

May 2005

# What Makes Small-City Downtowns Viable?

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**What Makes Small-City Downtowns Viable?**

Kyle Noonan

B.A., University of Connecticut 2005

An Honors Thesis

Submitted in Partial Fulfillment of the

Requirements for Designation as

University Scholar

at the

University of Connecticut

2005

## **Acknowledgements**

I owe a great deal to the many people who helped develop this project and see it through to fruition. Such an undertaking requires the support of a number of people. Most importantly, my advisors, Drs. Dennis R. Heffley and Thomas J. Cooke, deserve warm thanks for their patience. Diligent staff—too numerous to name—at a variety of organizations were invaluable in tracking down data. A variety of others also gave generously of their time and expertise, including Gautam Tripathi, Richard Langlois, Bill Berentsen, Ellen Cromley, Andrew Latimer, and Steven Batt. Special thanks are owed to my fellow thesis-writers Adam Kanter and Ira Steinberg and to my eternally patient roommate John Jevitts. A very special thanks goes to David R. Agrawal, my fellow University Scholar, for keeping my eye on the ball.

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## INTRODUCTION

One of the defining geographic features of economic change during the 20<sup>th</sup> century was a profound restructuring of the urban landscape. America's urban areas were radically different in 2000 in structure and function from their counterparts in 1900. Changes in transportation, industrial production, and public policy drove these shifts in the makeup of our cities.

One of the most obvious changes, and one that began before the 20<sup>th</sup> century, has been the deconcentration of economic activity and population within each of the U.S.'s urban areas. Paradoxically, as the country's rural population sharply declined, the population density of America's cities declined as well, due to the suburbanization of urban areas.

Connecticut has been no exception to this trend. In 1900, 40% of the state's population lived in the four largest cities; by 2000, that fraction had shrunk to 14% (Berentsen, 2002). The result has been that Connecticut is “not just a state with suburbs, but a suburban state” (Janick, 1993, p.9). Job creation and population growth are largely limited to suburban and exurban towns, leaving the urban centers that fueled the state's growth in the early 20<sup>th</sup> century stagnant. This phenomenon of center-city abandonment is well-known, and has been a major public issue, particularly in Connecticut, since the 1950's (Rae, 2003). While the literature- and public interest- in Connecticut's largest urban areas is rich, both the nature and the magnitude of this trend in Connecticut's smaller, more isolated urban areas has gathered less attention.

What, exactly, has led to these changes in the geographic structure of the urban environment? And why study and quantify these trends? Deconcentration has had deep

and lasting economic, fiscal, social, and environmental consequences. Urban downtowns, which once dominated civic and economic activity in Connecticut, have declined substantially in importance. This decline has been both cause and effect of many other changes that have occurred in New England. Our economy has transitioned from manufacturing-based to service-based. Employment—especially manufacturing—is no longer clustered in the central city, which ironically has now become a higher-cost place to conduct most manufacturing activity. Inter-urban transport largely occurs by automobile, which has replaced trains, while the automobile again dominates virtually all intra-urban transport, replacing trolleys, horses, and walking. Coupled with increasing income, which increases demand for residential land, these transportation changes have rendered dense central cities largely obsolete. Finally, a variety of public policy decisions (and non-decisions) have had profound consequences for the center city. Federal housing policy, urban renewal decisions, and the strict maintenance of Connecticut's 18<sup>th</sup>-century municipal boundaries have weakened or even crippled downtown areas.

The resources and attention given to Connecticut's major urban centers- Hartford, Bridgeport, and New Haven, in particular- have been huge in recent decades. Yet the spectacular collapse of their urban economies is certainly not unique, and their limited spatial scale has made it easier to overlook the enormous growth in suburban wealth that has accompanied the emptying of the core of each city. In this analysis, I intend to examine the experience of all of Connecticut's traditional urban centers—from Torrington and Ansonia to Willimantic and Danielson—to explore what has occurred

there in recent decades. I consider the center city municipality as both the “service center” for its region and as a one-time or current manufacturing center.

This study has two broad objectives. The first is to provide a qualitative history of the rise and decline of urbanism in Connecticut. This draws mainly from secondary sources that describe and explain urban history at the national, state, and local level. The second objective is to quantify the impact of various economic, social, and political conditions on health of all center cities in Connecticut. This section uses regression analysis to ascertain relationships between three measures of economic health and a variety of explanatory variables. The conclusion is a synthesis of the literature review and the results of the regression analysis. It evaluates the determinant factors of center city health and suggests public policies to improve center city health.

This analysis draws from economics, geography, and public policy. I do not model the economic health of the cities in any formal sense. The quantitative analysis is limited to the use of empirical tools from economics to investigate the factors that have been associated with the declining economic health of Connecticut’s urban areas. The analysis is intended to inform public policy. By more fully understanding the economic experience of all of Connecticut’s cities, we can make more informed policy choices. On countless issues that local and state governments face, a deeper understanding of each decision’s consequences on the distribution of economic activity can help policymakers make wiser decisions.

## **BACKGROUND TO URBANISM**

Connecticut's small cities and their CBDs have largely fallen from their role a century ago as true "centers" of economic and social activity. Though the public sector continues to reside in downtown areas, center cities no longer serve the same central role in the civic, cultural, and economic life of Connecticut (Janick, 1993). Private employment of all kinds has largely vacated from central business districts, and often from the service center municipality entirely. Population has followed the same trend; and not surprisingly, property valuation growth is far below suburban or exurban municipalities, often plunging into negative rates.

Why has this happened? The literature on urban economic deconcentration is prolific. Here, both the rise and fall of these cities will be examined. To understand how these cities declined, we must first understand how they rose to dominance—in the words of Douglas Rae, how the "accident of urbanism" unfolded. Once the story of how these cities formed and prospered has been told, we can turn to the recent experience of urban deconcentration.

Throughout this analysis, the major causal factors of urban form and their effects will be discussed, and their relevance to the experience of Connecticut's small cities evaluated. This thesis focuses on deconcentration, since that has been the story in Connecticut for most of the last century. As we paint a picture of urban decline in Connecticut, particular attention will be paid to variables that have had differential impact across cities, so that their relative importance in economic health can be observed.

## **TRANSPORTATION: TECHNOLOGY AND GOVERNMENT**

As Alex Marshall observed in his study of the modern American city, “How we get around determines how we live... Transportation determines the form of our places.” (Marshall, 2000, p. xi). Transportation in America has radically changed since the early 1800’s. The shift to rail-based transit, and later to the ubiquity of the automobile, is a large--some would argue, the single largest--factor in understanding the rise and fall of urban America (Jackson, 1985).

The cities under study in this thesis rose to become industrial centers in the mid-1800’s. Some had been small farming settlements, but it wasn’t until the collision of several events in the evolving capitalist system of 19<sup>th</sup> century America that they became recognizable urban centers (Rae, 2003). During this period, improving agricultural technology and the exploitation of new, fertile farmland in the Midwest produced a vast agricultural surplus, greatly lowering the cost of food. Simultaneously, huge numbers of immigrants from Europe and Canada, seeking higher wages and lower land costs in the U.S., flooded East Coast cities and provided labor for new industries. Finally, widespread use of technological innovations like the steam engine (and the railroad in particular) revolutionized manufacturing (Rae, 2003). The new factory system of production exploded in Connecticut as early as anywhere else in the country, raising boomtowns such as Putnam out of country settlements (Ladd, 1969).

The rise of dense urban settlements with mixed industrial, residential, and commercial land uses came about through inequalities in transportation technology. The railroad permitted inter-urban and inter-state transport with very low marginal cost, opening up Connecticut’s cities to a variety of raw materials and markets. But a train,

though reliable and inexpensive to operate, can run only on a railroad, which is a fixed path. Once railroad cars reached their destination and were unloaded, goods had to be moved on expensive, unreliable variable path transport (at this time, mainly horse vehicles on dirt or cobblestone streets). People, for the most part, also lacked intra-urban transport that would allow them to live separate from their work. This changed somewhat after 1890, when the streetcar came into wide use. Yet the streetcar, like the railroad, operated on fixed routes, spatially concentrating activity along those routes. This difference in inter-urban and intra-urban transit concentrated urban activity around railroad depots, forcing manufacturers, and hence residents and retailers, to locate there. Only during the 1920's, when the automobile came into wide use, did variable-path travel become as cheap as fixed-path travel. Industry, no longer chained to the railroad depots, was able to move to cheaper land outside the center city. Concentration became unnecessary, and urban residents were freed to live beyond walking distance of a public transit line or their place of employment; retail necessarily followed (Jackson, 1985). The net effect has been a steady deconcentration of activity from the urban centers since the 1920's (Rae, 2003). Below, a brief history of intra-urban transit is described, moving from railroad to streetcar to automobile.

