

City of Beverly

ECONOMIC **IMPACT** STUDY



conducted for



Beverly Main Streets

by

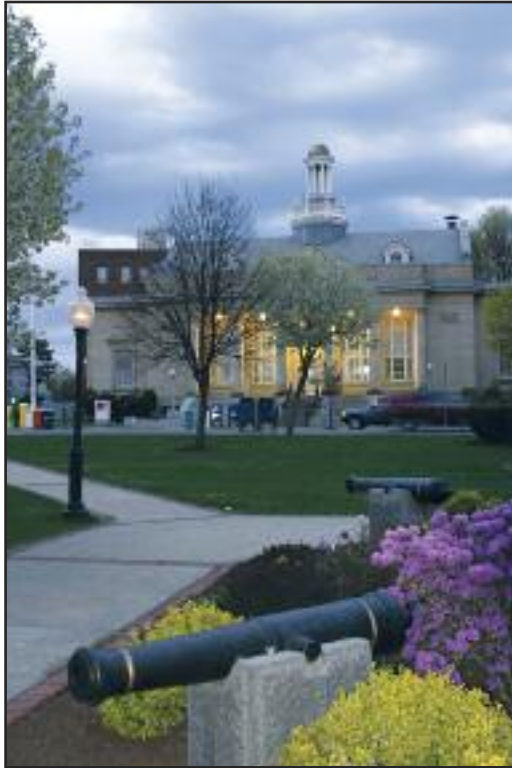
ENDICOTT RESEARCH CENTER • ENDICOTT COLLEGE • BEVERLY, MASSACHUSETTS

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EXECUTIVE SUMMARY

The *Beverly Economic Impact Study* provides information about the regional economy for local economic development practitioners and policy-makers. The study indicates that:

- The expansions of four industries – arts, infrastructure, restaurant, and retail – will not only contribute to the continuous growth of the local economy, but will also indicate a possible path for Beverly to improve the quality of living and to reach the desirable social development.
- During the time period from 2002 to 2008, the American economy experienced a relatively strong expansion, with an annual average growth rate of 2.8%, while New England, Massachusetts, and Essex County experienced a more moderate increase with the average growth rate 1.6%, 1%, and 1.7%, respectively. The local economy performs better than that of the state and region.
- Since September 11, 2001 Essex County, in a way similar to that of the American economy, experienced economic fluctuation. However, the changes of the Gross Domestic (Regional) Product (GDP) indicate that the local economy had an opposite trend to that of the national one.
- By 2006, the population in Beverly was 40,553; while the Beverly businesses and organizations employed 30,248. That is to say that the Beverly economy employs many daily commuters. This fact implies that although Beverly looks like a small, quiet seashore town, its economy may well be more rigorous than it appears. Moreover, it also indicates the possibility that impact analysis, particularly the “induced” impact within the Beverly city boundary, may well be under-estimated due to the “leakage.”
- From IMPLAN 2006 data, the base of the Beverly economy is still highly related to information technology, computer, and precision instrument industries, given the fact that the employment in manufacturing as a whole has been and will continue to be shrinking.

THE PURPOSE OF THE RESEARCH

The Endicott Research Center and Beverly Main Streets collaborated on the *Beverly Economic Impact Study*, which focuses on the path and the perspective of the local economic development as well as on the possible choices facing the Beverly community.

Economic development is no longer synonymous with “economic growth.” Today, when talking about economic development, not only are people increasingly interested in sustainable development (SD), but now more than ever link economic development to the quality of living and social development. This study employs the input-output model for impact analysis. However, aware of this fundamental change in the concept of economic development, this study provides economic development practitioners and policy-makers with a dynamic picture of local economic development. In so doing, both historical and forecasting data are used to describe the path and constraints of local economic development, while the impact analysis for four named industries – art, retail, restaurant, and infrastructure – indicates some possible choices that the Beverly community may have.

Like many impact analyses that typically focus on the multiplier effect, the impact analysis for the four Beverly industries provides information on the pure economic impacts of these industries, in terms of total, employment, and value-added effect. However, the implication of the analysis goes beyond the justification of investment decisions. Once the changes of economic structures in the past and possibly in the future have been taken into account, the investment choices today will indicate the choices of living style that will be made by the local community in the future. To put it another way, the choices suggested here not only demonstrate the possible path of future economic growth, they also project reasonable ways of improving the image of Beverly as a liveable seashore town as well.

In brief, the *Beverly Economic Impact Study* serves two purposes: finding reasonable strategies for local economic development and finding a reasonable approach to identify such strategies.

