Appendix 1: Regional Profile

This section provides an analysis of relevant demographic, housing, education, and transportation data. It gives an overview of the human and physical resources in the region. Economic data, except for data on occupations, is found in the next section.

Demographics

Central Connecticut experienced moderate growth between 1990 and 2010. In 2010 the Central Connecticut region had an estimated population of 235,878 people (see *Table 3*), a 4.1% increase over 2000. This represents a slight reversal of the trend seen from 1990 to 2000, when the population fell 0.4%. While positive, growth still lagged national trends: 9.7% growth from 2000 to 2010. It also lagged the state growth rate, which was 4.1%.

The largest population center in the region remains New Britain,

Table 3. Population Change (1990-2010)

	1990	2000	% Change (1990-2000)	2010	% Change (2000-2010)	Total % Change
Berlin	16,787	18,215	8.5%	19,866	9.1%	18.3%
Bristol	60,629	60,062	-0.9%	60,477	0.7%	-0.3%
Burlington	7,026	8,190	16.6%	9,301	13.6%	32.4%
New Britain	75,491	71,538	-5.2%	73,206	2.3%	-3.0%
Plainville	17,392	17,328	-0.4%	17,716	2.2%	1.9%
Plymouth	11,822	11,634	-1.6%	12,243	5.2%	3.6%
Southington	38,518	39,728	3.1%	43,069	8.4%	11.8%
Region	**227,665**	**226,695**	**-0.4%**	**235,878**	**4.1%**	**3.6%**
Hartford MSA	1,085,837	1,183,110	9.0%	1,212,383	2.5%	11.7%
Connecticut	3,287,116	3,405,565	3.6%	3,574,097	4.9%	8.7%
United States	258,709,873	291,421,906	12.6%	308,745,538	9.7%	24.1%

Source: U.S. Census Bureau, 1990; U.S. Census Bureau, 2000; U.S. Census Bureau, 2010

Table 4. Population and density (2010)

	Population	Area (miles²)	Density
Berlin	19,866	27.0	736
Bristol	60,477	26.8	2,257
Burlington	9,301	30.4	306
New Britain	73,206	13.4	5,463
Plainville	17,716	9.8	1,808
Plymouth	12,243	22.3	549
Southington	43,069	36.6	1,177
Region	**235,878**	**166.3**	**1,418**
Hartford MSA	1,212,383	1,565.9	774
Connecticut	3,574,097	5,009.0	714

Source: U.S. Census Bureau, 2010

with 73,206 people. It is followed by Bristol (60,477 people) and Southington (43,069 people). While both of the two largest cities reversed the population loss they saw from 1990 to 2000, it was some of the smaller towns that saw the greatest growth. From 2000 to 2010 Burlington saw the greatest growth (13.6%), followed by Berlin (9.1%) and Southington (8.4%). Of note is that only Burlington exceeded the national growth rate.

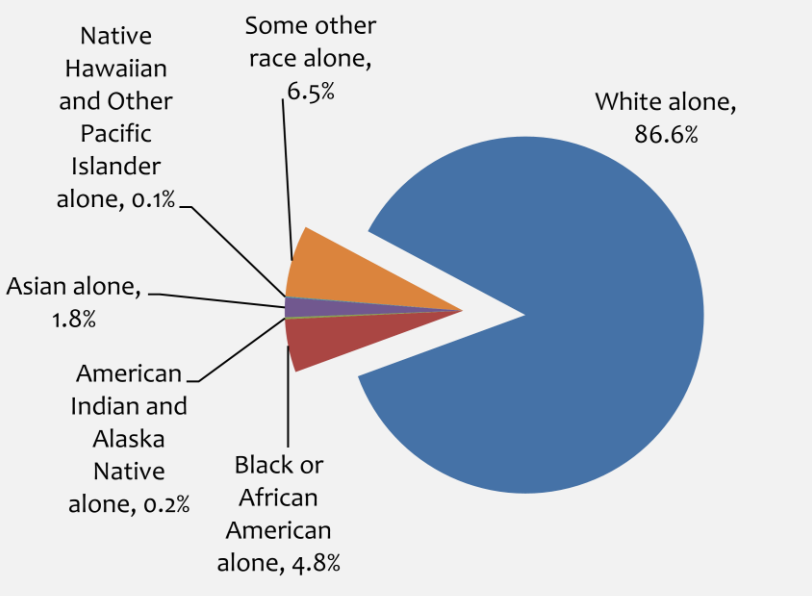
The region has a relatively high population density at 1,418 people per mile². This makes the region nearly twice as dense as the Hartford MSA. As expected, the region's largest city, New Britain, is the most densely populated at 5,463 people per mile² (see *Table 4*). With the exception of Plainville (which is the third densest municipality but the fifth most populous), the smaller the municipality the less densely populated it is.

Race and Ethnicity

The region is predominantly white and is much less diverse than either the state or the nation. Region-wide, 86.6% of the population was white in 2009 (see *Figure 8*), while only 74.5% was nationwide. The state was 79.9% white. Only one municipality in the region had a lower percentage of whites than the nation. New Britain is 73.4% white and 11.5% Black or African American.

Since 2000, the racial and ethnic profile of the region has changed somewhat. In 2000, just 10.8% of the population was Hispanic or Latino while 12.5% of the nation was. That changed

Figure 8. Racial Make-up of the Region (2009)



Source: U.S. Census Bureau, 2010

to 13% of the region and 15.1% of the nation in 2009. Hispanics and Latinos do make up a larger portion of the region's population than of the state (11.6%) or the MSA (11.0%). Significant Hispanic or Latino populations are found in New Britain (31.9%) and Bristol (8.1%).

Age

In general, the towns and cities in the region are slightly older than the nation as a whole (see Table 5). Every town except for New Britain had a median age that exceeded that. Every town, except for New Britain, also saw an increase in median age from 1990 to 2009 that exceeded the national rate.

Distribution

The region's age distribution is on par with the state's, but diverges significantly from national trends. The region has a smaller percentage of children and teenagers than the MSA, the state, and the nation. The region does have a higher percentage of young adults (20 to 34 year olds), which make up 19% of the population, than the state or the MSA, but lags behind the national average of 20.4%.

The percentage of mature workers (those aged 35 to 54) is lower than all but one comparison region, but the differences are small. Just 30.3% of the region falls into this cohort, while 30.6% of the state, and 30.4% of the MSA do. It is higher than the national average of 28.7%.

People who are at or near retirement age make up a smaller proportion of the region than either the state or the MSA. Just 17.8% of Central Connecticut's population is between 55 and 74, while 18.1% of the state, and 18.3% of the MSA, is. The nation has a lower percentage: 17.3%. Across the board, the region had a much higher percentage of people over the age of 75 (7.6% of the

Table 5. Median Ages

	1990	2000	2009	% Change (1990-2009)
Berlin	37.5	41	42.6	13.60%
Bristol	33.4	37.6	39.6	18.60%
Burlington	34.5	38.1	40.4	17.10%
New Britain	32.4	33.9	33.8	4.30%
Plainville	35.2	39.6	41.4	17.60%
Plymouth	33.9	37.7	39.9	17.70%
Southington	35.7	39.7	42.2	18.20%
U.S.	32.8	35.3	36.5	11.30%

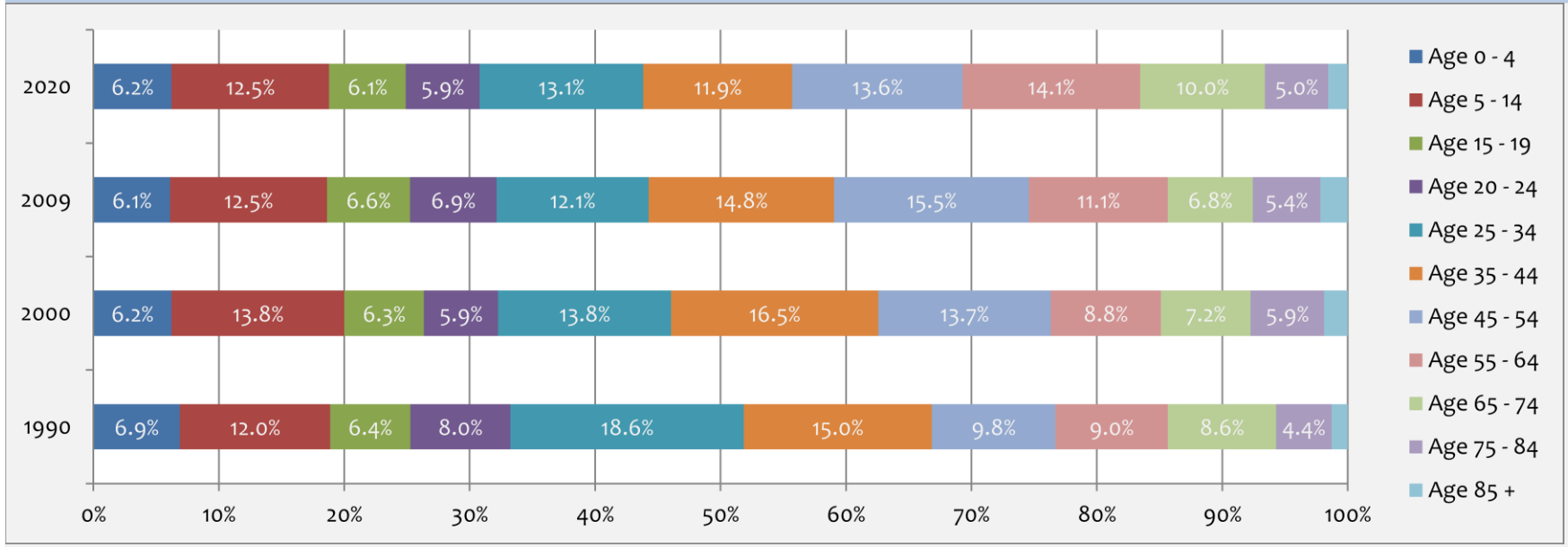
Source: U.S. Census Bureau, 1990; U.S. Census Bureau, 2000; U.S. Census Bureau, 2010

Table 6. Gains and losses of population by age group

Age Group	2000-2009
Under 20	-2304
20-24	2968
25-34	-3041
35-44	-5808
45-54	4099
55-64	7447
65-74	613
75+	-472

Source: U.S. Census Bureau, 1990; U.S. Census Bureau, 2000; U.S. Census Bureau, 2010

Figure 9. Change in Regional Age Distribution (1990-2014)



Source: U.S. Census Bureau, 1990; U.S. Census Bureau, 2000; U.S. Census Bureau, 2010; CERC, 2010

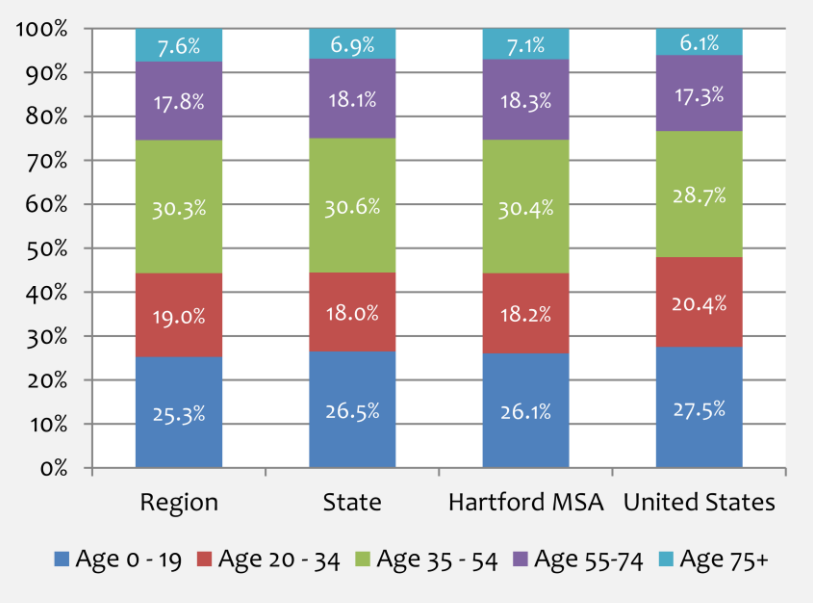
population).

Over time, as was suggested by the increasing median age, the region's age distribution has shifted toward the older cohorts, with some interesting exceptions (see *Figure 9*). The 65-74 cohort shrank from 7.2% in 2000 to 6.8% in 2009. The 75-84 cohort increased from 1990 to 2000 (4.4% to 5.9%), then decreased again in 2009 to 5.4%. Ages 85 and over have shown a steady but small increase (1.3% to 2.2%). People aged 55 to 64 grew from 8.8% to 11.1% of the population (2000 to 2009).

The increase in older populations was mirrored by a decrease in the population share of younger age cohorts. Young children fell as a proportion of the population from 6.9% to 6.1%. Teenagers lost some share as well. Most dramatically, the share of 25 to 34 year olds has dropped significantly, from 18.6% to 13.8%. This was an absolute decline of over 14,000 people. The 35 to 44 year old cohort also saw a small decrease, from 15.0% to 14.8%.

Projections indicate slight changes in the trend. Residents between 20 and 24 are expected to decline as a percentage of the population, while 25 to 34 year olds are expected to increase. The 35 to 44 year old cohort is projected to decline significantly (from 14.8% to 11.9%). A large increase is projected to occur in the 55 to

Figure 10. Age Distribution (2009)



Source: U.S. Census Bureau, 2010

64 and 65 to 74 year old cohorts. It should be noted that these projections are based on Census 2000 data.

These shifting percentages represent significant gains and losses (see Table 6). In absolute terms, the population of 45-54 year olds increased by over 4,000 and the 55-64 population grew by nearly 7,500 (2000 to 2009). Meanwhile, the region lost over 3,000 25 to 34 year olds and nearly 6,000 35 to 44 year olds.

Migration

Recent migration data is only available at the county level, so Hartford County migration patterns will be analyzed as the closest approximation of the region's migration patterns. In 2008, based on IRS tax filing data, around 28,278 people moved from Hartford County. In that same year, 24,650 moved into the county. The top four most popular destination counties are in Connecticut (Tolland, New Haven, Middlesex, and Litchfield). These same four counties are also the most popular sources of new residents. There is a net loss of 751 residents to Tolland and a net gain of 712 residents from New Haven.

Outside of Connecticut, the largest draw for Hartford County residents is the south. There was a net outflow of 1,036 people to Florida in 2008. This was followed by a net outflow of 409 residents to North Carolina. The fifth most popular destination was South Carolina with a net outflow of 227. Other popular southern states included Texas, Virginia, and Georgia.

The county also experienced an imbalance with other Northeastern and Mid-Atlantic states. Hartford County lost 248 more people to Massachusetts than it gained. Pennsylvania picked up 209 people and there was a net outflow of 165 people to Maine.

Hartford County came out ahead of a few states as well. New York lost 196 people to Hartford and New Jersey lost 16 people. Two rust-belt states, Ohio and Michigan, were also net exporters of people (67 and 46 people respectively).

Findings

- Population growth was slower than the national average
- The 2000s saw a reversal of 1990s population losses

- The highest population growth was in Berlin, Burlington, and Southington
- The region is less racially diverse than the state and the Nation.
- The region has a higher percentage of Hispanic and Latino people than either the state or the MSA.
- The Hispanic/Latino population has grown, from 10.8% to 13% of the region.
- The region's population is older than the nation's, as is its workforce.
- The population of working age adults is skewing significantly toward older adults.
- The 45 to 54 cohort has grown dramatically while both the 35-44 and 25-34 cohorts have declined.
- Demographic shifts indicate that the labor force will shrink and increased pressure may be placed on senior services.

Education

Throughout the public participation process, educational resources were cited as a major strength of the region. The region is home to numerous secondary and post-secondary institutions, providing a wide variety of educational and training opportunities. The region's central location also permits its residents and employers to have easy access to institutions in surrounding regions.

Starting at the high school level, students in the region have the opportunity to take advantage of vocational training. The Connecticut Technical High School System includes 16 degree-granting technical high schools throughout the state. Two of these schools are located in the region: Bristol Technical Edu-

Table 7. Changes in School Enrollment

	% Change in Public School Enrollment (2004 to 2008)	%Change in Private School Enrollment (2004 to 2006)	Total Change in School Enrollment (2004 to 2006)
Berlin	-4.0%	-21.9%	-4.1%
Bristol	-2.5%	-12.9%	-2.9%
Burlington	4.6%	n/a	3.8%
New Britain	-5.9%	-18.9%	-3.0%
Plainville	-4.5%	18.1%	0.9%
Plymouth	11.5%	0%	-2.0%
Southington	-4.4%	2.6%	1.8%
Region	**-2.9%**	**-11.7%**	**-1.4%**

Source: U.S. Department of Education, National Center for Education Statistics, 2010; Connecticut Department of Education 2010; U.S. Department of Education, National Center for Education Statistics, 2009

cation Center and Goodwin Technical High School in New Britain. In addition to general academic courses, these schools provide training in automotive technologies, carpentry, computer-aided design, culinary arts, electrical, hairdressing, manufacturing, plumbing, welding, and others. Nearby schools in Hartford, Waterbury, Middletown, and Torrington expand the range of options to include airplane maintenance and health technology.

The region has higher education opportunities in New Britain and Southington. Central Connecticut State University in New Britain provides a full range of academic programs at the undergraduate and graduate level, including programs that prepare students for careers in health care, the life sciences, manufacturing, business management, and communications. The Lincoln College of New England's Southington campus (formerly Briarwood College) offers three bachelor degree programs, a range of associate degrees, and three certificate programs.

Further opportunities are available in nearby towns such as Farmington and West Hartford. Tunxis Community College in Farmington has a full range of associate degree programs and certificates in a variety of fields. The University of Hartford in West Hartford offers a range of undergraduate, graduate, and continuing education programs. They range from the arts to the sciences. The University of Connecticut maintains four nearby campuses in Hartford, West Hartford, Farmington, and Torrington. The Farmington campus is home to the UConn Health Center and the university's many healthcare programs. The Hartford campus is home to UConn's law school. The Torrington and Greater Hartford (West Hartford) campuses offer a number of four-year degrees.

Continuing education and workforce training opportunities are also prevalent in and around the region. Tunxis Community College maintains a Bristol campus that provides customized workforce training programs for area businesses, including nonprofits, manufacturers, and healthcare providers. Branford Hall Career Institute in Southington has a number of certificate programs, such as health claims, medical assisting, paralegal, computer networking, and massage therapy. In Enfield Connecticut, Asnuntuck Community College has developed a number of innovative programs with the private sector. Their Manufacturing Technology Center offers certificates and associate's degrees in a range of manufacturing technologies and processes. The school also offers other programs, such as computer programming, accounting, and early childhood education.

K-12 Education

For the past few years school enrollment has been declining in Central Connecticut (See *Table 7*). Between 2004 and 2008, public schools lost 2.9% of their students. Between 2004 and 2007 (the last year that complete data was available for) private schools lost 2.9% of their students throughout the region. Combined, between 2004 and 2006, the region lost 0.8% of its total enrollment.

School enrollment did not change uniformly. Plymouth's public schools grew by 11.5% and Burlington's grew by 4.6%. Overall, between 2004 and 2007, Burlington gained 3.8% more students in public and private schools. The largest public school enrollment decline occurred in New Britain, which lost 5.9% of its students.

Public School Performance

In general the public schools in the region perform well, as do most of the students. In 2009, 88% of the 2,767 eligible public school students in the region graduated. While this was below the state average of 91%, all but two towns (New Britain and Plymouth) exceeded the state rate. Every town in the region either maintained their graduation rate or increased it from 2002. Region-wide the rate went up 3% from 2002 to 2009.

Table 9. Advanced Degree Attainment (2009)

	Bachelor's Degree	Graduate Degree	Bachelor's or greater
Berlin	25.0%	14.9%	40.0%
Bristol	12.6%	7.0%	19.6%
Burlington	25.0%	18.1%	43.1%
New Britain	11.4%	6.8%	18.2%
Plainville	14.2%	4.6%	18.7%
Plymouth	13.6%	6.5%	20.1%
Southington	21.1%	12.9%	34.0%
Region	**15.6%**	**9.0%**	**24.6%**
Hartford MSA	19.3%	14.4%	33.7%
Connecticut	19.9%	15.2%	35.1%
United States	17.4%	10.1%	27.5%

Source: U.S. Census Bureau, 2010

Table 8. Higher Educational Enrollment

School	Type of School	Enrollment (2008)
Brandford Hall Career Institute	2-year	575
Briarwood College	4-year +	702
Central Connecticut State University	4-year +	12,461
Charter Oak State College	4-year +	1,988
Lincoln Technical Institute	2-year	709

Source: U.S. Department of Education, 2010

Proficiency scores in the region also lag state results. In 2009, only 72% of the students who took the Connecticut Academic Performance Test were proficient in math; 75% of them were proficient in reading. Statewide, 75% of students were proficient in math and 78% were proficient in reading. The region's performance worsened in 2009 compared with 2002. Math proficiency decreased by 5% and Reading proficiency decreased by 4%. In large part the region's results can be attributed to a sharp decline in proficiency scores in New Britain, where math proficiency declined by 27% and reading proficiency declined by 19%. State results also showed a decrease or stagnation.

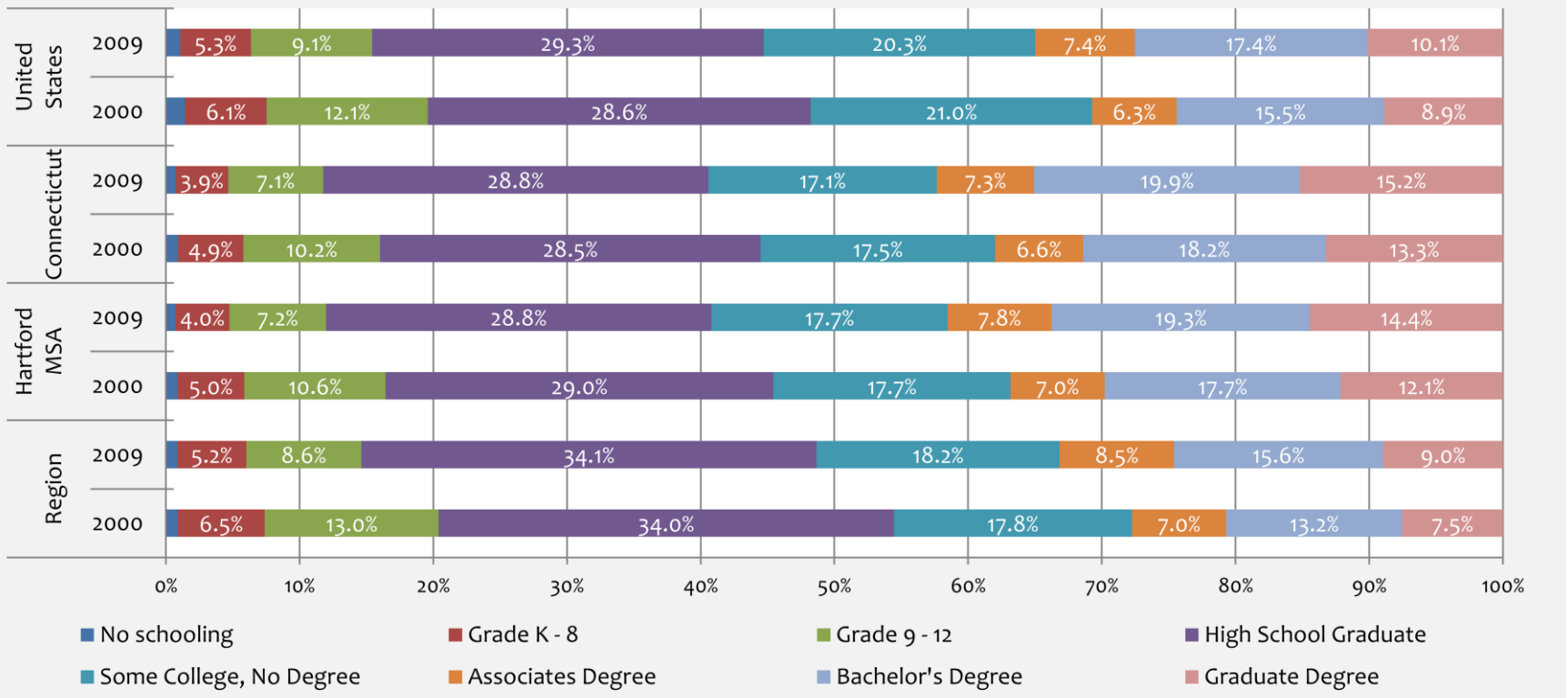
Higher Education

College enrollment grew between 2004 and 2008. In 2004, there were 15,127 students, which grew to 16,425 students in 2008. Total growth was 8.6%. Much of this impressive growth can be attributed to Lincoln Technical Institute, which grew by 163.6%. This school was purchased by a larger organization in 2004,

which is a possible cause of its growth. The largest college in the region is Central Connecticut State University, which saw modest growth following a period of declining enrollment. It had 12,320 students in 2004 and 12,461 in 2008 (see Table 8 for current enrollment numbers).