Railroads first allowed substantial numbers of Americans to live farther than walking distance from their place of employment. Importantly, however, they still required residence within walking distance of the railroad line (Jackson, 1985). In New York City, the first railroad commute began in 1832 when railroads extended up Manhattan Island to 125<sup>th</sup> St. By 1843, the railroad connected New Haven to New York City, and real estate developments began to reach into southwestern Connecticut

(Jackson, 1985). Between 1840 and 1860, the population of Greenwich increased by 60%; Westport's population nearly doubled. These towns began the transformation from sleepy farming villages to true residential suburbs dependent on the urban core. Though this phenomenon was most pronounced in greater New York, smaller cities began to see railroad commuting as well. An observer noted that in the 1880's "between 14 and 16 trains to or from Hartford stopped at Windsor each day and that some local residents actually worked in the capital city" (Whetten, 1974, as quoted in Janick, 1993). Cost to ride the railroad was far higher than most wage-earners could afford, and these railroad suburbs were accessible only to the wealthy (Janick, 1993). Though the railroad created the first true suburbs for wealthy urbanites, most urban residents continued through the 1800's to commute by foot.

The trolley also cheapened intra-urban transport, substantially changing urban land use in its own right. Jackson (1985, p. 113) has stated that the "extraordinary prosperity and vitality of most urban cores between 1890 and 1950 cannot be understood without reference to the streetcar systems." By World War I, seventy Connecticut towns were served by electric railways (Janick, 1993). It is important to note that the trolley did not substantially affect the location of manufacturing. The streetcars moved people through the city, but moving materials and goods continued to require the railroads. The trolley simply allowed workers to reach plants from more distant residences. In New Haven, for example, streetcar systems built during the 1910's opened up large rural areas around the city to upwardly-mobile, second-generation immigrant families (Brown, 1976, as quoted in Janick, 1993). This served both to expand urban areas and to open up formerly residential areas for manufacturing, commercial, and retail uses (Jackson, 1985).

Because the trolley lines nearly all converged in the central business district, the dominance of the CBD was reinforced by the streetcar system (Jackson, 1985). The trolley lines individually allowed access into the outskirts of a city, but retailers—then as now—focused where traffic intersected. In the early 20<sup>th</sup> century, that meant the central business district. Before automobiles, with their enormous demands for space, came into common use, the trolley-and-foot system of transit encouraged dense, centralized, multi-story retail and commercial activity.

This all changed in the 1920's, however. Henry Ford's much-celebrated assembly-line Model T dropped in price from \$950 in 1910 to \$290 in 1924. By 1925, the average American worker could purchase a Model T with less than three months' wages (Jackson, 1985). This explosion in automobile sales transformed the motorcar from a luxury of the wealthy to a fixture of mass society.

Traffic congestion, unimaginable to most city planners at the turn of the century, began to impinge on American cities in the mid-1920's (Hall, 2002). The auto's most dramatic early impact, in fact, wasn't to drain residential population, but rather to congest city streets. By 1923, traffic was so thick that some cities talked of banning cars from downtown streets (Jackson, 1985). In New Haven, for example, the mayor claimed in 1923 that the endless rows of parked cars on downtown streets were a safety hazard for fire trucks. In 1937, when the problem had gotten even worse, the mayor pleaded with citizens to leave their cars at home and to walk to downtown (Rae, 2003). Some American cities, such as Washington, Kansas City, and St. Louis, showed more downtown commuters used cars than transit in the 1920's (Tobin, 1976). Indeed, Connecticut's high income allowed it to lead the nation in automobile use. By the

1920's, New Haven alone would house more than fifty auto dealerships (Rae, 2003).

This traffic swamped cities that were designed around trolleys, horses, and foot traffic.

Eventually, however, it became inevitable that the car would be used for inter-urban rather than purely intra-urban commuting. New York, which claimed the world's earliest and most extensive expressway system, had profound consequences for Fairfield County: by 1923, before even the Merritt Parkway was constructed, a National Geographic reporter observed "Even Connecticut, as far as Stamford, Greenwich, and New Canaan, is peopled with those who work in Gotham by day and sleep in the country by night." (Showalter, 1923, as quoted in Jackson, 1985) Yet Connecticut itself financed an excellent road system starting in 1907. A network of 14 major highways fed by smaller connectors was begun before WWI, and after 1921, Connecticut received substantial federal funding for road-building. By 1950, Connecticut had more than 3,000 miles of paved highway, probably more than any other state in the country (Janick, 1993).

While car use promoted urban congestion, the highways encouraged leaving the city altogether, opening undeveloped areas far from commuter rail lines for development. Commuting within a city was no longer necessary for middle-class residents, who were freed by the car to commute to other municipalities. Fairfield County, again leading the pack, lobbied successfully in the 1920's for a "boulevard" that would "be devoted to high speed traffic between the county and New York City." (Wilson, 1929, as quoted in Janick, 1993) The Merritt Parkway, which opened in 1938, brought parts of Fairfield County not well served by the railroad within commuting range of New York City. This pattern was to be repeated throughout Connecticut in the coming decades.

A national system of limited-access highways was first considered in the mid-1930's. It was not until 1956, when the Interstate Highway Bill was signed, that the federal government decided to subsidize auto travel on a massive scale. The highway bill, and an accompanying bill that provided for its financing, created a \$27 billion, 41,000 mile system of expressways to be constructed over sixteen years. It was designed to link every state capital and 90% of America's cities of over 50,000 people. Each project was to be 90% financed by the federal government (Weiner, 1987).

The first modern traffic studies, in the 1930's, showed that for both large and small cities, the vast majority of traffic heading into the city was not through-traffic, but rather destined for another location inside the city. As late as 1940, for example, highway planners found that 43% of the traffic on Waterbury's state highways was local traffic headed in or out of the CBD; in Hartford, this figure was 50% (State of Connecticut, 1944; as quoted in Janick, 1993). Most highway engineers used this rationale to argue for highways that pierced the very heart of cities. A "hub-and-wheel" model of urban highways was advocated from the late 1930's: a tight loop girdling the CBD, linked by two to six radial highways to the circumferential beltway, which would carry through-traffic and spur development of the city outskirts (Warner, 1972). Only in this way could downtown be salvaged, for in the age of the automobile, any area without easy car access was thought to be doomed. History has shown they were exactly wrong: cars and 19<sup>th</sup> century CBDs are incompatible on all but the tiniest scales, and the increase in car use necessarily meant the decline of an urban system unable to handle cars. This hub-and-wheel model was incorporated into the interstate highway bill in 1956.

Perhaps inevitably, the massive government commitment to highways and the resulting pattern of land use have spelled doom for much of the nation's mass transportation. Roads, since becoming a federal concern in the 1910's, have been enthusiastically and generously supported by the federal government ever since. Curiously, mass transportation, which like roads began as a local concern, has largely stayed that way (Hawken et al., 1999). Broad-based federal support for mass transit is limited mainly to inter-urban transport. While interstate highways have been 90% federally supported since the 1950's, transit projects receive a fraction of their funding from the federal government, generally cannot condemn property for construction, and always require revenue from users. Yet both systems serve mainly intra-urban traffic, specifically commuters (Jackson, 1985). This glaring discrepancy has certainly harmed transit-based central business districts.

This massive highway subsidy has had a very real physical impact on the city as buildings, streets, and public space were removed to build the interstates. It had an even more profound impact, however, in the long run, by greatly lowering the cost of car travel relative to other forms of transport. Transforming urban transportation from public transit-based to automobile-based meant obsolescence of the central business district. As New Haven's example illustrates, city centers simply can't fit as many shoppers in cars as on foot.

The vast condemnation of private land that urban highway construction required was extraordinarily expensive. To minimize these costs, planners attempted to find the lowest-cost routes, which often passed through low-income areas and public parks. River margins became popular corridors, with detrimental impacts on urban open space in cities

like New Haven and Hartford (Warner, 1972). When routes through developed areas were built, engineers rationally minimized cost by selecting the poorest (and thus, cheapest to condemn) areas. Many urban planners actually encouraged this policy, arguing that the highway could be a powerful tool for slum clearance. Mayor Richard Lee of New Haven built the Oak Street Connector through a working-class neighborhood for slum clearance as well as to improve traffic flow, as the highway's generous 500-foot width demonstrates (Rae, 2003). Routing highways through poor areas made construction cheaper, with disastrous social effects for urban neighborhoods. The effects that highway construction, urban renewal, and other public policies had on the physical plant of the city warrant discussion.

