Commercial Real Estate Analysis and Recommendations for Economic Development

University of Michigan, Stephen M. Ross School of Business
Multidisciplinary Action Project (MAP)
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I.   Executive Summary

The following report is a result of a University of Michigan Stephen M. Ross School of Business Multidisciplinary Action Project (MAP) for Invest Puerto Rico spanning January through April 2020. The project included a week-long visit to the island of Puerto Rico by the MAP team and three months of primary research, secondary research, data analysis, and qualitative studies to deliver recommendations for Invest Puerto Rico. The report is summarized as shown below, with details on high-level takeaways.

Project Overview
Invest Puerto Rico, a non-profit organization established by law in 2017, promotes the island of Puerto Rico as an investment destination for companies in the mainland United States and elsewhere. The MAP team was charged to investigate commercial real estate properties (hereafter referred to as 'properties') and provide recommendations to develop tools and methodologies to attract new companies to the island. The team also researched target industries (primarily knowledge services) to determine how needs align with the existent inventory of properties on the island. We worked with resources from the University of Michigan (viz. faculty, staff, library, etc.), Invest Puerto Rico, and other stakeholders including the Department of Economic Development and Commerce (DDEC) of Puerto Rico to analyze and propose recommendations.

Situation Analysis
The results of the team's analyses resulted in the following key takeaways:
- Context: While Puerto Rico faces numerous challenges including high utility costs, frequent natural disasters, and a highly informal and fragmented real estate system, investors could benefit from the island's unique economic positioning. Benefits include nearly 98% [1] of the island being classified as an opportunity zone, tax incentives for businesses, and the availability of bilingual talent.
- Inventory Analysis: Using stakeholder resources and publicly available data, the team aggregated property inventory information. Through this analysis, we found that there is no central database which can aid potential investors to find real estate properties on the island. The available data sources contain a limited number of properties, with often inaccurate and incomplete property attributes. The team aggregated all publicly available datasets and realized the necessity for a central tool.
- Key Industry Analysis: The team then analyzed the needs of key industries under consideration through in-person interviews with key stakeholders and secondary research. We found that the knowledge services industry has real estate requirements that are different from legacy industries like heavy manufacturing. A lot of properties on the island were also found to be modeled for heavy manufacturing and would require widespread remodeling to be move-in ready for new industries like knowledge services.

- Real Estate Tools: The team also conducted research on key stakeholders in the real estate business in Puerto Rico to understand the impact of a central tool. This research, along with analysis and comparison of tools currently on the market in the mainland United States, including CoStar and Reonomy showed that a self-developed tool is optimal. Key areas to focus on to develop such a tool include design elements, a polished crowdsourcing and peer review process, manual data collection, incentivized data verification methods, and identifying software development partners.

Recommendations

Following the analysis of real estate inventory, key industries and real estate tools, the team recommends that Invest Puerto Rico **self-develop a central commercial real estate tool**. Comprehensive attributes need to be included in the design and property data collected and verified for accuracy. To implement this tool, Invest Puerto Rico should undertake the following:

- Engage Stakeholders: Invest Puerto Rico should pursue ways to gain stakeholder buy-in prior to making any changes to the existent real estate system on the island. The team recommends several steps, so the deployment of the new real estate tool is seamless. These include key stakeholder identification, crowdsourcing, a detailed peer review process, ways to ensure utilization of the tool and data accuracy, and methods to communicate value to stakeholders.
- Define a Business Model: Before developing the tool, it is important to determine the business model through which this tool will be deployed. The team recommends using government funding initially to encourage utilization by key stakeholders. This could then be expanded through a co-op ownership model or a subscription-based model once the tool gains widespread acceptance.
- Maintain Tool Accuracy and Access: Ensuring complete, accurate, and up-to-date information and user permissions is imperative. Peer reviews and administrative oversight can address these.

The team recommends implementing the tool through a four-step process starting in mid-late 2020. These include business model finalization, developer identification and beta launch, inventory aggregation and public rollout by mid-2022.

These steps can have a massive impact on the Puerto Rican economy. New investors will be easily able to identify if a property is available on the island to open their businesses without much hassle, unlike today. This will enable Puerto Rico to be viewed as easy to do business as the mainland United States and position Invest Puerto Rico to reach the island's economic development goals.

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III. Project Overview

A. Background

Invest Puerto Rico

Established as a non-profit organization by law in 2017, Invest Puerto Rico's overall mission is to promote Puerto Rico as a competitive investment jurisdiction and attract new business and capital investment to the island to boost the economy. Invest Puerto Rico's strategy is to align, facilitate, and enhance the promotion efforts of private, public, and nonprofit organizations that have historically supported government initiatives and driven economic development within their sectors [2]. Working hand in hand with the Department of Economic Development and utilizing public and private funding, the organization seeks to be the go-to resource when corporations look to relocate or start a business platform on the island [3].

Thus far, Invest Puerto Rico has streamlined two major tools to increase the efficiency of investing on the island. First is the Single Business Portal (SBP), a digital platform where companies submit their applications for incentive permits, location approvals, and more [4]. No longer do interested companies need to communicate with multiple departments within the government, but instead are able to do all they need through one site. In addition to the SBP tool, Invest Puerto Rico offers The Perfect Site tool, which allows users to better navigate the real estate on the island and understand where move-in ready office, industrial, and manufacturing sites are located [5]. The tool also allows users to better understand the current infrastructure and demographics of the island through offering overlays of residential, hospital, and school locations, along with a map of public transportation and park areas.

Looking forward, Invest Puerto Rico is focusing their promotional efforts on the knowledge services industry in key markets throughout the U.S. and abroad. The organization is successfully launching Puerto Rico into a new era where the island will be able to market itself as a highly desirable location for companies to locate, as well as manage economic hurdles, whether the current COVID-19 crisis or future challenges [3].

B. Overview / Methodology

Our goal was to provide actionable insights on the commercial real estate inventory on the island so Invest Puerto Rico can promote the resources available to potential new investors. To accomplish our objective, we investigated cataloging island properties and real estate tools that would work best for Puerto Rico. Our team also analyzed relevant stakeholders. Furthermore, we researched targeted industries and analyzed property needs.

Our methodology throughout the project involved three major steps. First, our team utilized the University of Michigan's Library services to perform a deep dive into the history of Puerto Rico and the economic cycles the island has gone through. Second, we traveled to the island to understand what the current real estate inventory is and interview key players. Lastly, we researched current commercial real estate tools that are used in other jurisdictions. A full list of Sources can be found in Appendix A. The report set forth below includes our findings and recommendations that will benefit Invest Puerto Rico going forward.

C. Deliverables

As a result of data aggregation analyses completed, the team produced three major deliverables:
  i.   Aggregated real estate inventory data
  ii. Proposed real estate management tool and implementation plan
  iii. Recommendations to advance and promote management of real estate assets

Due to lack of available data sources with key attribute details and varying industry needs with size of firms, a fourth deliverable noted in our Letter of Engagement, compiled real estate attributes needed by key sectors, was not completed. Recommendations for next steps to complete this assessment, however, were defined and are included in Section IV.C.

These results were presented to the sponsor through several touchpoints, which include:
  i.   MAP midpoint presentation, March 5th, 2020 (slide deck)
  ii. MAP final presentation, April 15th, 2020 (slide deck)

The details of the project's scope, its deliverables, and the team's approach agreed to at the beginning of the project (January 2020) were documented in the Letter of Engagement shown in Appendix B.

IV. Situation Analysis

A. Context

History of Puerto Rico

Often unacknowledged in the mainland United States' analysis of economic development, Puerto Rico has been a U.S. territory since 1898. This status has granted the island numerous benefits over the years but has also caused difficulties in seeking out the best path forward for economic development and sustainability. As a U.S. territory, residents of Puerto Rico are granted U.S. citizenship. At the same time, residents of Puerto Rico are not afforded the same Constitutional rights as other U.S. citizens. This juxtaposition of governance has led to fiscal instability that has compounded over a decade-long recession [6].

The decline in the island's gross domestic product (GDP) starting in 2006 is primarily due to three main reasons. First, the territory is plagued by debt spurred on by a panicked government seeking ways out of a road towards bankruptcy [7]. Second, the population of Puerto Rico is quickly aging, while the talent is migrating to the mainland in search of higher paying opportunities and no barriers to entry [8]. As of 2015 the migratory balance with the United States between 2006 and 2015 saw a net 444 hundred thousand people leave and not return to the island [9]. Third, the island lacks the infrastructure to sustain high demand for manufacturing and production of goods. Therefore, when the U.S. disbanded many of Puerto Rico's tax advantages, companies were incentivized to seek out alternatives, increasing the vacancy in commercial real estate inventory [10].

In addition to the debt crisis, Puerto Rico also suffered from a cycle of natural disasters that dismantled the island infrastructure, thereby damaging the island's ability for regrowth, and harming the companies' perception of the island beyond reality. In 2017, two hurricanes, Irma, and Maria, devastated the island with an economic impact of $43-159 billion dollars [11]. While Puerto Rico has recovered immensely from these hurricanes, the infrastructure on the island, specifically the electric grid, is still experiencing difficulties, and therefore creates a disincentive for new investors. As recently as 2020, the island was hit by a 6.4 magnitude earthquake adding to investors' concerns regarding the infrastructure and long-term prospects of investing in relocation to the island [12]. Now, at the time of this report, the island is facing the uncertainty of economic instability brought on by the COVID-19 global crisis [13].

Puerto Rico Regulatory Arena

The current regulatory climate in Puerto Rico provides a company relocating to the island with numerous benefits in the form of tax credits and tax exemptions. Act-60, signed into law on July 1, 2019 by the former Governor of Puerto Rico Ricardo Rossello, consolidated various programs including the previous promotional incentives set out in Act 20 and Act 21 [14].

Puerto Rico's new incentive code provides the following benefits: 4% income tax rate, 0% distribution of dividends rate, 75% property tax exemption, 75% exemption over construction taxes, 50% municipal patent exemption, and 50% exemption over municipal taxes [15]. In addition to these benefits, corporations and residents do no pay U.S. federal taxes and there is a 100% tax exemption from Puerto Rico income taxes on all dividends, interest, and long-term capital gains accrued after becoming a bona fide resident [15].

In addition to the tax incentives, nearly 98% of Puerto Rico qualifies as an opportunity zone [1]. Opportunity zones allow companies who wish to invest in long-term developments to receive enhanced benefits. On the federal level, these benefits include temporary deferral of income tax gains, a step-up basis for gains, and income tax exclusion for opportunity fund gains [16]. Local to the island, these benefits include an 18.5% tax on the funds net income, 100% tax exemption on interest and dividends, 25% exemption on license, property, and construction excise taxes, tax deferment on capital gains, credit priority system, 25% tax credit, and a simplified permit process [15].

Historically, Puerto Rico has always instituted several incentive programs to spur investment on the island. Two of these programs that arguably ended up causing more harm than good are Section 936 and the EB-5 Investor Visa program.

Section 936 of the Internal Revenue Code was a method to encourage banking, finance, manufacturing, pharmaceutical and electronic companies to come to Puerto Rico [17]. Beginning in 1976, Section 936 granted U.S. corporations enormous tax exemptions if the companies relocated to Puerto Rico. This caused a large uptick in investment in the island from companies wanting to take advantage of the tax benefits [17]. However, in 1996, President Clinton signed legislation to phase out Section 936 over the next 10 years to be completely repealed in 2006. Starting in 2006, the companies that no longer could receive these incentives began leaving the island, contracting the economy, and drastically increasing the unemployment rate. Section 936 is now criticized as a major contributing factor to Puerto Rico's almost decade long recession [17].

EB-5 was created by Congress in 1990 as a method to stimulate the economy and create more jobs.[8] Investors were able to qualify for the EB-5 visa through investing in new commercial enterprises that create at least 10 full-time jobs, and invest a minimum of $1 million in capital,

including several other requirements [18]. However, EB-5 is no longer a program that is working fluidly to bolster investment on the island. Due to the lack of organization and transparency, wait time for visas has risen to anywhere between 29- and 45.5-months causing investors to seek other less arduous places to redeploy their capital [19].

Act-60, although promising, could fall into the same pitfalls as previous legislation if not leveraged properly. Specifically, Act-60 needs to be analyzed for whether it promotes the right companies to invest on the island and whether these companies will remain on the island long-term and boost the number of jobs being offered. In addition, Act-60 must be analyzed for whether the government is set up to appropriately manage and guide companies through the program so that they are motivated to access the benefits.

