

Welfare
Reform
and Access to
Jobs in Boston



U.S. Department of Transportation
Bureau of Transportation Statistics



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This report was prepared for the
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Bureau of Transportation Statistics
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Welfare Reform and Access to Jobs in Boston

INTRODUCTION

The July 1996 welfare reform law, the Personal Responsibility and Work Opportunity Reconciliation Act, made far-reaching changes in federal social service programs. "Welfare reform" typically refers to that part of the law that replaced Aid to Families with Dependent Children (AFDC), an entitlement program for poor families, with block grants to the states called Temporary Assistance for Needy Families (TANF). TANF is fundamentally different from AFDC in three ways:

1. It provides states with a lump sum for their welfare programs, regardless of changes in the number of families who need assistance.
2. The assistance is time-limited—a state may not use federal TANF funds to provide assistance to a family that includes an adult who has received benefits for 60 months, whether or not consecutive (but may exempt up to 20 percent of families due to hardship).
3. States must require that parents or caretakers engage in work (as defined by the state) within 24 months of receiving assistance.

Under TANF, states are free to set shorter time limits and stricter work requirements. A National Governors' Association report dated June 30, 1997, indicates that 22 states plan to have time limits shorter than 60 months and that 21 will require work before 2 years.

The requirement that the poor work in return for assistance is inextricably linked to the issue of mobility. Clearly, work requires mobility—safe and efficient transportation not only to jobs but to day care centers and other services that make work possible. Thus, adequate transportation is a prerequisite for work and for welfare reform. Yet, people receiving welfare face tremendous mobility challenges. Welfare recipients are disproportionately concentrated in big cities and very few own an automobile, so most must rely on transit to access employment and related services. Moreover, because more than 90 percent of welfare parents are single mothers (Urban Institute 1997), their transportation needs will be much greater once they are working. A recent study shows that poor working mothers

spend more than twice as much on transportation as welfare-reliant mothers (Edin and Lein 1997). Single working mothers also must make several intermediate stops during the commute to and from work: to drop off children at day care or school, shop for groceries, or pick up children on the way home. Finally, many of the entry-level jobs for which recipients are qualified are located in the outer suburbs of metropolitan areas, which are not typically served by public transit (see, for example, Coulton, Verma, and Guo 1996). Today, about 70 percent of jobs in manufacturing and trade—sectors employing large numbers of entry-level workers—are suburban (Kasarda 1995).

The U.S. Department of Transportation's Bureau of Transportation Statistics and Volpe National Transportation Systems Center are engaged in an effort to better understand the dimensions of the mobility problem facing welfare recipients across the country. This study uses a geographic information system (GIS) to assess mobility for recipients living in the City of Boston. Although the scope and specific nature of the mobility problem vary considerably among U.S. cities, Boston presents a good case study for older Frostbelt cities with mature central areas and well-developed transit systems.

This study has three objectives:

1. Determine recipients' overall access to transit service.
2. Estimate where in the metropolitan area recipients are likely to find work and determine these potential employers' proximity to transit.
3. Ascertain how well mass transit in Boston connects welfare recipients and employers and thus meets recipients' mobility needs.

This study did not address other key mobility considerations, such as the locations of day care centers and other services upon which working mothers rely.

This report profiles the recipient population nationwide and describes their most significant mobility challenges, namely, the transportation demands of single parenthood and the changing spatial patterns of employment. It also looks at the spatial distribution and key characteristics of TANF recipients in Boston, and assesses recipients' job opportunities and the

location of potential employers. It provides an analysis of recipients' access to jobs and of transit system performance, and presents key conclusions and suggests areas for future analysis.

WELFARE RECIPIENTS, TRANSPORTATION, AND EMPLOYMENT

Like most poor families in America, families receiving welfare are headed predominately by single women.¹ For these women, finding and keeping a job—and staying off welfare—will require an ongoing balancing act: managing the demands of work and family on a low income and with little support, made even more difficult by current spatial patterns of employment and limited transportation options.

Profile of the Nation's Welfare Population

When assessing recipients' mobility requirements, at least three overall characteristics should be kept in mind: the vast majority of adult welfare recipients are single mothers, about half of these mothers have children younger than school age, and more than three-fourths have only a high school diploma or less. Specifically:

- Of the 4.3 million adults receiving AFDC in 1995, 3.8 million, or 88 percent, were females (Department of Health and Human Services 1997).
- About 19 percent of all welfare cases consist of children only. Of the cases that do include an adult, 90 percent are headed by a single mother (Urban Institute 1997).
- Eighty-one percent of welfare mothers are in their twenties and thirties; 74 percent have only one or two children. Of all welfare cases with a parent, about 50 percent have at least one child under the age of 5. In 30 percent of the cases, the youngest child is 6 to 11 years of age, and in the remaining 20 percent the youngest child is 12 or older (Urban Institute 1997).
- Eighty-four percent of recipients have a high school education or less: 42 percent have less than a high school education and another 42 percent have a high school diploma or equivalency. Sixteen percent have some college education (Urban Institute 1997).

Contrary to popular myth, the majority of welfare mothers are not long-term recipients but rather “cycle” back and forth between low-paid work and welfare.

¹According to the U.S. Census Bureau's latest poverty statistics (March 1997), 54 percent of all families living below the poverty level are headed by female householders with no husband present.

According to the Institute for Women's Policy Research (1995), most welfare mothers are already working but cannot earn enough to lift their families out of poverty. Seven of 10 welfare mothers spend significant time in the labor force, with over 40 percent working more than 950 hours a year and another 30 percent actively looking for work. The jobs held by these women tend to be in the low-paying retail and service industries (restaurants, hotels, department stores, nursing homes, hospitals). These employers pay an average of just \$4.29 per hour and employ 40 percent of welfare mothers, compared with 19 percent of all women.

A significant factor limiting recipients' job prospects is their lack of an automobile. Nationally, less than 6 percent of welfare families reported a car as a household asset in 1995; the average value was just \$620 (Department of Health and Human Services 1997). This ownership figure is probably low, because previous welfare eligibility rules limiting the value of assets may have led some recipients to “hide” ownership by having a family member or friend hold the title. However, Edin and Lein's 1997 study of welfare mothers in selected cities found that car ownership among recipients ranged no higher than 20 to 40 percent.

Travel Patterns of Single Mothers

As previously suggested, welfare mothers face a number of challenges to finding and retaining employment: the responsibilities of single parenthood and young children, low educational attainment, irregular work experience, low pay, and lack of an automobile. Combined, these circumstances create severe mobility problems both for welfare recipients and for other single mothers. These problems are exacerbated by the unique transportation requirements of working single mothers, particularly those with low incomes.

As shown by Sandra Rosenbloom (1995), working women overall have different travel patterns and needs than either working men or nonworking women. For example, data from the 1990 Nationwide Personal Transportation Survey (NPTS) show that employed women, 16 to 64 years old, in urban areas take 3.8 person trips a day—12 percent more trips than urban employed men and 31 percent more than urban women who are not employed. On average, employed men make 19 percent more trips a day than men not working, while employed women make 33 percent more trips than women who are not employed. Undoubtedly, this is because employed women retain most child care and domestic responsibilities and link their work commute with trips to schools, day care centers, and other services (Rosenbloom 1995, McKnight 1994).

