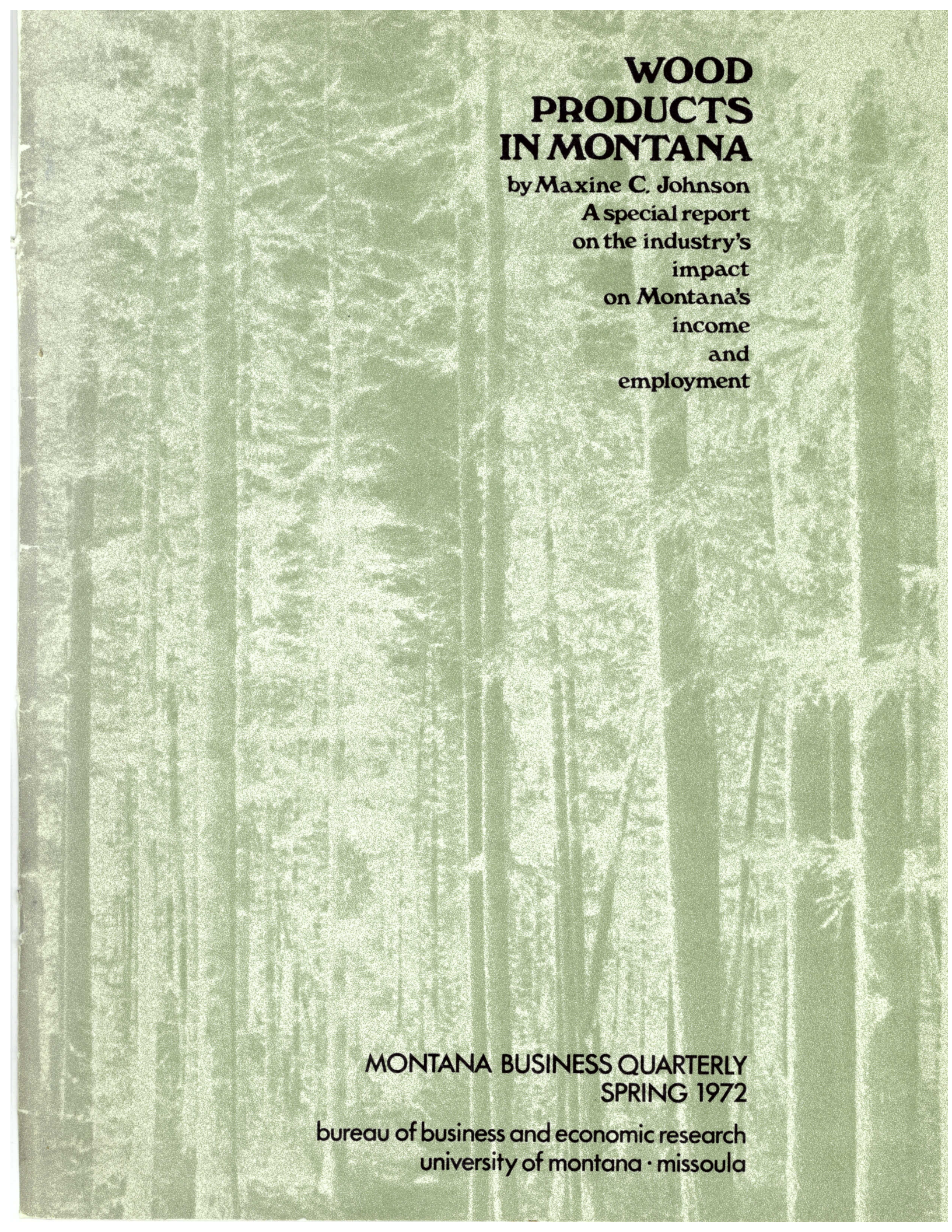

WOOD PRODUCTS IN MONTANA

by Maxine C. Johnson

A special report on the industry's impact on Montana's income and employment

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EDITOR'S INTRODUCTION

This issue of the *Montana Business Quarterly* is devoted entirely to a special report on the wood products industry by Maxine C. Johnson, Associate Professor of Business Administration and Assistant Director of the Bureau of Business and Economic Research at the University of Montana, Missoula. The report was prepared at the request of the Montana State Department of Planning and Economic Development.

The timber industry has been an important part of Montana's economy from the beginning. Everyone knew that it had important effects on the state's income and employment—especially in the western counties. However, until Maxine Johnson undertook this study, no one had put together any hard data, any reliable facts.

This report spells out the number of jobs and amount of income generated by the wood products industry statewide and in eight western counties. It also makes projections concerning loss of income and employment if the industry slows down.

What this state needs, and what we would have liked to publish, is a comprehensive analysis of *all* aspects of the wood products industry in Montana: its impact on the physical environment—air, water, and soil; the impact on scenic beauty, wildlife, and recreation; the economics of timber management and other long-term economic effects, as well as this evaluation of the industry's current contribution to employment and income.

The U.S. Forest Service's 1970 Task Force Appraisal of *Management Practices on the Bitterroot National Forest* and the 1970 *Report on the Bitterroot National Forest* by Arnold Bolle and other faculty of the University of Montana's School of Forestry have dealt with timber management practices in one area.

However, data are not now available for research projects of such scope for all parts of western Montana and relevant areas in central and eastern Montana; it would take months, maybe years, to complete the job.

We feel lucky that we can supply one key portion of the puzzle. Good information is now available to the public on the wood products industry's effect on income and employment. We hope that others with equal competence and care will fill in the rest of the story.

Wood Products in Montana

A special report on the industry's impact on Montana's income and employment

MAXINE C. JOHNSON

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SUMMARY

Since 1950, the wood products industry (here defined as logging operations, wood products manufacturing, and the production of pulp and paper) has occupied a unique position as a growth industry in Montana. Among the state's primary or export industries—those which make an area grow—only manufacturing (especially wood products) and the federal government have been expanding their employment; the others—agriculture, mining, and railroads—have been letting workers go.

The result has been a state economy that, by national standards, has grown very slowly. It has been unable to supply enough jobs for its residents and has provided Montanans with an average income per person well below the national average.

In western Montana — Lincoln, Flathead, Sanders, Lake, Mineral, Missoula, Ravalli, and Granite Counties—the record has been much better. The major reason: the wood products industry. While agriculture and railroads have dropped employees here too, manufacturing and the federal government have added workers. Of the 5,420 new manufacturing employees between 1950 and 1968, 3,500 (65 percent) went to work in wood products activities. Another 1,000 were involved in the aluminum plant at Columbia Falls.

The transformation of western Montana from an agricultural to an industrial economy has meant more jobs and more income. Total employment—wage and salary workers plus the self-employed—was up 32 percent in the western counties between 1950 and 1968, as opposed to only 11 percent in all of Montana. Total personal income grew 93 percent in western Montana, 52 percent in the state; per capita incomes were up 42 percent and 30 percent respectively. There is no doubt that the wood products industry has been responsible for much of the growth in the eight western counties. By 1969, the area's economy had become heavily dependent upon wood products activities.

In attempting to measure the total impact on income and employment, we counted not only persons at work in the industry, but also federal government employees engaged in timber activities. But to really see how primary industry employment affects the economy, workers in secondary industries—transportation, trade, services, local government, etc.—who provide goods and services for the wood products industry, its employees, and timber management workers must be added in. Similarly, in computing total income attributable to the wood products industry, we included the earnings of industry and timber management workers, plus the additional income generated in the area by their expenditures and by industry purchases of goods and services. Our estimates, based on the U.S. Department of Commerce, Regional Economics Information System, indicate that in 1969 something like 43 percent of total employment and 51 percent of total personal income in western Montana came, either directly or indirectly, from the wood products industry.

In the state as a whole (using the same data for computation), wood products played a much smaller role: approximately 12 percent of total employment and 11 percent of total personal income in 1969 was directly or indirectly attributable to the industry.

The year 1969 was a year of high production and employment in the forest industries; it is also the latest year for which all the necessary data are available. The total contribution of the industry would have been somewhat smaller in 1970 and 1971.

The growth of Montana's wood products industry has been accompanied by a large increase in the amount of timber cut on national forests. In recent years, a good many people have come to feel that the Forest Service has emphasized timber production at the expense of other uses of the forest. They feel that recent high rates of timber harvest are excessive in terms of future timber supply and are damaging to the environment. Especially offensive to these critics is the practice of clearcutting. The Forest Service is re-evaluating its management practices in response to changing values and public pressure, and timber sales on national forests are being reduced, at least temporarily.

This report is concerned with the potential effects of declines of various severity in the tim-

ber supply on employment and income during the next few years, 1973 to 1975. Clearly, short-run economic considerations should not be the only criteria applied to the solution of the timber management problem. Nevertheless, an understanding of what may be involved in the way of economic change should be helpful to those who influence the decision.

To determine the potential effects of various changes in the timber supply from the national forests, three alternative assumptions were made. The first was that wood products firms would reduce their cut during the next three years to match the amount of timber which the Forest Service expects to sell. On the average, this would mean a decline of 20 percent below the typical harvest for fiscal years 1966-1970. The second assumption was that the industry would continue to cut at the fiscal 1972 level, slightly above the 1966-1970 average, but that considerable readjustment would take place within the industry as firms maneuvered for a timber supply. The third assumed a temporary ban on clearcutting with a sharp decline of from 30 to 35 percent in available timber supply from national forests.

Assumption I. This alternative, involving a decline of approximately 20 percent, or 150 million board feet annually (in timber cut from national forests), would probably result in a loss of about 750 jobs and $7 million in wages, salaries, and proprietors' income in Montana's wood products industry. When total statewide effects are considered—including the loss in jobs and income which would result in other industries—the potential loss amounts to 2,370 jobs and $22 million in income. These figures are equal to approximately 1 percent of Montana's total employment and income in 1969.

Assuming a decline of 150 million board feet in annual timber cut, fiscal 1973-1975:

	Montana	Eight Western Counties
Potential decline in:		
Industry employment	750	652
Total employment	2,370	1,813
Percentage of total 1969 employment	0.9	3.1
Industry earnings	$7,100,000	$6,300,000
Total personal income	$22,000,000	$20,900,000
Percentage of total 1969 personal income	1.0	4.7

The impact would be greater in western Montana, where the total job loss might be 1,800 or 3 percent of total employment and income might decline by almost $21 million, or 5 percent of total income. Estimates for Assumption I are summarized above.

Assumption II. The Forest Service anticipates that the industry may continue to cut timber at a high rate during the next few years, preferring to keep plants operating even though reducing the amount of timber under contract. This has been the pattern thus far in fiscal 1972. But timber sales are not being reduced equally on all forests. With the development of new multiple use plans, some forests are in for sizable reductions in their timber growing land base; mills in their vicinity may run short of logs. And there is little doubt that stumpage prices will go up as mills bid for the declining amount of timber to be offered for sale. Emphasis in the industry will be on size, efficiency, and integration, and the readjustments may be extensive. Even if the total amount of timber cut continued high, the possibility of mills closing and workers being thrown out of work is real. If the job loss statewide ranged from 250-500 workers, the repercussions would be considerably smaller than those anticipated in Assumption I. At the state level, the direct and indirect employment loss could range from 790 to 1,580, or from 0.3 to 0.6 percent of total 1969 employment and the income loss from $7.3 to $14.7 million, or 0.3 to 0.7 percent of total 1969 personal income. In western Montana, losses could range from 1 to 2 percent of employment and from 1.6 to 3.1 percent of income. The figures are summarized below:

Assuming timber cut continues high, but industry readjustments reduce employment:

	Montana	Eight Western Counties
Potential decline in:		
Industry employment	250-500	218-435
Total employment	790-1,580	606-1,209
Percentage of total 1969 employment	0.3-0.6	1.0-2.0
Industry earnings	$2,400,000-$4,800,000	$2,100,000-$4,200,000
Total personal income	$7,300,000-$14,700,000	$7,000,000-$13,900,000
Percentage of total 1969 personal income	0.3-0.7	1.6-3.1

Assumption III. Proposals have been made for a (presumably) temporary moratorium on all clearcutting. The Forest Service estimates that the immediate effects of a clearcutting ban would be to reduce the volume of timber harvested by 30 to 35 percent, or approximately 250 million board feet. Such a reduction could mean as many as 4,000 fewer jobs in Montana, 3,000 of them in the western counties alone. Assumption III effects:

Assuming a ban on clearcutting and an annual reduction of 250 million board feet in the timber harvest:

	Montana	Eight Western Counties
Potential decline in:		
Industry employment	1,250	1,088
Total employment	3,950	3,025
Percentage of total 1969 employment	1.4	5.1
Industry earnings	$11,900,000	$10,600,000
Total personal income	$36,700,000	$34,800,000
Percentage of total 1969 personal income	1.7	7.8

All of these estimates, as is clearly indicated in the report which follows, are necessarily only rough approximations of the potential effect of changes in the amount of timber available to the wood products industry. Each alternative assumes that the housing market and therefore the demand for Montana's wood products will remain strong, and that the paper mill in Missoula will continue at full production during the next three years.

The wood products industry has always been susceptible to cyclical fluctuations, many of them as severe as the declines envisioned in Assumptions I and II above. The difference is that if these declines become permanent—as they may well do—the wood products industry may no longer be counted as a growth industry. Unless the job losses which may occur are offset by gains in other industries—and there is some question about this—the performance of Montana's economy in the 1970s will continue to be disappointing and much of the expected vigor will be missing from the western Montana economy.

INTRODUCTION

The Setting: Montana's Economy

By almost any measure, Montana is in economic trouble. Since 1950, the state and its citizens have received far less than a full share of national prosperity, as measured by the growth of employment and income.

