

Examining the Rural-Urban Income Gap



The Center for

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Examining the Rural-Urban Income Gap

A report by

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EXECUTIVE SUMMARY

There is an income gap between rural and urban Pennsylvania, and, since the 1980s, this gap has been growing. These are just some of the findings from research, completed in 2005, which looked at 30 years of data from the U. S. Census Bureau, the U.S. Bureau of Economic Analysis, and the Pennsylvania Departments of Revenue, Labor and Industry, Education, Health, Welfare, and Community and Economic Development.

To learn if there is a measurable income gap between and within Pennsylvania's rural and urban counties and to identify the causes of the gap, if it in fact existed, the researchers set out to identify and analyze factors affecting income growth in rural Pennsylvania and to compare rural income growth with urban income growth.

The researchers found that, in 2001, the per capita income in rural Pennsylvania was \$23,941, while the per capita income in urban Pennsylvania was \$32,578: this \$8,637 per capita income gap between rural and urban Pennsylvania had increased since the 1980s.

The researchers also found that certain factors, such as educational attainment, workforce participation, and national economic trends, tended to affect income growth in rural Pennsylvania.

Other research findings were that: the income gap between upper and lower income households had increased within every Pennsylvania county from 1980 to 1998; variables affecting urban income growth were similar to variables affecting rural income growth; and taxes assessed at the local and county levels had no significant effect on personal income within Pennsylvania counties.

To close the rural urban income gap, the researchers recommended focusing efforts to increase educational attainment and rural labor force participation.

INTRODUCTION

In 1991, the Center for Rural Pennsylvania published a report entitled “*The Widening Rural-Urban Income Gap: Past Trend or Forecast for the 1990s.*” This report noted a \$4,700 income gap between rural and urban areas and the steady increase in the gap during the 1980s.

This research, which was completed in 2005, revisited the earlier study and found that the income gap between rural and urban Pennsylvania is still present and continues to increase. The research also looked at the causes of the income gap and factors that have caused the gap to increase.

METHODOLOGY

The goal of the research was to determine if there was a measurable income gap between Pennsylvania’s rural and urban counties and, if so, to identify the causes.

To conduct the study, the researchers created a database that included information on income and other sociodemographic factors for each Pennsylvania county from 1969 to 2001. The data were collected from federal agencies, such as the U. S. Census Bureau and U. S. Bureau of Economic Analysis, as well as state agencies, including the Pennsylvania Departments of Revenue, Labor and Industry, Education, Health, Public Welfare, and Community and Economic Development.

With this database, the researchers performed analytical tests to identify the causes of the rural-urban income disparity. The dependent variable of per capita income was tested against 50 independent variables, such as educational attainment, age, labor force participation rates, unemployment rates, and other demographic characteristics.

In addition, different sources of income were tested against the 50 independent variables. These income sources included earned income, which is income from wages and salary, and unearned income, which is income from interest, dividends and rent (hereafter referred to as “investments”) and transfer payments.

The analysis was conducted at the county level. To provide a better understanding of the absolute change rather than the relative change, dollar figures were not adjusted for inflation.

Since the research began in 2001, the researchers used the Center for Rural Pennsylvania’s 1990 definition of rural and urban. According to this definition, a county was considered rural if more than 50 percent of the population was defined as “rural” by the U.S. Census Bureau. Counties that were less than 50 percent rural were considered urban. As more data were released in 2002 and 2003 from Census 2000, the researchers reanalyzed the data to produce a more current picture of income trends, and continued to use the Center’s 1990 rural definition.

FINDINGS

Income gap exists between Pennsylvania’s rural and urban counties

Within Pennsylvania, incomes were not evenly distributed. In 2001, 17 percent of the total personal income within the state was found in rural counties and 83 percent was in urban counties. Nearly one half of the income in the state was found in six counties: Allegheny, Philadelphia, Montgomery, Chester, Delaware, and Bucks.

Even on a per capita basis, incomes were not evenly distributed. In 2001, the per capita income in Pennsylvania rural counties was \$23,941, while in urban counties the per capita income was \$32,578, or \$8,637 higher.

Within Pennsylvania, the highest per capita incomes were in Montgomery, Chester, and Bucks counties, each with incomes in excess of \$38,900. The lowest per capita incomes were found in Tioga, Greene, and Huntingdon counties, where the per capita income was less than \$20,500.

Figure 1: A Geographic Comparison of Per Capita Income, 2001

	Total Personal Income Per Capita, 2001
United States	\$30,413
Pennsylvania	\$30,752
Pennsylvania Urban Counties	\$32,578
Pennsylvania Rural Counties	\$23,941

Data source: U.S. Bureau of Economic Analysis

Nationally, there was a similar pattern in income disparity. In 2001, 16 percent of total personal income was in rural counties and 84 percent was in urban counties. The disparity in incomes is further illustrated by the fact that 50 percent of the total income in the U.S. can be found in only 100 of the more than 3,000 counties nationwide.

Pennsylvania had the 18th highest income of the 50 states in 2001. The states with the highest incomes were Connecticut, New Jersey, and Massachusetts; each had per capita incomes in excess of \$38,900.