One result of this need to “trip chain” is that employed women, and particularly employed mothers,

are becoming increasingly dependent on the automobile (McKnight 1994). The 1990 NPTS shows that the number of miles driven by all women between 1969 and 1990 increased 76 percent, and more than doubled among women aged 16 to 34 (compared with a 46-percent increase for all men). As explained by Rosenbloom, “working women with children are particularly dependent on the car because it is the best—and perhaps only—way to balance the child care and domestic responsibilities they retain when they enter the paid labor force” (1995, p. 2-48).

The need to balance domestic and job responsibilities is especially acute for single mothers. These women face more domestic demands than either married women or men and are far more likely to have lower incomes. A number of recent studies suggest that single mothers take both *more trips and longer trips* than married mothers. For instance, Rosenbloom’s analysis of 1990 NPTS data indicates that at almost every income level, single mothers make more trips than married mothers—with low-income single and married mothers often taking more trips than women with considerably higher incomes. Moreover, research cited by Rosenbloom suggests that single mothers also travel further and longer than married mothers. As discussed in more detail below, one conclusion is that many single mothers, particularly those who are poor, are forced to take longer trips because of a “spatial mismatch” between the low-income neighborhoods in which they live and suburban employment centers.

Suburbanization, Deconcentration, and Spatial Mismatch

Welfare recipients are disproportionately concentrated in inner cities. U.S. Census Bureau statistics for program participation in 1992 show that almost half of all people receiving AFDC or state General Assistance lived in central cities, compared with just 30 percent of the U.S. population (1997). At the same time, many researchers have documented the economic restructuring of cities (particularly in the Northeast and Midwest), the subsequent loss of blue-collar jobs, and the overall shift of employment to the suburbs. As described by John Kasarda:

Fueled by an intense interaction of technological, economic, and social forces, the economic and demographic structures of metropolitan areas were altered significantly during the 1970s and 1980s. Manufacturing dispersed to the suburbs, exurbs, nonmetropolitan areas, and abroad. Warehousing activities relocated to more regionally accessible beltways and interstate highways. Retail establishments followed their suburbanizing clientele and relocated in peripheral shopping centers and malls. The urban exodus of the middle

class from the central cities further diminished the number of blue collar service jobs such as gas station attendants and delivery personnel. Many secondary commercial areas of central cities withered as the income levels of the residential groups that replaced a suburbanizing middle class could not economically sustain them (1995, p. 234).

According to Kasarda, national trends since 1970 show that the metropolitan employment balance shifted to the suburbs in the mid-1970s and has continued deconcentrating at a rate of approximately 1 percent a year. Today, 70 percent of all jobs in manufacturing, retailing, and wholesaling are in the suburbs. For workers in central cities, suburbanization has meant the decline of key industries, such as manufacturing and trade, that once employed large numbers of less-educated city residents. In Boston and other major northern cities these industries have been replaced by “information-processing” industries, such as finance and public administration, that typically hire workers with education beyond high school. As Kasarda explains, “Job losses have been greatest in those northern urban industries in which education requirements for employment tend to be low [while]Job growth has been concentrated primarily in urban industries in which education beyond high school is the norm” (p. 246). Thus, even though the new information-processing jobs are “spatially accessible” to city workers with less education, they nevertheless are functionally inaccessible to them.

In *Poverty and Place*, Paul Jargowsky points out that the deconcentration explanation for inner city unemployment is a variation of the spatial mismatch hypothesis, first stated by John Kain in 1968. In general, this hypothesis holds that inner city residents are isolated from low-skill jobs for which most of the growth is in the suburbs. Although early research results were mixed, “a growing body of evidence supports Kain’s theory that spatial mismatch affects the employment and earnings of minorities in central cities. The effects seem to be growing over time, as metropolitan areas continue to move toward a more decentralized paradigm” (p. 125).

Recent studies have confirmed the relationship among inner city residence, transportation access, and employment. For example, Ihlanfeldt and Sjoquist (1991) determined that travel time was significantly related to the probability of employment for inner city teenagers: as the length of their required commute increased, their probability of having a job declined. In another study, Popkin, Rosenbaum, and Meaden (1993) found that those African-American women participating in the Gautreaux housing program in Chicago who relocated to the suburbs were 14 percent more likely to be employed than those who relocated to another area of the city. Clearly, given welfare mothers’ poverty, low skills, family responsibilities,

travel needs, and limited transportation options, they feel most acutely the effects of increasing employment deconcentration and spatial mismatch.

WELFARE RECIPIENTS IN BOSTON

An analysis of welfare recipients' access to jobs involves asking at least three questions: Where do recipients live? Where are they likely to work? How well does transit connect the two?

Welfare reform in Massachusetts predates national welfare reform, having been in effect since November 1, 1995. Under TANF, the state is continuing the AFDC waivers approved earlier by the Department of Health and Human Services. These waivers set up a two-tier system for recipients: those subject to a 24-month time limit and those also subject to a work requirement. Approximately half of all adult recipients are subject to a two-year limit on assistance within any five-year period. (Other recipients are exempt from the time limit due to their own or a child's disability or similar reason). Those recipients whose youngest child is age 6 or older must also work a minimum of 20 hours a week.

As of June 1997, there were approximately 74,000 welfare families in Massachusetts (Department of Health and Human Services November 1997). In Boston, about 7,900 are headed by adults subject to the two-year time limit.² Map 1, which shows the number of recipients by zip code, indicates that welfare families are concentrated in a few adjacent areas of the city.

²In this study, "Boston" recipients include those in Boston, Cambridge, Somerville, and Brookline.

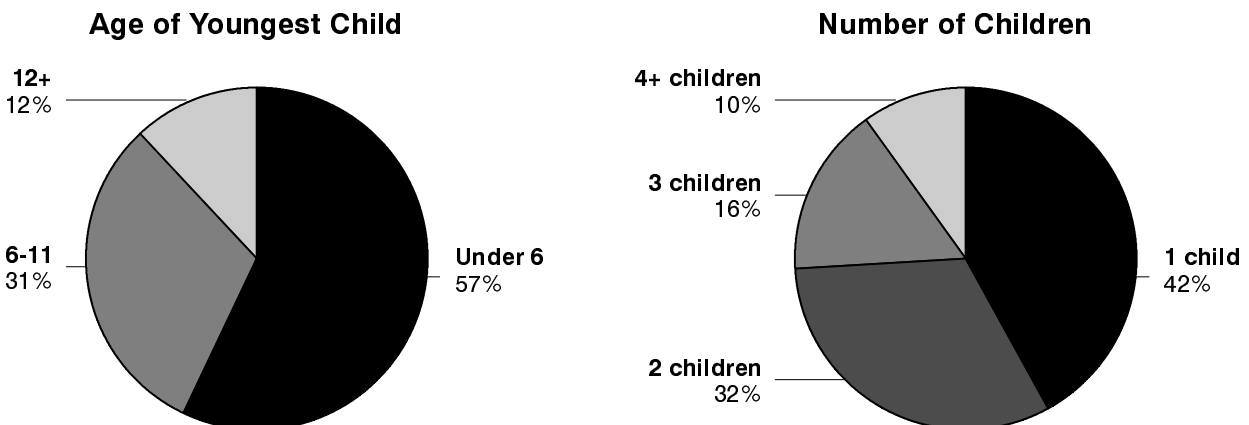
That recipients are concentrated in particular areas of Boston is not surprising, given that the overall concentration of poverty³ rose from 12 to 18 percent between 1970 and 1990 (Jargowsky 1997). U.S. Census data for 1990 reveal that the areas in which Boston recipients are concentrated are substantially poorer than the city as a whole. Within these neighborhoods, more than 25 percent of the population is below the poverty level, compared with 18 percent in the entire City of Boston and just 9 percent in the greater metropolitan area. Moreover, about 30 percent of the households in these poor areas were receiving some form of public assistance in 1990, compared with 14 percent of all households in the city. In one area of Boston with a high concentration of recipients, 42 percent of households received public assistance income.

