# RECREATIONAL CONDOMINIUMS IN SUMMIT COUNTY, COLORADO: LOCATIONAL FACTORS AND POLICY IMPLICATIONS

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JAMES VERNON NANCE, Jr.
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LOCATIONAL FACTORS AND POLICY IMPLICATIONS

presented by

James V. Nance, Jr.

has been accepted towards fulfillment
of the requirements for

Ph.D degree in Geography

Michael Chubb

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ABSTRACT

RECREATIONAL CONDOMINIUMS IN SUMMIT COUNTY, COLORADO:
LOCATIONAL FACTORS AND POLICY IMPLICATIONS

By

James Vernon Nance, Jr.

This study describes and analyzes the location and development of recreational condominiums in Summit County, Colorado.

Summit County, Colorado, located 75 miles west of Denver in the Colorado Rockies, experienced rapid recreational development during the last five years. As land prices increased, developers introduced urban land use schemes into Summit County and attempted to establish the highest residential densities possible; consequently in the 1970's, the focus of real estate development turned almost exclusively to condominiums. These large multi-storied, apartment-like buildings were constructed throughout the county and generally replaced the "cabin-in-the-woods" as the primary form of recreational housing. In fact, the condominium trend was well established by 1972 when 88 percent of the living units developed that year were multi-family residential condominiums.

In Summit County, the recent growth of condominiums represents a major departure from earlier development of small cabins and Victorian styled houses. Many of the permanent residents of Summit County moved there to escape the city and they resisted the condominium as an intrusion of urbanism into the rural landscape. Many of their protests were well justified; much of the condominium development has blighted the landscape

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with cheap construction, architectural designs not suited for the mountains and locations unsuited for high density and multi-family residential development. Furthermore, the rapid growth has presented the county with serious problems of providing adequate municipal services. Because goals and growth policies for condominiums remain ill-defined, development continues without benefit of a comprehensive plan. The problem of this study involves the spatial pattern of recreational condominium development and how these patterns can be explained in order to improve planning and public policy.

Since regulating condominium growth must ultimately be accomplished by local governments, the study emphasizes condominium location at the micro-level. The analytical approach utilizes an analysis of the agents involved in the development process and their selected site characteristics to explain the spatial structure at the micro-level.

Four factors are primarily responsible for the area-wide development of recreational housing in Summit County: increasing popularity of skiing, creation of Dillon Reservoir, construction of Interstate 70, and location of Colorado's population concentrations. In addition, other factors tended to direct growth toward multi-family condominium complexes: limited amount of private developable land, high land prices, local government policies and attitudes that permitted high density zoning and the acceptance of condominiums as a form of ownership in recreational housing.

Both the historical development of condominiums and their spatial pattern indicated that the three main ski areas (Breckenridge, Copper Mountain, and Keystone) and Dillon Reservoir serve as nuclei of condominium development. In fact, within a half a mile of these ski areas and Dillon Reservoir are found 53.8 percent of the condominium projects and within one mile are 79.9 percent of the projects. Because of the

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recreational orientation, condominium projects were dichotomized into two types of regions: ski oriented or reservoir oriented.

In this study, three characteristics of condominium projects were selected as indicative of the degree of urbanism and important for future planning: site density, building height, and building size. Each of these characteristics (dependent variables) were cross tabulated with selected locational site characteristics (independent variables). A univariate, non-parametric technique, the Goodman-Kruskal index of order association, was utilized to determine the degree of association between each dependent variable and each independent variable.

In the case of density, significant positive associations were found with valley sites, town locations; and negative associations with tree cover, PUD zoning, distance from a post office, supermarket, major road, and ski area. Contrary to what was hypothesized, higher densities are associated with less tree cover. Of the ski oriented condominiums with extremely high density, 75 percent have been built in an open meadow or treeless site and created a major visual impact on the rural landscape. In the ski region, more scattering of high density condominium developments has occurred than in the reservoir region; this is revealed by weak indexes for distance from the post office and major roads.

For the most part, the taller buildings at the base of the ski areas accounted for the negative association for the variables tree cover, distance from post office, and distance from a supermarket. In the reservoir region, no identifiable locational pattern of building height exists.

For building size, only three independent variables proved significant in each region. With the exception of hillside or valley locations in the ski region, only moderate indexes were produced. In part, this is explained by the fact that most of the buildings are small and few

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identifiable patterns exist except for the concentration of larger buildings in the valley areas, at the base of the ski areas, and near Dillon Reservoir.

In the future, the location selected for condominiums should be appropriate to the characteristics of the site and the role of the new development within the community's spatial and social framework. If a condominium project is designed with a low lot coverage, sufficient open space for landscaping and recreational use, and ample parking, then Summit County should welcome the present trend toward higher densities associated with condominiums as a relief from the wasteful land use practices of earlier single family type of second homes.

Currently, an over supply of condominiums exist in Summit County. Nevertheless, once the existing unsold units are purchased, condominiums will continue to be built as part of the county's recreational housing. Because of the rental income, tax aspects, location, amenities, and carefree ownership advantages of a condominium over a second home, the condominium has appeal in the recreation housing market. However, it is doubtful that condominiums will again dominate recreational housing in Summit County.

# RECREATIONAL CONDOMINIUMS IN SUMMIT COUNTY, COLORADO

## LOCATIONAL FACTORS AND POLICY IMPLICATIONS

By

James Vernon Nance, Jr.

A DISSERTATION

Submitted to
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In partial fulfillment of the requirements
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Without the patience, understanding, and assistance of my wife, this study would have never been completed; to her, I will be forever indebted.

My sincere appreciation is also expressed to my doctoral committee, particularly the chairman Dr. Micheal Chubb, for careful and critical reviews of the drafts.

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# CHAPTER 1

# INTRODUCTION

Noted conservationist Aldo Leopold (1949:viii) warned that, if the concept of land as a "commodity" persisted, the nation's land base could not long "survive the impact of mechanized man".

Written nearly a quarter century ago, the observation still applies today despite the repeated warnings of contemporary environmentalists. The traditional concept of land as a commodity to be bought and sold, used and depleted as the owner sees fit, continues with a minimum of government involvement. Confronted with rapidly changing land use patterns, governmental agencies simply altered the concept to fit a situation of limited supply. The controls of zoning ordinances, subdivision regulations and building codes generally take the form of "thou shall not" commandments (Senate Committee on Interior and Insular Affairs 1973:72). Basically, these ordinances are largely devoid of any positive land use planning concepts; instead, the negative controls tend to perpetuate the scarce supply of land. Will Rogers aptly described the situation when he said, "Buy land, they ain't making any more of it".

## Mountain Land Use Trends in Colorado

In Colorado, the utility of this traditional attitude towards land must be questioned in light of the severe pressures now being placed on it by continued population growth and recreational development. Since 1950, the state's population has increased by 69 percent and, if growth

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continues at past rates, the population is expected to double by 2000. For the most part, the greatest population gain has occurred in the major metropolitan centers along the eastern front of the mountains. But the nearby mountain regions that serve as the state's recreational hinterland and a destination for millions of tourists annually, have also experienced rapid development due to the demand for second homes and recreational land. With few controls on exurban land development, subdivisions were carved out of the valleys and mountainsides at an accelerating pace. As a result, the mountain regions have been suddenly faced with unprecedented changes in land use referred to as "mountain urbanization" (High Country 1973: 15).

