

# **Nevada's Proposed 2003-2005 Budget: Review & Analysis**

**Sponsored by:  
Citizens for Prosperity & Responsibility**

**March 2003**

**CPR** | Citizens for Prosperity & Responsibility

316 California Ave. #103, Reno, NV 89509-1650  
E-mail: cprnevada@hotmail.com

Marty Guidici  
American Ready-Mix

Joe Serpa  
Q&D Construction

Brett Barker  
Barker-Coleman Communities

Len Savage  
Savage & Son

Steve Johnson  
Berry-Hinckley Industries

Blake Smith  
Somerset Development

Rod Cooper  
Granite Construction

Tammy Brunson  
Walton's Funeral Homes

Conrad Stitser  
Pinnacle Dry Wall

Tom Reviglio  
Western Nevada Supply

Mike Winkel  
Winkel Motors

---

Authors:

Demographics Solutions, Inc.  
3876 Red Rock St.  
Las Vegas, NV 89103  
(702) 362-6773

Dr. Robert Schmidt, J.D., Ph. D.  
schmidtarr@aol.com

Charles Barr, M.A.  
cfbarr@aol.com

## **Executive Summary**

As the Nevada legislature deliberates critical fiscal issues impacting the State, it is faced with the daunting task of evaluating the proposed budget.

This report questions many of the outcomes of the proposed budget. This critical analysis is not an attempt to suggest expert knowledge of each individual budgetary item, but rather to suggest that many of the assumptions underlying the budget are inconsistent with both empirical and theoretical evidence.

We find that many of the revenue projections in the proposed budget are not transparent, do not follow any recognized methodology, and are inconsistent with Federal data and other empirical information. For example, our analysis suggests that current calls for significant increases in State tax revenue are based upon overestimates of expected growth in areas such as school enrollment, Medicaid caseloads, and other welfare spending such as Temporary Assistance for Needy Families (TANF).

By closely analyzing the assumptions made by Governor Guinn and the Task Force in arriving at their estimates of State revenue needs, as well as historical patterns of government expenditure growth in Nevada, our analysis suggests that State services can be funded at current levels without the proposed massive increases in taxes. In fact, we demonstrate that the proposed increases in cigarette and liquor taxes, without any other tax increases, will generate sufficient additional revenues to create a surplus rather than a deficit.

## Introduction

As is well known, the current legislative budget as submitted by Governor Kenny Guinn suggests an immediate and ongoing fiscal crisis that can be averted only by a massive tax increase. In his State of the State address, Governor Guinn predicted that Nevada would face a “shortfall” in revenues of over \$700 million in the next two years alone.<sup>1</sup>

However, a closer analysis does not support these arguments. Our analysis suggests that Nevada does not face a \$700 million deficit in the next biennium. Existing tax revenues, possibly augmented with increased cigarette and liquor taxes, should be more than adequate to fund state expenditures at current levels. In short, we do not find justification for massive tax increases to offset “projected” State expenditures.

The Governor and his advisory panel, the Governor’s Task Force on Tax Policy in Nevada, justify their proposal for a 41% tax increase<sup>2</sup> by offering a perplexingly high estimate of future revenue needs and a very pessimistic estimate of future revenue growth from existing sources. In addition, as indicated in his speech, the Governor intends to use the proposed new revenues not merely to maintain State services at existing levels, but also, at significant cost, to launch several new State initiatives, while greatly increasing the size and scope of many existing programs.<sup>3</sup>

In a fundamental sense, why does the analysis in this report reach different conclusions than those presented in the State budget proposals?

This report suggests that many of the assumptions underlying the budget are inconsistent with available empirical and theoretical evidence. We find that many of the revenue projections in the proposed budget are simply:

1. Not transparent,
2. Do not follow any recognized methodology, and
3. Are inconsistent with Federal data and other empirical information.

Specifically, we have found strong evidence that current calls for significant increases in State tax revenue are based upon overestimates of expected growth in areas such as:

1. School enrollment,
2. Medicaid caseloads, and
3. Other welfare programs, such as TANF.

---

<sup>1</sup> *State of the State Address*, Remarks by Governor Kenny C. Guinn to the 72nd Session of the Nevada Legislature, January 20, 2003.

<sup>2</sup> Executive Budget in Brief (“EB”), P. 17 & 20.

<sup>3</sup> *State of the State Address*. New programs proposed in the Governor’s speech include statewide full-day kindergarten; a new Science, Engineering and Technology Center at UNLV; and creation of a new mental health hospital in southern Nevada.

By closely analyzing the assumptions made by Governor Guinn and the Task Force in arriving at their estimates of State revenue needs, as well as historical patterns of government expenditure growth in Nevada, our analysis suggests that State services can be funded at current levels without the proposed massive increases in taxes. If our analysis is correct, then, for example, higher levels of State spending for areas such as public education might be achieved through the Governor's proposed increases in cigarette and liquor taxes alone.

### **The 2002-2003 Deficit**

In his "State of the State" speech, Governor Guinn reported that he was forced to deal with a budget deficit of \$300 million in the 2001-2003 biennium, which he resolved by initiating many "very difficult" budget cuts and by drawing down on General Fund reserves (the so-called "Rainy Day Fund").

The current deficit and resulting budget cuts are examples of what the Governor terms a "long-term structural budget problem facing Nevada."<sup>4</sup> However, a closer examination shows that Nevada's fiscal picture is actually much brighter than the one the Governor paints. More specifically:

- The actual deficit for the two-year period was less than 52% of what the Governor reported.
- This deficit followed several years of budget surpluses and a decade of growth in per capita inflation-adjusted State spending.<sup>5</sup>
- Far from being structural, this deficit was a temporary and cyclical one, similar in size and scope to the 1991-1993 deficit (which likewise occurred against the backdrop of an economic slowdown and a war against Iraq).

While he failed to provide specific details to justify his claim of a \$300 million deficit, it is likely that the Governor relied in part on numbers provided by his Task Force. Using a combination of the 2001 Legislature's budget and its own assumptions regarding future growth and funding needs, the Task Force projected a cumulative deficit of \$372 million for the two-year period.<sup>6</sup>

The actual numbers tell a somewhat different story. On the revenue side, according to the Budget and Planning Division, the estimated General Fund shortfall for the 2001-03 biennium totals \$155.7 million.<sup>7</sup> On the spending side, the State reported actual spending of \$3.752 billion<sup>8</sup> compared to budgeted spending of \$3.847 billion,<sup>9</sup> which re-

---

<sup>4</sup> *State of the State Address*.

<sup>5</sup> TFR, P. 3-3.

<sup>6</sup> Governor's Task Force on Tax Policy, *Section 4: General Fund Outlook*, page 4-5.

<sup>7</sup> State of Nevada, *2003-2005 Executive Budget in Brief*, page 17.

<sup>8</sup> State of Nevada, *2003-2005 Executive Budget in Brief*, page 17.

flects budget cuts totaling \$95 million. Most of the remaining shortfall showed up as a draw down in General Fund reserves.

A few things regarding the above numbers should be noted. First, the General Fund revenue shortfall was approximately half of the \$300 million mentioned in the Governor's speech. Second, the reported budget cuts still left spending at 6.3% above 1999-2001 levels, after adjusting for inflation and population growth. Third, \$116 million – an amount representing 75% of the revenue shortfall – was spent on new enhancements to existing programs, rather than funding of such programs at previous levels.<sup>10</sup>

### **Establishing a Reasonable Baseline**

In order to estimate future State revenue needs, a baseline must first be established, and several assumptions must be made regarding future trends in revenue growth, revenue requirements, population growth, and related items.

The first question to ask is whether the Task Force employed an appropriate baseline, or starting point, for its estimates of current and future revenue needs. As noted in its report, the Task Force “used the budgeted spending levels for the 2001-03 biennium as a representative baseline.”<sup>11</sup> However, as the Task Force also stated, “It is noteworthy that between FY 2000-01 and FY 2002-03, the State's general fund budget increased by nearly 20%, or from \$1.6 billion to \$2.0 billion. This increase exceeded population and inflation growth by nearly 10% and represents the largest two-year increase in State appropriations reported during the study period.”<sup>12</sup>

These three sentences, taken together, show why the 2001-03 budget was not an appropriate choice as a representative baseline. Placed in historical context, this budget was the Legislature's response to the exceptional growth of State revenues during the boom years of the late 1990's. At the time this budget was adopted, the Legislature had reason to believe that such growth would continue, and adopted the budget in anticipation of continued increases in revenues from existing taxes.

A few months after this budget was adopted, State revenues declined unexpectedly and sharply in the wake of the September 11 attacks and their chilling effect on tourism. In the 1½ years since the attacks, Nevada's economy has staged a modest recovery, but State revenues have continued to accrue at a lower rate than anticipated at the time the 2001-03 budget was adopted.

---

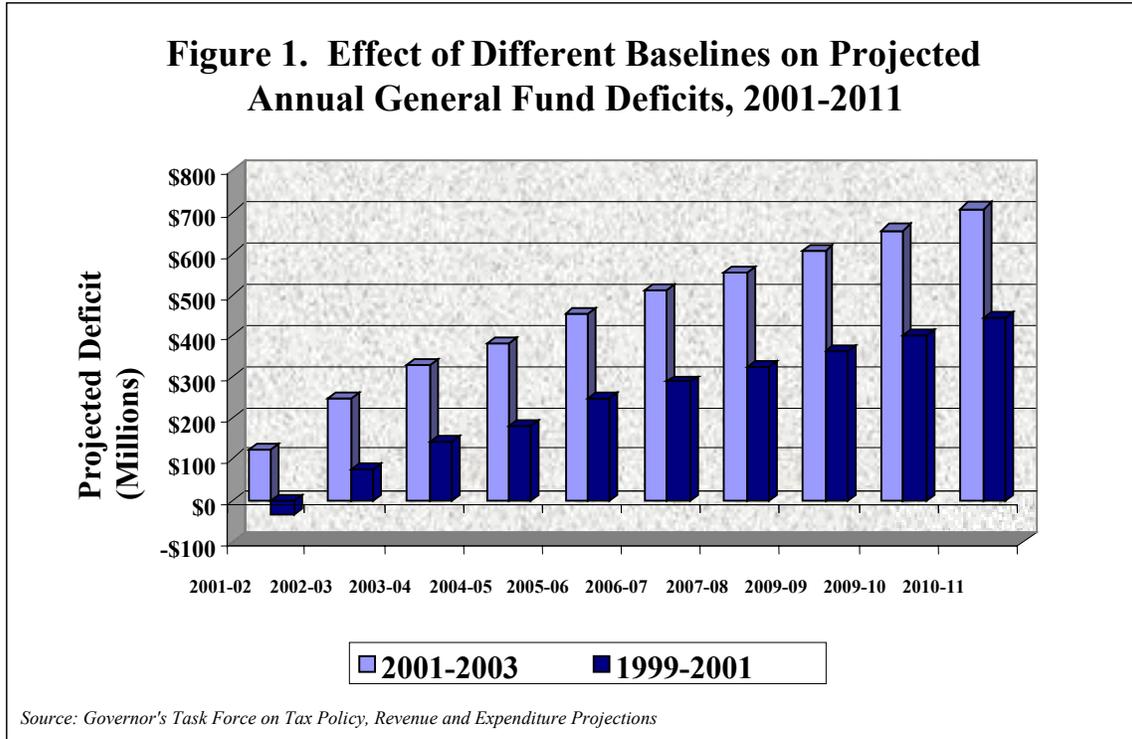
<sup>9</sup> State of Nevada, *2001-2003 Executive Budget in Brief, Spending Summary*.

<sup>10</sup> State of Nevada, *2003-2005 Executive Budget in Brief*, page 27.

<sup>11</sup> Governor's Task Force on Tax Policy, *Section 4: General Fund Outlook*, page 4-14.

<sup>12</sup> Governor's Task Force on Tax Policy, *Section 4: General Fund Outlook*, page 4-15.

In defense of using this budget as a reference point, the Task Force stated: “Interim actions notwithstanding, it is the approved 2001-03 spending levels that remain the baseline for this analysis, as these data best represent the Legislature’s intended service level.”<sup>13</sup> It is true that the 2001-03 budget represented the Legislature’s intended service level, but that is not the whole story. It represented the intended service level *based on the Legislature’s reasonable expectation that revenues would be available to fund the expansion of state services that they approved*. If the Legislature had known in advance what was to come, its “intended service level” would have been set lower.



A more appropriate baseline would be the spending levels approved for the 1999-2001 budget, adjusted for population growth and inflation. That budget was itself a product of significant real per capita revenue and spending growth over the previous several years; it was not a “stingy” budget by any means. Using this budget as a baseline would simply mean stripping away the “add-ons” placed in the 2001-03 budget, before the Legislature discovered that the money would not be available to fund them.

