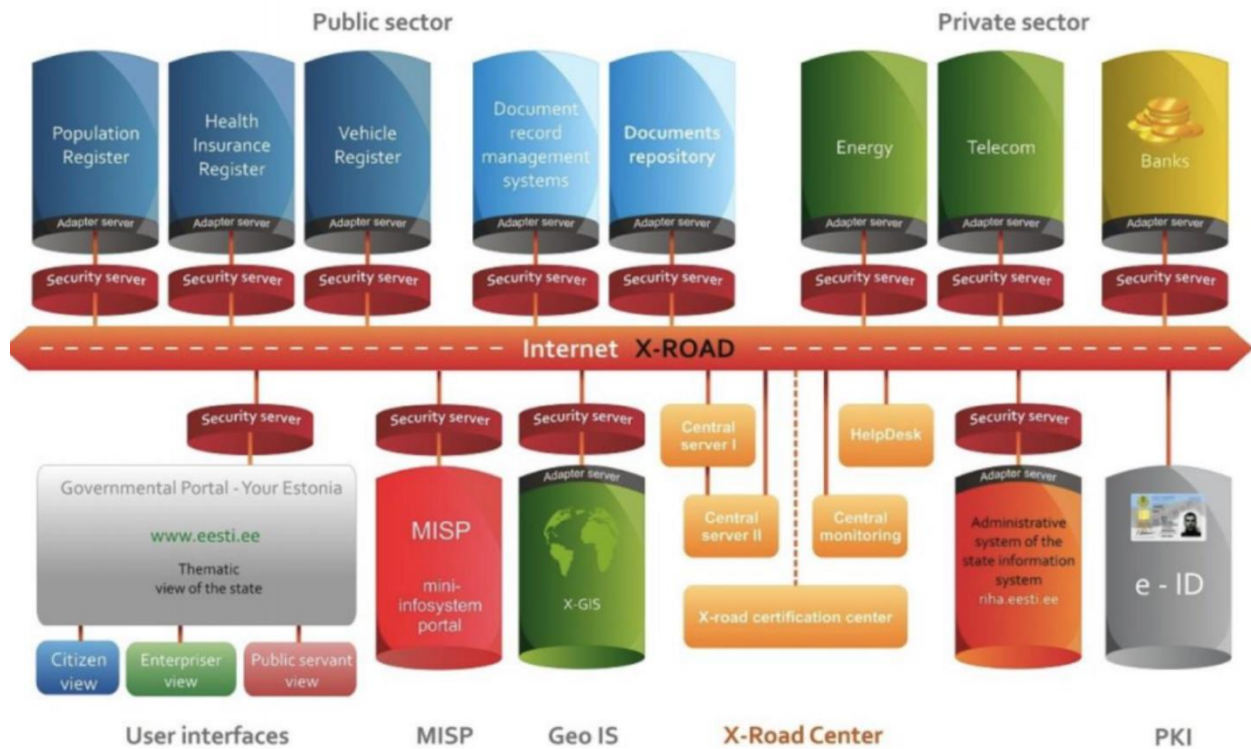
Organizational Chart of Estonia's E-Government Platform, Source: Jaffe

By developing a platform similar to Estonia's e-government, I believe that formerly over-complicated markets like affordable housing would become immensely more attractive to investors with the streamlined access to government functions, regulation, and documentation. Using Estonia's figures as a comparison, New York's 8 million people would save up *84 thousand years of labor every year* in not having to deal with inefficient government processes. *That's the equivalent of 84,000 people working 24/7 every year.* With this degree of breakthrough, I believe productivity and innovation in sectors like affordable housing would inevitably see major progress.

Innovative Building Methods

Taking a look at the status of innovation within the construction industry, many companies have already been conducting extensive research on innovative construction processes. New Story Charity, a nonprofit based in Atlanta, GA, is one example of an organization that has found a means to reduce construction costs by nearly 40% and timelines by nearly 10x. As of the fall of 2019, New Story is on track to complete the world's first 3D printed community this year in Latin America (Rice, 2019, para. 7). By completely reconsidering the model for homebuilding, New Story has fashioned a way to build an 800 square foot home in less than 24 hours and a 2000 square foot home in less than 3 days (Canales, 2019, para. 2). With development costs that will be anywhere from 30-50% cheaper than traditional development, many speculate that this technology could completely revolutionize the sector within 10-15 years (Canales, 2019, para. 3). According to ICON, a partner of New Story Charity, these homes are not only cheaper, but they are also built stronger, more environmentally friendly, and allow for the complete customization of homes through digital design integration (Rice, 2019, para. 19).

Some may argue that building 800-2000 sq. ft. homes have little to do with addressing the New York affordable housing crisis, however, I would argue the contrary. Already, Dubai has introduced 3D printing as a major component of their long-term economic strategy called

New Story and ICON's 3D Printed Homes, Source: Beilin

Future Cities Programme. According to the Future Cities Programme, Dubai plans for 25% of all buildings to be 3D printed by 2030 (Anderson, 2016, para. 4). They say, "Current projections suggest the technology will cut construction costs by 50 to 70 percent and labour costs by 50 to 80 percent, while reducing waste in construction by 60 percent (Anderson, 2016, para. 25)." Given Dubai's ambitious plans, 3D printing has obviously started finding its way to towering metropolises. Even though it may not be possible to build 3D printed high rises right now, I

believe there are other critical elements of policy that could provide immediate relief to New York's affordable housing crisis in the short term.

High Speed Train, Source: Liangyu

High Capacity, High Speed Rail to Albany

According to Peters, when a city is facing an affordable housing crisis, they have two options: densify or improve public transit. As densifying in one of the most densified cities will represent a complex, highly technical, cost-intensive effort, my suggestion would be to opt for Peters' second proposal and seek to improve public transit in New York City. With New York's affordable housing deficit approaching nearly 550,000 homes (NYC Housing, para. 4), a viable public transportation plan to remedy this deficit must be built around the following parameters: 1) commute times into any regions of expansion must not exceed 1 hour, 2) regions of expansion should target high growth areas, and 3) there must be a reasonable means for financing the scope of the project. With these criteria in mind, my recommendation for the City of New York would be to develop a high capacity, high speed rail between New York and Albany. By building a high-speed rail between New York and Albany, I believe many of the 550,000 needed homes could be outsourced to cheaper areas of the state while bringing economic vitality to potentially high-growth areas like Albany.

Taking a deeper look at the value this high-speed rail proposal, let us consider the following:

1) **Less than One Hour Commute:** A high-speed train would be able to transport up to 300,000 people a day between New York and Albany in a mere 45 minutes (MTA,

2017). With only 150 miles between New York and Albany and at a typical speed of around 200 mph, a high-speed train could create a commute that is a viable, compelling option for lower income families to ride back and forth between the two cities on a daily basis (Matthews, para. 14, 2019).

