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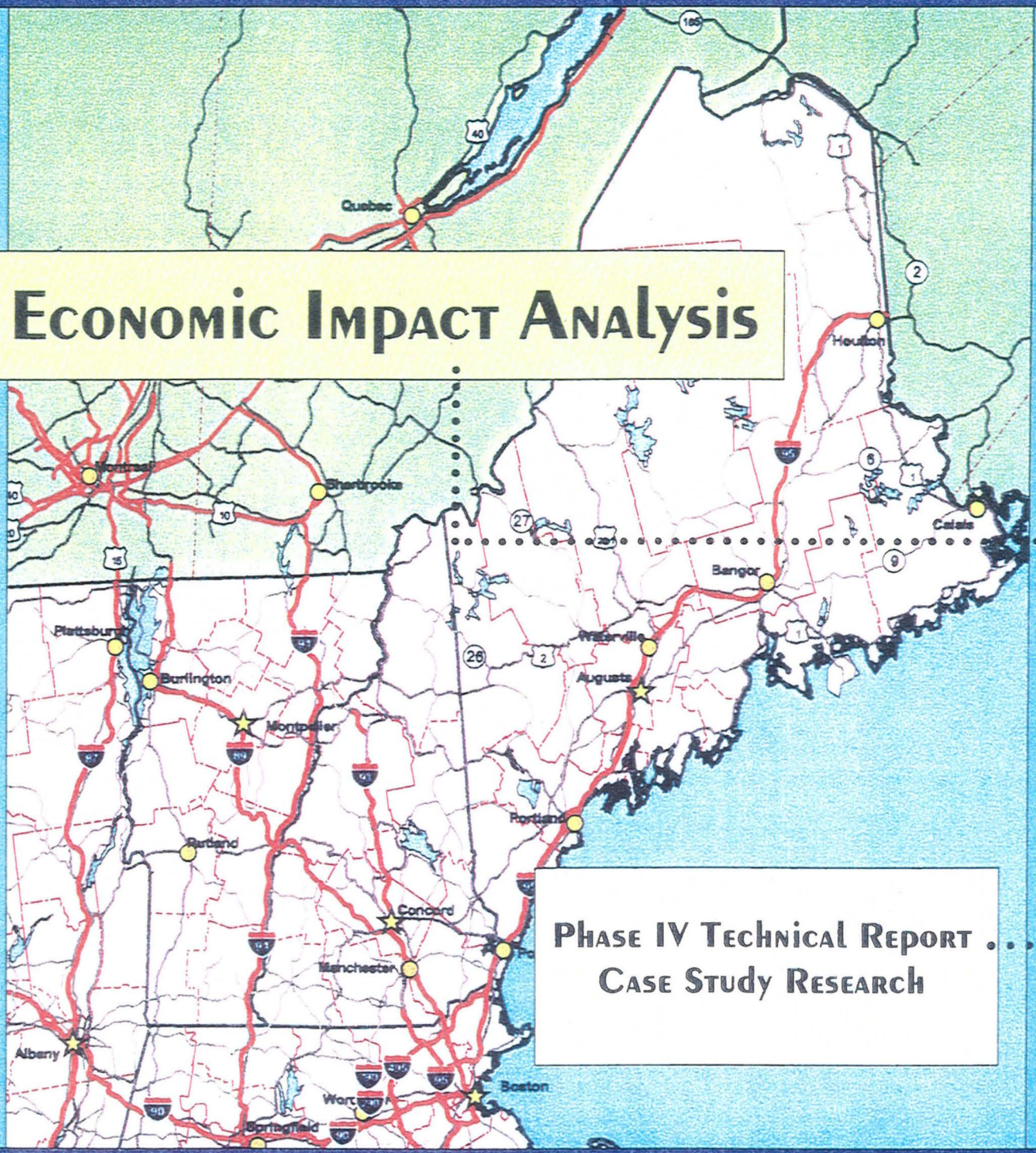
Maine East-West Highway...



Economic Impact Analysis

Phase IV Technical Report
Case Study Research

Main Planning Office
Main ment of Transportation

October 1999

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STATE OF MAINE
EXECUTIVE DEPARTMENT
STATE PLANNING OFFICE
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AUGUSTA, MAINE
04333-0038

ANGUS S. KING, JR.
GOVERNOR

EVAN D. RICHERT, AICP
DIRECTOR

November 3, 1999

To: Members, Appropriations Committee
Members, Transportation Committee
Members, DOT's East-West Highway Peer Review Group
Governor's Office
Interagency East-West Highway Working Group

From: Laurie Lachance

Re: Phase IV Technical Report of the East-West Highway Economic Impact Analysis

****

At long last, I am forwarding the fourth and final technical report of the East-West Highway Economic Impact Analysis. This report contains the results of case studies of the economic development trends along the I-91 and I-89 corridors in New Hampshire and Vermont. The intent of this portion of our work was to evaluate the impact that the four-lane highways had on the rural areas through which they passed. Because these roads have been operational for some time, we could assess the employment and income trends along the corridor since the time of construction.

I am also forwarding a copy of Governor King's 7-Step Plan for Implementing Better East-West Transportation that he presented to the annual meeting of the Maine Chamber and Business Alliance October 6th.

This should conclude my mailings to you. If our system has worked well, you should now have all 7 of the reports plus the Governor's plan. A list of the reports published follows:

1. A Summary of the Findings of Studies Regarding a Maine East-West Highway
2. A Technical Report On An East-West Highway in Maine (DOT)
3. Assessment of Toll Financing Feasibility (DOT - Wilbur Smith Associates)
4. Economic Impact Analysis - Phase I - Baseline Conditions
5. Economic Impact Analysis - Phase II - Survey Research and Commodity Forecasts
6. Economic Impact Analysis - Phase III - Economic Impacts
7. Economic Impact Analysis - Phase IV - Analogous Routes

Because of the sheer size of these reports (6 of which are each over 100 pages), we have placed them on the following websites to save on printing costs. If you, or others, would like to access them on the web, they can be found at:

Http://www.state.me.us/spo/ OR
Http://www.state.me.us/ OR
Http://www.state.me.us/mdot/

Thank you all for your patience. If you have any questions, please feel free to call me at 287-1479 or e-mail me at laurie.lachance@state.me.us . I will try to direct you to the most appropriate resource.

Maine East-West Highway: Economic Impact Analysis

Phase IV Technical Report: Case Study Research

September, 1999

Prepared for **Maine State Planning Office**
Maine Department of Transportation

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I
Introduction

Overview

The following is the final in a series of four technical reports which constitute the entire economic impact analysis of the proposed Maine East-West Highway. This technical report summarizes the findings of case study research that was performed for the analysis. The case studies examine historic traffic, land use and development patterns that have occurred along rural sections of two interstate highways in Vermont and New Hampshire, over the past 25 to 30 years. Specifically, the project team investigated transportation and economic trends before and after construction of Interstate 91, from Brattleboro, Vermont to the Canadian border, and Interstate 89 from Concord, New Hampshire to the Canadian border. (Additional descriptions of these routes and their comparability to an east-west highway through Maine, are presented later in this report.) The experience of Interstate 95 between Bangor and Houlton is also discussed to provide additional historical context to the analysis.

The purpose of the case study research was two fold. First, the case studies were undertaken in order to verify the reasonableness of the economic impact forecasts presented in the Phase III Technical Report. Although there may be no existing highway that is in every respect comparable to the proposed Maine East-West Highway, and the time period of the last 30 years is not necessarily indicative of the next 30, the observation of development impacts along existing roads does provide a useful measure of comparison. At minimum, the case studies can determine whether the impact projections presented in the Phase III Technical Report are high, low or roughly consistent with the historical experience of these other four-lane corridors. If the projected impacts of an east-west highway are substantially different from the historical experience of other routes, then justifications for those differences need to be provided.

Secondly, the case study research was intended to gather observations regarding potential business attraction and relocation effects, bypass effects and other localized land use impacts that would not necessarily be captured by an econometric model. Therefore, attention was given to observing these types of localized development impacts that have clustered near existing rural highway corridors in comparable regions of Northern New England.

East-West Highway Corridors

The Phase I Technical Report discussed the process that was used to select five conceptual highway corridors on which to base the economic impact analysis. Because the corridors are referenced in the case study analysis, a map and descriptions of the corridors are provided for reference. These corridors include three upgrade alternatives and two corridors on new alignments, as shown on Map I-1 and described below[1].

[1] Corridor definitions were provided by the Maine Department of Transportation.

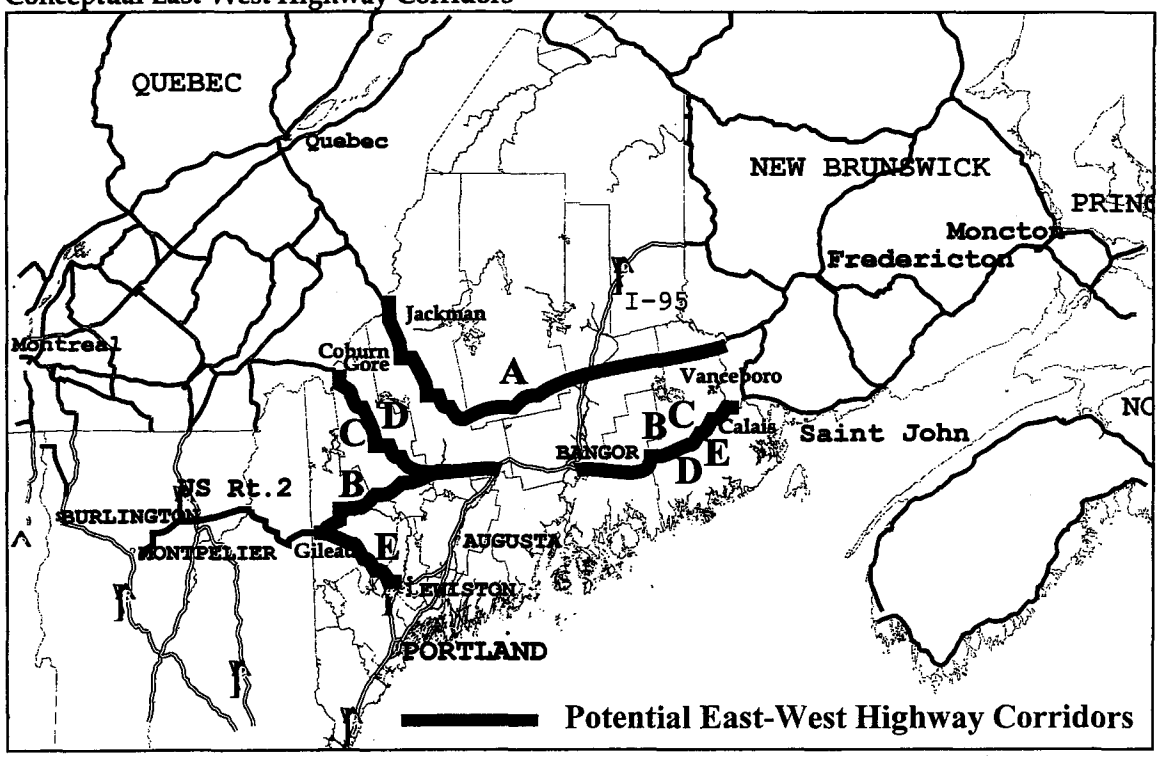
Because the case studies selected for analysis are both four-lane interstates, the east-west highway corridors given most attention in this report are the four-lane corridors D and E.

Corridor Upgrade Alternatives

Corridor "A": *The Trans-Maine Trail (Alternate)* This corridor begins at the Canadian border in Vanceboro and proceeds westerly via Route 6 through Lincoln, Milo, Dover-Foxcroft, and Guilford to Abbot, then westerly via Route 16 to Bingham. The trail proceeds northerly along Route 201 to Jackman and Sandy Bay at the Canadian Border. (Includes Routes 6, 16 and 201)

Corridor "B": *The East-West Highway* As defined in statute, this corridor begins at the Maine/New Brunswick border and proceeds westward along route 9 to Route 46 in East Eddington. The corridor continues southerly along Route 46 to Route 1A in East Holden, then westerly along Route 1A to I-395 in Brewer and connects with I-95 at or near Bangor. It then continues southwesterly along existing I-95, leaving I-95 in Newport. From this point, it continues westerly along Route 2 to the Maine/New Hampshire border at Gilead. (Includes Routes 9, 46 1A, I-395, I-95, & 2)

Map I-1
Conceptual East-West Highway Corridors



Corridor "C": *The East-West Highway (Alternate)* Beginning at the Maine/New Brunswick border, this corridor proceeds westward along Route 9 to Route 46 in East Eddington. The corridor continues southerly along Route 46 to route 1A in East Holden, then westerly along Route 1A to I-395 in Brewer and connects with I-95 at or near Bangor. It then

continues southwesterly along existing I-95, leaving I-95 in Newport. From this point, it continues westerly along Route 2 to Route 27 in Farmington, then continues northwesterly along Route 27 to the Maine/Quebec border at Coburn Gore, linking Sherbrooke and Montreal via Quebec Route 10. (Includes Routes 9, 46, 1A, I-395, I-95, 2 & 27)

Corridors on New Alignments

Corridor "D": This corridor is a limited access 4-lane highway, predominately on new alignment, beginning at the Maine/New Brunswick border, at a location somewhere in the vicinity of Calais/Baileyville and connecting to Saint John Fredericton, and Moncton via NB Routes 1, 2 and 3. The corridor then proceeds westward along or south of Route 9, connecting with I-395 and I-95 at or near Bangor, and continues southwesterly along existing I-95, leaving I-95 at a point between Newport and Augusta. From this point, it continues northwesterly to the Maine/Quebec border at or near Coburn Gore, linking Sherbrooke and Montreal via Quebec Route 10.

Corridor "E": Also a limited access 4-lane highway, predominately on new alignment, this corridor begins at the Maine/New Brunswick border at a location somewhere in the vicinity of Calais/Baileyville and connecting to Saint John Fredericton and Moncton via NB Routes 1, 2 and 3. The corridor then proceeds westward along or south of Route 9, connecting with I-395 and I-95 at or near Bangor, and continues southerly along existing I-95/I-495, leaving I-95/I-495 at a point between Augusta and Gray. It then continues in a generally northwesterly direction to the Route 2 corridor crossing into New Hampshire at or near Gilead, linking New Hampshire, Vermont, and Montreal via Route 2 and I-89.

Report Organization

The technical report is presented in two sections. Chapter II contains an analysis of current and historic traffic characteristics along those sections of Interstates 89 and 91 that have been selected for this analysis. The scope of that discussion includes observed changes in regional traffic conditions following construction of the highways, comparison of traffic growth on the interstates to growth on other major regional corridors, observed land use patterns along the highway corridors and trends in Canadian Border crossings at the northern terminus of each route. The concluding Chapter III then evaluates long term economic trends in the several counties which lie along each highway corridor, since the approximate opening of the routes in the late 1960s. Comparisons with the respective states of New Hampshire and Vermont are noted, as are differences among the more urban and rural counties along each corridor. Comparisons to those Maine Counties which are in the Study Area for an east-west highway are also provided for context. Finally, the analysis examines general business location patterns along each corridor, with particular attention given to identifying locations of Canadian-headquartered companies.

Summary Findings

The following section provides a summary of the overall findings of this technical report and their potential implications for the development of an east-west highway through Maine:

Transportation Assessment

- Interstates I-89 and I-91 serve regions which are comparable to Central and Northern Maine, provide similar highway connections to Montreal, and have an extended period of operations spanning roughly 30 years. I-89 was constructed between 1960 and 1970. The New Hampshire length of I-89 was constructed in three major sections with the sections being completed in 1960, 1965 and 1968. The Vermont length of I-89 was constructed in several sections between 1961 and 1970. The Vermont length of I-91 was constructed in several sections between 1958 and 1978. The stretch south of White River Junction was completed first, between 1958 and 1966.

- The construction of I-89 and I-91 enhanced access considerably between the northeastern United States and Canada. The population and employment centers served by these routes are also considerably closer to Montreal than the City of Bangor would be after construction of an east-west highway. As shown by the mileage estimates in Table I-1, all of the larger economic and population centers along these corridors are within 260 miles or an approximate 4½ hour drive from Montreal.

Table I-1
Distances Between Montreal and Corridor Study Cities

Location	Approximate Mileage
St. Albans, VT (I-89)	69
Burlington, VT (I-89)	98
Montpelier, VT (I-89)	140
St. Johnsbury, VT (I-91)	136
Brattleboro, VT (I-91)	248
White River Junction, VT (I-89/I-91)	188
Concord, NH (I-89)	259
For Comparison: Bangor, ME	*290*

- Historical data indicate that growth in traffic volumes accelerated after completion of I-89 and I-91. Similarly, growth in traffic along these routes has outpaced the underlying travel demand growth in the regions served by these highways. In the first decade after completion, annual traffic growth on I-89 averaged 7.7% per year, compared to a 5.9% annual growth rate which occurred along existing routes during the decade prior to construction. Similarly, traffic volumes along the southerly segments of I-91 grew by 6.5% annually in the first decade after opening, compared to 4.7% growth along existing routes during the decade prior to construction. Over the entire period following the opening of these interstates, traffic growth along I-89 and I-91 has averaged 4.1% per year. This compares to an approximate 2.6% annual growth in traffic along selected secondary routes, which provide a reasonable

"control" measure of baseline growth in travel demand in each State. If economic activity is assumed to accompany growing traffic volumes, one would expect to find evidence along the I-89 and I-91 corridors.

- Despite the relatively high rates of traffic growth which immediately followed the opening of I-89 and I-91, current volumes are somewhat comparable to I-95 through Maine. This is particularly true of the more rural northern segments of each corridor, near the Canadian border. Daily traffic demands on I-89 range from a low of 8,000 vehicles per day (vpd) near the Canadian border to 30,700 vpd in the more urbanized area of Lebanon, NH, and 43,100 vpd in Burlington, VT. Traffic on the more rural sections of the corridor range from 8,000 to 13,000 vpd. Utilization of I-91 is considerably lower, with the interstate carrying 3,100 to 3,700 vpd in its northern section, approaching the Canadian border, to a high of 23,500 vehicles per day in the vicinity of Brattleboro. By comparison, traffic counts along I-95 near Bangor are in the 27,000 to 31,000 range, and decline to 2,000 to 4,000 vpd near the Canadian border. Volumes on Route 9 near Calais are in the 7,600 vpd range, comparable to I-89 in the St. Albans area. Given the fact that a Maine East-West Highway (at Coburn Gore) would also connect to Sherbrooke (like I-91), and would lie further from Montreal at its western terminus, one would expect its future traffic characteristics at the Canadian Border to be more comparable to those observed along the northern segments of I-91 rather than I-89, which also lies within the commuter shed of Burlington, VT.

- Traffic at the border crossings of I-89 and I-91have grown at a slower rate than overall traffic. Annualized growth rates at these crossings have also been substantially less than both Houlton and Calais. From 1984 to 1994, the overall growth rate on the northern segment of I-89 was 3.6 percent while the Highgate border crossing point showed a growth rate of 1.5 percent, less than half of the roadway traffic volume growth rate. Similarly, the growth rate on the northern segment of I-91 was 4.1 percent while the Derby Line border crossing showed a growth rate of only 2.9 percent, about two-thirds of the roadway traffic volume growth rate. Overall, traffic volume growth at the Maine border crossings was greater than at the Vermont crossings during that same period. The Houlton, Maine border crossing showed a traffic volume growth rate of about 5.1%, greatly outpacing the 0.7% growth rate for traffic volumes along the I-95 corridor north of Millinocket. Despite the absence of an interstate connection at Calais, this border crossing had the highest volume and also showed one of the highest growth rates (4.4%) during the 1984-1994 period.

- Development along the two interstate corridors is focused at significant interchange points and in the vicinity of population centers that pre-existed the highways. Much of the I-89 and I-91 corridors remain rural today, nearly three decades since the highways' completion. The most common type of development along these corridors is that of highway-related services such as fast-food establishments and gas stations. Many of the interchanges along these routes show this kind of development, while some have no commercial or industrial development at all. A few locations, notably near traditional economic centers such as White River Junction, Vermont, and near the larger corridor cities such as Burlington, Montpelier, and Brattleboro, Vermont, and Concord, New Hampshire, there is more significant development near the interstate corridors. This development contains travel services, regional services, and in some cases, office, residential and other commercial activity. The final type of development is not directly related to the interstate corridor, but is enabled by these facilities. Another type of observed

development is tourism-related commercial activity in town centers and near tourist attractions, such as ski areas. Many service signs on the highways direct motorists to area attractions and tourist destinations. Undoubtedly, these facilities have benefitted to some degree from the increased visibility that the interstates provide.

- Both I-89 and I-91 have generated negative bypass effects on some communities. Much like the potential effects of Corridors D and E, I-89 and I-91 bypass long segments of pre-existing two-lane routes that also serve each corridor. Some segments of these bypassed routes continue to carry significant truck volumes due to weight restrictions on the interstate corridors. These routes also connect the urban downtown areas and smaller village centers of most of the communities that are located near the interstate corridors, and provide key interchange points for local residents who seek to access the interstate system. However, bypassed rural communities, particularly along Route 5 between White River Junction and Newport, have lost roadside business development as a result of the construction of I-91.

Economic Assessment

- Rates of population growth in the counties serviced by I-89 and I-91 have been roughly comparable to Statewide averages since 1969. Analysis of 8 counties (3 NH, 5 VT) along the I-89 corridor found that population growth has averaged 1.3% annually from 1969 through 1996 period, while the VT counties along the I-91corridor grew by 1% per year over the same period. Comparable population growth rates for NH and VT were 1.8% and 1.1%, respectively. The more urban counties near Concord, NH (Merrimack-1.7%), Lebanon, NH (Grafton-1.4%) and Burlington, VT (Chittenden-1.4%) experienced the fastest rates of growth during the period. Population growth in 5 of the counties serviced by I-89 and I-91 averaged less than 1% annually over the period. For comparison, Penobscot County's population grew by 0.5% over this time frame.

- Similarly, rates of employment growth in the counties serviced by I-89 and I-91 have been roughly comparable to Statewide averages since 1969. An analysis of the counties along the I-89 corridor found that employment growth has averaged 2.3% per year from 1969 through 1996, while the VT counties along the I-91corridor have expanded employment by 1.1% per year. Comparable job growth in NH and VT was 2.9% and 2.0%, respectively. The more urban counties near Concord, NH (Merrimack-2.7%), Lebanon, NH (Grafton-2.6%) and Burlington, VT (Chittenden-2.9%) experienced the fastest rates of growth during the period. Employment growth in 4 of the counties serviced by I-89 and I-91 averaged less than 1% annually over the period. For comparison, Penobscot County's annual rate of job growth was 1.5% over this time frame.

- Closer analysis of employment data indicate that Maine Counties have only recently begun to lag those served by I-89 and I-91. An analysis of county-level job growth over the 28 year period found that most of the disparities between Northern and Southern Maine Counties, as well as Northern Maine and comparable counties in Northern NH and VT, have emerged since the late 1980s. Prior to that time northern Maine compared favorably to the I-89 and I-91 corridors (particularly the northern-most segments of those corridors) in terms of job growth. This trend suggests that reasons other than highway access are responsible for the modestly differential growth rates.

- Because of their respective locations at the intersections of two interstates, St. Johnsbury VT, and Lebanon/Hartford NH/VT might have been expected to experience a period of substantial economic growth and transformation following the construction of I-89 and I-91. Evidence suggests that this has not been the case. Lebanon/Hartford (White River Jct.), located at the intersections of I-89 and I-91, maintains one of the lowest unemployment rates in the region but remains relatively small in terms of total population and employment. Annual rates of job growth in this region have been marginally higher than the respective averages for NH and VT since 1980. St. Johnsbury, located at the intersections of I-91, I-93 and US Route 2, has generally under-performed the Vermont economy over the past 20 years. Despite its strategic location, St. Johnsbury's labor market is below 15,000 and job growth has been negligible since 1980. Based on a comparison of the two locations, the superior economic performance of Lebanon/Hartford is largely explained by the nearby presence of Dartmouth College in Hanover, NH. The economy of St. Johnsbury, which is similar to Northern Maine and dominated by natural resource industries, has been unable to overcome structural changes to its economy, despite its superior transportation assets.

- Analysis of business location patterns along the I-89 and I-91 corridors has found little evidence of Canadian investment along these corridors. Data searches were conducted using Dun&Bradstreet, to identify the existence of Canadian-owned companies and the presence of transportation and distribution firms along the I-89 and I-91 corridors. The analysis identified very limited levels of investment over the past 20 years. The influence of Canadian investment emanating from Montreal was negligible, beyond 100 miles of the border.

Conclusion

From an analysis of the data, it appears that I-89 and I-91 have helped the economies of Northern NH and VT over the past 3 decades. However, neither highway has dramatically altered the underlying economic structure of the corridor communities. The limited ability of those corridors to stimulate Canadian investment from Montreal suggests that the Maine E-W highway would face similar challenges in the future. An east-west corridor improvement should aid regional efforts to recruit business investment and diversify the economies of Central and Northern Maine, but will not necessarily guarantee success.

The experience of the I-89 and I-91 corridors indicate that incremental gains following the construction of an E-W highway would be modest, consistent with the impact forecasts developed in the Phase III Technical Report. Based on the experience of the case study communities, development impacts are most likely to occur within commuting distance of Bangor and the other larger population centers along the corridor, such as Skowhegan, which are already located within close proximity to Interstate 95.

II
Traffic Analysis

Overview

To gain further insight on the potential effects that a new limited access highway such as the East-West corridor in Maine might have on transportation and economics, two case studies were completed for other similar corridors in New England. Specifically, the project team investigated transportation and economic trends before and after construction of Interstate 91, from Brattleboro, Vermont to the Canadian border, and Interstate 89 from Concord, New Hampshire to the Vermont/Canadian border. These corridors are particularly relevant because they provide interstate connections for several small and mid-sized northeastern cities to/from the Montreal market.

The following section details the traffic findings of these case studies. Again, this investigation is intended to provide additional background material to aid in the understanding of the potential transportation effects an east-west corridor through Maine. It begins by describing the two primary interstate highway corridors considered in this analysis, and their comparability to the proposed project. The report then describes the general methodology and results of this analysis in terms of transportation utilization and resulting changes in land use patterns along the respective corridors. The section concludes by summarizing the significance of the findings in terms of their relevance in predicting the transportation and land use impacts of a comparable investment in Maine.

Description of the Case Study Corridors

The case studies focused on two interstate highway corridors in New Hampshire and Vermont, I-89 and I-91. These two interstate corridors are shown in Figure 1 and described below.

