Demographic Changes and Their Fiscal Consequences in Vermont

Prepared by:
Richard W. Heaps and Arthur G. Woolf
December 1, 2006
# Table of Contents

I. Executive Summary .......................................................... 1

II. Demographic Projection ...................................................... 2
   A. The Decennial Census, Population Estimates, and Population
      Projections ................................................................. 2
   B. The Vermont Population Projection .................................... 3
   C. The Projection by Age Cohorts ........................................ 4
   D. Recent Census Population Estimates .................................. 8
   E. Is the Projection Reliable? ............................................. 9

III. Economic and Fiscal Implications ........................................ 10
    A. Introduction ............................................................ 10
    B. Forecasting Income Growth .......................................... 10
    C. Forecasting Tax Revenues ........................................... 11
    D. Forecasting Government Spending ................................... 13
    E. The Political Economy of Demographics and Spending ........ 20

IV. What Can Vermonters Do? .................................................... 21

IV. Demographic Appendices ................................................... 24
    A. Non-Census Bureau Population Projections .......................... 24
    B. Reasonableness of the Census Projection for Vermont .......... 31
I. Executive Summary

Vermont’s population is growing and is projected to grow much more slowly than the nation as a whole. Moreover, the state’s population is aging. Over the next twenty five years, the state’s population will increase by 85,000 and the number of people over the age of 65 will rise by 93,000. Although the working age population in Vermont is currently increasing, the number of working age Vermonters, people between the ages of 20 and 65, will begin to decline in less than a decade. These changes will have major impacts on the state’s economy and especially on state and local governments’ tax collections and their ability to fund services to the public.

This study examines the U.S. Census Bureau’s population projection for Vermont and uses it as a basis for forecasting both spending trends and tax revenues that will be available to state and local governments. It finds that governments will not be able to fund the services that Vermonters currently receive. There is a significant mismatch between the demographically-induced changes in tax revenues that governments will be receiving and the trend of spending growth that we expect given how spending has changed over the past two decades. Unless Vermonters are willing to accept far higher levels of taxation relative to their income than they have accepted in the past, the state is on an unsustainable demographic and fiscal path.
II. Demographic Projection

A. The Decennial Census, Population Estimates, and Population Projections

People in Vermont and the U.S. are very familiar with the decennial census of the United States. Every ten years (the last was in 2000) census takers fan out across the country to count the number of people living in the country. Most people accept the count obtained as a reasonably accurate measure of the resident population. The major dispute concerns the census count in large urban areas. For a non-urban state like Vermont, the decennial census count is very accurate.

Between the decennial census years, the U.S. Census Bureau produces estimates of population for past years. That is since 2000, the Census has produced estimates of the Vermont population for 2001, 2002, 2003, 2004, and 2005. The estimates are based on the 2000 Census and use data from a variety of sources.

The U.S. Census Bureau also prepares population projections. Projections are estimates or calculations of the population for future dates based on plausible assumptions about future births, deaths, international migration, and domestic migration, or the movement of people among the fifty states.

At any point in time, there are both Census Bureau estimates and projections for population and the numbers will differ. For example, as of mid 2006 there was a Census Bureau estimate for Vermont’s population in 2005 and a Census Bureau projection for Vermont’s population in 2005. The estimate was prepared in 2006 looking backward while the projection was prepared in 2004 looking forward. The estimate is generally the more accurate of the two series, unless the user is comparing a number with others calculated in a projected series.
B. The Vermont Population Projection

The Census Bureau’s most recent population projection for Vermont was released in April 2005. It covers the years 2004 to 2030 and is based on the Census 2000 results and the assumption that recent state demographic trends will continue into the future. The projection for total population of the state is shown below.

The most noticeable trend in the projection is the slowing rate of population growth expected for Vermont. While growth from 1960 to 1990 exceeded 10% per decade, the growth slowed to 8% from 1990 to 2000. The projection shows growth slowing dramatically in the coming three decades: 7% from 2000 to 2010, 6% from 2010 to 2020, and just 3% from 2020 to 2030. In absolute magnitudes, Vermont added 67,000 residents between 1960 to 1970 but is projected to add just 21,000 residents from 2020 to 2030.

The key is that Vermont is projected to see a dramatic slowing in population growth. We shall next see that this growth is not uniform among all age groups.
C. The Projection by Age Cohorts

The most dramatic demographic impact in the U.S. during the 20th century was the Baby Boom generation, people born between 1946 and 1964. The number of Baby Boomers far surpassed the numbers born before or after them. As a result this “bulge” of people has affected schools, housing, and job markets as they aged. Today the oldest Boomer is 60 years-old and will soon be retiring. Therefore, it is not surprising that the first demographic impact clearly apparent in the Vermont population projection is the rapid increase in the number of 65 and older persons from 2000 to 2030.

![Vermont Population Projection Age 65 and older](chart)

In 2004, the population projection shows nearly 81,000 Vermont residents age 65 and older. That is 13% of the population. In 2014 this age group totals 109,000, 16% of the state’s population. Then in 2024 this age cohort soars to 154,000 or 22% of the total. At the end of the projection period nearly 174,000 Vermonters are age 65 or older, 24% of the population. That is, by 2030 one out of every four Vermonters will be a senior citizen. Between 2005 and 2030 the total Vermont population will increase by 85,000 people and the over 65 population will increase by 93,000. All of Vermont’s population growth will be accounted for by older people.
A very disturbing trend in the projection is what is calculated to happen to the number of working age Vermont residents. As the graphic shows the number rises until 2013, when it peaks at just over 400,000, then it begins to fall. This is due to the retirement of the Baby Boom generation and its replacement by a smaller young adult age cohort.