METHODOLOGY

The methodology employed here is subject to both available data sources and the specific needs for information collection and presentation.

The data presentation focuses on three aspects: what happened in the past, what is happening in the present, and what will happen in the future. In so doing, both trend analysis and cross-sectional comparison are used. *IMPLAN* software provides the impact analysis and estimated multipliers.

While some other information sources are also employed by this study, two major data sources, *Woods & Poole 2007* and *IMPLAN 2006*, provide the most supporting evidences.

To make the findings easily accessible and intuitive, tables and charts are used for data presentation. The detailed data is available upon request.

I. ECONOMIC GROWTH

Since September 11, 2001 the United States as well as the local economy experienced fluctuations. Due to the economic stimulus package, the U.S. economy had a quick rebound. However, the regional/local economy experienced a more painful path of recovery. Moreover, the growth of the gross regional product in Essex County indicates that the local economy has opposed the economic trend to that of the state as well as New England.

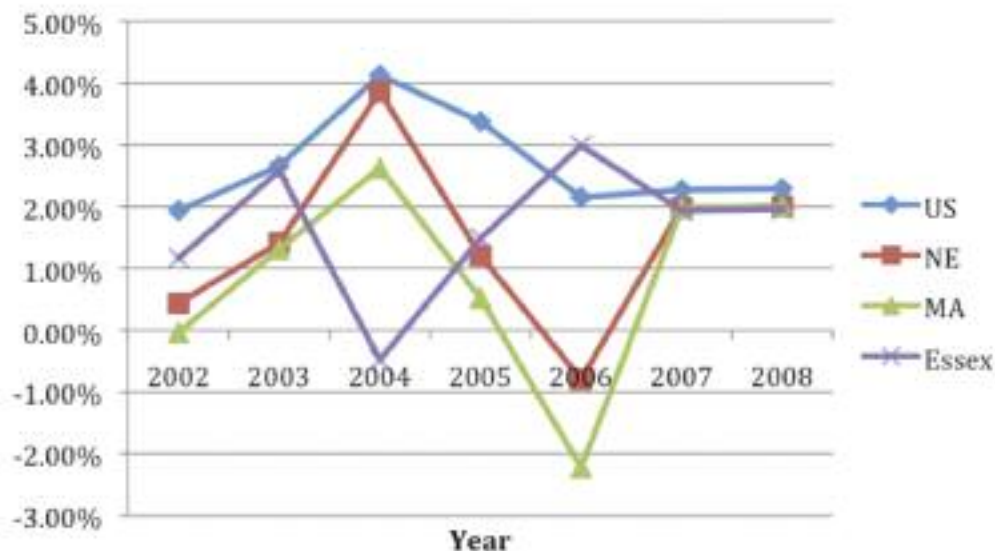
During the time period from 2002 to 2008, the American economy experienced a relatively strong expansion with an annual average growth rate of 2.8% GDP; while moderate increases, average growth rates of 1.6%, 1%, and 1.7%, were experienced in New England, Massachusetts, and Essex County, respectively. Apparently, the local economy in Essex County performs better than that of the state and region.

TABLE 1: THE CHANGE OF GROSS REGIONAL/DOMESTIC PRODUCT: 2002-08

GROWTH OF GROSS REGIONAL PRODUCT: 2002-08								
	UNITED STATES		NEW ENGLAND		MASSACHUSETTS		ESSEX COUNTY	
	Value (Billion, '04\$)	% Change	Value (Billion, '04\$)	% Change	Value (Million, '04\$)	% Change	Value (Million, '04\$)	% Change
2002	10883.565	1.94%	619.343	0.44%	297654.71	-0.04%	24817.05	1.17%
2003	11172.355	2.65%	628.096	1.41%	301564.65	1.31%	25457.00	2.58%
2004	11633.573	4.13%	652.358	3.86%	309483.00	2.63%	25334.37	-0.48%
2005	12026.607	3.38%	660.242	1.21%	311093.78	0.52%	25710.96	1.49%
2006	12285.328	2.15%	655.008	-0.79%	304186.35	-2.22%	26479.37	2.99%
2007	12564.662	2.27%	667.975	1.98%	310200.21	1.98%	26992.06	1.94%
2008	12852.398	2.29%	681.362	2.00%	316411.97	2.00%	27521.18	1.96%