2) **High Growth Destination:** As a third-tier city with low land values, low unemployment, high demand, and market stability as the state capital, Albany is positioned for ideal growth feeding on the back and forth traffic coming from New York City. Instead of diffusing growth among multiple regions surrounding New York City, creating a direct line to a high-growth, smaller metropolis will create opportunity for lower income workers to access cheaper land yet have adequate access to infrastructure, goods, and services provided by the City of Albany.

3) **Reasonable Financing Strategy:** Referring to similar projects undertaken around the world like Taiwan's high-speed rail, we see that with proper planning, expertise, and execution, a 225-mile high speed train can be built for a total of $18 billion in 7 years (Matthews, para. 8, 2019). Under the assumption that New York could undertake the project for a proportionate price and timeline, we could estimate that New York's 150-mile high speed rail could be built for $12 billion in 4.5 years. At present, New York's budget allocated towards homelessness and affordable housing totals $3.2 billion annually (Goldman, 2019, para. 1). Through a combination of issuing debt, partnering with Albany, and allocating a portion of New York's affordable home annual budget towards the project, I believe that it would be reasonable to assume that New York City could reasonably finance a project of this scope.

With all of these factors considered, just imagine what kind of energy could spring into action within the affordable housing sector. An IRR based development model could recapture the interest of traditional real estate dollars and encourage innovation. A streamlined E-government platform could detangle complex regulations. Innovative building technologies could help build homes stronger, faster, more affordable, and more environmentally friendly. Lastly, a high capacity, high speed train could 1) open up formerly hard-to-access markets for investors, 2) provide reasonable, environmentally-friendly commutes for workers, 3) provide cheap land for low-income demographics and 4) all fit within a reasonably well timed, well-financed project. By allowing for all these policy elements to work better, I believe it would be possible for New York to see dramatic increases in affordable housing supply by allowing more private sector engagement in affordable housing development.

Policy Research: Expert Interviews

"Exploration is the engine that drives innovation. Innovation drives economic growth."
Edith Widder (qtd. In Mastandrea para. 16)

By consulting industry experts, my next objective is to explore the feasibility of each of my policy propositions. Coming into these interviews, I reminded myself that being open to cross-disciplinary input will be key for innovation and creating a fully integrated framework. As Edith Widder taught, "Exploration is the engine that drives innovation. Innovation drives economic growth" (qtd. In Mastandrea para. 16). As my goal is to ultimately spur innovation and economic growth among the homeless of New York, I saw the interviews as a chance to *explore* and *learn*.

Fee Based Vs. IRR-based Financing Expert Opinion

Seeking expert advice on improving New York fee-based system for developing affordable housing, I had a difficult time finding qualified interviewees. In a short conversation with John Doe (named changed), Chief of Staff for Goldman Sach's Urban Investment Group, he suggested, "You should really look into problems facing NYCHA. Their facilities are in major disrepair and they're the primary provider of public housing in NYC. It's really a mess."

As Doe had mentioned the significance of NYCHA, I set out to conduct more research on NYCHA, the problems they face, and if there had been any efforts to integrate the private sector into their operations. To my delight, I stumbled upon a study conducted by Bo He of Columbia University titled *Privatizing of NYCHA Public Housing: How Could Privatization Improve Quality of Public Housing?*. In his study, He further breaks down the complications that NYCHA faces and what has kept the private sector distant from NYCHA's operations. I will summarize his study below.

In his paper, He begins by introducing NYCHA and some of the problems NYCHA faces. According to He (2016), NYCHA was founded in 1934 as a quasi-private corporation which utilized local, state, and federal funding as a government agency yet with less regulatory restraint than most agencies. Over the course of 40 years, NYCHA built nearly 180,000 units in NYC, however, construction of NYCHA units ceased in 1974 when federal funding dried up (p. 3-4, 2016).

Offering lower than market prices, having no competitor, and having little support from the federal government, the bone fide monopoly of NYCHA over New York's low-income housing eventually resulted in the deterioration of NYCHA's service and maintenance (He, p. 7-8, 2016). With little ongoing support from the federal government, NYCHA's housing projects eventually became synonymous with crime, poor management, disruptive residents, and failing building systems (He, p. 4, 2016). As a result, policymakers' enthusiasm towards expanding New York's affordable housing also dampened as there was already an estimated $2 billion of maintenance to be done for New York's current affordable housing (Kusisto, para. 6, 2018).

According to He (2016), privatization efforts have been attempted but have been met with criticism claiming that they did not create the enough units for the very poor and instead caused mass displacement. Figures like William T. Gormley proposed that privatization of public housing would result in 1) improved efficiency, 2) reduction of political

interference/limits, 3) sufficient private capital, and 4) time saving for NYCHA's assets. Critics of NYCHA's privatization claimed that privatization will result in significant increase in prices and nepotism of politicians granting lucrative government contracts to favored friends and family above those who are qualified (p. 12, 2016).

Ultimately, He (2016) claims that both of these parties have fair claims and that an integrated, multifaceted approach should be adopted instead. Some of He's suggestions to integrate private sector involvement in affordable housing development include the following:

- Infill NYCHA's affordable housing developments with median income affordable units to raise earnings.
- Develop commercial spaces on ground floor of NYCHA's affordable housing developments that are on main roads to produce rental income.
- Ground lease NYCHA's unused plots to private developers to generate additional income.
- Enhance public perception of NYCHA's public housing by turning over green space to be used as public park space by the city.
- Outsource NYCHA's management and maintenance to private firms to increase efficiency of operations.
- Build NYCHA's public housing further away from central business district with better public transportation to foster better affordability.
- Require private affordable housing developers to adhere to rent limit on their units (p. 38-41, 2016).

Considering that Doe suggested NYCHA's failures are a major issue at the root of New York's affordable housing crisis, I think it would be reasonable to consider He's policy suggestions in more depth moving forward. Although He is not proposing a transition to a new financing model, I believe He's examination of integrating the private sector into NYCHA's operations accomplishes the same goal of directing the private sector funding towards New York's affordable housing through a (perhaps) more practical model.

E-Government Expert Opinion

For my second interview, I wanted to interview someone who would be an expert in integrating technology into governmental function. I also wanted to find someone who would know what it would take for New York to develop an e-government platform to make data, documentation, and regulations easier to navigate for individuals and businesses. Through researching numerous conferences on integrating government and technology, I was able to set up an interview with Henry Penner (named changed), a speaker, consultant, and business leader who comes alongside local, state, and county governments to help them determine how to integrate technology into their processes. Although Penner is from Maryland, Penner stated that he has done plenty of work alongside New York's government and is familiar with

their biggest needs. As such, I started asking Penner about New York's position towards digitization:

"Do you think New York has the potential to create an e-government platform that could reduce complexity for individuals/businesses around the city? What would be the first step for NYC to move in this direction?"

