An Unsustainable Disconnection between Parking Supply and Urban Growth

Abstract:

Sustainability is a multifaceted idea of increasing interest to policy makers and community leaders. It has recently become apparent that automobile use and its accompanying effects can be detrimental to a city’s environmental and socioeconomic sustainability. This study focuses on a single aspect of the automobile transportation system that has received very little attention until just recently: parking. This research was carried out by measuring changes in parking provision, demographics, and commuter travel behavior in New Haven during the overarching time period (1951 -2009). Off-street parking has increased significantly, meanwhile activity level has dropped, and the number of drivers has increased only marginally. These findings indicate a severe disconnection between parking provision and urban growth, calling for reassessment of policy makers’ assumptions about parking supply and demand.
Introduction:

Parking is like world hunger. There’s plenty of food, but the problem is where it goes
-John Gorman, Chairman of New Haven Chamber of Commerce Parking Task Force (1)

Off-street parking is a necessary piece of any large-scale automobile oriented transportation system, but its often disregarded effects can be a powerful determinant of urban form and function. Recent studies have brought a wealth of new information about parking and its effects to the forefront of urban planning issues. Researchers Manville and Shoup say “Parking spaces themselves are ubiquitous (we notice them most when they are absent), and they are ubiquitous in part because cities require parking almost everywhere.” (2) In other words, because of the automobile’s hold over the transportation sector, policies are written to ensure adequate parking is always present and consequently, people have grown to expect it.

This study examines the case of New Haven, Connecticut, in order to assess the relationships between the amount of off-street parking, changes to the built environment, travel behavior, and demographic trends over a period of fifty years. When selecting a city for study, it was interesting to note from preliminary demographic information that New Haven experienced a rapid increase in automobile use, but this has leveled off in the last couple of decades; warranting further investigation (Figure 1). New Haven is an important case study because of its status as a “Model City” (3) during a time when cities across the country were being retrofitted for automobile oriented transportation and modern suburban lifestyles.

![Figure 1: Percent of residents that commute by automobile](image)

*Average for 100 cities with lowest automobile share in 2000

New Haven was seen as an example for other developing American cities, but not all cities followed the same trend in automobile dependency (Figure 1). Cities like Lowell, Massachusetts and Hartford, Connecticut continued to become more automobile dependent while cities like
Blanc

Cambridge, Massachusetts decreased their automobile dependency. This particular parking study is a subset of larger study examining all of these cities in hopes of identifying relationships between parking supply and automobile usage. By assessing the parking supply and demand in New Haven, this study contributes to the growing body of literature studying parking provision’s adverse effects upon cities.

A great deal of knowledge about how policy and infrastructure decisions can influence a community can be gained by studying the past relationships and trends. Our society is now facing obstacles posed by past choices that favored automobiles as the predominant mode of transportation. Through this sort of research, city planners and policy makers can be made aware of the noteworthy disconnection between parking supply and urban growth, and use this knowledge to reassess transportation and parking policies. New Haven is an important city to study because it is now undergoing vast changes as sustainable transportation and city planning becomes more prevalent. This study reveals how a focus on parking provision has played out over time, so that this focus may be reevaluated in future decisions. This study examines not only how and why off-street parking in New Haven has changed, but its relevant effects on the community and how these concepts can be generalized to other modern urban spaces.

Background:

New Haven is a mid-size city located in southwestern Connecticut, along the Long Island Sound, and is home to Yale University. It is the second largest city in Connecticut (behind Bridgeport), is recognized by the American Institute of Certified Planners as a National Historic Planning Landmark for its “Nine Square Plan”, and is often referred to as the first colonial city to plan for land use development (4). Two interstate expressways (I-91 and I-95) intersect in New Haven, making it a prominent travel hub between Boston and New York City. It is also an important port city along the Long Island Sound, making it another important terminal or change-over for commercial and industrial traffic.