Perception Vs. Reality

Not only has Puerto Rico suffered from a lengthy recession, poorly designed incentive programs, and environmental disasters, media coverage continues to distort the current state of the island. Popular news sources throughout the world continue to depict Puerto Rico as a location that is devastated and helpless. A quick Google search pulls up articles with headers such as "Puerto Rico Faces Uneven Underfunded Recovery," [20] "Puerto Rico's Economy Has Been Plummeting Like a Stone," [21] or "Deadly Puerto Rico Earthquake Leaves Close to 300k Homes, Businesses Without Water" [22]. In reality, the impact from the natural disasters is not widespread and the island offers numerous benefits to companies wanting to invest to incentivize them to relocate.

B. Current Status of Commercial and Industrial Real Estate Data

Puerto Rico has a lot of challenges to overcome in its current economic situation. One of these challenges is to understand the status of its commercial and industrial real estate in order to develop new ways to strategically win more U.S. mainland and foreign investors and companies to invest in Puerto Rico's real estate. In order to understand and analyze this challenge, our team reviewed the aggregated real estate inventory of Puerto Rico.

We found that there is no official aggregated inventory that provides data for the entire island's commercial and industrial real estate. This is mainly because there is no tool available for private and public sectors to aggregate such inventory. Instead, each organization in the private and public sector consolidates its own subset of real estate inventory and only provides some of that information on their respective websites for the public to view (see JLL Real Estate section). This makes it impossible to understand the overall current status.

Also, decentralized lists of inventories make it difficult to keep all records up to date to ensure proper information can be provided to possible investors and companies. Therefore, it is critical

to have a workstream moving forward to consolidate Puerto Rico's commercial and industrial real estate information.

This section that follows summarizes the findings of our research on the analysis of the existing inventory, processes used by organizations on data aggregation, and how Invest Puerto Rico could move forward to overcome the challenge of Puerto Rico's real estate inventory. We first discuss the data available from three broker websites, and then provide analysis of the aggregated inventory. In this section we also provide information from our interviews with PRIDCO and JLL Real Estate. Details and findings of our research on tools are reviewed in Section IV. D.

Data Aggregation

As previously mentioned, there is currently no centralized inventory list of Puerto Rico's commercial and industrial real estate. To get some understanding of the current situation, data was aggregated from the public sector of the following real estate broker websites:

  i.   Christiansen Commercial Real Estate (https://www.christiansencommercial.com/)
  ii. Point2Homes (https://point2homes.com)
  iii. Cushman & Wakefield (https://propertyconceptscommercial.com)

From these websites, over 400 properties were aggregated into MS Excel (attached as a separate file and summarized in Figures 1-3). Because there is no common way individual brokers consolidate inventory data of the respective properties, only a subset of the properties' attributes was included as part of this aggregation. These attributes are as follows:

  i.   Address
  ii. Price
  iii. Building size
  iv. Lot size
  v.   Type
  vi. Short description

For some real estate brokers and properties, further attributes were available. However, because of the lack of information on other properties on such attributes, these were excluded. Also, not all the above stated attributes were included for every property; in some cases, attributes were missing for these properties.

Data Aggregation Analysis

We also conducted an analysis of the aggregated data. Figures 1 (Christiansen Commercial Real Estate), 2 (Point2Homes) and 3 (Cushman & Wakefield) depict the results of this analysis:
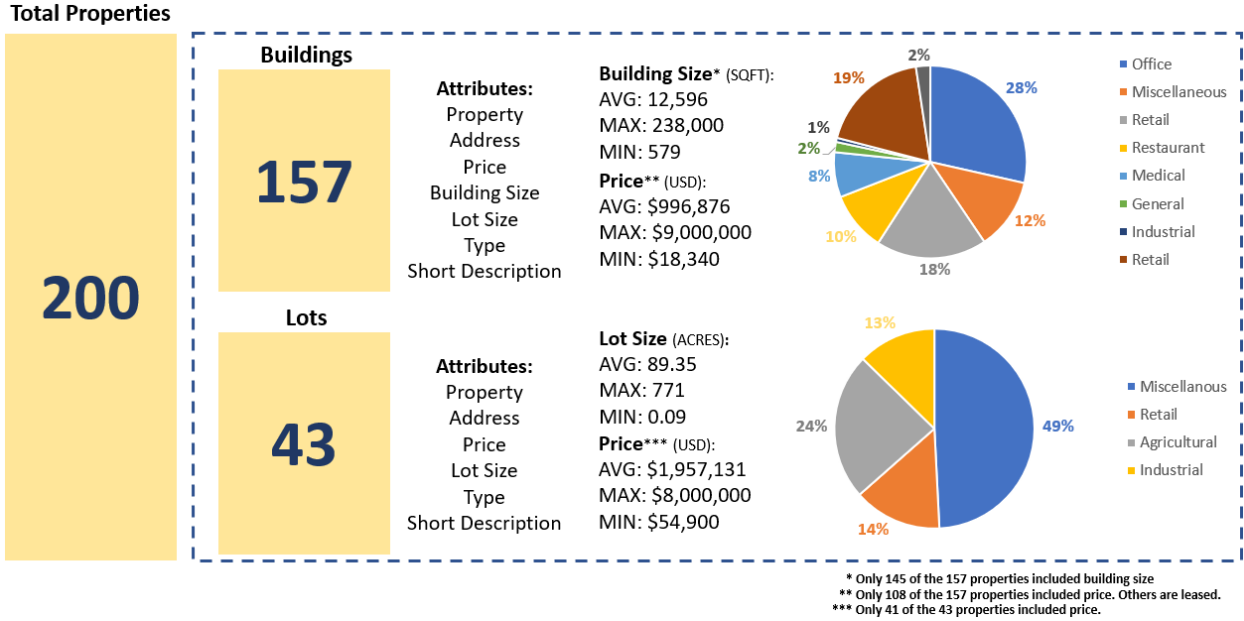
Total Properties

200

Buildings

157

Attributes:
Property
Address
Price
Building Size
Lot Size
Type
Short Description

Building Size* (SQFT):
AVG: 12,596
MAX: 238,000
MIN: 579
Price** (USD):
AVG: $996,876
MAX: $9,000,000
MIN: $18,340

- Office 28%
- Miscelaneous 12%
- Retail 18%
- Restaurant 10%
- Medical 8%
- General 2%
- Industrial 1%
- Retail 19%
- 2%

Lots

43

Attributes:
Property
Address
Price
Lot Size
Type
Short Description

Lot Size (ACRES):
AVG: 89.35
MAX: 771
MIN: 0.09
Price** (USD):
AVG: $1,957,131
MAX: $8,000,000
MIN: $54,900

- Miscellanous 49%
- Retail 14%
- Agricultural 24%
- Industrial 13%

* Only 145 of the 157 properties included building size
** Only 108 of the 157 properties included price. Others are leased.
*** Only 41 of the 43 properties included price.

Figure 1: Analysis of Christiansen Commercial Real Estate

Total Properties

231

Buildings

205

Attributes:
Address
Price
Building Size
Type
Short Description

Building Size* (SQFT):
AVG: 8,673
MAX: 344,445
MIN: 400
Price (USD):
AVG: $603,551
MAX: $9,000,000
MIN: $27,000

- Comm/Ind 99%
- Mixed Use 1%
- Hotel 0%

Lots

26

Attributes:
Address
Price
Lot Size
Type
Short Description

Lot Size** (ACRES):
AVG: 164.17
MAX: 899
MIN: 4.5
Price (USD):
AVG: $1,447,596
MAX: $6,315,500
MIN: $58,000

- Comm/Ind 38%
- Farm And Agriculture 62%

* Only 139 of the 205 properties included building size
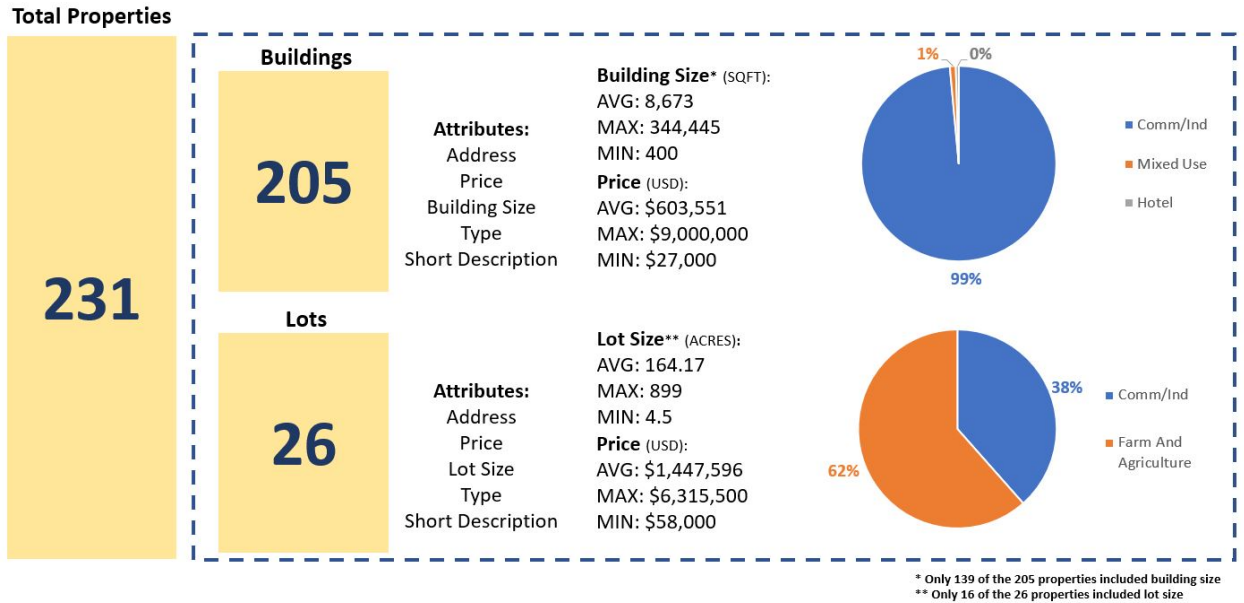** Only 16 of the 26 properties included lot size
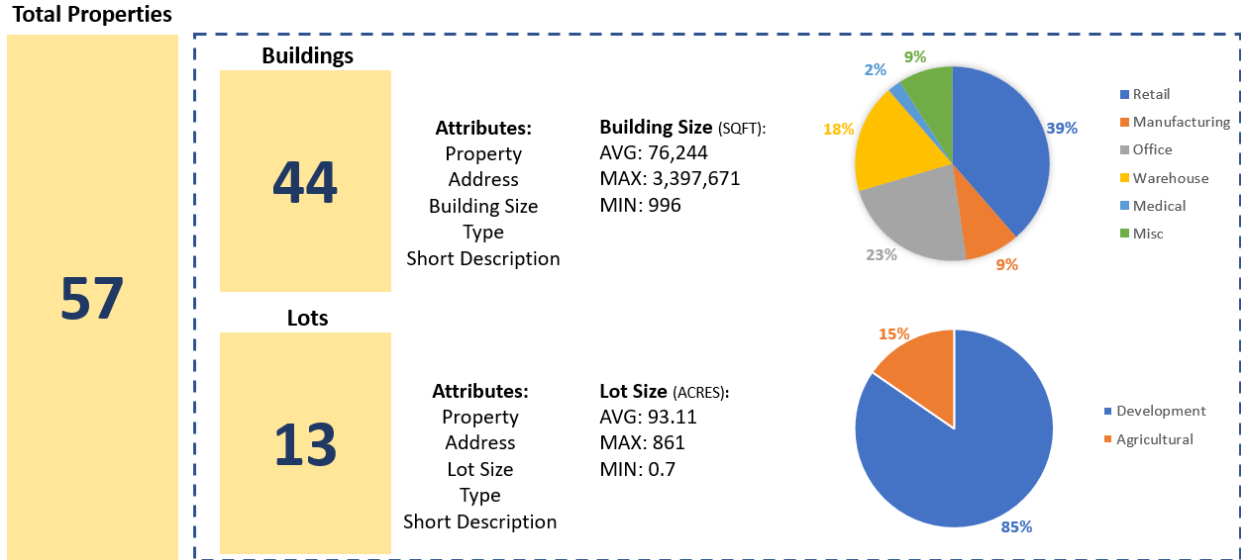
Figure 2: Analysis of Point2Homes

Figure 3: Analysis of Cushman & Wakefield

As shown in these figures, of the 400+ properties gathered, there is a lot of variability in terms of square footage, lot size, and types of properties. Prices ranged from $18,340 to $9,000,000, while the building sizes range from 996 square feet to 3,397,671 square feet. The property types from Cushman & Wakefield and Christiansen also vary a lot with offices and retail taking the biggest percentage of the properties. Point2Homes only provides attribute values of "Mixed Use", "Comm/Ind", and "Hotel", and therefore it is unclear how many of these properties are for retail, offices, medical, etc. However, as stated earlier and detailed in the JLL Real Estate section, there are some concerns with the accuracy of the information provided by the brokerage websites and may therefore be misleading.