Despite the dire financial situation that Connecticut faces, the state has continued to fund higher education. In 2010 it appropriated $8,450 per full time equivalent student. This was the fifth highest level in the country. It was also one of the few states to not cut funding. Funding increased 0.2% in Connecticut from 2009 to 2010. While this is a very small increase, Connecticut was one of seven states that did not cut funding on a per student basis.[xiv] This is expected to change in the near future, though how much funding will be cut is not known.[xv]

Figure 11. Change in Educational Attainment (2000-2009)



Source: U.S. Census Bureau, 2000; U.S. Census Bureau, 2010

Educational Attainment

In the past decade the region has shown dramatic improvements in educational attainment, but still lags behind the nation, the state, and the MSA. People who only completed 9-12 grades have fallen from 13.0% to 8.6% of the population (see Figure 3). A smaller drop occurred in in the population of people completing K-8. All higher education categories have increased though most categories lag national, state, and MSA results.

The region still lags behind in advanced degree attainment (graduate degrees). Just 9% of residents region-wide have a graduate degree but 10% nationwide have one. That discrepancy becomes even greater when the region is compared to the state and the metropolitan area. 15.4% of the state and 14.4% of the MSA have graduate degrees.

While the region lags the nation, the state, and the MSA in higher educational attainment (so called "high skill" workers), it does have a significant advantage with middle skill workers. People with an Associate's degree make up 8.5% of the population while people with some college, but no degree, make up 18.2%. The national average for *Associate's degrees* is lower at 7.4% but is higher for *some college*. The region's percentages of both of these categories exceed the state and MSA averages.

There is significant variation between the municipalities though (see Table 9). In both Burlington and Berlin at least 40% of the population has at least a bachelor's degree. This exceeds the state, nation, and MSA percentages. On the other hand, in New Britain, Bristol, and Plainville, less than 20% of the population has at least a bachelor's degree.

Findings

- K-12 enrollment is down throughout most of the region.
- Higher education enrollment increased by 8.6% between 2004 and 2008.
- Despite financial troubles, the state has so far maintained funding levels, though they are expected to decrease.
- Educational attainment has increased.
- Educational attainment lags comparison regions.
- Compared to the state and the MSA, the region has a high percentage of "middle skill" workers.

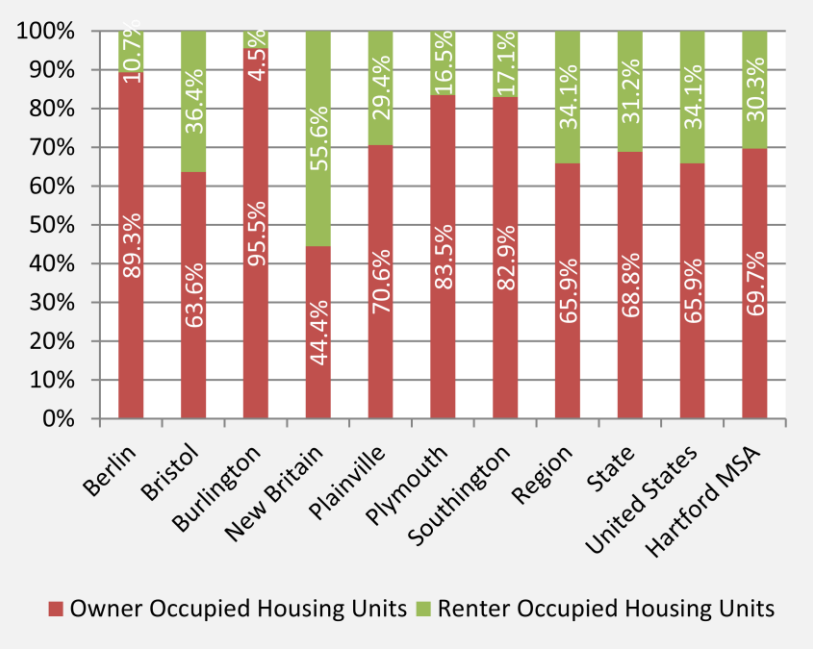
Housing

Central Connecticut contains a diversity of housing, which is important for maintaining a diverse and robust labor force. While some of the individual municipalities struggle to supply adequate housing to all income levels, the region as a whole is able to accommodate a variety of economic and living situations.

Tenure

Home ownership is one of the primary sources of wealth in the United States. As such, it serves as an indicator of both economic health and community health. It also contributes to community stability. People who own their home tend to be more attached to a community. For that reason home ownership can be an indi-

Figure 12. Housing Tenure by Town (2009)



Source: U.S. Census Bureau, 2010

cator of quality of life. It helps to answer: "how attached are people to this area?"

Most households in the Central Connecticut region are owner-occupied. Overall 65.9% of occupied housing is owner-occupied while 34.1% is renter-occupied. This is the exact same ratio as that of the United States. The region is, however, more skewed towards renters than either the state or the MSA; 68.8% of the state's housing units, and 69.7% of the MSA's, are owner-occupied.

Within the region, there is again a great amount of diversity. Over 95% of Burlington's housing is owner-occupied, while only 44.4% of New Britain's is. In Bristol, the ownership rate is just 63.5% while in Berlin it is 89.3%.

In all of the municipalities, the rate of homeownership increased from 2000 to 2009. The greatest increase was seen in Plymouth, which went from 78.6% to 83.5%. The smallest increase was seen in Burlington, in which 94.8% of housing units were owner-occupied. This increased to 95.5% in 2009. The regional rate increased 2.3%, a larger increase than the state, which increased 2.0%, and the nation, which actually decreased 0.3%. The MSA exceeded the regional rate by increasing 3.7%.

Vacancy

According to USPS data (which is collected in a different manner than Census data, and thus is not comparable), the region as a whole has experienced fewer vacancies than the nation as a whole. In 2010, Central Connecticut's vacancy rate was 2.91% while the nation's was 3.66% (See *Table 10*). Within the region, rates varied from a low of 0.47% in Burlington to a high of 5.41% in New Britain.

In 2007, residential vacancy was almost universally lower. The entire region had just a 2.57% vacancy rate. Every municipality except for New Britain had rates lower than 2%. Three of them were below 1%. One oddity was that New Britain's vacancy rate actually decreased between 2007 and 2010. It went from 5.49% to 5.14%. This is probably attributable to demolitions, particularly

Table 10. Residential Vacancy Rates

	2007	2010	Change
Berlin	0.48%	1.24%	158.33%
Bristol	1.72%	2.20%	27.91%
Burlington	0.30%	0.47%	56.67%
New Britain	5.49%	5.41%	-1.46%
Plainville	1.55%	2.01%	29.68%
Plymouth	1.94%	3.50%	80.41%
Southington	0.83%	1.64%	97.59%
Region	**2.57%**	**2.91%**	**13.23%**
Nation	2.92%	3.66%	25.34%

Source: U.S. Department of Housing and Urban Development, 2010; U.S. Department of Housing and Urban Development, 2007

in formerly high vacancy rate census tracts. In one tract, the housing stock decreased by over 400 units (not shown); the number of vacancies fell by the same amount.

Physical Characteristics

The physical characteristics of housing in the region have changed dramatically. Data from the ACS show that housing units are getting larger throughout the region, following national trends. From 2000 to 2009 the total number of housing units increased by 3.6% in the region. The number of units with nine or more rooms, however, increased by 31.8%. The number of two room units declined by over 30%. While these numbers follow national trends, intra-regional trends diverge. Berlin, for example added 11.3% more housing units, but added nearly 61% more nine room plus units.

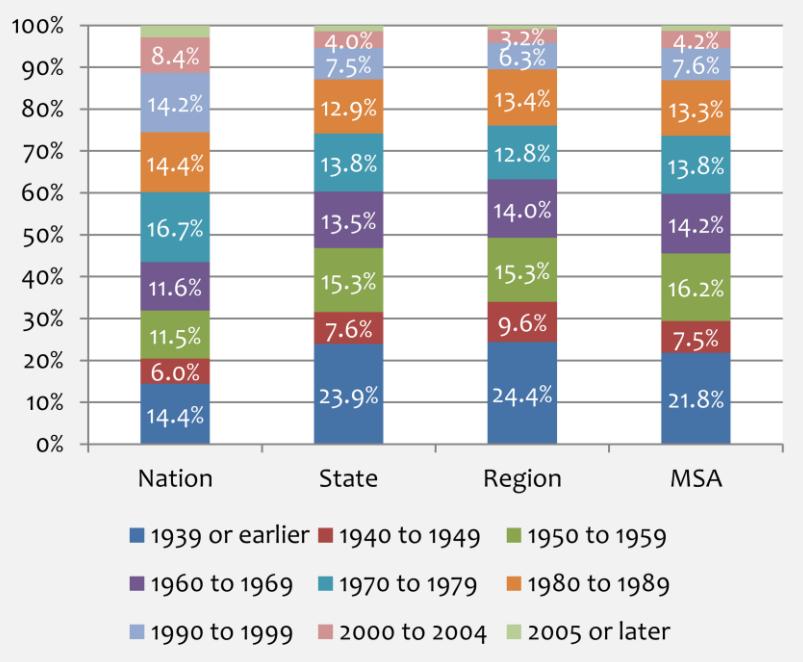
The age of the region's housing also differs significantly from national trends. Over 24% of the region's units were built before 1940, while just over 14% of the nation's were. The region's average was higher than the Hartford MSA as well, where just under 22% of units were built before 1940. This trend continues with other age groups of housing units, until the 1970s, when regional percentages begin to lag national ones. Most notable is that the region lags the nation, the state, and the MSA in the 2000 to 2004 and 2005 and later groups, indicating again that housing construction in the region has lagged other areas.

Geographic Distribution

Most the housing units in the region remain in traditional population centers, such as Bristol and New Britain, but that is changing. As shown in Figure 14, the vast majority of housing units are located in Bristol and New Britain (around 60%). Recent construction, however, has favored the other towns. Southington, for example has a greater percentage of units constructed since 2005 than Bristol and New Britain combined. In fact, you have to look at housing that was constructed in the 1980s to see Bristol and New Britain representing a plurality of units.

Growth in the five towns has been (relatively) explosive (see Table 11). Region wide, from 2000 to 2009 the number of housing units increased by just 3.6%, well below the national average of 10.2%, but on par with Connecticut which added 3.7% more units. Berlin showed the highest growth at 11.3%, with Burlington, Southington, and Plymouth all showing greater than aver-

Figure 13. Housing unit age distribution



Source: American Community Survey

age growth. Bristol and New Britain lagged the regional and state average while Plainville lost units.

Cost and Sales

In most of the region, housing is more expensive than the national average, but less expensive than the state. As of August 2010, only New Britain and Bristol had lower median home sale prices (existing and new) than the U.S. Every municipality in the region had a lower median, however, than the state of Connecticut. As shown in Figure 19 (page 92), housing prices have fallen since their peak in 2007, but have since recovered in most of the region. The exceptions are Bristol and New Britain, where prices have remained relatively low.

Since 2006, sales of homes have fallen dramatically. In 2006 5,990 homes were sold in the region, but just 4,418 were sold in 2010 (a decrease of 26%). Berlin, Burlington, Plainville, and Southington have begun to rebound. Sales increased in those municipalities by 6%, 10%, 11%, and 5% respectively.

Affordability

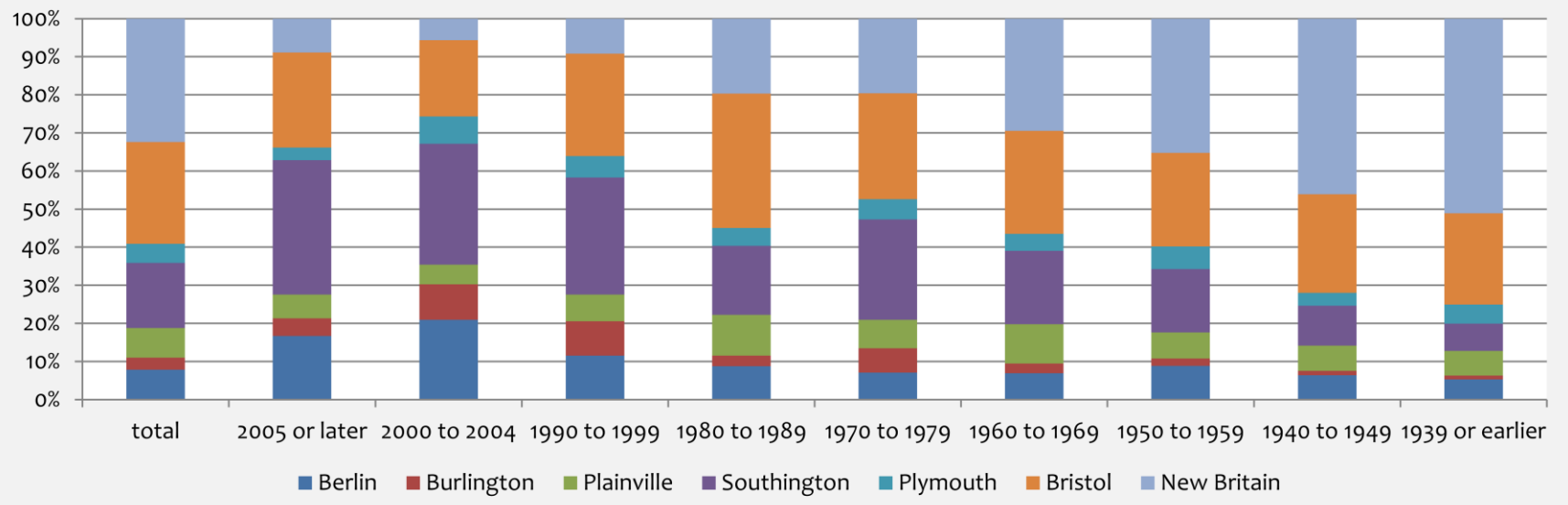
Compared to the rest of Connecticut, the seven municipalities in Central Connecticut are relatively affordable. A recent study (using 2009 data) by the Partnership for Strong Communities[xvi] compared the state's median income to the income needed to afford a mortgage on the median priced home in each Connecticut municipality. Bristol, New Britain, Plainville, and Plymouth were all considered affordable while Berlin, Burlington, and

Table 11. Percent growth in housing units from 2000 to 2009 by town

	Percent growth
United States	10.2%
Connecticut	3.7%
Berlin	11.3%
Burlington	5.5%
Plainville	-0.7%
Southington	8.4%
Plymouth	6.0%
Bristol	0.9%
New Britain	2.4%
Region	3.6%

Source: U.S. Census Bureau, 2000; U.S. Census Bureau, 2010

Figure 14. Percent of housing units built in a given time frame located in each town



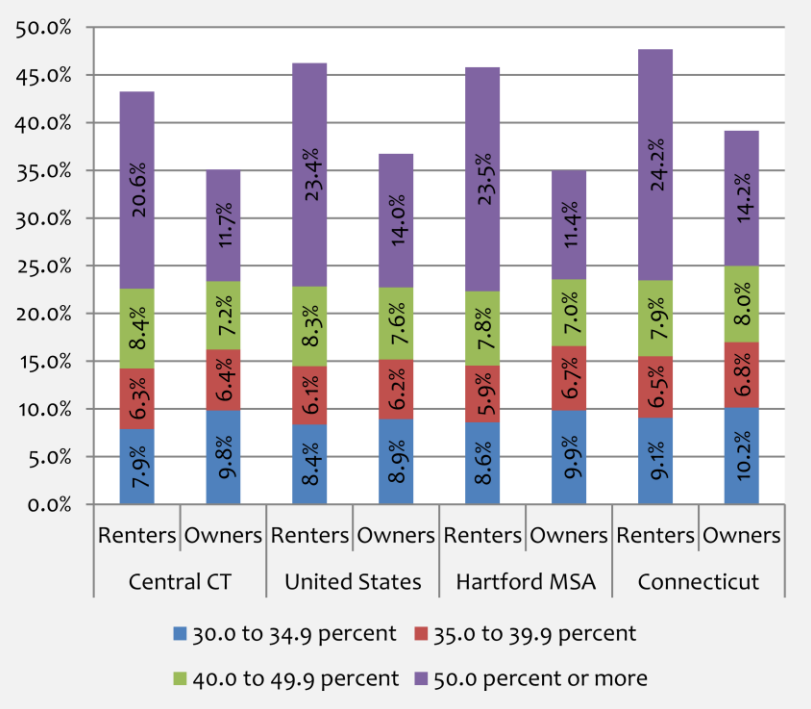
Source: U.S. Census Bureau, 2010

Southington were unaffordable. All seven municipalities had median home prices that were affordable to people earning the median income for that municipality.

The above data only considers medians, but the affordability is more complex than that. For a household to be able to afford to own a house, they need to be able to cover expenses with less than 30% of their income. Households that pay more than 30% are considered "cost burdened". Nationally, 36.7% of homeowners with a mortgage are cost-burdened. In Central Connecticut just 35.1% of households are cost-burdened. The state of Connecticut fares worse than the nation with 39.1% of homeowners being burdened.

All households are not burdened to the same degree however (see *Figure 15*). In Central Connecticut, 11.7% of homeowners pay 50% or more of their income in housing costs. Nationally, the percentage is 14.0%. A slightly lower percentage of Central Connecticut homeowners pay between 40% and 49% income for housing costs. A slightly larger percentage pays between 34% and 39% or 30% and 34%. The state showed higher percentages in every category.

Figure 15. Percent of cost burdened households (2009)



Source: U.S. Census Bureau, 2010

A much larger percentage of Central Connecticut renters are cost burdened, though the situation is still better than the national average. 43.2% of renters in the region are in unaffordable housing, versus 46.2% nationwide. Statewide, 47.7% of renters are burdened. As with owner costs, the region tends to have smaller, or very similar, percentages of cost burdened renters for each of the individual categories. It should be pointed out, however, that nearly 21% of renters in the region pay more than 50% of their income on housing. Cost-burden rates vary within the region. For example, 25.1% of New Britain renters pay more than 50% of their incomes on housing (see Figure 20 on page 93) while just 3.9% of Burlington renters are burdened to that degree.

Permits

Across the region, housing permits are down from 2004 (see *Table 12*). The total decrease from 2004 to 2010 was 14%. Throughout that period, housing activity had fluctuated considerably. Housing permits did increase from 2006-2007, by 2%, and from 2009 to 2010, by 5%.

The most recent year of activity (2010) indicates that housing construction is on the rebound in much of the region. Every municipality except for New Britain experienced an increase in housing permits from 2009 to 2010. In Berlin the increase was 137%.

Findings

- Home ownership is on par with state and national trends.
- Construction has shifted away from traditional population centers.
- Housing remains relatively affordable in the region.
- There are some signs of recovery from the housing crisis.
- Compared to the state and the MSA, a relatively small percentage of Central Connecticut residents feel a cost burden.
- Renters are more likely than owners to feel cost-burden.

Table 12. Percentage change in housing permits issued by town (2004-2010)

Year	Berlin	Bristol	Burlington	New Britain	Plainville	Plymouth	Southington	CC Region
2004-2005	238%	-58%	-35%	147%	-49%	-61%	-11%	-1%
2005-2006	-57%	-38%	-34%	-36%	0%	-9%	-44%	-11%
2006-2007	-33%	46%	22%	23%	132%	-14%	20%	2%
2007-2008	-32%	-71%	-61%	-69%	-36%	-67%	-8%	-8%
2008-2009	-2%	-34%	91%	33%	-25%	0%	-35%	-2%
2009-2010	137%	95%	19%	-42%	5%	83%	36%	5%
2004-2009	53%	-86%	-54%	-53%	-41%	-81%	-52%	-14%

Source: Department of Economic and Community Development, 2010

The Transportation System

The region's transportation infrastructure and commuting patterns provide valuable insights into the region's economy. An efficient transportation system can either enhance, or degrade job accessibility, the size of the labor pool, and the ability of businesses to export their goods. This section provides a description of the region's transportation system and analyzes commuting patterns.

Infrastructure

Road Network

The municipalities of Central Connecticut have relatively good highway access, with a few exceptions. Interstate 84, Route 72, and Interstate 91 provide easy access to New Britain, Berlin, Plainville, Southington, and Bristol. These routes connect the region to Hartford, Waterbury, New Haven, and points beyond.

Connections to other regions are not uniformly good. Soon after reaching Bristol, Route 72 ceases to be a limited access highway, dropping in speed considerably. Recent upgrades have improved the situation. Other important routes through town, such as Route 6 have frequent stop signs and curb-cuts. The Terryville section of Plymouth is reached via Route 6, which again, has frequent stop lights. Route 8 does connect the west side of town to Torrington and I-84 through Waterbury. Burlington, being a relatively rural town, is much less accessible, though connections to major roads can be made through Bristol or Farmington.

Although traffic jams do back up the region's limited-access expressways from time to time, congestion is not a recurring problem for them. Choke points, however, are found along routes often traveled by the region's residents, such as I-84 through Hartford, Waterbury, and Cheshire, as well as I-91 between Windsor and Wethersield, and Route 9 in Middletown.

State projections suggest the situation will deteriorate. By 2030 it is projected that all state routes in the region but 69, 71, 72, 179, 364, and 571 will be near, at, or above capacity. This includes much of the region's expressway mileage. Congestion will increase, costing workers money and time. As described in the next section, increased congestion will also severely impact the movement of goods into and out of Central Connecticut.

Transit

The region's local bus system serves parts of Berlin, Bristol, Hartford, Farmington, Meriden, New Britain, Newington, and Plainville. Service is not offered in Burlington, Plymouth (including Terryville), or Southington. Buses run Monday through Friday from about 6 AM to 6 PM, with extended service to 9:30 PM in parts of Berlin, New Britain, and Plainville. There is no Sunday or holiday service.

Due to service gaps, no direct transfers are possible to transit operations in and around Waterbury (including CT TRANSIT's Waterbury division and Metro-North's Waterbury branch line) and Torrington (namely the Northwestern Connecticut Transit District local buses). The lack of through-routing and the predominantly local nature of the bus service make interregional trips lengthy to nigh impossible.

Although there have been repeated calls over the years for restoration of passenger rail to central Connecticut, no commuter or express trains serve the region. The sole community with passenger rail is Berlin, at whose Kensington station Amtrak's Vermonter and some of its Northeast Regional trains stop. Due to the Vermonter's leisurely speed and awkward schedule, which partly result from track removal and deterioration, the service is unable to satisfy the commuter or high-speed rail market. The New Haven-Springield Shuttle, which began after electrification of the Northeast Corridor, complements this service and provides an alternative to commuters from Hartford to New Haven.