Over the past two decades, Montanans have been subjected to a state economy that, by national standards, is growing very slowly—an economy which cannot supply enough jobs for its residents and which provides its people with an average income per person well below the United States average. In 1970, Montana's per capita income was 14 percent below the national figure; in 1950, it had been 8 percent above the national average.[1]

The 1970 Census reported that as of April 1 of that year, 248,342 people 14 years of age and over were at work at civilian (nonmilitary) jobs in Montana, only 14 percent more than in 1950. These figures include both wage and salary workers and the self-employed. During the 20-year period, the number of males employed in the state actually declined 5 percent. As the Census data show, only a rapidly growing number of working women kept total civilian employment from falling:[2]

TOTAL CIVILIAN EMPLOYMENT IN MONTANA

	April 1 1950	April 1 1960	April 1 1970	Percent Change 1950-60	1960-70	1950-70
Males	169,835	163,207	161,654	-4	-1	-5
Females	48,625	68,063	86,688	40	27	78
Total	218,460	231,270	248,342	6	7	14

The Montana figures become more meaningful when compared with national employment data for the same period. Over the past two decades, the state economy's ability to provide jobs has fallen far short of the national experience. While the national economy was able to pick up momentum during the 1960s, Montana experienced very limited growth:[3]

PERCENT CHANGE IN TOTAL CIVILIAN EMPLOYMENT

	Montana			United States		
	1950-60	1960-70	1950-70	1950-60	1960-70	1950-70
Males	-4	-1	-5	6	12	18
Females	40	27	78	26	36	71
Total	6	7	14	12	20	33

The slow growth of employment in Montana can be attributed mostly to the nature of the state's industries and the change which has been occurring in its industry mix.

Economists like to classify industries as primary or export industries—that is, industries which sell most of their production outside an area—and as secondary or derivative industries —industries which cater mostly to local markets. Although such classifications are usually imperfect—and certainly this is true of those used in this report—they are nonetheless very useful in understanding economic change in an area.

In Montana, agriculture, mining, manufacturing, railroads, and federal government are the major export or primary industries. They serve markets outside the state and provide most of the basis for growth. Between 1950 and 1970, the number of jobs in these industries declined by approximately 19,500. The loss was especially pronounced during the 1950s:[4]

[1]U.S. Department of Commerce, Office of Business Economics, *Survey of Current Business*, vol. 51, no. 8 (August 1971), table 2, p. 31.

[2]U.S. Bureau of the Census, *U.S. Census of Population: 1960, General Social and Economic Characteristics, Montana,* Final Report PC(1)-28C (Washington, D.C.: U.S. Government Printing Office, 1961), table 53, p. 28-98; *idem., U.S. Census of Population: 1970, General Social and Economic Characteristics, Montana*, Final Report PC(1)-C28 (Washington, D.C.: U.S. Government Printing Office, 1971), table 46, p. 28-113. Data are for persons 14 years old and over and exclude the military.

[3]*Ibid.*; and U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*, vol. 18, no. 17 (January 1972), tables A-1 and A-2, pp. 23-24. The United States data are for persons 16 years and over; prior to 1960, they exclude Alaska and Hawaii, whose combined employment amounts to less than 1 percent of the national total.

[4]Employment Security Commission of Montana, "Employment Series by Months," *Montana Labor Market*, Supplement 1 (Helena, Montana); *idem., Montana Annual Statewide Work Force Report for 1970* (Helena, Montana); *idem.*, unpublished data (Helena, Montana); and Bureau of Business and Economic Research, University of Montana (Missoula, Montana).

PRIMARY EMPLOYMENT IN MONTANA

	Annual Average		
	1950	**1960**	**1970**
Agriculture	52,800	39,200	34,800
Mining	10,200	7,900	6,600
Manufacturing	18,000	20,600	23,900
Lumber, wood products, and paper	5,400	7,400	8,700
All other manufacturing	12,600	13,200	15,200
Railroads	14,000	9,000	6,600
Federal government, civilian	8,300	9,900	11,900
Total primary employment	103,300	86,600	83,800

	Percent Change		
	1950-60	**1960-70**	**1950-70**
Agriculture	-26	-11	-34
Mining	-23	-16	-35
Manufacturing	14	16	33
Lumber, wood products, and paper	37	18	61
All other manufacturing	5	15	21
Railroads	-36	-27	-53
Federal government, civilian	19	20	43
Total primary employment	-16	-3	-19

These estimates do not include self-employed persons in nonfarm industries and thus they understate total mining and manufacturing employment to some extent.

The major reasons for the losses in agriculture, mining, and railroad employment are well known: the increased productivity per worker which resulted from such developments as new farm equipment and improved farming methods; open-pit mining; and, in the railroad industry, diesel engines and automated switchyards. Significant increases in employment by the federal government and manufacturing kept the overall decline in total primary employment from being even greater. By far the largest single creator of new jobs in manufacturing was the wood products industry.

Tourism also is to some extent an export industry. But jobs that depend on travel and recreation occur in the trade and service industries—in hotels and motels, restaurants, and service stations—and are classified as secondary or derivative employment. Unfortunately, we cannot separate those workers serving out-of-state tourists from those serving the local population. Available data do indicate, however, that tourism has a smaller effect on employment in those industries than public discussion implies. Later in this report, more attention will be devoted to tourist-oriented industries.

In addition to the whole range of trade and service industries (wholesaling, retailing, and personal, business, recreational, and professional services), the derivative industries encompass finance, insurance, and real estate; construction; nonrail transportation, communication and utility firms; and state and local government. A large number of new jobs was created in these industries during the fifties and sixties, notably in services employment and in state and local government. These industries have been much less influenced by technological change and rising productivity than have the goods-producing industries. Their heavy use of labor, plus an increased demand for services by affluent Americans, has resulted in a major shift in the pattern of employment toward the service-producing industries—public and private—both nationally and in Montana.

Between 1950 and 1970, and especially between 1960 and 1970, the shift toward this kind of employment in Montana created a large number of new jobs, many of which were filled by women. These jobs offset the decline in primary or export employment and allowed total employment to grow even as the number of primary jobs fell:[5]

TOTAL CIVILIAN EMPLOYMENT IN MONTANA

	Annual Average		
	1950	**1960**	**1970**
Primary employment	103,300	86,600	83,800
Derivative employment	125,200	150,300	177,200
Total civilian employment	228,500	236,900	261,000

	Percent Change		
	1950-60	**1960-70**	**1950-70**
Primary employment	–16	–3	–19
Derivative employment	20	18	42
Total civilian employment	4	10	14

[5]Estimated by the Bureau of Business and Economic Research, University of Montana, Missoula.

These figures represent estimates of average year-round employment and, therefore, are higher, and not comparable to, the April 1 Census figures for 1950, 1960, and 1970.

In spite of the fact that total employment did increase by 14 percent between 1950 and 1970, the number of new jobs was not nearly large enough to provide work for Montana's growing labor force. Over the two decades, the "job gap" amounted to over 35,000.[6] That is, the state needed approximately 35,000 more jobs than its economy provided. The effects of this job gap have been painfully obvious: higher unemployment here than in the country as a whole (Montana's rate is usually about one percentage point higher than the nation's), an oversupply of workers which appears to have helped keep wages down, and a net outmigration of residents —especially of better educated young people who leave in search of greater opportunities elsewhere. Figure 1 illustrates the point very well: between 1960 and 1970, 46 Montana counties had a net migration loss (that is, more people moved out than moved in) while only 10 counties recorded a net gain. Of the 10 counties which had a net gain, 5 were in western Montana.

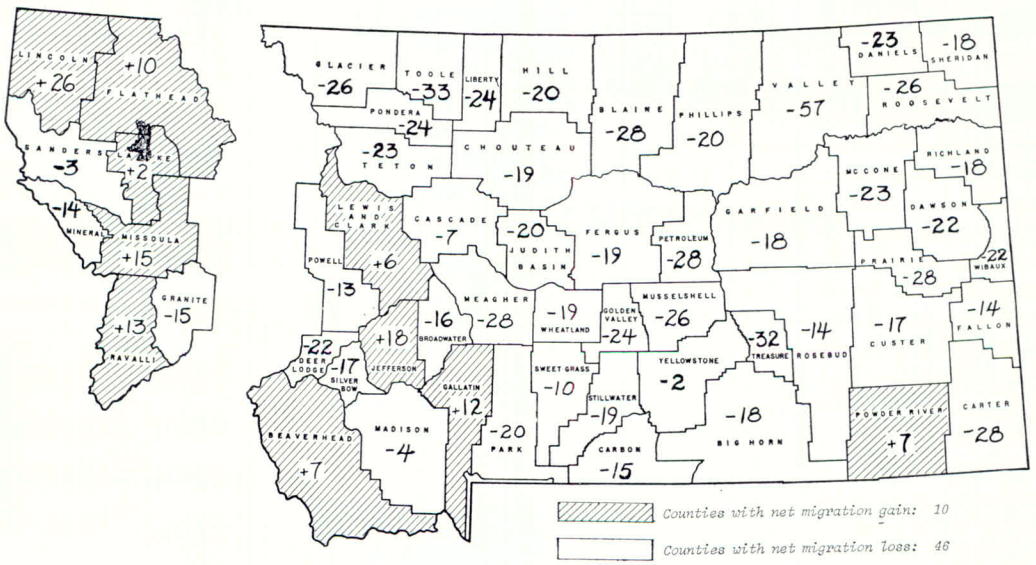
The slow growth in jobs obviously meant a slow growth in income. Furthermore, the shift in employment from primary to derivative industries, which represented for the most part a

[6]Based on an estimate from "The Montana Economy," *Research Report of the Montana Economic Study* (Missoula, Montana: Bureau of Business and Economic Research, University of Montana, 1970), pt. 1, vol. 2, chap. 2, tables 2.2 and 2.3, pp. 2.9 and 2.12.

FIGURE 1

NET MIGRATION RATES FOR MONTANA COUNTIES, 1960-1970

(In Percentages)



Source: U.S. Bureau of the Census, *U.S. Census of Population: 1970, General Demographic Trends for Metropolitan Areas, 1960 to 1970, Montana*, PHC(2)-28 (Washington, D.C.: U.S. Government Printing Office, 1971), table 3, pp. 28-10 and 28-11.
Note: Migration rates measure the movement of persons into or out of an area during a specified period of time. Net migration is derived by subtracting the natural increase (births minus deaths) from the net change in population for the area. The migration rate is determined by expressing net inmigration or outmigration as a percentage of the total population at the beginning of the period. Thus, Missoula County's net migration gain for the 1960-1970 period was equal to 15 percent of its 1960 population.

shift from higher to lower paying jobs, had a dampening effect. When an area replaces jobs in copper mining (which paid an average of $9,140 in 1970) with jobs in retail trade (where the average worker earned less than $5,000), the implications for both total and per capita income are obvious.[7] The loss in agricultural workers hurt too, since in Montana, though not in many parts of the United States, average income per farm worker (including farm operators) is higher than average income per nonfarm worker.

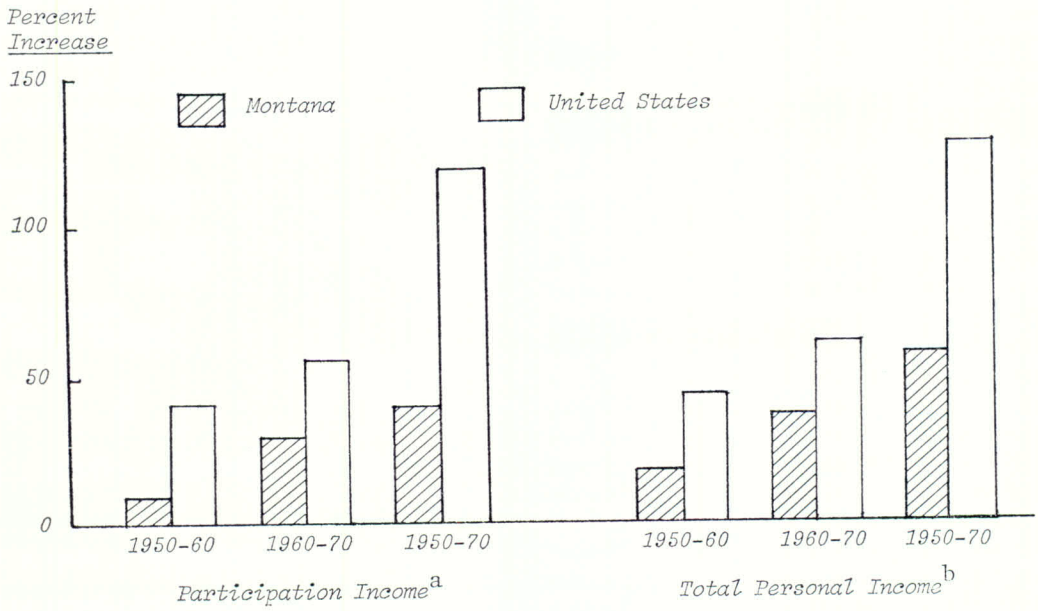
[7]Employment Security Commission of Montana, unpublished data (Helena, Montana).

Personal income estimates tell the story very well. While total participation income—income earned by persons participating in the labor force—was increasing 118 percent in the United States between 1950 and 1970, it grew only 40 percent in Montana. As a result, the state's total personal income (which includes property income—rent, dividends, and interest—and transfer payments—social security checks, pensions, welfare, etc.—as well) also lagged far behind the United States (figure 2). And per capita income—total personal income divided by the total population—fell from a level significantly above the national average in 1950 to a figure well below it by 1970 (figure 3).