New Haven’s recent history is tied to the presence of Ivy League Yale University and its colonial background, but the relevant history for this parking study dates back to the mid-1950’s when cities across the country were undergoing a process referred to as “urban renewal”. Urban environments across the country were being overhauled to make way for automobile infrastructure, tall office buildings, and suburban attractions. Throughout this time, much of New Haven’s redevelopments were efforts to set an example for modern cities and attract prosperity. The expected results never came to fruition and this study attempts to explain this disconnection.

Methodology:

The parking data used in this study is based on Geographic Information System (GIS) mappings of the off-street parking in New Haven during 1951, 1986, and 2009. The GIS mappings were generated from a collection of georeferenced aerial photos taken during each time period. All visible off-street parking facilities were identified and the total area for each year was calculated using the ESRI software ArcMap. This measurement does not account for underground facilities, on-street parking, and private driveways, so this is a conservative estimate. Depending on the quality of the photographs, some questionable areas were marked as unsure and minimum and maximum areas were calculated accordingly. From those minimums and maximums, an average amount of parking was calculated and this was used to estimate the number of off-street parking spaces. This last calculation was based on the assumption that the average area of a parking space (plus space to maneuver) is 350 square feet (32.5 square meters). This estimate was determined from a sample of
over 100 surface lots identified in this study. The average height of parking structures was assumed to be 4.5 levels in New Haven as a result of a survey of the city’s parking structures.

Data concerning demographics and commute trip behavior were aggregated from U.S. Census records (5,6,7), the American Community Survey (8), the Census Transportation Planning Product (9), and the National Historic Geographic Information System (10). A summary of this data is contained in Table 2.

Extensive background investigation of New Haven was performed by reviewing history books and relevant newspaper articles from the New Haven Register. Multiple current and former city officials were interviewed about the history of parking in New Haven, and the Free Public and City Plan libraries were also consulted for further historic research. Using the numerical data and established background information, relationships were assembled to show the disconnection between parking supply and urban growth in New Haven over the last sixty years.

Results:

There are significant data discrepancies between demographic trends, automobile use, and the amount of off-street parking in New Haven. Off-street parking coverage increased by nearly 400% between 1951 and 2009 (Table 1), while the number of residents driving to work had a net increase of only 5% between 1950 and 2000 (Figure 4). These results are alarming in the sense that although the amount of resident drivers in New Haven has experienced relatively little net change, the amount of land used for parking has increased significantly. In 1951, off-street parking covered 1.49% of the city’s land, while in 2009 it covered 6.60% (Table 1). Especially noticeable was the amount of land converted to parking in the neighborhoods surrounding downtown area (Figure 2). Studies have shown that the increase in land used proprietarily for off-street parking along with other automobile infrastructure decreases the amount of available land for other activities, creating spaces only inhabitable by and useful for automobiles(11).

Figure 2: Map of parking in New Haven circa beginning and ending of study period
Table 1: Parking Data Summary

<table>
<thead>
<tr>
<th>Measure</th>
<th>1951</th>
<th>1986</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking Spaces (Surface lots)</td>
<td>21,690</td>
<td>69,830</td>
<td>93,140</td>
</tr>
<tr>
<td>Parking Spaces (Structures)</td>
<td>0</td>
<td>8,860</td>
<td>13,270</td>
</tr>
<tr>
<td>Parking Spaces (Total)</td>
<td>21,690</td>
<td>78,690</td>
<td>106,410</td>
</tr>
<tr>
<td>Uncertainty (+/-)</td>
<td>3.9%</td>
<td>0.9%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Parking Coverage of City</td>
<td>1.49%</td>
<td>4.89%</td>
<td>6.60%</td>
</tr>
<tr>
<td>Population</td>
<td>163,204</td>
<td>128,728</td>
<td>128,436</td>
</tr>
<tr>
<td>Parking Spaces Per Resident</td>
<td>0.133</td>
<td>0.611</td>
<td>0.829</td>
</tr>
</tbody>
</table>