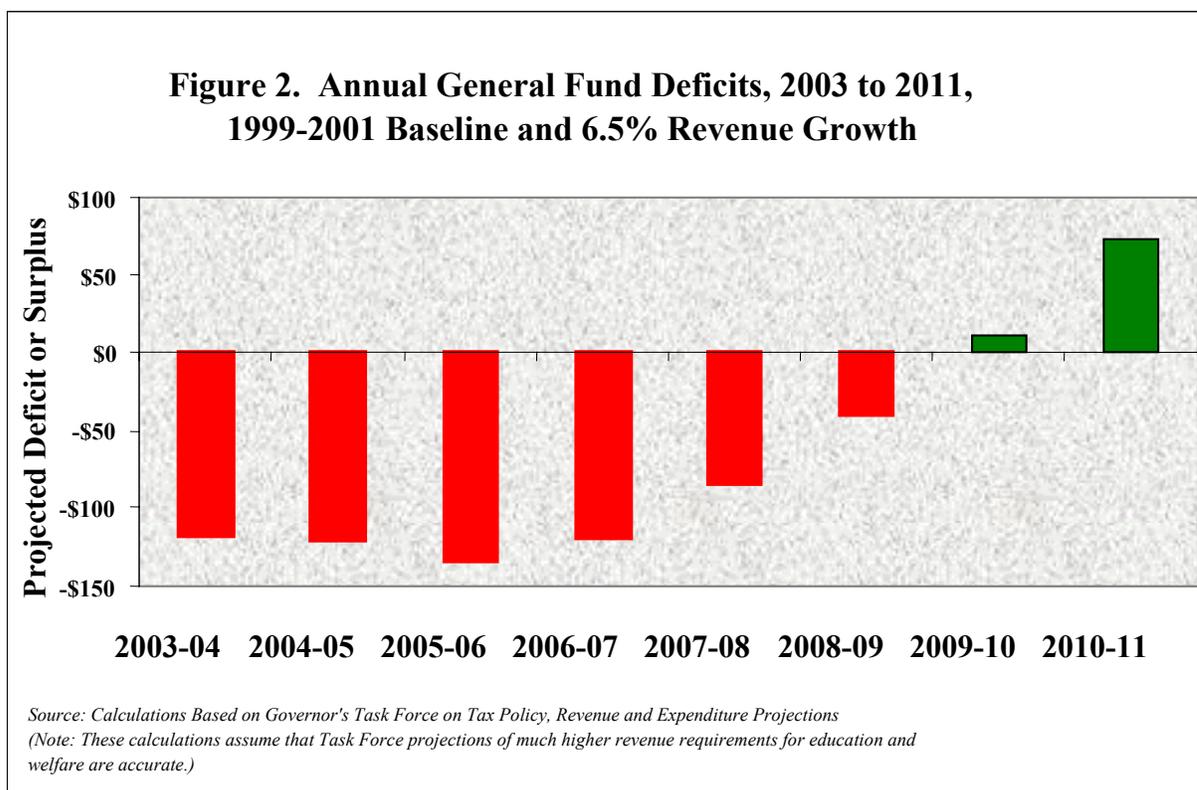
The importance of establishing a reasonable baseline is dramatically shown in Figure 1, above. Even before adjusting for other elements of the Task Force projections, setting a realistic baseline reduces the 2001-03 deficit by nearly 88%, from \$372 million to only \$46 million. (This is almost identical to what the actual revenue shortfall would have been, had the State not spent \$116 million on enhancements to existing programs.) Using the 1999-2001 baseline also reduces the overall projected deficit for the 10-year period 2001-2011 from \$4.57 billion to \$2.43 billion, a decline of nearly half.

<sup>13</sup> Ibid.

## Projecting Future Revenue Growth

To assist in its deficit projections, the Task Force has attempted to forecast the amount that existing taxes will contribute to State revenue growth in the coming years. This forecast shows General Fund revenues increasing 41.6% between FY 2001-02 and FY 2010-11, a compound annual increase of approximately 3.9% per year.<sup>14</sup>

By any historical standard, this is an extremely pessimistic forecast. The compound annual increase in General Fund revenue between 1989 and 2001 was 7.3%, and for State revenue as a whole it was 8.4%.<sup>15</sup> This growth in State revenues occurred during a decade that included two recessions as well as the first Gulf War, far from a “best case” scenario. Despite the economic fallout from the terrorist attacks and the recession, General Fund revenues managed to grow 1.0% during FY 2001-02, and posted a higher 3.5% growth in FY 2002-03 as the economy continued to recover.



It would take an extraordinary state of affairs, such as a decade-long recession, to reduce the compound annual percentage increase in General Fund revenues to a level well below even the most depressed year of the 1990’s. This unduly pessimistic outlook is a product of the methods that the Task Force used to estimate future growth in population and income. We will examine the Task Force’s forecasting methodology shortly.

<sup>14</sup> Governor’s Task Force on Tax Policy, *General Fund Outlook: Exhibit 4A-1*.

<sup>15</sup> Governor’s Task Force on Tax Policy, *Fiscal System Overview: Exhibit 2A-1*.

Figure 2 shows what happens to the deficit when we substitute a more reasonable annual revenue growth rate of 6.5%, which is a bit less than the growth rate achieved during the 1989-2001 period (7.3%). The deficit for the eight-year 2003-2011 period falls to an average of \$67 million per year, or *less than 13%* of the Task Force estimate. What's more, the annual deficit begins declining steeply in 2006, disappearing and becoming a *surplus* by 2009.

To summarize, we have arrived at deficit projections that are very different than those being circulated by the Governor and his Task Force. We reached our conclusions by modifying only two assumptions that the Task Force used to justify its prediction of a large and growing General Fund deficit during the next decade. We changed the spending baseline (adjusted for population growth and inflation) from 2001-2003 levels to 1999-2001 levels. And we increased anticipated annual revenue growth from 3.9% to 6.5% (which is still lower than the historical average).

Without taking any other factors into account, these two changes alone reduced the projected 2003-2011 deficit to one-eighth of its former size. The remaining deficit, if real, could be overcome with a modest tax increase that is less than one-fourth the size of that proposed by Governor Guinn.

However, even this deficit projection may be overstated, as it has not yet taken into account possible problems with Task Force predictions regarding future demand for state services. Governor Guinn and the Task Force have based their estimates of future revenue needs on an expectation of higher-than-normal increases in school enrollment and demand for Medicaid and other welfare services. Later in this document, we will examine the methodology that the Task Force used to arrive at its conclusions.

### **The 2004-2005 Deficit**

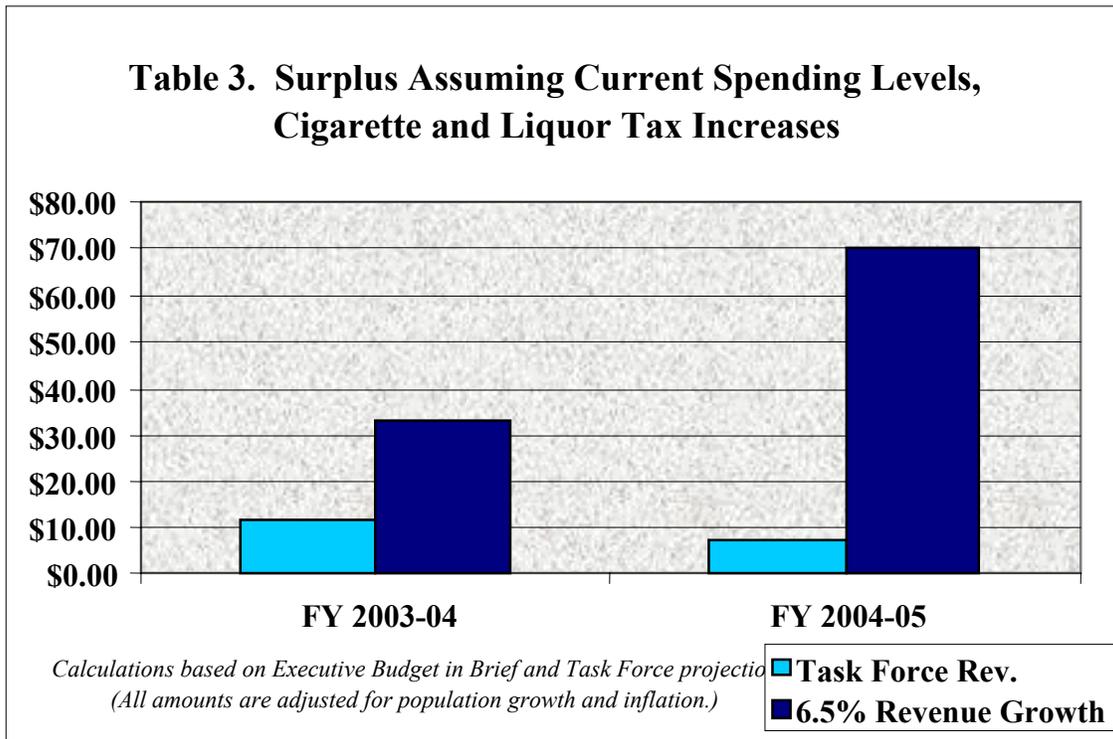
Although only general predictions can be made for State revenues and expenditures over the next 10 years, more detailed predictions can be made for the near term.

General Fund revenues for FY 2002-03, using the current tax structure, are estimated at \$1,813.5 million. Governor Guinn has requested tax hikes that would significantly add to State revenue in future years. For purposes of this forecast, we will assume that the Governor obtains only the cigarette and liquor tax increases that he has requested, and that these increases are effective beginning in FY 2003-04. This will add an annualized \$135.6 million to the existing tax base of \$1813.5 million, for a total of \$1,949.1 million. We will adopt this as our baseline.

The Task Force has forecast a 5.40% increase General Fund revenues for FY 2003-04, and a 4.55% increase in FY 2004-05. Such a percentage increase would result in a total of \$4,202.4 million in General Fund revenues for the 2003-05 biennium. Using what we consider a more realistic annual revenue growth rate of 6.5%, we arrive at a biennium total of \$4,286.5 million.

On the expenditure side, the Governor is proposing a 33.9% increase in spending compared to the current biennium, or a total of \$4,887.3 million.<sup>16</sup> This would create a 2003-05 biennium deficit of \$600 million to \$685 million, depending on which revenue growth projections were used.

However, if current spending levels are maintained, adjusted only for population growth and inflation, a totally different picture emerges. The Task Force has estimated combined annual population and inflation growth at 4.8% throughout the study period.<sup>17</sup> Using this benchmark, General Fund spending for FY 2003-04 should total \$2,042.7 million in FY 2003-04 and \$2,140.7 million in FY 2004-05, for a biennium total of \$4,183.4 million.



Thus, if the Governor’s proposed new spending plans are removed from the equation, and higher cigarette and liquor taxes are added in, the deficit turns into a two-year *surplus* of \$103.1 million. Even using the pessimistic revenue growth rate predicted by the Task Force, a surplus of \$19 million will result.

<sup>16</sup> *Executive Budget in Brief*, p. 20.

<sup>17</sup> Governor’s Task Force on Tax Policy, *General Fund Outlook*, page 4-17.

## Revenue Needs for Education

A major portion of Nevada's budget is directed toward supporting education. During the 2001-03 biennium, State spending on education (including General Fund and non-General Fund spending) totaled \$3,014 million. For the 2003-05 biennium, Governor Guinn is proposing to spend \$3,694 million, an increase of \$680 million or 22.6%.<sup>18</sup> The General Fund education expenses are increased by over 30%.<sup>19</sup>

Some of this money is earmarked for new programs that Governor Guinn is proposing, such as statewide full-day kindergarten and a new Technology Center at UNLV. However, spending increases on existing education commitments are based partially on the Governor's estimate that enrollment will increase substantially. The Governor estimates that the university and community college enrollment will increase by 9.4% in 2004 and by 6.1% in 2005.<sup>20</sup> This projected enrollment increase is significantly higher than the Task Force projections and is not supported by historical data.<sup>21</sup> The student population only increased by 2.7% in 2002 and is estimated to increase by only 2.7% in 2003. There does not seem to be any valid demographic support for these large projected increases in enrollment. The Governor estimates the K-12 student enrollment will increase by 4.01% in FY 2003-04 and another 3.56% in FY 2004-05.<sup>22</sup>

Since so much of State budget projections are driven by anticipated increases in school enrollment, it is worthwhile to examine enrollment estimates in more detail. In addition to the Governor's estimates for the next two years, shown above, there exist long-term estimates by the Task Force, the State Demographer, the Nevada Department of Education, and the U.S. Department of Education.

The State Demographer projects overall population growth to be 3.71% in 2003, 3.27% in 2004, and 2.89% in 2005. For school-age persons age 5 through 19, his estimates are somewhat lower: 3.43% in 2003, 2.96% in 2004, and 2.45% in 2005.<sup>23</sup>

An even lower estimate is provided by the National Center for Education Statistics (NCES), a division of the U.S. Department of Education. The NCES estimates K-12 enrollment growth for Nevada of only 2.82% in Fall 2003 (which corresponds to FY 2003-04) and 1.37% in Fall 2004 (which corresponds to FY 2004-05). The NCES also projects that total enrollment in Nevada will begin declining in 2007, a prediction that, if true, implies that long-term funding needs projected by the Task Force may require significant downward revision.