FIGURE 2

INCOME GROWTH IN MONTANA AND THE UNITED STATES, 1950-1970

(Measured in 1958 Dollars)

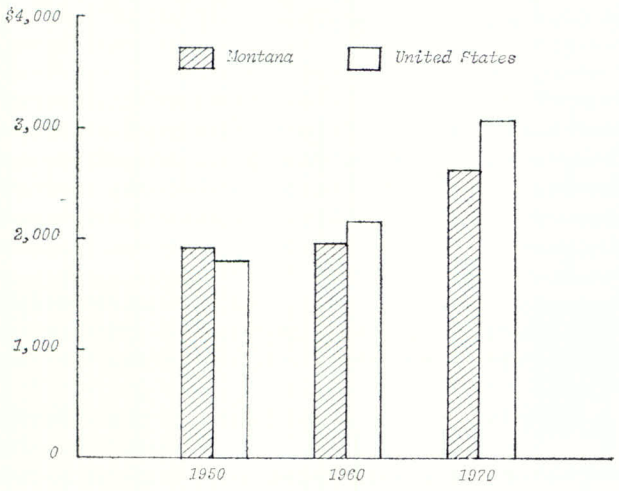


Sources: Derived using U.S. Department of Commerce, Office of Business Economics, unpublished data (Washington, D.C., September 1971); and *idem., Survey of Current Business*, vol. 51, no. 8 (August 1971), table 2, p. 31.
Note: Data for the United States exclude Alaska and Hawaii prior to 1960.
[a]Total earnings of labor force participants; includes wages and salaries, fringe benefits, and the income of proprietors of unincorporated businesses.
[b]Includes participation income, property income (rent, dividends, and interest), and transfer payments (payments for which no current services are rendered in return, such as retirement pensions, veterans' payments, and welfare).

FIGURE 3

PER CAPITA INCOME IN MONTANA AND THE UNITED STATES, 1950, 1960, AND 1970

(In 1958 Dollars)



Source: Derived using U.S. Department of Commerce, Office of Business Economics, *Survey of Current Business*, vol. 51, no. 8 (August 1971), table 2, p. 31.
Note: Data for the United States exclude Alaska and Hawaii prior to 1960.

Both figures 2 and 3 are based on income estimates expressed in constant (1958) dollars; that is, they are adjusted for price changes so that they more accurately measure changes in purchasing power. In these terms, per capita income in Montana showed practically no increase between 1950 and 1960.

In summary, then, since 1950 Montana has been troubled by an economy where new jobs are created too slowly to take care of the increase in workers and where most of the new jobs are in the lower paying industries. As a result, per capita income is falling further behind the national average. There have been many ramifications: an especially heavy loss of population in most rural areas, small towns dying, difficulties in providing public services.

The outlook for the 1980s seems to promise more of the same. The Montana Economic Study predicts that employment in primary industries will continue to decline, although at a rather slow rate, and that derivative employment will continue to increase, but not as fast as in the past. The job gap will continue, and Montana's per capita income in 1980 may be as much as 21 percent below the national average. In other words, the authors expect that during the coming decade, Montanans will continue to share less than fully in national prosperity, at least insofar as prosperity is measured by employment and per capita income.[8]

Growth in Western Montana

Montana covers a very large area and any general discussion of the state economy can obscure substantial differences from one part of the state to another. For the most part, and with some notable exceptions, the larger urban areas have grown and prospered and the rural areas and small towns have suffered the losses. On a geographic basis, western Montana has posted the best record in the state in terms of economic growth.

The Montana Economic Study, in defining economic regions in Montana, designated eight western counties—Lincoln, Flathead, Sanders, Lake, Mineral, Missoula, Ravalli, and Granite—as its western region (Region 1). The area is outlined in figure 1. The combined population of the eight counties has grown more rapidly than any other part of the state, especially since 1960:[9]

	Population		
	1950	**1960**	**1970**
Eight western counties	114,454	128,541	157,428
Montana	591,024	674,767	694,409

	Percent Change		
	1950-60	**1960-70**	**1950-70**
Eight western counties	12	22	38
Montana	14	3	17

The growth in population reflects a growth in jobs:[10]

[8]*Montana Economic Study*, vol. 2, chap. 4, table 4.6, p. 4.41.

[9]U.S. Bureau of the Census, *U.S. Census of Population: 1960, Number of Inhabitants, Montana*, PC(1)-A28 (Washington, D.C.: U.S. Government Printing Office, 1960), table 6, p. 28-11; and *idem.*, *U.S. Census of Population: 1970, Number of Inhabitants, Montana*, PC(1)-A28 (Washington, D.C.: U.S. Government Printing Office, 1970), table 9, p. 28-12.

[10]*Montana Economic Study*, vol. 3, chap. 5, table 5.2, p. 5.15 and vol. 2, chap. 2, table 2.4, p. 2.14. The 1960 and 1968 figures for the state were adjusted to eliminate the effects of copper industry strikes on employment.

	Civilian Employment		
	1950	1960	1968
Eight western counties	42,760	43,270	56,540
Montana	228,500	236,900	254,400

	Percent Change		
	1950-60	1960-68	1950-68
Eight western counties	1	31	32
Montana	4	7	11

Unfortunately, comparable year-round estimates of total employment (including the self-employed) for a year later than 1968 are not available for counties and regions of Montana.

It should be noted that 1968 employment in western Montana was higher than usual. Employment in wood products and paper has declined since then; in 1971, it amounted to approximately 7,800—that is, some 500 below 1968.[11] Nevertheless, the 32 percent increase between 1950 and 1968 indicates that civilian employment in western Montana has grown at approximately the same rate as national employment (33 percent between 1950 and 1970) and much more rapidly than state employment as a whole.[12]

Nearly all the growth in western Montana has taken place since 1960. The decade of the fifties was a disaster; total employment increased by only 1 percent in ten years, as the number of workers in agriculture and railroads fell off drastically (37 percent), and even federal government employment declined slightly. Among the area's primary (export) industries, only wood products bucked the trend; that industry, despite some bad years, increased its employment by 35 percent (1,700) over the decade. Without this growth, western Montana would indeed have had problems.

During the sixties, the trend was reversed. The declines in agriculture and railroads slowed; the federal government began to add workers, wood products continued to expand, and other manufacturing activities employed more people. Total primary (export) employment in the region increased 23 percent, although it continued to decline in the state as a whole. Not surprisingly, derivative employment also increased much more rapidly in western Montana. As a result, total employment was 31 percent higher in 1968 than in 1960:[13]

TOTAL CIVILIAN EMPLOYMENT IN EIGHT WESTERN COUNTIES

	Annual Average		
	1950	1960	1968
Agriculture	7,320	4,580	3,910
Manufacturing	6,160	7,890	11,580
Lumber, wood products, and paper	4,800	6,500	8,300
All other manufacturing	1,360	1,390	3,280
Mining	310	380	460
Railroads	2,940	1,860	1,450
Federal government, civilian	2,240	2,140	3,330
Total primary employment	18,970	16,850	20,730
Total derivative employment	23,790	26,420	35,810
Total civilian employment	42,760	43,270	56,540

	Percent Change		
	1950-60	1960-68	1950-68
Agriculture	–37	–15	–47
Manufacturing	28	47	88
Lumber, wood products, and paper	35	28	73
All other manufacturing	2	136	141
Mining	23	21	48
Railroads	–37	–22	–51
Federal government, civilian	–4	56	49
Total primary employment	–11	23	9
Total derivative employment	11	36	51
Total civilian employment	1	31	32

By 1968, the mountainous western counties had undergone a transformation; manufacturing had replaced agriculture as the dominant industry. Most of the new manufacturing jobs (3,500

[11]Employment Security Commission of Montana, unpublished data (Helena, Montana, April 1972). Preliminary estimate based on nine months' data.

[12]U.S. Department of Labor, *Employment and Earnings*, pp. 23-24.

[13]Estimated, based on data from the Montana Economic Study. Nonfarm self-employed could not be estimated by industry; they are included in derivative employment. Thus, total employment in manufacturing and mining is slightly understated.

of 5,420) were in the wood products industries. The other major contributor was The Anaconda Company's aluminum plant at Columbia Falls in Flathead County. Constructed during the mid-1950s, the plant employed approximately 1,000 workers in 1970.[14]

More jobs mean more total income. Between 1950 and 1969, real income from participation in the labor force (adjusted for changes in the purchasing power of the dollar) increased 75 percent in western Montana. Total income, which includes property income and transfer payments, was 93 percent higher in 1969 than in 1950. When compared to the state experience, the area's growth was impressive (figure 4).

Western Montanans' per capita incomes also have increased more rapidly than those of other Montanans. Even so, in 1969 (the latest year for which county estimates are available) they were still below the state average. (The figures in figure 5 also are in 1958 dollars.) It is surprising that the residents of an area which is growing more rapidly than the state as a whole would have below-average per capita incomes. The Montana Economic Study pointed to very low agricultural incomes as part of the explanation. Western Montana farmers and ranchers in general are much less prosperous than their eastern Montana counterparts. There is also evidence, from the 1970 Census, that the proportion of the population at work in western Montana is smaller than for the state as a whole.

The Montana Economic Study has predicted that western Montana's growth will continue during the 1970s, although at a somewhat slower rate. If the Study's projections are correct, population in western Montana will continue to grow faster than in the state as a whole:[15]

	Population		Projected Change	
	1970	Projected 1980	Number	Percent
Eight western counties	157,428	171,000	13,672	9
Montana	694,409	725,000	30,591	4

[14]Personnel Director, Anaconda Aluminum Company, Columbia Falls, Montana, reply to telephone inquiry (April 1970).

[15]U.S. Bureau of the Census, *1970 Census of Population, Number of Inhabitants*, table 9, p. 28-12; and *Montana Economic Study*, vol. 1, chap. 1, table 1.3, p. 1.21 and vol. 3, chap. 5, table 5.2, p. 5.15.

Population is projected to grow faster in western Montana because employment is expected to increase more rapidly there:[16]

	Civilian Employment		Projected Change	
	1968	Projected 1980	Number	Percent
Eight western counties	56,540	65,450	8,910	16
Montana	254,400	278,400	24,000	9

The employment projections for western Montana assumed a continued decline in agricultural and railroad jobs, and an increase in the number of workers in mining (the Study anticipated new copper developments), manufacturing (especially wood products), and federal government agencies, for a small net gain in primary employment. Further increases in derivative employment also were anticipated:[17]

TOTAL CIVILIAN EMPLOYMENT IN EIGHT WESTERN COUNTIES

	Annual Average		Projected Change	
	1968	Projected 1980	Number	Percent
Agriculture	3,910	2,860	–1,050	–27
Manufacturing and mining	12,040	13,290	1,250	10
Railroads	1,450	940	–510	–35
Federal government	3,330	4,470	1,140	34
Total primary employment	20,730	21,560	830	4
Total derivative employment	35,810	43,890	8,080	23
Total civilian employment	56,540	65,450	8,910	16

The Montana Economic Study also anticipated that per capita income would increase more rapidly in the eight western Montana counties; by 1980, it could amount to 95 percent of the state figure:[18]

[16]*Montana Economic Study*, vol. 1, chap. 1, table 1.3, p. 1.21 and vol. 3, chap. 5, table 5.3, p. 5.16.

[17]*Ibid.*, p. 5.16.

[18]U.S. Department of Commerce, Office of Business Economics, Regional Economics Information System,

PER CAPITA INCOME IN 1958 DOLLARS

	1969	Projected 1980	Projected Change (Percent)
Eight western counties	2,314	3,164	37
Montana	2,551	3,331	31
Eight counties as a percentage of Montana	91	95	—

We have already noted that if the Montana Economic Study's predictions are correct, state per capita income may be as much as 21 percent below the national in 1980; for the eight western counties, the difference would be somewhat greater—around 25 percent below.[19] Nevertheless, based on employment and income projections, the outlook for economic growth in western Montana is more promising than for any other part of the state.

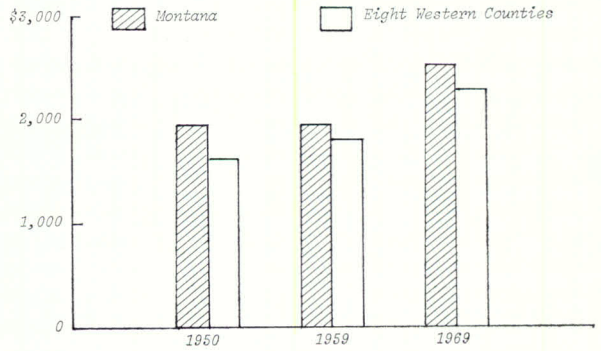
unpublished data (Washington, D.C., June 1971); and *Montana Economic Study*, vol. 3, chap. 5, table 5.4, p. 5.18.

[19]The National Planning Association expects that United States per capita income will be in the neighborhood of $4,204 (1958 dollars) in 1980. *Montana Economic Study*, vol. 2, chap. 4, table 4.6, p. 4.41.

FIGURE 5

PER CAPITA INCOME IN MONTANA AND EIGHT WESTERN COUNTIES, 1950, 1959, AND 1969

(In 1958 Dollars)

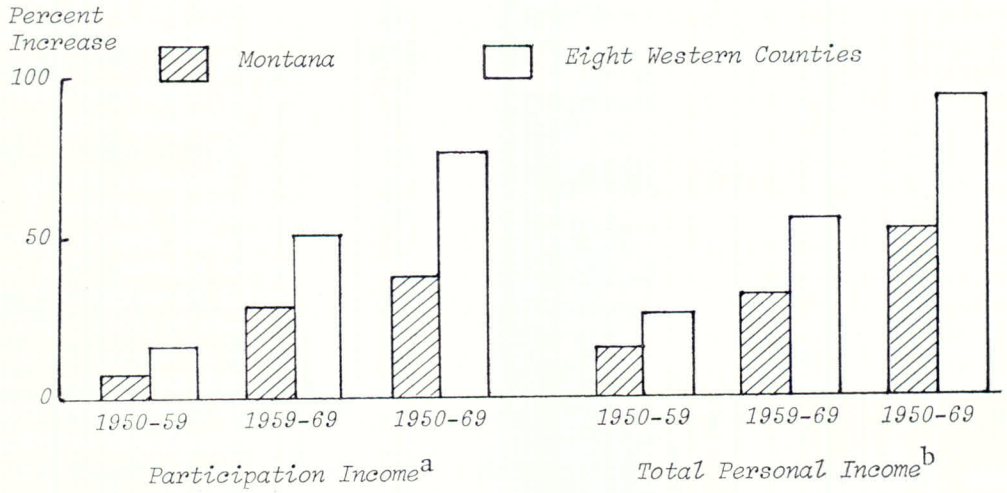


Sources: Derived using U.S. Department of Commerce, Office of Business Economics, *Survey of Current Business*, vol. 51, no. 8 (August 1971), table 2, p. 31; and *idem.*, unpublished data (Washington, D.C., 1971).