Parking spaces per resident have increased likewise, from 0.133 spaces per resident in 1951 to 0.611 spaces per resident in 1986 (360% increase), with another jump to 0.829 parking spaces per resident in 2009 (a 34% increase). Remember that this study only accounted for visible off-street parking lots, so this does not account for the driveways and on-street parking around a resident’s home. It is also worth noting that the increase in parking per resident between 1951 and 1986 came during a time when New Haven’s population decreased by 21%, illustrating how parking growth did not correlate with the city’s population growth. The growth in parking did, however, correlate with an increase in the percentage of commuters favoring the automobile over other, more sustainable modes of transportation (Figure 3); this was due in part to the decrease in population. As the money for redevelopment projects began to run out, the growth in automobile dependency for commuters slowed until it came to halt around 1990 (Figure 3).

Figure 3: New Haven Commuter Mode Share Data
The important concept identified in this study is the disconnection between the city’s growth and the expansion of its off-street parking infrastructure. Parking facilities accompany commercial developments because of zoning requirements to serve anticipated demand, but research has shown that requiring this parking actually induces additional demand (2). While the amount of off-street parking in New Haven has risen significantly since the 1950’s, other demographic indicators do not point toward growth (Table 2 and Figure 4). The population and commuting employees of New Haven have both decreased significantly, while the amount of residents and outside commuters driving to work has only increased marginally (as previously mentioned). These declining effects exemplify the disconnection between parking provision and urban growth.

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Commuting Residents</th>
<th>Residents Driving</th>
<th>Commuting Employees</th>
<th>Employees Driving</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>152,048</td>
<td>55,979</td>
<td>32,251</td>
<td>84,541</td>
<td>54,374</td>
</tr>
<tr>
<td>1970</td>
<td>137,707</td>
<td>53,748</td>
<td>36,799</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1980</td>
<td>126,109</td>
<td>48,144</td>
<td>33,104</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1990</td>
<td>130,474</td>
<td>54,954</td>
<td>39,916</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2000</td>
<td>123,626</td>
<td>46,592</td>
<td>33,843</td>
<td>73,873</td>
<td>62,659</td>
</tr>
</tbody>
</table>

Table 2: Demographic Indicators

Figure 4: Normalized parking and demographic data compared

Community leaders’ decisions to construct automobile oriented buildings and infrastructure throughout the urban renewal era in an attempt to compete with the growth of suburbs reflect the
growing importance of automobiles in urban transportation systems. It’s only been in recent years, as society faces the realities of climate change and rising fossil fuel prices, that the sustainability of automobile-oriented transportation systems has been the subject of growing scrutiny. New Haven has made efforts to move towards a more sustainable transportation system with improvements to their bicycle network and renovations on the Union and State Street train stations. The recent award winning *City of New Haven Complete Streets Design Manual* mentions walkable, safe, and sustainable street planning as some its primary goals (12). There are also projects promoting calmer traffic and a more connected downtown, such as the up and coming Downtown Crossing plan to trim back a section of Route 34 that divides the city’s downtown area from the Yale-New Haven Hospital and medical centers (13). Federal funds have also been awarded to Connecticut and Massachusetts to construct a New Haven-Hartford-Springfield commuter rail line, which will connect these three metropolitan areas using an alternative mode to the automobile (14). In recent years, the city has experienced a leveling off of automobile use (from 73.5% in 2000 to 72.2% in 2010), as well as a slight increase in population (123,626 in 2000 and 128,970 in 2010). By continuing with efforts like those mentioned above and putting emphasis on the management of off-street parking construction, New Haven can harness the momentum of the green movement to encourage more sustainable living and transportation standards.

**Discussion:**

Redevelopment programs significantly altered New Haven’s urban fabric. Beginning in the mid-1950’s, sizable amounts of federal money were secured for the New Haven Redevelopment Agency’s various urban renewal programs. The mayor during 1954-1970, Richard Lee, told New Haven’s Board of Aldermen in November 1960 that his goal was to make New Haven “A slumless city – the first in the nation” (3). This led to countless low-income housing areas that were seen as “blight” to be demolished and turned into highways, luxury apartments, and strip mall style shopping centers in an effort to draw back the taxpayers who had been trickling out of the city since the late 1940’s and taking refuge in the new American dream: the suburb.