### **HOUSING POLICY AND URBAN RENEWAL**

In 1933, the Home Owners Loan Corporation (HOLC) was established by the federal government. As the agency developed, it began to produce studies of housing markets for cities across the country. HOLC appraisers evaluated each neighborhood in a city as credit risks for home mortgages. Factors that improved creditworthiness in HOLC's evaluation included newness of development, presence of developable land, restrictive covenants, high social status and social homogeneity, and high home ownership. These factors are not descriptive of the pre-automobile neighborhoods surrounding the central business districts of Connecticut's old industrial cities; HOLC's evaluations almost universally advised against investing in traditional urban neighborhoods. In New Haven, for example, HOLC evaluators determined in 1937 that 94.7% of the city's population lived in "substandard" neighborhoods (Rae, 2003). This was the origin of government "redlining," the practice of formally delineating certain

neighborhoods as unworthy of credit, and thus condemning them to all-but-certain disinvestment. Though HOLC likely only echoed what many loan officers already felt, the agency still legitimized redlining and actively discouraged urban investment. Loans, if they could be obtained at all, were made at higher interest rates for urban neighborhoods. This encouraged families to leave the center city for the suburbs, damaging the central business district and depressing property values (Jackson, 1985). The effect of government redlining of Connecticut's traditional urban areas is difficult to quantify, but it certainly had a negative impact on urban neighborhoods and center city economic activity.

After World War II, the federal government began to massively subsidize suburban housing at the expense of the center city. Subsidized loans offered by the Federal Housing Administration and the tax deductibility of mortgage payments often made it cheaper to purchase than to rent a unit of space (Jackson, 1985). Young families, in particular, abandoned older rental units in the cities for new tract housing in the suburbs. Hartford, for example, lost 6,500 young married couples during the 1950's, many for new single-family tract developments in towns like East Hartford, Manchester, and Bloomfield (Janick, 1993). In the 1950's, the state government joined the federal government in subsidizing this new housing by paying roughly twice as much of the Hartford suburbs' school expenses than of the city itself (Clouette, 1992, as quoted in Janick, 1993). The shift of population to suburban areas—indeed, much of the decentralization that has afflicted our center cities—has been mitigated in other regions of the country through the process of annexation. As urban areas expand in response to economic and policy changes, the jurisdiction of the city government expands as well. In

Connecticut, however, municipal borders have changed very little through time, and annexation has never occurred. Connecticut's cities are unable to absorb suburban growth and thus cushion the decline of the center city (Rae, 2003).

In the post-World War II era, as population and business activity began to leave traditional urban areas, revitalizing CBDs became a major concern for city governments (Frieden and Sagalyn, 1989). The Housing Act of 1949 authorized the clearing of slum areas to improve housing and business conditions in the cities (Rae, 2003). The rationale was simple: the center city, in the age of the automobile, was thought to be obsolete. Its institutions, businesses, even streets and buildings would need replacement. The prevailing mentality called for making a "fresh start" by "renovating entire neighborhoods to provide a completely new land-use pattern." (Owen, 1959, as quoted in Frieden and Sagalyn, 1989). City governments feared that without massive public intervention, the decline of the CBD and surrounding neighborhoods would spell doom for public coffers. The local business elite feared competition from the rapidly growing suburbs. With strong support from both the business and government elite, urban redevelopment plans for cities around the country were drafted. By 1959, there were over 700 published (Frieden and Sagalyn, 1989). Though major cities, such as Bridgeport, New Haven, and Hartford drafted revitalization plans, many smaller cities did as well, including Putnam (Ladd, 1969).

Hindsight has shown that the "bulldozer years" of urban renewal—the 1950's and 1960's—had strongly negative impacts on the center city (Rae, 2003). Planners who remade the city attempted to make it into a more modern, car-based layout- essentially, to suburbanize the downtown (Frieden and Sagalyn, 1989). This failed to recognize the

basic economic forces that had created and sustained the central business district.

Additionally, the ongoing uncertainty and disruption of urban renewal discouraged investment and shopping in the CBD.

Throughout this period, small, locally-owned stores were destroyed in huge numbers to make room for new mega-projects—or, if the parking garages and office towers failed to materialize, the dense blocks gave way to vacant lots. Returning to Rae's (2003) analysis of New Haven, the 1950's renewal of downtown New Haven displaced 785 businesses. Though many of these businesses were probably of declining profitability, removing this dense, locally-rooted network destroyed much of what distinguished New Haven from the more modern suburbs. Competition with the suburbs on their terms—with a suburban-style mall and car-based business district—gave the cities a disadvantage from the start. The office park and enclosed mall were created by the car; the center city was created by trains and trolleys. “Suburbanizing” the downtown was profoundly destructive to the center city, whose structure and origin, and thus function, was ignored.

## **STRUCTURAL SHIFTS**

Changes in transportation were a major cause of industrial flight from the center city. While railroads centralized manufacturing, highways decentralized it, greatly lowering the value of center-city locations for industry (Rae, 2003). These technological changes disadvantaged the center city relative to the suburbs; but structural changes in the economics of manufacturing disadvantaged the entire region relative to the rest of the world. Truly profound structural changes occurred in New England manufacturing during the 20<sup>th</sup> century. Taken together, these trends are broadly known as

deindustrialization. Manufacturing created the center city; in this century, it vacated not only the city, but often the entire region.

Temin (2000) has observed that New England's key industries were largely the same in 1940 as a century earlier. The region stayed dominant in American manufacturing during the period, growing large industrial cities. Yet the vast majority of this manufacturing activity disappeared from 1940 to 2000, and manufacturing no longer distinguishes the region (Temin, 2000). Shoe and textile manufacturing were never as dominant in Connecticut as in eastern New England. Luckily for Connecticut, the state's cities (with the exception of those in the Quinebaug Valley) did not suffer from the wholesale flight of these industries, which employed by 2000 less than one-eighth of their 1948 count. Yet the metals industry, which dominated western Connecticut, was also hit severely by the same trends, particularly as defense contracting declined in the last decades of the twentieth century (Temin, 2000).

The region's manufacturing declined for several well-documented reasons. In short, New England's manufacturing after WWII was defined by archaic, multi-story factories built around water power and rail lines. This center-city configuration was outdated: manufacturing in modern, one-story facilities using electric power and trucking was far more efficient (Temin, 2000). The long, seemingly permanent presence of manufacturing had created a unionized, high-wage workforce and tax structures that discouraged capital investment (Rae, 2003). Additionally, massive investment in the American South by the federal government helped make its low-wage work force accessible to manufacturers in New England. Many low-skill manufacturing industries, particularly textiles, took advantage of the South's more modern transportation and

industrial facilities (Temin, 2000). As barriers to international trade came down, New England's aged industrial stock was forced into competition with the entire world, increasing these competitive pressures as the century closed.

Essentially, the economic engine around which Connecticut's industrial cities grew slowed down or all but ceased to function. The CBD and center city neighborhoods, which harnessed the wealth created in the great factories of the 19<sup>th</sup> and early 20<sup>th</sup> centuries, became obsolete. The New Haven region provides a good example: nearly 28,000 factory wage-earners in the city in 1947 had dwindled to less than 3,000 a half-century later. Hence the late 20<sup>th</sup> century saw center-city manufacturing decline ten-fold. But in suburban regions, manufacturing jobs increased by 12,000 from 1947 through 1967, before being halved over the next 30 years (Rae, 2003). While the suburbs gained for a time at the center city's expense, as the century closed, the entire region's manufacturing economy was in sharp decline.

The huge increase in median household income through the 20<sup>th</sup> century also had an undeniable hand in suburbanization. Mills (1972) observed that there is a high income elasticity of demand for newer, low-density housing, which is located overwhelmingly outside the center city. Housing is a normal good, and as Americans grew wealthier, their demand for quantity and quality of housing grew as well. Hence Mills identifies growth in income as an important factor in flattening urban density gradients. Given Connecticut's long position as one of the wealthiest American states, these income effects are likely to have influenced urban density earlier and more forcefully than in other parts of the country (Janick, 1993).

## **SOCIAL FACTORS**

Social factors also contributed to the decline of the central city. Connecticut's industrial cities were built when foot travel was the dominant mode of daily transportation. The requisite density meant that through the 1800's, a variety of ethnic groups, though informally segregated to some degree, were forced by sheer physical proximity to interact (Rae, 2003). This changed somewhat when the trolley came into wide use, since the geographic area open to residential use greatly expanded. As noted above, in New Haven, the trolley allowed second-generation immigrants in the 1910's to segregate into more homogeneous ethnic neighborhoods. There, the Irish took the eastern outskirts, the Germans the western outskirts, and the Yankees the northern outskirts (Brown, 1976, as quoted in Janick, 1993). In general, these movements appear to be an attempt to self-segregate, rather than to escape any particular ethnic group. This would change after World War II, when African-American and Hispanic migrants effectively stigmatized Connecticut's center cities.