Interstate 89

Interstate 89 begins in Concord, New Hampshire at I-93 and continues northwesterly through the state to the Vermont border and I-91 at White River Junction. From I-91, the route continues northwest through Montpelier and to Burlington. Near Burlington, I-89 turns northerly and continues to the Canadian border near Philipsburg, Quebec. I-89 links the cities of Concord, New Hampshire, Lebanon, New Hampshire, Montpelier, Vermont and Burlington, Vermont. I-89 also serves as an important link between Montreal, Quebec and the Boston, Massachusetts metropolitan area.

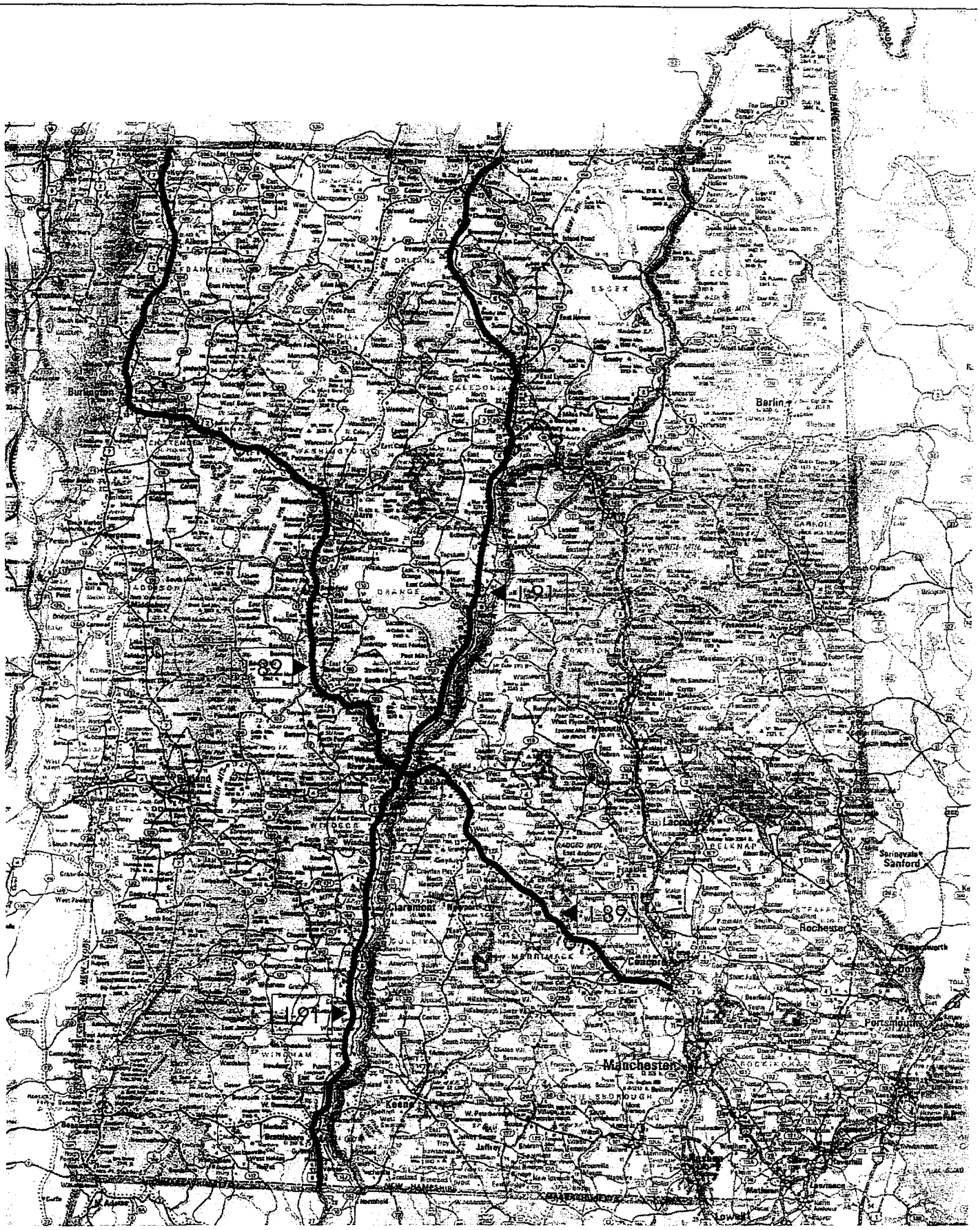


Figure 1
Routes I-91 and I-89
Case Study Areas

I-89 was constructed between 1960 and 1970. The New Hampshire length of I-89 was constructed in three major sections with the sections being completed in 1960, 1965 and 1968. The Vermont length of I-89 was constructed in several sections between 1961 and 1970. Before 1960, travel along this corridor was accomplished primarily on U.S. Route 4 between Concord and Lebanon, New Hampshire. From Lebanon to Montpelier, the primary routes were Vermont Route 14 and 110 to Barre. From Barre to Montpelier, U.S. 302 was the primary link, and from Montpelier to Burlington, travelers would follow U.S. Route 2. Once at Burlington, one could follow either U.S. Route 2 or 7 to the Canadian border.

Interstate 91

Interstate 91 begins in New Haven, Connecticut and travels north through Connecticut and Massachusetts. I-91 enters Vermont south of Brattleboro and continues in a northerly direction to White River Junction, St. Johnsbury and the Canadian border at Rock Island. Once in Canada, the route is designated as Route 55 and continues as an interstate quality roadway to Sherbrooke, Quebec. Near Sherbrooke, interstate quality links can be made to Montreal and Quebec City. I-91 links Hartford, Connecticut, Springfield, Massachusetts, Brattleboro, White River Junction, and St. Johnsbury, Vermont, and Sherbrooke, Quebec.

The Vermont length of I-91 was constructed in several sections between 1958 and 1978. The stretch south of White River Junction was completed first, between 1958 and 1966. Before construction of I-91, travel along this corridor was accomplished on U.S. Route 5 which follows the same alignment as I-91. Other routes could also be followed in New Hampshire, these routes include New Hampshire Routes 63, 12, 12A, 120, 10, 25, 135 and U.S. Route 3.

Comparability of the Case Study Corridors to an East-West Highway through Maine

Interstates 89 and 91 are relevant case studies for the conceptual east-west highway corridors D and E, because like those proposals, they provide four-lane connections for several small and mid-sized NH/VT cities and towns, to/from the Montreal market. Both routes also service predominantly rural regions over much of their length and provide access to a number of popular tourist recreation areas. The economic base of the regions served by I-89 and I-91 are somewhat comparable to Central and Northern Maine, and the larger communities in these regions are also similar to several of the Maine communities located along Routes 2, 9 and 16/27. The two largest cities served by I-89, Burlington, Vermont, and Concord, NH, are similar to Bangor in size, while Montpelier, Barre, Brattleboro, Springfield, Saint Albans, and Newport, Vermont are roughly comparable in population to Maine communities such as Calais, Brewer, Skowhegan, Farmington and Rumford.

In addition, both case study corridors intersect with a second Interstate, in communities which contain comparable characteristics to those along the conceptual east-west corridors through Maine. I-89 and I-91 intersect in Hanover, VT/Lebanon, NH, also known as the Upper Valley Region. This intersection point provides a useful indicator of the types of impacts that might occur at the intersection of I-95 and Corridors D or E in the Bangor/Brewer area. Interstate 91 also intersects with I-93 and US Route 2 in Saint Johnsbury, VT. A Montreal-bound shipment hauled along Corridor E, which terminates at US Route 2 in Gilead, would be likely to travel onward to Saint Johnsbury before

reentering Quebec via I-91 or I-89. Therefore, the observation of Saint Johnsbury's experience following the completion of I-89 should be a particularly relevant case study. The northern terminus of I-91 today also provides a comparable connection to Montreal via Sherbrooke, as would be created by the four-lane Corridor D, terminating at Coburn Gore. Westbound shipments exiting Maine via Corridor D, like those exiting Vermont via I-91, would have to pass through Sherbrooke to reach Montreal.

Much like the predicted impacts of an east-west highway through Maine, the construction of I-89 and I-91 substantially cut travel/shipping times between Metropolitan Montreal, Boston and New York and strategically positioned Vermont and Northwestern New Hampshire at the center of a large and growing flow of trade between these major urban markets. As shown in Table II-1, I-89 and I-91 connected several small to mid-sized NH/VT communities to the Montreal marketplace. As noted by the estimated mileage figures, all major activity centers along these corridors are under 4½ hours from Montreal and within approximately 250 miles, significantly closer that Bangor would be following the completion of Corridor D. Distances from these same communities to Boston, Springfield, Hartford and New York City are also comparable or closer than Bangor.

Table II-1: Distances Between Montreal and Corridor Study Cities

Location	Approximate Mileage
St. Albans, VT (I-89)	69
Burlington, VT (I-89)	98
Montpelier, VT (I-89)	140
St. Johnsbury, VT (I-91)	136
Brattleboro, VT (I-91)	248
White River Junction, VT (I-89/I-91)	188
Concord, NH (I-89)	259
For Comparison:	
Bangor, ME	290

Although neither I-89 or I-91 is primarily east-west in orientation and neither services Atlantic Canada, both provide a direct interstate highway connection between Quebec's largest metropolitan area at one end, and the urban markets of Eastern Massachusetts, Central Connecticut and New York City at the other. The US metropolitan areas that are connected to Montreal via I-89 and I-91, are also important export markets for Canada and are substantially larger than Atlantic Canada in both population and employment. Therefore, an understanding of how Maine might benefit economically by being located at the center of a four-lane highway connection between Atlantic Canada and Montreal, should be evident in the experience of Vermont and New Hampshire's similar positioning between Montreal and Southern New England, following the construction of I-89 and I-91.

Case Study Methodology

The project team reviewed the two case study corridors from the perspective of transportation, land use, and economics. This analysis included both historic record research and field review to ascertain the general utilization of the corridors and land use

economic changes that have occurred since their construction.

To consider what growth impacts the interstates corridors may have had from a transportation perspective, and by comparison to other major travel routes in the region, historical traffic volumes were researched to determine annualized growth rates for different segments of each of the interstate and control corridors (see discussion below). The strategy was as follows:

- Determine current utilization and traffic growth rates along the I-89 and I-91 "corridors" from the time of construction until the present.

- Compare traffic growth rates along the I-89 and I-91 corridors prior to construction of the interstates with post construction, to determine whether growth was greater after construction of the interstates.

- Calculate traffic growth rates over similar periods for several control routes in order to better understand general background traffic growth within New Hampshire and Vermont. These control routes represent major traffic routes that were not replaced by interstate highways. The control routes serve to identify general increases or decreases in traffic growth elsewhere in the state as a result of regional economics. (The use of extended time periods also tends to smooth out fluctuations due to upturns and downturns in the economy).

- Using control corridor traffic growth rates, compare traffic growth through Vermont and New Hampshire on the case study corridors to other regional routes.

This methodology was applied to various segments along each corridor that represent portions of the road that may experience different travel patterns. For the purpose of this analysis, the Interstate 89 corridor is divided into four segments running northwest from Concord, New Hampshire to the U.S./Canadian border. The four segments are as follows:

- Segment 1: Concord, NH to NH/VT border
- Segment 2: NH/VT border to Montpelier, VT
- Segment 3: Montpelier, VT to Burlington, VT
- Segment 4: Burlington, VT to U.S./Canadian border

The Interstate 91 corridor is divided into three segments running north from the Massachusetts/ Vermont border to the U.S./Canadian border. The three segments are as follows:

- Segment 1: Massachusetts/Vermont border to I-89/I-91 interchange
- Segment 2: I-89/I-91 interchange to St. Johnsbury, VT
- Segment 3: St. Johnsbury, VT to U.S./Canadian border

I-95 in Northern Maine, divided into three segments, is included for comparison. The three segments are:

- Segment 1: Augusta to Bangor, ME,
- Segment 2: Bangor to Medway (Millinocket), ME, and
- Segment 3: Medway to Houlton, ME.

Several control corridors were identified to quantify what traffic volume growth has occurred elsewhere in the region. Two north-south corridors and three east-west corridors were selected for comparison. The north-south corridors best approximate interstate corridors while the east-west corridors best approximate the alignments under consideration in Maine. These control corridors are shown in Figure 2 and described below.

U.S. Route 7 - U.S. Route 7 is a major north-south corridor thorough western New England. U.S. 7 links the Connecticut coast with the Canadian Border. U.S. 7 enters Vermont north of Williamstown, Massachusetts and continues through Bennington, Rutland, Middlebury, Burlington, and St. Albans before reaching the Canadian border near Philipsburg, Quebec. Along some segments, U.S. Route 7 is a limited access highway.

U.S. Route 4 - U.S. Route 4 is a major east-west corridor linking Lebanon, New Hampshire and Rutland, Vermont. West of Rutland, U.S. 4 has been upgraded to an interstate quality road which was not included in this analysis.

U.S. Route 2 - U.S. Route 2 is an important east-west corridor linking cities in the northern portions of Vermont and New Hampshire. U.S. Route 2 begins at the Canadian border near Alburg, Vermont and continues through Burlington and Montpelier. The route continues easterly through St. Johnsbury, Vermont and then crosses New Hampshire linking Lancaster in the west to Berlin, Gorham and the Maine border to the east. U.S. Route 2 continues in Maine through Rumford, Skowhegan and Bangor before it ends at the Canadian border in Houlton.

New Hampshire and Vermont Route 9 - Route 9 is an important east-west corridor linking Bennington, Vermont, Brattleboro, Vermont, Keene, New Hampshire and Concord, New Hampshire. Route 9 connects with U.S. Route 4 near Concord providing a link to the seacoast region of New Hampshire.

New Hampshire Route 16 - Route 16 is the primary north-south travel route in eastern New Hampshire. Route 16 links Portsmouth and the metropolitan Boston region with North Conway, and Berlin, New Hampshire, primary recreation destinations in the state.

A windshield survey of the corridors was also conducted to ascertain the apparent level of land use change and development activity that has occurred over time along these routes and at interchange locations. This analysis was supplemented by a review of corridor economic indicators, which are presented in Chapter III.

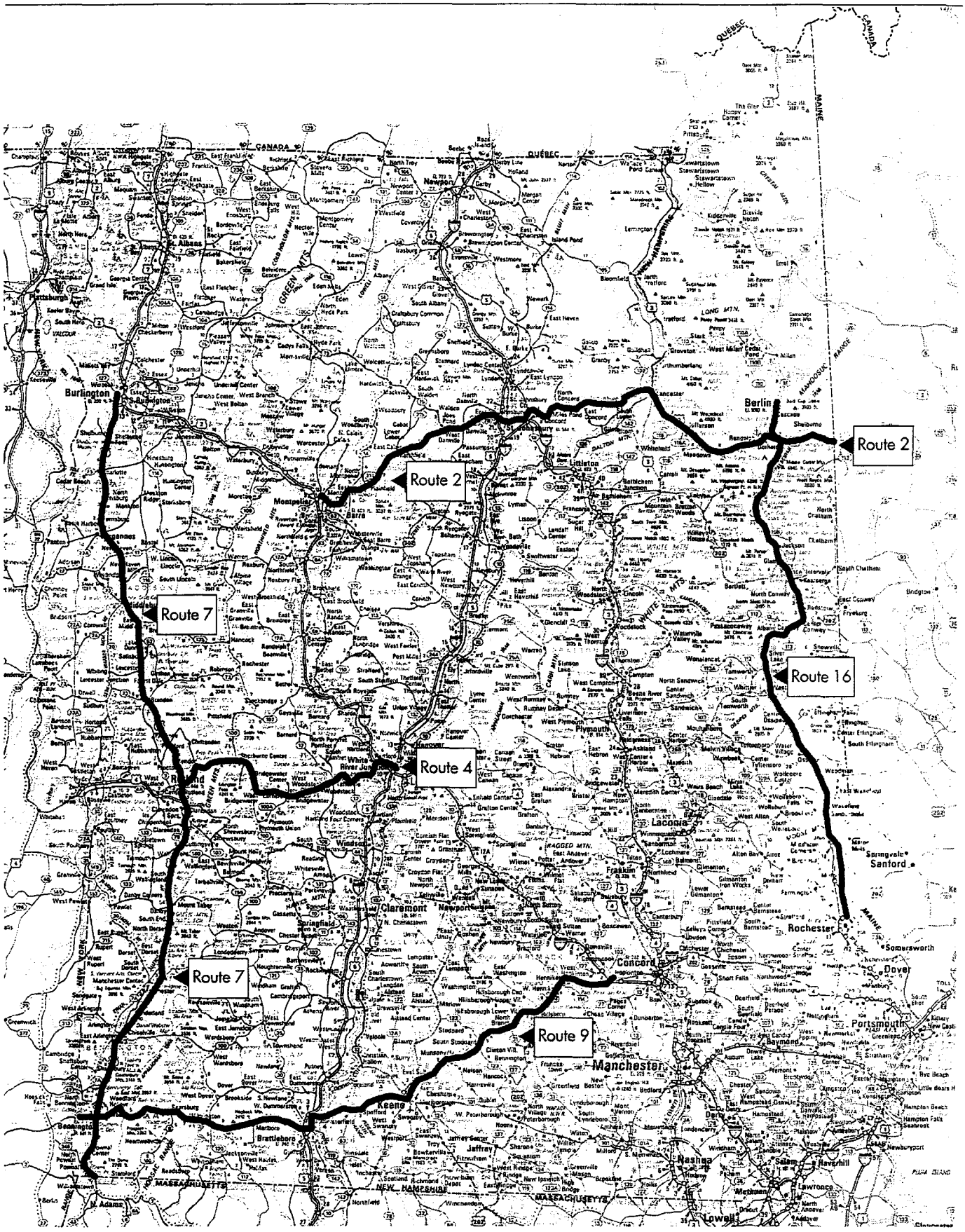


Figure 2
Control Routes

Transportation Findings

Growth in Traffic Demand

Table II-2 presents daily traffic demands on the I-89 and I-91 interstate corridors which give indication as to their utilization and importance within the overall transportation network.

Table II-2: Interstate 89 and 91 Corridor Traffic Volumes (1994)

		Average Annual Daily Traffic (AADT)
I-89 (NH/VT)		
Segment 1	Concord to NH/VT border	30,700 to 12,000 vpd*
Segment 2	NH/VT border to Montpelier	11,500 to 18,100 vpd
Segment 3	Montpelier to Burlington	20,500 to 43,100 vpd
Section 4	Burlington to U.S./Canadian border	22,900 to 8,000 vpd
I-91 (VT)		
Segment 1	MA/VT border to I-89/I-91	11,800 to 23,500 vpd
Segment 2	I-89/I-91 Interchange to St. Johnsbury	10,100 to 6,200 vpd
Segment 3	St. Johnsbury to US/Canadian border	3,100 to 3,700 vpd
I-95 (ME)		
Segment 1	Augusta to Bangor	27,700 to 14,700 vpd
Segment 2	Bangor to Medway(Millinocket)	31,200 to 6,300 vpd
Segment 3	Medway to Houlton	4,000 to 2,000 vpd

*vpd = Vehicles per day

Daily traffic demands on I-89 range from a low of 8,000 vehicles per day (vpd) near the Canadian border to 30,700 vpd in the more urbanized area of Lebanon, NH, and 43,100 vpd in Burlington, VT. Traffic on the more rural sections of the corridor range from 8,000 to 13,000 vpd.

Utilization of I-91 is considerably lower, with the interstate carrying 3,100 to 3,700 vpd in its northern section, approaching the Canadian border, to a high of 23,500 vehicles per day in the vicinity of Brattleboro.

Two different types of traffic analysis comparisons were performed for study corridor locations. First, traffic volume growth rates in the I-89 and I-91 corridors before the construction of the interstates, were compared with growth rates after construction. Second, traffic volume growth rates on all segments of I-89 and I-91 were compared to growth rates on the control corridors elsewhere in the region.

Corridor Growth Rate Comparisons

Historical traffic data were found for the southern segment of the I-91 corridor and for the northern section of I-89 for the decade before the highway was constructed. These data are shown in Table II-3. The traffic growth rate through the I-91 corridor (southern

segment) in the decade prior to the construction of I-91 averaged 4.7 percent annually. (Prior to the construction of I-91, U.S. 5 was the primary route through the corridor.)

Table II-3: Interstate 91 and 89 Corridors - Traffic Volume Comparison

	Average Annual Percent Increase in AADT
I-91 Corridor (2 Cordon Locations)	
Decade before I-91 Construction[1]	4.7
Decade after I-91 Construction[2]	6.5
I-89 Corridor (1 Cordon Location)	
Decade before I-89 Construction[3]	5.9
Decade after I-89 Construction[4]	7.7
Control Routes (5 Locations)[5]	
Decade after Interstate Construction	3.3

[1] Includes traffic along U.S. 5
[2] Includes traffic along both I-91 and U.S. 5
[3] Includes traffic along Route 2
[4] Includes traffic along I-89 and Route 2
[5] Data not available for traffic on control routes prior to I-91 construction

The traffic growth after construction of I-91 averaged 6.5 percent annually. (For this calculation the growth rate through the I-91 corridor (southern segment) includes both I-91 and U.S. 5). Comparing the I-89 corridor before/after construction, in the vicinity of Waterbury, VT, shows that traffic grew at a rate of 5.9 percent annually in the decade prior to the interstate's construction and 7.7 percent after construction. In this case, the pre-construction data are from Route 2 (the parallel route) and the post-construction data represent both I-89 and Route 2. The traffic growth rate on the control routes for the same post-interstate construction period averaged 3.3 percent annually (data were not available for all of the control routes during this time period).

Traffic volume growth trends for I-89 and I-91 are depicted in Figure 3. As the figure shows, both corridors demonstrate an accelerated growth during the post-interstate period; however, these data do not fully account for more regional traffic diversions to the corridors or shifts in economic conditions regionally (see later economic analysis discussion).

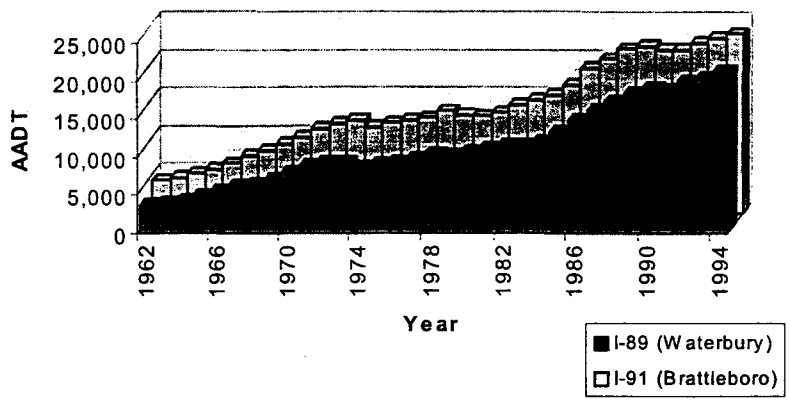
For comparison purposes, I-95 in Maine, between Augusta and Bangor shows an annualized traffic volume growth rate of 3.6 percent[2]. North of Bangor, annual traffic volume growth rates are much lower, ranging from 1.8 percent[3] between Bangor and Medway (Millinocket), to 0.7 percent[4] between Medway (Millinocket) and Houlton.

[2] Count station 382 in Carmel, ME, data from 1978 and 1997.

[3] Traffic data at Howland, ME north of SR 155 from 1989 and 1997.

[4] Traffic data at Oakfield, ME at Smynra Road from 1989 and 1997.

Figure 3: Interstate 91 and 89 Traffic Volume Growth Trends



Interstate and Control Corridor Growth Rate Comparisons

Traffic volume growth rates on all segments of both the I-91 and I-89 corridors were compared with similar growth rates for the control corridors. The results of this analysis are summarized in Table II-4.

Table II-4: Interstate and Control Corridor Growth Rate Comparisons

	Average Annual Percent Increase in AADT (1971-1994)
I-89	
Segment 1	4.6
Segment 2	4.1
Segment 3	4.0
Segment 4	3.6
Composite Average	*4.1*
I-91[1]	
Segment 1	3.4
Segment 2	4.6
Segment 3	4.1
Composite Average	*4.1*
Control Routes	
NH 9	2.6
VT 9	2.6
US 4	3.1
US 2 (NH)	1.2
US 2 (VT)	1.9
NH 16	3.4
US 7	3.1
Composite Average	*2.6*

[1] Data only available beginning in 1974

The traffic growth rate on both I-89 and I-91 averaged 4.1 percent annually from 1971 to 1994. The traffic growth rate on the control routes averaged from 1.2 percent to 3.1

percent annually from 1971 to 1994. The composite annual growth rate for the control routes was 2.6 percent. Again, these control routes are, for the most part, roadway segments that do not compete with the interstate corridors for traffic demands.

Again, the traffic statistics suggest that growth along the case study corridors (viewed simply in terms of vehicles per day traveling the corridors) has outpaced growth elsewhere In Vermont and New Hampshire. One has to further investigate the area's economic indicators to determine whether or not this increase in travel represents a measurable economic gain in the regional economy, or merely a transfer of activity within the marketplace.

International Border Crossings

As a component of this analysis, trends at the international border crossings on the Interstate 89 and Interstate 91 corridors were examined. Traffic volumes at the Highgate border crossing at the terminus of I-89 and the Derby Line border crossing at the terminus of I-91 from 1984 to 1994 were examined. Table II-5 summarizes these data.

The data show that the international border crossings on I-89 and I-91 have not experienced the same growth in traffic volumes as the routes themselves. The overall growth rate on the northern segment of I-89 (Segment 4) is 3.6 percent while the Highgate border crossing point shows a growth rate of 1.5 percent, less than half of the roadway traffic volume growth rate. Similarly, the growth rate on the northern segment of I-91 (Segment 3) is 4.1 percent while the Derby Line border crossing shows a growth rate of only 2.9 percent, about two-thirds of the roadway traffic volume growth rate.

