Parking Development Decisions in
Downtown New Orleans

A Directed Research Project Submitted to
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and
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in Candidacy for the Degree of
Master of Sustainable Real Estate Development

by
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Acknowledgements

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Part I - Hibernia Bank Building: A Parking Conundrum

When construction completed on the Hibernia Bank Building in 1921, its 335-foot height made it the tallest building in the state of Louisiana. With its iconic cupola lit, this building acted as a navigational beacon for ships in the Mississippi River, making it a literal landmark of New Orleans for almost a century. The building served as Hibernia National Bank’s headquarters until 2005, when, just a few months after Hurricane Katrina hit New Orleans, Capital One purchased Hibernia and moved the majority of the building’s activities across the street to Place St. Charles. Beginning in 2006, Capital One utilized only the first floor retail branch, leaving the majority of a 250,000 sf building vacant. However, due to the outdated mechanical systems, Capital One was forced to spend approximately $1 million a year to maintain the building and was eager to sell the asset.¹

Figure 1. Hibernia Building Photo

The general economic state of New Orleans and the devastation caused by Hurricane Katrina made large-scale redevelopment in the city a difficult task. For many years, a team that included reputable New Orleans developers Marcel Wizsnia, Paul Flower, and Joe Jager attempted to renovate the building but were unable to put together a deal. In 2011, Woodward partnered with HRI Properties, who had extensive experience with complicated capital stacks and were able to put a deal together that involved New Market Tax Credits, Historic Tax Credits, and Community Development Block Grant (CDBG) Funding. This project would renovate the Hibernia Bank Building into 175 residential units and two floors of office space while keeping the ground floor retail bank.

Figure 2. Hibernia Parking Lot Rendering

Source: Woodward Design + Build
When the Hibernia Bank Building was built, there were only 8.7 cars per 100 people in the US. By 2007, this number had climbed almost 10 fold to 84.4 cars per 100 people.\textsuperscript{2} Thus, it was constructed without parking and its customers were provided with only a 23-space adjacent surface lot during the entire time that Hibernia occupied it. However, the demand for parking in 2011 was much different than in 1921 and the redevelopment team for the Hibernia Bank Building had to decide if they should include parking and how to do that in a financially feasible way. Would there be demand for parking? Would the income from a parking structure cover the costs? How would the inclusion of parking effect rents and vacancy of the residential component of the renovated building? How could the surface parking space best be utilized if parking is not included? All of these are important questions that a developer of any project must consider when considering parking while programming their space.

Although the surface parking space adjacent to the Hibernia Bank Building was too small to create an efficient parking garage, halfway through the renovations of the building the development team designed a structure that would utilize the historic building’s stairs and elevators to meet code, which made the parking structure feasible. This open-air garage is 6 stories tall and contains 114 parking spaces. The Hibernia parking structure was made feasible by creative design, but it still costs over $40,000 per space, which is about twice what an efficient parking structure could cost. Some of these increased costs are attributed to the strong foundation, which allows for the future constructions of two additional floors. A significant contributor to these high costs is the inefficiency of building a parking structure on a small lot in a downtown location.

The parking structure was built with the expectation that it would benefit the lease-up and rental rates of the Hibernia Bank Building. However, by the time the apartment phase of building was completed, the market for downtown residential apartments had improved beyond modeled expectations and the building leased up in only 75 days, well before the parking structure was even complete. When the parking was completed a few months later, that structure fully leased up as well, bringing no conclusion to the questions that a developer faces when attempting to find the right balance between residential units and parking in the downtown New Orleans market.

The example of the Hibernia Building begins to illuminate the intricacies of development decisions, especially those pertaining to parking. Despite the seeming simplicity of parking structures, they are expensive to build and are typically less lucrative than other programmatic uses would be. For this reason, it is essential to understand the intricacies of parking development and management. This paper will examine parking in downtown New Orleans and provide a framework for developers as they make parking development decisions. Factors examined include parking supply & demand, zoning requirements, construction, management, and financing restrictions.
Part II - Parking Literature Review

Cars have become extremely valuable, both in terms of their monetary value and their importance in their everyday life. However, a typical car spends 95% of its time not being used but taking up space while parked. In areas of low car density, finding a parking space can be easy. Alternatively, in dense areas like downtown New Orleans, finding parking can be difficult, time consuming, and expensive. Of the 5% of the time that a car is in use, the average driver spends 30% of their time looking for parking when in dense downtown areas. Therefore significant research has been done on parking and how to create the most efficient parking experience. This research does not directly address the topic parking development decisions but it shows the importance of these decisions and may help influence them.

Time Delays

Parking availability can have significant impact on traffic and time delays. This is particularly true for on-street parking. Not only does on-street parking take up lanes that could be used to move traffic, but also people often spend extra time on the streets cruising for this parking, which increases traffic and therefore time delays. These time delays can have many other negative consequences, which are discussed in later sections. Time delays can be mitigated if there is sufficient and properly priced parking.

Economy

The availability of parking can affect the economy of a neighborhood. As mentioned above, lack of parking can lead to traffic and traffic congestion can have various effects on the

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High economic costs can be seen due to travel delays, the slowing of metropolitan growth, and the inhibition of agglomeration benefits. This often means that the economic activity doesn’t disappear but simply adapts to traffic restrictions, as traffic does not deter people from doing their regular activities but it will dictate where they do them. In order to entice economic activity to an area, traffic should be mitigated.