Each year from 1940 until the mid-1970's, roughly 150,000 southern blacks moved to northern industrial cities. Cities like New Haven, Waterbury, and Bridgeport absorbed huge numbers of these migrants: in New Haven alone, the black population would quadruple over the period to 40,000. Starting in the 1960's, and continuing to present, Hispanics began moving to Connecticut in great numbers as well (Rae, 2003). Less confined to the major cities than African-Americans, they have still suffered intensive ghettoization in Connecticut's smaller cities (Janick, "Demographic," 2003).

The timing of the arrival of these migrants was disastrous: mass migration began as center city manufacturing began its sharp decline, and continued as economic

opportunity in the center city collapsed (Rae, 2003). African-Americans, suffering from racial discrimination, were denied many of the opportunities of earlier white migrants for social advancement, and became economically trapped in the center city. Public housing began as temporary shelter for poor white families during the Depression, and was located almost exclusively in contemporary working-class neighborhoods. By the 1960's, it was serving as increasingly permanent shelter for a black underclass; by the 1970's, its concentrated poverty had become synonymous with center city pathology (Jackson, 1985). Coupled with white flight to other neighborhoods, a major result was the evolution of public housing into a symbol of *de facto* racial segregation. Concentration of poor minorities in the cities produced deeply troubled public school systems, which further discouraged families of any means from living in the cities (Rae, 2003). Furthermore, mounting racial tension in the cities erupted into rioting in the late 1960's in Bridgeport, Waterbury, Middletown, New Britain, Stamford, Norwalk, New Haven, Hartford, and New London (Janick, "Racial," 2003). This violence further confirmed to Connecticut residents the instability and danger of the concentrated poor, which had become synonymous with the center city (Ladd, 1969).

In short, the presence of concentrated minority populations in abject poverty stigmatized the city. Its intense concentration of social pathology discouraged investment and residency in surrounding neighborhoods (Rae, 2003). This concentration along economic and racial lines has been remarkably sharp in Connecticut, producing intensely troubled urban populations even in minor cities like Willimantic and New London. The stigma of poverty and segregation continues to pose a major challenge for these downtown areas.

## CONCEPTUAL MODEL

The literature on urban economic health identifies a number of determinant factors. In this paper, those factors are examined in Connecticut's cities over the 1980-2000 period to determine the relative impact of each. The goal is to identify and determine the magnitude of causal factors that correlate with changing economic conditions in Connecticut's center cities.

This paper uses linear regression analysis to analyze which factors correlate with measures of economic health, and attempts to explain them in an economic framework. The goal is to determine which factors are most important in explaining economic health so that they may gain the attention of the policymaker.

The "economic health" of each city, as defined here, can be represented in three dimensions: property value; population; and income. Clearly all three are related, as rising income will increase population and hence property values as well. Suburbanization, similarly, will be expected to reduce all three in the center city. Yet any one of the three is unlikely to tell as complete a story as all three used together, and they will be used to determine how decentralization has occurred. They are represented by observable variables as follows: municipal Equalized Net Grand List (estimated market value of all property within a municipality); Census population; and Census median household income.

In a standard utility-maximization framework, a household spends its income  $y$  on a set of goods (whose price is assumed to be given, and are purchased at unit cost  $c$ ) and

“land”  $q$ , which may be thought of as a composite of housing structure and land, subject to a standard budget constraint:

$$y = (1+t)pq + c.$$

The unit price of land  $p$ , the tax rate on land  $t$ , and income  $y$  determine the household’s demand for “land” and other goods, and hence its maximum utility  $U^*$ , or:

$$U^*(y, t, p) \quad \text{where } U^*_y > 0, U^*_t < 0, U^*_p < 0$$

Thus, utility increases with increasing income and decreases with an increasing tax rate and unit price of land. Since the price of other goods is given and assumed to be equal in all locations, only income, tax rate, and the unit price of land (or, more generally, property values) are of interest. Using Connecticut’s 169 towns as the units of data collection, we can collect data on proxy variables for income, tax rate, and the market value of property. For income, each municipality’s median household income is used, as above. For property value, Equalized Net Grand List per capita, or the net value of all property in a municipality divided by its population, is used. These two variables, as noted above, are used as indicators of economic health. For the tax rate on property, the effective mill rate is used. The effective (or equalized) mill rate is measured as an independent variable, since it is set exogenously by town governments, and may affect residential decisions, as noted, as well as business investment. This basic utility function can be easily modified to include other variables that we believe to contribute to households’ utility, for example, per capita state aid to municipalities. State aid to municipalities, locally perceived as “free money,” is expected to positively impact utility, as it means higher service levels and/or lower tax rates, all else equal. (Note that since state aid for education, which constitutes the majority of aid to municipalities, is allocated

based on a formula that includes median household income and ENGL per capita, this variable will be included only in the regression on population change.)

Three social variables will be included that could have an important impact on economic health: ethnic composition, crime rate, and educational attainment. We observe that center cities populations are not only generally poorer than surrounding suburbs, but also have proportionally higher concentrations of ethnic minorities (Janick, “Demographic,” 2003). Cutler et al. (1999) describe racial segregation in urban America, and find three temporal phases. First, blacks and Hispanics arrived to the region through the cities, and with few resources for transportation or access to capital, were forced to settle where they landed. These initial patterns were maintained through mid-century by “collective actions” by whites- i.e., legal or quasi-legal barriers to entry to white neighborhoods. Finally, since around 1990, segregation has persisted through “decentralized racism:” whites, with greater wealth and income, outbid minorities to live in more favorable neighborhoods, and minorities are forced to remain in unfavorable urban neighborhoods. To test the importance of the center city’s ethnic makeup on economic health, percentage of population that is non-white (including Hispanics) is included.

Crime is a social pathology commonly associated with the center city. In Connecticut, crime rates display great spatial variation, with center cities displaying by far the highest crime rates (CT Dept. of Public Safety, 2001). This great inequity in crime rate is believed to be related to the greatly lower income, wealth, educational attainment, and social connectedness of center city populations. In particular, these conditions adversely affect expectations for economic improvement, making crime a

more appealing option for inner-city residents (Putnam, 2000). In any case, the higher crime rates in the center cities may provide a disincentive to live, work, shop, and hence invest, there. Index crimes per 100,000 population, as compiled by the Connecticut State Police, provide information on crime rates in Connecticut towns.

Educational attainment is a social variable that may also affect economic conditions. It is likely to display a strong positive correlation with proportion of population white and household income, which we must note when running the regressions. But high educational attainment, all else equal, may improve economic conditions in other ways, by encouraging small business creation and improving involvement in the school system and other public organizations. For this reason, the percent of population twenty-five and over with any college education is included as an independent variable.

Households' location decisions are not the only way to reflect local economic conditions. Business vitality is also critical, particularly when we are examining center cities with a traditional role as service center and employment base. To capture the effects of these sectors on the center city, we can collect data on employment in the retail and manufacturing sectors. The study cities came to prominence and reached their peak population and relative wealth as centers of manufacturing. The literature review describes this process in some detail. These cities also historically served as service centers for the surrounding areas, with their central business districts serving the retail needs of the city and the region. Since the primacy of the CBD was a huge part of the traditional city's landscape (Rae, 2003), changes in retail employment deserve analysis.

The magnitude of changes in these two sectors may be expected to have a major impact on economic health.

The unemployment rate, which measures utilization of the labor pool, is also a key indicator of economic health, since a high unemployment rate indicates that business activity is not able to fully utilize the labor pool in a given municipality. This may be relevant as urban areas frequently suffer from low employment opportunity, but high population density (Weinberg, 2003). Declines in unemployment in a city may be expected to increase economic health through decreases in crime and increases in property values, population, and income.

Locational variables may also be important to Connecticut's cities. Proximity to major cities—particularly New York—is known to have resulted in substantial growth for some of Connecticut's cities (Janick, "Demographic," 2003). Danbury and Stamford, for example, have benefited from being accessible to New York City but far enough to have lower wages and land values, stimulating industrial development. Historically, Rae (2003) demonstrates that New Haven's industrial success was partly due to its integration into the New York region's capital, labor, and retail markets. Similarly, the industrial cities of the Naugatuck Valley blossomed around Waterbury's brass manufacturing activity in the mid-1800's (Leblanc, 1969). In general, dissemination of manufacturing activity from a center of activity may be expected to decline with distance. Currently, location in a metropolitan economy would be expected to increase CBD health in the center cities under study. CBDs that are geographically isolated outside a metropolitan area will have a smaller market and fewer opportunities for specialization. In this analysis, two location variables—distance from New York City and distance from

Hartford—are used to measure the effect of distance from a major metropolitan center.