Table II-5: International Border Crossing Traffic Volumes and Growth Rates

Location	Direction	1984 Crossings*	1994 Crossings*	Annualized Growth Rate
I-89	Entering U.S.	528,089	582,741	0.99%
Highgate, VT	**Entering Canada**	520,263	632,823	1.98 %
	Total	***1,048,532***	***1,215,564***	***1.49%***
I-91	Entering U.S.	699,865	912,889	2.69%
Derby Line, VT	**Entering Canada**	652,839	880,544	3.04%
	Total	***1,352,704***	***1,793,433***	***2.86%***
I-95	Entering U.S.	322,573	610,488	6.59%
Houlton, ME	**Entering Canada**	288,022	391,496	3.12%
	Total	***610,595***	***1,001,984***	***5.08%***
U.S. 1 and Maine 9	Entering U.S.	1,084,842	1,791,888	5.15%
Calais, ME	**Entering Canada**	1,021,120	1,437,287	3.48%
	Total	***2,105,962***	***3,229,175***	***4.37%***

Source: *Trade and Traffic Across the Eastern US-Canada Border* Volume 2: Statistical Review of Border Crossing Trade and Traffic Data. Parsons Brinkerhoff Quade and Douglas, Inc. March 1998

Overall, traffic volume growth at the Maine border crossings is greater than at the Vermont crossings. The Houlton, Maine border crossing is the lowest volume crossing of those considered and shows a traffic volume growth rate of about 5.1%, greatly outpacing the 0.7% growth rate for traffic volumes along the I-95 corridor north of Millinocket. The Calais, Maine border crossing has the highest volume of all crossings

considered in this analysis and also shows one of the highest growth rates indicating its importance as a gateway to eastern Maine.

Land Use Patterns Along the Corridors

Development along the two interstate corridors is focused at significant interchange points and in the vicinity of major (and largely traditional) activity centers. Much of the I-89 and I-91 corridors remain rural today, nearly three decades since the highway's completion. The most common type of development along these corridors is that of highway-related services such as fast-food establishments and gas stations. Many of the interchanges along these routes show this kind of development, while some have no commercial or industrial development at all. At some of the more prominent interchanges, significant service development has occurred, including regional services such as supermarkets and department stores.

A few locations, notably near traditional activity centers such as White River Junction, Vermont, and near the larger corridor cities such as Burlington, Montpelier, and Brattleboro, Vermont, and Concord, New Hampshire, there is more significant development near the interstate corridors. This development contains travel services, regional services, and in some cases, office, residential and other commercial activity.

The final type of development is not directly related to the interstate corridor, but is enabled by these facilities. This type of activity is tourism-related commercial development in town centers and near other attractions along these corridors. Many service signs present on the highways, direct motorists to area attractions and tourist destinations. Undoubtedly, these facilities have benefitted to some degree from the increased visibility that the interstates provide.

Much like the potential effects of Corridors D and E, I-89 and I-91 bypass long segments of pre-existing two-lane routes that also serve each corridor. I-91 in particular bypasses Route 5 along its entire length from the Massachusetts border to the Town of Newport. I-89 similarly bypasses long segments of Route 14 between White River Junction and Montpelier, U.S. Route 2 from Montpelier to Burlington and Route 7 from Burlington to the Canadian Border. Similar to sections of Routes 2 and 2A which parallel I-95 in Maine, these arterials continue to carry significant truck volumes due to weight restrictions on the interstate corridors. These routes also connect the urban downtown areas and smaller village centers of most of the communities that are located near the interstate corridors, and provide key interchange points for local residents who seek to access the interstate system.

Near the major population centers and tourism destinations found along each corridor, these pre-existing routes have become prime locations for retail and service development and are very congested in some areas. However, the "bypass effects" of I-91 are clearly evident in many of the small rural towns located along Route 5, particularly between White River Junction and Newport, which are beyond the commuting sheds of employment centers and have no local tourist attractions. In many of these towns, there are remnants of roadside service business and village centers that had previously relied on through traffic, much like those observed in small towns that were bypassed by I-95 between Bangor and Houlton.

Although the presence of I-89 and I-91 has enabled residents of these towns to commute to jobs and access shopping in the larger urban areas, there is little evidence to indicate that these communities have captured <u>local</u> economic benefits from the construction of

the interstates. This evidence suggests that similar bypass effects could be felt by the Maine communities located along Routes 1 and 9 between Bangor and Calais.

Conclusions

This analysis found that during the decade following the construction of Interstates 91 and 89, the annual rate of growth in traffic was roughly two percentage points higher than growth rates experienced along pre-existing routes during the decade prior to construction. Over the next 23 years (1971-1994) following the completion of these interstates, traffic volumes grew at an average rate of roughly 4 percent per year. This annual rate of growth in interstate traffic averaged 1.5 to 1.7 percentage points higher than growth rates on the major two-lane (control) routes servicing those same States, during the same time period. This net difference illustrates the highways' respective impacts in diverting traffic from less efficient routes and stimulating growth in travel demand and economic activity to, from and through the respective host regions.

Although these historic long term rates of traffic growth along I-89 and I-91 are significant, each highway improvement generated only modest increases in traffic. In the short term, both corridors generated traffic increases that were only incrementally higher than the volumes carried by pre-existing routes. Over the longer term, the sustained 4 percent annual growth in traffic volume occurred during a period when average rates of population and employment growth throughout the Northeastern US and the Province of Quebec, were higher than are projected to occur over the next 30 years. The historic changes in traffic volumes after the construction of the I-89 and I-91 corridors, are roughly consistent with the projected traffic effects of the proposed four-lane east-west highway Corridors D and E.[5] When evaluated against the historical experience of Interstates 89 and 91, traffic projections for the four-lane east-west corridors appear to be reasonable.

Like observed traffic patterns along I-95 in Maine, heaviest traffic on I-89 and I-91 occurs near the larger population centers along each corridor. I-89 traffic in the Burlington area is modestly higher than existing I-95 traffic in the vicinity of Bangor, while the highest volumes on I-91 in Vermont occur in the vicinity of Brattleboro, and are lower than Bangor. Average daily traffic volumes along the rural segments of each interstate corridor are also modest, particularly near the Canadian border. The northern-most segment of I-89 carries comparable traffic volumes to Route 9 near Calais. The northern segment of I-91 near Newport, VT, which lies roughly 40 miles further from Montreal than the northern terminus of I-89, services roughly 1,000 more vpd than I-95 near Houlton.

The observed land use development impacts of I-89 and I-91 have been largely confined to the larger economic and population centers which pre-existed each corridor. Neither of these interstates appear to have caused dramatic traffic or land use impacts along their rural segments. The rural sections of I-89 and I-91 are similar to I-95 north of Bangor, in terms of the minimal presence of development activity located near each corridor. To the extent that roadside development impacts were observed, the locations were clustered in or near the larger existing population centers, or tourist/recreation areas that are served by each corridor. In some cases, negative bypass effects have impacted smaller towns which lack tourism attractions. From the experience of these interstates, it can be

[5] See A Technical Report on an East-West Highway in Maine, Maine Department of Transportation, September, 1999. Traffic forecasts are presented in Chapter I of that report.

reasonably assumed that the vast majority of land use impacts generated by an east-west highway through Maine, would be similarly concentrated near the larger population centers along each corridor, with minimal positive effects and some negative effects extending into rural areas.

Finally, the analysis shows that despite the proximity of I-89 and I-91 to Metropolitan Montreal, traffic volumes at the international border crossings in Vermont are lower today, and have been growing at a slower pace, than border crossing volumes in Maine at Houlton and Calais. If a four-lane highway connection is a primary "generator" of US/Canada trade, one would expect cross-border traffic flows between these larger urban markets to be substantially higher than volumes moving through Calais and its two-lane connection to Route 9.

III
Economic Assessment

Methodology

The following section evaluates long term economic trends in those regions which are served by Interstate 91 in Vermont, and Interstate 89 between Concord, New Hampshire and the Canadian Border. The purpose of the analysis is to isolate and measure the extent of economic development which has occurred along each corridor, the nature of that development and the degree to which development impacts can be attributed to investment in the respective highways. Wherever possible, the analysis explores the potential applicability of these observed development impacts, to predicting the effects of a comparable highway facility through Maine.

The first section discusses long term trends in population and employment by industry growth in the several counties which lie along each highway corridor. Comparisons with the respective states of New Hampshire and Vermont are noted, as are differences among the more urban and rural counties along each corridor. Comparisons to those Maine Counties which are in the Study Area for the east-west highway are also provided for context. Finally, the analysis examines general business location patterns along each corridor, with particular attention given to identifying locations of Canadian-headquartered companies.

The methodology used to conduct this research included an examination of population and employment trend data covering a 27 year period from 1969 through 1996. Business location patterns were also examined using searches of company listings provided by Dun & Bradstreet Information Systems. This data base enabled the consultants to profile the locations of companies by size, industry grouping and years in business. Although the limitations of the data do not enable its use to measure total employment expansion in each region, it does provide a perspective on the number of companies which have located along each corridor, their distribution by industry classification and current employment, and the number of years the firms have existed at their current locations.

Finally, the analysis also addresses selected individual communities, in order to gain additional insights into the local economic and land use effects of each highway. Primary emphasis is given to two locations, the intersections of I-91 and I-89 at Hartford (White River Jct.) Vermont and Lebanon, New Hampshire, and the intersections of I-91, I-93 and U.S. Route 2 in Saint Johnsbury, Vermont. These locations were selected because of their strategic locations and comparability to a potential intersection of I-95 and a new east-west highway corridor in the Bangor/Brewer area.

Employment Trends

Tables III-1 and III-2, along with the accompanying graphs, show the overall trends in industry employment among the several NH and VT counties that are located along the I-89 and I-91 Corridors. Extending from its southern terminus, I-89 begins in Merrimack County and runs northwesterly through Sullivan and Grafton Counties before entering Vermont at Windsor County. From that point, I-89 runs through portions of Orange,

Washington, Chittenden and Franklin Counties, before terminating at the Canadian Border in Highgate. The major NH communities which are located on or near the highway corridor include Concord, New London, Newport, Lebanon and Hanover. The larger Vermont communities served by the corridor include White River Junction (Hartford), Barre, Montpelier, the Burlington Metropolitan Area and Saint Albans.

The section of I-91 addressed in this study runs the length of eastern Vermont beginning in Windham County at the Massachusetts border. From that point, I-91 parallels the Connecticut River, crossing the eastern edge of Windham and Windsor Counties, where the route connects Brattleboro, Bellows Falls, Springfield, Windsor and White River Junction to the larger metropolitan areas of Western Massachusetts and Central Connecticut. I-91 crosses I-89 at White River Junction and runs along the eastern edge of Orange County and then through the center of Caledonia County, where it connects with the northern terminus of I-93 at St. Johnsbury. I-91 then continues northward through Orleans County before terminating in Derby Line at the Canadian border. North of White River Junction, I-91 serves the Vermont communities of Norwich, St. Johnsbury and Newport. Hanover, NH is also connected to I-91 via a bridge crossing of the Connecticut River.

Employment Trends

I-89 Corridor

As shown in Table III-1, the eight counties (3 in NH and 5 in VT) served by I-89 had a combined total employment of just over 371,700 in 1996. Total employment more than doubled (a 103% increase) over 27 years, adding nearly 192,000 jobs and growing at compound annual growth rate of just under 2.7%. Over the same time frame, total employment in New Hampshire and Vermont grew by 2.8% and 2.3% annually, while Maine employment grew at a slower 1.9% annual rate. Measured in terms of employment, the combined economies of the counties served by I-89 grew at a slightly slower rate than the overall New Hampshire economy but out-performed Vermont.

Consistent with national trends, employment in services, wholesale and retail trade, and the finance, insurance and real estate sectors led the region's job gains with growth rates above 3.0% per year. Construction employment grew by 2.8% annually, government sector employment grew at just under 2.2% per year and the transportation and utilities sector expanded at a rate slightly above 2.0%. Manufacturing experienced the slowest rate of job growth at 0.8% per year, adding a total of just under 10,000 jobs by 1996. However, nearly all of this manufacturing growth occurred from 1969 to 1979. From 1980 through 1996, manufacturing employment throughout the 8 counties grew by a total of only 2 percent or about 1,200 jobs.

Like the Maine counties that would be served by the proposed east-west highway corridors, the counties located along I-89 vary greatly in population and employment levels. The economic performance of these individual counties has also varied over the past three decades. To illustrate the relative job performance of the 8 counties, the corridor as a whole and the State of Vermont since the completion of I-89, cumulative growth rates are indexed and compared in Figure 4. Combined, Chittenden and Merrimack Counties contained 51% of the corridor's total employment in 1996, and captured more than 56% of the 8 counties' total job growth since the completion of I-89. Chittenden County also experienced the fastest rate of job growth throughout the period at nearly 3.2% per year, followed by Merrimack County at just under 3.0%.

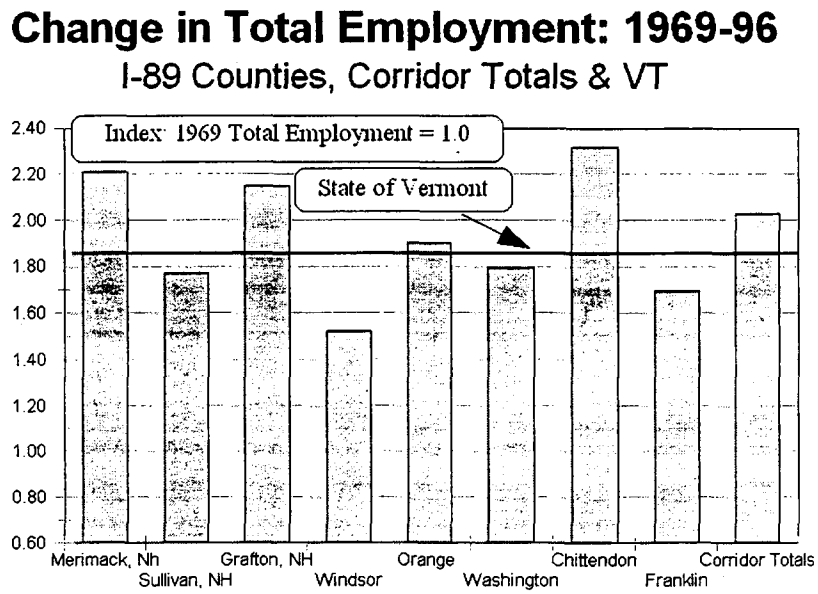
Table III-1: Employment by Industry Trends, 1969-96
I-89 Corridor Counties[1]

Employment by Industry	Total Employment 1969	1996	Total Change	Percent Change	Annual Growth Rate
Total full- and part-time employment	**186,160**	**377,702**	**191,542**	**102.89%**	**2.66%**
Wage and salary employment	161,359	301,153	139,794	86.64%	2.34%
Proprietors' employment	24,801	76,549	51,748	208.65%	4.26%
Farm proprietors' employment	4,365	3,518	(847)	-19.40%	-0.80%
Nonfarm proprietors' employment 2/	20,436	73,031	52,595	257.36%	4.83%
Farm employment	7,964	5,066	(2,898)	-36.39%	-1.66%
Nonfarm employment	178,196	372,636	194,440	109.12%	2.77%
Private employment	147,444	317,605	170,161	115.41%	2.88%
Ag. serv., forestry, fishing, and other 3/	840	3,470	2,630	313.10%	5.39%
Mining	606	510	(96)	-15.84%	-0.64%
Construction	10,937	23,050	12,113	110.75%	2.80%
Manufacturing	43,174	53,147	9,973	23.10%	0.77%
Transportation and public utilities	7,312	12,721	5,409	73.97%	2.07%
Wholesale trade	5,549	14,210	8,661	156.08%	3.54%
Retail trade	26,290	62,725	36,435	138.59%	3.27%
Finance, insurance, and real estate	10,347	24,316	13,969	135.01%	3.22%
Services	42,242	122,404	80,162	189.77%	4.02%
Government and government enterprises	30,752	55,031	24,279	78.95%	2.18%
Federal, civilian	3,886	5,818	1,932	49.72%	1.51%
Military	3,454	3,594	140	4.05%	0.15%
State and local	23,412	45,619	22,207	94.85%	2.50%

[1] Employment totals include Merrimack, Sullivan and Grafton Counties in NH, and Windsor, Orange, Washington, Chittenden and Franklin Counties in Vermont.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS) Data Base.

Figure 4



As shown in the figure, 3 of the 8 counties under-performed the State of Vermont in job growth between 1969 and 1996. Orange County grew at a comparable rate to the state average and the three remaining counties out-performed the State of Vermont. In general, the most rural counties along the corridor experienced the slowest rate of job growth. The slower job growth in the rural counties is explained in part by their under-performing retail trade and service sectors. In the case of Windsor County, I-89 and I-91 have encouraged the concentration of retail and service development on the New Hampshire side of the border (in Grafton County). Franklin County, with average job growth of just under 2.0% per year, has been similarly hurt by the concentration of retail trade and services in nearby Chittenden County (Greater Burlington), which has limited the ability of Saint Albans to attract non-manufacturing employment.

It is also significant to note that the county where I-89 and I-91 intersect, (Windsor) experienced the slowest rate of job growth, averaging less than 1.6% per year. Windsor was also the only county on the I-89 corridor that suffered a net loss of manufacturing employment between 1969 and 1996. Although Windsor County's slow growth was partially offset by the expansion of abutting Grafton County in New Hampshire, the crossing of two interstate highways clearly did not cause a noticeable acceleration of job growth in that county, nor was the construction of the two interstates able to prevent later manufacturing job losses.

White River Junction/Lebanon NH Labor Market Area

Because I-89 and I-91 intersect at the VT-NH border, the localized impacts of the highway crossing are dispersed into portions of four counties in two States. For this reason, it is useful to examine trends in the local labor market area (LMA), in addition to the county-level data presented above. For statistical purposes, State employment agencies in both NH and VT use the Hartford-Lebanon, VT-NH LMA as the geographic region for reporting labor market conditions in this area.

The NH labor force residing within this LMA totals just under 26,000 (1997 estimate), and the VT labor force is marginally larger at 28,700. With a combined labor force of 54,700, the Hartford-Lebanon labor market area is only slightly larger than the estimated 50,900 workers residing in the Bangor, MSA. Because of its comparable population and labor force size, this market area provides a useful indicator of the types of employment impacts that might be associated with the construction of a second interstate-quality highway crossing of I-95 in the vicinity of Bangor, and is discussed below for that reason.

Although a higher percentage of the region's labor force lives in Vermont, employment is concentrated in NH. The NH portion of the LMA contains approximately 1,400 establishments that employ 26,000 workers, compared to 1,800 firms and 16,500 jobs located in Vermont. Consequently, most of the following section will focus on the NH portion of the LMA.

Perhaps the most striking statistical characteristic of the Hartford-Lebanon LMA is the very low unemployment rate that has characterized this region over the past three decades. Most recent unemployment rates reported on both sides of the LMA are in the range of 1.1% to 1.2%, the lowest of any labor market area in either state. The region's characteristically low unemployment is due primarily to the unique structure of its economy, which is dominated by a large and stable non-manufacturing sector anchored by educational and medical services, business services and tourism.

For example, 48.3% of total employment on the NH side of the LMA is provided by

service industries, compared to less than 28% for the State of NH. Retail trade is the second largest industry sector, providing 18% of total employment. Manufacturing is only the third largest industry on the NH side of the LMA, representing only 11.9% of total employment. (Statewide, manufacturing comprises nearly 20% of NH's total job base.) Service employers in the region include Dartmouth College, Hitchcock Medical Center and a growing cluster of more than 100 business service providers, particularly software companies, that have grown up around the region's academic institutions.

Although the local manufacturing sector is small, the 84 manufacturers located on the NH side of the LMA are primarily engaged in high-technology industries. This is evidenced by the fact that more than 58% of the roughly 3,100 manufacturing jobs on the NH side of the LMA, are clustered in the industrial machinery and electronic equipment sectors. By contrast, the 124 manufacturing firms on the Vermont side of the LMA are more represented by traditional sectors such as lumber and wood products, printing, furniture, and food products. Manufacturers in the Vermont portion of the LMA are also substantially smaller than their NH counterparts, averaging only 12 employees per firm.

Not surprisingly, there is also a significant presence of trucking and warehousing firms in this LMA, including 41 in Vermont and 26 in NH. However, the combined employment provided by these firms totals less than 600, representing only 0.8% of total employment on the NH side, and a slightly higher 1.8% of total employment on the VT side of the border.

Despite the region's historically low unemployment, population growth has been surprisingly modest. Lebanon, NH and White River Junction, VT are the largest communities in the LMA, with 1990 Census populations of 12,181 and 9,404, respectively. Both communities have experienced very modest increases in population in the current decade and each are projected to add roughly 900 residents by 2000. Projected annual population growth rates through 2015, are 0.5% and 0.7%, respectively, well below the projected average growth rates for each state. The Planner for the Town of Hartford indicated that a shortage of housing, particularly affordable rental housing, was a major drag on the region's capacity to sustain faster rates of population and job growth.

As the largest population center in the region, the City of Lebanon, NH has also been the most aggressive in terms of accommodating and attracting job growth to the region. According to the Director of Planning, Lebanon currently contains roughly 4.0 million square feet (SF) of retail, commercial, office and industrial space, most of which has been constructed within the past 30 years. The City's zoning could also support an additional 35 million SF of space on roughly 70 parcels, totaling 350 to 500 acres, that remain available for development.

The City's primary success in recent years has been the attraction of retail, service and limited industrial development to a short segment of Route 4 in West Lebanon, that is connected to I-89 by three exits. The region's largest shopping centers, "big box" retailers and hotels are located along this strip, which is also reported to be under consideration for development of a 600,000 SF enclosed mall. Also located in this same area is the Lebanon Regional Airport, which is surrounded by a significantly sized industrial park that has built out slowly over the past 25 years. The first phase is essentially developed and the City is planning to initiate the second of four phases in the near future.

Similar to the influence of I-95 on Bangor, the construction of I-89 and I-91 have

contributed to economic growth within the Hartford-Lebanon LMA, and have obviously influenced the locations of development within that region. The presence of the interstate exits, coupled with the lack of a sales tax in NH, have encouraged the concentration of retail development in West Lebanon. The increased access afforded by both the north-south and east-west highway connection, has clearly established West-Lebanon as that region's dominant retail destination. However, it is less clear whether this development pattern represents a real economic "benefit" to the larger region, or was simply achieved at the expense of nearby secondary retail locations like White River Junction, St. Johnsbury, Springfield and Barre Vermont, and Claremont, NH.

It is also less clear how responsible the second interstate connection has been to supporting the economic "drivers" of the LMA economy, which have been educational and medical services, high technology manufacturing and business services. The local Planners in Hartford and Lebanon both stated that the region's central location, superior highway access and improving air and rail services have been an important marketing point in regional business recruitment efforts. However, both also indicated that the area's quality of life attributes and cultural and educational facilities have been more responsible for the region's overall economic strengths and recent expansion of software and other high-tech industries. Without the presence of nearby Dartmouth College, it is questionable how much of that development would have located in the Hartford-Lebanon, LMA.

I-91 Corridor

Comparable data for the five Vermont counties served by I-91 are presented in Table III-2 and Figure 5. Lacking the presence of larger urban centers, these five counties contained a total job base of only 106,700 in 1996, (less than a third of the job base along the I-89 corridor) and added a net total of just over 42,100 jobs since 1969. Collectively, annual employment growth among these five counties averaged just under 1.9% from 1969 through 1996, below Vermont's and roughly comparable to Maine's statewide average.

Like the I-89 corridor counties, employment in services, wholesale and retail trade, and the finance, insurance and real estate sectors led the region's job gains from 1969 to 1996, but with slower growth rates ranging from 2.2% to 3.6% per year. Construction employment also grew by 2.2% annually. Government sector jobs grew slower than the rate of total employment at just under 1.7% per year, and the transportation and utilities sector expanded at a rate of less than 1.3%. Total manufacturing employment declined over the entire period at a rate of just under -0.5% per year, causing the loss of more than 1,750 jobs by 1996.

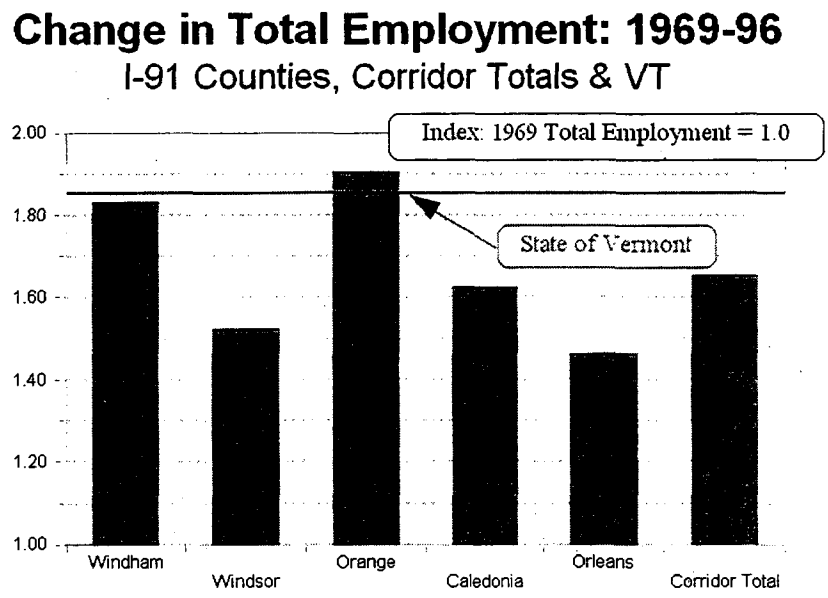
The majority (61%) of total 1996 employment along this corridor was concentrated in the two southern-most counties (Windham and Windsor), which also captured a similar share (62%) of the regions' net job growth over the period. Four of the five counties under-performed the state as a whole in terms of job growth, with only Orange County, which is served by both I-89 and I-91, slightly exceeding the State average. The two northern-most counties (Caledonia and Orleans) together contained a combined job base of 29,000 in 1996 and added a net of 10,250 jobs over the entire 27 year period following the completion of I-91. These modest gains illustrate the somewhat limited influence that I-91 has had on employment growth in the rural northeast corner of the State.

Table III-2: Employment by Industry Trends, 1969-96
I-91 Corridor Counties[1]

Employment by Industry	Total Employment 1969	1996	Total Change	Percent Change	Annual Growth Rate
Total full- and part-time employment	**64,561**	**106,683**	**42,122**	**65.24%**	**1.88%**
Wage and salary employment	53,850	78,075	24,225	44.99%	1.39%
Proprietors' employment	10,711	28,608	17,897	167.09%	3.71%
Farm proprietors' employment	2,692	2,448	(244)	-9.06%	-0.35%
Nonfarm proprietors' employment 2/	8,019	26,160	18,141	226.23%	4.48%
Farm employment	4,571	3,323	(1,248)	-27.30%	-1.17%
Nonfarm employment	59,990	103,360	43,370	72.30%	2.04%
Private employment	51,360	89,659	38,299	74.57%	2.08%
Ag. serv., forestry, fishing, and other 3/	235	1,491	1,256	534.47%	7.08%
Mining	32	14	(18)	-56.25%	-3.02%
Construction	4,490	8,213	3,723	82.92%	2.26%
Manufacturing	15,628	13,875	(1,753)	-11.22%	-0.44%
Transportation and public utilities	3,192	4,512	1,320	41.35%	1.29%
Wholesale trade	1,746	4,544	2,798	160.25%	3.61%
Retail trade	9,227	17,465	8,238	89.28%	2.39%
Finance, insurance, and real estate	2,865	5,187	2,322	81.05%	2.22%
Services	13,534	33,567	20,033	148.02%	3.42%
Government and government enterprises	8,630	13,701	5,071	58.76%	1.73%
Federal, civilian	1,367	1,985	618	45.21%	1.39%
Military	1,208	1,470	262	21.69%	0.73%
State and local	6,055	10,246	4,191	69.22%	1.97%

[1] Employment totals include Windham, Windsor, Orange, Caledonia and Orleans Counties.
Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS) Data Base.