States with the lowest per capita income were West Virginia, Arkansas, and Mississippi, each with per capita incomes below \$23,300.

As Map 1 below shows, the U.S. is nearly evenly divided between counties that have per capita incomes above those in rural Pennsylvania and those that have incomes at or below those in rural Pennsylvania. In 2001, 1,266 counties had per capita incomes above rural Pennsylvania's \$23,941, and 1,800 counties had incomes at or below this level.

Income gap has grown between Pennsylvania's rural and urban counties

Per capita incomes in rural and urban counties increased between 1969 and 2001. Meanwhile, there has been a persistent gap in per capita income between Pennsylvania's rural and urban counties. In 1969, there was a 19 percent gap between rural and urban per capita incomes, and over the next 32 years, that gap widened to 25 percent. (See Figure 2)

Total personal income initially grew faster in rural counties relative to urban counties between 1969 and 2001, decreasing the gap early on. However, most of the rural growth occurred between 1969 and 1979, after which rural income growth slowed while urban income growth accelerated. In addition, urban counties have been losing population while rural counties have been gaining population. This increase in the rural population, along with the slower personal income growth

Map 1: U.S. Counties with Per Capita Income Above and Below Rural Pennsylvania Per Capita Income, 2001

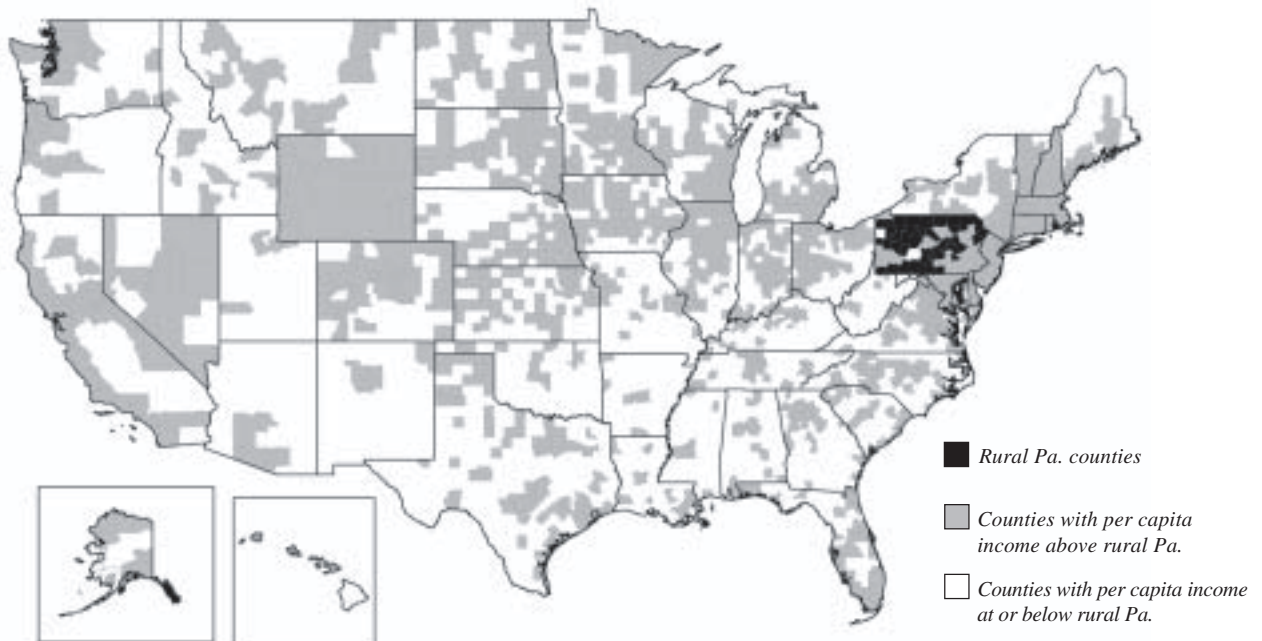
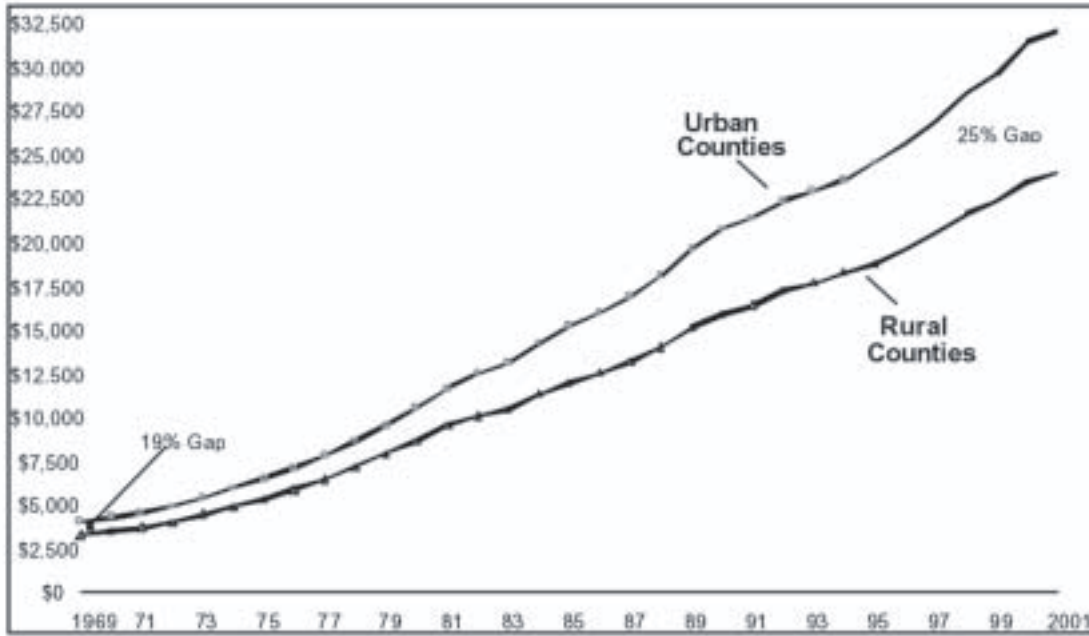