**Supply & Usage**

The supply of parking can affect the demand for parking and usage of cars. Studies have been done examining how residential parking supply effects car ownership and usage in New York City. When controlling for a variety of factors including income and demographics, the availability of parking and the convenience of this parking has a significant impact on car ownership.\(^7\) As expected, the more available parking is the more likely a household will decide to get a car. Additionally, the convenience of parking affects the usage of cars, as owners with on-street parking spaces tend to use their cars more than those with off-street parking.\(^8\)

**Environmental Sustainability**

Transportation accounts for about 27% of U.S. greenhouse gas emissions and car usage accounts for a large percentage of these emissions.\(^9\) Therefore, it is important to ensure that cars are being used efficiently and more environmentally friendly forms of public transportation should be used when available. Building off previously referenced research, further research has been conducted on the effects of parking supply on the environment. Having convenient parking

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can increase car ownership and usage, thereby increasing greenhouse gas emissions, which is a potential argument for less parking. However, a shortage of parking can cause people to cruise for parking and create additional traffic and greenhouse gas emissions, which is an argument for more parking.\textsuperscript{10} This is a delicate balance that differs depending on city density and alternative transportation options so each city must examine their situation in determining how parking development will affect greenhouse gas emissions.

**Government Regulation**

As the literature shows, the implications of having the correct amount of parking are important beyond the direct implications of parking cars. Therefore, local governments often try to impose the proper amount of off-street parking in a neighborhood by having parking requirements for various uses. For example, owners may be required to have a certain amount of parking per residential unit or per square foot of retail space. Although less frequent and often less restrictive, some jurisdictions impose restrictions on maximum parking spaces allowed, as excessive parking could promote unnecessary car usage.

The effectiveness of these requirements is unproven and the theory behind these requirements has changed since they were first introduced in the 1920s. Much of this debate is centered around the extent to which the markets can self regulate parking. For many decades, Donald Shoup has been at the forefront of this debate. In his 1978 paper, “Problems with Parking Requirements in Zoning Ordinances”, he laid out the various justifications for parking requirements and his rebuttals to those.\textsuperscript{11} These included:


<table>
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<tr>
<th>Justification</th>
<th>Rebuttal</th>
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<td>Insufficient off-street parking will force drivers to cruise for parking and clog up the streets.</td>
<td>Drivers will still cruise for parking if on-street parking is cheaper, which it often is.</td>
</tr>
<tr>
<td>Parking may spill over into neighboring communities if supply is insufficient.</td>
<td>Permits can be issued where this is a problem.</td>
</tr>
<tr>
<td>Parking must be accessible to encourage the use of a downtown.</td>
<td>The private market will regulate this.</td>
</tr>
</tbody>
</table>

The argument that government intervention in the form of parking requirements can lead to inefficient markets implies that there should be little government intervention in the parking market. However, local government can also play a role in regulation through their management of parking that they control, which is typically on-street parking. This can be done by carefully planning prices and permits.\(^{12}\) One tactic for regulating on-street parking is by creating a Parking Benefits District (PBD).\(^{13}\) The theory behind a PBD is that 1 out of 8 on-street spaces should always be vacant in order to reduce cruising time. In order to achieve this ratio, parking prices will adjust as demand adjusts. PBDs have been introduced in several cities, including New York, San Francisco, and Austin and could benefit New Orleans.


\(^{13}\) "Study on Parking Benefit Districts and Opportunities for New Orleans." *ULI-Louisiana*, 2012.
Part III - New Orleans

Focus Area

The intent of this paper is to help provide a framework for development decisions surrounding parking in Downtown New Orleans, which will henceforth be referred to as “the focus area”. Although this does not include the most historic neighborhood of the city, the French Quarter, this does include the densest area by built square footage. Neighborhoods in New Orleans can go by many names and have ambiguous borders; the most common names for this focus area are the “Central Business District” (CBD), “The Warehouse District” and “The Arts District”. The focus area does not include the “Sports & Entertainment District”, as the uses in this area differ from those in the focus area but the activities in this area play a role in parking in the focus area.

Figure 3. Downtown Development District Map

Source: Downtown Development District
Although this research intends to guide development decisions in the focus area, it is often difficult to get data that is specifically tailored to this area. Therefore, some of the data in this paper will include surrounding neighborhoods.

Figure 4. Focus Area Map

Source: Policy Map

**Economic History**

Founded in 1718 by French Colonialists, New Orleans’ strategic location made it an important location for trade throughout the United States. In the early 1800s, New Orleans was the second most trafficked port in the country and the third largest city by population. Although sugar cane was also an economic driver of southern Louisiana, transportation was the biggest driver of New Orleans’ economy for hundreds of years, ebbing and flowing as technology and the political situation in the US changed.

In the 1940s, sugar cane was replaced by oil as the region’s primary commodity, triggering a 40-year period of economic growth in New Orleans. In 1960, New Orleans hit its peak population of 627,525 people. However, the oil crash in the early 1980s ended this period of prosperity for New Orleans.

From the mid 1980s to 2005, New Orleans oil and transport economies faded. During this period, New Orleans relied on the tourism industry, but this was not enough to keep the economy and population of the city from declining. In 2005, with New Orleans’ population at about 455,000, Hurricane Katrina devastated the city, and almost a year later the city's population was under 200,000. However, Hurricane Katrina brought significant national attention and capital to New Orleans, which has led to substantial economic growth in the past 10 years. With the help of disaster funding and business incentives, New Orleans is becoming a hub for the film industry, the tech industry, while tourism and oil both still play vital roles in the economy. Just nine years after a storm that forced almost everyone leave New Orleans, the population was almost 90% its pre-Katrina population and continuing to grow steadily.