---

<sup>18</sup> *Executive Budget in Brief 2003-05*, p. 29.

<sup>19</sup> Fiscal Report prepared by the Nevada Legislative Counsel Bureau, p. 65.

<sup>20</sup> Fiscal Report prepared by the Nevada Legislative Counsel Bureau, p. 72, 78.

<sup>21</sup> Governor's Task Force on Tax Policy, Exhibit 4B-49.

<sup>22</sup> *Executive Budget 2003-05*, page K12-ED9. However, page 67 of the Fiscal Report prepared by the Nevada Legislative Counsel Bureau instead shows a 3.61 percent enrollment increase for FY 2003-04.

<sup>23</sup> Nevada State Demographer's Office: *Age, Sex, Race and Hispanic Origin Estimates from 1990 to 2001 and Projections from 2002 to 2022 for Nevada and its Counties*.

The Task Force estimated K-12 growth in enrollment of approximately 4% in FY 2003-04 and another 4% in FY 2004-05.<sup>24</sup> To partially explain this high estimate, the Task Force also projected that enrollment, as a percentage of school-age population, would rise from 88% to 90.5% during the next two years.

However, the methodology employed by the Task Force is open to question. The Task Force “worked with representatives of the Nevada Department of Education, the school districts, and State Demographer’s Office to project school enrollment and to recreate per pupil support funding models.”<sup>25</sup> However, they discovered that “original projections provided by the State Demographer’s Office and the Nevada Department of Education were internally inconsistent. In fact, the State’s combined enrollment estimates, which constitute a compilation of the estimates generated by each of the individual school districts, resulted in a number of students exceeding the total count of school-aged children projected by the State Demographer in FY 2008-09 (an impossible condition).”<sup>26</sup>

The Task Force then attempted to reconcile these conflicting projections by creating an estimate that assumed that the school-age population would grow “slightly faster than the rate of population growth.”<sup>27</sup> However, the Task Force did not explain why they made such an assumption, which is directly opposite to the State Demographer’s conclusion that school enrollment would grow more slowly than the general population.

While the procedure employed by the Task Force “splits the difference” between the Demographer’s estimate and that of the Nevada Department of Education, it does not necessarily improve upon the accuracy of these two estimates. Either the Demographer underestimated growth in the school-age population, or the Department of Education overestimated growth in the number of students (or possibly both of the above). Considering the critical importance of having a reliable school-age population forecast to aid in estimating future state budgets, such a wide disparity between the two “official” estimates should have led the Task Force to more closely examine the assumptions behind each estimate, rather than to merely make “refinements” to both data sets to arrive at an in-between estimate.

Examining the four different estimates above, we find that both the Governor and the Task Force project K-12 enrollment during the 2003-05 biennium to grow at a faster rate than overall population growth (as estimated by the State Demographer). The NCES estimates that enrollment growth will be less than population growth. The State Demographer, while not estimating enrollment growth, predicts that the age 5 to 19 population will grow at a slower rate than the population as a whole.

For budgeting purposes, it might be reasonable to assume that enrollment growth will be approximately equal to population growth. Although this assumption may not generate the most accurate possible forecast, it is not likely to be significantly higher or

---

<sup>24</sup> Governor’s Task Force on Tax Policy, *General Fund Outlook: Exhibit 4B-11*.

<sup>25</sup> Governor’s Task Force on Tax Policy, *General Fund Outlook*, p. 4-19.

<sup>26</sup> *Ibid.*

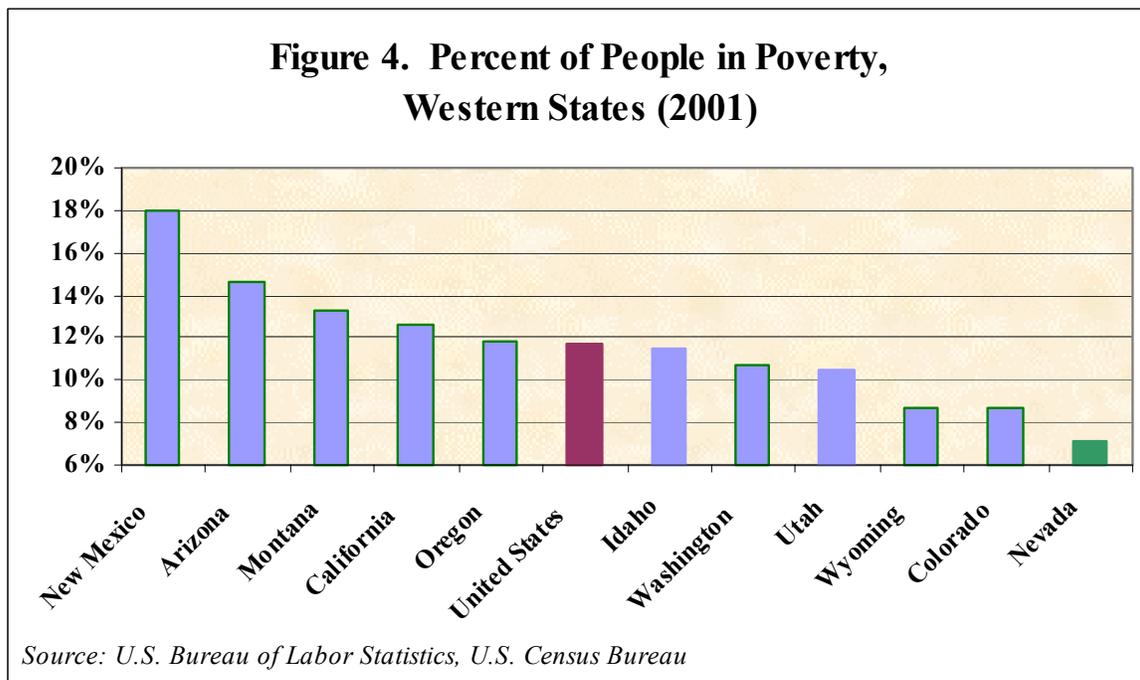
<sup>27</sup> *Ibid.*

lower than the actual growth rate. Using the State Demographer's population projections, and an annual inflation rate of 2.5%, total education spending in the 2003-05 biennium should be approximately \$3,284 million. This is \$410 million less than the Governor's proposed education budget for the biennium.

## Medicaid and Other Welfare Programs

Over the long term Nevada's economy, like the nations, will be subject to alternating periods of recession and prosperity. Since the timing of these cycles cannot be predicted, a forecast of State revenue requirements that falls between these two extremes is least likely to be subject to major error. It is with this principle in mind that we examine the welfare component of State spending.

Several steps must be taken in order to create a reasonable estimate of future State costs for Medicaid and other welfare programs. This involves (1) determining the percentage of persons living in poverty, compared to the overall population, (2) examining population trends and their impact on future welfare needs, and (3) comparing Nevada's welfare spending (adjusted for the poverty level) with that of other states, as a benchmark to assist in determining the appropriate level of spending in Nevada.<sup>28</sup>



### Nevada's Low Level of Poverty

Partly as a result of our low-tax environment, *Nevada has a lower rate of poverty than any other western state, and the third lowest poverty rate in the entire nation.* At only 7.1%, Nevada's 2001 poverty rate (as defined by the U.S. Department of Health and Human Services) is 39% lower than that of the U.S. as a whole, and 41% lower than the average of the 10 other Western states. (See Figure 4).

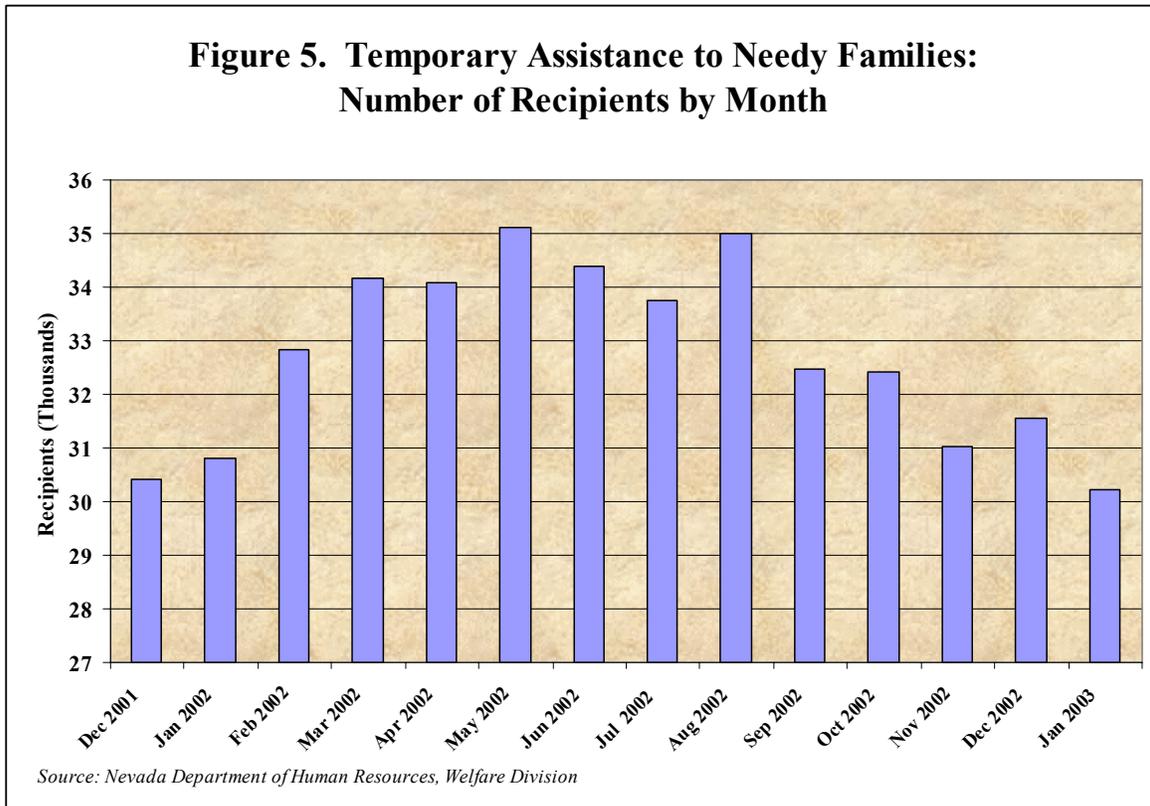
<sup>28</sup> Since eligibility requirements for welfare services vary from state to state, the Federally-defined poverty level is a more consistent benchmark for multi-state comparisons than the number of eligible recipients.

Given these impressive statistics, it should come as no surprise that the number of welfare recipients, as a percentage of the total Nevada population, is correspondingly less than that of other Western states and the nation as a whole.

### The Effect of Population Trends

To estimate growth in the number of people who qualify for Medicaid and other welfare services through the year 2010 and beyond, it is important to have access to a reliable population forecast, based upon credible and recognized methodology. Since senior citizens account for much of Nevada’s Medicaid and other welfare spending, a firmly grounded forecast is especially important when estimating population growth in that age category.

Unfortunately, it does not appear that the population forecast prepared by the Nevada State Demographer, and used by the Task Force to estimate revenue needs, is acceptable for this purpose. The State Demographer’s forecast contains no documentation regarding input data, methods, and assumptions. Consequently, it is not possible to evaluate the methodologies that were used in arriving at this forecast. A restated forecast, employing widely recognized and accepted methodologies, generates population estimates quite different from those proposed by the State Demographer. (The deficiencies in the State Demographer’s forecast, and a revised forecast using recognized methodologies, are presented in Appendix A.)



Estimates of future welfare spending are extremely sensitive to differences in population forecasts, particularly in regard to senior citizens. The State Demographer is predicting that the senior population (ages 65 and above) will grow at an annual rate of 4.4% between the years 2000 and 2010. However, a revised estimate based on widely accepted methodologies shows an annual growth rate of only 3.1%. This revised estimate forecasts a senior population that is 10.8% lower in the year 2010 than that predicted by the State Demographer. Because seniors account for a major portion of Medicaid and other welfare spending, any overestimate of the size of this population group will lead to an overestimate of future spending needs in this category.

Overall, the State Demographer is projecting that in the year 2010, persons over 50 will comprise 31.2% of Nevada's population. By contrast, the revised estimate shows only 28.2% in this age category. The State Demographer estimates that 55.7% of the growth will be in the "working age" population, while the revised forecast shows a figure of 56.8%.

The above differences, while seemingly small, can lead to large differences in projected future welfare spending. People over 50 are less likely to be working and more likely to be encountering costly medical problems than those under 50. Faster growth in the "working age" population implies a greater percentage of people with jobs, which in turn implies a likelihood of higher state revenues and lower welfare caseloads. These examples serve to show why accurate population forecasts are so critical to calculating future State revenue needs, and why the Task Force projections need to be re-examined before committing to a vastly increased welfare component of Nevada's budget.