![Vermont Population Projection](chart.png)

This is a dramatic change from recent demographic trends in the U.S. Historically, the working age population has steadily grown, helping to expand the economy and generate wealth to support families and government programs through taxes and fees.
The working age population of Vermont was almost the same in 1960 as it was sixty years earlier. Since 1960 it has grown dramatically, nearly doubling by 2000. This growing working age population helped to greatly expand the economy and increase tax revenues to state and local governments. However, this growth will soon end in Vermont and the working age population will begin decreasing in 2014 and by 2030 it will have fallen by 7%.

It is common to discuss this demographic trend in terms of a dependency ratio. That ratio is the number of young and old divided by the working age population. Obviously, working age people directly support children. They also support the elderly through funding Social Security, Medicare, Medicaid, and through family income intergenerational transfers. The dependency ratio for Vermont is shown below for the Census years from 1900 to 2000 and for the projection years of 2010, 2020, and 2030.
The dependency ratio from 1900 through 1940 remained about the same, in the neighborhood of .55 dependents per working age person. Then the ratio climbed to .74 by 1960 with the large number of Baby Boom children. Then, after 1960, as the Baby Boomers aged and moved into the workforce and had smaller families than their parents, the dependency ratio fell and will hit a low of .44 by 2010. It will then rapidly climb with the retirement of the Baby Boomers, reaching .67 in 2030. At that time there will be only 1½ workers for every dependent.

This is a particular problem for funding government programs. In the first half of the 1900s, public schooling expenditure per child was low and there were few publicly funded programs for the elderly. Today, inflation-adjusted public school expenditure is much higher and federal government taxes support very expensive publicly funded programs such as Social Security and Medicare.

Also, the nature of the dependency ratio will have changed over this period. In 1900 and 2020 the dependency ratio will be nearly the same, .56 and .57, respectively. But in 1900, roughly three-quarters of the dependents were children whereas in 2020 roughly three-quarters of the dependents will be age 65 and older.
D. Recent Census Population Estimates

The Census Bureau’s state population projections were released in April 2005. The first year of the projection is 2004. Since the release of the projection, the Census has released its population estimates for 2004 and 2005. We compare the projection to the estimates for 2005 below.

<table>
<thead>
<tr>
<th></th>
<th>2005 Projection</th>
<th>2005 Estimate</th>
<th>Percent Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>630,979</td>
<td>623,050</td>
<td>-1.3%</td>
</tr>
<tr>
<td>Working age</td>
<td>389,395</td>
<td>390,015</td>
<td>0.2%</td>
</tr>
<tr>
<td>Under 20</td>
<td>159,342</td>
<td>151,053</td>
<td>-5.2%</td>
</tr>
<tr>
<td>65 or older</td>
<td>81,982</td>
<td>82,242</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

The projection proved to be too high. The estimated 2005 population was 1.3% lower than the projection (off by nearly 8,000 people). However, for purposes of this analysis the age cohort of the error is even more important.

- The projection proved to be very accurate for the working age population and the 65 years-old and older population.
- The projection’s error was all in the number of under 20 years-old. The projection was off by 5.2%.

From this we draw three conclusions:

- The projection total appears to be too high.
- The projection trends for the elderly population appear to be on target.
- The projection trend for the working age population will prove over time to be too high as there will be fewer young entrants into the labor force than expected in the coming years.
- The number of younger Vermonters is declining faster than projected.
E. Is the Projection Reliable?

The following analysis of the fiscal implications of the demographic trends in Vermont is based on the Census Population Projection of 2005. Therefore, it is crucial to this analysis that this projection be reliable and that a prudent person would feel comfortable using the projection.

The previous comparison of the population projection versus recent population estimates shows the projection may have calculated too high a number of young people in Vermont and, as a result, overestimated the future working age population of the state. If this holds true with the passage of time, the fiscal problems discussed later in this report will be worse than thought, not less adverse. Therefore, while coming population estimates from the Census should be examined with interest, a prudent person would take actions today based on this projection as opposed to waiting until later, when it will be much more difficult to deal with any adverse impacts of these demographic changes. Policymakers would be remiss in their fiscal duty to dismiss the implications of the projection’s demographic trends and just hope they don’t come to pass.
III. Economic and Fiscal Implications

A. Introduction

The coming demographic changes will have major fiscal, economic, and social impacts on Vermont. These three demographic changes are the doubling of the over 65 population, the decline in the working age population, and the decline in the number of young people under the age of 20. Since Vermont’s demographic future is very different from what most states will be experiencing, the impacts of these shifts will also be different in Vermont than in most other states and what the nation as a whole will be experiencing.

These demographic changes will both constrain and change the dynamics of state and local tax revenues and expenditure patterns. On the tax side, Vermont’s governments (state and local) receive tax revenues from three major sources: property taxes, personal income taxes, and consumption taxes (including sales, meals and rooms, and others). These taxes are based on the income earned by Vermonters and the spending of Vermonters and others. But future tax revenues are likely to be constrained by the slow growth, and then the decline, in the number of working age Vermonters. With the decline in the number of workers, total income will not grow as fast as it has in the past. And with slower growth in income, spending will not grow as fast as in the past. This will be offset somewhat by the increase in the number of senior citizens and by their larger aggregate amount of spending in the economy.

