

AN ANALYSIS OF A PROPOSAL FOR FEDERAL SUSTAINED UNIT STATUS  
GRANT COUNTY, OREGON

by

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An analysis of a proposal to designate Grant County, Oregon, sustained yield unit status is presented. A brief history of the Sustained Yield Act and its applications are also included. Demographic, geographic, and economic factors are used in a comparative format, using an existing sustained-yield unit and another county of similar features as a control. Implications of unit designation are stated for local and national interests. Suggestions for future application responses are discussed.

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## Introduction

This paper provides a framework for evaluating a proposal for a sustained yield unit (SYU). A sustained yield unit is a portion of National Forest land and, in one case includes private land, from which the processing of logs is controlled. Units are designated, after application, by the Secretary of Agriculture or by the Secretary of the Interior. In this paper a proposal for federal sustained-yield unit (SYU) status for Grant County, Oregon, is examined.

## Enabling Legislation

Of the ten sections in the Sustained Yield Act of 1944 (58 Stat. 132 as amended; 16 U.S.C. 583-583i, Public Law 273), the first three sections constitute the main operative provisions of interest to this report. Sections 1 and 2 are oriented toward the establishment of "cooperative sustained yield units," in which privately owned and federally owned lands are managed as a single ownership. Only one such unit exists: the Shelton Unit, Washington State. Commercial forest lands, which consist of 111,466 acres of National Forest land and 238,692 acres of land owned by Simpson Logging Co., are merged under a 100 year agreement for the purposes of joint management in achievement of Sustained Yield Act objectives (Mason and Henze, 1959).

It is Section 3, however, which generates the most interest among small communities since it allows for the establishment of sustained yield units (SYU) without the

constraint of cooperatively managed private lands. Section 3 is reproduced here in its entirety for reference.

Sec. 3. The Secretary of Agriculture and the Secretary of the Interior are further severally authorized, whenever in their respective judgements the maintenance of a stable community or communities is primarily dependent upon the sale of timber or other forest products from federally owned or administered forest land and such maintenance cannot effectively be secured by following the usual procedure in selling such timber or other forest products, to establish by formal declaration for the purposes of maintaining the stability of such communities a sustained-yield unit consisting of forest land under the jurisdiction of the Secretary establishing such unit, to determine and define the boundaries of the community or communities for whose benefit such unit is created, and to sell, subject to such conditions and requirements as the Secretary believes necessary, federally owned or administered timber and other forest products from such unit without competitive bidding at prices not less than their appraised values, to responsible purchasers within such community or communities. (16 U.S.C.583b)

There are two key features of this legislation which deserve emphasis and restatement:

1. Maintenance of a stable community is noted as a goal to be achieved through the management of Federally owned timber supplies, and,
2. Timber-sale dependency is presented as a primary prerequisite for a community to receive SYU status, when "stability could not be maintained by usual timber sales procedures."

The vagueness and ambiguity of the legislation is obvious and, perhaps, even intentional. This ambiguity has

given rise to many attempts to define stability, community, and timber sale dependency (Schallau, 1974, Hillery, 1963, Obermiller, 1982, Beuter and Schallau, 1978).

However, no consensus of definition has been reached. For example, some people think of minimal variations in population or non-declining employment as elements of community stability while others think of maintaining a certain way of life, a more sociological approach. Still others relate the continued operation of the local mills to the notion of stability (Beuter and Olson, 1980). Similar arguments exist for timber dependency and community definitions. For each SYU, policy statements were made which specify operation of the unit, definitions of community, timber sale amounts, and goals for each particular unit. Controversies surrounding these terms are not examined further, but rather the terms are used in the context of the existing policy statements.

#### Scope of Application

Application of the act has been surprisingly minimal considering the advantage of its provisions. Since enactment, only six units have been designated, and only five remain in existence today. Figure 1 shows relative locations of the existing units. These five units, their location, and establishment date are:

1. Big Valley Unit, Modoc National Forest, Adin  
California, 1/27/50

Figure 1. Distribution of Federally Designated Sustained Yield Units



Source: An adaptation of "The Western States", The H.M. Gousha Co., San Jose California, 1980.

2. Grays Harbor Unit, Olympic National Forest, Grays Harbor, Washington, 11/2/49
3. Lakeview Unit, Fremont National Forest, Lakeview, Oregon, 10/10/50
4. Shelton Cooperative Unit, Olympic National Forest, Shelton, Washington, 12/12/46
5. Vallecitos Unit, Carson National Forest, Vallecitos, New Mexico, 1/1/48

The fact that many other units were not created is, in itself, an enigma. The record is not readily available or clear whether this is due to a lack of applications for status, or due to a denial of applications. Schallau (1983) suggests that the post WW II housing boom and ensuing prosperity negated any additional interest in attaining SYU status to provide for community stability.

Today, as Waggener (1977) predicted, there has been a renewed interest in community stability as a goal of National Forest management. This goal is specified in the national forest planning regulations, 36 CFR 219, sections 219.12 (iii)(B) and 219.4 (b)(2).

Grant County, Oregon, in particular, actively pursued sustained yield unit status in 1981-82 to no avail; this failure was primarily due to a policy made in 1959 which prohibited entry of new units. The essence of this policy was:

"to discontinue for the foreseeable future, further establishment of both Federal and cooperator sus-



tained-yield units" (FSM 2469.03)

Neither the basis or underlying logic for this policy, nor the qualifying criteria are apparent in any written form. Discussions with several timber management personnel in various forest locations support Scahllau's hypothesis that prosperous lumber markets in the late 1950's eliminated any renewed interest in sustained unit status. It was also suggested that because the Forest Service perceived little opposition as well as little interest, a policy was made which precluded new entries.

One of the intended purposes of this paper is to provide an initial framework for evaluating applications for SYU status as less prosperous times become manifest for the lumber industry in general, and specifically, as the adverse effects on small, wood processing communities are even more manifest.

The Sustained Yield Act is permissive legislation, i.e., the Secretaries of Agriculture and Interior are granted the authority to designate sustained yield units based on their "judgements." As such, the policy prohibiting additional units could be more susceptible to informal political processes, such as local congressional pressure, than would new legislation which would require majority approval. A proposal for status could also arise out of the planning process in the National Forest Management Act (NFMA), Section 219.4 (b)(2), "Regional objectives will be assigned to designate forest planning areas. These assignments will be based

upon... community stability objectives." Astute community leadership could inject this objective into the planning process, and then the impetus to create a unit would demand a solution that would be heavily influenced by representative political interest, forcing a revamping of the policy.

### Historical Aspects

The initial concept or need for SYU status came about during the latter 1940's as private timber supplies, reduced during WW II, decreased further during the post-war housing boom. Previous examples of exploitive economic activities such as mining and the subsequent boom-town to ghost-town process created much anxiety in those areas which relied heavily on the processing of logs and had little else in the way of an economic base. The large amounts of adjacent federal timber were seen as a controllable source to halt undesirable market consequences. If log processing requirements could be imposed, then the community could conceivably avoid the ghost-town conclusion.

For instance, in Big Valley, California during the 1940's, residents were keenly aware of the probability that large amounts of federal timber would flow out of the local manufacturing area as did private timber (Clark, 1975). Nearly all of the private timber harvested passed through the valley, past local mills, to mills 50 miles away. Low transportation and fuel costs, relative to the value of the logs, allowed for long haul distances. Outside mills were able to

favorably compete with local mills due to their efficiency of milling. "Locking up" of unprocessed logs from federal lands seemed a logical step for community survival. In this manner logs no longer passed through the valley unless they were first converted to processed lumber. This policy insured that the existing local mills would have a supply of raw material to manufacture, thereby maintaining the communities perception of stability.

With the creation of each sustained-yield unit, policy statements were also formulated. Policy statements established boundaries of the unit, sales procedures, and other rules of operation of the unit.

As Table 1 shows, no two units are alike in their operation or scope. The disparity in sales procedures and designation of timber dependent communities has caused adverse public testimony and animosity toward the Forest Service. This paper could provide a starting point in the processing of SYU applications, thereby either lessening the impacts of denial or by providing guidelines in the creation of a Sustained Yield Unit to insure previous problems are not repeated.

The next section of this paper develops the basis, or need, for unit designation in Grant County; in this regard the underlying expectations for the benefitting communities are examined.

Table 1. Policy Statement Excerpts and Characteristics of Sustained Yield Units<sup>1</sup>

Unit	Big Valley	Lakeview	Vallecitos	Grays Harbor
NF acres <sup>2</sup>	77,023	301,170	79,840	1,119,000
Volume (NF) <sup>3</sup>	13.7	66.5	4.5	92.5
# Mills	3	5	1	8 <sup>4</sup>
# Communities favored directly	3	2	3	9
Major Species	PP	PP 58% WF 31%	PP	fir/hem
Restrictions	-	No purchase of outside Federal Tbr	-	-
Employment (direct)	80	464	30	254
% Total Emp	20-30	35	60-80	30-40

Source: Policy Statements and Review Documents for Individual Sustained Yield Units

<sup>1</sup> The Shelton is not used for comparison since it is a cooperative SYU

<sup>2</sup> Acres of commercial forest land, land capable of growing at least 20 cubic feet of wood per acre per year

<sup>3</sup> Volume is reported in Scribner measure, million board feet. Annual allowable harvest for federal land; average harvest per year for private lands.

<sup>4</sup> Grays Harbor has over 100 mills, the largest number in the state of Washington. 88 of these are shake and shingle mills. Only those mills dependent on federal supplies are shown here