PRIDCO

Puerto Rico Industrial Development Company (PRIDCO) is an organization created and owned by the Puerto Rican government and its main purpose is to oversee the finances and operations of government owned commercial and industrial real estate. It is also in charge of providing incentives to domestic and foreign companies that have manufacturing operations or provide services on the island.

Because of its crucial role in Puerto Rico's commercial and industrial real estate, we gathered further information on Puerto Rico's current real estate status by conducting an interview with Mr. Norberto Pérez O'Neill, Director of the Real Estate Strategic Development Office. The following information was provided by Mr. Perez during the interview.

PRIDCO's Inventory

PRIDCO currently owns 1,560 commercial industrial and real estate properties, which per Mr. Perez, is about 90% of the total industrial inventory of the island. About 1-2 new properties are

built each year to provide real estate for new businesses that move to Puerto Rico. The status of PRIDCO's inventory during the time of our interview is also provided in the Real Estate Inventory Excel file, which also includes the data aggregation from the public broker websites.

PRIDCO's Database

The inventory system from PRIDCO is maintained by the finance team. In case of a property's status change, the finance team manually updates the inventory. The system then automatically updates each morning at 8am to provide up-to-date information to the broader organization. This is also true if no changes to the inventory were made the previous day.

PRIDCO's Contract Process

Mr. Perez is in charge of connecting investors with existing properties on the island. Once an interested investor contacts Mr. Perez, he requests the square footage needs of the investor in order to search the database. Also, the investor is requested to provide information on what the facility will be used for. If properties match the criteria, Mr. Perez asks his team to visit and verify the status of the property. The list and status of properties is provided to the investor to review.

In parallel, if needed, Mr. Perez follows up with the planning team and civil engineers in order to get a sense of how much investment is needed to prepare, modify, or rebuild the facility for the investor. As a next step, Mr. Perez provides a proposal to the investor. Contingent upon interest, Mr. Perez provides the lease agreement for the investor to sign, followed by his engineering team handing over the keys to the investor. Lastly, Mr. Perez transfers the paper to the finance team to update the inventory database.

If no existing property matches the needs of the investor, Mr. Perez also manages the process to build a new facility per the needs of the investor.

JLL Real Estate

During our visit to the island, we also conducted an interview with Andrew Carlson, who is the Senior Vice President of JLL Real Estate (JLL) and is in charge of commercial and industrial real estate in Puerto Rico, Caribbean, and Latin America (LATAM). JLL is the second largest commercial real estate firm in the world and is headquartered in Chicago, Illinois.

Current Island Inventory Status

Mr. Carlson confirmed that there is still a lot to be done for property inventory on the island. To support his view, he stated that there is currently no consolidated property inventory for the public to view. Recently, JLL has also tried to contact other real estate brokers to share their property data so that it could be consolidated in a combined effort. However, no other real estate brokers were willing to share any data. In addition, most data on brokerage sites cannot be

trusted as it is not accurate, which JLL found out as they started aggregating their own data and verified individual sources. In some cases, properties that did not even exist were found listed.

JLL Real Estate Inventory

JLL started to aggregate Puerto Rico's commercial real estate in a manual and brute force fashion with the goal to have a central property database. Because the data is aggregated manually, it is a very expensive and time-consuming process. Multiple analysts and interns search real estate broker's websites, match, and confirm the respective property's data using the Centro de Recaudación de Ingresos Municipales (CRIM), and then enter the data into JLL's database. During our interview, Mr. Carlson stated that JLL has aggregated a total of 516 properties in their database. At the time of the interview, JLL had been aggregating data for approximately three months.

Throughout the aggregation process, JLL discovered several insights about the current property inventory. One such insight is that the prices of inventories for sale vary greatly because owners often expect to sell a property at a very unreasonable price - both low and high. These unreasonable prices make it difficult for a firm such as JLL to estimate the actual market price of a property. One of their goals is to eventually take advantage of their aggregated inventory database to calculate reasonable market prices for each property.

The experiences of PRIDCO and JLL underscore the lack of coordination and accuracy in real estate data. Without coordination, it is difficult to support the real estate market in order to benefit the overall wellbeing of Puerto Rico. The inaccuracies in real estate data provided on the individual public websites make it difficult to assess the current situation of the real estate market. Therefore, such issues must be resolved as part of the strategy to win more investors and companies to invest in the real estate market of Puerto Rico.

C. Knowledge Services Industry Attributes

Invest Puerto Rico's promotional plan outlines the nonprofit's desire to bring knowledge services industries to the island. As part of our analysis, we researched the commercial real estate needs of these companies. Per our conversations with representatives at Invest Puerto Rico, Puerto Rico is currently competing with markets like Dublin, Singapore, and other Caribbean countries that offer stability and strong incentives. Therefore, aligning the real estate inventory with the company needs will increase the island's marketability.

Target Market Rationale

The knowledge services industry is Invest Puerto Rico's target for three main reasons.

First, the knowledge service industry is on a steep growth trajectory. Year-over-year, as technology improves and more companies enter the space, there is an increase in momentum/demand. For example, according to the U.S. Bureau of Labor Statistics Growth Forecast by employments numbers (2016-2026), information services, consulting services, and office administration services are the among the top fastest growing industries [23].

Second, knowledge services companies will capitalize on the island's highly educated population and retain talent on the island. Puerto Rico currently has numerous universities with excellent engineering programs. Puerto Rican engineering students are often recruited to the mainland due to the current lack of knowledge services companies on the island and higher salaries (Carlo, M., Acting Director and Dr. Vega, P., Director, Computer Science and Engineering, University of Puerto Rico at Mayagüez, personal interview, February 11, 2020). Per our interview with the University of Mayaguez offering more opportunities for these students will decrease the net outward migration.

Lastly, there is already a strong desire from knowledge service companies to invest in Puerto Rico. Per the DDEC Incentive Application Information there is a strong showing for companies applying to receive incentives on the island. This shows that Puerto Rico is already an attractive destination and will be easier to market to once a fully developed tool is in place [3].

Knowledge Services Companies' Interview Insights

Throughout our analysis, we conducted several interviews with existing companies located on the island, companies who have considered investing in opening/expanding a business on the island, as well as a representative from the Puerto Rico Department of Economic Development and Commerce (DDEC). Four major themes emerged from these conversations that provide further insight into what is required to motivate and entice new investment and what is flawed in the current process.

The organizations interviewed include Wovenware, Fusion Farms, Engine-4, University of Mayaguez, JLL and DDEC.

- Wovenware provides product development services to meet a variety of clients needs including chat box interfaces, artificial intelligence needs, data analytics, application modernization, cloud solutions and nearshore software development. Wovenware is located in San Juan in a government building currently owned by the Department of Sports and Recreation. (Gonzalez, C., CEO of Wovenware, personal interview, February 12, 2020).
- Fusion Farms a company that looks to combine the hydroponic growing of agriculture products with the implementation of a self-sustaining ecosystem. Fusion Farms is currently successfully operating in what was once a vacant PRIDCO building and seeks

to continue to expand the business and utilize more of the vacant inventory on the island (Lang, K., co-founder and CEO of Fusion Farms, personal interview, March 26, 2020).

- Engine 4 is a coworking tech space in Puerto Rico with over 24,000 sq. ft of facilities in Downtown Bayamon. Engine - 4 offers individuals and small companies the opportunity to access a community office space with reliable internet, parking, fast track city permits and a train friendly location. One of the main goals at Engine – 4 is to help foster kids' interest in software development (Torres, L., co-founder of Engine-4, personal interview. February 11, 2020).
- University of Mayaguez is a public University in Puerto Rico. Students at this University typically graduate to work for knowledge services companies within software development or financial sectors. Approximately 1,700 students graduate from the University every year (Carlo, M., Acting Director and Dr. Vega, P., Director, Computer Science and Engineering, University of Puerto Rico at Mayagüez, personal interview, February 11, 2020).
- JLL is a brokerage firm that offers commercial real estate services throughout the world including Puerto Rico (Carlson, A., Senior Vice President and Keenan, H., Analyst, JLL Real Estate, personal interview, February 12, 2020).
- DDEC is a government department that owns and manages the leases of 90% of the industrial properties on the island of Puerto Rico. DDEC seeks to be the one stop shop for any company looking to invest on the island, using the single business portal and PRIDCO owned properties, which are exempt from property taxes (O'Neill, N., Director, Real Estate Strategic Development Office at Puerto Rico Industrial Development Company, personal interview, February 10, 2020).

The four major themes that emerged from conversations with the above companies include 1) there is a lengthy time frame for acquisition, 2) the information is either absent or misrepresentative 3) there is a high cost to redevelop, and 4) there are not adequate incentive programs.

Long Acquisition Timing: Looking first at the acquisition time frame, one of the key issues raised was that even after a target property was determined, the time frame to occupy was drawn out and riddled with roadblocks. Examples provided as to why the process was so arduous included first, a hiring freeze on all government agencies; departments like PRIDCO lack the adequate resources needed to execute a seamless investor assistance process. Second, the inspections needed for the property to be deemed habitable are often not reported accurately and in a timely fashion, which creates bottlenecks and a need for multiple reports. Third, the SBP created for simplicity is in fact not user friendly and is filled with software malfunctions that prohibit the documents from being submitted easily. Lastly, the process is fraught with complications that cause the investor to run into similar bureaucratic inefficiencies as acquiring a PRIDCO property. This is true even for privately owned parcel acquisitions.

<u>Missing or Inaccurate Information</u>: As analyzed in the above sections, these interviews highlighted problems related to the lack of existing inventory information that companies need to access. Examples provided of this issue include that the PRIDCO database does not provide the necessary information for a business to determine its interest in the property. Another example is the misrepresentative data across all information sources such as the PRIDCO database, CRIM and private broker websites. A final example is that in order to find a property, there is a high level of need for local knowledge to navigate the landscape. This is necessary to both find the property and to manage navigating loopholes to expedite the process. Having a local expert becomes especially important since we were informed some of the listings produced are in fact fake or not actually listed by the broker.

<u>Need for Redevelopment:</u> A large portion of the current real estate inventory available is not developed for knowledge service companies. Because of this, the structures often require a large injection of capital in order to meet the needs of the company. In our tour around Puerto Rico it was made clear to us that many of the industrial parks were not currently suited for knowledge service companies. The main issue presented with this problem is that the redevelopment would be extremely costly and once it is completed the investor is not given ownership rights to ultimately profit from the hard work of managing the redevelopment process.

<u>Inadequate Incentives</u>: The final theme that emerged from our conversations was that incentives provided are either insufficient or not in alignment with community needs. For example, although incentives like the ones provided by PRIDCO are encouraging, they are not viewed as enough to overcome all the other major shortfalls, such as process complications, timing, and cost. Companies are attracted to the idea that Puerto Rico is cheaper than the mainland U.S. and yet still get the 'Made in the USA' sticker. However, the barriers to entry are proving too arduous without proper incentives. In addition to the poor execution of incentive programs, there is also an issue with incentives favoring outside investors. Companies currently on the island that wish to grow are not able to take advantage of the same incentives as outside investors, despite the need for growth in the economy. Another example is the structure of PRIDCO incentives. Because private brokers are not able to compete with the same incentives offered by PRIDCO they are at a disadvantage. This hinders the competition in the market which would otherwise could encourage and improve the client experience. Thus, the incentives are currently not set up in a way that align with the needs of the island.

These issues raised by our primary sources are consistent with the outside research we conducted and reinforce the need for improvement in real estate data and acquisition processes. Well thought out processes that align with the inventory needs of businesses seeking to invest with the needs of the economy in Puerto Rico are needed to foster quick and more efficient growth.

Knowledge Services Attribute Considerations

There are a number of commercial real estate attributes knowledge services companies require given their similarities. Through our interviews and secondary research, the below nine attributes stood out.

- Square Feet: Knowledge services companies vary widely in the number of employees desired and thus the size of a building needed ranges greatly. However, our research shows that companies in this industry are trending towards a more collaborative work space which allows for a greater number of employees per square feet. According to the Office of Real Property Management Performance Measurement Division a survey of the private sector indicated the average space per person to be 200 Usable Square Feet (USF). However with the design of an office shifting toward collaborative spaces the has shown that this number can now go as low as 80 USF [24].

