**The Geography of Entrepreneurship in the New York Metropolitan Area**


Stuart S. Rosenthal
Department of Economics
Syracuse University
Syracuse, NY 13244-1020
USA
Phone: (315) 443-3809
ssrosent@maxwell.syr.edu
http://faculty.maxwell.syr.edu/rosenthal/

and

William C. Strange
RioCan Real Estate Investment Trust
Professor of Real Estate and Urban Economics
Rotman School of Management
University of Toronto
105 St. George Street
Toronto, ON M5S 3E6
Canada
Phone: (416) 978-1949
wstrange@rotman.utoronto.ca
www.rotman.utoronto.ca/~wstrange/


PRELIMINARY: COMMENTS WELCOME

April 7, 2005


*We gratefully acknowledge the financial support of the Kaufman Foundation, the Center for Policy Research at Syracuse University and the Social Sciences and Humanities Research Council of Canada. Excellent research assistance has been provided by Yong Chen and Michael Eriksen.

**Abstract**

This paper considers the spatial pattern of entrepreneurial activity in the New York Consolidated Metropolitan Statistical Area (CMSA). The focus is on two key aspects of entrepreneurship: the number of new establishment births and the employment at new establishments. The paper makes three contributions. First, the paper documents the extensive variation within the New York CMSA in the sorts of business activity that take place, including entrepreneurship. Second, in analyzing the sources of entrepreneurship, the density of local employment (urbanization) and the amount of local employment in an entrepreneur's own industry (localization) both are shown to have positive effects on births and new establishment employment. Third, the influence of both of these agglomeration economies is shown to attenuate with distance. Typically, the effect of the environment beyond one mile is an order of magnitude smaller than the effect of the more immediate environment.

*New York will be a great place when they finish it.*
*-popular saying*

## I. Introduction

New York City is often used as a paradigm for all that is urban. For instance, the analysis of New York in Jacobs (1969) is explicitly presented as bearing on fundamental aspects of urbanization in general, not just on New York. This approach is easy to understand. Cities are defined by their scale and density, and among the cities in the US, New York has the most: the most employment, the most population, the most density. Almost any urban phenomenon that one might want to study is present in New York, and New York's size means that the phenomenon in question is magnified, and thus easier to understand. This magnification makes the study of New York an essential part of the study of the city in general, and it is why the particular discussions of New York in Hoover and Vernon (1959), Vernon (1960) and Chinitz (1961) have had such long lasting general impact on urban economics.

This paper will also look at New York as an urban paradigm. The focus will be on New York's constant change, as put in the famous unattributed quote above. The central aspect of New York's dynamism that the paper will consider is entrepreneurship. Specifically, the paper will focus on the geography of entrepreneurship, examining how the levels and character of nearby economic activity influence the births of new establishments and the scale at which they operate.

The paper builds primarily on research on agglomeration economies. Much of the empirical research on agglomeration has sought to estimate the effect on productivity of an establishment's local environment. The estimation has sometimes involved direct estimates of productivity (Henderson (2003)) and has sometimes involved estimating correlates of productivity, including wages (Glaeser and Mare (2001)) and growth (Henderson et al (1995)).[1] In this paper we will be concerned with two productivity correlates, establishment births and new establishment employment. Prior work on agglomeration and births has established the importance of the metropolitan environment (Carlton (1982)). Rosenthal and Strange (2003) show that agglomeration effects attenuate geographically for six industries (Software (SIC 7371-73,75), Food Products (SIC 20), Apparel (SIC 23), Printing and Publishing (SIC 27), Fabricated Metal (SIC 34), Machinery (SIC 35)) that serve national and international markets. For these industries, it appears that an establishment's local environment matters most.[2]

The paper employs geographically refined data from Dun and Bradstreet together with geographic information systems software (GIS) to study the spatial pattern of entrepreneurship in New York City for a broad set of industry groups. The key analysis involves regressions of the number of births and the amount of new establishment employment in a census tract on variables that describe the tract's local environment. Two sets of such variables are constructed. The first characterize the total employment across all industries within one mile, between one and five miles, and between five and ten miles of the tract. These measure the degree of urbanization of the tract, which Jacobs (1969) and others have argued to be associated with productivity. The second set of variables characterize the employment in individual two-digit SIC industries. These allow the identification of localization effects, where the proximity to own-industry activity adds to productivity (Marshall (1920)).

In this paper, we take a within-city approach to agglomeration, with the identification of the determinants of the spatial pattern of births and new establishment employment coming from variation in the data within the NY CMSA. Although such an approach is rare in the literature --

[1] See Rosenthal and Strange (2004) for a more complete survey.
[2] Aharonson et al (2004) show the importance of the local environment for bio-technology.

Andersson et al (2004) and Arzaghi and Henderson (2004) are exceptions -- theoretical work on agglomeration argues forcefully that the effect should be modeled as decaying with distance rather than being bounded by political borders.[3]

In addition to being closer to theories of agglomeration, our within-city geographic approach has an important econometric advantage: any effects that are fixed at the city level will be captured by the constant term. One such effect is regional natural advantage. Recognition of the importance of these effects goes back to Marshall (1920) at least. More recently, Glaeser et al (2001) have shown climate to be a strong predictor of urban growth. To the extent that this sort of natural advantage influences entrepreneurship at the regional level, we control for this, and also for any other region-wide natural advantage that might exist. Although we cannot fully rule out the possibility that within-city variation in natural advantages drive some of our results, we believe that most natural advantages are regional. To the extent that is true, then spatial variation in activity within the NY CMSA will be driven primarily by agglomeration economies and the spatial differences in productivity they create. This seems to be especially likely when analyzing the location of information-oriented industries that are less sensitive to shipping costs.

Separate regressions are carried out for four one-digit industry groups, Manufacturing (SIC 21-39), Wholesale Trade (SIC 50-51), Services (SIC 70-89), and Finance, Insurance, and Real Estate (FIRE, SIC 60-67). We also estimate models with employment from all industries in the economy aggregated together (82 two-digit industries in all). In all of these models, we include two-digit SIC fixed effects to control for characteristics common to enterprises throughout a given two-digit category. We also estimate one additional model for just Business Services (SIC 73). This industry is considered separately because of its importance in the local economy. In all the models, we consider whether urbanization and localization economies are

[3]See O'Hara (1977), Ogawa and Fujita (1980), Imai (1982), Helsley (1990), or Krugman (1993), for example.

present.  More importantly, our geographically refined data allow us to consider also whether these effects attenuate geographically.

The paper's results are as follows.  First, the paper documents the extensive variation within the New York CMSA in the sorts of business activity that take place, including entrepreneurship.  Second, in analyzing the sources of entrepreneurship, the density of local employment (urbanization) and the amount of local employment in an entrepreneur's own industry (localization) are both shown to affect entrepreneurship.  However, while the influence of localization is always positive, the impact of urbanization is much smaller in magnitude at the margin.  For some industries, it is negative.  Third, all of these agglomeration economies are shown to attenuate with distance.  Typically, the effects of the environment beyond one mile are an order of magnitude smaller than effects of the more immediate environment.

The remainder of the paper is organized as follows.  Section II presents the evidence on the location of economic activity within New York.  Section III presents a simple model of new establishment formation and discusses the agglomeration variables that will be used in estimation.  Section IV presents the results of the estimation.  Section V concludes.

## II. Metropolis 2001: Location patterns in the New York region

### A. Overview

Nearly fifty years ago, the Graduate School of Public Administration at Harvard University was asked to carry out a comprehensive study of the New York Region.  This mammoth effort resulted in nine monographs and a summary volume (Vernon (1960)).  The project covered nearly every aspect of New York's economy, including its labor markets, housing markets, and industrial organization.  Geography was central to all of this analysis.

What goods and services were produced in New York and not in other places because of New York's pre-eminent and peculiar place in the system of cities? Within New York, where were different goods produced? Although the study of agglomeration economies was far from mature during the Project, the idea of external increasing returns played a central role in the answers offered to these questions.

Our goals in this paper are obviously much more modest, but they are related. We are interested in characterizing where various activities take place within New York and how agglomeration economies impact New York's perpetual reinvention of itself. This section concerns the first of these tasks. As will become apparent, the section's analysis departs from the New York Metropolitan Region Project in at least one important way: we carry out the analysis at a much more refined level of geography.

## B. Data

We are able to do this by employing data from Dun & Bradstreet Marketplace. This database provides a wealth of information on establishments throughout the New York CMSA. We employ data from the second quarter of 2001 to describe New York's economic environment. The data characterize an establishment's activity (using the primary Standard Industrial Classification, SIC), its employment, and its US postal zipcode location. Those zipcodes were then matched to the Census zipcode tabulation area (ZCTA) geography, and further matched to the year 2000 census tract geography. This enabled us to convert all of the employment data to census tract geography which we use as our standard geographic unit of analysis.[4] In future

[4]US Postal Service zipcode boundaries are established "at the convenience of the U.S. Postal Service" (http://www.census.gov/epcd/www/zipstats.html). They are based on postal logistics rather than on a geographic or socioeconomic concept of a neighborhood, in contrast to Census block or tract geography. In response, Census has created a boundary file that approximates the geographic region associated with each US Postal zipcode based on

work, this will facilitate analysis of the relationship between local employment and residential patterns. However, as noted in the Introduction, our focus in this paper is on employment and entrepreneurship activity in Manufacturing, Wholesale Trade, FIRE, and Services. We will say more about how the data are employed in estimation later in the discussion.

### C. County level patterns

Before turning to our more geographically refined characterization of economic activity in New York, we will begin by painting a larger but somewhat less detailed picture at the county level. The New York CMSA is made up of 31 counties. They differ substantially. New York County, which is essentially equivalent to Manahattan, and is extremely dense, 66,940 people per square mile (www.factfinder.census.gov). Dutchess County is 64 miles from the center of Manhattan, and it is considerably less dense, 350 per square mile. Looking across the rest of the New York CMSA, population density varies between these two extremes. This intra-city variation is one of the main reasons we look at agglomeration and entrepreneurship using within-city variation in this paper.

Figures 1a – 1d depict employment densities (employment per square mile) at the county level across the metropolitan area. Right away, it is clear that with regard to employment as well, Manhattan is different. Despite the well-known problems of central cities in general and of

---

the associated year 2000 census blocks found in that zipcode. The resulting geographic polygons correspond to an agglomeration of block-level geography and provide a close approximation to the US Postal zipcode boundaries. The resulting boundary file is referred to as the zipcode tabulation area (ZCTA) file on the Census website and is available for download from Census. Using that file, we matched the zipcode IDs from Dun & Bradstreet geocode the data. This procedure worked for the great majority but not all of the zipcodes in the NY CMSA (and the US overall). To further identify the location of the remaining postal zipcodes, we augmented the ZCTA file with a 1999 file available on the US Census website that reports the latitude and longitude of the US Postal zipcodes in the US in 1999. After merging those coordinates into the year 2000 ZCTA file, we were able to geocode all but a very small number of the year 2001 zipcodes obtained from D&B. Using that augmented ZCTA boundary file and also the year 2000 census tract boundary file (available from Census over the web), we calculated the correspondence between ZCTA geographic units and census tracts. Those correspondence weights were used to calculate the number of establishments and employees present in each census tract given the original US postal zipcode-level data from D&B.

New York in particular, and despite the tendencies of industries and household to decentralize, the high density of activity in Manhattan remains unique in the New York metropolitan area. This pattern holds for Manufacturing (SIC – 20-39; Figure 1a), for Wholesaling (SIC 50-51; Figure 1b), Services (SIC 70-89; Figure 1c), and FIRE (SIC 60-67; Figure 1d). This result is somewhat surprising. A lot of popular urbanism (i.e., Garreau (1991)) has argued that the really important parts of America's cities are their peripheries. It is certainly true that the changes taking place at the urban fringe are significant. However, it is also true that their status as a fringe implies the existence of a center, and the center still matters, at least for some cities. Of course, New York is unusually dense, as discussed in the Introduction. Thus, the picture of this analysis of New York may not apply to more sparsely developed cities like Houston.

Not surprisingly, the industries differ in their patterns of centralization. Comparing Figures 1a and 1b shows that Manufacturing and Wholesaling follow roughly similar patterns, with the latter being more centralized. Given the importance of services for all 21st Century cities, it is not surprising that Figure 1c shows Service sector employment to exceed 100 workers per mile in more than half of New York City's counties. It is also not surprising that employment in FIRE industries is highly concentrated in and near Manhattan. These are known to be highly agglomerated industries.

## D. Tract level patterns

One might believe that the centralization of the NY CMSA is adequately depicted in the county maps in Figures 1a - 1d. Figures 2a – 2d show that this is not true. They present employment densities at the census tract level. As with the county level figures, Figures 2a - 2d show that Manhattan is overwhelmingly the center of the City's employment. In fact, for each of these industry groups, the center of employment is not just Manhattan but Lower Manhattan, defined as beginning at the lower end of Central Park. Even within Lower Manhattan, there are places with greater and smaller densities for each of the four industry groups. Thus, taken as a whole, the figures clearly establish that there is micro-level geographic concentration within the New York metropolitan area.

We begin with Figure 2a. It shows that Manufacturing is concentrated in midtown, specifically in the "Fashion District" (formerly the more modestly named "Garment District"). There exist lesser concentrations in the closest areas of Brooklyn, Queens, The Bronx, and also in New Jersey. Despite the de-urbanization of manufacturing activity that took place in the last half of the 20th Century, the Manufacturing sector remains important for New York City. In light of the Introduction's claim that New York has been treated as an urban paradigm, it is important to also note that the persistence of manufacturing activity is probably greater in New York than in other cities. Figure 2b shows Wholesaling. As in the earlier county level map, the pattern for Wholesaling is very similar to the pattern for Manufacturing. Both industry groups reach their highest employment densities in midtown.

Figure 2c shows starkly just how much New York has become a "Service City." For Manufacturing, there are only 11 tracts where employment density is greater than 50,000 workers per square mile. For Services, there are 94 tracts that reach an employment density of at least 50,000. There are lesser concentrations of Manufacturing in the outer boroughs. The parallel for Services is that most of Brooklyn, Queens, and The Bronx reaches at least moderately concentrated levels of Service employment density. It is worth reiterating that although Service sector employment is everywhere, it is especially present in Lower Manhattan.

Figure 2d shows employment density for the FIRE industry group. This reveals a somewhat different pattern. Employment continues to reach its greatest densities in Lower Manhattan, as with the other industries. Unlike the other industries, for FIRE there are two centers. They are located downtown, at the lower tip of Manhattan, and at midtown. Also, relative to the other industry groups, there is really rather little high-density in FIRE outside of Manhattan (both Upper and Lower).

Taken together, Figures 1a- 1d and 2a – 2d paint a picture of a centralized city, both at the macro (county) and micro (census tract) levels. The pattern varies by industry, with Service employment reaching high densities across much of Manhattan and at least moderate densities in the adjacent areas. Other industries are concentrated more narrowly. Manufacturing and Wholesaling are still important for New York City. They are concentrated in midtown. FIRE is also concentrated there, but there is also another concentration downtown.

These maps describe the local business environment that confronts an entrepreneur making the decisions of whether to start up a new establishment, where to put it, and at what scale to operate it. These will essentially be the regressors in our models. The dependent variables will be the births of new establishments and new establishment employment. The next set of maps will describe the latter of these.

**E. Entrepreneurship density**

Figures 3a - 3d describe the density of new establishment employment at the tract level. Specifically, they describe geographic patterns of employment of establishments in 2004:Q2 that are fewer than three years old. It is well-known that many establishments have very short life spans (see the references in Caves (1998)). Our births variable will thus understate the true amount of new establishment creation that took place over the period because we do not take into account those companies that were created after 2001:Q2 but closed before 2004:Q2. Having said that, it is not obvious that using a shorter horizon would have been preferable. In this case, our initial period was chosen to characterize New York City before the destruction and disruptions associated with September 11th. We chose to look at births over a longer horizon in part to allow some of the effects of September 11th to have worked through the system. Of course, adjustment remains incomplete as of this writing, but some terminal date needed to be set.

It is immediately clear from Figures 3a to 3d that entrepreneurial activity is also highly concentrated. Furthermore, new establishment employment is greatest near the locations identified in Figures 2a to 2d as having the most employment in the various industry groups. These suggest the presence of geographically-attenuating agglomeration economies in entrepreneurship where the effect is at least partly associated with own-sector activity (localization).

In sum, the maps in this section paint a picture of the New York CMSA as remarkably centralized, both at the macro- and micro- levels. Both the number of new establishments and the employment they bring are also centralized. Entrepreneurial activity appears to be attracted to locations with large amounts of activity in the same sector. This is as far as simple descriptive devices like maps can take us. The next section will set out a model that will form the basis for the estimation of the relationship between the spatial allocation of business activities and entrepreneurship.

## III. Model and estimation strategy

### A. Model

The heart of the model is agglomeration economies. If agglomeration economies exist, then productivity will vary spatially. This, in turn, implies that births will take place near existing concentrations of employment, all else equal. However, all else may not be equal. For instance, if there were to exist a local source of natural advantage, then firms would agglomerate even though they had no external effect on each other. For example, as discussed in Rosenthal and Strange (2004b), the wine industry is concentrated in California because of favorable climate and other natural features that facilitate growing of grapes. As discussed in the Introduction, our within-city approach controls for natural advantages that operate at a regional level. To take that idea a step further, we also include two-digit SIC fixed effects in all of the models. This allows the influence of region-wide natural advantages to differ across two-digit industry sub-groups by stripping away all factors common to enterprises belonging to a given sub-group. Even with these fixed effects, we cannot rule out the possibility that local variation in natural advantages may still account for a portion of the estimated attraction of new economic activity to existing concentrations of employment. However, we believe that our results largely reflect the influence of external economies of scale rather than natural advantages for two reasons that we elaborate on later. To anticipate, the first reason is that some of our industry groups seem to be quite footloose, as with Services and FIRE. In addition, the attenuation patterns we document implicitly suggest the presence of factors whose influence dissipates rapidly, a feature that seems to better fit local variation in agglomeration than natural advantages.