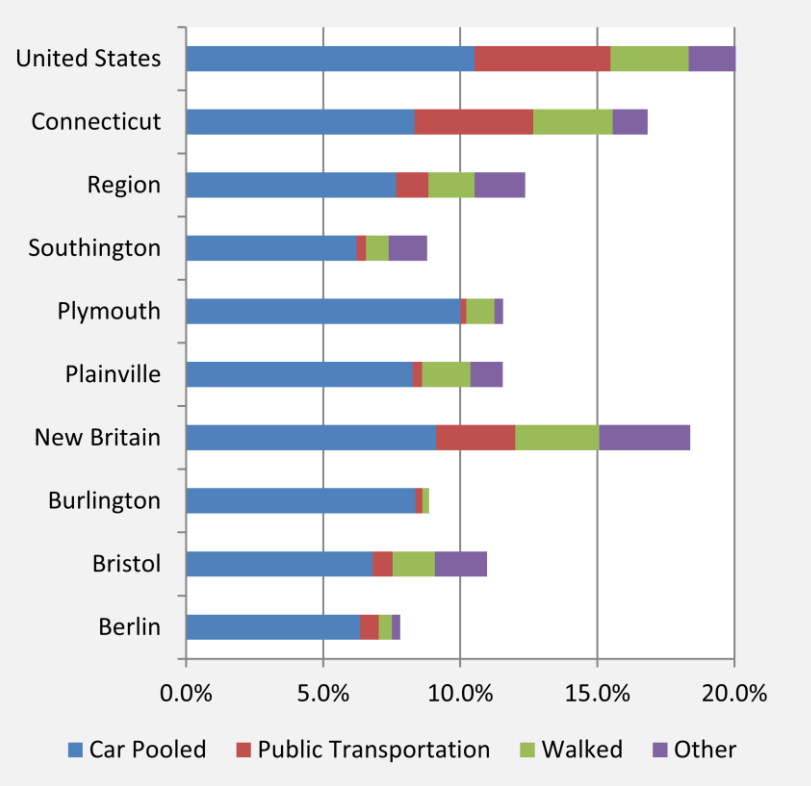
Freight

Over 200 million tons of freight travels through the Hartford Metropolitan region every year. Of that, 98% travels by truck, well above the national average of 79%. This disproportionately large amount of truck traffic contributes to congestion, increased maintenance needs, safety problems, and air quality deterioration. Trucking is also a less efficient method of transportation, so in many cases, the overreliance on trucking leads to higher costs for regional businesses.

Most of the freight that travels through the region travels along Interstate 84. Of the freight on I-84, a higher percentage is inbound (deliveries) than outbound (pickups). Within the Central Connecticut region, Route 72 is also an important route. Unlike I-84, it is used more for pickups than deliveries; the route's pickup bias is probably a reflection of the region's strong manufacturing base.

CCRPA, together with CRCOG and MRPA, contracted with a consultant to study freight movement in the Hartford metropolitan area. According to this report:

Figure 16. Popularity of Modes of Transportation (2009)



Source: U.S. Census Bureau, 2010

[t]raffic in the [regional] freight rail system… is shaped by the position [of the region] in the eastern and national rail network, and by the structure of the network itself. Ownership, connection, and distance combine to influence the pattern and character of current and prospective freight volume. While [the region] is a crossroads for highway traffic, it is poorly accessible from a freight rail standpoint. As such, the ability of rail to relieve the highway, and to act as a mitigant to deficient air quality and growing congestion, is constrained by network position, vertical clearances, facility capacity, and institutional factors.

Mode-shares

Central Connecticut is dependent on automobiles to a greater degree than either then the nation or the state (see Figure 16). In 2009, 85.4% of the region drove to work alone, compared to 79.4% of workers in the state and 75.9% workers in the nation. While 7.7% of workers did car pool, they did so at a rate well below the national average of 10.5%. Public transportation's share of commuting was also below the national average: just 1.2% of people chose that mode, versus 5% of the nation.

The region is also becoming increasingly reliant on single-occupancy vehicles. In 2000, just 84.1% of workers drove alone, which increased to 85.4% in 2009. Conversely, public transportation ridership and walking both decreased: they were 1.4% and 2.5% respectively. Carpooling also saw a large drop in mode-share, from 9.6% to 7.7%. Both the state and the nation saw small decreases in the percentage of workers driving alone.

Public transit and non-automotive modes of transportation achieve relatively high mode-shares in some parts of the region. For example, in New Britain, 2.9% of workers chose public transportation and 3.1% walked to work. While only 0.7% of workers in Bristol used public transportation, 1.5% of them did walk to work. In Plainville, 1.8% walked. The Region's most prolific car poolers were found in Plymouth, where 10% of workers

participated in a car pool; this was higher than the state average and nearly as high as the national average.

Commuting Flows

The region's commuting patterns suggest that increased congestion will have significant negative economic consequences. As of 2009, the vast majority of workers living in the region were employed outside of it. Over 65% of the region's employed residents worked elsewhere (69,322), while just 35% of them both lived and worked here (37,129 people). In 2002 over 39% of them lived and worked in the region; during that seven year period more than 3,000 people had their employment and residence geographically decoupled. This indicates a trend of decentralization.

In fact, the region has not created enough jobs to employ its residents. Central Connecticut's municipalities lagged the rest of the State in jobs per member of the labor force. Berlin had the best performance for the region by creating 1.03 jobs for every member of its labor force. New Britain was next with 0.69 jobs per labor force member and Bristol followed close behind with 0.58. The top result statewide was posted by Farmington, which had 2.38 jobs per labor force member. Hartford was a close second at 2.13 jobs per labor force member. The region as a whole scored just 0.65 jobs per labor force member, indicating that it is not currently capable of employing all of its working citizens, necessitating significant commuting.

The largest individual employment centers for regional residents remain in the region, though they have declined in importance. The largest employment centers were Bristol (10,786 workers) and New Britain (10,590 workers). Combined they represented 19.5% of the workforce. Both have declined in importance since 2002, when they employed 22% of the region's working residents. Southington (6,595), Plainville (4,152), and Berlin (3,540) also attracted large numbers of workers

The 65% of Central Connecticut workers who leave the region for employment find jobs in a large number of towns (see Table 13), but a few major employment centers are identifiable. Almost 10% of the workforce commuted to Hartford (10,206 people) and 7% commuted to Farmington (7,469 people). Hartford's share was an increase from 2002 when just 8.7% of the region worked there. The region's workers were also willing to find employment in far flung locations (see *Figure 21* on page 94). In 2009, 1,273 residents of the region worked in New Haven and 714 worked in Stamford. 370 even worked in Manhattan.

The decentralization trend is again evident. New Haven attracted 19% more workers from Central Connecticut in 2009 than it did in 2002. Stamford only increased by 4% but Manhattan picked up an extra 171 workers from the region, an increase of over 82%. It should be noted that some of these workers may be telecommuting and not actually driving or taking the train.

Surprisingly, despite exporting a large number of workers, a plurality of the region's jobs are held by people living outside it. In 2009 over 54% of the region's jobs were held by people living outside the region, representing an inflow of 44,452 people. The

top places for the region's employees to live (other than municipalities in the region) were West Hartford (2,623), Waterbury (2,363), Meriden (2,118), and Hartford (2,060). Newington, Farmington, Middletown, Torrington, and Wolcott were other popular origins.

The percentage of local jobs being held by people living outside the region has also been increasing. Between 2002 and 2009 the number of workers commuting from outside the region increased by 12% (4,705 workers). During the same period the total number of workers in the region increased by just 1%. The greatest increase in workers coming into the region came from West Hartford, though large increases also came from Hartford, Wethersfield, Wallingford, Torrington, and Wolcott.

At the same time the number of jobs held by workers from the region's towns has decreased substantially. The largest decrease came from Southington, where 1,137 fewer residents found employment in the region. The number of Bristol residents working in the region decreased by 985 people while the number of New Britain residents decreased by 755. Only Plymouth showed a small increase: just eight people.

Table 13. Number of Workers from Central Connecticut Municipalities

Municipality	2009		2002	
	Count	Share	Count	Share
Bristol	10,786	10.1%	11,842	11.3%
New Britain	10,590	9.9%	11,252	10.7%
Hartford	10,206	9.6%	9,118	8.7%
Farmington	7,469	7.0%	7,398	7.0%
Southington	6,595	6.2%	7,413	7.1%
Plainville	4,152	3.9%	4,749	4.5%
Berlin	3,540	3.3%	4,181	4.0%
Newington	3,367	3.2%	3,187	3.0%
West Hartford	2,971	2.8%	2,829	2.7%
Waterbury	2,908	2.7%	2,534	2.4%

U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2009)

Regional Ties

A significant result of this analysis is that, while the region has strong ties to Hartford, it is also bound to towns outside of the Hartford MSA. Within the top 20 employment centers for the region's residents, five are in New Haven County and one is in Middlesex County. Big draws in New Haven County include Waterbury (2,908 people), Meriden (2,344 people), Cheshire (2,085 people), and Wallingford (2,048 people). In Middlesex County, 2,751 of the region's residents work in Middletown.

The region also draws workers from a diversity of locations. While some of the top origins for the region's employees are in Hartford County, a significant number of workers come from other counties. Waterbury, Meriden, and Wolcott are in New Haven County; Middletown is in Middlesex County and Torrington is in Litchfield County. Each of these towns house over 1,000 of the region's employees.

Findings

- Traffic predictions show much of the region's highways being at or above capacity by 2030.
- Public transit service is limited in the region.

- The region is more heavily dependent upon single occupancy vehicles than the rest of the country.
- Connecticut's freight movement system is much more reliant on trucking than the nation as a whole.
- Rail freight is significantly underutilized
- Employment in Central Connecticut is becoming less concentrated.
- A significant amount of cross-commuting is occurring.
- The region has strong ties to Hartford, but also to areas of New Haven and Middlesex Counties.

Business Resources

Beyond educational and workforce training, resources are available to help people start businesses, or improve the profitability of existing ones. Most of these resources are available statewide, but are worth mentioning as potential implementation partners for the projects and strategies in this plan.

Starting a Business

CCSU Institute of Technology and Business Development

Located in New Britain, the Institute of Technology and Business Development provides a wide range of business services to companies throughout the region. For startups, ITBD offers low-cost business incubator space. Entrepreneurs can rent office space, access shared office services, take advantage of educational programs, and receive business counseling services. New firms are able to take advantage of these reduced cost services for up to five years before moving on. Individuals outside of the incubator space can also take advantage of training and counseling services related to starting a business.

Training programs are also available for established firms. The Training Center (within ITBD) can assist firms with workforce training programs, including delivering and developing the curriculum. These programs can be held at ITBD or on-site in the businesses' facilities. ITBD also offers training in management, leadership, and "lean" process improvements.

CW Resources

CW Resources is primarily an organization that works to provide training to disadvantaged populations throughout the region. In addition to their workforce training programs, they also run the Connecticut Enterprise Center in New Britain. This facility is a small business incubator that provides low-cost space, business planning assistance, shared office equipment, meeting rooms, a receptionist, and shipping and receiving services. They are also located in an Enterprise Zone, so companies located in the incubator have access to tax and wage incentives.

Connecticut Economic Resource Center

Located in Rocky Hill, the Connecticut Economic Resource Center (CERC) provides a plethora of information to businesses located in, or considering relocating to, Connecticut. *SiteFinder* provides a searchable database of available sites throughout Connecticut. *ProgramFinder* is a database of federal, state, and local incentive programs. *DataFinder* provides demographic and economic data about every town in Connecticut. CERC's *Smart Start* program assists new, expanding, or relocating firms with

licensing and registration processes. Firms can also access information on training, education, recruiting, real estate, exporting, and other topics through CERC's Business Response Center.

SCORE

Two chapters of SCORE (a non-profit business mentoring organization that partners with the U.S. Small Business Administration) serve the region. The Northwest Connecticut chapter (based out of Torrington) works through the Greater Bristol Chamber of Commerce and the Greater Hartford Chapter works through the New Britain Chamber of Commerce. These groups connect entrepreneurs with veteran business owners who provide mentoring. They also host workshops and other events.

Central Connecticut Revolving Loan Fund

The Central Connecticut Revolving Loan Fund provides loans at low rates to firms in the seven municipality region. Funds can be used for acquisition or renovation of property, purchase of machinery or equipment, and short term working capital. Loans are generally capped at $200,000 for manufacturers and at $25,000 for retail outlets.

Workforce Training

In addition to the region's secondary schools, vocational high schools, community colleges, and universities, it has a number of other workforce training resources. These resources are targeted primarily at retraining and upgrading the workforce's skills.

CT Works

CT Works is the network of "one-stop career centers" operated throughout Connecticut. In the Central Connecticut Region, a one-stop center is operated by Capital Workforce Partners in New Britain. This center provides services for job-seekers, including training and job placement. They also help employers setup job fairs, recruit employees, start apprenticeship programs, access tax credits, and comply with safety and health regulations.

CW Resources

CW Resources works with persons with disabilities and the socioeconomically disadvantaged. They provide vocational assessments, assistance with finding training and schooling options, and other services to those in need. Not only do they help individuals with finding work, but they offer a number of direct services to businesses, such as janitorial services, grounds maintenance, packaging, and production.

Municipal Resources

The potential financial resources available to a municipality can be gleaned from its equalized net grand list, which is the estimated market value of all property in a municipality.[xvii] Generally, to give this number context, it is divided by the population. The ENGLs per capita for all seven towns are in Table 16. The region as a whole has a per capita ENGL of just $105,555.10 while the state's is $168,655.78. None of the towns in the region have higher per capita ENGLs than the state. Part of the reason for this poor showing is that the state total is heavily influenced by

Table 14. Equalized net grand lists per capita and mill rates by town

	2009 ENGL/pc	Mill Rate (2009)
Berlin	$ 161,014.37	22.69
Bristol	$ 102,388.69	25.99
Burlington	$ 149,210.62	29.32
New Britain	$ 60,479.57	34.98
Plainville	$ 128,757.84	26.24
Plymouth	$ 100,340.14	30.1
Southington	$ 141,844.42	23.02
Region	**$105,555.10**	n/a
state	$168,655.78	n/a

Source: Office of Policy and Management, 2010

towns in the New York Metropolitan Region. For example, Greenwich has a per capita ENGL of $842,001 (not shown).

There are some interesting results within the region. As is seen in many of the other statistics, Berlin and Burlington have the highest numbers. Berlin, however, takes the lead this time. Southington is close behind Burlington, falling short by less than $8,000. Again, New Britain has the lowest value at just $60,479.62.

While this is not surprising, it is interesting when compared with mill rates (the rate of taxation levied on property). The lowest mill rate is found in Berlin (with the highest per capita grand list). The highest mill rate, by far, is in New Britain (34.98). Interestingly, despite having the second highest per capita grand list, Burlington also has the third highest mill rate (29.32). With the exception of Burlington, the towns with low property values are being forced to raise property tax rates. This leads to an increased cost of living that further dampens any chances for growth.

Grand list growth in the region lagged the state. Between 2005 and 2000, the total grand list for the region grew by 18.8%. Statewide growth was 20.2%. Only two municipalities beat the state growth rate: Burlington (34.2%) and Plymouth (20.5%).

Distressed Municipalities

Connecticut state law requires that at least one municipality in a CEDS region be considered "distressed" under EDA guidelines. The two main ways that a municipality can qualify are by having an unemployment rate that is one percent higher than the national average, or by having a per capita income that is less than 80% of the national average. New Britain's unemployment rate for the last 24 months averaged 12.6% while the nation's averaged less than 10%. Under this criterion, New Britain, and thus the region, qualifies.

Every year, the State of Connecticut releases a ranking of municipalities based on a number of indicators of "distress". The top 25 of them are considered "distressed municipalities". As of 2010, three of the region's municipalities had this designation: Bristol, New Britain, and Plymouth.

Findings

- The region's combined grand list per capita is roughly 2/3rds of the state average.

Table 15. Cost of living	
Municipality	**% higher than the U.S.**
Berlin	18.3%
Bristol	4.4%
Burlington	30.0%
New Britain	-2.4%
Plainville	4.7%
Plymouth	7.3%
Southington	18.0%
Source: Sperling's 2010	

- With a few exceptions, small grand lists are associated with relatively high tax burdens for the region's residents.
- Grand list growth was 18.8% from 2005 to 2009.
- The region qualifies as a distressed region.
- Three municipalities are considered distressed by the state.

Cost of Living

Municipalities in the Central Connecticut region have a higher than average cost of living, though again, it varies considerably (See *Table 18*). The highest cost of living—based on housing, food, transportation, utilities, healthcare, and miscellaneous expenses (and not including state or local taxes)—is found in Burlington, which is 30% higher than the national average. At the opposite side is New Britain, which is 2.4% *less expensive* than the national average.

Energy Costs

Excluding Alaska and Hawaii, Connecticut has the highest electricity costs in the nation (see *Table 19*). In August 2010, the average cost of electricity for all users in the United States was ¢10.45 per Kilowatt-hour; in Connecticut it was ¢17.18. The New England region had a rate of ¢15.35. Different users pay different amounts, and Connecticut does not lead the nation in all categories, but it is near the top. Residential users pay ¢18.98 in Connecticut, which is lower than New York's rate (not shown) of ¢19.03. Commercial users pay ¢16.3, lower than both Massachusetts (¢18.44) and New York (¢16.83) (not shown). Industrial users pay ¢14.1 in Connecticut, but pay ¢16.06 in Rhode Island (not shown). In all cases Connecticut's rates are higher than both the regional and national average. These rates have fallen slightly from 2009 rates.

Findings

- A wide variety of costs of living exist in the region, from much higher, to slightly lower than the national average.
- Three municipalities are within 5% of the national average

Table 16. Electricity Rates for End-users (August 2010)			
	Connecticut	**New England**	**United States**
Residential	18.98	16.68	12.02
Commercial	16.3	16.17	10.69
Industrial	14.1	11.65	7.21
All Sectors	17.18	15.35	10.45
Source: U.S. Energy Information Administration, 2010			

while one is below the national average.

- The state of Connecticut is one of the most expensive energy markets in the county by nearly every measure.

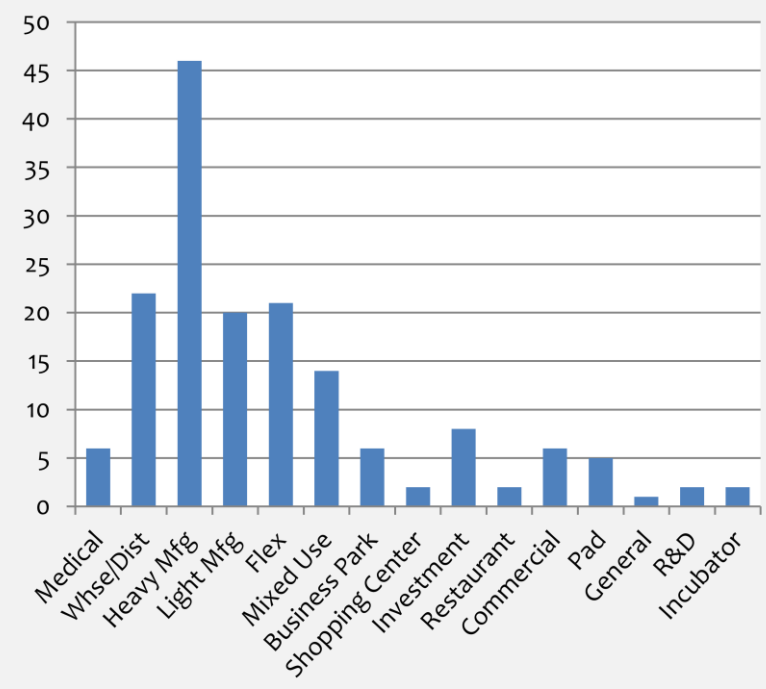
Developable Sites and Buildings

An analysis of sites and buildings available for purchase or lease was performed using CERC's SiteFinder website. This search revealed a total of 2.6 million square feet of available commercial and industrial building space. There were also at least 320 acres of sites available for development, representing roughly 0.3% of the region's total area. The median acreage of sites was just two acres, though the average was higher at seven acres. The median square footage of buildings was 7,500 and the average was 23,212.

Sites and buildings are available for a variety of purposes (see Figure 17). The largest percentage, 38%, of sites and buildings are available for retail. This is followed closely by industrial at 35%. Retail and special use are available on 23% and 4% of sties and buildings respectively. Looking at industry subsectors, the greatest availability is for heavy manufacturing with 46 available sites and buildings. Wholesale/distribution, light manufacturing, flex space, and mixed use were also prevalent.

As is expected, most of the available sites and buildings are located in areas that have not previously been as heavily developed. Over half of the site acreage is found in Southington, as is 27% of the building square footage. Berlin contains the next greatest proportion of the region's available space with 15% of the acreage and 26% of the square footage. These two municipalities also contain the greatest number of sites and buildings, with 40 in Berlin and 36 in Southington. A large number of buildings is also available in New Britain (28).

Figure 17. Available sites and buildings by industry subsector



Source: U.S. Census Bureau, 2010

It should be noted that the SiteFinder database does not necessarily list every available site or building in a municipality. Listings in the database must be maintained by property owners or other interested parties. A full assessment of available commer-

cial and industrial space would require on the ground surveys and in-depth analysis of municipal records.

Brownfields and Contaminated Sites

As an older industrial area, the region contains numerous brownfield sites. According to data compiled for the UConn Brownfield Mapping Project (published in March 2011), there are 28 confirmed brownfield sites in the region. Bristol and New Britain have the most (nine each) with Berlin following close behind (seven sites). Every town, however, except for Burlington, has at least one site.

The extent of contamination in the region is much greater than the above would suggest. The Connecticut Department of Environmental Protection, Remediation Division, maintains an inventory of contaminated or potentially contaminated sites. This inventory includes sites where activities known to involve hazardous materials were being performed. There are over 750 sites in the region that are potential or known to be contaminated. Environmental assessments have only been done on a handful of these sites, and even fewer have been remediated (see *Figure 18*).

These sites are problematic for a number of reasons. Such sites contain harmful contaminants that limit potential reuse until remediation can be performed. As they sit unused they are not contributing to economic activity. Potential developers may be deterred by lengthy investigation and remediation processes, as well as potential liability concerns. Financing may also prove troublesome.

These sites are, however, potential sites of development with existing infrastructure. Redeveloping these sites avoids the development of virgin land and reduces the need for new infrastructure. Grants for assessing the level of contamination and cleaning it up are also available from state and federal sources.

A key stumbling brining these sites back into a useful state is information. A comprehensive inventory of the region's brownfields and contaminated sites is not available in an easy to use format. Developing a geocoded inventory of these sites would greatly aid in redevelopment. It could be used to quickly locate clusters of sites and identify potential investment opportunities that could enhance their marketability.

The Environment

Generally speaking, population growth and economic development result in greater development of land. This issue was raised in the region's 2007 to 2017 Plan of Conservation and Development. That plan noted that land was being converted for development at a rate that far outpaced population growth. This section provides an update to that finding.

Based on data from the University of Connecticut's Center for Land Use Education and Research, land is being converted at a very fast rate. Between 1990 and 2006 (the last year for which data is available) the amount of developed land in the region increased by 8.7%. During the same period the amount of agricultural land decreased by 17.4%. Deciduous forestland decreased by 5.6%, coniferous forestland decreased by 3.8%, and forested wetland decreased by 2.6%. As of 2006, 30.4% of the region's land was developed, versus 28.2% in 1990.

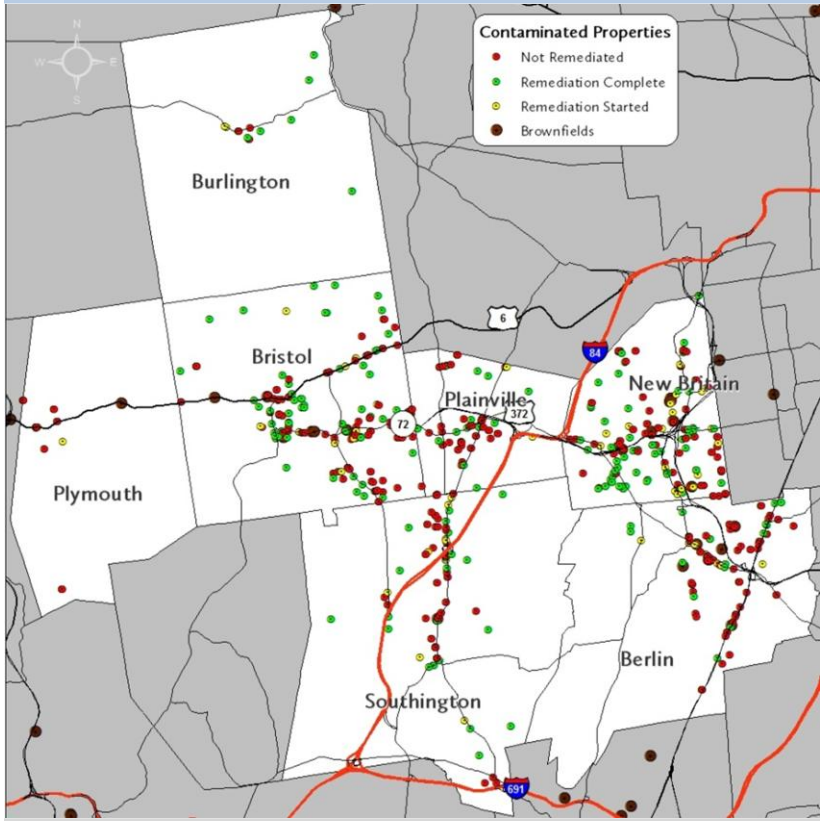
The rate of land conversion far outpaces the rate of population growth experienced by the region. Between 1990 and 2009 (data was not available for the region in 2006), the population only increased by 1.9%. In 1990 there was about one acre of developed land for every 7.5 people. Since then, land has been developed at a rate of one acre for every 1.77 people.