### Grant County Study

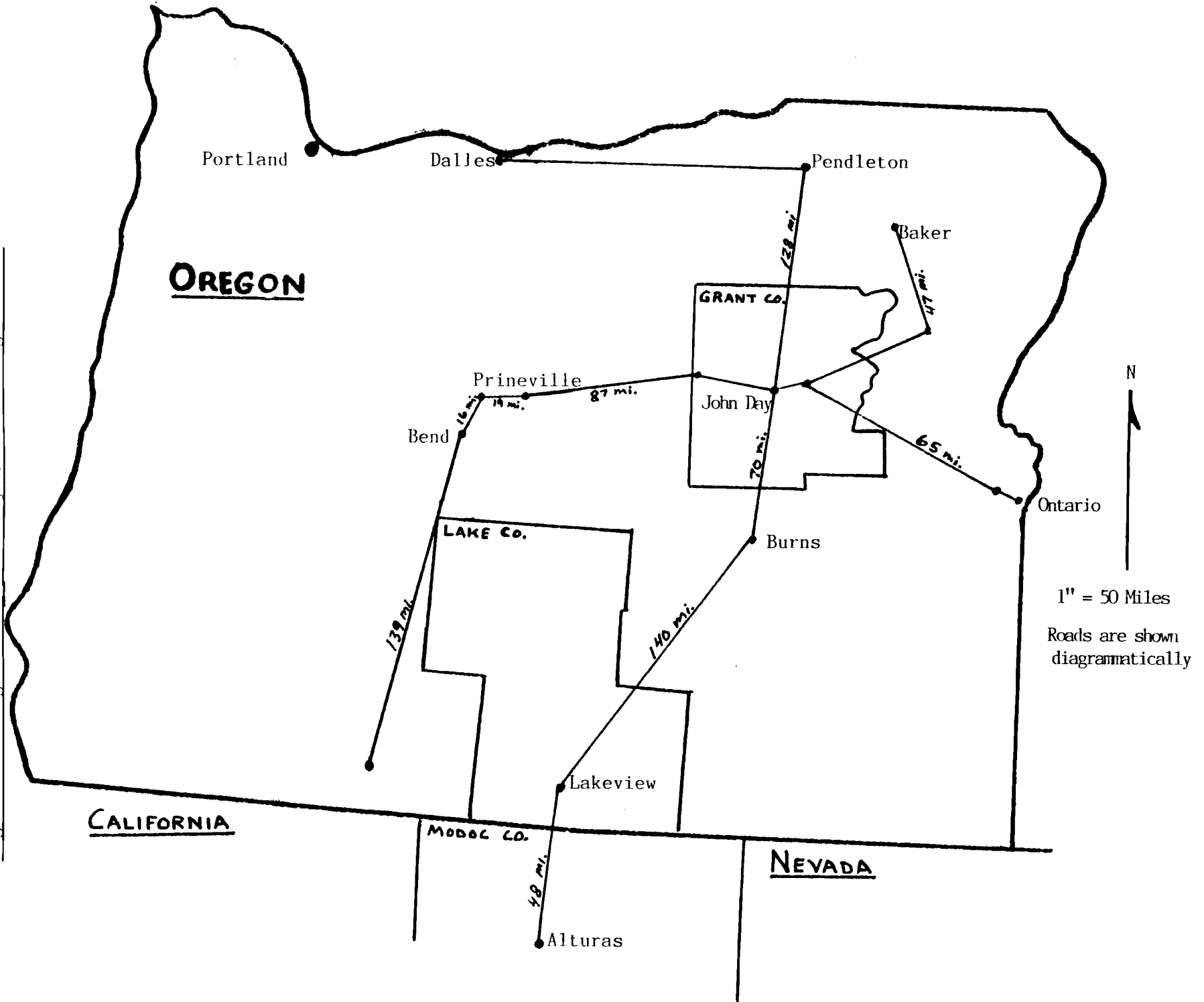
The need for the analysis of the Grant County proposal arises from the proposal itself and the corollary problems associated with it. These problem areas are:

1. There are no formal or informal rules or criteria for SYU designation within the operational guidelines of the Forest Service or within the enabling legislation.
2. Designation of a SYU for Grant County would further limit and control market conditions for the sale of publicly owned timber from the Malheur National Forest and could stimulate other counties to apply for similar status.
3. The existence of sustained-yield units in other communities is an advantage for those communities which have them and a disadvantage for those economically distressed communities which do not. The inequities between communities which have SYU designation and those which do not have both social and economic implications in the management of National Forests. Confering upon Grant Co. SYU status would create inequities which increase the inherent inequity of the enabling legislation.

The renewed interest in SYU status for Grant Co. has, in part, originated from the same concerns that caused Lake County and the other existing SYUs to apply and receive

status during the late 1940's and early 1950's. Competition for federal timber supplies in western Oregon increased the demand for Eastern supplies as Western sawmill operators from Sweet Home and Detroit started bidding on Eastern Oregon (Deschutes National Forest) timber sales just over the crest of the Cascades in the mid-1970's. The consequences of Western operators successfully bidding on Eastern timber sales pushed Eastern operators to look even further east. Grant County, due to its remoteness, had enjoyed a long era of relatively little competition. Competition was essentially confined to three mills: Hines Lumber Co., Hudspeth Lumber Co., and the Prairie City Lumber Co.. In the late 1970's, mills from the Prineville and Bend-Redmond area started to bid on timber from the Malheur National Forest. Due to the increased competition, higher stumpage rates, and a decline in the demand for lumber, Hudspeth Lumber Co. was the first to close down. Hines stopped operations at the plywood plant in Burns in early 1980 and closure of the log mill in John Day followed shortly thereafter. The entire Hines operation was purchased by another company which now has all of the log mills operating at near capacity. In addition, a firm from the Prineville area (Figure 2) has started operation of a new mill in John Day. The Prairie City mill, which remained open during less prosperous times, because of its efficiency and specialty of its log processing (fir dimension lumber), has modernized further and now competes for all timber species. This "renewal" has also resulted in firms from the Baker

Figure 2. Mileages Between Primary Manufacturing Centers



Source: Oregon Road Map, an Adaptation, The H.M. Gousha Co., San Jose, Ca.

area successfully bidding on Malheur National Forest Sales. During the same period when Grant County mills were shutting down, the mills in Lake County were able to remain in operation. The geographic proximity of Grant County to Lake County (Figure 2) and other similarities in physical features raise several questions that could be asked by a concerned congressional representative. To address these questions, a comparative analysis technique will be used. This method will compare features of the Grant County economy with the same features of Lake County. In the analysis, differences between the factors of comparison are sought which could be attributed to SYU status. Presumably, the sustained-yield unit has made a favorable and positive difference for Lake County. It is this favorable result that Grant County seeks in attaining unit status. Modoc County is included in this comparative study since it lies in proximity to Lake County, has a similar wood products based economy (at least in appearance), and has expressed no interest for a sustained-yield unit. The lack of interest expressed by Modoc County should be explained by differences revealed in the same comparative factors which will be discussed in the next section.

In this paper, the comparative analysis will address questions that would likely be asked by county representatives in their pursuit of a sustained-yield unit. These questions therefore, are:

1. If Grant Co. mimics Lake Co. in its economic



structure, and has suffered losses in its timber manufacturing industry, would SYU status have prevented these losses?

2. If the economic structure is different between these two counties, what are the differences? Does SYU status explain any of these differences? Would designation of a SYU in Grant Co. reduce any of the differences?

3. What are the similarities and differences between Modoc and Grant Co.? What are the differences that have not interested Modoc County to apply for unit status.?

Before examining the features of the three counties, it is important for the decision maker and the residents of Grant Co. to understand the general nature of some of the economic effects of SYU status. In determining the reasons for Grant county to apply for sustained yield unit status, the following questions might be pertinent: If Grant Co. were to receive status, what are the expectations of the applicants? Who would be the "winners" and who would be the "losers"? In answering these questions it appears that the most obvious beneficiaries are:

1. Sawmill Owners

Direct benefits come in the form of lower stumpage prices. This allows for higher profit ratios than outside the unit, and also allows for local sawmills to "blend" higher-priced outside timber, private and federal, with unit

timber. Blending constitutes a considerable competitive economic advantage. Blending can be used in several different ways depending on the local mills' markets and their product line.

## 2. Employees of the Sawmills

Lower stumpage prices have, in several instances, allowed for sustained operations, even though at reduced levels, during periods of depressed markets (e.g. Big Valley in 1982.) Other mills, outside of units, have traditionally shut down during these depressed conditions and, in some instances, have not reopened. As a result of mills staying open on a more reliable basis, employees have a higher level of certainty about their futures.

## 3. Local Merchants

The economic advantage of unit status for local merchants and businesses lies in the sustaining of existing businesses rather than the increasing of new businesses. It is reasonable to assume that the multiplier effect of basic activity from the lumber industry does create indirect and induced economic gains which are manifested throughout the county. While the range of multipliers can be argued, there are studies which, depending on the economic model used, suggest a range of 1.36 to 2.3 (Lin 1980, Beuter 1978). These multipliers are considered low by comparison with more urban areas. However, this range is considered "normal" for rural, small economic base, communities due to the relatively

limited diversity of goods and services. This factor contributes to significant leakages to more urbanized shopping areas, even though travel time to the nearest large community is 2-3 hours.

#### 4. Other Residents

The presence of the mills and the subordinate businesses, indirect and induced, do provide a basis for maintaining a variety of services for others within the community. The absence of the mills would undoubtedly reduce the economy such that many businesses could no longer remain viable. Leakages would increase to such an extent that only skeletal services and marginally operable businesses would remain.

The potential losers in sustained yield unit status are:

##### 1. County Government

County government receives 25% of timber generated receipts from federal lands (in addition to all other National Forest receipts). These in-lieu payments are allocated, by law, for schools and roads. Reductions in forest receipts due to lower stumpage prices would cause counties to either reduce those applicable services or to rely on other sources of revenue, such as state transfers or higher property taxes. Other local taxes are also a possible choice; however, property taxes are one of the single largest sources of support for county government and are the most probable source of raising large amounts of revenue. Lower stumpage rates, as the result of less competition within an SYU, generate less revenues to the county. The County's method of

compensating for this loss will determine further "losers" of granting SYU status.

## 2. Federal Government

Receipts to the national treasury would be similarly reduced as in the county example. At the national level this serves to reduce total revenues. One can speculate on the consequences, but in general the sums available to other transfer programs such as social welfare programs and overall government expenditures for goods and services would be reduced. Sympathy for these national effects has not been apparent in the minutes of any recent hearings during unit reviews, even though these effects should be considered when deciding equity issues which affect national programs.

## 3. Adjacent Communities

Maintenance of businesses in unit-dependent communities, e.g., John Day, Prairie City, Mt. Vernon, Dayville, Seneca, precludes any possible gains in efficiency which could occur by centralizing the businesses in other, larger communities such as Baker, Pendleton, or Prineville.

The effect is difficult to assess in general, and must be examined on a community-by-community basis. Travel times and energy consumption would have to be compared to price differentials in order to assess the efficiency of centralization.

#### 4. Other Log Processing Mills

Another adversely affected group are those potential bidders on SYU sales, who may bid on sales, but must process the logs locally if successful. Unless the outside mills are willing to make large capital investments for primary processing, they cannot reasonably expect to be serious contenders against established local mills. The available supply, that would otherwise be available to them, is reduced. The effects may be manifest in higher prices for non-SYU timber and a lower rate of return on their investments. Shut-downs during periods of depressed market conditions are more likely for mills outside sustained yield units than those inside units due to higher marginal costs of operation.

#### 5. Consumers

The per capita effect on consumers of wood fiber are small since the volumes from the existing units are small when included with national markets for wood fiber. However, if sustained yield unit status were conferred on a large number of counties in the west, higher regional prices for some products could be expected.

These are only a few of the groups that may be affected by sustained-yield unit status. The impacts are more diffuse and difficult to assess as the area of analysis is expanded to include other states and regions within the nation. While it can be assumed that there are other regions that are impacted, the degree of significance is estimated to be minimal due to the small share of a much larger market.

The next section analyzes the factors alluded to earlier, addressing the concerns and questions of the applicant county by comparing selected factors (demographic, geographic, and economic) of Grant County which has publicly pursued SYU status, to those of Lake County, which already has a sustained yield unit.