FIGURE 4

INCOME GROWTH IN MONTANA AND EIGHT WESTERN COUNTIES, 1950-1969

(Measured in 1958 Dollars)



Sources: Derived using U.S. Department of Commerce, Office of Business Economics, unpublished data (Washington, D.C., September 1971); and *idem., Survey of Current Business*, vol. 51, no. 8 (August 1971), table 2, p. 31.

[a]Total earnings of labor force participants; includes wages and salaries, fringe benefits, and the income of proprietors of unincorporated businesses.

[b]Includes participation income, property income (rent, dividends, and interest), and transfer payments (payments for which no current services are rendered in return, such as retirement pensions, veterans' payments, and welfare).

A word about projections: foretelling the future is a hazardous business and the authors of the Montana Economic Study would be very much surprised if their projections for 1980 turned out to be right on the nose. At the time they were prepared—early 1970—they represented, in the authors' judgment, the most likely future course of the state's economy, based on patterns of the past and current knowledge of the state. We refer readers interested in the assumptions on which the projections were based to part 1, volume 2, chapter 4 of the *Research Report of the Montana Economic Study.*

With the passage of time—these projections were made in early 1970—this writer now believes that the Study's employment projections for 1980 may have been too high. Specifically, the estimate of wood products employment probably is overly optimistic; that is, it may be too high even assuming favorable market conditions and an adequate supply of timber for Montana mills. The Economic Study predicted that the state's wood products industry would add 1,000 new jobs between 1968 and 1980—with 700 of them in the eight western counties. This estimate probably did not give enough weight to potential increases in capital investment and in output per worker; if we had it to do over, we would assume a smaller increase in wood products employment and, as a result, a somewhat slower growth in total employment in both the state and the region. At the same time, we still would expect the western Montana economy to outperform the rest of the state in terms of employment and total income.

To summarize: in two decades western Montana moved from an agricultural area to an economy heavily dependent on industry, primarily wood products. In the process it maintained the most satisfactory record of economic growth, as measured by employment and income, of any region in the state.

The Broader Perspective

Thus far in these pages we have emphasized changes in employment and their effect on the money incomes of Montanans and western Montanans. But money income is not the only income, at least not as economists see it. People derive psychic income from attractive physical surroundings; they also value excellence in public services—education for example—and in cultural activities. In these areas, Montana rates both pluses and minuses.

Just as surely as the state has fewer dollars per capita than the national average, so does it have more physical advantages, including a large share of the nation's most beautiful outdoors. But Montana also has environmental problems, although they are not as severe as those in some more industrialized areas of the nation. A good many Montanans recognize this; they place a high value on Montana's outdoor beauty, its uncrowded living, and its relative freedom from some of the problems facing more industrialized areas. They are anxious to preserve these tremendous assets. They fear that accelerated economic growth—of the resource-oriented type apt to occur in Montana—might result in a further deterioration of the physical environment. They also see existing Montana industry creating environmental hazards.

On the other hand, in addition to the obvious disadvantages of lower money incomes, the slow economic growth in Montana has been reflected in the comparatively low level of public services, cultural activities, and other amenities of modern life, especially in the more sparsely populated areas. While more affluent Montanans are able to compensate for their inadequacy by private purchase or occasional travel to other areas, those less fortunate must accept what the state has to offer.

If the Montana Economic Study projections are even approximately correct, it is unlikely that in the foreseeable future Montana's economic course can be altered. It is possible that its slow growth can be modified.[20] To do this, the state must find ways of decelerating the job loss in its primary or export industries while searching for methods to increase total employment, either through the addition of new export industries or the expansion of existing activities. The greatest hope probably is through the expansion of existing primary industries.

But here, as everyone knows, Montana runs headlong into the environmental dilemma. Because a fair share of the state's basic industries

[20] *Ibid.*, vols. 1 and 2, chaps. 1 and 4.

are based on natural resources, environmental problems are bound to occur. Agriculture creates problems since fertilizers and insecticides increase both output and pollution. More cattle feeding poses an environmental threat. Mining, smelting, and refining pollute the air and water and scar the landscape; logging and wood products manufacturing do the same.

In recent years, the wood products industry has made considerable progress in reducing its air polluting propensities, and at a high investment cost. Public attention now is centered on the management of the national forests by the U.S. Forest Service and on the harvesting practices which it has permitted. A good many people feel that the Forest Service has emphasized timber production at the expense of other uses of the national forests, and that the recent rate of timber harvest is excessive and damaging to the environment. The practice of clearcutting, both because of the visual effect it creates and a concern for potential damage to soils and watersheds, is most disturbing to environmentalists.

The Forest Service has responded to this criticism by re-evaluating its management practices in the light of the Multiple Use-Sustained Yield Act of 1960 and the National Environmental Policy Act of 1970. It has agreed with critics that its management program has been out of balance. Its present long-run goal appears to be increased emphasis on other forest values and uses with as little reduction as possible in the amount of timber harvested. Nevertheless, it is clear that the timber sell program on national forests in Montana is being reduced, at least temporarily.

This report will not attempt to evaluate the claims and counterclaims surrounding the issue of Forest Service timber management in Montana.[21] Instead, it is concerned with only one aspect of the problem: the role of the wood products industry in the state and in western Montana as measured by its contributions to employment and income and the potential economic consequences of a decline in timber harvest. The results should be of interest not only to industrialists, environmentalists, and forest managers, but also to the general public, whose members will influence the ultimate decisions. Clearly, short-run economic considerations should not be the only criterion, but an understanding of what may be involved in the way of economic change should be helpful in evaluating potential solutions and in fitting together the puzzle of jobs, income, public services, environmental quality, and aesthetics. Public agencies, concerned with economic planning and employment also have a stake in such an analysis, for they will be called upon to help alleviate hardships which may occur.

[21]These issues have been described in Arnold W. Bolle, *et. al., A Select Committee of the University of Montana Presents its Report on the Bitterroot National Forest* (Missoula, Montana: University of Montana, 1970) and U.S. Department of Agriculture, Forest Service, *Management Practices on the Bitterroot National Forest*, A Task Force Appraisal, May 1969-April 1970 (Missoula, Montana: U.S. Department of Agriculture, Forest Service, Region 1, 1970).

THE WOOD PRODUCTS INDUSTRY

Growth of a Basic Industry

Over one-sixth of Montana's land area (17.3 million acres) is classified as commercial forest land. Seventy-two percent of this acreage is, and always has been, publicly owned: the federal government controls over 11.8 million acres and the state and local governments, 0.6 million; 4.9 million acres (28 percent) is in private ownership.[22] These lands are the basis for Montana's wood products industries. They—and the wood products industries—are mostly heavily concentrated in western Montana, but not altogether; where there are forest-covered mountains in eastern Montana there are also wood products activities.

During the past twenty years, the national forests have provided a large share of the raw materials for the wood products industry. In 1969, the Forest Service estimated that 60 percent of all the timber harvested in Montana came from the national forests. The remainder came from other public lands, both federal and state (10 percent), and privately owned lands (30 percent).[23] The percentages will vary a little from one year to another, but obviously the industry is heavily dependent on the national forests. In some areas, mills have no other source of timber.

For purposes of this report, we shall consider pulp and paper as part of the wood products industry. Nationally, pulp and paper is classified as a separate industry. But Montana's one plant is closely allied to the wood products industry and its supply of wood fiber comes largely from other wood products firms, so unless otherwise specified, the term wood products industry, when used in the following pages, includes pulp and paper. By this definition, the industry's major products are finished and rough lumber, pulp and paper, and plywood. Laminated beams, modular panels, molding, window frames and sashes, door frames, end glued products, prefabricated houses, particle board, posts and poles also are manufactured and marketed.

Many of these products were not produced in Montana in 1950; they point up the growth and diversification which has taken place in the state industry. Larger mills have modernized their plants, increased their production capacity and their efficiency, and added new products. National firms have moved into the state, building new plants, or buying out established operations. Today, the wood products industry in the state encompasses operations which range from large integrated mills, such as the one in Libby which produces finished lumber, plywood, poles, Stractan (an industrial gum used by pharmaceutical companies), and other products, to small portable mills producing only rough lumber.

The availability of unutilized timber resources brought about the industry's rapid growth in Montana after World War II. Improved harvesting and milling techniques had made it possible to harvest logs on steeper slopes and to use smaller and frequently lower quality logs whose utilization once was uneconomical. When declining timber supplies and increasing competition in other parts of the United States caused some producers to look elsewhere, Montana forest lands offered them opportunities for expansion or continued existence. Thus, while total United States employment in forest industries was actually declining and physical output was showing little change, Montana employment and production rose substantially.[24] To keep the proper perspective, it is well to note that the increase in Montana production had little effect on total national output; the proportion of total United State lumber output produced in Montana has amounted to as much as 4 percent only once, in 1968.[25] Nevertheless, the growth of the industry, as we shall note frequently in this report, was a significant development in Montana.

Several tables and charts document the expansion of the industry during the past two decades.

[22]U.S. Department of Agriculture, Forest Service, *Timber Trends in the United States*, Forest Resource Report no. 17 (Washington, D.C.: U.S. Government Printing Office, 1965), tables 1 and 2, pp. 141-142.

[23]Montana Department of Planning and Economic Development, *Montana Data Book* (Helena, Montana, 1970), p. 9:7, citing U.S. Department of Agriculture, Forest Service, Region 1, unpublished data (Missoula, Montana).

[24]Ahmad Al-Samarrie, *Economic Projections to 1980: Growth Patterns for the Coming Decade*, National Planning Association, Center for Economic Projections, National Economic Projections Series, Report 70-N-1 (Washington, D.C.: National Planning Association, 1970), tables VI-4 and VI-8, pp. S-62 and S-70.

[25]"The Industries of Montana," *Montana Economic Study*, pt. 2, vol. 2, chap. 3, p. 3.43.

Table 1 shows the growth of wage and salary workers in various segments of the industry. Unfortunately, these figures understate total employment because they do not include self-employed workers; persons such as proprietors and partners in unincorporated businesses are omitted. The Office of Business Economics, U.S. Department of Commerce, has estimated total employment for 1969. According to its figures, total employment, including proprietors, in the industry in that year was 9,746, rather than 9,314 as shown in table 1. Based on this comparison, the figures in table 1, because they exclude proprietors, may understate total employment in the industry by about 4 percent.

Table 1 also excludes other workers that most people would identify with the industry. The Standard Industrial Classification developed for the U.S. government designates independent logging truck operators—persons who haul logs on contract—as part of the transportation industry. Logging truck drivers employed directly by logging companies, sawmills, or other wood products operations are counted as employed in the wood products industries.

Figure 6 shows value added by manufacture and wage and salary workers in all wood products industries except pulp and paper since 1956. Value added figures represent the value added to raw materials by the manufacturing process; they have been adjusted for changes in price, using a national price index. Figure 6 does not include pulp and paper, because there is only one pulp and paper mill in Montana and

TABLE 1

WAGE AND SALARY WORKERS IN THE WOOD PRODUCTS INDUSTRIES

1950-1971

Year	ALL WOOD PRODUCTS INDUSTRIES		LUMBER AND WOOD PRODUCTS					PAPER AND ALLIED PRODUCTS
	Number	Index	Total	Logging Camps and Contractors	Sawmills and Planing Mills	Millwork and Related Products[a]	Miscellaneous Wood Products[b]	Total[c]
1950	5,374	100	5,374	983	3,898	417	76	0
1951	6,109	114	6,109	1,288	4,333	367	121	0
1952	5,873	109	5,873	1,169	4,207	384	113	0
1953	5,776	108	5,774	1,046	4,369	283	76	2
1954	6,160	115	6,157	1,262	4,420	381	94	3
1955	7,150	133	7,146	1,573	4,991	475	107	4
1956	7,651	142	7,645	1,686	5,242	558	159	6
1957	6,622	123	6,590	1,307	4,587	578	118	32
1958	6,725	117	6,589	1,214	4,654	581	140	136
1959	7,613	142	7,472	1,540	5,128	655	149	141
1960	7,406	129	7,230	1,506	4,880	704	140	176
1961	7,654	142	7,433	1,507	4,776	1,025	125	221
1962	8,232	153	8,008	1,475	5,362	1,052	119	224
1963	8,757	163	8,512	1,587	5,583	1,224	118	245
1964	8,692	162	8,439	1,703	5,307	1,315	114	253
1965	8,911	166	8,641	1,759	5,315	1,423	144	270
1966	9,201	172	8,872	1,944	5,389	1,359	180	329
1967	9,064	169	8,650	1,720	5,531	1,247	152	414
1968	9,386	175	8,945	1,878	5,757	1,179	131	441
1969	9,314	173	8,857	1,957	5,661	1,119	120	457
1970	8,603	160	8,125	1,614	5,229	1,148	134	478
1971[d]	8,773	163	8,305	1,576	5,397	1,199	133	468

Sources: Employment Security Commission of Montana, "Employees on Montana Nonagricultural Payrolls," *Montana Labor Market: Employment Series by Months*, Supplement 1 (Helena, Montana); *idem.*, unpublished data (Helena, Montana).

Notes: Detail may not add to totals due to rounding.

Average number of wage and salary workers in 1947-49 was 5,400.

These figures exclude proprietors of unincorporated businesses and other self-employed workers.

[a]Includes plants producing millwork, plywood, laminated wood, and prefabricated buildings.

[b]Includes particle board plants.

[c]Includes pulpmills, paper, and paperboard mills.

[d]Nine-month average.

value added figures are not published for that industry.

Figure 7 documents the growth in lumber production and in employment in logging operations and sawmills. Despite the diversification which has occurred, lumber production still employs the greatest number of industry workers and accounts for the largest share of output. Readers should note that production figures for 1950 to 1956 are not comparable to the estimates for later years. They are included in order to give an approximation of the increase in production during the early fifties. Nor are all persons employed in logging operations and establishments classified as sawmills engaged in producing lumber; nevertheless, the two series are roughly comparable.

