Environmental Protection, Population Change and Economic Development in the Western United States

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Abstract:
This research analyzes the relationship between protected federal lands (wilderness, national parks, national monuments and roadless areas) and nearby communities in the western United States. Opponents of environmental protection claim that protected lands limit the growth of nearby communities by locking up potentially valuable natural resources and restricting mining, logging and grazing. Others claim that extractive industries are no longer the backbone of rural economies – instead, the presence of protected federal lands encourages growth by attracting tourists and new residents. A geographic information system is used to calculate the proportion of protected lands occurring within 50 miles of the center of each Western county. This information, in combination with detailed county-level data, indicates that environmental protection is not associated with slow growth in the rural West. The presence of protected lands is correlated with relatively rapid population growth and with relatively rapid income and employment growth.

Introduction

In January of 2001, the Clinton Administration attempted to restrict new road construction in nearly one-third of the lands managed by the United States Forest Service. If upheld, this "roadless rule" would limit development on 58.5 million acres of Forest Service lands (United States Forest Service, 2000a). The amount of land protected as a result of the "Roadless Rule" is approximately 2% of the total land base of the United States – an area larger than the entire National Park System (Wallace, 2001) or the state of Utah.

Because the future of so much land is at stake, the roadless rule has intensified the debate over the management of federal lands. The Forest Service received over 1.5 million public comments on the roadless rule (United States Forest Service 2000a), and both the state of Idaho and several timber companies are currently suing the Federal Government to prevent the rule's implementation. The debate over protected lands often centers on a "jobs vs. the environment" discussion in which the environmental benefits associated with limiting access to federal lands are balanced against the economic costs of locking up the natural resources these lands contain.

This paper explores the "jobs vs. the environment" debate over the economic impacts of policies limiting roads, mining, logging and grazing on federal lands. It quantifies the relationship between the presence of protected federal lands (wilderness, national parks, national monuments and roadless areas) and the growth of nearby populations and economies in the Western United States. The results of this analysis show that the presence of protected federal lands is correlated with relatively high rates of population, income, and employment growth in the rural West, and that the "jobs vs. the environment" argument is overly simplistic given the region's shifting economic structure. *Figure 1* displays nonmetropolitan counties in the West, along with both United States Forest Service roadless areas and other protected federal lands.

The Environment as a Warehouse of Raw Materials

Opponents of the roadless rule and the creation of new wilderness areas and national monuments often claim that environmental protection comes at the expense of local economies and results in outmigration. Rasker (1995) explains that this "jobs vs. the environment" argument is based on

the assumption that extractive industries generate earnings and create the jobs that make local communities possible. Because roads facilitate mining, logging and grazing, extending them into roadless areas is seen as a form of economic development. "According to this view, if mining, logging and ranching do poorly . . . the rest of the economy should also suffer. When these activities prosper they should pull the other sectors up with them" (Rasker, 1995: 22). Consequently, the presence of protected federal lands is thought to be a barrier to economic growth that harms nearby communities by limiting access to valuable natural resources that might otherwise create jobs when extracted and generate income when exported (Power, 1996a).

Others claim federal lands should not be "set aside solely for recreational enjoyment and nature worship" because they limit local employment and tax revenues (Patric and Harbin 1998: 1). Protected federal lands are also criticized as providing "free recreational opportunities to a relatively small number of primitive backcountry users. Thus, the gain to this tiny minority, given all of the backcountry already available, is tiny, while the economic losses to the majority are substantial. So, the argument goes that this type of land management can only make the population collectively poorer" (Power 1996a: 1).

Frustration with the federal government's efforts to create wilderness areas, limit access to resources on federal lands, and new environmental regulations boiled over in the Sagebrush Rebellion of the late 1970's and 1980's (Davis 1997). The movement was especially active in the rural West, where sagebrush rebels used the concept of states' rights to argue for increased access to natural resources and where numerous attempts were made to transfer control of federal lands to the states or even counties. In the 1990's, the Wise Use Movement furthered this agenda

by attempting to limit the influence of environmentalists, protect jobs from regulatory decisions, increase resource extraction and development, and to champion private property rights (Davis 1997).

The Environment as a Magnet for Tourists, Retirees, and Small Business Owners

Those in favor of protecting federal lands claim that the presence of roadless areas and wilderness benefits local economies and leads to population growth. This claim rests on two main assertions. First, extractive activities are a small and declining source of employment and income. Second, protected lands are an economic asset, as the amenities associated with roadless areas, wilderness, national parks and national monuments attract tourists and new residents. In other words, the debate over protected federal lands is not one of "jobs vs. the environment" but "jobs v. jobs". While protecting roadless areas may limit employment growth in extraction, protection promotes more growth in the service sectors that form the new core of many rural economies.

Empirical evidence supports the claim that extractive industries are no longer the foundation of many rural western counties. These industries -- mining (including minerals and energy), logging, agriculture and fishing -- are in decline, while the service sector has grown dramatically (Power 1991, Rasker 1993, Rudzitis 1993, Rasker 1994). Even though extraction is more likely to form the economic base of rural than urban areas, *Figure 2* shows that the proportion of jobs in extractive industries is small and declining in the 325 nonmetropolitan counties of the eleven western states (the study area is shown in *Figure 1*). Similarly, *Figure 3* shows that government transfer payments (the majority of which are social security payments) alone account for more

income than all of the wages in mining, logging, and agriculture combined in the rural West. The fact that government payments to individuals inject more money into rural Western economies than wages in all extractive activities combined is one indication of decreasing economic importance of these industries. Another is that employment growth in extractive industries has stagnated while overall employment has grown rapidly – an improbable occurrence if mining, logging and agriculture still form the core of rural economies.