## Analysis of the Proposal

This part of the paper provides a comparison between three counties so that similarities and differences in selected elements can be displayed and accounted for in terms of SYU status. The counties are: Grant County, the "applicant" for SYU status; Lake County, which has SYU status; and Modoc county which has no expressed interest in SYU status.

### Methods

The analysis involves an extensive review of literature, augmented by personal knowledge of sustained-yield units and their operation. Also included is information obtained from telephone conversations during late 1983 and early 1984 with personnel from the Malheur National Forest, Modoc National Forest, the Big Valley Unit, and the Vallecitos Unit. In addition, residence in Grant County for 2 years made for a better understanding of the demographic and economic structure of that county.

This analysis is a elementary comparison of various elements of three counties. The comparative technique allows an analysis focused on observable and understandable differences in selected demographic and economic elements. Different levels of economic development produce different observable outcomes (Gregory and Stuart, 1980).

An important feature of any analysis prepared in response to public inquiry, as in this case, is that the answers be readily understood by Grant Co. residents. While

the output of the analysis must be readily understandable, the analysis itself might be more complicated. For this paper, linear regression techniques are used to fit non-linear data points so that more analytical comparisons could be made.

The following factors were selected for comparison:

1. Population trends
2. Aging and dependency Indices
3. Employment distribution
4. Unemployment trends
5. Median income
6. Geophysical Elements
  - a. Volume ratios, federal to private
  - b. Land base ratios, federal to private
  - c. Isolation, travel times

These factors were selected because, in general, they were referenced by the enabling legislation as in the case of employment and timber supplies or, because the elements were thought to be indicators of stability which could be readily compared. The availability of data was another criterion for selection, an essential feature of the comparative technique. A more specific discussion for the rationale and use of the factors will preface analysis of each factor.

### Population Trends

Population trends are but one indicator of stability. Rapid growth of a county often has adverse impacts if the



growth occurs faster than the supportive infrastructure such as sewer systems, schools, police and fire departments, etc.. Likewise, rapid decline can also result in adverse effects, such as a higher tax rate due to demand for services shrinking faster than is the infrastructure.

Population information, as an element of comparison will provide insight into any community. Population size will distinguish whether an area is likely to exhibit rural or urban characteristics. For this analysis all three "community" areas are rural in character. Generally, a population of 2,500 is the standard for distinguishing between urban and rural (Poplin, 1972). The Sustained Yield Act allows for the combining of one or more communities for administrative and economic purposes. All existing sustained yield units have chosen this feature of the act and have combined two or more communities into a larger "community", still rural in nature, but bound together by economic necessity. Size of a community also indicates a possible occupational structure. Urban areas are characterized by a high division of labor; conversely rural areas are usually characterized by one or two major occupations (Poplin, 1972).

For example, this feature of rural areas is shown in Table 2. All three counties have a significant portion of employment in two industries, wood products and agriculture. These agriculture and wood products workers are even more significant than these percentages suggest because while 20 - 31 % are actually employed by the two industries, 70-90 per

cent of all basic<sup>1</sup> jobs are in these two groups.

Table 2. Percentage Employment by Industry for Grant, Lake, and Modoc Counties, 1980.

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<u>County</u>	<u>Agriculture &amp; Wood Products</u>	<u>All Other</u>
Grant	31 %	69 %
Lake	28 %	72 %
Modoc	20 %	80 %

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Source: U.S. Census Data for 1980, California and Oregon

When comparing overall population growth from 1880 to 1980, there is no significant difference in growth rates between the three counties. Figure 3 illustrates these trends while Table 3 shows the relevant statistics. F values are not significant and thus there is no significant difference between the yearly growth rates over the last 100 years. While there is a good fit of the linear regression model as shown by the R-squared values, there is a flattening, a decrease in growth rate, after 1950 for all three counties.

1

Basic jobs are those whose salaries are the direct result of exogenous economic activity injected into the county, an essential element for community survival. The range stated is from an estimated split of basic and non basic employment for these two industries.

Table 3. Population Growth Rates\* for Grant, Lake, and Modoc Counties, Statistics for 1880-1980

Comparison Group	Yearly Growth Rate	Std. Error	R <sup>2</sup>	Group F Value (d.f.)	P Value
a.					
Grant	43	6.6	.81		
Lake	53	5.7	.91	1.2667	.2732
Modoc	46	9.9	.71	(1,20)	
b.					
Grant					
Lake	same as above			.3385	.4259
c.					
Grant					
Modoc	same as above			.0821	.2261
				(1,18)	

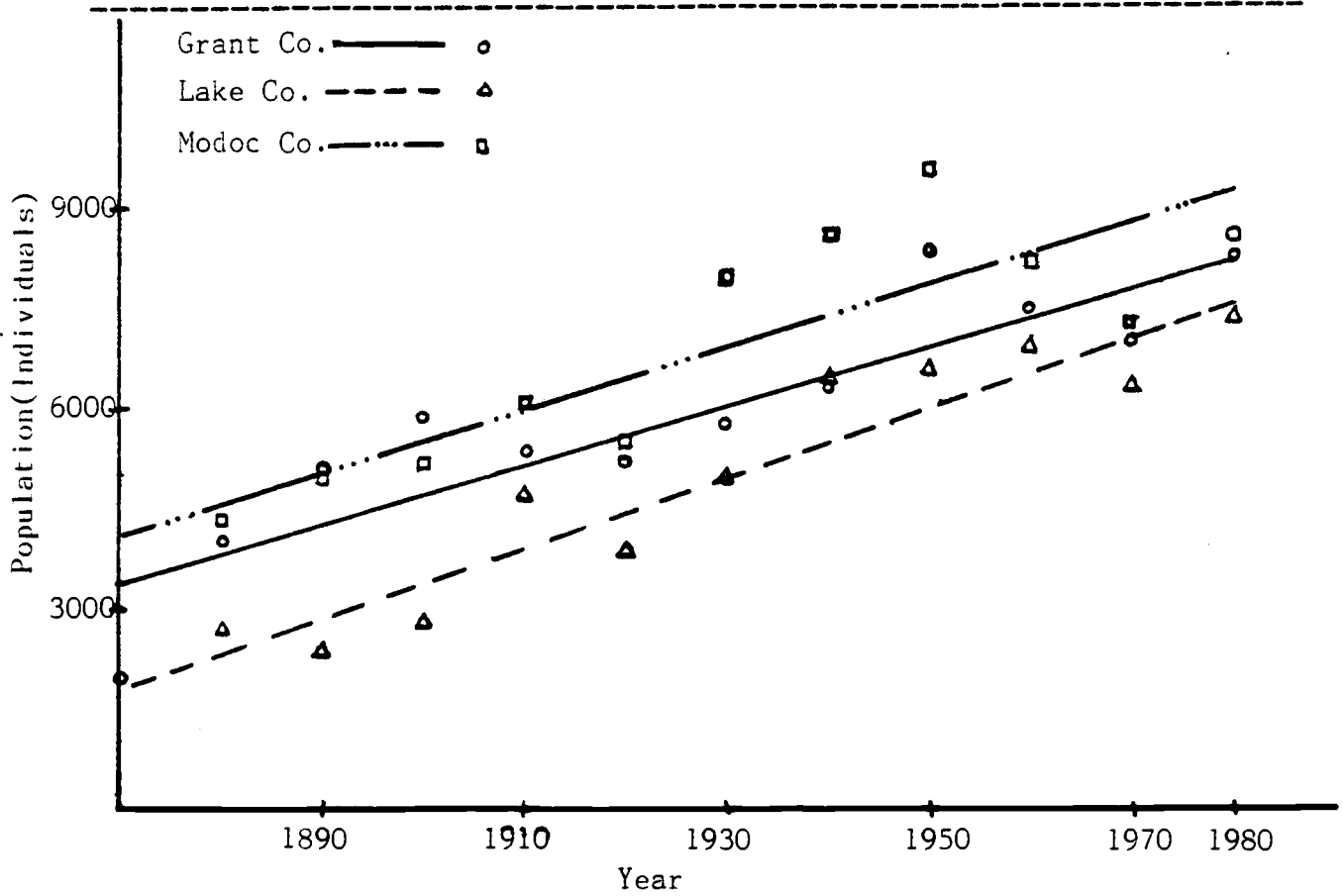
Source: U.S. Census Data for California and Oregon  
 \*Persons per year, rounded to whole numbers

As illustrated by the data points in Figures 3,4, and 5 there have been numerous fluctuations in population over the past 100 years. There was a renewed growth period from the 1920's to the 1950's, and a brief decline occurred during the 1950's. Since then, a gradually increasing population is evident.

Figure 3, a linear transformation of the fluctuations, shows the low rate of growth as well as the similarity among counties.

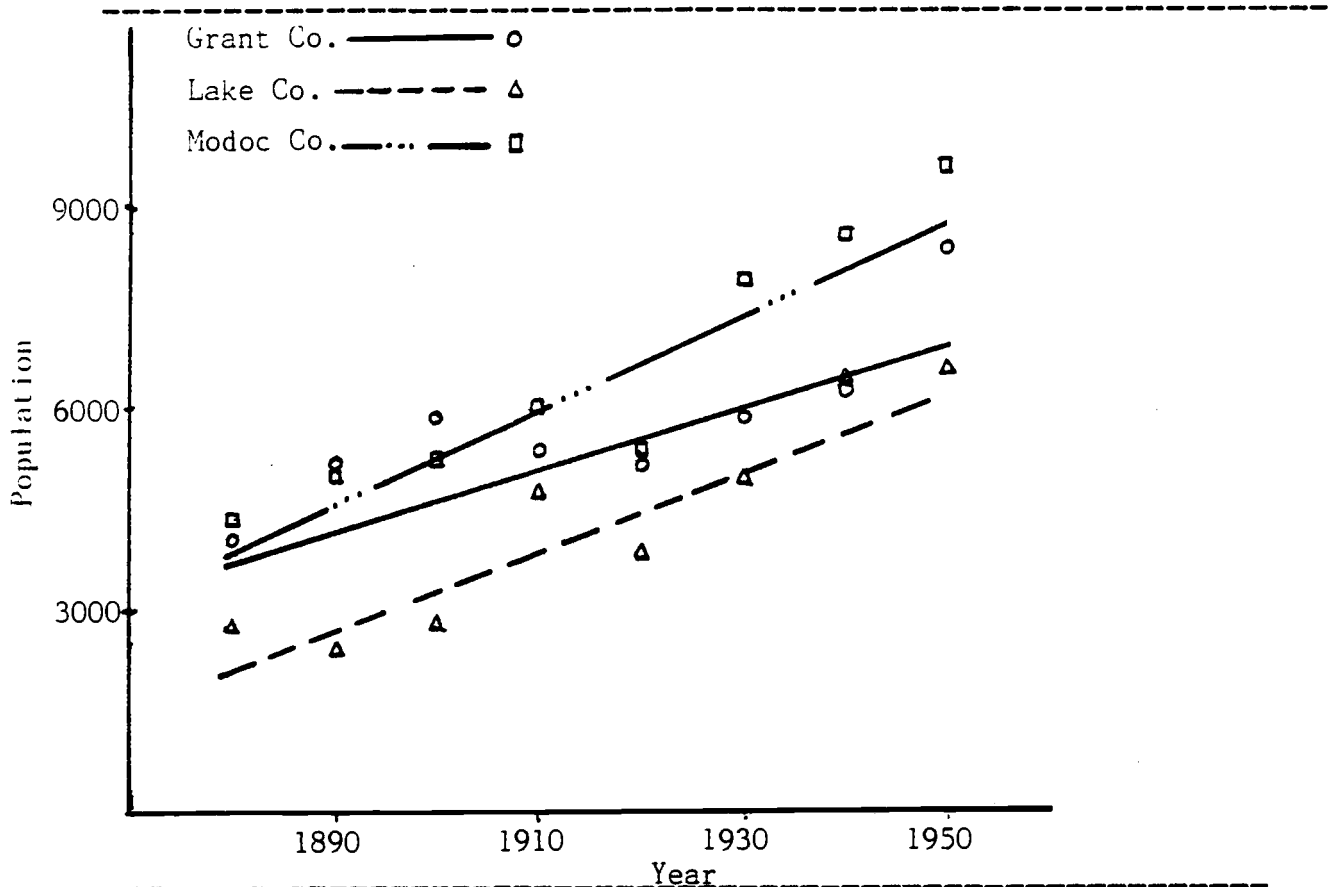
To examine differences attributable to SYU status, the periods before SYU designation and after designation were studied using linear comparisons. Table 4 shows the data before the SYU designation. While the growth rates are similar for this period, Grant County's rate more closely