Figure 7 also indicates that production has grown much more rapidly than employment, reflecting the greater efficiency of new and remodeled plants which has resulted in increased output per worker. The frequent interruptions in the general upward trend provide evidence of the continued cyclical nature of the lumber industry and its susceptibility to changes in the housing market. Both figure 6 and figure 7 are plotted on a ratio scale, which means that equal slopes denote equal rates of change.

Increased output of wood products has, of course, brought about a growing demand for timber. The total volume of timber harvested from all Montana timberlands (public and private) for all products increased 109 percent between 1952 and 1969.[26] Much of the increase came from national forest lands; the amount of timber cut on the national forests in Montana

[26]U.S. Department of Agriculture, Forest Service, *Timber Resources for America's Future*, Forest Resource Report no. 14 (Washington, D.C.: U.S. Government Printing Office, 1958), table 5, p. 532; *idem.*, *Estimates of Timber Products Output and Plant Residues, Montana, 1969*, Research Note INT-133 (Ogden, Utah: Intermountain Forest and Range Experiment Station, 1971), table 1, p. 3.

FIGURE 6

EMPLOYMENT AND VALUE ADDED IN MONTANA'S WOOD PRODUCTS INDUSTRY 1956-1969

(Ratio Scale)

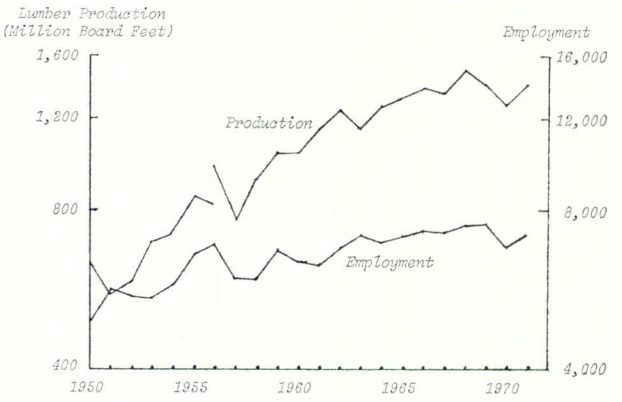
Sources: Table 1; and U.S. Bureau of the Census, *Annual Survey of Manufactures*, 1956, 1957, 1959, 1960, 1962, 1964-1966, 1968, and 1969; and *Census of Manufactures*, 1958, 1963, and 1967 (Washington, D. C.: U.S. Government Printing Office).

Notes: Data are for lumber and wood products (including logging operations) only; value added data for paper and allied products industry are not available. The value added data were adjusted to reflect changes in the prices of lumber and wood products. Value added data for 1968 are not available.

FIGURE 7

MONTANA LUMBER PRODUCTION AND EMPLOYMENT IN LOGGING OPERATIONS AND SAWMILLS 1950-1971

(Ratio Scale)



Sources: Western Pine Association, *Production by States and Species, 1947-1956*, Circular 896 (Portland, Oregon: Western Pine Association, 1957), p. 5; Western Wood Products Association, *1964-65 Statistical Yearbook*, p. s-12, *1968 Statistical Supplement to FACTS*, p. 21, and *1970 Statistical Yearbook*, p. 21 (Portland, Oregon: Western Wood Products Association, Statistical Department); *idem.*, unpublished data (Portland, Oregon, 1972); and Employment Security Commission of Montana, unpublished data (Helena, Montana).

increased by 181 percent over the same period.[27] There is no doubt that the demand for raw materials on the part of the industry resulted in direction to the Forest Service, as custodian of the major source of timber, to put up and sell the full allowable cut on certain national forests. This permitted increased harvesting on national forest lands.

The preceding pages, by illustrating the substantial growth in the wood products industry, verify its unique position among Montana's basic industries. Having described the state's dismal economic situation and confirmed the industry's role during the past two decades as a positive influence in terms of employment and income, it is time to look at and attempt to measure the current contribution of wood products to the Montana economy, and more particularly, to the economy of western Montana.

Although approximately thirty Montana counties have some wood products activity, the bulk of employment and production occurs in eight northwest counties: Lincoln, Flathead, Sanders, Lake, Mineral, Missoula, Ravalli, and Granite (figure 8). This is the impact area—the area where the wood products industry exerts the greatest effect. There are other counties and communities where the industry is extremely important, and these will be identified whenever possible, but the greatest impact of changes in the industry have been felt (and will be felt) in western Montana. Here is where the greatest economic contribution is made; here is where many timber management questions arise.

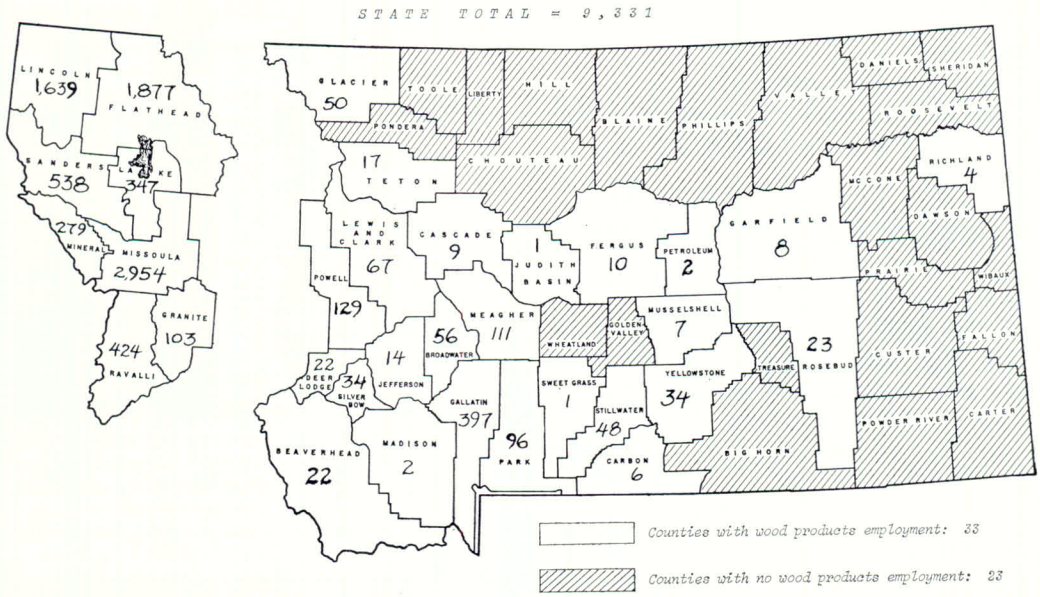
Current Contributions: Jobs and Income

Most of the analysis which follows will be based on 1969 data. Even though 1969 may seem long ago to some readers, it is a rather good choice of a year in which to evaluate the wood products industry in Montana. The year 1969 is fairly representative of recent years, when the industry reached a high point in employment

[27]U.S. Department of Agriculture, Forest Service, Region 1, unpublished data (Missoula, Montana, April 1972).

FIGURE 8

WAGE AND SALARY WORKERS IN THE WOOD PRODUCTS INDUSTRY, 1969



Source: U.S. Department of Commerce, Office of Business Economics, Regional Economics Information System, unpublished data (Washington, D.C., March 1972).
Note: Data are for lumber and wood products and paper and allied products.

and production. It was not as prosperous a year as 1968 (prices fell in 1969 as housing construction declined), but it was better than 1967 and 1970. Furthermore, 1969 has one overriding virtue: there are reliable employment and income data available from the U.S. Department of Commerce, Office of Business Economics, Regional Economics Information System, for use in the analysis, and they are the latest such data available. Since this is 1972, it might seem more meaningful to talk about 1970 or 1971, but at this writing (April 1972) it is too early for these figures to be ready. It is also true that relationships among industries usually do not change very rapidly, and that the pattern in 1971 probably did not vary significantly from that in 1969. However, the total contribution—direct and indirect—of the wood products industry no doubt was greater in 1969 than in 1970 or 1971.

In 1969, there were 9,746 people — wage and salary workers and self-employed — at work in Montana's wood products industries; they earned — in wages and salaries and proprietors' income — approximately $71.9 million.[28] In terms of total employment and income in the state, these data, as figures 9, 10, and 11 illustrate, represent a rather small slice of the pie. Only about 4 percent of Montana's total employment and earnings and 3 percent of total personal income come directly from the forest industries.

But, if the rancher in Garfield County is only vaguely aware of the existence of the industry, the merchant in many a western Montana town is acutely conscious of the presence and the economic significance of wood products activities. Approximately 87 percent of wood products employment (8,461 workers) and 89 percent of the income ($64.2 million) from the industry is concentrated in the eight western Montana counties.[29] In this area the wood products industry represents 14 percent of the jobs, 19 percent of earnings, and 14 percent of total personal income.

In some individual counties, the contribution is even larger. Twenty-five percent of the total employment in Mineral County was in the wood products industry in 1969; 34 percent of total earnings and 25 percent of total personal income came from the industry (table 2). For Sanders County, the figures were 20 percent of employment, 29 percent of earnings, and 21 percent of total income. Both of these counties are very small in terms of population. Mineral County had only 2,958 residents in 1970; Sanders County had 7,093. Lincoln County, even though currently experiencing temporary boom conditions with the construction of Libby Dam, nevertheless counted 24 percent of its employment, 26 percent of its earnings, and 21 percent of its total income from wood products. In 1965, before the dam, the proportion of Lincoln County income earned by wood products employees approached 40 percent; when the dam is completed, it may again.[30]

Table 2 indicates that several counties outside

[28]U.S. Department of Commerce, Office of Business Economics, unpublished data (February 1972).
[29]*Ibid.*
[30]*Ibid.*

TABLE 2

PROPORTION OF TOTAL EMPLOYMENT, EARNINGS, AND INCOME COMING DIRECTLY FROM WOOD PRODUCTS INDUSTRIES SELECTED COUNTIES, 1969

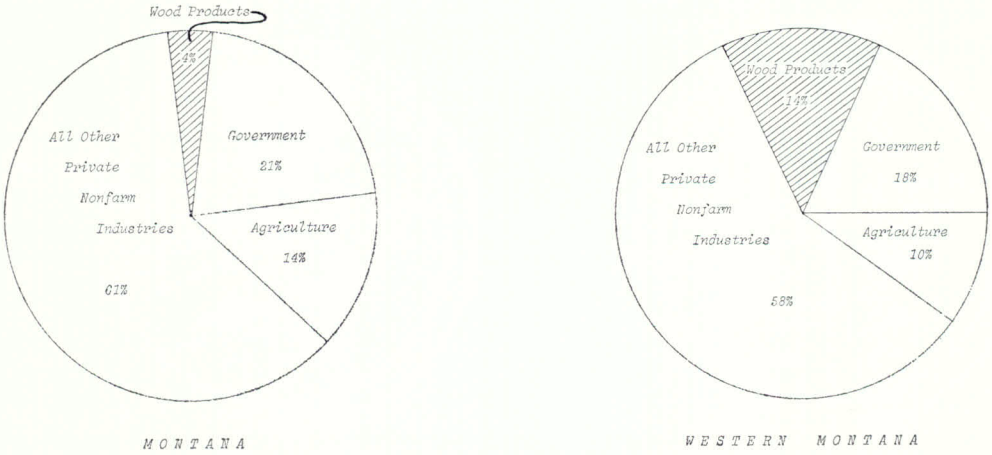
County	1970 County Population	Percentage from Wood Products: Employment	Earnings	Total Personal Income
Mineral	2,958	25	34	25
Sanders	7,093	20	29	21
Lincoln	18,063	24	26	21
Flathead	39,460	14	17	13
Missoula	58,263	13	17	13
Ravalli	14,409	10	15	11
Granite	2,737	12	13	9
Lake	14,445	8	13	9
Meagher	2,122	13	13	11
Powell	6,660	6	7	5
Broadwater	2,526	7	6	5
Gallatin	32,505	4	4	3
Park	11,197	3	2	2

Sources: U.S. Department of Commerce, Office of Business Economics, Regional Economics Information System, unpublished data (Washington, D.C., February 1972); and U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1970, Number of Inhabitants, Montana,* PC(1)-A28 (Washington, D.C.: U.S. Government Printing Office, 1970), table 9, p. 28-12.

Notes: Earnings include wages and salaries, other labor income, and proprietors' income. Total personal income includes earnings plus property income and transfer payments.

FIGURE 9

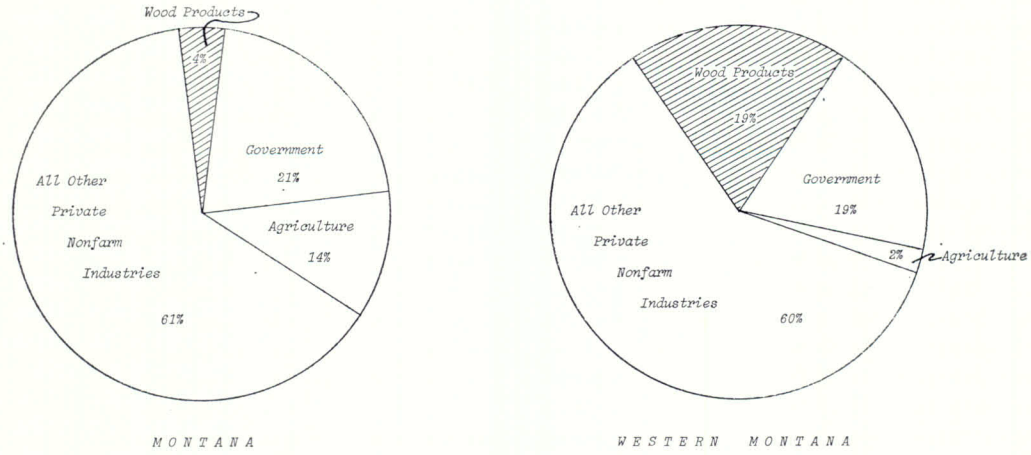
TOTAL EMPLOYMENT, BY INDUSTRY, IN MONTANA AND EIGHT WESTERN COUNTIES, 1969



Source: Derived using U.S. Department of Commerce, Office of Business Economics, Regional Economics Information System, unpublished data (Washington, D.C., February 1972).
Notes: The data include the self-employed. The eight counties are Flathead, Granite, Lake, Lincoln, Mineral, Missoula, Ravalli, and Sanders.