**Real Estate Trends**

The focus area has historically been a large part of the economic hub of New Orleans, and therefore real estate trends in this area closely follow economic growth. The Warehouse District, aptly named for its abundance of warehouses, took its shape to support system for the transportation economy. Many of New Orleans’ tallest buildings in the CBD were developed as office space when the oil industry was booming in the mid 1970s. Unfortunately, when the economy slowed, vacancy climbed. This led to adaptive redevelopment opportunities of these vacant buildings. Beginning in the 1980s, the Warehouse District began seeing a transformation
from industrial warehouses to residential buildings. However, for decades little was done to restore the skyscrapers to productive use.

Like much of New Orleans, the focus area has seen significant development in the 10 years since Hurricane Katrina. Many of the skyscrapers that were underutilized pre-Katrina or left vacant after the storm have been redeveloped or currently have substantial redevelopment plans. Since 2012, 40% of the vacant square footage in the focus area has been redeveloped.\textsuperscript{15} However, like the redevelopment of the Warehouse District in the 1980s, the redevelopment of the focus area provides for different uses than the historical uses.

Disaster funding has played a large role in the redevelopment of downtown New Orleans, but a national trend of urbanization has shaped the form of this redevelopment. This trend has brought a variety of people back into the city center and increased the demand for residential units. The increased demand has made it economically viable to redevelop many large vacant buildings into residential and mixed-use buildings. In addition, many of the vacant surface parking lots are being developed.

A common way to measure residential occupancy is by examining the amount of residential addresses receiving mail. In June 2005, just before Hurricane Katrina, 1,316 addresses in the CBD received data. By June 2014, this number grew to 2,917, 221.7% of the pre-Katrina addresses.\textsuperscript{16} To put this in perspective, this number is 88.4% of its pre-Katrina number citywide and the CBD is the 2nd fastest growing residential neighborhood according to this data. According to the Downtown Development District, there are currently 2,964 units in downtown New Orleans, over 5,100 residents, and an additional 1,800 units currently under development.\textsuperscript{17}

\textsuperscript{15} Ferguson, Leigh. Email message to author. April 6, 2015.
Part IV - Parking Development Factors in Downtown New Orleans

There are many factors that should influence a developer’s decision to build parking including: demand for parking, supply of parking, future development, governmental restrictions, lender restrictions, construction costs and income potential.

Parking Demand
Parking demand is a very complex issue that can vary tremendously over time and space. To simplify the equation, parking demand is a factor of car ownership and downtown usage. Other factors include distance to work, public transportation access, demographics/culture, location of amenities, density, and the types of use of a downtown area.

Parking Fields
Figure 5 shows a breakdown of downtown daytime population, and highlights the differing uses of downtown New Orleans. Each of these uses has a different demand for parking, and therefore represent a different parking field. Sample examples of parking fields include hotel customers, residential customers, office customers, and special event customers. The demand so each of these fields can differ in both time and space. For example, residential customers tend to park at night and weekends and use their cars to get to work. Office customers will use parking between 8 am and 6 pm on Monday through Friday. A situation like this creates an opportunity to have a residential customer and an office customer share one parking space, which increases the income to the parking space owner. For more about the effective management of parking fields, refer to the ‘Income & Management’ section.

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Public Transportation

Public transportation in New Orleans is not a reliable or convenient form of for most residents. In their study using 2012 data, 86% of the Pre-Katrina population had returned to New Orleans but less than half of the public transportation had been restored. The service that has been restored is often unreliable. However, compared to the rest of the city, Downtown New Orleans has the most public transportation available. The most reliable form of public transit in the city is the streetcar and all of its lines come through the focus area. There are also proposals to increase public transportation focused around a downtown hub.


Alternative Transportation

Although traditional public transportation is subpar in New Orleans, the city is beginning to pick up on national semi-public transportation trends. These include various types of ride sharing programs such as Enterprise CarShare, Car2Go, and Uber. The South Market District, and extensive mixed use development in downtown New Orleans is bringing the first car sharing program to the area and Uber has now fully launched in the city. Uber has a goal of making its product cheaper than car ownership, which could reduce parking demand. All of these programs allow people to get around with the speed and efficiency of a car without the need to own and therefore park a car.

The increased use of active transportation (i.e. walking, biking) also reduces the demand for cars usage. New Orleans has recently become a more bike friendly city. These efforts have shown some effectiveness in increasing bike use, as daily bicycle use increased 20% from 2010 to 2011 and increases were most evident in locations where bike infrastructure was updated.

Pedestrian traffic did not increase at the same rate as bike traffic. However, as downtown New Orleans develops, vacant buildings become occupied and streetscapes begin to have more commercial space. This will likely increase pedestrian traffic, as residents will have less need to drive to desirable locations.

User Preference

Downtown New Orleans car owning residents have options for parking throughout the area, many of which have different price points. Therefore, drivers must

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22 Fields, Billy. "Establishing New Orleans as a Leader in Active Transportation: Solidifying Progress, Moving Towards an Active Transportation Culture." UNO Transportation Institute, 2011.
often choose between convenience and price when making parking decisions. Although there is little quantitative data on this in downtown New Orleans, many industry professionals see important trends.

Beyond the inherent value of convenience, convenient parking tends to come with a higher level of security, which can be important in downtown New Orleans where crime is prevalent. For both convenience and security reasons, women, elderly, and families tend to be the demographics that will pay a premium for parking that is attached to their residential building.  

Because convenient parking is often more expensive, wealth plays a factor in demand for parking spaces. Wealthy residents will typically pay more for convenient parking and many will expect it if they are tenants of some of the nicest units. Buildings that have components of affordable housing typically see less demand for parking from the tenants of those affordable units.

Forms of transportation that do not require car ownership are increasing, but this does not directly reduce car ownership and parking demand. There is a culture of car ownership in the United States and in examining residential parking it is car ownership that dictates the amount of parking required, not simply car usage.

Additional info about user preference is examined in the section ‘Resident Survey’ section.