### **Comparing Nevada's Welfare Spending with That of Other States**

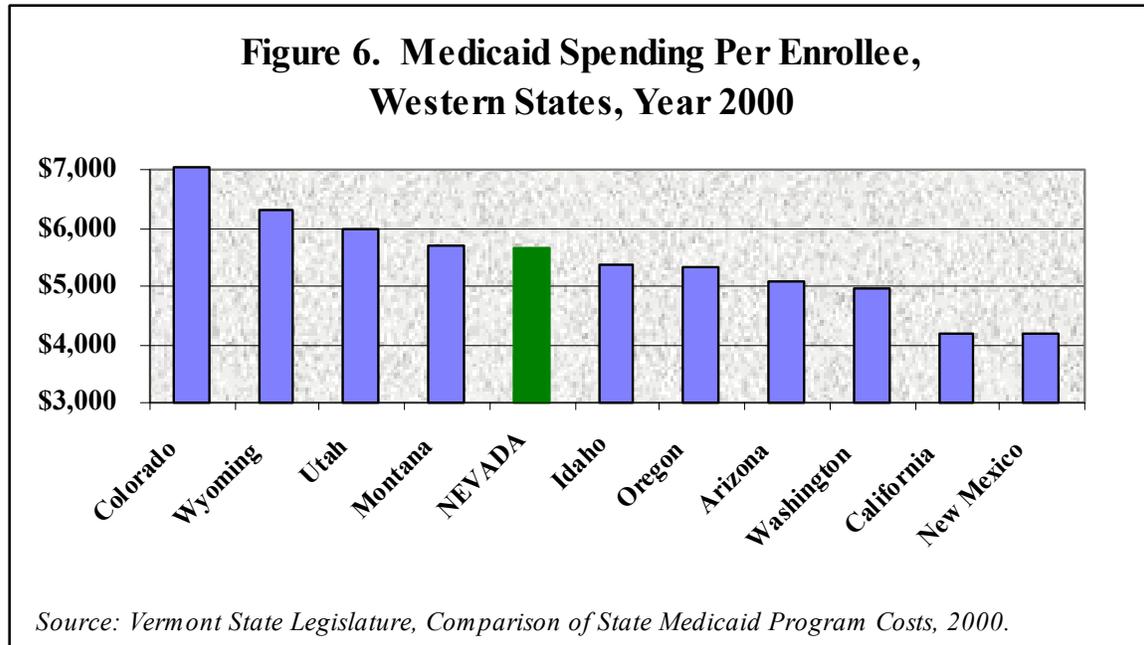
In his January 20 "State of the State" speech, Governor Guinn mentioned that Nevada "spends less per capita on Medicaid than any other state." While it is true that we spend less on Medicaid and other welfare programs *per Nevada resident*, it is not the case in terms of how much we spend *per enrollee* or *per person at the Federally-defined poverty level*. The low overall State spending on Medicaid and other welfare programs is, to a large extent, a consequence of Nevada's low percentage of people living in poverty, compared to the rest of the nation.

Adjusting welfare spending figures to reflect each state's percentage of people living in poverty, we find that Nevada's 1999 welfare spending *per person living in poverty* was 35th in the nation, rather than last. Of the 11 Western states, Nevada ranked 5th in welfare spending, and contributed about *9% more* than the average amount spent by the other ten Western states. (Significantly, our poverty-adjusted welfare spending was 6% more generous than that of California, even though our cost of living, compared to California's, was 9% lower.)

In terms of Medicaid spending per enrollee, Nevada did even better. An analysis by the Vermont State Legislature using year 2000 data showed that Nevada spent *24% more* per enrollee than the average amount spent by the 10 other Western states, and *35%*

more per enrollee than California.<sup>29</sup> A Kaiser Foundation study using 1998 data came to similar conclusions.<sup>30</sup>

Contrary to the way in which it is often portrayed, Nevada is by no means a laggard in terms of Medicaid and other welfare spending.



### Welfare/Human Services Spending in the 2003-05 Biennium

The currently proposed budget requests spending for Human Services of \$4,145.9 million during the coming biennium. This is 16.9% higher than was spent in the previous biennium, which itself saw higher than normal spending due to the economic fallout from the terrorist attacks and the recession.

The amount requested in the current budget makes sense only if we assume the immediate onset of a recession even worse than the recent one, causing caseloads to skyrocket even beyond their recent high levels. That assumption appears to be incorporated in the 2003-05 budget statement, which says:

“By FY 2005, Medicaid caseloads are expected to total over 200,000, more than double their level from as recently as FY 1999. Increases of 18,000-20,000 per year are expected in the 2003-2005 biennium. TANF (Temporary Assistance for Needy Families) recipients are also forecast to continue rising at a pronounced clip. Annual caseload gains of 5,000-6,000 are expected.”<sup>31</sup>

<sup>29</sup> Vermont State Legislature, *Comparison of State Medicaid Program Costs, 2000*.

<sup>30</sup> Kaiser Family Foundation, *State Health Facts Online*. <http://statehealthfacts.kff.org>.

<sup>31</sup> State of Nevada, *Executive Budget in Brief 2003-2005*, p. 79. It is worth noting that the Task Force predicts that the Medicaid caseload will stabilize at around 160,000 during the next several years, rather than

However, the current trend does not bear out this prediction, and in fact is moving in the opposite direction: caseloads (the number of people assisted) are declining to more normal levels as the Nevada economy continues to recover. The number of TANF recipients declined by over 4,700 between August 2002 and January 2003. During that same period, Medicaid enrollment increased by only 726 persons or 0.45%, much less than the rate of population growth, and less than *one-tenth* the rate of increase that was forecast in the budget document.<sup>32</sup> These trends are typical of what can be expected in an economy staging a modest rebound from a recent recession.

Given this circumstance, one would expect inflation-adjusted welfare spending to decline along with the caseloads. Even if caseloads were not declining, an increase of *at most* 11.7% (reflecting inflation and population increases) would appear to be justified. An increase at this level would trim \$185 million from the current 2003-05 budget request, and would generate similar reductions in estimates of revenue needs for welfare in the years beyond.

In fact, because caseloads are increasing at a slower rate than the general population (and in some cases actually declining), it should be possible to trim even more from the Human Services budget without compromising the level of assistance given to each recipient. If it is appropriate for budgeted welfare spending to rise during economic slowdowns, it is equally appropriate to reduce such spending during periods of prosperity, when the demand for welfare services declines.

### **Revenue Needs for TANF (Temporary Assistance to Needy Families)**

The development of “population-based” methods to solve the problems of forecasting income assistance caseloads (e.g., TANF, Medicaid and Medicare) for the State of Nevada would represent an improvement in which the demographic perspective helps solve two major public-policy problems (1) providing accurate and useful forecasts of caseloads, and (2) creating a dynamic model with which to analyze alternative policy proposals. When forecasting or examining the caseload history, it is common to look at caseload levels as a time-series. A caseload grows and shrinks as time passes because new members enter the caseload from a population of potential clients while other members exit the caseload.

A common way to examine and project income assistance caseloads is to count the number of cases on assistance in a given time period. When forecasting the caseload history, it is also common to look at the caseload levels as they are arrayed over time. Although many policy makers also think in terms of caseload “length of stay” as a policy variable this concept has not proven very useful in forecasting caseloads or expenditures.

---

showing the dramatic increase that is forecast in the Budget document. See Exhibit 4B-66 of the Task Force analysis.

<sup>32</sup> Nevada Department of Human Resources, Welfare Division.

This time series of caseload levels results from two basic components of change: entries and exits. Characteristics associated with entries and exits can be used to develop models of current and future caseload behaviors. Specifying the numbers and rates of entries and exits is the first step. These rates and numbers can then be related to a host of economic and social conditions

Population-based forecasting is a proven approach to forecasting public assistance caseloads. In most situations, simple extrapolations of past trends or econometric time-series models are used. Characteristics associated with entries and exits can be used to develop dynamic models of current and future caseload changes.

Entry and exit rates and volumes can be related to historical, current, and anticipated changes in economic, social, and programmatic conditions to develop models of caseload behavior and forecasts of caseload levels that are typically used for budget development.

## Appendix A. Nevada Population Projection Review

This section of the report examines population and related projections done by the Nevada State Demographer and other entities as input to the Governor’s Task Force on Tax Policy in Nevada.<sup>1</sup> The Task Force was established under the Nevada State Legislature adopted Assembly Concurrent Resolution 1. The Resolution states that the Task Force is needed because Nevada’s revenue collections may be lagging behind its rate of growth – a condition that could lead to fewer per capita dollars available to fund services historically offered. The Task Force was directed to submit a report of its review to the Governor and the Legislative Council Bureau by November 15, 2002.

The future population of Nevada is clearly both a source of revenue and a source of costs to the State. As such, projections done by administrative units of the state have provided input to the Task Force. The current report provides a critical examination of the state-level projection done by the Nevada State Demographer (2000a) and, in the process, offers a brief overview of basic population projection concepts.

Based on the analysis in this report, a forecast of the Nevada’s population (by age and sex) is provided for 2005, 2010, and 2015. As part of the analysis underlying this forecast, the report includes both an “initial projection” of the state’s population (by age and sex) and a “zero-migration” benchmark projection, which gives an idea of how the state’s population would look if migration stopped. This benchmark also gives some insights into the likely size of Nevada’s population by 2015 because the critical examination relies primarily on the “cohort-component” method of population projection.

The report also discusses three key demographic issues likely to have an effect on the fiscal condition of Nevada. Two of these issues are somewhat outside of the traditional scope of work of the Nevada State Demographer’s Office. These issues are, respectively, “De Facto” populations and immigration (both legal and illegal). The third issue is population “aging,” particularly in terms of the effect of the aging of the Baby boom generation.

### Concepts and Terms

Information about a present or past population is called an *estimate*. There are many ways to make population estimates (Raymondo, 1992). Some methods update information from the most recent census using ratio, regression, or component techniques. They often use data from sample surveys or administrative records. Others use interpolation procedures to develop estimates for dates between censuses. Some methods provide estimates only for the total population, whereas others provide estimates by age, sex, race, and a variety of other demographic and socioeconomic characteristics.

Demographers typically refer to information about the future as either a *projection* or a *forecast*. Although these two terms are often used interchangeably, they can be differentiated according to the expected likelihood of their outcomes. A *projection* may be defined as the numerical outcome of a particular set of assumptions regarding the fu-

ture population. It is a conditional calculation showing what the future population would be if a particular set of assumptions were to hold true. Because a projection does not attempt to predict whether those assumptions actually will hold true, it can be incorrect only if a mathematical error is made in its calculation. A projection can never be proven right or wrong by future events.

A *forecast* may be defined as the projection that is most likely to provide an accurate prediction of the future population. As such, it represents a specific viewpoint regarding the validity of the underlying data and assumptions. A forecast reflects a level of judgment beyond that found in a projection, and it can be proven right or wrong by future events (or, more realistically, it can be found to have a relatively small or large error). *Projection* is a more inclusive term than *forecast*. All forecasts are projections but not all projections are forecasts. Projections and forecasts sometimes refer solely to total population, but often include information on age, sex, race, and other characteristics as well.

Distinctions among the terms *estimate*, *projection*, and *forecast*, are not always clear-cut. When the data needed for population estimates are not available, techniques ordinarily used for projections of future populations are sometimes used for calculations of current and past populations. A government statistical agency may view its calculations of future population as hypothetical projections, but data users may interpret them as forecasts. In this report, the term *estimate* refers to a present or past population and *projection* to refer to a future population, regardless of their intended uses or the methodology employed; the term *forecast* is used when discussing the accuracy of a projection.

Population projections may be prepared using either subjective or objective methods. Subjective methods are those in which data, techniques, and assumptions are not clearly identified; consequently, other analysts cannot replicate them exactly. Objective methods are those for which data, techniques, and assumptions are clearly identified, such that other analysts can replicate them exactly. It is important to note that even objective methods require choices regarding variables, data sources, projection techniques, and so forth. At some level, every projection method requires the application of judgment.

It also is useful to define six terms that are frequently used in describing population projections. Although not universal, these terms are widely used and generally understood by those working in the field. They are: (1) base year; (2) launch year; (3) target year; (4) base period; (5) projection horizon; and (6) projection interval. The *base year* is the year of the earliest data used to make a projection, the *launch year* is the year of the most recent data used to make a projection, and the *target year* is the year for which the population is projected. The *base period* is the number of years between the base year and launch year and the *projection horizon* is the number of years between the launch year and target year. The *projection interval* is the time increment in which projections are made (e.g., annually or every five years).

## **Review of the Nevada State Demographer's Projection**

There are three major problems with the State Demographer's Projection (2000a): (1) It contains no documentation regarding input data, methods, and assumptions; (2) it does not provide cross-classified population composition data, only age distributions, and then separately, totals by sex, totals by race, and totals by Hispanic origin; and (3) its projection horizon is only to 2010, which fails to yield any information about the impact on Nevada of the "retirement wave" represented by the Baby Boom generation, the first of which begin to reach age 65 in 2011 (nearly 100 million births occurred in the US during the baby boom, which is generally recognized as the period from 1946 to 1964). In terms of the first problem, the only documentation providing clues on how the state population totals were projected is found in a report by the State Demographer on county population projections (Nevada State Demographer 2000b). However, even this documentation is not adequate for a comprehensive review.