> "First, whatever a city can do to ensure the whole city has access to high-capacity broadband – that is essential. In New York, a lot of boroughs don't have access to broadband.
>
> There's an initiative called One New York – it's an initiative to ensure every business in New York has access to 1 GB of broadband but I don't know how that's been going recently."

Next, Penner started explaining how the largest potential for cities to benefit from digitization was through establishing platforms for AI and machine learning to utilize the data gathered. Danielle explained,

> "When we talk about giving citizens access to data, we need to bring in where the world of city tech is going in regards to AI, machine learning, chatbots, etc. These types of functions allow us to determine what citizens want and need. Citizens need access to data but with so much data to sort through, AI will allow cities to personalize data to anticipate what data they will need."

Next I asked Penner, *"What do you think would be the most important features of any e-government platform?"* He replied,

> "Right now, smart projects are relatively siloed in their application. Kansas City might be doing a smart transportation project. Other cities might be applying it to traffic or lighting. What we really need is a fully integrated platform to tie all agencies together.
>
> Netherlands was working on project somewhat like this. By installing acoustic sensors around streets with lots of bars, they were able to program the sensors to distinguish between lots of different sounds like glass being smashed intentionally versus glass being dropped accidentally. Depending on the types of sounds, notices were able to be sent to the appropriate department to respond to certain disturbances."

"To your knowledge, have any cities sought to create a fully integrated e-government platform?"

> "We have seen very few RFP's for smart city initiatives. RFP specifications are typically focused on the needs of the time rather than anticipating future needs based on demographic make-up. These cities need to think about creating a digital

platform for their data/operations that is able to evolve and be adaptive. Cities also need to figure out privacy. A lot of cities have struggled with questions concerning the balance between sharing data and protecting privacy."

"Are there estimates for savings that could come through digitalization efforts?"

"I haven't really seen any hard dollar-for-dollar estimates, however, I've seen some soft estimates that digitalization efforts could yield $3-$5 for every dollar invested. This is hugely relative though.

Looking around the world, China has seen significant ROI's in a number of their smart city initiatives. China's smart cities saw a 30% reduction in crime, 20% increase in citizen satisfaction, and a significant increase in students' performance. In order to see this kind of economic development, cities need to have broadband access. That's why I'd suggest expanding high speed broadband access as a first step for New York."

Coming away from my interview with Penner, I was struck with one thing in particular – instead of focusing on manually making data user friendly to users, Penner's proposition was for governments to learn how to integrate machine learning and AI into the digitalization process so the platform itself could find the most relevant data for its users. Instead of spending likely tens of thousands of manhours trying to perfect a platform for citizens to navigate, Penner was much more interested in letting technology itself do the heavy lifting. I was also fascinated with how proactively Penner was thinking about how to set up e-governments in a way that could make room for the emergence of the 5G network, the internet of things, and data being collected on an exponential scale. By creating e-governments that could evolve, shift, and mold depending on the needs of people at the time, Penner believed a city had a much better chance to achieve the kind of ROI's he mentioned in his interview. As a practical next step, Penner noted that a city like New York needs to focus on expanding their high-speed broadband connection. Overall, my interview with Penner was immensely enlightening as I discovered that there is a lot more to consider in creating an e-government platform than just consolidating all the government's data into one "app." By laying an infrastructural foundation like expanding New York's high-speed broadband connection, Penner revealed how New York would have a much better chance of streamlining and utilizing data in a way that could be relevant to individuals and businesses.

Innovative Building Methods: Expert Opinions

In my third interview, I interviewed Susan Wagner (name changed); a native New Yorker who serves as the Director of Operations, Construction Review for New York City School Construction Authority and has over 20 years of experience in the New York City

construction industry as a Licensed Professional Engineer, Licensed Site Safety Manager, and Licensed Master Fire Suppression Contractor. Susan Wagner also serves as my construction management professor at NYU Schack Institute of Real Estate.

With a passion for construction and integrating sustainable and technological innovations into construction, I wanted to run some of my ideas past Wagner to get her expert opinion on issues such as 1) the significance of innovating within construction, 2) the potential of 3D printed construction, and 3) how she would approach the NYC housing affordability crisis as a professional in the field. Over a 20-minute phone call, our conversation went as follows:

"Thanks for being willing to answer a few of my questions Professor. To begin, can tell me a little bit about your background?"

> "Sure. I'm a licensed professional engineer here in New York. I was born and raised in the city. My dad owned a fire-suppression corporation in the city so he worked on the World Trade Centers, embassies, and other big projects since I was little. When I graduated school, I first worked in design for several years before I moved into construction management. Since then, I've worked on mostly vertical projects – hospitals, schools, and a little residential. For the most part, all my projects are institutional or commercial."

"Have you seen the construction industry change since you started working in construction management?"

> "Most definitely. Construction has been going through major changes – mostly from NYC legislation. Due to legislation, the construction industry in NYC has been at the forefront of environmental mindfulness. Even though the rest of the state hasn't been as open to environmental legislation, NYC has adopted legislation that requires builders to conform to certain environmental guidelines and we've really become a leader in that regard."

"Can you explain to me the significance of adopting more environmental-conscious legislation?"

> "Certainly. Construction is overall probably the most wasteful, least sustainable industries out there. Simply go to a dumpster on a construction site and you'll see. There's a ton of environmental waste and a lot of this waste creates toxins like VOC's. When concrete cures, it produces GH. Whenever managers order for a project, they usually order 10-15% extra material in case they need it. For them, it's a safer bet to have more than enough

materials rather than have too few and have their workers sit around the site with nothing to do which is also expensive."

"Where have you seen technology integrated into construction? Does it seem to be working?"

"Overall, construction has been pretty slow to integrate technology, unlike most other industries. For the most part, we still build buildings the same way we did 100 years ago. For the most part, I'd say construction managers have been the most proactive in integrating technology into their daily workflow. A lot of administrative software has enabled them to streamline paperwork. On the job site, however, there's a lot less tech integration. Every job is so different so it's been hard for all the parties involved in construction to get onboard and familiar with one software or technology."

"Where do you see the potential in 3D printed construction?"

"3D printed construction is a very exciting development in construction and I believe it has a lot of potential. There's probably not a lot of potential to integrate 3D printed construction into NYC's market until it has more vertical capacity. However, once they can build 10-15 stories in New York, I think there will be major adoption. The reduction of insurance costs alone would likely cause owners to jump on it."

"As someone working in the construction industry of NYC, how would you recommend solving the housing affordability crisis?"