B. Forecasting Income Growth

One of the major effects of the aging of the population will be a slowdown in the rate of economic growth in Vermont since there will be proportionately fewer working-age Vermonters than there are today. We quantify this economic impact by looking at the income earned by Vermonters and use as our income measure the adjusted gross income (AGI) reported to the Vermont Tax Department when Vermonters submit their state income tax forms each April. AGI is a good measure of income because it includes what most people would consider to be income, including wages and salaries, interest and dividends, rental income, most Social Security and pension income, and capital gains.

To forecast AGI, we divide adjusted gross income into two components: the income earned by everyone under the age of 65 and the income earned by Vermonters age 65 and over. In the future, the number of working age Vermonters will fall and the number of Vermonters over 65 will rise. In order to accurately forecast Vermont AGI, we need to take account of both of these demographic changes.
In 1980, 8.8% of total AGI came from the over 65 population. By 2004, that had increased to 12.8% of AGI. Some of that increased share of AGI earned by seniors is due to an increase in the number of Vermonters over the age of 65, but most of it is due to the rapid growth in the AGI earned by each senior citizen. Between 1980 and 2004, AGI per senior citizen increased by 3.1% per year in inflation-adjusted dollars. We assume that in the future AGI from this age group will continue to grow at this rate.

For the under 65 population, we focus on the amount of AGI earned per worker, since most AGI is earned by workers and not by the non-working population under the age of 65. AGI per worker has increased at a rate of 0.9% per year, surprisingly much lower than the growth rate of AGI for those over 65. The amount of income earned per senior citizen is less than the amount earned by an average worker in Vermont, so as the population ages, this will slow down the rate of income growth. But that will be somewhat offset by the faster growth of income of seniors compared to workers. Our method of forecasting future AGI growth is simply to extrapolate these two growth rates and apply them to the changing number of seniors and workers in Vermont.

C. Forecasting Tax Revenues

Our forecast of AGI provides an estimate of income available to Vermonters in future years. Rather than building a specific model of how taxes might grow in the future, we make a very simple assumption about Vermonters’ capacity to pay taxes. Over the past twenty-four years, Vermonters have paid between 14.9% and 18.0% of their AGI in tax payments to state and local governments. This means that taxes have fluctuated within a fairly narrow share of income. The average tax share, shown as the solid line in the figure below, was 16.2% of AGI. In the future, we assume that Vermonters will allow themselves to be taxed at their historical average of 16.2% of AGI.
This is a reasonable assumption. In 2004, the most recent year for which we have data, Vermont had the fifth highest tax burden of any state in the nation. As the graph shows, in 2004 taxes were higher than their long term average. We think that it is reasonable to assume that Vermonters will not accept a much higher tax burden on income than the 16.2% average for any long time period.

Tax revenues in Vermont will be constrained by demographic changes, slowing as the labor force growth slows. Then, beginning in about 2015, the labor force will start to decline, which will constrain tax revenue growth even further. This slowdown in tax revenue growth is one of the major impacts of the demographic changes that Vermont government faces. In the past, tax revenues have grown for two reasons. One is the growth in tax revenues per working person. As productivity and real wages rise, so do taxes per worker. The second is the growth in the number of working Vermonters. When the number of working Vermonters stops rising, this second component of tax revenue growth will also stop rising. It is this component of tax revenue growth that will be a major constraint on governments in the coming decades.
D. Forecasting Government Spending

Vermont’s state and local governments spend most of their revenues in three areas: education, human services (including health care), and transportation. Transportation spending is relatively insensitive to the changing demographics of the state and will not be considered in this study. Education spending can clearly be affected by the changing number of students in Vermont’s public schools. Health and human services spending can also be affected by demographics, but it is also greatly influenced by policy choices made in Montpelier. In this section we analyze the effect of demographics on the likely trend in government spending in the state by considering spending on schools and human services.

1. School Enrollments and Education Spending

The decline in the number of people under the age of 20 will have significant impacts on schools in Vermont. Since 2000, the number of students enrolled in Vermont’s public schools has fallen by five percent and over the next decade there will be an additional twelve percent decline in Vermont school enrollments. Although the number of students will begin to rise after 2015, in 2030 the number of students enrolled in Vermont’s schools will still be less than in 2000.