- Location: Knowledge services such as financial activities, information services, and professional and business services all attract educated talent. Young professionals that fit this category are typically college graduates seeking to live near metropolitan communities with access to good education for their children and entertainment. Therefore, a key attribute that these companies will look for is proximity to a major city as well as quality public transportation for the employees to utilize (Representatives of Invest Puerto Rico, personal interview, February 12, 2020).

- Transportation: Another attribute that is important to consider is transportation services. Although knowledge services companies do not depend as much on ports and airports as a manufacturing company, ease of access to airports and/or piers is going to be a feature knowledge services organizations consider [25].

- Parking Ratio: Parking in Puerto Rico is very limited, yet a highly important attribute for knowledge service companies per our interviews. Commonly the ratio of parking spaces needed for commercial real estate is 4 spots per every 1,000 SQ FT of space [26]. Thinking of creative solutions to these parking needs will be crucial in attracting companies within this category.

- Growth Potential: Companies within this industry are growing quickly. Specifically, entrepreneurial businesses under the knowledge services umbrella look for buildings in which they can grow into. Having multiple floors available to rent and/or own will be an attractive feature that companies will look for. For example in our conversations with Christian Gonzalez at Wovenware he indicated that the building he currently occupies is attractive because there is an opportunity to grow and expand within the building (Gonzalez, C., CEO of Wovenware, personal interview, February 12, 2020).

- Redevelopment Needs: Knowledge services companies are not looking for heavy lift buildings. Per our interviews the average timeline for a new transition is typically 3-6 months. Therefore, at most, moderate redevelopment will be the bar for whether the commercial property is attractive to the company. In our interview with Kendell Lang at

Fusion Farms he expressed concern with the length of time it takes to get a building occupiable because every day the company is not operating is lost revenue (Lang, K., co-founder and CEO of Fusion Farms, personal interview, March 26, 2020).

- <u>Previous Use</u>: Given the island's history of heavy manufacturing,knowledge services companies will want assurance that the property does not have a history of environmental concerns. Health and safety of employees is a major priority of most all companies and mitigation of environmental issues will make inventory highly unmarketable

- .<u>Construction Requirements</u>: Given Puerto Rico's history of earthquakes, each building will require documentation of being up to code. Companies within the knowledge services industry look for a solid electrical infrastructure to meet the needs of work that is both tech heavy and confidential in nature. Wovenware specifically indicated that having a stable electrical grid was key to their operation being successful (Gonzalez, C., CEO of Wovenware, personal interview, February 12, 2020).

- <u>Walkability</u>: Walkability is not a major requirement for knowledge services companies. However, inventory located in areas with high walkability scores will be significantly more attractive. People thrive when they work and live in an area with high walkability scores and thus being able to provide this to employees will allow knowledge service companies to become more attractive [27].

D. Commercial Real Estate Information & Management Tools

After understanding the current status of the commercial real estate information in Puerto Rico and the property attributes knowledge services companies are looking for, we researched the different tool options to organize this data. In order to understand the options for commercial real estate information and management tools, we conducted a stakeholder analysis, benchmarked two existing tools, and reviewed possibilities for a self-developed tool.

Stakeholder Analysis

There are several stakeholders that will be impacted by a centralized commercial real estate database. Public brokers, private brokers, Invest Puerto Rico, the government, existing businesses on the island, and firms interested in moving to the island. Below is an analysis of each stakeholder including their current role in the real estate landscape, the benefits to them of a central database, and potential pushback to a central database.

i. **Public brokers**

<u>Research</u>: We spoke with Norberto Pérez O'Neill, Director of the Real Estate Strategic Development Office on February 10, 2020.

Current role: The largest public broker on the island is PRIDCO. PRIDCO oversees the finances and operations of government owned commercial and industrial real estate in Puerto Rico.

Benefit of central database: PRIDCO would benefit from a wider audience viewing its properties and more detailed and accurate information being presented about its properties.

Potential pushback to a central database: PRIDCO may view the development of a new real estate database as an attempt to infringe on its role and responsibilities. PRIDCO currently has a list of available properties on its website for public consumption, but the information provided is limited. It is difficult to get a good sense of the lot size, property type, and sale price of the properties, and therefore it is difficult to rely on the tool as a resource to analyze existing real estate to meet the needs of a potential new business.

ii. **Private brokers**

Research: We spoke with Andy Carlson and Henry Keenan from JLL Real Estate on February 12, 2020.

Current role: There are a number of private commercial real estate brokers on the island. All private brokers show their own listings on their own websites and many properties can be found on multiple websites. Based on our interviews it appears that there is no collaboration between private brokers or between public and private brokers. Therefore, all the individual firms are collecting their own foundational property information and duplicating work.

Benefit of central database: A central database would provide one source of accurate data and create more trust and coordination between brokers and investors.

Potential pushback to a central database: Private brokers may view the creation of a central database as destruction of the value they provide. In the current commercial real estate landscape in Puerto Rico, even the most foundational property information is valuable because of the lack of a central database. This concern could cause brokers to hoard instead of pool information.

iii. **Invest Puerto Rico**

Research: We spoke with Gail Nolan, John Bozek, Yanira Camacho, and Sam Talman throughout this project from January through April 2020.

Current role: Invest Puerto Rico's mission is to "promote Puerto Rico as a competitive investment jurisdiction to attract new business and capital investment to the Island." In order to attract new business, Invest Puerto Rico wants to make it as easy as possible for third parties to access complete, reliable commercial real estate information remotely.

Benefit of central database: A central database would allow Invest Puerto Rico to further its mission and make it simple for prospective new businesses to access complete, reliable real estate information.

Potential pushback to a central database: None.

iv. **Existing Businesses on the Island**

Research: We spoke with representatives from Engine-4 and Wovenware in February 2020 and a representative from Fusion Farms in March 2020.

Current role: When existing, local businesses want to expand or are interested in changing locations, they currently find new commercial real estate by word of mouth, and in some cases by going door to door.

Benefit of central database: Local businesses would benefit from easy to access, reliable commercial real estate information. The search for property would be standard for all local businesses, which would create efficiencies and a more liquid commercial real estate market on the island.

Potential pushback to a central database: Creating a more liquid, transparent commercial real estate market would level the playing field and could potentially take away some advantage that currently exists for local businesses that have beneficial relationships with property owners.

v. **Firms interested in moving to the island**

Current role: There is currently no standard for how prospective new businesses to Puerto Rico can access all available commercial real estate information. One way prospective businesses can gather information about the real estate landscape is to have a broker such as JLL take them on a five day roadshow. This requires a significant investment from prospective businesses and is inadvertently creating a high barrier to entry to consider moving a business to Puerto Rico.

Benefit of central database: A central database would remove the barrier to entry to initiate a commercial real estate scan of Puerto Rico. A complete and reliable web-based tool that prospective businesses can access themselves would save them time and money.

Potential pushback to a central database: None.

While there are many benefits to instituting a centralized commercial real estate information and management tool, some stakeholders may see this as an intrusion on the value they bring to the process. A critical component of tool implementation will be to engage with all stakeholders to ensure they understand how the tool will benefit them and address any concerns they may have.

Existing Commercial Real Estate Information and Management Tools

There are several existing commercial real estate information and management tools that Puerto Rico could utilize on the island. Each has advantages and disadvantages from Invest Puerto Rico's perspective. Two examples of these tools that bookend the market are CoStar, the high-end standard with high end cost, and Reonomy, a startup that is going after the mass market

  i. **CoStar** [28]

According to CoStar's website, "with over $1 billion invested in research operations, we've built and maintained the industry's most comprehensive database of commercial real estate information."

Userbase: Over 125,000 commercial real estate professionals; global; brokers, property managers, and investors.

Cost: Varies widely based on user characteristics such as geography, organization type, organization size, number of users, etc. (CoStar sales representative, personal interview, April 6, 2020).

Business model: Subscription fee. Two confidential sources we spoke with indicated that they are paying $10,000 to $30,000 per year for regional information for 2 to 20 users at one firm (Appendix D).

Information: General property information, aerials, photos, floor plans, listings (verified every 30 days), sales comps, lease comps, tenant information, tenant lease details, area demographics, and analytics (rent, occupancy, and absorption over a period of time).

Functionality: Detailed search, market, industry, and forecasting research, historical market performance, surveys, customizable reports.

Other: Over 5.3 million total properties, nearly 2,000 researchers (largely U.S., Canada, and Europe), 'go to source' for 86% of all commercial real estate transactions.

Pros for Puerto Rico: Well-established, proven, ensures completeness and accuracy.

Cons for Puerto Rico: Does not currently cover Puerto Rico; magnitude of cost unknown, but most likely high.

Why not in Puerto Rico yet? The cost for CoStar to catalog all the properties in Puerto Rico most likely outweighs the userbase's willingness to pay.

ii. **Reonomy** [29]

Reonomy is "a startup that ingests some 100 sources of data, including multiple public and proprietary data feeds and crowdsourced information, and then uses artificial intelligence to crunch it to provide market intelligence that is used by developers, investors, acquirers and anyone else who works in the area of commercial property" [30].

Userbase: More than 100,000 customers; investors, developers, and businesses looking for customer leads.

Cost: Varies based on use case. Reonomy's basic package starts at $299/month for individuals. Most stakeholders would probably require the Teams or Enterprise packages which have customized pricing (Reonomy sales representative, personal interview, April 6, 2020) [31].

Business model: Usually a fee for a certain number of 'unlocks' every month; unlocks allow users to access property owner contact information.

Other: Over 50 million properties, uses machine learning and data from private (CoreLogic and Dun & Bradstreet) and public (state-level government) sources.

Functionality: Detailed search, can add custom data, can record notes and store proprietary files for individual properties [32].

Pros for Puerto Rico: Since Reonomy is a startup, they may be more flexible to work with on cost and scale the product to fit Puerto Rico's specific needs.

Cons for Puerto Rico: Does not currently cover Puerto Rico; magnitude of cost unknown.

Why not in Puerto Rico yet? Most likely due to a lack of access to information.

While existing tools are an option, they may not be willing to expand into Puerto Rico, or it may be cost prohibitive. Therefore, a self-developed tool should also be considered.

Self-Developed Tool

A self-developed tool is also an option. Based on our analysis, one of the biggest barriers to implementing a centralized commercial real estate information and management tool is the lack of complete and accurate property data. Therefore, if Invest Puerto Rico can solve the data problem, a self-developed tool could be designed to meet Puerto Rico's needs in a way that is more cost-effective and efficient than implementing an existing tool.

In order to understand more about how to approach a self-developed tool, we spoke with James Goebel and Lisa Ho from Menlo Innovations, a software design and development firm in Ann Arbor, Michigan. In Table 1, we outlined two types of self-developed tools, an 'all property' solution and a 'top properties' solution. There are two significant differences between these tools: the data collection method and the sophistication of software development required. The all property solution requires a relatively complex crowdsourcing and peer review process to collect the data and a more sophisticated software solution. The top property tool calls for a more manual data collection process and a less sophisticated software tool. Therefore, the all property tool will most likely be much more expensive relative to the top property tool.

Table 1: Self-Developed Tool Options

	All Property Solution	**Top Property Solution**
Description	An online tool that catalogs and verifies all commercial property information as well as provides a simple, searchable user interface	A website that highlights the top available commercial properties in each category (e.g. small, mid-size, large knowledge services, hydroponics, etc.) by providing complete and accurate property information in a consistent, easy to understand format
Objective	The goal is to give prospective businesses the opportunity to search through all commercial property on the island in order to determine if there is a property that is well-suited to their needs	The goal is to show prospective businesses that there are commercial properties on the island that are well-suited to their needs and they should consider Puerto Rico in their formal search
Design Elements	- Data collection interface - Data peer review interface - User view interface - User sort functionality - User custom data functionality	- Standard property template for data collection - Standard property template for web display - Web display structure
Data Collection	Crowdsourcing and peer review	Manual
Data Verification	Crowdsourcing and peer review	Manual, incentivized
Development	Significant	Minimal
Testing	Significant	Minimal
Implementation	Roll out tool; establish ongoing crowdsourcing and peer review	Go live with website

	processes; manage user base including access type	
Maintenance	General software maintenance; ensure effectiveness of crowdsourcing and peer review	General modifications to the standard property template or website structure
Cost	Companies that have created similar tools have invested significantly in their development. For example, as of November 2019, Reonomy had raised $128 million. To get an accurate cost estimate, the tool scope and design would need to be determined in detail.	To set up the website structure and standard property template, there will be some upfront costs. If you paid a software engineer $25 per hour for 500 hours, the cost would be $12,500 for set up. Cost for data collection and maintenance can be scaled up or down from $20,000 per person annually.

V.   Recommendations

As evidenced by the analysis in the previous sections, Puerto Rico's need for a centralized database for all commercial real estate is clear. The lack of availability of a central real estate information database is hurting the Puerto Rico economy, and it is imperative that steps need to be taken to tackle this issue as soon as possible.