In counties where the shift to services is most advanced, the relationship between the environment and local economic security has fundamentally changed. Economic security no longer depends on exporting raw materials. Instead, the presence of natural amenities --pristine mountains, clean air, wildlife, and scenic vistas--stimulates employment, income growth and economic diversification by attracting tourists (and their credit cards), small business owners (and their employees), and retirees (and their stock portfolios). Because of this, previous research (Ullman 1954, Williams and Sofranko 1979, Rasker 1993, 1994, 1995, Power 1991, 1995, Loomis and Walsh 1997, Rudzitis 1993) suggests that natural amenities are an increasingly important component of economic development in rural regions of the western United States, and are likely to be associated with relatively diversified economies, rapidly growing service sectors, and population growth. Protected lands act as a catalyst in the transformation of stagnating extractive economies into diversified, relatively competitive amenity economies:

"Our natural landscapes no longer generate new jobs and incomes primarily by being warehouses from which loggers, farmers, fishermen, and miners extract commercial products. In today's world, these landscapes often may

generate more new jobs and income by providing the natural resource amenities--water and air quality, recreational opportunities, scenic beauty and the fish and wildlife--that make the . . . [area] an attractive place to live, work, and do business" (Power et al. 1995: ii).

If this view is correct, then the relationship between the environment and local economies has undergone an important transition in the rural West – recreational opportunities provided by forests may be more valuable than timber exports (Power 1996a). In fact, this is the second claim made by proponents of wilderness and roadless areas: protected federal lands encourage growth in nearby communities.

Surveys indicate that environmental amenities and recreational opportunities do play an important role in attracting and retaining firms and migrants. Johnson and Rasker (1993) surveyed 500 randomly selected businesses owners located within the Greater Yellowstone Ecosystem to determine the factors influencing the location decisions of the region's firms. The survey found that the most important factors in attracting (and keeping) businesses were: scenic beauty, a quality environment, recreational opportunities, the rural setting, and the fact that it was a good place to raise a family. Even though 66% of the business owners felt their business would be more profitable in an urban area, when asked the question: "All things considered, would you choose to locate a business here again?" 86% said yes (Johnson and Rasker, 1993).

In a study focusing on the forces attracting migrants to Western counties containing wilderness areas, Rudzitis and Johansen (1989) found similar results. When asked how important a county's attributes were in convincing recent in-migrants to move there, the most important factors were

scenery, outdoor recreation, and environmental quality. Sixty percent said that the presence of wilderness areas was an important factor in influencing their move (Rudzitis and Johansen 1989). There is some indication that the presence of environmental amenities is also linked to population growth at the national level as well. One recent study (McGranahan 1999) ranked U.S. counties on the basis of their climate, topography and water area. It found that, for the nation as a whole, high amenity counties tend to have relatively rapid population growth.

Are protected lands associated with population loss and economic stagnation?

If opponents of protected lands are correct in claiming that roadless areas, national parks, national monuments and wilderness are an economic liability, then counties containing them should suffer from relatively slow population growth, income growth and employment growth. Conversely, if protected lands attract new residents and strengthen local economies, then the presence of protected federal lands should not harm local economies. Instead, the populations and economies of counties with protected lands should grow relatively rapidly.

Data and Methodology

To analyze the relative growth of counties that contain or are adjacent to protected lands, a geographic information system was used to calculate the amount of protected federal lands within 50 miles of the center of each Western county. The eleven Western states (shown in Figure 1) were selected as the study area because approximately 54% of the region is managed by the Federal government (Jackson, 1995) and the majority of protected lands are located there. The growth rates of county level employment, total income, and per capita income were calculated for the period 1969 –1999 using data from the Bureau of Economic Analysis (2001).

This period was chosen because 1969 is the first year in which data on income and employment by economic sector at the county level are available and 1999 was the most recent. County level population growth rates were calculated using data from the U.S. Census Bureau (2001).

The first step in calculating the amount of protected land that counties contain or are adjacent to is to calculate the centroids (the exact center) of each western county. *Figure 4a* displays the results of this calculation for Colorado counties. Second, buffers containing all of the land within 50 miles of each county centroid were created (*Figure 4b*). These 50-mile buffers encompass most of the land in the average western county and account for the presence of protected lands that are just outside each county's border. Next, data from the U.S. Geological Survey (1999) and the Forest Service (United States Forest Service 2000) on the location of federally designated wilderness areas, USFS roadless areas, national parks and national monuments were used to create map layers depicting federally protected lands. *Figure 4c* shows protected lands within 50 miles of Colorado. Finally, the 50-mile buffers and the protected lands map layers were intersected, and the amount of protected land within 50 miles of the center of each county in the study area was calculated. *Figure 4d* displays the amount of protected lands within 50 miles of county centroids in Colorado, and *Figure 4f* displays the number of square miles of protected lands within 50 miles of county centroids for the entire study area.

Once the amount of protected lands is calculated for each county, it is possible to compare the growth of populations and economies in counties with and without protected lands. Data on population growth, employment growth, and protected lands are displayed in *Figure 5*. During the period 1970-2000 the populations of Western metropolitan counties grew more than 19 times

faster than the nonmetropolitan counties without protected lands. At the extremes, Douglas, Colorado (suburban Denver) grew by 1,937%, while Harding, New Mexico (an agricultural county) lost 40% of its population. If environmental protection limits growth, then nonmetro protected lands counties should grow even more slowly than other nonmetro counties. This is not the case, however. The populations of nonmetropolitan protected lands counties grew 11.7 times faster than nonmetropolitan counties without protected lands, while the 50 nonmetropolitan counties with the most protected land grew 16.8 times faster. In rural counties, where extractive industries are thought to support local economies, population growth rates are highest in counties containing protected lands.