Figure 3. Population Trends for Grant, Lake, and Modoc Counties (1880-1980).



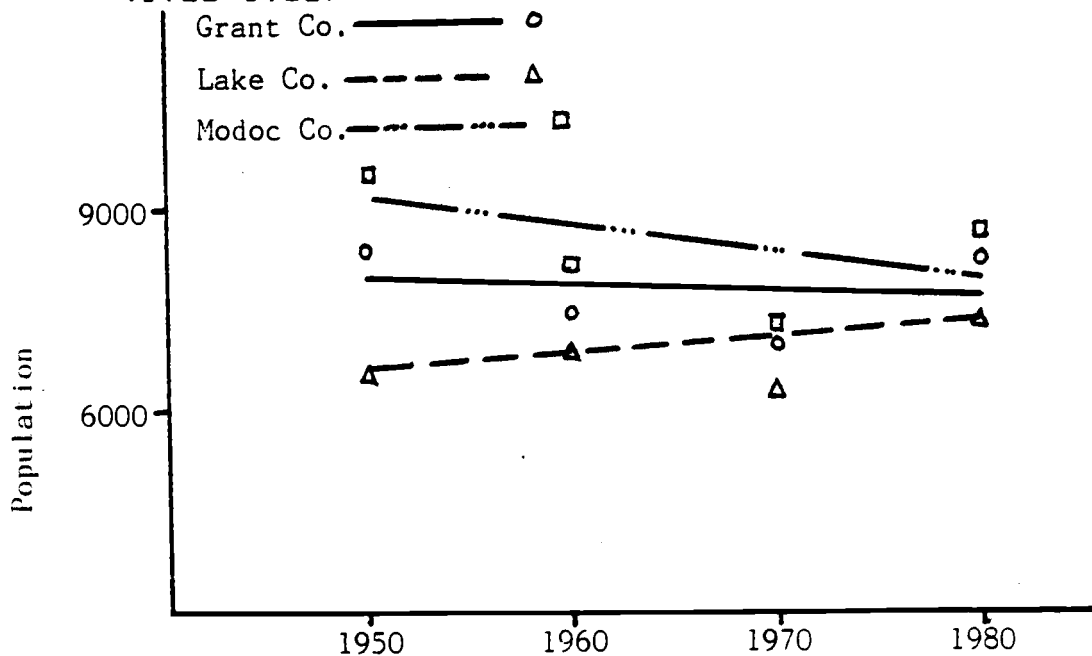
Source: U.S. Census Data for California and Oregon

Figure 4. Population Growth Rates for Grant, Lake, and Modoc Counties (1880-1950).



Source: U.S. Census Data for California and Oregon

Figure 5. Population Trends, Grant, Lake, Modoc Counties (1950-1980)



Source: U.S. Census Data for California and Oregon

resembles Lake County's rate rather than it does Modoc County's. Figure 4 shows more divergence in the growth rate of Grant Co. from Modoc Co. when compared to the entire period illustrated in Figure 3.

\*

Table 4. Population Growth Rates for Grant, Lake, and Modoc Counties, 1880-1950.

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Comparison Group	Yearly Growth Rate	Std. Error	R <sup>2</sup>	Group F Value (d.f.)	P Value
a.					
Grant	47	10.7	.79		
Lake	57	11.6	.83	.995	.3946
Modoc	69	14.1	.83	(1,10)	
b.					
Grant					
Lake	same as above		.454		.4788
			(1,10)		
c.					
Grant					
Modoc	same as above		1.658		.2254
			(1,10)		

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Source: U.S. Census Data for California and Oregon  
 \*Persons per year, rounded to whole numbers

The last population comparison is for the period between the years of 1950 and 1980, the period after SYU designation (Figure 5). Declines in Modoc and Grant County are shown while Lake Co. shows a continued growth as exhibited in prior periods. These data are more difficult to interpret since there are only four observations and the variation is large. This accounts for the small coefficient of determination, R<sup>2</sup>. For this reason the F and P values are not used for comparison due to the large variance, even though these measures suggest no statistically significant differences.

The only apparent trend displayed by all the data is that Lake Co. is the only one of the three to experience a sustained average increase in population growth over the comparison periods, 1880-1980, 1880-1950, and 1950-1980. However, as stated before, these trends are statistically similar, and no conclusive differences can be derived, in part due to the numerous fluctuations.

The data show that Grant County has grown at a rate similar to Lake Co. and Modoc Co. before the period of SYU establishment. Lake Co. shows a continued growth rate for the period after SYU designation while Grant and Modoc show declining populations. Statistically, these population trends do not provide a basis for SYU designation. The data indicate that populations have not been stable in these counties and that the rates of growth are quite low. Large yearly and decade fluctuations seem to be the rule rather than the exception.

If counties do not follow national population trends, then the causes must be the result of factors that are peculiar to these counties. For instance, in Grant County, subsequent analysis will reveal that a large part of the variation in the population can be directly linked to the fluctuations in lumber industry employment.

#### Aging and Dependency Elements

In addition to general population growth trends, aging and dependency ratios provide demographic information on the more subtle changes that beset a county as its economic

condition changes through time. As aging indices increase, a larger segment of those individuals over 65 years of age as compared to those less than 15 years is indicated. When used in concert with dependency ratios, economic implications can be suggested more succinctly. Has SYU status resulted in a younger population? This would suggest economic strength; prospects for jobs would encourage young workers to remain in a community. Is the population dependent on those who are working or is it dependent on other sources of revenue, such as pensions? Does SYU status serve to maintain a production oriented population?

Dependency ratios are based on the fact that every member of the county is a consumer but not everyone is a producer. A county with a larger proportion of its population producing goods and services is economically better off than a county with a smaller proportion of producers, *ceteris paribus* (Thompson and Lewis, 1965). Does the Lakeview Sustained Yield Unit explain lower dependency ratios for Lake Co. than Grant or Modoc Co.?

Dependency indices reflect increased reliance by those less than 15 years and older than 65 years on the defined working force, those persons between the ages of 15 and 65. As Table 5 shows, Lake Co. has historically had lower ratios than Modoc or Grant Co.. Modoc Co. has the largest ratio although not significantly different from Grant Co.'s. Overall, dependency ratios increased until 1960 then declined for all three counties.



Table 5. Dependency Indices by Decade for Grant, Lake, and Modoc Counties<sup>1</sup>

County	Year						Average
	1930	1940	1950	1960	1970	1980	
Modoc	46.2	30.0	34.6	41.9	37.9	36.5	37.85
Grant	31.9	32.1	37.4	41.7	39.1	36.1	36.38
Lake	31.5	30.2	36.1	40.3	37.9	35.7	33.62

Source: U.S. Census Data for California and Oregon

<sup>1</sup>

Dependency indices are computed by: Sum of those persons <15 years old and those >65 years old divided by those persons between and including 15 to 65 years old, multiplied by 100

Over the last 50 years there is no significant difference between the decennial county indices and thus these data suggests no advantage of SYU status based on the dependency indices alone.

Aging indices provide another measure that is often used in conjunction with dependency ratios. Since 1960 the nation has grown older due to decreased mortality rates and lower birth rates. The data in Table 6 show a similar trend for the three counties, i.e., a higher percentage of older persons to younger persons. Modoc Co. shows the largest index with Grant next, followed by Lake Co.. As Table 6 indicates, Grant Co. has a higher average age index than Lake Co. but a lower one than Modoc Co.. This trend has been consistent since 1950. In spite of the large differences of 1980 aging indices, there is no significant difference of index trends at the 95 % confidence level.

Table 6.- Aging Indices by Decade for Grant, Lake, and Modoc Counties<sup>1</sup>

County	Year						Average
	1930	1940	1950	1960	1970	1980	
Modoc	19.7	27.6	22.8	28.3	46.0	61.9	34.38
Grant	27.2	30.1	22.3	27.2	39.9	51.2	32.98
Lake	19.5	25.4	22.3	24.2	33.9	45.0	28.38

Source: U.S. Census Data for California and Oregon

1

Aging indices are computed by: # persons >65 years divided by # persons <15 years old, multiplied by 100

Employment data provide partial explanation for these high indices in Modoc Co. but do not account for the differences between Lake and Grant Co.. Employment data show a large service oriented sector, suggesting higher ratios of retired persons to those actively working.

While the implications are many, one possible interpretation concerns individual attitudes about the economy. Is Modoc Co. a retirement area? Are there opportunities for younger families? Is the community growth oriented? Another interpretation concerns the nature of the basic sectors of an economy. Is the community reliant on low paying service jobs which provide little future for career development? Implications may lie in the socio-economic structure of a community, not only its origins as a community, but also in its future.

The reason for these differences in aging ratios may be a greater out migration of younger workers from Modoc and

Grant counties, a reflection of the strength of their expectations for the local economy, especially jobs. Although not used in this paper, birth rates are another factor that can also be linked to the expectations of young workers in a modern economy although there are many exceptions such as in the large urban ghettos, where economic considerations are apparently ignored in the decision to have or not have children.

### Employment Elements

As stated earlier, employment is a key issue not only in the Sustained Yield Act but in all existing SYU policy statements. Advantages, as provided for by a SYU, should be evident when compared to a similar area which is not a unit.

Employment data when disaggregated have many subsections which can be analyzed by a number of techniques. Most methods are more difficult for local, concerned residents to understand than are the simpler methods used in this paper.