The region's rate of land conversion was slower than the state's, but the state's rate of land conversion was more in line with population growth. The state converted 51,072 acres (or 79.8 square miles) between 1990 and 2006. This increased the amount of developed land by 10%. During that same period, the state's population grew by 6.3%.

Impervious Surface Cover

As noted in the region's Plan of Conservation and Development (POCD), increased development results in an increase of impervious surface cover. This will negatively impact water supplies and adversely affect regional watersheds. The Build-Out Analysis performed for the region indicates that the following subregional basins will become degraded in the "70 percent build-out" scenario: Misery Brook, Pequabuck River, and Willow Brook. Degradation to these basins will reduce the supply of clean water and negatively impact recreation in the region.

Figure 18. Locations of contaminated sites in Central Connecticut



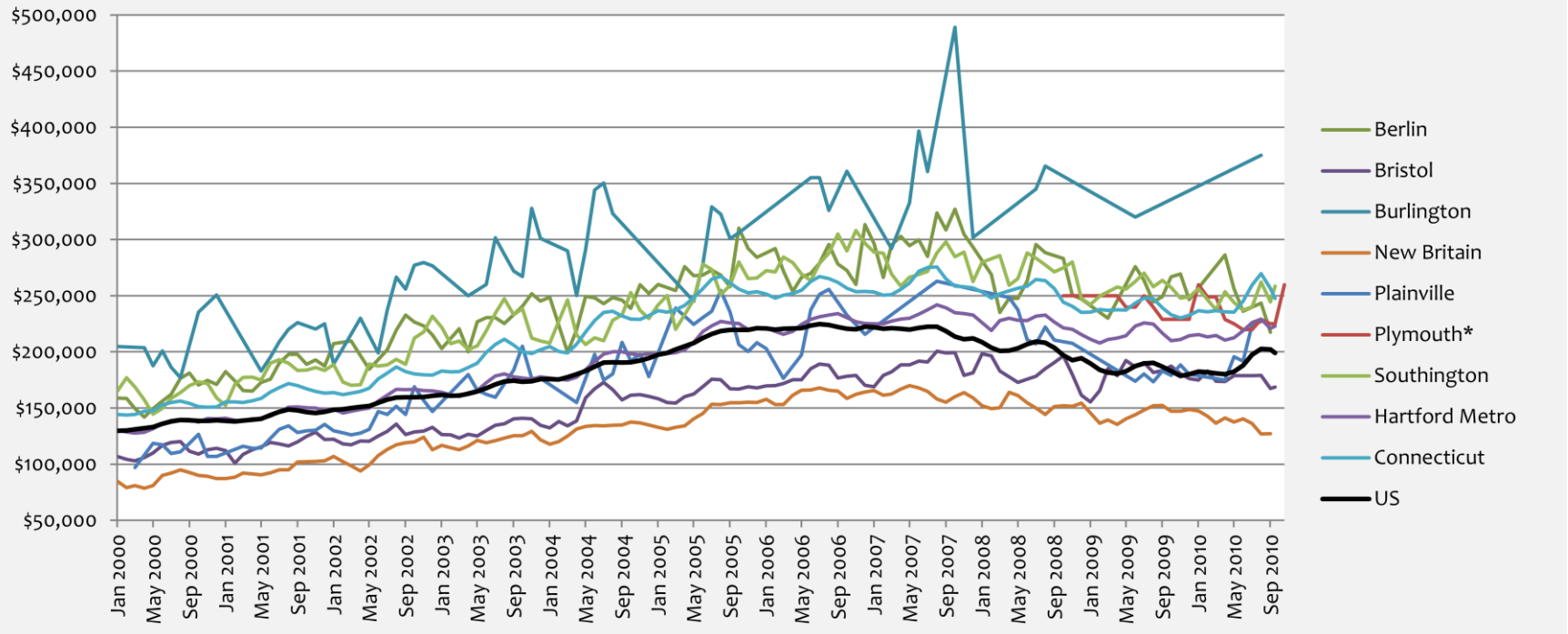
Source: Map by CCRPA; Data from Connecticut Office of Brownfield Remediation and Development and the Department of Environmental Protection.

Findings

- Many of the sites and buildings in the region are small.
- Most available sites and buildings are for manufacturing.
- Berlin and Southington have the most available space.
- The region has a wealth of brownfields and contaminated sites.
- Continued land development threatens critical environmental and economic resources.

Data Tables

Figure 19. Change in home prices



Source: Zillow.com

* Available data for Plymouth was incomplete.

Figure 20. Percent of households cost-burdened by town (2009)

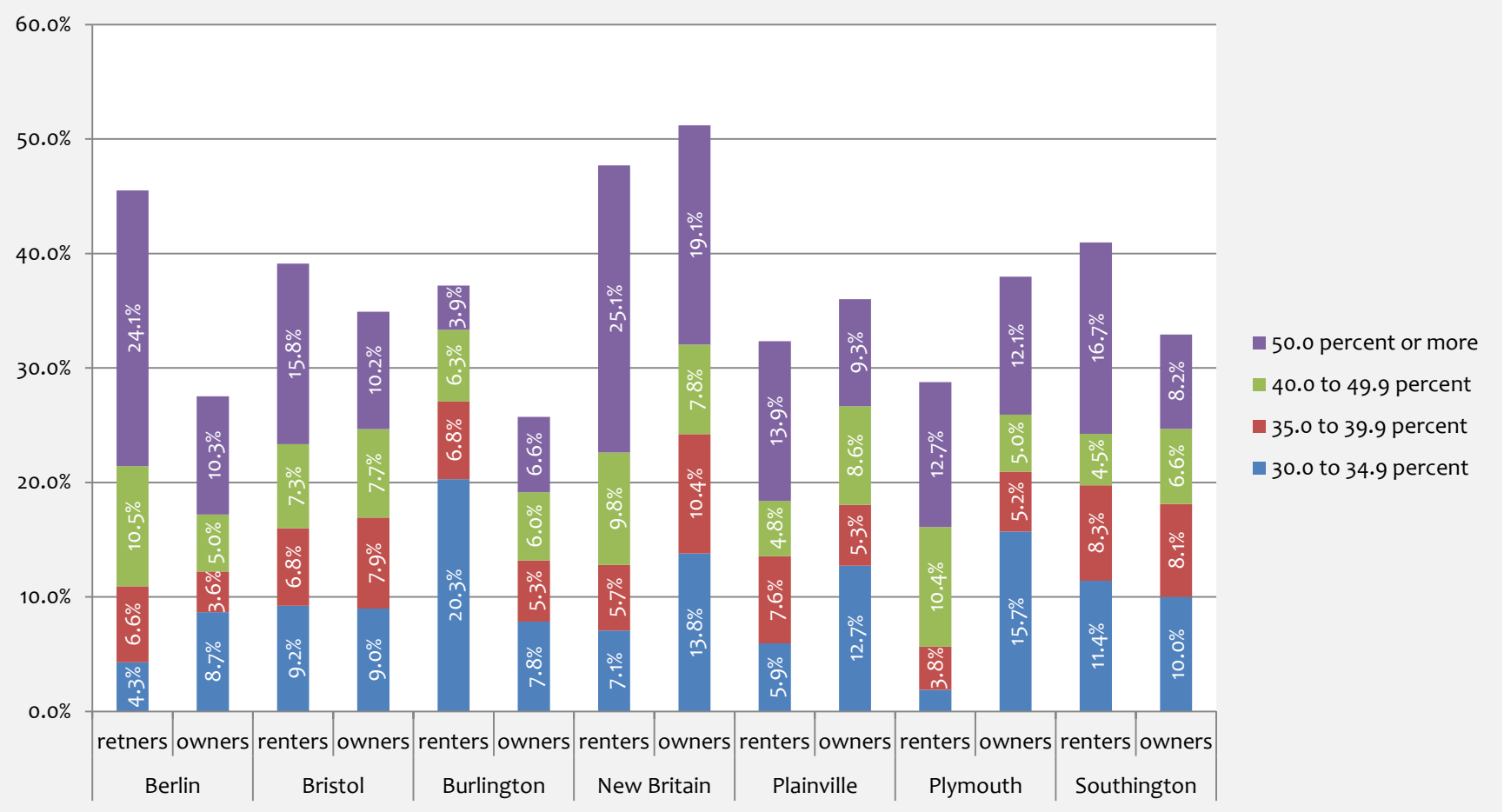
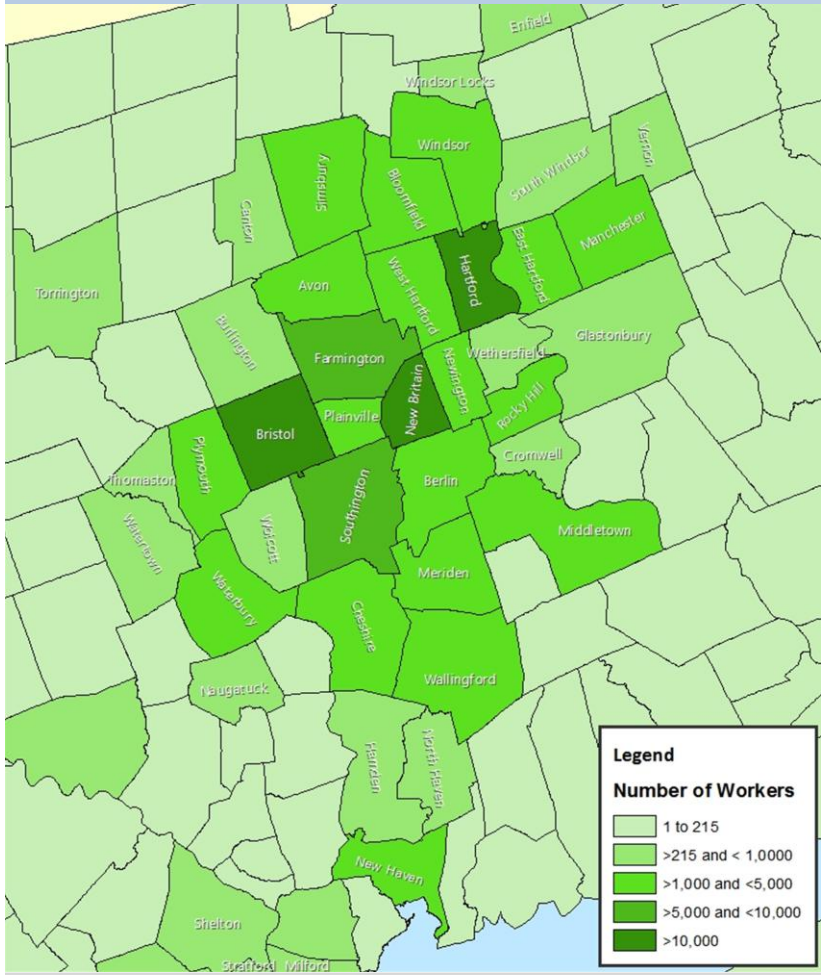
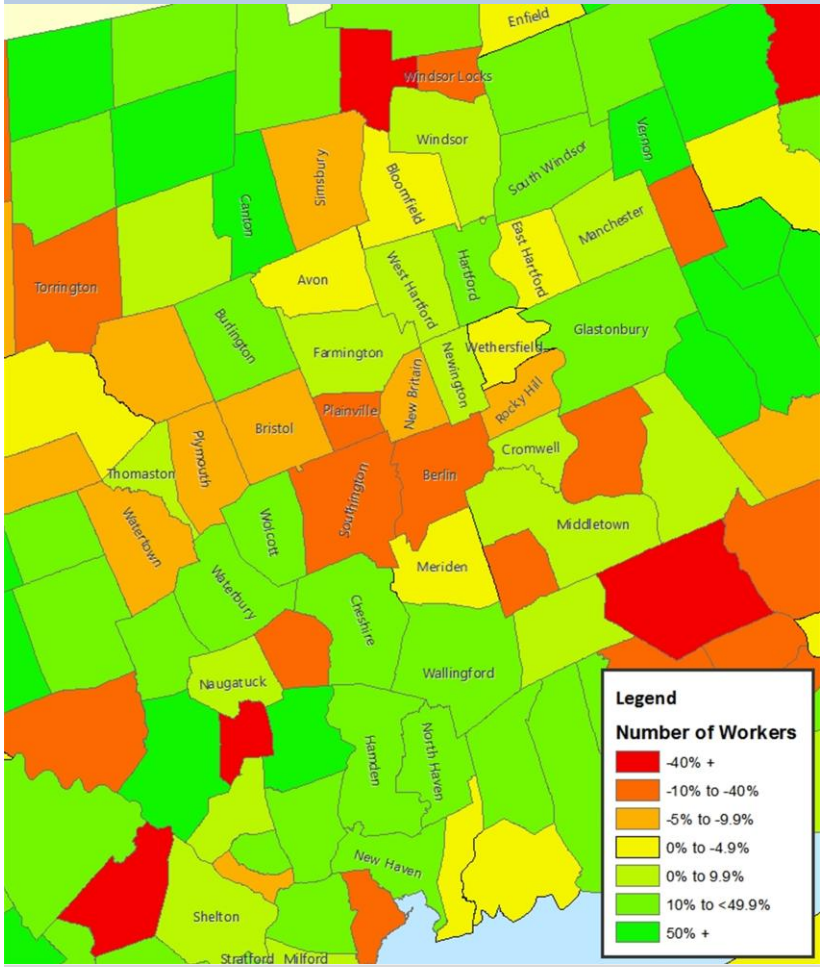


Figure 21. Number of Central Connecticut residents who work in various Connecticut towns (2009)



Source: Map by CCRPA using data from: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2009)

Figure 22. Percent Change in the Number of Jobs Held by Central Connecticut Residents (2002-2009)



Source: Map by CCRPA using data from: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2009)

Appendix 2: Economic Analysis

This section collects and analyzes available economic data to provide a firm basis for the actions proposed by this plan. The first section examines the overall economic situation in the Central Connecticut Region. It looks at broad sectors of the economy to determine which ones are creating jobs and which ones are losing them. The next section examines the industry cluster based efforts being deployed in adjacent regions and throughout the state. The final section examines the available data and literature to identify the region's best cluster prospects.

Two sets of clusters are then identified. The first set includes three clusters that are targeted for future growth in the region. These are clusters that have strong national or regional prospects. The second set includes three clusters that are important to the region, either because of their existing presence, or because of important benefits they provide. The goals and objectives of the CEDS include strategies designed to improve the prospects of each of these clusters.

Guiding Principles of the Analysis

Initial stakeholder discussions and a review of pertinent plans and guidelines suggested a few guiding principles for the analysis. First, this report should **not be construed as "picking winners"**. The intent is not to choose which firms or industries will be supported and which will be ignored, but is instead to help the region's leaders more fully evaluate their capital projects and workforce solutions. By better understanding the needs of clusters and how companies within them are interrelated, investments can be deployed in a strategic manner that improves conditions for a broad assortment of firms.

A second and related principle is that investments and targets should be **based on existing strengths and assets**. We have an existing workforce, an existing economic base, an existing infrastructure base, and an existing set of buildings and sites. It would be imprudent to jettison them in the vain hope of chasing the latest fad. The purpose of our investments should be to expand the reach and depth of our existing assets, to help them grow into new industries and take on new activities.

A third principle is that, despite the need to build on the region's existing businesses and workforce, **we should be targeting emerging clusters** for growth. Established clusters are the backbone of the region's economy, but recent evidence strongly suggests that young companies are the greatest creators of jobs.

For example, a recent paper from the Kauffman Foundation, using a relatively new database from the U.S. Census Bureau, shows that nearly all net job growth in the U.S. from 1980 to 2005 came from firms that were less than five years old[xviii]. While established firms do represent the lion's share of total jobs in the economy, they do not tend to create a large number of net new jobs.

Economic Conditions in Central Connecticut

Since the region's 2004 CEDS was completed, the economic development climate has changed dramatically. The following is a review of current economic conditions.

Business Activity

Despite the impact that the great recession has had on business activity, Department of Labor data show an increase in the number of private employers in the region. Between 2004 and 2009, the number of employers increased by 2.9%. During the same period, the number of private employers grew by 7.1% nationwide, over three times the regional rate. On the other hand, Connecticut only added 2.5% more employers.

At the same time, commercial property vacancy rates have also been increasing. According to USPS vacancy data, (based on the number of properties, not square feet) the region's business vacancy rate has increased since 2007 (the earliest year for which data is available), though only from 10.7% to 10.8% (see ***Error! Reference source not found.***). The national rate was slightly higher at 11%, and also grew faster from its 2007 rate of 8.9%. Burlington had the lowest rate, 3.1% in the region. Only New Britain and Plainville had rates higher than the national average: 14.1% and 12.2% respectively. Every town and city experienced an increase in their rate, except for New Britain, which dropped from 15.1% to 14.1% and Burlington, which was at 11.1% in 2007 and 3.1% in 2010. It should be noted that the total number of businesses listed for Burlington is very low, so small numeric changes translate to large percentage changes.

Retail Sales

Between 2004 and 2009 both the number of retail establishments and the value of retail sales declined. The number of establishments declined 10.7% between 2007 and 2010 (see *Table 21*). This was a slightly larger decline than was experienced by Connecticut: 10.12%. Overall, retail sales in the region declined 6% while increasing 17% statewide.

The amount of sales and use tax due also increased in the region, but at a slower rate than it did statewide. The region's taxes due declined by 2.5% while the state declined by 2.8%. Both Berlin and Southington saw taxes due increase, by 3.7% and 3.1% respectively.

Trade Names

Trade name filings have fallen considerably since the last CEDS was completed. While not a perfect indicator, trade name filings are a proxy for business start-up activity. In 2004 there were 774 filings region-wide, growing to a high of 986 in 2005. The growth

rate (from the previous year) was 9.3% in 2004 and 23.5% in 2005. The most recently available data show just 643 filings in 2010, for an overall decrease in volume of 16.9% between 2004 and 2010.

Regional Employment

Despite the economic downturn, the region has actually gained private sector jobs since 2004. Total private sector employment grew by 1.4% between 2004 and 2009, an addition of 1,141 jobs. During that same period national employment declined by 0.5% and State employment declined by 2.1%.

Regional employment was concentrated in three sectors (see *Table 22*): *Manufacturing*; *Retail Trade*; and *Health Care and Social Assistance*. In 2009 *Manufacturing* accounted for 14.9% of employment, *Health Care and Social Assistance* accounted for 17.2%, and *Retail Trade* accounted for 11.1%. These three sectors were also the largest sectors for the state, though the region's employment base was more dependent on *Manufacturing* (12.5% for the state) and *Health Care and Social Assistance* (just 17.8% for the state). Regional employment was much less concentrated in *Finance and Insurance employment*: 8.6% of state employment was concentrated in this sector versus 2.7% of regional employment. Other regional concentrations included *Information*, *Construction*, and *Accommodation and Food Services*.

Economic Base

The economic base of a region is made up of industries that are more heavily concentrated in that region than they are in some other reference area, such as the state or the nation. Those industries that employ a disproportionately large number of employees are assumed to be producing more than is required for local consumption, and are thus exporting the excess. The theory is that it is the economic (or export) base of a region that drives growth by bringing in outside money.

Table 17. Change in Retail Sales (2004 to 2009)

	Central Connecticut	Connecticut
2004 to 20005		
Number of Taxpayers	-4.8%	-4.3%
Retail Sales of Goods	-17.5%	-0.4%
Sales and Use Tax Due	-11.7%	-9.0%
2005 to 2006		
Number of Taxpayers	-0.8%	-0.2%
Retail Sales of Goods	-3.0%	-1.6%
Sales and Use Tax Due	-4.9%	-1.8%
2006 to 2007		
Number of Taxpayers	-0.2%	0.2%
Retail Sales of Goods	-15.5%	3.8%
Sales and Use Tax Due	-2.5%	2.4%
2007 to 2008		
Number of Taxpayers	-2.8%	-3.0%
Retail Sales of Goods	29.3%	5.4%
Sales and Use Tax Due	10.6%	3.1%
2008 to 2009		
Number of Taxpayers	-2.3%	-3.2%
Retail Sales of Goods	7.5%	9.1%
Sales and Use Tax Due	7.7%	3.1%
Total Change		
Number of Taxpayers	-10.4%	-10.1%
Retail Sales of Goods	-6.0%	17%
Sales and Use Tax Due	-2.5%	-2.8%

Source: Connecticut Department of Revenue Services, 2009

A crude way of determining which industries are in the base is to calculate location quotients (LQ). The LQ is determined by comparing the percentage of an area's total employment that is made up by a particular industry, to the percentage of total employment in a reference area (usually the state or nation) that is made up by a particular industry. If the LQ is below 1.0, the region is assumed to be a net importer of that industry's goods. If it is around 1.0, the industry is assumed to be producing just enough for local consumption (that is, the region and the reference region have roughly equal employment in the industry). Values much greater than 1.0 (usually at least 1.10) indicate that

Table 18. Industries as a Percentage of Total Employment (2009)

	Region	National	State	Hartford LMA
Agric., Forestry, Fishing and Hunting	0.0%	0.9%	0.3%	0%
Mining	0.0%	0.5%	0.0%	0%
Utilities	0.3%	0.0%	0.5%	0%
Construction	4.9%	4.8%	4.0%	4%
Manufacturing	14.9%	9.2%	12.5%	13%
Wholesale Trade	3.2%	4.3%	4.7%	4%
Retail Trade	11.1%	11.4%	13.0%	12%
Transportation and Warehousing	1.2%	3.9%	2.9%	3%
Information	4.6%	2.3%	2.6%	3%
Finance and Insurance	2.7%	4.4%	8.6%	13%
Real Estate and Rental and Leasing	0.7%	1.6%	1.4%	1%
Professional, Scientific, and Technical Services	2.5%	5.9%	6.4%	6%
Management of Companies and Enterprises	0.3%	1.4%	2.0%	2%
Administrative and Waste Management	3.7%	5.6%	5.5%	5%
Educational Services	0.4%	9.5%	3.8%	3%
Health Care and Social Assistance	17.2%	13.8%	17.8%	18%
Arts, Entertainment, and Recreation	0.6%	1.8%	1.7%	1%
Accommodation and Food Services	6.1%	8.7%	8.0%	8%
Other Services (except Public Administration)	3.5%	3.4%	4.1%	4%
Unclassifiable/unknown industry	0.0%	0.1%	0.0%	0%

Source: Connecticut Department of Labor, 2010

the region is exporting the product of that industry.

Based on 2009 data (see *Table 23*), in Central Connecticut, the economic base was made of the following industries: *Construction, Manufacturing, Retail Trade, Information, Health Care and Social Assistance,* and *Other Services*. In general, the economic base of Central Connecticut has been stable since the last CEDS was completed. A major exception is the *Information* sector. This sector showed an LQ of 1.3 against the nation in 2004, but jumped to 1.99 in 2009. This result is almost entirely attributable to the presence of ESPN in Bristol, which accounted for more than 90% of the region's employment in this sector. Bristol's LQ for this sector was 7.63 (not shown).

LQs can also reveal industries that are underrepresented, indicating that certain needs are being met outside of the region. For example, *Arts, Entertainment, and Recreation* only had an LQ of 0.33. *Management of Companies and Enterprises* was very low as well, at just 0.23, indicating a dearth of corporate offices. Finally, *Transportation and Warehousing* was only 0.30; against the state it was 0.41 and against the Hartford LMA it was 0.47. All of these were decreases from 2004.

Subsector Analysis

The data reported above was only available for broad industry sectors (2-digit level NAICS). To really get a feel for a region's economy, more fine grained data is needed. Unfortunately, the most recent data available at a finer grain is from the 2007 Economic Census, and even then most of the data was suppressed. A few concentrations could be identified though. For example, nearly half of all manufacturing employment in the region was in the *Fabricated Metal Product Manufacturing* subsector. In fact, it was 6.47 times as concentrated in the regional economy as it was nationally. Within the *Health Care and Social Assistance* sector, both *Hospitals* and *Nursing and residential care facilities* showed high concentrations: 3.1 and 2.6 respectively.