"Personally, I would be opposed to any policy that suggests we need to ship lower income residents further away from the city via improved public transit. I think that just reinforces the already felt gentrifying forces New York has been feeling over the past several decades. If you look at the population of New York, it is actually decreasing. Less people live here yet prices continue to rise. I think the issue is with affordability. I think ownership initiatives are good, but I think it should be led by the government, not the private sector. If the private sector gets involved, it will become profit driven, which will drive prices up further.

If I were to propose a solution, I would propose creating a new public authority that is less bureaucratic and modeled after the private sector. Even though NYCHA currently develops most of

New York's publicly funded affordable housing, I don't think they're the ones for the job. I think we need new eyes on it. There needs to be an agency created who has a better ability to collaborate with other agencies and levels of government to streamline the bureaucratic process. Private developers could come in and do the construction but a public entity should act as the owner. Then, if that entity is able to sell units to low income residents at affordable prices, the residents would be able to build wealth through the land. They'd be more concerned with the upkeep of the property and you won't see the kind of deterioration that you see in lots of our current affordable housing. If they would be interested in eventually selling their unit, they could be required to sell at a certain price to keep the prices affordable."

Through my interview with Wagner, I learned several different things. First, she seemed to confirm the breakthrough potential of technologies like 3D printed construction. As 3D printed construction produces almost zero wasted materials and can be built faster, stronger, and more affordably than traditional construction, hearing someone like Wagner get excited about 3D printed construction was certainly affirming. Second, it was interesting to hear Wagner's reaction to the idea of building low income developments outside of the city. Referring back to the function that Jeffrey Peters had laid out regarding price, density, and public transportation, it seemed that Wagner would opt for densifying in New York vs. building better public transportation in order to bring down prices. Underlying her claim, it seemed Wagner was asserting a belief that everyone should have the *right* to live in the central business district of a metropolis – a claim that I probably would not agree with. Nonetheless, I found her claim of the declining population in New York fascinating and believe that could be reason to look further into solutions that make better use of the density New York already possesses.

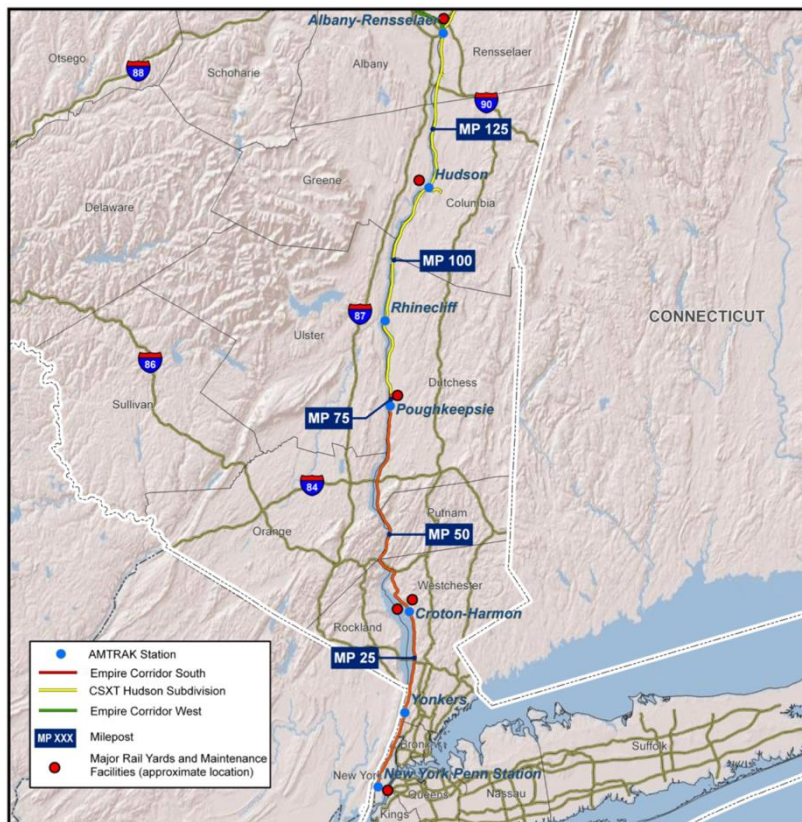**High Speed NYC-Albany Train Expert Opinion**

Lastly, I researched the viability of building a high-speed train from New York City to Albany. First, I encountered more problems identifying the right people to speak to as experts in the field. As I continued searching, I eventually discovered a newspaper trail documenting that a high-speed train between New York City and Albany has been topic of discussion over the last several decades and continues to be of significance in public forums.

First, I discovered that the discussion of an Albany-New York high speed train dates back to the early 1990's. Originally, Former Governor Mario Cuomo had campaigned for governor on the promise to bring a high speed, maglev rail up the Hudson Valley in 1993 (Foderaro, 1993). Even though these promises were never realized, the proposition was then

picked up by Mario's son, Andrew Cuomo, when he was running for governor in 2009. A few days after he was elected governor in 2010, Andrew Cuomo wrote the following,

> "High speed rail could be transformative for New York – with the potential to revitalize Upstate New York's economy with construction jobs now and permanent jobs created by the new high-speed rail links to New York City, Toronto, and Montreal in the future. That is why I made high speed rail a priority during my campaign, and that is why it will continue to be a top priority for me as Governor" (Rubinstein, para. 8, 2018).

Shortly after this statement from Cuomo, Cuomo wrote a letter to the U.S. Transportation Secretary Ray LaHood asking for him to redirect money that had been granted to Ohio and Wisconsin whose governors had both canceled the allocation (Marsh, para. 1, 2010). After receiving a federal grant of $354.4 million, the New York State Department of Transportation commenced a Tier 1 Environmental Impact Study and produced its first draft of a statement in 2014 (New York State, para. 1, 2011). In their study, the NYSDOT considered 10 options for the high-speed rail's development; one base case, three cases with a 79 mph limit, two cases with a 90 mph limit, then single case scenarios with 110 mph, 125 mph, 160 mph, and 220 mph limits (HSR Empire Corridor Program, 2011). From the beginning, all three of the 79 mph cases were dropped because they failed to improve speed, service, or operational costs. The 90 mph cases ranged from prices of $1.66 - 5.6 billion and made marginal improvement to train stations, travel times, operational efficiency, and ridership -- all with little to moderate environmental impact. The 110 mph and 125 mph cases ranged from $6.25-$14.7 billion and included new rail, 15-30% improvement in travel time, notable ridership improvement, and about 10% improvements in operational efficiency -- all with what was considered moderate to high

New York Empire Corridor, Source: HSR Empire Corridor Program

environmental impact. Finally, the 160 mph and the 220 mph high speed cases were both thrown out because of intolerably high cost, complexity, and environmental impact. With costs ranging from $30-50 billion, both these cases were nearly three times the price of the next cases in line and would require electrification improvements for nearly the entire Hudson valley (required for high-speed trains), complex engineering solutions for tight curves, and significant communal/environmental impacts (HSR Empire Corridor Program, p. 2-3, 2014).