## Summit County

The second home development that is transforming vast areas of the Colorado Rockies to dense urban landscapes is finding a focal point in Summit County (Figure 1). Recent studies on second home development by Ragatz (1970) and Tombaugh (1968) indicate that the vacation homes are not randomly distributed but generally concentrate with reference to two primary factors: proximity to primary residents and the availability of facilities for recreation.

Summit County meets both requirements. First, it is located only seventy-five miles from the largest population center of the state, the Denver Metropolitan Area, and it is readily accessible via Interstate 70, the first major transcontinental route across Colorado. Second, the overall physical environment of the area sets the stage for numerous recreational activities (Figure 2). Bounded on the east and south by the Williams Fork Mountains and the Continental Divide, and on the west

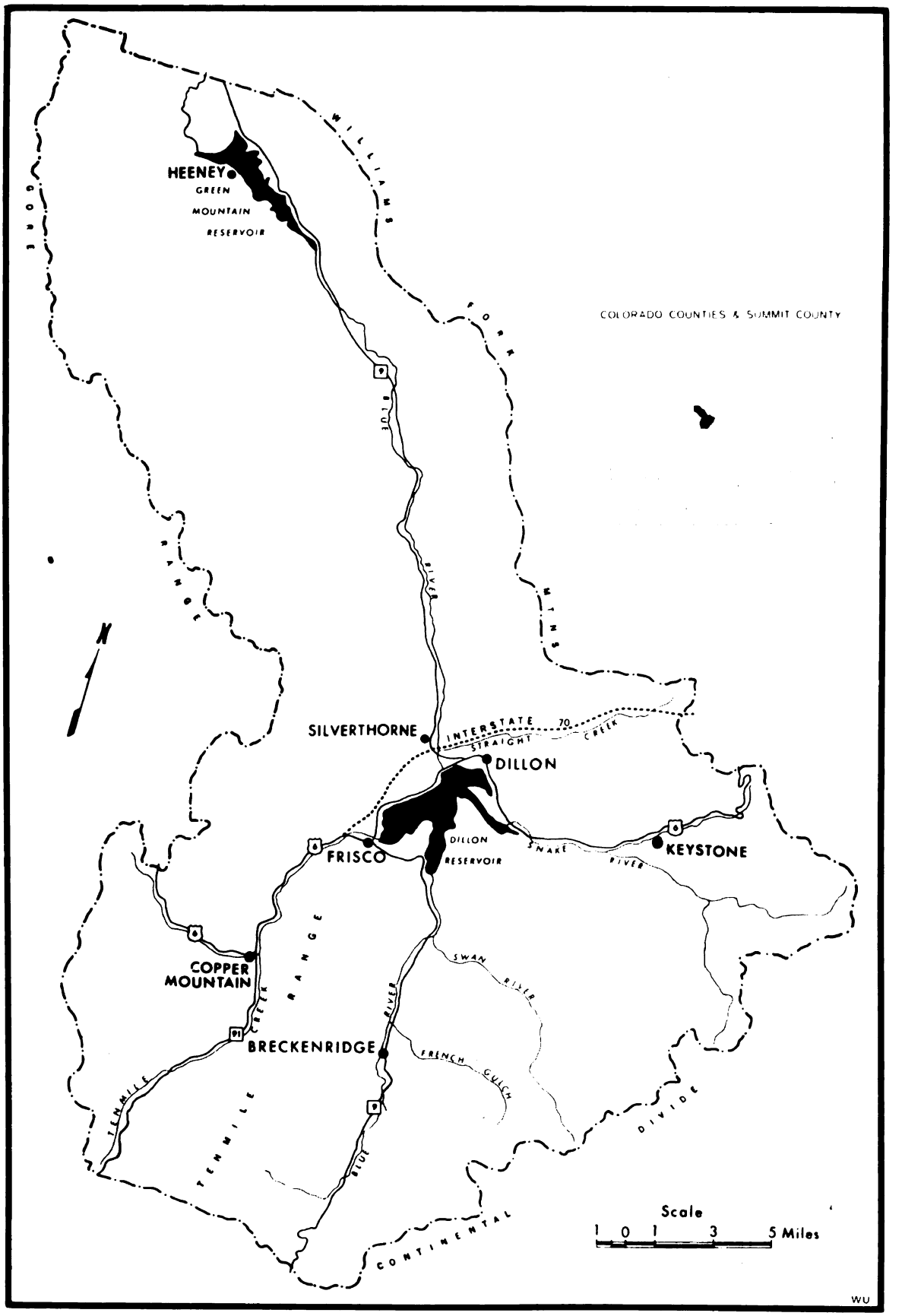


Fig. 1. Summit County, Colorado (map courtesy of Wilbur J. Ulman,Ph.D.

FIGURE 2.--View of the central part of Summit County. In the foreground is the town of Frisco on the west shore of Dillon Reservoir; the town of Dillon is on the opposite shore in the vicinity of the major road cut scar (Interstate 70) on the left side of the photograph. The William Fork Mountain and Continental Divide are shown in the background.

by the spectacular Gore Range, the mountains form a basin drained by the headwaters of the Blue River. Open meadows dominate the valley floor, but the surrounding mountains are covered with coniferous forests that are intersperced with aspen groves. Over seventy-five percent of the county lies within the Arapaho National Forest. Elevations range from 7,550 feet in the northern valley to over 14,000 feet in the surrounding mountains. Two large reservoirs and a number of streams provide abundant water-based recreation in the summer. In addition, the mountain environment is characterized by cool summers that offer a refreshing change from the hot plains. On the other hand, the winter climate sets the foundation for the county's major recreational activity, skiing. Summit County has four ski areas of which three are considered major four season resorts.

Summit County then, by virtue of its location, accessibility, natural site characteristics, and recreational opportunities, experienced an unprecedented growth during the last five years. The intensity is illustrated by the change in assessed property valuation. From 1960 to 1974 assessed valuation increased over twelve fold with the largest gains experienced since 1970 (Table 1).

At first, the county was unprepared to cope with the rapid pace of development. Zoning laws, subdivision regulations and master plans were of little concern to local communities who depended mainly on ranching, some mining and a minor tourist business. Understaffed and poorly financed, local governments knew little of land development and the consequence of poor planning. Furthermore, the county was eager for economic development after years of limited growth. As a result, land use controls were almost non-existent and zoning was arbitrary.

Because of a limited amount of private developable land, land

prices escalated. Then developers began to introduce urban land use schemes by having large areas zoned for multi-family development. With high density zoning, most of the new developments involved condominium complexes. These large, multi-storied apartment like buildings were constructed throughout the county and generally replaced the "cabin in the woods" as the primary form of recreational housing. In fact, the condominium trend was well established by 1972 when 88 percent of the living units developed that year in the county were multi-family residential condominiums (Summit Citizens Association 1973:3).