The Federal Highway Act of 1956 commissioned interstate highways to connect a country that was quickly spreading from its urban centers after a rise in automobile ownership, and construction began on I-91 and I-95 that would link New Haven to other nearby metropolitan areas. Commuters and visitors from the suburbs desired adequate and prevalent parking spaces near downtown and other areas of interest in cities like New Haven, so modern parking structures and surface lots were built over many of those areas leveled for redevelopment. Since parking required more land, the only way to accommodate a multitude of activities in a common area was to use land more intensely by building taller buildings (11). Large – scale office buildings and multiple story garages dominated the skyline while adequate crosswalks, calm traffic, and other pedestrian amenities took secondary priority. New Haven’s historic town green was trimmed back for more on-street parking and an additional travel lane, and for many years there was even talk of building a parking garage directly under it (15); though that plan was eventually abandoned after much protest.

In 1959, a piece of CT Route 34 merging with I-95 called the Oak Street Connector (officially known as the Richard C. Lee Highway) was completed, cutting a highway directly into downtown New Haven and offering suburban shoppers expedited access to the (now closed) Macy’s and Malley’s department stores as well as the rest of the central business district. Over the next few decades, several parking garages were built on surrounding streets to offer a secure destination, culminating in the colossal 2,400 space Air Rights Garage, built directly over the terminus of the Oak Street Connector to park the majority of the nearby Yale-New Haven Hospital commuter’s vehicles. While all of this development might have provided the proposed access *into* the city, it
could be said that a person’s overall access to community resources (taking into account increased traffic and decreased land available for non-transportation related activities) such as employment, shopping, and leisure areas, had resultantly decreased.

Greater New Haven had experienced a significant increase in automobile dependency in the 1960’s (Figure 3) in response to the highway projects that would hopefully connect our country and draw people back to more urban lifestyles. Many cities used the drive of the automobile revolution to continue building profitable shopping centers and attractions for suburbanites (that came with more parking lots) and left their urban environments harsh to pedestrian and bicycle transportation, consequently continuing to increase their automobile dependency in a recursive process.

All this change in urban design and thought left New Haven a very different place physically, socially, and economically. Many residents who had the means to leave did while its poorer citizens were shuffled around the city at the whim of the newest clearance of “slums” (16). The working class population was left unhappy and without many choices or sufficient access to the new lifestyle that had been forced upon them. This was evident in the Dixwell Avenue sit-out protests and the riots during the summer of 1967 in the Hill neighborhood, or the extensive protesting of another 5,000 car garage on State Street; which never came to fruition (3). There were many people blatantly opposed to New Haven’s new direction, but the majority of renewal continued as planned; the eventual “common good” of bringing residents, prosperity, employment, and life back to the city being the primary goal of renewal.

As space for off-street parking (and other automobile infrastructure) increased, the population and available employment steadily decreased (Figure 4); meanwhile the city fell further into debt. For example, the (now demolished) New Haven Coliseum (a concert hall and sports arena) was constructed to attract large crowds, but partly because it was never fully financed (the building was never finished as intended), it never pulled in the desired revenue and thus became another bill levied onto the shoulders of an already prominently poor city. In 1967, the city of New Haven convened their board of Alderman “in an apparent move to hold down [the city’s] bonded indebtedness. Already one of the highest in the state, New Haven [asked the] General Assembly permission to appropriate funds in its annual operating budgets to help pay off bonds that will be sold to finance the proposed new municipal parking garage [attached to the Coliseum]” (17). There were countless other cases like the Coliseum that weighed heavily on community leaders’ and taxpayers’ minds, but still evident in the years that followed was the thought that more access for automobiles related directly to progress and growth.