Current Parking Ratios
There are many places to find recommendations for parking ratios. Design guides, such as *Planning and Urban Design Standards,* lay out general recommendations and

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says that a multifamily building should have 2 parking spaces per unit.\textsuperscript{26} However, this guide also states, “All parking recommendations presented here should be considered in the context of local conditions, parking requirements, and other factors that may affect the actual spaces needed.” Many of these factors are examined throughout this paper, however, another way to help determine a proper ratio is to see what the current market trends are.

There is no significant data set on rates of parking absorption in downtown New Orleans. In examining some ratios of current parking space to residential unit ratios in downtown New Orleans, it becomes evident that there is currently a range of approaches for successful developments.

At the new South Market District development, a 440-space parking garage was recently built in accordance with residential units and retail space. Parking was developed to have about 1.1 parking spaces per unit. However, based on initial demand the developer would feel comfortable building at less than one parking space per unit.\textsuperscript{27}

In the Saratoga, a 155-unit residential building with an attached parking structure, there are less than 96 leased parking spaces in the attached structure.\textsuperscript{28} This is a ratio of less than .62 parking spaces per residential unit. However, as the next section shows, there are residents of this building that own cars and choose to park them somewhere less convenient when a cheaper option is available.

\textsuperscript{27} Papamichael, Chris. Interview by author. February 23, 2015.
\textsuperscript{28} Woodard, Heidi. Interview by author. February 2, 2015.
At the Hibernia Bank Building, there are 71 parking spaces and 175 residential units, a ratio of about .4 parking spaces per unit. However, there is excess demand for these spaces, showing that this ratio is too low.\textsuperscript{29}

At the Strand, a recently opened apartment building in the focus area, there are 116 parking spaces and 192 units, 39 of which are affordable at 80\% area median income. This is a planned ratio of .6 parking spaces per unit and .75 parking spaces per market rate unit. Initial lease up has 96 units leased, 38 of which are affordable, and 41 parking spaces leased. This is a ratio of .42 parking spaces per unit and .70 parking spaces per market rate unit.\textsuperscript{30}

These rates are based on occupancy and the amount of parking leased by residents compared to total residential units. They do not necessarily reflect the amount of parking spaces constructed. Some residential buildings pursue public parking garages, allowing them to build excess parking and then lease out parking that is not being used by residents. One of the first buildings to take this approach is 930 Poydras, which contains 250 residential units and 500 parking spaces.\textsuperscript{31} For more information in the benefits of public parking garages, refer to the ‘Income & Management’ section.

It is important to keep in mind that these are just snapshot examples. There are also examples of buildings, such as the Maritime, that have no parking directly available but are still able to fully lease up at premium rental rates.

\textsuperscript{29} Abbenante, David. Email message to author. April 10, 2015.
\textsuperscript{30} Allen, Richard. Email message to author. May 4, 2015.
Resident Survey

Background
A survey was conducted to examine demands of residents of downtown apartment buildings. Survey participants were residents of two recently renovated apartment buildings: The Maritime and The Saratoga. The Saratoga is a 153-unit apartment building on the northern edge of the focus area. The building was converted to apartments and, although this conversion does not include parking, there is an adjacent parking structure that the owner leases spaces from and then can conveniently sublease to tenants. Like the Saratoga, the Maritime is a residential conversion consisting of 105-luxury units. These units are about 50% more expensive than the Saratoga’s but there are no attached parking options, so tenants must find their own parking.

Surveys were left at the front desk of each of these buildings with the doormen, who encouraged the residents to fill them out. These surveys asked questions about transportation usage, car ownership, and downtown parking.

(Refer to Appendix A for full survey.)

Results

<table>
<thead>
<tr>
<th># of respondents</th>
<th>Total</th>
<th>Saratoga</th>
<th>Maritime</th>
</tr>
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<tr>
<td>Respondents own a car</td>
<td>77%</td>
<td>71%</td>
<td>86%</td>
</tr>
<tr>
<td>Respondents walk to work</td>
<td>56%</td>
<td>54%</td>
<td>59%</td>
</tr>
<tr>
<td>Respondents drive to work</td>
<td>38%</td>
<td>39%</td>
<td>26%</td>
</tr>
<tr>
<td>Respondents state parking was a housing decision factor</td>
<td>72%</td>
<td>75%</td>
<td>68%</td>
</tr>
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</table>
Residents were also asked what forms of transportation they would like to use if more available. Of the 18 total respondents to this question, 10 (56%) marked that they would bike more if that were more accessible.

If residents owned a car, they were asked where they parked it and what they paid for this parking. Surprisingly, location and price varied greatly, even in the same building. This shows that some people are willing to pay more for close and convenient parking while others are willing to put in more effort to both find and utilize cheaper parking options.

(Refer to Appendix B and Appendix C for more in depth results.)

Discussion

The survey indicated that less than half of the residents who own cars do not use them for their daily commute. This means that these cars are often sitting at their residential parking space significantly more than cars that are used regularly. Decreased car usage indicates higher residential parking demand, as cars that are used as work transportation are generally not taking up these spaces between during working hours. This decreases the ability of using one parking space to fulfill the needs of multiple parking fields.

There are higher rates of car ownership in the building Saratoga, the building that costs more and provides no parking, indicates that income is a large contributor to car ownership and parking demand. However, it shows that in the current market, parking convenience is not vital to some of the wealthiest residents.

Although the magnitude of the preference is unclear, the preference of 72% of respondents that claim parking was a factor in housing decisions is important for developers to consider. A higher percentage of residents in the Saratoga, which has more
convenient parking than the Maritime, consider parking to be a factor. This indicates that when parking is a factor, it may be a strong enough factor to play a role in making a housing decision.