Figure 5



Caledonia County is particularly relevant as a case study because of its location at the intersection of I-91 and I-93 in St. Johnsbury, and the county's proximity to the Canadian Border. The county is also bisected by Route 2 and serves as a gateway for shipments

entering or leaving Maine via the Route 2 corridor. As shown in Figure5, total employment in that county has increased by roughly 62% from 1969 to 1996, expanding by 6,100 to a current level of roughly 16,000. Retail trade and services have accounted for 3,800 or 63% of the net employment increase over the period. Manufacturing also grew by 800 jobs (43%) but well below the growth rate in the total economy.

It is perhaps surprising that the transportation and wholesale trade industries in Caledonia County have generated a minimal net gain of only 128 jobs (14%) since 1969. Part of this minimal net increase reflects the closure of the county's largest trucking firm, in the late 1980s. Collectively, employment in the transportation and wholesale trade sectors represented 6.5% of total employment in Caledonia County, below the average for the entire I-91 Corridor (8.4%). These trends suggest that the expansion of transportation and distribution employment did not follow the intersection of two interstate-quality highways in this comparatively rural market. Further discussion of economic trends in the Town of St. Johnsbury is presented below.

Saint Johnsbury Labor Market Area

Because of its location at the intersection of three major transportation routes, an additional effort was made to understand employment trends and recent development activity in the Town of Saint Johnsbury. If investments in highways can benefit rural economies, then growth rates in that community since the completion of I-91 and I-93 should provide a reasonable indicator of the potential magnitude of those benefits. The Town is located at the intersection of Interstate 91, 93 and US Route 2 and is also connected by three railroads, the Vermont Northern, Maine Central and Canadian Pacific. (However, Guilford Transportation ceased providing rail service to the south, the volume of rail and intermodal activity moving through the town has been very limited in recent years.) St. Johnsbury is served by five interstate exits, in addition to the intersection of I-91 and I-93, there is one exit off I-93 to the east of the Town center and three exits off I-91.

The Town of St. Johnsbury is a community of 7,608 persons (1990 census estimate), and is the largest population center on the I-91 corridor, north of White River Junction. Despite the Town's highway connections, however, St. Johnsbury's population has actually been declining in recent years. The Town's population is projected to fall to 6,823 by 2000, and decline further to just over 5,600 by 2015. The 2015 projection represents an anticipated 26% population loss from 1990.[6]

The St. Johnsbury Labor Market Area (LMA) is quite small. It contained slightly under 1,000 establishments and employed just under 10,500 wage and salary workers in 1998. In July of 1999, the region's total labor force was estimated at 14,750. Like portions of Maine, the St. Johnsbury, LMA has experienced an out-migration of younger workers and very little movement of population into the region. Consequently, one recent constraint to the area's job growth has been a lack of labor. Unemployment in the labor market area is currently at a 30 year low. The unemployment rate for the LMA as a whole is 3.5%. The Town's unemployment rate is slightly higher at 4.1%, a percentage point above Vermont's statewide rate of 3.1%.

According to Joel Schwartz, the Town's economic development director, the local economy has been stabilized in recent years by a small but growing cluster of machine

[6] Vermont Health Care Authority, Center for Rural Studies, June 1993 projections.

tool and plastics manufacturing firms. Although highways may have helped, he credited the growth of this cluster primarily to the Town's long history of machine tooling which predated the interstate system. Most of the growth attributed to this cluster has been generated from within, by local start-ups, rather than by attracting firms from outside the region.

A work camp and State prison facility have become important employers in the area and provide a steady base of jobs during cyclical downturns. Two prep schools and a small private college are located in the vicinity. St. Johnsbury also has the largest medical facility in Northeastern Vermont and has a significant base of employment in medical services. While these sectors have grown, transportation employment in the Town has declined sharply since the closure of the Saint Johnsbury Trucking Company several years ago, and is no longer a major component of the local economy.

Despite the Town's interstate connections, development activity immediately adjacent to the highway corridors has been somewhat limited. This is due in part to topographic constraints. Because the highway corridors parallel river valleys, relatively few new development sites were actually created around the Town's interstate exits. Two of the exits are also very near the downtown area and were largely built out prior to the construction of the corridors. Mr. Schwartz also reported that the few remaining developable parcels on the interstate corridor are effectively being held off the market by their current owners. He speculated that those owners are looking to sell the properties for motel sites or retail uses that can afford to pay higher land prices. Other interstate exits immediately to the north and south of the Town are also constrained by a lack of water and sewer service to attract significantly sized users.

When asked if the area has made efforts to attract Canadian investment, he indicated that the region has had only limited interest and very little success. He believed that differences in the corporate cultures and labor relations practices between Quebec Province and Northern New England, have worked to discourage French Canadian firms from locating in the area. Also, St. Johnsbury's highway connections to Sherbrooke have not had much of an influence in drawing Canadian investment from that market, because it is also small and has not been growing.

When asked about the impacts of the interstate system on the Town, the primary benefit he cited was the region's growing attractiveness to second home owners, who have been buying up inexpensive seasonal homes in the rural areas surrounding St. Johnsbury. He believed that the increased seasonal population has been beneficial to construction, retail and service businesses, but visible impacts from such development have been limited. The impacts of the interstates have also been a double-edged sword in terms of impacts on local retailers. Although I-91 has provided rural populations to the north with better access to the Town, the convenience of the interstate has also encouraged residents to drive to Littleton or Lebanon NH to shop. As a result, the Town has experienced very little new retail development in recent years.

When asked to comment on whether truck traffic on the interstate system has benefitted the local economy, he indicated that although most Canadian truck traffic uses the interstates, most of the local freight movements, particularly wood products, stay on Routes 2 and 5 due to their higher weights. This has caused congestion and safety problem for several communities in the region. There is a significant presence of automotive service businesses that serve the trucking industry, but he believed that activity was supported primarily by the local logging and wood products companies rather than through traffic on the interstate system.

From the preceding discussion, it is clear that while the construction of the interstate system may have benefitted St. Johnsbury, the presence of highways has not halted population out-migration or dramatically transformed the region's economy. To date, St. Johnsbury has been largely unsuccessful in attracting major relocations or expansions of manufacturing, transportation or retail employers from either Canada or elsewhere in the US. Benefits of freight movements to the local economy have not been obvious and impacts of the highways on retail and service activity have been a mixed blessing at best. However, the Town has succeeded in nurturing local investment in manufacturing start-ups and expanded "institutional" employment in educational, health care and corrections facilities. Some or all of those developments may not have been possible without the construction of the interstate corridors.

Comparison to Maine

In order to evaluate the preceding data in the context of comparable economic conditions in Maine, Table III-3 and Figure 6 present a similar summary of industry employment and county-level job growth for the six Maine counties which would be crossed by the conceptual four-lane highway Corridors D and E (the E-W Highway Study Area). County-level employment growth rates are also compared to Maine State average, as well as to the counties in the I-89 and I-91 corridors.

As shown in Figure 6, the E-W Study Area counties, collectively, experienced roughly the same rate of job growth as the State of Maine from 1969 through 1996. This collective growth rate was also comparable to the five Vermont counties located along the I-91 corridor, but well below the eight counties that are served by I-89. The three eastern-most counties in the E-W Highway Study Area approached or exceeded the Maine Average and the I-91 corridor in terms of annual job growth. Penobscot County in particular, which is crossed by I-95, exhibited virtually identical rates of job growth to the State of Maine and I-91 counties in Vermont. This trend contrasts to the three western-most counties, particularly Oxford, which lagged the State average rate of job growth.

The industry distribution of employment growth profiled in Table III-3 shows the primary differences between the past economic performance of the E-W Highway Study Area and those counties along the I-89 and I-91 corridors. The E-W Highway Study Area contained nearly 200,700 jobs in 1996 and added a net of 77,600 jobs over the preceding 27 years. Like the other two regions studied, annual growth in service employment (3.9%) led all industries. Annual growth rates in the construction, retail trade, transportation/utilities, and the finance, insurance and real estate sectors also exceeded 2.0% over the period. Employment in wholesale trade grew by 1.8% annually and public sector jobs increased by roughly 1.0% per year.

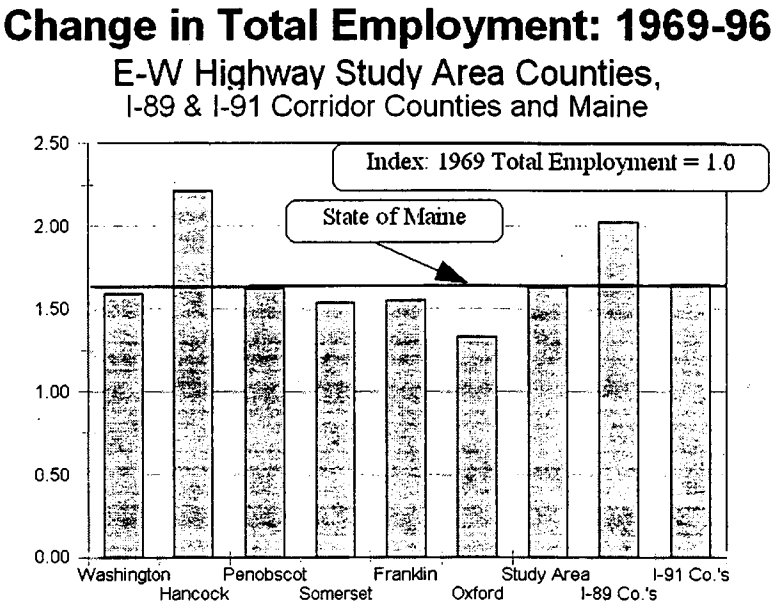
However, while the I-89 corridor counties exhibited modest increases in manufacturing employment from 1969 through 1996, the five Maine counties which are aggregated in Table III-3, lost more than 5,600 manufacturing jobs. Further analysis of the data show that roughly 4,300 of these 5,600 net job losses in manufacturing (77%) have occurred since 1989. The Maine counties also had a high concentration of manufacturing employment in 1969, (representing nearly 31% of the region's total job base, compared to only 23%-24% for the I-89 and I-91 corridors) which has made diversification into non-manufacturing sectors more difficult.

Table III-3: Employment by Industry Trends, 1969-96
Maine East-West Highway Study Area Counties[1]

Employment by Industry	Total Employment 1969	Total Employment 1996	Total Change	Percent Change	Annual Growth Rate
Total full- and part-time employment	**123,065**	**200,662**	**77,597**	**63.05%**	**1.83%**
Wage and salary employment	104,340	153,210	48,870	46.84%	1.43%
Proprietors' employment	18,725	47,452	28,727	153.42%	3.50%
Farm proprietors' employment	1,926	2,622	696	36.14%	1.15%
Nonfarm proprietors' employment 2/	16,799	44,830	28,031	166.86%	3.70%
Farm employment	3,920	3,810	(110)	-2.81%	-0.11%
Nonfarm employment	119,145	196,852	77,707	65.22%	1.88%
Private employment	97,370	168,257	70,887	72.80%	2.05%
Ag. serv., forestry, fishing, and other 3/	2,926	5,087	2,161	73.86%	2.07%
Mining	173	43	(130)	-75.14%	-5.03%
Construction	5,968	14,592	8,624	144.50%	3.37%
Manufacturing	37,709	32,101	(5,608)	-14.87%	-0.59%
Transportation and public utilities	5,359	9,142	3,783	70.59%	2.00%
Wholesale trade	3,325	5,414	2,089	62.83%	1.82%
Retail trade	17,608	37,539	19,931	113.19%	2.84%
Finance, insurance, and real estate	4,370	7,732	3,362	76.93%	2.14%
Services	19,922	56,042	36,120	181.31%	3.90%
Government and government enterprises	21,775	28,595	6,820	31.32%	1.01%
Federal, civilian	2,181	2,310	129	5.91%	0.21%
Military	3,486	2,576	(910)	-26.10%	-1.11%
State and local	16,108	23,709	7,601	47.19%	1.44%

[1] Employment totals include Washington, Hancock, Penobscot, Somerset, Franklin and Oxford Counties.
Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS) Data Base.

Figure 6



The loss of these manufacturing jobs, and their resulting drag on trade and services, largely explains the differential growth rates between the Maine counties and the other

two regions. The structural changes that have occurred in Maine's manufacturing economy over the past three decades are largely due to the nature of Maine's industries, global competition, technological change and business cost factors that are unrelated to transportation issues.

Comparison to Vermont Counties Without Interstate Connections

A second useful comparison of employment trends for counties located along the I-89 and I-91 corridors appears in Table III-4 and Figure 7. Those exhibits provide similar trend data for five Vermont counties which are not directly served by the interstate system. Three of these counties, Bennington, Rutland and Addison are located in the southwestern corner of the State. The remaining two, Lamoille and Essex, are located in rural Northern Vermont. Like much of rural Maine, many interior sections of these counties are 25 to 50 miles from the nearest interstate connection.

As shown in Figure 7, the three Southwestern Vermont counties have all achieved employment growth rates which are roughly equivalent to or higher than the State average, as well as the average of those counties which are served by I-91. Rural Lamoille County has exhibited rapid job growth that is well above the state average, due in large part to that region's growing attraction as a ski destination. Sparsely populated Essex County in the Northeast Kingdom has historically been Vermont's poorest county and has grown at a slightly slower rate than nearby Orleans County over the past three decades.

The five Vermont counties that are not directly crossed by interstate highways, contained a total job base of 98,400 in 1996, and have added a net total of just over 43,100 jobs since 1969. Collectively, annual employment growth among these five counties was nearly 2.2% from 1969 through 1996. This rate lies within the range of annual job growth among those counties which are served by I-91 (1.9%) and I-89 (2.7%).[7]

Among those Vermont counties that are not served by interstate highways, employment in services, wholesale trade and retail trade, led job gains from 1969 to 1996, with growth rates of 3.2% to 3.6% per year. Construction employment grew by 2.4% annually. Government, transportation/ utilities, and the finance, insurance and real estate sectors grew at slower rates of 1.6% to 1.9%. Total manufacturing employment also remained stable over the period, growing at less than 0.3% per annum and adding roughly 900 jobs.

The experience of these counties indicates that the underlying factors that have contributed to employment growth in Vermont since 1969, were not entirely dependent on the locations of interstate highways within the State. Underlying economic (job) growth in Southern Vermont and Western New Hampshire since 1969 appears to be in the range of 1.9% to 2.1% per year, while the northern sections of each state have grown at slower rates of 1.6% to 1.8% (comparable to those counties studied within the State of Maine). Differential rates of job growth between counties served by I-89 and I-91, and those counties without interstate highway connections have been very limited, generally less than 0.5% per year. Improved transportation access, along with several other

[7] A similar analysis of employment trends was conducted for four NH Counties, (Belknap, Carroll, Cheshire and Coos, which also lack interstate highways. Combined employment in these four counties grew at a 1.9% annual rate from 1969 to 1996, ranging from a high of 3.0 % in Carroll County to a low of 1.2% in Coos.

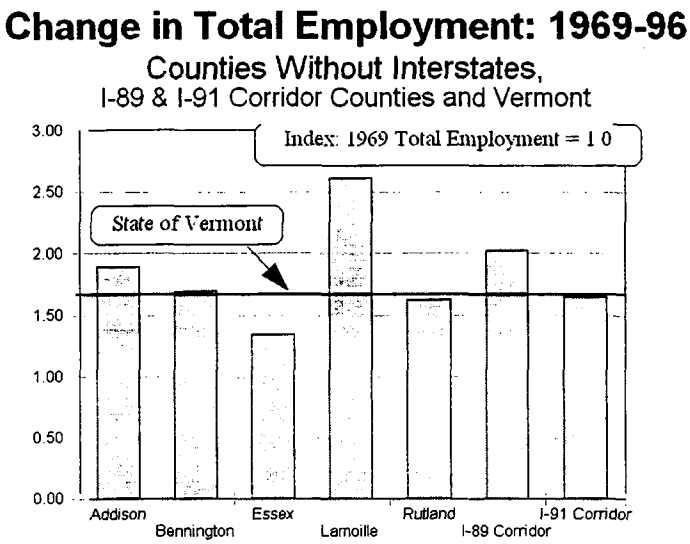
contributing factors, may be partly responsible for the marginally higher rates of job growth experienced by some counties following the construction of I-89 and I-91.

Table III-4: Employment by Industry Trends, 1969-96
Vermont Counties With No Interstate Connections[1]

Employment by Industry	Total Employment 1969	Total Employment 1996	Total Change	Percent Change	Annual Growth Rate
Total full- and part-time employment	**55,305**	**98,424**	**43,119**	**77.97%**	**2.16%**
Wage and salary employment	45,205	74,948	29,743	65.80%	1.89%
Proprietors' employment	10,100	23,476	13,376	132.44%	3.17%
Farm proprietors' employment	2,271	1,755	(516)	-22.72%	-0.95%
Nonfarm proprietors' employment 2/	7,829	21,721	13,892	177.44%	3.85%
Farm employment	4,358	2,669	(1,689)	-38.76%	-1.80%
Nonfarm employment	50,947	95,755	44,808	87.95%	2.36%
Private employment	43,853	84,635	40,782	93.00%	2.47%
Ag. serv., forestry, fishing, and other 3/	430	1,264	834	193.95%	4.07%
Mining	428	289	(139)	-32.48%	-1.44%
Construction	3,439	6,614	3,175	92.32%	2.45%
Manufacturing	12,817	13,815	998	7.79%	0.28%
Transportation and public utilities	1,945	3,289	1,344	69.10%	1.96%
Wholesale trade	1,018	2,501	1,483	145.68%	3.39%
Retail trade	8,327	19,178	10,851	130.31%	3.14%
Finance, insurance, and real estate	2,866	4,411	1,545	53.91%	1.61%
Services	12,566	32,781	20,215	160.87%	3.62%
Government and government enterprises	7,094	11,120	4,026	56.75%	1.68%
Federal, civilian	744	730	(14)	-1.88%	-0.07%
Military	1,074	1,318	244	22.72%	0.76%
State and local	5,276	9,072	3,796	71.95%	2.03%

[1] Employment totals include Addison, Bennington, Essex, Lamoille and Rutland Counties.
Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS) Data Base.

Figure 7



Population

Comparison of Population Trends

Table III-5 and Figures 8 through 10 below provide a similar regional comparison of population growth trends among those same groups of counties that were compared above in terms of employment. In general, those counties which experienced the most rapid rate of employment growth also experienced the fastest rise in population. Counties along the I-89 corridor showed the highest aggregate change and most rapid population growth, led by Merrimack and Chittenden Counties. Population growth among the counties located along I-91 was slower than the State average and also below the average of those Vermont Counties which are not crossed by interstate highways. The Maine counties studied experienced the same rate of population growth as the State of Maine as a whole.

Table III-5: Population Trends, 1969-96
I-89, I-91, Maine East-West Highway Study Area Counties and States of ME, NH & VT

Population by County	Total Population 1969	Total Population 1996	Total Change	Percent Change	Annual Growth Rate
I-89 Corridor Counties					
Merrimack, NH	79,699	124,890	45,191	56.70%	1.7%
Sullivan, NH	30,669	39,665	8,996	29.33%	1.0%
Grafton, NH	54,150	77,895	23,745	43.85%	1.4%
Windsor	43,800	55,097	11,297	25.79%	0.9%
Orange	17,420	27,532	10,112	58.05%	1.7%
Washington	46,985	56,258	9,273	19.74%	0.7%
Chittenden	96,160	140,241	44,081	45.84%	1.4%
Franklin	30,958	43,254	12,296	39.72%	1.2%
I-89 Corridor Totals:	399,841	564,832	164,991	41.26%	1.3%
I-91 Corridor Counties					
Windham	32,949	42,748	9,799	29.74%	1.0%
Windsor	43,800	55,097	11,297	25.79%	0.9%
Orange	17,420	27,532	10,112	58.05%	1.7%
Caledonia	22,597	28,748	6,151	27.22%	0.9%
Orleans	20,008	25,077	5,069	25.33%	0.8%
I-91 Corridor Totals:	136,774	179,202	42,428	31.02%	1.0%
Vermont Counties with no Interstates					
Addison	23,692	34760	11,068	46.72%	1.4%
Bennington	28,669	36158	7,489	26.12%	0.9%
Essex	5,475	6499	1,024	18.70%	0.6%
Lamoille	13,040	21355	8,315	63.77%	1.8%
Rutland	51,763	62732	10,969	21.19%	0.7%
Combined:	122,639	161,504	38,865	31.69%	1.0%
Maine E-W Highway Study Area Counties					
Hancock	34,397	49,226	14,829	43.11%	1.3%
Washington	30,083	36,109	6,026	20.03%	0.7%
Penobscot	125,729	143,895	18,166	14.45%	0.5%
Somerset	40,531	52,276	11,745	28.98%	0.9%
Franklin	22,262	28,871	6,609	29.69%	1.0%
Oxford	43,550	53,678	10,128	23.26%	0.8%
Maine Study Area Totals:	296,552	364,055	67,503	22.76%	0.8%
New Hampshire	724,000	1,160,213	436,213	60.25%	1.8%
Vermont	437,000	586,461	149,461	34.20%	1.1%
Maine	992,000	1,238,566	246,566	24.86%	0.8%

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS) Data Base.

Table III-6 provides a set of population projections for the Vermont counties on the I-89 and I-91 corridors. (Comparable time series projections were not available for NH.) The purpose of the exhibit is to illustrate the expected slowdown in future population growth from 2000 to 2015, in comparison to the State's experience over the past three decades. As shown in the table, the annual rate of population growth over the next 15 years is expected to slow for all of the Vermont counties along the two corridors, as well as for the State as a whole.

Windsor, Orleans and Washington Counties are all projected to lose population over the forecast period, while growth rates in all of the remaining counties are expected to slow to below 1% per year. Although these Vermont counties may not have suffered the types of recent population declines experienced in rural Maine, the presence of the I-89 and I-91 corridors will not be sufficient to prevent expected population losses in some of these counties over the coming decades.

Figure 8

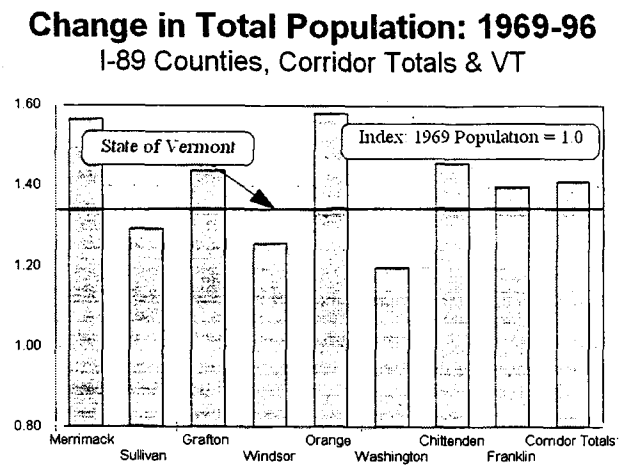


Figure 9

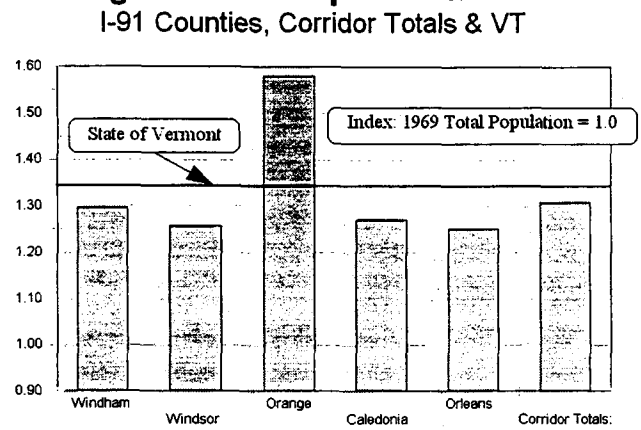


Figure 10

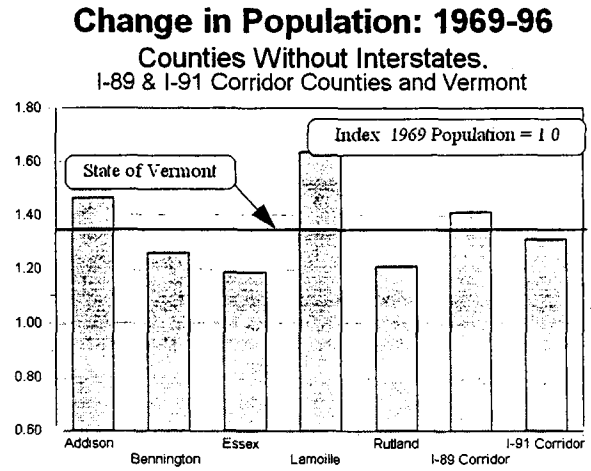


Table III-6: Population Projections, 2000-2015
Vermont I-89 and I-91 Counties and State

Total Population	2000 Estimate	2015 Projected	Change:2000-15 Number	Change:2000-15 Percent	Annual Rate
I-89 Corridor					
Windsor	55,115	54,464	(651)	-1.2%	-0.1%
Orange	28,920	32,733	3,813	13.2%	0.8%
Washington	56,057	54,668	(1,389)	-2.5%	-0.2%
Chittenden	147,372	165,241	17,869	12.1%	0.8%
Franklin	44,845	51,093	6,248	13.9%	0.9%
Corridor Totals:	277,194	303,735	26,541	9.6%	0.6%
I-91 Corridor					
Windham	45,267	49,554	4,287	9.5%	0.6%
Windsor	55,115	54,464	(651)	-1.2%	-0.1%
Orange	28,920	32,733	3,813	13.2%	0.8%
Caledonia	29,355	31,040	1,685	5.7%	0.4%
Orleans	24,095	23,120	(975)	-4.0%	-0.3%
Corridor Totals:	182,752	190,911	8,159	4.5%	0.3%
Vermont	605,068	646,825	41,757	6.9%	0.4%

Source: Vermont Health Care Authority, Center for Rural Studies, June 1993.