In 1982 it was reported that “there is more downtown parking in New Haven than in any other Connecticut city – more than twice that provided in Hartford and Stamford”. In response, the current mayor, Biagio DiLieto, said, “I am very gratified with this information and I remain strongly committed to maintaining and improving parking facilities for workers, shoppers, and visitors in the downtown area” (18). The city had still not paid off its debts, but politicians continued to rally around the modernized accessibility of New Haven to the automobile. This was a common story; in cities like New Haven and Hartford, debt and massive parking garages seemed to be synonymous.

In Yale Professor Douglas Rae’s City: Urbanism and Its End, he gives an extensive commentary on the decline of New Haven after urban renewal:

In the years immediately after Dick Lee’s reign, it became apparent that New Haven would not become the slumless city once advertised, that its fabric of enterprise was in tatters, that its industrial might was all but gone, that the vitality of its civic fauna was being supplanted by professionally staffed service organizations, that crime was a growing problem, especially in lower-income neighborhoods, and that the inner city would continue to house the neediest households in the region in wildly disproportionate numbers. (16)
Today, New Haven is the second poorest city in Connecticut, with 28.65% of its residents’ incomes below the poverty line. \(^{18}\) Sometime during the Urban Renewal Era, through pilferage, mismanagement, and other unaccounted-for monetary leaks, the revenue set aside to pay back New Haven’s federal debt was lost, and redevelopment slowed in the 1980’s. \(^{20}\) The suburbanites were never really drawn back to the city, and as displayed in the results section, the city population steadily decreased during the redevelopment era. Meanwhile, New Haven’s urban fabric had changed completely, thrusting its community, willingly or not, into the automobile age.

The modern automobile oriented transportation system that was expected to help revitalize New Haven had coincided with more citizens leaving the city as well as socioeconomic decline. A previous study examining Hartford and Cambridge has shown that as an urban environment becomes more fragmented by automobile infrastructure, pedestrian activity becomes discouraged, and this research holds true on the streets of New Haven as well \(^{21}\). As New Haven now progresses towards more sustainable transportation systems and lifestyles, the obstacles created by numerous off-street parking facilities will be difficult to overcome.

Conclusion:

Over fifty years ago, in an attempt to stimulate urban growth, New Haven tried to compete with the automobile accessibility of the suburbs by constructing numerous parking facilities inside its urban core. This increase in parking, along with other urban renewal programs, coincided with a decrease in activity inside the city. Population and commuting employees both experienced a decline, while the automobile dependence inside these two groups increased, bringing into question the assumptions made behind the provision of parking. The increased amount of parking was huge in comparison to the relatively small net change in drivers, displaying a startling detachment between parking provision and demographic need.

Persistent urban renewal programs left the city of New Haven fragmented. If policy makers and urban planners continue to provide parking facilities for declining cities, they will not be serving demand; they will be inducing it. This recursive development pattern of constructing parking to serve anticipated demand needs to be re-evaluated. If this approach isn’t corrected, parking provision and automobile dependency could prohibit urban growth in the future. Efforts to increase alternative transportation and the reestablishment of a continuous urban fabric can also assist in stimulating urban growth.

By quantifying the expansion of off-street parking in New Haven and delving into the background behind it, this study illustrated how incongruous the present parking supply is to the city’s demographic need and explained these circumstances. This disconnection needs to be repaired and the assumptions behind it reexamined so that New Haven and cities facing similar obstacles can sustain urban development in the future.
Acknowledgements:

This research was funded by the University of Connecticut’s’ Center for Transportation and Livable Systems. The author thanks PhD candidate Christopher McCahill for his guidance and assistance, Professor Norman Garrick for his advisement, Anstress Farwell of the New Haven Urban Design League and Brian McGrath of the Chapel West Special Services District for their breadth of knowledge on the subject, and the city of New Haven for their cooperation throughout this research project.
References:


20. McGrath, Brian. Personal Interview. 21 July 2011