FIGURE 10

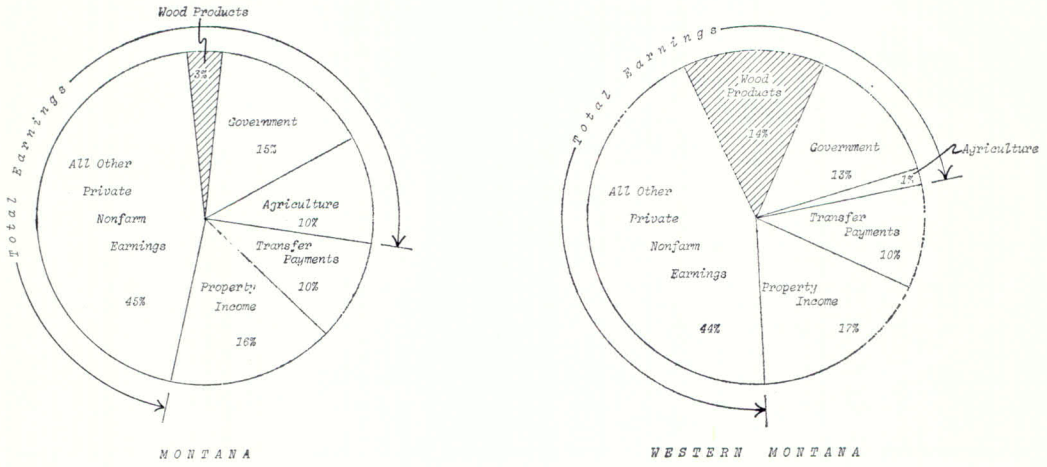
TOTAL EARNINGS, BY INDUSTRY, IN MONTANA AND EIGHT WESTERN COUNTIES, 1969



Source: Derived using U.S. Department of Commerce, Office of Business Economics, Regional Economics Information System, unpublished data (Washington, D.C., February 1972).
Notes: Earnings include income from participation in the labor force; that is, wages and salaries, other labor income, and proprietors' income. The eight counties are Flathead, Granite, Lake, Lincoln, Mineral, Missoula, Ravalli, and Sanders.

FIGURE 11

TOTAL PERSONAL INCOME, BY SOURCE, IN MONTANA AND EIGHT WESTERN COUNTIES, 1969



Source: Derived using U.S. Department of Commerce, Office of Business Economics, Regional Economics Information System, unpublished data (Washington, D.C., February 1972).
Notes: Total earnings includes all income from participation in the labor force; that is, wages and salaries, other labor income, and proprietors' income. Detail may not add to 100 percent because of rounding. The eight counties are Flathead, Granite, Lake, Lincoln, Mineral, Missoula, Ravalli, and Sanders.

the eight-county region also have a rather heavy dependence upon wood products. Most notable is Meagher, where the industry was a source of 13 percent of total employment and earnings and 11 percent of total personal income in 1969. Even county figures can obscure the sometimes overwhelming dependence of a very small community on its one or two sawmills or other plants.

Measuring the direct contribution of an industry to an area provides some interesting information, but it does not tell the whole story. At the beginning of this report we identified wood products as a basic, or export, industry. A basic industry is an industry in which an area specializes, one that produces more than the area needs. The excess is sold to other areas and the income received is used to pay for imports. Other industries basic to Montana include agriculture, mining, railroads, and federal government.

According to export-base analysis, an area's economic growth depends mainly upon the expansion of its basic industries. If demand for the output of a basic industry increases, employment and earnings in that industry will increase; there will be more overtime work, or unemployed workers will be hired, or new workers may move into the area and go to work. The demand for products of secondary, or derivative industries (trade, services, public utilities, nonrail transportation, construction, state and local government) will increase also. The expanding basic industries will require more goods and services and the increased earnings of their employees also will create new demands for retail goods and services. This means more employment in the secondary industries. The total expansion in employment (or income) which stems from an increase in a basic industry is known as the multiplier effect. In order to better judge the total economic contribution of the wood products industry, the multiplier effect must be considered.

The multiplier is not a terribly precise measure, but it does provide useful guidelines for estimating the total economic contribution, in terms of employment and/or income, of an in-

dustry to a local economy. It can be especially useful when an area is considering the advantages or disadvantages of a particular economic action, be it a tax concession to a prospective new industry or a policy which would result in reduced production in an established industry.

Once the basic industries have been identified, it is quite simple to determine the multiplier, assuming adequate employment and income data are available. The multiplier can be calculated by dividing total employment or earnings by primary or basic employment or earnings. For instance, estimates from the U.S. Department of Commerce indicate that the employment multiplier for the state in 1969 was 3.16; this means that for every job in a primary or basic industry there were just over two jobs in secondary industries. In western Montana, the multiplier was somewhat smaller (2.78), indicating 1.78 secondary jobs for each primary job:[31]

EMPLOYMENT IN 1969

	Montana	Eight Western Counties
Total employment	273,870	59,029
Primary employment[32]	86,750	21,244
Multiplier	3.16	2.78

We think these Department of Commerce employment estimates are a little high, both for Montana and the eight western counties. However, our own employment estimates for 1968 from the Montana Economic Study yield roughly the same multipliers: 3.07 for the state and 2.73 for western Montana. Therefore, we have some confidence that the multiplier for employment is in the neighborhood of these figures.

Income multipliers also are useful tools for analysis. In 1969, for each dollar earned in primary industries in Montana, roughly two dollars ($2.09) in additional income was received by state residents. In the eight western counties, the multiplier effect was somewhat greater—in the neighborhood of $2.29 to one:[33]

[31]Based on U.S. Department of Commerce, Office of Business Economics, unpublished data (February 1972) and Employment Security Commission of Montana, *Montana Labor Market*, Supplement 1.

[32]Employment in agriculture, mining, manufacturing, railroads, and the federal government.

[33]U.S. Department of Commerce, Office of Business Economics, unpublished data (February 1972).

PERSONAL INCOME IN 1969

	Montana	Eight Western Counties
Total personal income	$2,171,361,000	$444,620,000
Earnings from primary industries[34]	$ 703,273,000	$135,333,000
Multiplier	3.09	3.29

What do these data, then, tell us about the total contribution of the wood products industry to Montana? In 1969, combined state employment in wood products amounted to 9,746. In order to have a more accurate measure of the total industry impact, we add to this figure the approximately 830 persons (full-time equivalent) employed in timber management in Montana by the U.S. Forest Service, the Bureau of Land Management, and the Bureau of Indian Affairs.[35] All of these agency people are included in the primary employment estimates in part one of this report under federal government. We have omitted the timber management employees in the State Forester's Office (there are only a few) because they were classified with other state employees in secondary employment in the foregoing tables.

Applying the multiplier for all primary industries to the total number of employees (10,576) in wood products and federal timber management activities indicates that in 1969 approximately 22,844 other persons held jobs in secondary activities servicing the industry, its employees, and federal timber management personnel. Among these 22,800 workers, for example, were independent logging truck operators and heavy equipment dealers plus the telephone repairmen, the retail clerks, and the public school teachers who supply consumer goods and services to industry and federal workers and their families. Thus, the total num-

[34]Wages and salaries, other labor income, and proprietors' income from agriculture, mining, manufacturing, railroads, and the federal government.

[35]U.S. Department of Commerce, Office of Business Economics, unpublished data (February 1972); and unpublished data from Steve Yurich, Regional Forester, U.S. Department of Agriculture, Forest Service, Region 1 (Missoula, Montana, February 1972); Harold C. Lynd, Associate State Director, U.S. Department of the Interior, Bureau of Land Management (Billings, Montana, January 1972); and Harold D. Roberson, Acting Assistant Area Director, U.S. Department of the Interior, Bureau of Indian Affairs (Billings, Montana, February 1972).

ber of jobs attributable, directly and indirectly, to the industry activities was in the neighborhood of 33,420—or about 12 percent of total state employment in 1969 (figure 12).

Each dollar of basic income in 1969 is estimated to have generated another $2.09 in income to Montanans as it filtered through the economy. The wood products industries were responsible for $71.9 million in wages and salaries and proprietors' income that year; another $6 million was earned by federal timber management employees.[36] Applying the multiplier to this total ($77.9 million times 2.09) implies that the wood products industry was directly or indirectly responsible for $240.7 million in income—an amount equal to 11 percent of total income in the state (figure 13). (Total personal income, it will be recalled, includes property income and transfer payments as well as income earned from participation in the labor force.)

In western Montana, the 8,461 jobs in wood products plus the 722 in federal timber management (total 9,183) can be presumed to have created another 16,346 jobs in supporting and secondary activities.[37] The 25,500-plus jobs dependent upon wood products amounted to 43 percent of the region's total employment (figure 12). Earnings of industry workers and timber management people amounted to $69.5 million; when the multiplier effect is taken into account, the total contribution becomes $228.7 million, or 51 percent of total personal income in the eight counties (figure 13).

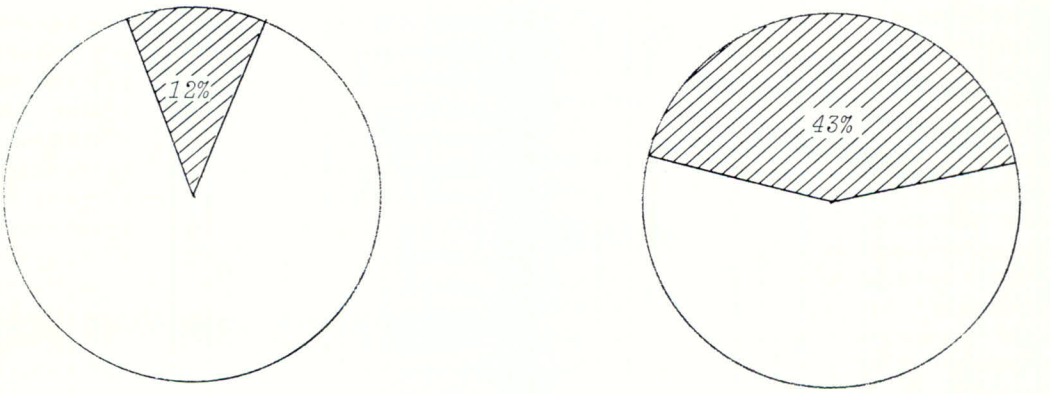
In some counties, the total economic contribution may be greater than these figures indicate. One thinks first of such small counties as Mineral and Sanders (table 2). However, to apply the regional multiplier to employment and income in these counties would be inappropriate; the multiplier effect is apt to be smaller in counties with small populations and limited trade and service facilities. Industries and in-

[36] *Ibid.*

[37] *Ibid.* (derived).

FIGURE 12

ESTIMATED PROPORTION OF TOTAL EMPLOYMENT DIRECTLY AND INDIRECTLY ATTRIBUTABLE TO THE WOOD PRODUCTS INDUSTRY IN MONTANA AND EIGHT WESTERN COUNTIES, 1969

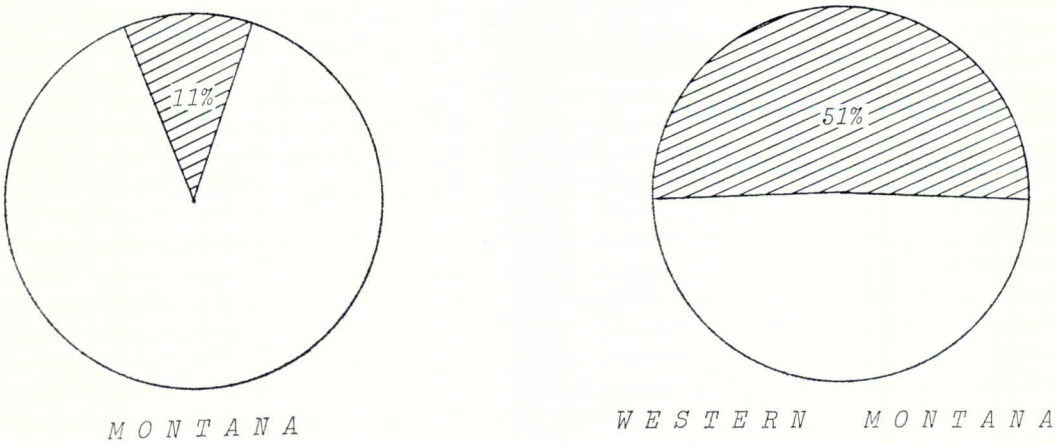


Sources: Estimated, using unpublished data from U.S. Department of Commerce, Office of Business Economics, Regional Economics Information System (Washington, D.C., February 1972); Steve Yurich, Regional Forester, U.S. Department of Agriculture, Forest Service, Region 1 (Missoula, Montana, February 1972); Harold C. Lynd, Associate State Director, U.S. Department of the Interior, Bureau of Land Management (Billings, Montana, January 1972); and Harold D. Roberson, Acting Assistant Area Director, U.S. Department of the Interior, Bureau of Indian Affairs (Billings, Montana, February 1972).

Notes: Includes the self-employed. The eight western counties are Flathead, Granite, Lake, Lincoln, Mineral, Missoula, Ravalli, and Sanders.

FIGURE 13

ESTIMATED PROPORTION OF TOTAL PERSONAL INCOME DIRECTLY AND INDIRECTLY ATTRIBUTABLE TO THE WOOD PRODUCTS INDUSTRY IN MONTANA AND EIGHT WESTERN COUNTIES, 1969



Sources: Estimated, using unpublished data from U.S. Department of Commerce, Office of Business Economics, Regional Economics Information System (Washington, D.C., February 1972); Steve Yurich, Regional Forester, U.S. Department of Agriculture, Forest Service, Region 1 (Missoula, Montana, February 1972); Harold C. Lynd, Associate State Director, U.S. Department of the Interior, Bureau of Land Management (Billings, Montana, January 1972); and Harold D. Roberson, Acting Assistant Area Director, U.S. Department of the Interior, Bureau of Indian Affairs (Billings, Montana, February 1972).