We begin with a model adapted from Rosenthal and Strange (2003). Suppose that the price of output is normalized to one. In this case, an establishment generates profit equal to $\pi(y)$

= a(y)f(x)-c(x), where a(y) shifts the production function f(x), y is a vector of local characteristics, the components of which will be clarified below, and x is a vector of factor inputs that cost c(x). Input quantities will be chosen to maximize profits by satisfying the usual first order conditions. Employment (n), for example, is chosen such that $a(y)\partial f(x)/\partial n - \partial c(x)/\partial n = 0$.

Establishment births occur if a firm can earn positive profits, with all inputs chosen at their profit-maximizing levels. Establishments are heterogeneous in their potential profitability. This is captured by rewriting the profit function as $\pi(y,\varepsilon) = \max_x a(y)f(x)(1 + \varepsilon) - c(x)$. We suppose that ε is independent and identically distributed across establishments according to the cumulative distribution function Φ(ε). For any y, there is a critical level ε*(y) such that $\pi(y, \varepsilon^*(y)) = 0$ and $\pi(y, \varepsilon) > (<) 0$ as $\varepsilon > (<) \varepsilon^*(y)$. In this case, the probability that an establishment is created is $\Phi(\varepsilon^*(y))$.

We assume that new establishments are opened at locations chosen from among all of the census tracts in the New York CMSA, j = 1, …, J. We also assume that location and employment decisions are made taking the prior economic environment (2001:Q2) as given. Let the vector $y_j$ describe the local characteristics of each tract. Aggregating over establishments in a given tract gives the number of births (B) and total new-establishment employment (N) in industry i and tract j. We express these as follows:

$$B_{ij} = by_{ij} + b_m + b_i + \varepsilon_{b,ij}, \quad (1)$$

$$N_{ij} = ny_{ij} + n_m + n_i + \varepsilon_{n,ij}, \quad (2)$$

where $\varepsilon_b$ and $\varepsilon_n$ are error terms, b and n are vectors of coefficients, $b_m$ and $n_m$ are metro-wide constant terms, and $b_i$ and $n_i$ are industry fixed effects. The $b_m$ and $n_m$ terms capture any characteristics that impact entrepreneurship that are common across all industries in the New York metropolitan area. The industry-specific fixed effects capture any attributes that are common to entrepreneurship throughout that industry in the NY area. Together, the metro-wide constant and the industry fixed effects control for a range of natural advantages, as discussed earlier.

In addition, these terms are also likely to capture a number of other unobserved determinants of entrepreneurship that might vary geographically.[5] For example, Blanchflower and Oswald (2001) report that "latent entrepreneurship," the unfulfilled desire for self-employment, varies substantially across countries. It is reasonable to suspect that it might also vary between cities. Black et al (1996) show the availability of collateral to be an important determinant of new enterprise creation in the UK. The entrepreneur's own housing is shown to be the single most important source of such collateral. Since housing markets in larger cities are different than in smaller cities, this may be another metropolitan-wide effect captured in the model fixed effects. Furthermore, there is a well-documented correlation between entry and failure. See Caves (1998) for a review of this literature. This correlation implies that resources that can be used by new establishments may be more plentiful where there has been activity of a similar sort previously. Carlton (1983) includes this in his concept of the "birth potential" of an area. This is clearly an important issue in estimation where identification is based on inter-city variation in the data. In our case, however, the identification comes from intra-city variation. As long as firms that fail were free to have chosen any location within the CMSA, this effect will be captured by the fixed effects.

As discussed above, local variation in agglomeration that affects productivity will affect births and employment at the new establishments. Thus, the vector $y_{ij}$ will characterize the spatial distribution of employment as perceived by industry i in tract j. Specifically, $y_{ij}$ includes the level of employment within and outside of industry i (for i = 1,…,I) within various distances

[5]See the review by Shane and Venkataraman (2000).

of the geographic centroid of tract j. These variables define the level of agglomeration associated with a given tract and can be measured with our data. We will now explain how.

## B. Concentric ring variables

As discussed above, we employ data from Dun & Bradstreet in our analysis. Our goal is to assess the relationship between a tract's local business environment and establishment births and birth employment. To do this, we characterize the environment of each census tract in our sample according to the 2001:Q2 level of employment. The first step is to compute for each tract both the total level of employment and the level of employment in each two-digit industry. It is worth emphasizing that in our latter measures, we measure the effect in a specific two-digit industry, and not in a more general one-digit level industry group.

The next step is to create a set of concentric ring variables for both own-industry and aggregate employment. These variables will allow the measurement of the geographic extent of agglomerative externalities. They are calculated as follows. First, employment in a given tract is treated as being uniformly distributed throughout the tract. Then, using mapping software, circles of radius $r_i$, i = 1, 5, and 10 miles are drawn around the geographic centroid of each census tract in the New York CMSA. The level of own-industry employment contained within a given circle is then calculated by constructing a proportional (weighted) summation of the own-industry employment for those portions of the tracts intersected by the circle. For example, if a circle includes all of tract 1 and 10 percent of the area of tract 2, then employment in the circle is set equal to the employment in tract 1 plus 10 percent of the employment in tract 2. The same procedure is used to calculate the level of other-industry employment within each circle. Differencing employment levels for adjacent circles (by employment type) yields estimates of the levels of own- and other-industry employment within a given concentric ring. Thus, the 5-mile ring ($r_5$) reflects employment between the 1 and 5-mile circles, and so on out to 100 miles. Table 1 describes our data, including the rings.

### C. Tobit estimation

We will estimate (1) and (2) using a Tobit specification to account for the censoring of both kinds of entrepreneurial activity at zero. An alternative would have been to estimate the number of new establishments in a count model, while estimating new establishment employment by Tobit. We chose to estimate both by Tobit in order to treat both aspects of entrepreneurship symmetrically. This raises an econometric issue because noisy estimates of the fixed effects in nonlinear models typically leads to inconsistent estimates of the slope coefficients [e.g. Chamberlain (1980, 1985), Hsiao (1986)]. Also, Tobit models are known to be sensitive to distributional assumptions than are linear regressions. Our primary response to this issue is that bias resulting from noisy estimates of fixed effects in nonlinear models tends to go towards zero as the number of observations per fixed effect becomes arbitrarily large. Since our sample has 5,211 tracts per fixed effect (the number of tracts in the NY CMSA), inconsistency arising from noisy estimates of the fixed effects is hoped to be small.[6]

[6] Although for most of the industry regressions to follow there are a large number of tracts with zero arrivals of new enterprises (and their associated employment), it should also be noted that for each industry regression, a large fraction of tracts do receive arrivals. This is clear in Tables 2 and 3.

## IV. The geography of entrepreneurship

### A. Births

This section presents estimates of models relating entrepreneurship to the local business environment as defined by the concentric ring variables described above. We begin with estimates of (1), the births model. All estimation is carried out at the census tract level.

Table 2 presents two models. Model I deals only with urbanization, the scale of aggregate activity. Model II adds variables capturing localization, the scale of activity in an establishment's own industry. In all models we include variables capturing activity in an establishment's immediate vicinity (within one mile), nearby (between 1 and five miles), and further away (within ten miles).

The first result to notice from Model I is that the urbanization of the immediate environment has a positive effect on births for all four industry groups. Overall, the effect is that adding 1,000 workers is associated with .0016 births. For Manufacturing, adding an additional 1,000 workers within one mile adds .0006 new establishment births. For Wholesaling, the marginal effect of 1,000 workers within one mile is .0057 births. For Services, the effect is .0027 births, and for FIRE it is .0018 births. For Business Services, the effect is the largest, .0144. The effect is significant for all four industry groups.

The effects are also economically meaningful. As noted earlier in the paper, the mean population density in Manhattan is much greater than in Dutchess County at the edge of the city (66,940 per square mile versus 350 per square mile). Commuting patterns within the metropolitan area cause differences in employment density to be even greater: for the 1-mile ring, the mean level of employment is 280,283 in Manahattan and 3,717 in Dutchess County (see Table 1a). If one were to change only the 1-mile employment level in Dutchess County to the

Manhattan level, this would result in .43 additional new establishments per tract. By comparison, the mean number of new establishments in a tract in Dutchess County is .25.

The next result to notice in Table 2 is that the effect attenuates fairly rapidly. For each of the industry groups, the coefficient for employment in the 1 to 5 mile ring is at least an order of magnitude smaller than the coefficient in the 1 mile ring. This attenuation is very clear in Figure 4. The decay is especially pronounced in Business Services. The attenuation of the effect of the local business environment is a result that will persist through nearly every specification in the paper. The result suggests that there urban interactions that are highly local in nature. In other words, a business's neighborhood matters.

Model II considers both urbanization and localization together. It is immediately apparent that controlling for activity in a firm's own industry impacts the estimates for the effect of employment in all industries. For Wholesaling, Services, and Business Services, the effect of additional total employment within one mile is either no longer significant or is negative. It is significant for all industries, FIRE, and Manufacturing, but the effect is reduced by an order of magnitude in the first two cases by half for the last

In contrast, the effects of localization are positive and significant in every case. For all industries, adding 1000 workers in a firm's own industry (two-digit SIC) within one mile is associated with .0832 additional births. For Manufacturing, an increase in 1000 of own-industry employment within one mile produces an additional .0552 births. It is important to reiterate: this is the effect of 1000 additional workers in the establishment's own two-digit SIC code. It is not the effect of 1000 additional workers in the entire Manufacturing industry group. For Wholesaling, the effect is even larger at .2810 births, while in services, the effect is .0978 births. In FIRE and Business Services respectively, the effects are .0385 and .2860. These effects are all significant. To sum up, it appears that some of the urbanization effects present in Model I are instead really localization effects.

One result that Model II shares with Model I is that if agglomeration effects exist, they attenuate. Figure 5a presents the urbanization coefficients. As discussed above, many are negative or are insignificant. The rest are small. Nevertheless, these coefficients attenuate. The picture in Figure 5b is much clearer. Localization coefficients attenuate in much the same way that urbanization coefficients did in the urbanization-only Model I. In this case, the attenuation is most sharp for Business Services and Wholesale Trade.

The discussion thus far has focused on the number of births taking place in a census tract. This is one natural measure of the amount of entrepreneurial activity taking place there. It misses one particularly important aspect of entrepreneurship: the scale of entry. We now turn to the estimation of a model that addresses this.

## B. Birth employment

The results reported in Table 3 are estimates of (2), the model of employment at new establishments. As discussed above, these are firms created between 2001:Q3 and 2004:Q4. As before, we begin with a model including only urbanization coefficients, Model I. The evidence of urbanization effects here is similar to the evidence in the previous Table 2 (Model I). For all industries, the presence of an additional 1000 workers within 1 mile is associated with .0375 more workers at new establishments. For all the industry groups, total employment within one mile also has a significant effect on birth employment. The presence of 1000 additional employees within one mile of a census tract increases new establishment employment by .0368 in Manufacturing, by .0510 in Wholesale Trade, by .1270 in FIRE, by .0296 in Services, and by .1420 in Business Services. All are highly significant.

As with the births model in Table 2, the attenuation of the urbanization effects is striking. Figure 6 depicts the urbanization effects. For all employment and for each of the individual industry groups, the effect attenuates by an order of magnitude between the 1- and 5-mile rings. As with the urbanization effects in the births model (Figure 4), Business Services exhibits the largest one-mile ring coefficient and the sharpest attenuation.

Table 3 also reports a model that includes both localization and urbanization variables in a regression of new establishment employment. As in Table 2's births models, including localization variables impacts the estimates of urbanization effects. In this case, Wholesale Trade takes on a negative sign for the one-mile ring (see Figure 7a), as do all of the ring coefficients for Business Services. The other three industry groups and all employment have positive and significant coefficients. Although these coefficients are smaller than in Model I, they are not as reduced in size as occurred when moving between the urbanization-only and urbanization-and-localization models for births.

As is easily seen in Table 3 and Figure 7b, localization has a positive and significant impact on new establishment employment for all industries and for the various individual industry groups. The one-mile coefficient is greatest for Manufacturing. It implies that an increase in the number of own-industry workers within one mile is associated with an increase in new establishment employment of 3.3100 workers at new establishments. The effects are of the same order of magnitude for (in order of size) FIRE, Wholesale Trade, and Business Services. They are positive and significant, if somewhat smaller, for all industries and services. Once again, for each industry regression the effects attenuate sharply with distance.

## C. The sources of agglomeration economies

We have thus far shown that both urbanization and localization are related to two aspects of entrepreneurial activity, the births of new establishments and the total employment of new establishments. These results relate most closely to Rosenthal and Strange (2003), who also estimate models of births and birth employment. One very important difference is that Rosenthal and Strange looked at six select manufacturing industries (including a computer software aggregate), chosen in part, because each receives large numbers of births and each exports nationally and internationally. A large number of births reduces the number of censored observations in the Tobit models, while marketing abroad likely increases the degree to which a company's location is influenced by local variation in agglomeration economies as opposed to within-city variation in natural advantages. In comparison, this paper instead focuses primarily on broad one-digit industry groups, using fixed effects to control for two-digit industry sub-groups. This restricts the slope coefficients to be alike across industry sub-groups, but grouping industries at the one-digit level reduces the number of censored observations. Despite the difference in specification, the results of this paper are consistent with Rosenthal and Strange (2003) in showing that rapid attenuation is the norm.

The result that attenuation is rapid is also consistent with the few other studies that have considered the decay of agglomeration economies. Anderson et al (2004) consider the local impacts of a shift in the organization of higher education in Sweden. The policy change – a significant decentralization – is a kind of natural experiment. The key finding is that the effects are highly localized. Arzaghi and Henderson (2004) show that external economies in advertising are also highly localized.[7]

[7]It is important to emphasize that the attenuation of agglomeration economies does not mean that separate parts of a city are completely unrelated. See Haughwout and Inman (2002) for a complete treatment of this issue.

An important issue touched on earlier is the ability of the estimation to separate agglomeration effects from natural advantages or other potential reasons that entrepreneurs should be attracted to locations with high levels of existing activity. This would not be a problem for any natural advantage that affected the entire metropolitan area. There are, however, natural advantages that are more local. For instance, a port location may be more productive for a firm engaged in wholesale trade. In this situation, natural advantages will lead to high levels of employment, and so the coefficients on employment levels may reflect both natural advantages and agglomeration effects. Our results show that the effect of existing activity attenuates rapidly. If this were to be explained by a natural advantage, it would need to be a natural advantage that attenuated rapidly as well. This does not seem to describe a port, since shipping costs are relatively low, especially for information oriented industries such as FIRE and Services.

If the influence of within-city variation in natural advantages are at most weak, this naturally leads to the question: what agglomeration economies are present locally that are so much weaker at larger distances? This is a particular aspect of the more general question of: what are the sources of agglomeration economies? This larger question has proven to be very difficult to address. Many plausible sources of agglomeration economies have been proposed. Marshall's (1920) list involves labor market pooling, input sharing, and knowledge spillovers. Other explanations involve the availability of consumption externalities (Glaeser et al (2001)) and the management of uncertainty (Strange et al (2004)). There are many other possibilities, as set out in the survey by Duranton and Puga (2004). Unfortunately, in many respects, the implications for births, wages, and productivity of these possible sources are fairly similar. This makes it difficult to identify particular forces that give rise to agglomeration economies.

This paper's key result regarding microfoundations is that agglomeration economies attenuate rapidly. This does seem to favor some sources of agglomeration economies over others. In a sense, agglomeration economies are a transportation cost issue. Glaeser (1998) suggests the following way to think about this. There are costs of moving goods, costs of moving people, and costs of moving ideas. The former are not especially important for the modern business because the costs of moving goods have shrunk dramatically over the last 100 years. People are more costly to move, with urban commuting being a particularly salient instance of this. Although information can easily be transported electronically, *ideas and knowledge* are almost certainly costly to transport. The sort of unexpected synergies that Jacobs (1969) sees as being responsible for the creation of new-work depend on random interactions. These are much more likely if the interacting parties are quite close to each other.

All of this suggests that our documented attenuation result is rather more consistent with high costs of moving ideas than with the other sorts of agglomeration economy. To the extent this is correct, the ideas being transported must be literal Marshallian knowledge spillovers or some other sort of social interaction. In either case, high transportation costs would be associated with rapid decay. Of course, it is important to recognize that this interpretation of the observed patterns has been quite casual. Future work will be required to more precisely disentangle the many agglomerative forces that are at work.

## V. Conclusion

This paper has analyzed the spatial pattern of entrepreneurial activity in the New York CMSA. Since entrepreneurship takes place against a backdrop of current activity, the paper began by looking at the geography of activity in four industry groups, Manufacturing, Wholesaling, Services, and FIRE. All are shown to be centralized around Manhattan and the nearer boroughs, with FIRE being the most centralized. Entrepreneurial activity is also centralized, with the pattern being quite similar to the pattern for levels of activity. This suggests that some force is leading entrepreneurs to agglomerate. There are many candidates that are consistent with the data, including both natural advantages and Marshallian external economies.

In order to better understand the relationship, the paper estimates models of new establishment births and new establishment employment as functions of the local business environment. In a model that includes only one agglomeration variable – urbanization, total nearby employment – the urbanization is shown to be positively related to both births and birth employment. If instead an additional agglomeration variable is also included – localization, employment in an establishment's own industry – then the results change. For all of the industry groups, localization is shown to be positively associated with both measures of entrepreneurship. For most of the industry groups, the influence of urbanization is greatly reduced, sometimes negative, and no longer significant after controlling for localization.