As would be expected, another large concentration was found in the *Broadcasting* subsector of *Information*. That industry had an LQ of 14.6 against the nation. Only one employer, however, was reported in that subsector (ESPN).

Within the *Retail Trade* sector, some interesting results were found. The region performed well in *Food and beverage stores* (1.7), *Health and personal care stores* (1.8), and *Motor vehicle and parts dealers* (1.4). On the other hand, *Electronics and appliance stores* were poorly represented at 0.5, as were *Clothing and clothing accessories* stores (0.6). *Sporting goods, hobby, book, and music stores* came in at just 0.7, which was the same as *General merchandise stores*.

Shift-Share

Shift-share looks at employment in various industry sectors during two points in time. It compares the changes that occur on a regional scale to those that are happening nationwide and industry wide. This allows us to determine how much of a given industry's growth or decline, in a given region, is attributable to

general national trends, specific industry trends, and the character of the local economy.

While manufacturing was still a relatively important sector in Central Connecticut in 2009, employment continued to fall (see **Table 24**). Between 2004 and 2009 employment in manufacturing fell 15%, from 14,926 to 12,658. Nationally, employment in this sector fell by 17%. This indicates that Central Connecticut's manufacturers have remained relatively strong. In fact, the region was able to hold on to 285 more jobs than would be predicted by national and industry trends.

The region also made significant gains in the *Finance and Insurance* sector. Over 700 jobs were added in this sector, at a time when the industry was contracting nationally. Between 2004 and 2009, Central Connecticut's *Finance and Insurance* sector grew

Table 19. LQs for Central Connecticut vs the nation, state, and Hartford Labor Market Area (2009)

Industry Sector	vs National		vs State		vs Hartford LMA	
	2004	2009	2004	2009	2004	2009
Utilities	n/a	n/a	0.00	0.55	0.00	0.83
Construction	1.06	1.03	1.24	1.24	1.25	1.22
Manufacturing	**1.61**	**1.62**	**1.27**	**1.19**	**1.26**	**1.15**
Wholesale Trade	0.77	0.74	0.72	0.68	0.80	0.77
Retail Trade	1.02	0.98	0.87	0.85	0.96	0.95
Transportation and Warehousing	0.40	0.30	0.58	0.41	0.68	0.47
Information	**1.30**	**1.99**	**1.17**	**1.79**	**1.30**	**1.76**
Finance and Insurance	0.40	0.61	0.21	0.31	0.13	0.21
Real Estate and Rental and Leasing	0.36	0.43	0.41	0.48	0.49	0.52
Professional, Scientific, and Technical Services	0.54	0.42	0.46	0.39	0.48	0.40
Management of Companies and Enterprises	0.40	0.23	0.29	0.16	0.41	0.16
Administrative and Waste Management	0.65	0.65	0.66	0.66	0.73	0.70
Educational Services	0.04	0.04	0.12	0.09	0.17	0.14
Health Care and Social Assistance	**1.31**	**1.24**	**1.02**	**0.97**	**0.99**	**0.94**
Arts, Entertainment, and Recreation	0.33	0.33	0.32	0.34	0.36	0.41
Accommodation and Food Services	0.71	0.70	0.79	0.75	0.86	0.81
Other Services (except Public Administration)	1.01	1.02	0.85	0.84	0.90	0.93

Source: Connecticut Department of Labor, 2010; U.S. Bureau of Labor 2010

by 50%. The region also saw its *Real Estate and Rental and Leasing* sector grow by 16.7%; nationally this sector shrank by 5.3%.

The *Information* sector has also grown considerably since 2004. Employment was up 42%, a gain of 1,155 jobs. Nationally, this sector contracted by 8.8%; taking national contraction into consideration, the region gained or saved a total of 1,394 jobs in this sector.

The shift-share also revealed a number of weaknesses in the region's economy. A major loss of *Professional, Scientific, and Technical Services* jobs was experienced. Employment in this sector fell 12.5% regionally, but it grew 10.2% nationally. Not only did the region experience decline, but it also missed out on growth. Those two forces combined to deprive the region of 546 jobs in this sector. Regional growth in *Health Care and Social Assistance,* which was 9.4%, lagged the nation, which grew by 12.7%. If the region had followed national trends, sectoral employment would have grown by another 444 jobs.

Finally, possibly a result of the challenges facing our transportation system, *Transportation and Warehousing* employment fell by 25%. Nationally it only fell by 1.9%. The result was a loss of 308 jobs beyond what national or industry trends would suggest.

Most of these trends are mirrored when the region is compared to the state and the Hartford LMA. The region was weak in *Health Care, Management of Companies and Enterprises, Professional, Scientific, and Technical Services,* and *Transportation and Warehousing*. A notable exception is *Manufacturing*, which was a strength for the region when compared to the nation, but was a weakness when compared to the state and LMA. Employment in this sector dropped by 15.2% in the region, but only by 8.4% in the LMA, and 13.1% in the state.

Establishment Sizes

In 2009, most of the employers in the region had few employees (see ***Error! Reference source not found.*** on page 103); 50.6% of employers had fewer than five employees. This is comparable to the national average of 54%. Over 90% had fewer than 50 employees. Nationally, 94.6% had fewer than 50 employees. Only 9 employers had more than 500 employees. It should be noted that many of these employers are branch offices of larger companies, so they are not necessarily "small businesses" (The definition of a small business used by the U.S. Small Business Association varies by industry, but generally includes businesses with fewer than 500 employees).

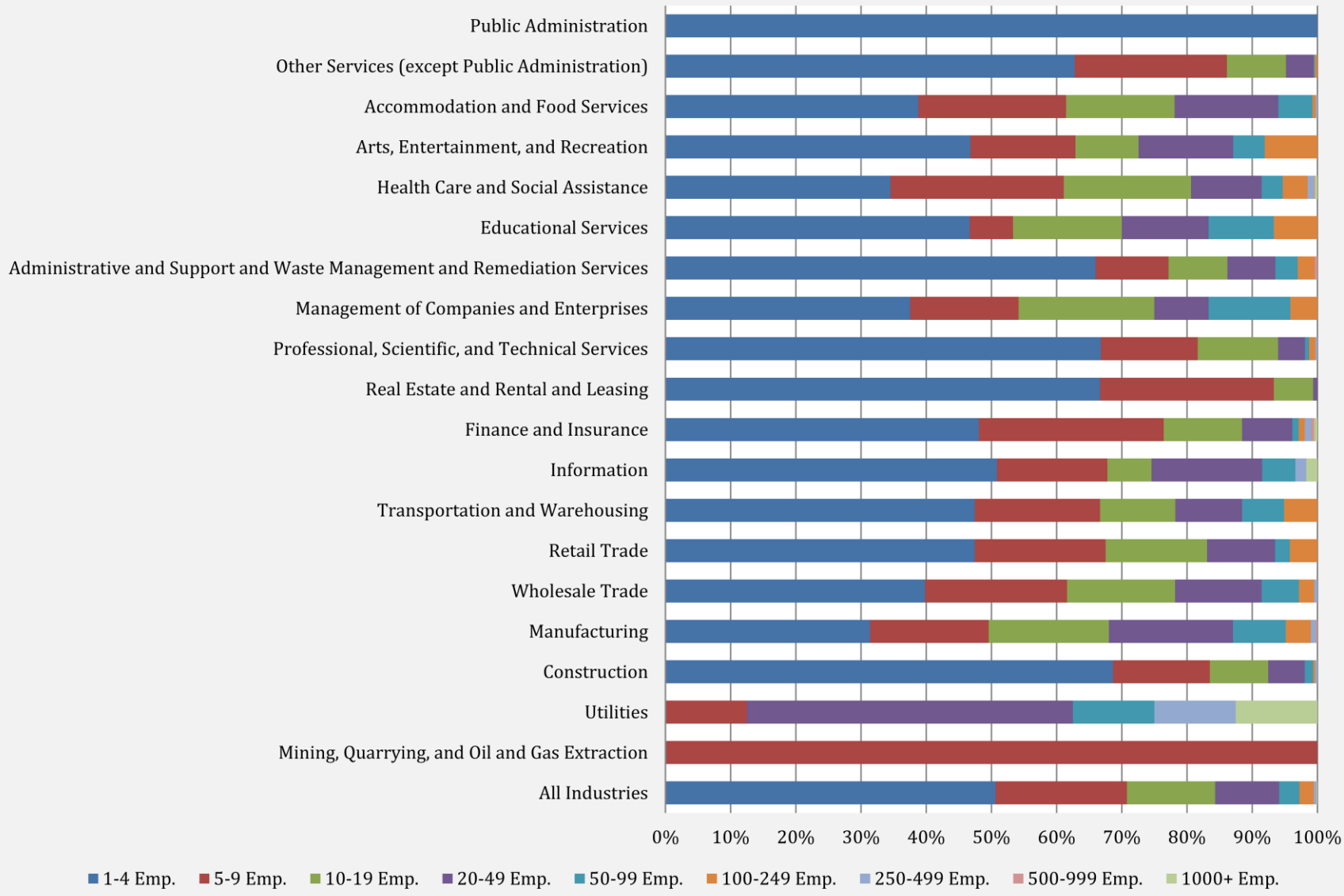
The sizes of employers varied depending on the sector that the business was in. *Real Estate and Rental Leasing* employers tended to be smaller than average. Over 66% of them had fewer than five employees. In fact, no business in the real estate sector was larger than 50 employees. Similarly, nearly 67% of *Professional, Scientific, and Technical Services* businesses had fewer than five employees.

Table 20. Shift-share analysis (2004 to 2009)

	Regional Employment				National Employment	Share Shift Analysis		
	2004	2009	Change	% Change	% Change	National Growth	Industrial Mix	Comparative Share
Total - All Industries	83,570	84,711	1,141	1.4%	-0.9%	-9,113.79	8546.68	-192.40
Construction	4852	4,178	-674	-13.9%	-13.7%	-68.65	-595.29	-10.06
Manufacturing	14,926	12,658	-2,268	-15.2%	-17.1%	-211.18	-2342.12	284.89
Wholesale Trade	2809	2,723	-86	-3.1%	-1.4%	-39.74	0.00	-46.51
Retail Trade	9,976	9,389	-587	-5.9%	-3.4%	-141.15	-195.48	-250.46
Transportation and Warehousing	1340	1,006	-335	-25.0%	-1.9%	-18.96	-6.98	-308.56
Information	2726	3,881	1,155	42.4%	-8.8%	-38.57	-200.95	1394.85
Finance and Insurance	1519	2,266	747	49.2%	-3.3%	-21.49	-28.71	797.04
Real Estate and Rental and Leasing	489	571	82	16.7%	-5.3%	-6.92	-18.89	107.56
Professional, Scientific, and Technical Services	2405	2,103	-302	-12.5%	10.2%	-34.03	278.58	-546.14
Management of Companies and Enterprises	440	279	-161	-36.6%	9.4%	-6.23	47.49	-202.52
Administrative and Waste Management	3302	3,098	-204	-6.2%	-8.5%	-46.72	-234.06	76.53
Educational Services	322	299	-23	-7.0%	6.6%	-4.56	25.95	-43.98
Health Care and Social Assistance	13306	14,558	1,251	9.4%	12.7%	-188.26	1884.74	-444.98
Arts, Entertainment, and Recreation	473	501	28	5.9%	4.2%	-6.69	26.59	8.18
Accommodation and Food Services	4885	5,145	260	5.3%	4.6%	-69.12	291.59	37.19
Other Services (except Public Administration)	2833	2,965	132	4.7%	1.9%	-40.08	93.85	78.15

Note: Red rows represent sectors that performed much worse in the region than in the nation; green rows are sectors that performed much better.
Source: U.S. Bureau of Labor, Quarterly Census of Employment and Wages (Washington, D.C.: U.S. Bureau of Labor)

Figure 23. Establishment size by industry (2009)



Source: County Business Patterns

Table 21. Top 10 Employers in the Region by Number of Employees

Company	Municipality	Industry	Employee Range
ESPN Inc.	Bristol	Television Stations & Broadcasting	1,000-4,999
New Britain General Hospital	New Britain	Hospitals	1,000-4,999
Lake Compounce	Bristol	Amusement & Theme Parks	1,000-4,999
Bristol Hospital	Bristol	Hospitals	1,000-4,999
Central Connecticut State University	New Britain	Schools-Universities & Colleges	500-999
Hospital for Special Care	New Britain	Hospitals	500-999
Nicard Enterprises	Plymouth	Bolts, Nuts, Screws, Rivets/Washers (Mfrs)	500-999
GE Consumer and Industrial	Plainville	Electric Equipment & Supplies-Wholesale	500-999
Manafort Brothers Inc.	Plainville	Demolition Contractors	500-999
Hartford	Southington	Insurance	500-999

Source: Connecticut Department of Labor

A few sectors tended to have larger employers. Only 31.4% of manufacturers had fewer than five employees but 13% had more than 50 employees; Just 5.9% of all employers were larger than 50 employees. Almost 17% of businesses in *Management of Companies and Enterprises* and *Educational Services* had more than 50 employees.

The 10 largest employers (excluding municipal government) in the region can be found in Table 25. The employers in this list come from an interesting array of industries. There are three hospitals (led by New Britain General), a cable broadcasting company (ESPN), an amusement park (Lake Compounce), a manufacturer, a wholesaler of electric equipment, a demolition company, and an insurance company. This list also represents a wide geographic area, spanning five of the seven municipalities in the region.

Wages

Wages have been increasingly steadily, though only by enough to keep pace with inflation. The average wage was $42,217 in 2004 and rose to $48,129 in 2009. This was an increase of 14.0%, nearly identical to the national increase of 14.2%. When adjusted for inflation (using the Consumer Price Index), the 2004 wage was the equivalent of $47,947 in 2009 dollars. So, the inflation adjusted increase in the average wage was just 0.4%.

As the regional economy transitions from being concentrated in production to being concentrated in services, it will result in a change in regional wealth. For example, the average manufacturing job in the region paid over $58,000 in 2009 (see ***Error! Reference source not found.***). Good news for the nearly 15% of the workforce in that industry. The largest industry in 2009, however, was *Health Care and Social Assistance*, which only paid an average of $45,000 per employee. Another large concentration,

though one that is shrinking, is *Retail Trade*, where the average employee made just $27,000.

Other high paying sectors showed mixed results for the region. A bright spot for wage growth is the *Information* sector, which showed impressive growth in the region and paid an average of almost $90,000 a year. Another growing sector with high wages is *Finance and Insurance*, which paid over $60,000 per employee and makes up 3.4% of employment. On the other hand, the region is losing employment in *Professional, Scientific, and Technical Services*, which is also a high paying industry at over $60,000 per employee.

Findings

- The business environment has cooled considerably.
- The number of business filings decreased by 16.9% since 2004.
- One positive indicator is that the number of private employers increased between 2004 and 2009 by 2.9%.
- The region is losing high paying manufacturing jobs and gaining lower paying health care services jobs.
- *Information* and *Finance and Insurance* provide high paying jobs and are growing in the region.
- Wages increases have followed national trends, but when adjusted for inflation, wages have been essentially flat.
- The regional economy lost jobs at a slightly faster rate (0.2%) than the national economy.
- Retail of food and health care products was strong in the region, but most other retail operations are underrepresented, such as clothing, books, sporting goods, electronics, and other general merchandise.
- Manufacturing is no longer the largest employment sector in the region, though it remains large a relatively strong.

Labor Force and Employment Trends

The quality, quantity, and composition of the region's labor force are essential factors in future economic prosperity. This section examines trends that have occurred in the region's labor force, including employment rates and occupations.

Labor Force Participation

The region's labor force grew, as did the labor force participation rate. As of October 2010, there were 130,308 people in the regional labor force (the population over the age of 16 that is either employed or looking for work), an increase of 8,254 workers since 2003. The region's labor force participation rate (the percentage of people over the age of 16 who are in the labor force) in 2009 was also higher than it was nationally. In the region, 70% of people over 16 were part of the labor force, while just 65.4% were nationally. In the same year, just 68.2% of Connecticut's potential labor force was active. The region's above average participation rate extends to every municipality except New Britain, whose rate (63.4%) was just 2% lower than the national average.

Not only was the participation rate higher, but it also represented an increase over the 2000 rate. All seven municipalities increased their participation rates, as did the state, while the na-

tional rate declined slightly from 65.7% to 65.4%. The regional rate was 66.8% in 2000.

Unemployment

Like the rest of the country, the recent recession resulted in a large increase in unemployment for the region (see Figure 24). In January of 2007 the unemployment rate was 5.9% but had dropped to 4.8% by October of that year, just 0.1% higher than the national rate. One year later the rate was 6.0% and a year after that it was 9.2%. The unemployment rate hit a peak in January of 2010 when it went as high as 11.4%. The national rate peaked as well, but at a lower rate of 10.6% (the northeast is more much susceptible to seasonal employment variations due to winter weather). Up until December of 2010, the regional rate and the national rate were similar. In November the region's rate was 9.8% and the nation's was 9.6%. Once again, winter is negatively affecting the region, causing the unemployment rate to rise to 10.8% in February 2011 while the national rate declined to 9.5% (not seasonally adjusted and 8.9% seasonally adjusted).

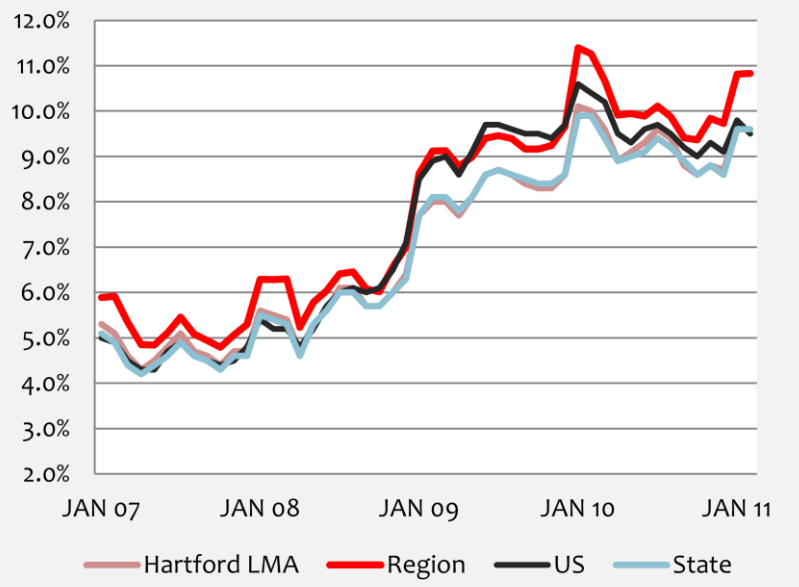
Connecticut has seem similar trends, but at an overall lower rate of unemployment. Back in November the state's rate was one point lower than the region's, at 8.8%. Currently, the state's rate is 9.6%. The Hartford Labor Market Area has followed the state trend.

Income

Per capita incomes in the region are high in comparison to the nation, but lag considerably behind the state. The region's per capita income was $32,745 in 2009 (see Table 28), while the nation's was $27,041 and the state's was $36,468. The region was more in line with the MSA, which had a slightly higher average at $33,311.

Income growth in the region was relatively high. The region's per capita income grew by 30% between 2000 and 2009, while the nation's grew by just 25%. The highest growth was recorded in Berlin, with 42%. All but two towns, New Britain and Burlington, had higher rates of per capita income growth than the nation.

Figure 24. Unemployment Rates from 2007 to February 2011



Source: Connecticut Department of Labor, 2010

Table 22. Change Per Capita Incomes (2000-2009)

	2000	Inflation adjusted	2009	% Change	% Change (Inflation adjusted)
Berlin	$27,630	$34,427	$39,162	42%	14%
Bristol	$23,067	$28,741	$29,090	26%	1%
Burlington	$36,098	$44,978	$44,900	24%	0%
New Britain	$17,952	$22,368	$21,243	18%	-5%
Plainville	$23,002	$28,660	$29,526	28%	3%
Plymouth	$22,910	$28,546	$29,337	28%	3%
Southington	$26,047	$32,455	$35,956	38%	11%
Region	**$25,244**	**$31,454**	**$32,745**	**30%**	**4%**
Hartford MSA	$25,874	$32,239	$33,311	29%	3%
State	$28,766	$35,842	$36,468	27%	2%
United States	$21,587	$26,897	$27,041	25%	1%

Source: U.S. Census Bureau, 2000; U.S. Census Bureau, 2010

The region's income growth is less impressive when one takes the effects of inflation into account. From 2000 to 2009, the total rate of inflation was 24.6% (it fluctuated between 1.6% and 3.85%). Considering inflation, per capita income only increased by 1% nationally. The region, however, surpassed the state, the nation, and the MSA in income growth with a rate of 4%. Two towns stand out in the region, Berlin with a 14% rate of growth, and Southington, with an 11% rate of growth. Per-capita income in New Britain, on the other hand, declined by 5%.

Poverty

As with the rest of the nation, the region's poverty rate increased from 2000 to 2009. In 2009, 9.6% of residents were below the poverty line. While this is much lower than the national average (13.5%), it is higher than the state and MSA averages (8.7% and 9.1% respectively). The region's poverty rate increased from 8.3% in 2000; every municipality saw an increase as well, with the exception of Plainville, which saw a slight decrease from 5.1% to 5.0%. The highest poverty rates were seen in the biggest cities like New Britain (18.7%) and Bristol (7.7%).

Occupations

Despite shifts in occupational trends, the population of the region continues to be more heavily concentrated in production occupations than the rest of the country or the state (see *Table 29*). 14.4% of the region is employed in *Production, transportation, and material moving occupations* while only 12.5% of the nation is and 10.3% of the state is. Conversely, just 32.3% of the region was employed in *Management, professional, and related occupations*, while 34.8% of the nation was employed in that

Table 23. Occupational Characteristics

	Central Connecticut		United States		Connecticut	
	2000	2009	2000	2009	2000	2009
Management, professional, and related occupations	31.6%	32.3%	33.3%	34.8%	39.13%	39.6%
Service Occupations	15.1%	17.0%	15.1%	16.9%	14.63%	16.4%
Sales and Office Occupations	26.8%	26.6%	26.67%	25.6%	26.45%	25.4%
Farming, fishing, and forestry occupations	0.2%	0.1%	0.73%	0.7%	0.20%	0.2%
Construction, extraction, maintenance, and repair occupations	8.6%	9.5%	9.48%	9.5%	7.98%	8.1%
Production, transportation, and material moving occupations	17.6%	14.4%	14.69%	12.5%	11.95%	10.3%

Source: U.S. Census Bureau, 2010; U.S. Census Bureau, 2000

category and 39.6% of the state was. *Sales and Office Occupations* make up 26.6% of the workforce, which is close to the national average of 25.6%, as well as the state average of 25.4%.

There are some interesting results in sub-categories of occupations as well. Within *Production, transportation, and material moving occupations*, 9.5% of the region's workforce is in *Production Occupations* while just 6.5% of the United States and 5.9% of Connecticut are. A weakness of the region is in *Education, training, and library occupations* (a sub-category of *Management, professional, and related occupations*), of which just 5.1% of the population finds employment in. Nationwide, 5.8% of workers are in this field and 6.7% of the workers in the state are in this field.

Shift-Share

A shift-share analysis was performed on occupational data to look at trends over time. Very few occupational categories showed a positive trend between 2000 and 2009. In fact, the total number of workers in the region grew at less than half the national rate (4.3% versus 8.9%). Because of this, one would expect that almost all occupational categories would also be growing at a slower rate.