Figure 2: Per Capita Incomes in Rural and Urban Pennsylvania, 1969 to 2001*



*Data not adjusted for inflation. Data source: U.S. Bureau of Economic Analysis

rates, has depressed rural per capita income relative to urban per capita income.

Shift in sources of income

According to the U.S. Bureau of Economic Analysis, personal income comes from three different sources: wages and salary; interest, dividends and rent (investments); and transfer payments. Wages and salary are

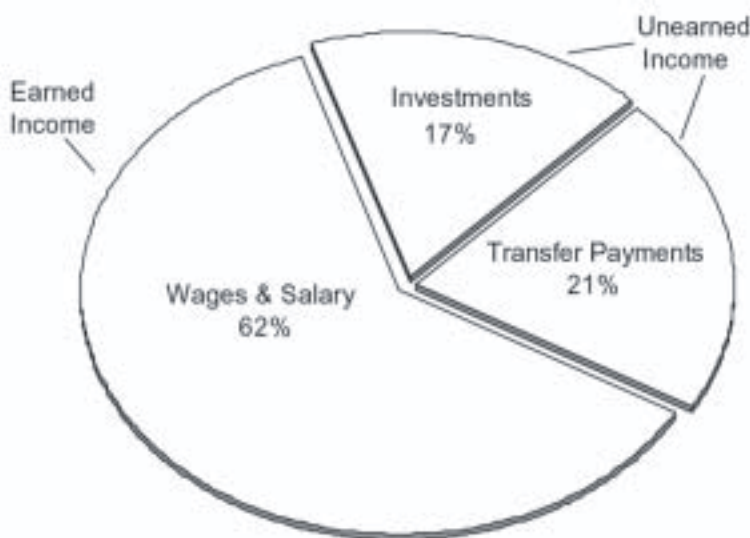
referred to as “earned income,” while dividends, interest, and rent, and transfer payments, such as unemployment compensation, pensions, and Social Security, are considered unearned income.

As Figure 3 shows, about 62 percent of rural income comes from earned sources and 38 percent come from unearned sources.

Over time, the percentage of income from earned sources has declined while income from unearned sources has increased. As Figure 4 on Page 8 shows, in 1969, nearly 78 percent of all rural income came from earned sources; however, by 2001, this percentage dropped to less than 62 percent. Urban areas, and the nation as a whole, have also experienced a similar income shift.

This shift does not mean that wages have declined. Instead, it suggests that unearned sources of income have become more prominent. For example, between 1969 and 2001, 40 percent of the increase in income was attributed to growth in unearned income.

Figure 3: Sources of Rural Pennsylvania Income, 2001

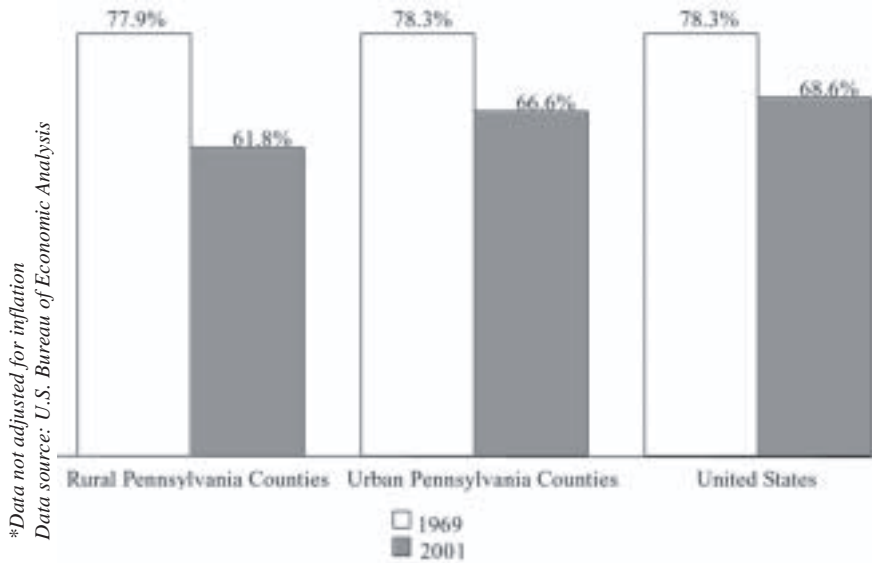


Data source: U.S. Bureau of Economic Analysis

Per capita income changes

Between 1969 and 2001, per capita income in Pennsylvania’s rural counties increased 645 percent, not adjusted for inflation. Among the state’s urban counties there was a 710 percent increase. The counties with the highest increase