In all of the paper's analysis of entrepreneurship, we have taken a geographic approach to agglomeration rather than a political one. Specifically, we estimate the effects of activity taking place very close to a census tract (within one mile), fairly close (between one and five miles), and further away (between five and ten miles). For nearly all of the paper's many models, the effects of a tract's business environment are shown to attenuate sharply. The effect at five miles is typically at least one order of magnitude smaller than the effect within one mile. This result speaks to the question: what is a city? The answer seems to be that many of the spatial interactions that are central to cities are quite local. When entrepreneurs must decide the best location to open an establishment, they choose a location that is close to existing activity, especially in their own industry. It should be recognized, however, that by estimating these effects within one city we have held constant those factors that are common to business throughout the NY CMSA. Thus, the fact that we identify a local effect does not preclude the existence of other effects that operate across cities and regions.

There are many forces that can explain the paper's agglomeration results. Unfortunately, the estimation does not enable us to identify specific agglomerative forces that are at work. Whatever the forces may be, however, they appear to operate at a narrow level of geography. If there are Marshallian agglomeration economies, then the economies must attenuate rapidly. This suggests (but of course does not prove) that the effect might be some sort of social spillover, since ideas and learning are costly to transport and allegiances are costly to maintain over a great distance. If there are also or instead natural advantages that favor particular locations, then these too must attenuate rapidly. This could reflect access to particular neighborhood amenities, for example. In either case, the important result is rapid attenuation.

**References**


Aharonson, Barak S., J.A.C. Baum, and M. P. Feldman (2004), "Industrial Clustering and the Returns to Inventive Activity: Canadian Biotechnology Firms, 1991-2000"

Anderson, R., J. M. Quigley, and M. Wilhelmson (2004), “University decentralization as regional policy: the Swedish experiment,” *Journal of Economic Geography* 4, 371-388.

Arzaghi, M. and J.V. Henderson (2004), “Networking Off Madison Avenue” Brown University Working Paper, November 2004.

Black, J., D. de Meza, and D. Jeffries (1996), “House prices, the supply of collateral, and the enterprise economy,” *The Economic Journal* 106, 60-75.

Carlton, D. W. (1983), "The Location and Employment Choices of New Firms: An Econometric Model with Discrete and Continuous Endogenous Variables," *Review of Economics and Statistics* 65, 440-449.

Caves, R. (1998), “Industrial organization and new findings on the turnover and mobility of firms,” *Journal of Economic Literature* 36, 1947-1982.

Chamberlain, G. (1980), "Analysis of covariance with qualitative data," *Review of Economic Studies*, 47, 225-238.

Chamberlain, G. (1984), “Panel Data” (Chapter 22, Vol. 2) *in* Z. Griliches and M. Intriligator (Eds.), *Handbook of Econometrics*, (New York: Elsevier Science Publishing Company).

Chinitz, B.J. (1961), "Contrasts in Agglomeration: New York and Pittsburgh," *American Economic Review* 51, 279-89.

Duranton, G. and D. Puga (2004), "Micro-foundations of urban agglomeration economies," in J.V. Henderson and J.-F. Thisse, eds., *Handbook of Urban and Regional Economics, Volume 4* (New York: North Holland), 2063-2118.

Garreau, J. (1991), *Edge Cities: Life on the New Frontier* (New York: Doubleday).

Glaeser, E.L. (1998), "Are cities dying?" *Journal of Economic Perspectives* 12(2): 139-160.

Glaeser, E.L., and D. C. Mare (2001), "Cities and Skills," *Journal of Labor Economics* 19(2): 316-342.

Glaeser, E.L, H. D. Kallal, J. A. Scheinkman, and A. Shleifer (1992), "Growth in Cities." *Journal of Political Economy* 100: 1126-1152.

Glaeser, E., J. Kolko, and A. Saiz (2001), "Consumer City," *Journal of Economic Geography* 1: 27-50.

Haughwout, A.F. and R.P. Inman (2002), “Should suburbs help their central cities?” *Brookings-Wharton Papers on Urban Affairs*, 45-94.

Helsley, R.W. (1990), “Knowledge and Production in the CBD,” *Journal of Urban Economics* 28, 391-403.

Henderson, J.V. (2003), "Marshall's Scale Economies," *Journal of Urban Economics* 53: 1-28.

Henderson, J.V., A. Kuncoro and M. Turner (1995), "Industrial Development in Cities." *Journal of Political Economy* 103: 1067-1085.

Hoover. E. and R. Vernon (1959), "Anatomy of a Metropolis, Cambridge: Harvard University Press.

Hsiao, Cheng (1986), Analysis of Panel Data, New York: Cambridge University Press.

Imai, H. (1982), “CBD Hypothesis and Economies of Agglomeration,” *Journal of Economic Theory* 8, 275-299.

Jacobs, J. (1969), The Economy of Cities, New York: Vintage.

Krugman, P. (1993), "On The Number and Location of Cities," *European Economic Review* 37, 293-298.

Marshall, A. (1920), *Principles of Economics*, London: MacMillan.

Ogawa, H. and M. Fujita (1980), “Equilibrium Land Use Patterns In A Nonmonocentric City,” *Journal of Regional Science* 20, 455-475.

Rosenthal, S. S. and W. C. Strange (2003), "Geography, Industrial Organization, and Agglomeration," *Review of Economics and Statistics* 85:2, 377-393.

Rosenthal, S. S. and W. C. Strange (2004a), “Evidence on the Nature and Sources of Agglomeration Economies”, in Henderson, J.V. and J.-F. Thisse, eds., *Handbook of Urban and Regional Economics*, Volume 4. Amsterdam: Elsevier, 2119-2172.

Rosenthal, S. S. and W. C. Strange (2004b), "The Micro-Empirics of Agglomeration Economies,” *in* Arnott, R. and D. McMillen, eds., Companion to Urban Economics, Blackwell, forthcoming.

Shane, S. and S. Venkataraman (2000), “The promise of entrepreneurship as a field of research,” *Academy of Management Review* 25(1) 217-226.

Strange, W.C., W. Hejazi, and J. Tang (2004), "The Uncertain City: Competitive Instability, Skills, and the Strategy of Agglomeration," Working Paper.

Vernon, R. (1960), Metropolis 1985, Cambridge, MA: Harvard University Press.

**Table 1a: Variable Means Per 2-Digit Industry and Census Tract By County - ALL INDUSTRIES (SIC 1 to 97; 82 Industries)**
**New establishments and employment counts are from 2004:Q2; Existing employment counts are from 2001:Q2**

| State | County Name | County FIPS Code | New (< 3 years) Census Tract Own-Industry Establishments | New (< 3 years) Census Tract Own-Industry Establishment Employment | Existing Own-Industry Employment Within 1 Mile | Existing Own-Industry Employment Within 1-5 Miles | Existing Own-Industry Employment Within 5-10 Miles | Existing All Industry Employment Within 1 Mile | Existing All Industry Employment Within 1-5 Miles | Existing All Industry Employment Within 5-10 Miles |
|---|---|---|---|---|---|---|---|---|---|---|
| CT | Fairfield | 9001 | 0.21 | 1.25 | 72 | 976 | 1,806 | 5,807 | 79,052 | 146,311 |
| CT | Litchfield | 9005 | 0.14 | 0.64 | 7 | 157 | 439 | 564 | 12,709 | 35,570 |
| CT | Middlesex | 9007 | 0.16 | 0.66 | 17 | 314 | 962 | 1,344 | 25,469 | 77,939 |
| CT | New Haven | 9009 | 0.13 | 0.80 | 61 | 889 | 1,748 | 4,959 | 71,989 | 141,613 |
| NJ | Bergen | 34003 | 0.29 | 1.57 | 128 | 3,949 | 18,220 | 10,334 | 319,865 | 1,475,853 |
| NJ | Essex | 34013 | 0.14 | 2.39 | 200 | 3,590 | 14,174 | 16,240 | 290,762 | 1,148,106 |
| NJ | Hudson | 34017 | 0.12 | 0.82 | 277 | 22,067 | 26,047 | 22,428 | 1,787,452 | 2,109,836 |
| NJ | Hunterdon | 34019 | 0.24 | 1.65 | 9 | 182 | 689 | 708 | 14,771 | 55,775 |
| NJ | Mercer | 34021 | 0.18 | 1.68 | 167 | 1,454 | 2,081 | 13,521 | 117,810 | 168,560 |
| NJ | Middlesex | 34023 | 0.19 | 1.04 | 75 | 1,547 | 4,004 | 6,081 | 125,333 | 324,359 |
| NJ | Monmouth | 34025 | 0.20 | 1.13 | 33 | 605 | 1,453 | 2,662 | 49,032 | 117,726 |
| NJ | Morris | 34027 | 0.25 | 2.43 | 46 | 1,085 | 3,073 | 3,717 | 87,850 | 248,917 |
| NJ | Ocean | 34029 | 0.19 | 0.58 | 18 | 356 | 795 | 1,471 | 28,865 | 64,362 |
| NJ | Passaic | 34031 | 0.24 | 1.28 | 153 | 2,638 | 7,713 | 12,410 | 213,670 | 624,716 |
| NJ | Somerset | 34035 | 0.25 | 2.45 | 40 | 933 | 3,017 | 3,264 | 75,579 | 244,397 |
| NJ | Sussex | 34037 | 0.14 | 0.48 | 5 | 122 | 438 | 442 | 9,856 | 35,474 |
| NJ | Union | 34039 | 0.19 | 0.99 | 114 | 2,610 | 7,319 | 9,223 | 211,406 | 592,868 |
| NJ | Warren | 34041 | 0.16 | 0.52 | 7 | 158 | 464 | 581 | 12,825 | 37,622 |
| NY | Bronx | 36005 | 0.05 | 0.23 | 255 | 5,454 | 27,965 | 20,622 | 441,752 | 2,265,155 |
| NY | Dutchess | 36027 | 0.11 | 0.51 | 17 | 250 | 478 | 1,350 | 20,259 | 38,752 |
| NY | Kings | 36047 | 0.06 | 0.25 | 327 | 11,182 | 28,917 | 26,514 | 905,770 | 2,342,297 |
| NY | Nassau | 36059 | 0.15 | 0.91 | 108 | 2,313 | 5,898 | 8,736 | 187,393 | 477,736 |
| NY | New York | 36061 | 0.36 | 4.21 | 3,460 | 25,347 | 21,184 | 280,283 | 2,053,141 | 1,715,933 |
| NY | Orange | 36071 | 0.17 | 0.81 | 10 | 199 | 490 | 811 | 16,148 | 39,704 |
| NY | Putnam | 36079 | 0.16 | 0.47 | 5 | 162 | 666 | 394 | 13,153 | 53,913 |
| NY | Queens | 36081 | 0.05 | 0.25 | 247 | 8,984 | 25,563 | 19,979 | 727,692 | 2,070,562 |
| NY | Richmond | 36085 | 0.07 | 0.24 | 70 | 1,684 | 13,967 | 5,669 | 136,435 | 1,131,321 |
| NY | Rockland | 36087 | 0.16 | 0.63 | 37 | 870 | 2,533 | 3,032 | 70,450 | 205,175 |
| NY | Suffolk | 36103 | 0.14 | 0.74 | 41 | 926 | 2,349 | 3,341 | 75,021 | 190,269 |
| NY | Westchester | 36119 | 0.13 | 0.79 | 93 | 1,694 | 4,923 | 7,551 | 137,237 | 398,743 |
| PA | Pike | 42103 | 0.15 | 0.58 | 1 | 23 | 83 | 72 | 1,843 | 6,713 |
| | | **Total** | **0.14** | **0.98** | **348** | **6,193** | **14,429** | **28,151** | **501,593** | **1,168,765** |

**Table 1b: Variable Means Per 2-Digit Industry and Census Tract By County**
**MANUFACTURING (SIC 20 to 39; 20 Industries)**
**New establishments and employment counts are from 2004:Q2; Existing employment counts are from 2001:Q2**

| State | County Name | County FIPS Code | New (< 3 years) Census Tract Own-Industry Establishments | New (< 3 years) Census Tract Own-Ind Establishment Employment | Existing Own-Industry Employment Within 1 Mile | Existing Own-Industry Employment Within 1-5 Miles | Existing Own-Industry Employment Within 5-10 Miles |
|---|---|---|---|---|---|---|---|
| CT | Fairfield | 9001 | 0.04 | 1.02 | 59 | 792 | 1,266 |
| CT | Litchfield | 9005 | 0.03 | 0.61 | 8 | 151 | 341 |
| CT | Middlesex | 9007 | 0.04 | 0.45 | 12 | 253 | 703 |
| CT | New Haven | 9009 | 0.04 | 0.92 | 24 | 495 | 1,211 |
| NJ | Bergen | 34003 | 0.06 | 1.13 | 82 | 2,170 | 8,073 |
| NJ | Essex | 34013 | 0.03 | 0.54 | 73 | 1,839 | 7,950 |
| NJ | Hudson | 34017 | 0.02 | 0.85 | 106 | 8,395 | 11,289 |
| NJ | Hunterdon | 34019 | 0.07 | 0.50 | 5 | 113 | 534 |
| NJ | Mercer | 34021 | 0.03 | 1.51 | 22 | 486 | 1,003 |
| NJ | Middlesex | 34023 | 0.04 | 0.68 | 44 | 937 | 2,586 |
| NJ | Monmouth | 34025 | 0.04 | 1.08 | 8 | 163 | 453 |
| NJ | Morris | 34027 | 0.07 | 2.13 | 34 | 855 | 2,287 |
| NJ | Ocean | 34029 | 0.03 | 0.08 | 5 | 88 | 205 |
| NJ | Passaic | 34031 | 0.05 | 1.13 | 105 | 1,957 | 4,575 |
| NJ | Somerset | 34035 | 0.05 | 4.04 | 36 | 786 | 2,368 |
| NJ | Sussex | 34037 | 0.04 | 0.25 | 2 | 56 | 257 |
| NJ | Union | 34039 | 0.04 | 1.14 | 106 | 2,050 | 4,068 |
| NJ | Warren | 34041 | 0.03 | 0.08 | 6 | 131 | 341 |
| NY | Bronx | 36005 | 0.01 | 0.03 | 54 | 1,469 | 11,624 |
| NY | Dutchess | 36027 | 0.03 | 0.29 | 15 | 174 | 274 |
| NY | Kings | 36047 | 0.01 | 0.10 | 108 | 3,827 | 10,611 |
| NY | Nassau | 36059 | 0.03 | 0.32 | 37 | 789 | 2,028 |
| NY | New York | 36061 | 0.11 | 2.53 | 1,234 | 9,964 | 8,445 |
| NY | Orange | 36071 | 0.04 | 0.43 | 4 | 77 | 185 |
| NY | Putnam | 36079 | 0.03 | 0.18 | 1 | 83 | 381 |
| NY | Queens | 36081 | 0.01 | 0.15 | 98 | 3,331 | 8,816 |
| NY | Richmond | 36085 | 0.01 | 0.03 | 8 | 532 | 5,160 |
| NY | Rockland | 36087 | 0.03 | 0.12 | 19 | 435 | 1,190 |
| NY | Suffolk | 36103 | 0.04 | 0.42 | 25 | 592 | 1,401 |
| NY | Westchester | 36119 | 0.03 | 0.27 | 35 | 530 | 1,760 |
| PA | Pike | 42103 | 0.03 | 0.11 | 0 | 6 | 28 |
| | | **Total** | **0.03** | **0.62** | **127** | **2,386** | **5,772** |

**Table 1c: Variable Means Per Industry and Census Tract By County**
**WHOLESALE TRADE (SIC 50 and 52; 2 Industries)**
**New establishments and employment counts are from 2004:Q2; Existing employment counts are from 2001:Q2**

| State | County Name | County FIPS Code | New (< 3 years) Census Tract Own-Industry Establishments | New (< 3 years) Census Tract Own-Ind Establishment Employment | Existing Own-Industry Employment Within 1 Mile | Existing Own-Industry Employment Within 1-5 Miles | Existing Own-Industry Employment Within 5-10 Miles |
|---|---|---|---|---|---|---|---|
| CT | Fairfield | 9001 | 0.44 | 4.33 | 131 | 1,961 | 4,744 |
| CT | Litchfield | 9005 | 0.24 | 1.28 | 8 | 197 | 641 |
| CT | Middlesex | 9007 | 0.31 | 2.39 | 22 | 545 | 1,853 |
| CT | New Haven | 9009 | 0.27 | 1.29 | 145 | 5,076 | 11,530 |
| NJ | Bergen | 34003 | 1.01 | 7.67 | 462 | 12,539 | 47,951 |
| NJ | Essex | 34013 | 0.27 | 1.68 | 302 | 8,276 | 39,900 |
| NJ | Hudson | 34017 | 0.32 | 1.92 | 706 | 55,093 | 65,712 |
| NJ | Hunterdon | 34019 | 0.45 | 1.52 | 13 | 306 | 1,214 |
| NJ | Mercer | 34021 | 0.23 | 1.63 | 75 | 1,292 | 3,062 |
| NJ | Middlesex | 34023 | 0.58 | 4.07 | 224 | 4,789 | 11,387 |
| NJ | Monmouth | 34025 | 0.42 | 2.24 | 49 | 892 | 2,568 |
| NJ | Morris | 34027 | 0.66 | 4.07 | 116 | 2,818 | 7,890 |
| NJ | Ocean | 34029 | 0.32 | 1.51 | 33 | 602 | 1,319 |
| NJ | Passaic | 34031 | 0.60 | 4.38 | 309 | 7,230 | 25,805 |
| NJ | Somerset | 34035 | 0.45 | 3.48 | 83 | 2,161 | 7,502 |
| NJ | Sussex | 34037 | 0.31 | 0.83 | 8 | 206 | 791 |
| NJ | Union | 34039 | 0.36 | 1.52 | 310 | 6,715 | 16,982 |
| NJ | Warren | 34041 | 0.27 | 0.79 | 12 | 260 | 762 |
| NY | Bronx | 36005 | 0.14 | 0.98 | 460 | 10,645 | 74,954 |
| NY | Dutchess | 36027 | 0.17 | 0.86 | 18 | 334 | 726 |
| NY | Kings | 36047 | 0.20 | 0.90 | 752 | 25,117 | 69,016 |
| NY | Nassau | 36059 | 0.45 | 4.43 | 275 | 5,809 | 14,965 |
| NY | New York | 36061 | 1.39 | 10.98 | 7,963 | 64,170 | 54,953 |
| NY | Orange | 36071 | 0.34 | 3.93 | 22 | 411 | 922 |
| NY | Putnam | 36079 | 0.24 | 0.67 | 8 | 223 | 957 |
| NY | Queens | 36081 | 0.21 | 1.38 | 612 | 21,725 | 59,917 |
| NY | Richmond | 36085 | 0.15 | 0.45 | 83 | 3,332 | 29,815 |
| NY | Rockland | 36087 | 0.51 | 2.74 | 100 | 2,743 | 8,000 |
| NY | Suffolk | 36103 | 0.41 | 2.65 | 129 | 3,215 | 8,048 |
| NY | Westchester | 36119 | 0.29 | 2.43 | 201 | 3,374 | 11,859 |
| PA | Pike | 42103 | 0.12 | 0.50 | 1 | 22 | 81 |
| | | **Total** | **0.39** | **2.72** | **794** | **14,923** | **36,126** |