Further Survey Recommendations
This survey was only conducted on two buildings and had 55 respondents. However, as explained in the previous section, demand can change greatly among buildings and therefore it would be beneficial to expand on the surveyed pool. Additionally, getting demographic data to understand how developers can better serve their future clients.

Parking Supply
Understanding the current supply and therefore potential competition is important in parking development decision-making. In examining competition, developers must understand that different types of parking attract different types of customers and therefore not all parking within the focus area is equal competition. For example, a street parking space is attractive to a customer who will only be parking for a short period of time but not as attractive to a resident or office worker. Additionally, as explained in the ‘Demand’ section, various customers within the same parking field will have differing convenience needs, so the type of customer a developer is targeting will determine the radius of competition and therefore the area with which a developer should determine supply.

In their 2009 Parking & Mobility Study, the Downtown Development District examined the amount of available parking in their district and various sub-areas of their district, which allows to narrow in on the focus area. In 2009, there were a total of 38,337 parking spaces in the focus area. This study also reports weekday daytime peak demand, which totals 10,304.

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Although these numbers show an overall excess amount of parking, the excess parking is not placed in spatially appropriate locations. There are blocks of the area that have a surplus of parking and other blocks that are lacking in supply. This means that although there seems to be a surplus of parking overall in the focus area, there a deficit of parking in some location and potential to build successful parking in the area if it is located properly.

**Figure 6. Parking Supply and Occupancy**

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<td></td>
<td>On-Street</td>
<td>Off-Street</td>
<td>Total</td>
</tr>
<tr>
<td>CBD</td>
<td>1,300</td>
<td>15,514</td>
<td>16,814</td>
</tr>
<tr>
<td>Warehouse District</td>
<td>1,837</td>
<td>19,686</td>
<td>21,523</td>
</tr>
<tr>
<td>Total</td>
<td>3,137</td>
<td>35,200</td>
<td>38,337</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Weekday Daytime Demand (Occupancy)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On-Street</td>
<td>Off-Street</td>
<td>Total</td>
</tr>
<tr>
<td>CBD</td>
<td>1020 (78%)</td>
<td>8073 (52%)</td>
<td>9093 (54%)</td>
</tr>
<tr>
<td>Warehouse District</td>
<td>1211 (66%)</td>
<td>8949 (45%)</td>
<td>10160 (47%)</td>
</tr>
<tr>
<td>Total</td>
<td>2231 (71%)</td>
<td>17022 (48%)</td>
<td>19253 (50%)</td>
</tr>
</tbody>
</table>

Source: Downtown Development District

In examining the demand for parking, this report looks at weekday daytime peak demand. Although this may have been a good indicator when this area housed primarily commercial uses, as the focus area shifts to accommodate more hotel and residential uses, peak parking demand times are likely to shift as well. Therefore, the demand factor of this chart may not accurately represent total peak demand.
There has been a significant change to this market in the years since this study was conducted, which must be considered. However, an update to the study is currently being commissioned.  

_Ferguson, Leigh. Interview by author. March 19, 2015._
Zoning

The zoning ordinance can play a role in two major ways in a developer’s decision to construct parking:

Parking Requirements:

Parking requirements are highly studied in academic parking research and are highly debated in practice. Parking requirements play a big role in development in parts of the city and although the current CZO has fairly loose zoning regulations, they can still be restrictive. Currently, the focus area is broken up into nine zoning districts. Six of these districts have parking requirements while eight of the nine have restrictions on maximum permitted parking spaces.

New Orleans is in the process of creating new CZO and these requirements will likely become even looser when the draft Comprehensive Zoning Ordinance (CZO) goes into effect. The draft CZO has 7 zoning districts for this area. None of these districts have any parking requirements or maximum restrictions in the draft.

(Refer to Appendix D for further full zoning breakdown.)

Public v. Accessory Parking:

Public Parking and Accessory parking are two fundamentally different categories of parking. Where public parking allows anyone to use the parking spaces and the manager to manage this as they wish, accessory parking cannot be the primary use of the building and must be intended to support the primary activities of the building. However, a public parking structure gives a parking structure owner the ability to manage the
structure in creative ways that can make a structure more financially feasible.\textsuperscript{34} This point is elaborated in the ‘Income & Management’ section.

The current CZO permits accessory parking in the entire study area. Public parking, or “non-accessory” as the ordinance refers to it as, is a conditional use in all of the districts.\textsuperscript{35} This means that in order to build a public parking structure, the developer must go through an entitlement process, which could cost a project significant time and money.

The draft CZO uses different language when referring to parking and lists “parking structures” as a permitted use in the entire focus area. This implies that public parking is a permitted use throughout the focus area. However, the draft CZO requires that 25% of the ground floor of parking structures in the focus area be reserved for retail space.

Overall, the zoning ordinance currently plays a role in parking decisions in the focus area. The parking requirements force developers to either build parking or rent it from surrounding parking structures. Additionally, creating a public parking structure requires approvals, which can be time consuming and costly. Although, the removal of parking requirements in the draft CZO reduces one incentive for developers to build parking, this is potentially counterbalanced by the incentive of added revenue opportunities from a public parking garage.

**Parking Structure Efficiency and Construction Costs**

*Importance*

The efficient use of space in a parking structure is an important factor in a parking structure. A parking structure typically costs between $18,000 and $35,000 per space to

\textsuperscript{34} Papamichael, Chris. Interview by author. February 23, 2015.
construct. The large range in these prices can be partially attributed to the amount of space needed per parking space. Consider that the base price per square foot of parking structure construction in New Orleans is $60. An efficient parking structure allots 300 square feet per parking space whereas an inefficient parking structure can be 400 square feet per space. Based on this base price alone, an efficient space costs $18,000 whereas an inefficient space costs $24,000, a difference of $6,000.