Source: Woods & Poole, 2007

**FIGURE 1: GROWTH RATE OF GROSS DOMESTIC/REGIONAL PRODUCT:
U.S., New England, Massachusetts, and Essex County**



II. DEMOGRAPHY: 2006

TABLE 2: 2006 DEMOGRAPHY

2006 Demography: U.S., New England, Massachusetts, Essex County, and Beverly					
	U.S. (in 1,000)	New England (in 1,000)	Massachusetts (in 1,000)	Essex County (in 1,000)	Beverly
Population	299,398.48	14,269.99	6,437.19	735.96	40,553
Employment	176,969.94	9,101.69	4,171.52	402.56	30,248
Households	114,373.80	5,642.91	2,533.56	285.46	16,225
	U.S. (‘04\$)	New England (‘04\$)	Massachusetts (‘04\$)	Essex County (‘04\$)	Beverly
Household Income	\$91,729	\$105,191	\$109,692	\$112,546	\$117,708
	U.S. (in Billions, ‘04\$)	New England (in Billions, ‘04\$)	Massachusetts (in Millions, ‘04\$)	Essex County (in Millions, ‘04\$)	Beverly
Total Personal Income	\$10,143.73	\$576.67	\$270,159.93	\$30,954.21	\$1,909,790,000

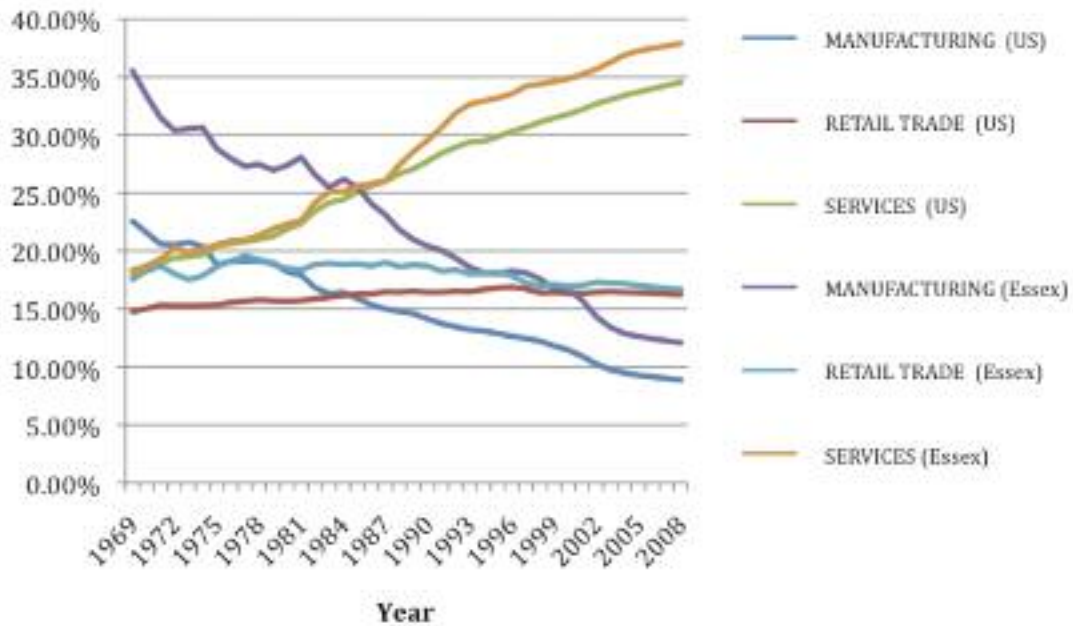
Source: Woods & Poole, 2007 for U.S., New England, Massachusetts, and Essex County, IMPLAN 2006 for Beverly.

Table 2 offers a different picture of Beverly’s economy. By 2006, the population in Beverly was 40,553, while approximately 30,248 were employed within the city. Although there is no additional detailed data source available, it seems that Beverly employs a large number of daily commuters. If this is true, then it implies that, although Beverly looks like a small, quiet seashore town, its economy may well be more rigorous than it appears. Moreover, it also gives a warning that the impact analysis, particularly the “induced,” within the Beverly city boundary may well be under-estimated due to the “leakage.”

III. ECONOMIC BASE IN BEVERLY

In past decades, the U.S. as well as the regional/local economic structure has changed dramatically. **Figure 2** indicates that (1) while employment in manufacturing both in the U.S. and Essex County reduced sharply, the level of employment in manufacturing in Essex County is still greater than the national average; (2) employment in the service sector of both the U.S. and Essex County has almost doubled, while the increase is more rapid locally; and (3) employment in retail trade in both the U.S. and Essex County is relatively stable. As a matter of fact, the share of employment in services in Essex County drops slightly.