Business Location Patterns

Examining aggregate job trends provides an overall understanding of growth patterns that have taken place in a local or regional economy. However, looking at employment data alone may not reflect the movement of individual companies into and out of a given region or the diversification of economic activity that may be taking place. Gaining a better understanding of these types of factors requires analysis at the establishment level.

In order to gain further insights into the movements of firms into the I-89 and I-91 Corridors, the consultants conducted searches of companies using Dun & Bradstreet data and iMarketinc® market research software. These sources are able to track the presence of individual companies by city/town, SIC Code, average employment, annual sales and years in business.[8] (For comparison, a similar search was undertaken for those Maine counties located in the project Study Area, as described in the previous section.) In addition, a more detailed analysis was undertaken to identify the locations of Canadian owned companies along each corridor.

For the purposes of this analysis, we believe it is more useful to identify significantly sized firms that were likely to consider transportation factors in their investment decisions. For this reason, searches were limited to companies which currently have a minimum of 25 employees. The industry groups searched were also limited to manufacturing, transportation and distribution, and selected business service industries such as computer software, data processing, information technology and related services. The search was initially conducted for all businesses located in the counties discussed above, and then narrowed to locations within approximately 10 to 15 miles of either I-89

[8] The classification of companies by years in business was limited to the time distributions indicated in Table III-6. Therefore, it was not possible to identify all business locations that had taken place since the completion of each highway. The reader should be aware that 20% to 30% of the firms in the data base are not classified by year established and, in some cases, years in business may reflect the year in which an existing business was acquired by the present owner, or relocated within the region, rather than an actual start-up date.

or I-91. Although there are limitations to the data (see footnote) the sources used provide a reasonably accurate, near 100% sample of companies fitting the above criteria.

Consistent with the relative size differential of the economies served by each corridor, there are substantially more companies along the I-89 corridor which satisfied the search criteria. In total, more than 300 firms with nearly 28,000 employees were identified along the I-89 corridor, compared to only 134 firms with less than 11,000 employees along I-91. A minimum of 141 firms along the I-89 corridor, with 10,700 current employees, have either started up, relocated or been acquired by new owners within the past 20 years. Included in that total are 53 firms within the past five years alone. Along I-91, fewer than 70 firms and 5,300 employees have shown similar activity within the past 20 years.

Again, the reader should be cautioned that these indicated levels of business investment do not necessarily represent the creation of net new jobs or the recruitment of new firms to each region. Some of the firms fitting the search criteria may represent acquisitions of pre-existing companies by new owners, or relocations of businesses within the respective regions. However, the data shown for firms within the past 20 years does provide a rough order-of-magnitude estimate of the relative success these regions have had in recruiting and retaining business investment in manufacturing, transportation and "high-tech" service industries. On average over the past 20 years, the data in Table III-7 translates to roughly 7 establishments and 530 jobs per year along the I-89 corridor, and 3 establishments and 260 jobs per year along I-91. Some portion of these totals can be attributed to the business retention and recruitment effects of each highway.

Table III-7
Locations of Manufacturing, Transportation and Business Service Firms by Years in Business (at Current Location): I-89, I-91 and Maine Study Area Communities[1]

Region	Number Businesses	Average Employment	Percent Distribution	
			Businesses	Employment
I-89 Corridor				
5 Years or Less	53	4,687	16.67%	16.88%
6-10 Years	29	1,648	9.12%	5.94%
11-20 Years	59	4,380	18.55%	15.78%
21 Years or More	84	5,809	26.42%	20.93%
Not Indicated	93	11,237	29.25%	40.48%
Totals:	318	27,761	100.00%	100.00%
I-91 Corridor				
5 Years or Less	24	1,786	17.91%	16.35%
6-10 Years	14	961	10.45%	8.80%
11-20 Years	29	2,515	21.64%	23.03%
21 Years or More	38	1,915	28.36%	17.53%
Not Indicated	29	3,745	21.64%	34.29%
Totals:	134	10,922	100.00%	100.00%
Maine Study Area				
5 Years or Less	16	1,888	7.66%	8.10%
6-10 Years	27	4,227	12.92%	18.14%
11-20 Years	42	2,332	20.10%	10.01%
21 Years or More	68	4,094	32.54%	17.57%
Not Indicated	56	10,756	26.79%	46.17%
Totals:	209	23,297	100.00%	100.00%

[1] Includes manufacturing, transportation and distribution and selected business service industries with a minimum of 25 employees.
Sources: iMarketinc® and Dun & Bradstreet Information systems.

Similar to the previous comparison of employment trends, Maine counties in the East-West Highway Study Area show a past level of business activity that is within the range of the I-89 and I-91 corridor regions. In total, more than 200 Maine firms with more than 23,000 existing employees satisfied the search criteria used above. Of these companies, a minimum of 85 firms with nearly 8,500 current employees have either started up, relocated or been acquired by new owners within the past 20 years.

Two significant differences also appear when comparing the Maine data to the other two regions. First is the substantially smaller number of firms and employment listed in the "five years or less" category, particularly when compared to the I-89 corridor. Secondly, the average number of employees per establishment in Maine at 111, is significantly higher than the other two regions, which range from 81 to 87. This comparison suggests that the Maine Study Area counties have recently lagged the I-89 and I-91 corridors in their ability to internally generate or recruit manufacturing, transportation and business service industries. This same trend was observed in the employment data examined in the previous section. This issue is examined further in the following table.

Table III-8
Locations of Firms (at Current Location) by Major Industry Group: I-89, I-91 and Maine Study Area Communities[1]

Region	Number Businesses	Average Employment	Percent Distribution	
			Businesses	Employment
I-89 Corridor				
Manufacturing	244	23,759	76.73%	85.58%
Transportation	32	1,405	10.06%	5.06%
Business Services	42	2,597	13.21%	9.35%
Totals:	318	27,761	100.00%	100.00%
I-91 Corridor				
Manufacturing	129	10,614	96.27%	97.18%
Transportation	3	238	2.24%	2.18%
Business Services	2	70	1.49%	0.64%
Totals:	134	10,922	100.00%	100.00%
Maine Study Area				
Manufacturing	171	21,699	81.82%	93.14%
Transportation	28	1,107	13.40%	4.75%
Business Services	10	491	4.78%	2.11%
Totals:	209	23,297	100.00%	100.00%

[1] Includes manufacturing, transportation and distribution and selected business service industries with a minimum of 25 employees.
Sources: iMarketinc® and Dun & Bradstreet Information systems.

Table III-8 sorts the same data on firms and employment by industry group rather than years in business. As shown, manufacturing firms represent the dominant share of businesses and employment identified in each region. The I-89 corridor is very similar to the Maine Study Area counties in terms of employment levels within the manufacturing the transportation sectors, while the I-91 corridor lags in both establishments and employees. The primary difference between the I-89 corridor and the other two regions lies in the substantial presence of business service establishments, particularly computer software firms, that have clustered along that corridor. As shown, more than 40 companies with nearly 2,600 employees are located along I-89, clustered primarily within the Greater Burlington and Hanover/Lebanon, NH areas. This contrasts to only 10 firms and fewer that 500 employees in Maine, and 2 firms with 70 employees located along I-91.

The report appendix also contains lists of the individual companies which are identified in the "10 years or less" categories within in each region. An examination of these lists shows a growing presence of computer and software companies, as well as other high-technology manufacturing firms along the I-89 corridor. It also appears that the presence or absence of high-technology investment is the key factor which explains the comparative differences in recent employment growth rates among the three regions. From the observed clustering of these companies along the I-89 corridor, it can be argued that the educational institutions, quality of life characteristics and population densities of Greater Burlington and the Hanover/Lebanon area, have been much more influential than either I-89 or I-91 in attracting and supporting high technology firms.

Canadian Investment Along the Highway Corridors

A final focus of the case study research was an effort to identify locations of Canadian-headquartered companies along the interstate corridors. The purpose of this search was to determine whether the creation of direct interstate linkages to Canada has resulted in the attraction of Canadian firms to Vermont and New Hampshire. Because most sections of I-89 and I-91 are closer to the industrial regions of Quebec Province than Maine, the presence of Canadian-owned companies along those corridors is an indicator of how important an east-west highway might be in attracting similar types of investment to Maine.

To accomplish this task, the consultants requested from Dun & Bradstreet Information Systems (D&B), a data search of all Canadian-owned companies in those VT and NH Counties which are crossed by Interstates 89 or 91. Unlike the previous analysis, all industry groups and size classifications were included in the search criteria. Tables III-9 and III-10 profile these companies by location, number of employees, product line, year established and location of the Canadian parent company. It should be noted that some of the listed companies were established operations that were purchased by Canadian firms. Therefore, only a portion of the employment represented by these companies was actually created as a result of Canadian investment in the U.S.

In total, D&B identified 31 companies that are owned by Canadian-headquartered firms. Of these companies, 23 are located near I-89 and 8 near I-91.[9] The firms currently employ an estimated 1,150 workers at these US locations. The 23 companies located along I-89 employ 944 workers, compared to only 200 employees for the 8 firms located along or near I-91. Of the entire list, 24 companies have fewer than 50 employees and only 3 firms employ more than 100 workers.

The firms are also clustered geographically. Eighteen of the 31 Canadian-owned firms, representing 65% of the total employment, are located along I-89 between Swanton and South Burlington, within roughly 100 miles of Montreal. Five of the eight firms that are located on or near I-91, are clustered near the Canadian border, in the vicinity of Newport. Beyond these two clusters, there are only 2 other Canadian-owned firms in the Vermont sections of the I-89 and I-91 corridors, along with six firms in New Hampshire. It is also significant to note that no Canadian-owned companies were found on I-91 below White River Junction.

[9] The list of Canadian firms under the "I-91 corridor" includes three companies that are actually located in NH, near Interstate 93. These were included on the list because of their proximity to Saint Johnsbury.

Table III-9: Locations of Canadian-Owned Companies Along the I-89 Corridor [1]

Company Name	Company Location	ST	SIC Code	Product Description	Year Started	Employ-ment	Headquarters Company Name	HQ City	HQ Province
Ivaco Inc. Vermont Fasteners	Swanton	VT	3452	Bolts, Nuts, Rivets, and Washers	N/A	13	Ivaco Inc	Montreal	Quebec
Infasco Nut Div	Swanton	VT	9999	Nonclassifiable Establishments	N/A	NA	Societe En Commandite Ifastgroupe	Marieville	Quebec
Barry Callebaut U.S.A., Van Houten Div	Saint Albans	VT	2066	Chocolate and Cocoa Products, Nsk	1992	215	Barry Callebaut Canada Inc	Saint-Hyacinthe	Quebec
Sandora Industries, Inc	Saint Albans	VT	2759	Commercial Printing, Nec	1991	35	Sandora Sales & Manufacturing Ltd	Montreal	Quebec
Telecite Electronic System Inc	Williston	VT	3993	Signs and Advertising Specialties	N/A	4	Telecite Inc	Montreal	Quebec
Velan Valve Corporation	Williston	VT	3491	Industrial Valves, Nsk	1956	190	Velan Inc	Montreal	Quebec
Swish Maintenance Limited	Burlington	VT	5087	Service Establishment Equipment	1991	16	Swish Maintenance Limited	Peterborough	Ontario
CTC Holdings, Inc.	Burlington	VT	7389	Business Services, Nec, Nsk	1981	1	Canadian Tire Corporation Limited	Toronto	Ontario
Interexpress Inc	Burlington	VT	4213	Trucking, Except Local	1996	22	149675 Canada Inc	Montreal	Quebec
Plum Traders Limited (Inc)	Burlington	VT	5094	Jewelry and Precious Stones, Nsk	1991	14	Plum Traders Inc	Toronto	Ontario
Hooker Electronics Co Inc	Colchester	VT	5065	Electronic Parts and Equipment, Nec, Nsk	1964	6	Hooker Electronics Canada Ltd	Montreal	Quebec
Saturn Solutions Corp	Essex Junction	VT	7371	Custom Computer Programming Services, Nsk	1993	40	Saturn (Solutions) Inc	Montreal	Quebec
Centrodyne Corp of America	Essex Junction	VT	3825	Instruments to Measure Electricity	1974	5	Centrodyne Inc	Montreal	Quebec
Stella Foods East Inc	Hinesburg	VT	2022	Cheese; Natural And Processed, Nsk	1997	34	Groupe Saputo Inc (Le)	Montreal	Quebec
Cameo Crafts Ltd	Milton	VT	3497	Metal Foil and Leaf	N/A	30	Industries Graphiques Cameo Crafts Ltee	Montreal	Quebec
Northern New England Gas Corp	South Burlington	VT	4924	Natural Gas Distribution	1983	90	Gaz Metropolitain Inc	Montreal	Quebec
Bariatrix International Inc	South Burlington	VT	2834	Pharmaceutical Preparations	1982	26	Produits Bariatrix International Inc (Les)	Lachine	Quebec
Sport Dinaco	South Burlington	VT	5932	Used Merchandise Stores	N/A	3	Sport Dinaco Inc	Lachine	Quebec
Bombardier Transit Corporation	Barre	VT	3743	Railroad Equipment	N/A	5	Bombardier Inc	Montreal	Quebec
Vermont Castings, Inc	Bethel	VT	3433	Heating Equipment, Except Electric, Nsk	1996	175	Cfm Majestic Inc	Mississauga	Ontario
Energex Pellet Fuel Inc	West Lebanon	NH	2411	Burls, Wood	N/A	7	Energex Pellet Fuel Inc	Lac-Megantic	Quebec
Scanada International Inc	Bow	NH	7353	Heavy Construction Equipment Rental, Nsk	1983	7	Scanada Slipform Systems Inc	Montreal	Quebec
Kennco Inc	Concord	NH	5084	Industrial Machinery and Equipment	1976	6	Kennedy C A Inc	Montreal	Quebec
				TOTALS:	23	944			

[1] Companies are listed in order of approximate distance from the Canadian Border.

Table III-10: Locations of Canadian-Owned Companies Along the I-91 Corridor [1]

Company Name	Company Location	ST	SIC Code	Product Description	Year Started	Employ-ment	Headquarters Company Name	HQ City	HQ Province
Tresk Distribution	Derby Line	VT	5084	Industrial Machinery and Equipment	NA	8	Groupe Tresk Inc, Le	Sherbrooke	Quebec
Garneau, Louis Usa Inc	Newport	VT	2339	Womens and Misses Outerwear, Nec	1988	20	Garneau Louis Sports Inc	St-Augustin-de-Quebec	Quebec
Codet Newport Corporation	Newport	VT	2326	Mens and Boys Work Clothing	NA	8	Codet Inc	Coaticook	Quebec
Metarom Corp	Newport	VT	2087	Flavoring Extracts and Syrups, Nec	1991	3	Metarom Canada Inc	Granby	Quebec
Cancot Usa Inc	Newport	VT	2392	Household Furnishings, Nec	1989	2	Cancot Industries Inc	Montreal	Quebec
Gen Foot America	Littleton	NH	3089	Plastics Products, Nec, Nsk	NA	80	Genfoot Inc	Montreal	Quebec
Rotobec Usa Inc	Littleton	NH	5082	Construction and Mining Machinery	1981	8	Rotobec Inc	Langevin	Quebec
Newman Lumber Co, Inc	Woodsville	NH	2421	Sawmills and Planing Mills, General	1997	75	Industries Davidson Inc	Davidson	Quebec
				TOTALS:	8	204			

[1] Companies are listed in order of approximate distance from the Canadian Border.

Among the industry groups represented on the list, most are in manufacturing. The largest among these is a food products manufacturer which employs 215 workers in St. Albans. Several of the smaller entities appear to be wholesalers of Canadian-manufactured products. Only one Canadian transportation firm was on the list, a 22 person trucking company located in Burlington.

Sixteen of the 31 firms are headquartered in Montreal and most of the remaining parent companies are located within a few miles north of the border in the Province of Quebec. Only two of the 31 firms were headquartered in Ontario and no firms were based in other Provinces.

It is obvious from the list that the influence of Canadian investment along the two corridors has been very limited, particularly outside of the Burlington area. However, roughly a third of the companies, including the three largest employers on the list, were started after 1990, which suggests that the rate of investment may have accelerated in recent years.

Conclusions

The preceding analysis illustrates that the presence or absence of interstate highways appears to be one of several factors that have influenced employment and population trends in these respective counties. The following observations can be drawn from the data presented above:

1. Those counties located at the southern end of the corridors, closer to population centers, have experienced more rapid job and population growth than counties which are located in the more rural northern regions of each corridor. When Merrimack (Concord, NH) and Chittenden (Burlington, VT) are removed from the mix, rates of job growth in the remaining counties are not significantly different than those experienced in Maine over the same period. Based upon the experience of these routes, it is difficult to project that significant employment or population growth would flow into the rural counties located along an east-west highway corridor through Maine. To the extent that economic impacts do occur, their effects are likely to concentrate in and around established employment centers such as Bangor.

2. The most rapid job growth in all of the regions studied has occurred in non-manufacturing industries, primarily in retail trade and services. Those counties that have experienced the strongest rates of job growth since 1969, have also had the highest growth rates in non-manufacturing employment. Counties that showed larger increases in population also experienced higher rates of total job growth. The experience of the I-89 and I-91 corridors generally support the findings of the Phase III Technical Report, which concluded that the majority of job impacts associated with an east-west highway, would occur in trade and service industries.

3. The construction of I-89 and I-91 was not followed by large net increases in manufacturing and transportation sector jobs. Counties along I-89 maintained a slow growth rate in manufacturing employment of less than 0.8% per year over the 1969-96 period, while counties on I-91 lost manufacturing jobs. The experience of the I-89 and I-91 corridors generally support the findings of the Phase III Technical Report, which concluded that the effects of an east-west highway on manufacturing employment would be very limited.

4. The two Vermont counties that are located at the intersections of interstate corridors, have not experienced any significant premium in terms of past population or employment growth. Windsor (at the intersection of I-89 and I-91) and Caledonia Counties (at the intersection of I-91 and I-93) have both lagged the Vermont average in population and employment growth since 1969. These counties' proximity to the NH border and the concentrations of (sales-tax free) retail development located in Lebanon and Littleton, NH, may partially explain their relatively slow growth in non-manufacturing jobs. However, the absence of significant growth in manufacturing and transportation jobs as well, suggests that improved highway access alone does not necessarily guarantee higher rates of growth.

5. Counties located in Southwestern Vermont, which lack interstate highway connections, have generally kept pace with Statewide rates of employment and population growth since 1969. This factor suggests that the majority of population and job growth along the I-89 and I-91 corridors since 1969 can be attributed to factors unrelated to the highway improvements themselves. One of the primary contributing factors to higher rates of job growth along the I-89 corridor, compared to I-91 and the Maine Study Area, has been that region's ability to attract high-technology employers, including software and other business service companies. Most communities served by an east-west corridor through Maine are not likely to possess the types of labor, educational and institutional assets desired by these types of firms, even if highway access is improved.

6. Communities along the I-89 and I-91 corridors have had very limited success in attracting investment by Canadian companies over the past three decades. The presence of Canadian companies is insignificant beyond 100 miles of Montreal. The ability of an east-west highway to attract investment by Canadian-based firms would also appear to be limited based on the experience of these other regions.

It remains to be determined whether the long term population and employment effects of a four-lane east-west highway through Maine, should run higher, lower or within the range of growth rates indicated by the case study research. The issue of where an east-west highway appropriately "fits" in the context of the case study corridors, is addressed below.

I-91 provides a northern connection to Sherbrooke and Montreal that is very comparable to the proposed Corridor D. However, I-91 lacks an urban market of a comparable size to Bangor and has a relatively small population and job base today, nearly 30 years after construction of the corridor. Although I-91 is perhaps predictive of the types of effects which could be felt along the rural segments of an east-west highway through Maine, relying on the experience of I-91 may underestimate the potential impacts of improved east-west access to larger employment centers like Bangor.

Alternatively, I-89 provides a shorter, superior connection to the Montreal market for Vermont and New Hampshire industries, than would an east-west highway for Maine employers. In terms of positioning between two markets, the portions of Southern New England that are connected to Montreal via I-89 are much larger in population, closer in terms of travel time, more affluent and more diversified economically than Atlantic Canada. Both the northern and southern terminus of I-89 also connect to other four-lane highways, which provide a superior connection to the remainder of the US Interstate and Trans-Canada systems. Adding these factors together, an I-89 location, midway

between Montreal and Southern New England, appears to offer greater strategic advantages to NH and Vermont industries, than an east-west highway location, midway between Atlantic Canada and Quebec Province, offers to Maine industries.

The economic and population centers along the I-89 corridor also possess comparatively superior economic assets, beyond transportation, which are also needed to support growth and development. Total employment levels in the Burlington MSA are roughly a third higher than Bangor. The economy of the Burlington MSA is also more diversified than the Bangor's and has already demonstrated success in nurturing high-tech industries. Other labor market areas located along I-89, particularly Concord, NH, and the Hartford-Lebanon VT-NH LMA are also larger and possess more growth potential than those in Maine that would be connected via an east-west highway.

Based upon the observed characteristics of the two case study corridors, this analysis concludes that the economic impacts of a four-lane east-west corridor through Maine, are most likely to fall *within* the range of the two comparable routes. For the reasons presented above, we see no basis to support a conclusion that either conceptual Corridor D or E could generate substantially greater long term employment impacts than those observed along I-89, or impacts below those observed along I-91, over the past three decades.

Given the recent employment growth rates achieved by Vermont and NH counties which are not served by interstate highways, the contribution of I-91 and I-89 to annual employment growth in NH and VT has <u>at most</u>, been in the range of 0.1% to 0.5% per year since 1969. This incremental "premium" over job growth elsewhere in the two States, represents a rough order-of-magnitude estimate of the productivity and business attraction affects of the two case study highway corridors, on the respective economies of their host regions. If it is accepted that these corridors represent relevant, predictive case studies for an east-west highway through Maine, then it is reasonable to project that a four-lane highway though Maine might also generate a 0.1% to 0.5% premium over underlying rates of job growth in those Maine counties which are located along the proposed corridors.

Therefore, had an east west highway existed in the six Maine Study Area counties in 1969, applying these incremental increases to actual rates of job growth, results in the addition of between 5,100 and 28,000 jobs (over and above the 77,000 actual increase) by 1996. In our judgement, the lower half of this range (5,000 - 16,000 jobs) represents a reasonable estimate of what the I-89 and I-91 case studies suggest could have happened in Maine, had an east-west highway existed during that same time period. Due to demographic reasons, rates of population and employment growth over the next 30 years, nationally and regionally, are projected to slow sharply in comparison to actual rates experienced from 1969 through 1996. In that context, the projected year 2030 employment impacts of about 3,800 jobs associated with Corridor D, as estimated in the Phase III Technical Report, are reasonably consistent with the case study findings. Although modest additional employment gains over that amount may be possible, expectations for dramatically higher economic impacts, which would be necessary to justify the higher costs of the four-lane alternatives, are not supported by the case study research.

In conclusion, the case study research found that I-89 and I-91 have marginally helped the economies of Northern NH and VT over the past 3 decades. However, neither highway has dramatically altered the underlying economic structure of the corridor communities. The limited ability of those corridors to stimulate Canadian investment

from Montreal suggests that the Maine E-W highway would face similar challenges in the future. An east-west corridor improvement should aid regional efforts to recruit business investment and diversify the economies of Central and Northern Maine, but will not necessarily guarantee success.

The experience of the I-89 and I-91 corridors indicate that incremental gains following the construction of an E-W highway would be modest and consistent with the impact forecasts developed in the Phase III Technical Report. Based on the experience of the case study communities, development impacts are most likely to occur within commuting distance of Bangor and the other larger population centers along the corridor, such as Skowhegan, which are already located within close proximity to Interstate 95. Extending the economic benefits of an east-west transportation improvement into rural counties will be much more difficult, and particular attention must also be given to mitigating bypass effects on rural segments of the corridors.

If an aggressive, complementary economic development strategy is undertaken in concert with highway improvements, there may be a potential to retain, recruit and develop from within, incremental increases beyond the projected 3,800 jobs associated with Corridor D, estimated in the Phase III Technical Report. However, an improved highway would be only one contributing factor among several that would be necessary to achieve such success. Like the observed clustering of software firms along I-89, it is difficult to determine the relative importance of the highway itself, among the range of factors that must be present for such growth to occur.