In addition to being concentrated in the poorest areas of the city, Boston welfare recipients face at least two severe mobility limitations: most are raising young children and most do not own a car.

Figure 1 shows the age of the youngest child and the number of children for non-exempt TANF recipients in Boston. More than half have children who are not yet of school age: these are the mothers who are likely to have the most difficulty balancing work and family responsibilities. About 40 percent of the recipients have no pre-school-age children and are subject to the immediate work requirement. (Even though mothers with young children are not required to work, they are still subject to the two-year time limit, and for some assistance will cease as early as December

³Jargowsky defines the concentration of poverty as the percentage of a metropolitan area's poor living in high-poverty neighborhoods, or census tracts where at least 40 percent of the population is below the poverty line.

Figure 1. Dependents of Non-Exempt Boston TANF Recipients



Source: Massachusetts Department of Transitional Assistance.

1998.) As with welfare recipients nationwide, three-fourths of those in Boston have only one or two children.

Recipients in Boston also resemble recipients nationally in their lack of a car. In fact, car ownership for Massachusetts welfare recipients may be even less likely than for recipients overall. While about 6 percent of welfare families in all states reported an automobile as an asset in 1995, only 3 percent of Massachusetts families did so (Department of Health and Human Services 1997).

As mentioned previously, these statistics for recipients' automobile assets are probably low, because welfare rules encouraged many recipients to conceal car ownership. Nevertheless, it is likely that far more Boston recipients go without a car than possess one. In Edin and Lein's study of low-wage and welfare-reliant mothers, only 24 percent of the welfare mothers in Boston reported owning an automobile. Undoubtedly, the mothers without cars face significantly greater difficulties entering a job market that has become predominately suburban.

JOB OPPORTUNITIES FOR BOSTON WELFARE MOTHERS

Given their family responsibilities, work histories, and relatively low educational levels, most welfare mothers will have to find entry-level, low-skill jobs. Yet, spatial and skills mismatches have isolated residents of inner cities from many entry-level job opportunities. The shift in educational requirements for city jobs has been particularly pronounced in Boston, which by 1990 had nearly twice as many jobs in industries with

high mean employee education levels as it had in those with low mean levels. Between 1970 and 1990, jobs in Boston's high-education industries increased by 41 percent, while jobs in low-education businesses dropped by 14 percent (Kasarda 1995).

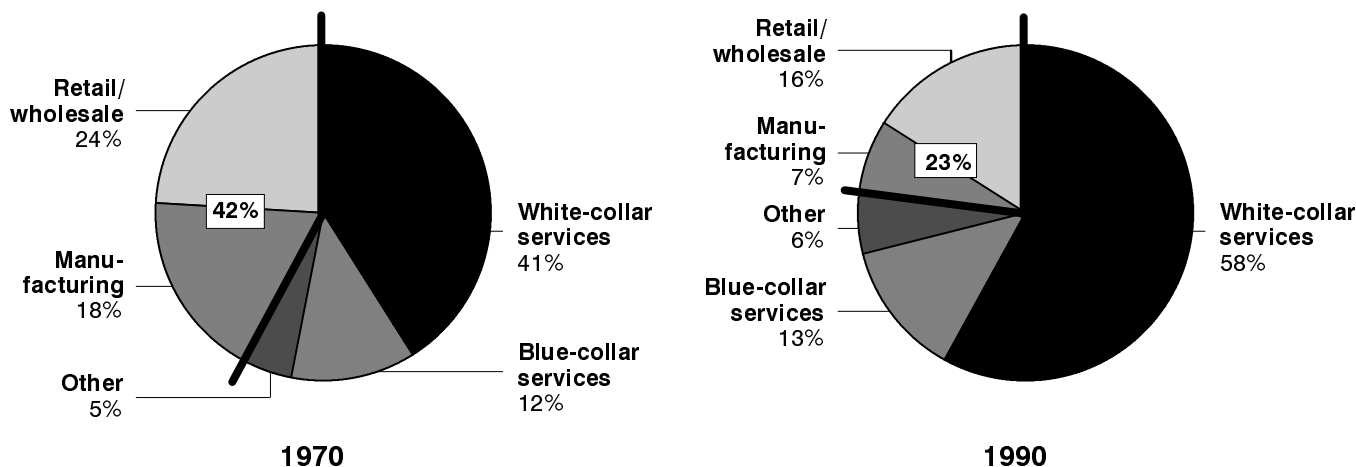
Figures 2 and 3 show the changes in Boston central-city employment by sector and by educational level from 1970 to 1990. As indicated in figure 2, employment in manufacturing and trade, sectors that traditionally hire large numbers of entry-level workers, fell by 19 percent, while employment in white-collar services increased by 17 percent. Figure 3, which shows the percentage distribution of Boston jobs by the educational level of jobholders, is even more revealing. This figure shows that while almost 30 percent of Boston jobs in 1970 were held by workers without a high school diploma, by 1990 just 7 percent of jobs were held by such workers. Approximately 70 percent of jobs in central-city Boston in 1990 were held by those with at least some college education.

Entry-Level Job Opportunities in Boston

The Massachusetts Division of Employment and Training (DET) projects that approximately 106,000 new entry-level jobs will be created in the state between 1994 and 2005.⁴ (The DET defines "entry-level" work as that requiring only minimal on-the-job training.) More than 75 percent of these jobs will be in the 10 occupations shown in figure 4.

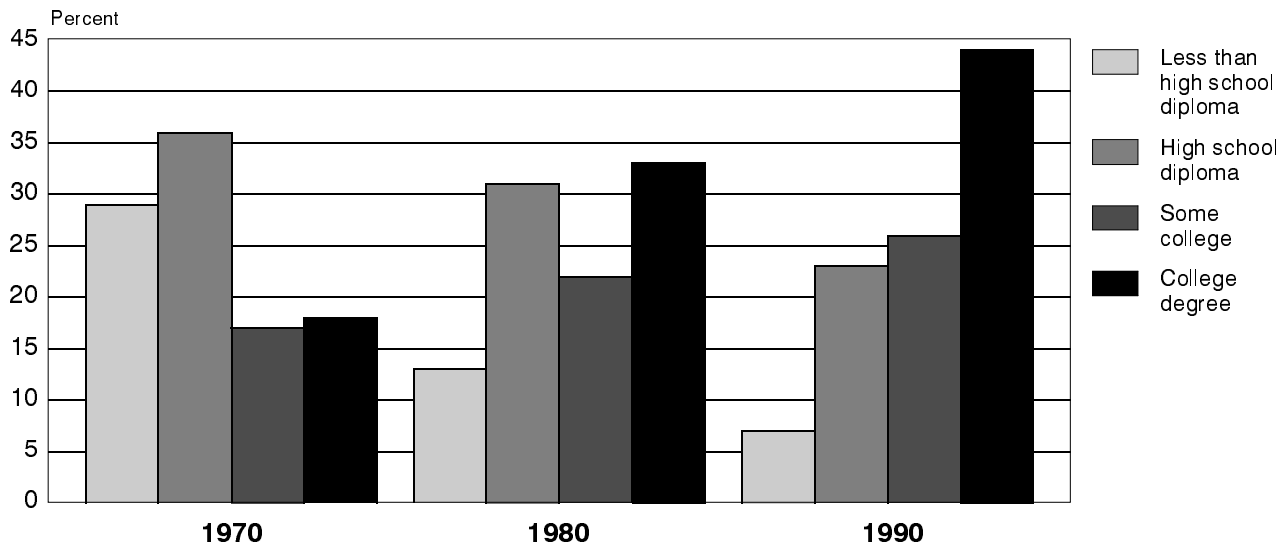
⁴Labor market analysts generally feel that it is more appropriate to look at new entry-level jobs rather than job openings—which include replacements—since in this market "replacements" typically are due to job switching rather than new positions created through retirements.