Strategies

In creating an efficient parking structure, the goal is to reduce the amount of space that cannot be used by a parked vehicle. A standard parking space is 9 feet wide and 18 feet long for a total area of 162 feet. Therefore, the efficiency comes in reducing the space needed for other activities such as movement of cars throughout the structure, movement in and out of the individual spaces, and queuing of cars in and out of the garage. Much of the space devoted to non-parking uses can serve multiple uses to gain efficiency. For example, if the same area can be used for moving cars through a structure and moving cars in and out of spaces, those areas are overlapped. Although this is inherently used in all structures, tactics such as allowing for parking on ramps of parking structure can increase the space that is utilized in this way. Figure 8 shows a single threaded helix design, which efficiently has cars park on ramps and an inefficient design that has a ramp that only allows cars to change floors but not park.

---

Factors

The biggest factor in the ability to build efficiently is the dimensions of the land upon which the garage is built. The ideal dimensions for a parking structure is 122 feet by 220 feet. The 122 foot width allows for two rows of 60 feet width (36 feet for 2 rows of parked cars and 24 feet for car movement) and the 220 foot length allows for enough length gain 10 feet in height with a slope of 7% and room to turn around on either end. This allows for approximately 90 spaces per floor.

As length of a parking structure decreases, the width decreases, or the width increases by multiples other than 60 feet, the parking structure becomes less efficient. For example, rows of any less than 60 feet will not allow for enough space for two rows of straight-in parking and traffic flow. Angled parking can allow you to reduce this 60-foot limit but this also requires one-directional traffic, which can reduce efficiency.

Funding

Because current New Orleans market rates often cannot support new construction or renovation, much of the current development in the city is highly subsidized. Much of this comes...
in the form of disaster related grants or tax credits for historic rehabilitation, low-income housing, or new markets. However, these programs are unlikely to fund parking structures with the same frequency that they fund other uses. Therefore, parking structures must pursue more standard debt and equity.

Although parking can potentially have greater cash flow than other potential downtown programs including residential, much of this income is often highly variable and therefore has higher risk. This occurs because users of parking spaces typically do not sign year-long leases. In fact, the most profitable parking structures rely heavily on some of the shortest term parking options (hourly) and event parking price increases. This causes large fluctuations and less certainty of income, which is a sign of a riskier business.

This increased risk can change typical underwriting terms. According to Barrett Blaum, relationship manager at Whitney National Bank, a parking garage will typically receive lower leverage terms than a residential building, with a maximum loan-to-value of 65% compared to 80% for a residential development. Additionally, the interest rates are typically 50 basis points higher, there will be a higher debt service coverage ratio, and there will be a shorter amortization period.\(^{37}\)

**Income & Management**

As mentioned in Part II, there is a big difference in the income potential of a public parking structure and an accessory parking structure. The potential earnings of an accessory parking structure are limited by the main use of the building. For a residential building, the spaces in these structures can only be used by the residents of the building. This limits other potential revenue streams. Public parking, even when primarily used to supplement a residential

\(^{37}\) Blaum, Barrett. Email message to author. March 6, 2015.
building, can be adjusted depending on demand and parking spaces can get have multiple revenue streams. For example, spaces that are rented monthly by residents can be rented hourly when those residents are not using the spaces.

The financial benefits of a public parking garage are not guaranteed by obtaining a public parking designation. Management is vital to ensuring efficiency and maximizing profits. Potential income streams for parking managers to take advantage of include parking rates that vary depending on duration (e.g. hourly, daily, monthly...) and parking that varies depending on parker activity (e.g. event parking, hotel parking...). Pricing these different parking rates in order to maximize occupancy while keeping rates high is vital to increase profits. In order to do this, successful parking managers will track usage and use creative tactics such as creating monthly contracts that exempt special event dates, which draw higher rates.

Figure 9. Management Cash Flows

<table>
<thead>
<tr>
<th>Accessory Type of parking</th>
<th>Price</th>
<th>Allotted Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserve Monthly</td>
<td>$235</td>
<td>20%</td>
</tr>
<tr>
<td>Standard Monthly</td>
<td>$185</td>
<td>80%</td>
</tr>
<tr>
<td>Weekly</td>
<td>$65</td>
<td>0%</td>
</tr>
<tr>
<td>Daily</td>
<td>$10</td>
<td>0%</td>
</tr>
<tr>
<td>Hourly</td>
<td>$3</td>
<td>100%</td>
</tr>
<tr>
<td>Event Rate</td>
<td>$30</td>
<td>80%</td>
</tr>
<tr>
<td>Event Frequency</td>
<td>0 days/year</td>
<td>100%</td>
</tr>
<tr>
<td>NOI (year 1)</td>
<td>$909,792</td>
<td>5.05%</td>
</tr>
<tr>
<td>IRR</td>
<td>Leveraged</td>
<td>5.05%</td>
</tr>
<tr>
<td></td>
<td>Unleveraged</td>
<td>5.21%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public Type of parking</th>
<th>Price</th>
<th>Allotted Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserve Monthly</td>
<td>$235</td>
<td>10%</td>
</tr>
<tr>
<td>Standard Monthly</td>
<td>$185</td>
<td>50%</td>
</tr>
<tr>
<td>Weekly</td>
<td>$65</td>
<td>10%</td>
</tr>
<tr>
<td>Daily</td>
<td>$10</td>
<td>20%</td>
</tr>
<tr>
<td>Hourly</td>
<td>$3</td>
<td>30%</td>
</tr>
<tr>
<td>Event Rate</td>
<td>$30</td>
<td>80%</td>
</tr>
<tr>
<td>Event Frequency</td>
<td>8 days/year</td>
<td>120%</td>
</tr>
<tr>
<td>NOI (year 1)</td>
<td>$1,888,553</td>
<td>36.22%</td>
</tr>
<tr>
<td>IRR</td>
<td>Leveraged</td>
<td>36.22%</td>
</tr>
<tr>
<td></td>
<td>Unleveraged</td>
<td>16.18%</td>
</tr>
</tbody>
</table>

