1995 RUPRI RURAL BASELINE

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The Rural Policy Research Institute provides objective analysis and facilitates dialogue concerning public policy impacts on rural people and places.

* *This alphabetical ordering reflects equality of contribution.*

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PREFACE

This 1995 RUPRI Rural Baseline, developed to provide policy makers with a quantitative analytic tool with which to assess the rural impacts of policy alternatives, represents the culmination of a two year effort by the Rural Policy Research Institute. It provides the basis for future policy analyses undertaken by the RUPRI Regional Work Group, and is now a central component in the growing set of analytic "tools" developed by RUPRI to expand understanding of the rural impact of public policies.

As with all policy analyses, this baseline has its limitations, due to modelling, methodological, data, and definitional constraints. These we readily acknowledge, and discuss in greater detail in the Appendix of this Baseline document. However, we are very grateful to the RUPRI scientists who have labored diligently over these past two years to develop this new analytic tool, which provides for the first time the potential to quantitatively assess the rural impacts of national policy choices. This baseline will now be used for this purpose, with initial analyses directed at issues surrounding the continuing national dialogue regarding entitlement policies, including Medicare, Medicaid, and other transfer payments.

We owe a tremendous debt of gratitude to the dedicated scientists who are primarily responsible for the development of this baseline, and the modelling capability which will utilize it in future analyses. Glenn Nelson chaired this Regional Work Group, with Curtis Braschler and Evert Van der Sluis as co-principal investigators on this project team. In addition, the following RUPRI scientists provided valuable contributions to this effort, in the form of creative review and critique:

Sam Cordes, Coordinator, RUPRI - University of Nebraska
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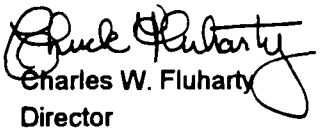
Daryl J. Hobbs, Coordinator, RUPRI - University of Missouri
Bruce Johnson, University of Nebraska
Tom Johnson, Virginia Polytechnic Institute
Jian Ma, University of Missouri
Dan Otto, Iowa State University
James K. Scott, Director, RUPRI Educational Services
Matt Spilker, University of Nebraska
Gregg Suhler, University of Missouri
David Swenson, Iowa State University

We also appreciate the contributions made by other analysts, who provided insightful review or comments on this document. We acknowledge particularly Molly Sizer Killian, the University of Arkansas-Fayetteville, and David McGranahan, USDA/ERS, who both served on the external review team. Their insights and suggestions added immeasurably to this analysis. Jian Ma and James Scott also provided valuable editorial assistance in the production of this report.



Charles W. Fluharty
Director

EXECUTIVE SUMMARY

Introduction

This 1995 RUPRI Rural Baseline provides a projection of economic and demographic variables for rural regions of the U.S., with comparisons to urban regions. The baseline was developed to address the lack of a quantitative rural perspective for policy development and analyses. Separate, but linked projections of population, economic production, employment and personal income are presented for each of four groupings of counties for the U.S.: 1) core counties of large metropolitan areas, 2) other metropolitan counties, 3) nonmetropolitan counties adjacent to metropolitan areas, and 4) other nonmetropolitan counties. While much diversity exists within each grouping, these groupings reflect the systematic differences between broad types of metropolitan and nonmetropolitan areas. These projections were developed using a fourteen (14) sector model of the economy – eleven (11) private and three (3) public sectors.

This baseline projection describes what is likely to occur across a limited set of measures, *assuming current policies are continued.* This should *not* be seen as a forecast of economic trends for rural America. It is a tool for general policy analysis, designed to provide policy makers and analysts with insight regarding the future, *should no policy changes occur.*

A baseline projection differs from a forecast in several important respects. A forecast represents analysts' best judgments as to what will happen in the future. If forecasters believe policies are likely to change, these assumed changes are incorporated into the forecast. In contrast, a baseline projection is designed to provide information regarding the most likely future under existing policies, as a basis for considering and evaluating policy changes. Hence, a baseline typically does not incorporate policy changes, even when such changes are viewed as likely. For example, a baseline projection including federal fiscal variables would appropriately assume levels of tax receipts consistent with current tax rates. Policy analyses examining projected differences from the baseline would be useful to decision makers as they deliberate alternative tax rates. On the other hand, a forecast might well assume a modest reduction in income taxes, in view of recent bipartisan support for such cuts.

Because a projection is *not* a forecast, the projections in this report are not estimates of what is most likely to happen in the nonmetropolitan U.S. areas in the future. While opinions differ regarding what policy changes are most likely, policy analysts generally agree that important policy changes are likely. Indeed, the purpose of this baseline for nonmetropolitan county groupings is to inform policy makers about the possible consequences of policy alternatives, in comparison to this baseline.

Short Term (Through 2000) Baseline Projections

The baseline projections for the period through the year 2000 are particularly important because this period will be used most intensively in subsequent policy analyses. Future analyses of potential policy changes will often measure the impacts of policy alternatives as changed from these baseline figures.

Nonmetropolitan areas are projected to continue to share in the current economic expansion, but with significant differences from metropolitan areas. Gross output for the nonmetropolitan county groupings, which is strictly analogous to gross domestic production of the nation, is projected to expand by 12.0 percent from 1994 to 2000, as compared to 15.1 percent for metropolitan areas. Productivity over this period, as measured

by output per job, is projected to expand by 6.2 percent in nonmetropolitan ares, exceeding the 3.7 percent projected by metropolitan areas. The net result is that job growth in this period in nonmetropolitan areas is projected at about 5.5 percent, which is markedly less than the 11.1 percent projected for metropolitan areas.

The projected increase in productivity in nonmetropolitan areas is a source of economic strength for the nation, as it facilitates growth in per capita incomes in the U.S. and enables the U.S. to compete more effectively in the world economy. However, the loss of jobs and businesses associated with this increased productivity places disproportionate adjustment burdens on nonmetropolitan areas.

The population of nonmetropolitan areas is projected to grow slightly more than 1 percent between 1994 and 2000 as compared to a growth rate of slightly over 7 percent for metropolitan areas. These projected relative growth rates are similar to the pattern which occurred in the 1980s. Nonmetropolitan growth rates were closer to those of metropolitan areas in the 1970s and in 1991 and 1992, and so this projected result warrants continued close examination in future updates.

Long Term (2000 through 2030) Baseline Projections

The long term projections provide a context for analyzing the long term impacts of current policy decisions. Recent intense debate in policy circles concerning the implications of current and alternative policies regarding federal entitlements, such as Social Security, Medicare and Medicaid, has increased awareness of the importance of examining long as well as short term impacts.

In the long term, the retirement of the post-war baby boom generation in large numbers, beginning in the decade of 2000-2010, will have a major impact on nonmetropolitan areas, as well as the nation. Beginning in 2010, the number of people over age 65 grows rapidly in both absolute and relative terms. For about 20 years beginning in 2008, the number of exits from the labor force exceeds the number of entrants to such an extent that the number of jobs grows more slowly than the population. This is unprecedented since 1970 with the exception of brief periods associated with major recessions.

The projected slowing in the rate of growth of workers reduces rates of growth in per capita output and income – despite continued increases in productivity per worker. In other words, the projected slower rates of growth in per capita output and income are due to the increased ratio of non-workers to workers; workers continue to be more productive as they have in the past.

Nonmetropolitan areas are projected to continue to contain a disproportionate number of the elderly throughout the projection period. Thus, the manner of the resolution of the strain placed on the policy process – by the demands of a large elderly cohort for increased services comparable to their predecessors and the demands of workers for tax rates no higher than their predecessors – will be disproportionately important to nonmetropolitan areas.

DEFINITIONS

The RUPRI baseline differentiates "rural" policy impacts by tracing and projecting key trends in four groups of U.S. counties. This section defines these groups, and describes how and why they are used.

Table 1 compares the metropolitan-nonmetropolitan classification often used in federal and state funding formulas with the RUPRI groupings. Currently, the Office of Management and Budget (OMB) classifies a standard metropolitan area as a county or group of contiguous counties containing at least one city of 50,000 or more, and other counties that exhibit strong ties to the central city (U.S. Department of Commerce, 1986). Nonmetropolitan areas are counties that do not meet these criteria. Because nonmetropolitan counties are defined by this method as a residual, this grouping of counties contains considerable diversity.

Table 1. OMB and RUPRI County Classification Schemes Compared

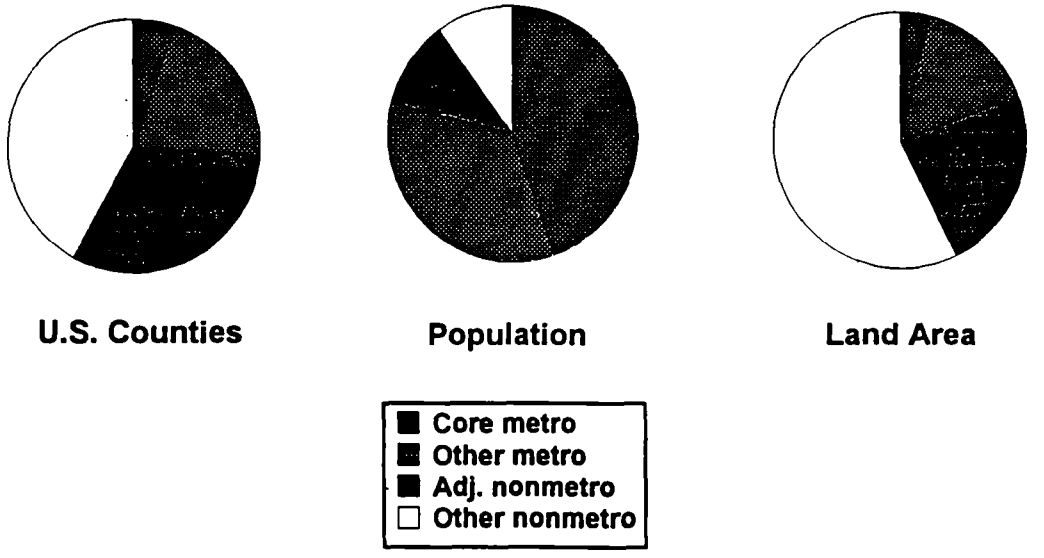
Standard Metro/Nonmetro Categories			RUPRI Baseline Categories		
Name	Definition	Percent	Name	Definition	Percent
Metro	A county or group of contiguous counties that contains at least one city of 50,000 or more, and other counties that exhibit strong ties to the central city.	26.2	Core metro	Core counties of metro areas of 1 million population or more	5.4
			Other metro	All other metro counties	20.8
Non-metro	All counties not designated as metropolitan	73.8	Adjacent nonmetro	Nonmetro counties that are adjacent to metro areas	31.7
			Other nonmetro	All other nonmetro counties	42.1

The RUPRI county groupings sub-divide the OMB categories, with an adaptation of a widely used county classification system developed by the Economic Research Service at USDA, called the Rural-Urban Continuum Codes (see Appendix for further details). This classification scheme is built on the assumption that proximity to metropolitan areas provides some counties with a different set of economic opportunities than is available to counties farther from metropolitan areas.[1] By dividing metropolitan and nonmetropolitan counties into the four groups described above, the baseline projections will account for more of the diversity of rural areas, yet retain much of the parsimony implicit to the OMB method.

[1]The economic implications of "adjacency" vary across space, by the population size and economic activity of different metropolitan areas. For example, residents of counties adjacent to metropolitan areas in the Southeast experience a very different range of employment and economic opportunities than do residents of counties adjacent to metropolitan areas in much of the West. Sixty-seven percent of the Southeastern nonmetropolitan counties have at least twenty-five percent of the workers commuting outside their home county for employment. In the West, this is true in only twenty percent of the counties. For more information on the nature and magnitude of the variance within and between nonmetropolitan county groupings, see the Appendix, as well as Nelson, Swenson and Otto (1995).

Figure 1 shows the proportion of counties assigned to each group, and compares that to the proportion of the total population living in these counties and the land area they represent. These pie charts dramatically demonstrate the concentration of population in America's metropolitan counties. The charts also show that the other nonmetropolitan county grouping constitutes more than half of the total U.S. land area.

Figure 1. U.S. Counties, Population and Land Area by Metro/Nonmetro Groupings



BASELINE PROJECTIONS

This presentation compares projected changes in key baseline indicators in each of the four county groupings. It describes both short and long term projections of population; production; employment; and personal income.

The baseline projections for the period through the year 2000 are particularly important because this period will be used most intensively in subsequent policy analyses. The baseline figures for this period are estimates of what will occur if there are no changes in state and federal policies affecting the indicators being monitored. Future analyses of potential policy changes will often measure the impacts of policy alternatives as changes from these baseline figures.

POPULATION

The nonmetropolitan population will increase, but more slowly than in the past, and at a much slower rate than in metropolitan areas.