With the release of this report and the ongoing failures of California's high-speed railway construction, Cuomo's enthusiasm towards the high-speed rail waned. (B, N., para. 3, 2014) To this day, the full environmental report has yet to be released. In NYSDOT's latest release, NYSDOT share they aim to release report by May 8, 2020 (Anderson, para. 2, 2019), however, with all factors considered, it appears that any hopes for an authentic high-speed rail in the Hudson Valley would be reduced to merely strategic improvements to improve speed of the current railway.

Considering these developments against the backdrop of my proposition to improve New York's affordable housing options by developing a high-speed railway to an outlying city like Albany, it seems that my proposition would simply not be feasible. First, a price tag of $30-50 billion is about 3-4x higher than my original price estimate of $12 billion. Considering the extensive work that would have to be done to 1) engineer high speed rail around/through the mountainous curves of the Hudson Valley and 2) lay the infrastructure that would allow for the electrification of the track, it seems that costs would become astronomical and would not be merited based on the economic value it would bring. Second, even if the state of New York decided to allocate $15 billion in improving the current railway (decreasing commute time by 30%), the 2-hour trip would still be unlikely spur a critical mass of New Yorkers to commute in ways that would ease affordable housing pressures.

Final Conclusions

"If someone is able to show me that what I think or do is not right, I will happily change, for I seek the truth, by which no one was ever truly harmed. It is the person who continues in his self-deception and ignorance who is harmed."
~Marcus Aurelius, Meditations

As we come to the end of our research journey exploring New York's affordable housing crisis, let us review my initial policy propositions and suggest where research could go deeper

in the future. As we have examined the facts, it has become obvious that some of my policy suggestions would be more viable than others. The good news is that an honest inquiry *will* include adjustments as more factors are considered together. As Marcus Aurelius observed nearly 2000 years ago,

> "If someone is able to show me that what I think or do is not right,
> I will happily change, for I seek the truth, by which no one was
> ever truly harmed. It is the person who continues in his self-
> deception and ignorance who is harmed."

In the spirit of Marcus Aurelius's suggestion, let us relook at my initial policy suggestions and how the facts might change our approach to New York's affordable housing.

First, let us consider my proposition to transition New York's fee-based affordable housing model to an IRR-based model. Upon my research, I found that developers and financers hesitate to suggest a new financing model entirely and instead, suggest finding new ways to integrate the private sector into NYCHA's public housing operations. Referring to the research conducted by Bo He of Columbia University, I found that He makes a series of suggestions ranging from building commercial spaces on the ground floor of NYCHA developments, outsourcing management and maintenance to the private sector, ground leasing NYCHA's vacant lots to private developers, and more. Wagner agreed that the government should explore other ways to integrate the private sector into NYCHA's operations and suggested exploring the possibility of launching a new government agency that is less bureaucratic and modeled after the private sector. Both Wagner and He agreed that if private developers are involved in developing NYCHA's land, the government should enforce price ceilings to ensure that low income residents are able to afford the units now and well into the future.

As possible areas of further exploration, I would suggest conducting a probe into the extent of NYCHA's shortcomings and attempt to quantify the economic value that could be produced by integrating private sector into NYCHA's operations. I would suggest interviewing NYCHA officials, NYCHA public housing residents, and other stakeholders to assess the viability of He's various policy suggestions. Recognizing that NYCHA was originally founded as a quasi-private corporation, my hypothesis would be that Wagner's suggestion to launch a new government agency with less regulatory requirements would merely perpetuate the fundamental flaws that are already existent in NYCHA. With more care and due diligence, however, perhaps it could be possible to launch a more thoughtfully-conceived governmental agency after the lessons New York has learned through NYCHA.

Next, revisiting my policy suggestion to build a fully integrated, streamlined e-government platform, it appears that New York has some essential improvements to make in their digital infrastructure before launching a project of this scale. Upon consulting Henry Penner, an expert in government data digitalization, he suggested that New York should first

focus their efforts on enabling at least 1 GB of broadband connection across New York City. In Penner's opinion, laying this groundwork for digital infrastructure is essential for working towards a fully integrated, accessible e-government platform like that of Estonia's. In Penner's opinion, building an integrated e-government on the right foundation from the beginning is critical. With developments such as 5G, big data, machine learning, and AI coming down the pipeline for cities, ensuring that a city like New York has the capabilities to run and access cloud-based systems through broadband connectivity will be essential to laying the proper groundwork for the future e-government initiatives.

With Penner's opinion in mind, it appears that it would be unfavorable for New York to build an integrated e-government platform at this time. With that said, there may be other means to make market information more accessible to NYC affordable housing developers. He (2016) makes a policy suggestion for NYCHA to "provide more detailed financial information of each public housing development" (p. 41, 2016). As an area of further research, my suggestion would be to further look into 1) what financial information on public housing is accessible for developers and 2) what it would take for NYCHA to make this information more readily available to the public.

Considering my proposition to use innovative building methods in affordable housing construction, it appears that the technology may still be too young yet looks promising for the near future. Upon consulting Wagner, a local NYC construction expert, she voiced that using emerging construction technologies such as 3D printed construction could offer a very compelling option to NYC's affordable housing developers. Not only would it speed up construction timelines, reduce cost by 30-40%, and virtually eliminate environmental waste, but Wagner also mentioned that the reductions in insurance premiums alone would compel developers to quickly adopt the technology. In addition, due to New York's status as a leading environmentally-conscious city, she believes that the city would be majorly supportive of these efforts.

Considering the early stages of the technology, Wagner predicts that mass adoption of 3D printed construction would not happen until 3D printed construction has the capabilities of building 10-15 stories. Considering that my proposition of adopting 3D printed construction was initially tied to the policy suggestion to develop public transit from NYC to outlying cities (thus allowing for 1-2 story housing to be built), it seems that the viability of this suggestion will hinge our ability to identify viable plots in these outlying regions. Therefore, my suggested areas of further research would include 1) determining the viability of my high-speed rail proposition or 2) identifying other regions of land where 1-2 story housing could be built near NYC public transit.

Brooklyn Queens Connector, Source: He

Finally, revisiting our inquiry into the viability of a high-speed rail between New York City and Albany, it appears that the likelihood of building a truly high-speed rail capable of reaching speeds of 160 mph+ would be unlikely. Upon my research, I made the discovery that the prospect of building a high-speed rail has already been the subject of much discussion over the last decade and due to infrastructure limitations, complex engineering problems, and a hefty price tag, the initiative has largely been dropped. Today, the state continues to explore making marginal improvements that could allow for travel time improvements of up to 30%, however, this would not be nearly enough to encourage large scale adoption of New York workers commuting to and from Albany on a daily basis.