Notes: Total personal income includes income from participation in the labor force (wages and salaries, other labor income, and proprietors' income) plus property income and transfer payments. The eight western counties are Flathead, Granite, Lake, Lincoln, Mineral, Missoula, Ravalli, and Sanders.

dividuals in those counties may do a good share of their purchasing outside the county, perhaps in Missoula, thereby reducing the size of the multiplier. And we should note that employment and income estimates for small counties may be subject to proportionately greater errors than figures for larger areas. For these reasons, multiplier effects for individual counties have not been calculated.

In Missoula County, the center of western Montana wood products activity and probably the state's most rapidly growing city, other activities also contribute to growth. One thinks of the University of Montana and of the trade and service establishments which have helped Missoula develop into a regional trade center. From the standpoint of Missoula County, these, too, are export industries.

Figures carried out to decimal points, especially when they appear in print, seem to assume a preciseness which often does not exist. It is worth noting again that the estimates of the impact of the wood products industry are approximations. They are based on estimated income and employment figures which are subject to error. The classification of primary versus derivative industries is not exact. And furthermore, we have used a multiplier based on the relationship of all primary industries to all derivative industries; that is, it is not a multiplier for the wood products industry alone. The development of such an estimate would have required far more money and time than was available for this report, and the chances are that the results of such a detailed study, in terms of accuracy and specificity, would not have justified the cost. The income multipliers we have used are very similar to, but slightly lower than, multipliers derived for forest industries in the state of Washington in an input-

output study prepared by the Graduate School of Business, University of Washington.[38] The fact that our multipliers are lower does not surprise us, since Washington is a more industrialized state than Montana and probably is able to provide more capital goods and industrial supplies within its borders.

Nevertheless, we suspect that use of an overall multiplier effect may slightly understate the contribution of the wood products industry in Montana. It seems evident to us that forest industry activities, which range from the harvesting of the raw material to the sale of a finished product, would have greater impact on the economy, for instance, than the operation of a railroad or a federal agency. But in any case, we prefer to be conservative, and we do believe that the estimates presented here are reasonable—that they are in the ball park.

And surely they leave no doubt of the economic importance of the industry in western Montana and, indeed, in the entire state. To repeat, the total overall contribution of the forest industries to the state economy amounted in 1969—the high production year—to approximately 12 percent of total employment and 11 percent of total income. In western Montana, as much as 43 percent of total employment and 51 percent of total income results, directly or indirectly, from wood products activity.

The Potential Effects of a Decline in Wood Products Activity, 1972-1975

Preceding sections of this report have described the role of the wood products industry in Montana and western Montana and its contribution in terms of jobs and income. Let us look now at the potential consequences of a decline in industry production as the result of a reduction in the amount of timber available from national forest lands.

We concern ourselves with timber from the national forests because most of the timber from federal lands (90 percent) comes from those lands, and because most of the controversy concerning timber management has centered on the national forests. We look chiefly at the next few years, through 1975, both because they are our most immediate concern and because of the difficulties involved in longer-range predictions. As circumstances change, further study and revised estimates should be made.

Figure 14 gives the pattern of sales and harvest on the national forests in Montana since fiscal 1960, with Forest Service projections to 1975. The figures for timber sold and timber cut in any one year are not the same, of course; timber sold in one year may not be harvested for several years, depending upon the purchaser's needs and the time involved in building roads and making other preparations. In fiscal 1971, the volume of timber sold in Montana by the Forest Service declined drastically; 1971 sales of 599.5 million board feet amounted to only 67 percent of fiscal 1970 sales of 894.3 million board feet. They were the lowest since fiscal 1961. Just as pressure from the wood products industry resulted in an increase in timber sales through the 1960s, so since 1970 has pressure from other groups and a change in Forest Service direction forced a decline. The National Environmental Policy Act requires that forest management policies be reviewed.

There is a complicating factor in figures for timber sales and harvests on the national forests which we have had to ignore in this report: the movement of timber across state lines. Most of the movement we are concerned with in this report involves the Montana and Idaho boundaries. Montana firms sometimes buy timber in Idaho; some timber cut in Montana is processed in Idaho. Except for some timber purchased and cut on the Kaniksu Forest in Idaho by Montana firms, the effects of these imports and exports have been ignored for lack of information. Forest Service officials do not believe this is a serious omission.

Even though the market for lumber wasn't very good, the amount cut on the national forests in Montana in fiscal 1971 exceeded the reduced amount of timber sold that year. As a result, the volume of uncut timber under contract declined. Between January 1, 1970, and January 1, 1972, it fell from 2,356.2 million board feet to 1,496.4 million board feet, or 36 percent (figure 15); at recent harvesting levels, the January 1972 figure represented about a two-year supply of timber. Wood products manufacturers prefer to have at least two to three years' timber under contract.

[38]Stephen H. Archer, *et al., The Role of Forest Lands in the Washington Economy* (Seattle: Business-Economics Advisory and Research, Inc., December 1970), p. 18.

They say it is necessary in order to provide time for construction of required roads, to have a variety of timber available, and to facilitate financing. They are concerned, of course, with the drop in timber sales since fiscal 1970 and fearful that this trend may continue.

Forest Service plans for the next few years indicate that sales will continue below recent levels. Projected sales for fiscal 1972 through 1975 average 603 million board feet, or 78 percent of the average for fiscal 1966-1970. If things go according to plan, fiscal 1973 will be the low point, with increases in 1974 and 1975 (figure 14).

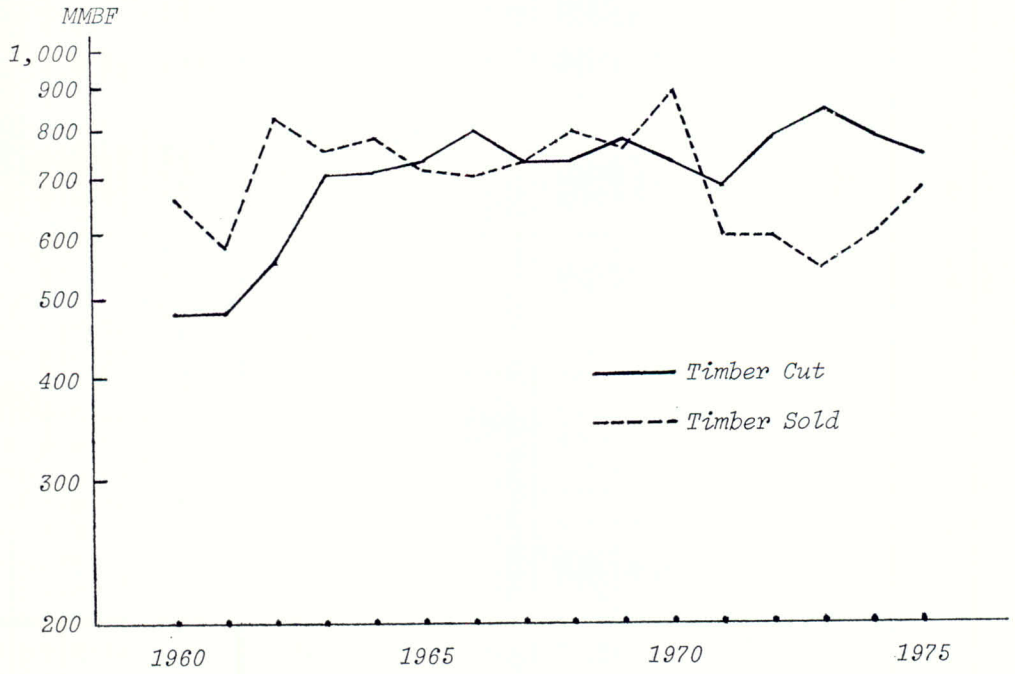
At the same time, the Forest Service, assuming strong demand for wood products, predicts continued high cutting of timber. Montana producers have large investments in plants; they need to keep those plants operating. As long as timber is available and the lumber market good (it is very good in the spring of 1972), they are expected to continue a high level of output. Such a practice also serves to emphasize the need for timber and to keep up the political pressure for more sales. As of April 1972, the Forest Service expects the fiscal 1972 harvest to approximate the projected volume of 783 million board feet. Over the four-year period, fiscal 1972-1975, the agency anticipates an average harvest of 787 million board feet per year, 4 percent higher than during fiscal 1966-1970 (figure 14).

Such a pattern could mean only one thing—a further drop in the amount of timber under contract. According to Forest Service estimates, by July 1, 1975, uncut timber under contract will

FIGURE 14

VOLUME OF TIMBER CUT AND SOLD ON MONTANA'S NATIONAL FORESTS FISCAL YEARS 1960-1971, WITH PROJECTIONS TO 1975

(Ratio Scale)



Source: U.S. Department of Agriculture, Forest Service, Region 1, unpublished data (Missoula, Montana, April 1972).
Notes: Data include some timber in Idaho and Washington on the Kaniksu Forest. Volumes involved in the Missoula roundwood sale, canceled in January 1972, have been subtracted from the 1970 total.

FIGURE 15

UNCUT TIMBER UNDER CONTRACT ON MONTANA'S NATIONAL FORESTS 1962-1972 AND PROJECTED TO 1975

(Ratio Scale)

Source: U.S. Department of Agriculture, Forest Service, Region 1, unpublished data (Missoula, Montana, April 1972).
Notes: Data are as of January 1 of each year; and they include some contracts in Idaho and Washington on the Kaniksu Forest. Volumes involved in the Missoula roundwood sale, canceled in January 1972, have been subtracted from the 1970, 1971, and 1972 totals.

amount to less than one and one-half years' harvest, based on the average cut for fiscal years 1966-1970.[39]

The Forest Service expects that sales can be increased rather steadily during the latter 1970s; by 1980, it envisions sales and harvest approximately in balance, with sales just 2 percent lower than the average for fiscal 1966-1970 and the potential harvest about the same as during those years.[40] But the levels anticipated for 1980 cannot be maintained, Forest Service officials say, if Congress fails to provide for more intensive management of timber areas.

The state figures for estimated sales and harvest on all Montana national forests obscure some significant variations among forests. The changes in anticipated sales by forest during 1972-1975 are given in table 3. The bulk of the decline, in terms of timber volume, will occur in the Bitterroot, Flathead, Gallatin, Helena, Kootenai, and Lolo forests. The most severe decreases on a percent basis are anticipated in three of the smaller forests, the Gallatin, the Helena, and the Lewis and Clark.

Of course, these figures are only estimates and a good many things could change them, as the Forest Service very well knows. A drop in the lumber market could reduce the amount of timber cut; national legislation affecting timber management policies could change the volume of timber offered for sale; additional timber producing land could be withdrawn for other uses or because it is deemed unsuitable for logging. Revisions may well be made as a result of current studies now underway. So these figures, especially the harvest estimates, should be regarded as necessarily tentative; on the other

[39]U.S. Department of Agriculture, Forest Service, Region 1, unpublished data (April 1972).
[40]*Ibid.*

TABLE 3

TIMBER SALES ON MONTANA'S NATIONAL FORESTS IN FISCAL YEARS 1966-1970 WITH FISCAL 1972-1975 PROJECTIONS

Forest	Average Annual Sales (MMBF)		Anticipated Changes	
	1966-70	1972-75	MMBF	Percent
Beaverhead	31	27	–4	–13
Bitterroot	59	41	–18	–31
Custer	2	4	2	100
Deer Lodge	33	35	2	6
Flathead	162	126	–36	–22
Gallatin	39	13	–26	–67
Helena	23	8	–15	–65
Kaniksu*	36	28	–8	–22
Kootenai	200	183	–17	–8
Lewis and Clark	19	10	–9	–47
Lolo	158	129	–29	–18

Source: Derived from U.S. Department of Agriculture, Forest Service, Region 1, unpublished data (Missoula, Montana, April 1972).
Note: MMBF denotes million board feet.
*Includes portions in Idaho and Washington.

hand, they represent the best judgment of the Forest Service at this time.

In the following pages, we shall accept the estimates above for sales and harvests as representative of one of the possible courses, but we shall also consider other alternatives, among them a reduction in cut to the level of 1972-1975 sales and a ban on clearcutting. In each case, we shall consider the potential impact on employment and income over the next few years.

According to our calculations, in both 1966 and 1969, the only years for which all the necessary data are available, there were approximately six wood products workers per million board feet of timber harvested in Montana.[41] This estimate is based on figures for all people at work in the industry, both wage and salary workers and the self-employed, and for all timber harvested from federal, state, and private lands.

[41]Derived using estimates of total timber products output from U.S. Department of Agriculture, Forest Service, *Timber Products in the Rocky Mountain States, 1966*, Resource Bulletin INT-9 (Ogden, Utah: Intermountain Forest and Range Experiment Station, 1970), tables 40 and 44, pp. 67 and 71, and *idem., Estimates of Timber Products Output and Plant Residues, Montana, 1969*, tables 1 and 2, p. 3; and employment data from Employment Security Commission of Montana, *Montana Labor Market* (Helena, Montana), and U.S. Department of Commerce, Office of Business Economics, unpublished data (February 1972).

We doubt that the industry could reduce employment in direct proportion to production, at least not very quickly. Figures 6 and 7 indicate that historically this has not been the case. Because of this, we feel more comfortable assuming that the actual decline, at least over the short run, would be somewhat less—perhaps five workers for every million board feet decline in timber harvested. This would mean that a decline of 100 million board feet might result in a loss of 500 jobs.

It is interesting to compare the estimate of a drop of five workers per million board feet with the actual experience from 1968 to 1970. In response to poor market conditions, lumber production declined sharply (figure 7) and the amount of timber harvested on national forests in Montana was reduced by 145.3 million board feet from calendar year 1969 to calendar 1970.[42] Average employment in 1970 was about 780 less than in 1968. Assuming that producers cutting timber on other forest lands also were affected by the market and reduced their harvest proportionately, this represented a decline of approximately 3.3 workers per million board feet.