Figure 2. Boston Central-City Employment by Sector: 1970-90



Source: Kasarda, 1995.

Figure 3. **Distribution of Boston Central-City Jobs by Education Level of Jobholders: 1970-90**



Source: Kasarda, 1995.

Where will these new jobs be? According to the Boston Redevelopment Authority (BRA), many will not be in central Boston. The BRA estimates that approximately 3,000 new entry-level jobs are created in the city each year. Competing for these jobs are about 1,100 high school graduates, other new entrants to the labor force, the unemployed (about 10,000 workers in the city), and the 7,900 non-exempt TANF recipients.

The competition for entry-level positions in Boston is not different than that in other cities. One study, for example, found that the ratio of job applicants to hires in Harlem's fast-food industry was 14 to 1. This study concluded that an "oversupply of job-seekers causes a creeping credentialism in the ghetto's low-wage service industries" and that, therefore, "welfare recipients will have a tough time beating out their competition even for these low-wage jobs" (Newman and Lennon, 1995). A recent study in Chicago estimates that there would be six workers for every entry-level position in that city if all people unemployed or on welfare were to look for jobs (cited in Weir 1997). Clearly, many of Boston's welfare recipients will have to seek work outside the central city in one of the metropolitan area's fast-growing suburbs.

Location of Entry-Level Employment

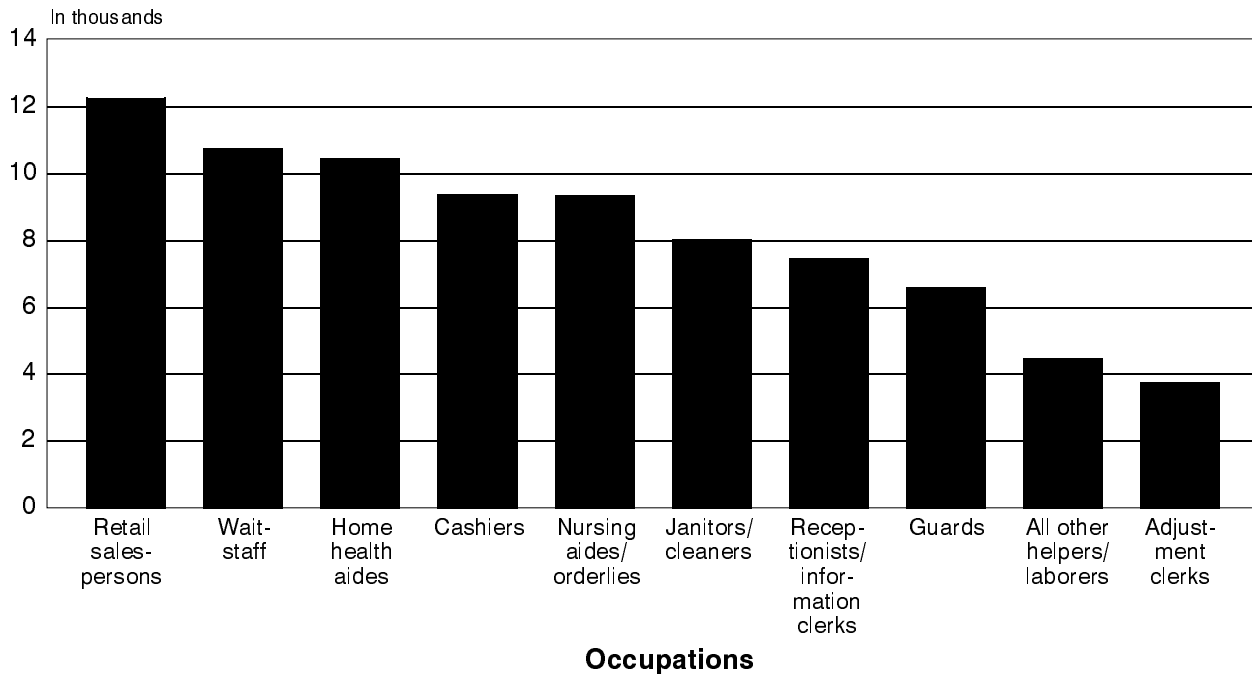
Entry-level job opportunities for welfare recipients are not evenly distributed across the greater Boston area.

Because the Massachusetts DET does not project job growth below the statewide level, identifying the location of potential employers first requires an estimation of where such growth will likely occur. In this study, this was accomplished by

1. using an occupation/industry matrix to determine which industries hire workers in the state's high-growth entry-level occupations,
2. collecting employment data for these industries for all cities and towns in greater Boston, and
3. analyzing the employment figures to determine which cities and towns have experienced the greatest job growth in these industries.

The DET's occupation/industry matrix rank-orders the industries employing persons in specific occupations in Massachusetts. (The U.S. Department of Labor's Bureau of Labor Statistics publishes such a matrix for the United States as a whole.) This matrix indicates that five industries are likely to create the bulk of the new entry-level jobs shown in figure 4: retail and wholesale trade, restaurants, hotels, health care services, and business services. (The appendix lists the industries determined to be most likely to hire workers in the top 10 entry-level occupations. Throughout the rest of this report, they are referred to simply as "entry-level industries.")

Industry employment statistics for Massachusetts cities and towns are available through the state's ES-202 program, which compiles data on employment

Figure 4. **New Entry-Level Jobs in Massachusetts: 1994-2005**

Source: Massachusetts Division of Employment and Training.

and wages for workers covered under state unemployment insurance laws. The city and town data are reported annually by three-digit Standard Industrial Classification (SIC) code.

Using these employment figures, it is possible to determine the actual rates of job growth in entry-level industries for cities and towns constituting the Boston metropolitan area (defined here as those within the I-495 “loop”). Data for 1992 and 1995 show that the average employment growth rate for entry-level industries in greater Boston was 8.5 percent.⁵ (The City of Boston experienced below-average employment growth in these industries, at about 6 percent a year.) The growth in entry-level industry employment by city and town is shown on map 2. This map reveals that the highest growth areas for such industries between 1992 and 1995 were well outside of the central city.

The next step in this analysis was to identify specific companies in industries likely to hire entry-level workers that are located in cities or towns with above-average job growth in these industries (referred to here as “high-growth areas”). A DET database of Massachusetts companies lists about 3,200 such businesses with 20 or more employees. Map 3 shows their spatial distribution.