Figure 4: Percent of Total Income from Wages and Salary, 1969 and 2001



*Data not adjusted for inflation
Data source: U.S. Bureau of Economic Analysis

Most of the income increases in Pennsylvania’s rural and urban counties occurred in the 1970s. Between 1969 and the 1981, both rural and urban counties had an average increase of 9 percent per year. However, between 1982 and 2001, the rate slowed to an average of 5 percent per year. These percentages were nearly identical to the national rates. (See Figure 5)

The growth in income during the 1970s can be partially explained by the high rate of inflation during this period. Between 1970 and 1980, inflation increased an average of 11 percent per year. Over the next 20 years (1981 to 2001) inflation only

increased about 5 percent per year.

were Bucks, Centre, Chester, and Montour, each with an increase of more than 800 percent. Counties with the smallest increases were Cameron, Mifflin, Monroe, and Pike, each with an increase of less than 560 percent.

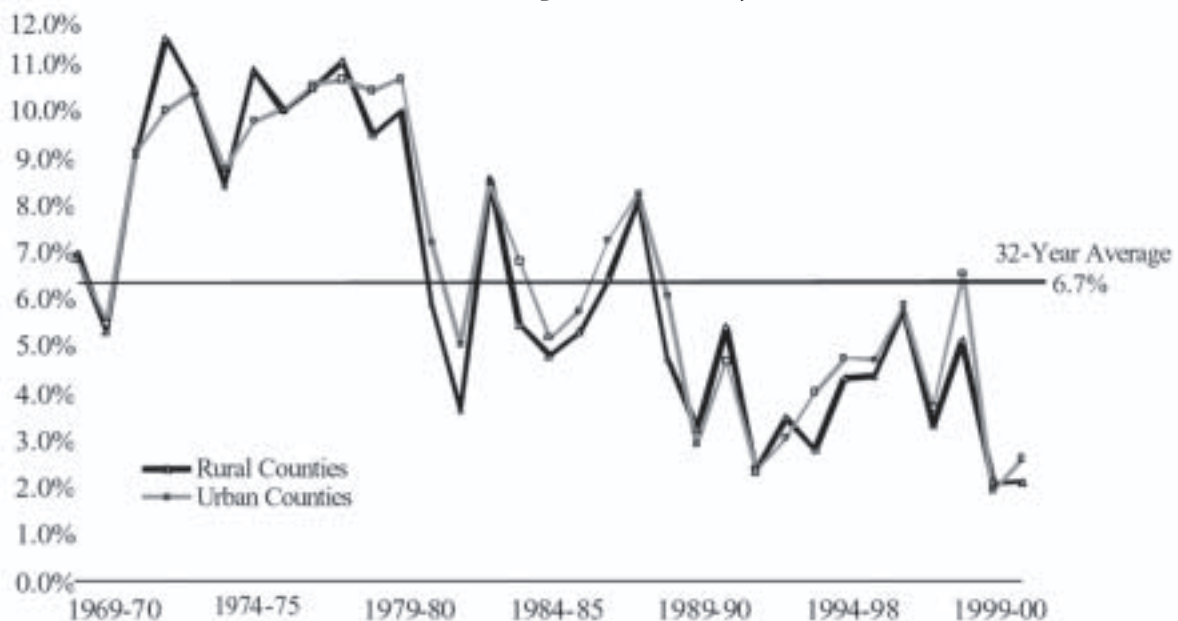
Nationally, there was a 697 percent increase in per capita income between 1969 and 2001. Among the states, Pennsylvania had the 32nd highest increase in per capita income. Colorado, Massachusetts, and Mississippi had the highest increases in per capita income, while Alaska, Hawaii and Nevada had the lowest increases.

Income distribution within counties

To estimate the distribution of income within each county, the researchers used the Gini coefficient, which is widely used to measure the degree of household income inequality by using a value that ranges between 0 and 1. A value of 0 means that incomes within a group are distributed equally, while a value of 1 means that incomes are distributed unequally.

While the U.S. Census Bureau reports annual

Figure 5: Annual Per Capita Personal Income Growth Rates in Rural and Urban Pennsylvania Counties, 1969 to 2001*



*Data not adjusted for inflation. Data source: U.S. Bureau of Economic Analysis

Figure 6 : Weighted Average for Gini Coefficients* for Selected Years

	1975	1980	1985	1990	1995	1998
Pennsylvania Rural Counties	0.473	0.480	0.514	0.546	0.569	0.568
Pennsylvania Urban Counties	0.472	0.489	0.517	0.560	0.586	0.591

*A value of 0 means that incomes within a group are distributed equally, and a value of 1 means that incomes are distributed unequally.

national Gini coefficients, it does not estimate county Gini coefficients. For this research, the researchers estimated county Gini coefficients for 1975, 1980, 1985, 1990, 1995, and 1998 by using information from the Pennsylvania Department of Revenue.