Projection Through the Year 2000

Population in the adjacent and other nonmetropolitan groupings is projected to increase by 1.6 and 1.2 percent, respectively, from 1994 through 2000. These growth rates are lower than the growth rates observed in the 1980s and early 1990s. These increases are also significantly below the projected increases of 7.0 and 7.5 percent for the core metropolitan and other metropolitan counties, respectively, from 1994 to 2000.

During the 1970s, the population in nonmetropolitan counties grew at higher rates than in metropolitan counties and the U.S. as a whole. However, growth rates in nonmetropolitan counties fell to less than one-third of that of metropolitan counties in the 1980s, when the farm financial crisis and generally poor economic conditions led to significant outmigration. In 1991 and 1992, the nonmetropolitan population growth rates show a partial recovery. However, the RUPRI baseline projects growth rates through 2000 declining once again to levels below the annualized growth rates of the 1980s. These population projections are consistent with the most recent US Census Bureau projections (see Appendix), and they are also consistent with projected trends in productivity and employment growth. These linkages will be discussed in more detail in the sections on production and employment.

Figure 2. U.S. population by county grouping, 1980-2000

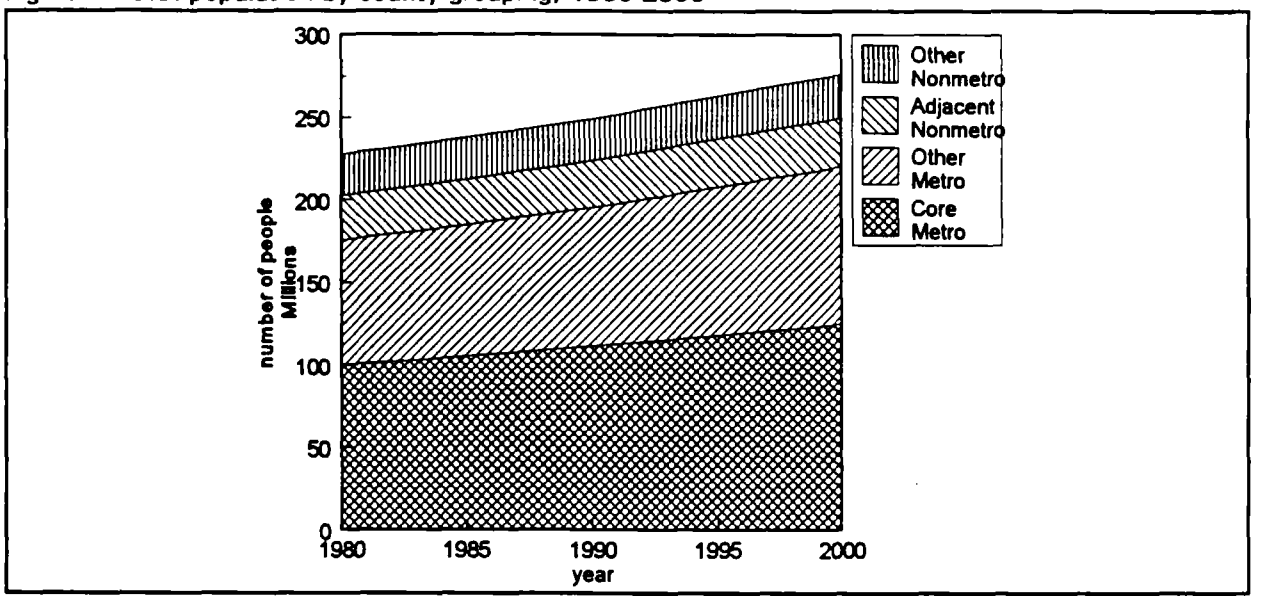


Table 2. Population (in millions) and Population Growth Rates by County Grouping, 1970, 1980, 1990-2000

	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Core Metro	94	100	112	113	114	115	117	118	119	121	122	123	125
Other Metro	65	75	84	85	86	88	89	90	91	92	93	95	96
Adj Nonmetro	24	27	28	28	29	29	29	29	29	29	29	29	30
Other Nonmetro	21	25	26	26	26	26	26	26	26	26	26	26	26
U.S.	204	227	249	252	255	258	261	263	266	269	271	274	276
						Population Growth Rate (percent)							
Core Metro		0.7[a]	1.1[b]	1.0	1.1	1.2	1.3	1.1	1.1	1.1	1.1	1.1	1.1
Other Metro		1.5[a]	1.1[b]	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1
Adj Nonmetro		1.3[a]	0.4[b]	0.9	1.0	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.2
Other Nonmetro		1.4[a]	0.3[b]	0.7	1.0	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.1
U.S.		1.1[a]	0.9[b]	1.1	1.2	1.1	1.2	1.0	1.0	1.0	1.0	0.9	0.9

[a]Average annual growth rate between 1970-1980

[b]Average annual growth rate between 1980-1990.

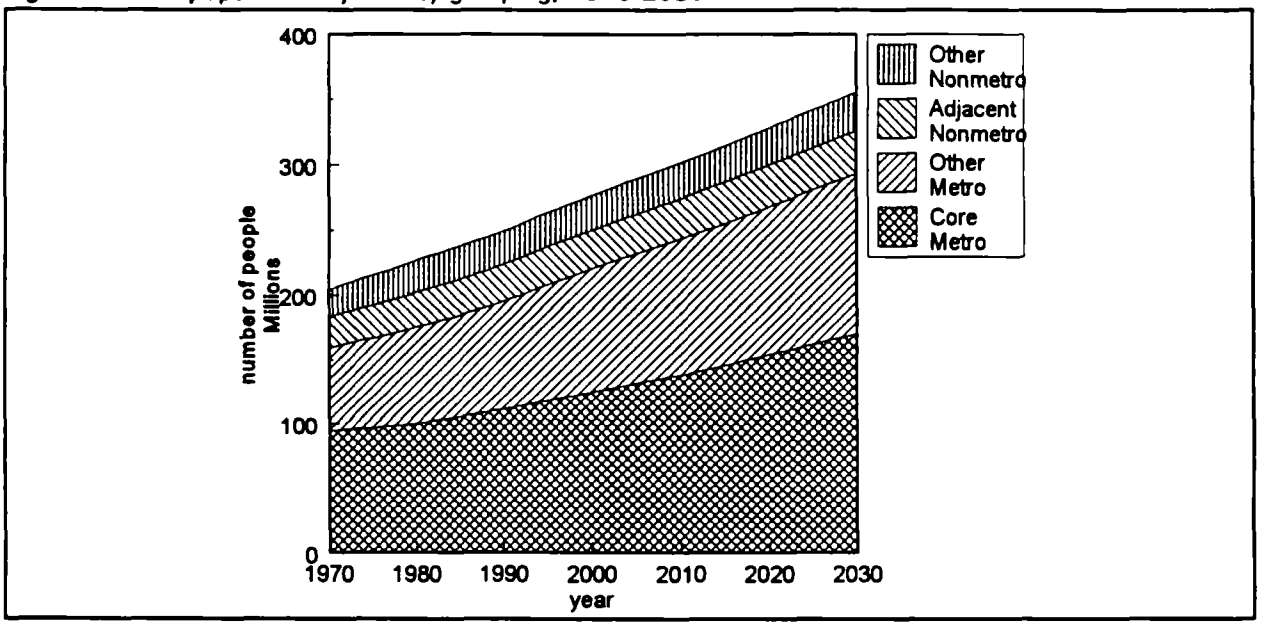
Some analysts argue that nonmetropolitan population growth may be much more robust than these projections indicate for the 1990s. Their expectations of higher growth rates are based on assumptions that opportunities for retirement and recreation, and rural amenities such as low crime rates, will stimulate increased urban-to-rural migration, and that growth on metropolitan fringes will spill over into nonmetropolitan areas.[2]

[2]See Sharon O'Malley, "The Rural Rebound," American Demographics, May 1994, pp. 24-29, for one presentation of these views.

Long Term Projections

Figure 3 shows the projected distribution of the U.S. population though 2030, by metropolitan and nonmetropolitan county groupings. In 1980, 51 million (22.8 percent of the U.S. population) lived in nonmetropolitan county groups. By 1995, the absolute number of people living in nonmetropolitan areas will have increased to 55 million, but the proportion in nonmetropolitan areas will have decreased to 20.9 percent of the total. This proportion drops throughout the projection period.

Figure 3. U.S. population by county grouping, 1970-2030



The population in each of the two nonmetropolitan groupings is projected to grow at an annual rate of over 0.3 percent through the projection period. This projected rate is lower than the average annual rate of growth of 1.4 percent in the 1970s (Table 2), and is slightly lower than the observed rate since 1980.

The population in both groups of metropolitan counties is projected to grow at an annual rate of about 1 percent throughout the projection period. The population is projected to grow more slowly in nonmetropolitan areas than in metropolitan areas, for three principal reasons.

1) Working age adults (and their children) will continue to be attracted to metropolitan areas, seeking employment and other opportunities.
2) Most retired people will continue to reside in metropolitan areas.[3]
3) People immigrating to the U.S. from other countries are expected to settle in core metropolitan counties, in keeping with historic patterns.[4]

[3]Recently a number of nonmetropolitan counties have experienced steady population growth as retirement destinations. Johnson (1993) concludes that nonmetropolitan counties experienced a net inflow of over 650,000 adults ages 50 and above in the 1980s. Despite this recent retirement-related growth in some rural communities, and the increasing percentage of elders in the total nonmetropolitan population, the number of elder metropolitan residents is nearly four times the number of elder residents in nonmetropolitan areas.

[4]This analysis follows the Census Bureau assumptions, which keep annual immigration levels at 880,000 throughout the projection period. Alterations of immigration policy could significantly affect baseline projections.

Changing Age Structure

As the U.S. population grows, the RUPRI baseline projects significant changes in the age structure in each county groupinng. Those changes have major policy implications that warrant careful attention, illustrated in Figures 4-8.

In the aggregate, all age cohorts will continue to expand through the projection period. The projected number of children (ages 0-17) increases steadily through 2010, and then this growth continues at a slightly slower pace. The working age cohort (age 18-64) is projected to grow much faster than the number of young people until about 2010. In the period 2000-2010, the baby boom generation begins to retire, rapidly increasing the number of retirees (Figure 4). In the current decade, the number of elders will grow much more slowly, as a much smaller age cohort born during the Great Depression and WWII moves into retirement.