⁵The employment growth rate for each city or town was derived using 1992 as the base year (the last year of a major recession in Massachusetts) and calculating the number of jobs added or lost by 1995 (the most recent year for which data were available) for the industries in each relevant SIC code (see appendix).

Finally, map 4 shows the Boston area’s transit routes in relation to the high-growth areas for entry-level employment. This map makes clear the fact that most of these areas are either underserved by or well beyond the reach of public transit. The rest of this report is devoted to an analysis of public transit access to jobs for Boston’s welfare recipients.

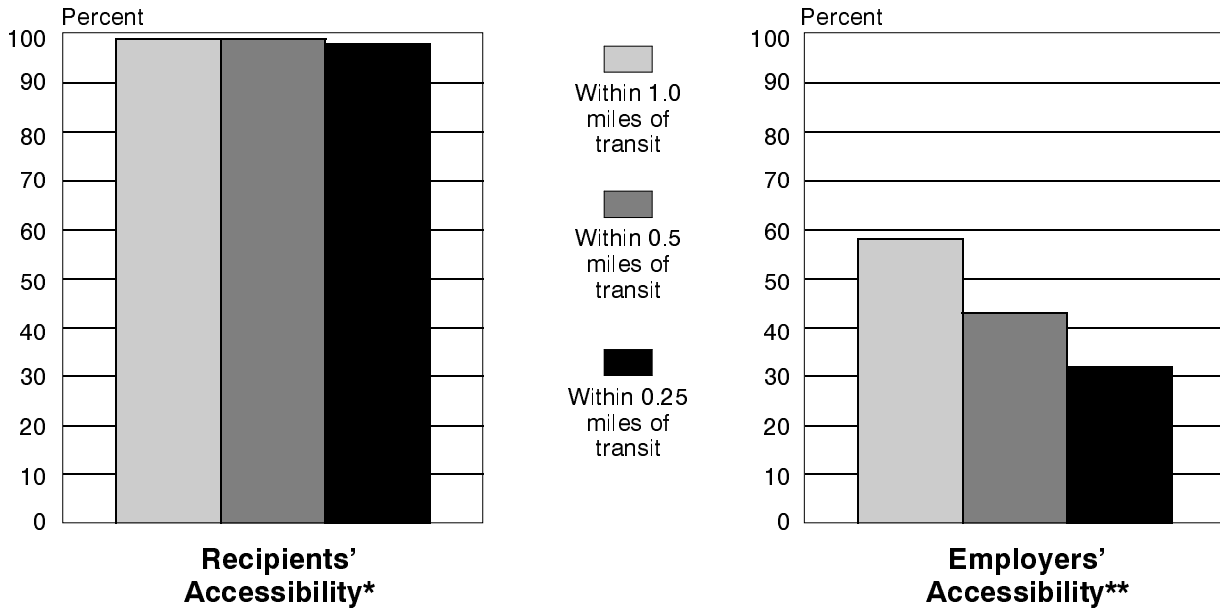
TRANSIT IN THE SUBURBS: THE JOB ACCESSIBILITY GAP

Living in or near a central city with a well-developed transit system, welfare recipients in Boston should have excellent access to some form of transit service. Indeed, about 98 percent of recipients are within one-quarter mile of a bus route or transit station. Yet, as shown in figure 5, there is a “job accessibility gap”: just 32 percent of potential employers in the Boston area are within one-quarter mile of transit.⁶ Moreover, only 43 percent are within one-half mile of transit and 58 percent within 1 mile.

In general, four classes of deficiencies prevent Boston’s transit system from providing access to the universe of available jobs:

⁶Here, potential employers are the 3,200 companies in the DET database that are located in high-growth areas for entry-level employment and that are in industries most likely to create new entry-level jobs. See map 3.

Figure 5. The Job Accessibility Gap



*Non-exempt TANF recipients in the Boston area

**Employers in high employment growth areas in industries likely to hire entry-level workers

1. As shown on map 4, many high-growth areas for entry-level employment are in the outer suburbs and well beyond existing transit service.
2. Some areas are served only by commuter rail, which in most cases fails to provide direct access to employment sites and is prohibitively expensive for recipients.
3. For many suburban areas served by transit there is a substantial gap between existing routes and stations and growing employment areas.
4. Even when transit does provide direct access to a suburban job, the trip takes too long or requires several transfers, or transit schedules and hours do not match work schedules.

about 3,000 entry-level workers. Clearly, this map shows that although a number of bus routes serve the North Waltham area, none are within walking distance of the 77 employers shown; the closest bus is more than one-half mile away. Although this appears to suggest the need for a feeder service or vanpool from this bus to employment sites, both the length and complexity of the trip from Boston to Waltham, as discussed below, make an extended or flexible route more feasible.

Transit Service Takes Too Long, Requires Transfers, or Is Inadequate

Although welfare recipients in Boston have good access to transit, existing service does not reach many suburban jobs. For example, a commuter traveling to North Waltham from a central point in one area of the city with a high concentration of recipients would have to take three buses—a trip of 1 hour and 40 minutes—and then walk more than a mile to get to work. Moreover, from this central-city location:

- Not one of the potential employers in high-growth areas for entry-level work can be reached within 30 minutes by transit.
- Just 14 percent of the employers can be reached via transit within 60 minutes. These employers

The Gap Between Transit and Employment

Map 4 shows that several high-growth areas for entry-level work are served by transit. Yet, these services are not designed for inner city commuters traveling daily to suburban jobs. Instead, most suburban routes are meant to take residents of “bedroom communities” to city jobs downtown. Map 5 shows how this can leave large gaps between existing transit routes and suburban employment centers.

The site of map 5 is the Town of Waltham, a high-growth suburb west of Boston located along Route 128. Specifically, the map shows an area in North Waltham with 77 employers that currently employ

account for only 10 percent of all entry-level jobs that currently exist in high-growth areas.⁷

- Thirty-one percent of employers can be accessed within 90 minutes, representing 33 percent of current entry-level jobs.
- And, finally, 48 percent of the employers in this study cannot be reached by transit within 2 hours—or 45 percent of the existing entry-level jobs.

As big as these gaps in accessibility are, these data actually present a “best-case” scenario for recipients who must rely on transit. This spatial analysis does not consider impediments such as inadequate hours of transit operation, infrequent or unreliable transit service, or security concerns of recipients using isolated bus stops or transit stations during off-peak hours. For example, mirroring the situation at many suburban malls, transit service to a large mall in Burlington, one of Boston’s western suburbs, ends at 9:30 p.m., when the mall closes. Because employees of the mall’s retail establishments typically must stay at work past closing, they cannot rely on transit for their trip home. This service gap effectively shuts out workers without an automobile from employment at the mall.