As a possible area of further research, my suggestion would be to explore what suburbs in New York would most benefit from public transit extensions. Implementing initiatives like improving the reliability, frequency, and distance of New York's bussing system could be one low-cost option to make further out, more-affordable suburbs accessible for New York City workers. In addition, He (2016) also suggests looking into developing a Brooklyn-Queens connector subway line to make cheaper housing in Queens more accessible to New York's central business district (p. 38-39, 2016). Both of these options could represent viable, realistic options that could also reopen the possibility of building 1-2 story 3D printed affordable housing closer to the city.

Revisiting where we began in this paper, all of these findings and recommendations will hopefully serve to equip the modern-day real estate professional to be of genuine service to mankind. First examining real estate through the lens of first principles, we uncovered that real estate has played a fundamental role since the founding of our nation to 1) establish economic independence, 2) foster human dignity, and 3) spur technological/cultural progress. Next, we determined that the fundamental role real estate plays in relation to humanity is to provide people a *home*. Then, in line with Plato's principles of unity and goodness, we sought to uncover how real estate's core function was not being met in New York City as of 2019 (unity) and how this function can be most effectively reconciled through interdisciplinary problem solving (goodness). Consulting experts in the areas of our policy propositions, we then determined what policies are actionable today, what policies should be improved before implementing, and what matters should be further researched before implementing. Although we may not be ready to pass a bill, seek investors, or break ground on a project, the process we employed through our journey provides a holistic foundation to build off of for the future. Although we have not arrived at a solution today, we have begun a process that will enable others to journey further in days ahead.

Bibliography

"68% Of the World Population Projected to Live in Urban Areas by 2050, Says UN | UN DESA Department of Economic and Social Affairs." *United Nations*, United Nations, 16 May 2018, www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html.

Abraham, Roshan. "What's It Like Growing Older in the NYC Homeless Shelter System?" *City Limits*, Citylimits.org, 27 Aug. 2019, citylimits.org/2019/06/05/homeless-shelter-aging-senior-elderly-disabled/.

Aggarwala , Rohit. "The Global Fight against Climate Change Needs Better City Data." *Sidewalk Labs*, Sidewalk Labs, 22 Apr. 2016, www.sidewalklabs.com/blog/the-global-fight-against-climate-change-needs-better-city-data/.

"America: The Land of Opportunity." *Core Knowledge*, www.coreknowledge.org/wp-content/uploads/2018/05/CKHG_G6_B2_U7_Immigration_WTNK_C01_NationofImmigrants.pdf.

Anderson, Robert. "Dubai Plans to 3D Print 25% of Buildings by 2030." *Gulf Business*, Gulf Business, 11 May 2016, gulfbusiness.com/dubai-plans-to-3d-print-25-of-buildings-by-2030.

Anderson, Eric. "High-Speed Rail Project Faces Another Delay." *Times Union*, Times Union, 27 June 2019, www.timesunion.com/business/article/High-speed-rail-project-faces-another-delay-14052483.php.

Aurelius, Marcus. *Meditations*. Collectors Library, 2020.

Bah, El-hadj M., et al. "Slum Upgrading and Housing Alternatives for the Poor." *SpringerLink*, Palgrave Macmillan, London, 1 Jan. 1970, link.springer.com/chapter/10.1057/978-1-137-59792-2_6.

Bartha, Paul. "Analogy and Analogical Reasoning." *Stanford Encyclopedia of Philosophy*, Stanford University, 25 Jan. 2019, plato.stanford.edu/entries/reasoning-analogy/.

Beilin, Holly. "Home Building Startup New Story Unveils 3D-Printed House At SXSW to Shelter the Developing World." *Hypepotamus*, Hypepotamus, 12 Mar. 2018, hypepotamus.com/news/new-story-unveils-3d-printed-home/.

Breaking Ground. "Lenniger Residences." *Breaking Ground*, breakingground.org/our-housing/lenniger-residences.

Burrows, Dan. "20 Most Expensive U.S. Cities to Live In." *Www.kiplinger.com*, Kiplingers Personal Finance, 26 Apr. 2019, www.kiplinger.com/slideshow/real-estate/T006-S001-most-expensive-u-s-cities-to-live-in-2019/index.html.

B, N. "A Bleak Future." *The Economist*, The Economist Newspaper, 7 Feb. 2014, www.economist.com/gulliver/2014/02/07/a-bleak-future.

Canales, Katie. "An Austin Startup Can 3D-Print Tiny Homes in 24 Hours for a Fraction of the Cost of Traditional Homebuilding - Here's How Icon Could Revolutionize Affordable Housing." *Business Insider*, Business Insider, 13 Oct. 2019, www.businessinsider.com/icon-3d-printer-tiny-home-austin-photos-2019-10#so-the-team-at-icon-set-out-to-reimagine-how-a-home-could-be-constructed-from-the-ground-up-and-developed-a-3d-printer-capable-of-building-a-home-up-to-2000-square-feet-in-under-three-days-smaller-homes-can-be-built-in-24-hours-2).

Clear, James. "First Principles: Elon Musk on the Power of Thinking for Yourself." *James Clear*, 1 Sept. 2018, jamesclear.com/first-principles.

Clearly, John. "Aristotle's Criticism of Plato's First Principles." *In: Studies on Plato, Aristotle and Proclus*, Brill, 31 July 2019, https://brill.com/view/book/edcoll/9789004247840/B9789004247840_020.xml?lang=en.

Coalition for the Homeless. *State of the Homeless 2019*. Coalition for the Homeless, Apr. 2019, www.coalitionforthehomeless.org/wp-content/uploads/2019/04/StateOfThe-Homeless2019.pdf.

Costly, Andrew. "The Constitution and Slavery." *Constitutional Rights Foundation*, Constitutional Rights Foundation, www.crf-usa.org/black-history-month/the-constitution-and-slavery.

DATTA, M. *Challenges Facing the Construction Industry in Developing*. Department of Architecture and Building Services, 2005, www.irbnet.de/daten/iconda/CIB8842.pdf.

"Democracy in America." *Democracy in America*, by Alexis de Tocqueville et al., Library of America Paperback Classics, 2012, p. 645.

DHS NYC. "DHS DATA DASHBOARD - FISCAL YEAR TO DATE 2019." *Nyc.gov*, DHS NYC.GOV, 18 Dec. 2019, www1.nyc.gov/assets/dhs/downloads/pdf/dashboard/FY2019-Q3-DHS-Data-Dashboard-5'17'2019.pdf.