Figure 4. U.S. population by age cohort, 1970-2030

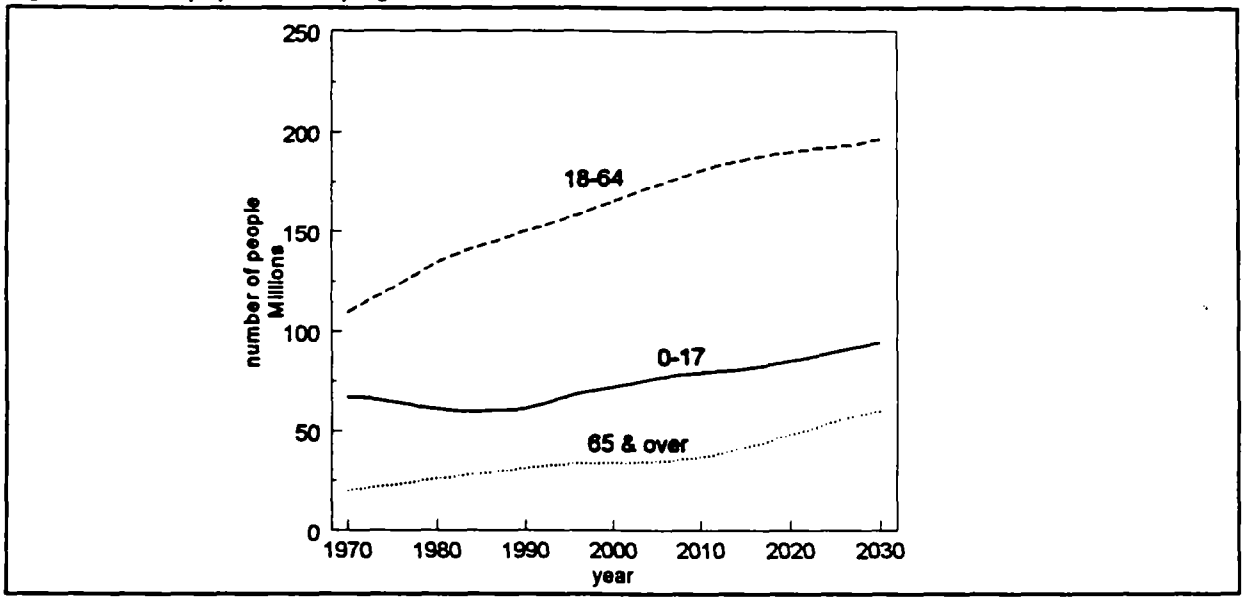


Figure 5. Core metro population by age cohort, 1970-2030

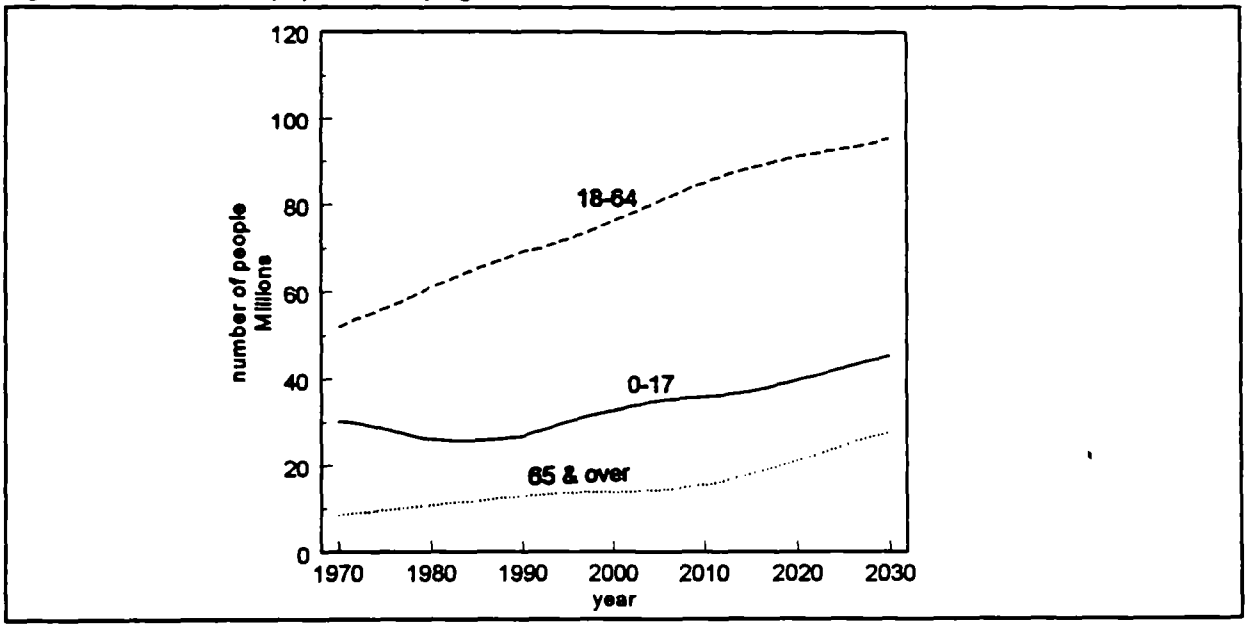
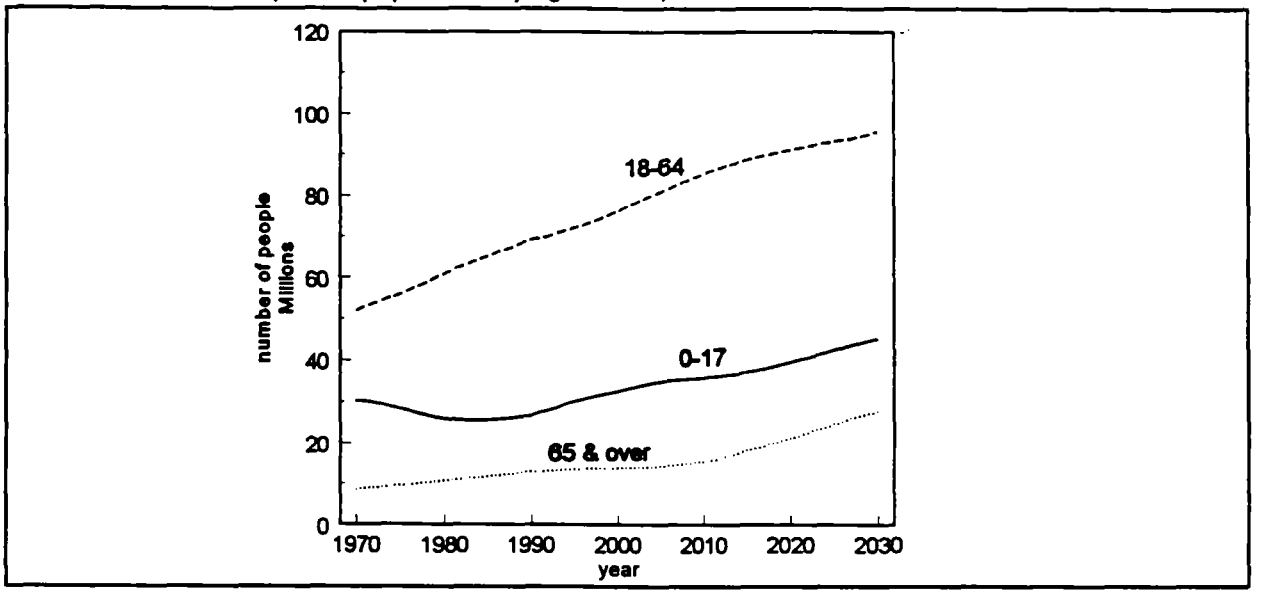


Figure 6. Other metropolitan population by age cohort, 1970-2030



Changes in age structure vary across the rural-urban continuum. For example, the number of children in the adjacent and other nonmetropolitan county groupings increases by 17 and 20 percent, respectively, over the projection horizon (Figures 7-8). In metropolitan counties, the cohort of children increases much more rapidly. For example, in core metropolitan counties, the population of children grows from approximately 30 million today to 45 million in 2030, an increase of 50 percent (Figure 5).

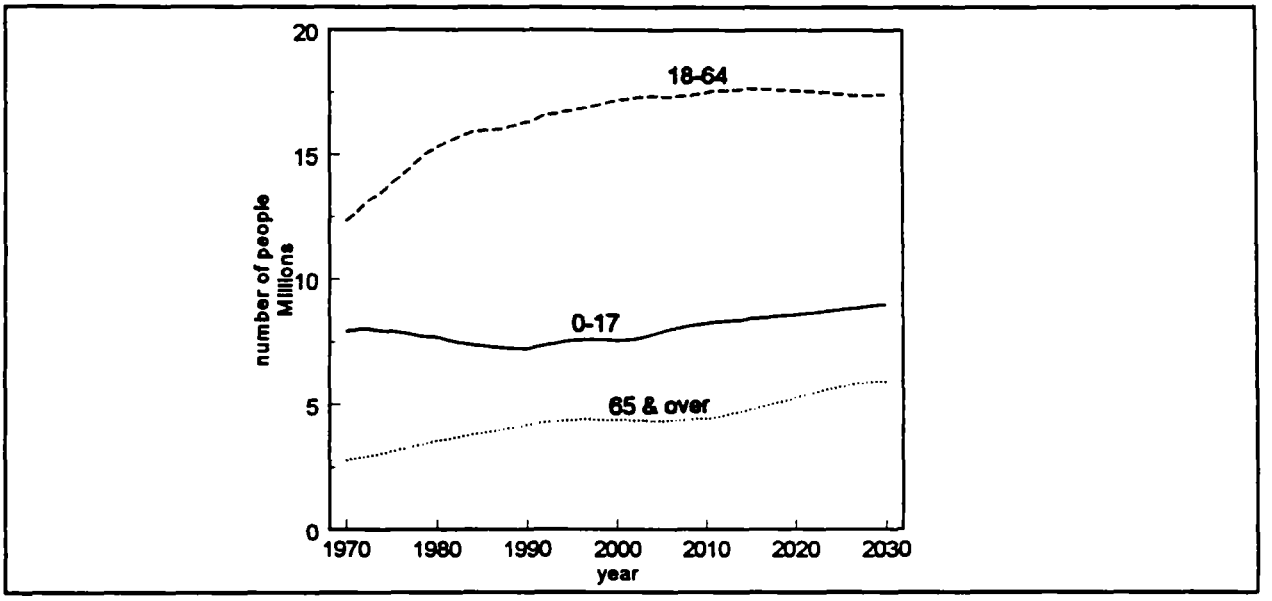
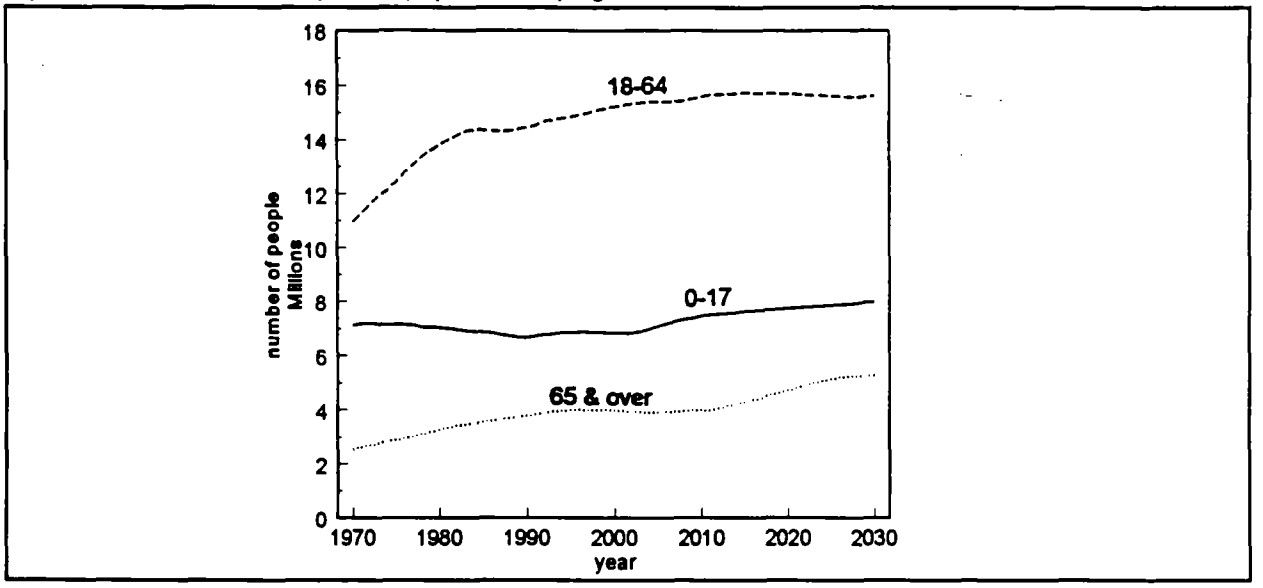


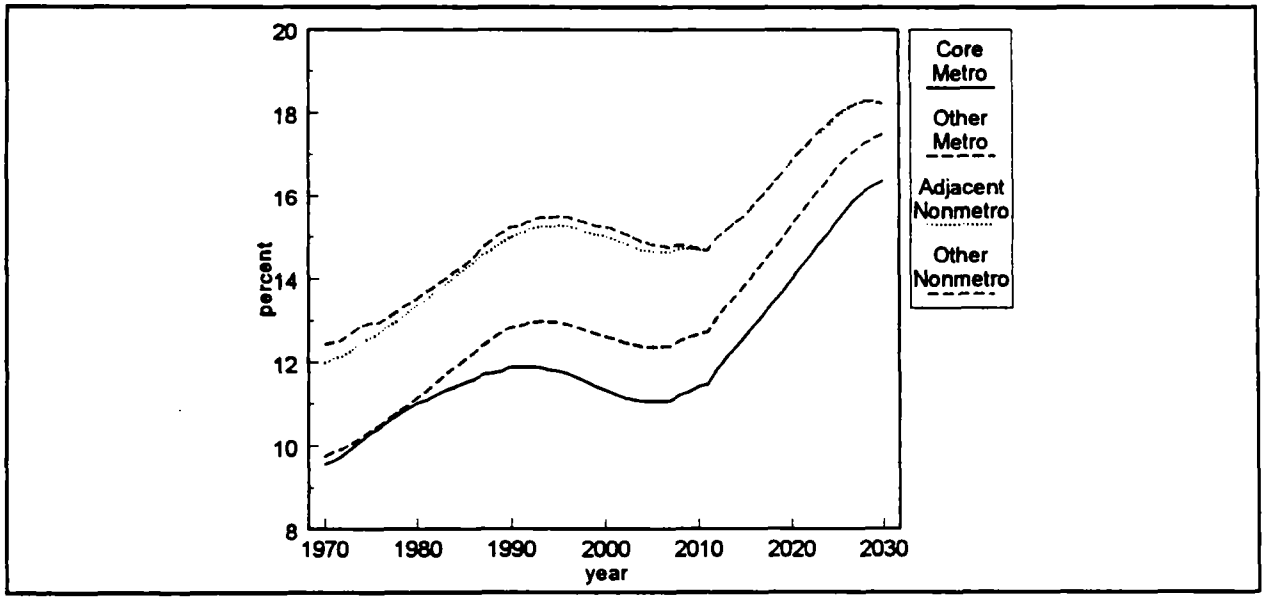
Figure 7. Adjacent nonmetropolitan population by age cohort, 1970-2030

Figure 8. Other nonmetropolitan population by age cohort, 1970-2030



The distribution of elderly residents (ages 65 and over) also changes somewhat across groupings. In absolute terms, the number of elders living in metropolitan areas is projected to increase steadily through 2010, when growth is accelerated. In nonmetropolitan counties, the population ages 65 and over grows more slowly. However, continuing outmigration of younger people will help make the proportion of elders in the nonmetropolitan population much greater than in metropolitan groupings (Figure 9).[5]

Figure 9. The population percentage of individuals of age 65 and over by county grouping, 1970-2030



[5]The changing age structure in nonmetropolitan counties is not simply a function of natural aging or of a net outmigration of working age adults and their children. Many people move at the time of their retirement, which often occurs between 55 and 65 years of age. Many localities, in both metropolitan and nonmetropolitan areas, will experience significant population growth due to an influx of retirees. These migrating elders often bring new wealth, income and spending power to these localities.