It is important to note that none of the three major problems just listed mean that the projections done by the State Demographer are inaccurate. In fact, as discussed later, these projections are, in my judgment, far more representative of Nevada's future than those done by the US Census Bureau (Campbell, 1996). One of the tasks of the critical examination is to extract information "implied" in the State Demographer's work that can be used in a more transparent (and, presumably, conventional) projection method that, in turn, better meets standard evaluation criteria.

Because of the lack of documentation, an indirect approach is taken in regard to evaluating (and extending) the projection done by the State Demographer. This approach consists of developing three "analytic" sets of projections using the cohort-component approach. The launch year for each projection is 2000 (using 2000 census data; note that the launch year for the State Demographer's projection is 1990). The first projection set is deemed an "initial projection" because it uses historical data and reasonable assumptions to provide a look at Nevada's population by age and sex in 2005, 2010, and 2015. It also uses information derived from the State Demographer's work in the second projection – namely, the total numbers of net migrants. The second projection set uses the same launch year, fertility, and mortality data as the "initial projection" to derive the "implicit" age-specific migration data required to generate the same age distributions found in the State Demographer's projection for 2005 and 2010 (in addition, the 2000 age distribution in the State Demographer's projection is compared with that found by the 2000 census). The third projection set uses the same launch year, fertility, and mortality data as the forecast, but under a "zero-migration" scenario to see what Nevada's population would look like in 2005, 2010, and 2015 if migration had halted in 2000. This is useful for two reasons. First, by comparing it with the forecast, the effect of migration can clearly be seen for all age-sex groups as well as the total population. Second, it shows the momentum for growth built into Nevada's 2000 age structure by past migration - even under this extreme and highly unlikely condition, Nevada's population will continue to increase through 2015.

Table 1 shows the projected population by age (and separately by sex) for Nevada in 2005 and 2010, as well as the 2000 population derived by the Nevada State Demographer (2000a). The total population shown for 2000, 2005, and 2010 is the same total

shown in the “county population projection” report issued by the Nevada State Demographer (2000b). Given this equivalence (and the lack of documentation in the State Projection report), it appears that the state level projection is in part the product of a “bottom up” set of projections in which the county level projections (obtained using a “stepwise regression” procedure for all counties but two, and an average of historical growth rates for the remaining two, Lander and Lincoln (Nevada State Demographer, 2000b) were summed to obtain state totals. No documentation is provided on how age distributions were obtained.

Table 2 shows a comparison of the age distribution and the sex distribution found in the 2000 census for Nevada and the same distributions generated by the State Demographer, as shown in Table 1. For Nevada as a whole, the State Demographer generated a 2000 population that is 61,176 (3.06 %) higher than that found in the 2000 census. In 11 of 18 age groups, the state demographer’s numbers exceed that of the census, with the largest percent difference (11.99) found for age group 30-34. Of the seven age groups in which the State Demographer’s numbers are less than the corresponding census number, the largest difference is found for age group 5-9 (-8.21%). The State Demographer generated both a larger number and males and females than found the Census Bureau, with a relative difference of 2.93% and 3.1%, respectively.

Table 1. Age Distributions for 2000, 2005 and 2010, from the Nevada State Demographer’s Projection (2000a)

Age Group / Year	2000	2005	2010
0-4	143325	172431	184187
5-9	137063	155446	178487
10-14	137738	153442	163872
15-19	128840	152651	161005
20-24	127946	149578	163165
25-29	152777	158722	165251
30-34	176823	182667	173619
35-39	182982	198875	193207
40-44	169856	201649	207295
45-49	150776	185116	207533
50-54	132639	162786	188605
55-59	109522	141491	163660
60-64	90963	115306	139402
65-69	72647	92836	110205
70-74	59058	71126	84951
75-79	44223	51760	59529
80-84	25672	33383	37995
85+	16585	22833	29483
Total	2059433	2402097	2611453
Males	1048882	1221243	1322362
Females	1010551	1180854	1289091

Table 2. Age Distribution Comparison for 2000: US Census Bureau vs. Nevada State Demographer<sup>4</sup>

Age Group / Year	Nevada State Demographer	US Census Bureau	Difference	Percent Difference
------------------	--------------------------	------------------	------------	--------------------

0-4	143325	145817	-2492	-1.71
5-9	137063	149322	-12259	-8.21
10-14	137738	139193	-1455	-1.05
15-19	128840	127169	1671	1.31
20-24	127946	130006	-2060	-1.58
25-29	152777	148726	4051	2.72
30-34	176823	157885	18938	11.99
35-39	182982	165910	17072	10.29
40-44	169856	156051	13805	8.85
45-49	150776	140214	10562	7.53
50-54	132639	128836	3803	2.95
55-59	109522	105057	4465	4.25
60-64	90963	85142	5821	6.84
65-69	72647	71387	1260	1.77
70-74	59058	60388	-1330	-2.20
75-79	44223	44851	-628	-1.40
80-84	25672	25314	358	1.41
85+	16585	16989	-404	-2.38
Total	2059433	1998257	61176	3.06
Males	1048882	1019051	29831	2.93
Females	1010551	980206	30345	3.10

The US Census Bureau also has done population projections for Nevada (Campbell, 1996). These projections provide a basis for comparison, as shown in Table 3.

Table 3. Comparison of the Projection done by the Nevada State Demographer to the US Census Bureau<sup>2</sup>

Year	Nevada State Demographer	US Census Bureau Series A(preferred)	Difference	Percent Difference
2000	2059433	1871000	188433	10.07%
2005	2402097	2070000	332097	16.04%
2010	2611453	2125000*	486453	22.89%
2015	n/a	2179000	-	-
2025	n/a	2312000	-	-

\*linear interpolation between 2005 and 2015.

Although both sets of projections shown in Table 3 have 1990 as the launch year, the Bureau's projections were published in 1996, while those of the State Demographer were released in 2000. A comparison of the 2000 projections with the 2000 census figure (1,998,257) shows that the projection by the State Demographer has less than half the difference than that of the Census Bureau's. From 2000 to 2010 the two sets of projections diverge even more, with those of the Census Bureau falling far below. By 2010, the State Demographer shows Nevada with nearly half a million more people than that shown by the Census Bureau.

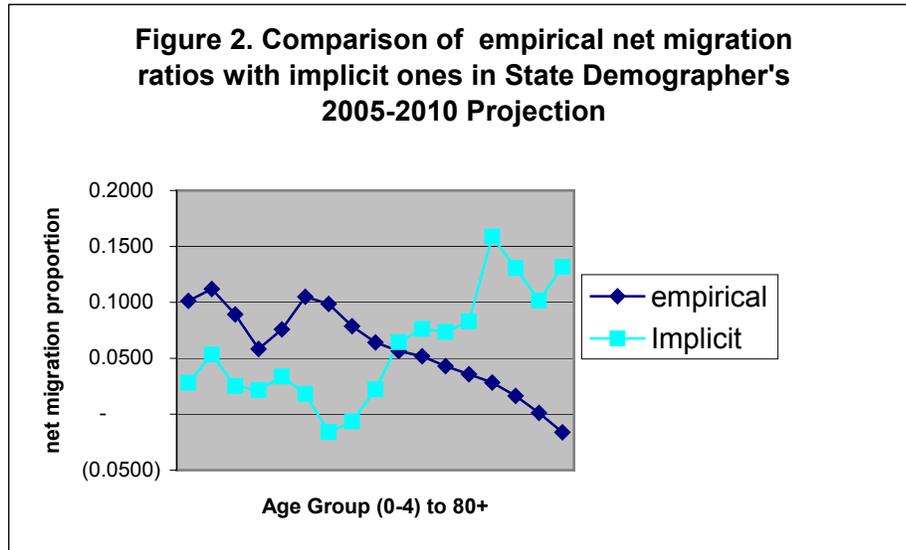
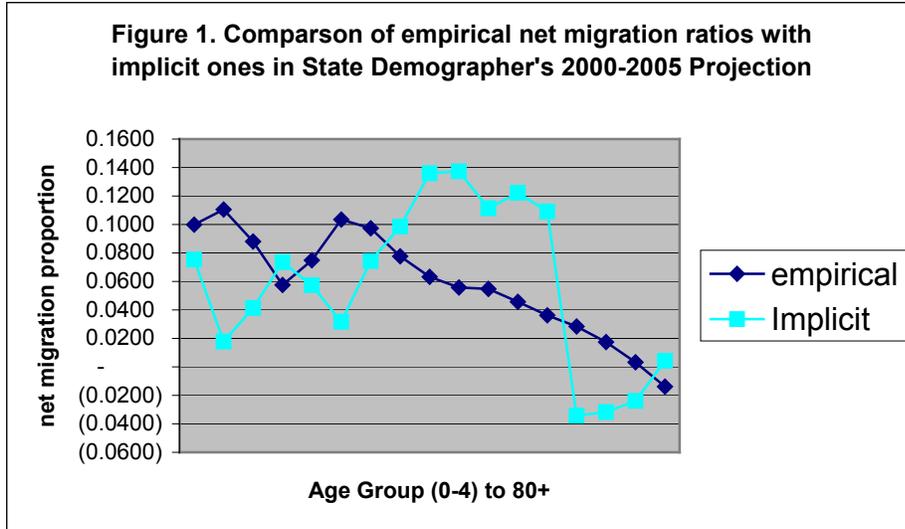
Because the Nevada State Demographer's projections do not include any information on the components of change (births, deaths, and migration), it is not directly possible to examine the sources of the differences between the two sets of projections. However, the Census Bureau (Campbell, 1996) projects: (1) a net number of 141,647 mi-

grants (both domestic and international) between 2000 and 2005, (2) a net number of 3,859 migrants between 2005 and 2010, and (3) a net number of -7,044 between 2010 and 2015. Collectively, these three projection cycles represent a substantial decline in migration from the net number found between 1995 and 2000, which was approximately 312,000. The Census Bureau (Campbell, 1996) projects the following numbers of births over these same projection cycles: (1) for 2000-2005, 131,863 births; (2) for 2005-2010, 139,634 births; and (3) for 2010-2015, 141,318 births. It (Campbell, 1996) projects the following numbers of deaths: (1) 2000-2005, 78,352; (2) 2005-2010, 87,045; and (3) 2010-2015, 91,365.

One way to derive a set of reasonable estimates of the components of change underlying the State Demographer’s projections is to apply fertility and survivorship rates applicable to Nevada’s population in 2000 and use the cohort –component method to generate an expected age distribution for 2005 that can be compared to the age distribution in the State Demographer’s projection. The difference for each age group would represent the implied number of net migrants. These differences by age group can be summed (along with the births and deaths generated from the rates) to get estimates of the net number of migrants. This information can be then combined with the already calculated births and deaths to obtain estimates of the components of change. The same process can be used in carrying forward the 2005 projection to 2010. This analysis has been done, revealing the following comparison:

<u>2000-2005</u>	<u>Births</u>	<u>Deaths</u>	<u>Net N of Migrants</u>
Nevada	156,841	98,982	358,345
Census Bureau	131,863	78,352	141,647
 <u>2005-2010</u>	 <u>Births</u>	 <u>Deaths</u>	 <u>Net N of Migrants</u>
Nevada	159,409	82,636	436,467
Census Bureau	139,634	87,045	3,859

Another set of comparisons can be made between the age-specific net migration rates found specifically for Nevada (and used in the “initial projection” discussed in the following section) and those “implied” in the State Demographer’s projections. Figure 2 shows these differences in graphic form for the 2000-2005 projection cycle, while Figure 3 shows them for 2005-2010. The graphs reveal that the age-specific net migration rates implied in the State Demographer’s projection are neither consistent with those empirically found for Nevada during the 1995-2000 period nor with any known migration typologies (see, e.g., Pittenger, 1976: 187-194; migration typologies are discussed more fully in the following section). In addition, it would be unlikely to see net migration patterns change as drastically between two projection cycles, as implied by the State Demographer’s projection. These findings are much more disturbing than the differences between the State Demographer’s projection and that done by the US Census Bureau.



### The “Initial Projection”

Partly to overcome the three major problems identified in the State Demographer’s projections, an “initial projection” was produced, which is based on the cohort-component method, available data for Nevada, and the total net numbers of migrants implied by the State Demographer’s projection (as found in the previous section; i.e., 358,345 for the 2000-2005 projection cycle, and 436,467 for the 2005-2010 projection cycle, and an average of the two for the 2010-2015 cycle). The result provides population information cross-classified by age and sex, along with information on the components of change. This work represents not only an attempt provide the State Demographer’s work with a foundation that is documented in terms of data, methods and assumptions, but also to extend the State Demographer’s work, so that it is more useful for the Legislature.

Table 4a provides the 2000 population of Nevada by age and sex (the launch population), while Tables 4b through 4d provide the “initial projections” for 2000, 2005, and 2010, also cross-classified by age and sex.