FIGURE 2: THE CHANGE OF EMPLOYMENT (%): 1969-2008



Source: Woods & Poole, 2007

Moreover, the estimated location quotients (calculated from *IMPLAN 2006*) show that the base of the Beverly local economy is still highly related to the information technology, computer, and precision instrument industries, given the fact that employment in manufacturing as a whole has been and will continue to shrink.

IV. IMPACT ANALYSIS OF ARTS, INFRASTRUCTURE, RETAIL, AND RESTAURANT

TABLE 3: ECONOMIC IMPACT OF ARTS, INFRASTRUCTURE, RETAIL, AND RESTAURANT IN BEVERLY

		Direct	Indirect	Induced	Total
Retail	Output	\$1,000,000.00	\$173,619.00	\$212,645.00	\$1,386,264.00
	Employment	12.5	1.2	1.9	15.5
	Value-added	\$644,023.00	\$104,205.00	\$135,969.00	\$884,197.00
Arts	Output	\$1,000,000.00	\$490,703.00	\$211,523.00	\$1,702,226.00
	Employment	36.3	13.7	1.9	51.90
	Value-added	\$248,347.00	\$210,320.00	\$134,144.00	\$592,811.00
Infrastructure	Output	\$1,000,000.00	\$99,121.00	\$121,654.00	\$1,220,775.00
	Employment	2.3	0.5	1	3.8
	Value-added	\$611,833.00	\$61,168.00	\$77,421.00	\$750,422.00
Restaurant	Output	\$1,000,000.00	\$112,668.00	\$138,197.00	\$1,250,865.00
	Employment	12.4	1	1.2	14.6
	Value-added	\$355,494.00	\$63,575.00	\$87,948.00	\$507,017.00

Source: *IMPLAN 2006*

Table 3 summarizes the economic impacts of the intended investment in the four chosen industries. Three types of impact are calculated – output, employment, and value-added. (Notice that the Total Impact = Direct + Indirect + Induced.)

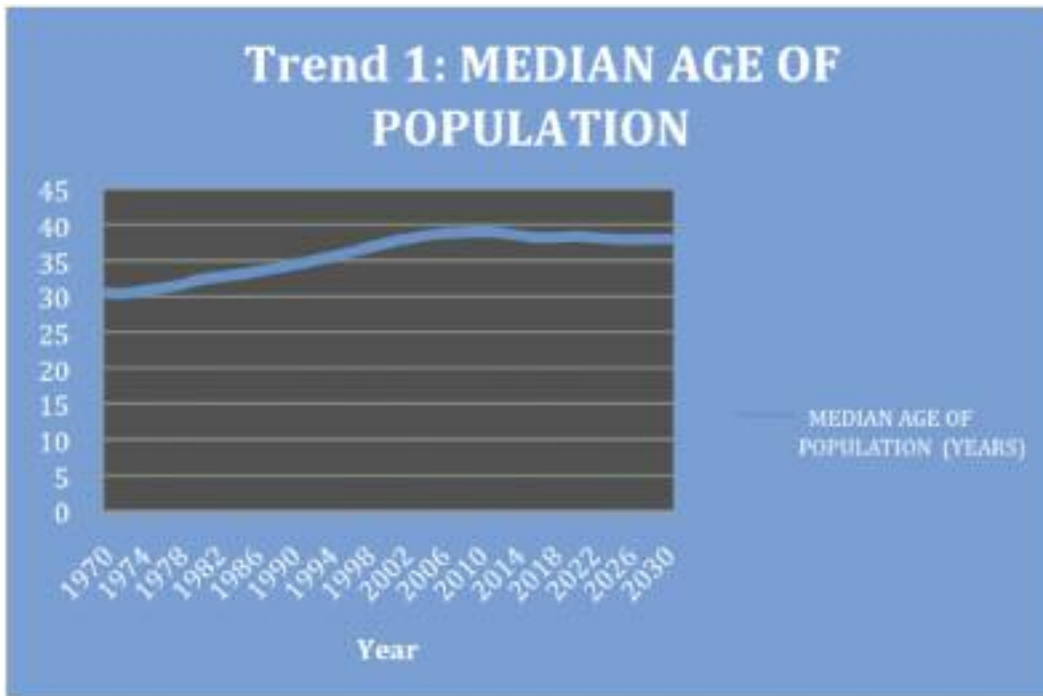
For each category of impact:

$$\text{The multiplier} = \frac{\text{Direct Impact} + \text{Indirect Impact} + \text{Induced Impact}}{\text{Direct Impact}}$$