The working age population (ages 18-64) in nonmetropolitan counties is virtually unchanged between 1994 and 2030 (both in relative and absolute terms). This population grows much more rapidly in metropolitan areas, presumably because young adults seek employment and other opportunities available in metropolitan areas. After 2010, the proportion of working age adults available to support younger and older residents shrinks in both metropolitan and nonmetropolitan areas at a notable pace.

PRODUCTION

Gross production in nonmetropolitan areas grows more slowly than in the past, and continues to grow more slowly than in metropolitan areas. Slower growth rates are projected for all groupings, particularly after 2010.

Projection Through the Year 2000

Both nonmetropolitan county groupings are projected to share in the current economic expansion, but with significant differences from the metropolitan groupings (Table 3; Figure 10). Real gross domestic product (GDP) for the U.S. through 1999 is calibrated to the August 1994 projections of the Congressional Budget Office. Gross output for the adjacent and other nonmetropolitan groupings is projected to expand by 12.4 and 11.6 percent, respectively, from 1994 to 2000. These rates are lower than the growth rates of 14.9 and 15.4 percent projected for the core and other metropolitan counties groupings, respectively, over this same period. The slower rates of growth in the nonmetropolitan county groupings primarily reflect the tendency for these counties to have disproportionate shares of the slower growing industrial sectors and the service sectors with which they are associated.

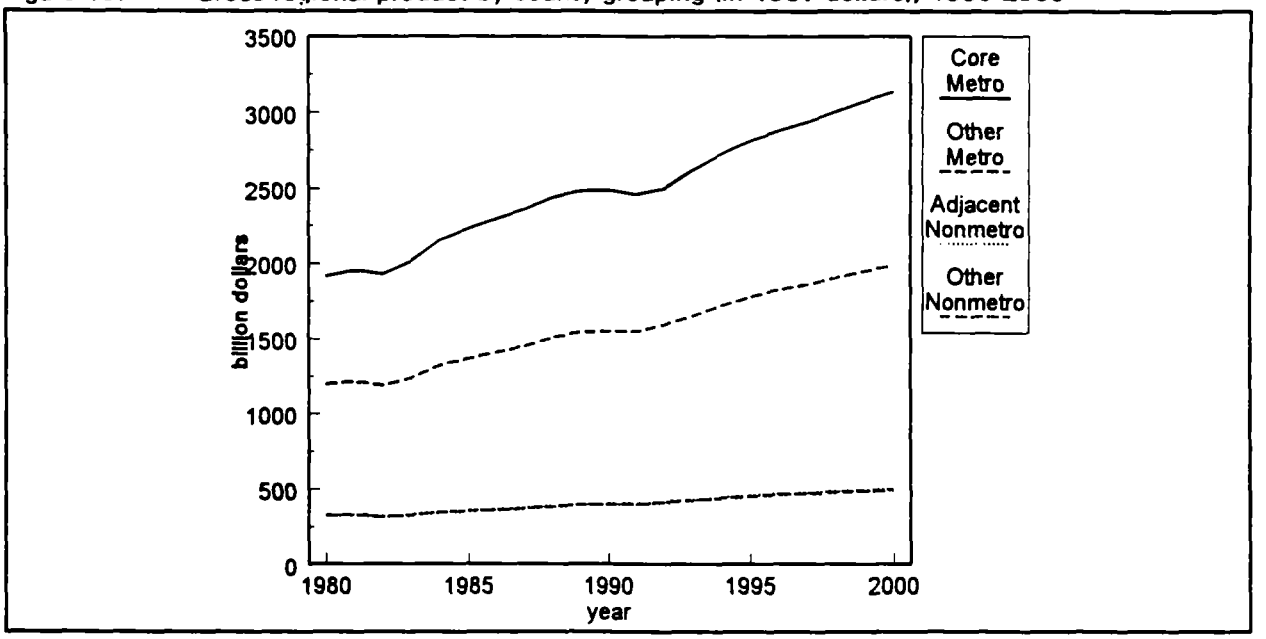
Table 3. GRP and GRP Growth Rates by County Grouping (in Million 1987 Dollars), 1970, 1980, 1990-2000

	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Core Metro	1504	1916	2487	2457	2502	2624	2730	2814	2879	2942	3008	3074	3138
Other Metro	903	1198	1553	1549	1599	1653	1723	1779	1825	1867	1908	1949	1988
Adj Nonmetro	255	327	403	402	419	433	450	462	472	480	489	497	505
Other Nonmetro	247	328	405	404	418	430	446	458	467	474	482	490	498
U.S.	2910	3768	4848	4813	4938	5140	5348	5513	5642	5764	5888	6011	6129
						GRP Growth Rates (percent)							
Core Metro		2.4[a]	2.6[b]	-1.2	1.8	4.9	4.0	3.1	2.3	2.2	2.2	2.2	2.1
Other Metro		2.9[a]	2.6[b]	-0.3	3.2	3.4	4.2	3.3	2.6	2.3	2.2	2.1	2.0
Adj Nonmetro		2.5[a]	2.1[b]	-0.2	4.1	3.3	3.9	2.7	2.2	1.8	1.8	1.7	1.6
Other Nonmetro		2.9[a]	2.1[b]	-0.2	3.5	2.8	3.7	2.6	2.0	1.7	1.7	1.7	1.5
U.S.		2.6[a]	2.6[b]	-0.7	2.6	4.1	4.1	3.1	2.3	2.2	2.1	2.1	2.0

[a]Average annual growth rate between 1970-1980

[b]Average annual growth rate between 1980-1990.

Figure 10. Gross regional product by county grouping (in 1987 dollars), 1980-2000



Long Term Projections

Gross Product

Gross product in each of the two nonmetropolitan groupings is projected to grow more slowly in later years of the projection period.[6] Annual rates of increase decline from slightly less than 3 percent in the 1970s to less than 1 percent in 2010-2030.

The change in gross product in each of the two metropolitan groupings is projected to follow the same pattern as the nonmetropolitan groupings (Figure 11). Annual rates of increase tend to move from approximate parity with the nonmetropolitan groupings in the 1970s down to a little over 1 percent in 2010-2030.

The most important factor underlying the decline in output growth rates is the decline in the growth rate of the working age adult population across the entire population.

Per Capita Gross Product

Figures 12 and 13 show that the growth rate of per capita output in nonmetropolitan areas is slightly greater than in metropolitan areas, and this leads to small decreases in the amount by which per capita product in metropolitan areas exceeds that of nonmetropolitan areas.

[6]The historical and projected series for the two nonmetropolitan groupings are more similar than the literature suggests would be the case. Analysts have distinguished these two groups because they believe proximity to a metropolitan area has a significant effect on many nonmetropolitan socioeconomic and demographic variables. The reasons for this result are discussed further in the Appendix, and are the subject of continued study within RUPRI.

Figure 11. Gross regional product per capita by county grouping (in 1987 dollars). 1970-2030

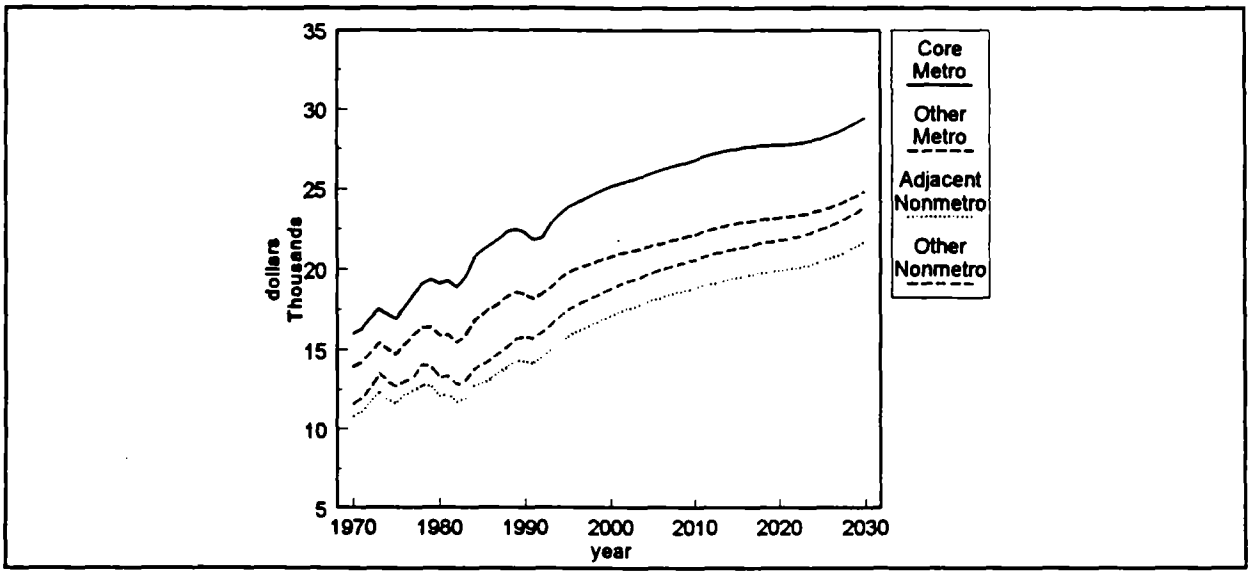


Figure 12. **Gross regional product growth rates per capita in the two metropolitan county groupings (in 1987 dollars), 1970-2030**

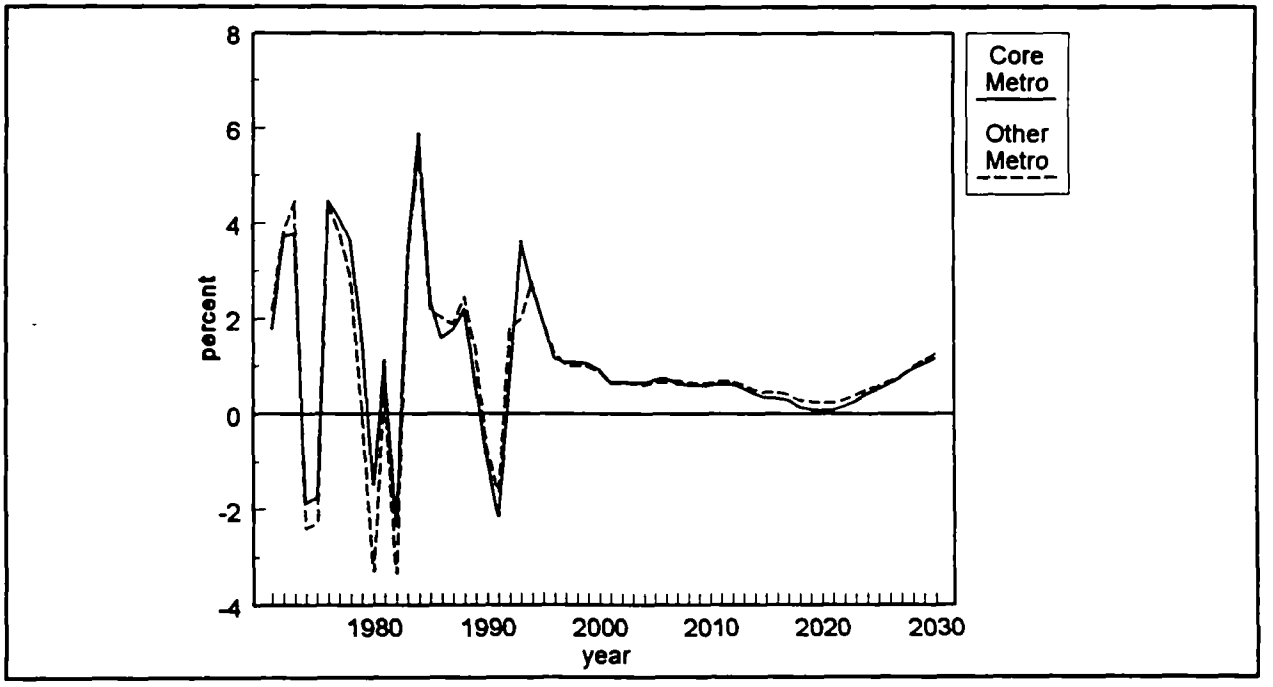
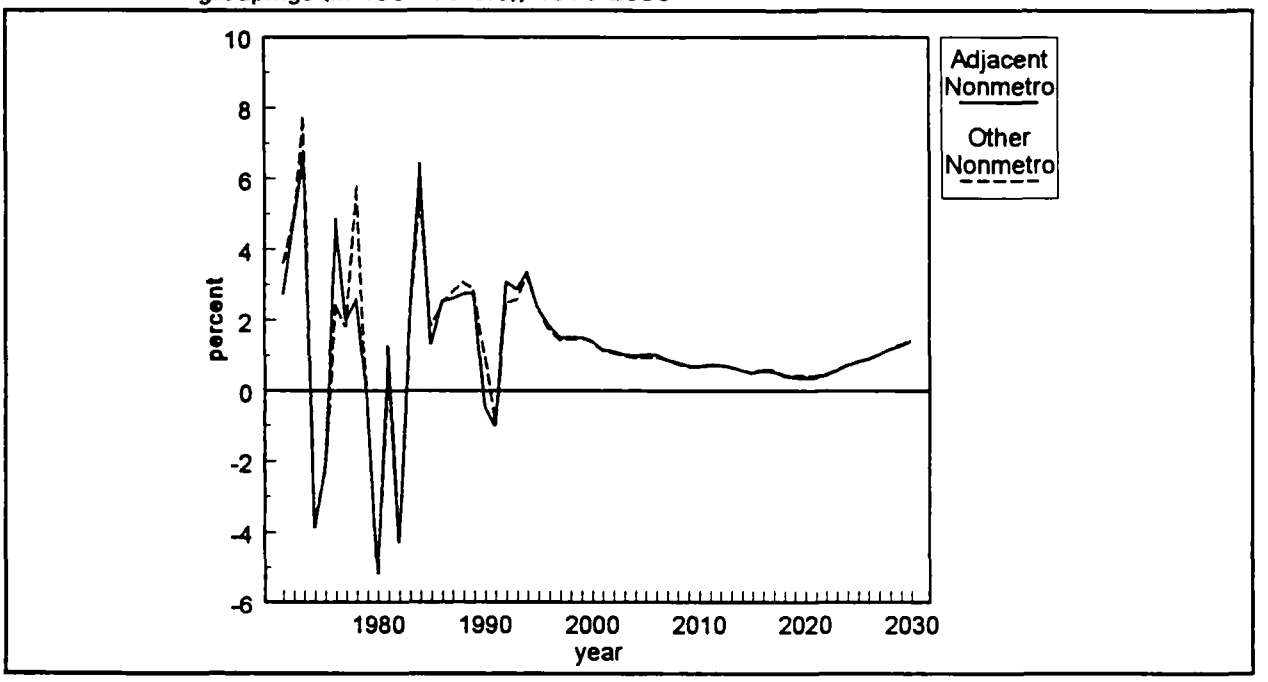