After the county coefficients were estimated, a weighted average for rural Pennsylvania as a whole was found by multiplying each county's Gini coefficient by the percentage of that county's population relative to the total population of all rural counties. The values for all rural counties were then added to obtain the rural value. The same approach was used for urban counties.

Figure 6 shows that, with the exception of 1975, the Gini coefficients were larger for urban counties than for rural counties. This means that income inequalities, or the gap between high-income households and low-income households, in urban counties were slightly more profound than income inequalities in rural counties. The table also shows that both urban and rural counties experienced increases in income inequality

over time, which is consistent with the rising inequality among household incomes as reported by the U.S. Census Bureau.

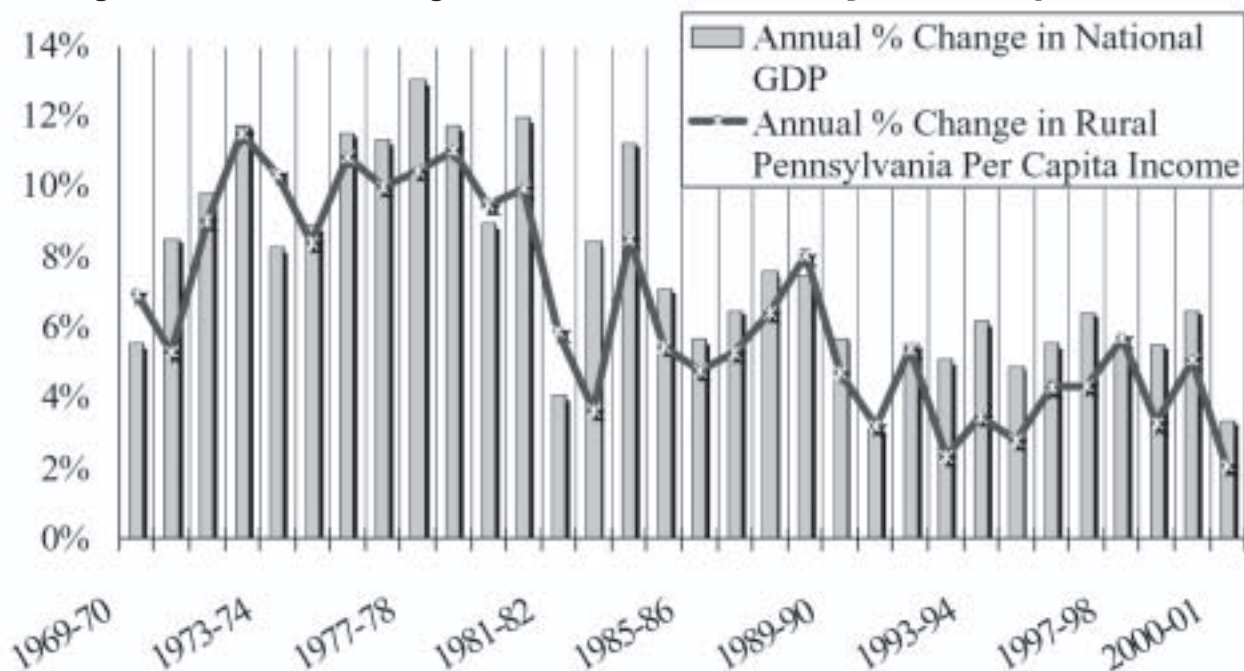
Factors influencing the rural-urban income gap

National economy

The size of the income gap is sensitive to national economic trends. Before the 1981-1982 recession, the gap between rural and urban per capita incomes was, on average, 17 percent. After this recession, the gap increased to an average of 23 percent.