A. Overview: **Develop a Centralized Commercial Real Estate Tool**

Our team recommends Invest Puerto Rico **self-develop a commercial real estate tool**. A centralized database tool is necessary for the island to move forward in its quest for economic development. Below, we outline the value proposition supporting a centralized tool and next steps to determine the best centralized tool option.

Value Proposition for a Centralized Commercial Real Estate Database

The lack of a centralized commercial real estate database is currently a barrier to entry for firms and investors interested in moving to and investing in Puerto Rico. In today's globalized and digital world, business development research often begins on the internet. Firms and investors want to self-serve preliminary information to narrow their search for where to move or expand their businesses. Without an online resource accessible to potential new businesses, Puerto Rico is not as visible as competitors.

There are several reasons why Puerto Rico needs a centralized commercial real estate database: (1) increased convenience, (2) increased visibility, and (3) increased value.

First, having one location for all commercial real estate information on the island increases convenience for customers. Instead of scanning multiple websites, calling multiple brokers, and visiting in person firms and investors need a resource they can trust to be complete and accurate to start their research. It also makes it easier for brokers to search through properties and find what potential investors are looking for.

Second, increased visibility is created by having one standard across the island. This will ensure that everyone is communicating about the same property and that interested parties can sort properties by standard attributes.

Finally, a central database increases value because creating and maintaining a single central database is much more efficient than everyone maintaining their own. This has the added benefit

of allowing brokers to focus on building out additional proprietary information because the foundational information is already accessible to all.

Therefore, a centralized commercial real estate database is critical to attract new business and investment to the island of Puerto Rico.

To successfully implement this tool, Invest Puerto Rico should undertake the following to address the issues and position the country for real estate growth:

    i.   Investigate & select a tool
   ii.   Engage key stakeholders
  iii.   Define a business model
  iv.   Maintain accuracy & access

B. Investigate & Select Centralized Tool Option

Self-developed tool
Compared to an existing commercial real estate information and management tool, a self-developed tool has advantages that outweigh the disadvantages.

Advantages include creating the tool to meet specific needs, owning the tool to ensure control, and paying less to maintain the database relative to the cost of subscription fees to the entire user base. By creating a tool to meet specific needs, Invest Puerto Rico could only pay for the functionality required for the island's commercial real estate needs. This would result in paying a more reasonable price and not paying for functionality in an existing tool that is not needed. Owning the tool ensures control of maintaining the completeness and accuracy of the database. It also allows the owner to develop standard policies and procedures for the user base that accomplish its objectives. A self-developed tool would also cost less to maintain in-house as opposed to paying a third party to do so.

Disadvantages include significant upfront cost and owner responsibility for ensuring the completeness and accuracy of the data. Also, if for some reason the self-developed tool is no longer sufficient or cannot be maintained anymore, the sunk cost is lost.

Commercial Tools
While we recommend creating a self-developed tool, Invest Puerto Rico should use existing tools as resources during their development process.

- CoStar: While Puerto Rico may not require all the functionality that CoStar provides, it may be worth contacting CoStar's business development team to understand what it would look like for CoStar to move into Puerto Rico.
- Reonomy: While Reonomy does not yet cover Puerto Rico, it is worth reaching out to Reonomy's business development team to understand if they have gathered any information on Puerto Rico so far, if they plan to move into Puerto Rico, and what the cost of setting up coverage for Puerto Rico would be.

Self-developed tool content and development

To begin the data collection process, we aggregated an initial set of available commercial real estate properties (400+ properties) with publicly available data. This, along with the underlying datasets available on the current Invest Puerto Rico commercial real estate map (website tool) will be a good starting point for the tool.

This new tool should have data attributes relevant to the growing needs of upcoming key industry sectors- namely, knowledge services, IT, etc. As detailed in the previous sections, the data attributes that are present in currently available databases in Puerto Rico might not be relevant to the upcoming needs of new industries. It is imperative that the tool is updated with changes in the economy. This can be guaranteed by our recommended peer creation and review process. Key elements to consider during tool development and deployment are detailed below:

- Design Elements - Database Property Attributes: An initial list of property attributes that should be cataloged are listed below. These attributes are based on Reonomy's property attributes and search filters that are detailed in Appendix E.

  - Building, Lot, & Location: Attributes such as year built, year renovated, number of buildings, number of floors, number of units, building area, asset type, lot area, zoning, full address

  - Ownership: Attributes such as owner name, mailing address, and whether or not it is owner occupied. While ownership information can be found in tax records, it can be difficult to find contact information which is what users will be interested in when they find a property they are interested in pursuing. Therefore, the owner contact information provides an opportunity to differentiate user access in the business model, potentially charging a fee to access this data.

  - Tenants: Attributes such as business name, business address, business industry, type of location, number of employees, year moved in, and lease terms such as contract end date.

➢ Sale History: Attribute such as sale date, transaction type, and document type, sale price, foreclosed or not, price per square foot of building, price per square foot of lot, and deal financing.

➢ Debt: Attributes such as date of transaction, maturity date, lender(s), amount, document type, mortgage type, interest rate, interest type, term, and signatories.

➢ Tax: Attributes such as tax amount, assessed land value, assessed improvement value, total assessed value, land market value, improvements market value, and total market value.

➢ Custom Data: A place to add proprietary property attributes, property notes, and property files that is only available to the user or entity that entered the information.

- Crowdsourcing and Peer Review Process: A crowdsourcing and peer review process is one way to address the data collection and verification gap that currently exists. An initial outline of this process is below:

  i.   Identify stakeholders that have access to desired property information.
  ii. Recruit and qualify stakeholders to input desired property information online.
  iii. Create an interface to allow both (a) online input and (b) online review of desired property information.
  iv. Gamify the input and review process by offering incentives for number of properties and/or attributes contributed and number of entries reviewed.
  v.   Keep track of stakeholder metrics such as number of contributions and number of reviews as well as completeness and accuracy of those contributions and reviews.

- Manual Data Collection: Hire part-time employees, students, or interns to source and maintain top property information. Using entry-level labor up to $10/hour would be roughly $20,000 per employee per year. If one employee can research (and verify, see footnote 4) a little over one property per week, they can document 50 properties per year. A list of top properties may only need to show 100 properties to be compelling, and once the initial list and relationships with brokers are established, data collection will be much more efficient.

- Manual, Incentivized Data Verification: While initial data collection can begin online and through brokers and other stakeholders, the information will need to be verified in person to ensure completeness and accuracy. To increase the efficiency of both the data collection and verification processes, brokers can be incentivized. Invest Puerto Rico

could offer to highlight the exclusive broker of a property on the top property page increasing the broker's visibility and credibility. In exchange, Invest Puerto Rico will be able to more easily collect and update information.

- Software Development Partners: While hiring a software development firm to design, develop, test, and implement the tool is the most straightforward approach, it is also worth considering partnering with a local organization to develop the tool. While a software development firm may still be required to manage the project, university students or other organizations that provide coding training may be interested in partnering on the project. This would be a great way to engage the community as well as potentially lower the cost of the project.

The success of a centrally available database tool is dependent on the data aggregated in the tool. The accuracy of the data being stored in this database is crucial for it to be widely accepted. To ensure data accuracy, regular maintenance of the database is important.

C. Engage Key Stakeholders

One of the most critical aspects of implementing a central tool is buy-in from all stakeholders. As several stakeholders are involved in an informal economy like Puerto Rico, this issue will need to be tackled before pushing the tool out for public use. Since the commercial real estate information is currently decentralized, it will require support from stakeholders to aggregate, maintain, and ensure accuracy of all data. A formal stakeholder engagement process should be started immediately to gather input from brokers, the government, and businesses to communicate the benefits to all of this tool and get a full understanding of pressure points for individual stakeholders.

Starting this process early will allow time to work through any issues or complications that arise. There are two primary goals in engaging stakeholders: (1) to have stakeholders participate in the crowdsourcing and peer review process and (2) to have stakeholders rely on and utilize the tool to create one standard and source of truth across the island, ensuring that stakeholders are brought in early is important.

Prospective Stakeholders

Stakeholders are anyone interested in improving accessibility of commercial real estate information in Puerto Rico or those with a broader interest in improving economic development on the island. We have already identified several stakeholders in this report including public brokers, private brokers, Invest Puerto Rico, existing businesses on the island, and prospective businesses to the island. Other stakeholders include government entities with property information such as CRIM. Collectively, these are the stakeholders with the access to the most

property information. In addition to these groups, other private citizens, schools or universities, and special interest groups may want to be involved in this project. These and other stakeholders will need to be engaged in different ways based on the goals of engagement above.

Stakeholders Vital to Tool Utilization

Stakeholders are anyone that will be using the tool in the future. This includes Invest Puerto Rico, public brokers, private brokers, existing businesses, future businesses, and prospective investors. It will be important to identify the right group of people because their input will be important into the tool design process. The more involvement this group has in the early stages, the more ownership they will have over the tool and this will increase the tool utilization rate upon implementation.

Engagement Process

While there are slightly different stakeholders for the two primary goals, there is significant overlap and one stakeholder engagement process can be run incorporating both tracks. After key stakeholders are identified, steps in the stakeholder engagement process are as follows:

i. Communicate key objectives, value proposition, and general stakeholder engagement plan

ii. Hold an initial workshop to gather input from stakeholders; focus on questions such as:
   ➢ What is your current role in Puerto Rico's economic development?
   ➢ What role do you play in the commercial real estate market?
   ➢ What value do you provide to the commercial real estate market?
   ➢ How do you currently gather property information?
   ➢ Would a central commercial real estate database be helpful to you and your business?
   ➢ What would be the benefits to you of a central commercial real estate database?
   ➢ What would be the drawbacks to you of a central commercial real estate database?
   ➢ What information would you like in a central commercial real estate database?
   ➢ What functionality would you like in a central commercial real estate database?
   ➢ Would you be willing to pay for a central commercial real estate database? How much?
   ➢ Would you be willing to contribute property information to a central commercial real estate database in return for access to the complete database or other incentives?

iii. Synthesize initial findings from the workshop and determine:
   ➢ Which stakeholders are already supportive of the tool?
   ➢ Which stakeholders need additional support to understand the value of the tool?
   ➢ The common arguments against a central tool

iv. Organize the stakeholder engagement process into work streams and develop execution plans; work streams may include:
- ➢ Stakeholder outreach to increase support of tool
- ➢ Tool promotion to broader community
- ➢ Input into crowdsourcing and peer reviewing property information
- ➢ Input into tool design
- ➢ Input into designing tool implementation

Communicating Stakeholder Value

There will be some stakeholders that consider a central commercial real estate database as a threat instead of an opportunity. It is important to identify these stakeholders early on, understand their pain points, and help them understand how they will personally benefit from this tool as well as how the island of Puerto Rico will benefit from this tool.

While the benefits of a centralized real estate database to the island of Puerto Rico as a whole are more obvious and in line with Invest Puerto Rico's mission, the value to individual stakeholders may be less obvious. Based on initial conversations with a small group of stakeholders, we anticipate the following arguments against a central commercial real estate database. Along with these arguments, we propose counterpoints to help communicate the value stakeholders will realize.

i. <u>The tool will take away the value I provide to clients. They find it valuable when I provide them property information for the properties I represent</u>.
Yes, this tool will provide basic property information for all properties on the island, but your clients will still need your expertise to communicate with buyers and sellers. When representing buyers, this tool will give you the ability to show them all of the available properties on the island that meet their criteria. When representing sellers, this tool will give you the ability to make that property visible to a much wider audience including both prospective buyers on and off the island.

ii. <u>If I contribute my property information to the central database, I will have nothing incremental left to share with my clients to give me a competitive advantage.</u>
The crowdsourcing and review process for property information will only cover specific property attributes. Certain proprietary information such as sales comparable transactions, lease comparable transactions, and tenant lease terms may be retained by stakeholders. The tool will allow stakeholders to add this proprietary information to the database without giving access to all users. That way stakeholders will be able to continue to differentiate themselves from competitors. Since the central database will provide basic property information, stakeholders will not need to spend time researching basic data and can allocate more time to building up their proprietary information.

D. Define a Business Model

A second key success factor of the centralized real estate tool is defining the optimal business model. Many of the existing commercial real estate information and management tools operate under a subscription-based business model where the tool owner charges all users a periodic fee. While this model could be deployed in Puerto Rico, it may be difficult to get stakeholders to buy into a new, unproven tool. At least initially, government funding would be the most likely to encourage tool utilization by as many stakeholders as possible resulting in faster and higher value creation.