Figure 13. Gross regional product growth rates per capita in the two nonmetropolitan county groupings (in 1987 dollars), 1970-2030



The projected annual growth rate of per capita gross product declines from approximately 1.7 and 1.0 percent for nonmetropolitan and metropolitan counties, respectively, in the 1990s, to rates just barely above zero around 2020 before rebounding after the early 2020s.

EMPLOYMENT

The number of jobs in both nonmetropolitan groupings is projected to grow more slowly than in the past, and more slowly than in metropolitan areas.

Projection Through the Year 2000

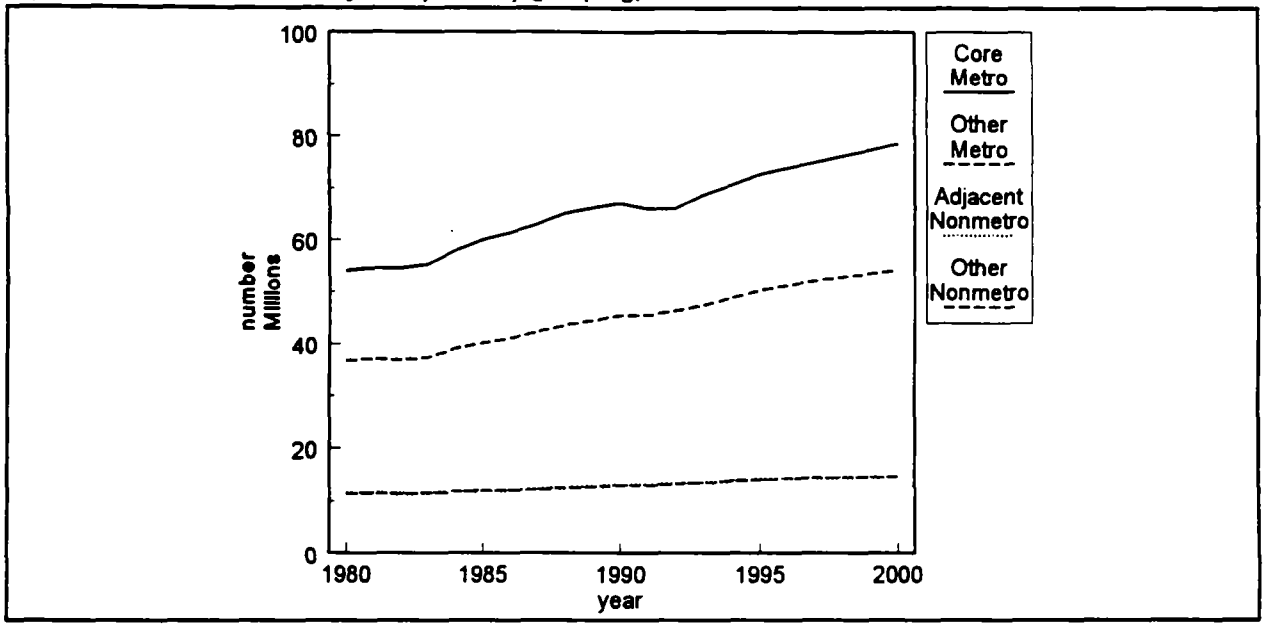
Job growth in the adjacent and other nonmetropolitan groupings for the 1994-2000 period is projected to be 5.2 and 5.8 percent, respectively (Table 4, Figure 14). These rates are about half of the rates of 11.2 and 11.0 percent projected for the core metropolitan and other metropolitan counties groupings, respectively. These projections are, of course, directly linked to the projected smaller rate of output growth and the higher rate of labor productivity growth in nonmetropolitan areas relative to metropolitan areas.

Table 4. Jobs (in millions) and Job Growth Rates by County Grouping, 1970, 1980, 1990-2000

	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Core Metro	44	54	67	66	66	69	71	73	74	75	76	77	79
Other Metro	29	37	46	46	46	48	49	50	51	52	53	54	54
Adj Nonmetro	10	12	13	13	13	14	14	14	14	14	14	15	15
Other Nonmetro	9	11	13	13	13	14	14	14	14	14	14	15	15
U.S.	91	114	139	138	139	143	147	151	154	156	158	160	162
						Job Growth Rates (percent)							
Core Metro		2.1[a]	2.2[b]	-1.6	0.0	3.8	2.9	2.8	1.8	1.6	1.6	1.5	1.5
Other Metro		2.6[a]	2.2[b]	0.1	1.6	2.5	3.0	2.9	1.9	1.6	1.5	1.3	1.3
Adj Nonmetro		1.9[a]	1.3[b]	0.3	1.7	1.9	2.1	1.9	1.0	0.6	0.5	0.5	0.5
Other Nonmetro		2.4[a]	1.4[b]	0.7	1.8	1.8	2.1	2.0	1.1	0.7	0.7	0.6	0.6
U.S.		2.2[a]	2.0[b]	-0.6	0.9	3.0	2.8	2.6	1.7	1.4	1.4	1.3	1.3

[a]Average annual growth rate between 1970-1980
[b]Average annual growth rate between 1980-1990.

Figure 14. Total number of jobs by county grouping, 1980-2000

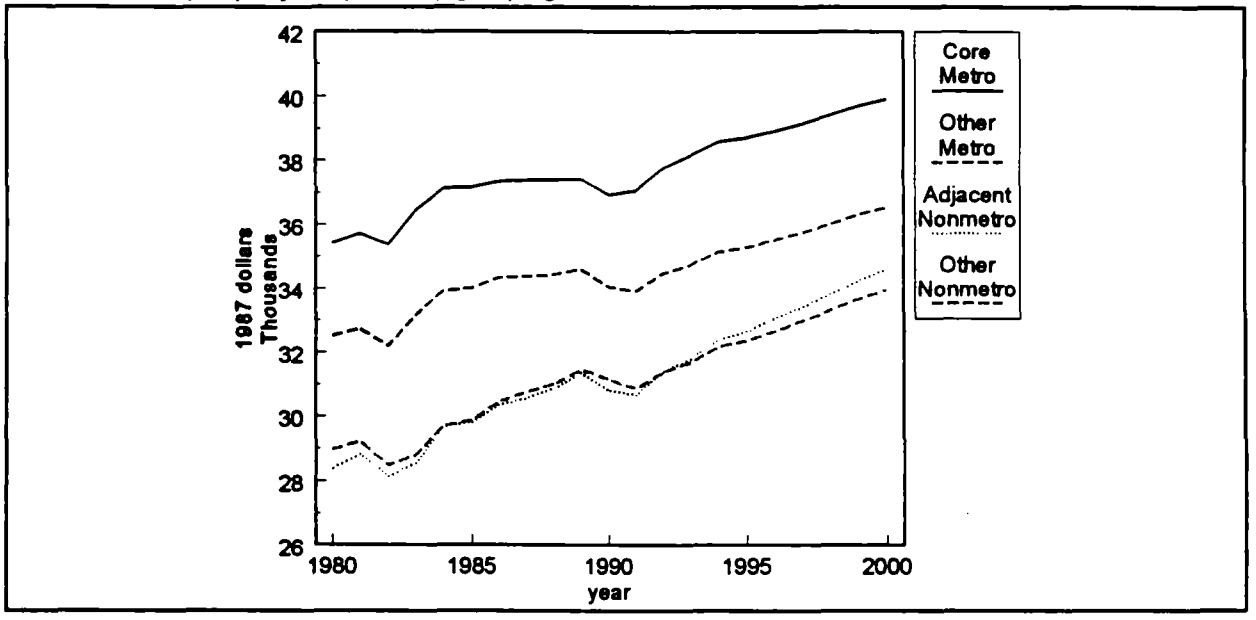


Labor productivity over 1994-2000, as measured by output per job, is projected to expand by 6.8 and 5.6 percent in the adjacent and other nonmetropolitan county groupings, respectively (Figure 15, Table 5). These rates exceed the 3.7 percent growth rates projected for both the metropolitan core and other metropolitan county groupings. The higher rates of growth in the nonmetropolitan groupings reflect in part the disproportionate share of these economies devoted to manufacturing and natural resource based sectors, in which productivity is increasing at relatively higher rates. Even though output per worker is currently lower in the nonmetropolitan groupings than in the metropolitan areas, the levels of output per job are converging over the period.

Table 5. Output per Job by County Grouping (in Thousand 1987 dollars), 1970, 1980, 1990-2000

	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Core Metro	34.1	35.4	36.9	37.1	37.8	38.2	38.6	38.7	38.9	39.2	39.4	39.7	39.9
Other Metro	31.6	32.5	34.1	33.9	34.5	34.8	35.2	35.3	35.5	35.8	36.0	36.3	36.6
Adj Nonmetro	26.8	28.4	30.8	30.7	31.4	31.8	32.4	32.7	33.1	33.4	33.8	34.2	34.6
Other Nonmetro	27.7	29.0	31.2	30.9	31.4	31.7	32.2	32.4	32.7	33.0	33.3	33.7	34.0
U.S.	31.9	33.1	34.9	34.8	35.5	35.8	36.3	36.4	36.7	36.9	37.2	37.5	37.8

Figure 15. Output per job by county grouping, 1980-2000



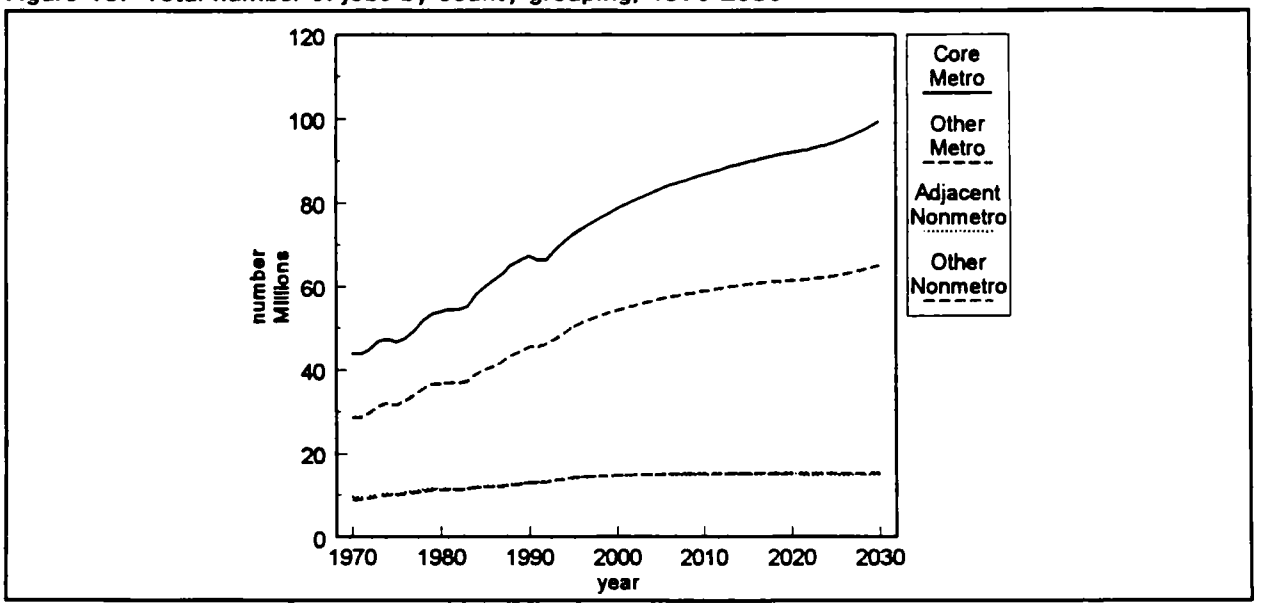
Long Term Projections

Figure 16 shows the baseline projection for the total number of jobs in both metropolitan and nonmetropolitan county groupings. The number of jobs in each of the nonmetropolitan groupings is projected to grow more slowly as the projection period unfolds. Average annual rates of job growth are projected to decline from about 2 percent in the 1970s to around 0.3 percent in 2000-2010, and remain virtually unchanged in 2010-2030.