TABLE 1.--Assessed Property Valuation, Summit County, Colorado, 1960 - 1974

| Year | Grand Total Assessed Valuation | Per Cent Increase Over Previous Year |
|---|---|---|
| 1960 | 5,878,560 | |
| 1961 | 6,458,580 | 10.0 |
| 1962 | 7,084,030 | 9.7 |
| 1963 | 7,269,100 | 2.6 |
| 1964 | 7,559,140 | 4.8 |
| 1965 | 8,085,125 | 6.9 |
| 1966 | 9,199,740 | 13.8 |
| 1967 | 9,913,035 | 7.8 |
| 1968 | 10,965,985 | 10.6 |
| 1969 | 11,825,900 | 7.0 |
| 1970 | 13,605,320 | 15.0 |
| 1971 | 18,983,500 | 28.7 |
| 1972 | 25,524,000 | 34.5 |
| 1973 | 55,213,200 | 116.3 |
| 1974 | 72,558,410 | 31.4 |

Source: Colorado Division of Property Taxation, Denver, Colorado

The development of condominiums provided additional tax revenues and more employment opportunities and generally stimulated the local economy. But, on the other hand, these benefits did not occur without accompanying costs to the county. Serious environmental and service

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problems developed, and raised questions about the county's ability to provide road maintenance, snow removal, schools, water, sewer, and solid waste disposal (Summit Citizens Association 1973:1).

Concern was also expressed over ways to minimize environmental decay and aesthetic deterioration. Summit County was beginning to realize that development for development sake alone was not enough. The promotional theme of "Keep Colorado Growing" began to be replaced with anti-growth sentiments like "Don't Californicate Colorado". Since the official county master plan was inadequate to cope with the explosive growth of condominiums, citizen groups called for control and moratoriums until the proper planning could be accomplished. Many of the protests were well justified; much of the condominium development had blighted the landscape with cheap construction, architectural designs not suited for the mountains, and locations unsuited for high density and multi-family residential development. Furthermore, as Ulman (1973 B:x) concludes,

> The findings of the study reveal the lack of capacity of rural local governments, in general, to effectively deal with the major problems of long range planning, rapid development, and protection of the environment in the face of accelerated development pressures. Increasing population densities, rising crime, lagging public services, traffic congestion and increasing environmental decay signaled the approach of urbanization.

Colorado Senate Bill 35 provides the legislation for local governments to enact land use controls and establish a review process for residential subdivisions. This gives the local units of government the legal power to develop land use plans. But in Summit County, goals and growth policies remain ill-defined and development continues without the benefit of comprehensive locational policies for condominiums.

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## Statement of Problem and Objectives

This study involves the location of condominiums in Summit County. The problem stated in question form is: What are the spatial patterns of recreational condominium development and how can these patterns be explained in order to predict what will happen in the future and improve planning and public policy?

More specifically, the objectives of this study are as follows:

1. Describe and analyze the location and development of recreational condominiums.

2. Identify associations between the locational factors and the various intensities of land use associated with recreational condominiums.

3. Identify trends and make recommendations on location policies that would aid the Regional Planning Commission, Board of County Commissioners, town boards and other public agencies responsible for the location of recreational condominiums.

## Significance of Problem

Summit County lacks a county master plan and consequently does not have an adequate framework for dealing with current land use problems. According to Charles Foster, Summit County Planner, "The timing of the completion of a comprehensive master plan is of the utmost importance as the vast majority of the high density zoning has occurred in just two years. If we wait two more years to complete a plan, we will end up giving away most of our options for adequate control" (Summit Citizens Association 1973:Introductory letter).

The location of recreational condominiums has direct implications with regards to traffic patterns, parking and traffic congestion, commercial activities, utility orientation and use of recreation facilities. Therefore, it would be beneficial to anticipate where, when and how much of such development is likely to occur. But to do this requires information

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on the spatial distribution of the existing developments; consequently, this proposed study is concerned with contributing to a better understanding of the factors associated with the location of recreational condominiums.

## CHAPTER II

## ANALYTICAL FRAMEWORK

As indicated earlier, the subject of this study is the factors affecting the location of recreational condominiums. Since very little research has been published on this topic, the analytical framework is based largely on urban land development concepts pioneered at the University of North Carolina's Center for Urban and Regional Studies by Chapin and Weiss. Although this research focused primarily on residential land development in the Piedmont Industrial Crescent of North Carolina, their land development factors have been applied to recreational development in Burby's (1971) article,"A Quantitative Analysis of Factors Influencing Residential Location in Reservoir Recreation Areas".

Basically, the approach utilizes an analysis of the agents involved in the development process and their selected site characteristics to explain the spatial structure at the micro-level (Weiss, et al. 1966:6). Since regulating growth will probably remain the responsibility of local governments, emphasis on the condominium location at the micro-level seems the most appropriate for establishing guidelines for future developments.

### Decision Agents in Land Conversion

Land use patterns can be viewed as the geographical expression of a myriad of human decisions (Abler, et al. 1971:455). And in land development, these decisions are incredibly fragmented and diffused among a wide

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variety and large number of private individuals and organizations and among many public agencies (Clawson 1971:58). Each of the decision makers is guided by his own incentive - the household consumer by needs and preferences; and the developer-builder by the profit motive; others, including the predevelopment land owner, the realtor, financier, and the public official, by an array of pecuniary and non-pecuniary motives (Kaiser and Weiss 1969:75). One way to simplify this complexity is to focus on the agents who influence the land conversion process and actually make commitments to a specific location. These are: the landowner's decision to hold, subdivide or to place the new land on the market, the developer's decision to invest in second home development on that site, and the household consumer's decision to purchase the second home package of house, lot and location.

At least three interrelated studies are required to adequately analyze the location of second homes (Burby 1971 B:76). Each of these studies would center on one of the main location agents; the pre-development land owner, the developer, and the consumer.

In the past, most studies relevant to second home development viewed the problem of forecasting the spatial distribution of second homes almost exclusively from the actions of the consumer. But in a recent article, Clout (1971:548) concluded that it is virtually impossible to forecast the location of second homes in this manner because of the wide range of socio-economic groups acquiring them for many different reasons and uses. While the consumer influences and is influenced by the developer, the role of the individual purchaser is more passive in the sense that he chooses among the alternatives available to him (Clawson 1971:72). The socio-economic characteristics of the second-home buyer, such as stage in life cycle, household size

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and income as well as the consumer desired amenities of scenery, tranquility, open space, and recreational opportunities are important in determining the residential preferences perceived by the developer to be shaping the market to which he intends to sell his development (Kaiser 1968:355). The logical starting place appears to be the developer because the developer is the initiator and the catalyst most directly involved in the location and physical design (Clawson 1971:58). It is his locational decision that is the first specific spatial commitment (Kaiser, et al. 1965:30). As Ratcliff (1951:276) has observed,

> From a community standpoint, one of the most crucial phases in the productive process which creates usable space is the point at which land is taken out of agricultural use and prepared for urban use. It is here that the basic skeleton of the city is created and land use patterns are crystallized so that future changes are difficult and costly.

Since the developer is central to the development process, the strategy of the proposed research views this agent's location decision as the most fruitful for an exploratory study in spatial structure of recreational condominiums.

A major assumption of the analytical framework is that "legally recorded subdivisions (condominiums in this study) represent empirical evidence of the development location decision" (Kaiser 1966:14). Since the proposed research will use the condominium as the observation unit, it is this assumption that enables the study to adapt the developer as the decision agent and thus utilize the conceptual approach.