Eliot, T.S. *Four Quartets Part II: East Coker*. www.philoctetes.org/documents/Eliot%20Poems.pdf.

Engel, Jack, and Ben Kline. "For-Profit Affordable Housing Interview 1." 12 Oct. 2019.

Engel, Jack, and Jeffrey Peters. "For-Profit Affordable Housing Interview 2." 12 Oct. 2019.

Engel, Jack, and Molly. "Homeless Affordable Housing Interview 1." 7 Nov. 2019.

Engel, Jack, and Chris and Paula. "Homeless Affordable Housing Interview 2." 7 Nov. 2019.

Engel, Jack, and Dillon. "Homeless Affordable Housing Interview 3." 22 Nov. 2019.

Engel, Jack, and Eddie. "Homeless Affordable Housing Interview 4." 22 Nov. 2019.

Engel, Jack, and Jose. "Homeless Affordable Housing Interview 5." 22 Nov. 2019.

Engel, Jack, and Susan Wagner. "Expert Interview 1." 25 Nov. 2019.

Engel, Jack, and Henry Penner. "Expert Interview 2." 22 Nov. 2019.

Engel, Jack, and Sister Joann. "Shelter Affordable Housing Interview 1." 7 Nov. 2019.

Engel, Jack, and Miller. "Shelter Affordable Housing Interview 2." 7 Nov. 2019.

Farha, Leilani. "Summary of the Report of the Special Rapporteur on the Right to Adequate Housing," *HOMELESSNESS AND HUMAN RIGHTS*, United Nations Human Rights Office of High Commissioner, www.ohchr.org/Documents/Issues/Housing/HomelessSummary_en.pdf.

Foderaro, Lisa W. "Cuomo Wants High-Speed New York City-Albany Rail Link." *The New York Times*, The New York Times, 10 Nov. 1993, www.nytimes.com/1993/11/10/nyregion/cuomo-wants-high-speed-new-york-city-albany-rail-link.html.

Friedman, Milton. *Milton Friedman: Make Politically Profitable For Wrong People To Do Right Thing*. Youtube, 22 Feb. 2013, www.youtube.com/watch?v=MEVI3bmN8TI.

Goldman, Henry. "NYC Doubles Spending on Homelessness to $3.2 Billion Since 2014." *Bloomberg.com*, Bloomberg, 22 May 2019,

www.bloomberg.com/news/articles/2019-05-22/nyc-doubles-spending-on-homelessness-to-3-2-billion-since-2014.

Government of Estonia. "Estonia - We Have Built a Digital Society and so Can You." *e-Estonia*, Government of Estonia, e-estonia.com/.

Hayes, Adam. "What the Internal Rate of Return – IRR Measures." *Investopedia*, Investopedia, 5 Sept. 2019, www.investopedia.com/terms/i/irr.asp.

He, Bo. *Privatizing of NYCHA Public Housing: How Could Privatization Improve Quality of Public Housing?* COLUMBIA UNIVERSITY, May 2016, academiccommons.columbia.edu › doi › download.

HSR Empire Corridor Program, director. *High Speed Rail Empire Corridor Public Outreach Video*. *High Speed Rail Empire Corridor Public Outreach Video*, NYSDOT, 11 Apr. 2014, www.youtube.com/watch?v=ypfWSecK63w.

HSR Empire Corridor Program. "Tier 1 Draft EIS." *Tier 1 Draft EIS*, New York State Department of Transportation, 2014, pp. 2–1-2–50. www.dot.ny.gov/content/delivery/Main-Projects/S93751-Home/S93751--Repository/04chap2.pdf.

Homeless Shelter Directory. "New York City Homeless Shelters & Services For The Needy." *New%2Byork%2Bcity Homeless Shelters and Services - New%2Byork%2Bcity NY Homeless Shelters*, HomelessShelterDirectory, www.homelessshelterdirectory.org/cgi-bin/id/city.cgi?city=new%2Byork%2Bcity&state=NY.

Jaffe, Eric. "How Estonia Became a Global Model for e-Government." *Medium*, Sidewalk Talk, 20 Apr. 2016, medium.com/sidewalk-talk/how-estonia-became-a-global-model-for-e-government-c12e5002d818.

JEAN, RENÉE. "On the Edges of a Dream … A Tent City in Leogane, Haiti." *Daily Journal Online*, Daily Journal Online, 18 Dec. 2010, dailyjournalonline.com/news/local/on-the-edges-of-a-dream-a-tent-city-in/article_a62c8ae2-0a51-11e0-bc57-001cc4c002e0.html.

Jefferson, Thomas. *Notes on the State of Virginia with an Appendix*. Query XIX. Printed by H. Sprague, 1787.

King James Version. Bible Gateway, 2019.

Kothari, Miloon. "ECONOMIC, SOCIAL AND CULTURAL RIGHTS Report of the Special Rapporteur on Adequate Housing as a Component of the Right to an Adequate Standard of Living, ." *United Nations*, COMMISSION ON HUMAN RIGHTS Economic and Social Council,

3 Mar. 2005, documents-dds-
ny.un.org/doc/UNDOC/GEN/G05/117/55/PDF/G0511755.pdf?OpenElement.

Kusisto, Laura. "Private Sector Does Better Job Managing Public Housing than New York
City: Study." *The Wall Street Journal*, Dow Jones & Company, 18 June 2018,
www.wsj.com/articles/private-sector-does-better-job-managing-public-housing-than-
new-york-city-study-1529248106.

Liangyu. "China to Complete Testing of Winter Olympics High-Speed Train by Mid-
2019." *XinhuaNet*, 24 Apr. 2018, www.xinhuanet.com/english/2018-
04/24/c_137131755.htm.

Lizarralde, Gonzalo. *The Invisible Houses : Rethinking and Designing Low-Cost Housing in
Developing Countries*, Routledge, 2014. ProQuest Ebook Central,
http://ebookcentral.proquest.com/lib/nyulibrary-ebooks/detail.action?docID=1829333.

Mathews, Joe. "To See High-Speed Rail Done Right, California Should Study
Taiwan." *Fresnobee*, The Fresno Bee, 20 Oct. 2019, www.fresnobee.com/news/local/high-
speed-rail/article236384818.html.

Mastandrea, Mia. "30 Of Our Favorite Quotes on Innovation." *Workspace Digital*, BOS
Holdings Company, 10 Dec. 2018, www.workspace.digital/30-favorite-quotes-innovation/.

Marsh, Dylan. "Cuomo Already Pushing for High Speed Rail." *Buffalo Rising*, Buffalo Rising,
7 Nov. 2010, www.buffalorising.com/2010/11/cuomo-already-pushing-for-high-speed-rail/.