It can be seen that if \$1,000,000 is invested in each of the four industries respectively, the economic impacts are different. It is not a surprise that most of the multipliers are not greater than 2, since none of the four industries belong to manufacturing. However, it should be pointed out that the investment in the arts industry realizes the greatest economic impact on output, employment, and value-added; and the three multipliers for the arts industry are 1.7, 1.4, and 2.39, respectively. Second, the economic impacts of investment in infrastructure are moderate. However, since the investment in infrastructure generally improves the city's environments, it contributes to the overall improvement of business investment efficiency, which cannot be measured by a static input-output model. Furthermore, as is pointed out earlier, because of the large number of commuter employment, the multipliers for the final consumption industries, such as restaurants, may well be underestimated. Last but not least, since the manufacturing industry will continue to shrink – as we will see in the next section, the choice of the investments in the four industries is suitable to the structural changes of the local economy and can also be considered as the rational choice for the quality of living.

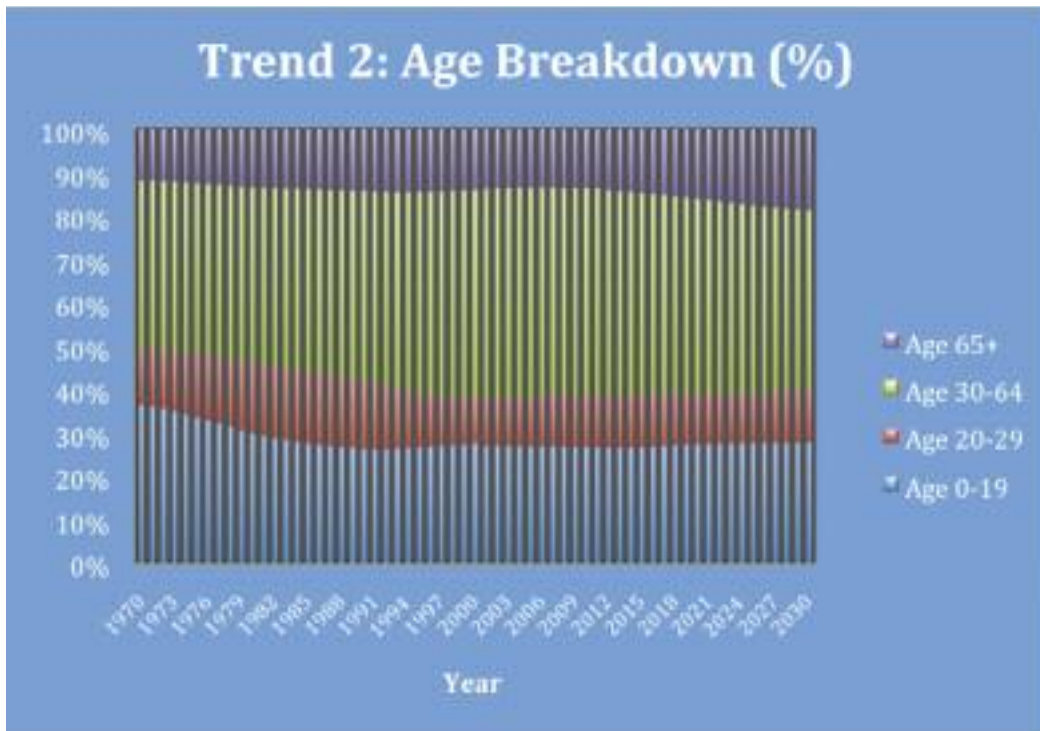
V. ECONOMIC PROSPECTIVE

In this section, graphic presentation will be used to describe some important economic indicators for the next two decades. It should be pointed out that due to the restriction of data, the indicators used are those at the Essex County level, rather than for Beverly alone. Also, please notice that the definitions of business and industries by *Woods & Poole* here are different from that of the four industries above.