IV
Appendix

Appendix A: Data Tables

Appendix Table A-1
List of Firms Locating Along the Interstate Corridor within the Past Decade [1]

SIC 4 Code	SIC 4 Code1	Location	Years in Business	Number Establishments	Total Employment	Annual Sales ($Mil)	Average Employment	Average Sales
I-89 Corridor								
7389	Business services, nec	Concord, NH	1 year or less	1	27	$2.90	27	$2.90
3699	Electrical equipment and supplies, nec	Concord, NH	6 to 10 years	1	27	$167.70	27	$167.70
3312	Blast furnaces and steel mills	Concord, NH	4 or 5 years	1	115	$28.10	115	$28.10
2221	Broadwoven fabric mills, manmade	Concord, NH	6 to 10 years	1	45	$5.00	45	$5.00
3441	Fabricated structural metal	Concord, NH	6 to 10 years	1	25	$2.60	25	$2.60
2752	Commercial printing, lithographic	Concord, NH	4 or 5 years	1	25	$2.50	25	$2.50
7389	Business services, nec	Concord, NH	6 to 10 years	1	27	$1.50	27	$1.50
3563	Air and gas compressors	Concord, NH	4 or 5 years	1	95	$13.00	95	$13.00
3823	Process control instruments	Concord, NH	6 to 10 years	1	100	$10.10	100	$10.10
7389	Business services, nec	Bow, NH	6 to 10 years	1	30	$3.00	30	$3.00
2819	Industrial inorganic chemicals, nec	Bow, NH	2 or 3 years	1	35	$5.50	35	$5.50
3612	Transformers, except electric	Contoocook, NH	6 to 10 years	1	27	$1.10	27	$1.10
2499	Wood products, nec	Bradford, NH	6 to 10 years	1	65	$4.40	65	$4.40
2421	Sawmills and planing mills, general	Henniker, NH	6 to 10 years	1	40	$8.10	40	$8.10
3826	Analytical instruments	North Sutton, NH	4 or 5 years	1	99	$12.00	99	$12.00
3081	Unsupported plastics film and sheet	Newport, NH	6 to 10 years	1	70	$9.90	70	$9.90
2752	Commercial printing, lithographic	New London, NH	2 or 3 years	1	30	$2.60	30	$2.60
3861	Photographic equipment and supplies	Salisbury, NH	1 year or less	1	25	$10.00	25	$10.00
2421	Sawmills and planing mills, general	West Springfield, NH	2 or 3 years	1	27	$4.20	27	$4.20
4213	Trucking, except local	Lebanon, NH	2 or 3 years	1	45	$3.20	45	$3.20
3565	Packaging machinery	Lebanon, NH	2 or 3 years	2	178	$27.20	89	$13.60
2731	Book publishing	Lebanon, NH	2 or 3 years	1	50	$5.20	50	$5.20
3429	Hardware, nec	Lebanon, NH	4 or 5 years	1	60	$5.20	60	$5.20
7371	Custom computer programming services	Lebanon, NH	4 or 5 years	1	119	$38.60	119	$38.60
2759	Commercial printing, nec	Lebanon, NH	1 year or less	1	35	$2.10	35	$2.10
7374	Data processing and preparation	Lebanon, NH	4 or 5 years	1	130	$6.70	130	$6.70
3541	Machine tools, metal cutting type	West Lebanon, NH	6 to 10 years	2	365	$40.30	183	$20.20
3542	Machine tools, metal forming type	West Lebanon, NH	4 or 5 years	1	140	$12.00	140	$12.00
3999	Manufacturing industries, nec	Stockbridge, VT	4 or 5 years	1	45	$2.80	45	$2.80
3433	Heating equipment, except electric	Bethel, VT	2 or 3 years	1	175	$60.00	175	$60.00
2086	Bottled and canned soft drinks	Randolph, VT	6 to 10 years	1	35	$29.10	35	$29.10
3469	Metal stampings, nec	Randolph, VT	1 year or less	1	34	$7.00	34	$7.00
2431	Millwork	Northfield, VT	4 or 5 years	1	35	$3.90	35	$3.90
3949	Sporting and athletic goods, nec	Northfield, VT	2 or 3 years	1	39	$3.20	39	$3.20
3229	Pressed and blown glass, nec	Barre, VT	4 or 5 years	1	30	$1.90	30	$1.90
3621	Motors and generators	Waitsfield, VT	2 or 3 years	1	30	$3.90	30	$3.90
2834	Pharmaceutical preparations	Montpelier, VT	1 year or less	1	28	$14.00	28	$14.00
3089	Plastics products, nec	Montpelier, VT	2 or 3 years	1	48	$1.60	48	$1.60
2752	Commercial printing, lithographic	Montpelier, VT	1 year or less	1	181	$29.00	181	$29.00
7379	Computer related services, nec	Montpelier, VT	4 or 5 years	1	30	$0.90	30	$0.90
3559	Special industry machinery, nec	Waterbury Center, VT	1 year or less	1	105	$14.20	105	$14.20
3841	Surgical and medical instruments	Waterbury Center, VT	4 or 5 years	1	27	$4.80	27	$4.80
2013	Sausages and other prepared meats	Richmond, VT	6 to 10 years	1	40	$16.60	40	$16.60
3713	Truck and bus bodies	Hinesburg, VT	6 to 10 years	1	47	$5.50	47	$5.50

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List of Firms Locating Along the Interstate Corridor within the Past Decade [1]

SIC 4 Code	SIC 4 Code1	Location	Years in Business	Number Establishments	Total Employment	Annual Sales ($Mil)	Average Employment	Average Sales
3565	Packaging machinery	Hinesburg, VT	6 to 10 years	1	50	$5.10	50	$5.10
2022	Cheese; natural and processed	Hinesburg, VT	2 or 3 years	1	34	$10.00	34	$10.00
7371	Custom computer programming services	Williston, VT	4 or 5 years	1	41	$3.20	41	$3.20
3479	Metal coating and allied services	Williston, VT	6 to 10 years	1	49	$8.00	49	$8.00
3085	Plastics bottles	Shelburne, VT	4 or 5 years	1	50	$12.30	50	$12.30
3357	Nonferrous wiredrawing and insulating	Shelburne, VT	4 or 5 years	1	95	$17.20	95	$17.20
7389	Business services, nec	South Burlington, VT	1 year or less	1	258	$13.00	258	$13.00
2082	Malt beverages	South Burlington, VT	4 or 5 years	1	28	$4.30	28	$4.30
2015	Poultry slaughtering and processing	South Burlington, VT	4 or 5 years	1	25	$3.00	25	$3.00
7373	Computer integrated systems design	South Burlington, VT	4 or 5 years	1	75	$14.00	75	$14.00
7389	Business services, nec	South Burlington, VT	6 to 10 years	1	35	$2.00	35	$2.00
7375	Information retrieval services	Burlington, VT	4 or 5 years	1	60	$5.10	60	$5.10
2013	Sausages and other prepared meats	Burlington, VT	4 or 5 years	1	69	$14.40	69	$14.40
4212	Local trucking, without storage	Burlington, VT	6 to 10 years	1	30	$2.00	30	$2.00
3483	Ammunition, except for small arms, nec	Burlington, VT	2 or 3 years	1	35	$95.70	35	$95.70
3589	Service industry machinery, nec	Burlington, VT	2 or 3 years	1	300	$93.20	300	$93.20
3826	Analytical instruments	Winooski, VT	2 or 3 years	1	200	$29.70	200	$29.70
7371	Custom computer programming services	Essex Junction, VT	6 to 10 years	1	40	$1.10	40	$1.10
2342	Bras, girdles, and allied garments	Essex Junction, VT	4 or 5 years	1	430	$19.10	430	$19.10
2752	Commercial printing, lithographic	Essex, VT	6 to 10 years	1	44	$4.30	44	$4.30
7373	Computer integrated systems design	Colchester, VT	6 to 10 years	1	44	$4.30	44	$4.30
2051	Bread, cake, and related products	Colchester, VT	1 year or less	1	40	$1.40	40	$1.40
3561	Pumps and pumping equipment	Colchester, VT	2 or 3 years	1	60	$9.20	60	$9.20
2672	Paper; coated and laminated, nec	Milton, VT	6 to 10 years	1	45	$5.00	45	$5.00
4213	Trucking, except local	Milton, VT	6 to 10 years	1	62	$3.50	62	$3.50
2311	Men's and boy's suits and coats	Fairfax, VT	6 to 10 years	1	30	$1.00	30	$1.00
2821	Plastics materials and resins	Saint Albans, VT	1 year or less	1	27	$4.90	27	$4.90
2759	Commercial printing, nec	Saint Albans, VT	6 to 10 years	2	195	$19.60	98	$9.80
2656	Sanitary food containers	Saint Albans, VT	1 year or less	1	382	$271.40	382	$271.40
2066	Chocolate and cocoa products	Saint Albans, VT	6 to 10 years	1	215	$220.00	215	$220.00
2759	Commercial printing, nec	Swanton, VT	2 or 3 years	1	80	$6.20	80	$6.20
3321	Gray and ductile iron foundries	Swanton, VT	2 or 3 years	1	30	N/A	30	N/A
				79	6,143	$1,536.30	78	$19.45

NOTE: [1] Totals include start-ups, relocations and firms that changed ownership.
SOURCES: iMarketinc and Dun&Bradstreet Information Systems.

Appendix Table A-1
List of Firms Locating Along the Interstate Corridor within the Past Decade [1]

SIC 4 Code	SIC 4 Code1	Location	Years in Business	Number Establishments	Total Employment	Annual Sales ($Mil)	Average Employment	Average Sales
I-91 Corridor								
3699	Electrical equipment and supplies, nec	Vernon, VT	6 to 10 years	1	36	$5.00	36	$5.00
2631	Paperboard mills	Brattleboro, VT	6 to 10 years	1	220	$307.00	220	$307.00
3672	Printed circuit boards	Brattleboro, VT	6 to 10 years	1	90	$6.40	90	$6.40
2711	Newspapers	Brattleboro, VT	1 year or less	1	45	$2.50	45	$2.50
3827	Optical instruments and lenses	Brattleboro, VT	6 to 10 years	1	38	$6.50	38	$6.50
2711	Newspapers	Brattleboro, VT	4 or 5 years	1	50	$2.50	50	$2.50
2392	Household furnishings, nec	Brattleboro, VT	1 year or less	1	25	$1.50	25	$1.50
7389	Business services, nec	Brattleboro, VT	2 or 3 years	1	40	$1.70	40	$1.70
4213	Trucking, except local	Westminster, VT	6 to 10 years	1	52	$6.20	52	$6.20
2082	Malt beverages	Springfield, VT	1 year or less	1	45	$8.40	45	$8.40
3699	Electrical equipment and supplies, nec	Springfield, VT	4 or 5 years	1	112	$20.00	112	$20.00
3552	Textile machinery	Springfield, VT	2 or 3 years	1	37	$3.60	37	$3.60
2519	Household furniture, nec	North Springfield, VT	2 or 3 years	1	87	$7.00	87	$7.00
3441	Fabricated structural metal	Claremont, NH	1 year or less	1	71	$12.00	71	$12.00
3325	Steel foundries, nec	Claremont, NH	4 or 5 years	1	105	$7.00	105	$7.00
3563	Air and gas compressors	Claremont, NH	1 year or less	1	75	$9.10	75	$9.10
3541	Machine tools, metal cutting type	Claremont, NH	4 or 5 years	1	100	$5.00	100	$5.00
2337	Women's and misses' suits and coats	Claremont, NH	6 to 10 years	1	82	$2.70	82	$2.70
3069	Fabricated rubber products, nec	Claremont, NH	4 or 5 years	1	34	$3.00	34	$3.00
3441	Fabricated structural metal	Claremont, NH	2 or 3 years	1	65	$10.00	65	$10.00
3991	Brooms and brushes	Claremont, NH	2 or 3 years	1	100	$10.00	100	$10.00
2621	Paper mills	Claremont, NH	6 to 10 years	1	50	$14.00	50	$14.00
2836	Biological products, except diagnostic	Claremont, NH	6 to 10 years	1	35	$4.00	35	$4.00
2281	Yarn spinning mills	Ludlow, VT	6 to 10 years	1	58	$1.60	58	$1.60
3541	Machine tools, metal cutting type	Windsor, VT	2 or 3 years	1	145	$20.00	145	$20.00
3545	Machine tool accessories	North Hartland, VT	2 or 3 years	1	50	$3.70	50	$3.70
3545	Machine tool accessories	North Hartland, VT	1 year or less	1	50	$3.70	50	$3.70
2752	Commercial printing, lithographic	Hanover, NH	1 year or less	1	240	$25.10	240	$25.10
3577	Computer peripheral equipment, nec	Hanover, NH	2 or 3 years	1	175	$23.30	175	$23.30
7371	Custom computer programming services	Hanover, NH	6 to 10 years	1	145	$18.20	145	$18.20
2435	Hardwood veneer and plywood	Bradford, VT	6 to 10 years	1	80	$6.30	80	$6.30
2099	Food preparations, nec	Saint Johnsbury, VT	1 year or less	1	130	$14.00	130	$14.00
3599	Industrial machinery, nec	Saint Johnsbury, VT	6 to 10 years	1	45	$2.90	45	$2.90
2721	Periodicals	Saint Johnsbury, VT	1 year or less	1	28	$3.80	28	$3.80
3089	Plastics products, nec	Lyndonville, VT	6 to 10 years	1	75	$5.70	75	$5.70
3599	Industrial machinery, nec	Lyndonville, VT	1 year or less	1	122	$10.00	122	$10.00
2421	Sawmills and planing mills, general	West Burke, VT	6 to 10 years	1	75	$12.00	75	$12.00
2499	Wood products, nec	Newport, VT	2 or 3 years	1	85	$6.80	85	$6.80
3639	Household appliances, nec	Newport, VT	2 or 3 years	1	25	$1.20	25	$1.20
3949	Sporting and athletic goods, nec	Newport, VT	6 to 10 years	1	25	$1.40	25	$1.40
3545	Machine tool accessories	Derby Line, VT	4 or 5 years	1	160	$14.00	160	$14.00
			TOTALS:	41	3,307	$628.80	81	$15.34

Appendix Table A-1

List of Firms Locating Along the Interstate Corridor within the Past Decade [1]

SIC 4 Code	SIC 4 Code1	Location	Years in Business	Number Establishments	Total Employment	Annual Sales ($Mil)	Average Employment	Average Sales
Maine Study Area								
2092	Fresh or frozen packaged fish	Lubec, ME	6 to 10 years	1	40	$0.90	40	$0.90
2091	Canned and cured fish and seafoods	Prospect Harbor, ME	6 to 10 years	1	150	$45.00	150	$45.00
3443	Fabricated plate work (boiler shop)	Southwest Harbor, ME	2 or 3 years	1	33	$4.30	33	$4.30
3732	Boatbuilding and repairing	Southwest Harbor, ME	2 or 3 years	1	150	$14.60	150	$14.60
3732	Boatbuilding and repairing	Ellsworth, ME	6 to 10 years	1	37	$3.50	37	$3.50
2711	Newspapers	Ellsworth, ME	6 to 10 years	1	50	$2.50	50	$2.50
2411	Logging	Lincoln, ME	6 to 10 years	1	33	$2.20	33	$2.20
2499	Wood products, nec	Howland, ME	6 to 10 years	1	36	$2.90	36	$2.90
2421	Sawmills and planing mills, general	West Enfield, ME	6 to 10 years	1	45	$6.00	45	$6.00
3732	Boatbuilding and repairing	Brooklin, ME	4 or 5 years	1	50	$4.30	50	$4.30
4212	Local trucking, without storage	Costigan, ME	2 or 3 years	1	30	$1.50	30	$1.50
2621	Paper mills	Millinocket, ME	6 to 10 years	1	1,602	$370.00	1,602	$370.00
3732	Boatbuilding and repairing	Old Town, ME	6 to 10 years	1	98	$18.70	98	$18.70
3715	Truck trailers	Bangor, ME	6 to 10 years	1	40	$2.10	40	$2.10
3357	Nonferrous wiredrawing and insulating	Bangor, ME	2 or 3 years	1	30	$3.30	30	$3.30
7389	Business services, nec	Bangor, ME	6 to 10 years	1	30	$1.70	30	$1.70
2026	Fluid milk	Bangor, ME	2 or 3 years	1	100	$38.00	100	$38.00
4213	Trucking, except local	Bangor, ME	4 or 5 years	1	110	$17.20	110	$17.20
3714	Motor vehicle parts and accessories	Brewer, ME	6 to 10 years	1	95	$27.90	95	$27.90
3441	Fabricated structural metal	Brewer, ME	2 or 3 years	1	80	$5.00	80	$5.00
2621	Paper mills	Brewer, ME	6 to 10 years	1	460	$66.90	460	$66.90
2411	Logging	Hampden, ME	6 to 10 years	1	35	$2.30	35	$2.30
4212	Local trucking, without storage	Bucksport, ME	6 to 10 years	1	27	$6.00	27	$6.00
2426	Hardwood dimension and flooring mills	Newport, ME	4 or 5 years	1	95	$6.90	95	$6.90
3143	Men's footwear, except athletic	Dexter, ME	6 to 10 years	1	900	$206.30	900	$206.30
3713	Truck and bus bodies	Fairfield, ME	4 or 5 years	1	25	$1.00	25	$1.00
4213	Trucking, except local	Fairfield, ME	6 to 10 years	1	50	$20.00	50	$20.00
3111	Leather tanning and finishing	Hartland, ME	1 year or less	1	540	$135.00	540	$135.00
3144	Women's footwear, except athletic	Skowhegan, ME	6 to 10 years	1	25	$0.70	25	$0.70
2499	Wood products, nec	Skowhegan, ME	6 to 10 years	1	25	$2.40	25	$2.40
3143	Men's footwear, except athletic	Skowhegan, ME	2 or 3 years	1	62	$3.70	62	$3.70
2421	Sawmills and planing mills, general	Strong, ME	6 to 10 years	1	40	$3.70	40	$3.70
2499	Wood products, nec	Wilton, ME	4 or 5 years	1	100	$24.30	100	$24.30
2411	Logging	Phillips, ME	6 to 10 years	1	34	$0.50	34	$0.50
2621	Paper mills	Jay, ME	2 or 3 years	1	283	$75.00	283	$75.00
2451	Mobile homes	Oxford, ME	4 or 5 years	1	78	$8.00	78	$8.00
2452	Prefabricated wood buildings	Oxford, ME	6 to 10 years	2	180	$17.70	90	$8.90
3089	Plastics products, nec	South Paris, ME	6 to 10 years	1	40	$2.80	40	$2.80
2082	Malt beverages	Bethel, ME	6 to 10 years	1	60	$1.80	60	$1.80
7389	Business services, nec	Fryeburg, ME	6 to 10 years	1	50	$2.00	50	$2.00
3599	Industrial machinery, nec	Fryeburg, ME	4 or 5 years	1	122	$10.00	122	$10.00
3567	Industrial furnaces and ovens	Porter, ME	6 to 10 years	1	135	$9.00	135	$9.00
				109	9,167	$2,414.10	84	$22.15

NOTE: [1] Totals include start-ups, relocations and firms that changed ownership.
SOURCES: iMarketinc and Dun&Bradstreet Information Systems.

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
I-89 CORRIDOR COUNTIES (SOUTH TO NORTH)

Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
MERRIMACK COUNTY, NH							
Total full- and part-time employment	37,102	52,443	73,537	82,123	45,021	121.3%	3.0%
Wage and salary employment	32,688	45,239	61,432	67,503	34,815	106.5%	2.7%
Proprietors' employment	4,414	7,204	12,105	14,620	10,206	231.2%	4.5%
Farm proprietors' employment	459	452	438	323	(136)	-29.6%	-1.3%
Nonfarm proprietors' employment 2/	3,955	6,752	11,667	14,297	10,342	261.5%	4.9%
Farm employment	886	756	627	489	(397)	-44.8%	-2.2%
Nonfarm employment	36,216	51,687	72,910	81,634	45,418	125.4%	3.1%
Private employment	28,527	40,600	59,813	66,890	38,363	134.5%	3.2%
Ag. serv., forestry, fishing, and other 3/	183	309	605	922	739	403.8%	6.2%
Mining	101	101	170	158	57	56.4%	1.7%
Construction	1,959	2,955	5,782	4,944	2,985	152.4%	3.5%
Manufacturing	9,333	11,302	10,526	10,486	1,153	12.4%	0.4%
Transportation and public utilities	1,104	1,382	2,091	2,250	1,146	103.8%	2.7%
Wholesale trade	1,246	2,152	3,295	3,595	2,349	188.5%	4.0%
Retail trade	4,431	7,168	11,869	13,418	8,987	202.8%	4.2%
Finance, insurance, and real estate	2,928	3,999	6,495	6,680	3,752	128.1%	3.1%
Services	7,242	11,232	18,980	24,437	17,195	237.4%	4.6%
Government and government enterprises	7,689	11,087	13,097	14,744	7,055	91.8%	2.4%
Federal, civilian	596	556	714	857	261	43.8%	1.4%
Military	659	547	500	444	(215)	-32.6%	-1.5%
State and local	6,434	9,984	11,883	13,443	7,009	108.9%	2.8%
State	(N)	6,415	7,604	8,351	8,351	ERR	ERR
Local	(N)	3,569	4,279	5,092	5,092	ERR	ERR
SULLIVAN COUNTY, NH							
Total full- and part-time employment	11,573	15,845	19,362	20,478	8,905	76.9%	2.1%
Wage and salary employment	9,758	13,228	15,663	16,006	6,248	64.0%	1.8%
Proprietors' employment	1,815	2,617	3,699	4,472	2,657	146.4%	3.4%
Farm proprietors' employment	229	227	246	179	(50)	-21.8%	-0.9%
Nonfarm proprietors' employment 2/	1,586	2,390	3,453	4,293	2,707	170.7%	3.8%
Farm employment	357	353	362	290	(67)	-18.8%	-0.8%
Nonfarm employment	11,216	15,492	19,000	20,188	8,972	80.0%	2.2%
Private employment	9,671	13,406	16,125	17,182	7,511	77.7%	2.2%
Ag. serv., forestry, fishing, and other 3/	139	139	172	(D)	(139)	-100.0%	-100.0%
Mining	14	30	28	(D)	(14)	-100.0%	-100.0%
Construction	551	872	1,500	1,288	737	133.8%	3.2%
Manufacturing	4,055	5,419	4,669	5,001	946	23.3%	0.8%
Transportation and public utilities	269	397	504	512	243	90.3%	2.4%
Wholesale trade	299	480	525	738	439	146.8%	3.4%
Retail trade	1,960	2,445	3,526	3,457	1,497	76.4%	2.1%
Finance, insurance, and real estate	438	802	1,047	938	500	114.2%	2.9%
Services	1,946	2,822	4,154	4,970	3,024	155.4%	3.5%
Government and government enterprises	1,545	2,086	2,875	3,006	1,461	94.6%	2.5%
Federal, civilian	132	96	104	109	(23)	-17.4%	-0.7%
Military	227	177	160	141	(86)	-37.9%	-1.7%
State and local	1,186	1,813	2,611	2,756	1,570	132.4%	3.2%
State	(N)	243	316	367	367	ERR	ERR
Local	(N)	1,570	2,295	2,389	2,389	ERR	ERR
GRAFTON COUNTY, NH							
Total full- and part-time employment	27,744	36,466	54,963	59,615	31,871	114.9%	2.9%
Wage and salary employment	23,929	30,516	45,678	48,058	24,129	100.8%	2.6%
Proprietors' employment	3,815	5,950	9,285	11,557	7,742	202.9%	4.2%
Farm proprietors' employment	533	451	447	328	(205)	-38.5%	-1.8%
Nonfarm proprietors' employment 2/	3,282	5,499	8,838	11,229	7,947	242.1%	4.7%
Farm employment	943	750	636	492	(451)	-47.8%	-2.4%
Nonfarm employment	26,801	35,716	54,327	59,123	32,322	120.6%	3.0%
Private employment	22,835	31,239	48,319	52,503	29,668	129.9%	3.1%
Ag. serv., forestry, fishing, and other 3/	202	273	474	648	446	220.8%	4.4%
Mining	65	62	64	99	34	52.3%	1.6%
Construction	1,301	1,943	4,139	3,076	1,775	136.4%	3.2%
Manufacturing	5,453	6,695	7,749	8,009	2,556	46.9%	1.4%

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
I-89 CORRIDOR COUNTIES (SOUTH TO NORTH)

Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
Transportation and public utilities	1,068	1,156	1,608	1,582	514	48.1%	1.5%
Wholesale trade	296	988	1,270	1,441	1,145	386.8%	6.0%
Retail trade	4,118	6,226	9,849	10,643	6,525	158.5%	3.6%
Finance, insurance, and real estate	1,082	1,688	3,027	2,667	1,585	146.5%	3.4%
Services	9,250	12,208	20,139	24,338	15,088	163.1%	3.6%
Government and government enterprises	3,966	4,477	6,008	6,620	2,654	66.9%	1.9%
Federal, civilian	688	680	747	682	(6)	-0.9%	-0.0%
Military	407	310	317	.286	(121)	-29.7%	-1.3%
State and local	2,871	3,487	4,944	5,652	2,781	96.9%	2.5%
State	(N)	1,119	1,432	1,676	1,676	ERR	ERR
Local	(N)	2,368	3,512	3,976	3,976	ERR	ERR
WINDSOR COUNTY, VT							
Total full- and part-time employment	21,712	26,244	30,999	33,030	11,318	52.1%	1.6%
Wage and salary employment	18,863	21,402	23,588	23,757	4,894	25.9%	0.9%
Proprietors' employment	2,849	4,842	7,411	9,273	6,424	225.5%	4.5%
Farm proprietors' employment	447	620	650	541	94	21.0%	0.7%
Nonfarm proprietors' employment 2/	2,402	4,222	6,761	8,732	6,330	263.5%	4.9%
Farm employment	750	964	815	691	(59)	-7.9%	-0.3%
Nonfarm employment	20,962	25,280	30,184	32,339	11,377	54.3%	1.6%
Private employment	17,878	21,542	25,623	27,386	9,508	53.2%	1.6%
Ag. serv., forestry, fishing, and other 3/	104	193	499	(D)	(104)	-100.0%	-100.0%
Mining	18	10	69	(D)	(18)	-100.0%	-100.0%
Construction	1,330	1,711	3,115	2,566	1,236	92.9%	2.5%
Manufacturing	7,240	6,618	4,397	4,379	(2,861)	-39.5%	-1.8%
Transportation and public utilities	1,016	1,124	1,009	1,171	155	15.3%	0.5%
Wholesale trade	737	1,117	1,082	919	182	24.7%	0.8%
Retail trade	3,177	3,641	4,951	5,466	2,289	72.0%	2.0%
Finance, insurance, and real estate	892	1,095	1,623	1,462	570	63.9%	1.8%
Services	3,364	6,033	8,878	10,649	7,285	216.6%	4.4%
Government and government enterprises	3,084	3,738	4,561	4,953	1,869	60.6%	1.8%
Federal, civilian	745	1,065	1,429	1,406	661	88.7%	2.4%
Military	386	425	424	455	69	17.9%	0.6%
State and local	1,953	2,248	2,708	3,092	1,139	58.3%	1.7%
State	(N)	436	463	555	555	ERR	ERR
Local	(N)	1,812	2,245	2,537	2,537	ERR	ERR
ORANGE COUNTY, VT							
Total full- and part-time employment	6,525	8,785	11,306	12,426	5,901	90.4%	2.4%
Wage and salary employment	4,862	6,256	7,868	8,268	3,406	. 70.1%	2.0%
Proprietors' employment	1,663	2,529	3,438	4,158	2,495	150.0%	3.5%
Farm proprietors' employment	617	679	677	527	(90)	-14.6%	-0.6%
Nonfarm proprietors' employment 2/	1,046	1,850	2,761	3,631	2,585	247.1%	4.7%
Farm employment	1,013	1,076	883	718	(295)	-29.1%	-1.3%
Nonfarm employment	5,512	7,709	10,423	11,708	6,196	112.4%	2.8%
Private employment	4,493	6,435	8,775	9,794	5,301	118.0%	2.9%
Ag. serv., forestry, fishing, and other 3/	(D)	(D)	174	299	299	ERR	ERR
Mining	(D)	(D)	19	14	14	ERR	ERR
Construction	662	627	1,324	1,142	480	72.5%	2.0%
Manufacturing	860	1,695	1,464	1,366	506	58.8%	1.7%
Transportation and public utilities	215	242	315	417	202	94.0%	2.5%
Wholesale trade	117	204	323	531	414	353.8%	5.8%
Retail trade	907	1,212	1,701	1,763	856	94.4%	2.5%
Finance, insurance, and real estate	236	367	544	568	332	140.7%	3.3%
Services	1,356	1,983	2,911	3,694	2,338	172.4%	3.8%
Government and government enterprises	1,019	1,274	1,648	1,914	895	87.8%	2.4%
Federal, civilian	116	59	98	89	(27)	-23.3%	-1.0%
Military	152	189	204	226	74	48.7%	1.5%
State and local	751	1,026	1,346	1,599	848	112.9%	2.8%
State	(N)	231	271	379	379	ERR	ERR
Local	(N)	795	1,075	1,220	1,220	ERR	ERR
WASHINGTON COUNTY, VT							