Once the tool has been fully implemented and the value is being realized by stakeholders, a subscription fee or a co-op ownership model may be appropriate. Also, discounted pricing could be provided to stakeholders based on the amount they are contributing to collecting and maintaining the data, so they are incentivized to continue doing so.

Tool Business Models

There are a number of ownership and business models to consider for a commercial real estate information and management tool. One business model may be best to get the tool set up and another business model may be best to maintain the tool once it is fully adopted and operational. Business model options are summarized below.

- Subscription Model: Many of the existing commercial real estate information and management tools operate under a subscription-based business model. The tool owner charges all users a periodic fee based on things such as number of users, size of the business, or amount of information accessed. This model would require the tool owner to provide the upfront set up costs and then the owner would be able to recoup those costs and earn a return over time. The payback period will depend on the magnitude of the upfront cost compared to the number and cost of subscriptions.
  Examples of subscription models include CoStar, Reonomy, Netflix, Amazon Prime, health clubs, and internet providers.

- Government Funding Model: A government funding model would require the government to fund both the set-up costs and maintenance of the tool. This would be a subsidy to catalyze a firm such as Invest Puerto Rico to take on the task of implementing a tool to promote economic development on the island.

  Examples of government funding models include tax incentives to attract new businesses, agriculture subsidies to stabilize food prices, and housing subsidies to help individuals own their own homes.

- Cooperative (Co-Op) Model: A co-op business model would require stakeholders to buy-in to the tool as owners. This means everyone would have a piece of the pie based on their contribution. Therefore, stakeholders would be accountable for their proportional allotment of the upfront and maintenance costs but would also benefit from the value of the tool, whether it be the use of the tool or revenue from others using the tool. Examples of co-op business models include Ace Hardware Corporation, Recreational Equipment, Inc., Land O'Lakes, Inc., Ocean Spray, and Sunkist Growers, Incorporated.

- Hybrid: Government Funding + Subscription Model: Another way to approach the tool business model is to have the government fund upfront tool development costs as well as operating and maintenance costs for a period of time until the tool is fully adopted. At that point, the tool owner could start charging a subscription fee or the business model could be transitioned to a co-op. This grace period funded by the government would most likely encourage utilization of the tool by as many stakeholders as possible.

E. Maintain Tool Accuracy & Access

Data accuracy

One of the most difficult tasks of implementing a central tool is ensuring complete, accurate, and up-to-date information not only when the tool is implemented, but over the life of the tool as well. CRIM is a good source for information, but it is only updated periodically as new property tax information is collected and is only as accurate as the tax information collected. To ensure and maintain accurate data, companies such as CoStar have employees that make phone calls property by property to gather the information. This is a very labor-intensive process which would require a lot of time and money especially for initial data compilation and verification.

Another way to ensure data completeness and accuracy is to **employ peer creation and review**. This would require building a trusted network of stakeholders who have access to this information and defining a standard process and procedures for compiling and maintaining the data. There are several databases that are maintained in this way, one of the most well-known being the website Wikipedia. Users can contribute to and modify information on the website and accuracy is ensured through review by other users. The peer review method will require some oversight to resolve conflicting reports or disagreements, but it is much less labor intensive than centrally validating properties one by one. While stakeholder buy-in is critical to tool implementation, it is also necessary to create a successful peer review system.

Tool access

User permissions will need to be addressed for tool implementation. There are three main categories of users: owner, peer reviewers, and viewers. The owner will be the administrator of

the database. The owner will be responsible for qualifying and managing users as well as resolving any disputes that arise between peer reviewers. Peer reviewers will need to be qualified and will require read/write access to the database. Finally, viewers will only be able to view the data and will not have access to make changes. Qualification criteria to become a peer reviewer will need to be developed. Also, there should be a registration process for viewers in order to collect standardized information about who is using the database for what purposes.

F. Implementation Timeline

Implementing the tool and deploying it through Puerto Rico's real estate stakeholders will be a time-consuming process. The team forecasts the following timeline for implementation, while understanding that several challenges, economic and societal, can derail this plan.

i.   <u>Tool and Business Model Proposal (mid - late 2020)</u>: Invest Puerto Rico should deep-dive into the various alternatives suggested for a new tool and create a business model proposal by late 2020. This should be after considering the amount of capital that can be invested and number of personnel that can be allocated on a long-term basis.

ii.   <u>Identify Developer and Beta Launch (early - mid 2021)</u>: Invest Puerto Rico should identify a developer for the new software tool and plan to have a beta launch during this time period.

iii. <u>Aggregate Available Inventory (mid 2021 - ongoing)</u>: Data aggregation is foreseen as the longest lead-time item in the tool development and deployment process. Invest Puerto Rico should start off by aggregating all data provided by the MAP team onto the tool and verify accuracy of the database at the time of upload. This can then be supplemented with peer review and maintenance steps as detailed in section V.B.

iv.   <u>Public Rollout & Stakeholder Acceptance (mid 2022 - beyond)</u>: Once the tool gathers enough data from all available resources and Invest Puerto Rico achieves a confidence level that major metro area properties are covered by the tool, public rollout can begin. We anticipate this phase to begin around mid-2022, after which gradual stakeholder acceptance of the tool will be seen in the months that follow.

The bulk of this report was based on the knowledge services industry as the focal point due to the shift in Puerto Rico's economic landscape lately. Our recommendations have also thus been focused on the knowledge services industry, but it is key to note that the centrally developed tool, when properly implemented, can be scaled to accommodate the needs of any upcoming industries. This also reiterates the need for a new tool for the island of Puerto Rico for sustained long-term development.

G. Additional Economic Development Ideas: Detroit Case Study

Puerto Rico is unique in that the island provides a company the opportunity to manufacture goods and services within the U.S., yet it is challenged by an infrastructure that is not fully developed and lack of support from the U.S. that leaves many gaps in the island's needs. Given the island's uniqueness, there is no direct case study to compare that would provide a clear path forward for how to increase the accuracy of real estate inventory data in order to align the commercial real estate needs of knowledge service companies with the current inventory on the island. However, through an analysis of Detroit's story, the municipality's history has similarities to Puerto Rico. We believe that Invest Puerto Rico could look to Detroit for solutions to promote economic growth. Implementing similar initiatives in Puerto Rico will help attract and match new businesses to real estate inventory in order to create a more robust economy.

Detroit History

 Nearing the end of the 19th century, Detroit was a fertile location for the automobile industry. Stimulated by a booming economy, Detroit grew quickly led by the momentum of the big three auto firms. Over the span of just 12 years (1945-1957), these three firms built twenty-five new manufacturing plants [33]. By the 1950's, the city was thriving and had swelled to a population of 1.8 million. This marked the end of Detroit's upward climb because for the next several decades Detroit suffered from a cycle of disasters. Throughout the 1960's and 1970's the city was challenged by devastating race riots, which led to economic and social fallouts and increased the outmigration to the suburbs [33]. Between 1950 and 2010, Detroit lost approximately 60% of its population, leaving vast areas of a city that is large enough to fit San Francisco, Manhattan, and Boston all within its boundaries vacant [34]. In addition to the high vacancy, the economic decline decreased the city's tax revenue and ultimately culminated in the municipality filing for bankruptcy in 2013 [35]. For decades, Detroit battled with issues of prejudices, net outmigration, corruption, and a low investment due to a stigma that the city would never be able to come back to life and be worth investing in.

Despite the compounding hardship and negative perception, the city endured and clawed itself out of the economic decline, so much so that Detroit once again is a thriving economy. Common threads between Puerto Rico and Detroit include, but are not limited to, low diversity in the economy, high levels of vacant industrial buildings, debilitating debt, and a history of economic decline brought on in part because of low investment due to a negative stigma.

Lessons from Detroit

Understanding what Detroit has done successfully to overcome these common issues provides a model for possible recommendations in the future. Four of the paths forward that Detroit utilized, relevant to Puerto Rico from the Commercial Real Estate standpoint include, 1)

privatizing the ownership of commercial real estate, 2) diversifying the economy, 3) providing incentives and tax breaks, and 4) encouraging community engagement.

First, **private ownership of commercial real estate** in Detroit is at the heart of the successful turnaround of debilitated assets. The combination of the mass exodus to the suburbs and the 2008 recession led to much of the land and vacant buildings being turned over to the city and land banks. Since the recession, the city and land banks have sold these buildings sometimes for just $1 to private investors such as Dan Gilbert who were best suited to repurpose and revitalize the building [36]. Private owners are profit oriented, operate with high efficiency, and have a great depth of institutional knowledge and are thus in the best position to bring dilapidated buildings back to life through the injection of large sums of capital.

Puerto Rico faces a similar challenge as Detroit did because a large portion of the industrial real estate is owned by PRIDCO. Thus, a learning that comes from this case study is that PRIDCO should no longer operate in the real estate ownership business by holding onto title and leasing the buildings. Doing so creates overhead, delays, and inefficiencies. Instead PRIDCO could sell the inventory outright. Similar to what happened in Detroit, this would lead to an increase in the quantity of investors interested in PRIDCO buildings, thus decreasing overall vacancy on the island.

Second, **economic diversification** is key. The economy in Detroit for decades was supported by the auto industry. While this seemed like a safe strategy for many years given the strength and size of the market, the bankruptcy of Chrysler and General Motors in 2009 quickly shed light on the flaws of the strategy. Since 2009, Detroit has increased efforts to become a more diverse economy by marketing to and encouraging other industries to invest [37]. Specifically, Detroit has positioned itself to target tech companies and foster entrepreneurial endeavors. For example, in 2007 the New Economy Initiative (NEI) was specifically created in order to create a more diversified economic landscape in Detroit [38]. Since the NEI's foundation it has helped created over 17,500 jobs many of which are in the tech sector. Thus, Detroit went from a city known almost exclusively for its manufacturing of vehicles to offering a wind range of employment opportunities. The diversification of job opportunities increased the migration of young professionals into the city looking for jobs, which then led to more companies relocating to the city in order to chase the incoming talent [37].

Invest Puerto Rico is already implementing a strategy to diversify away from an economy dominated mostly by pharmaceuticals by targeting knowledge services. Continuing this initiative is in line with the initiative leveraged by Detroit. However, it is also important in the long term that the island consider the full range of economic opportunities and not just knowledge services in order to decrease vulnerabilities.

Third, Detroit has implemented **numerous tax exemptions and community incentives** via grants to motivate investment in the city. For example, there is a state program called the Michigan Community Revitalization Program. As part of this program there is a fund created to encourage investment in areas historically unattractive to companies. Businesses that qualify are able to take advantage of any combination of a grant, loan and other economic assistance to facilitate their business [38]. Programs such as this are designed to connect the thriving areas of Detroit, so the city becomes one and eliminates the pockets of blight.

The lessons gleaned from looking at Detroit's tax exemptions and incentive programs is to have a strong understanding of the current status of the economy and real estate inventory. Having this understanding will provide Puerto Rico with the tools to create programs in line with encouraging investment in the city as a whole, rather than in pockets, which will create long term sustainable benefits. For Puerto Rico, this means having a strong pulse on making sure the incentives being offered to businesses are in line with the investments the island wants to see long term.

Lastly, Detroit is a great example of a city that has been able to **create deep pride and encourage strong community engagement,** which has been fostered by community members pouring their heart and resources into contributing to changing the city for the better [39]. One example of this is the powerful marketing campaign "Detroit Vs. Everybody." In response to endless headlines portraying Detroit in a bad light, and the world at large seeing the city as a lost cause, Tommy Walker's campaign captured the spirit of Detroit's residents. The clothing line that reads simply Detroit Vs. Everybody was a message to people in the city that the residents are in the fight together and together could bring back Detroit despite the rest of the country publishing articles to the contrary [40].

Another example of the community engagement is LOVELAND Technologies, a software and data analysis company that is working to create a high-resolution map of every property in the city, including the vacant property that is often overlooked [41]. This company created as a community engagement platform has been instrumental in raising awareness of neighborhoods within the city that need help and decreasing the foreclosure problems [39].

Similarly, the population in Puerto Rico has immense pride in the island, their community, and their culture. Looking at grassroots campaigns that have been utilized in Detroit and other similar cities provides ideas that can be utilized by Invest Puerto Rico to create more unity. These efforts can improve Puerto Rico's economy and create stakeholder buy-in when marketing a real estate tool like the one proposed in this report.

While Detroit's history and commercial real estate inventory make the municipality a good case study to learn from, there are many other cities that have faced immense issues and come out the

other side. Looking at the history of Detroit or any number of metropolitans is a way for Invest Puerto Rico and the island as a whole to capitalize on what has worked and not worked so that new initiatives are not required to be created from scratch.