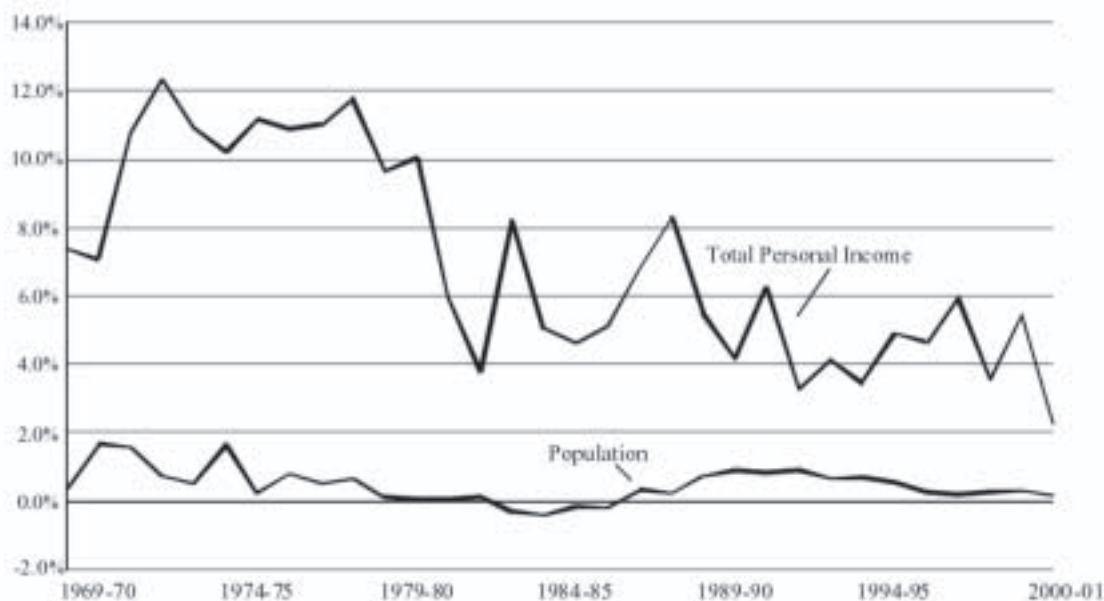
As Figure 7 shows, the change in rural Pennsylvania's per capita income closely follows changes in the national gross domestic produce (or GDP). The GDP represents the dollar value of all final goods and services produced in the U.S. in a year. During prosperous years, rural income increased and during less prosperous years, rural income decreased. This suggests that incomes in rural Pennsylvania are

Figure 7: Annual Percent Change in National GDP and Rural Pennsylvania's Per Capita Income*



*Data not adjusted for inflation. Data source: U.S. Bureau of Economic Analysis

Figure 8: Annual Percent Change in Total Personal Income and Population of Rural Pennsylvania, 1969-2001



**Data not adjusted for inflation. Data source: U.S. Bureau of Economic Analysis*

not separate from national economic trends.

The econometric model used in the research suggests that every \$1 billion increase in GDP contributes to an 86-cent increase in the income gap between rural and urban Pennsylvania. Between 1969 and 2001, the nation's GDP increased by \$9.2 trillion while the gap between rural and urban per capita incomes increased by nearly \$7,900.

Population change

As Figure 8 shows, total personal income in rural Pennsylvania grew at a faster rate than the population. Between 1969 and 2001, the population in rural Pennsylvania increased 17 percent, while total personal income increased nearly 770 percent. During the same period, the population in urban Pennsylvania increased only 2 percent while total personal income increased 725 percent. Although the rural population grew more rapidly, the growth of rural total personal income did not keep pace, and this helped to depress rural per capita income relative to urban per capita income.

Shift in employment and wages

As Figure 9 shows, both rural and urban counties in Pennsylvania have seen significant declines in manufacturing employment between 1969 and 2000 and a large increase in service employment. This pattern also occurred nationally.

The shift in employment was mirrored by a shift in

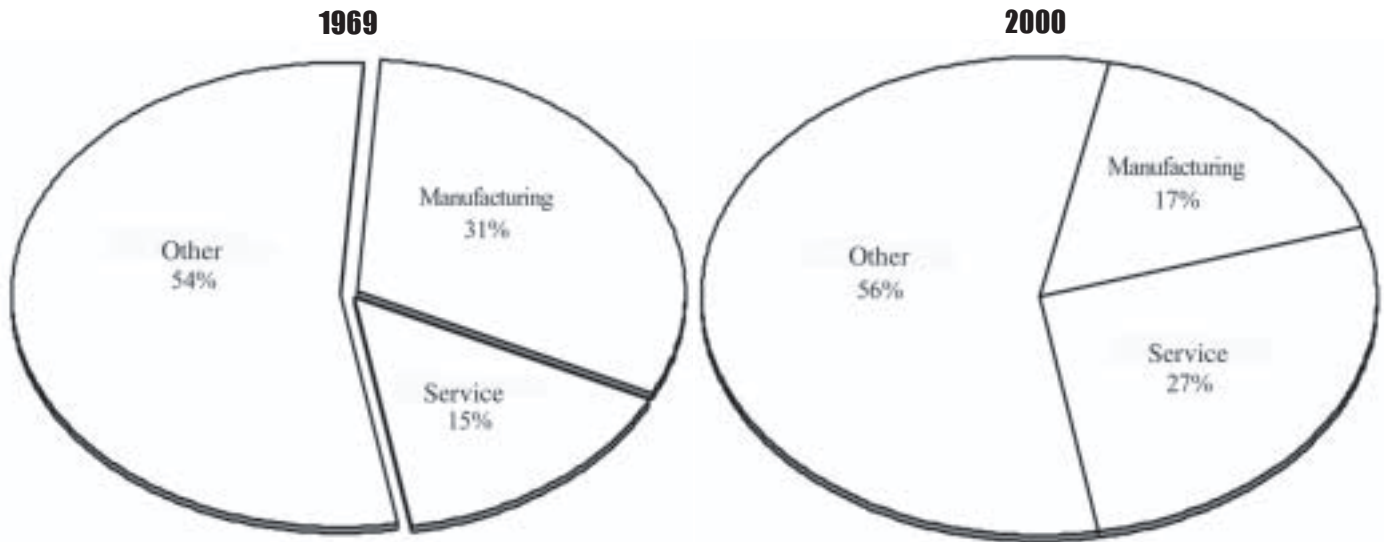
earnings. In 1969, 36 percent of all earnings came from manufacturing jobs, and only 12 percent came from service jobs. Thirty-one years later, manufacturing earnings accounted for 24 percent of all earnings and service earnings accounted for 22 percent. There was a similar shift in the state's urban counties.