## Developer's Location Decisions

Weiss et al. (1966:12-20) identified three sets of factors which influence the key decisions in the developer's decision making process:

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2. Decision Agent Characteristics
3. Site Characteristics

Contextual Factors

Contextual factors are the broad area-wide considerations which limit and determine the general type and amount of development (Weiss et al. 1966:12). Two broad categories of contextual factors affect the individual location decision of developers: socio-economic factors and public policies.

To the developer, the contextual factors provide a major input into the decision whether or not to develop in the area. Such conditions as the current demand for new condominium units, growth prospects, and the existing and future supply of condominium units greatly influence the availability of financing to the developer. Policies of the Federal and state government with respect to reservoir location and road construction, especially interstate highways construction, strongly affects the rate of development in a rural area and the demand for second homes.

Decision Agent Characteristics

Decision agent characteristics represent the first of two sets of factors which are important in the explanation of the variation in the developer's location decision at the city or county level. Four key characteristics of the development firm apply:

1. Type of Firm
2. Scale of Operations
3. Entrepreneurial Approach
4. Life Cycle of Firm

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of the development company's activity among residential, commercial, or industrial projects. For example, development companies generally take either a conceptual or regional approach. In the conceptual approach, the firm will develop one type of project, such as shopping centers, and build these wherever the demand appears to exist. In this case, the firm may develop projects throughout the United States. In the regional approach, a development company will develop a variety of project types; it may develop office space, commercial or industrial, but concentrates in one region or metropolitan area. "Scale of operation" denotes the annual production of residential living units. The "entrepreneurial approach" refers to the broad, personal attitudes which influence the developer's decision making process. "Life cycle" refers to the experience and reputation of the firm in the development industry.

However, Kaiser (1968:357) determined that the most influential behaviorial component is the scale of operation. Different patterns are produced by large and small developers; while both are responsive to site characteristics, the two appear to be looking for different combinations. For example, small developers tend to choose more remote sites with fewer public utilities. Larger developers tend to select the opposite kind of site characteristics (Kaiser and Weiss 1969:77).

Site Characteristics

Site characteristics are the second set of location factors and they represent the spatial structure at the micro-level; consequently, these characteristics appear to be the most effective means by which to explain the developer's location decision (Kaiser and Weiss 1969:76). Research indicates that the site characteristics affect land development costs, the marketability, and the value of the subdivision lots.

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As Marion Clawson (1971:60) states, "In any case, the kind of house, their price, and their market must be related, in the developer's judgement to the character of the site."

Three broad categories of site characteristics influence the developer's location decision: physical, location, and institutional. First, physical site characteristics refer to the environmental setting that either influences the site development cost or the consumer's desirability for that site, or both.

Second, the locational site characteristics consist of values derived from the relative location of the site within the spatial pattern of activity places, transportation network, and social values. Since the site itself is fixed, changes in the locational characteristics depend on changes in the surrounding spatial framework (Weiss et al. 1966:17).

Institutions of the community, i.e., local government, impose the third category of site characteristics. Public policy influences the locational decision both as contextual factor (macro-level) and institutional site characteristic (micro-level). Of great significance to condominium construction is zoning. Whether a developer buys land already zoned for multi-family or attempts to have a parcel rezoned for multi-family, the number of dwelling units permitted per acre (density) becomes a major consideration in the spatial pattern.

Once the choices are narrowed down to alternative sites, land cost as a locational factor becomes very important. As a subsequent article by Weiss and Kaiser (1968:77) notes: "The price market aimed for by the developer also influences his selection of site characteristics and hence the location of his subdivision". In condominium development, the cost of land per living unit influences and in many

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## Previous Research on Second Home and Condominium Development

Past research centered almost exclusively on the location of single family type second homes, but many of the locational concepts presumably apply to recreational condominiums.

Studies by geographers such as Wolfe (1951), Clout (1971), and Borchert (1970) have centered mainly on the state or regional distribution of second homes. For example, their results reveal that an important explanatory variable is the actual mileage between the primary residence in the metropolitan center and the second home. In "Holiday Homescapes of Queenland", Marsden (1969) discusses the city-region hypothesis which generally shows how the nearest major urban center provided the majority of second home owners. David and Geoffroy's (1968) article, "Les Residences Secondaires de la Chartreuse Iserouise" illustrated the concept by the fact that 82 percent of the second home owners in the alpine ski resort of Chartreuse were from nearby Grenoble.

Wolfe (1970 A) attempted to establish a distance decay function between the number of second homes and the distance from the major metropolitan center of a region. And Burby (1971 A:75) found a significant negative relationship between land in second homes and the road distance to Atlanta.

Of greater importance to this study, however, is research at a more limited scale that illustrates the location factors at the micro-level. As identified in the analytical framework, the micro-level locational factors emphasized three categories of site characteristics: 1) physical 2) locational 3) institutional.

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## Physical Characteristics

In a mountain environment, physical site characteristics influence the location of recreational condominiums. Obviously, appeal of a site will depend on the overall environment and climatic condition as well as the particular characteristics of the site with respect to the environmental setting (Reardon 1973:8).

Water. Previous studies have illustrated the importance of the lakeshore and streams as an attraction for second homes. Ragatz (1970:24) noted that, "Developers are realizing that almost any type of property with water access is the potential location for vacation homes".

View. Another major element of the recreational landscape is the aesthetic beauty of the mountains or what Clawson and Knetsch (1966:100) describe as "the innate attractiveness of an area". Its importance to recreation development was noted by Thompson (1971:179), "the primary recreation resource of Colorado is scenery". Although difficult to define, an impressive vista is an important factor to second home development.

Tree Cover. As Thompson (1971:19) suggests, the forest areas please the eye of the grass and/or desert resident. Norcross (1973:49) revealed that trees and woods were a very desired environmental feature of townhouse and condominium owners.

Topography. In the mountains, topography affects the suitability of the land for development; construction costs are generally higher on an excessively sloping site than a flat site; consequently, valley locations should be preferred over hillside locations.

## Location Characteristics

As in the majority of housing investment decisions, the factors of location are of greatest importance (Clurman and Hebard 1970:24).

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In a recreational community, accessibility to recreation opportunities influences the location of subdivisions (Burby 1971A:72). As Walsh and Parseys (1972:2) noted, "Seasonal home use is both a consumptive good and a means to other recreation activities".

Recreational Activity Centers. At the micro-level, accessibility to recreation and other activity places appears to be positively related to the location of second homes; for example, recent market surveys reveal that skiers desire close proximity to the ski lifts (Skiing Area News 1972:18; Vail Real Estate Report 1970:3). Generally, the recreational activity desires which influences the decision to purchase the second home property reflect the activities available in the area. In Aspen, Colorado, Walsh and Parsey's (1972:39) survey found that all condominium owners ski and they reported this activity as most influential in their purchase decision.

The relationship between accessibility to water and the amount of second home development is well documented (Burby 1971A:75). Tombaugh's study (1970:56), "Factors Influencing Vacation Home Locations", revealed that 89 percent of Michigan's second homes are located on or within a five minute walk of some body of water.