Table 7 shows the statistical comparisons of the lumber sector to total employment. Modoc shows the greatest decline, while Grant shows less rate of decline than Lake County.

Table 7. Percent Annual Decline of Lumber Employment  
for Grant, Lake, and Modoc Counties,  
1947-1981.

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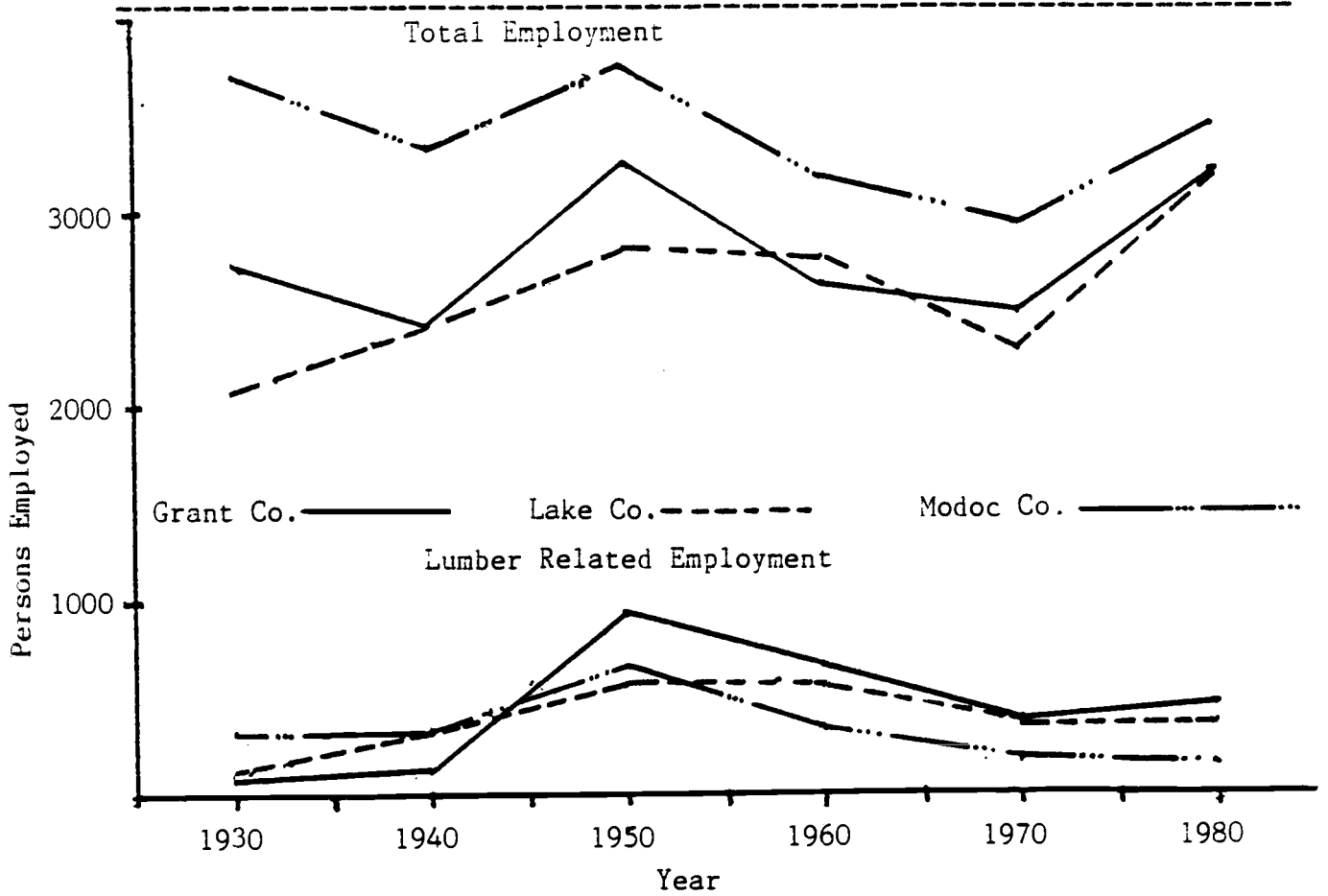
County	% Jobs
Grant Co.	-1.391
Lake Co.	-1.454
Modoc Co.	-1.741

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Source: Oregon Covered Employment and Payrolls by Industry  
and County, 1947-1981

Figure 6 shows county employment levels and lumber sector employment levels for the last 50 years. Some generalized trends are apparent. Both county employment and lumber employment experienced a large peak in 1950, due to post WW II prosperity. County employment patterns closely follow lumber employment trends from 1947 to 1970 for all three counties. 1980 data show a departure from the previous trend; overall employment increased in all three counties but essentially remained the same for the wood products industry. While the amplitude of the trends is different, linear regression techniques show the slopes are not significantly different at the 95% confidence level.

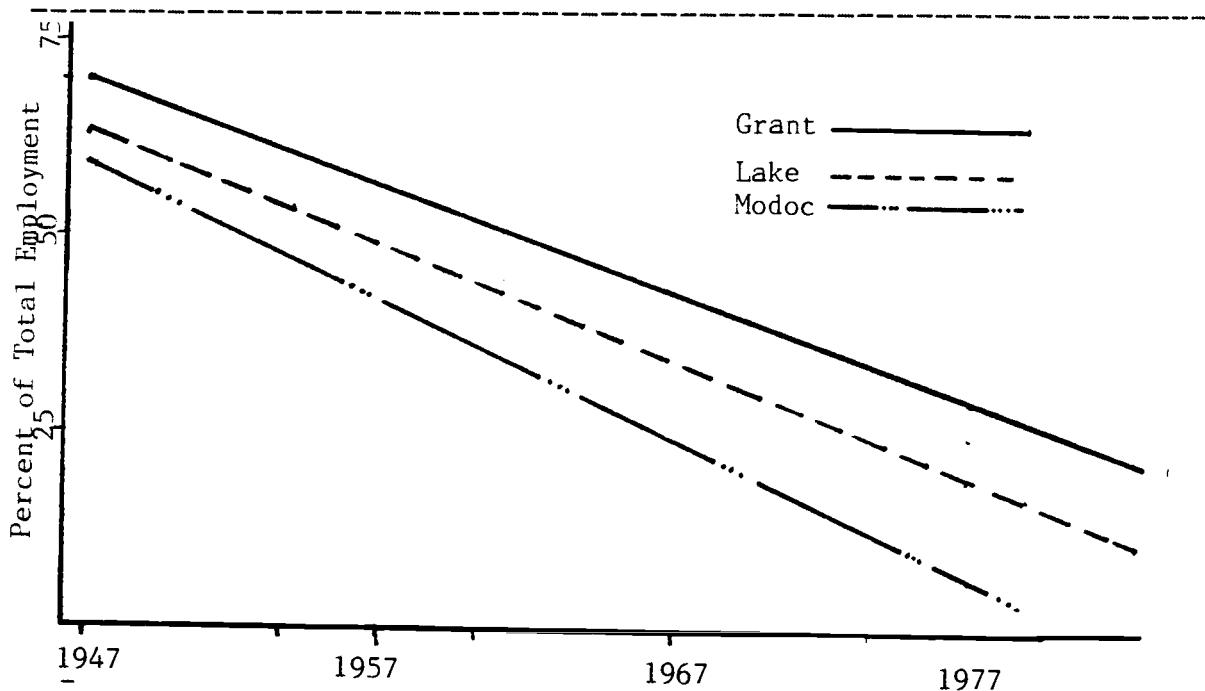
Figure 6. Total and Lumber Employment Growth Rates for Grant, Lake, and Modoc Counties, 1930-1980.



Source: Oregon Covered Employment and Payrolls by Industry and County, 1947-1981

To analyze employment trends in greater detail, the period from 1947 to 1981 was examined on a yearly basis, as shown in Figure 7. All three counties have shown an overall decline in proportion of lumber employment to total employment during the last 35 years. The rates of decline are not significantly different among the counties. This suggests that SYU status has not made a difference in terms of maintaining employment, although it is possible, but conjectural, that Lake County may have been worse off without unit status. Modoc Co. shows a more rapid decline in its ratio of lumber to total employment overall than does Lake or

Figure 7. Lumber employment as a Percentage of Total employment for Grant, Lake, and Modoc Counties, 1947-1981