VI.   Conclusion

As outlined in previous sections, the University of Michigan MAP team believes that the biggest hurdle facing the commercial real estate market in Puerto Rico is that it is highly informal and fragmented. A highly informal market coupled with the negative public perception outside of the island has resulted in the island not being viewed as a lucrative destination for potential investors.

To further economic development, we recommended Invest Puerto Rico **self-develop a commercial real estate tool**. Comp rending required attributes, leveraging peer reviews and verifying data accuracy are essential.

Key aspects to implementing this recommendation include engaging stakeholders, defining a business model, and maintaining tool accuracy and accessibility
These steps, once implemented, can have a massive impact on the Puerto Rico economy. New investors will be easily able to identify if a property is available on the island to open their businesses without much hassle, unlike today. This will enable Puerto Rico to be viewed as easy to do business as the mainland United States. The new and improved ACT 60, along with this new tool can also provide valuable cost offsets to new businesses, who would otherwise have not invested in the island, given the high utility prices.

Our MAP team is pleased to have been a part of defining a strategy to advance Puerto Rico's real estate development. Working with Invest Puerto Rico had been a very positive experience and we are appreciative of the organization's partnership with the Ross School of Business. Working closely with Invest Puerto Rico has given us a unique opportunity to understand the commercial real estate market in Puerto Rico. We look forward to following the organization's efforts to implement and build upon our recommendation and anticipate learning of the positive impacts of the centralized tool in future real estate growth.

For Invest Puerto Rico, immediate and long-term next steps are detailed in the report in section V. We believe that through these steps, the commercial real estate landscape on the island can improve significantly and new businesses will invest in Puerto Rico without hesitation.

VII. Appendices

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Appendix B: Letter of Engagement

MICHIGAN ROSS   **INVEST PUERTO RICO**

January 13, 2020

Dear Gail and John:

The 2020 Ross School of Business MAP Team thanks you for the opportunity to assist Invest Puerto Rico by providing an analysis and strategy for managing a complex portfolio of public and private real estate assets. Our team will conduct the project with input from faculty advisor Brian Talbot, and communication coach Lisa Pawlik. This letter of engagement confirms our mutual understanding of the project motivation and objectives, scope, approach and timing, deliverables, and resource requirements.

Project Motivation & Objectives

Invest Puerto Rico's overall mission is to promote Puerto Rico as a competitive investment jurisdiction to attract new business and capital investment to the island in order to boost the economy. Puerto Rico is currently experiencing significant economic distress due to a long recession followed by a devastating hurricane in 2017 and the current earthquakes, putting the country in a disaster cycle. Invest Puerto Rico's strategy is to align, facilitate, and enhance the promotion efforts of private, public and nonprofit organizations that have historically supported the government initiatives and driven economic development within their sectors. Specifically for this project, the team will define a value proposition for real estate inventory and a solution to overcome the fragmented inventory and ineffective technology used to maintain communication between public and private real estate management brokers.

Project Scope

To accomplish the objective, the MAP team will catalog island properties and develop tools and methodologies to attract new multinational companies. Furthermore, the team will research targeted industries and analyze how the industry's critical needs align with the property inventory. Specifically, the team will:

1. Catalog Public and Private Commercial/Industrial Properties:
   a. Accumulate available data on properties in Puerto Rico through a variety of sources such as university resources, databases, brokers, and real estate developers.
   b. Aggregate and analyze property data.
   c. Identify methods to close the gap regarding property attribute inaccuracies and omissions.
2. Define Targeted Industry Needs
   a. Determine key sectors within manufacturing, logistics, knowledge services, and creative industries, relevant to Puerto Rico.
   b. Research and identify real estate needs for the above key sectors.
   c. Create master list of property attribute needs to include in the database.
3. Benchmark Commercial/Industrial Real Estate Information & Management Tools
   a. Identify current successful real estate information & management tools.
   b. Benchmark tools according to the needs of Puerto Rico's real estate needs.
   c. Provide recommendation for tool implementation.
4. Analyze Synergies Between The Real Estate Inventory and Industry Needs
   a. Identify alignment between inventory and industry needs.
   b. Pinpoint the gaps between inventory and industry needs.
   c. Recommend methods to bridge gaps.

Approach and Timing

Our time and effort will be structured in four phases as outlined below:

Phase 1: Project Entry and Initial Research (January 11-26) (2 weeks)

- Conduct kickoff meeting with project sponsor and establish weekly meeting cadence.
- Discuss and confirm the scope of the project.
- Finalize letter of engagement.
- Develop detailed project plan including dates by which work is to be accomplished (Gantt chart).
- Kick off research of existing property data, industry property needs, and real estate information & management tools.

Stage 2: Data Collection and Idea Generation (January 27-February 16) (3 weeks)

- Finalize Puerto Rico visit agenda.
- Continue conducting secondary research.
- Develop detailed research plan with interviewee and data resource targets, interview guides and data collection approaches
- Travel to Puerto Rico and conduct site visits to collect data from Invest Puerto Rico, industrial and commercial real estate entities, brokers, and companies.
- Compile primary and secondary information.

Stage 3: Data Analysis and Synthesis (February 17-March 7) (3 weeks)

- Analyze and diagnose research findings.
    - Analyze accuracy of the aggregated property data.
    - Identify alignment and gaps between existing properties and industry needs.
    - Analyze and compare real estate management tools.
- Present findings in interim PowerPoint deck to sponsor.

Stage 4: Solutions and Recommendations (March 7-March 28) (3 weeks)

- Develop strategic options for final recommendations.
- Rank and finalize proposed recommendations.
- Develop action plan for confirming recommendations.
- Conduct additional research as needed to finalize recommendations.
- Prepare outline and begin drafting final deliverables.

Stage 5: Final Deliverables (March 29-April 18) (3 weeks)

- Prepare final presentation.
- Prepare final report.
- Prepare companion documents.
- Deliver final presentation and written report.
- Transition project to Invest Puerto Rico for implementation.

Deliverables

As a result of the above activities, we will provide you with a detailed written report and deliver an oral presentation of our findings and recommendations on April 17-18. These deliverables will include the following:

- Aggregated real estate data and/or real estate data sources.
- Compiled real estate attributes needed by key sectors.
- Proposed real estate management tool and implementation plan.

- Analyze synergies between the real estate inventory and industry needs.
- Recommendations to advance and promote management of real estate assets.

Resource Requirements

To deliver the highest quality deliverables noted above, the team will need these support resources from Invest Puerto Rico including:

- Company liaison and backup liaison for managing the team's interactions.
- Access to relevant personnel at Invest Puerto Rico for interviews during the project.
- Access to previous analyses completed by Invest Puerto Rico.
- Timely response to data and feedback requests.

We are excited to be working with Invest Puerto Rico and look forward to delivering insightful, accurate recommendations that will have a lasting impact for the organization. We encourage you and other stakeholders to contact us with any questions, concerns, or suggestions at any time via our team liaison Carly Dietz (dietzcc@umich.edu).

Sincerely,

Carly Dietz   Nived Karumatt   Ken Mueller   Emily Walainis

This letter accurately describes our expectations of the Ross School of Business MAP project.

Appendix C: Real Estate Inventory Excel File (provided as a separate file)

Appendix D: CoStar Brochure

ACHIEVE YOUR FULL BUSINESS POTENTIAL WITH COSTAR

It's a given that your information needs will always be complex. And all the while you need to be at the center of what's happening, across every element of your business.

Are you buying, selling or leasing a property? Representing tenants or analyzing lease proposals? Valuing assets, underwriting loans or managing diverse portfolios? With CoStar Suite, you'll have the answers you need.

CoStar Suite provides the essentials to succeed in commercial real estate. For over 30 years, our researchers have captured and followed the intricate details behind every commercial property. As a result, over 125,000 commercial real estate professionals have unparalleled access to the largest number of listings ever assembled, detailed sale comps, actionable analytics, and the cutting-edge technology to bring it all together in a professional and efficient environment.

YOUR SOURCE FOR COMMERCIAL REAL ESTATE INTELLIGENCE

Insight
Capitalize on the research and experience of our professionals, to not only see but truly understand the commercial real estate industry.

Data
Gain access to timely, verified, and reliable data that keeps you up to speed and in the know, 24/7.

Tools
Equip yourself with the most reliable and cutting-edge tools on the market, so you never miss an opportunity to succeed.

Community
Connect to the world's leading commercial real estate professionals. At the center of commercial real estate, CoStar is the common language the community speaks.

RESEARCH IS WHAT WE DO

We know information is the cornerstone of every remarkable deal.
That's why research is our passion, and the foundation on which we've built the richest, most valuable treasury of portfolio, tenant, sale comp, lease comp, field and aerial information, imagery and analysis in the industry. Our investigative, insightful research team is nearly 2,000 strong, and scouts out the data our clients rely on to make confident, profitable choices. Working across markets and submarkets, from the road and in the air, we dig deep. Making the calls, tracking the values, profiling the tenants, identifying the true owners, creating the relationships and connecting the dots in order to tell the full story.

Couple that with marketing platforms that are used – and fueled – by the industry professionals themselves. More than 250,000 commercial real estate decision makers use CoStar's platforms, including Apartments.com and LoopNet, to update their listings, connect with peers, and close deals. Those transactions only make our research engine more powerful.

Over **5,300,000** total properties

Over **1,600,000** listings for sale or lease

Over **120,000** updates each business day

Over **114 Billion** total SF of inventory tracked

Over **51,000,000** total digital images

A POWERFUL COMBINATION COMES TOGETHER IN **COSTAR SUITE**

Know the Details Behind Every Building

- Access a full market inventory of properties and spaces – available as well as fully leased.
- Search by market and submarket, with hundreds of details on each property.
- Access photos, aerials, maps, floor plans, stacking plans and more.
- Access information on every true owner, broker, and property manager behind every property.
- Analyze and report the true cost of a lease with ease using pre-populated lease and building information.

Value Properties with Confidence Using Sale and Lease Comps

- Establish a sound listing price by evaluating sale and lease comparables that are fully vetted.
- View contact information for true buyers and sellers behind LLCs and partnerships.
- Understand sale conditions and lease concessions including escalations, free rent, and more.
- View market activity with maps or aerials displaying properties sold, leased, for sale or pending.
- Access sale and lease comps as fast as the day of transaction.

Identify Prospects and Fill Space with Access to Every Tenant in Every Building

- Target prospective tenants with expiring leases.
- View lease expirations, space history and lease terms.
- Identify tenants who are growing, downsizing, likely to relocate or over-paying for their space.
- View company information including key decision makers, business type, employee count, growth outlook and other locations.
- Expand your opportunities by researching tenants according to industry type, employee size or other criteria.
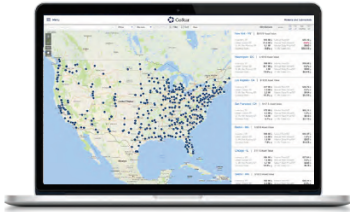
Analyze Markets and Submarkets Like Never Before

- Search for markets and submarkets with required KPIs such as rent, occupancy, and cap rates.
- Determine acquisition strategy by benchmarking market and submarket performance.
- Understand historical performance of a market, submarket, property, or customized set of properties.
- Forecast market and submarket performance such as rent growth, absorption, and stock.
- Generate underwriting reports to support position of value.
- Export historical, existing, and forecast data for internal analysis.

MOBILE APP AND NEWS

Take CoStar with You

Bring the information wherever your business takes you. Available on smartphones, tablets, and wearable devices through iOS and Android, CoStar mobile allows unhindered access to all aspects of CoStar Suite whether you are at home, on the road, or touring properties with a client.