Public Lands. Since government regulations generally prohibit construction of permanent structures on federally owned land, second home residences tend to cluster adjacent to the government property line, with the most desirable sites being closest to the government property line (Burby 1971 A:72).

Transportation. Transportation is a major influence on land use. At the micro-level, the cost of condominium development would become prohibitive if the developer had to construct long access roads to reach the site (Burby, et al. 1970:10). But areas easily accessible to

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existing roads enhance the opportunity for condominium development. Furthermore, in a rural mountain environment, ease of accessibility is related to the quality of the road and its condition during the winter season.

Existing Towns. With the advantages of existing utilities, municipal services and accessibility, the established communities are the logical locations for condominium development. As in an urban setting, the towns also offer easy access to shopping and entertainment facilities.

Institutional Characteristics

Finally, the impact of the public sector on the second home development process is channeled through three governmental functions: regulatory, provision of urban services, and capital improvements.

Included in the regulatory functions are zoning, subdivision regulations and building regulations. In past research, these have been omitted largely because land use controls were almost non-existent in the rural areas. But in Colorado, Senate Bill 35 requires that a condominium developer submit his plan to the local government for approval. Because of the legislated review process, attitudes of the local government toward condominium development become important.

The second function of government is the provision of urban services. Burby (1971 A:75) found that second home development is positively associated with the availability of public utilities and second home subdivisions tend to be associated with the extension of a given system.

Finally, the capital improvement programs of local, state, and federal government play a major role in determining the location and improvement of the transportation networks. Burby (1971 A:72)

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highlighted the pervasive influence of the availability and quality of public roads. His study found that development tended to occur where roads are available and has been attracted more to paved than dirt or gravel roads.

Availability of Land

The availability of land is an important locational factor to the condominium or subdivision developer. Only 23 percent of the land in Summit County is in private ownership and much of this land is unsuitable for development due to excessive slopes.

## Condominium Development and Mountain Urbanization

In Summit County, the recent growth of condominiums is a major departure from the earlier development of small cabins and Victorian styled houses. By contrast, the multi-family, multi-storied apartment-like structure of the condominium reflect a type of land use found in urban areas. In a way, the intensity of land use associated with condominium projects represents an intrusion of urbanism into a rural, recreation landscape. Since many of the permanent residents of Summit County moved there to escape the city, they resist condominium development. Furthermore, in the Breckenridge "Goals and Objectives Survey" conducted in the summer of 1974, the permanent resident considered the old buildings as the town's most attractive physical features and the newer condominiums were considered the ugliest physical feature (Summit County Journal 1975 A).

Generally, the resistance to condominiums increases with the high density, multi-storied projects. For example, when a six story project in Breckenridge sought town approval, it was met with considerable local resistance based on scenic pollution and the resulting

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urban appearance associated with a high rise building.[1] For instance, a local newspaperman described it as "out of scale with the town" (Interview with Tom Farnum, February 20, 1975, Breckenridge, Colorado).

Density is generally the most objectional characteristic of condominiums. At a town of Blue River board meeting, trustee Scott Gould described the reason he was against a condominium project: "this subdivision would undermine the basic character of Blue River because the density was too high".

In an effort to achieve higher densities, developers want to build multi-storied structures. In Summit County, the tall building presents a visual contrast and an aesthetic contradiction to the rural setting. At a Frisco, Colorado meeting of the town's Planning and Zoning Commission in 1972, when a 12 story building was submitted for variance of the 35 foot height restriction, one member commented "if a variance were allowed, other developers would build tall buildings around the lake creating a skyline similar to Miami Beach's" (Summit Sentinel 1972).

Associated with density and building height is building size. Developers attempt to build larger buildings to minimize their cost and utilize the site more efficiently. Furthermore, the building size relates to the visual impact and reflects the overall structural mass of the condominium project.

In this study, the characteristics of condominiums selected as indicative of the degree of urbanism and important for future planning

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[1] The author attended the presentation of the six story Trail's End at the Breckenridge Architectural Committee and Planning and Zoning meeting in Spring, 1972.

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Land Use Intensity Patterns

Community densities have a great variety of spatial patterns. Urban geographers have developed several locational theories on land use arrangements: concentric pattern, linear pattern, and radial pattern. In most cases, however, the highest densities are found in the center of the urban community and along the major corridors; the lowest densities are found in the outlying areas. In an urban situation, the highest densities of land use and highest land values are based on commercial activities (office space and retail). In a rural recreational type of setting, however, the most intense residential land uses are oriented toward recreation rather than office and retail types of land use. Consequently, the high density locations are often immediately adjacent to the major recreational activity center.

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[1] There are two measures of density:
Net density represents the number of dwelling units per net acre of land devoted to residential buildings and accessory uses on the same lot within the site but excluding land for streets, public parking, playgrounds, and non-residential uses.
Gross density is computed on the basis of gross land area including area devoted to streets and other non-residential uses plus one-half of bounding streets and one-quarter of bounding street intersections. Unless otherwise stated, density in this study refers to net density.

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## Hypotheses

From the conceptual framework, previous research on recreational condominiums, and personal experience, it has been found that as in any land use study, a multitude of factors influence location. Since the thrust of the study is exploratory and focuses primarily on the planning aspects of location, attention will be focused on the most important factors. Two general hypotheses will guide the study:

1. In Summit County, the major recreational activity centers, Dillon Reservoir and the ski areas, serve as nuclei of condominium development.

2. Different types of recreational condominiums, in terms of selected urbanism characteristics, are associated with various combinations of site characteristics. The subhypotheses are:

    a. Higher densities, taller buildings, and larger buildings, are negatively associated with increasing distance from a post office, shopping opportunities, ski area, shore of Dillon Reservoir, marina, public lands, interchange on Interstate 70, and major road.

    b. Higher densities, taller buildings, and larger buildings are positively associated with increasingly wooded sites, more scenic views, valley locations and planned unit developments.

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# CHAPTER III

# RESEARCH DESIGN

In this chapter, the scope of the study is defined, and the measurements and statistical methods employed to test the hypotheses are described.

## Scope

As in any location study, the problem can be considered at many different geographic scales and in varying degrees of detail. However, based on the objectives and conceptual approach, the investigation will be conducted at the micro-level. As stated in the objectives, the study area is Summit County and the central aim is to analyze the location of condominium buildings within that county. The study, then, involves a complete inventory of existing condominiums in Summit County as of December 31, 1973. It does not include proposed condominium projects or expansion of existing projects after that date.

Furthermore, since the study is geographic in nature, characteristics of the decision agent (i.e. developer) will not be included; instead, site characteristics are the main theme. Other studies from the University of North Carolina have not considered behavioral characteristics of the developer; examples are, Burby's (1971 A) "A Quantitative Analysis of Factors Influencing Residential Location in Reservoir Recreation Areas" and Burby et al. (1970) "Factors Influencing the Residential Utilization of Reservoir Shoreland in the Southeast". As Weiss noted, site characteristics are "the most effective means to explain the variation in the

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Availability of land is an important influence on the location of condominiums, but it would require a separate study on the pre-development land owner which is beyond the resources of this researcher. Another variable, cost of land is also omitted; the tax assessor's office had an estimation of land values; however, the figures proved incomplete and outdated. Developers resisted disclosing the cost of land.