A few categories, however, stood out as growing faster in Central Connecticut than would be predicted by national trends. *Installation, maintenance, and repair occupations*, a sub-category of *Construction, extraction, and maintenance occupations*, grew by 13.4% regionally and declined by 4.7% nationally. In fact, that larger category of construction workers also grew faster at a regional level than at a national level (15.8% versus 9.2%). *Man-*

Table 24. Job growth by educational and training requirements (U.S. & North Central Workforce Investment Area)

	WIA (2006-2016)		United States (2008-2018)	
	Growth	% Growth	Growth (thousands)	% Growth
Total Growth	**47,546**	**8.3%**	**15,724**	**10.1%**
No College	**25,163**	**52.9%**	**8,145**	**53.3%**
Related Work Exp.	4,066	8.6%	1,180	7.7%
OJT* (long-term)	2,532	5.3%	806	5.3%
OJT (moderate-term)	6,574	13.8%	1,963	12.9%
OJT (short-term)	11,991	25.2%	4,197	27.5%
Some College	**6,758**	**14.2%**	**2,332**	**15.3%**
Associate's degree	3,569	7.5%	1,168	7.6%
Vocational award	3,189	6.7%	1,164	7.6%
Bachelor's and above	**12,508**	**26.3%**	**3,634**	**23.8%**
Bachelor's	10,741	22.6%	3,085	20.2%
Bachelor's & Exp.	1,767	3.7%	549	3.6%
Graduate degree	**3,117**	**6.6%**	**1,162**	**7.6%**
Master's	1619	3.4%	464	3.0%
Doctoral	513	1.1%	346	2.3%
Professional	985	2.1%	353	2.3%

Source: U.S. Department of Labor & Connecticut Department of Labor
* OJT refers to on the job training.

agement occupations was another regional strength. While national growth was brisk at 13.7%, regional growth outpaced it at 19.8%.

The news was less positive for *Professional and related occupations*, which experienced 5.5% growth on a regional level, but grew 12.3% nationally. If national trends played out locally, the region would have 1,480 more people in this category. One bright spot was found in a sub-category of this occupation: *Arts, design, entertainment, sports, and media occupations*. This sub-category grew by 20.2% in the region and just 7.9% nationally. This is probably due to ESPN's presence.

The region's production workers did poorly between 2000 and 2009. *Production occupations* fell 24.9% regionally, outpacing the national contraction of 17%. The results indicate that Central Connecticut lost 1,190 more jobs in this category than national trends account for.

Transportation and material moving occupations grew significantly in the region. Growth was 13.8% regionally (8% national-

ly), with most of the growth coming from *Motor vehicle operators*, which grew 29.6% (national growth was just 7.5%). Fewer people, however, found themselves in supervisory positions (1.1% decline).

Location Quotients

To determine which occupational categories the region specializes in, location quotients were calculated and analyzed. The Central Connecticut region has few occupational concentrations or deficiencies. The largest concentration is *Healthcare support occupations*, which is 1.53 times more concentrated in the region than it is in the nation. The second largest concentration is found in *Production occupations*, which is 1.46 times as concentrated locally as it is nationally.

A few occupations do stand out as regional deficiencies. *Life, physical, and social science occupations* only had an LQ of 0.61 (though it was 1.79 in Burlington).There is also a dearth of people in *legal occupations* (0.67).

Projections

The Connecticut Department of Labor projects that the North Central Workforce Investment Area (which covers the entire region except for Plymouth) will grow at a moderate pace (see Table 30). From 2006 to 2016, total job growth is projected to be just 8.3%, nearly two points lower than the national rate of 10.1%. The largest sources of new jobs will come from service industries (see Table 31). Customer Service Representatives, Retail Salespersons, and food preparation workers are all in the top five occupations. Other big gains will be seen in health care. Registered nurses, home health aides, and nursing aides are all in the top 20 occupations. Other occupations with high numbers of new openings include accountants, bookkeepers, computer systems analysts, and business operations specialists.

Production occupations are projected to continue to decline. Overall, production jobs are expected to decrease by 434 jobs. A few occupations, such as computer-controlled machine setters, machinists, and welders are projected to post sizable increases in employment.

The educational and training needs of growing occupations in the North Central WIA will be fairly close to national needs (see Table 30). Just under half of new jobs will require at least some post-secondary education. Nearly a quarter of new jobs will require at least a Bachelor's degree. Just over 10% will require greater than a Bachelor's degree. The North Central WIA skews somewhat more heavily towards advanced degrees; nationwide, just 8% of new jobs will require an advanced degree.

Based on current educational attainment (see the Educational Attainment section on page 73), the region may only be fully prepared to meet the needs of the lower-end jobs. Around 53% of new jobs in the North Central WIA will require no college education and just under 49% of the region's residents (age 25 and above) have no college education. Some of those jobs will be absorbed by people with higher levels of education. Just 14% of new jobs will require some college or an associate's degree but

almost 27% of the region's workforce is in this education category. The largest mismatch, however, is in higher education needs. Approximately 33% of new jobs in the larger region will require a Bachelor's degree or above; less than 25% of the workforce in the region currently possesses that level of education.

Findings

- The region's labor force participation rate was higher than average and has been growing.
- The regional unemployment rate is higher than average.
- The region's unemployment has fluctuated to a greater degree than the national rate.
- Per capita income in the region lags the state.
- Per capita income growth has been higher than average, even when taking inflation into account.
- The region's poverty rate was well below the national rate, but higher than the state and the Hartford MSA.
- Though still heavily concentrated in production occupations, the region's workforce is transitioning toward service sector jobs.

Table 25. Top 20 projected occupations from 2006 to 1016 in the North Central WIA

Occupational Group Title/Job Title	2006 Employment	2016 Employment	Growth	Annual Openings
Customer Service Representatives	12,378	14,682	2304	579.00
Retail Salespersons	15,502	17,658	2156	679.00
Registered Nurses	10,472	12,228	1756	354.00
Combined Food Preparation and Serving Workers, Including Fast Food	5,668	6,803	1135	220.00
Accountants and Auditors	7,416	8,527	1111	237.00
Computer Software Engineers, Applications	2,675	3,708	1033	137.00
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	9,850	10,879	1029	288.00
Waiters and Waitresses	8,050	9,006	956	534.00
Bookkeeping, Accounting, and Auditing Clerks	8,769	9,710	941	228.00
Office Clerks, General	11,104	11,966	862	290.00
Home Health Aides	3,134	3,995	861	109.00
Nursing Aides, Orderlies, and Attendants	7,702	8,546	844	160.00
Computer Systems Analysts	4,016	4,840	824	188.00
Personal and Home Care Aides	2,017	2,819	802	104.00
Landscaping and Groundskeeping Workers	4,578	5,324	746	130.00
Executive Secretaries and Administrative Assistants	7,583	8,298	715	196.00
Food Preparation Workers	4,259	4,947	688	216.00
Business Operations Specialists, All Other	3,844	4,456	612	104.00

Source: Connecticut Department of Labor

- Large concentrations exist in health care professions, but significant deficiencies were found in higher level, professional occupations.
- New job growth is expected to demand high levels of education and training.

Recent and Current Investments

While much of the economic data paints a negative picture of the region's recent economic development, it has largely been a result of broader economic trends. Despite the dire broad economic condition of the country, the region has made significant progress on its economic development strategy. In addition to developments at the regional level, numerous inter-regional and statewide investments have been made, or are being made, that promise to positively impact the region.

Since adoption of the 2004 CEDS, the region has been hard at work implementing it. The region was able to leverage EDA grants for three major regional development projects. In Bristol $1.2 million in EDA funding was used to develop phase 1 of the Southeast Bristol Business Park. This was followed up with a second phase that was recently completed. Both phases have attracted numerous companies. In New Britain the EDA funded Phase 1 SMART Park project was completed in 2008 and is now home to Celebration Foods, employing 300 workers. In Plymouth $1.1 million in EDA grants were used to complete Phase III of the Plymouth Business Park. Plainville completed two phases of its downtown revitalization project and completed an addition to its Strawberry Fields Industrial Park.

The region is also embarking on infrastructure investments with state and interregional partners. The State recently approved the long planned Hartford-New Britain Busway, which will provide bus rapid transit service from Central Connecticut to Hartford, connecting the region's residents with important job centers. Funds have also been approved to study the possibility of creating a commuter rail link between Central Connecticut and locations throughout southern Connecticut and New York. Such links would provide an expanded labor pool for the region's businesses and greater employment opportunities for its residents.

Cluster Analysis

Rather than focusing on specific companies or industries, the EDA encourages regions to identify and support industry clusters. This concept, most recently championed through the work of Michael Porter, looks at firms that are interconnected, whose work either feeds off of, or supports, the work of other firms. Porter defines a cluster as: "geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field that are present in a nation or region." A cluster is more than just a geographical concentration of companies that produce the same product. It also includes suppliers to those companies, research institutions

that operate in the same field, and companies that produce related goods or services.

There are a number of advantages for firms in clusters. When groups of firms that use common inputs cluster together, the price of buying those inputs may decrease due to economies of scale. Firms are also able to take advantage of a common labor pool. Even if two firms are not producing the exact same product, just similar products, or products within the same field, their labor needs are likely to be closely aligned. Members of clusters can also take advantage of common institutions, such as universities that produce new knowledge and innovation in the field. Finally, firms in clusters, as well as supporting institutions, can take advantage of so-called "tacit knowledge". Knowledge flows more freely in a confined geographical area when there is a critical mass of related firms. A common business culture can develop which may reduce costs and hassles for firms in the cluster. This benefit is less tangible, but nonetheless important.

To determine which clusters show the most promising prospects for growth, five sources of information were consulted. First, a broad analysis of generic nationally identified clusters was performed on Hartford County (the smallest area that such an analysis could be performed on). A list of clusters previously identified in Connecticut was also consulted and compared to the Hartford County analysis. Similarly, a list of clusters identified by the Metro Hartford Alliance was also consulted. To the extent possible, an analysis of regional employment data retrieved from *ReferenceUSA* was also analyzed. These four sources were supplemented with industry research and a final list of target clusters was developed.

National Clusters

Using data from Purdue University's Purdue Center for Regional Development, a cluster analysis of Hartford County was performed. The clusters used in this analysis use nationwide definitions. The purpose is to get an updated picture of which clusters are growing and which are declining in the broader region.

Hartford County has employment concentrations in 10 clusters, though a few of them overlap. The location quotients for each cluster are listed in Figure 25. The largest concentration was found in *Transportation Manufacturing* (a LQ of 3.5), which overlaps with the *Defense and Security* cluster (LQ of 1.75). Also in the manufacturing "supercluster" is *Fabricated Metal Product Manufacturing*, which scored a LQ of 2.4. Non-manufacturing clusters included *Biomedical/Biotech* at 1.59, *Business & Financial Services* at 1.75, and *Printing and Publishing* at 1.26.

A strong regional advantage was only detected in some of the clusters using shift-share techniques (see ***Error! Reference source not found.***). *Printing & Publishing*, while experiencing a slight decline in employment, performed much better at the county level than at the national level (-0.9% versus -10.9%). *Transportation Equipment Manufacturing* was a similar story, losing 4.9% of its employment countywide but losing nearly 23% nationwide. Hartford County performed much closer to the national average in *Fabricated Metal Products* (-7.5% and -12.2%

respectively). The only cluster to have both a regional advantage and positive employment growth was *Defense and Security*, which grew by 7.2% in the county and 1.6% nationwide.

Two clusters had positive employment growth in the county but lagged the nation. *Biomedical/Biotechnology* grew by 9.7% countywide but grew by 13.5% nationwide. *Business & Financial Services* grew by just 0.5% countywide and 2.4% nationwide.

Connecticut's Clusters

Connecticut has supported the cluster concept since at least 1998 when a task force of business leaders endeavored to identify an initial list of six industry clusters. The Industry Cluster Initiative was soon started and provided seed money to support identified clusters. There are now nine clusters in the state. They are: *aerospace, agriculture, bioscience, insurance and financial services, maritime, metal manufacturing, plastics, software and information technology,* and *tourism*[xix].

To support these clusters, the State has made considerable investments over the years. Since 1997 the Department of Economic and Community Development has invested $17 million in the State's Industry Cluster Initiative, leveraging $23 million in federal funds and $8 million in private money. Connecticut Innovations also invested money into the bioscience cluster to the tune of $33 million, leveraging $40 million in private investment[xx].

Table 26. Proposed Target Clusters
High Growth Clusters
Biomedical/Biotechnical
Health Services
Printing & Publishing (Broadcasting)
Clusters With Regional Importance
Aerospace & Defense Manufacturing
Fabricated Metal Product Manufacturing
Agriculture

Hartford's Clusters

In 2005 the Metro Hartford Alliance completed their CEDS, and in the process identified a number of target industry clusters. Given Central Connecticut's close proximity to Hartford, and the numerous ties between the two areas, it makes sense to coordinate with their efforts to some degree.

The Metro Hartford CEDS identified five industry clusters that were already strong in the region. They were: *Financial Services, Aerospace and Defense, Transportation Services, Industrial Supplies,* and *Health Services*. Moving beyond what is already established, the researchers looked at national trends, to identify which clusters are growing and which are declining. Based on this analysis, they determined that *Material Supplies*, *Chemicals & Plastics*, *Higher Education & Research*, *Mass Media*, and *Wholesale* clusters were "dislocating", meaning that they are undergoing fundamental changes in their factors of growth.

Figure 25. Hartford County Location Quotients for all National clusters

Source: Purdue University's Purdue Center for Regional Development

Table 27. Shift-share analysis of national clusters in the Hartford region

	Regional Employment				National Emp.	Share Shift Analysis		
	2004	2009	Change	% Change	% Change	National Growth	Industrial Mix	Comparative Share
Total - All Industries	479,234	486,187	6,953	1.5%	-0.5%	-2,485	0	9438
Advanced Materials	12,800	11,981	-819	-6.4%	-11.5%	-66	-1400	1467
Agribusiness, Food Processing & Technology	3,688	4,051	363	9.8%	-1.8%	-19	-47	429
Arts, Entertainment, Recreation & Visitor Industries	13,000	14,245	1,245	9.6%	-0.5%	-67	3	1310
Biomedical/Biotechnical (Life Sciences)	25,751	28,237	2,486	9.7%	13.5%	-134	3622	-1002
Business & Financial Services	73,730	74,088	358	0.5%	2.4%	-382	2143	-1402
Chemicals & Chemical Based Products	3,798	3,299	-499	-13.1%	-15.7%	-20	-575	95
Defense & Security	40,508	43,415	2,907	7.2%	1.6%	-210	848	2269
Education & Knowledge Creation	40,226	43,386	3,160	7.9%	5.7%	-209	2504	865
Energy (Fossil & Renewable)	18,819	18,361	-458	-2.4%	2.5%	-98	565	-925
Forest & Wood Products	7,460	6,339	-1,121	-15.0%	-26.1%	-39	-1906	824
Information Technology & Telecommunications	16,986	18,307	1,321	7.8%	-0.5%	-88	2	1407
Transportation & Logistics	11,103	10,117	-986	-8.9%	-1.9%	-58	-154	-774
Manufacturing Supercluster	44,389	41,350	-3,039	-6.8%	-16.0%	-230	-6877	4069
Primary Metal Mfg	809	674	-135	-16.7%	-21.9%	-4	-173	43
Fabricated Metal Product Mfg	12,860	11,892	-968	-7.5%	-12.2%	-67	-1508	607
Machinery Mfg	6,164	5,928	-236	-3.8%	-10.2%	-32	-596	392
Computer & Electronic Product Mfg	2,175	1,935	-240	-11.0%	-13.9%	-11	-291	62
Electrical Equipment, Appliance & Component Mfg	3,090	2,582	-508	-16.4%	-16.3%	-16	-486	-6
Transportation Equipment Mfg	19,291	18,340	-951	-4.9%	-22.8%	-100	-4300	3449
Printing & Publishing	11,243	11,137	-106	-0.9%	-10.9%	-58	-1162	1114

Note: Green rows are clusters that show a high regional concentration (LQ).
Source: U.S. Bureau of Labor, Quarterly Census of Employment and Wages (Washington, D.C.: U.S. Bureau of Labor)

The Metro Hartford Alliance then looked at the region's strengths and weaknesses. Strengths included: strategic location, access to major interstates, access to an international airport, a high quality of life, a well-educated workforce, an abundance of nearby colleges and universities, and strong corporate presence. Weaknesses included: high cost of doing business (the Hartford MSA, which most of Central Connecticut is part of, was ranked 119th out of 150 metro areas (higher is bad) based on the cost of doing business), poor image of the City of Hartford, lack of coordinated entrepreneurial support, lack of state incentives, lack of young professional workforce, and inadequate rail access.

Based on their analysis, they identified six target industry niches within larger clusters. They were: Advanced Security & Defense Manufacturing, Financial Services, Biotechnology, Logistics & Distribution, Clean Energy, Health Services.

Cluster Prospects

Based on the data analysis presented above, and a review of relevant literature, six clusters were identified as targets. The two biggest opportunities for growth in Central Connecticut would appear to be *Bioscience/Biotechnology* and *Health Services*; the *Printing & Publishing (Broadcasting)* cluster was also identified as a potential for growth that should be studied further. A second set of three clusters was also identified. These three clusters already have a significant presence (*Metal Manufacturing*), are linked to important statewide clusters (*Aerospace & Defense*) or provide essential regional benefits (*Agriculture*). The clusters in the second set may not represent an opportunity for significant overall job growth, but they do represent opportunities for developing and strengthening the region's economy and quality of life.

The following sections give a brief overview of each identified cluster. The region's presence in each cluster is analyzed to the extent allowed by available data. The region's strengths and weaknesses are discussed, and finally, an explanation of findings is provided.

Bioscience

Bioscience can range from the genetic engineering of animals and agriculture, to the creation of new drugs, and to the construction of medical devices. It involves basic research at institutions such as universities, product research by firms, the manufacture of devices or chemicals, and crafting pieces of devices (See *Table 35*). Workforce requirements range from highly skilled laborers to highly educated researchers.

The bioscience sector is growing quickly at the national level. In 2008 there were 1.42 million people working in the sector. Since 2001 employment has grown 15.8%, a rate that was nearly five times the national average. The fastest growth was seen in *Research, Testing, & Medical Laboratories*, which added 46.1% more employees between 2001 and 2008. More moderate growth was seen in other parts of the sector, such as *Medical Devices* (2% growth), *Drugs & Pharmaceuticals* (2.3% growth) and *Agricultural Feedstock & Chemicals* (1.9% growth). Even during the

Table 28. Central Connecticut presence in selected industry clusters

Industry Cluster	Number of Companies (2004)	Number of Companies (2009)	Estimated Employment†
Metal Manufacturing	336	321	6,908
Health Services	480	527	14,558*
Printing & Publishing	79	70	4,049
Insurance & Finance	301	328	4,068
Bioscience & Biotechnology	26	36	605
Aerospace &Defense	29	30	899
Logistics & Distribution	46	56	521
Tourism	107	97	4,580
Clean Energy	12	10	186
Agriculture	35	33	1,290

†*Estimated Employment* data comes from an analysis of *ReferenceUSA* listings. It is not comparable to other employment statistics used throughout this report nor do all data points come from a given year. The number of companies in a given cluster is derived from County Business Patterns Zip Code level data.
* Health Services employment estimates are based on the health and social services sector.

recession the sector grew by 1.4% (2007 to 2008). That growth is projected to continue through 2016, growing by 1.5% per year[xxi].

Not only were jobs growing, but they also provided high wages. In 2008 the average wage sector-wide was $77,600. Jobs in *Medical devices & equipment* earned an average of over $63,000 a year in 2008. Pharmaceuticals production paid the highest wage at an average of $93,000[xxii].

Regional Presence

Central Connecticut has been targeting this cluster for many years, and those efforts are beginning to pay off. The region's *bioscience* cluster, medical devices in particular, grew considerably between 2004 and 2009 (see Table 34). In 2004 there were just 26 companies in this cluster. That number grew to 36 in 2009. Current direct employment is estimated at 605 employees. The average size of those companies also grew, though most were still very small, with none of the companies in the cluster having more than 250 employees.

Half of the region's companies in this cluster are in the production sector. In 2009 there were 18 companies in this region manufacturing goods related to bioscience. This represents a significant increase from 2004 when just 14 firms were in this sector.

Strengths

A recent report suggests that medical device manufacturing is the strongest target for Central Connecticut. That report listed the State of Connecticut as one of 14 states that specialize in medical device manufacturing[xxiii]. It is particularly fitting for

Central Connecticut because it builds on the region's traditional strength in the manufacturing sector. As mentioned elsewhere, between 2004 and 2009, manufacturing jobs declined in the U.S. by 17%; in Central Connecticut they only declined by 15%, indicating that the region enjoys an advantage. This is probably in part due to Connecticut's higher than average productivity rates.

Medical device manufacturing also builds on the regional labor pool's existing skill-sets. While manufacturing jobs in general are declining, those skills are still with us. Finding new outlets for them is an important way to build on our assets while expanding economic opportunity. Anecdotal evidence and an examination of firm profiles in the *ReferenceUSA* database show that many machine shops in the region are already producing parts for medical devices. It may not be their primary economic activity, but it is an important source of income.

Weaknesses

While the medical devices sector of the bioscience cluster is a good target, there are some challenges. The first is that, while the region enjoys proximity to the UConn Health Center in Farmington, there are some indications that this facility could do a better job at meeting the needs of industry. A recent survey of industry R&D managers revealed that, while being located near high quality research personnel was important, it was equally important to be located near universities that provide easy collaboration[xxiv]. Another recent survey of CEO's of Connecticut companies revealed that Connecticut universities may not be meeting this need[xxv]. In that survey, 62% of respondents mentioned

Table 29. Bioscience Cluster Composition

NAICS	Description
3254	Pharmaceutical and Medicine Manufacturing
334510	Electro-medical and Electro-therapeutic Apparatus Manufacturing
334516	Analytical Laboratory Instrument Manufacturing
334517	Irradiation Apparatus Manufacturing
3391	Medical Equipment and Supplies Manufacturing
54138	Testing Laboratories (includes labs not involved in bioscience)
54171	Research and Development in the Physical, Engineering and Life Sciences
6215	Medical and Diagnostic Laboratories

Source: Connecticut Department of Labor, "Connecticut's Industry Clusters (2005)

that it was "hard to connect" with university faculty, students, and labs, or that they "do better with other state's universities". They stated that in many cases a professor's enthusiasm and accessibility were more important than their prestige. They cited three main obstacles:

> *1) the lack of incentives for university researchers to work with technology companies; 2) the dearth of bridge programs between academia and industry; and 3) occasional deficiency of expertise in the relevant field.*

The Central Connecticut Region has little control over this, but could be an advocate for greater university-industry partnering.

Opportunities

The region has a lot of opportunity to grow its bioscience cluster, medical devices in particular, because of the efforts of surrounding regions. Since the 2004 CEDS, a new bioscience zone was established in areas of New Britain and Bristol that abut the

University of Connecticut Medical Center in the town of Farmington (in the Metro Hartford Region); parts of Plainville may soon be added. While primary research functions will initially be focused in Farmington, significant spill-over effects may occur as innovative research is spun-off into new products and companies. Governor Malloy also announced in 2011 that the state would help focus nearly $1 billion of investment on the UConn Health Center.

Threats

It has become a cliché to say that a region should target biotech or bioscience. A Brooking's Institute survey found that 83% of the local and state economic development agencies surveyed had chosen biotechnology as a target[xxvi]. This will results in intense competition for new firms. The good news is that the cluster is actively growing, which means that competition does not necessarily have to result in a "zero-sum game". That is, since new firms are starting up and existing firms are actively expanding, economic development efforts do not have to involve "poaching" from other areas.

According to a recent study of CEOs in Connecticut (including some who recently left the state), Connecticut does not yet offer good value for fast growing companies. The transportation network is not up to par. It is difficult to work with Universities (the study notes that both Yale and UConn receive a much smaller proportion of their research funding from industry than do other universities). It is also not the sort of place that currently attracts the sort of bright young workforce that fast growing companies rely upon. Many of these issues are internal to Central Connecticut as well, but they stem in large part from the external environment of the State. The overall message from the survey was that a high cost environment such as Connecticut can be perfectly conducive to high growth companies, but that Connecticut is not offering enough value relative to its costs.[xxvii]

The State of Connecticut's record with the bioscience cluster has not been entirely positive, which threatens the region's prospects with this cluster. As with the State's economy as a whole, the biopharmaceutical industry has shown only moderate growth (1% from 1993 to 2003) and the *bioscience* cluster has shown slightly negative growth (measured by employment). A 2005 analysis of the cluster found that the cluster enjoys good diversity in the State, is highly concentrated, has a solid intellectual property pipeline (patent development) but was small relative to other states, showed limited growth, and had limited availability of venture capital[xxviii]. Also, while Connecticut is a highly educated state, it ranks low on bioscience related higher education degrees, ranking 31st of 50 states[xxix]. Connecticut did rank in the top 20 for venture capital in the bioscience cluster, but the only category of venture capital it ranked highly in was in information technology for medical and health services[xxx].