News

CoStar's award winning news team is dedicated to delivering you the most up to date information on the events that shape and influence your market. Our bureau spans markets throughout the country, using CoStar's research findings to pursue stories that may impact your business.
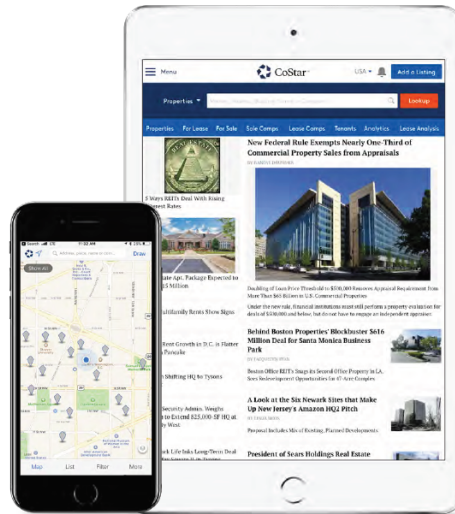
Appendix E: Reonomy Property Information

Source: Reonomy Introduction instructional video. https://youtu.be/AuRl3y37Fxo

Building & Lot Information

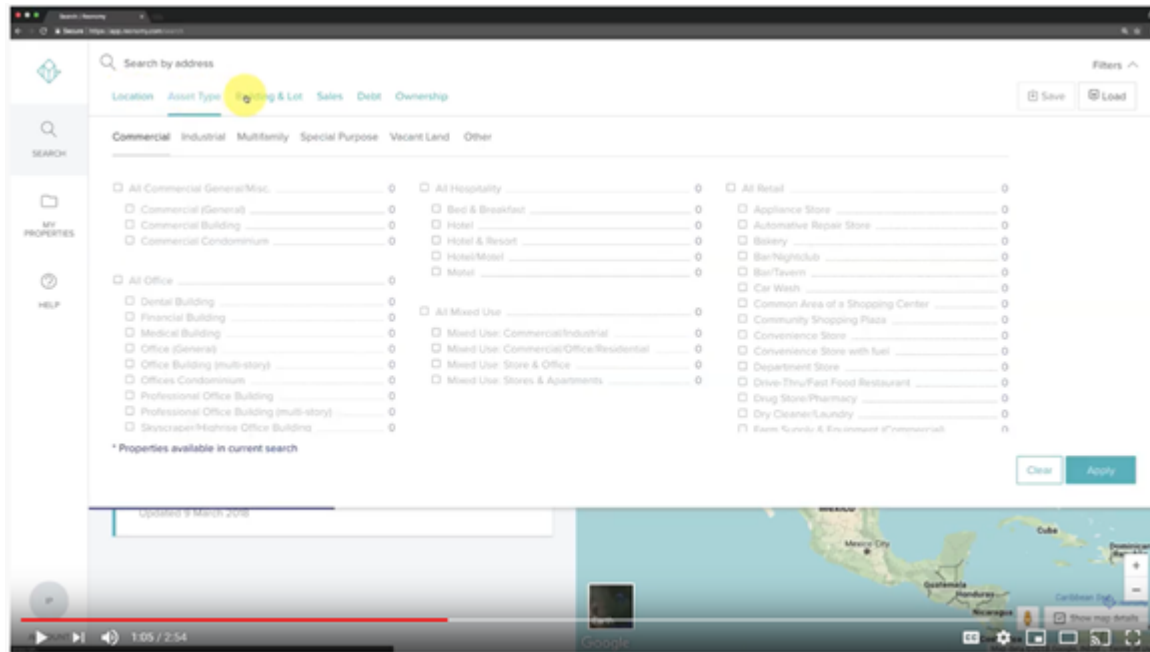*Ownership Information*

Sales Information

Debt Information

Tax Information

Appendix F: Reonomy Search Filters

Source: Reonomy Customizing Your Search instructional video. https://youtu.be/dxqP7FrQSWg

Search by Location
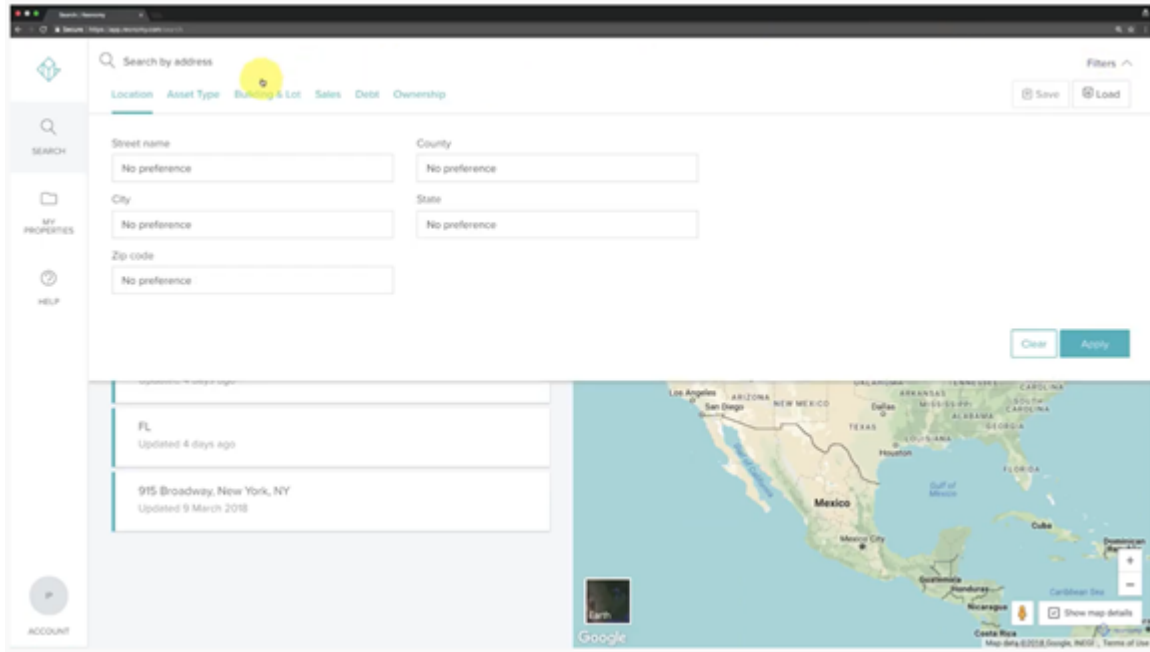
Search by Asset Type

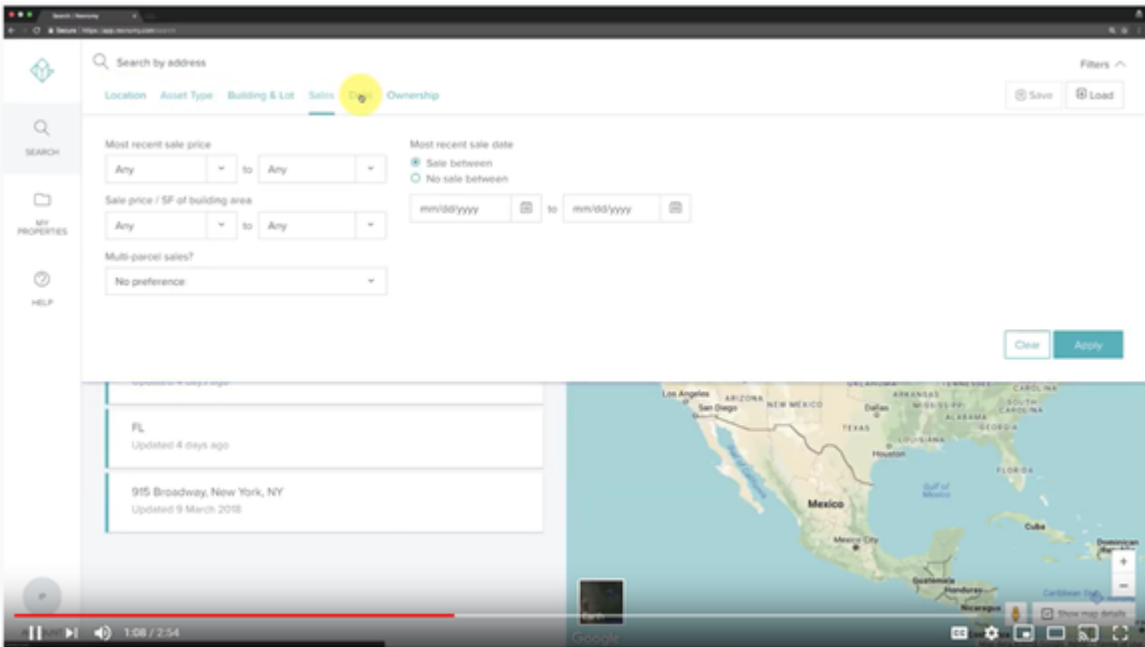*Search by Building & Lot*
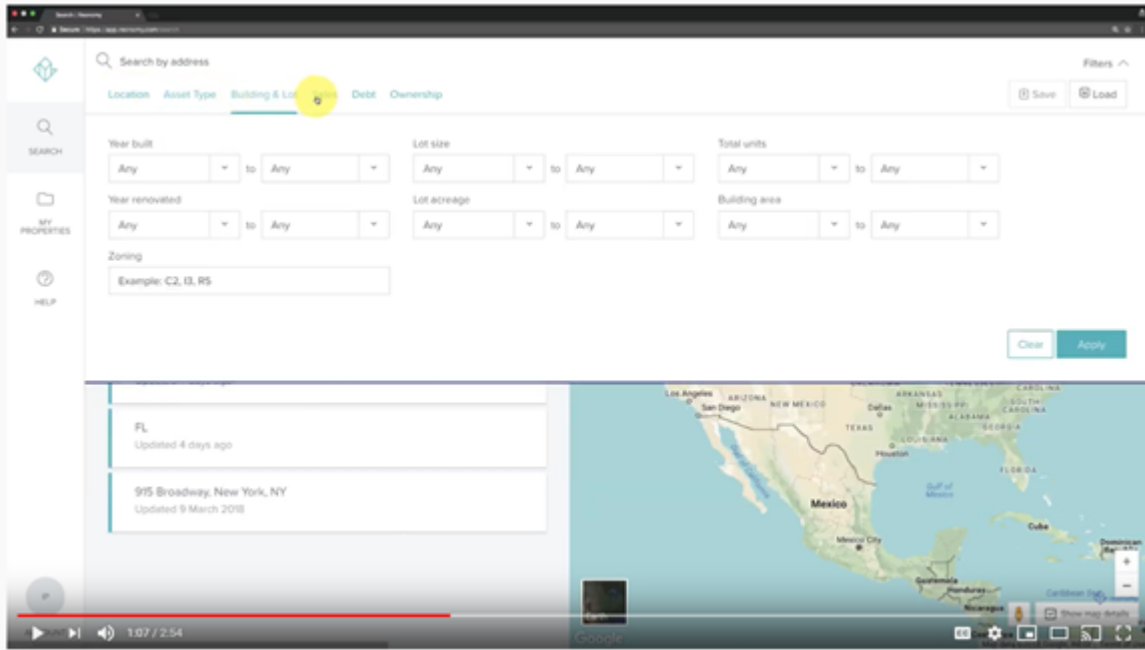
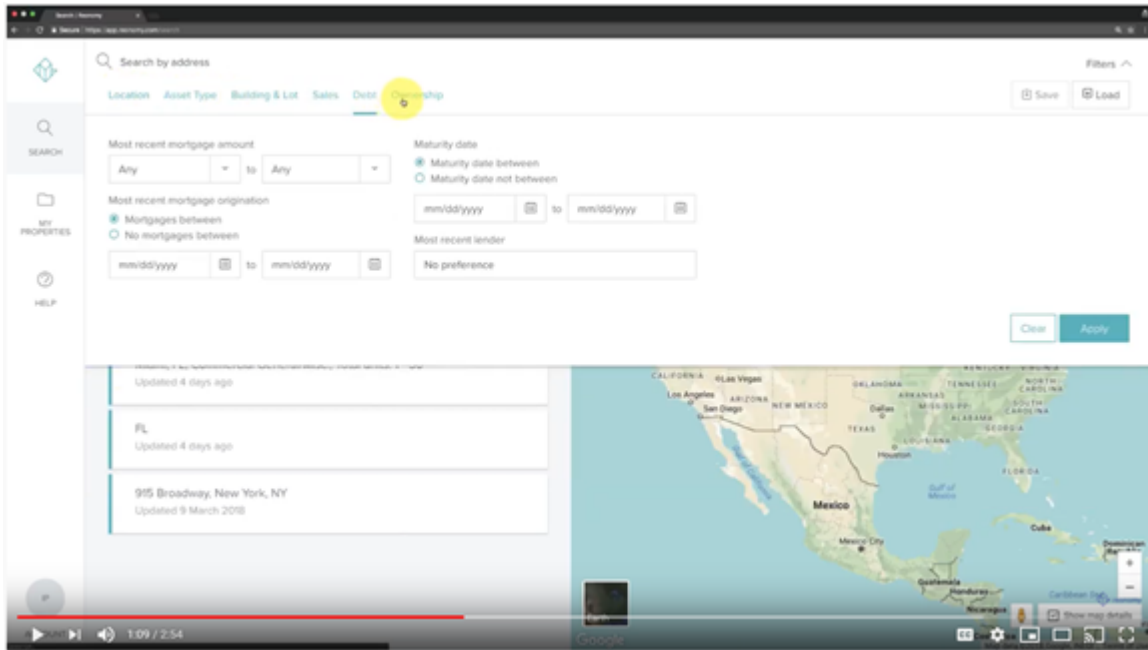*Search by Sales*

Search by Debt

Search by Ownership