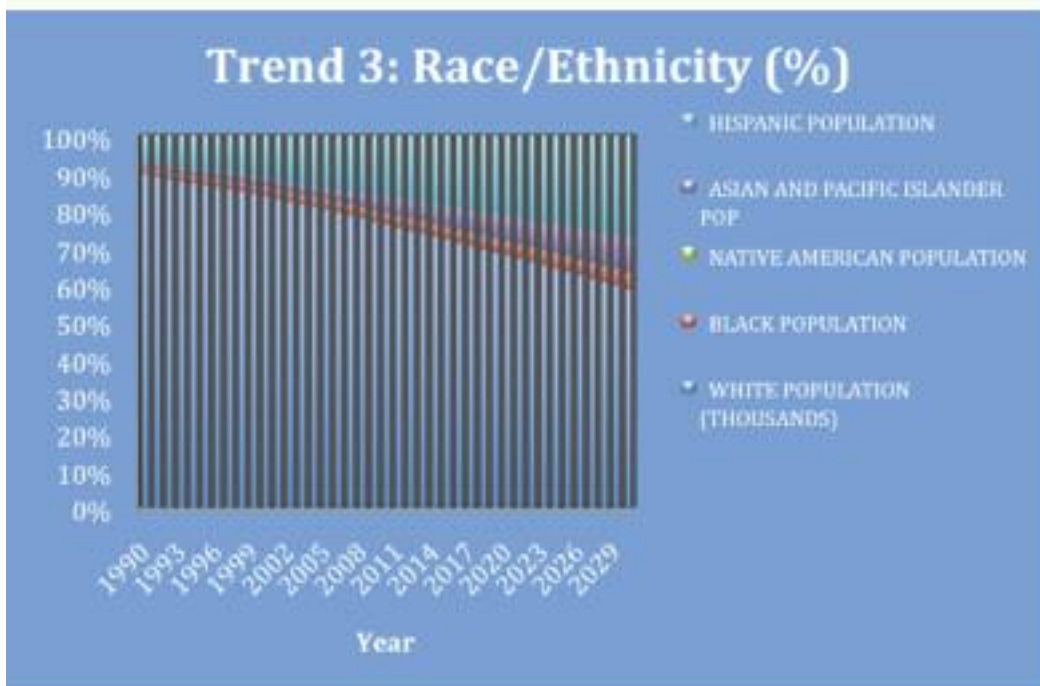
Source: *Woods & Poole*, 2007

Trend 1 shows that the median age in Essex County increases from approximately 30 in 1970 to 38 by 2030.



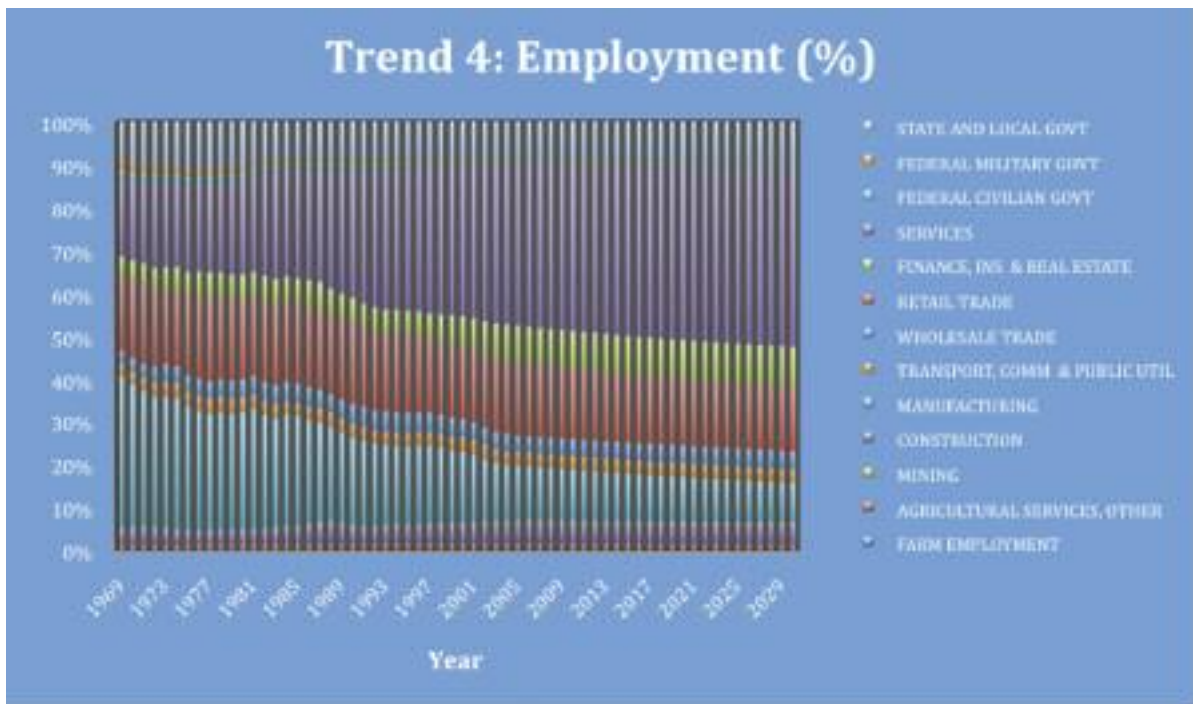
Source: Woods & Poole, 2007

Trend 2 indicates that the percentage of the population that are ages 20–29 and under 19 are relatively stable. There is a gradual increase in the share of the aging population (65+), against the decreasing share of the population that is aged 30–64.