Total spending on preK-12 education has grown significantly in the past decade. In the 1996 school year state and local governments spent $940 million (in 2005 dollars) to educate 105,600 students. Inflation-adjusted school spending was flat in the late 1990s and then grew rapidly in the current decade. By 2005, total education spending had risen to more than $1.2 billion – a thirty five percent rise in inflation-adjusted spending. This occurred despite a decrease of 7,200 students in the state’s schools between 1996 and 2005. The Vermont Department of Education has not yet released its annual report on spending for 2006, but the number of students fell by an additional 1,700 students in 2006 to 96,600.
Most school spending is on salaries and benefits, and a major driver of the increase in total school spending in the past decade has been increased staffing levels. The figure below shows the increase in full time equivalent (FTE) teachers and other school personnel over the past decade. In 1996 there were 7,750 FTE teachers in Vermont’s schools; by 2006 that had increased to 8,850, a fourteen percent increase. At the same time number of students in Vermont schools had fallen by nine percent. The total number of non teaching employees in the schools, which includes teacher aides, administrators, counselors, nurses, librarians, clerical staff, maintenance personnel, and others, rose from 8,000 to 10,200 over the same time period, a twenty seven percent increase.
According to the 2004 Survey of State and Local Government Finance, (U.S. Census Bureau) Vermont’s state and local governments spent $1.155 billion on primary and secondary education in FY2004 and state and local governments collected a total of $2.286 million in taxes. Only $100 million of the total revenues used to fund pre K-12 education came from federal sources (Vermont Department of Education, Summary of the Annual Statistical Report of Schools, May 2005). Out of every tax dollar collected by state and local governments, only three cents goes to higher education (UVM, the Vermont State College system, and VSAC). Because this amount of state spending is so small, we do not consider higher education in this analysis.
over the same ten year period, the state’s schools added 600 teachers. This recent historical experience casts doubt on any likely cost reductions due to continued declining enrollments.

Education spending per student has increased by 3.9% per year in inflation-adjusted dollars between 1980 and 2003. The graph below shows that over the past twenty five years the only time that per pupil spending did not grow was between 1992 and 1996. During those years, state spending on education was held constant due to severe budgetary problems at the state level. The only way Vermonters could spend more on their schools was by raising tax revenues at the local level, which they were reluctant to do. The result was essentially no change in per pupil spending. Since the enactment of Act 60 in 1997, the state of Vermont has taken over most of the funding of public education. Given the spending impacts of Act 60 and Act 68, we think it is unlikely that the upward trend in spending will soon be reversed.

We therefore assume that the historical 3.9% rate of increase in spending per pupil will continue into the future. Currently, education spending in Vermont is about $12,000 per pupil, with total education spending of $1.2 billion. By 2030, total education spending will be $2.8 billion (in 2005 inflation-adjusted dollars) and there will be 5,000 fewer students enrolled in Vermont schools than there are today.

With total education spending growing, education will absorb an increasing share of the slowly growing tax revenues available to Vermont governments–state and local. As noted earlier,
education currently accounts for nearly 50 percent of all taxes collected by the state and local governments. The graph below shows two scenarios for the share of taxes that will be needed to fund education. The first, shown in the solid line, assumes that Vermonters will accept an overall tax burden of 16.2% of their adjusted gross income, Vermont’s historical average share of taxes. The second, shown in the dashed line, assumes that Vermonters will accept a tax burden at the highest end of its historical range, or 18.0% of total income. As the graph shows, if taxes are at their average share of AGI, education spending absorbs 50% of available tax revenues through about 2015. After 2015 the share of taxes needed to fund education steadily increases. This is caused by the slowdown in income growth coupled with the end to the decline in the student count and the beginning of an increase in the number of students in Vermont’s schools. The upward trend continues and by 2030, nearly 75 cents out of every dollar in taxes that state and local governments receive will be spent on education. The dashed line shows that even if Vermonters are willing to pay 18% of the AGI in taxes, by 2030 more than two thirds of all tax dollars will be needed to fund education.

Under either scenario, Vermont will have serious problems funding education. The growing share of taxes devoted to education spending will severely constrain the ability of Vermont governments to spend money on all other functions, including health care, highways, environmental protection, community development, corrections, public safety, the judiciary, and governmental administration itself.
Since the decline in the number of school age students represents the largest source of potential fiscal savings given the demographic changes we anticipate, it is vitally important that Vermont policymakers work to constrain the growth in education spending in order to prevent unprecedented tax increases in Vermont or draconian cutbacks in other areas of governmental spending.

2. Human Services Spending

The second largest share of government spending in Vermont is for programs administered by the state Agency of Human Services, which includes health care, welfare programs, corrections, and other social assistance. Human services spending should not be directly affected by the state’s demographic changes. Currently, a relatively small share of total human service spending goes to people over 65, so the doubling of the over 65 population need not impose significant costs to the state. Although older people do account for a large share of total health care spending, most of that is financed by Medicare, which is a federally financed program and does not require any state contributions.

Therefore, the major concern with human services spending is the overall growth rate in human services spending, not the amount spent on the growing over 65 population. Human services spending has been growing at a rate of 3.3% per year for the past twenty years, and entitlement programs, especially in the health care area, have dramatically expanded in scope in the past decade. In the last twenty years, approximately one-quarter of human services growth is due simply to population growth but three quarters is due to the increased spending per person. Human services spending growth will slow based on the declining growth rate of the state’s population, but the projected growth in spending per person will continue at its historical rate of 2.4% per year.

3. Education and Human Services Spending

We add these two large spending areas together to show what is likely to happen when the slowdowns in income and tax revenue growth are combined with continued high rates of spending growth in education and human services. The graph below shows what happens when we combine our best estimates of income growth, per pupil spending growth, and per capita human services growth. Today, education and human services absorb about two-thirds of total tax revenues collected by state and local governments in Vermont. That share will stay relatively constant for the next decade. By 2020, it will rise to 77% of all available tax revenues. By 2025, 88 cents out of every dollar collected by state and local governments will

---

2In FY05, about $50 million in state funds were spent on the over 65 population. Total Agency of Human Service spending from state revenue sources was about $400 million.
be used for education and human services, and by 2030, virtually all taxes raised by all governments in Vermont will be needed to fund these two programs.