Source: Created by author

To highlight these differences, I have modeled two parking structures, identical in form but different in management strategy. The first is an accessory parking structure, which is managed using only monthly contracts, as it is accessory to a residential building. The other is a well-managed public parking garage, which can take advantage of multiple income streams. The accessory parking garage’s NOI is less than half of that of the public parking garage. Projecting
out a sale in year 10, the public parking garage has a significantly higher IRR. See Figure 9 for more details.

(Refer to Appendix E and Appendix F for analysis details.)

Hotel Parking

This analysis does not include hotel parking. Unlike in many other cities where hotels tend to own their own parking, about two thirds of the hotels in New Orleans do not own parking so the hotel parking field is forced to directly compete with other with other parking fields. Additionally, tourism is a significant driver of economic activity in downtown New Orleans so understanding visitors’ parking needs is vital.\(^{38}\)

Hotel guests in downtown areas, including New Orleans, will typically pay more for parking. At $30 per night, a hotel parking space can generate up to $900 a month, which is significantly higher than the $185-$235 for monthly parking that were used in the model. However, this often comes with increased operational expenses including valet services. Hotel parking demand also fluctuates more than other forms of parking, as different hotel customers have different parking demand. Typically, convention attendees will not bring their own cars at rates as transient visitors. Because hotel parking fluctuates greatly, managers of hotel parking must creatively managing their parking structures to lease up spaces while hotel car rates are low while ensuring that spaces are available when hotel customers demand this parking. Similar to event parking, this is done using creative contracts. Additionally, the use of valet services allows for more flexibility in location of parking spaces. Hotel parking can either be part of an accessory garage if the hotel is the primary use or a component of a public parking garage.

\(^{38}\) Giggliotti, Tom. Interview by author. April 21, 2015.
Part V - Financial Analysis

Model

To further analyze profit maximization and compare parking to residential options, 5 different financial models were created:

1. Public Parking Structure
2. Accessory Parking Structure
3. Residential building *without* parking
4. Residential building *with* accessory parking
5. Residential Building *with* public parking

Each of these models consist of a single building with the same mass using a footprint that is intended to maximize parking efficiency (300 SF/Space). The model was also run using development costs associated with a less efficient parking garage (400 SF/Space). In the residential with parking cases, enough parking was built to accommodate current trends of market rate residential car ownership in the focus area, which is estimated at .8 spaces per residential unit.39

(Refer to Appendix E for financial analysis inputs for all five models.)

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Results

Figure 10. Use Comparison - 300 sf per parking space

<table>
<thead>
<tr>
<th>Description</th>
<th>Accessory</th>
<th>Public</th>
<th>Residential</th>
<th>Residential w/ Accessory</th>
<th>Residential w/ Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Gross Income (yr 1)</td>
<td>$1,137,240</td>
<td>$2,360,691</td>
<td>$3,235,320</td>
<td>$3,061,578</td>
<td>$3,338,914</td>
</tr>
<tr>
<td>Operating Expenses (yr 1)</td>
<td>$227,448</td>
<td>$472,138</td>
<td>$970,596</td>
<td>$953,716</td>
<td>$954,436</td>
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<tr>
<td>NOI (yr 1)</td>
<td>$909,792</td>
<td>$1,888,553</td>
<td>$2,264,724</td>
<td>$2,235,548</td>
<td>$2,384,478</td>
</tr>
<tr>
<td>Value (yr 0)</td>
<td>$12,997,029</td>
<td>$26,979,323</td>
<td>$32,353,200</td>
<td>$30,894,420</td>
<td>$34,063,973</td>
</tr>
<tr>
<td>Value (yr 10)</td>
<td>$15,437,402</td>
<td>$32,045,067</td>
<td>$43,479,995</td>
<td>$36,403,909</td>
<td>$41,355,189</td>
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<tr>
<td>Leveraged IRR</td>
<td>5.05%</td>
<td>36.22%</td>
<td>19.54%</td>
<td>18.35%</td>
<td>27.48%</td>
</tr>
<tr>
<td>Unleveraged IRR</td>
<td>5.21%</td>
<td>16.18%</td>
<td>9.91%</td>
<td>9.29%</td>
<td>20.59%</td>
</tr>
</tbody>
</table>

Source: Created by author

Figure 11. Use Comparison - 400 sf per parking space

<table>
<thead>
<tr>
<th>Description</th>
<th>Accessory</th>
<th>Public</th>
<th>Residential</th>
<th>Residential w/ Accessory</th>
<th>Residential w/ Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Gross Income (yr 1)</td>
<td>$852,930</td>
<td>$1,767,583</td>
<td>$3,235,320</td>
<td>$2,918,556</td>
<td>$3,158,667</td>
</tr>
<tr>
<td>Operating Expenses (yr 1)</td>
<td>$170,586</td>
<td>$353,517</td>
<td>$970,596</td>
<td>$909,159</td>
<td>$904,991</td>
</tr>
<tr>
<td>NOI (yr 1)</td>
<td>$682,344</td>
<td>$1,414,066</td>
<td>$2,264,724</td>
<td>$2,131,120</td>
<td>$2,253,676</td>
</tr>
<tr>
<td>Value (yr 0)</td>
<td>$9,747,771</td>
<td>$20,200,945</td>
<td>$32,353,200</td>
<td>$29,451,240</td>
<td>$32,195,370</td>
</tr>
<tr>
<td>Value (yr 10)</td>
<td>$11,578,051</td>
<td>$23,939,953</td>
<td>$43,479,995</td>
<td>$34,703,443</td>
<td>$39,093,897</td>
</tr>
<tr>
<td>Leveraged IRR</td>
<td>-0.08%</td>
<td>17.09%</td>
<td>19.54%</td>
<td>16.39%</td>
<td>24.20%</td>
</tr>
<tr>
<td>Unleveraged IRR</td>
<td>1.50%</td>
<td>11.50%</td>
<td>9.91%</td>
<td>8.86%</td>
<td>19.54%</td>
</tr>
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</table>

Source: Created by author

(Refer to Appendix F for 10-year cash flows for all five models.)