## General Definitions

In this study, the following definitions apply to the terms used:

Association of Unit Owners. The unit owners acting as a group in accordance with the declaration and by-laws for the administration of the project. Ordinarily, the owner can exercise voting rights in the association. It can also be provided by the condominium declaration that the lessee of a unit shall be deemed to be an owner for voting purposes (Kass and Sakai 1974:2).

By-Laws. The operation of the property is governed by a set of by-laws which set forth the manner of selection of the board of directors, the officers, the association's duties and obligations and the calling of the meeting which governs the activities of the project (Kass and Sakai 1974:2).

Common Elements. Parts of the property which are necessary or convenient to the existence, maintenance and safety, or normally in common use by the unit owners of the project. Common elements include such items as the land, the foundations and structural items, central and appurtenant installations for utilities, the elevators and such other facilities as are designated common elements in the declaration (Kass and Sakai 1974:2).

Common Expenses. The expenses of operation of the property and all sums designated as such in the declaration and the by-laws (Kass and Sakai 1974:3).

Common Interest. The percentage of undivided interest in the common elements apportioned to each unit as expressed in the declaration (Kass and Sakai 1974:3).

Condominium Ownership. Condominium ownership consists of a separate estate in an individual air space of a multi-unit property together with an undivided interest in common elements (Colorado Real Estate Commission 1970:27).

Condominium Map. The floor plan, site plan, or parcel map which

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sets forth the layout, location, unit numbers and dimensions of the units and which is filed for record and generally certified by a registered architect, registered land surveyor, or professional engineer (Kass and Sakai 1974:3).

Condominium Project. Any co-owned, multi-family building or buildings classified as a condominium by Colorado's Condominium Act.

Condominium Unit. It is an individual air space unit together with the interest in the common element appurtenant to such unit (Colorado Real Estate Commission 1970:27).

Declaration. A recorded instrument which defines the character, duration, rights, obligations and limitation of condominium ownership (Colorado Real Estate Commission 1970:27).

Developer. The single firm that takes a piece of raw land, plots it into lots and streets, installs utilities, erects the condominiums, and sells or rents them to consumers. In Summit County, the condominium developer sometimes buys land already zoned for multi-family, with utilities installed to the property line. In other cases, the developer takes raw land, rezones and subdivides it, installs utilities and builds the buildings. Whatever approach is used, several persons or firms might be involved - land assembler, broker, site planner, builder, sales agent - but for simplicity's sake, this study will consider these processes as all carried out by "the developer".

Limited Common Elements. Those common elements designated in the declaration and reserved for the use of certain apartments to the exclusion of other apartments, such as a hallway on a given floor reserved for the use of the apartment owners on that floor (Kass and Sakai 1974:4).

Townhouse. It is a single-family attached unit with land under the unit usually deeded to the owner. Characteristically, townhouses are usually built as series of four to ten units with a common wall between each unit. Each unit has its own front door (McKeever 1968:114). Usually, they are condominiums in Summit County in that the common area and/or the land may be co-owned.

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## Operational Definitions

To investigate the relationships stated in the hypothesis, the various factors need to be defined precisely so that appropriate numerical value can be assigned.

### Dependent Variables

The dependent variables represent the degree of urbanism associated with recreational condominium development and describe the intensity of land use. For purposes of this study, they are defined as follows:

Density. Computed by dividing the total number of dwelling units by the size of the site in acres to the nearest hundredth. If the project is multi-phased and only a portion was completed by 1974, the density was based on the total number of units planned for the site. Commercial space was also used in calculating density by adding one dwelling unit for each 500 square feet of commercial space. Source: Size of the site in acres and total number of living units was obtained from the Summit County Tax Assessor's office.

Building Size. Computed by dividing the total number of dwelling units which are part of each condominium development by the number of buildings. If the condominium project is multi-phased, it was considered to be one project. For example, if the total number of units is 20 and the number of buildings is 2, then the building size is 10 units. Source: Field Inspection.

Building Height. Records of the height of the condominium building in stories; if more than one building exists in a single development, the mean of all the buildings was used. Source: Condominium maps in Summit County Clerk's office and field inspection.

### Independent Variables

The independent variables are as follows:

Topography . An ordinal variable that describes the condominium site as either "hillside" or "valley". Hillside rated as 1 and valley rated higher at 2. Source: Field Inspection.

Tree Cover. An ordinal variable that classifies the tree cover of the condominium site's open space as (1) open meadow or no trees (2) lightly wooded, or (3) heavily wooded. "Open space" is defined as the area not paved for parking or covered with buildings. Source: Field Inpsection.

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Water Frontage. An ordinal variable that records whether or not the site abuts a stream or Dillon Reservoir. Non-stream frontage sites assigned a value of 1, stream or reservoir frontage site assigned a higher value of 2. Source: Field Inspection.

View. An ordinal variable that ranks the general view from the site on a one to four scale. View ratings are the average for the entire project. Some units within a project may have better views than others, but overall view of the site is what the rating is based on.

1. No view - immediate foregrounds of trees or other types of development fall within this category.
2. Vista - view up to $90^{o}$ of reasonably attractive landscape
3. View of lake or ski slope; prospective scene from $90^{o}$ to $180^{o}$
4. Panorama - attractive scenes from $180^{o}$ to $360^{o}$

As Fines (1968:43) notes, "experience has demonstrated that it would be an almost impossible task to design and operate a system of evaluation embracing a multi-dimensional landscape. The best that one can seek is a method of evaluating the basic three dimension landscape under any conditions and in relation to the average intelligent observer".

Source: Field Inspection.

Size of the Net Site. A ratio variable that records the size of the site in acres to the nearest hundredth. Source: Summit County Tax Assessor's Office.

Township or County Location. An ordinal variable that records whether or not the project is located within a township or outside a township but within the county. County location given a value of 1 and township locations were given a value of 2. Source: Field inspection and comparison with County Map.

Road Distance from Nearest Post Office. A ratio variable measured in tenths of road miles from the condominium to the nearest post office. Source: Measurement calculated by plotting location of condominiums on U. S. Forest Service planemetric map and then calculating distance (this method will be used for all of the following distance variables).

Aerial Distance to Government Property Line. A ratio variable measure in direct straight line distance from the nearest government property line to the condominium. Government lands also include the Denver Water Board land that surrounds most of Dillon Reservoir.

Road Distance to Nearest Ski Area. A ratio variable measured in tenths of road miles from condominium to nearest base ski terminal or lift facility at either Breckenridge Ski Area (Peak 8 or Peak 9), Keystone or Copper Mountain. No condominiums are close to A Basin.

Aerial Distance to Shore Line. A ratio variable measured in direct straight line distance from condominium to nearest shore of Dillon Reservoir.

Road Distance to Interchange on Interstate 70. A ratio variable measured in tenths of road miles from the condominium to the nearest exit on I-70 along the most feasible route.

Road Distance to Nearest Major Road. A ratio variable measured in tenths of road miles to the nearest U. S. or state highway from the condominium.

Road Distance to Nearest Marina. A ratio variable that measures the distance from the condominium to the nearest marina in tenths of road miles.

Road Distance to Shopping. A ratio variable measured in tenths of road miles to the nearest supermarket from the condominium. Source: Field Inspection.