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
I-89 CORRIDOR COUNTIES (SOUTH TO NORTH)

Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
Total full- and part-time employment	22,418	28,607	37,179	40,256	17,838	79.6%	2.2%
Wage and salary employment	19,354	23,917	30,493	31,479	12,125	62.6%	1.8%
Proprietors' employment	3,064	4,690	6,686	8,777	5,713	186.5%	4.0%
Farm proprietors' employment	406	460	447	362	(44)	-10.8%	-0.4%
Nonfarm proprietors' employment 2/	2,658	4,230	6,239	8,415	5,757	216.6%	4.4%
Farm employment	719	717	560	462	(257)	-35.7%	-1.6%
Nonfarm employment	21,699	27,890	36,619	39,794	18,095	83.4%	2.3%
Private employment	16,661	21,600	29,379	32,411	15,750	94.5%	2.5%
Ag. serv., forestry, fishing, and other 3/	50	129	231	384	334	668.0%	7.8%
Mining	367	314	165	146	(221)	-60.2%	-3.4%
Construction	1,335	1,706	2,522	2,293	958	71.8%	2.0%
Manufacturing	3,382	3,210	3,972	4,309	927	27.4%	0.9%
Transportation and public utilities	948	991	876	1,260	312	32.9%	1.1%
Wholesale trade	747	1,200	1,316	1,358	611	81.8%	2.2%
Retail trade	3,102	4,032	5,914	6,607	3,505	113.0%	2.8%
Finance, insurance, and real estate	2,116	2,628	3,818	3,624	1,508	71.3%	2.0%
Services	4,614	7,390	10,565	12,430	7,816	169.4%	3.7%
Government and government enterprises	5,038	6,290	7,240	7,383	2,345	46.5%	1.4%
Federal, civilian	287	278	326	314	27	9.4%	0.3%
Military	485	495	471	497	12	2.5%	0.1%
State and local	4,266	5,517	6,443	6,572	2,306	54.1%	1.6%
State	(N)	3,482	4,091	4,150	4,150	ERR	ERR
Local	(N)	2,035	2,352	2,422	2,422	ERR	ERR
CHITTENDEN COUNTY, VT							
Total full- and part-time employment	47,539	65,263	99,828	110,169	62,630	131.7%	3.2%
Wage and salary employment	42,979	57,638	84,539	91,753	48,774	113.5%	2.8%
Proprietors' employment	4,560	7,625	15,289	18,416	13,856	303.9%	5.3%
Farm proprietors' employment	541	575	553	450	(91)	-16.8%	-0.7%
Nonfarm proprietors' employment 2/	4,019	7,050	14,736	17,966	13,947	347.0%	5.7%
Farm employment	1,244	1,076	756	617	(627)	-50.4%	-2.6%
Nonfarm employment	46,295	64,187	99,072	109,552	63,257	136.6%	3.2%
Private employment	39,429	53,640	86,299	96,175	56,746	143.9%	3.4%
Ag. serv., forestry, fishing, and other 3/	100	273	653	950	850	850.0%	8.7%
Mining	41	70	90	66	25	61.0%	1.8%
Construction	3,214	3,874	7,380	6,551	3,337	103.8%	2.7%
Manufacturing	10,719	14,410	17,601	16,418	5,699	53.2%	1.6%
Transportation and public utilities	2,019	2,575	3,745	4,647	2,628	130.2%	3.1%
Wholesale trade	1,883	2,825	4,716	4,923	3,040	161.4%	3.6%
Retail trade	6,901	10,642	17,535	17,961	11,060	160.3%	3.6%
Finance, insurance, and real estate	2,327	3,773	7,044	7,501	5,174	222.3%	4.4%
Services	12,225	15,198	27,535	37,158	24,933	204.0%	4.2%
Government and government enterprises	6,866	10,547	12,773	13,377	6,511	94.8%	2.5%
Federal, civilian	1,047	1,255	1,740	1,696	649	62.0%	1.8%
Military	874	1,004	1,083	1,193	319	36.5%	1.2%
State and local	4,945	8,288	9,950	10,488	5,543	112.1%	2.8%
State	(N)	4,332	5,025	4,771	4,771	ERR	ERR
Local	(N)	3,956	4,925	5,717	5,717	ERR	ERR
FRANKLIN COUNTY, VT							
Total full- and part-time employment	11,547	13,869	17,212	19,605	8,058	69.8%	2.0%
Wage and salary employment	8,926	11,014	12,951	14,329	5,403	60.5%	1.8%
Proprietors' employment	2,621	2,855	4,261	5,276	2,655	101.3%	2.6%
Farm proprietors' employment	1,133	915	967	808	(325)	-28.7%	-1.2%
Nonfarm proprietors' employment 2/	1,488	1,940	3,294	4,468	2,980	200.3%	4.2%
Farm employment	2,052	2,002	1,538	1,307	(745)	-36.3%	-1.7%
Nonfarm employment	9,495	11,867	15,674	18,298	8,803	92.7%	2.5%
Private employment	7,950	9,542	13,031	15,264	7,314	92.0%	2.4%
Ag. serv., forestry, fishing, and other 3/	62	85	165	267	205	330.6%	5.6%
Mining	(L)	19	34	27	27	ERR	ERR
Construction	585	541	1,171	1,190	605	103.4%	2.7%
Manufacturing	2,132	2,592	2,697	3,179	1,047	49.1%	1.5%
Transportation and public utilities	673	686	806	882	209	31.1%	1.0%

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
I-89 CORRIDOR COUNTIES (SOUTH TO NORTH)

Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
Wholesale trade	224	497	718	705	481	214.7%	4.3%
Retail trade	1,694	2,053	3,038	3,410	1,716	101.3%	2.6%
Finance, insurance, and real estate	328	473	728	876	548	167.1%	3.7%
Services	2,245	2,596	3,674	4,728	2,483	110.6%	2.8%
Government and government enterprises	1,545	2,325	2,643	3,034	1,489	96.4%	2.5%
Federal, civilian	275	704	505	665	390	141.8%	3.3%
Military	264	283	312	352	88	33.3%	1.1%
State and local	1,006	1,338	1,826	2,017	1,011	100.5%	2.6%
State	(N)	290	394	451	451	ERR	ERR
Local	(N)	1,048	1,432	1,566	1,566	ERR	ERR
CORRIDOR TOTALS							
Total full- and part-time employment	186,160	247,522	344,386	377,702	191,542	102.9%	2.7%
Wage and salary employment	161,359	209,210	282,212	301,153	139,794	86.6%	2.3%
Proprietors' employment	24,801	38,312	62,174	76,549	51,748	208.7%	4.3%
Farm proprietors' employment	4,365	4,379	4,425	3,518	(847)	-19.4%	-0.8%
Nonfarm proprietors' employment 2/	20,436	33,933	57,749	73,031	52,595	257.4%	4.8%
Farm employment	7,964	7,694	6,177	5,066	(2,898)	-36.4%	-1.7%
Nonfarm employment	178,196	239,828	338,209	372,636	194,440	109.1%	2.8%
Private employment	147,444	198,004	287,364	317,605	170,161	115.4%	2.9%
Ag. serv., forestry, fishing, and other 3/	840	1,401	2,973	3,470	2,630	313.1%	5.4%
Mining	606	606	639	510	(96)	-15.8%	-0.6%
Construction	10,937	14,229	26,933	23,050	12,113	110.8%	2.8%
Manufacturing	43,174	51,941	53,075	53,147	9,973	23.1%	0.8%
Transportation and public utilities	7,312	8,553	10,954	12,721	5,409	74.0%	2.1%
Wholesale trade	5,549	9,463	13,245	14,210	8,661	156.1%	3.5%
Retail trade	26,290	37,419	58,383	62,725	36,435	138.6%	3.3%
Finance, insurance, and real estate	10,347	14,825	24,326	24,316	13,969	135.0%	3.2%
Services	42,242	59,462	96,836	122,404	80,162	189.8%	4.0%
Government and government enterprises	30,752	41,824	50,845	55,031	24,279	79.0%	2.2%
Federal, civilian	3,886	4,693	5,663	5,818	1,932	49.7%	1.5%
Military	3,454	3,430	3,471	3,594	140	4.1%	0.1%
State and local	23,412	33,701	41,711	45,619	22,207	94.9%	2.5%
State	0	16,548	19,596	20,700	20,700	ERR	ERR
Local	0	17,153	22,115	24,919	24,919	ERR	ERR

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
I-91 CORRIDOR COUNTIES (SOUTH TO NORTH)

Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
WINDHAM COUNTY, VT							
Total full- and part-time employment	17,622	22,943	29,923	32,279	14,657	83.2%	2.3%
Wage and salary employment	15,379	18,954	24,441	25,394	10,015	65.1%	1.9%
Proprietors' employment	2,243	3,989	5,482	6,885	4,642	207.0%	4.2%
Farm proprietors' employment	262	339	346	280	18	6.9%	0.2%
Nonfarm proprietors' employment 2/	1,981	3,650	5,136	6,605	4,624	233.4%	4.6%
Farm employment	590	645	481	393	(197)	-33.4%	-1.5%
Nonfarm employment	17,032	22,298	29,442	31,886	14,854	87.2%	2.3%
Private employment	15,175	19,861	26,890	28,926	13,751	90.6%	2.4%
Ag. serv., forestry, fishing, and other 3/	78	357	557	694	616	789.7%	8.4%
Mining	14	14	(L)	(L)	(14)	-100.0%	-100.0%
Construction	1,523	1,397	2,630	2,407	884	58.0%	1.7%
Manufacturing	3,845	4,938	3,690	3,671	(174)	-4.5%	-0.2%
Transportation and public utilities	954	1,197	1,464	1,628	674	70.6%	2.0%
Wholesale trade	416	785	1,898	2,304	1,888	453.8%	6.5%
Retail trade	2,455	3,660	4,967	5,120	2,665	108.6%	2.8%
Finance, insurance, and real estate	854	1,182	1,869	1,876	1,022	119.7%	3.0%
Services	5,036	6,331	9,810	11,221	6,185	122.8%	3.0%
Government and government enterprises	1,857	2,437	2,552	2,960	1,103	59.4%	1.7%
Federal, civilian	185	155	178	181	(4)	-2.2%	-0.1%
Military	303	310	326	349	46	15.2%	0.5%
State and local	1,369	1,972	2,048	2,430	1,061	77.5%	2.1%
State	(N)	213	226	275	275	ERR	ERR
Local	(N)	1,759	1,822	2,155	2,155	ERR	ERR
WINDSOR COUNTY, VT							
Total full- and part-time employment	21,712	26,244	30,999	33,030	11,318	52.1%	1.6%
Wage and salary employment	18,863	21,402	23,588	23,757	4,894	25.9%	0.9%
Proprietors' employment	2,849	4,842	7,411	9,273	6,424	225.5%	4.5%
Farm proprietors' employment	447	620	650	541	94	21.0%	0.7%
Nonfarm proprietors' employment 2/	2,402	4,222	6,761	8,732	6,330	263.5%	4.9%
Farm employment	750	964	815	691	(59)	-7.9%	-0.3%
Nonfarm employment	20,962	25,280	30,184	32,339	11,377	54.3%	1.6%
Private employment	17,878	21,542	25,623	27,386	9,508	53.2%	1.6%
Ag. serv., forestry, fishing, and other 3/	104	193	499	(D)	(104)	-100.0%	-100.0%
Mining	18	10	69	(D)	(18)	-100.0%	-100.0%
Construction	1,330	1,711	3,115	2,566	1,236	92.9%	2.5%
Manufacturing	7,240	6,618	4,397	4,379	(2,861)	-39.5%	-1.8%
Transportation and public utilities	1,016	1,124	1,009	1,171	155	15.3%	0.5%
Wholesale trade	737	1,117	1,082	919	182	24.7%	0.8%
Retail trade	3,177	3,641	4,951	5,466	2,289	72.0%	2.0%
Finance, insurance, and real estate	892	1,095	1,623	1,462	570	63.9%	1.8%
Services	3,364	6,033	8,878	10,649	7,285	216.6%	4.4%
Government and government enterprises	3,084	3,738	4,561	4,953	1,869	60.6%	1.8%
Federal, civilian	745	1,065	1,429	1,406	661	88.7%	2.4%
Military	386	425	424	455	69	17.9%	0.6%
State and local	1,953	2,248	2,708	3,092	1,139	58.3%	1.7%
State	(N)	436	463	555	555	ERR	ERR
Local	(N)	1,812	2,245	2,537	2,537	ERR	ERR
ORANGE COUNTY, VT							
Total full- and part-time employment	6,525	8,785	11,306	12,426	5,901	90.4%	2.4%
Wage and salary employment	4,862	6,256	7,868	8,268	3,406	70.1%	2.0%
Proprietors' employment	1,663	2,529	3,438	4,158	2,495	150.0%	3.5%
Farm proprietors' employment	617	679	677	527	(90)	-14.6%	-0.6%
Nonfarm proprietors' employment 2/	1,046	1,850	2,761	3,631	2,585	247.1%	4.7%
Farm employment	1,013	1,076	883	718	(295)	-29.1%	-1.3%
Nonfarm employment	5,512	7,709	10,423	11,708	6,196	112.4%	2.8%
Private employment	4,493	6,435	8,775	9,794	5,301	118.0%	2.9%
Ag. serv., forestry, fishing, and other 3/	(D)	(D)	174	299	299	ERR	ERR
Mining	(D)	(D)	19	14	14	ERR	ERR
Construction	662	627	1,324	1,142	480	72.5%	2.0%
Manufacturing	860	1,695	1,464	1,366	506	58.8%	1.7%
Transportation and public utilities	215	242	315	417	202	94.0%	2.5%
Wholesale trade	117	204	323	531	414	353.8%	5.8%
Retail trade	907	1,212	1,701	1,763	856	94.4%	2.5%
Finance, insurance, and real estate	236	367	544	568	332	140.7%	3.3%
Services	1,356	1,983	2,911	3,694	2,338	172.4%	3.8%

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
I-91 CORRIDOR COUNTIES (SOUTH TO NORTH)

Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
Government and government enterprises	1,019	1,274	1,648	1,914	895	87.8%	2.4%
Federal, civilian	116	59	98	89	(27)	-23.3%	-1.0%
Military	152	189	204	226	74	48.7%	1.5%
State and local	751	1,026	1,346	1,599	848	112.9%	2.8%
State	(N)	231	271	379	379	ERR	ERR
Local	(N)	795	1,075	1,220	1,220	ERR	ERR
CALEDONIA COUNTY, VT							
Total full- and part-time employment	9,799	12,053	14,261	15,924	6,125	62.5%	1.8%
Wage and salary employment	7,914	9,486	10,879	11,373	3,459	43.7%	1.4%
Proprietors' employment	1,885	2,567	3,382	4,551	2,666	141.4%	3.3%
Farm proprietors' employment	506	558	579	490	(16)	-3.2%	-0.1%
Nonfarm proprietors' employment 2/	1,379	2,009	2,803	4,061	2,682	194.5%	4.1%
Farm employment	849	888	741	636	(213)	-25.1%	-1.1%
Nonfarm employment	8,950	11,165	13,520	15,288	6,338	70.8%	2.0%
Private employment	7,477	9,462	11,663	13,207	5,730	76.6%	2.1%
Ag. serv., forestry, fishing, and other 3/	53	90	165	212	159	300.0%	5.3%
Mining	(L)	(L)	17	(L)	0	ERR	ERR
Construction	561	912	1,326	1,137	576	102.7%	2.7%
Manufacturing	1,898	2,492	1,957	2,710	812	42.8%	1.3%
Transportation and public utilities	582	564	692	623	41	7.0%	0.3%
Wholesale trade	331	520	439	418	87	26.3%	0.9%
Retail trade	1,500	1,809	2,693	2,960	1,460	97.3%	2.5%
Finance, insurance, and real estate	571	564	763	758	187	32.7%	1.1%
Services	1,980	2,510	3,611	4,380	2,400	121.2%	3.0%
Government and government enterprises	1,473	1,703	1,857	2,081	608	41.3%	1.3%
Federal, civilian	151	72	103	117	(34)	-22.5%	-0.9%
Military	193	219	218	236	43	22.3%	0.7%
State and local	1,129	1,412	1,536	1,728	599	53.1%	1.6%
State	(N)	505	565	610	610	ERR	ERR
Local	(N)	907	971	1,118	1,118	ERR	ERR
ORLEANS COUNTY, VT							
Total full- and part-time employment	8,903	10,853	12,239	13,024	4,121	46.3%	1.4%
Wage and salary employment	6,832	8,304	9,057	9,283	2,451	35.9%	1.1%
Proprietors' employment	2,071	2,549	3,182	3,741	1,670	80.6%	2.2%
Farm proprietors' employment	860	792	760	610	(250)	-29.1%	-1.3%
Nonfarm proprietors' employment 2/	1,211	1,757	2,422	3,131	1,920	158.5%	3.6%
Farm employment	1,369	1,407	1,067	885	(484)	-35.4%	-1.6%
Nonfarm employment	7,534	9,446	11,172	12,139	4,605	61.1%	1.8%
Private employment	6,337	8,038	9,507	10,346	4,009	63.3%	1.8%
Ag. serv., forestry, fishing, and other 3/	(D)	(D)	191	286	286	ERR	ERR
Mining	(D)	(D)	53	(L)	0	ERR	ERR
Construction	414	477	1,035	961	547	132.1%	3.2%
Manufacturing	1,785	2,630	2,040	1,749	(36)	-2.0%	-0.1%
Transportation and public utilities	425	509	506	673	248	58.4%	1.7%
Wholesale trade	145	274	305	372	227	156.6%	3.6%
Retail trade	1,188	1,337	1,911	2,156	968	81.5%	2.2%
Finance, insurance, and real estate	312	398	534	523	211	67.6%	1.9%
Services	1,798	2,141	2,932	3,623	1,825	101.5%	2.6%
Government and government enterprises	1,197	1,408	1,665	1,793	596	49.8%	1.5%
Federal, civilian	170	122	161	192	22	12.9%	0.5%
Military	174	198	189	204	30	17.2%	0.6%
State and local	853	1,088	1,315	1,397	544	63.8%	1.8%
State	(N)	196	209	246	246	ERR	ERR
Local	(N)	892	1,106	1,151	1,151	ERR	ERR
I-91 CORRIDOR TOTALS							
Total full- and part-time employment	64,561	80,878	98,728	106,683	42,122	65.2%	1.9%
Wage and salary employment	53,850	64,402	75,833	78,075	24,225	45.0%	1.4%
Proprietors' employment	10,711	16,476	22,895	28,608	17,897	167.1%	3.7%
Farm proprietors' employment	2,692	2,988	3,012	2,448	(244)	-9.1%	-0.4%
Nonfarm proprietors' employment 2/	8,019	13,488	19,883	26,160	18,141	226.2%	4.5%
Farm employment	4,571	4,980	3,987	3,323	(1,248)	-27.3%	-1.2%
Nonfarm employment	59,990	75,898	94,741	103,360	43,370	72.3%	2.0%
Private employment	51,360	65,338	82,458	89,659	38,299	74.6%	2.1%
Ag. serv., forestry, fishing, and other 3/	235	640	1,586	1,491	1,256	534.5%	7.1%

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
I-91 CORRIDOR COUNTIES (SOUTH TO NORTH)

Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
Mining	32	24	158	14	(18)	-56.3%	-3.0%
Construction	4,490	5,124	9,430	8,213	3,723	82.9%	2.3%
Manufacturing	15,628	18,373	13,548	13,875	(1,753)	-11.2%	-0.4%
Transportation and public utilities	3,192	3,636	3,986	4,512	1,320	41.4%	1.3%
Wholesale trade	1,746	2,900	4,047	4,544	2,798	160.3%	3.6%
Retail trade	9,227	11,659	16,223	17,465	8,238	89.3%	2.4%
Finance, insurance, and real estate	2,865	3,606	5,333	5,187	2,322	81.0%	2.2%
Services	13,534	18,998	28,142	33,567	20,033	148.0%	3.4%
Government and government enterprises	8,630	10,560	12,283	13,701	5,071	58.8%	1.7%
Federal, civilian	1,367	1,473	1,969	1,985	618	45.2%	1.4%
Military	1,208	1,341	1,361	1,470	262	21.7%	0.7%
State and local	6,055	7,746	8,953	10,246	4,191	69.2%	2.0%
State	0	1,581	1,734	2,065	2,065		
Local	0	6,165	7,219	8,181	8,181		

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
MAINE STUDY AREA COUNTIES

(EAST TO WEST) Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
WASHINGTON COUNTY							
Total full- and part-time employment	11,025	14,738	16,411	17,556	6,531	59.2%	1.7%
Wage and salary employment	8,311	10,734	12,382	12,464	4,153	50.0%	1.5%
Proprietors' employment	2,714	4,004	4,029	5,092	2,378	87.6%	2.4%
Farm proprietors' employment	202	406	404	431	229	113.4%	2.8%
Nonfarm proprietors' employment 2/	2,512	3,598	3,625	4,661	2,149	85.5%	2.3%
Farm employment	391	537	669	764	373	95.4%	2.5%
Nonfarm employment	10,634	14,201	15,742	16,792	6,158	57.9%	1.7%
Private employment	8,446	11,598	12,890	13,941	5,495	65.1%	1.9%
Ag. serv., forestry, fishing, and other 3/	861	1,593	1,113	1,457	596	69.2%	2.0%
Mining	(L)	17	(L)	(L)	0	ERR	ERR
Construction	682	936	1,662	1,260	578	84.8%	2.3%
Manufacturing	2,804	3,170	2,257	2,383	(421)	-15.0%	-0.6%
Transportation and public utilities	427	631	841	859	432	101.2%	2.6%
Wholesale trade	308	348	521	538	230	74.7%	2.1%
Retail trade	1,454	2,080	2,661	3,007	1,553	106.8%	2.7%
Finance, insurance, and real estate	348	378	448	526	178	51.1%	1.5%
Services	1,558	2,445	3,383	3,904	2,346	150.6%	3.5%
Government and government enterprises	2,188	2,603	2,852	2,851	663	30.3%	1.0%
Federal, civilian	378	378	359	317	(61)	-16.1%	-0.6%
Military	447	403	397	351	(96)	-21.5%	-0.9%
State and local	1,363	1,822	2,096	2,183	820	60.2%	1.8%
State	(N)	290	379	438	438	ERR	ERR
Local	(N)	1,532	1,717	1,745	1,745	ERR	ERR
HANCOCK COUNTY							
Total full- and part-time employment	14,288	20,432	28,082	31,705	17,417	121.9%	3.0%
Wage and salary employment	11,324	14,976	20,515	21,865	10,541	93.1%	2.5%
Proprietors' employment	2,964	5,456	7,567	9,840	6,876	232.0%	4.5%
Farm proprietors' employment	92	294	346	344	252	273.9%	5.0%
Nonfarm proprietors' employment 2/	2,872	5,162	7,221	9,496	6,624	230.6%	4.5%
Farm employment	271	399	491	445	174	64.2%	1.9%
Nonfarm employment	14,017	20,033	27,591	31,260	17,243	123.0%	3.0%
Private employment	11,547	17,022	24,339	27,505	15,958	138.2%	3.3%
Ag. serv., forestry, fishing, and other 3/	1,029	1,866	1,499	1,842	813	79.0%	2.2%
Mining	109	(L)	31	(D)	(109)	-100.0%	-100.0%
Construction	1,314	1,595	2,954	2,876	1,562	118.9%	2.9%
Manufacturing	2,300	2,694	3,733	3,830	1,530	66.5%	1.9%
Transportation and public utilities	370	723	904	1,134	764	206.5%	4.2%
Wholesale trade	254	533	496	(D)	(254)	-100.0%	-100.0%
Retail trade	2,200	3,349	5,589	6,144	3,944	179.3%	3.9%
Finance, insurance, and real estate	515	749	1,190	1,268	753	146.2%	3.4%
Services	3,456	5,506	7,943	9,864	6,408	185.4%	4.0%
Government and government enterprises	2,470	3,011	3,252	3,755	1,285	52.0%	1.6%
Federal, civilian	272	318	304	337	65	23.9%	0.8%
Military	597	676	783	767	170	28.5%	0.9%
State and local	1,601	2,017	2,165	2,651	1,050	65.6%	1.9%
State	(N)	609	424	582	582	ERR	ERR
Local	(N)	1,408	1,741	2,069	2,069	ERR	ERR
PENOBSCOT COUNTY							
Total full- and part-time employment	52,146	68,159	83,731	84,707	32,561	62.4%	1.8%
Wage and salary employment	45,964	59,470	70,853	69,115	23,151	50.4%	1.5%
Proprietors' employment	6,182	8,689	12,878	15,592	9,410	152.2%	3.5%
Farm proprietors' employment	560	730	661	639	79	14.1%	0.5%
Nonfarm proprietors' employment 2/	5,622	7,959	12,217	14,953	9,331	166.0%	3.7%
Farm employment	1,077	1,153	970	947	(130)	-12.1%	-0.5%
Nonfarm employment	51,069	67,006	82,761	83,760	32,691	64.0%	1.8%
Private employment	40,565	53,764	67,646	69,752	29,187	72.0%	2.0%