To summarize how we got these results: Tax revenues are assumed to be fixed at 16.2% of adjusted gross income earned by Vermonters. Adjusted gross income per worker grows, in real terms, at 0.9% per year, its historical average for the past twenty five years, and adjusted gross income per person over the age of 65 grows by 3.3% per year, its historical average. Per pupil spending grows by its historical average rate of 3.9% per year and human services spending grows at its historical average rate per of 2.4% per capita. All of these growth rates are adjusted by the changes in the relevant populations.
E. The Political Economy of Demographics and Spending

The discussion thus far has assumed that the changing demographics of Vermont will not change the underlying spending patterns. But there are some very good reasons to believe that the mismatch between economic growth and government spending may well be even more serious than we have shown.

One reason is one that we alluded to earlier. Current population estimates for Vermont show the state’s population is growing more slowly than the Census population projection numbers had estimated. Moreover, all of this slowdown is accounted for by a reduction in the number of young people. These young people are the workers of the near future, so the slowdown in tax revenue growth may occur sooner than our estimates show.

The second reason is because of the political implications of the aging of the state’s population. Currently, people over 65 make up 17% of the voting age population in Vermont. By 2020, that will increase to 25% and by 2030 senior citizens will make up 30% of the state’s voting age population. In addition, people over the age of 65 are much more likely to vote than people under the age of 65. Seniors will therefore comprise an increasingly large share of the state’s voters in coming years.

It is an axiom of political behavior that politicians seek votes and win elections by responding to the needs and desires of their constituents. Over the next 25 years, those older constituents will be pressuring their elected representatives for benefits, either in the form of more government services or lower taxes, or both. If politicians vote to provide more services to their older constituents, pressures on the spending side will accelerate. If they vote for tax relief targeted to seniors, tax revenue growth may be more constrained than our estimates suggest. Either of these will make Vermont’s fiscal situation even more bleak than our projections show.
IV. What Can Vermonters Do?

This analysis suggests a number of policies that could reduce the fiscal problems that will result from these demographic changes. We briefly discuss them here.

- **Slow the growth of education spending.**

  The primary driver of government spending is the rapid growth in education spending. This is a somewhat surprising result, given that the underlying demographic pressure facing the state is from the rising number and share of older people in the population. But education spending has been rising so rapidly that, even though there will be fewer students to educate in coming years, education by itself will nearly overwhelm the taxing capacity of the state. It is imperative that the state policymakers undertake measures to constrain the growth rate of spending.

- **Slow the growth of human services spending.**

  Human services spending has also been growing very rapidly, although not as fast as education spending. Much of that growth is due to the rising cost of health care and the increasingly large numbers of people who have their health care paid for by the State of Vermont. This is due to state policy changes that allowed many people to receive health insurance from the state rather than through their employer or by paying for it themselves. In 1988 only one in seventeen Vermonters under the age of 65 received their health insurance through Medicaid, which is paid for by a combination of federal and state funds. By 2004, one in five Vermonters under 65 received health care funded by Medicaid.

  If the state continues paying for health care for an increasingly large share of the state’s population, this will only exacerbate the demographically-induced fiscal problems the state faces in the future. The state enacted its Catamount Health program in 2006, which will dramatically expand its role in health care and its health care costs. Moreover, there is constant pressure to further expand the state’s role in health care by enacting a single-payer state-financed health care program. These programs will dramatically affect the state’s financial position, especially when the demographically-induced revenue slowdown begins within the next decade.

  Although people over 65 do not account for a significant share of health care spending today, policymakers should understand that if they enact additional programs that provide more health care services to the over 65 population, the cost of these programs will grow dramatically in future years as the eligible population rises.
• *Increase the taxes, as a share of income, that people and businesses in Vermont pay.*

As we have noted, the combination of slower overall income growth and increased spending demands will mean that education and human services will absorb nearly all available tax revenues for Vermont’s state and local governments. If spending is not constrained, the only option will be to raise Vermont’s taxes. But the increase in taxes needed to continue to fund the rest of state and local government would mean an inordinate tax burden on Vermonters, including businesses and individuals. It is very unlikely that Vermonters would accept the increase in taxes needed to make this happen. If taxes were increased that much, the impact on the state’s economy would likely be severe.

• *Increase the growth rate of average worker income.*

The fiscal impacts discussed above assume that the income growth of seniors and workers continues to grow at its historical average rate of the past twenty-five years. It is possible that income growth per worker will be higher in the future than it has been over the past two and a half decades. However, the magnitude of income growth needed to generate the tax revenues that will be needed to fund the projected cost of services is much larger than any conceivable increase based on productivity growth. Income would have to grow by 75 percent more than its historical rate of increase in order to keep projected spending at roughly its current share of income. It is highly unlikely that higher income growth will allow Vermont to grow our way out of the fiscal dilemma that the state faces.

• *Change the underlying demographics in Vermont.*

Since the basic problem facing the state is demographic, one solution is to change the demographics of the state. The way to reduce the share of the over 65 population is to increase the number of people under the 65. This would mean making the state a much more attractive place for productive working-age in-migrants. The way to do this would be to make the state more attractive to businesspeople and entrepreneurs who start businesses and who employ highly educated and skilled workers who make high salaries. If the state’s labor force over the next twenty five years could grow at the same rate it grew in the 1990s, a very large part of the projected revenue problem would be eliminated.