The relatively rapid growth of protected lands counties is even more pronounced when employment growth is considered. Despite the "jobs vs. the environment" argument that employment suffers when federal lands are protected, nonmetropolitan protected lands counties grew 5.7 times faster than nonmetropolitan counties without protected lands. Employment in the 50 nonmetropolitan counties with the highest levels of protected lands grew faster than employment in Metropolitan counties and 10.6 times faster than nonmetropolitan counties without protected lands. The claim that the protection of Federal lands leads to job loss and declining populations does not hold in the nonmetropolitan west– the highest levels of environmental protection occur in counties experiencing relatively rapid population and employment growth.

It might be argued that while employment and population in counties with protected federal lands grow relatively rapidly, incomes in these counties do not. The presence of protected lands

might hasten the transition from high wage jobs in mining and logging to low wage service jobs. As *Figure 6* shows, this is not the case. While income growth rates are relatively low in nonmetropolitan areas, they are higher in nonmetropolitan counties with protected lands. In fact, income growth in the 50 nonmetropolitan counties with the highest levels of protected lands is 2.75 times faster than in nonmetropolitan counties without protected lands. Similarly, the data do not support the contention that the presence of protected lands is associated with relatively low per capita income growth as high paying logging and mining jobs are lost. Instead, per capita income grew fastest in the 50 nonmetropolitan counties with the highest levels of protected lands.

Table 1 contains Pearson's correlation coefficients for the association between growth and the amount of protected federal lands within 50 miles of a county's center. The correlation between protected lands and growth in population, employment, total income, and per capita income is positive and statistically significant. In the nonmetropolitan West, the highest levels of environmental protection are correlated with the fastest growth.

The economies of rural, isolated areas are generally thought to be the most dependent on extractive activities (Power 1996). Consequently, the counties that should be the most vulnerable to regulations limiting access to federal lands are those that are both nonmetropolitan and that are not adjacent to metropolitan areas. This is not the case. When this subset of nonmetropolitan Western counties is analyzed, the relationship between protected lands and growth is generally stronger. In the most isolated Western counties, the presence of protected lands is correlated with relatively rapid population, employment and total income growth. The

exception is the correlation between per capita income growth and protected lands, a possible result of the income earned by commuters living in counties adjacent to urban centers. Another explanation is that the amenities associated with protected lands are seen as a "second paycheck" and residents of high amenity rural areas may choose to trade lower wages for the opportunity to live in "a beautiful place" (von Reichert and Rudzitis, 1992).

Some opponents of roadless areas agree that federal lands support tourism. They argue, however, that protecting federal lands may actually limit their appeal to all but a small group of outdoors enthusiasts. Protection harms economies by limiting the construction in private inholdings and often banning off-road recreation in the form of snowmobiling, four wheeling and driving all-terrain vehicles. They also claim that the Forest Service manages "lands of many uses" and that extraction does little to limit the appeal of most federal lands. If these claims are true, protected lands should be no more valuable to nearby economies than other federal lands, and the correlation between *non*-protected federal lands and growth should be just as strong as that of protected lands and growth. Again, this is not the case. As seen in *Table 2*, the presence of non-protected federal lands is not correlated with employment growth, income growth and per capita income growth in nonmetropolitan, nonadjacent counties. While the association between population growth and non-protected lands is positive and statistically significant, it is not as strong as the association between protected lands and growth. This is further indication that the amenity values of protected lands do promote growth. National parks and monuments often contain especially scenic or unique areas, as do roadless areas and wilderness, and their protected status ensures that they suffer from relatively little degradation.

Conclusion

Despite the fact that the fortunes of rural Western counties have historically "risen and fallen with the entry and exit of different raw materials into world markets" (Flora 1990: 158), and despite the fact that virtually all of the region's extractive industries are in decline (Gulliford 1989), a number of rural western counties are experiencing rapid economic growth. This apparent contradiction indicates that a fundamental change in the nature of the rural West's economy has taken place. Counties where high-quality natural amenities have been protected are successfully navigating from being dependent on a few natural-resource industries to having a modern, diversified, service oriented economy. An increasing number of researchers (including the thirty-four endorsing Power et al. 1995) feel that the West's economic future lies not in extractive industries, but in industries that benefit from the presence of environmental amenities.

Roadless areas, national monuments, national parks and wilderness areas provide a wide range of ecological benefits, including the protection of biodiversity, watersheds, and ecosystems. Their economic value is often less obvious. This analysis shows that the presence of protected federal lands is associated with population growth, income growth and employment growth. While it does not prove that protected lands cause this growth, it does provide support for the argument that, in the rural West, economic security is associated with counties that no longer rely on the environment as a source of raw materials for export, but instead use the environment as a magnet to attract tourism, retirees, and small businesses.

Opponents of increased protection for federal lands often argue that the costs of protection are unacceptably high. "Setting aside forests as wilderness areas means a loss of jobs, tax revenues, and commodity values for nearby communities. Loss of income and tax base can be acute in western states already having vast areas of publicly owned timber in preserved status" (Patric and Harbin 1998: 6). This argument is difficult to sustain in light of the fact that protected lands counties grow faster than similar counties without wilderness, national parks, roadless areas and national monuments.

There is another problem with the argument that protected lands limit local economies by restricting access to valuable resources. In many cases, these resources did not support local economies in the first place. With few exceptions, mining and logging bypassed protected lands, which often contain mountain peaks, desert, brush, scrub and nonproductive forests. Wilderness and roadless areas remained roadless precisely because they are relatively unattractive to extractive industries. As a result, the value of the natural resources they contain is often less than the cost of extracting them (Frome 1997).