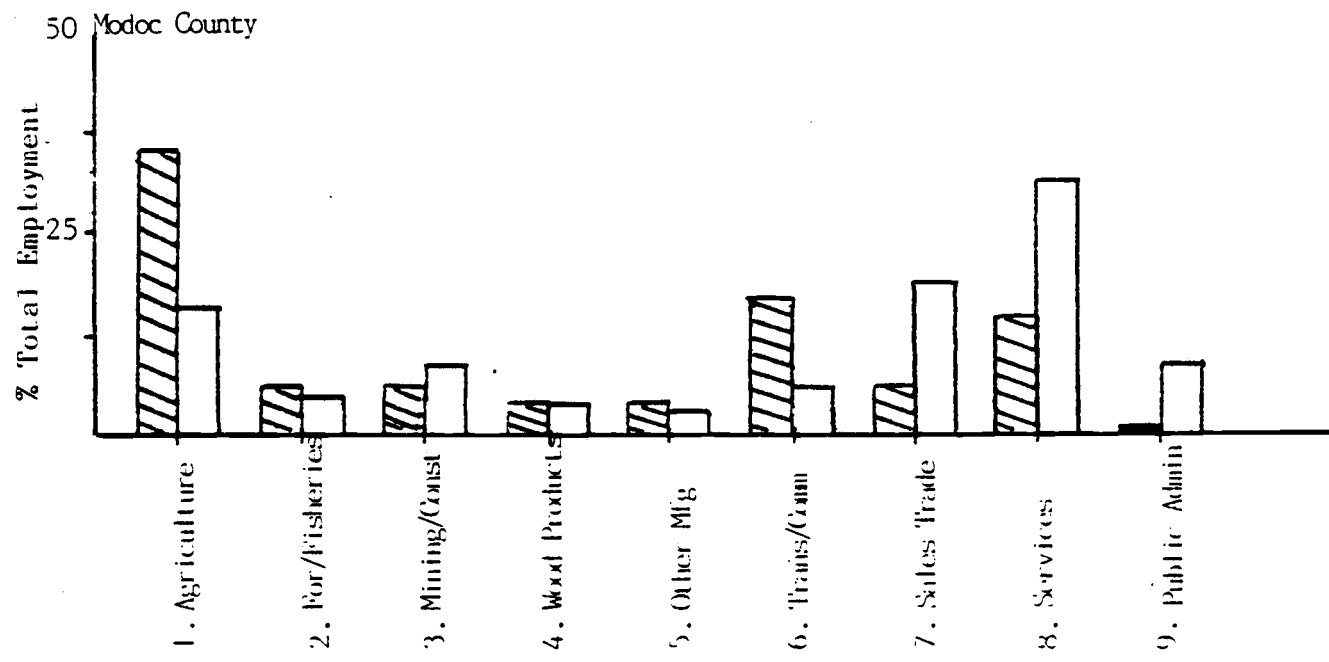
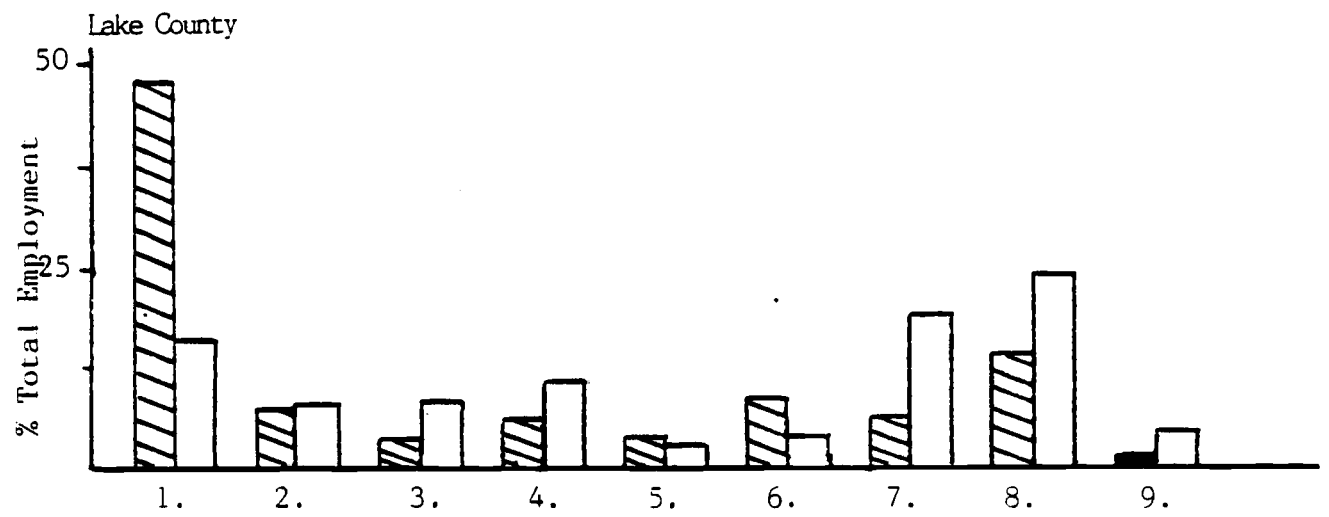
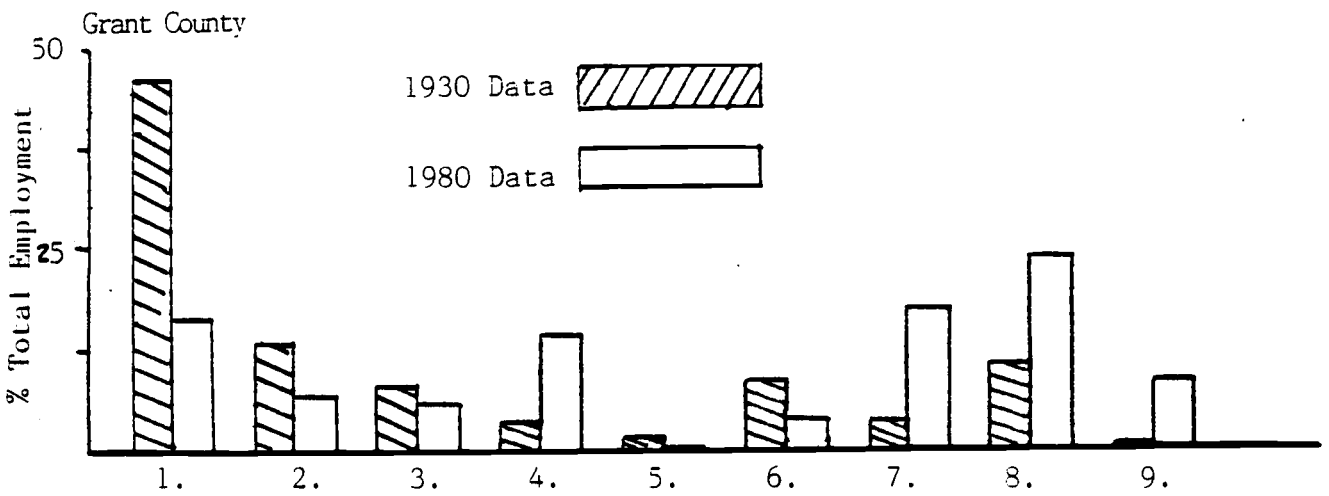
Source: Oregon Covered Employment and Payrolls by Industry and County.

Grant Co. Comparisons in Figure 7 show Grant and Lake Coun-

ties following similar paths in their fluctuations. Lake Co. shows a more rapid decline from 1954 to 1957 than does Grant Co..

Employment in the various sectors has changed considerably during the period from 1930 to 1980 as shown by Figure 8. In 1930 agriculture was the predominant sector of employment for all three counties. In Grant County forestry and fisheries sectors were the second largest employment grouping followed by services. Fifty years later, 1980, services was first, sales second, and agriculture third. Lake County followed a similar trend. Modoc County, however, has had a more dramatic shift to the services industry in 1980, nearly replacing the losses in the agriculture industry. Sales trade was second in sectoral employment, followed by agriculture. With the exception of Modoc County, Grant and Lake County showed a more diverse economy than existed in 1930.

Figure 8. Changes in Sectoral Employment in Grant, Lake, and Modoc Counties from 1930 to 1980





### Median Income

Median incomes have been examined to discern any distributional variations between the three counties. The underlying issue is to assess some of the purported benefits of SYU status, namely fewer layoffs, prolonged work seasons, and conceivably higher annual wages as a result of the "stability." If any of these three benefits are indicated, we would expect to see a higher median income for Lake Co..

Table 8 shows median incomes for each of the three counties, an aggregate figure.

Table 8. Median Incomes for Families by Decade for Grant, Lake, and Modoc Counties, 1950-1980

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Year	County		
	Grant	Lake	Modoc
1950	\$3,086	\$3,083	\$2,895
1960	4,976	5,391	4,995
1970	7,007	6,993	6,890
1980	15,204	15,493	13,394

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Source: U.S. Census Data for California and Oregon

Are the lumber workers, on the whole better off than most other workers in these counties? Are there differences that can be assigned to SYU status benefits?

Median incomes are larger for Lake Co. than Grant Co., but only by a small amount. Modoc Co. however, has a larger difference for 1980 data. This is a reflection of a more

service oriented economy. Significant differences are not apparent from the data or from statistical analysis.

### Geo-Physical Elements

Geo-physical similarities exist among the three counties. All three are considered "Eastern" counties, i.e., they lie east of the Cascade Mts. and are predominantly dry plateaus. Predominant tree species are ponderosa pine with a mixed fir component. Similarities in terms of market pressures could be assumed to exist due to the similar uses of the wood products and the common primary markets. For instance, different species of lumber, if they existed, could be a factor in explaining variations in economic success depending on their uses; housing, furniture, paper products, etc. all have different markets and could be assumed to fluctuate, in terms of employment, at different rates for different reasons.

Another apparent feature of these three counties is the long distances to other communities of comparable or greater size. In all three cases, two hours is the minimum travel time to such a community. These long distances have historically isolated the communities from outside influences. As mentioned earlier, however, declining supplies and increased capital costs have forced outside mills to re-examine these previously unexploited markets. Lakeview is not any more susceptible, due to the proximity of competitive communities, to outside bidding on federal timber supplies than are Grant or Modoc Counties.

Timber volumes and land base data indicate large differences in the amounts of federal timber available and large differences in commercial forest land ownership (Table 9).

Table 9. National Forest and Private Industrial Timber Supplies and Land Bases for Grant, Lake, and Modoc Counties<sup>1</sup>

County	NF Vol.	Private Vol.	NF Ac.	Private Ac.
Grant	187	44	1324	320
Lake	62	32	700	229
Modoc	60	< 1	325	146

Source: Resource Atlas<sup>1</sup> for Grant and Lake County, Modoc National Forest Data Base for Land Management Planning.

1

Volumes are reported as annual allowable harvest, million board feet, scribner rule; acreages are reported as commercial forest land, growing 20 cubic feet or more wood per year per acre.

It is apparent that Grant Co. has substantially more federal timber than does Lake County. It may be for this reason that Lake Co. is considered to be more vulnerable to timber sales being exported from the county. Larger concentrations of timber allow for investments for processing of logs prior to shipment to even larger communities. All three counties are similar in terms of their land base ratios, with Grant Co. having more commercial forest land than the other two counties.

### Unemployment

Unemployment is often considered more of interest to local residents than is employment and, certainly receives

far more media attention. Records of SYU reviews and of policy statements indicate more concern over short term unemployment than over the overall decline of the woods products industry employment as has been shown in Figure 7.

Table 10 shows the unemployment figures for the past 40 years as taken from census data. Direct, yearly comparison from the same data source is the only way to overcome any bias that may be present, assuming that the influences and affects may be the same for all three counties. Table 10 shows Lake Co. had lower unemployment rates for 1960 and 1970, but a higher rate in 1980.

Table 10. Unemployment Percentage Rates, 1940-1980, for Grant, Lake, and Modoc Counties

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Year	Grant	County Lake	Modoc
1940	7.6	12.3	11.6
1950	4.9	5.2	3.1
1960	12.3	8.8	7.1
1970	12.0	8.4	5.5
1980	17.5	21.4	15.9

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Source: U.S. Census Data for California and Oregon

## Summary and Conclusions

### Summary

The establishment of all SYU's, as presented here, is an equity issue; the legislation favored certain communities who were fortunate in receiving sustained yield unit status. It is obvious that the Forest Service alone could not be expected to stabilize all communities within or adjacent to National Forest boundaries. It is also evident that timber supplies alone cannot stabilize economies, but can, in part, contribute to a stable community (Schallau 1983). For the purposes of this comparative analysis, the issue of whether an SYU actually establishes stability is moot. The issue from a pragmatic approach, which is most likely taken by community leaders in their application for status, is based on the fact that Grant County is similar to Lake County in many respects. Lake Co. mills have been kept open as opposed to the closing of Grant County's. Lumber employment has declined in both counties. Residents in Grant County would favor status if its mills were kept open, even at reduced operating levels. In this context, the mills' survival is equated to the survival of the county.

Several elements have been examined to determine if these two counties are indeed similar. From the information presented there does not appear to be any significant differences between several elements of Grant Co. and Lake Co.. Based upon the presumption that Lake Co. is a valid SYU, then the reasons for not bestowing unit status upon Grant Co. are

not readily apparent. Modoc Co. provides an interesting comparison since, it too does not seem to significantly differ from Grant or Lake Co., although the economy of Modoc Co. appears to have changed from a woods product base to one more service oriented. The reasons and implications of this are not clear.

Fluctuations in total and lumber employment have occurred with regularity over the past 40 years. In both counties, total employment varied with lumber employment in a collinear manner, indicating a strong link between the two. No significant differences in population growth, dependency and aging indices, median incomes, or unemployment were evident. There are differences in available timber supplies. Grant County has double the quantities available to Lake County.