Table 4a. Population of Nevada by Age and Sex, 2000

Age Group / Sex	Male	Female	Total
0-4	74,800	71,017	145 817
5-9	76,547	72,775	149 322
10-14	71,623	67,570	139 193
15-19	65,868	61,301	127 169
20-24	68,013	61,993	130 006
25-29	77,234	71,492	148 726
30-34	83,053	74,832	157 885
35-39	87,034	78,876	165 910
40-44	80,672	75,379	156 051
45-49	71,140	69,074	140 214
50-54	64,516	64,320	128 836
55-59	52,500	52,557	105 057
60-64	43,083	42,059	85 142
65-69	35,889	35,498	71 387
70-74	29,276	31,112	60 388
75-79	20,579	24,272	44 851
80+	16,224	26,079	42 303
Total	1,018,051	980,206	1 998 257

Table 4b. Initial Population Projection of Nevada by Age and Sex, 2005\*

Age Group / Sex	Male	Female	Total
0-4	97,416	93,747	191 163
5-9	94,674	90,317	184 991
10-14	92,576	88,080	180 656
15-19	82,076	77,178	159 255
20-24	79,635	73,476	153 110
25-29	86,575	79,539	166 113
30-34	94,968	87,294	182 262
35-39	96,175	87,704	183 879
40-44	97,078	89,134	186 213
45-49	88,301	84,580	172 881
50-54	77,711	77,799	155 511
55-59	68,465	70,832	139 298
60-64	54,189	56,462	110 651
65-69	42,519	43,837	86 356
70-74	32,255	34,546	66 801
75-79	21,755	26,508	48 263
80+	16,983	28,586	25 758
Total	1,223,351	1,189,619	2 393 159

\*Some numbers may not exactly due to rounding.

Table 4c. Initial Population Projection of Nevada by Age and Sex, 2010\*

Age Group / Sex	Male	Female	Total
0-4	100,473	96,699	197 172
5-9	121,601	117,238	238 839
10-14	114,195	108,957	223 152
15-19	105,280	99,768	205 048
20-24	98,826	91,998	190 824
25-29	102,277	94,855	197 132
30-34	108,272	98,820	207 092
35-39	111,053	102,996	214 048
40-44	108,600	100,270	208 870
45-49	106,401	100,379	206 779
50-54	96,241	93,631	189 872
55-59	82,573	84,313	166 886
60-64	70,114	74,825	144 940
65-69	53,277	58,024	111 301
70-74	38,312	42,073	80 385
75-79	23,992	28,623	52 616
80+	17,410	30,081	47 492
Total	1,458,897	1,423,550	2 882 447

\*Some numbers may not add exactly due to rounding.

Table 4d. Initial Population Projection of Nevada by Age and Sex, 2015\*

Age Group / Sex	Male	Female	Total
0-4	132,085	127,096	259 181
5-9	122,455	118,061	240 515
10-14	139,311	134,168	273 479
15-19	125,602	119,526	245 128
20-24	120,233	113,149	233 382
25-29	119,162	111,360	230 522
30-34	121,728	112,309	234 037
35-39	122,556	112,999	235 555
40-44	121,909	114,239	236 149
45-49	116,569	110,239	226 809
50-54	112,620	109,522	222 143
55-59	99,169	100,118	199 287
60-64	82,248	87,342	169 590
65-69	66,554	74,593	141 147
70-74	46,770	54,739	101 509
75-79	28,429	35,617	64 046
80+	19,300	33,528	52 828
Total	1,696,701	1,668,607	3 365 308

\*Some numbers may not add exactly due to rounding.

The fertility, mortality, and migration schedules remain constant over the entire projection horizon. The fertility schedule (age specific fertility rates) are taken for Nevada, as is the mortality schedule (survivorship rates derived from male and female life tables constructed specifically for Nevada)<sup>3</sup>. Table 5 provides the fertility rates, while Tables 6a and 6b provide the life tables for males and females, respectively. Table 7 pro-

vides the migration schedule constructed using Nevada data. Immediately below are the components of change for each of the

Table 5. Age Specific Fertility Rates for Nevada, circa 2000

Age Group	15-19	20-24	25-29	30-34	35-39	40-44	45-49
ASFR	0.0720	0.1490	0.1280	0.0770	0.0305	0.0052	0.0001

The Total Fertility Rate associated with the ASFRs in Table 5 is 2.309 (i.e., on average women can be expected to have 2.309 births on average over their childbearing years. These rates were kept constant over the horizon for each of the three sets of projections. It is more likely, however, that they will decline, in concert with expected fertility declines for the US as a whole (Campbell, 1996, Day, 1996).

Table 6a. Male Life Table, Nevada 1990

AGE	nQx	lx	Ndx	NLx	Tx	ex
0	0.014	100000	1395	99065	6926360	69.26
1	0.0025	98605	244	393933	6827295	69.24
5	0.0018	98361	179	491360	6433362	65.41
10	0.0018	98182	177	490470	5942002	60.52
15	0.0089	98006	868	487858	5451532	55.62
20	0.0107	97137	1035	483101	4963674	51.10
25	0.0107	96103	1026	477948	4480573	46.62
30	0.0153	95076	1457	471741	4002625	42.10
35	0.0178	93620	1666	463933	3530884	37.72
40	0.0211	91953	1941	454915	3066951	33.35
45	0.0303	90012	2730	443236	2612036	29.02
50	0.0476	87282	4154	426027	2168800	24.85
55	0.0705	83128	5862	400987	1742773	20.96
60	0.1115	77266	8613	364799	1341786	17.37
65	0.1538	68653	10562	316863	976987	14.23
70	0.2192	58092	12734	258623	660124	11.36
75	0.3211	45357	14565	190376	401501	8.85
80	0.472	30793	14533	117631	211125	6.86
85	1	16260	16260	93494	93494	5.75

Table 6b. Female Life Table, Nevada 1990

AGE	nQx	lx	Ndx	NLx	Tx	ex
0	0.0102	100000	1015	99320	7624905	76.25
1	0.0023	98985	226	395489	7525585	76.03
5	0.0007	98759	71	493619	7130097	72.20
10	0.0016	98688	159	493044	6636478	67.25
15	0.0035	98529	343	491789	6143434	62.35
20	0.0041	98186	403	489926	5651645	57.56
25	0.0041	97784	401	487917	5161719	52.79
30	0.005	97383	488	485695	4673802	47.99
35	0.0071	96895	691	482748	4188107	43.22
40	0.01	96204	961	478618	3705359	38.52
45	0.0182	95243	1730	471892	3226740	33.88
50	0.0267	93514	2499	461321	2754849	29.46
55	0.0394	91015	3583	446116	2293528	25.20
60	0.0611	87432	5346	423794	1847412	21.13
65	0.0964	82086	7911	390653	1423618	17.34
70	0.1451	74175	10761	343975	1032964	13.93
75	0.2174	63415	13783	282616	688989	10.86
80	0.3106	49632	15414	209623	406373	8.19
85	1	34217	34217	196751	196751	5.75

Table 6a shows that males in Nevada can be expected to live 69.26 years at birth, while Table 6b shows that females in Nevada can expect to live 76.25 years at birth. Because the life tables are for 1990, the survivorship rates can be expected to be less than those that would be derived from life tables constructed using 2000 data.

Table 7. Nevada Age-sex specific Migration Proportions, circa 2000

age at end of cycle	Proportion of total net n of male migrants	Proportion of total net n of female migrants
0-4	0.09984	0.10005
5-9	0.11022	0.11077
10-14	0.08856	0.08755
15-19	0.05935	0.05564
20-24	0.07892	0.07058
25-29	0.10564	0.10126
30-34	0.10263	0.09175
35-39	0.07940	0.07581
40-44	0.06429	0.06220
45-49	0.05313	0.05837
50-54	0.05112	0.05844
55-59	0.04240	0.04911
60-64	0.03520	0.03718
65-69	0.02792	0.02882
70-74	0.01623	0.01871
75-79	0.00112	0.00538
80+	-0.01598	-0.01163
All Ages	1	1

The preceding ratios are shown in Figure 1 (and repeated in Figure 2). In examining Figure 1, it is clear that the pattern follows the “metropolitan/suburban” net migration typologies identified by Pittenger (1976: 190). This makes sense, given that the bulk of Nevada’s growth has taken place in southern Nevada – a suburbanizing metropolitan area. Although the level of migration may change between 2000 and 2015, it is likely that the net migration ratios shown in Table 7 will persist because southern Nevada will remain “metropolitan” and continue to “suburbanize” through 2015.

In summary, the “projected” components of change used in the “initial projection” are reasonable, but actual components are expected to be different. Specifically, both fertility and mortality are very highly likely to be lower than the “projected” (i.e., constant) ones. In terms of migration, it is likely that the total number of net migrants for the period 2010-2015 may be somewhat lower than that projected – more along the lines of that projected for 2000-2005. These observations will later be incorporated into the “modified final forecast” for Nevada presented later.

## **A Zero-Migration Benchmark**

The zero-migration benchmark is useful because it shows that even under a highly unlikely scenario that Nevada’s population has sufficient demographic momentum to continue growing until 2015, with a total net gain of nearly 108,000 persons between 2000 and 2015 (from 1,998,257 to 2,105,902). It is of interest to note that the zero net migration scenario produces a population in 2015 that is only about 73,000 less than the projection of 2,179,000 released by the US Census Bureau (Campbell, 1996) as its “preferred” (Series A) projection.

It is not surprising that Nevada would continue to grow under a zero-net migration scenario because its population is “young” - a demographic condition in which births tend to outnumber deaths even where fertility is low. This happens because relatively more people are in (or will “age” into) child-bearing ages and relatively fewer people are in ages where death rates are high (i.e., above 65 years of age).

It is the results of the “zero migration” scenario that lend support to the argument that the “growth trajectory” underlying State Demographer’s projection is likely to be more on target than that underlying the projection done by the US Bureau of the Census. It was this finding that led in part to the decision to develop a forecast to 2015 using the “implied” migration information derived from the State Demographer’s projection.

Table 8a. 2005 Population of Nevada by Age and Sex under Zero Net Migration\*

Age Group / Sex	Male	Female	Total
0-4	79,189	76,161	155 350
5-9	74,551	70,846	145 398
10-14	76,408	72,690	149 099
15-19	71,241	67,398	138 640
20-24	65,226	61,069	126 294
25-29	67,288	61,739	129 026
30-34	76,231	71,166	147 397
35-39	81,678	74,378	156 056
40-44	85,342	78,201	163 543
45-49	78,601	74,320	152 921
50-54	68,378	67,527	135 905
55-59	60,724	62,200	122 924
60-64	47,762	49,927	97 689
65-69	37,422	38,770	76 192
70-74	29,293	31,256	60 549
75-79	21,550	25,562	47 113
80+	19,900	30,630	50 530
Total	1,040,785	1,013,840	2 054 625

\*Some numbers may not add exactly due to rounding.

Table 8b. 2010 Population of Nevada by Age and Sex under Zero Net Migration\*

Age Group / Sex	Male	Female	Total
0-4	63,544	61,114	124 658
5-9	78,926	75,977	154 903
10-14	74,416	70,764	145 180
15-19	76,001	72,505	148 507
20-24	70,547	67,143	137 689
25-29	64,530	60,818	125 348
30-34	66,414	61,458	127 871
35-39	74,969	70,735	145 704
40-44	80,091	73,742	153 832
45-49	83,151	77,102	160 253
50-54	75,549	72,655	148 204
55-59	64,359	65,301	129 660
60-64	55,244	59,088	114 332
65-69	41,486	46,023	87 509
70-74	30,544	34,137	64 681
75-79	21,563	25,681	47 243
80+	22,128	33,790	55 918
Total	1,043,462	1,028,032	2 071 494

\*Some numbers may not add exactly due to rounding.

Table 8c. 2015 Population of Nevada by Age and Sex under Zero Net Migration\*

Age Group / Sex	Male	Female	Total
0-4	76,468	73,543	150 011
5-9	63,333	60,967	124 300
10-14	78,783	75,889	154 672
15-19	74,020	70,584	144 604
20-24	75,260	72,231	147 491
25-29	69,794	66,867	136 662
30-34	63,692	60,541	124 233
35-39	65,315	61,085	126 399
40-44	73,512	70,130	143 641
45-49	78,035	72,705	150 740
50-54	79,923	75,375	155 298
55-59	71,109	70,260	141 369
60-64	58,551	62,034	120 584
65-69	47,985	54,467	102 452
70-74	33,861	40,524	74 385
75-79	22,483	28,048	50 531
80+	23,123	35,408	58 530
Total	1,055,245	1,050,657	2 105 902

\*Some numbers may not add exactly due to rounding.