Even if protected lands are warehouses of easily acquired raw materials, environmental regulations limiting extractive activities in protected lands do not seem to limit the growth of nearby populations or economies. As figures 3 and 4 show, extractive industries play a small and declining role in supporting nonmetropolitan Western economies. Despite the loss of industries that were once considered the foundation of Western economies, many nonmetropolitan counties in the West are experiencing rapid growth. This paper points to one explanation for this seeming contradiction: the counties most able to rebound from the loss of extractive industries are

typically those that have the environmental amenities needed to support growth in the service sector and to attract new residents who bring income derived from dividends, interest, rent, and social security payments.

The Real Problem With Wilderness?

Thomas Power (1996: 5) suggests that the economic problem with wilderness is that it promotes nearby growth rather than limiting it. "The economic problem we need to be focusing upon is how to keep attractive natural environments from being destroyed by the growth they stimulate, not how to fight economic depression caused by protecting natural areas and wilderness."

In cities like Aspen, Vail, Sun Valley, Jackson and Telluride, the shift from extraction to amenity economies is virtually complete. This transition has not been without social cost, however. Many communities in federal lands counties worry about "Aspenization", or the problems associated with rapid development, a skyrocketing cost of living, and a shortage of jobs that pay well enough to allow those who work in a resort community to actually live there.

While protected federal lands attract tourists, they cannot be developed. As a consequence, growth in resort towns is often limited to relatively small tracts of private lands surrounded by federal holdings. This land scarcity, in combination with rapid growth, fuels skyrocketing property values (Lorah 2002). In Aspen, for example, the median cost of a home is over 3 million dollars. The median cost of a condominium in nearby Snowmass is $632,000 (Aspen Times 2001). As a result, middle class families are forced farther "down valley" to live in more affordable bedroom communities.

The fact that extraction is an increasingly minor component of rural Western economies does not necessarily mean that all federal lands should be off limits to mining, logging and grazing. While protected lands are an essential component of ecological and economic security, Western landscapes should be more than a backdrop for tourism and recreation, and Western communities should strive to be more than playgrounds for the wealthy. One way to accomplish this while maintaining some traditional links to the land is suggested by Marston (2001, 16): "instead of rejecting extractive jobs, we need to figure out what kind of mining follows heap leaching, what kind of forestry follows intense roading and clearcutting. We need to use new mining and new forestry to repair what the old mining and old forestry damaged."