SUMMARY AND CONCLUSIONS

This analysis demonstrates that although Boston’s welfare recipients have adequate access to transit, existing transit service does not reach a large number

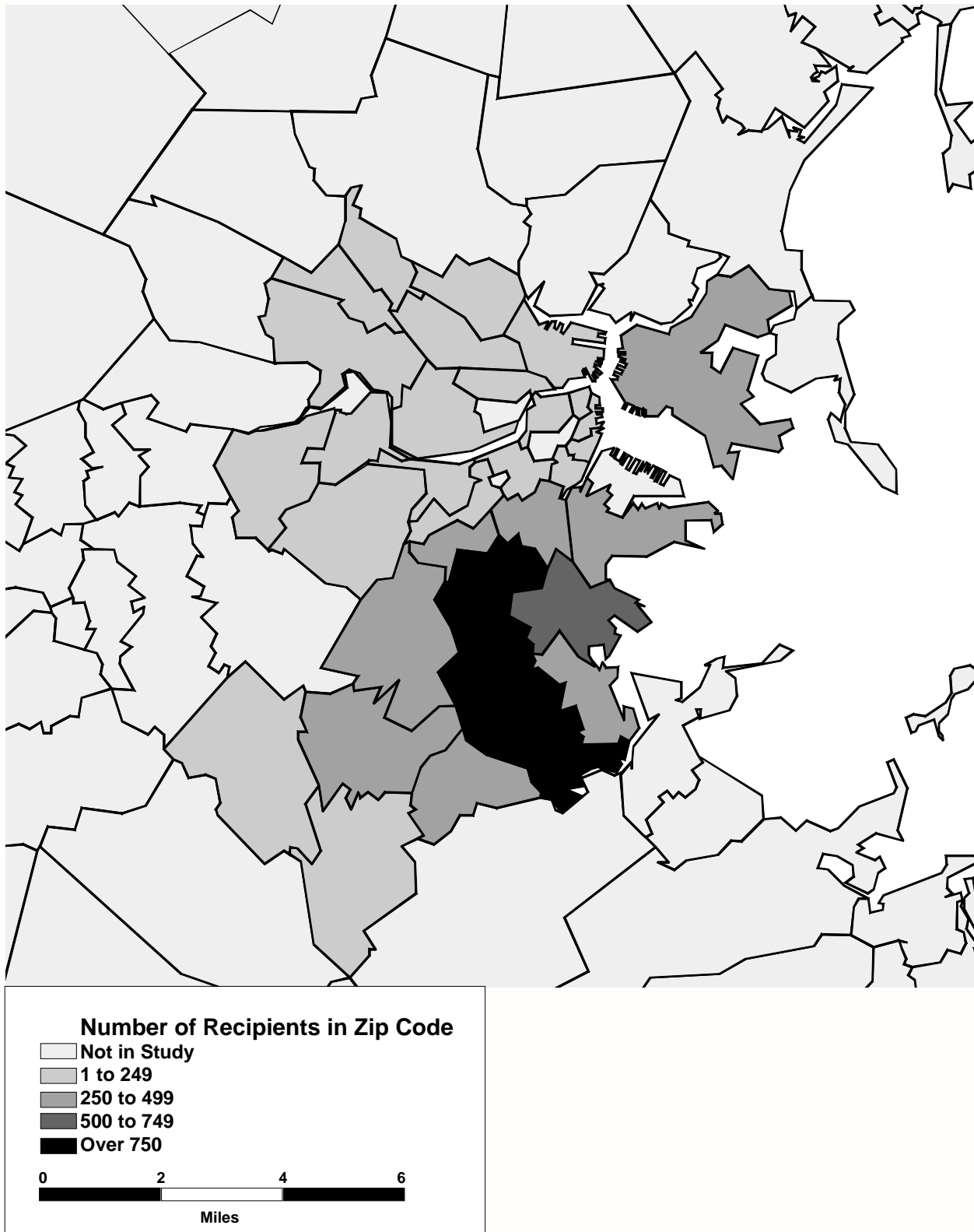
of potential employers. Boston recipients face tremendous mobility problems, including lack of transit service in the suburbs, gaps in existing service, long travel times, numerous transfers, and inadequate schedules. Moreover, traditional transit service is unlikely to meet the transportation needs of many welfare mothers, given their need to make frequent intermediate trips during the commute to and from work.

Nevertheless, this analysis also suggests that it may be possible to improve or expand the existing transit system so that it more closely meets welfare recipients’ needs. For example, *technology innovations* such as flexible routing, advanced paratransit services, and other applications of information technology offer real, if limited, solutions to improving transit service to low-density suburban areas. These technology-based solutions also may facilitate *service innovations*, including extended schedules, express routes in key corridors, modified routes, and day care services at transit stations. Such improvements in the technology and operation of the existing transit system may do more to improve transit’s overall efficiency and utility than creating complementary services solely for welfare recipients.

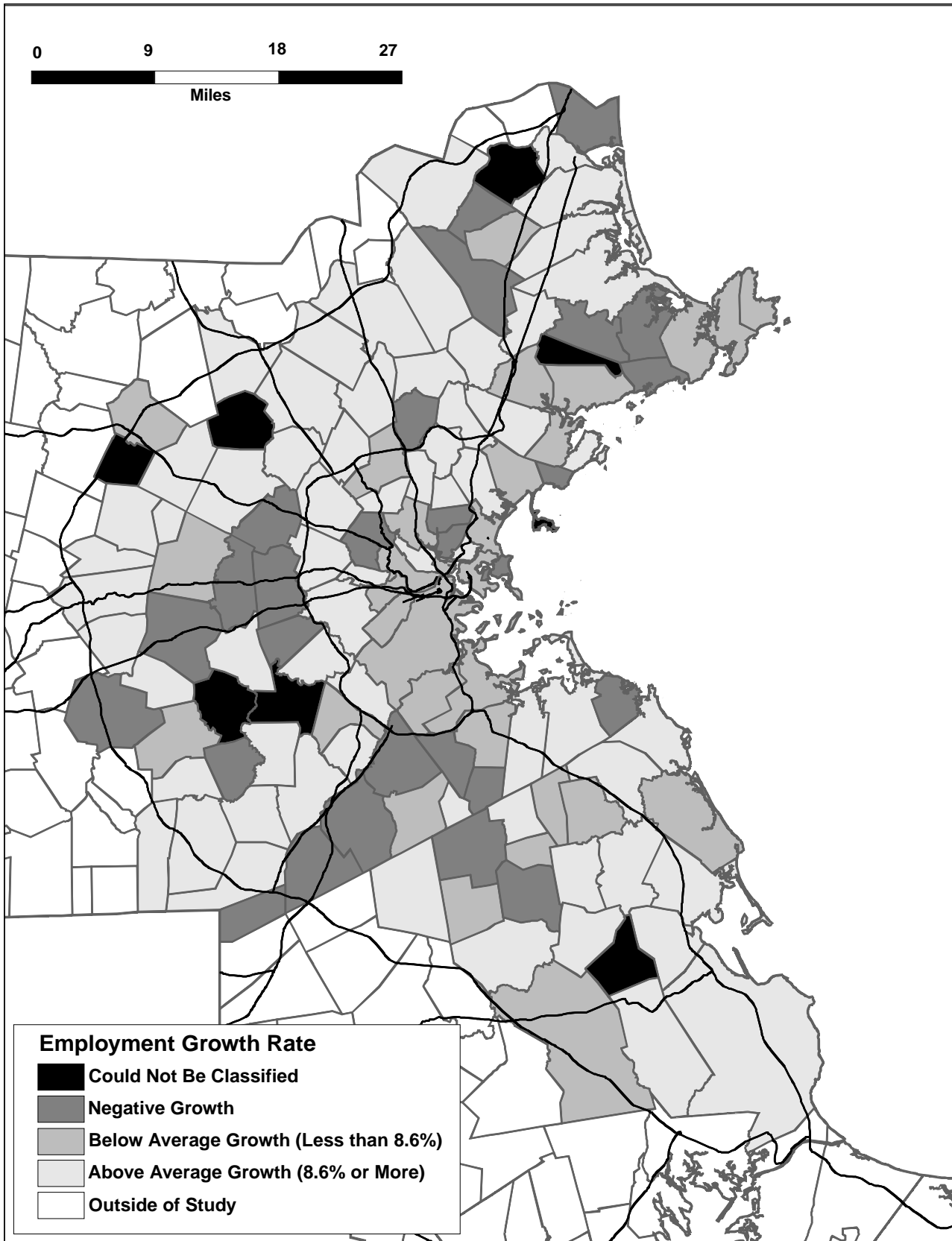
Finally, the results of this analysis also suggest the need for further study in a number of areas. First, it is critical that assessments such as this be expanded to include access to day care, job training, and other services. Next, a network analysis is needed to determine the overall time and monetary costs of transportation for welfare recipients and other inner city residents. Lastly, additional studies in other cities and in rural areas are necessary to further develop GIS applications for use as a policy and planning tool by transit agencies, metropolitan planning organizations, human services agencies, and others faced with the challenge of implementing welfare reform.