Source: Woods & Poole, 2007

Trend 3 indicates that the percentage of the white population will continue to drop. Although the shares of all minority groups increase, the Hispanic population grows at the greatest rate.



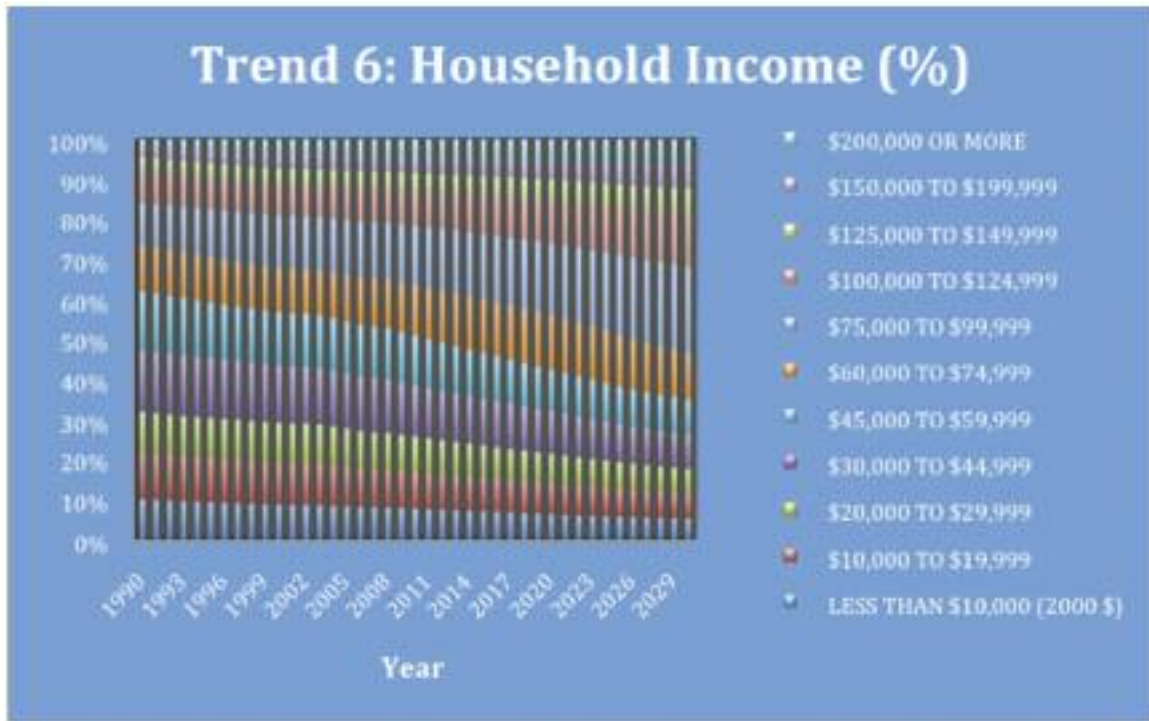
Source: Woods & Poole, 2007

Trend 4 indicates that in the next two decades manufacturing will continue to shrink, while the service industry will become the largest employer.



Source: Woods & Poole, 2007

Consistent with **Trend 4**, **Trend 5** shows that earnings from the service industry will expand in the next two decades.



Source: Woods & Poole, 2007

Although, as **Trend 6** shows, the percentage of the household income under \$30,000 a year will experience a gradual decrease, one should be cautious to draw any conclusion that there will be a possible drop in the poverty rate, since this measure is based on the 2000 constant dollar.



Source: Woods & Poole, 2007

Trend 7 indicates that the share of personal income has been and will continue to be relatively stable by 2030.