Job growth in the metropolitan county groupings exhibits the same pattern as in the nonmetropolitan groupings, but with a more moderate decline in growth rates. The growth rate of jobs in metropolitan groupings declines from a little less than 2 percent in the 1970s to about 0.6 percent in 2010-2030.

The difference between growth rates of jobs in the nonmetropolitan and metropolitan groupings is partly because the nonmetropolitan sectors, which employ relatively more people, tend to grow slower relative to the important sectors in metropolitan areas.

Figure 16. Total number of jobs by county grouping, 1970-2030



Growth In Jobs, Population and Output

Because of increases in labor productivity, output grows faster than the number of jobs in all groupings. U.S. job growth is projected to continue to exceed population growth through about 2006 (Figures 17 and 18). During the period 2008-2028 the rate of population growth is projected to exceed that of jobs.

The primary factor causing the projected reversal of the rates of growth of jobs and population is the retirement of the baby boom generation beginning in about 2006. The retirement of this large cohort removes large numbers of people from the work force.

Another significant factor in the slow down in the growth of jobs is the leveling off of female participation in the labor force. The ratio of jobs held by females to the female population increased almost 20 percent from 1971 to 1994 for women aged 35-44. The rate for this age group is projected to increase an additional 8 percent from 1994 to 2005, after which the rate is assumed to be constant. A similar pattern is projected for women in other age groups. Female residents of nonmetropolitan counties are projected to be slightly less likely to participate in the labor force than those in the metropolitan groupings, but the differences are generally less than 1 percent.

Figure 17. Population and jobs growth rates, 1970-2030

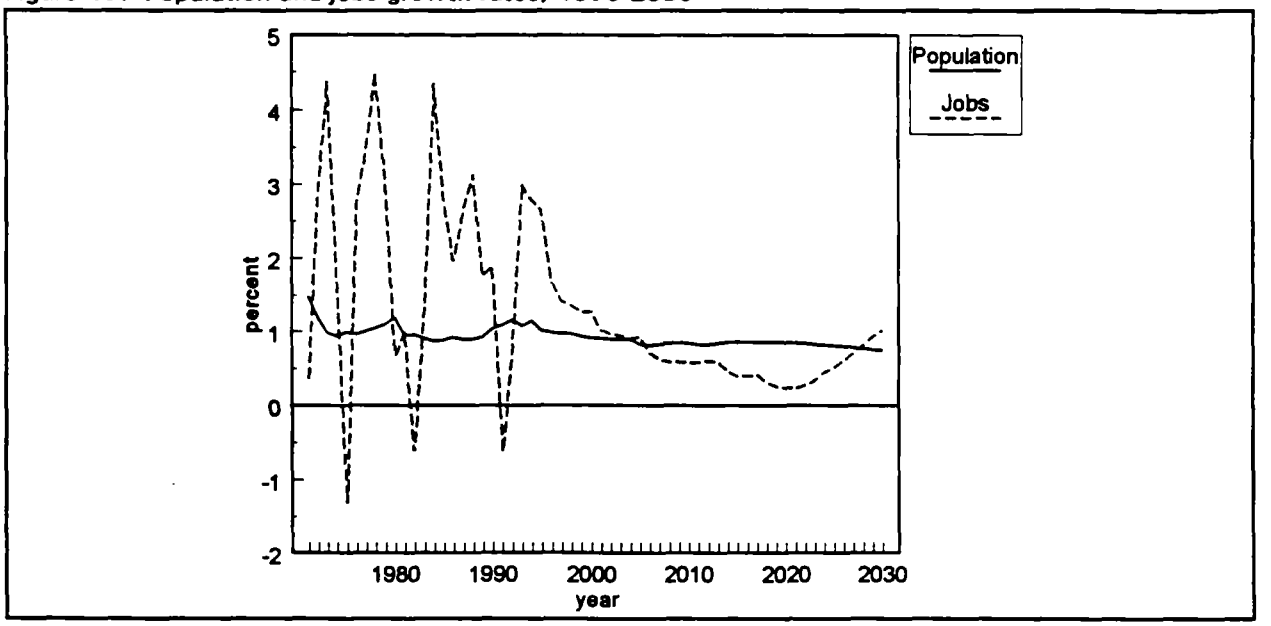
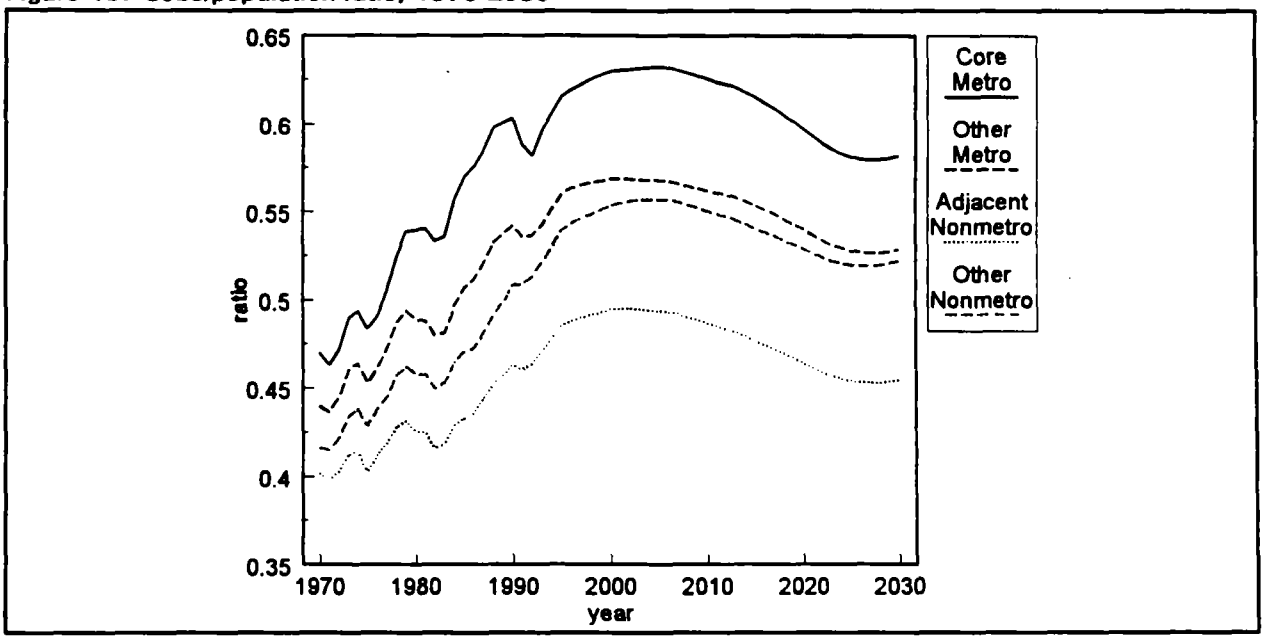


Figure 18. Jobs/population ratio, 1970-2030



Job Growth by Sectors

Figure 19 shows that the manufacturing sector is projected to lose 5.7 and 4.1 percent of current jobs during the period from 1994 to 2010 in the adjacent and non-adjacent nonmetropolitan county groupings, respectively. This is a significant shift from the last two decades, when manufacturing jobs expanded in nonmetropolitan areas. The number of manufacturing jobs in the metropolitan groupings continues the downward trend begun in the early 1980s.

An important difference between the adjacent and other nonmetropolitan groupings is that in the adjacent group, more than 18 percent of total jobs are in manufacturing. In the other nonmetropolitan counties, manufacturing jobs account for approximately 14 percent of the total. When the two groups are combined, 13 percent of the jobs are now in manufacturing.

Figure 19. The number of manufacturing jobs by county grouping, 1970-2030

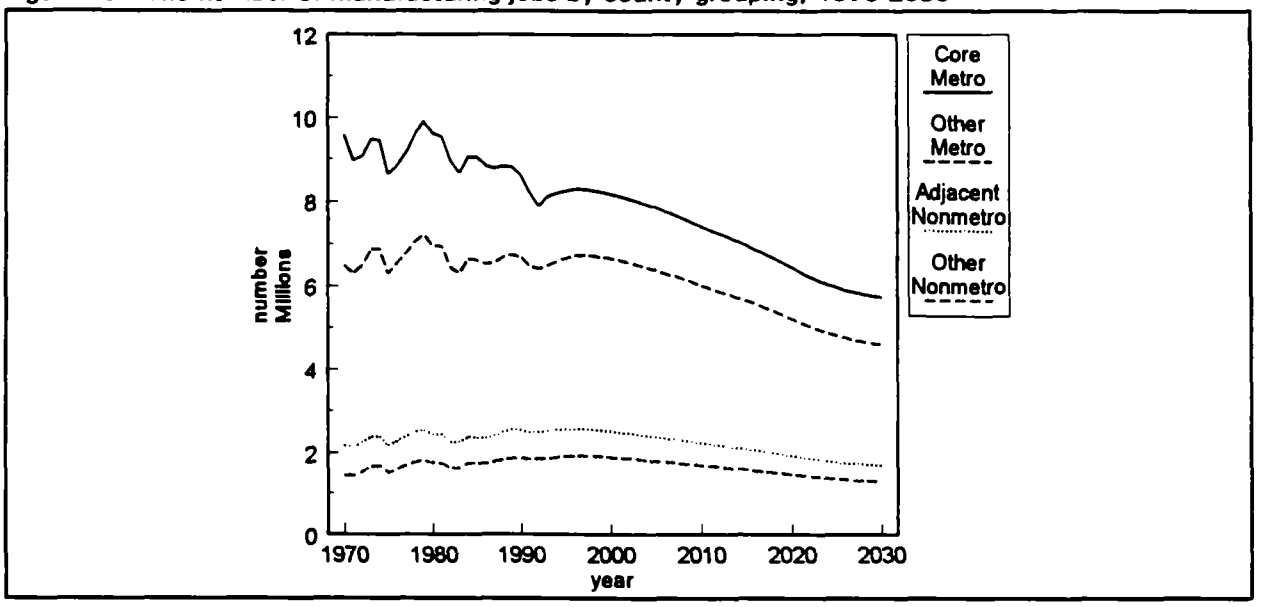


Figure 20. The number of nonmanufacturing jobs by county grouping, 1970-2030

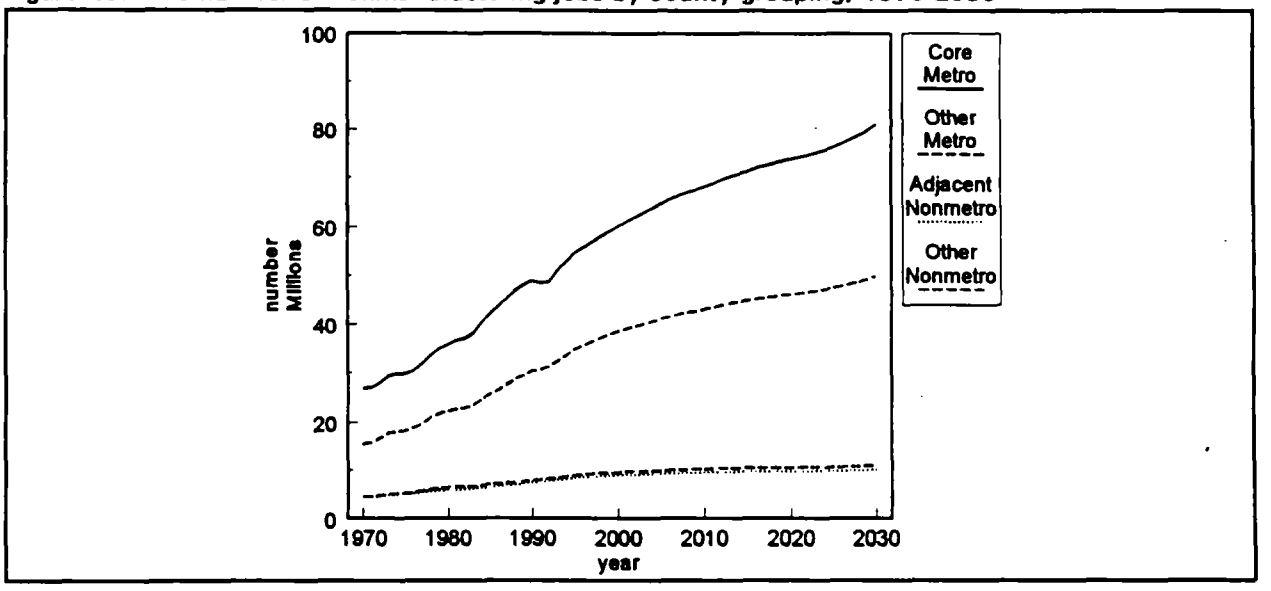


Figure 20 shows the projected number of jobs in all nonmanufacturing sectors. In adjacent and other nonmetropolitan counties, the services sector accounts for 75 and 65 percent of the total job growth over the

next fifteen years. These proportions are higher than the 49 percent projected for the combined metropolitan groupings.