Lake county is a valid SYU by virtue of its continued existence and supporting review hearings. The conditions found in Grant Co. would seem to follow those in Lake Co. irrespective of SYU status. Grant Co. has undergone similar declines in employment factors as has Lake and Modoc Co. Whether SYU status would reverse the trend is speculative, although the Lake County data suggest it would not. Variables other than a captive supply of timber seem to be at work in determining the variations of factors examined in this paper.

## Conclusion

At the present time, the data do not support designation of Grant County as a sustained yield unit. Differences between a county that relies on a SYU and a county without a SYU have not been shown by the data. New activity in the wood products industry in Grant Co. has resulted in response to an increasing demand for lumber. Undoubtedly the residents of Lake Co. feel that their mills would not exist without the protected status of the sustained-yield unit. This analysis provides a decision maker a rationale on which to respond to Grant County community leaders. The need for further analysis could then be determined or a summary decision could be made depending on the political climate. It can be surmised that the impacts, as a result of granting unit status, to national entities are not nearly of the magnitude as those to the local benefitting entities.

Many issues remain unsolved by this analysis. Some of them are:

1. What constitutes timber dependency? 10%, 20%, 30%, of volume, of the economy, of employment, of total income?
2. What would be the effects of a proliferation of SYU units, locally, regionally, and nationally?

The direct benefits to sawmill owners will undoubtedly fluctuate with varying wood demand. A primary concern in allowing additional sustained yield units is the cost of the legislation to the nation as a whole. Based on wood prices

in 1980, the gross amount of annual loss to the federal treasury for the Lakeview unit was approximately \$2,000,000. Of this amount, 25 percent, \$500,000, is transferred back to the counties, a considerable sum for eastern Oregon counties. In Grant County, the amount lost to the federal treasury would be even more substantial, approximately \$4,000,000 annually. Whether or not this subsidy is comparable to or better than the cost of unemployment or a transfer of labor resources to other communities is beyond the scope of this paper, but additional analysis would certainly provide a interesting case study for subsidy considerations and higher level of detail for national concerns.

One possible way to ascertain the value of an SYU would be to require the merging of all private industrial timber lands with federal lands in a long term contract similar to that of the Shelton Cooperative SYU. This approach would appear to be more appropriate and rational if indeed the populace believes that the local timber supplies are essential to community stability and existence by providing joint harvest scheduling of federal and private timber supplies. This would serve to ameliorate the "outright subsidy" argument by providing "matching" funds. Incorporating private lands into a joint management scenario would also impose more intensive practices on private lands and increase community support for forest management. An overall reduction in political transaction costs would be effected by regionally internalizing the costs associated with an SYU. Likewise,



public lands could be managed with a greater sensitivity for market conditions in order to maintain the resemblance of "stability".

Use of profits by the benefitting mills is problematic since the advantage contributes to the continued existence of these local mills, the original objective of application for SYU status by a county. Unfortunately, this has encouraged little progressive investment, with minor exceptions, for more efficient milling in existing units, since competition for timber-sales is not as intense within the unit as outside the unit.

To summarize, Grant Co. and any other county to apply for SYU status, expect benefits to exceed costs. From an equity in distribution standpoint, a desirable solution would be such that distribution of wealth were not changed as the result of SYU designation. The benefits of unit status would be passed on in the same proportions to the employees as well as the sawmill owners.

There are winners and losers as the result of SYU designation. In this sense distributional problems will be localized. A localized viewpoint, such as that of Grant Co., is heavily weighted to examine and consider only the benefits of sustained employment and seldom consider the extent of benefits for the sawmill owners or the losses to the federal treasury.

A proliferation of sustained yield units at least in eastern counties of Washington, Oregon, and California would

seem a likely course if policy changes permitted entry of new units. In fact, some counties may have a de facto status by virtue of their location e.g., isolation, from outside mills.

Dependency on the woods products industry has dramatically changed over the last 40 years. The fluctuations in employment levels do not appear to be related to the late 1970's "invasion" of mills from western parts of Oregon. Declines are evident from 1950 during a period when there was no outside competition for timber sales. The downward trend in lumber related employment may continue as Modoc County's has, presumably to a lower level than is evident today.

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APPENDIX A

Sustained Yield Forest Management Act

Appendix A. Complete Text of Sustained Yield Forest Management Act

SUSTAINED YIELD FOREST MANAGEMENT ACT

Act of March 29, 1944 (58 Stat. 132, as amended; 16 U.S.C. 583-583i)

Sec. 1. In order to promote the stability of forest industries, of employment, of communities, and of taxable forest wealth, through continuous supplies of timber; in order to provide for a continuous and ample supply of forest products; and in order to secure the benefits of forests in maintenance of water supply, regulation of stream flow, prevention of soil erosion, amelioration of climate, and preservation of wildlife, the Secretary of Agriculture and the Secretary of the Interior are severally authorized to establish by formal declaration, when in their respective judgements such action would be in the public interest, cooperative sustained-yield units which shall consist of federally owned or administered forest land under the jurisdiction of the Secretary establishing the unit and, in addition thereto land which reasonably may be expected to be made the subject of one or more of the cooperative agreements with private landowners authorized by section 2 of this Act. (16 U.S.C. 583)

Sec. 2. The Secretary of Agriculture, with respect to forest land under his jurisdiction, and the Secretary of the Interior, with respect to forest land under his jurisdiction, are severally authorized for the purposes specified in section 1 of this Act. to enter into cooperative agreements with private owners of forest land within a cooperative sustained-yield unit, established pursuant to section 1 of this Act, providing for the coordinated management of such private land and of federally owned or administered forest lands within the sustained-yield unit involved.

Each cooperative agreement may give the cooperating private land-owner the privilege of purchasing without competitive bidding at prices not less than their appraised value, subject to periodic re-adjustments of stumpage rates and to such other conditions and requirements as the Secretary may prescribe, timber and other forest products from federally owned or administered forest land within the unit, in accordance with the provisions of sustained-yield management plans formulated or approved by the Secretary for the unit; shall limit the time, rate, and method of cutting or otherwise harvesting timber and other forest products from the land of the cooperating private landowner, due consideration being given to the character and condition of the timber, to the relation of the proposed cutting to the sustained-yield plan for the unit, and to the productive capacity of the land; shall prescribe the terms and conditions, but not the price, upon which the cooperating private landowner may sell to any person timber and other forest products from his land, compliance by the purchaser with such conditions to be required by the contract of sale; shall contain such provisions as the Secretary deems necessary to protect the reasonable interest of other owners of forest land within the unit; and shall contain

other provisions as the Secretary believes necessary to carry out the purposes of this Act.

Each cooperative agreement shall be placed on record in the county or counties in which the lands of the cooperating private landowner covered thereby are located, and the costs incident to such recordation may be paid out of any funds available for the protection or management of federally owned or administered forest land within the unit. When thus recorded, the agreement shall be binding upon the heirs, successors, and assigns of the owner of such land, and upon purchasers of timber or other forest products from such land, throughout the life of such cooperative agreement. (16 U.S.C.583a)

Sec. 3. The Secretary of Agriculture and the Secretary of the Interior are further severally authorized, whenever in their respective judgements the maintenance of a stable community or communities is primarily dependent upon the sale of timber or other forest products from federally owned or administered forest land and such maintenance cannot effectively be secured by following the usual procedure in selling such timber or other forest products, to establish by formal declaration for the purposes of maintaining the stability of such communities a sustained-yield unit consisting of forest land under the jurisdiction of the Secretary establishing such unit, to determine and define the boundaries of the community or communities for whose benefit such unit is created, and to sell, subject to such conditions and requirements as the Secretary believes necessary, federally owned or administered timber and other forest products from such unit without competitive bidding at prices not less than their appraised values, to responsible purchasers within such community or communities. (16 U.S.C.583b)

Sec.4. Each of the said Secretaries is further authorized in his discretion to enter into cooperative agreements with the other Secretary, or with any Federal agency having jurisdiction over federally owned or administered forest land, or with any State or local agency having jurisdiction over publicly owned or administered forest land, providing for the inclusion of such land in any coordinated plan of management otherwise authorized by the provisions of this Act when by such a cooperative agreement he may be aided in accomplishing the purposes of this Act; but no federally or publicly owned or administered forest land not under the jurisdiction of the Secretary establishing the sustained-yield unit concerned shall be included in any such plan except in pursuance of a cooperative agreement made under this section. (16 U.S.C.583c)

Sec.5. Before any sustained-yield unit authorized by section 1 or section 3 of this Act shall be established, and before any cooperative agreement authorized by section 2 or section 4 of this Act shall be entered into, advance notice thereof shall be given by registered mail or certified mail to each landowner whose land is proposed to be included and by publication in one or more newspapers of general circulation in the vicinity of the place where the timber is located and the costs incident to such publication may be paid out of any funds available for the protection or management of the federally owned or administered



forest land involved. This notice shall state: (1) the location of the proposed unit; (2) the name of each proposed cooperator; (3) the duration of the proposed cooperative agreements; (4) the location and estimated quantity of timber on the land of each proposed cooperator and on the Federal land involved; (5) the expected rate of cutting of such timber; and (6) the time and place of a public hearing to be held not less than thirty days after the first publication of said notice for the presentation of the advantages and disadvantages of the proposed action to the community or communities affected.

Before any sale agreement made without competition and involving more than \$500 in stumpage of federally owned or administered timber shall be entered into under this Act, advance notice thereof shall be given by publication once weekly for four consecutive weeks in one or more newspapers of general circulation in the vicinity of the place where timber is located, and the costs incident to such publication may be paid out any funds available for the protection or management of federally owned or administered forest land within the unit concerned. This notice shall state: (1) the quantity and appraised value of the timber; (2) the time and place of a public hearing to be held not less than thirty days after the first of said notice if requested by the State or county where the timber is located or by any other person deemed to have a reasonable interest in the proposed sale or in its terms; and (3) the place where any request for a public hearing shall be made. Such requests need be considered only if received at the place designated in the notice not later than fifteen days after the first publication of said notice. If a request for a hearing is received within the time designated, notice of the holding of the hearing shall be given not less than ten days before the time set for such hearing, in the same manner as provided for the original notice.