**Table 1d: Variable Means Per Industry and Census Tract By County**
**SERVICE (SIC 70 to 89; 15 Industries)**
**New establishments and employment counts are from 2004:Q2; Existing employment counts are from 2001:Q2**

| State | County Name | County FIPS Code | New (< 3 years) Census Tract Own-Industry Establishments | New (< 3 years) Census Tract Own-Ind Establishment Employment | Existing Own-Industry Employment Within 1 Mile | Existing Own-Industry Employment Within 1-5 Miles | Existing Own-Industry Employment Within 5-10 Miles |
|---|---|---|---|---|---|---|---|
| CT | Fairfield | 9001 | 0.49 | 2.43 | 153 | 2,034 | 3,781 |
| CT | Litchfield | 9005 | 0.29 | 0.98 | 13 | 298 | 868 |
| CT | Middlesex | 9007 | 0.32 | 1.26 | 44 | 700 | 1,965 |
| CT | New Haven | 9009 | 0.28 | 1.31 | 156 | 1,872 | 3,255 |
| NJ | Bergen | 34003 | 0.67 | 2.74 | 281 | 9,292 | 42,591 |
| NJ | Essex | 34013 | 0.38 | 2.20 | 491 | 8,097 | 29,216 |
| NJ | Hudson | 34017 | 0.25 | 1.01 | 563 | 47,728 | 60,508 |
| NJ | Hunterdon | 34019 | 0.57 | 5.29 | 23 | 436 | 1,482 |
| NJ | Mercer | 34021 | 0.48 | 4.46 | 219 | 2,850 | 4,721 |
| NJ | Middlesex | 34023 | 0.48 | 2.56 | 169 | 3,334 | 8,766 |
| NJ | Monmouth | 34025 | 0.50 | 2.23 | 75 | 1,398 | 3,304 |
| NJ | Morris | 34027 | 0.63 | 6.11 | 99 | 2,318 | 6,675 |
| NJ | Ocean | 34029 | 0.40 | 1.21 | 43 | 840 | 1,838 |
| NJ | Passaic | 34031 | 0.53 | 2.73 | 329 | 5,448 | 17,193 |
| NJ | Somerset | 34035 | 0.68 | 4.70 | 90 | 2,009 | 6,491 |
| NJ | Sussex | 34037 | 0.32 | 0.89 | 13 | 269 | 931 |
| NJ | Union | 34039 | 0.44 | 1.94 | 220 | 5,197 | 15,982 |
| NJ | Warren | 34041 | 0.37 | 1.33 | 14 | 319 | 970 |
| NY | Bronx | 36005 | 0.11 | 0.57 | 823 | 15,997 | 65,203 |
| NY | Dutchess | 36027 | 0.22 | 0.94 | 38 | 547 | 1,027 |
| NY | Kings | 36047 | 0.14 | 0.50 | 878 | 25,775 | 65,120 |
| NY | Nassau | 36059 | 0.32 | 1.95 | 264 | 5,597 | 14,215 |
| NY | New York | 36061 | 0.95 | 7.16 | 8,230 | 58,359 | 48,652 |
| NY | Orange | 36071 | 0.38 | 1.38 | 20 | 413 | 1,053 |
| NY | Putnam | 36079 | 0.31 | 0.90 | 11 | 388 | 1,552 |
| NY | Queens | 36081 | 0.11 | 0.45 | 562 | 21,400 | 60,804 |
| NY | Richmond | 36085 | 0.16 | 0.47 | 208 | 4,199 | 29,656 |
| NY | Rockland | 36087 | 0.34 | 1.09 | 89 | 2,078 | 6,123 |
| NY | Suffolk | 36103 | 0.31 | 1.46 | 88 | 1,924 | 4,958 |
| NY | Westchester | 36119 | 0.30 | 1.63 | 225 | 4,487 | 13,132 |
| PA | Pike | 42103 | 0.33 | 0.78 | 2 | 53 | 196 |
| | | **Total** | **0.33** | **1.80** | **846** | **14,465** | **33,126** |

**Table 1e: Variable Means Per Industry and Census Tract By County**
**FIRE (SIC 60 to 69; 7 Industries)**
**New establishments and employment counts are from 2004:Q2; Existing employment counts are from 2001:Q2**

| State | County Name | County FIPS Code | New (< 3 years) Census Tract Own-Industry Establishments | New (< 3 years) Census Tract Own-Ind Establishment Employment | Existing Own-Industry Employment Within 1 Mile | Existing Own-Industry Employment Within 1-5 Miles | Existing Own-Industry Employment Within 5-10 Miles |
|---|---|---|---|---|---|---|---|
| CT | Fairfield | 9001 | 0.27 | 1.81 | 77 | 1,009 | 2,070 |
| CT | Litchfield | 9005 | 0.07 | 0.14 | 3 | 77 | 294 |
| CT | Middlesex | 9007 | 0.10 | 0.30 | 7 | 183 | 716 |
| CT | New Haven | 9009 | 0.11 | 0.49 | 33 | 500 | 1,132 |
| NJ | Bergen | 34003 | 0.24 | 2.06 | 97 | 4,140 | 29,179 |
| NJ | Essex | 34013 | 0.12 | 18.35 | 277 | 3,936 | 23,121 |
| NJ | Hudson | 34017 | 0.11 | 1.38 | 489 | 51,750 | 39,305 |
| NJ | Hunterdon | 34019 | 0.25 | 0.68 | 6 | 116 | 450 |
| NJ | Mercer | 34021 | 0.16 | 0.93 | 53 | 1,080 | 1,645 |
| NJ | Middlesex | 34023 | 0.13 | 0.59 | 55 | 1,210 | 3,053 |
| NJ | Monmouth | 34025 | 0.19 | 1.52 | 27 | 553 | 1,342 |
| NJ | Morris | 34027 | 0.23 | 3.37 | 60 | 1,355 | 3,411 |
| NJ | Ocean | 34029 | 0.15 | 0.53 | 11 | 214 | 469 |
| NJ | Passaic | 34031 | 0.16 | 0.49 | 127 | 2,414 | 7,423 |
| NJ | Somerset | 34035 | 0.24 | 1.62 | 29 | 784 | 2,469 |
| NJ | Sussex | 34037 | 0.11 | 0.46 | 4 | 112 | 408 |
| NJ | Union | 34039 | 0.16 | 0.45 | 65 | 1,964 | 8,021 |
| NJ | Warren | 34041 | 0.04 | 0.10 | 3 | 69 | 261 |
| NY | Bronx | 36005 | 0.03 | 0.16 | 146 | 4,959 | 47,073 |
| NY | Dutchess | 36027 | 0.07 | 0.18 | 9 | 142 | 273 |
| NY | Kings | 36047 | 0.05 | 0.18 | 227 | 20,662 | 57,369 |
| NY | Nassau | 36059 | 0.14 | 0.91 | 115 | 2,539 | 5,938 |
| NY | New York | 36061 | 0.41 | 13.63 | 7,686 | 51,662 | 31,061 |
| NY | Orange | 36071 | 0.15 | 0.45 | 6 | 117 | 278 |
| NY | Putnam | 36079 | 0.09 | 0.33 | 3 | 91 | 366 |
| NY | Queens | 36081 | 0.04 | 0.18 | 159 | 12,297 | 44,783 |
| NY | Richmond | 36085 | 0.04 | 0.12 | 43 | 1,016 | 28,374 |
| NY | Rockland | 36087 | 0.14 | 0.50 | 20 | 510 | 1,751 |
| NY | Suffolk | 36103 | 0.12 | 0.84 | 26 | 684 | 1,944 |
| NY | Westchester | 36119 | 0.13 | 0.61 | 78 | 1,509 | 4,052 |
| PA | Pike | 42103 | 0.10 | 0.28 | 1 | 20 | 57 |
| | | **Total** | **0.13** | **2.12** | **555** | **10,344** | **24,324** |

**Table 1f: Variable Means Per Industry and Census Tract By County**
**BUSINESS SERVICES (SIC 73)**
**New establishments and employment counts are from 2004:Q2; Existing employment counts are from 2001:Q2**

| State | County Name | County FIPS Code | New (< 3 years) Census Tract Own-Industry Establishments | New (< 3 years) Census Tract Own-Ind Establishment Employment | Existing Own-Industry Employment Within 1 Mile | Existing Own-Industry Employment Within 1-5 Miles | Existing Own-Industry Employment Within 5-10 Miles |
|---|---|---|---|---|---|---|---|
| CT | Fairfield | 9001 | 2.81 | 12.71 | 503 | 6,317 | 11,850 |
| CT | Litchfield | 9005 | 1.39 | 2.91 | 25 | 450 | 1,439 |
| CT | Middlesex | 9007 | 1.56 | 4.03 | 44 | 1,076 | 4,116 |
| CT | New Haven | 9009 | 1.54 | 7.12 | 282 | 3,532 | 6,562 |
| NJ | Bergen | 34003 | 3.79 | 13.23 | 902 | 26,100 | 132,863 |
| NJ | Essex | 34013 | 1.85 | 4.76 | 900 | 19,579 | 107,485 |
| NJ | Hudson | 34017 | 1.26 | 5.45 | 1,850 | 192,095 | 172,576 |
| NJ | Hunterdon | 34019 | 3.48 | 47.33 | 24 | 610 | 2,945 |
| NJ | Mercer | 34021 | 2.60 | 15.04 | 375 | 6,194 | 10,843 |
| NJ | Middlesex | 34023 | 3.13 | 19.71 | 564 | 12,935 | 30,325 |
| NJ | Monmouth | 34025 | 2.81 | 8.09 | 181 | 3,260 | 7,826 |
| NJ | Morris | 34027 | 3.57 | 31.07 | 399 | 9,257 | 24,027 |
| NJ | Ocean | 34029 | 1.88 | 4.03 | 59 | 1,200 | 2,744 |
| NJ | Passaic | 34031 | 2.70 | 12.31 | 673 | 16,483 | 54,862 |
| NJ | Somerset | 34035 | 4.22 | 23.26 | 397 | 8,911 | 25,004 |
| NJ | Sussex | 34037 | 1.49 | 3.32 | 32 | 690 | 2,451 |
| NJ | Union | 34039 | 2.14 | 12.12 | 581 | 13,653 | 44,163 |
| NJ | Warren | 34041 | 1.62 | 2.60 | 15 | 366 | 1,308 |
| NY | Bronx | 36005 | 0.47 | 1.92 | 765 | 21,362 | 211,544 |
| NY | Dutchess | 36027 | 1.03 | 2.55 | 55 | 876 | 1,763 |
| NY | Kings | 36047 | 0.66 | 1.98 | 1,192 | 75,574 | 223,295 |
| NY | Nassau | 36059 | 1.71 | 8.94 | 683 | 14,104 | 34,256 |
| NY | New York | 36061 | 5.25 | 42.36 | 30,425 | 206,479 | 132,278 |
| NY | Orange | 36071 | 1.68 | 4.95 | 29 | 618 | 1,682 |
| NY | Putnam | 36079 | 1.66 | 3.47 | 21 | 1,202 | 4,288 |
| NY | Queens | 36081 | 0.51 | 2.16 | 1,191 | 59,295 | 177,417 |
| NY | Richmond | 36085 | 0.86 | 2.59 | 259 | 5,997 | 92,526 |
| NY | Rockland | 36087 | 1.84 | 4.84 | 180 | 4,662 | 14,439 |
| NY | Suffolk | 36103 | 1.50 | 5.61 | 252 | 6,434 | 17,295 |
| NY | Westchester | 36119 | 1.42 | 10.09 | 447 | 7,899 | 25,723 |
| PA | Pike | 42103 | 1.35 | 2.38 | 2 | 54 | 215 |
| | | **Total** | **1.75** | **8.95** | **2,410** | **43,167** | **103,005** |

**Table 2: Number of Establishments Less Than 3 Years in Age in 2004:Q2**
**(t-ratios in parentheses)**

| | | | All Industries | Manufacturing | Wholesale Trade | FIRE | Service | Business Services |
|---|---|---|---|---|---|---|---|---|
| **Model I** | All Workers (1,000) | 0 to 1 mile | 1.56E-03 | 6.70E-04 | 5.67E-03 | 1.79E-03 | 2.73E-03 | 1.44E-02 |
| | | | (101.60) | (45.40) | (45.70) | (54.66) | (62.50) | (37.64) |
| | | 1 to 5 miles | 2.36E-06 | 2.37E-05 | -1.10E-04 | -3.08E-05 | 3.53E-06 | -1.59E-04 |
| | | | (1.71) | (9.96) | (-6.42) | (-6.15) | (0.56) | (-3.03) |
| | | 5 to 10 miles | -9.64E-05 | -5.22E-05 | -5.58E-05 | -7.11E-05 | -1.34E-04 | -5.69E-04 |
| | | | (-66.74) | (-33.31) | (-5.49) | (-23.55) | (-35.53) | (-18.43) |
| | | SIC Fixed Effects | 82 | 20 | 2 | 7 | 15 | - |
| | | Censored Obs | 235,198 | 76,421 | 830 | 16,793 | 20,092 | 22 |
| | | Uncensored Obs | 186,893 | 27,799 | 9,592 | 19,684 | 58,073 | 5,189 |
| | | Log-Likelihood | -275,426.87 | -34,760.02 | -14808.08 | -22,357.75 | -92536.19 | -11,720.36 |
| | | Pseudo R-sq | 0.27 | 0.21 | 0.07 | 0.20 | 0.14 | 0.07 |
| **Model II** | Own SIC Workers (1,000) | 0 to 1 mile | 8.32E-02 | 5.52E-02 | 2.81E-01 | 3.85E-02 | 9.78E-02 | 2.86E-01 |
| | | | (137.09) | (50.78) | (40.72) | (37.00) | (89.26) | (15.55) |
| | | 1 to 5 miles | -6.17E-04 | 1.19E-04 | 3.84E-03 | -2.20E-04 | -7.50E-04 | 6.46E-02 |
| | | | (-7.04) | (0.61) | (2.31) | (-1.22) | (-4.35) | (12.85) |
| | | 5 to 10 miles | -2.39E-03 | 1.13E-03 | 4.35E-03 | -1.65E-04 | -3.66E-03 | 2.04E-02 |
| | | | (-36.96) | (8.30) | (3.84) | (-1.30) | (-34.61) | (8.18) |
| | All Workers (1,000) | 0 to 1 mile | 2.79E-04 | 3.21E-04 | -3.86E-03 | 6.04E-04 | 1.30E-07 | -1.89E-02 |
| | | | (11.69) | (20.08) | (-14.83) | (13.54) | (-1.35) | (-8.43) |
| | | 1 to 5 miles | 5.82E-06 | 2.24E-05 | -1.66E-04 | -1.70E-05 | 1.64E-05 | -6.74E-03 |
| | | | (2.94) | (8.49) | (-3.04) | (-2.41) | (2.10) | (-12.11) |
| | | 5 to 10 miles | -5.27E-05 | -5.68E-05 | -1.80E-04 | -6.31E-05 | -2.68E-05 | -2.00E-03 |
| | | | (-30.56) | (-31.96) | (-5.13) | (-14.40) | (-4.26) | (-7.67) |
| | | SIC Fixed Effects | 82 | 20 | 2 | 7 | 15 | - |
| | | Censored Obs | 235,198 | 76,421 | 830 | 16,793 | 20,092 | 22 |
| | | Uncensored Obs | 186,893 | 27,799 | 9,592 | 19,684 | 58,073 | 5,189 |
| | | Log-Likelihood | -263,299.55 | -33,372.00 | -14035.75 | -21,624.79 | -87,534.67 | -11,523.95 |
| | | Pseudo R-sq | 0.31 | 0.24 | 0.12 | 0.23 | 0.19 | 0.08 |