## Other Projections: An Analysis and Comparison

There are other projections that affect Nevada, namely any projection done for southern Nevada (i.e., the Las Vegas metropolitan area), which in demographic terms, dominates the entire state. One example is the “structural model” forecast done by Riddel and Schwer (no date) that appears in the Task Force’s collection of materials. This projection has a horizon of 2035, which makes it highly useful for a policy analysis. It also is well documented and uses a known methodology. By 2015, Riddel and Schwer project a population of 2,072,398 for Clark County. Given both this projection and that Clark county had about 70 percent of the state’s population in 2000 (Nevada State Demographer, 2000b), one would expect the state to have a total population of about 2,961,000 (where  $2,961,000 \approx 2,072,398/.70$ ) in 2015 if this share persisted. This is approximately 400,000 less than the forecast derived for 2015 from migration information found in the State Demographer’s projection; it is, however, only about 100,000 persons larger than the forecast derived for 2010 from migration information found in the State Demographer’s projection. Given that the ratio persists between Clark County and the State as a whole, these results suggest that the actual population in Nevada by 2015 is probably going to be between 2,900,000 and 3,100,000.

## Population Forecast for Nevada

The preceding observations, coupled with the earlier analysis, suggest that the state of Nevada can expect to have a population of around 3,000,000 by 2015. To hit this target, the total migration data shown in the “initial projection” were modified and trended so that the population would move in a reasonable trajectory from the observed numbers in 2000 to the numbers expected in 2015.

Tables 9a through 9c show the forecasted population (by age and sex) for 2005, 2010, and 2015, respectively. As was the case in the “initial projection”, the fertility, mortality, and age-specific migration schedules remain constant over the entire projection horizon and are the same as shown in tables 5 through 7, respectively. Figures 3 through 5 show the same data in the form of population pyramids, while Figure 1 shows the population for 2000 (as taken from Table 4a).

Table 9a. Forecasted Population of Nevada by Age and Sex, 2005\*

Age Group / Sex	Male	Female	Total
0-4	97 500	93 828	191 328
5-9	94 767	90 407	185 174
10-14	92 651	88 151	180 802
15-19	82 126	77 223	159 350
20-24	79 701	73 533	153 234
25-29	86 664	79 621	166 285
30-34	95 054	87 369	182 423
35-39	96 242	87 765	184 007
40-44	97 133	89 185	186 317
45-49	88 346	84 627	172 973
50-54	77 755	77 847	155 601
55-59	68 501	70 872	139 373
60-64	54 219	56 492	110 711
65-69	42 543	43 860	86 403
70-74	32 269	34 561	66 830
75-79	21 756	26 512	48 268
80+	16 970	28 576	45 546
Total	1 224 194	1 190 431	2 414 625

\*Some numbers may not exactly due to rounding.

Table 9b Forecasted Population of Nevada by Age and Sex, 2010\*

Age Group / Sex	Male	Female	Total
0-4	92 582	89 086	181 668
5-9	112 899	108 817	221 716
10-14	107 228	102 327	209 555
15-19	100 623	95 569	196 192
20-24	92 584	86 625	179 210
25-29	93 922	87 140	181 061
30-34	100 179	91 860	192 039
35-39	104 808	97 251	202 059
40-44	103 541	95 557	199 098
45-49	102 218	95 948	198 166
50-54	92 208	89 753	181 962
55-59	79 233	81 105	160 338
60-64	67 341	72 161	139 502
65-69	51 077	55 909	106 986
70-74	37 038	40 848	77 886
75-79	23 913	28 550	52 463
80+	18 679	31 306	49 985
Total	1 380 073	1 349 813	2 729 886

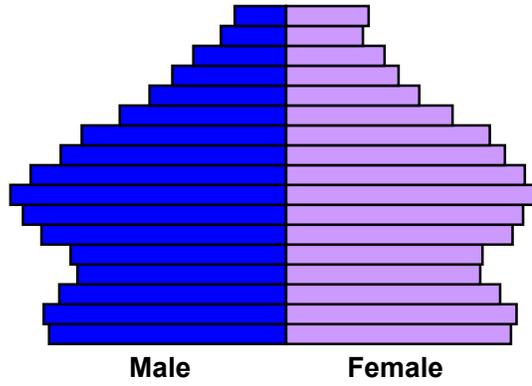
\*Some numbers may not add exactly due to rounding.

Table 9c. Forecasted Population of Nevada by Age and Sex, 2015\*

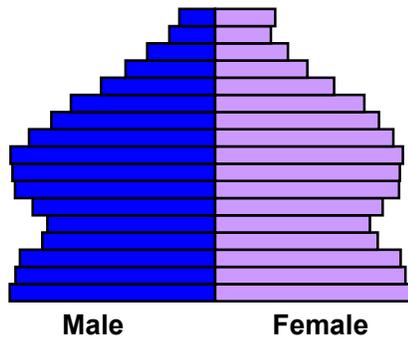
Age Group / Sex	Male	Female	Total
0-4	114 909	110 546	225 455
5-9	103 505	99 739	203 245
10-14	121 718	117 279	238 998
15-19	112 704	107 525	220 229
20-24	107 684	102 131	209 815
25-29	102 361	96 204	198 566
30-34	103 159	95 744	198 903
35-39	106 611	98 740	205 351
40-44	109 321	102 521	211 842
45-49	106 297	99 941	206 238
50-54	103 459	99 532	202 991
55-59	91 109	91 613	182 722
60-64	75 670	80 694	156 363
65-69	61 337	69 346	130 683
70-74	43 342	51 065	94 407
75-79	27 378	34 089	61 468
80+	21 419	35 193	56 612
Total	1 511 984	1 491 903	3 003 887

\*Some numbers may not add exactly due to rounding.

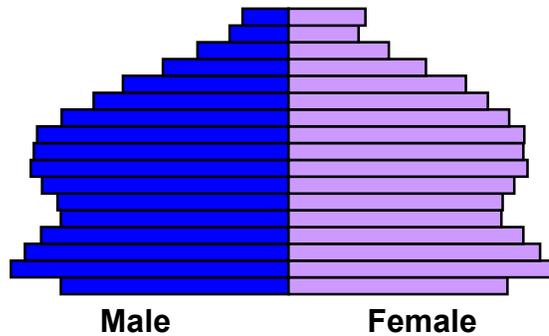
**Figure 3. 2000 Nevada Population**



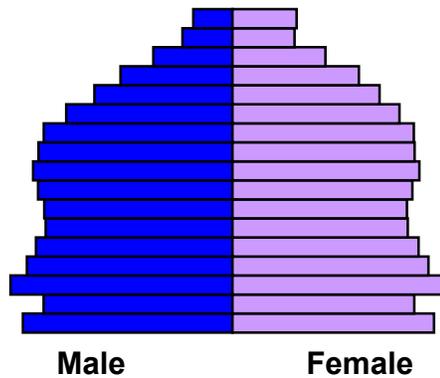
**Figure 4. 2005 Nevada Population Forecast**



**Figure 5. 2010 Nevada Population Forecast**



**Figure 6. 2015 Nevada Population Forecast**



Immediately below are the components of change for each of the three forecast cycles.

Forecast Cycle	Births	Deaths	Net Number of Migrants	Population at end of cycle
2000-2005	156,841	100,473	360,000	2,414,625
2005-2010	155,161	116,054	280,000	2,729,886
2010-2015	207,439	133,434	200,000	3,003,887

By taking advantage of known information, analytic methods, available projections, and reasonable assumptions, a reasonable forecast of Nevada's population has been the result. This is not to say that other assumptions are not reasonable and that that Nevada's demographic future will look exactly like that portrayed here. However, the key issue is whether or not the forecast provides information sufficient to make a successful set of decisions in a cost-effective and timely manner (Swanson, et al., 1998). For all of the uncertainty and inaccuracy in the forecast, however, it is likely to better serve the Legislature than currently available alternatives.

## **The importance of non-census defined populations for Nevada**

One drawback of virtually all official population projections done at the state and national level is that the unit of analysis is a "census-defined resident." This is also known as the "De Jure" population – the population defined in terms of one's usual place of residence. This means that projections are rarely (if ever done) for states (and the US as a whole) for "seasonal," "daytime" or other forms of "De Facto" population. This is unfortunate because "seasonal" populations can play a substantial role in both the costs and revenues affecting certain states (Espinoza and Stallmann, 1996). Nevada is a prime example. It gains substantial revenues (and incurs costs) from non-residents visiting the state for varying lengths of time (e.g., Las Vegas Convention And Visitors Authority, 1996).

Tracking down "seasonal populations" for an entire state is not easy, however (e.g., Las Vegas Convention and Visitors Authority; Voss, 1994), which means that developing estimates can be an expensive task subject to high levels of inaccuracy and uncertainty. This suggests that any projections based on these estimates will also be expensive and subject to high levels of inaccuracy and uncertainty. Given the importance of these data, it may, however, be well worth the cost to get a picture of the population, even one clouded by inaccuracy and uncertainty. It may also be possible to lobby the US Census Bureau to include questions in its "American Community Survey," a kind of "rolling census," that could allow information on seasonal populations to be extracted. Given that this issue impacts many sub-national areas, it may be possible for Nevada to ally with other state congressional delegations to effect this change in the American Community Survey.

## **Immigration**

In the past 10 years, the US Census Bureau (along with many state demographic centers) has recognized the importance of immigration in determining population change. Immigration is both legal and illegal. The US Census Bureau makes "heroic" efforts (along with its partner state and local governments) in attempting to count both legal and illegal residents in the decennial census. However, even with accurate counts, the census only occurs every 10 years, which allows a lot of room for intercensal change due to net foreign migration. The "American Community Survey" is likely to offer some hope for more frequent updates at the state and metropolitan level – if it is fully funded by the Congress

## Population Aging

Between about 2011 and 2029, the surviving members of the 100 million baby boom generation will move into retirement. As was the case with all other social institutions (e.g., schools,) the baby boom will leave its mark on those associated with old age before it passes from the stage - the last baby boomer is expected to die around 2070 (Russell, 1987: 25). The list of costs and benefits associated with this tremendous bulge is long (Russell, 1987). The question is not so much on how many baby boomers will mover into old age, but where in the US they will be doing so. As was pointed out in the preceding discussion on seasonal populations, it may be that they do so in many place “simultaneously.” One way or another (as permanent and as seasonal residents), it is highly likely that Nevada (especially southern Nevada) will be impacted by this far more than suggested in the state’s past age-migration patterns (see, e. g., Figure 1).

## Summary

The age, sex, race, and Hispanic origin projection done by the Nevada State Demographer (2000a) is flawed in terms of three major areas, but its flaws do not preclude it from serving as an accurate forecast. It is flawed primarily because it fails to meet any of the standard demographic evaluation criteria. It provides no description of methods, data and assumptions. In terms of its results, the analysis reveals that it lacks face validity and plausibility. It provides neither an indication of accuracy nor uncertainty. It is not easy to understand and it fails to provide details useful for purposes of discussing tax policy in Nevada, such as the population cross-classified by sex, age, race, and Hispanic origin. In terms of all of these criteria, the projections done by the US Census Bureau (1996) for Nevada are superior. The major criterion in which the Census Bureau’s projections are lacking is “timeliness.” However, this is not to say that the Census Bureau has produced projections that serve as an accurate forecast of Nevada. In fact, it is likely that the projection produced by the State Demographer is more accurate over its horizon.

Without belaboring the points made earlier, we strongly recommend that the Legislature consider using demographic forecasts that provide more demographic detail than those of the State Demographer and that whatever is used be well documented and accomplished with clear methods and capable of providing the needed demographic detail and meeting standard evaluation criteria. Such forecasts would then be amenable to being translated into other types of impacts using the methods. In this regard, the forecast provided in this report can serve as a possibility.

In terms of the Legislature’s interests, two critical points relative to the demographic forecast presented here are accuracy and uncertainty. These issues could be more fully addressed given more time and resources. Another approach to dealing with them is to consider “worst” and “best” case scenarios (relative to a given decision-making entity) derived from all of the projections in conjunction with a preferred level of risk (e.g., low to high) and then select one of the projections as a “forecast” that meets these prefer-

ences. For example, one could take a worst-case scenario in terms of demographics and then use it as a basis for planning.

### **Endnotes**

1. The 2000 Census data are taken from an online document, “QT-P1. Age Groups and Sex: 2000, Census 2000 Summary File 1 (SF 1) 100-Percent Data, Nevada,” found at the US Census Bureau’s “factfinder” website (<http://factfinder.census.gov>).
2. The Nevada Projections are taken from the report by the Nevada State Demographer(2000a), as shown in Table 1; the Census Bureau’s projections are taken from Campbell (1996) and are online at <http://www.census.gov/population/www/projections/popproj.html>.

## REFERENCES

Armstrong, J. 2001. *Principles of forecasting: A handbook for researchers and practitioners*. Norwell, MA: Kluwer Academic Publishers.

Bell, F., A. Wade, and S. Goss. 1992. *Life tables for the United States social security area 1900-2080*. Washington, DC: Social Security Administration.

Bongaarts, J. and R. Bulatao (Eds.). 2000. *Beyond Six Billion: Forecasting the World's Population*. Washington, DC: National Academy Press.

Campbell, P. 1996. *Population projections for states by age, sex, race, and Hispanic Origin: 1995 to 2025*. Report PPL-47. Washington, DC: U.S. Bureau of the Census.