Reducing the cost of living in Vermont would also be a part of a policy that would enable this to occur. Reducing the cost of living means’ lower taxes, lower costs of food and energy, and lower housing prices. All of these are amenable to public policy.
Lower taxes are directly affected by public policy. Increased competition, for example by increasing the number of supermarket chains doing business in Vermont, can lower food prices. Energy prices are influenced by regulatory and other public policy decisions. Housing prices can be lowered by increasing the supply of houses, and one way to do that is to reduce the state and local regulatory barriers to housing construction.
IV. Demographic Appendices

A. Non-Census Bureau Population Projections

We are aware of four population projections other than that of the U.S. Census prepared for Vermont. Are they generally consistent with the Census projection or do they suggest different demographic trends for Vermont? We examine each of them in turn below.

1. MISERS

In August of 2003 the Massachusetts Institute for Social and Economic Research (MISER) released a demographic projection prepared for the Vermont Department of Aging & Disabilities. MISER, founded in 1981 by the University of Massachusetts, is an interdisciplinary research institute of the College of Social and Behavioral Sciences. It is the liaison between the state and the U.S. Bureau of the Census.

MISERS’ projection covered the period 2000 to 2020 and was based on the 2000 Census. A projection was given for total population and population by age cohorts.

The Census and MISERS’ projections of total population are given below.

<table>
<thead>
<tr>
<th>Comparison of Census and Miser Total Population Projections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>2000</td>
</tr>
<tr>
<td>2005</td>
</tr>
<tr>
<td>2010</td>
</tr>
<tr>
<td>2015</td>
</tr>
<tr>
<td>2020</td>
</tr>
</tbody>
</table>

The MISER projection calculates Vermont’s future population growth will be slower than in the recent past and even slower than that projected by the Census. The difference in population projected is about 2% per decade, a relatively small amount.
More important to the analysis of this report are the underlying trends projected by the Census versus MISER. Both projections show the same general trends.

<table>
<thead>
<tr>
<th>Comparison of Census and MISER Age Cohort Population Projections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Census Bureau</td>
</tr>
<tr>
<td>0-19</td>
</tr>
<tr>
<td>2000</td>
</tr>
<tr>
<td>2005</td>
</tr>
<tr>
<td>2010</td>
</tr>
<tr>
<td>2015</td>
</tr>
<tr>
<td>2020</td>
</tr>
</tbody>
</table>

- Both projections show the number of residents from 0 to 19 years-old will decrease substantially from 2000 to 2020. The Census Bureau shows a 9% decline while MISER shows an 11% decline.

- Both projections show the number of working age Vermonters will rise and then decline during the twenty year projection period. MISER shows less growth and a more precipitous decline. If this study had used the MISER projection, the future fiscal problems would have been more severe.

- Both projections show a nearly identical (76% vs 79%) rise in the number of elderly Vermonters.

In conclusion, the MISER projection shows similar Vermont demographic trends as the Census projection. Use of the MISER projection would have yielded similar findings as did use of the Census projection.
2. Moody’s Economy.com and NEEP

The official state economic forecast for Vermont is prepared by the national forecasting firm Moody’s Economy.com with assistance from the New England Economic Partnership (NEEP). The Economy.com forecasting model is an extensive econometric model with a demographic component.

In October 2005 NEEP released its economic forecast which contained a population projection through 2009. That projection, compared to the Census projection, is shown below.

<table>
<thead>
<tr>
<th></th>
<th>Census</th>
<th>NEEP</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>627</td>
<td>621</td>
<td>na</td>
</tr>
<tr>
<td>2005</td>
<td>631</td>
<td>623</td>
<td>-1.3%</td>
</tr>
<tr>
<td>2006</td>
<td>635</td>
<td>625</td>
<td>-1.6%</td>
</tr>
<tr>
<td>2007</td>
<td>640</td>
<td>628</td>
<td>-1.8%</td>
</tr>
<tr>
<td>2008</td>
<td>644</td>
<td>632</td>
<td>-1.8%</td>
</tr>
<tr>
<td>2009</td>
<td>648</td>
<td>635</td>
<td>-2.0%</td>
</tr>
</tbody>
</table>

Both projections show the Vermont population growing at a very slow rate. The Census projection shows population growing just 3.3% in total between 2004 and 2009. The NEEP forecast shows a gain of just 2.3%.
Comparison of Census and NEEP Age Cohort Population Projections

<table>
<thead>
<tr>
<th></th>
<th>Census Bureau</th>
<th></th>
<th></th>
<th></th>
<th>NEEP</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-19</td>
<td>20-64</td>
<td>65 &amp; up</td>
<td>0-19</td>
<td>20-64</td>
<td>65 &amp; up</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>166.3</td>
<td>385.0</td>
<td>81.0</td>
<td>162.0</td>
<td>380.7</td>
<td>78.8</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>159.3</td>
<td>389.4</td>
<td>82.2</td>
<td>160.8</td>
<td>382.8</td>
<td>79.4</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>157.9</td>
<td>393.6</td>
<td>83.8</td>
<td>159.6</td>
<td>384.9</td>
<td>80.2</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>156.4</td>
<td>397.4</td>
<td>85.7</td>
<td>158.8</td>
<td>387.5</td>
<td>81.7</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>154.9</td>
<td>400.6</td>
<td>88.4</td>
<td>158.3</td>
<td>389.6</td>
<td>84.1</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>153.3</td>
<td>404.0</td>
<td>90.9</td>
<td>157.7</td>
<td>391.7</td>
<td>86.2</td>
<td></td>
</tr>
</tbody>
</table>

The NEEP population projection is consistent with the Census projection in the growth rates of the various age groups.