**Table 3: Employment at Establishments Less Than 3 Years in Age in 2004:Q2**
**(t-ratios in parentheses)**

| | | | All Industries | Manufacturing | Wholesale Trade | FIRE | Service | Business Services |
|---|---|---|---|---|---|---|---|---|
| **Model I** | All Workers (1,000) | 0 to 1 mile | 3.75E-02 | 3.68E-02 | 5.10E-02 | 1.27E-01 | 2.96E-02 | 1.42E-01 |
| | | | (49.08) | (25.91) | (36.41) | (19.88) | (49.57) | (30.87) |
| | | 1 to 5 miles | 4.56E-04 | 2.35E-03 | -8.89E-04 | -2.71E-03 | -2.37E-05 | -1.40E-03 |
| | | | (4.71) | (10.45) | (-4.60) | (-2.76) | (-0.28) | (-2.21) |
| | | 5 to 10 miles | -1.90E-03 | -3.63E-03 | -5.64E-04 | -3.31E-03 | -1.01E-03 | -3.39E-03 |
| | | | (-27.66) | (-24.51) | (-4.91) | (-5.64) | (-19.67) | (-9.10) |
| | | SIC Fixed Effects | 82 | 20 | 2 | 7 | 15 | - |
| | | Censored Obs | 235,198 | 76,421 | 830 | 16,793 | 20,092 | 22 |
| | | Uncensored Obs | 186,893 | 27,799 | 9,592 | 19,684 | 58,073 | 5,189 |
| | | Log-Likelihood | -973,247.04 | -152914.36 | -38023.11 | -123836.86 | -241323.35 | -24641.01 |
| | | Pseudo R-sq | 0.05 | 0.04 | 0.02 | 0.01 | 0.03 | 0.02 |
| **Model II** | Own SIC Workers (1,000) | 0 to 1 mile | 1.37E+00 | 3.31E+00 | 2.30E+00 | 2.72E+00 | 8.87E-01 | 2.20E+00 |
| | | | (41.68) | (31.47) | (28.28) | (12.98) | (55.40) | (9.66) |
| | | 1 to 5 miles | -3.86E-02 | -2.32E-02 | 2.08E-02 | 4.89E-02 | -1.27E-02 | 4.56E-01 |
| | | | (-7.88) | (-1.23) | (1.07) | (1.34) | (-5.09) | (7.32) |
| | | 5 to 10 miles | 9.88E-03 | 1.58E-01 | 3.01E-02 | -4.86E-03 | -2.57E-02 | 1.18E-01 |
| | | | (4.64) | (11.87) | (2.25) | (-0.19) | (-16.67) | (3.82) |
| | All Workers (1,000) | 0 to 1 mile | 1.57E-02 | 1.44E-02 | -2.68E-02 | 4.38E-02 | 4.77E-03 | -1.15E-01 |
| | | | (17.39) | (9.01) | (-8.77) | (4.86) | (6.67) | (-4.13) |
| | | 1 to 5 miles | 1.05E-03 | 2.64E-03 | -1.01E-03 | -3.51E-03 | 2.68E-04 | -4.82E-02 |
| | | | (8.02) | (10.21) | (-1.58) | (-2.46) | (2.25) | (-6.99) |
| | | 5 to 10 miles | -2.06E-03 | -4.61E-03 | -1.42E-03 | -2.81E-03 | -2.67E-04 | -1.07E-02 |
| | | | (-24.99) | (-26.35) | (-3.44) | (-3.20) | (-3.45) | (-3.32) |
| | | SIC Fixed Effects | 82 | 20 | 2 | 7 | 15 | - |
| | | Censored Obs | 235,198 | 76,421 | 830 | 16,793 | 20,092 | 22 |
| | | Uncensored Obs | 186,893 | 27,799 | 9,592 | 19,684 | 58,073 | 5,189 |
| | | Log-Likelihood | -972,094.22 | -152333.34 | -37636.15 | -123735.40 | -239348.99 | -24571.90 |
| | | Pseudo R-sq | 0.05 | 0.04 | 0.03 | 0.01 | 0.04 | 0.02 |

Figure 1a: Manufacturing Employment Density (Workers/Sq Mile) at the County Level, 2001:Q2
(Numbers in parentheses are the number of counties belonging to that category)

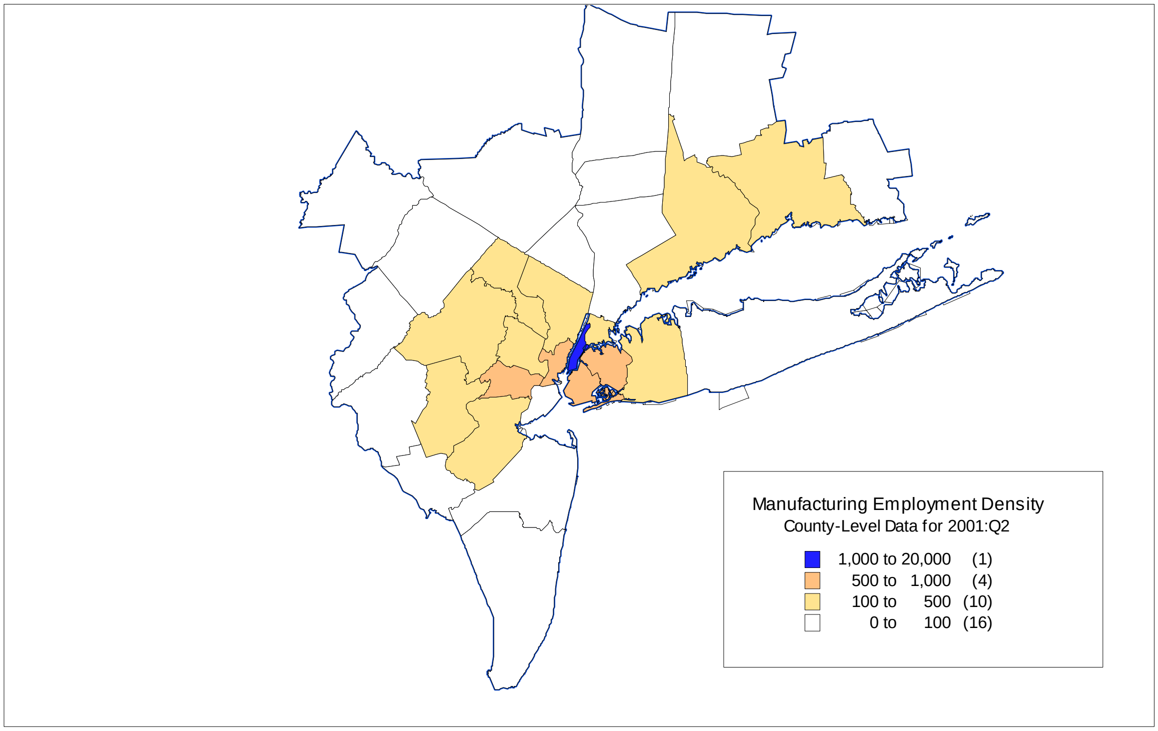



Figure 1b: Wholesale Trade Employment Density (Workers/Sq Mile) at the County Level, 2001:Q2
(Numbers in parentheses are the number of counties belonging to that category)

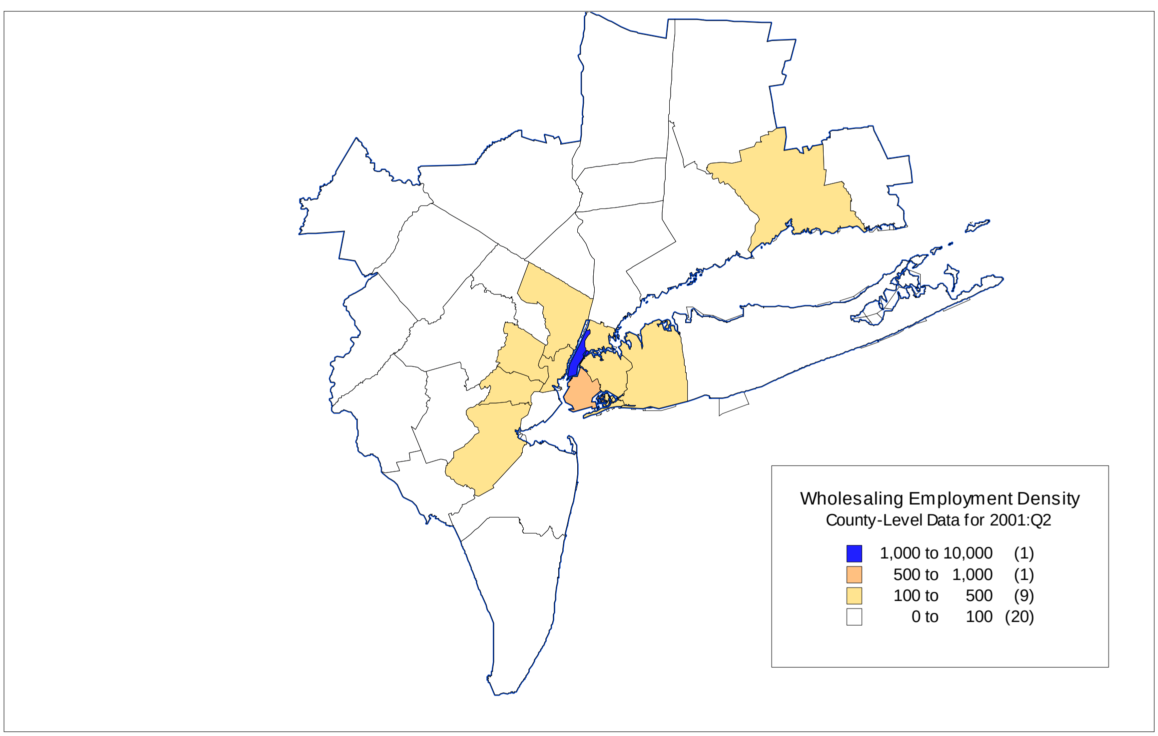


Figure 1c: Service Employment Density (Workers/Sq Mile) at the County Level, 2001:Q2
(Numbers in parentheses are the number of counties belonging to that category)

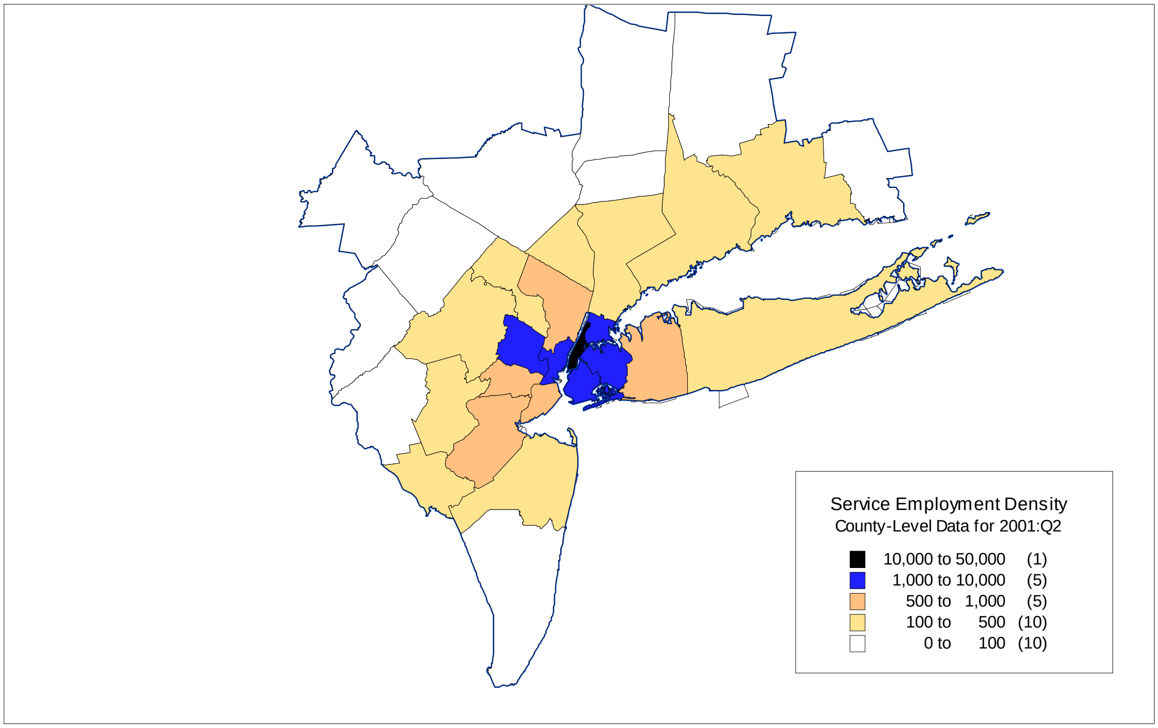



Figure 1d: FIRE Employment Density (Workers/Sq Mile) at the County Level, 2001:Q2
(Numbers in parentheses are the number of counties belonging to that category)

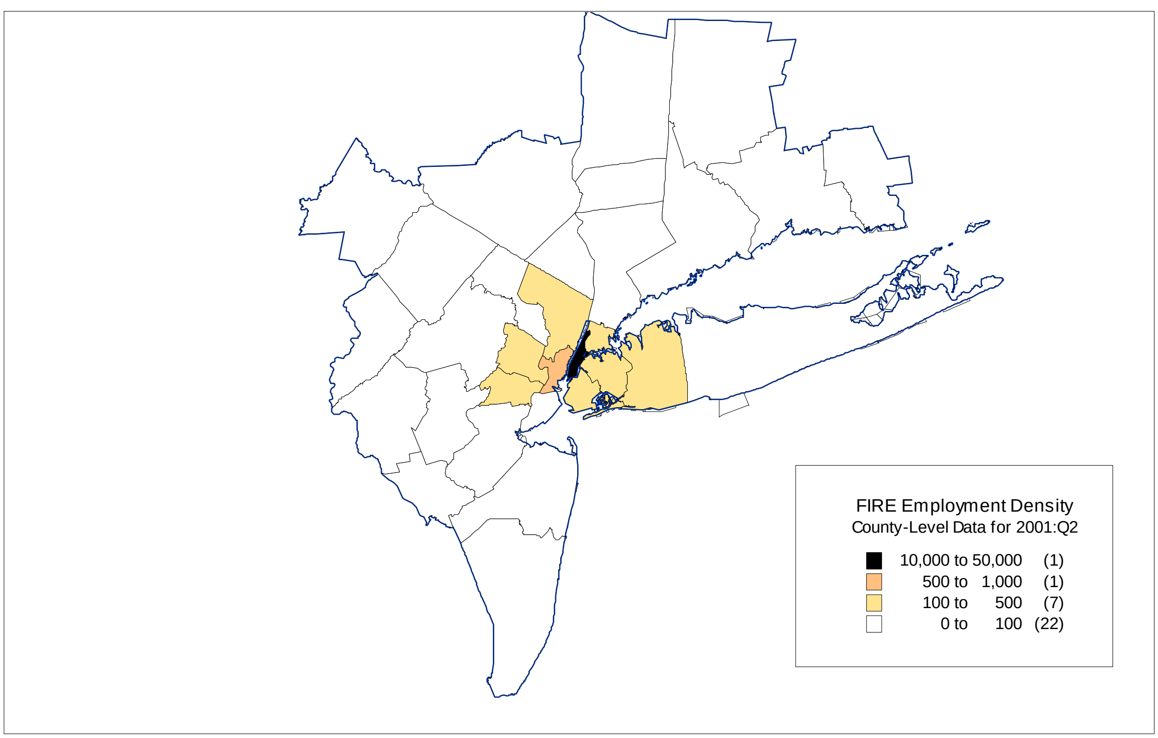


Figure 2a: Manufacturing Employment Density (Workers/Sq Mile) at the Tract Level, 2001:Q2
(Numbers in parentheses are the number of tracts belonging to that category for the entire NY CMSA)