Although little research exists on the topic, the presence of a major educational institution in a city would seem to have a positive impact on economic health.

Anecdotally, vibrant downtowns are often located near college campuses. It should be noted that a college, as a non-profit institution, has an untaxable physical plant and thus campus real estate removes property from the tax rolls. Yet the physical presence of a campus likely increases local taxable property values through amenities and stable employment opportunities. Additionally, a downtown campus guarantees a stable and relatively immobile consumer population, much like all downtowns enjoyed in their pre-automotive heyday. For this reason, the ratio of student population at four-year colleges to town population is included as an independent variable.

Finally, I include a variable to measure the influence of the past on present economic conditions. Older manufacturing cities may be subject to “path dependency”—they may be constrained by their industrial legacy in their ability to generate positive economic conditions today. The social and political structures, physical plant, and public perception of a city are good examples of conditions that may be deeply influenced by events of a century or more ago. To see if history matters, I include an independent variable from 1900, more or less the peak of urbanism: the percentage of the municipal population engaged in manufacturing activities. This reflects the “manufacturing intensity” of a city when manufacturing was at its peak. Since manufacturing is the central activity around which central business districts formed, this variable also gives us some sense of the historic primacy of the central business district.

## RESULTS AND DISCUSSION

As described in the Conceptual Model section, three dependent variables measuring economic health—ENGL per capita, population, and median household income—are modeled with a set of independent variables. Three time periods—1980, 1990, and 2000—are used, both to determine temporal differences in the relationships between variables, and to examine relationships in changes between decades. Ideally the study would go back further, preferably to the 1940's or earlier, when the manufacturing towns under study had more robust local economies and stronger downtowns. That would tell a better story about how the “end of urbanism” played out.

The sample set is comprised of the forty-four most manufacturing-intensive cities in Connecticut circa 1900. These cities were selected from the 1900 Census of Manufactures, which provided data on manufacturing employment and output for the top 61 manufacturing towns in Connecticut (measured in output value). Manufacturing employees per capita in 1900 was created as a proxy variable for central business district primacy. This is likely the best variable available since the downtowns of interest in this study were created largely by manufacturing activity, and indexing manufacturing employees on total population shows the relative importance of the sector. The year 1900 was in the midst of the peak of American urbanism, as streetcar systems dominated intraurban transport and the automobile had not come into wide use (Jackson, 1985). Of the 61 towns with appreciable manufacturing output in 1900, forty-four had 15% or more of the population engaged in manufacturing. Below 15%, manufacturing employment per capita drops off quickly, and so only these forty-four towns comprise the set with

which the regressions will be run. A list of these towns, and the percentage of their populations in manufacturing in 1900, is provided below.

**Table 1.**

<b>Connecticut towns ranked by manufacturing employment, 1900</b>		<b>Connecticut towns ranked by manufacturing employment, 1900</b>	
MUNICIPALITY	% Pop. In Manu. In 1900		
Thomaston	35.0	Windham	24.8
Waterbury	32.5	Stafford	24.7
New Britain	32.5	Southington	24.0
Naugatuck	31.3	Seymour	23.5
Meriden	31.0	Bethel	23.4
Brooklyn	30.7	Griswold	23.3
New Hartford	29.4	Sterling	23.0
Derby	29.1	Winchester	22.5
Shelton	29.1	Putnam	22.2
Berlin	28.9	Danbury	22.1
Vernon	28.9	Enfield	21.8
Manchester	28.6	New Haven	19.0
Torrington	28.3	Killingly	18.5
Thompson	27.4	Norwich	17.9
Montville	27.3	Hartford	16.7
Bridgeport	27.2	Middletown	16.7
Windsor Locks	27.1	Farmington	16.6
Ansonia	26.9	Watertown	16.2
Bristol	25.7	Branford	15.9
Wallingford	25.2	Glastonbury	15.5
Plainfield	25.0	Plainville	15.4
		New London	15.1
		Stamford	15.1

A casual look at the list confirms anecdotally that many of the municipalities named are generally recognized for their traditional downtowns. The list includes virtually all of the state's major cities; many smaller cities possessing suburban or undeveloped areas (i.e. Winchester, Griswold, Middletown); and some towns that possess a traditional mill town center but are mainly characterized today as suburban (i.e. Farmington, Glastonbury, Branford).

A brief overview of descriptive statistics below compares economic conditions in these 44 municipalities to those of the state at large. Statistics from the year 2000 only are shown here for simplicity.

**Table 2.**

Forty-four traditional downtowns compared with all Connecticut municipalities, 2000

<b>Variable</b>	<b>Manufacturing downtowns (n=44)</b>	<b>All Connecticut municipalities (n=169)</b>
Median household income	50037 (11901)	63957 (20130)
ENGL per capita	75250 (31132)	115667 (69132)
Population	38066 (35051)	20151 (24403)
State aid per capita	772 (383)	554 (349)
Mill rate	19.07 (5)	17.06 (4)
Percentage white	81.4 (19)	89.8 (13)
Percentage with any college	33.1 (8)	41.00 (9)
Unemployment rate	5.47 (3)	4.04 (3)
Crime rate (per 100,000)	2973 (1854)	1860 (1385)
% workforce in retail	11.1 (2)	10.4 (2)
% workforce in manufacturing	35.7 (10)	27.2 (10)
College students per thousand	20.3 (50)	12.3 (78)

(Standard deviation is placed in parentheses below each value)

Data supplied by U.S. Census Bureau (1998, 2001, 2002), U.S. Census Office (1902), CERC (2002), CT State Police (2001), College Compass (1997).

The first set of regressions looks at each year—1980, 1990, and 2000—as a point in time, regressing selected independent variables on per capita ENGL and median household income to ascertain relationships at that point in time. Population is omitted as a dependent variable, since population *per se* does not measure economic conditions. All

regressions were run with SHAZAM version 9. The results of these regressions are described below.

### **EQUALIZED NET GRAND LIST**

ENGL per capita was regressed on mill rate, unemployment rate, percentage white, percentage of residents 25 or above with any college, crime rate, manufacturing employment, retail employment, distance to Hartford, distance to New York City, manufacturing intensity in 1900, and college students per capita for each of the three time periods. Goodness of fit statistics for the models are presented Table 3 below, along with estimated coefficients and T-ratios for each independent variable. The risk of endogeneity should be noted in this model, particularly with the equalized mill rate variable, since mill rate is set based largely on the tax base available. Since crime data are incomplete for 1980, that variable was omitted for that year.

Across all three periods, equalized mill rate had a consistent and sometimes significant relationship with ENGL (T-ratio= -2.48, -0.81, -1.62). This is consistent with theory, since to sustain a given level of local public service, a smaller per capita tax base will mean higher mill rates. Connecticut's manufacturing cities with lower tax bases had higher tax rates in each of the three periods.

Whites as a percentage of population display less consistent results. In 1980 and 1990, percentage white was an insignificant determinant of ENGL, though it displayed a negative sign. In 2000, it was weakly significant but strongly positive, which is the expected result. Apparently percentage white is not significantly correlated with ENGL per capita after controlling for other factors that influence property values.

Percentage of population with college showed a significant positive relationship with ENGL in 1980 and 1990, but a weakly negative coefficient in 2000. The high correlation between percentage white and percentage population with college (in 2000, approximately 0.7) may distort the coefficients of these two variables.

Unemployment rate displayed a negative but not very significant effect on ENGL. A negative effect is expected, since more slack labor will drive down wages, reduce immigration, and lower property values.

Crime rate was insignificant in the regression in both 1990 and 2000. This is not fully unexpected, since crime is expected in theory to have a negative relationship with income, but its relationship with property value has two effects with opposing directions. Higher crime rates should reduce property values, but lower property values may offer a less attractive “target” for criminals. This two-way causality may explain the weak regression coefficient. Percentage of population working in the retail sector also lacked significance in all three periods. Traditional industrial towns that have maintained a vibrant retail sector are expected to have higher ENGL, but the insignificance of the retail coefficient argues against this. Problems may reside in the choice of variable. Retail sales by town may be a better measure of the health of the retail sector than retail employment. And, even if retail employment is an acceptable measure, it would be better measured by job location than worker location, which is the Census-reported figure used here.