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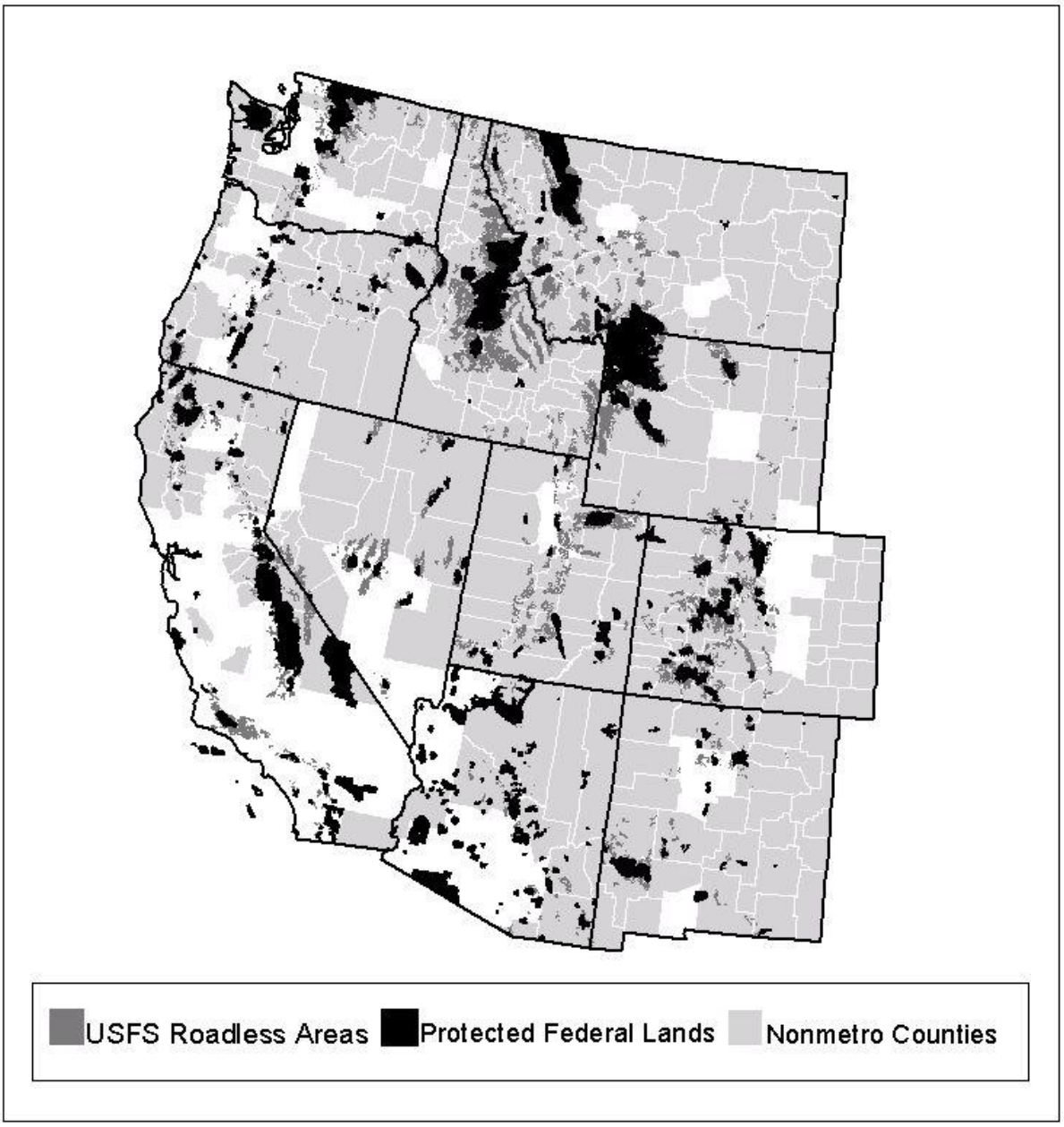
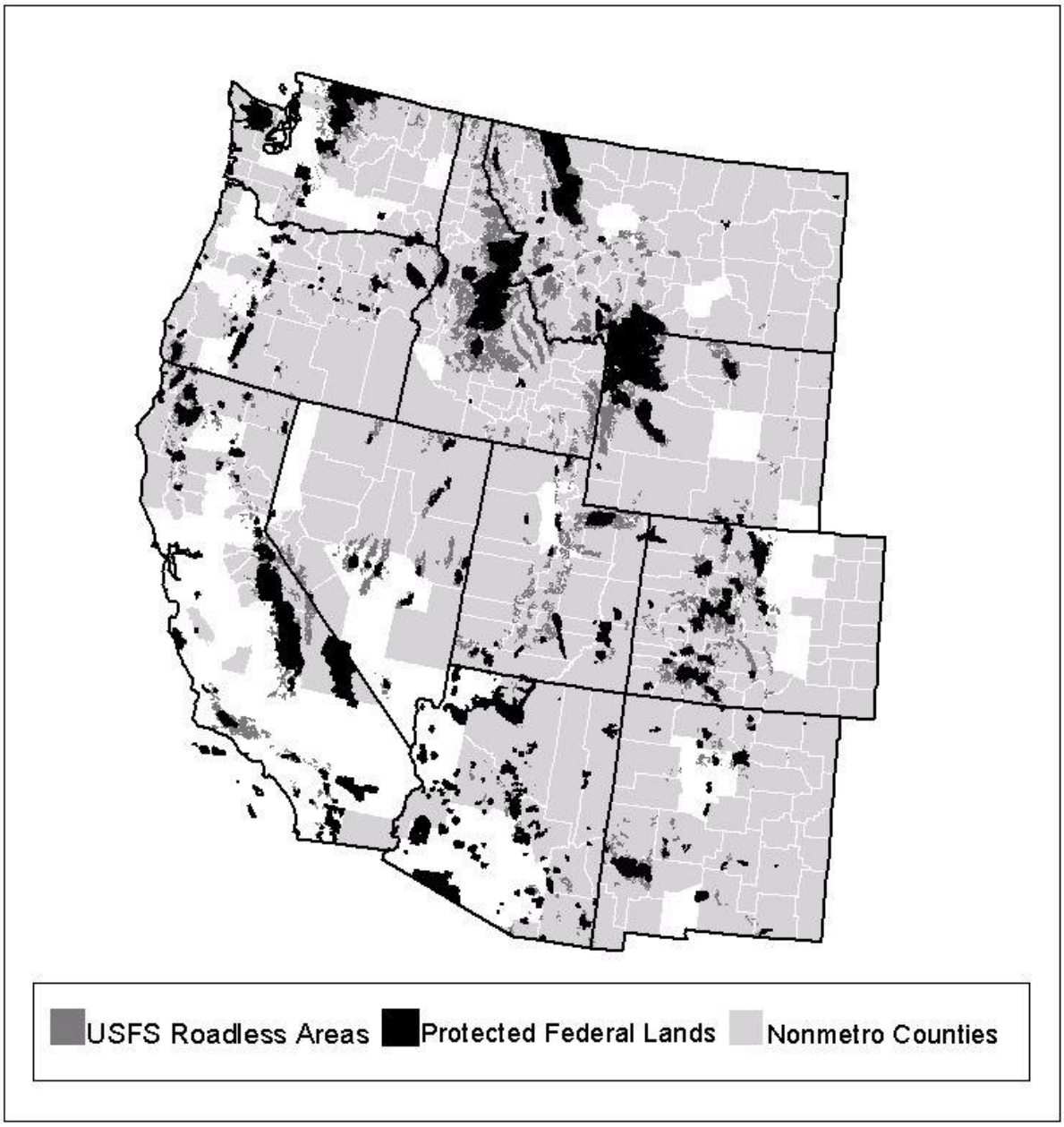