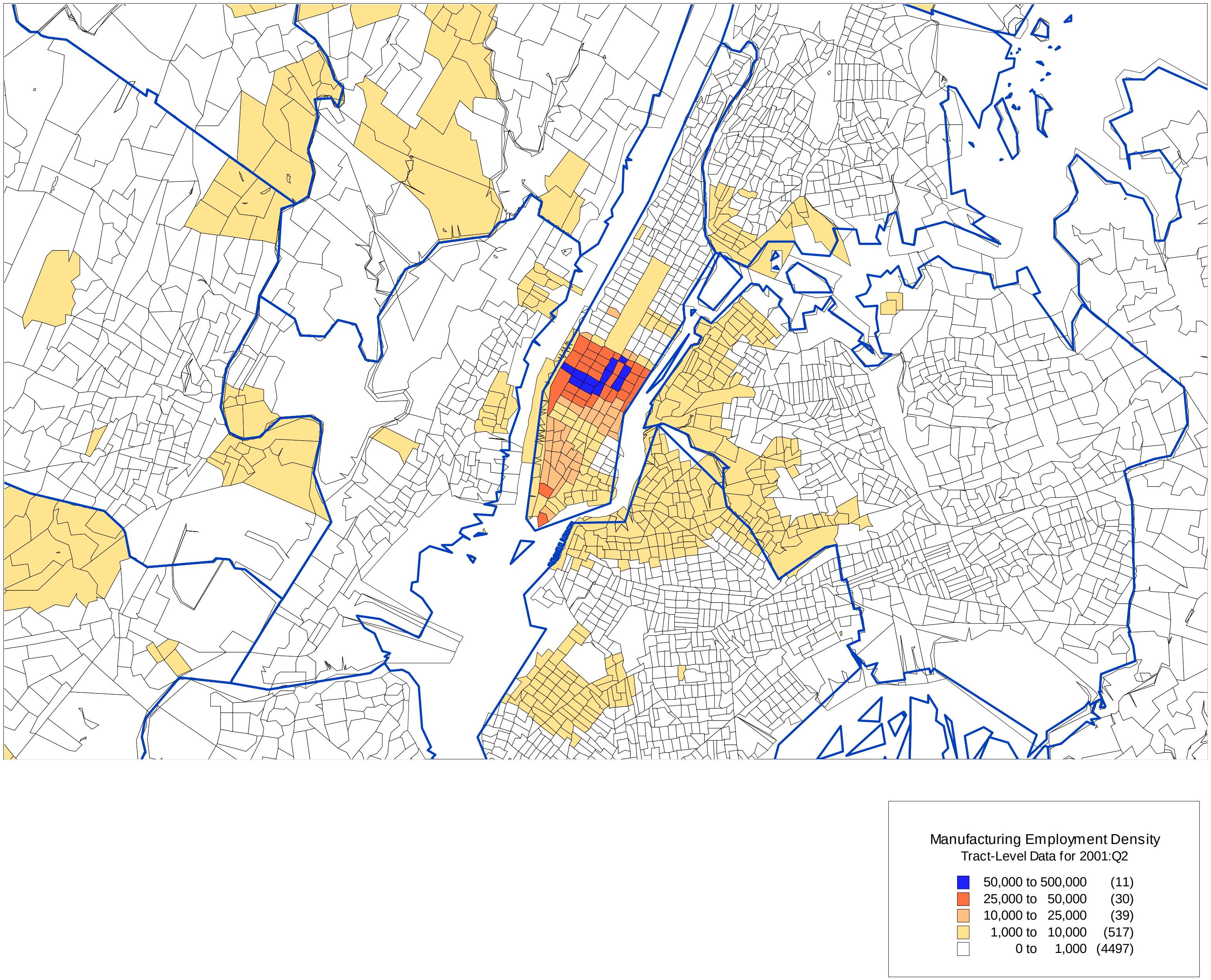
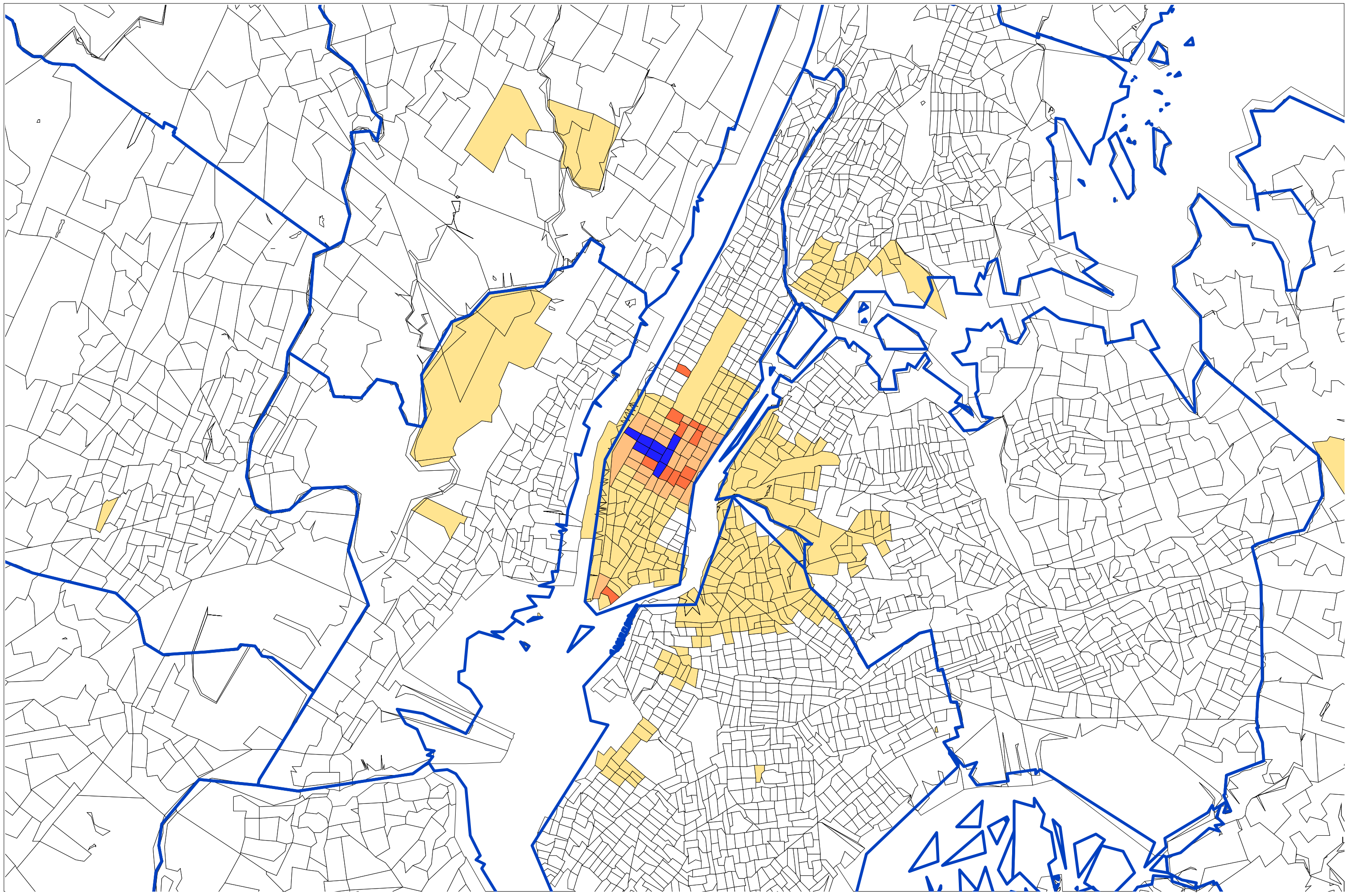


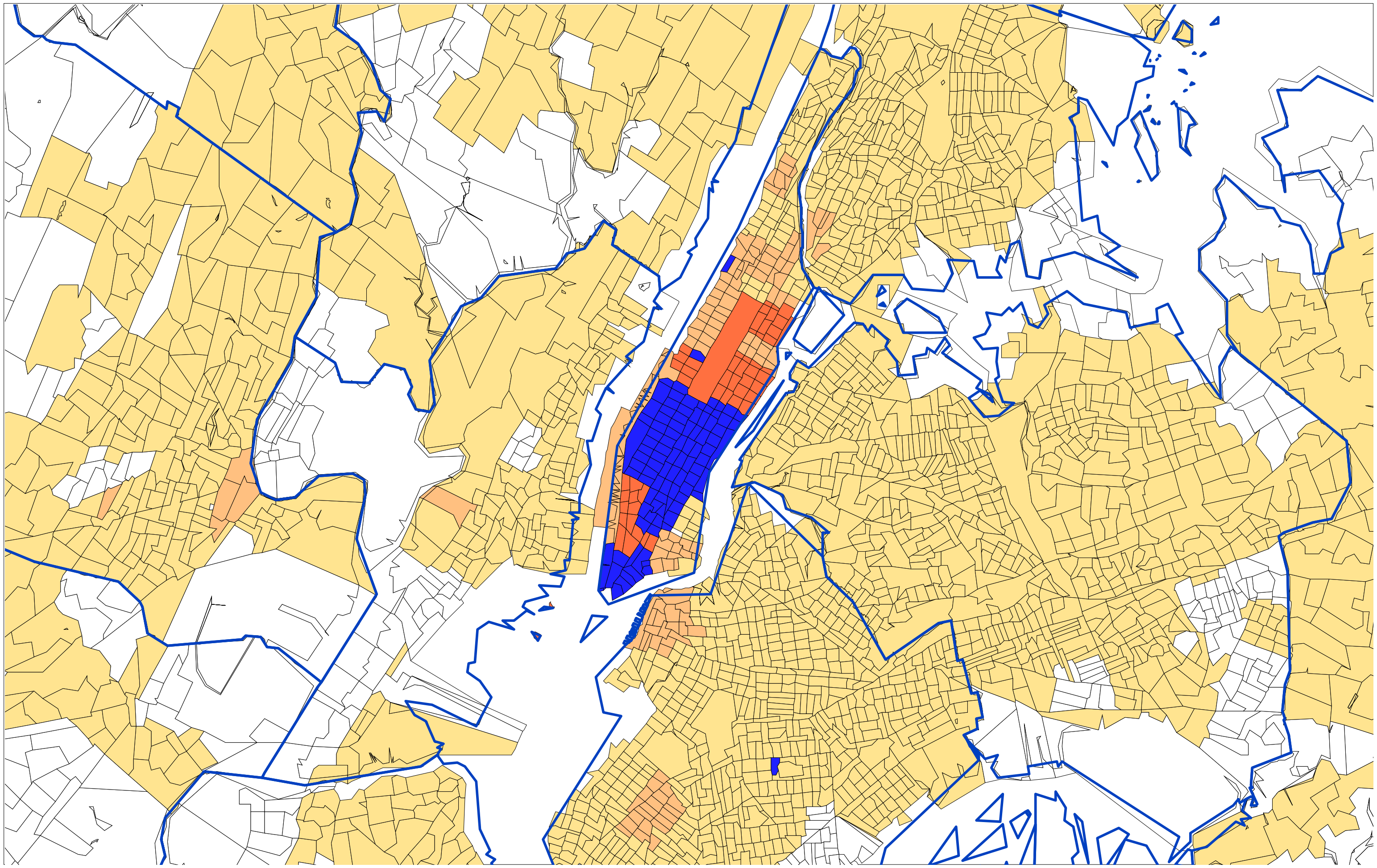
Figure 2b: Wholesale Trade Employment Density (Workers/Sq Mile) at the Tract Level, 2001:Q2
(Numbers in parentheses are the number of tracts belonging to that category for the entire NY CMSA)



Wholesaling Employment Density
Tract-Level Data for 2001:Q2

| | | |
|---|---|---|
| 50,000 to 500,000 | (8) |
| 25,000 to 50,000 | (12) |
| 10,000 to 25,000 | (28) |
| 1,000 to 10,000 | (285) |
| 0 to 1,000 | (4761) |

Figure 2c: Service Employment Density (Workers/Sq Mile) at the Tract Level, 2001:Q2
(Numbers in parentheses are the number of tracts belonging to that category for the entire NY CMSA)



Service Employment Density
Tract-Level Data for 2001:Q2

| | | |
|---|---|---|
| 50,000 to 500,000 | | (94) |
| 25,000 to 50,000 | | (55) |
| 10,000 to 25,000 | | (133) |
| 1,000 to 10,000 | | (2570) |
| 0 to 1,000 | | (2242) |

Figure 2d: FIRE Employment Density (Workers/Sq Mile) at the Tract Level, 2001:Q2
(Numbers in parentheses are the number of tracts belonging to that category for the entire NY CMSA)

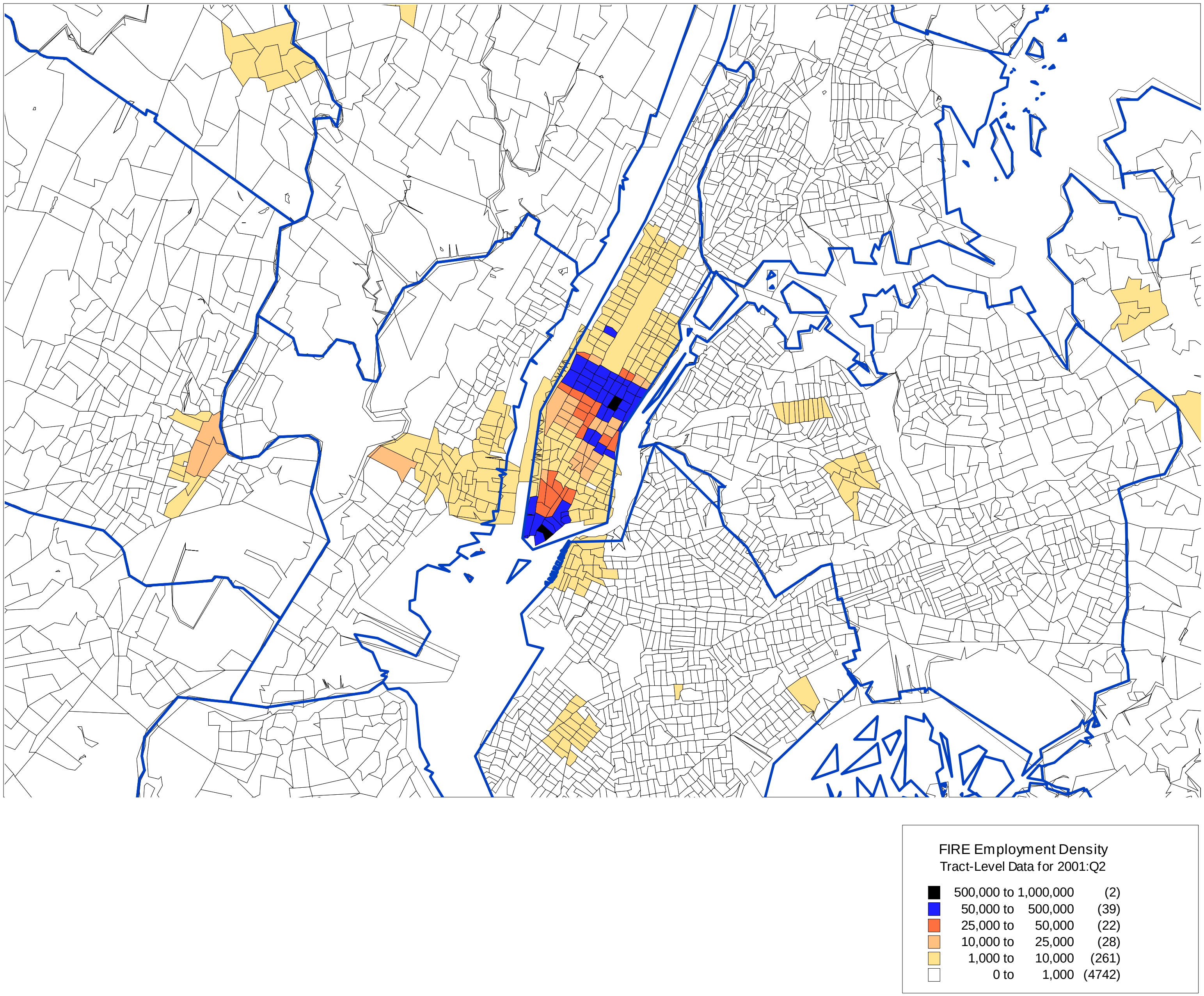


Figure 3a: Manufacturing Employment Density (Workers/Sq Mile) at the Tract Level At Establishments 3 Years or Less in Age in 2004:Q2
(Numbers in parentheses are the number of tracts belonging to that category for the entire NY CMSA)

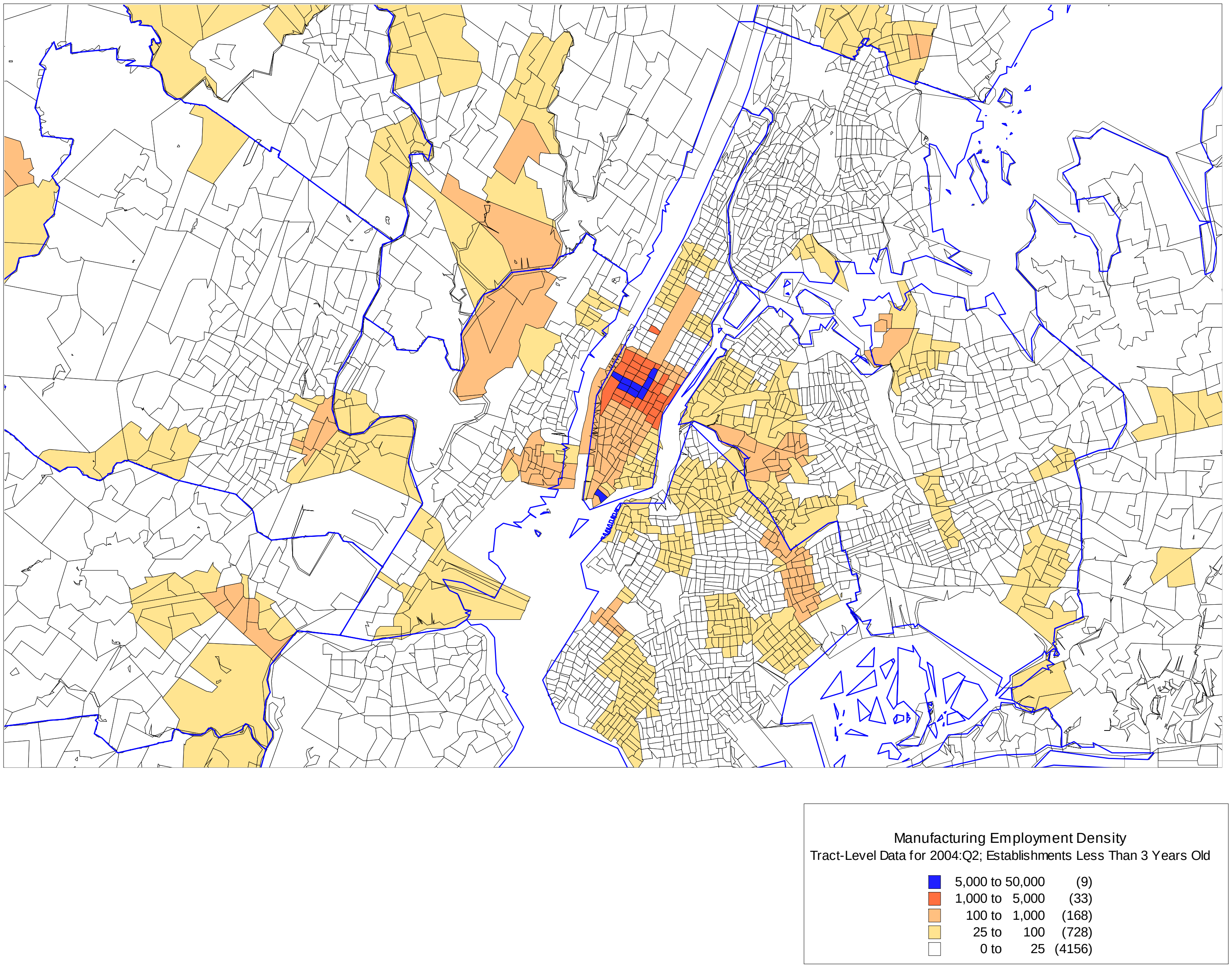


Figure 3b: Wholesale Trade Employment Density (Workers/Sq Mile) at the Tract Level At Establishments 3 Years or Less in Age in 2004:Q2
(Numbers in parentheses are the number of tracts belonging to that category for the entire NY CMSA)