Planned Unit Development (PUD) Zoning. An ordinal variable that records whether or not the condominium is part of a PUD. Any other type of zoning is rated 1 and PUD zoning is rated higher at 2.

Number of Buildings. Records the total number of buildings that contain the dwelling units but excludes any service or maintenance structures. Source: Field Inspection.

Date Project Began. Records the year the project was begun; the earliest recorded condominium project is 1965. Source: Summit County Tax Assessor's Office.

Configuration. Records the type of dwelling units in terms of studio, one bedroom, one bedroom with loft, two bedroom, two bedroom with loft, three bedroom, three bedroom with loft, four bedroom, more than four bedrooms. Source: Condominium map; Summit County Clerk's Office.

For four of the above mentioned variables that are dichotomous, topography, water frontage, township or county, and PUD zoning, an ordinal interpretation was made by defining certain locations as "more desirable" or "more preferred". In light of the nature of the variables, this ranking seems reasonable (interview with Professor Edward J. Kaiser, Department of Urban and Regional Planning, University of North Carolina, Chapel Hill, North Carolina). The following rational was used to determine

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the most preferred location: (1) For topography, the valley location was given a higher value because of accessibility from major roads and proximity to the major activity centers. (2) For water frontage, sites that front on either the stream or the reservoir are usually more desirable and ranked higher than sites without water frontage. (3) For township or county location, the township location was given a higher value because of the availability of municipal services and the proximity to shopping and entertainment. (4) A PUD zoning was given a higher value than other types of zoning because of the amenities of the PUD's and in several cases their location at the base of the ski slopes.

## Data

As noted in the operational definitions, three informational sources were utilized in obtaining the data. First, the County Clerk's office has a condominium map for each project in Summit County. From the condominium map, many characteristics of the building may be obtained such as size, height, and location. Also the Tax Assessor's office has a list of every condominium project. In addition, the writer visited each project to collect environmental data and plot the exact location of the project on U. S. Forest planametric maps of Summit County.

Once plotted, distance variables were then calculated. Before measuring distances from U. S. Forest Service planametric maps, however, recreational and transportational features that are part of the study were placed on the map: ski areas, marinas, interchanges on I-70, supermarkets and post offices. As shown in Figure 3, U. S. Forest Service planametric map depicts streams and lakes, towns, roads, government and property lines. They served as

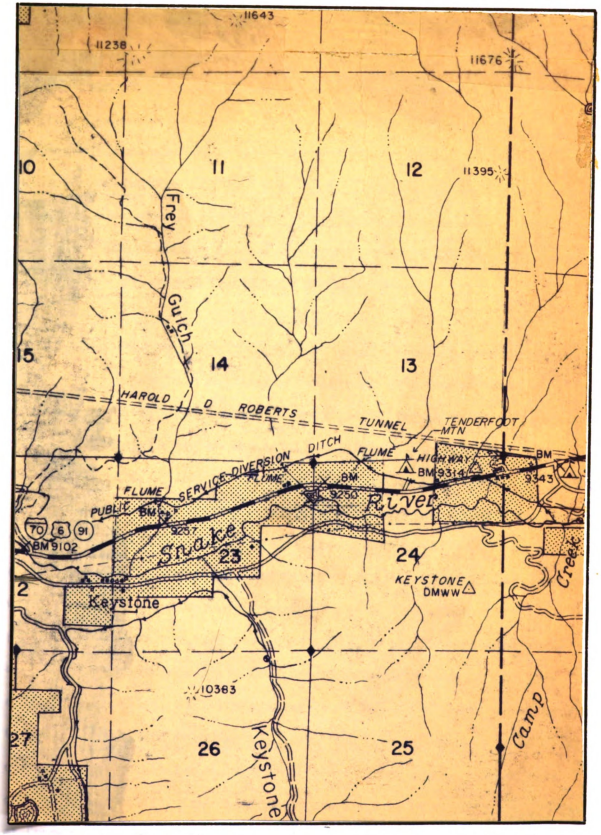


Fig. 3. Portion of U. S.Forest Service Planametric series map for Summit County, Colorado.

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Location of condominium projects in Breckenridge, Frisco, or Dillon, were also plotted on the township map. For example, the town map of Frisco has a scale of 1 inch = 400 feet; at this scale, distance variables may be more accurately calculated than on the smaller scale Forest Service planametric map. To obtain distances, an engineer's scale was used to measure straight line distance. For road distances, a map measurer was utilized.

For each condominium in Summit County, desired information was noted on the data form shown in Appendix A.

## Data Analysis

To examine locational patterns of condominiums in Summit County, it was anticipated that a multiple regression model would be developed that utilized various distances as independent variables in association with the condominium urbanism characteristics as dependent variables. When the correlation matrix was constructed for each dependent variable, it revealed a low correlation coefficient for two key variables: distance from shore of Dillon Reservoir and distance from a ski area. Spatial distribution of the data suggested that a non-linear locational pattern was producing the low correlation coefficients. To check for this pattern, contingency tables were constructed with distance from shore of Dillon Reservoir and distance from ski area with each of the three dependent variables, and as suspected, this revealed two distinct clusters. Condominium projects that are oriented towards the reservoir form a major concentration within two miles of the shore, then another major concentration is found in the Breckenridge area and at two other ski areas at Copper Mountain and Keystone. Because of these two distinct clusters, data were divided into two regions: reservoir oriented and ski oriented

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condominium projects (described in Chapter V).

Multiple regression analysis was computed for each region, and it was found that very few variables were related in a statistically significant manner. In part, this is explained by the fact that many variables have a non-normal distribution as revealed by a test of skewness and kurtosis. If based on a normal distribution assumption, a multi-variate technique was determined as not suitable.

Because several environmental and institutional variables were measured in an ordinal scale and many distance variables non-normally distributed, the study called for a nonparametric technique to analyze the data (Johnson 1973:378). Of the nonparametric methods, the Goodman-Kruskal index of order association was selected as most suitable for determining the degree of association for several reasons. First, the measure of order association (gamma) is a similar index to the more familiar product-moment correlation coefficient (r) in that it varies from -1 to +1 with perfect unity indicating a perfect negative (-1) or positive association (+1).

Second, unlike the product-moment correlation, the Goodman-Kruskal index of order association requires only ordinal scale of measurement and assumes no specific probability law governing the distribution of the variables. Thus, assumptions required for the Goodman-Kruskal test are most nearly met by the nature of the data.

Third, a method exists of analyzing the measure of order assocation (gamma) to determine whether it could have occured by pure chance or if there was no actual association (Kaiser 1966:152).

But a major limitation of the method is that it is only a univariate technique. In other words, it does not consider degree of urbanism reflected in condominiums by a combination of site characteristics. In addition, it does not adjust for the influence of other site characteristics which are

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Analysis of data involved several steps. First, a computer program printed a distribution of each variable and calculated the mean and standard deviation. Based on these results, variables were divided into meaningful categories for the contingency tables. Second, contingency tables were printed for each pair of dependent and independent variables along with the gamma coefficient.

Since Goodman-Kruskal is seldom encountered in geographic and planning literature, an example of the computation is found in Appendix D.