Findings

While it is a cliché in economic development to target bioscience, the recent establishment of the bioscience zone surrounding UConn's Farmington Health Center is a great opportunity for the region. This facility provides incubator space and other re-

sources to help UConn researchers develop their ideas into marketable products. After three years in the incubator, these new firms must "graduate" and move on. Incentives in the bioscience zone (parts of Bristol, New Britain, and, soon, Plainville) make it an attractive place for these firms to land.

Another advantage is that the region's traditional economic base, manufacturing, may be an asset to these companies. Some of the research that comes out of UConn will result in drugs and other products that the region does not excel in, but others will need to be manufactured. Many, including innovative dental products and surgical instruments, must be manufactured out of metal. Information obtained through the *ReferenceUSA* database shows that some metal manufacturing firms in the region are already engaged in such activities. Biomedical devices represent an opportunity to both grow new companies, and help existing companies expand into new products.

The space needs of bioscience startups are also much more inline with the existing resources of the region. The trend among larger manufacturers and warehousing companies is to create ever larger structures with ever greater freeway access. Many municipalities in the region are largely built out or constrained by environmental impediments. The spatial requirements for developing new biomedical devices or conducting research are much more modest. The wet lab space at UConn's Farmington campus is hardly massive; most rooms are roughly the size of high school science lab. Such facilities could easily be created in the some of the region's unused factories and warehouses.

Health Services

Companies in the health services cluster include hospitals, physicians' offices, dentists, and nursing homes (see Table 36). Generally, since these are services that are provided, they require the physical presence of the customer and thus tend to serve local needs. For all but the most complex procedures, customers seek out such services locally. So, to a certain extent, all regions of the country will support a certain number of health services firms.

While it is true that almost every region in the country contains such services, a large enough grouping of them—one that attracts outside money—may still be considered a cluster. Urban centers near largely rural areas will attract outsiders for complicated surgeries. Services such as nursing homes may also cluster and serve a greater than local market.

The Bureau of Labor Statistics forecasts that the Healthcare industry will generate more than 3.2 million jobs nationwide between 2008 and 2018. This is projected to be the largest increase of any industry. Every occupation within the healthcare industry is projected to increase in employment. The greatest growth is projected to occur for *Physician Assistant*s (41.3% growth) and *Secretaries and Administrative Assistants* (26.5%)[xxxi]. Both of these would be categorized as middle to high skill occupations.

Regional Presence

Central Connecticut has a very strong health services cluster. According to the 2007 Economic Census, the region's employment in *Nursing and residential care facilities* is 2.6 times the

Table 30. Health Services

NAICS	Description
62	Health Care and Social Assistance
6211	Office of Physicians
6213	Office of Other Health Practitioners
6214	Outpatient Care Centers
6216	Home Health Care Services
623	Nursing and Residential Facilities

Source: Connecticut Department of Labor, "Connecticut's Industry Clusters (2005)
NAICS codes in *italics* are subsets of the code above them

national average. Employment in *hospitals* is 3.1 times the national average. As of 2009, the *Health Care and Social Assistance* sector was the largest source of employment in the region, accounting for over 17% of employment.

The region's disproportionately high concentration of employment in this cluster, and disproportionately high number of facilities, implies that it serves more than local needs. Two of the region's largest employers are hospitals (Bristol Hospital and New Britain General); the Hospital of Central Connecticut in Southington is also a major employer. These large institutions, while they do not export a product, do import people and money from surrounding towns.

Strengths

As mentioned above, the region has numerous assets in this cluster. Three large hospitals and large concentrations of employment draw people from around the region. Large elderly care facilities are also regional draws. These institutions provide employment to a wide variety of people in the region, from those with just high school diplomas to physicians and dentists with advanced degrees.

Weaknesses

Overall wages in this cluster are not as high as some other clusters. For example, the average manufacturing job in the region paid over $58,000 in 2009. The *Health Care and Social Assistance* sector only paid an average of $45,000 per employee.

An oft reported fact is that as people retire, they are moving back to inner city areas in great numbers, in search of easier to manage housing and environments that are conducive to staying active. The region's deficiencies in public transit will make its downtowns less desirable to mobility challenged people looking to maintain a more active lifestyle in their retirement. The same is true of the region's amenity poor downtowns.

Opportunities

The United States, Connecticut in particular, is aging. This trend is increasing the market for health services dramatically. By 2016 employment in Health Care and Social Assistance in the Hartford Labor Market Area is projected to increase by 18% over its 2006 level. Employment in Ambulatory Health Care Services is projected to increase by over 19% during the same period. These are expected to be some of the highest growth rates in the labor market area.

New advances in bioscience (See above) are also increasing the supply of services available. This increased supply may have an effect on the demand for such services. New treatments, proce-

dures, and devices are being developed all the time, opening new markets and employment opportunities.

Threats

A major threat is cost and the overall economy. To a certain extent, the growth in health services was made possible by generous retirement packages and health care benefits. Changes in the labor relations (the decline of unions for example) are altering this dynamic. Future retirees and residents in general may have fewer resources with which to pay for health services. Without such benefits, and with fewer finances in general due to national economic trends, we may see a decrease in health care spending[xxxii].

Findings

The Health Services cluster is already very large, but there is still potential for growth. This sector grew by 9.4% between 2004 and 2009, a rate that was slower than the national average, but still impressive. The region still enjoys a very high concentration of employment in this sector compared to the nation. The numerous hospitals in the region are a draw to surrounding regions (hospital employment is three times more concentrated in the region than in the nation).

There is also some overlap with the biosciences cluster. Many of the laboratory technician skills that are necessary for hospital employees are also in demand from bioscience companies. There is also ample opportunity for partnerships between area hospitals and bioscience firms.

Average wages in this cluster are relatively low, but it does provide employment for residents with a range of education levels. Entry level jobs are available for those with just high school diplomas while technician jobs may be filled by those with Associate's degrees or certificates. A strong health services cluster also draws individuals with high levels of educational attainment, such as doctors and nurses.

Printing & Publishing

The 2004 CCC CEDS identified a telecommunications cluster in the region. It consisted of firms operating cable and other pay television services and direct mail advertising companies. NAICS based definitions were not included in the CEDS, but at the national level a Printing and Publishing cluster has been identified, encompassing many of the same industries (see Table 37).

Jobs in the broadcasting industry tend to be well paying but are facing increased competition. The jobs in this industry also tend to require high levels of education such as a college degree in a field of study related to broadcasting (journalism for example)[xxxiii].

The industries within this cluster grew at a very high rate between 2004 and 2008. At the national level, they added 8.2% more jobs than they had in 2004. Growth is projected to increase in the coming years, growing by 7.4% between 2008 and 2018[xxxiv]. In Connecticut, growth in *Broadcasting* is projected to increase by nearly 15% while *Motion Picture and Sound Recording* employment is projected to increase by nearly 30% (from 2006 to

2016). The *Telecommunications* industry is projected to increase by 5%[xxxv].

Regional Presence

The region's greatest asset in this cluster is ESPN, who is both a producer and broadcaster of sports news content, which reportedly increased its presence in the region significantly (now employing around 4,000 people). The total number of regional businesses in this cluster actually declined, however, from 79 in 2004 to 70 in 2009 (see Table 34). Overall, employment is estimated at 4,049 employees. This estimate is low, however, as the database it comes from (*ReferenceUSA*) places ESPN's employment at just 3,000, while recent reports suggest it is closer to 4,000 (after moving some of its non-Connecticut offices to Bristol). If this is the case, then, total cluster employment is probably closer to 5,049.

Strengths

As noted above, the region's greatest strength is the presence of its largest employer: ESPN. This company, a worldwide leader in sports broadcasting, began in Bristol and has recently expanded its presence there. It provides a certain amount of notoriety for the city of Bristol (if not for the region) and is a major source of employment and wealth creation.

Weaknesses

One major broadcaster (regardless of its size and notoriety) is not a cluster. A broader cluster would include suppliers of equipment and content, as well as services utilized by the broadcasting industry. While 15 companies manage the telecommunications infrastructure in the region, and one large employer broadcasts to a worldwide audience, few are engaged in supplying the equipment these companies use. In both 2004 and 2009 there were just three companies producing communications equipment in the region. There has also been a lack of internet companies, information retrieval companies, and radio broadcasters. Anecdotal evidence suggests that a few companies also provide services and content to ESPN. Further study is necessary to assess the strength and extent of the linkages within this cluster.

Without a critical mass of companies, the potential labor pool for this cluster is quite shallow. Unlike Hollywood, where people are constantly leaving, joining, and starting companies, there is

Table 31. Printing & Publishing Cluster

NAICS	Description
323	Printing and related support activities
325910	Printing ink manufacturing
339950	Sign manufacturing
511	Publishing industries (except Internet)
51511	Radio broadcasting
51521	Cable and other subscription programming
516	Internet publishing and broadcasting
51911	News syndicates
51919	All other information services
54143	Graphic design services
541613	Marketing consulting services
5418	Advertising and related services
54191	Marketing research and public opinion polling
541922	Commercial photography

Source: Center for Regional Development, Indiana Business Research Center, and , Inc., "Unlocking rural competitiveness: The role of regional clusters" (Purdue University, 2007).

just one major employer in Central Connecticut. An employee leaving ESPN has few options for employment in the field. Similarly, when looking for new employees, it is likely that ESPN has to recruit from outside of the region.

Opportunities

New communications technology is expanding the reach of broadcasters and forcing companies to purchase new equipment. The switch to high definition television and radio required new equipment. An increased emphasis on Internet content requires both new equipment and new talent. Much of this transition has already been achieved (ESPN already broadcasts in HD) but the possibility of moving to 3D broadcasts could cause new activity in supportive industries.

Threats

The Bureau of Labor Statistics forecasts mediocre growth in the broadcasting industry. The new technology that was cited above as an opportunity is also a liability. New competition is from new media sources (podcasts, blogs, YouTube, etc…) is threatening the industry. The BLS also notes that the industry is experiencing a round of consolidations. They estimate that employment growth will trail other industries.

Demand for telecommunications services and products is expected to increase, but the BLS projects decreased employment. The rate of expansion for the industry has slowed and will continue to slow. While new technologies will be deployed, greater productivity, and the existing infrastructure, will require fewer employers.

Findings

Printing and publishing, with an emphasis on broadcasting, is not yet recognized as a cluster in Connecticut, but it has considerable potential. ESPN employs somewhere around 4,000 people at its Bristol facility and recently relocated another facility to the region. Nearly 70 other companies in the region also participate in printing and publishing activities.

Not only are there a lot of jobs in this cluster, but they are growing and pay well. The Information sector (which encompasses most of this cluster) grew by 42% between 2004 and 2009, far outpacing most other sectors of the economy. The average wage in that sector was also $90,000, over twice the average regional wage of all sectors combined. Throughout Hartford County, the Printing & Publishing cluster paid an average of nearly $71,000 per year, far above the region's average wage of $48,000.

The extent of interconnectedness between these companies is currently unknown. Data limitations prevented a full cluster analysis. Besides which, determining input and output flows between non-production firms is a difficult task. More needs to be known about the potential for this cluster, but it represents one of the region's brightest prospects for growing high paying jobs for highly educated individuals.

Metal Manufacturing

Companies in the metal manufacturing cluster include companies that work with metal in many forms. Firms in the *Primary Metal Manufacturing* sector work with metal ore and refine it.

Those in *Fabricated Metal Manufacturing* turn that refined metal into basic metal products such as wire or sheets. Other firms in the cluster go a step further and construct actual products out of the metal such as machines, silverware, or jewelry. Firms servicing these companies, such as warehouse operations are also included (see Table 38).

While the economic recession has hurt the manufacturing sector, signs point to near-term improvement. In 2011 16 manufacturing industries are expected to show improvement over 2010, including *Primary Metals* and *Fabricated Metal Products*. Overall, the manufacturing sector is expected to grow by 5.6% (measured by revenue)[xxxvi].

Employment, on the other hand, is projected to continue to decline nationwide. *Primary Metal Manufacturing* was projected to decline by 1% annually between 2008 and 2018. *Fabricated Metal Product Manufacturing* was projected to decline by 0.9% annually during the same period. *Machinery Manufacturing* employment was projected to decline by 0.8%[xxxvii].

Employment in nearly every occupation in this cluster is projected to decline nationally (through 2018)[xxxviii]. Welding occupations are projected to decline by 2%; Tool and die makers by 8%; Machinists by 5%; and Machine setter, operators, and tenders by 13%. Computer control programmers and operators are the only occupation that is projected to increase in employment: by 4%. These trends are largely due to increasing use of technology resulting in productivity increases.

Regional Presence

Some encouraging results came of the Central Connecticut Corridor's focus the metal manufacturing cluster. *Manufacturing* in general lost employment from 2004 to 2009 (see above), but performed better than the national *manufacturing* sector. On the other hand, the number of metal manufacturing firms in the region declined, from 336 in 2004 to 321 in 2009 (see Table 34 on page 118). The cluster lost 12 *Primary Metal Manufacturing* firms, but gained seven *Fabricated Metal Manufacturers*. Estimates put regional employment in this cluster at 6,908.

At the same time, the average size of those companies grew. For example, only two companies in the entire cluster had more than 250 employees in 2004, but three of them did in 2009. In fact, every range of employment above the 10-19 range grew. This indicates that, while employment in the production trades in general is declining, the companies in this cluster are actually growing. The reasons for this should be investigated further.

Table 32. The Metal Manufacturing Cluster

NAICS	Description
331	Primary Metal Manufacturing
332	Fabricated Metal Product Manufacturing
333	Machinery Manufacturing
337124	Metal Household Furniture Manufacturing
33991	Jewelry and Silverware Manufacturing
423510	Metal Service Centers and other Metal Merchant Wholesalers

Source: Connecticut Department of Labor, "Connecticut's Industry Clusters (2005)

Strengths

The region currently enjoys large concentrations of firms and employees in this cluster. This is especially true of *Fabricated Metal Product Manufacturing*, which is nearly 6.5 times as concentrated in the region as it is nationally. As noted above, between 2004 and 2009, the number of companies in that sector grew even while the cluster as a whole was contracting.

The region also enjoys a relative advantage in the so-called "middle-skill" cohort of workers. A recent report argued that New England will soon be facing a shortage of workers with an associate's degree or some college education, and a glut of workers with higher degrees (that is, the workers with the higher degrees will no longer enjoy the wage premium they once did)[xxxix]. Central Connecticut's educational attainment is much less skewed to higher education than the rest of Connecticut.

Weaknesses

While the region's growth in *Fabricated metal product manufacturing* is positive, it may be a sign of a worsening situation. The Department of Labor projects employment in that sector to decline by 0.3% by 2016 in the Hartford Labor Market Area. On the other hand, employment in *Primary Metal Manufacturing* is projected to increase by nearly 10%. Between 2004 and 2009 the region lost employers in this sector. The region may be falling behind national trends.

The region also currently lacks good transportation infrastructure in many areas, making it difficult to distribute products efficiently. Highway access to Bristol and Plymouth has repeatedly been cited as a problem. Currently, railroad access is also less than optimal.

As will also be discussed below in *Threats*, labor issues are becoming a big concern for this industry. Finding workers who already possess the skills necessary for modern manufacturing processes is difficult. At least one manufacturer that we spoke with reported having troubles filling positions, even with unemployment as high as it is. The workers who apply just do not possess the right skills.

Opportunities

As is often reported, production processes that are labor intensive have moved off-shore to take advantage of lower cost labor markets[xl]. While this would seem to spell absolute doom for the sector in the United States, and Connecticut in particular, the situation is more complex than that. A recent survey of manufacturers showed that cost is their primary concern (including energy costs) when making location decisions, but quality came in at a close second[xli]. Survey participants also reported being increasingly concerned about lax intellectual property laws in developing countries, China in particular. For this reason many companies are looking to the U.S. and Europe for production processes that rely extensively on intellectual property.

Threats

A report by ICF Consulting listed labor force issues as a primary concern of the Metal Manufacturing cluster[xlii]. That report noted that, while employment is down overall, there is still a critical

need to find and train the next generation of workers in the cluster. Part of this is marketing the field to high school students, to encourage them to pursue further training. This issue was brought up during public outreach efforts. It was argued that the region's schools, and schools in general, are not doing enough to encourage students to enter this field.

Another aspect of labor force concerns is with helping employers upgrade their employee's skills. Many of the job losses are not due to a lack of profitability in the cluster, but rather, to an increase of productivity. This increased productivity has come from advanced manufacturing techniques that are largely computer driven, requiring workers with different skill-sets. This trend of requiring higher tech skills could leave the region's labor force unprepared for the future.

Findings

The Manufacturing sector, while shrinking in terms of employment, is still a large part of the regional economy. Nearly 15% of the region's workforce is in this sector, and for the most part they earn high wages (the average annual wage in Hartford County for this cluster was $59,000 versus $48,000 for all industries in Central Connecticut). Continued productivity increases and offshoring trends, however, limit the potential for employment growth.

Despite the negative trends, manufacturing can still play a positive role in the economy. Forecasts of doom have been premature, as manufacturing output has actually grown in the United States. While jobs have declined, the ones that do remain are high paying and require high levels of education and training. In fact, some recent trends show manufacturing employment rebounding from the recession.[xliii] By focusing on providing a highly trained manufacturing workforce, the region can retain many of the jobs that have been its traditional base. Employers can no longer rely on workers with high school diplomas to run their high tech machinery. Instead, they need people with Associate's degrees or college certificates. If Central Connecticut does not provide these workers, other places will.

Aerospace & Defense

The State of Connecticut defines the Aerospace cluster fairly narrowly, but Metro Hartford uses a broader definition that expands it to include defense and advanced security companies. Using the broader definition, it encompasses aerospace companies that are involved in making parts for airplanes and helicopters, assembling those vehicles, aircraft restoration, prototype design, and making major modifications to aircraft. Other defense manufacturing is included by Metro Hartford, as well as the manufacture of security devices such as monitoring equipment and security systems (see Table 39).

According to a recent report from Deloitte, the Aerospace and Defense industry should be heading out of the recession[xliv]. Industry analysts see 2009 as the "trough in the current economic cycle" for this industry. New orders from commercial airlines are expected to increase. On the other hand, the defense budget in the United States has been cut and numerous weapons programs have been canceled. Most military contractors can expect lean

times, but see below (under *Opportunities*) for a discussion of recent events in Connecticut.

The Bureau of Labor Statistics forecasts stable employment in *Aerospace Product and Parts Manufacturing* occupations[xlv]. Although new orders in the commercial sector are expected to increase, productivity increases and off-shoring of production jobs will absorb much of the new demand. The BLS forecasts that engineering professions will be much more stable than production jobs. In the North Central Workforce Investment Area, projections show a moderate decline in employment (through 2016) for the *Transportation Equipment Manufacturing* industry (2%).[xlvi]

Regional Presence

In 2009 there were 30 companies in the broader Defense & Advanced Security cluster (see Table 34 on page 118). Eight of them were in the smaller Aerospace cluster. The overall cluster did not grow from 2004, but the Aerospace sub-cluster grew by two companies. Employment in the cluster is still very significant at 899 employees (estimated).

While few of the region's companies participated in this cluster, the broader Hartford Defense & Advanced Security cluster was quite large. As discussed earlier, Hartford County's Defense and Security cluster was 1.75 times as concentrated as the nation's.

Strengths

The region's close proximity to the Hartford Metro Region allows its companies to participate in a very strong aerospace cluster.

Table 33. Aerospace/Defense Cluster

NAICS	Description
336	Transportation Equipment Manufacturing
33612	*Heavy Duty Truck Manufacturing*
3364	*Aerospace product and parts manufacturing*
336992	*Military Armored Vehicle Tank Manufacturing*
332993	Ammunition Manufacturing
332995	Ordnance and Accessories Manufacturing
	Advanced Security
334119	Biometrics system input device
3355999	Electrical Equipment Manufacturing
541380	Testing Laboratories
5417	Scientific Research and Development
56162	Security Systems Services
561612	Security Patrol Services

Source: Connecticut Department of Labor, "Connecticut's Industry Clusters (2005)
NAICS codes in *italics* are subsets of the code above them

Companies like the Barnes Group and CT Tool provide parts that are used by larger firms. Smaller machine shops in the area also provide parts on an order basis from time to time. While Central Connecticut may not meet every need of this cluster, nearby locations do, allowing the region to benefit from proximity. Hartford's existing defense contractors are a great asset, as is its history of manufacturing.

Weaknesses

There are few companies in the region participating in Connecticut's aerospace cluster. This gives them little power to control the direction of the cluster. Since they rely on larger firms, their positions may also be more tenuous. Since none of the major players in the cluster are in this region, the region has little abil-

ity to affect the cluster, leaving it vulnerable to external decision makers.

Opportunities

Recently, United Technologies (and subsidiary Pratt & Whitney) won a large defense contract. This contract will keep thousands of high paying manufacturing and design jobs in the larger Metro Hartford Region. None of those jobs will be in Central Connecticut, but they are in numerous nearby locations such as East Hartford and Middletown. This development strengthens the cluster statewide as it guarantees a certain level of activity for many years.

Threats

With few firms involved in aerospace actually located in the region, little decision making is done locally. Decisions made outside of the region can have a profound effect on the few firms in this cluster that call Central Connecticut home.

Similarly, statewide trends and issues have a big impact on this cluster. Connecticut is perceived as being a state with a high cost of doing business. A report by ICF Consulting listed overcoming this perception as a key task to be completed.[xlvii]

One other factor is the Nation's fiscal situation. Cut-backs are being made at all levels of government, and in all departments, including defense. Future rounds of budget negotiations could adversely impact the State's aerospace cluster, and thus those firms in Central Connecticut that are a part of it.

Findings

While direct cluster employment in the region was relatively low (just 899 employees), this cluster shows signs of improvement. A recent deal struck by United Technologies should ensure a considerable aerospace presence in the broader region for decades to come. UTC is manufacturing engines for a new jet in nearby Middletown, and other engineering activities are taking place throughout Hartford County. The uncertain situation regarding the national budget may jeopardize future defense spending, but for now, long-term deals should ensure this cluster's presence in Connecticut. Connecticut's reputation as a high cost location may also prove detrimental to growth.

Regional companies already take advantage of this clusters presence, and may find new opportunities in the future. The region's successful metal product manufacturers can be tapped to craft precision parts for aircraft and other defense or security equipment. As with the biotech cluster, some firms are already doing this.

Agriculture

The agriculture cluster is very diverse, including companies ranging from purely agricultural to manufacturers and wholesalers. Also included are firms that brew beer, make wine, manufacture pesticides, and sell farm equipment. Employment in the cluster ranges from management and supervisory positions, requiring some training or advanced education (beyond high school), to entry level positions that pay little and require no ad-

vanced education (some positions do not even require a high school diploma).

The Bureau of Labor Statistics projects that farm employment will remain steady. Overall employment may decline due to efficiencies and technology but low wages and the physical demands of the work will result in a steady stream of openings due to turnover[xlviii]. The State of Connecticut projects an overall decline in employment of five percent in this industry through 2016.

Food processing and manufacturing on the other hand is expected to grow. In the North Central Workforce Investment Area, employment is projected to grow by 11% from 2006 to 2016[xlix]. Nationally, growth is projected to be just under four percent[l]. While growth is projected to be positive, the Bureau of Labor Statistics also predicts that skill levels will decrease as food processing employment shifts from points of sale to processing facilities.

Regional Presence

Farm employment data is not available on a regional level, but at the county level the cluster has performed well. From 2004 to 2009, Hartford County added nearly 10% more jobs in the cluster. This was at a time when it shrank by nearly 2% nationally (see Table 32 on page 116). According to a recent study, the agricultural industry generated approximately 20,000 jobs statewide, with direct employment of nearly 12,000 jobs. The industry was also responsible for between $2.72 billion and $3.51 billion in economic activity in 2007; $866 million of that was in Hartford County[li].

The data that is available for the region shows considerable impact as well. There were 33 firms in industries related to the cluster in 2009, down slightly from 2004 when there were 35. Employment is estimated at more than 1,200 people (see ***Error! Reference source not found.***). According to the USDA Agricultural Census there were 152 farms in the region in 2007[lii]. Direct year to year employment was not available.

Strengths

The region contains many successful farm operations, many of which are, or could be, tourist destinations. Roger's Orchards operates two farm stands in Southington, attracting people from throughout the region. Lamothe's Sugar House is the state's largest maple syrup producer, and sells products to a wide area. The region is also located near (and in the case of Plymouth, in) Litchfield County, a popular tourist destination with a growing wine trail.