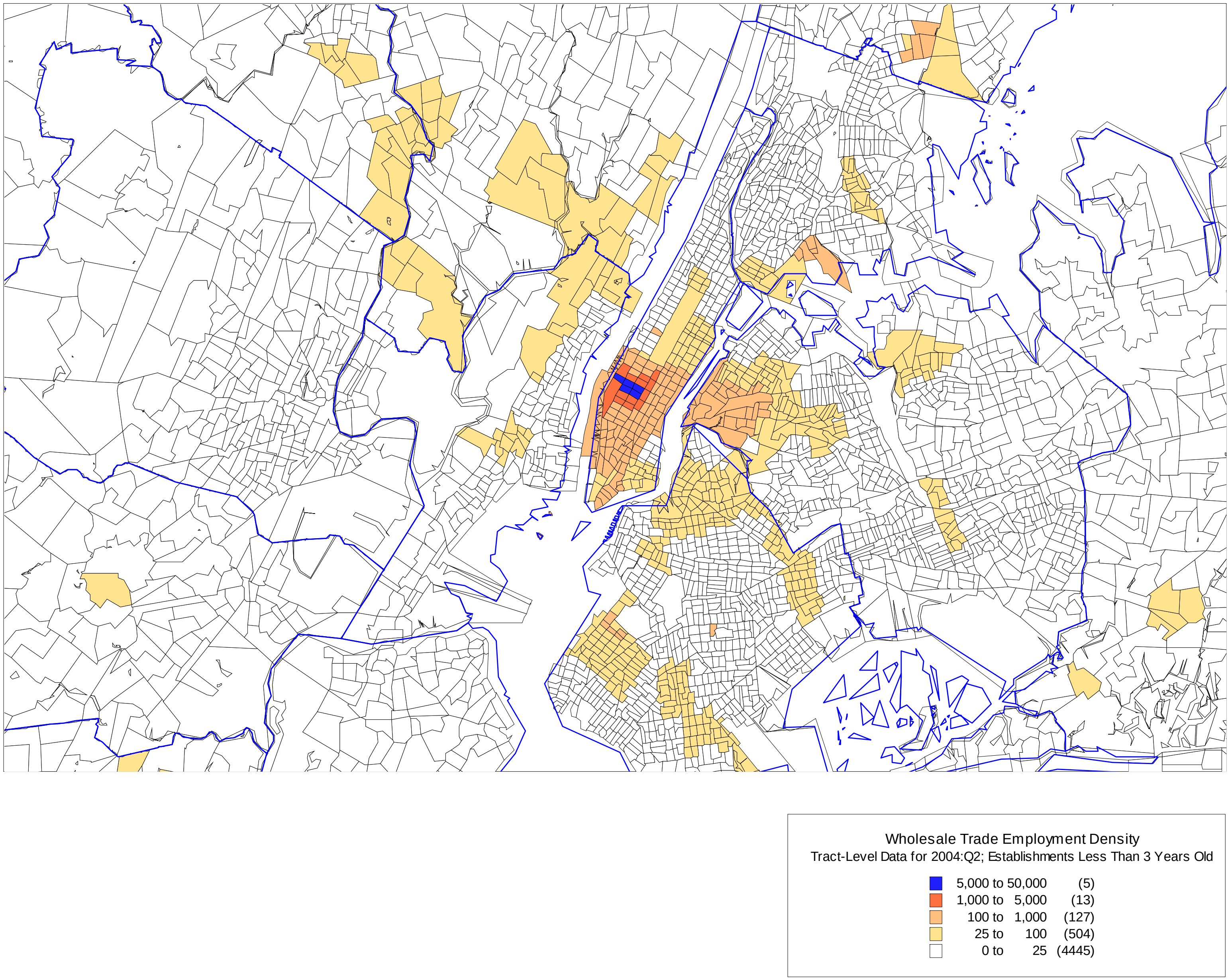
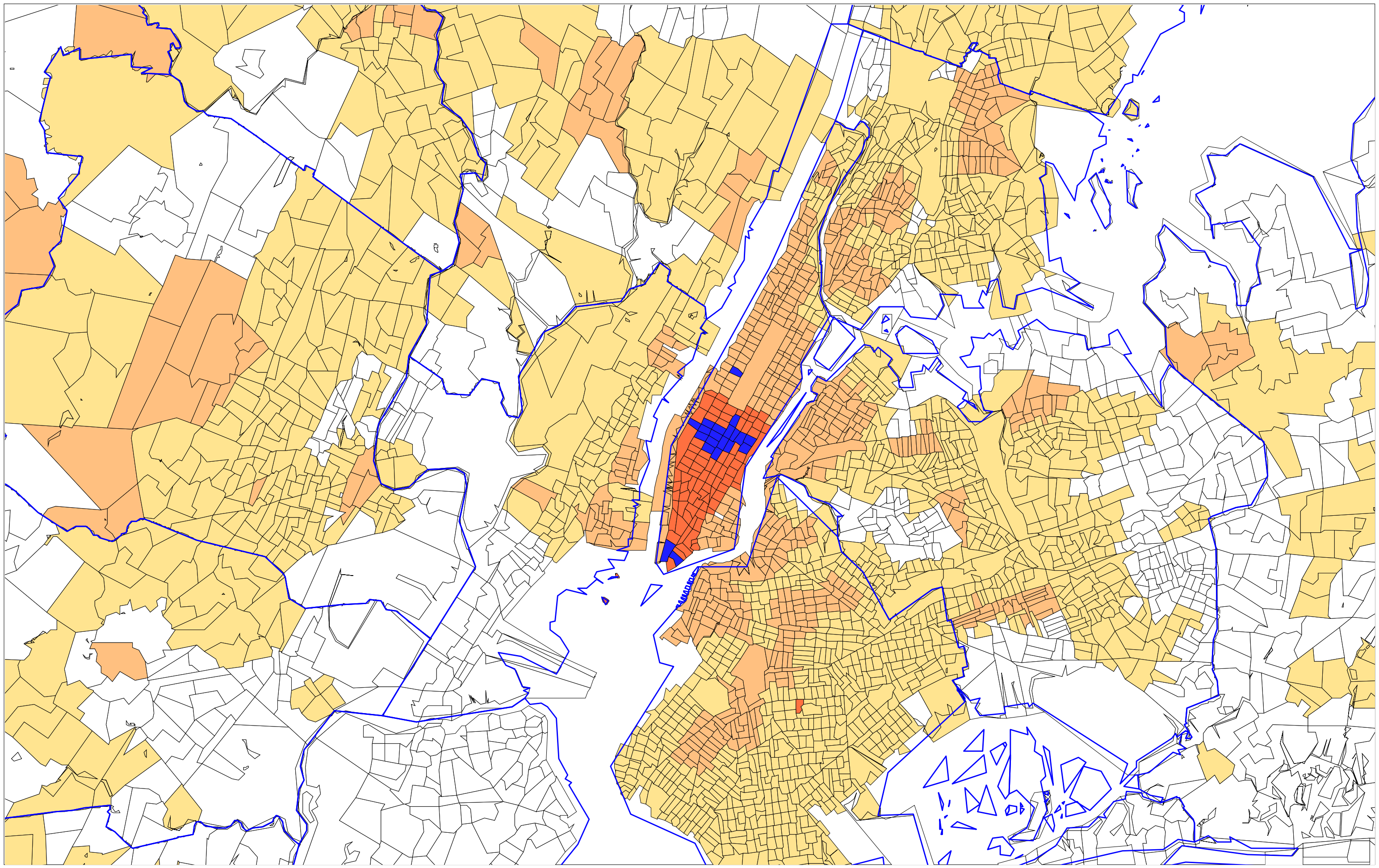


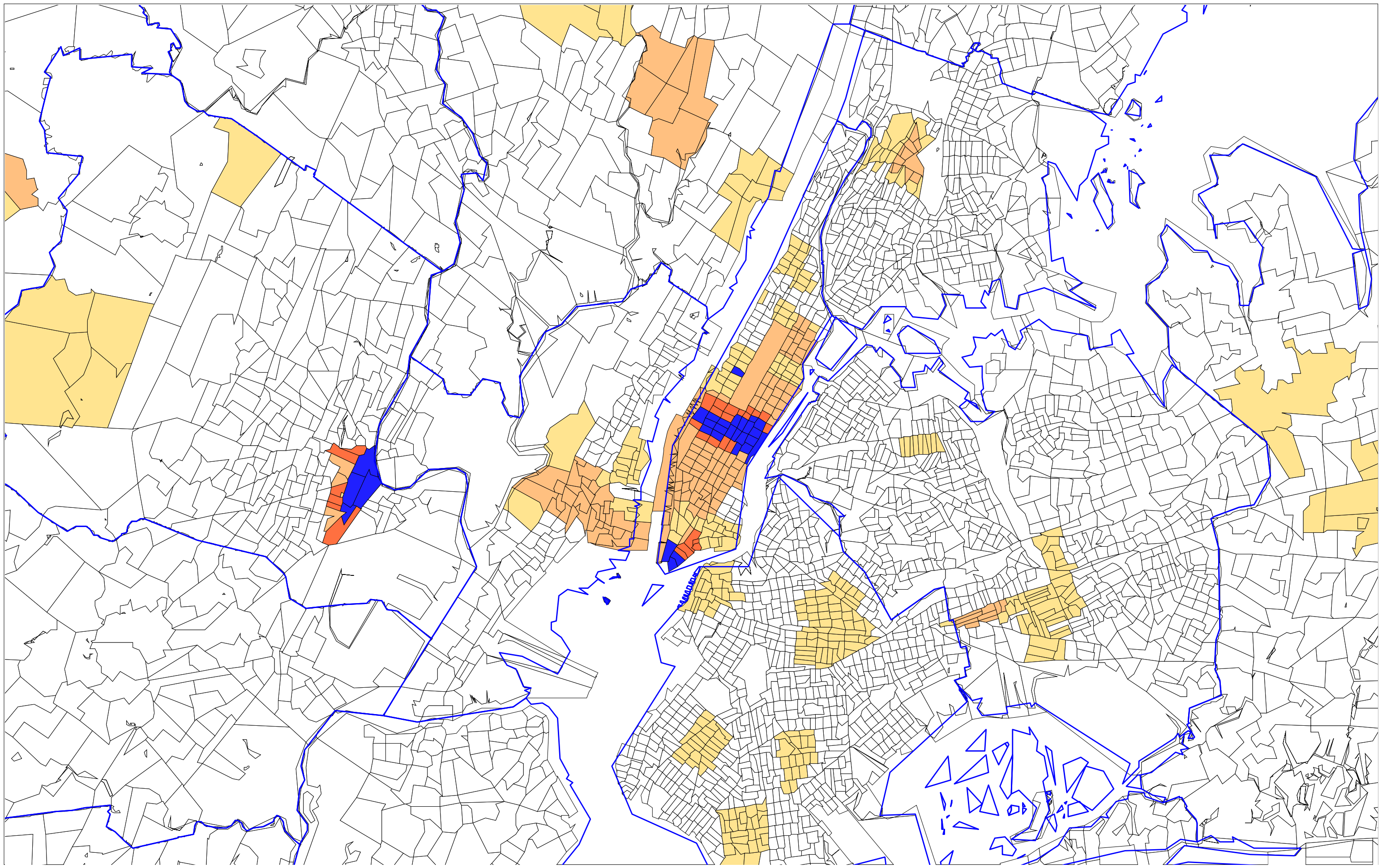
Figure 3c: Service Employment Density (Workers/Sq Mile) at the Tract Level At Establishments 3 Years or Less in Age in 2004:Q2
(Numbers in parentheses are the number of tracts belonging to that category for the entire NY CMSA)



Service Employment Density
Tract-Level Data for 2004:Q2; Establishments Less Than 3 Years Old

| | | |
|---|---|---|
| 5,000 to 50,000 | (20) |
| 1,000 to 5,000 | (85) |
| 100 to 1,000 | (661) |
| 25 to 100 | (2014) |
| 0 to 25 | (2314) |

Figure 3d: FIRE Employment Density (Workers/Sq Mile) at the Tract Level At Establishments 3 Years or Less in Age in 2004:Q2
(Numbers in parentheses are the number of tracts belonging to that category for the entire NY CMSA)



FIRE Employment Density
Tract-Level Data for 2004:Q2; Establishments Less Than 3 Years Old

| | | |
|---|---|---|
| 5,000 to 50,000 | (29) |
| 1,000 to 5,000 | (28) |
| 100 to 1,000 | (146) |
| 25 to 100 | (370) |
| 0 to 25 | (4521) |

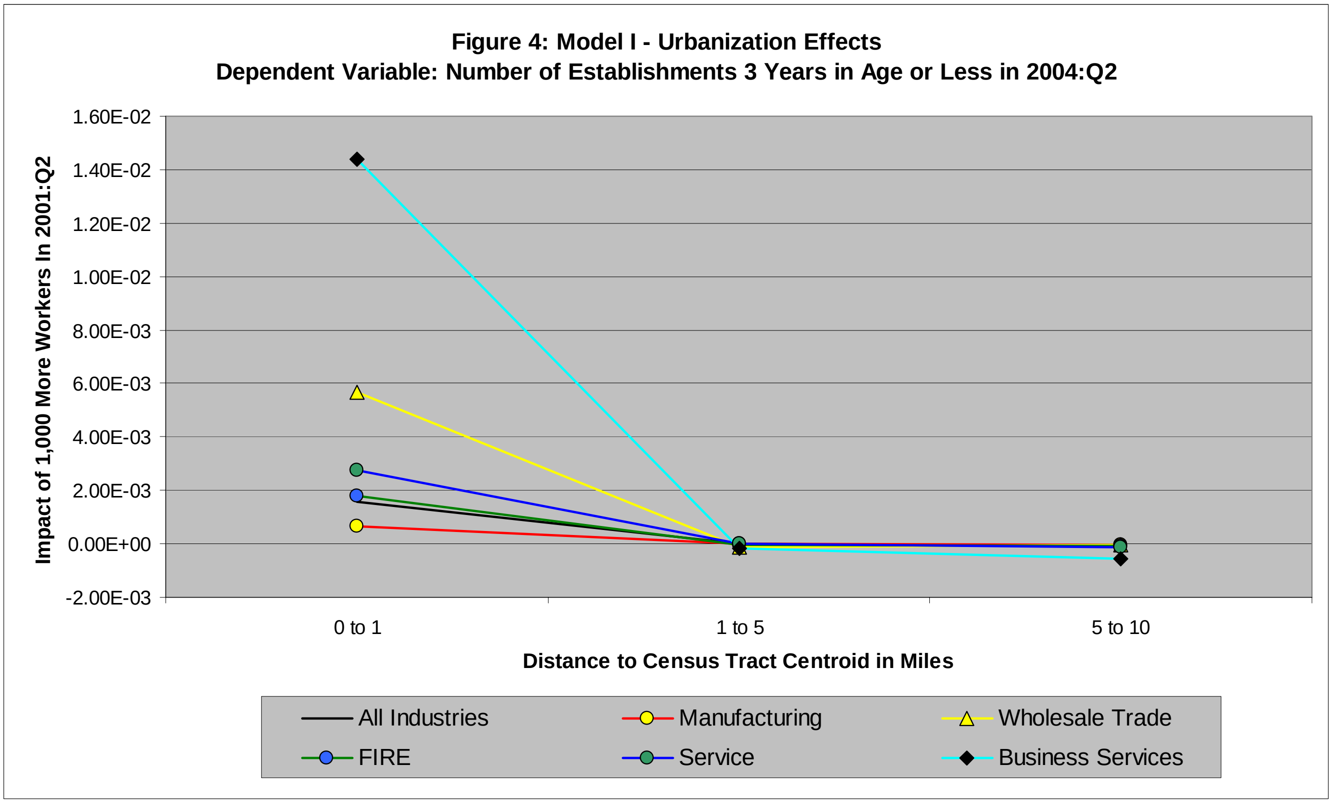


Figure 4: Model I - Urbanization Effects
Dependent Variable: Number of Establishments 3 Years in Age or Less in 2004:Q2
Impact of 1,000 More Workers In 2001:Q2
1.60E-02
1.40E-02
1.20E-02
1.00E-02
8.00E-03
6.00E-03
4.00E-03
2.00E-03
0.00E+00
-2.00E-03
0 to 1
1 to 5
5 to 10
Distance to Census Tract Centroid in Miles
All Industries
Manufacturing
Wholesale Trade
FIRE
Service
Business Services