Over the next fifteen years, the number of jobs in the service sector is projected to increase 22 and 24 percent in the adjacent and other nonmetropolitan county groupings, respectively. Service sector jobs in the combined metropolitan groups are projected to grow by 36 percent in the same time period.

The natural resource based sectors are roughly stable in employment over the projection horizon–with declines in farm jobs approximately offset by increases in the agriculture, forestry and fisheries services sector. These natural resource based sectors represent 9 and 10 percent of the jobs in the adjacent and other nonmetropolitan county groupings – significantly higher proportions than the 2 percent observed for the combined metropolitan groupings.

PERSONAL INCOME

Per capita real personal income in nonmetropolitan county groupings will grow more slowly than in the past, particularly after 2010. Nonmetropolitan real per capita personal income will grow at about the same rate as in metropolitan county groupings; but, mean income levels are significantly lower in nonmetropolitan groupings throughout the projection period.

Projections Through the Year 2000

Real personal income per capita in 1994-2000 is projected to increase at close to the same rate in each of the county groupings (Table 6). The projections for the four county groupings range from a high of 7.8 percent for the core counties of large metropolitan areas to a low of 7.3 percent for the other metropolitan counties. In adjacent and nonadjacent nonmetropolitan county groupings, real per capita personal income is projected to increase by 7.5 and 7.7 percent, respectively.

Table 6. Real Personal Income per Capita and Real Personal Income per Capita Growth Rates (in Thousand 1987 dollars), 1970, 1980, 1990-2000

	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Core Metro	13.2	15.9	18.8	18.5	18.7	19.1	19.6	19.8	20.0	20.3	20.5	20.8	21.1
Other Metro	10.6	13.2	15.2	15.0	15.2	15.5	15.8	16.0	16.2	16.4	16.6	16.8	17.0
Adj Nonmetro	8.9	11.0	12.5	12.4	12.7	13.0	13.3	13.4	13.6	13.7	13.9	14.1	14.2
Other Nonmetro	8.5	11.0	12.6	12.5	12.8	13.1	13.4	13.6	13.7	13.9	14.1	14.2	14.4
U.S.	11.4	13.9	16.2	16.0	16.3	16.6	17.0	17.2	17.3	17.6	17.8	18.1	18.3
						Per Capita Growth Rates (percent)							
Core Metro		1.9[a]	1.7[b]	-1.8	1.3	2.3	2.2	1.3	0.9	1.4	1.4	1.4	1.4
Other Metro		2.2[a]	1.4[b]	-1.3	1.7	1.4	2.3	1.3	0.9	1.3	1.2	1.2	1.2
Adj Nonmetro		2.1[a]	1.3[b]	-0.9	2.5	1.8	2.2	1.2	1.0	1.2	1.2	1.3	1.3
Other Nonmetro		2.6[a]	1.3[b]	-0.5	2.4	1.9	2.4	1.4	1.1	1.2	1.2	1.3	1.3
U.S.		2.2[a]	1.5[b]	-1.2	1.9	1.8	2.3	1.3	0.9	1.3	1.3	1.3	1.3

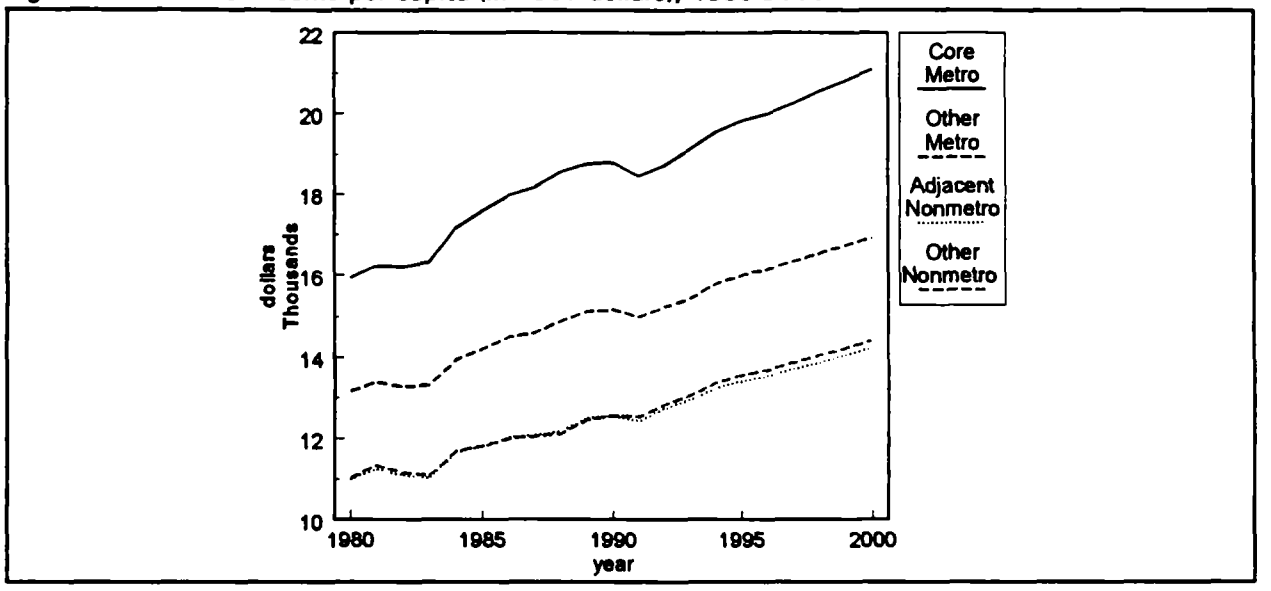
[a]Average annual growth rate between 1970-1980

[b]Average annual growth rate between 1980-1990.

Per capita incomes for the county groupings tend to change in parallel fashion because market forces lead to this result (Figure 21). If per capita incomes in an area grow less rapidly than elsewhere, people tend to move from the stagnant area to the other areas, and thereby lower the labor force in the stagnant area and increase the labor force in the growing area. These changes in the labor force tend to move the per capita incomes back to their original relative positions.

Persistent differences in the level of per capita income between county groups reflect differences in cost of living, amenities and costs associated with moving. Amenities are goods and services not bought and sold in markets, such as climate and scenery. Changes in the relative cost of living, such as in housing costs as space becomes in short supply in a metropolitan area, and in amenities will lead to a change in relative per capita incomes.

Figure 21. Personal income per capita (in 1987 dollars), 1980-2000

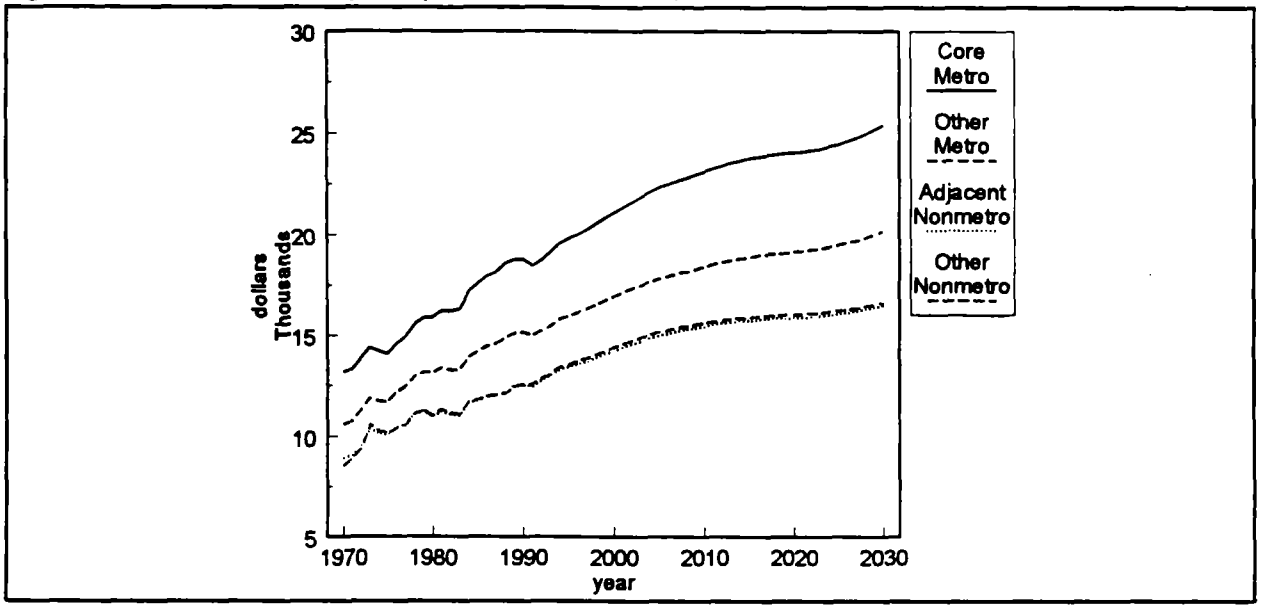


Long Term Projections

Real per capita incomes grow in all county groupings. Growth in labor productivity leads to increases in output per person that are also reflected in per capita incomes.

The differences in real personal incomes between county groupings remain approximately constant throughout the projection period (Figure 22). Movements of people and capital between groupings in response to differential opportunities for profit and real income cause relative incomes across the groupings to move in roughly parallel fashion. The projections incorporate assumptions that cause current differentials in housing and land prices between the county groupings to persist. The differentials in living and business costs among groupings leads to corresponding differentials in income levels. In other words, people must receive higher incomes in order to be persuaded to live in higher cost areas which tend to be in the metropolitan groupings.

Figure 22. Personal income per capita (in 1987 dollars), 1970-2030



Transfer Payments

Transfers payments represent a larger proportion of personal income in the nonmetropolitan groupings than in metropolitan areas throughout the projection horizon. This continues the historical pattern.

Table 7 shows the relative importance of the sources of personal income for each of the county groupings at decade intervals between 1970 and 2000. Each of the county groupings has undergone a long term decline in the percentage of personal income from wages and salaries. The increase in the percentage of personal income attributable to wages and salaries in 2000 and the associated decrease in the relative importance of "other income," which consists of dividends, interest, rent and a relatively small residential adjustment factor, is a somewhat suspect feature of the projections and warrants additional study as the projections are updated in the future. Also, people in all of the county groupings have contributed an increasing proportion of their personal income to social insurance. Finally, in each of the county groupings personal income from transfer payments has increased between 1970 and 2000.

While the direction of change of each of the components is virtually identical for the four county groupings from 1970 to 2000, there are dramatic differences in magnitude. The core metropolitan grouping has the highest percentages of personal income due to wages and salaries and the adjacent nonmetropolitan grouping the lowest. These results are partially due to the practice of allocating wages and salaries to the location of the place of work. The relatively low "other income" for the core metropolitan grouping and the relatively high values for the adjacent nonmetropolitan grouping represent the offsetting factor of "residential adjustments." Residential adjustment reflects commuters working in the core but living elsewhere and also commuters living in the adjacent nonmetropolitan grouping and working elsewhere.

The differences in the levels of transfer payments are particularly important for the purpose of the analysis of the impacts of changes in public policies. From 1970 to 2000, the two nonmetropolitan county groupings have

almost doubled the proportion of personal income from transfer payments from about 12 percent to 22 percent each. Over the same time period, the core metropolitan and other metropolitan counties increased their personal income component from transfers from about ten percent to 15 and 17 percent, respectively.