Manufacturing employment, though suffering from the same data collection problems as retail employment, displays more interesting results. In 1980, percent of workforce in manufacturing was insignificant and had a small negative coefficient. In

1990, the negative coefficient was much larger and showed a T-ratio of -1.004, giving us some confidence in a strongly negative relationship between manufacturing employment and ENGL. By 2000, the manufacturing employment coefficient was even more strongly negative and highly significant as a determinant of ENGL per capita. With increasing confidence over time, we can say that the manufacturing sector has had increasingly negative consequences for property values in Connecticut's center cities. This may be due to growing obsolescence of the manufacturing physical plant, which grew more slowly in value than other structures; or due to falling relative wages in manufacturing, which lowered income and hence property values (which will be explored in the next section.) In any case, towns with a large proportion of employment in manufacturing increasingly suffered from lower property values.

The two distance variables also displayed interesting results. Distance to New York City was negatively associated with ENGL for all three periods and with varying levels of confidence. Towns with manufacturing CBDs are influenced by the "Fairfield County effect," in which proximity to New York City overwhelms other economic characteristics and increases property values. A glance at the list of manufacturing cities confirms this: In Fairfield County, Stamford and Danbury, once tired mill towns, have been buoyed by economic activity spilling over from New York. Distance to Hartford, meanwhile, showed a weakly positive and insignificant effect for 1980 and 1990, but a strongly positive and significant result for 2000. Even controlling for Fairfield County, downtowns farther from Hartford had higher per capita property values. Heffley (personal comm., March 29, 2005) cites other distance gradients that may affect ENGL, such as distance to Boston and the shore, which may overwhelm the effect of metro

Hartford on property values. It is interesting, however, that proximity to Hartford has had an increasingly adverse effect on property values in the many downtowns that surround it.

Manufacturing intensity in 1900 showed a strongly negative and somewhat significant relationship with ENGL in both 1980 and 1990. Apparently history matters—historical manufacturing dominance, for reasons explored in the Literature Review, is still felt in the late twentieth century in depressed property values. This is grim news for manufacturing downtowns, since their set of historical physical and social endowments lowers their per capita property values. No clear relationship is discernible in 2000, which could be due to the declining importance of this historical variable, or simply misspecification of the model.

College students per capita had a negative relationship with ENGL per capita in all three periods, though it was modestly significant only in 1980 and 1990. In the case of property values, the college student variable is likely representing the physical campus's impact on the town's ENGL. Campuses are tax-exempt, so their physical plant is not part of the town's Grand List. College students as a proportion of the total town population is probably correlated with ratio of the campus's physical value to that of the entire town. Thus the negative coefficient associated with this variable likely describes lower per capita Grand List due to the large exemptions of campus property. For state institutions, however, lower ENGL per capita due to college campuses is not necessarily damaging to municipal revenues, since state PILT (payments in lieu of taxes) provides support to the town. For private institutions, which don't provide revenues to municipal governments, this revenue is not available to towns and likely stresses local finances.

This regression suggests the tax-exempt campus overwhelms the positive effect of a campus on surrounding property values. Another interesting analysis would be regression of college students or campus “value” on mill rate, to determine if higher local property taxes are required to make up for the lost taxable property in a campus.

Despite the presence of eleven explanatory variables, each of the three regressions in Table 3 accounts for about 3/5 of the variation in ENGL per capita across the 44 towns in the sample. This suggests that there may be other factors that the model currently omits.

**Table 3.**  
Equalized net Grand List per capita regressions

<b>Variable</b>	<b>1980</b>	Adj. R <sup>2</sup> = 0.60	<b>1990</b>	Adj. R <sup>2</sup> = =0.61	<b>2000</b>	Adj. R <sup>2</sup> = 0.61
	Est. coefficient	T-ratio 33 DF	Est. coefficient	T-ratio 32 DF	Est. coefficient	T-ratio 32 DF
<i>Mill rate</i>	-377.5	-2.48	-987.0	-0.81	-87.7	-1.62
<i>Unemployment</i>	-551.3	-1.07	-851.6	-0.30	-1071.5	-0.56
<i>% White</i>	-109.0	-0.94	-74.0	-0.17	414.0	1.00
<i>% College</i>	266.4	1.50	1321.3	1.31	-594.4	-0.94
<i>Crime rate</i>	----	----	0.2	0.65	3.35	0.69
<i>Retail employ.</i>	139.1	0.42	79.1	0.41	7055.6	1.910
<i>Manu employ.</i>	-8.6	0.06	-1087.2	-1.00	-4240.6	-4.10
<i>Dist to NYC</i>	-38.0	-1.26	-280.85	-2.39	-14.0	-1.54
<i>Dist to Hartford</i>	20.0	0.45	176.5	0.81	633.5	2.70
<i>Manu. In 1900</i>	-189.2	-1.67	-824.0	-1.62	-157.2	-0.41
<i>College stud.</i>	-16178	-1.42	-99589	-1.59	-301.9	-0.19

## INCOME

The explanatory variables below were regressed on median household income to determine their relationship in each decade. Goodness-of-fit of this income model was higher than that of ENGL.

Mill rate, which was negatively correlated with ENGL, showed negative but completely insignificant coefficient with income. Apparently differentials in mill rate had no effect on median income across Connecticut's mill towns. Percentage white also showed no significant relationship with income, suggesting that race is not correlated with income after controlling for other factors in the regression. This is heartening, since anecdotally we observe positive correlations between the poverty rate and racial minorities. Apparently race itself is not a determinant of community income.

The picture is muddied somewhat by the college variable. This variable shows high correlation with percentage white, as noted above, which may mask the effect of race on income. Here, college has a strong positive effect on income in all three periods, though the effect is only significant in 1980 and 1990. College's positive effect is consistent with theory, since a better-educated population, all else equal, is expected to have higher income.

Unemployment displays a strongly negative effect on income, but its importance declined through the three time periods, becoming insignificant in 2000. The negative effect is expected, due to the processes described in the ENGL section above. Crime rate, as for ENGL, gave an unclear picture. It was insignificant in 1990 but negative and strongly significant for 2000. Apparently crime rate has become a more significant drag on median income in Connecticut's downtowns.

The two employment variables failed to exhibit strong effects on income. Through 1980 and 1990, only manufacturing employment was weakly significant (in 1990), and through all three time periods, the sign of the coefficients was inconsistent.

Retail and manufacturing employment apparently fail to capture much of the variation in income across the study municipalities.

The two locational variables, distance to New York City and Hartford, also failed to have as much impact as expected. Theory would predict that income, like unit property values, would decline with distance from the metropolitan centers. The scale of this gradient is likely to be large and expanding, since higher income groups will buy more land and housing farther from the city. A “cavity” may exist surrounding the center city, but at some distance commuting becomes too costly and property values begin to decline. Yet in 1980, both variables display a positive and mildly significant relationship. In 1990, both variables fail to show significance, while in 2000, both variables show the expected significant negative coefficient. Though perhaps this may be interpreted as suggestive that the income gradient increased over time, it’s more likely that these locational variables fail to adequately model income.

The historical variable, manufacturing in 1900, showed no significant relationship in any of the three periods. This result stands in contrast to the regressions on ENGL, which showed a significant relationship. Apparently this historical feature affects property values more than income in Connecticut’s mill towns. This incongruity is somewhat surprising, since historical factors lowering property values without having a corresponding effect on income is difficult to explain in a traditional framework. Property values should be directly related to income. The lack of impact on income may be due to the fact that the physical plant of a city changes very slowly over time, so the physical endowments of these mill towns lowers property values but residents are still

able to earn the prevailing regional wage in other towns. In any case, this issue deserves more study.

College students per capita also showed somewhat mixed results. As with ENGL, 1980 showed a negative and significant result. For Census purposes, college students are reported as residents at their campus, and hence are likely to lower income in that municipality. In 1990, the effect was negative but not significant, and for 2000 the effect was insignificantly positive. This positive result is inconsistent and given its low T-ratio can likely be ignored. Note that the high coefficient of the college student variable results from the very low value of college students per capita.