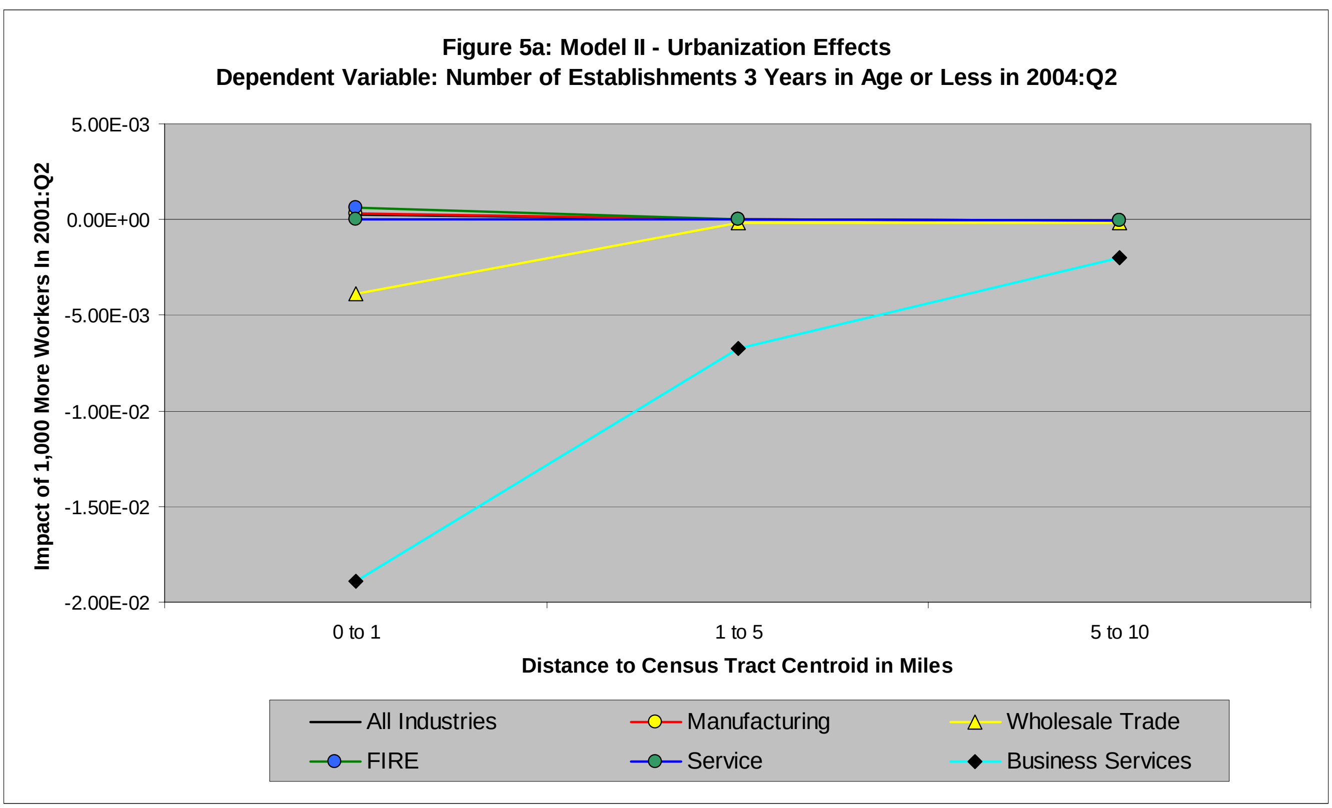


Figure 5a: Model II - Urbanization Effects
Dependent Variable: Number of Establishments 3 Years in Age or Less in 2004:Q2
Impact of 1,000 More Workers In 2001:Q2
5.00E-03
0.00E+00
-5.00E-03
-1.00E-02
-1.50E-02
-2.00E-02
0 to 1
1 to 5
5 to 10
Distance to Census Tract Centroid in Miles
All Industries
Manufacturing
Wholesale Trade
FIRE
Service
Business Services

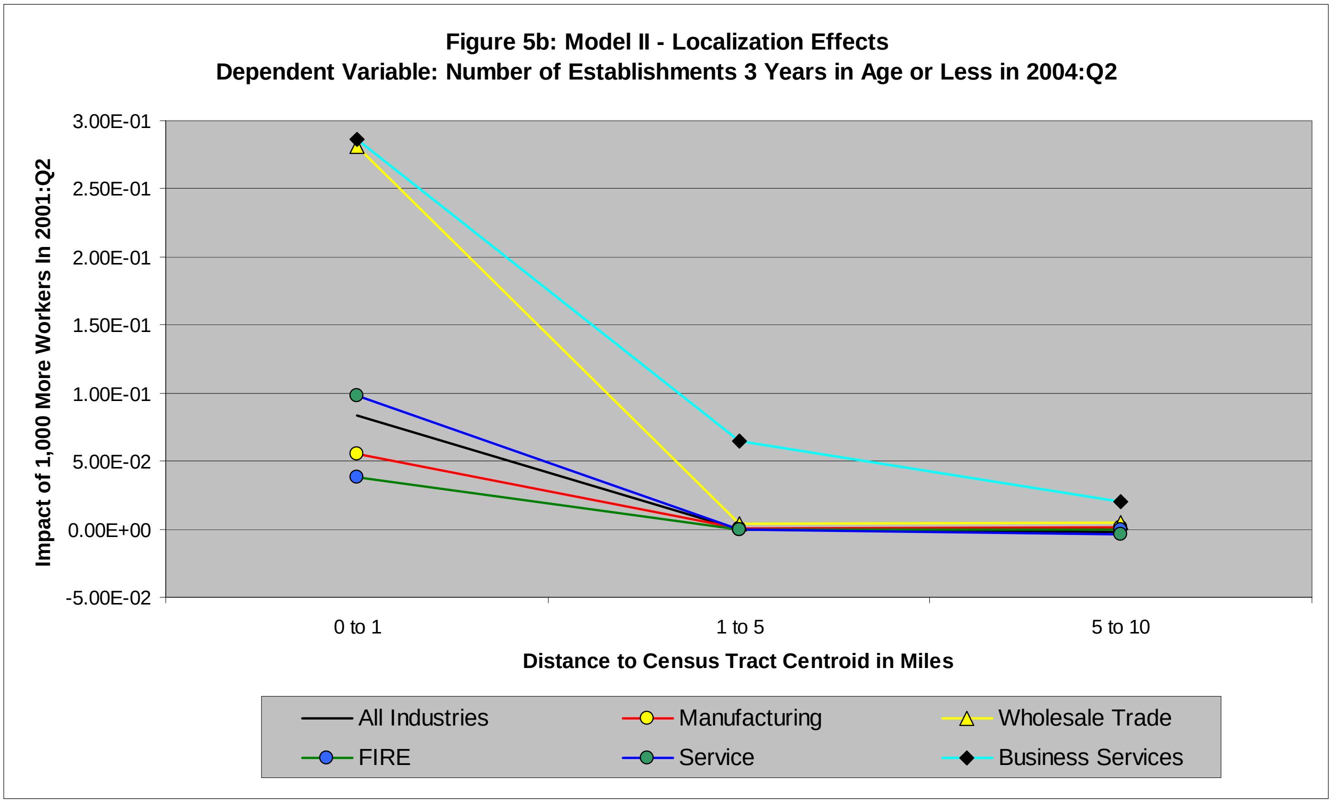


Figure 5b: Model II - Localization Effects
Dependent Variable: Number of Establishments 3 Years in Age or Less in 2004:Q2
Impact of 1,000 More Workers In 2001:Q2
3.00E-01
2.50E-01
2.00E-01
1.50E-01
1.00E-01
5.00E-02
0.00E+00
-5.00E-02
0 to 1
1 to 5
5 to 10
Distance to Census Tract Centroid in Miles
All Industries
Manufacturing
Wholesale Trade
FIRE
Service
Business Services

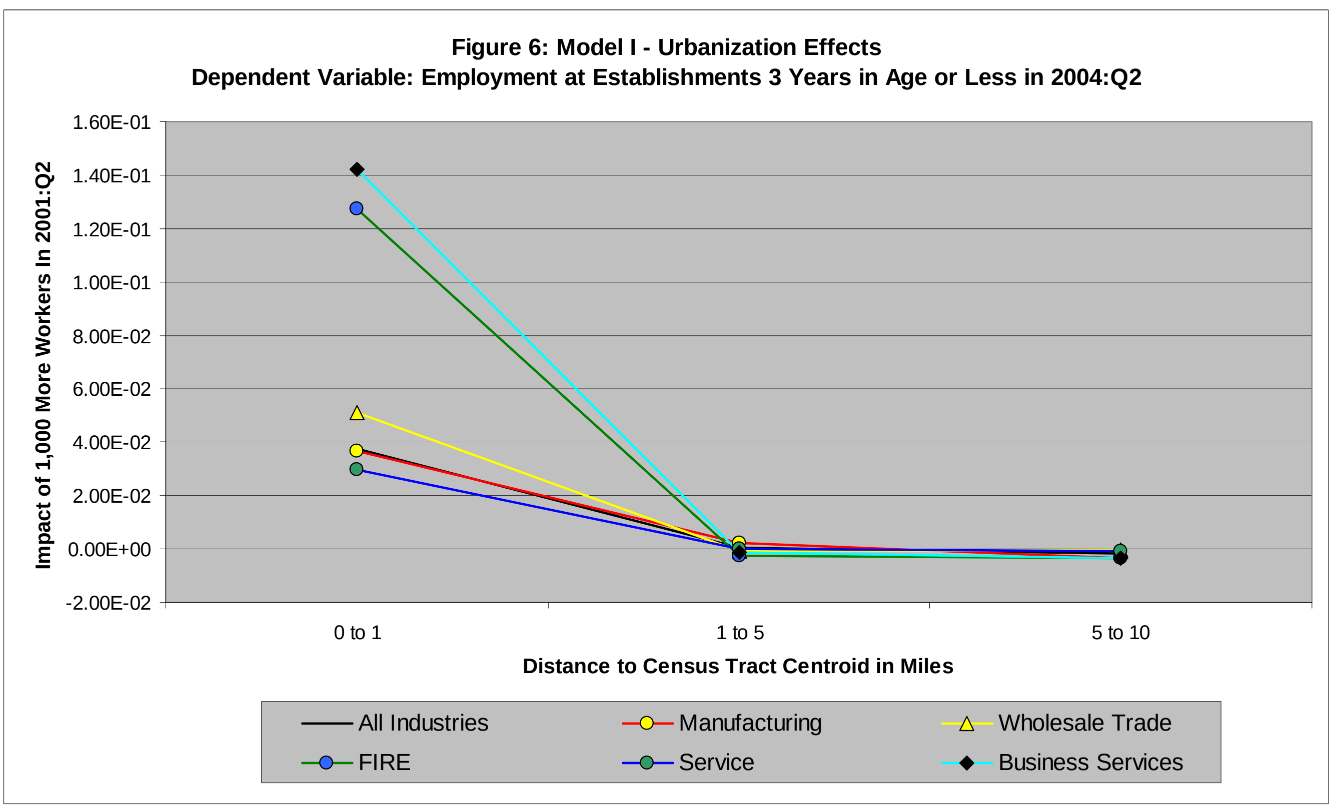


Figure 6: Model I - Urbanization Effects
Dependent Variable: Employment at Establishments 3 Years in Age or Less in 2004:Q2
Impact of 1,000 More Workers In 2001:Q2
1.60E-01
1.40E-01
1.20E-01
1.00E-01
8.00E-02
6.00E-02
4.00E-02
2.00E-02
0.00E+00
-2.00E-02
0 to 1
1 to 5
5 to 10
Distance to Census Tract Centroid in Miles
All Industries
Manufacturing
Wholesale Trade
FIRE
Service
Business Services

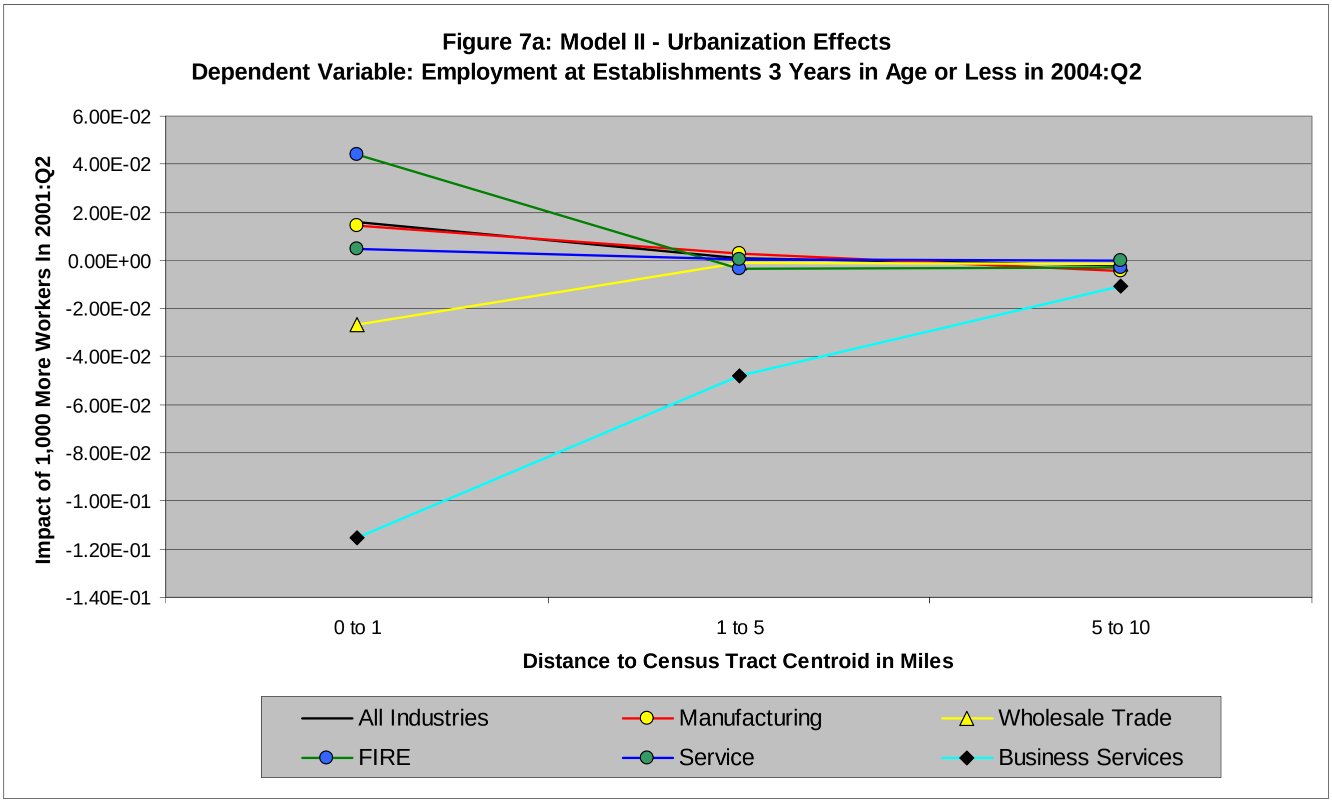


Figure 7a: Model II - Urbanization Effects
Dependent Variable: Employment at Establishments 3 Years in Age or Less in 2004:Q2
6.00E-02
4.00E-02
2.00E-02
0.00E+00
-2.00E-02
-4.00E-02
-6.00E-02
-8.00E-02
-1.00E-01
-1.20E-01
-1.40E-01
Impact of 1,000 More Workers In 2001:Q2
0 to 1
1 to 5
5 to 10
Distance to Census Tract Centroid in Miles
All Industries
Manufacturing
Wholesale Trade
FIRE
Service
Business Services

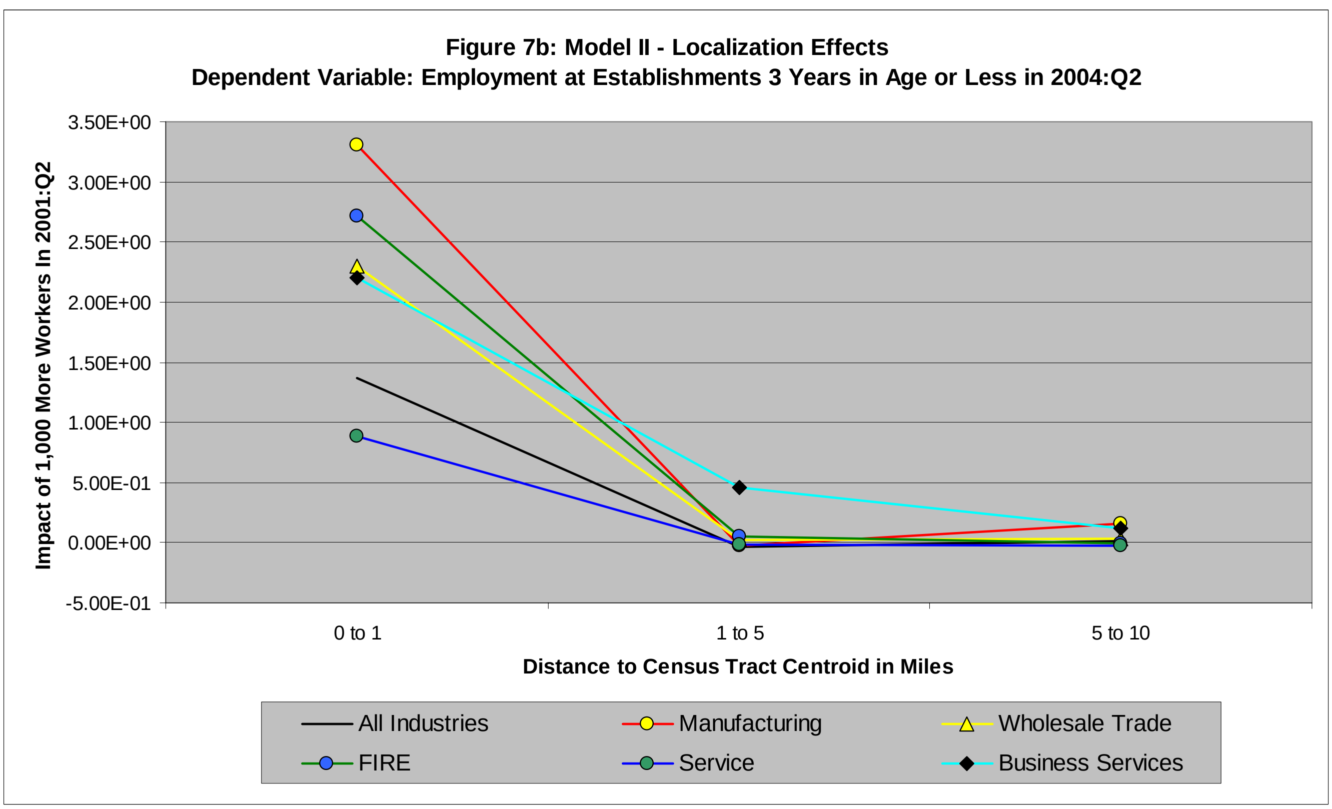


Figure 7b: Model II - Localization Effects
Dependent Variable: Employment at Establishments 3 Years in Age or Less in 2004:Q2
3.50E+00
3.00E+00
2.50E+00
2.00E+00
1.50E+00
1.00E+00
5.00E-01
0.00E+00
-5.00E-01
Impact of 1,000 More Workers In 2001:Q2
0 to 1
1 to 5
5 to 10
Distance to Census Tract Centroid in Miles
All Industries
Manufacturing
Wholesale Trade
FIRE
Service
Business Services