Other, less traditional agricultural assets exist as well. In New Britain, for example, Urban Oaks operates a successful organic urban farm. They sell to restaurants and farmer's markets throughout the state. The region is also home to food processing facilities, such as the recently opened Celebration Foods in New Britain (in an EDA funded project from the region's 2004 CEDS).

Weaknesses

The region continues to lose valuable farm land to development. Between 1990 and 2006 the amount of agricultural land in the region declined by 17.4%. Deciduous forestland decreased by 5.6%, coniferous forestland decreased by 3.8%, and forested wetland decreased by 2.6%. As of 2006, 30.4% of the region's land was developed, versus 28.2% in 1990.[liii]

The rate of land conversion far outpaces the rate of population growth experienced by the region. Between 1990 and 2009 (data was not available for the region in 2006), the population only increased by 1.9%. In 1990 there was about one acre of developed land for every 7.5 people. Since then, land has been developed at a rate of one acre for every 1.77 people.

Opportunities

The local food movement and the growth of agritourism are changing the face of the industry. Across the country people are shopping local and buying from farmer's markets. They are also increasingly including food destinations as part of their travel plans. Attractions such as breweries, wineries, and working farms draw large crowds. The region's proximity to successful food destinations like the Connecticut Wine Trail should be examined to see if they can be duplicated or built upon.

Urban agriculture is also becoming a more popular option for underutilized urban space. Urban Oaks has been operating successfully in New Britain, and community facilities such as the community garden in Farmington have become important local amenities. Americans are increasingly interested in food systems and this interest presents an opportunity to strengthen the region's remaining farms.

Table 34. Agriculture Cluster

NAICS	Description
11	Agriculture, Forestry, Fishing, and Hunting
311	Food Manufacturing
312120	Breweries
312130	Wineries
312140	Distilleries
3122	Tobacco Manufacturing
3253	Pesticide, Fertilizer, and other Agricultural Chemical Manufacturing
4244	Grocery and Related Product Wholesalers
4245	Farm Product Raw Material Merchant Wholesalers
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers
424910	Farm Supplies Merchant Wholesalers
424930	Nursery and Florist Merchant Wholesalers
424940	Tobacco and Tobacco Product Merchant Wholesalers

Source: Center for Regional Development, Indiana Business Research Center, and , Inc., "Unlocking rural competitiveness: The role of regional clusters" (Purdue University, 2007).

Gourmet and value-added foods are also becoming more popular. The market for such foods is growing along with the population, both nationally and worldwide[liv]. A recent report, however, suggested that the state's farms (and the region's) have not been particularly successful at reaching outside markets[lv]. Through cooperative marketing and product development initiatives, the region's farms and food processors could tap into new markets.

Threats

Rising energy prices will negatively impact food production operations. Farm equipment that runs on fossil fuels will cost more money to run, increasing the cost of food. More expensive food, and more expensive transportation, may negatively impact the region's ability to export its products.

Findings

Following statewide trends, the region's agricultural sector is currently small and not export oriented. Statewide reports have indicated that efforts to increase exports and better market the state's products are needed[lvi]. The market for food products is growing worldwide, increasing opportunities for the region's agricultural cluster to thrive. Domestic consumption patterns, including agritourism and the local food movement, should fit with the region's current stock of agricultural production firms.

Projections of employment are a mixed bag for this cluster. Farm employment is projected to decline slightly, but offer ample openings due to turnover. Food processing is projected to grow at a relatively fast rate, but will mostly employ lower-wage workers. As noted by a recent report, the agricultural industry's impacts extend beyond direct employment, supporting employment in other sectors such as tourism and food services[lvii].

Agricultural activities also indirectly impact the economics of the region. They contribute intangible impacts like preserving undeveloped land that improves quality of life. This in turn makes the region a more attractive place to visit and thus increases tourism revenue. Farmland also provides numerous ecosystem benefits, such as animal habitat and flood control.

Appendix 3: Meeting Schedules & Materials

Alliance and Coordinating Committee Meetings

Alliance meetings are generally held quarterly, on the third Monday of the month. They happen in December, March, June, and September. For the purposes of completing the CEDS extra meetings were scheduled for February, April, and May. The schedule was as follows:

- December 20th, 2010
- February 7th, 2011
- March 21st, 2011
- April 25th, 2011
- May 23rd, 2011
- June 20th, 2011
- September 19th, 2011

To facilitate the creation of this plan, a coordinating committee was also formed. It met between Alliance meetings starting in February. The schedule was as follows:

- February 15th, 2011
- March 7th, 2011
- April 4th, 2011

Regional Public Meetings

Three regional public meetings were held during the planning process. These meetings were designed to elicit feedback and keep interested stakeholders informed about progress. Alliance meetings were also open to the public, but they are held at noon when many people are unable to attend. The three meetings were held on:

- March 8th, 2011
- April 14th, 2011
- June 20th, 2011

Materials

Agendas, meeting minutes, and newspaper articles written about the CEDS process are attached to the end of this plan.

Appendix 4: Plans & Studies Consulted

The following is a review of studies, plans, and reports that were consulted for this plan. A brief summary of important regional, local, and state plans is provided below. A complete list of plans and studies consulted follows.

Regional Plan of Conservation and Development (2007-2017)

Adopted in 2007, this plan sets out goals and objectives the next 10 years of development in all seven municipalities. General themes of the plan included sustainability and finding a balance between priorities.

Some important themes from the plan's recommendations include:

Compact development: Direct development toward areas with existing infrastructure; develop on infill and brownfield sites instead of greenfields; promote mixed-use developments; and cluster housing to preserve open space.

Preserve existing assets: Support the redevelopment of city centers; retain existing industries; develop market niches that capitalize on existing assets; build on the region's cultural and historic heritage; consider the context and scale of places when constructing transportation projects; promote adaptive reuse projects; and stabilize residential neighborhoods.

Strive for balance: Consider agricultural viability as a part of economic development; promote projects that consider all users of a transportation facility; support and enhance transit corridors; support a wide range of housing types to provide housing for all income levels; and control greenhouse gases.

Regional cooperation: Encourage inter-municipal facility sharing agreements; assist member municipalities with forecasting needs; support region greenways through municipal open space acquisitions; and develop plans for emergency preparedness.

Municipal Plans of Conservation and Development

In addition to the regional plan of conservation and development (POCD), each municipality's POCD was also reviewed. Because these plans contain many common and overlapping themes, their commonalities will be discussed first, followed by the themes and issues specific to a single municipality.

Common concerns:

- Changing demographics
- Changing structure of the economy, from production to services
- Revitalization of downtown/town centers
- Preserving open space
- Preserving the historic and cultural resources of the region's towns and cities
- Concentrating development in areas with existing services, to both enhance livability and lower municipal costs
- Underutilized public transportation system

Berlin

In addition to many of the themes listed above, a major component of Berlin's POCD is the creation of a viable town center. This goal had appeared in numerous previous plans and has shown up on every survey conducted by the town. The current plan recommends that a town center be established in the Farmington Avenue/Kensington Center area.

Bristol

Despite Bristol's large size and traditional role as a manufacturing center, it suffers from a lack of transportation access. The city's POCD cites the circuitous route drivers must take to reach the interstate as a roadblock to future development.

The POCD also notes that many of the industrial sites in the city are considered "outmoded" by modern standards. The older, multi-story buildings do not meet current trends which favor "flexible space".

The city has also lost ground to regional retail centers, such as Westfarms Mall. Studies have shown that the city generates significant retail demand, but considerable leakage to other towns is occurring.

Burlington

The Town of Burlington's POCD calls for the protection the characteristics that lead to quality of life. Specifically, it recommends the exploration of design standards, historic protection laws, and the protection of scenic views.

As a town that has grown at a very fast rate in the recent past (it nearly doubled in population from 1980 to 2000), Burlington's needs regarding municipal staff have altered. The plan calls for the creation of a professional economic development position to help plan for the town's future growth.

New Britain

The city of New Britain has been shifting from an employment center for the region, to a net exporter of workers. Just 18% of New Britain's workers find employment in that city. The city hopes to improve its connections with the surrounding region (through transportation improvements such as the busway to Hartford) and improve the desirability of its housing stock to attract new residents.

Another concern is that one of the city's most vibrant neighborhoods (the Broad Street neighborhood) is physically cut-off from the downtown. Route 72 separates these two areas of the city. This separation makes it difficult for revitalization efforts in either area to have spill-over effects. A separate downtown plan was also created.

Plainville

In Plainville, the supply and variety of housing is a concern. The plan notes that senior housing is currently limited. It is also points out that the lack of housing within the downtown area is a missed opportunity to create a more walkable neighborhood.

The plan also notes that there is no active land trust in the region. The plan recommends creating an accurate and thorough assessment of the currently status of open space lands in the community.

Plymouth

The Town of Plymouth's plan seeks a number of changes to the town's zoning regulations. These are focused primarily on industrial lands, which were uniformly zoned. The plan recommends altering the industrial zones where appropriate to better serve the needs of industry.

The plan also notes that recent development has occurred in a sprawling pattern. Residential development increased while population growth was stagnant. Concerns over loss of agricultural land and environmental impacts were expressed.

Southington

The Town of Southington has undergone considerable change. Currently, an issue is that the relative prominence of its various retail areas is shifting. The concern is with keeping the various retail districts in good repair, both to sustain the tax base and present a good face to incoming traffic.

Another concern stems from the area's industrial heritage. Many former industrial sites are no longer productive; many are also contaminated and in need of clean-up (brownfield sites). Costs can be quite high and represent a barrier to redevelopment.

Regional Long Range Transportation Plan (2011 draft)

Currently in draft form, this plan sets out transportation goals and projects to be completed over the next 28 years. While this plan is not yet complete, some major areas of concern have been identified. They include:

- Ensuring that existing infrastructure is maintained.
- Reviewing projects for environmental impact.

- Designing roads and streets to enhance the built environment, so that that communities are safe, livable places.
- Improving data collection.
- Implementing the state's "complete streets" law.
- Adopting a network of on- and off-road pedestrian and bicycle routes.
- Completing the Farmington Canal Heritage Trail.
- Connecting the region to the New York City, Stamford, Bridgeport, Waterbury, and Hartford areas.
- Run commuter rail along the New Haven-Hartford-Springfield corridor.
- Rationalize local bus routes.
- Get transit routes added to online systems such as Google Transit.
- Improve signage for the public transit system.
- Add electronic highway signs to indicate alternative routes to avoid congestion.
- Make improvements to traffic control systems to decrease congestion.
- Maintain and upgrade the rail system to handle freight traffic.

Agriculture Preservation and Enhancement Strategies for the Central Connecticut Region

Completed in 2007, this plan examines issues affecting the region's farms and provides recommendations for dealing with them. After soliciting feedback through a survey and an advisory committee, the following issues were identified:

- Farmers experience pressure from multiple sources to develop their land.
- More regulatory enforcement is needed from towns to support agricultural uses.
- Towns need more education regarding farmland preservation and the benefits that it brings, as well as the needs and issues of farmers.
- Farmers need greater representation in town government, and greater resources for getting their concerns heard.
- Better regulations regarding the environmental impacts of development are needed.
- Towns and regions need more assistance to fund agricultural preservation programs.
- The following were some of the plan's recommendations:
- Address town-farmer issues through regulations, ordinances, zoning and plans of conservation and development
- Including strategies such as: transfer of development rights, purchase of development rights, tax relief programs, utilization of the Federal Farmland Assistance Programs, using farmer's markets to gather support for farmers, and establishing zoning regulations that protect agricultural land.
- Address education, training and outreach needs for the community and town officials
- Address and/or support farmers need for agricultural resources and town representation
- A possible action that could be taken is the establishment of an agricultural commission

- Address and/or support town's need to provide assistance to farmers

Mismatch in the Labor Market: Measuring the Supply of and Demand for Skilled Labor in New England

This report, put out by the Boston Federal Reserve, examines the labor market in New England States. The author's group workers into three categories based on their educational attainment: low skill, middle skill, and high skill. The main finding of the report is that New England states have an abundance of high skill workers, but lack middle skill workers. They forecast that a large proportion of future job growth will be in the middle skill category (those with some college or an associate's degree).

Their analysis also indicates that high skill labor is too prevalent in New England. By looking at the premium that employers are willing to pay for high skill workers (that is, the difference between what a worker in the high skill category makes and what a worker with just a high school diploma makes) throughout the country, they were able to determine which labor markets are oversaturated and which are not. In New England, high skill workers are unable to demand as large of premium as high skill workers in other areas.

Title of Plan/Study	Area Covered	Authors/Agency
Plan of Conservation and Development For the Central Connecticut Region 2007-2017 (2007)	Central Connecticut Region	CCRPA
Agriculture Preservation and Enhancement Strategies for the Central Connecticut Region (2007)	Central Connecticut Region	CCRPA
Central Connecticut Plan for Alternative Transportation and Health (2005)	Central Connecticut Region	CCRPA
Comprehensive Economic Development Strategy (2005)	Bristol, New Britain, Plainville, and Plymouth	CCRPA, Cosgrove Consulting
Long Range Transportation Plan (2011)	Central Connecticut Region	CCRPA
Capital Workforce Partners: Annual Report (2009-2010)	North Central Connecticut Workforce Investment Area	Capital Workforce Partners
Capital Workforce Partners Integrated Budget and Business Plan (2011-2012)	North Central Connecticut Workforce Investment Area	Capital Workforce Partners
King's Mark Resource and Development Area, Inc.: Area Plan 2009-2014	King's Mark RC&D Area (Western Connecticut)	King's Mark RC&D
Conservation and Development: Policies Plan for Connecticut 2005-2010 (2005)	Connecticut	OPM
Connecticut Economic Strategic Plan (2009)	Connecticut	DECD
State of Connecticut Long Range State Housing Plan (2005)	Connecticut	DECD
The Connecticut Competitiveness Agenda Project (2011)	Connecticut	Connecticut Technology council
Connecticut's Economic Competitiveness in Selected Areas (2009)	Connecticut	The Legislative Program Review and Investigations Committee, Connecticut General Assembly
Economic Impacts of Connecticut's Agricultural Industry (2010)	Connecticut	Department of Agricultural and Resource Economics, University of Connecticut

2009 Survey of International Trade	Connecticut	CBIA, J.H. Cohn LLP.
Town of Berlin: Plan of Conservation and Development (2003)	Berlin	Berlin Department of Development Services
Berlin Market Assessment	Berlin	AMS Advisory Services
Bristol Plan of conservation and Development (2000)	Bristol	Bristol Planning Commission, Buckhurst Fish and Jacqemart Inc.
Route 72 Corridor Land Use and Transportation Master Plan	Bristol	Fitzgerald & Halliday, Inc.
Town of Burlington Plan of Conservation and Development (2009)	Burlington	AECOM Planning Consultants
Plan of Conservation and Development 2010-2020, New Britain (2010)	New Britain	New Britain City Plan Commission, Harrall-Michalowski Associates
Review Draft, Downtown Plan and Strategy (2007)	New Britain	Harrall-Michalowski Associates, Yale Urban Design Workshop, Community Initiatives Development Corporation, The Maguire Group
Town of Plainville, 2009 Plan of Conservation and Development (2009)	Plainville	Plainville Planning and Zoning Commission, Urbitran
Town of Plainville, Connecticut: Community Resource Inventory Report (2007)	Plainville	Community Resource Inventory Committee
Plainville Incentive Housing Zone Study (2009)	Plainville	CCRPA
Town of Plymouth Plan of Conservation and Development (2004)	Plymouth	Town of Plymouth Planning and Zoning Commission
Town of Southington Plan of Conservation and Development (2006)	Southington	Town of Southington Planning and Zoning Commission, TPA Design Group
Metro Hartford Comprehensive Economic Development Strategy	The Metro Hartford Region	The MetroHartford Alliance, Angelou Economics

References

[i] Gail Leach and Steven Vastola, *Bristol* (Charleston, SC: Arcadia Publishing, 2001).
[ii] Lynda J. Russell, *Plainville* (Charleston, SC: Arcadia Publishing, 2007).
[iii] Kathleen L. Murray, *Berlin* (Charleston, SC: Arcadia Publishing, 2001).
[iv] Jean M. Martin, *Burlington* (Charleston, SC: Arcadia Publishing, 2001).
[v] the Office of Policy and Management, *A review of regional tax-based revenue sharing programs and the establishment of regional asset districts* (Hartford, CT: the Connecticut General Assembly, July 1, 2010), 7.
[vi] BlumShapiro and Connecticut Business & Industry Association, "2009 survey of Connecticut businesses: Manufacturing supplement" (Connecticut Business & Industry Association, 2009).
[vii] Grant Thorton and ASR Analytics, "Construction grants program impact assessment report" (U.S. Department of Commerce, Economic Development Administration, September 30, 2008).
[viii] D. A Lewis and J. Edward, *Does Technology Incubation Work?: A Critical Review* (Economic Development Administration, US Dept. of Commerce, 2001).
[ix] Casey R. Pickett and Matthew Nemerson, "The Connecticut Competitiveness Agenda Project" (Connecticut Technology Council, 2010).
[x] BlumShapiro and Connecticut Business & Industry Association, "2009 survey of Connecticut businesses: Manufacturing supplement."
[xi] ICF Consulting, "Connecticut's Next Generation Competitiveness Initiative: Metals Cluster Strategy" (University of Connecticut Office of Technology Commercialization, August 2005).
[xii] Connecticut Business & Industry Association, "2009 International trade survey" (Author, 2009).
[xiii] Ibid., 8.
[xiv] State Higher Education Executive Officers, "State higher education finance: FY 2010" (State Higher Education Executive Officers, 2011).
[xv] Jacqueline Rabe, "National reports say state is near top in higher ed funding," News, *The Connecticut Mirror*, April 1, 2011, http://www.ctmirror.org/story/12059/reports-connecticut-spends-well-higher-education.
[xvi] Partnership for Strong Communities, "Affordability in Connecticut, 2009", 2010.
[xvii] Office of Policy and Management, *Municipal Fiscal Indicators: Fiscal years ended 2005-2009* (Hartford, CT: Office of Policy and Management, November 2010).
[xviii] D. Stangler and R. E Litan, "Where Will the Jobs Come From?," *Kaufman Foundation Research Series: Firm Foundation and Economic Growth* 1 (2009): 1-17.
[xix] Nicholas Jolly, with Connecticut Department of Labor, "Connecticut's industry clusters" (Connecticut Department of Labor, July 2005).
[xx] Department of Economic and Community Development, "Connecticut Economic Strategic Plan", September 2009.
[xxi] Battelle Technology Partnership Practice, "Battelle/BIO State Bioscience Initiatives: Connecticut Profile" (Biotechnology Industry Organization, May 2010).
[xxii] J. Cortright, H. Mayer, and Brookings Institution. Center on Urban and Metropolitan Policy, *Signs of life: The growth of biotechnology centers in the US* (Center on Urban and Metropolitan Policy, the Brookings Institution, 2002).

[xxiii] Battelle Technology Partnership Practice, "Battelle/BIO State Bioscience Initiatives" (Biotechnology Industry Organization, May 2010).
[xxiv] J Thursby and M Thursby, *Here Or There?: A Survey of Factors in Multinational R and D Location--Report to the Government-University-Industry Research Roundtable* (Washington, D.C.: National Academies Press, 2006).
[xxv] Battelle Technology Partnership Practice, "Battelle/BIO State Bioscience Initiatives: Connecticut Profile."
[xxvi] Cortright, Mayer, and Policy, *Signs of life: The growth of biotechnology centers in the US*.
[xxvii] Pickett and Nemerson, "The Connecticut Competitiveness Agenda Project."
[xxviii] ICF Consulting, "Connecticut's Next Generation Competitiveness Initiative: Biopharmaceutical Cluster Strategy" (University of Connecticut Office of Technology Commercialization, August 2005).
[xxix] Institute for Supply Management, "ECONOMIC GROWTH CONTINUES IN 2011," *ISM - Media Releases*, December 7, 2010, http://www.ism.ws/about/MediaRoom/newsreleasedetail.cfm?ItemNumber=20976.
[xxx] Battelle Technology Partnership Practice, "Battelle/BIO State Bioscience Initiatives."
[xxxi] T. Alan Lacey and Benjamin Wright, Burea of Labor Statistics, "Occupational employment projections to 2018," *Monthly Labor Review Online* 132, no. 11 (November 2009).
[xxxii] C. J Truffer et al., "Health spending projections through 2019: the recession's impact continues," *Health Affairs* 29, no. 3 (2010): 522.
[xxxiii] Burea of Labor Statistics and U.S. Department of Labor, *Occupational Outlook Handbook 2010-2011*, 2009.
[xxxiv] Lacey and Wright, Burea of Labor Statistics, "Occupational employment projections to 2018."
[xxxv] Connecticut Department of LaborOffice of Research, "North Central Workforce Investment Area: Industry Projections: 2006-2016," *Connecticut Labor Market Information*, 2011, http://www1.ctdol.state.ct.us/lmi/forecast2006-2016/ncindustry.asp.
[xxxvi] Lacey and Wright, Burea of Labor Statistics, "Occupational employment projections to 2018."
[xxxvii] Curtis D. Spencer and Steve Schellenberg, Inc., "Trends in global manufacturing, goods movement and consumption, and their effect on the growth of United States ports and distribution" (NAIOP Research Foundation, September 2010).
[xxxviii] Lacey and Wright, Burea of Labor Statistics, "Occupational employment projections to 2018."
[xxxix] Alicia Sasser Modestino, New England Public Policy Center, *Mismatch in the Labor Market:Measuring the Supply of and Demand for Skilled Labor in New England*, Research Report (Boston, MA: Federal Reserve Bank of Boston, November 2010).
[xl] KPMG International and The Economist Intelligence Unit, "Global Manufacturing Outlook: Relationships, risk and reach" (KPMG International, September 2010).
[xli] Deloitte Development LLC., "Aerospace & Defense - 2010 U.S. Outlook" (Deloitte Development LLC., 2010).
[xlii] ICF Consulting, "Connecticut's Next Generation Competitiveness Initiative: Metals Cluster Strategy."
[xliii] Patrick J. Flaherty, "Manufacturing isn't dead: It doesn't even look that way!," *The Connecticut Economic Digest*, May 2011.
[xliv] Deloitte Development LLC., "Aerospace & Defense - 2010 U.S. Outlook."
[xlv] Bureau of Labor Statistics and U.S. Department of Labor, *Occupational Outlook Handbook 2010-2011*.
[xlvi] Connecticut Department of LaborOffice of Research, "North Central Workforce Investment Area: Industry Projections: 2006-2016."
[xlvii] ICF Consulting, "Connecticut's Next Generation Competitiveness Initiative: Aerospace Cluster Strategy" (University of Connecticut Office of Technology Commercialization, August 2005).
[xlviii] Bureau of Labor Statistics and U.S. Department of Labor, *Occupational Outlook Handbook 2010-2011*.
[xlix] Connecticut Department of LaborOffice of Research, *Connecticut Labor Force Data for Labor Market Areas & Towns* (Hartford, CT: Connecticut Department of Labor, 2010).
[l] Bureau of Labor Statistics and U.S. Department of Labor, *Occupational Outlook Handbook 2010-2011*.
[li] The University of Connecticut Department of Agricultural and Resource Economics and The Connecticut Center for Economic Analysis,

"Economic Impacts of Connecticut's Agricultural Industry" (The University of Connecticut College of Agriculture and Natural Resources, September 2010).

[lii] United States Department of Agriculture, "Quick Stats Application," Application, *National Agricultural Statistics Service*, n.d., http://quickstats.nass.usda.gov/?source_desc=CENSUS.

[liii] Center for Land Use Education & Research, "Your Town," *Connecticut's Changing Landscape*, n.d., http://clear.uconn.edu/projects/landscape/your/town.asp.

[liv] Interagency Agricultural Projections Committee, *USDA Agricultural Projections to 2019*, Long-term Projections (Washington, D.C.: Office of the Chief Economist, World Agricultural Outlook Board, U.S. Department of Agriculture, 2010).

[lv] ICF Consulting, "Connecticut's Next Generation Competitiveness Initiative: Agricultural Cluster Strategy" (University of Connecticut Office of Technology Commercialization, August 2005).

[lvi] The University of Connecticut Department of Agricultural and Resource Economics and The Connecticut Center for Economic Analysis, "Economic Impacts of Connecticut's Agricultural Industry."

[lvii] Ibid.