USFS Roadless Areas
Protected Federal Lands
Nonmetro Counties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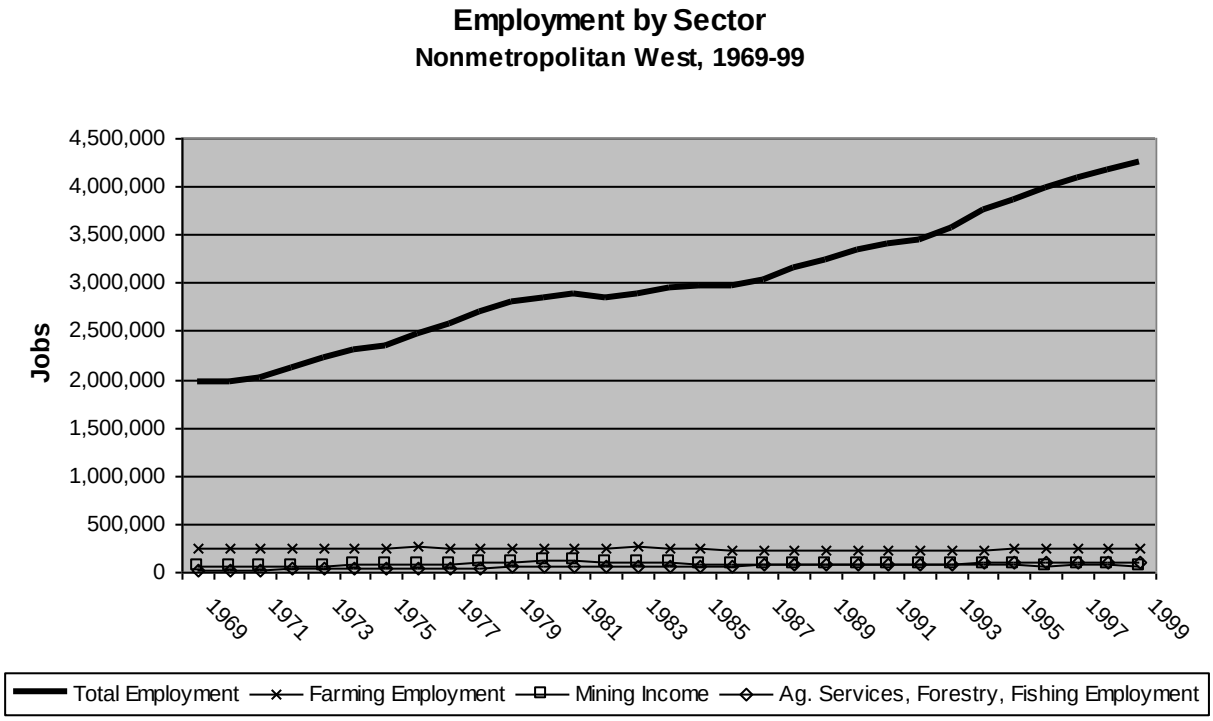