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
MAINE STUDY AREA COUNTIES

(EAST TO WEST) Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
Ag. serv., forestry, fishing, and other 3/	457	429	682	869	412	90.2%	2.4%
Mining	(L)	73	32	11	11	ERR	ERR
Construction	2,295	3,204	4,891	4,414	2,119	92.3%	2.5%
Manufacturing	13,297	14,986	13,643	10,602	(2,695)	-20.3%	-0.8%
Transportation and public utilities	3,454	4,007	4,738	4,711	1,257	36.4%	1.2%
Wholesale trade	2,208	3,179	3,787	3,829	1,621	73.4%	2.1%
Retail trade	8,165	11,331	16,029	17,051	8,886	108.8%	2.8%
Finance, insurance, and real estate	2,259	2,890	3,765	3,643	1,384	61.3%	1.8%
Services	8,425	13,665	20,079	24,622	16,197	192.2%	4.1%
Government and government enterprises	10,504	13,242	15,115	14,008	3,504	33.4%	1.1%
Federal, civilian	1,054	1,305	1,276	1,238	184	17.5%	0.6%
Military	1,525	817	1,192	758	(767)	-50.3%	-2.6%
State and local	7,925	11,120	12,647	12,012	4,087	51.6%	1.6%
State	(N)	5,537	6,093	5,382	5,382	ERR	ERR
Local	(N)	5,583	6,554	6,630	6,630	ERR	ERR
SOMERSET COUNTY							
Total full- and part-time employment	16,901	18,021	23,078	26,027	9,126	54.0%	1.6%
Wage and salary employment	14,078	14,290	17,804	19,353	5,275	37.5%	1.2%
Proprietors' employment	2,823	3,731	5,274	6,674	3,851	136.4%	3.2%
Farm proprietors' employment	525	576	546	521	(4)	-0.8%	-0.0%
Nonfarm proprietors' employment 2/	2,298	3,155	4,728	6,153	3,855	167.8%	3.7%
Farm employment	1,088	1,124	774	709	(379)	-34.8%	-1.6%
Nonfarm employment	15,813	16,897	22,304	25,318	9,505	60.1%	1.8%
Private employment	13,122	14,677	19,468	22,242	9,120	69.5%	2.0%
Ag. serv., forestry, fishing, and other 3/	240	140	240	386	146	60.8%	1.8%
Mining	22	(L)	0	(L)	(22)	-100.0%	-100.0%
Construction	732	1,099	1,999	3,010	2,278	311.2%	5.4%
Manufacturing	6,445	5,869	6,488	6,203	(242)	-3.8%	-0.1%
Transportation and public utilities	379	543	934	1,063	684	180.5%	3.9%
Wholesale trade	273	386	456	489	216	79.1%	2.2%
Retail trade	2,138	2,507	3,461	3,899	1,761	82.4%	2.3%
Finance, insurance, and real estate	423	501	647	674	251	59.3%	1.7%
Services	2,470	3,627	5,243	6,513	4,043	163.7%	3.7%
Government and government enterprises	2,691	2,220	2,836	3,076	385	14.3%	0.5%
Federal, civilian	194	190	166	157	(37)	-19.1%	-0.8%
Military	342	243	310	271	(71)	-20.8%	-0.9%
State and local	2,155	1,787	2,360	2,648	493	22.9%	0.8%
State	(N)	239	385	551	551	ERR	ERR
Local	(N)	1,548	1,975	2,097	2,097	ERR	ERR
FRANKLIN COUNTY							
Total full- and part-time employment	10,776	13,461	16,155	16,763	5,987	55.6%	1.6%
Wage and salary employment	9,418	11,242	13,107	12,370	2,952	31.3%	1.0%
Proprietors' employment	1,358	2,219	3,048	4,393	3,035	223.5%	4.4%
Farm proprietors' employment	207	306	264	259	52	25.1%	0.8%
Nonfarm proprietors' employment 2/	1,151	1,913	2,784	4,134	2,983	259.2%	4.8%
Farm employment	350	405	352	345	(5)	-1.4%	-0.1%
Nonfarm employment	10,426	13,056	15,803	16,418	5,992	57.5%	1.7%
Private employment	9,070	11,552	13,982	14,477	5,407	59.6%	1.7%
Ag. serv., forestry, fishing, and other 3/	126	87	135	164	38	30.2%	1.0%
Mining	(L)	(L)	11	(L)	0	ERR	ERR
Construction	334	792	1,102	1,220	886	265.3%	4.9%
Manufacturing	5,567	6,010	4,980	4,724	(843)	-15.1%	-0.6%
Transportation and public utilities	177	173	344	410	233	131.6%	3.2%
Wholesale trade	77	209	207	183	106	137.7%	3.3%
Retail trade	1,277	1,584	2,872	3,102	1,825	142.9%	3.3%
Finance, insurance, and real estate	258	442	805	843	585	226.7%	4.5%
Services	1,253	2,254	3,526	3,825	2,572	205.3%	4.2%

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
MAINE STUDY AREA COUNTIES

(EAST TO WEST) Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
Government and government enterprises	1,356	1,504	1,821	1,941	585	43.1%	1.3%
Federal, civilian	92	103	101	96	4	4.3%	0.2%
Military	207	150	182	151	(56)	-27.1%	-1.2%
State and local	1,057	1,251	1,538	1,694	637	60.3%	1.8%
State	(N)	360	478	488	488	ERR	ERR
Local	(N)	891	1,060	1,206	1,206	ERR	ERR
OXFORD COUNTY							
Total full- and part-time employment	17,929	20,940	23,401	23,904	5,975	33.3%	1.1%
Wage and salary employment	15,245	17,333	18,588	18,043	2,798	18.4%	0.6%
Proprietors' employment	2,684	3,607	4,813	5,861	3,177	118.4%	2.9%
Farm proprietors' employment	340	390	405	428	88	25.9%	0.9%
Nonfarm proprietors' employment 2/	2,344	3,217	4,408	5,433	3,089	131.8%	3.2%
Farm employment	743	834	607	600	(143)	-19.2%	-0.8%
Nonfarm employment	17,186	20,106	22,794	23,304	6,118	35.6%	1.1%
Private employment	14,620	17,586	19,955	20,340	5,720	39.1%	1.2%
Ag. serv., forestry, fishing, and other 3/	213	208	309	369	156	73.2%	2.1%
Mining	42	23	26	32	(10)	-23.8%	-1.0%
Construction	611	1,356	2,365	1,812	1,201	196.6%	4.1%
Manufacturing	7,296	7,396	5,322	4,359	(2,937)	-40.3%	-1.9%
Transportation and public utilities	552	608	653	965	413	74.8%	2.1%
Wholesale trade	205	343	307	375	170	82.9%	2.3%
Retail trade	2,374	2,834	4,269	4,336	1,962	82.6%	2.3%
Finance, insurance, and real estate	567	758	827	778	211	37.2%	1.2%
Services	2,760	4,060	5,877	7,314	4,554	165.0%	3.7%
Government and government enterprises	2,566	2,520	2,839	2,964	398	15.5%	0.5%
Federal, civilian	191	203	184	165	(26)	-13.6%	-0.5%
Military	368	259	329	278	(90)	-24.5%	-1.0%
State and local	2,007	2,058	2,326	2,521	514	25.6%	0.8%
State	(N)	247	208	251	251	ERR	ERR
Local	(N)	1,811	2,118	2,270	2,270	ERR	ERR
CORRIDOR TOTALS							
Total full- and part-time employment	123,065	155,751	190,858	200,662	77,597	63.1%	1.8%
Wage and salary employment	104,340	128,045	153,249	153,210	48,870	46.8%	1.4%
Proprietors' employment	18,725	27,706	37,609	47,452	28,727	153.4%	3.5%
Farm proprietors' employment	1,926	2,702	2,626	2,622	696	36.1%	1.1%
Nonfarm proprietors' employment 2/	16,799	25,004	34,983	44,830	28,031	166.9%	3.7%
Farm employment	3,920	4,452	3,863	3,810	(110)	-2.8%	-0.1%
Nonfarm employment	119,145	151,299	186,995	196,852	77,707	65.2%	1.9%
Private employment	97,370	126,199	158,280	168,257	70,887	72.8%	2.0%
Ag. serv., forestry, fishing, and other 3/	2,926	4,323	3,978	5,087	2,161	73.9%	2.1%
Mining	173	113	100	43	(130)	-75.1%	-5.0%
Construction	5,968	8,982	14,973	14,592	8,624	144.5%	3.4%
Manufacturing	37,709	40,125	36,423	32,101	(5,608)	-14.9%	-0.6%
Transportation and public utilities	5,359	6,685	8,414	9,142	3,783	70.6%	2.0%
Wholesale trade	3,325	4,998	5,774	5,414	2,089	62.8%	1.8%
Retail trade	17,608	23,685	34,881	37,539	19,931	113.2%	2.8%
Finance, insurance, and real estate	4,370	5,718	7,682	7,732	3,362	76.9%	2.1%
Services	19,922	31,557	46,051	56,042	36,120	181.3%	3.9%
Government and government enterprises	21,775	25,100	28,715	28,595	6,820	31.3%	1.0%
Federal, civilian	2,181	2,497	2,390	2,310	129	5.9%	0.2%
Military	3,486	2,548	3,193	2,576	(910)	-26.1%	-1.1%
State and local	16,108	20,055	23,132	23,709	7,601	47.2%	1.4%
State	0	7,282	7,967	7,692	7,692	ERR	ERR
Local	0	12,773	15,165	16,017	16,017	ERR	ERR

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
VT COUNTIES WITH NO INTERSTATES

Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
ADDISON COUNTY, VT							
Total full- and part-time employment	9,913	13,224	17,491	18,775	8,862	89.4%	2.4%
Wage and salary employment	7,492	10,171	13,037	13,682	6,190	82.6%	2.3%
Proprietors' employment	2,421	3,053	4,454	5,093	2,672	110.4%	2.8%
Farm proprietors' employment	987	873	899	757	(230)	-23.3%	-1.0%
Nonfarm proprietors' employment 2/	1,434	2,180	3,555	4,336	2,902	202.4%	4.2%
Farm employment	2,018	1,905	1,434	1,259	(759)	-37.6%	-1.7%
Nonfarm employment	7,895	11,319	16,057	17,516	9,621	121.9%	3.0%
Private employment	6,482	9,994	14,294	15,519	9,037	139.4%	3.3%
Ag. serv., forestry, fishing, and other 3/	108	151	295	(D)	(108)	-100.0%	-100.0%
Mining	(L)	(L)	17	(D)	0	ERR	ERR
Construction	474	703	1,424	1,247	773	163.1%	3.6%
Manufacturing	1,948	2,803	2,910	2,137	189	9.7%	0.3%
Transportation and public utilities	221	282	487	553	332	150.2%	3.5%
Wholesale trade	89	470	438	437	348	391.0%	6.1%
Retail trade	1,173	1,566	2,673	3,127	1,954	166.6%	3.7%
Finance, insurance, and real estate	410	504	690	761	351	85.6%	2.3%
Services	2,058	3,514	5,360	6,770	4,712	229.0%	4.5%
Government and government enterprises	1,413	1,325	1,763	1,997	584	41.3%	1.3%
Federal, civilian	129	88	137	134	5	3.9%	0.1%
Military	205	238	258	284	79	38.5%	1.2%
State and local	1,079	999	1,368	1,579	500	46.3%	1.4%
State	(N)	128	135	170	170	ERR	ERR
Local	(N)	871	1,233	1,409	1,409	ERR	ERR
BENNINGTON COUNTY, VT							
Total full- and part-time employment	14,330	18,174	21,957	24,328	9,998	69.8%	2.0%
Wage and salary employment	12,283	15,183	18,006	18,949	6,666	54.3%	1.6%
Proprietors' employment	2,047	2,991	3,951	5,379	3,332	162.8%	3.6%
Farm proprietors' employment	202	209	191	162	(40)	-19.8%	-0.8%
Nonfarm proprietors' employment 2/	1,845	2,782	3,760	5,217	3,372	182.8%	3.9%
Farm employment	408	352	291	247	(161)	-39.5%	-1.8%
Nonfarm employment	13,922	17,822	21,666	24,081	10,159	73.0%	2.1%
Private employment	12,595	16,034	19,717	21,847	9,252	73.5%	2.1%
Ag. serv., forestry, fishing, and other 3/	79	145	305	370	291	368.4%	5.9%
Mining	11	(L)	(L)	20	9	81.8%	2.2%
Construction	813	992	1,881	1,476	663	81.5%	2.2%
Manufacturing	4,420	5,181	3,961	3,752	(668)	-15.1%	-0.6%
Transportation and public utilities	313	437	438	565	252	80.5%	2.2%
Wholesale trade	134	322	344	580	446	332.8%	5.6%
Retail trade	2,395	3,354	4,872	5,433	3,038	126.8%	3.1%
Finance, insurance, and real estate	650	755	1,249	1,130	480	73.8%	2.1%
Services	3,780	4,842	6,662	8,521	4,741	125.4%	3.1%
Government and government enterprises	1,327	1,788	1,949	2,234	907	68.3%	1.9%
Federal, civilian	144	129	132	128	(16)	-11.1%	-0.4%
Military	248	277	281	296	48	19.4%	0.7%
State and local	935	1,382	1,536	1,810	875	93.6%	2.5%
State	(N)	416	442	456	456	ERR	ERR
Local	(N)	966	1,094	1,354	1,354	ERR	ERR
ESSEX COUNTY, VT.							
Total full- and part-time employment	2,007	2,296	2,702	2,712	705	35.1%	1.1%
Wage and salary employment	1,629	1,806	1,757	1,736	107	6.6%	0.2%
Proprietors' employment	378	490	945	976	598	158.2%	3.6%
Farm proprietors' employment	124	110	89	73	(51)	-41.1%	-1.9%
Nonfarm proprietors' employment 2/	254	380	856	903	649	255.5%	4.8%
Farm employment	244	213	136	116	(128)	-52.5%	-2.7%
Nonfarm employment	1,763	2,083	2,566	2,596	833	47.2%	1.4%

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
VT COUNTIES WITH NO INTERSTATES

Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
Private employment	1,339	1,766	2,236	2,200	861	64.3%	1.9%
Ag. serv., forestry, fishing, and other 3/	14	32	42	48	34	242.9%	4.7%
Mining	0	0	(L)	(D)	0	ERR	ERR
Construction	29	74	155	132	103	355.2%	5.8%
Manufacturing	853	1,205	1,378	1,217	364	42.7%	1.3%
Transportation and public utilities	73	50	103	129	56	76.7%	2.1%
Wholesale trade	(L)	28	(L)	(D)	0	ERR	ERR
Retail trade	166	169	220	261	95	57.2%	1.7%
Finance, insurance, and real estate	75	60	63	55	(20)	-26.7%	-1.1%
Services	122	148	265	352	230	188.5%	4.0%
Government and government enterprises	424	317	330	396	(28)	-6.6%	-0.3%
Federal, civilian	63	38	61	64	1	1.6%	0.1%
Military	47	50	50	53	6	12.8%	0.4%
State and local	314	229	219	279	(35)	-11.1%	-0.4%
State	(N)	13	14	16	16	ERR	ERR
Local	(N)	216	205	263	263	ERR	ERR
LAMOILLE COUNTY, VT							
Total full- and part-time employment	5,460	8,233	11,890	14,260	8,800	161.2%	3.6%
Wage and salary employment	4,202	6,280	8,951	10,301	6,099	145.1%	3.4%
Proprietors' employment	1,258	1,953	2,939	3,959	2,701	214.7%	4.3%
Farm proprietors' employment	316	295	271	240	(76)	-24.1%	-1.0%
Nonfarm proprietors' employment 2/	942	1,658	2,668	3,719	2,777	294.8%	5.2%
Farm employment	539	553	391	353	(186)	-34.5%	-1.6%
Nonfarm employment	4,921	7,680	11,499	13,907	8,986	182.6%	3.9%
Private employment	4,058	6,453	10,105	12,296	8,238	203.0%	4.2%
Ag. serv., forestry, fishing, and other 3/	72	67	199	283	211	293.1%	5.2%
Mining	(L)	(L)	12	15	15	ERR	ERR
Construction	525	618	1,323	1,208	683	130.1%	3.1%
Manufacturing	599	936	705	1,264	665	111.0%	2.8%
Transportation and public utilities	208	235	279	353	145	69.7%	2.0%
Wholesale trade	48	135	197	225	177	368.8%	5.9%
Retail trade	853	1,368	2,271	2,752	1,899	222.6%	4.4%
Finance, insurance, and real estate	319	430	718	728	409	128.2%	3.1%
Services	1,425	2,655	4,401	5,468	4,043	283.7%	5.1%
Government and government enterprises	863	1,227	1,394	1,611	748	86.7%	2.3%
Federal, civilian	64	45	67	68	4	6.3%	0.2%
Military	111	141	154	174	63	56.8%	1.7%
State and local	688	1,041	1,173	1,369	681	99.0%	2.6%
State	(N)	301	407	430	430	ERR	ERR
Local	(N)	740	766	939	939	ERR	ERR
RUTLAND COUNTY, VT.							
Total full- and part-time employment	23,595	29,618	36,235	38,349	14,754	62.5%	1.8%
Wage and salary employment	19,599	24,307	29,838	30,280	10,681	54.5%	1.6%
Proprietors' employment	3,996	5,311	6,397	8,069	4,073	101.9%	2.6%
Farm proprietors' employment	642	648	623	523	(119)	-18.5%	-0.8%
Nonfarm proprietors' employment 2/	3,354	4,663	5,774	7,546	4,192	125.0%	3.0%
Farm employment	1,149	1,144	837	694	(455)	-39.6%	-1.8%
Nonfarm employment	22,446	28,474	35,398	37,655	15,209	67.8%	1.9%
Private employment	19,379	24,850	31,176	32,773	13,394	69.1%	2.0%
Ag. serv., forestry, fishing, and other 3/	157	309	377	563	406	258.6%	4.8%
Mining	417	192	211	254	(163)	-39.1%	-1.8%
Construction	1,598	1,640	2,986	2,551	953	59.6%	1.7%
Manufacturing	4,997	5,698	6,064	5,445	448	9.0%	0.3%
Transportation and public utilities	1,130	1,531	1,646	1,689	559	49.5%	1.5%
Wholesale trade	747	1,292	1,384	1,259	512	68.5%	2.0%
Retail trade	3,740	4,987	6,504	7,605	3,865	103.3%	2.7%

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
VT COUNTIES WITH NO INTERSTATES

Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
Finance, insurance, and real estate	1,412	1,762	2,116	1,737	325	23.0%	0.8%
Services	5,181	7,439	9,888	11,670	6,489	125.2%	3.1%
Government and government enterprises	3,067	3,624	4,222	4,882	1,815	59.2%	1.7%
Federal, civilian	344	287	333	336	(8)	-2.3%	-0.1%
Military	463	490	490	511	48	10.4%	0.4%
State and local	2,260	2,847	3,399	4,035	1,775	78.5%	2.2%
State	(N)	1,201	1,310	1,404	1,404	ERR	ERR
Local	(N)	1,646	2,089	2,631	2,631	ERR	ERR
CORRIDOR TOTALS							
Total full- and part-time employment	55,305	71,545	90,275	98,424	43,119	78.0%	2.2%
Wage and salary employment	45,205	57,747	71,589	74,948	29,743	65.8%	1.9%
Proprietors' employment	10,100	13,798	18,686	23,476	13,376	132.4%	3.2%
Farm proprietors' employment	2,271	2,135	2,073	1,755	(516)	-22.7%	-1.0%
Nonfarm proprietors' employment 2/	7,829	11,663	16,613	21,721	13,892	177.4%	3.9%
Farm employment	4,358	4,167	3,089	2,669	(1,689)	-38.8%	-1.8%
Nonfarm employment	50,947	67,378	87,186	95,755	44,808	88.0%	2.4%
Private employment	43,853	59,097	77,528	84,635	40,782	93.0%	2.5%
Ag. serv., forestry, fishing, and other 3/	430	704	1,218	1,264	834	194.0%	4.1%
Mining	428	192	240	289	(139)	-32.5%	-1.4%
Construction	3,439	4,027	7,769	6,614	3,175	92.3%	2.5%
Manufacturing	12,817	15,823	15,018	13,815	998	7.8%	0.3%
Transportation and public utilities	1,945	2,535	2,953	3,289	1,344	69.1%	2.0%
Wholesale trade	1,018	2,247	2,363	2,501	1,483	145.7%	3.4%
Retail trade	8,327	11,444	16,540	19,178	10,851	130.3%	3.1%
Finance, insurance, and real estate	2,866	3,511	4,836	4,411	1,545	53.9%	1.6%
Services	12,566	18,598	26,576	32,781	20,215	160.9%	3.6%
Government and government enterprises	7,094	8,281	9,658	11,120	4,026	56.8%	1.7%
Federal, civilian	744	587	730	730	(14)	-1.9%	-0.1%
Military	1,074	1,196	1,233	1,318	244	22.7%	0.8%
State and local	5,276	6,498	7,695	9,072	3,796	71.9%	2.0%
State	0	2,059	2,308	2,476	2,476	ERR	ERR
Local	0	4,439	5,387	6,596	6,596	ERR	ERR

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
STATEWIDE TOTALS

(EAST TO WEST) Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
Nonfarm employment	425773	531357	696307	717413	291,640	68.5%	2.0%
Private employment	341740	435722	585675	615470	273,730	80.1%	2.2%
Ag. serv., forestry, fishing, and other 3/	7518	10713	11779	14823	7,305	97.2%	2.5%
Mining	361	349	335	330	(31)	-8.6%	-0.3%
Construction	22781	29660	52874	47266	24,485	107.5%	2.7%
Manufacturing	117188	120110	113512	98115	(19,073)	-16.3%	-0.7%
Transportation and public utilities	19273	23521	26966	29130	9,857	51.1%	1.5%
Wholesale trade	16094	22588	28033	28752	12,658	78.7%	2.2%
Retail trade	63584	86561	131912	138258	74,674	117.4%	2.9%
Finance, insurance, and real estate	20192	26578	41502	41956	21,764	107.8%	2.7%
Services	74749	115642	178762	216840	142,091	190.1%	4.0%
Government and government enterprises	84033	95635	110632	101943	17,910	21.3%	0.7%
Federal, civilian	15690	17856	18800	12606	(3,084)	-19.7%	-0.8%
Military	20174	15564	17510	11230	(8,944)	-44.3%	-2.1%
State and local	48169	62215	74322	78107	29,938	62.2%	1.8%
State	(N)	21069	25028	23988	23,988	ERR	ERR
Local	(N)	41146	49294	54119	54,119	ERR	ERR

APPENDIX TABLE A-2: LONG TERM EMPLOYMENT BY INDUSTRY TRENDS
STATEWIDE TOTALS

(EAST TO WEST) Line Title	1969	1979	1989	1996	1969-96 Total Change	1969-96 Percent Change	1969-96 Annual Rate
NEW HAMPSHIRE							
Total full- and part-time employment	334,069	468,677	666,063	712,892	378,823	113.4%	2.8%
Wage and salary employment	293,524	403,242	554,964	574,266	280,742	95.6%	2.5%
Proprietors' employment	40,545	65,435	111,099	138,626	98,081	241.9%	4.7%
Farm proprietors' employment	3,240	3,085	3,042	2,273	(967)	-29.8%	-1.3%
Nonfarm proprietors' employment 2/	37,305	62,350	108,057	136,353	99,048	265.5%	4.9%
Farm employment	7,035	5,684	4,707	3,743	(3,292)	-46.8%	-2.3%
Nonfarm employment	327,034	462,993	661,356	709,149	382,115	116.8%	2.9%
Private employment	277,618	398,956	582,951	629,662	352,044	126.8%	3.1%
Ag. serv., forestry, fishing, and other 3/	1,525	2,768	5,702	7,809	6,284	412.1%	6.2%
Mining	435	616	880	737	302	69.4%	2.0%
Construction	20,331	29,394	50,426	43,779	23,448	115.3%	2.9%
Manufacturing	99,835	121,296	118,440	111,072	11,237	11.3%	0.4%
Transportation and public utilities	12,810	16,085	22,070	24,915	12,105	94.5%	2.5%
Wholesale trade	9,604	18,829	26,261	29,947	20,343	211.8%	4.3%
Retail trade	52,057	81,456	131,351	139,602	87,545	168.2%	3.7%
Finance, insurance, and real estate	17,167	29,504	51,044	48,288	31,121	181.3%	3.9%
Services	63,854	99,008	176,777	223,513	159,659	250.0%	4.7%
Government and government enterprises	49,416	64,037	78,405	79,487	30,071	60.9%	1.8%
Federal, civilian	7,396	7,290	8,463	8,005	609	8.2%	0.3%
Military	8,746	8,135	8,459	4,475	(4,271)	-48.8%	-2.5%
State and local	33,274	48,612	61,483	67,007	33,733	101.4%	2.6%
State	(N)	17,334	19,684	21,613	21,613	ERR	ERR
Local	(N)	31,278	41,799	45,394	45,394	ERR	ERR
VERMONT							
Total full- and part-time employment	202,576	261,270	344,831	377,084	174,508	86.1%	2.3%
Wage and salary employment	171,126	215,312	276,206	291,571	120,445	70.4%	2.0%
Proprietors' employment	31,450	45,958	68,625	85,513	54,063	171.9%	3.8%
Farm proprietors' employment	7,224	7,230	7,192	5,938	(1,286)	-17.8%	-0.7%
Nonfarm proprietors' employment 2/	24,226	38,728	61,433	79,575	55,349	228.5%	4.5%
Farm employment	13,264	13,229	10,128	8,547	(4,717)	-35.6%	-1.6%
Nonfarm employment	189,312	248,041	334,703	368,537	179,225	94.7%	2.5%
Private employment	159,920	209,843	289,844	319,645	159,725	99.9%	2.6%
Ag. serv., forestry, fishing, and other 3/	995	1,992	3,885	5,485	4,490	451.3%	6.5%
Mining	1,180	859	701	739	(441)	-37.4%	-1.7%
Construction	13,137	15,370	28,479	25,084	11,947	90.9%	2.4%
Manufacturing	44,869	54,420	52,935	51,690	6,821	15.2%	0.5%
Transportation and public utilities	8,799	10,452	12,434	14,663	5,864	66.6%	1.9%
Wholesale trade	5,635	9,677	13,170	14,045	8,410	149.2%	3.4%
Retail trade	29,396	39,989	59,496	64,959	35,563	121.0%	3.0%
Finance, insurance, and real estate	10,552	14,068	21,836	21,704	11,152	105.7%	2.7%
Services	45,357	63,016	96,908	121,276	75,919	167.4%	3.7%
Government and government enterprises	29,392	38,198	44,859	48,892	19,500	66.3%	1.9%
Federal, civilian	3,754	4,314	5,293	5,409	1,655	44.1%	1.4%
Military	3,935	4,355	4,502	4,879	944	24.0%	0.8%
State and local	21,703	29,529	35,064	38,604	16,901	77.9%	2.2%
State	(N)	11,757	13,570	13,927	13,927	ERR	ERR
Local	(N)	17,772	21,494	24,677	24,677	ERR	ERR
MAINE							
Total full- and part-time employment	443443	546429	708220	728543	285,100	64.3%	1.9%
Wage and salary employment	380877	458703	583871	574347	193,470	50.8%	1.5%
Proprietors' employment	62566	87726	124349	154196	91,630	146.5%	3.4%
Farm proprietors' employment	7853	7674	7177	6972	(881)	-11.2%	-0.4%
Nonfarm proprietors' employment 2/	54713	80052	117172	147224	92,511	169.1%	3.7%
Farm employment	17670	15072	11913	11130	(6,540)	-37.0%	-1.7%