We are not surprised that this figure is lower than our estimate of five workers per million board feet. The 1968-1970 experience covers only two years, a relatively short period. Producers no doubt expected the market to improve, which it did, and preferred to adjust the number of hours worked rather than let key employees go. But if a reduction in output were perceived as permanent, more workers would be dismissed. Also, over the next few years, we anticipate that producers will speed up investment in labor-saving equipment in an effort to offset rising costs. Therefore, the estimate of a loss over several years of five workers for each million board feet decline in timber harvested seems reasonable and even conservative.

What happens to employment in the wood products industry during the next few years depends partly upon how producers react to the decline in sales volume and on what happens to the demand for wood products, especially lumber, in the years just ahead. If the demand stays strong and, as the Forest Service predicts, mills continue to cut at high levels, the decline in jobs

[42]U.S. Department of Agriculture, Forest Service, Region 1, unpublished data (April 1972).

could be rather small. If producers react more cautiously and reduce their cut substantially, the impact would be greater. Let us look at the latter possibility first.

Assumption I: the fiscal 1972-1975 timber cut is equal to the amount of projected timber sales. Let us assume that the industry reduces its cut on national forest lands to the volume of average annual sales projected for the fiscal period 1972-1975. Such a decline would average about 151.4 million board feet below the average harvest during fiscal 1966-1970 and probably represents the most drastic reaction to present Forest Service plans.[43] It implies a loss of approximately 750 jobs (5 workers per million board feet decline) in the wood products industry in Montana.

Assuming that average annual wages in the wood products industry continue to increase approximately 5 percent per year as they have recently, they may average $9,500 by 1975.[44] Thus a decline of 750 workers by that year would represent a direct income loss of about $7.1 million in wages and salaries. In using these figures, we are assuming that self-employed persons (who account for a small part of the total) have the same average earnings as wage and salary workers. We have not included average annual earnings of paper mill employees (which are considerably higher) in these calculations, under the assumption that most of the job loss would take place in other forest industries. This is not to say that the paper industry is not concerned about its raw material supply, or would not be affected.

If the decline in employment occurred in proportion to the geographic distribution of present employment (an assumption we make for lack of better information) approximately 650 of the 750 jobs (87 percent) and $6.3 million of the income (89 percent) would be lost in the eight western counties.

The multiplier effect described in preceding pages also works in reverse. Applying the 1969 multipliers to the employment figures implies a total loss by 1975 of approximately 2,370 jobs in Montana and 1,800 jobs in western Montana (table 4). This is the total job loss in the wood products industry plus related declines in the secondary industries providing goods and services for wood products plants and their employees. We do not include any potential future decline in timber management jobs in federal agencies. Total job losses such as those quoted above represent 1 percent of total employment in the state and 3 percent of total employment in western Montana in 1969.

Direct and indirect income losses might amount to as much as $22.0 million in Montana, of which $20.9 million would be concentrated in the eight western counties (table 4). These losses are equal to 1 percent of total personal income in Montana and 5 percent in western Montana in 1969. In some counties, the percentage would be considerably higher.

Employment declines of the magnitude we have been describing (or greater) occurred between 1956 and 1957, when average employment in the industry dropped by 1,000 and between 1969 and 1970, when the average number of workers was reduced by 700 (table 2). The difference was that these cyclical slumps were temporary and were so viewed by producers; the housing industry recovered and the market for wood products picked up. The present decline in timber cut could be long term, depending upon public attitudes and values and upon how Congress deals with Forest Service timber management budgets. On the other hand, Region One officials express the hope that by 1980 timber sales will return to 1966-1970 levels.

If the potential decline in employment described did persist until 1980, it could wipe out a substantial portion of the increase in jobs predicted for Montana by the Montana Economic Study. Indeed unless the job losses were offset by gains in other industries—and we will have more to say about that possibility later—the state performance in the 1970s would be even more disappointing than anticipated in the Economic Study and much of the expected vigor would be missing from the western Montana economy.

Based on the Forest Service estimates of sales for fiscal years 1972-1975, we see the above figures as representing rough approximations of the maximum loss of jobs and income under these conditions and for those years. We have spent some time in describing them in order that readers may understand how the estimates are

[43] *Ibid.*

[44] Based on Employment Security Commission of Montana, unpublished data.

TABLE 4

POTENTIAL LOSSES OF EMPLOYMENT AND INCOME ASSUMING VARIOUS DECLINES IN VOLUME OF TIMBER CUT ON MONTANA'S NATIONAL FORESTS

Potential Decline In:	Amount of Decline in Timber Cut			
	50 MMBF	100 MMBF	150 MMBF	250 MMBF
MONTANA				
Industry employment	250	500	750	1,250
Total employment[a]	790	1,580	2,370	3,950
Percentage of total 1969 employment	0.3	0.6	0.9	1.4
Industry earnings	$2,400,000	$ 4,800,000	$ 7,100,000	$11,900,000
Total personal income[b]	$7,300,000	$14,700,000	$22,000,000	$36,700,000
Percentage of total 1969 personal income	0.3	0.7	1.0	1.7
WESTERN MONTANA				
Industry employment	218	435	652	1,088
Total employment[c]	606	1,209	1,813	3,025
Percentage of total 1969 employment	1.0	2.0	3.1	5.1
Industry earnings	$2,100,000	$ 4,200,000	$6,300,000	$10,600,000
Total personal income[d]	$7,000,000	$13,900,000	$20,900,000	$34,800,000
Percentage of total 1969 personal income	1.6	3.1	4.7	7.8

Source: Derived using Employment Security Commission of Montana, unpublished data (Helena, Montana), and U.S. Department of Commerce, Office of Business Economics, Regional Economics Information System, unpublished data (Washington, D.C., February 1972).
Note: MMBF denotes million board feet.
[a]Multiplier is 3.16.
[b]Multiplier is 3.09.
[c]Multiplier is 2.78.
[d]Multiplier is 3.29.

derived, and so that they may be placed in the proper perspective. We do not present them as the most likely alternatives. If, as the Forest Service expects, the industry continues to cut at present rates during coming years—preferring to reduce the amount of uncut timber under contract and assuming that sales will be increased in the late 1970s—losses of this size in employment and income would not occur, at least not between now and 1975. (Obviously, the industry cannot go on reducing the amount of timber under contract forever.) Nevertheless, some decline is likely, by virtue of the declines in timber sales anticipated for some areas and the readjustments they will call for.

Assumption II: the fiscal 1972-1975 timber cut continues at fiscal 1966-1970 levels, with readjustments within the industry. It takes no particular forecasting ability to predict that stumpage prices are going to go up as mills compete for the declining amount of timber to be offered for sale during the next few years. Hauling patterns for logs may change and distances increase, resulting in higher transportation costs. In some areas, plants wholly dependent on the national forests may simply find themselves out of timber. As a result, the emphasis on size, efficiency, and integration, which has been underway for years, will be accelerated. It is easy to imagine a situation during the next few years where, even though overall timber harvest remains high, several smaller mills, inefficient mills, or mills with insufficient financial resources go out of existence, throwing employees out of work. At the same time other mills may increase their cut and their production with very little increase in employment. If the net loss in jobs ranged from 250 to 500, the effects on employment and income might be something like the potential losses listed in columns one and two of table 4. (These figures also serve as a measure of the consequences of smaller—50 or 100 million board feet—declines in timber cut.)

Overall, this range of possibilities implies rather minor effects on employment and income.

The total potential loss of 790 to 1,580 jobs and $7.3 to 14.7 million in wages is equal to approximately 0.3 to 0.6 percent of total state employment and personal income in 1969. In western Montana, the potential employment loss (600 to 1,200 jobs) amounts to 1 to 2 percent of 1969 employment and the possible income loss ($7.0 to 13.9 million) ranges from less than 2 percent to just over 3 percent of the 1969 total. But even though the total effects seem small, communities dependent upon a mill which goes out of business will find the impact of great consequence. Changes of this magnitude have occurred frequently in Montana communities within the recent past. The construction and location of the interstate highway system, for example, brought changes such as these in some small towns.

There is a greater likelihood, too, that these readjustments and the resulting job losses may be permanent; in other words, the mills which close will not reopen.

Assumption III: a moratorium on clearcutting. Another possibility should be mentioned, since the proposal has been made: a (presumably) temporary moratorium on all clearcutting. While such a development does not seem likely at this time, its potential effects should be considered.

In fiscal 1971, 56 percent of the timber harvested in Montana was clearcut. The Forest Service estimates that if all clearcutting were stopped the volume of total timber harvested might decline from 30 to 35 percent.[45] The fourth column in table 4 assumes a decline of 250 million board feet, an amount equal to from 30 to 35 percent of the average cut during fiscal 1966-1970 and of the anticipated timber cut for fiscal 1972-1975.

The resulting estimates of the potential declines in employment and income, based on the Forest Service assessment of its effect on timber harvest, indicate that such a ban could have far-reaching effects. In western Montana, the potential direct and indirect losses (3,025 jobs in wood products and other industries and $34.8 million in income) are equal to over 5 percent of 1969 employment and 8 percent of 1969 total personal income. For the state as a whole, of course, the percentages are smaller: a possible decline of 3,950 in employment and of $36.7 million in income represents less than 2 percent of total employment and income in 1969. These figures say nothing of the losses in investment which would occur if a decline of this magnitude took place. In both areas, but especially in western Montana, such losses would seriously affect the outlook for growth in employment and income during the coming decade.

All of these alternatives, it should be repeated, assume that the housing market and therefore the demand for Montana's wood products will remain strong, and that the paper mill in Missoula will continue at full production during the next three years (fiscal 1973-1975). We do not know which of the eventualities we have described is most likely; at the present time, we suspect that Assumption II, with the least serious consequences, may be. Readers who are confident of their own assessment of what may happen to timber supplies and harvests can plug their own estimates into the formula and come up with their own judgments.

Alternative Sources of Employment and Income

The question which follows is: If we are to have fewer jobs in wood products, what industries, if any, can be expected to take up the slack? Again, we have placed heavy reliance upon the findings of the Montana Economic Study and its outlook for the 1970s. The Study's message is not encouraging, as the early pages of this report indicated. Its authors anticipated a further, although small, decline in primary employment, with agriculture and railroads continuing to let workers go. Basic industries expected to show some increase in employment were mining, wood products, other manufacturing, and the federal government. Wood products, whose potential growth probably was overestimated in the Study, may now have to be removed from the list. This in itself implies serious consequences for Montana and more especially for the eight western counties. Both areas are left to pin most of their immediate hopes for growth in primary employment on the mining industry, other manufacturing (which at the moment means chiefly smelting and refining), and on the federal government. While limited growth was foreseen in these and some

[45]U.S. Department of Agriculture, Forest Service, Region 1, unpublished data (April 1972).

other industries, the Study could foresee no startling new developments which might turn the state around economically.

The wood products industry itself may be able to offset some of the loss in employment through further diversification and increased use of mill wastes and logging residues. Such moves would also increase the stability of the industry, which remains heavily dependent on the lumber market. But such diversification involves new installations and large capital expenditures; it does not occur overnight. Some of the frequently mentioned possibilities, such as increased production of pulp and paper and particle board, may have to await changes in market conditions. These products are currently in oversupply in the United States. Nevertheless, a long-run raw material potential does exist, and increased diversification and integration no doubt will be part of the long-term adjustment to changes in timber management policies.

Another possibility is increased employment by the Forest Service in timber management jobs. Most of these jobs are seasonal and are not satisfactory substitutes for what is generally year-round work in wood products plants. If funds were made available by Congress, workers could be used in activities such as site preparation, planting, seeding, thinning, and pruning. There are two questions involved here: First, where the need for intensified forest management will rank, among the many other demands for new and expanded programs, on the list of congressional priorities. And second, to what extent increased spending on forest management in Montana will be judged as an economic investment. Professional foresters disagree as to whether, if the nation is concerned with producing the most timber for its money, the limited funds which probably will be available should be spent in the Rocky Mountain area or in other parts of the country such as the South and the West Coast. Forest Service officials in Region One have expressed the belief that some funds for additional personnel will be appropriated in the coming years. They strongly urge increased investments on the better timber growing sites in Montana and the Rocky Mountain area.

One frequently hears the suggestion, especially in recreation-oriented western Montana, that increased employment in industries oriented toward travel and tourism may well offset the loss of industrial jobs. To suggest that jobs in such businesses as eating and drinking places, with average annual earnings per worker in 1970 of $2,653, hotels and motels (average earnings, $2,744), or service stations ($3,769) are a satisfactory substitute for jobs in an industry such as wood products where the typical worker earned $7,635 in 1970, is to reveal a limited understanding of Montana's economic problems. As the preceding pages have pointed out, the state needs jobs which pay well and which will help increase our lagging per capita income.

There are a good many ifs involved, then, in whether or not jobs lost in the wood products industry can be replaced, at least in the next few years. If they are not, and depending upon the extent of the loss, economic growth in Montana will be even slower than anticipated. Western Montana, again depending upon the extent of the decline, may find that its days as the growth area of the state are over; or, at least, that its advantage has diminished.

If jobs are lost and not replaced, there will be either more unemployment or more Montanans will leave the state in search of employment elsewhere. The probable consequences of these circumstances bear repeating: per capita incomes falling further behind the national average and continued difficulties in providing public services and the social and cultural activities which many Montanans value.

This report has attempted to document some of the implications for the Montana economy resulting from changes in wood products activity during the next few years. It is clear that new timber management policies, some of them long overdue, will force readjustments in the industry; the extent of the readjustments and the possible loss of jobs and income depends in large part upon how much the available timber supply is reduced. The public is a party to this question and will participate—indeed insists upon participating—in answering it. Insofar as choices exist consistent with proper management and conservation of the national forests, the potential economic consequences, particularly as reflected in jobs and income, deserve to be one of the criteria in the decision-making process.