- Both projections show the number of young Vermonters will decrease from 2004 to 2009. The Census shows a decrease of 8% while NEEP shows a decrease of 3%.
- Both projections show the number of working age Vermonters will increase from 2004 to 2009. The Census shows an increase of 5% while NEEP shows an increase of 3%.
- Both projections show the number of elderly Vermonters will increase rapidly from 2004 to 2009. The Census shows an increase of 12% while NEEP shows an increase of 9%.

In conclusion, the NEEP projection shows the same general demographic trends as the Census projections. Use of that projection would yield similar results to use of the Census projection.

We note that Moody’s Economy.com also prepared a longer term population projection for Vermont than that referenced above. The longer term projection is built on the same trends. By 2020 the NEEP projection shows a Vermont population of approximately 671,000 versus the Census projection of 691,000. NEEP is anticipating the same general long terms demographic trends for Vermont as is the Census Bureau.
3. **REMI**

Regional Economic Models, Inc. (REMI) of Amherst, Massachusetts prepares dynamic input-output models for states and regions. The strength of REMI models is in their ability to measure the economic and demographic impact of changes to the regional economy. As part of this process, REMI needs to generate a baseline economic and population forecast.

In 2003 Northern Economic Consulting, Inc. (in consultation with the Vermont Agency of Transportation) had REMI prepare a model for the state of Vermont. We show Census projection and the REMI baseline projection of population below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Census</th>
<th>REMI</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>627</td>
<td>623</td>
<td>na</td>
</tr>
<tr>
<td>2010</td>
<td>653</td>
<td>641</td>
<td>-1.8%</td>
</tr>
<tr>
<td>2020</td>
<td>691</td>
<td>695</td>
<td>0.6%</td>
</tr>
<tr>
<td>2030</td>
<td>712</td>
<td>766</td>
<td>7.6%</td>
</tr>
</tbody>
</table>

Both projections show the Vermont population growing at a very slow rate through 2020. The Census projection shows population growing just 10% in total for the sixteen years between 2004 and 2020. The REMI forecast shows a slightly higher gain of 12%. But then from 2020 to 2030 the Census shows the Vermont population growing at 3% and REMI calculates rate of 10%, which implies an increase in the rate of growth.

A more detailed comparison is presented below, which looks at the growth rates for three age cohorts.
The REMI population projection is generally consistent with the Census projection in the growth rates of the young and older age groups.

- Both projections show the number of young Vermonters will decrease from 2004 to 2020. The Census shows a decrease of 8% while REMI shows a decrease of 7% But then from 2020 to 2030 the Census Bureau shows a 3% increase while REMI shows a 12% increase.

- Both projections show the number of elderly Vermonters will double from 2004 to 2030.

The two projections differ on the growth of the working age population beginning after 2010. The Census Bureau shows this age group declining by 5% in the following twenty years. The REMI projection calculates this age group will continue to increase over that period, albeit slowly, by only a total of 6%.

In conclusion, the REMI projection shows the same general demographic trends as the Census projections with the exception that the working age population will continue to increase slowly. The underlying reason is that the REMI model calculates that migration into Vermont (internal and international combined), will increase more than fourfold from 2005 to 2025 to more than 7,000 persons per year. Birth and death rates remain essentially unchanged. As discussed in the following section of this appendix, that would be a dramatic demographic change for Vermont.
4. Conclusion to Other Population Projections

We examined four other population projections in addition to the Census projection. Two of the projections (MISER, NEEP) show trends that are nearly identical to that of the Census Bureau. Only the REMI projection showed a material difference from the Census projection, with the main difference being the projection of an increase in the working age population after 2020, rather than the decrease in this age group projected by the Census Bureau and MISER.

Therefore, of the five (the Census plus four others) projections available to policymakers in Vermont, all but one show a decline in the working age population sometime during the 2010 to 2020 period. A prudent policymaker would make plans based on the preponderance of the evidence and would not ignore the potential problems which most forecasters are anticipating. Thus, relying on the Census Projection is the prudent step to take.
B. Reasonableness of the Census Projection for Vermont

Any population projection is prepared based on assumed trends in three components of population change: the natural increase in population (births less deaths); state to state migration; and international migration. Should these assumed trends not hold, the resulting projection will most likely not prove to have accurately predicted the actual population growth.

Of course, in hindsight any projection will prove to be in error to some degree. But that is no reason to dismiss all population projections. For example, use of national population projections shows that the Medicare program is likely to face severe fiscal problems in the near term and Social Security in the longer term. Prudent policymakers (few appear in Congress at the moment) would be well advised to take action today before the problem gets worse.

Is it reasonable for Vermont policymakers to base policy decisions on the Census Projection? Or should the projection be considered simply speculative? We answer these questions by looking at the trends assumed for each component of population change in the projection. We note that the Census Projection assumed that recent trends in Vermont demographics would continue. Is that reasonable?