⁷Estimates of current entry-level employment were derived by (1) taking the midpoint of the size-class range for each company (obtained from the DET employer database) and (2) using the DET industry/occupation matrix to determine what percentage of employees may be considered entry-level.

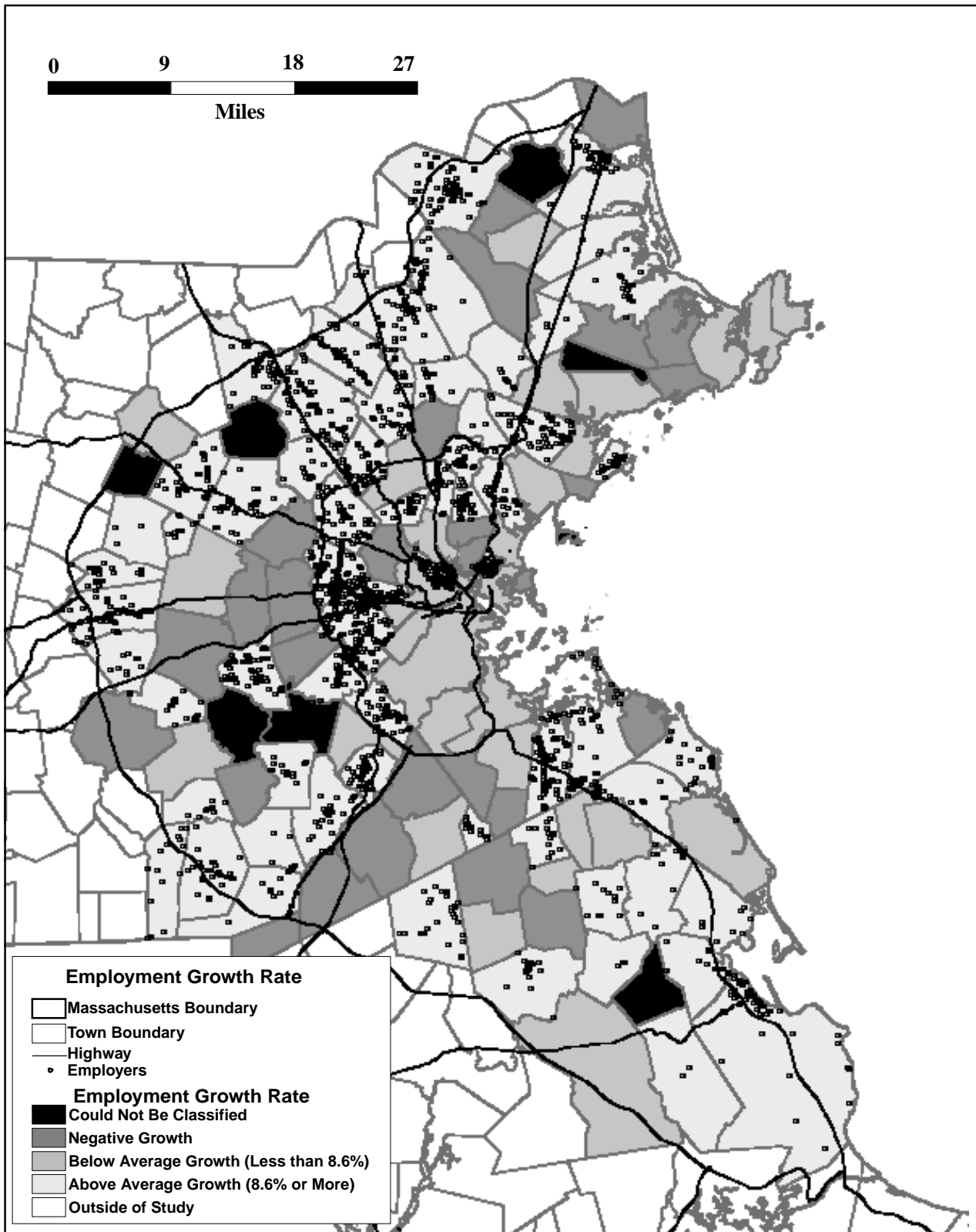
Map 1. Concentration of Boston TANF Recipients by ZIP Code



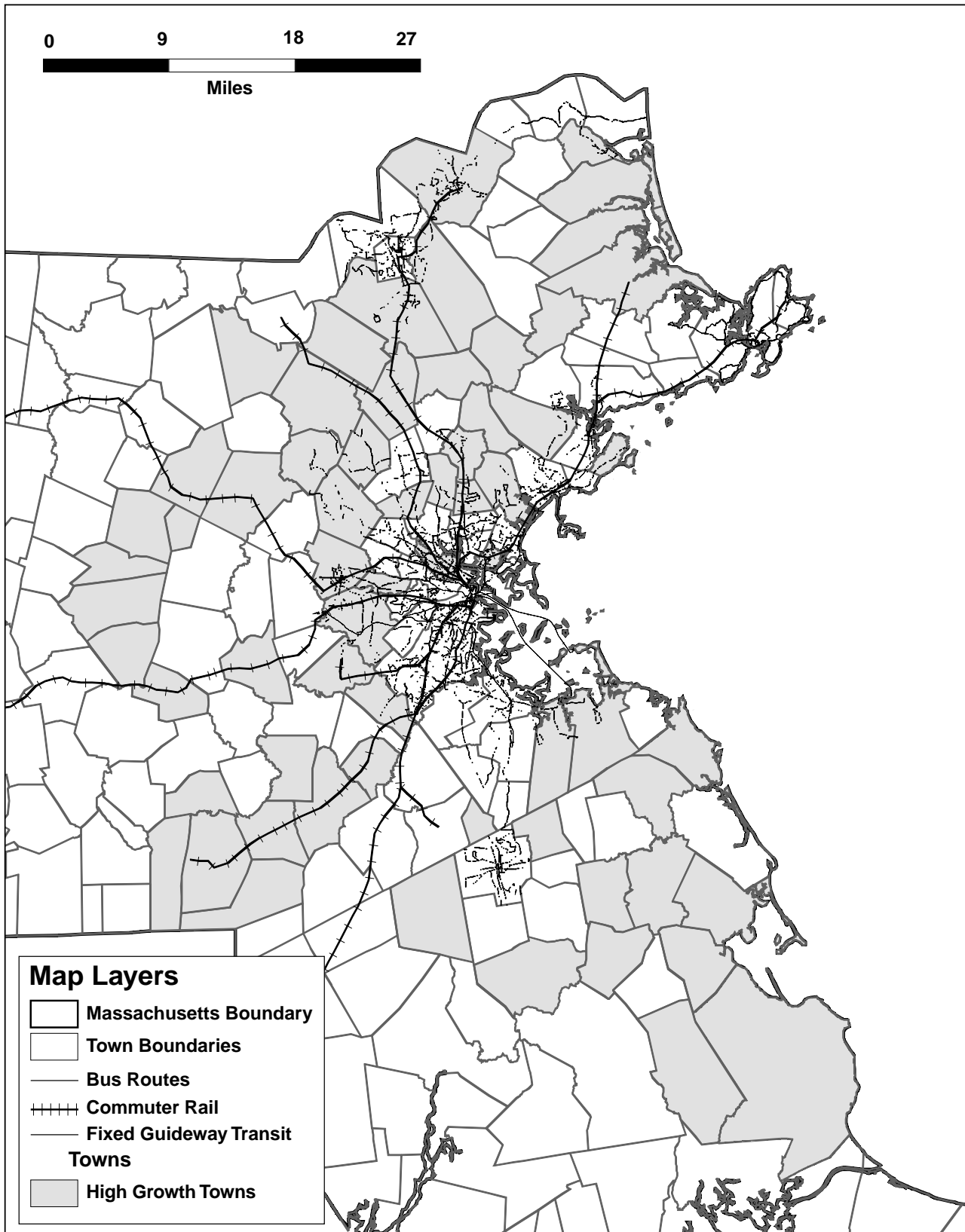
Map 2. Entry-Level Employment Growth in Greater Boston by City and Town