Despite its decline, manufacturing is still the largest income source for residents in rural counties. However, it is important to note that, unlike personal income data, which is recorded by place of residence, employment and earnings data are recorded by place of work.

The effect of the employment and earning shift from manufacturing to service on the rural-urban income gap was very small. The employment and earning shift affected both rural and urban Pennsylvania at roughly the same time. As a result, this shift was not primarily responsible for the widening income gap between rural and urban areas. In addition, though many believe that manufacturing jobs pay more than service jobs, many manufacturing jobs, such as those in the textile industry, pay relatively low wages, while service jobs, such as those in the education and health care sectors, pay relatively high wages. In addition, the degree of unionization, the age and education of workers, and numerous other factors also influence pay structures. Consequently, a movement from manufacturing employment to service employment does not necessarily mean that incomes will suffer.

Questions may arise as to whether the differences in the cost of living or local taxes affect the income gap.

Figure 9: Employment Shares by Industry: Full- and Part-Time Employment in Rural Pennsylvania, 1969-2000



Data source: U.S. Bureau of Economic Analysis

The cost-of-living index measures the amount of money needed to buy specific goods and services. According to 1993¹ and 2000² Center for Rural Pennsylvania reports, the difference in the cost of living between rural and urban Pennsylvania is less than 10 percent. That means that only 19 percent of the income gap is mitigated by cost-of-living differences.

Finally, the study analyzed if local county taxes, including real estate taxes, per capita or occupation taxes, hotel and sales taxes, and personal property taxes had any impact on net earnings per capita and investment income per capita. The results showed that local taxes have no significant effect on either type of income. Since local taxes are only a minor part of an individual's total taxes, it is not surprising that such taxes are somewhat insignificant.

Analytical model results

The researchers developed an analytical model to identify the most important determinants of county income to explain the income gap between Pennsylvania urban and rural counties. The analytical model was constructed in four consecutive stages: Stage 1 identified factors that affect differences in income among Pennsylvania counties; Stage 2 identified factors that

affect the three sources of income; Stage 3 determined whether rural and urban county incomes were influenced by different factors; and Stage 4 examined transfer payments in a more detailed manner to determine whether different county characteristics influence specific types of transfers.

The variables that were significant are highlighted below. While the effect of many of these variables may seem obvious, they are important to identify and discuss because of their overall contribution to income growth.

Stage 1: Per capita income for all 67 Pennsylvania counties was statistically measured against a list of relevant county-specific variables to identify their impact on Pennsylvania incomes. Among the variables that were significant were:

- National economic conditions: The cyclical trends of the national economy influence county income in Pennsylvania.
- Income inequality: Counties with a higher degree of inequality had higher per capita personal income.
- Education: Statistically, education has a significant effect on county income. Both high school education and college education contributed positively to

¹ Kurre, James. 1993. "The Cost Living in Rural Pennsylvania." The Center for Rural Pennsylvania.

² Kurre, James. 2000 "Differences in the Cost Living Across Pennsylvania's 67 Counties." The Center for Rural Pennsylvania.

county per capita income, with college education producing the more significant effects.

- **Age:** Labor productivity increases with experience and the acquisition of skills, which both increase with age. This study found that counties with a higher median age also have higher per capita incomes.
- **Business investment:** The number of business establishments in a county was used as a proxy for business investment. This variable significantly affected income, meaning the more businesses in a county, the higher the county income.
- **Poverty and unemployment:** Rates of poverty and unemployment impact county per capita income, since the poor and the unemployed do not have much earned income. Though the poor and the unemployed receive some transfer payments, this is usually a small fraction of the lost income; therefore, counties with higher rates of poverty and unemployment have lower per capita income.
- **Labor force participation rates:** Per capita income was higher in counties where the labor force represented a larger percentage of the population.
- **Labor force composition:** Counties with a larger percentage of females in the labor force have lower per capita incomes.
- **Industrial structure and occupation:** The model measured the effects of the manufacturing and service industries on the per capita income of rural Pennsylvania counties. Neither industry had a significant statistical effect on per capita personal income.

Stage 2: To determine if certain factors affect the different sources of income, the analytical model separated county per capita income into three main components: earnings, investments, and transfer payments. The researchers could then explore whether different county characteristics affected the three types of income differently. The statistical results confirmed some of the earlier findings.