1. Births

The Census estimates of Vermont’s population from 2000 to 2005 shows a total gain of 14,223 people. That is just a 2.3% total gain in five years. Half of this gain came from the natural increase in population: births less deaths. That means that without migration into the state, Vermont’s population would have grown only 1.2% in total in five years. That is very low. By comparison, the U.S. population growth rate is 1.0% per year.

The U.S. Department of Health’s Vital Statistics Division reports that Vermont women have the lowest fertility rate of any state in the U.S.\(^3\) In 2004 the U.S. fertility rate was 66.3. In Vermont the rate was just 51.8. Maine and New Hampshire were only slightly higher than Vermont.

The low level and downward trend in fertility is a characteristic of western countries, as evidenced by the slow population growth rates of France, Germany, Italy, and Japan, among others. The trend affecting Vermont women is an international trend that is not likely to be reversed soon. Rather, fertility in Vermont may decrease further.

---

\(^3\) Fertility is the number of births per 1,000 women aged 15 to 44.
2. Deaths

The mortality component of a state population projection is the least variable of the components that are projected. Mortality rates have changed significantly since 1900 and continue to do so. As evidenced by comparing the Census projection to the Census estimates for 2005 (presented in the text of this report), there no reason to expect the mortality rate trend to be a source of significant error in the projection.

3. Internal migration

Internal migration is the movement of population from state to state (not to or from another country). In recent years, this has been a small component of Vermont’s population growth. Data for gross migration are available from the decennial census (2000), which asked the question “where did you live five years ago?” The Census Bureau reports:

<table>
<thead>
<tr>
<th>Vermont Internal Migration: 1995 to 2000</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Migrants</td>
<td>Migrants per 1,000 residents</td>
</tr>
<tr>
<td>In migration</td>
<td>69,748</td>
</tr>
<tr>
<td>Out migration</td>
<td>67,494</td>
</tr>
<tr>
<td>Net migration</td>
<td>2,254</td>
</tr>
</tbody>
</table>

While the gross migration rates seem large, the net migration is small. That is, almost as many people moved into Vermont as left the state.

During the five year period 2000 to 2005, the Census Bureau estimates also show a small net migration of 3,530 people in total into Vermont. Given the estimated state population change of 14,223 during this period (which itself is small — just a 2% gain in five years), net migration contributed just 25% of the growth.

Is it possible that net migration into Vermont could increase and the projection would prove too low? Certainly someone will argue that the public’s perception of Vermont as a desirable place to live will improve, thereby send more migrants to the state. Given that Vermont’s population is small (620,000) versus that of the rest of the U.S. (299,000,000), a small change in perceptions of the U.S. public could dramatically affect the flow of people into Vermont. Has this ever happened?
The graphic below shows the U.S. and Vermont population change and projection change from 1840 through 2030.

![Vermont and U.S. Population Growth Rates 1840-2030](image)

Prior to the decade of the 1960s, Vermont’s population growth was always substantially lower than that of the U.S. and averaged a gain of around 5% gain per decade. Then in the 1960s and 1970s, decadal population growth in Vermont rose to 14% and 15%, respectively. During the 1970s, it actually exceed that of the U.S. (15% versus 11%) for the only time in the last 160 years.

This occurred because of migration into Vermont from other states. However, this migration has returned to a low level and, (partly) as a consequence, Vermont’s population growth has declined significantly and returned to its historical relationship of being below that of the United States. This has been true not only for Vermont, but for New England as a whole. The Census projection assumes this will continue.

Therefore, the period of the 1960s and 1970s was an anomaly in Vermont’s demographic history. Evidence from the last ten years shows that in-migration has returned to its relative historical levels. It would be speculative to assume the in-migration of the 1960s and 1970s will return to Vermont. Therefore, prudent policymakers will find the Census projection of low levels of in-migration to Vermont to be an appropriate assumption.
4. **International migration**

International migration always holds the potential to significantly affect the population growth of a state. A quick examination of the population growth of California, Florida, and Texas will bear that out. However, in Vermont the likelihood of international migration significantly increasing significantly and pushing population growth up well above the Census projection levels is remote.

International migration into Vermont has been low as measured by the 1990 and 2000 decennial censuses. In 1990, 7.9% of the U.S. population was foreign-born while only 3.1% of the Vermont population was foreign-born. In 2000, 11.1% of the U.S. population was foreign-born while just 3.8% of Vermont’s population was foreign-born. From 1990 to 2000, the Vermont population grew by 46,069 residents. The number of foreign-born residents increased by just 5,701. That is an increase of less than 600 new foreign-born residents per year during the 1990s. Just 12% of the new residents in Vermont during that time were foreign-born.

The relative unattractiveness of Vermont to the foreign-born is a trait shared with Maine and New Hampshire. In both census years, the rates of foreign-born for all three northern New England states were below the national rate.

The Census estimates of population change from 2000 to 2005 show that international immigration into Vermont totaled 4,359 persons in that five year period. That is an average of 872 people per year.

The Census projection for Vermont assumes a low level of international migration into Vermont would continue. Given recent history, that is an appropriate assumption.

5. **Conclusion**

Based on this analysis, we conclude that the Census projection assumed underlying demographic trends that have a firm basis in the history of Vermont. Differing assumptions would have a steep burden of persuasion to be accepted by most policymakers.

Therefore, we find the Census projection to be one which prudent policymakers should employ in their decision-making processes.