**Table 4.**  
Median household income regressions

Variable	1980	Adj. R <sup>2</sup> = 0.85	1990	Adj. R <sup>2</sup> = 0.81	2000	Adj. R <sup>2</sup> = 0.81
	Est. coefficient	T-ratio 33 DF	Est. coefficient	T-ratio 32 DF	Est. coefficient	T-ratio 32 DF
<i>Mill rate</i>	-31.5	-0.48	-145.9	-0.52	-9.5	-0.67
<i>Unemployment</i>	-1109.3	-5.05	-859.5	-1.31	-458.7	-0.91
<i>% White</i>	17.9	0.36	26.8	0.27	-26.1	-0.24
<i>% College</i>	288.2	3.79	812.2	3.49	78.2	0.47
<i>Crime rate</i>	----	----	-0.01	-0.21	-4.5	-3.46
<i>Retail employ.</i>	3.6	0.03	-328.8	-0.73	2448.3	2.51
<i>Manu employ.</i>	61.7	0.93	290.2	1.16	-993.3	-3.64
<i>Dist to NYC</i>	18.2	1.41	-20.3	-0.75	-7.6	-3.16
<i>Dist to Hartford</i>	24.3	1.28	17.2	0.34	-82.0	-1.32
<i>Manu. In 1900</i>	10.1	0.21	79.2	0.67	-80.8	-0.79
<i>College stud.</i>	-18730	-3.83	-12115	-0.84	280.2	0.68

#### **CHANGE, 1980-2000**

The second set of regressions analyzes change in each variable over the study decades. Rather than collect values for each variable at a point in time, the goal here is to determine how changes in each decade in the dependent variables have been affected by

changes in the independent variables. For each variable, values are in terms of percentage change over the time period.

Since correlation between the three dependent variables is likely, the three regressions were run as a system of equations for each decade (1980-1990, 1990-2000). This allows us to isolate impacts of the independent variables on each of the three dependent variables, correcting for correlation between the dependents that may mask the true effects of the independents.

The first dependent variable, percent change in Equalized Net Grand List per capita, was regressed on the same independent variables as above but using percentage change in the following variables: mill rate, percentage of population white, percentage of population with any college education, unemployment rate, percent in retail, and percent in manufacturing. For 1980-1990, the regression showed an adjusted  $R^2 = 0.47$ ; for 1990-2000,  $R^2 = 0.68$ , indicating a better fit of the model over that decade.

Change in mill rate, percent white, and percent college, while mostly significant, all showed different signs between the decades. This discrepancy is apparently not caused by problems of correlation, as described above, since the highest correlation between the three variables is 0.28. This may show misspecification of the model, and thus make it hazardous to draw any meaning from the regressions. Or, the high T-ratios may indicate that the directions of the effects of these variables actually changed between the decades. I will assume the latter but not attempt to draw much meaning from these first three variables.

Percentage change in unemployment rate and retail employment, however, showed negative and somewhat more significant effects on change in ENGL. The

direction of change in unemployment is expected: an increase in unemployment rate should decrease ENGL over the period, for reasons explored above. But an increase in percentage retail should have the opposite effect: increasing retail employment indicates increasing relative importance of the retail sector, and hence increasing importance of the center city in the regional economy. (Given structural shifts in the Connecticut economy toward primacy of the retail sector, retail as a percentage of the economy increasing across all towns is expected. But that this increase should correlate negatively with change in ENGL is interesting.) A likely explanation is that retail employment generates relatively little growth in the Grand List compared with more heavily capitalized employment like manufacturing. Change in manufacturing, while showing insignificant results in the 1980's, shows a somewhat more significant positive effect on change in ENGL in the 1990's. This is consistent with the story developed above about the smaller effect of retail employment versus manufacturing employment on ENGL. This entire explanation, of course, must bear the caveat that employment as measured here is by place of employee residence rather than employment location. This aside, town planners who wish to grow their Grand List by attracting retail employment may find that the effects of that growth are disappointing.

Change in crime rate displays a significant effect on ENGL during the 1990's. Center cities that grew fastest had the largest increase in crime rate. One normally would expect a decreasing crime rate to boost the growth in property values, so this positive regression coefficient may have another explanation. During the 1990s, crime rates fell substantially, particularly in central cities, perhaps due to an improved national economy and more stringent law enforcement (e.g., "three strikes" legal provisions). These same

larger cities, though, continued to experience the slowest growth, or even declines, in property values, perhaps resulting in the observed positive correlation.

Both locational variables suggested that manufacturing towns farthest from New York and Hartford grew fastest—that is, exurban growth exceeded metropolitan growth. This is consistent with the anecdotal observation that growth rates are persistently highest on the urban fringe, which is continually moving outward. This may mean that manufacturing towns that are seem remote and poorly situated—Willimantic, Winsted, and the towns of the Quinebaug Valley—may be positioned to absorb the most rapid growth in coming decades. For the 1990-2000 decade, however, the effect of distance from NYC on the change in ENGL per capita seems to have waned. It should be pointed out that the 1990s in Connecticut included a period of recovery from the property market “bubble” of the late 1980s.

Manufacturing in 1900 showed an insignificant negative effect on change in ENGL. Similarly, college students showed inconsistent but insignificant effects on the change in ENGL, preventing us from drawing any meaningful insights. (Note that this variable does not measure change in college students, but rather college students per capita at the beginning of the period. Change in college population was so tiny that the point-in-time variable was retained to regress on change in ENGL, population, and income.)

**Table 5.**  
Change in ENGL (as system of equations)

<b>Variable</b>	<b>80-90</b>	$R^2= 0.47$	<b>90-00</b>	$R^2=0.68$
	Est. coefficient	T-ratio	Est. coefficient	T-ratio
$\Delta$ mill	107.3	4.53	-0.09	-0.99
$\Delta$ white	-231.0	-2.72	1.19	3.81

$\Delta coll$	52.2	2.30	-0.81	-3.06
$\Delta unemploy.$	-18.6	-1.55	-0.18	-1.32
$\Delta retail$	-30.0	-1.55	-0.56	-2.52
$\Delta manu$	-36.9	-0.74	0.40	1.36
$\Delta crime$	----	----	0.34	3.40
<i>Dist to NYC</i>	21.6	1.85	-0.79	-0.89
<i>Dist to Hart.</i>	32.5	1.70	0.42	2.32
<i>Manu. In 1900</i>	-27.7	-0.50	-0.41	-0.97
<i>College stud.</i>	3212.4	0.47	-28.26	-0.50

The second regression in the system of equations was change in population over the 1980's and 1990's. The same independent variables were used, with the addition of change in per capita state aid. State aid PC was excluded from the regressions on median household income and ENGL because those factors are explicitly considered in the state formula for education aid, leading to a potential problem of reverse causality.

State aid PC was expected to have a positive relationship with population, since it constitutes “free money” that should enter into a potential resident’s utility function as lower taxes and/or higher level of public services. Though both decades had a significant result (only mildly so in the 1990's) of equal magnitude, each also had a different direction. Perhaps state aid became targeted more toward faster-growing center cities during the 1990's. Other than that, there is little we can tell from this variable. The same goes for change in mill rate, which was insignificant and showed a change in sign between the decades.

Change in percentage white, however, showed a predictable result. An increase in percentage white was associated with an increase in population. This is consistent with trends of exurban population growth, which is largely white. This result is buttressed by the college change variable, which is insignificant in the 1990's but positive and moderately significant in the 1980's. The fastest-growing towns are those on the

periphery, and the growth is likely to be among wealthier, better-educated whites. Towns with increasing minority populations are within the inner metropolitan ring and experiencing stagnant or negative growth overall. These results would likely be even stronger if all towns were included in the regression rather than just traditional mill towns, which are likely to grow slower in population white and college than undeveloped towns on their outskirts.

Change in unemployment was mildly significant only in the 1980's, when it exerted the expected negative effect on ENGL growth. The two employment variables, however, showed a positive effect in both decades (though were significant only during the 1990's.) Growth in manufacturing employment exerting a positive impact on population is expected, and its effect is likely intensified with manufacturing's large multiplier. Though the positive impact of retail employment is inconsistent with its effect on ENGL, growth in retail as a sector of the economy is consistent with theory—the fastest growing cities are likely to experience the fastest growth in the number and variety of retail establishments, and this suggests that retail grows as a segment of local employment as population grows.

Change in crime rate failed to display a significant impact in the 1990's. The locational variables, meanwhile, were both clearly insignificant in the 1980's and more significant in the 1990's. The sign of the coefficient on distance to Hartford was positive, which is consistent with the ENGL result that suggests exurban growth is most rapid. For distance to New York City, however, the sign was negative, suggesting that cities with downtowns closest to the city actually experienced more rapid population growth than those farther away. This seems unlikely, especially since the cities closest to the cities

are already among the most built-up and have less ability to add residents given zoning constraints, and may suggest a misspecification of the model.

As with ENGL, manufacturing intensity in 1900 and college students per capita continue to show inconsistent and insignificant results. The only significant observation was college students per capita in the 1980's, which showed a positive sign. This may indicate that the presence of a university in the 1980's resulted in faster population growth.