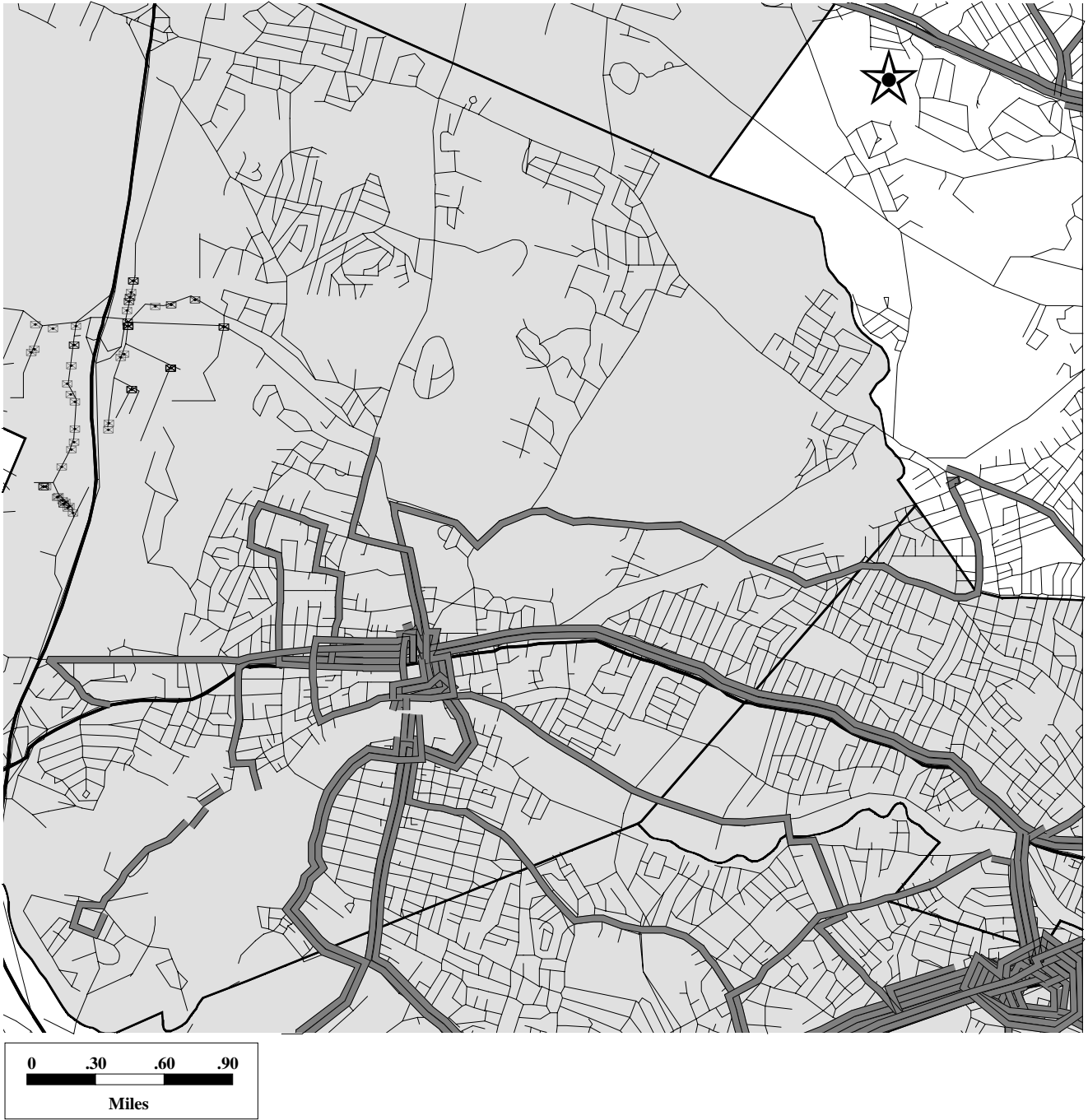
Map 3. Spatial Distribution of Potential Entry-Level Employers in Greater Boston



Map 4. Transit Service to Boston High-Employment Areas



Map 5. Gap in Transit Service to Waltham, MA



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Appendix

Industries in Massachusetts Likely to Create New Entry-Level Jobs

The following list of industries likely to hire entry-level workers was derived from state occupational employment projections by education and training category and the DET's occupation/industry matrix for Massachusetts:

SIC	Industry	SIC	Industry
20	Food and Kindred Products	70	Hotels and Other Lodging Places
26	Paper and Allied Products	72	Personal Services
271	Newspapers	734	Services to Buildings
308	Misc. Plastics Products, NEC	736	Personnel Supply Services
42	Trucking and Warehousing	737	Computer and Data Processing Services
481	Telephone Communications	738	Misc. Business Services
482	Telegraph and Other Communications	78	Motion Pictures
489	Communications Services, NEC	801	Offices and Clinics of Medical Doctors
50	Wholesale Trade—Durable Goods	802	Offices and Clinics of Dentists
51	Wholesale Trade—Nondurable Goods	803	Offices of Osteopathic Physicians
53	General Merchandise Stores	804	Offices of Other Health Practitioners
54	Food Stores	805	Nursing and Personal Care Facilities
55	Automotive Dealers and Service Stations	806	Hospitals
56	Apparel and Accessory Stores	807	Medical and Dental Laboratories
57	Furniture and Home Furnishings Stores	808	Home Health Care Services
58	Eating and Drinking Places	809	Health and Allied Services, NEC
59	Miscellaneous Retail	81	Legal Services
60	Depository Institutions	821	Elementary and Secondary Schools
63	Insurance Carriers	822	Colleges and Universities
65	Real Estate		