Mark, Joshua J. "Plato." *Ancient History Encyclopedia*, Ancient History Encyclopedia, 16 Dec.
2019, www.ancient.eu/plato/.

Mousa, Ahmad. "A Business Approach for Transformation to Sustainable Construction: an
Implementation on a Developing Country." *Shibboleth Authentication Request*, Resources,
Conservation and Recycling, 2 Dec. 2014, www-sciencedirect-
com.proxy.library.nyu.edu/science/article/pii/S0921344915300045.

MTA 2018 Adopted Budget. "About Us." *MTA*, Metropolitan Transportation Authority,
2017, web.mta.info/mta/network.htm#statslirr.

New York State. "Governor Cuomo Announces New York Awarded $354.4 Million in
Federal Funds for High-Speed Rail Projects." *Governor Andrew M. Cuomo*, New York
State, 28 Sept. 2014, www.governor.ny.gov/news/governor-cuomo-announces-new-
york-awarded-3544-million-federal-funds-high-speed-rail-projects.

NYC DHS. "DHS DATA DASHBOARD - FISCAL YEAR TO DATE 2016." *NYC Department of
Homeless Services*, NYC.gov,

www1.nyc.gov/assets/dhs/downloads/pdf/dashboard/tables/populat-Tbls_Dbd-03162016-Q2.pdf.

NYC DHS. "DHS DATA DASHBOARD - FISCAL YEAR TO DATE 2019." *NYC Department of Homeless Services*, NYC.gov, www1.nyc.gov/assets/dhs/downloads/pdf/dashboard/FY2019-Q3-DHS-Data-Dashboard-5'17'2019.pdf.

NYC DHS. "Inside DHS." *Inside DHS - DHS*, NYC.gov, www1.nyc.gov/site/dhs/about/inside-dhs.page.

NYC Housing. "Problem." *Problem - NYC Housing Plan*, NYC.gov, www1.nyc.gov/site/housing/problem/problem.page.

NYC HPD. "Tax Incentive Programs." *HPD - Developers - Opportunities - Tax Incentives*, NYC HPD, www1.nyc.gov/site/hpd/developers/tax-incentives.page.

OFORI, G. "Challenges of Construction Industries in Developing Countries: Lessons from Various Countries." *Challenges of Construction Industries in Developing Countries: Lessons from Various Countries*, Taylor & Francis, 2007, www.irb.fraunhofer.de/CIBlibrary/search-quick-result-list.jsp?idSuche=CIB%2BDC8937.

O'Kane, Sean. "Elon Musk Told Us He Was Sending a Car to Space, Then Said He Totally Made It Up." *The Verge*, The Verge, 2 Dec. 2017, www.theverge.com/2017/12/1/16726822/spacex-falcon-heavy-tesla-roadster-launch-elon-musk.

Peck, M. Scott. "A Quote by M. Scott Peck." *Goodreads*, Goodreads, www.goodreads.com/quotes/212298-abandon-the-urge-to-simplify-everything-to-look-for-formulas.

Powell, Jim. "John Locke: Natural Rights to Life, Liberty, and Property: Jim Powell." *Foundation for Economic Education*, Foundation for Economic Education, 1 Aug. 1996, fee.org/articles/john-locke-natural-rights-to-life-liberty-and-property/.

Rebong, Kevin. "NYC Dominates List of High-Growth Opportunity Zones: Report." *The Real Deal New York*, The Real Deal New York, 4 June 2019, therealdeal.com/2019/05/07/nyc-tops-list-of-wealthiest-opportunity-zones-report/.

Rice, Mae. "The Precision Robo-Labor of 3D Printers Is Changing Construction." *Built In*, 1 Oct. 2019, builtin.com/hardware/3d-printing-construction.

Rubinstein, Dana. "Assembly to Begin a New Push for High-Speed Rail." *Politico PRO*, Politico LLC, 7 Mar. 2018, www.politico.com/states/new-york/albany/story/2018/03/07/assembly-to-begin-a-new-push-for-high-speed-rail-300968.

Samuelson, Paul A., and William D. Nordhaus. *Economics*. McGraw-Hill, 2010.

Smith, Sean, et al. "The World Needs to Build 2 Billion New Homes over the next 80 Years." *World Economic Forum*, World Economic Forum, 2 Mar. 2018, www.weforum.org/agenda/2018/03/the-world-needs-to-build-more-than-two-billion-new-homes-over-the-next-80-years.

Simon, Scott. "Opinion: Should It Be Illegal To Sleep Outside?" *Pittsburgh's NPR News Station*, 90.5 WESA, 14 Dec. 2019, www.wesa.fm/post/opinion-should-it-be-illegal-sleep-outside#stream/0.

SIWI Swedish Water House. "Inclusive and Sustainable Cities: Creative Solutions to New Challenges." *Worldwaterweek.org*, Stockholm International Water Institute, 25 Aug. 2019, www.worldwaterweek.org/event/8396-inclusive-and-sustainable-cities-creative-solutions-to-new-challenges.

The Dwelling Place of NY. "About The Dwelling Place of NY." *ABOUT | The Dwelling Place of New York*, The Dwelling Place of NY, thedwellingplaceofny.org/about/.

 "The Founders and the Pursuit of Land." *The Lehrman Institute*, lehrmaninstitute.org/history/founders-land.html.

UN Habitat. "Slums: Some Definitions." *UN Habitat State of the World's Cities*, UN-Habitat, mirror.unhabitat.org/documents/media_centre/sowcr2006/SOWCR%205.pdf.

US Census Bureau. "American FactFinder - Results." *American FactFinder - Results*, 5 Oct. 2017, https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_S0801&prodType=table

US Census Bureau. "American FactFinder - Results." *American FactFinder - Results*, 5 Oct. 2017, https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_S0801&prodType=table

VanTol, Victoria. "Homelessness Among the Elderly Expected to Triple in 10 Years." *Invisible People*, Invisible People, 4 June 2019, invisiblepeople.tv/homelessness-among-the-elderly-expected-to-triple-in-10-years/.

Verhulst, Stefaan, and Andrew Young. "OPEN DATA IN DEVELOPING ECONOMIES: Toward Building an Evidence Base on What Works and How." *Challenges of Construction Industries in Developing Countries: Lessons from Various Countries*, The GovLab, July 2017, www.irb.fraunhofer.de/CIBlibrary/search-quick-result-list.jsp?idSuche=CIB%2BDC8937.

Wells, Thomas. "Sen's Capability Approach." *Internet Encyclopedia of Philosophy*, Erasmus University Rotterdam, www.iep.utm.edu/sen-cap/.

Zarenski, Ed. "Construction Inflation Index Tables." *Construction Analytics*, 16 Oct. 2019, edzarenski.com/2016/10/24/construction-inflation-index-tables-e08-19/.