Source: Woods & Poole, 2007

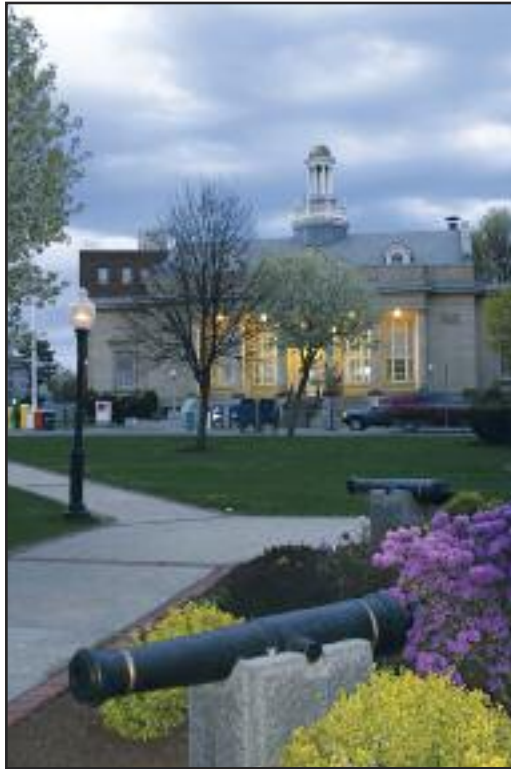
Trend 8 indicates that between now and 2029, the shares of most retail business will be stable, except for miscellaneous retail stores, which are expected to experience a moderate increase.

VI. GLOSSARY

- Direct Effects:** The changes in the industries to which a final demand change was made.
- Employment Multiplier:** Employment multipliers measure how job creation or destruction in a particular industry cause wider employment changes throughout the economy. For instance, does the closing of an auto factory that employs 1,000 people have a greater impact on the overall economy than the closing of a retail shopping mall that employs 1,000 people? The direct impacts (1,000 jobs lost) are the same; yet employment multipliers can show what the total indirect effects will be. In *IMPLAN*, the employment multipliers measure the changes in numbers of employments directly, indirectly, and totally.
- IMPLAN:** *IMPLAN* is a software with the database innovated by Minnesota *IMPLAN* Group, Inc. (MIG). *IMPLAN* refers to “Impact Analysis for Planning.” It uses the input-output model to generate the numerical estimates of the internal relationship of an economy.
- Indirect Effects:** The changes in inter-industry purchases as they respond to the new demands of the directly affected industries.
- Induced Effects:** These are typically reflected in the changes of spending by households as income increases or decreases due to the changes in production.
- Input-Output Model:** The input-output model of economics uses a matrix [<http://en.wikipedia.org/wiki/Matrix_\(mathematics\)>](http://en.wikipedia.org/wiki/Matrix_(mathematics)) representation of a nation’s (or a region’s) economy to predict the effect of changes in one industry on others and by consumers, government, and foreign suppliers on the economy. This model, if applied to a region, is also known as the Regional Impact Multiplier System. Wassily Leontief (1905–1999) is credited with the development of this analysis. Leontief won the Nobel Memorial Prize in Economic Sciences for his development of this model. Since then, the input-output model has been used broadly for different kinds of economic analysis, such as multiplier effect, regional economic development strategies, local economic planning, “snapshot” of the cross-sectional economy, etc.
- Multiplier:** The ratio of the overall effect to the initial change is called a regional multiplier, and it is sometimes expressed like this:
- $$\frac{\text{Direct Impact} + \text{Indirect Impact}}{\text{Direct Impact}}$$
- More often though, that added element of household spending on things like groceries is included, and then the ratio of overall effect to original change is expressed like this:
- $$\frac{\text{Direct Impact} + \text{Indirect Impact} + \text{Induced Impact}}{\text{Direct Impact}}$$
- The term “multiplier” cannot be used generically, though. Multipliers always express the ratio of overall effect to initial change by one of three measures: output (dollars’ worth of production), labor income, or jobs generated. So there are output multipliers, income multipliers, and employment multipliers.
- Value-added Multiplier:** The concept of “value-added” is defined as the payments to primary inputs, which typically include labors, capital, and government. In the input-output model, the value-added multipliers are defined as total value-added divided by the direct value-added, resulting from a given level of final demand. The value-added multipliers enable one to estimate the total changes in payments to primary input, when direct payments to those primary inputs are known. In practice, the concept of value-added can be further decomposed. In *IMPLAN*, value-added consists of four components – employee compensation, proprietor income, other property income, and indirect business tax.

Woods & Poole:

Located in Washington, D.C., Woods & Poole, Inc. is a private firm specializing in long-term economic forecasting. Woods & Poole has been providing forecasting data at the national, regional, state, and county levels for decades, using the “export-based approach.”



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