**Table 6.**  
Change in population (as system of equations)

Variable	80-90		90-00	
	Est. coefficient	T-ratio	Est. coefficient	T-ratio
		R <sup>2</sup> = 0.45		R <sup>2</sup> =0.44
$\Delta$ PC state aid	-0.026	-2.99	0.027	1.27
$\Delta$ mill	0.035	0.48	-0.015	-0.42
$\Delta$ white	0.317	1.23	0.290	2.35
$\Delta$ coll	0.106	1.58	-0.017	-0.16
$\Delta$ unemploy.	-0.040	-1.14	0.035	0.66
$\Delta$ retail	0.033	0.58	0.189	2.07
$\Delta$ manu	0.121	0.80	0.118	1.01
$\Delta$ crime	----	----	-0.031	-0.73
Dist to NYC	0.058	0.02	-0.045	-1.30
Dist to Hart.	-0.001	-0.08	0.086	1.20
Manu. In 1900	-0.013	-0.47	-0.079	-0.46
College stud.	9.69	1.43	-4.058	-0.18

The final equation of the three-equation system was the regression on change in income. The same eleven variables used in the regression on ENGL are retained. As with ENGL, the model displays substantially better goodness-of-fit in the 1990's than in the 1980's.

Change in mill rate and change in percent white each display a barely meaningful and expected result with respect to income in the decade in which they produce a T-ratio better than one. Mill rate is expected to decline with increasing income—towns with

increasing income (and hence tax base) are expected to enjoy lower growth in mill rate. These towns (likely exurban) that are increasing in income are expected to have the lowest increase in minority population (and hence, the greatest relative increase in percent white.) This is consistent with the story above, that those manufacturing towns on the exurban periphery are likely to enjoy the best general economic conditions and greatest relative racial homogeneity.

Change in college, as expected, shows a mildly significant positive effect on income. Towns with increases in educational attainment would be expected to have increases in income. Similarly, change in unemployment rate displays a negative and significant relationship with change in income, as expected: towns that lower their unemployment rate increase their income.

Change in manufacturing employment, interestingly, shows no significant relationship with change in income. Apparently change in manufacturing employment has no relationship with change in income, a surprising outcome given the large multiplier commonly ascribed to manufacturing employment in Connecticut. Perhaps the impacts of manufacturing have been overstated, or perhaps the town level is too fine to capture the effects of loss of manufacturing jobs (which was the overwhelming trend across both decades.) Since workers in the manufacturing industries of the center city are likely to live across the region, the effects on income from loss of manufacturing employment may be spread across the entire region. This is suggested by the regressions on ENGL, where the 1990's showed a significant positive relationship between change in ENGL and change in manufacturing employment.

Change in percentage of workers in retail showed a significant result only in the 1980's, when a negative relationship with change in income was predicted. This is consistent with the results for ENGL, and suggests that decline of the retail sector is correlated with declining income. This would seem to fit the story of many traditional downtowns, which have seen declining economic relevance as income in the center city drops and retail activity moves to the suburbs. It should be noted that a negative relationship between change in crime rate and change in income was weakly suggested.

The two locational variables displayed few meaningful results with respect to change in income. Distance to Hartford failed to show significance in either decade, suggesting that towns with downtowns in the Hartford metro area showed income growth different from the state at large. Distance to New York was significant in both decades, but showed a negative sign in the 1980's and a positive sign in the 1990's. Perhaps faster income growth in Fairfield County in the 1980's was overtaken by faster income growth in the rest of the state in the 1990's.

Manufacturing in 1900 failed to show a significant relationship with change in income, again showing no relationship with change in economic health. Here again, however, we note a negative coefficient, and this consistent sign is suggestive that manufacturing intensity in 1900 is a drain on current economic growth. College students per capita showed a positive moderately significant result in the 1980's with respect to income, suggesting that presence of a university exerted a positive effect on income during that decade.

**Table 7.**

Change in median household income (as system of equations)

Variable	80-90		90-00	
	Est. coefficient	T-ratio	Est. coefficient	T-ratio
		R <sup>2</sup> = 0.41		R <sup>2</sup> =0.63
$\Delta$ mill	0.026	0.23	-0.040	-1.04
$\Delta$ white	-0.267	-0.67	0.148	1.17
$\Delta$ coll	0.213	2.01	0.275	2.56
$\Delta$ unemploy.	-0.215	-3.84	-0.063	-1.11
$\Delta$ retail	-0.200	-2.21	0.064	0.71
$\Delta$ manu	-0.024	-0.10	0.005	0.04
$\Delta$ crime	----	----	-0.041	-0.98
Dist to NYC	-0.186	-3.40	0.039	1.07
Dist to Hart.	0.081	0.91	0.012	0.17
Manu. In 1900	-0.023	-0.09	-0.122	-0.71
College stud.	38.4	1.19	-4.007	-0.17

## CONCLUSION

The results above point toward a number of directions for future research. First, as noted above, it would be instructive to continue this analysis into earlier decades. By beginning in 1980 (due to data availability constraints), this study looks at cities “after the damage is done” rather than examining them while the processes of de-urbanization were occurring most rapidly (during mid-century). Secondly, it would be interesting to analyze the effects of other independent variables. Since transportation has had such a large role in changing center cities, more data on transportation use could be instructive. The percent of residents with an automobile or the percent leaving town to work, percent commuting with public transit, or accessibility of rail or limited-access highway, for example, may each have a relationship with economic health.

The regressions in this study paint a mixed picture for Connecticut’s center cities. Clearly they face a unique set of challenges. Yet the options for policymakers to pursue are limited, and this analysis fails to point to a set of clear instructions for policymakers. It is particularly grim to note that these downtowns are hampered by their industrial past.

In general, local policymakers are most concerned on a day-to-day basis with local property rate, and strive to minimize mill rate by both growing ENGL, obtaining more state aid, and holding down spending (Rae, 2003). Though this seems rational from the perspective of short-term political economy, this research suggests no clear relationship between mill rate and income or change in mill rate and change in the three indices of economic health. Though minimizing mill rate may keep voters happy each year, in a broader sense, it doesn’t seem to improve general economic conditions in Connecticut’s downtowns. Yet increasing employment in the retail sector, a common

side effect of localities' pursuit of development, also fails to provide a clear benefit to economic conditions. And maintaining manufacturing employment, which local and state officials often go to great lengths to do, fails to consistently improve economic conditions either. Perhaps the greatest lesson of the quantitative analysis is that economic conditions are largely out of the hands of local policymakers. Though municipal officials may exert some positive influence on economic conditions (and they can certainly exert a strongly negative influence), they are largely captive to the hand they were dealt. In 1900, these cities by and large had a very good hand; by 2000, a few were still prospering, some had merely survived, and many had folded.

A step back at the broader picture does give some hints for achieving more balanced regional growth. Increasing the scale of local government such that post-urban development is incorporated under the same local government as the downtown would mitigate the tax-service death-spiral of the center cities. Decades after recognition of this phenomenon in Connecticut's largest cities, which still suffer from by far the highest property taxes in the state, smaller cities continue to get sucked into patterns of declining tax base, increasing mill rate, increasing white flight, and increasing poverty (Myron and Orfield, 2003). Regionalization of local government would not only mitigate central city decline (by stabilizing tax rates) but also feed more revenue into the stressed center city.

Another critical reform would be rationalizing transportation policy. Federal transportation policy heavily subsidizes operating and maintenance expenses for highways and roads, while (somewhat bizarrely) requiring transit to collect substantial user fees. Furthermore, federal capital expenditures are heavily weighted toward automotive infrastructure. States and localities are left to take care of much intra-urban

transit (especially buses) themselves. Since downtowns and center cities are much less conducive to auto use than to transit use, removing these distortions to transportation markets would likely improve economic conditions in the center city.

A final reform would be changing municipal zoning. Municipal zoning continues to be based on a Progressive-era model of separation of uses. This model was designed to relieve the oppressive density of center-city slums and separate residences from the intense pollution of center-city heavy industry. In 21<sup>st</sup> century Connecticut, this is obsolete: heavy industry has virtually disappeared, and industry that remains is no longer a local health hazard. Policymakers are concerned more with the low and ever-declining density of a car-dominated state than with adverse effects of high density. Yet the state retains this outdated model for virtually all municipal zoning. Changing local zoning ordinances to encourage traditional mixed-used redevelopment of urban areas would reduce welfare losses from excess transportation, and allow traditional urban areas that are conducive to mixed uses to re-enter the economic mainstream. Restricting greenfield development in rural and exurban municipalities would also strengthen the competitive position of the center city.

This research suggests that these reforms would improve economic conditions in the center city. Rather than simply benefit the largest and worst-off cities, these changes could improve downtowns in cities across the state.

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