Carter, L. and R. Lee. 1992. Modeling and forecasting U.S. sex differentials in mortality. *International Journal of Forecasting* 8: 393-411.

Data Resources Incorporated. 1998. *Review of the U.S. Economy: Long-range focus, Winter 97-98*. Lexington, MA: Data Resources Incorporated.

Day, J. 1996. Population projections of the United States by age, sex, race, and Hispanic origin: 1995 to 2050. Current Population Reports, P25, No. 1130. Washington, DC: U.S. Bureau of the Census.

de Gans, H. A. 1999. *Population Forecasting 1895-1945: The Transition to Modernity*. Dordrecht: Kluwer Academic Publishers.

Espinoza, M. and J. Stallmann. 1996. Seasonal migration of retirees: a review of the literature. *Faculty Paper Series, FP-97-2*. Department of Agricultural Economics, Texas A&M University, College Station, Texas.

Fullerton, H. 1999. Labor force projections to 2008: steady growth and changing composition. *Monthly Labor Review* 122 (November): 19-32.

George, M. V., S. Smith, D. Swanson, and J. Tayman. (forthcoming). Population projections. Chapter 21 in D. Swanson and J. Siegel (eds.) *The Methods and Materials of Demography, 2<sup>nd</sup> Edition, Condensed*. New York, NY: Academic Press.

Governor's Task Force on Tax Policy in Nevada. 2002. *Analysis of Fiscal Policy in Nevada, Section 2: Fiscal System Overview*. Governor's Task Force on Tax Policy in Nevada, 2002, Reno, NV.

Greenwood, M., G. Hunt, and J. McDowell. 1986. Migration and employment

change: Empirical evidence on the spatial and temporal dimensions of the linkages. *Journal of Regional Science* 26: 223-234.

Irwin, R. 1977. Guide for local area population projections. Technical Paper # 39. Washington, DC: U.S. Bureau of the Census.

Isserman, A. 1985. Economic-demographic modeling with endogenously determined birth and migration rates: theory and prospects *Environment and Planning A* 17: 25-45.

Isserman, A. 1993. The right people, the right rates: Making population estimates and forecasts with an interregional cohort-component model. *Journal of the American Planning Association* 59: 45-64.

Kintner, H. and D. A. Swanson. 1994. Estimating vital rates from corporate databases: How long will GM's salaried retirees live? pp. 265-295 in H. Kintner, T. Merrick, P. Morrison, and P. Voss (Eds.), *Demographics: A Casebook for business and government*. Boulder, CO: Westview Press.

Kintner, H. and D. A. Swanson. 1996. Ties that bind: A case study of the link between employers, families, and health benefits. *Population Research and Policy Review* 15: 509-526.

Klosterman, R. 1999. Operation urban models: A report on the state of the art. Paper presented at the meeting of the Association of Collegiate Schools of Planning. Chicago, IL.

Kulkarni, M. and L. Pol. 1994. Migration expectancy revisited: Results for the 1970s, 1980s and 1990s. *Population Research and Policy Review* 13: 195-202.

Las Vegas Convention and Visitors Authority. 1996. *1996 Las Vegas Visitor Profile Study*. San Francisco, CA. GLS Research.

Lee, R. and L. Carter. 1992. Modeling and forecasting U.S. mortality. *Journal of the American Statistical Association* 87: 659-675.

Makridakis, S. S. Wheelwright, and R. Hyndman. 1998. *Forecasting: methods and applications*. New York: Wiley.

Manton, K., C. Patrick, and E. Stallard. 1980. Mortality model based on delays in progression of chronic diseases: Alternative to cause elimination model. *Public Health Reports* 95: 580-588.

Manton, K., E. Stallard, and H. Tolley. 1991. Limits to human life expectancy: evidence prospects, and implications. *Population and Development Review* 17: 603-637.

McKibben, J. 1996. The impact of policy changes on forecasting for school districts. *Population Research and Policy Review* 15 (December): 527-536.

Mills, E. and L. Lubuele. 1995. Projecting growth in metropolitan areas. *Journal of Urban Economics* 37: 344-360.

National Center for Health Statistics. 1997. *U.S. decennial life tables for 1989-91. Volume 1, No. 1.* Washington, DC.

Nevada State Demographer. 2000a. *Nevada Age Sex Race and Hispanic Origin Estimates and Projections 1990 to 2010.* Reno, NV: Nevada State Demographer's Office, University of Nevada, Reno, Small Business Development Center.

Nevada State Demographer. 2000b. *Nevada County Projections 2000 to 2010.* Reno, NV: Nevada State Demographer's Office, University of Nevada, Reno, Small Business Development Center.

Olshansky, S. 1987. Simultaneous/multiple cause-delay (SIMCAD): An epidemiological approach to projecting mortality. *Journal of Gerontology* 42: 358-365.

Olshansky, S. 1988. On forecasting mortality. *Milbank Quarterly* 66: 482-530.

Pittenger, D. 1976. *Projecting state and local populations.* Cambridge, MA: Ballinger Publishing Company.

Ravenstein, E. 1889. The laws of migration. *The Journal of the Royal Statistical Society*, LII, 241-301.

Raymondo, J. 1992. *Population estimation and projection: methods for marketing, demographic, and planning personnel.* New York, NY: Quorum Books.

Riddel, M. and R. K. Schwer. nd. *Population Forecasts: Long Term Projections for Clark County, Nevada, 2003-2035 (Draft).* Las Vegas, NV: University of Nevada Las Vegas.

Rogers, A. 1985. *Regional population projection methods.* Beverly Hills, CA: Sage Publications.

Rogers, A. 1995. *Multiregional demography: principles, methods and extensions.* Chichester, UK: John Wiley and Sons.

Russell, C. 1987. *100 predictions for the baby boom: The next 50 years.* New York: Plenum Press.

Ryder, N. 1965. The cohort as a concept in the study of social change. *American Sociological Review* 30: 843-861.

Ryder, N. 1990. What is going to happen to American fertility? *Population and Development Review* 16: 433-453.

Smith, S. K. and D. A. Swanson. 1998. In defense of the net migrant. *Journal of Economic and Social Measurement* 24: 249-264.

Smith, S. K., J. Tayman, and D. A. Swanson. 2001. *State and Local Population Projections: Methodology and Analysis*. New York, NY: Kluwer Academic/Plenum Publishers.

Swanson, D. and D. Beck. 1994. A new short cut county population projection method. *Journal of Economic and Social Measurement* 20: 25-50.

Swanson, D. and G. Chamberlin. 1993. *Enrollment projections for the university of Arkansas at Little Rock, fall term 1991 to fall term, 2001*. Institute for Economic Advancement, University of Arkansas, Little Rock, AR.

Swanson, D. G. Hough, and I. Sharkova. 1996. *Long-term enrollment forecast: Newberg public schools, 1995 to 2010*. Center for Population Research and Census, Portland State University, Portland, OR.

Swanson, D., G. Hough, J. Rodriguez, and C. Clemans. 1998. K-12 enrollment forecasting: Merging methods and judgment. *ERS Spectrum* 16: 24-31.

Thompson, W. and P. Whelpton. 1933. *Population trends in the United States*. New York, NY: McGraw-Hill Book Company.

Treyz, G. 1993. *Regional economic modeling: a systematic approach to economic forecasting and policy analysis*. Boston, MA: Kluwer Academic Press.

United Nations. 1998. *World Population Projections to 2150*. New York, NY: United Nations Population Division.

United Nations. 1973. *Manual VII. Methods of Projecting Households and Families*. New York, NY: United Nations.

U.S. Bureau of the Census. 1957. Illustrative projections of the population, by state, 1960, 1965, and 1970. Current Population Reports, P-25, No. 160. Washington, DC.

U.S. Bureau of the Census. 1966. Illustrative projections of the population of states: 1970 to 1985. Current Population Reports, P-25, No. 326. Washington, DC.

U.S. Bureau of the Census. 1972. Preliminary projections of the population of states: 1975-1990. Current Population Reports, P-25, No. 477. Washington DC.

U.S. Bureau of the Census. 1979. Illustrative projections of state populations by age, race, and sex: 1975 to 2000. Current Population Reports, P-25, No. 796. Washington, DC.

Voss, P. 1994. Targeting wealthy ex-Wisconsinites in Florida: a case study in applied demography. Pp. 109-128 in H. Kintner, T. Merrick, P. Morrison, and P. Voss (Eds.) *Demographics: A Casebook for Business and Government*. Boulder, CO: Westview Press.

Waddell, P. 2000. A behavioral simulation model for metropolitan policy analysis and planning: Residential location and housing market components of UrbanSim. *Environment and Planning B* 27: 247-263.

Yokum, J. and J. Armstrong. 1995. Beyond accuracy: Comparison of criteria used to select forecasting methods. *International Journal of Forecasting* 11: 591-597.

## Appendix B. Medicaid Background

Medicare is the federal insurance program for seniors and people with disabilities, while Medicaid is the joint federal-state insurance program for low-income people. Each program pays for health insurance coverage of low-income seniors and people with disabilities. The financial relationship between the states and the federal government has become strained as Medicaid expenditures have rapidly risen. This is largely because of the surge in costs of providing care for elderly and disabled beneficiaries who are also enrolled in Medicare. Structural gaps in coverage offered by Medicare have led state Medicaid programs to bear an increasing share of the overall costs of health care for seniors and people with disabilities.

The rising costs of health care for elderly and disabled beneficiaries, and the shift in costs from Medicare to Medicaid, are the primary forces driving up state Medicaid expenditures, which are, in turn, the fastest growing component of state budgets. *Three-quarters* of the projected growth in total Medicaid expenditures, as projected by Congressional Budget Office (CBO), is caused by the rising costs of care for the aged and disabled.

Size of Family Unit	48 Contiguous States and D.C.	Alaska	Hawaii
1	\$ 8,980	\$11,210	\$10,330
2	12,120	15,140	13,940
3	15,260	19,070	17,550
4	18,400	23,000	21,160
5	21,540	26,930	24,770
6	24,680	30,860	28,380
7	27,820	34,790	31,990
8	30,960	38,720	35,600
For each additional person, add	3,140	3,930	3,610

**SOURCE:** *Federal Register*, Vol. 68, No. 26, February 7, 2003, pp. 6456-6458.

Federal law requires that state Medicaid programs provide partial coverage for Medicare beneficiaries with incomes below 120 percent of the poverty line (\$10,780 in annual income for a single person and \$14,540 for a couple). Most elderly Medicaid beneficiaries and approximately 40% of disabled Medicaid beneficiaries are also on Medicare.

Both programs contribute to the costs of health care for those who are enrolled in both programs, a group of beneficiaries referred to as “dual eligibles.” For the low-income individuals fully enrolled in both programs, Medicaid pays for services that Medicare does not cover including prescription drugs and long-term care and covers the deductibles, coinsurance and premiums that Medicare assesses beneficiaries. It is estimated that nationally, 35 percent of all Medicaid expenditures are on behalf of dual eligibles.

State Medicaid programs are bearing a growing share of the financial responsibility for health care for seniors and people with disabilities. Medicaid expenditures for care for seniors and people with disabilities have grown much faster than Medicare ex-

penditures in recent years and the growth rates are projected to remain unequal in the future.

Many of these trends will negatively affect Nevada. For example, the Congressional Budget Office (CBO) projects that Medicaid expenditures for seniors will grow at an average rate of 8.9 percent each year from 2002 to 2012, while Medicare expenditures are projected to grow an average of 6.7 percent annually.

Medicaid expenditures are growing at a higher rate than Medicare *not* because state Medicaid programs are less efficient or pay providers more generously. In most states, Medicaid generally pays health care providers less than Medicare, and Medicaid payment rates have risen more slowly. Moreover, a far greater share of Medicaid beneficiaries are in managed care plans than in Medicare.

Instead, structural deficiencies in Medicare coverage have resulted in increasing costs to states. For example, Medicare does not cover outpatient prescription drugs, so Medicaid must cover all prescription drug costs for Medicare beneficiaries fully enrolled in both programs. The cost of prescription drugs is the fastest growing segment of health care spending. More than half (about 57 percent) of all Medicaid expenditures for prescription drugs are incurred for beneficiaries who are enrolled in Medicare. A majority of the Medicaid expenditures for seniors and people with disabilities are for long-term care services, such as nursing home or home health care services.

As an article in *Business Week* recently pointed out, “Medicaid costs have surged in large measure because of rapid growth in the costs of providing care for the elderly and disabled beneficiaries of Medicare who are also eligible for Medicaid. Under federal law, Medicaid is required to pick up the tab for drug coverage, long-term care, and Medicare deductibles and premiums for low-income Medicare beneficiaries. Changes in medical practice favoring shorter hospital stays and more drug coverage have slowed the growth of Medicare spending but accelerated the growth of Medicaid spending.”<sup>33</sup>

---

<sup>33</sup> Tyson, Laura D’Andrea, “Medicaid: Washington Rolls Out a Trojan Horse.” *Business Week*, March 24, 2003, p. 26.