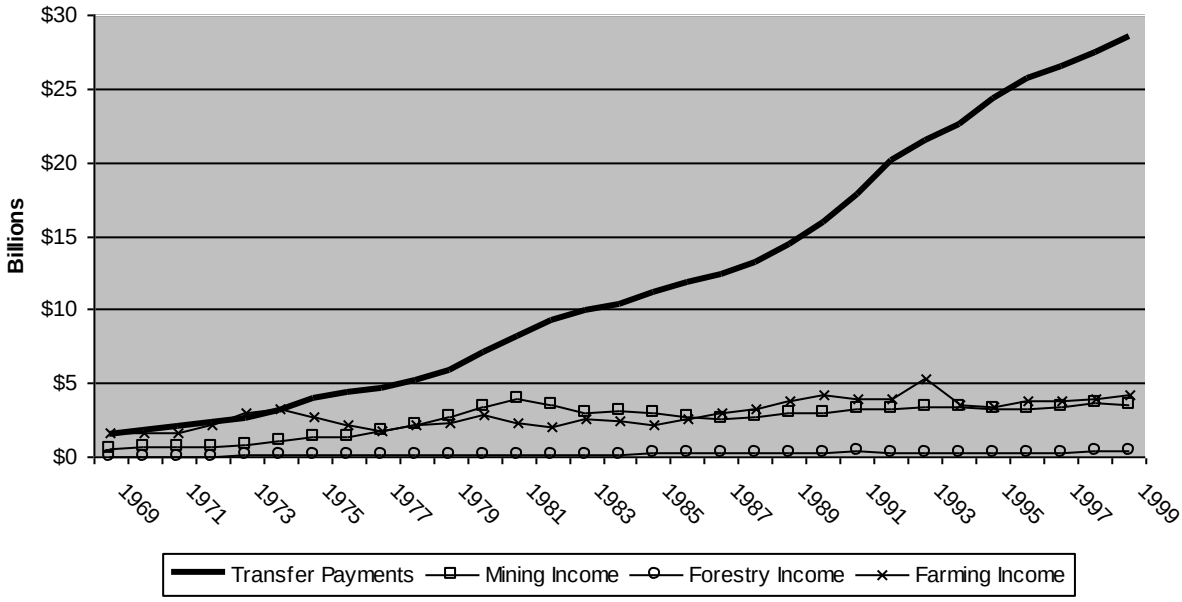
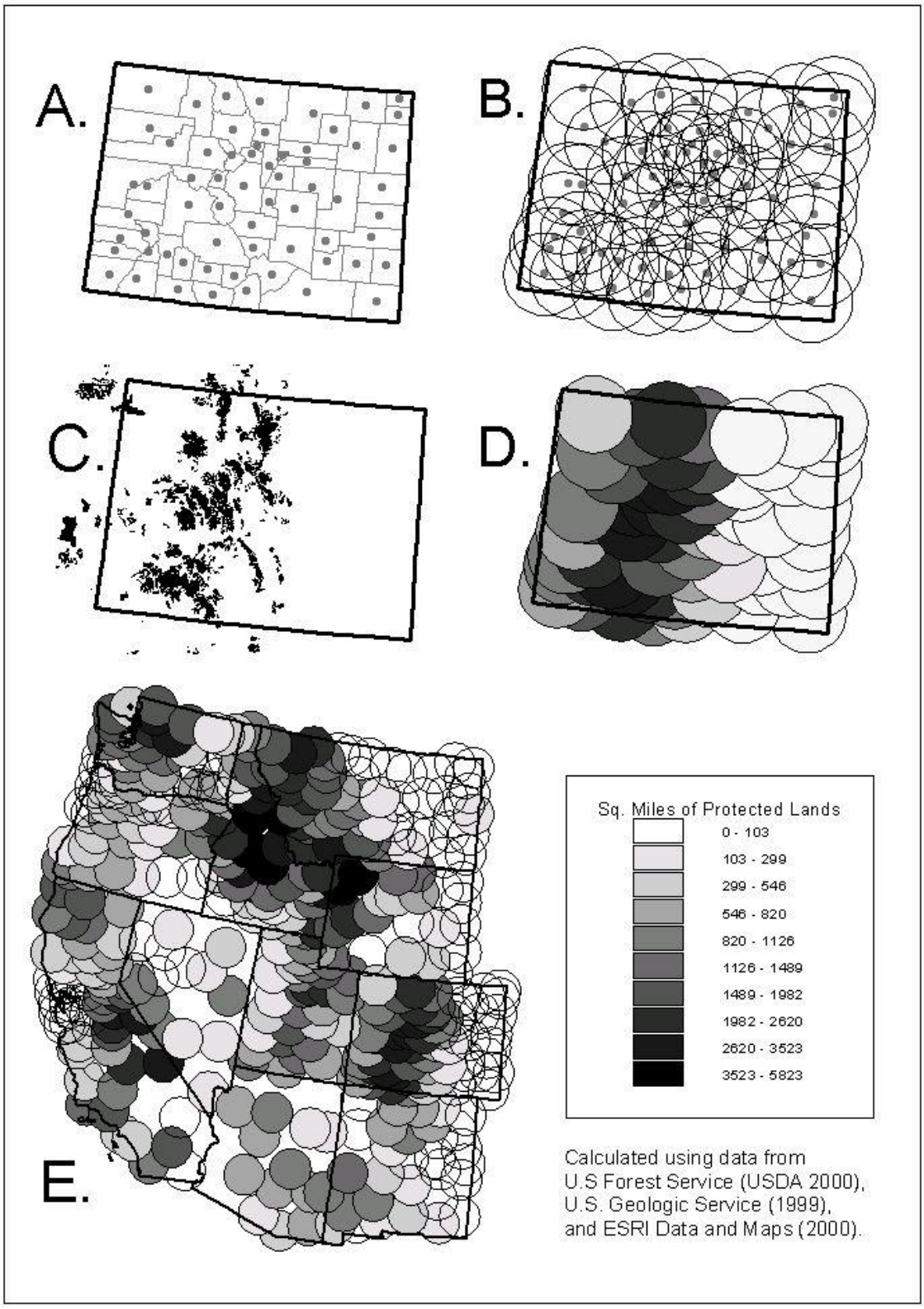
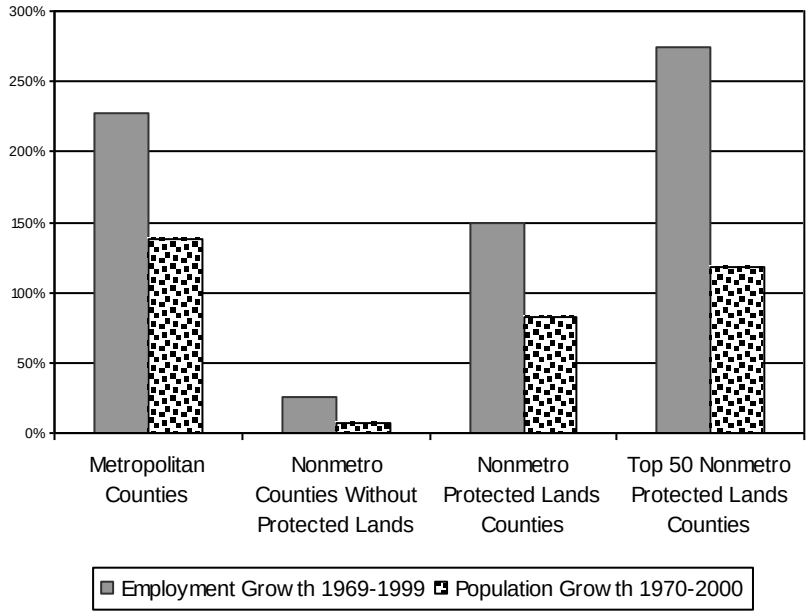