Table 7. The Components of Personal Income (in Percent of Total Personal Income), by County Grouping for 1970, 1980, 1990, and 2000

	Core Metro				Other Metro				Adjacent Nonmetro				Other Nonmetro			
	'70	'80	'90	2000	'70	'80	'90	2000	'70	'80	'90	2000	'70	'80	'90	2000
Wages & Salaries	70	65	64	66	65	59	56	57	49	48	44	45	52	53	48	49
Othr Labor & Propr	12	14	13	14	15	14	13	14	23	15	16	16	28	17	18	18
Soc'l Ins Contrib	-3	-4	-5	-6	-3	-4	-5	-5	-3	-3	-4	-4	-3	-4	-4	-5
Transfer Paymts	10	13	13	15	10	14	15	17	12	17	19	22	12	17	19	22
Other Income	12	13	15	11	14	17	20	17	18	23	25	22	12	17	19	15

APPENDIX

MODEL

The model underlying the RUPRI Baseline has been developed by Regional Economic Models, Inc., (REMI) (Treyz, 1993). The REMI framework includes an integrated analysis of demographic and economic variables. The methodology includes elements of input-output, econometrics, and computable general equilibrium models. The demographic variables include, but are not limited to: population by gender and one-year cohort, births by year and birth rates by age of mother, deaths by year and death rates by single year cohorts, migrants, and labor force participation rates. The economic variables available include, but are not limited to: employment, output (value-added), earnings, and wage rates.

The REMI framework includes an extensive income module that will be an important component of many policy simulations as well as of the baseline. The income module includes earnings from employment, earnings from property, transfers, taxes, adjustments for commuting, and other factors. The REMI framework includes many other variables that will be of interest in particular policy simulations.

METHODOLOGY

The RUPRI projections are based upon an aggregate 14 sector economic framework – eleven (11) private and three (3) public – offered by REMI. The disaggregation of national projections into projections for industrial sectors and county groupings (see the county classification section of this Appendix for a discussion of the groupings) is based upon the assumptions incorporated within the models developed for RUPRI by REMI.

The projections are constructed for four groupings of counties. These groupings reflect a rural-urban continuum developed by the U.S. Department of Agriculture's Economic Research Service (Butler and Beale, 1994), and since used by many other analysts. The county groupings are (see county classification section for details):

1. Nonmetropolitan counties not adjacent to metropolitan areas
2. Nonmetropolitan counties adjacent to metropolitan areas
3. Metropolitan counties not at the core of large metropolitan areas
4. Metropolitan counties at the core of large metropolitan areas

All underlying definitions, such as metropolitan status and adjacency, are defined as of 1992.

The projections are calculated annually for all years through 2030. The baseline projection for 1995-2000 will be emphasized in subsequent quantitative analyses of the impacts of alternative policy proposals. The long term projections provide a context within which current problems may be defined and solutions proposed. The retirement of the post-war baby boom generation in the context of the nonmetropolitan county groupings containing a disproportionate number of the elderly is an especially important feature of this long term context.

The model and associated procedures used to generate the projections summarized in this report can be described by RUPRI analysts to any degree desired by the questioner. That is, the modeling system is completely available for scrutiny and insight rather than a "black box."

DATA SOURCES

The baseline projections reported in this document draw on a variety of standard data sources. The REMI models incorporate many estimates developed originally by the Bureau of Labor Statistics (U.S. Bureau of Labor Statistics, 1993). The Bureau of Labor Statistics (BLS) estimates are especially useful in disaggregating U.S. aggregates into industrial sectors.

The national economic outlook through 1999 is calibrated to the projections of the Congressional Budget Office (CBO) released in August 1994 (Congress of the United States, 1994). The CBO report provides projections of a few aggregate macroeconomic variables, principally national gross domestic product, inflation, unemployment, interest rates, and selected tax bases. More detailed sectoral and income projections must be inferred from other sources if they are desired, as is the case with RUPRI projections. The CBO report also provides projections for the major categories of federal revenues and expenditures. The variables drawn from the CBO baseline are probably the most important factors in determining how the conditions over the next few years will vary from that which we observe today. Use of the CBO baseline facilitates later policy analyses, since CBO is a major source for fiscal analyses of policy proposals.

National population, births and deaths, and international immigration are calibrated to the Census Bureau "middle series" projections released in November 1993 (Day, 1993). The long term economic projections assume the economy grows sufficiently to accommodate increases in the working age population, including projected increases in labor force participation and in labor productivity. Thus, after the projections cease to be calibrated to the CBO economic projections available through 1999, the size of the population -- taking into account labor force participation rates -- becomes the fundamental factor determining the size of the economy.

COUNTY CLASSIFICATION

Metropolitan and nonmetropolitan areas of the United States exhibit great diversity. Older core metropolitan counties in New England, for example, are different in structure and composition than those found in the South or the Southwest. Southern nonmetropolitan areas have different economic and demographic structures than nonmetropolitan areas of the Midwest or the Plains states. There are, however, social and economic factors that vary by degree of urban influence. The USDA utilizes a ten-point scale, which incorporates proximity to metropolitan areas and urban composition to differentiate rural-urban counties in the United States. For the twin sakes of economy and efficiency, the ten categories have been collapsed into the four functional groupings used in this analysis, to allow differentiation between metropolitan and nonmetropolitan areas. By calculating appropriate sums of the four groupings, the projections can be displayed for the total of all metropolitan counties, the total of all nonmetropolitan counties, and the total of all fifty states plus the District of Columbia.

The USDA rural-urban continuum codes are quite sensitive to variations in several economic and demographic factors across the United States and allow substantively sound generalizations to be made about key features of rural, urban, and metropolitan U.S. counties irrespective of their spatial distributions.

Tests were run on several county-level social and economic variables to determine the appropriateness of using a four-grouping scale instead of the ten-grouping scale employed by USDA. The strengths and weaknesses of the RUPRI county groupings are reviewed in Nelson, Swenson, and Otto (1995).

The metropolitan and adjacency status of counties is based upon post-1990 census calculations reported in 1992-1993. This choice of dates for the fixing of the definition of the groupings may have an important impact

on the empirical results, as is discussed in "limitations." The most recent year of history with complete data that was available at the time of the modeling of the economic-demographic relationships underlying these projections was 1992. Partial data, especially for U.S. aggregates, was available for 1993-1994.

LIMITATIONS

The RUPRI Baseline methodology is subject to a number of qualifications. The first is that the projections are made for large aggregates of county groupings. The process of aggregation hides diversity within each grouping by calculating and utilizing average values over diverse experience. The following are two consequences of aggregation in this context. First, national estimates are averages over diverse regions. Hence, the baseline projection level is often not typical of a particular region of the country. In an effort to alleviate this concern, potential future RUPRI analyses include sub-national regions, allowing the examination of gains in precision as compared to increases in costs and complexity. A second consequence of aggregation is that the projections reflect the interactions of the fourteen (14) economic sectors. The process of increasing the scale of economic activity to reflect the size of the upwardly revised population projection utilized this aggregate model of economic interactions. An analysis using more detailed sectors would yield somewhat different projections. This consequence is believed to be of minor importance with respect to the baseline projections which address economy wide issues. However, later consequences for policy analyses that entail changes in detailed industrial sectors may be substantial. RUPRI hopes to explore the gains and costs of analyses at the 53 rather than fourteen (14) sector level. This would, for example, allow the specific treatment of the "health services" sector which is submerged within an enormous "services" sector in the current fourteen (14) sector model.

A second qualification of the current analysis is the extent of similarity between the two nonmetropolitan county groups. The projections for those two county groupings are generally more similar to each other than historical experience would lead analysts to expect. There are three possible explanations for this similarity. The first is that the projected similarities may be largely correct, because much of the structure of the two nonmetropolitan groupings is similar. Given the particular assumptions underlying these projections, the two groupings may experience quite similar changes. Past differences between the two groupings may reflect the impacts of unpredictable, major shocks, such as a period of major inflation, and a subsequent deflation of agricultural assets, which occurred in the 1970s and 1980s throughout much of the nonmetropolitan U.S. Projections rarely capture the effects of such shocks. Under this scenario, policy analyses, which sometimes assume larger than normal shocks, may reveal greater differences between the two nonmetropolitan groupings than do the baseline projections. The second cause of the similarity between the two nonmetropolitan county groupings in their baseline projections is that all of rural America has been aggregated into only two county groupings. That is, the distinguishing characteristics of the two nonmetropolitan groupings are too subtle to survive aggregation across, for example, the remoteness of Appalachian hollows and of Wyoming ranches. In addition, the very nature of what "adjacency" implies in terms of economic structure is significantly different in, for example, the more heavily populated eastern U.S. with smaller counties and in the more sparsely populated, large counties of the west. If so, analyses for sub-national regions would reveal more differences between the two nonmetropolitan groupings. The third possible cause is that the results may reflect the inability of an unchanging definition of county groupings to capture the economic dynamics of changing spatial economies. Some of the counties which were in fact "nonmetropolitan counties adjacent to metropolitan areas" in the 1970s or 1980s are now classified as parts of metropolitan areas. Their primarily nonmetropolitan historical experience is absorbed in the parameter estimates for the metropolitan models, rather than the nonmetropolitan models. Other nonmetropolitan counties have only recently become "adjacent to

metropolitan" counties as a result of the expansion of a metropolitan area. The historical experience of these nonmetropolitan counties reflected in the model's parameters is primarily one of "other." When non-metropolitan counties are re-classified as to "adjacent to metro," the modeling parameters do not reflect this change. If so, the projections for the nonmetropolitan adjacent grouping are biased towards that of the other grouping – and future experience will reveal this bias.

A third qualification of this baseline is that the validity of its projections is a function of the validity of the external projections that are used as input in the analysis. Furthermore, the validity of projections decline as time horizons lengthen. For example, the population projections of the Census Bureau will be revised on a regular basis as time passes. These revisions will reflect future observations of immigration, birth rates, and survival rates – all of which are subject to considerable uncertainty.

A fourth qualification is that the models underlying the projections do not include explicit treatment of numerous economic, social and technological factors of direct relevance to policy choices. For example, the projections do not pay explicit attention to income distribution measures, including poverty; household composition, including numbers of single parent families; security of persons and property, or alternatively, crime rates; drop out rates from schooling; and productivity impacts of investments in children.

Finally, as noted at the outset, the projections are a tool to be used by analysts as an addition to knowledge, but the projections do not substitute for the judgments of broadly informed people. This issue contains three components. First, the projections do not reflect differences between those portions of an industry in nonmetropolitan areas as contrasted to those portions of the identical industry (with respect to classification of jobs and output) in metropolitan areas. Much evidence exists that nonmetropolitan portions of industrial sectors contain a disproportionate number of the more routine, less skilled jobs in the industry. This has important implications for nonmetropolitan areas, which the current projections cannot elucidate. More information on the particular relationships in nonmetropolitan areas with respect to inter-industry transactions and occupational-sectoral relationships would enable greater insight into the likely effects of new private and public sector developments. The second component is that the underlying data base for the labor force participation rates generated in the projections does not include an explicit metropolitan-nonmetropolitan distinction. The importance of including this factor is uncertain, however, because labor force participation rates in nonmetropolitan and metropolitan areas have tended to converge over time. Third, the migration equations make an arbitrary distinction between those under 65 years of age who are assumed to migrate for reasons primarily of employment and income and those over 65 years of age who are assumed to migrate for reasons of seeking a pleasant place to retire. This arbitrary division may lead to biased inferences as the average age of retirement changes.

REFERENCES

Butler, Margaret A. and Calvin L. Beale. "Rural-Urban Continuum Codes for Metro and Nonmetro Counties, 1993." Staff Report No. AGES 9425, Agriculture and Rural Economy Division, Economic Research Service, U.S. Department of Agriculture, September 1994.

Congress of the United States, Congressional Budget Office. *The Economic and Budget Outlook: An Update.* U.S. Government Printing Office, Washington, D.C., August 1994.

Day, Jennifer Cheeseman. *Population Projections of the United States, by Age, Sex, Race, and Hispanic Origin: 1993 to 2050.* U.S. Bureau of the Census, Current Population Report P25-1104, U.S. Government Printing Office, Washington, DC, November 1993.

Johnson, Kenneth M. "Demographic Change in Nonmetropolitan America, 1980 to 1990". *Rural Sociology* 58(3):347-365.

Nelson, Glenn, David Swenson, and Daniel Otto. "Rural-Urban Economic Linkages: Rural Policy Research Institute Methods and Findings." Rural Policy Research Institute Working Paper. RUPRI Coordinating Center, University of Missouri, Columbia, 1995.

Treyz, George I., *Regional Economic Modeling: A Systematic Approach to Economic Forecasting and Policy Analysis.* Boston, MA: Kluwer Academic Publishers, 1993.

U.S. Bureau of Labor Statistics, U.S. Department of Labor. "The American Work Force, 1992-2005." *Monthly Labor Review* 116, 11 (1993), 3-86.

U.S. Department of Commerce, Bureau of the Census. *State and Metropolitan Area Data Book, 1986.* U.S. Government Printing Office, Washington, DC, 1986.