Discussion

As these models show, and as was shown in the ‘Income & Management’ section, public parking garages can be very lucrative and accessory parking garages make significantly less profit. Additionally, mixing residential with parking is only beneficial if the owner is able to
create a public parking garage. If that parking garage is only for accessory use, it does not benefit the project financially.

The efficient construction of a parking garage is important to its financial success. An efficient parking garage can be more profitable than a strictly residential building whereas an inefficient parking garage is less profitable. The efficiency of a parking garage is partially dictated by the footprint. Therefore, it is difficult to find space in a dense area like downtown New Orleans to construct a parking garage to these efficient standards. However, where these locations do exist, parking should be strongly considered in the development.

This model assumes that parking availability does not affect vacancy but does slightly increase rental rates, which currently seems true observationally but has not proven by data. Additionally, it should be noted that these are theoretical models based on current downtown New Orleans trends. These models would encourage developers to build more parking when it can be built efficiently, which would likely reduce parking prices down.
Part VI - Framework & Conclusions

As Part IV begins to explain, there are many factors that developers should consider when making decisions on parking development. This complexity means that there is no single correct ratio of parking to residential units in the focus area. Parking is an amenity that the current market in downtown New Orleans is willing to pay for. However, it comes at a high expense and must be properly managed to outweigh the opportunity cost of developing land or a building for other uses. When building parking, like any development, there are many factors that a developer must consider and actions that should be taken in order to ensure the success of that development. Here are some of the most important factors and actions:

Information to Consider

Supply and Demand on the Proper Scale
Supply and demand can change significantly with location, even on a block-by-block scale. *Therefore, it is important to understand the parking dynamics at a specific location.* If there is a parking surplus near your site, you may not need to build parking and tenants can simply rent from neighboring lots. However, many of the sites currently being developed do not have surplus parking and therefore parking development should be encouraged.

The complex relationship between car ownership and car usage is also important to understand. Although downtown residents may not use their cars frequently, they still own them at high rates. Increased ownership with decreased use leads to increases in parking demand. This can reduce an owner/manager’s ability to increase revenue by double selling spaces. Because car owners tend to use cars more if parking is convenient, ensuring convenient parking could induce more car usage and free up space for additional income.
Development Trends

Currently, residential units in the focus area are not having any trouble leasing up as interest in living downtown is increasing. Because there is an influx of demand, parking is an amenity that is preferred but not necessary. If the market changes and either too many units come on line or demand diminishes, a building’s amenities will be a bigger factor for potential tenants and parking may prevent some buildings from reaching their occupancy goals. *Although parking is not currently necessary for the success of residential buildings, this will likely not always be the case and therefore developers should build some amount to accommodate their tenants.* However, development trends in New Orleans could potentially make the focus area safer by creating a denser neighborhood. Increased safety would increase the walkability of a neighborhood, thereby the necessity of car ownership.

Efficient Construction & Management

Historically, parking has not been as lucrative as residential uses have been and is often thought to be constructed out of necessity. However, with the right steps, parking structures can be very profitable. Efficiency is key to this success, both in construction and management. A developer should work with architects to build parking on lots that are of ideal size for parking and maximize their efficiency and reduce construction cost. Additionally, active management of a parking structure can allow an owner to increase income and close the gap on the income potential of a residential building.
Actions to Take

Pursue Public Parking

Public parking has the ability to bring in significantly higher revenue than an accessory parking garage. In the new CZO, when parking requirements in the focus area are removed, it is important that barriers to entry for public parking garage development are also removed. The theory behind removing parking requirements is that a free market can build the correct amount of parking to accommodate an area’s users and therefore the market must be free to pursue various income streams in order to foster this free market. Developers should pay close attention to parking regulations and keep pressure on public officials to keep this market open.

Under these conditions, developers should consider making their parking structure public in order to take advantage of these income streams, while giving their tenants priority on these spaces. With technology advances, the management of public parking garages requires less manpower, creating further incentive to pursue this option.

Survey Current and Potential Tenants

The survey results reported in this study have interesting implications but with only two buildings and 55 people responding, there is potential to conduct further surveys to understand the preference of residents in the focus area. Because type of tenant and specific location are factors in determining parking demand, the reach of a survey must be taken into account and therefore more surveys should be conducted. These surveys provide valuable insight into the parking demand of residents, which can help maximize occupancy of a residential building.
Conclusion

Many fear that when the new CZO goes into effect in New Orleans and developers are no longer required to include parking in downtown developments, there will be a parking deficit in the area. This has the potential to lead to increased traffic and decreased usage of downtown New Orleans. Historically, this would have been true, as it was more difficult for parking structure to be profitable. However, with demand and parking prices rising in the focus area, it can now be profitable to build parking, provided that it can act as public parking. The profitability potential, coupled with developer’s understanding of the value of parking to supplement other downtown activities, should and likely will promote parking construction in the study area.
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