- **Earning per capita:** The most significant variables to positively influence earned income were the implicit price deflator index, the Gini coefficient, the percent of adults with a college education, population density, median age, the percent of persons employed in manufacturing, the percent of persons employed in the service sector, business investment, and labor force participation rates.
- **Investment per capita:** Investment income is

significantly and positively influenced by the following key factors: implicit price deflator index, educational attainment, labor force participation rates, population density, financial capital, and the percentage of senior citizens. As expected, county residents over age 65 rely more on investment income than the working population, and also may have accumulated larger amounts of financial capital. The population density variable may simply reflect a greater concentration of financial institutions and financial activity in higher density areas.

- **Transfer payments per capita:** The most significant determinants of transfer payments at the county level were the unemployment rate, the percentage of the population over age 65, and the number of female heads of households.

Stage 3: To determine whether rural and urban county income were influenced by different factors, two additional sets of equations were used to link rural county income and urban county income to a specific group of explanatory variables. The results were strikingly similar to the same variables identified in Stage 1. For total county income, the most significant variables affecting both rural and urban income were: national trends, educational attainment, labor force participation rates, income inequality, and population density. The number of business establishments, however, had a very positive and significant impact on earned income per capita in rural counties compared to urban counties.

Stage 4: In the final stage, transfer payments were further subdivided into income maintenance, unemployment compensation and retirement benefits per capita. Three different sets of equations were developed to identify the most important determinants of each transfer component. The key factors affecting income maintenance payments were population density, college education, the percentage of the population living in poverty, the percentage of females in the civilian labor force, the percentage of female heads of households, and the percentage of children under age 18. Unemployment compensation payments increased as unemployment rates and the manufacturing sector increased in a county. Retirement incomes were higher in counties with a larger percentage of people over age 65 and in counties with a higher percentage of people with higher levels of education.

Census 2000 update

The above results were initially based on data from the 1980 and 1990 decennial Census data. After the release of Census 2000, the researchers re-analyzed the results. In general, the findings and conclusions of the original study were essentially the same. Most of the variables found to be significant contributors to county income and the various income components remained significant even after the new data were incorporated into the analysis. The 2000 Census statistics produced some interesting changes caused by both national economic trends and perhaps some structural changes in the various counties of Pennsylvania.

The variables that remained significant throughout were: national economic conditions, income inequality, education, age, the labor force participation rate, the percentage of female workers in the labor force and unemployment rates.

Perhaps the most interesting consequence of the

update was that the industrial composition differences among the various Pennsylvania counties were less significant. In the original study, when data from 1980 and 1990 were used, both manufacturing and service employment were significant factors to the net earnings of Pennsylvania counties. Counties that had more manufacturing and service sectors enjoyed higher earnings than those that did not. However, the importance of manufacturing and service employment has diminished considerably in recent years.

In general, the addition of the Census 2000 data did not contribute to any significant differences in the per capita income of either urban or rural counties in Pennsylvania. Because the new data identified some important national trends, such as the beginning of the most recent recession and the considerable reduction in stock prices, it helped to explain both the recent reductions in investment income and the increase in transfer payments among Pennsylvania counties.

Conclusions and Considerations

Statistical measurements of the per capita income gap between rural and urban counties in Pennsylvania show that the gap is real and has grown.

Specifically, the gap's growth over the last two decades reflects the high-paced total income growth in urban counties and the population growth in rural counties.

- All three sources of income – net earnings, investment income and transfer payments – have grown faster in urban counties than in rural counties.
- National economic trends have contributed to the growth in the income gap. As the nation's economy expanded, it caused greater rates of growth for urban counties than for rural counties. In addition, national cost-of-living increases widened the already existing rural-urban income gap even further. This trend showed signs of diminishing when Census 2000 data were added.
- Income inequality has increased within every Pennsylvania county, but it is interesting to note that income inequality is greater within urban counties. Statistics indicate that income inequality has also increased at the national level over the same period.
- Education has been the most important variable affecting county per capita income, specifically earned income. In particular, the number of persons with a college education proved to be one of the most significant contributors to county income growth.
- Counties whose residents have a higher median age appear to enjoy higher per capita income. This is consistent with the idea that older people have acquired more advanced skills and experiences, which lead to higher productivity and income.
- Counties with higher unemployment and larger percentages of the population living in poverty have lagged behind other counties in earned income growth, but have experienced a faster growth in transfer payments.
- Local taxes have no significant effect on county income.
- Counties with a higher labor force participation rate also have higher per capita income. This labor force participation rate is influenced by many demographic characteristics of a county, such as age,

gender, and marital status, as well as the migration of an educated rural workforce to urban areas. This factor became less significant when the Census 2000 data were added.

- Counties with an older population, greater population density and greater amounts of financial capital enjoyed greater amounts of investment income.
- The variables that affected urban income growth were *not* significantly different from the variables that affected rural county income growth. National trends, education, age, labor force participation, income inequality, and population density all contributed to both urban and rural income growth.

To close the rural urban income gap, the researchers made two suggestions. First, there should be more focus on closing the educational gap between rural and urban counties. This could be accomplished by making higher education more accessible to those in rural counties and by giving more attention to developing strategies that will add college graduates to the rural workforce. Second, efforts should be made to increase rural labor force participation. This study has shown that the labor force participation rate has significant positive effects on county per capita income. Consideration should be given to providing appropriate incentives to encourage more citizens to seek employment.

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