The determination made by the Secretary having jurisdiction upon the proposals considered at any such hearing, which determination may include the modification of the terms of such proposals, together with the minutes or other record of the hearing, shall be available for public inspection during the life of any coordinated plan of management or agreement entered into in consequence of such determination. (16 U.S.C. 583d)

Sec. 6. In addition to any other remedy available under existing law, upon failure of any private landowner of forest land which is subject to a cooperative agreement entered into pursuant to this Act to comply with the terms of such agreement, or upon failure of any purchaser of timber or other forest products from such land to comply with the terms and conditions required by such agreement to be included in the contract of sale, the Attorney General, at the request of the Secretary concerned, is authorized to institute against such owner or such purchaser a proceeding in equity in the proper district court of the United States, to require compliance with the terms and conditions of said cooperative agreement; and jurisdiction is hereby conferred upon said district courts to hear and determine such proceedings, to order compliance with the terms and conditions of cooperative agreements entered into pursuant to

this Act, and to make such temporary and final orders as shall be deemed just in the premises. As used in this section the term "owner" shall include the heirs, successors, and assigns of the landowner entering into the cooperative agreements. (16 U.S.C. 583e)

Sec. 7. Whenever used in this Act, the term "federally owned or administered forest land" shall be construed to mean forest land in which, or in the natural resources of which, the United States has a legal or equitable interest of any character sufficient to entitle the United States to control the management or disposition of the timber or other forest products thereon, except land heretofore or hereafter reserved or withdrawn for purposes which are inconsistent with the exercise of the authority conferred by this Act; and shall include trust or restricted Indian land, whether tribal or allotted, except that such land shall not be included without the consent of the Indians concerned. (16 U.S.C. 583f)

Sec. 8. The Secretary of Agriculture and the Secretary of the Interior may severally prescribe such rules and regulations as may be appropriate to carry out the purposes of this Act. Each Secretary may delegate any of his powers and duties under this Act to other officers or employees of his department. (16 U.S.C. 583g)

Sec. 9. Nothing contained in this Act shall be construed to abrogate or curtail any authority conferred upon the Secretary of Agriculture or the Secretary of the Interior by any Act relating to the management of federally owned or administered forest lands, and nothing contained in any such Acts shall be construed to limit or restrict any authority conferred upon the Secretary of Agriculture or the Secretary of the Interior by this Act. (16 U.S.C. 583h)

Sec. 10. Funds available for the protection or management of federally owned or administered forest land within the unit concerned may also be expended in carrying out the purposes of this Act, and there are hereby authorized to be appropriated such additional sums for the purposes of this Act as the Congress may from time to time deem necessary, but such additional sums shall not exceed \$150,000 for the Department of Agriculture and \$50,000 for the Department of the Interior for any fiscal year. (U.S.C. 583i)

APPENDIX B  
Statistical Methods

## Appendix B. Statistical Methods

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Simple linear regression techniques were used to establish and compare relationships between county data sets. The model used is:

$$Y = B_0 + B_1 X + E$$

where Y is the dependent variable and X is the independent variable.  $B_0$  is the intercept and  $B_1$  is the parameter used for comparison, the coefficient of the independent variable. E represents stochastic error.

The model was not used for predictive purposes, only for purposes of comparing the coefficients of the independent variables. In all cases, rates of growth were being compared to each other. The null hypothesis for comparing data sets from three counties was:

$$H_0 : B_1 = B_2 = B_3$$

and the alternative  $H_a : B_1 \neq B_2 \neq B_3$

In addition, should the null hypothesis fail to be rejected, a paired comparison was conducted:

$$H_0 : B_1 = B_2 \text{ or}$$

$$H_0 : B_1 = B_3$$

In each analysis, Grant County data were matched either with both Lake and Modoc County data or with just Lake or Modoc County data.

Correlation coefficients were calculated to determine the linear association between variables. The "F" test was conducted on all comparison groupings for hypothesis testing. Assumptions and techniques used are contained in Snedecor and Cochran, 1980.

All data sets and models were computed using the Statistical Processing System, SPS, Version PC4.0, Buhyoff, Rauscher, Hull, Killeen, and Kirk, 1983.

APPENDIX C

Employment Data

**Table C.1. 1980 - Employment by Industrial Sector**

	COUNTY		
	Grant	Lake	Modoc
Total employment	3,191	3,187	3,411
Sector			
1. Agriculture	539	540	539
2. Forestry/Fisheries	235	265	172
3. Mining	16	14	31
4. Construction	166	250	247
5. Manufacturing	466	450	191
a. Lumber	437	354	134
b. Food	20	3	7
c. All other	9	93	50
6. Transportation	62	38	95
7. Comm/Utilities	73	98	113
8. Wholesale/retail	563	602	650
9. All Services	794	775	1,074
10. Public Administration	277	155	299
11. Not categorized/reported	---	---	---

**Table C.2. 1970 - Employment by Industrial Sector**

	COUNTY		
	Grant	Lake	Modoc
Total employment	2,485	2,296	2,917
Sector			
1. Agriculture	426	615	772
2. Forestry/Fisheries	143	**	**
3. Mining	---	5	9
4. Construction	117	71	170
5. Manufacturing	418	406	257
a. Lumber	381	364	166
b. Food	11	5	20
c. All other	26	37	71
6. Transportation	51	23	137
7. Comm/Utilities	50	59	73
8. Wholesale/retail	451	421	578
9. All Services	678	512	757
10. Public Administration	119	184	164
11. Not categorized/reported	---	---	---

\*\* Data combined with Agriculture



Table C.3. 1960 - Employment by Industrial Sector

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	COUNTY		
	Grant	Lake	Modoc
Total employment	2,626	2,770	3,184
Sector			
1. Agriculture	448	561	896
2. Forestry/Fisheries	119	119	102
3. Mining	17	55	12
4. Construction	111	200	170
5. Manufacturing	691	621	393
a. Lumber	657	553	314
b. Food	20	32	24
c. All other	14	36	55
6. Transportation	31	58	197
7. Comm/Utilities	51	65	90
8. Wholesale/retail	400	364	500
9. All Services	526	566	591
10. Public Administration	144	120	181
11. Not categorized/reported	53	41	52

**Table C.4. 1950 - Employment by Industrial Sector**

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	COUNTY		
	Grant	Lake	Modoc
Total employment	3,259	2,833	3,735
Sector			
1. Agriculture	781	917	1,128
2. Forestry/Fisheries	54	44	66
3. Mining	43	5	9
4. Construction	214	124	267
5. Manufacturing	962	634	739
a. Lumber	917	582	664
b. Food	14	20	29
c. All other	31	32	46
6. Transportation	79	52	286
7. Comm/Utilities	37	51	71
8. Wholesale/retail	403	361	439
9. All Services	461	526	463
10. Public Administration	82	94	117
11. Not categorized/reported	143	25	150

**Table C.5. 1940 - Employment by Industrial Sector**

	COUNTY		
	Grant	Lake	Modoc
Total employment	2,431	2,413	3,328
Sector			
1. Agriculture	953	818	1,161
2. Forestry/Fisheries	23	27	35
3. Mining	258	4	41
4. Construction	119	106	193
5. Manufacturing	315	672	720
a. Lumber	119	305	326
b. Food	12	12	24
c. All other	184	355	370
6. Transportation	68	27	204
7. Comm/Utilities	32	14	25
8. Wholesale/retail	225	273	362
9. All Services	319	358	429
10. Public Administration	72	77	114
11. Not categorized/reported	36	25	44

**Table C.6. 1930 - Employment by Industrial Sector**

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	COUNTY		
	Grant	Lake	Modoc
Total employment	2,775	2,193	3,704
Sector			
1. Agriculture	1,283	993	1,320
2. Forestry/Fisheries	362	172	235
3. Mining	113	8	19
4. Construction	112	75	224
5. Manufacturing	164	197	316
a. Lumber	92	117	158
b. Food	13	40	28
c. All other	59	40	130
6. Transportation	163	116	586
7. Comm/Utilities	70	86	58
8. Wholesale/retail	119	140	248
9. All Services	319	309	549
10. Public Administration	24	25	39
11. Not categorized/reported	46	72	109

Table C.7. Payroll and Employment Data1

Year	Grant County			Lake County			Grant County			Lake County		
	Tot Pay	Lbr Pay	%	Tot Emp	Lbr Emp	%	Tot Pay	Lbr Pay	%	Tot Emp	Lbr Emp	%
1947	2796	1877	67	1025	626	61	3318	2402	72	1068	677	63
1948	4855	3874	78	1459	1058	73	4528	3401	75	1340	843	63
1949	5051	3938	78	1534	1053	69	3782	2493	66	1141	689	60
1950	6218	4913	79	1692	1248	74	4280	2896	68	1167	706	61
1951	7281	5953	82	1740	1289	74	4669	3302	71	1167	714	61
1952	6306	4813	76	1429	934	65	4839	3456	71	1171	710	61
1953	6189	4523	73	1399	895	64	4839	3475	70	1178	727	62
1954	6257	4543	73	1392	877	63	4818	3460	72	1121	696	62
1955	6331	4488	71	1381	843	61	4820	3400	71	912	668	73
1956	8032	5760	72	1779	1098	62	4947	2931	59	1179	584	50
1957	6917	4438	64	1577	884	56	5259	2832	54	1282	546	43
1958	6695	4198	63	1454	792	54	7154	2941	41	1516	556	37
1959	7947	4538	64	1492	836	56	7239	3146	43	1538	715	46
1960	9611	4507	47	1596	829	52	6944	2867	41	1514	532	36
1961	7239	4086	56	1570	762	49	6612	2775	42	1475	515	35
1962	7627	4056	53	1545	686	44	6570	2718	41	1445	501	35
1963	7998	4431	55	1573	747	47	7250	3101	43	1513	536	35
1964	8371	3867	46	1557	628	40	7280	2937	40	1449	481	33
1965	8099	3744	46	1529	580	38	7790	2951	38	1461	461	31
1966	8708	3969	46	1547	574	37	7798	2856	37	1430	439	31
1967	9977	4834	48	1640	646	39	8085	2918	36	1400	417	30
1968	11012	5492	50	1734	710	41	8812	3209	36	1472	437	30
1969	11121	5476	49	1746	724	41	8846	3133	35	1430	407	28
1970	11183	4942	44	1645	618	38	9380	3128	33	1382	355	26
1971	12070	5197	43	1675	577	34	10342	3719	36	1418	399	28
1972	13363	6369	48	1713	655	38	11330	4410	39	1466	448	31
1973	10940	7001	64	1678	668	40	11775	4425	38	1470	423	29
1974	17277	7143	41	2016	635	32	15166	4633	31	1814	425	23
1975	18063	7030	39	1987	563	28	16018	4266	27	1796	358	20
1976	21184	8898	42	2111	644	30	17873	4887	27	1838	360	20
1977	16404	11001	67	1421	702	49	10962	5924	54	1093	393	36
1978	27966	12130	43	2396	714	30	24885	7220	29	2308	475	21
1979	31489	13577	43	2511	760	30	28636	8394	29	2466	496	20
1980	30342	9804	32	2307	489	21	30420	7569	25	2443	416	17
1981	31862	9662	30	2250	475	21	32582	8349	26	2433	443	18

Source: Oregon Covered Payrolls and Employment, 1947-1981

1

Legend:

- Tot Pay.....Total Payrolls, wages and salaries
- Lbr Pay.....S.I.C. 24 Payrolls, wood products sector
- %.....Lbr Pay/Tot pay x 100
- Tot Emp.....Total Employment
- Lbr Emp.....S.I.C. 24 Employment
- %.....Lbr Emp/Tot Emp x 100