Employment by Sector
Nonmetropolitan West, 1969-99
Jobs
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
Total Employment
Farming Employment
Mining Income
Ag. Services, Forestry, Fishing Employment

Sources of Income
Western Nonmetropolitan Counties, 1969-1999




A.
B.
C.
D.
E.
Sq. Miles of Protected Lands
0 - 103
103 - 299
299 - 546
546 - 820
820 - 1126
1126 - 1489
1489 - 1982
1982 - 2620
2620 - 3523
3523 - 5823
Calculated using data from
U.S Forest Service (USDA 2000),
U.S. Geologic Service (1999),
and ESRI Data and Maps (2000).

Population & Employment Growth in the 11 Western States



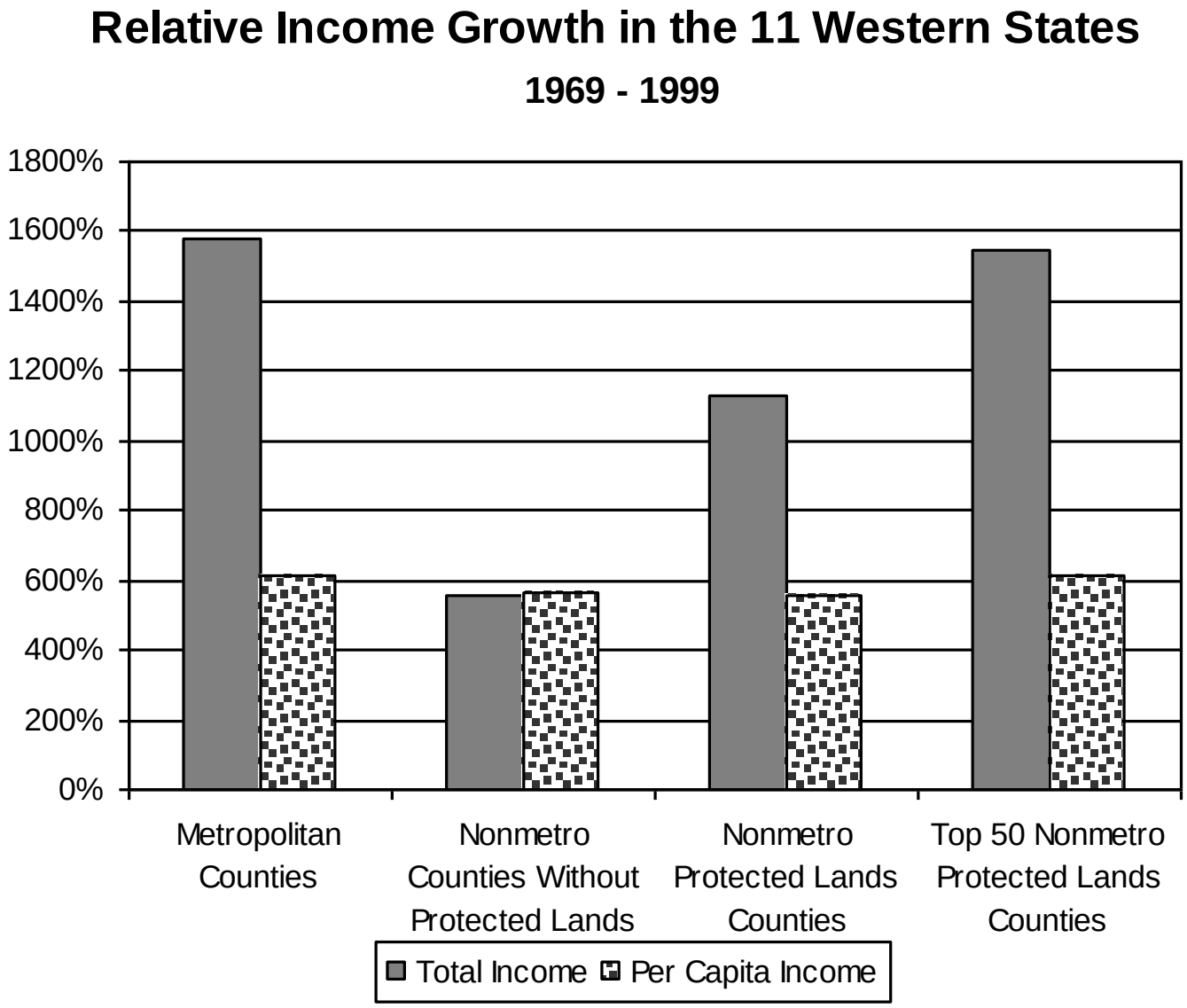

Relative Income Growth in the 11 Western States
1969 - 1999
1800%
1600%
1400%
1200%
1000%
800%
600%
400%
200%
0%
Metropolitan Counties
Nonmetro Counties Without Protected Lands
Nonmetro Protected Lands Counties
Top 50 Nonmetro Protected Lands Counties
Total Income
Per Capita Income

Table 1. The correlation between the amount of protected lands within 50 miles of a county's center and growth. Nonmetropolitan Western counties.

	Population Growth 1970-1990	Employment Growth 1969-1999	Income Growth 1969-1999	PCI Growth 1969-1999
Nonmetro counties (N=320)	0.24**	0.26**	0.26**	0.22**
Nonmetro counties not adjacent to metro areas (N= 111)	0.33**	0.30**	0.30**	0.19**

** Correlation is significant at the 0.01 level (1 tailed).

Table 2. The correlation between *non*-protected federal lands within 50 miles of a county's center and growth. Nonmetropolitan Western counties.

	Population Growth 1970-1990	Employment Growth 1969-1999	Income Growth 1969-1999	PCI Growth 1969-1999
Nonmetro counties (N=320)	0.22**	0.17**	0.18**	0.06
Nonmetro counties not adjacent to metro areas (N= 111)	0.23**	0.19	0.18	0.10

** Correlation is significant at the 0.01 level (1 tailed).

Limiting the construction of roads is one effective way to preserve these benefits, as roads directly impact the environment by facilitating the spread of exotic species, by increasing erosion and water pollution and by fragmenting habitat. The indirect effects of roads may be worse, as the access they provide facilitates logging, mining, grazing and agriculture (Strittholt and Dellasala 2001).

When Utah's 1.9 million acre Grand Staircase-Escalante National Monument was created in 1996, it was derided as the "mother of all land grabs" and criticized for limiting access to reserves of coal, natural gas and oil (Satchell 1997). Despite strong initial opposition to the monument, local opinion seems to be mellowing as a result of the monuments "rousing tourism success" (Brooke 1997: 12). Since the Monument's designation, employment and income have grown faster in the two counties containing the Monument than has Utah as a whole (calculated from Bureau of Economic Analysis 2001).

This perspective has important implications for understanding population change in the rural West. Supporters of limiting or even rolling back the protection of federal lands argue that population growth and employment growth will continue only as long as access to raw materials remains cheap. Population growth in the rural West is generally thought to be the result of increasing numbers of jobs in extractive industries. This *jobs first, then migration* (Rasker, 1995: 22) explanation fits well with the history of inmigrants moving to aptly named mining boom towns such as Golden, Leadville, Silverton and Marble.

Figure 1.
U. S. Forest Service roadless areas and other protected federal lands (wilderness, national parks, national monuments) as of 1999. Note: many wilderness areas are both "USFS Roadless Areas" and "Protected Federal Lands". Lands belonging to both categories appear as "Protected Federal Lands". Data sources: United States Forest Service (2001) and U.S. Geologic Survey (1999). County classification taken from (Butler 1990).

Figure 2.
Employment by sector in the nonmetropolitan West, 1969-1996. Data from the Bureau of Economic Analysis (2001). 1969 is the first year in which county level data on income and employment are available.

Figure 3.
Sources of Income in Western nonmetropolitan counties, 1969-1996. Data from the Bureau of Economic Analysis (2001).

Figure 4.
Calculating the amount of wilderness, national monuments, national parks and roadless areas within 50 miles of each county centroid.

Figure 5.
Protected lands and population and employment growth in Western counties.

Figure 6.
Protected lands and income growth in Western counties.