In testing relationships, the study employed a significance level of five percent; in other words, a hypothesis was rejected if it was true on an average of one or more times in 20. The author has no basis on which to establish the relative risk of accepting a false hypothesis as compared to rejecting a true hypothesis; however, a five percent significance level is not unusual in the social sciences.

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# CHAPTER IV

## CONTEXTUAL FACTORS ASSOCIATED WITH CONDOMINIUM DEVELOPMENT

This chapter discusses the national economic conditions, recreational trends, major governmental policies, transportation improvement, and other broad area-wide factors that influenced the development of condominiums in Summit County.

### National Growth in Recreational Housing and Condominiums

Recreational communities are a direct result of the national growth in participation in outdoor recreation. However, two major socioeconomic reasons provide the foundation for increased participation in outdoor recreation and, in turn, recreational housing ownership: sufficient discretionary income and leisure time (Ragatz 1970:119). While income and leisure time provide the opportunity, other technological and social factors encourage recreational condominium ownership: mobility, capital accumulation, status attainment, desire to participate in outdoor recreation, and the lure of tax benefits and investment opportunities (Ragatz 1970:19; Robbins 1971:5). As a result, the average annual rate of second home construction rose from about 20,000 units per year during the 1940's to 55,000 units per year during the 1960's (Bureau of Census 1969:7). By 1970, some 3.1 million families or approximately five percent of the families in the United States owned second homes (Bureau of Census 1973:15).

Condominiums have been an increasingly popular form of recreational housing (Robbins 1971:5). Pioneered in southern Europe, Hawaii and Florida, the condominium has become the predominate method of second

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home ownership in the ski and recreation towns of Europe, New England and the western United States (Robbins 1971:5). By 1972, condominiums accounted for approximately thirty percent of the recreation homes built in the United States; however, in the next decade, Real Estate Research Corporation predicts that condominiums will become the predominant type of recreation housing (Reardon 1973:1). As Robbins (1971:5) notes, "We predict that a period is beginning that will be known as the recreation condominium era."

"Condominium" refers to a form of ownership; essentially it means to have control (dominium) over a certain property jointly with (con) one or more other persons (Clurman and Hebard 1970:2). In Colorado, the Condominium Ownership Act permits the allowance and protection for exclusive and complete ownership of an individual dwelling unit and partial ownership of other elements of the development; specifically, the act creates "separate estates in an individual air space unit of a multi-unit property together with an undivided interest in common elements" (Colorado Real Estate Commission 1970). Condominiums take many forms: attached townhouses, apartments in high-rise buildings, garden apartments, and other forms of residential housing.

## Major Factors Associated with Condominium Development in Summit County

Four factors are primarily responsible for the area-wide development of recreational housing in Summit County: the increasing popularity of skiing, the creation of Dillon reservoir, construction of Interstate 70 and the location of Colorado's population concentrations (Thompson 1971:93; Ulman 1973 B:86).

### Skiing

During the decade of the 60's, the popularity of skiing grew

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dramatically throughout the nation. Much of the growth followed the 1960 Winter Olympic Games at Squaw Valley, where for the first time, television exposed large portions of the American public to the sport of skiing. At this period in time, the babies of the post-World War II era were twelve to sixteen years old and were just entering the recreation market. Publicity and resulting knowledge concerning the safety of the sport was stimulated by the release binding.

During this period, both Colorado and Summit County experienced substantial growth rates in the number of skier visits. Since 1960, the increase in skier visits to Summit County had fluctuated greatly; however, they reflected a steady upward trend with an average percentage increase of 22.1 percent (Table 2). In recent years, the growth of skier visits to Summit County has exceeded the average rate for the state. In Summit County, much of the condominium development is either directly or indirectly associated with skiing. In fact, a perception study of area residents identified skiing as the major factor responsible for development in Summit County (Huckabay 1970:34). Furthermore, the importance of the number of skiers to the growth of second homes was described by the Denver Research Institute when it found that approximately ten percent of Colorado's skiers owned property near a ski area (Allen 1970:64). As a result of the large increase in skier visits, a growing demand for recreational housing was created.

Dillon Reservoir

The location of Denver on the arid side of the Rockies with only the South Platte for surface water meant that, if the city intended to grow, it would have to import water. In anticipation of Denver's future water needs, the Denver Water Board began buying large tracts of land at tax sales in the early 1940's for a proposed dam and reservoir around the

TABLE 2.--Ski Lift Tickets Issued in Colorado and Summit County, 1960 - 1973

| Ski Area | Ski Seasons | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1960-61 | 1961-62 | 1962-63 | 1963-64 | 1964-65 | 1965-66 | 1966-67 | 1967-68 | 1968-69 | 1969-70 | 1970-71 | 1971-72 | 1972-73 | 1973-74 |
| Summit County: Breckenridge | ... | 16,822 | 34,149 | 55,353 | 87,822 | 83,000 | 105,572 | 112,014 | 138,259 | 165,476 | 197,684 | 221,500 | 271,213 | 282,776 |
| A Basin | 60,515 | 70,466 | 54,116 | 62,950 | 91,517 | 89,727 | 108,473 | 121,157 | 132,472 | 136,671 | 100,956 | 95,736 | 89,417 | 96,625 |
| Keystone | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 75,858 | 148,600 | 145,967 | 173,351 |
| Copper Mtn. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 700 | 120,463 | 181,883 |
| Total | 60,515 | 87,288 | 88,265 | 118,303 | 179,339 | 172,727 | 214,045 | 233,171 | 270,171 | 302,147 | 384,498 | 464,836 | 627,060 | 734,635 |
| Percent Change over prev. yr. | ... | 44.2 | 1.1 | 34.0 | 51.6 | -3.8 | 23.9 | 8.9 | 16.1 | 11.6 | 27.2 | 20.9 | 34.9 | 17.2 |
| Colorado: Total (000's) | 441 | 555 | 549 | 802 | 103 | 1,168 | 1,412 | 1,813 | 2,330 | 2,741 | 2,999 | 3,261 | 3,976 | 4,305 |
| Percent Change over prev. yr. | ... | 26.0 | -1.1 | 46.0 | 37.6 | 5.9 | 20.8 | 28.4 | 28.5 | 17.7 | 9.4 | 8.7 | 21.9 | 8.3 |

SOURCE: Annual published report of the lift tickets issued in Colorado by Colorado Ski Country USA, Denver, Colorado.

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town of Dillon (Blauvelt 1962:96). Construction of the project began in 1956 with the boring of the Harold D. Roberts Tunnel. The reservoir would provide Denver with western-slope water through the tunnel under the Continental Divide into the North Fork of the South Platte River (Denver Board of Water Commissioners). Completed in 1964, Dillon Reservoir is owned and operated by the City and County of Denver. With a water surface area of 2,970 acres, it is one of the largest bodies of water in Colorado.

Since Dillon would lie under about two hundred feet of water after the reservoir was filled, the town had to be moved. The Denver Water Board furnished a site for the new town along the north shore of the reservoir. Key businessmen and officials from the old town formed the Dillon Improvement Association and commissioned a Denver planning firm to design the new town layout. Development began in 1958 and by 1961, before water and sewage facilities were completed, 75 percent of the newly subdivided town lots were sold (Huckabay 1970:50).

The impact of the large reservoir on Summit County is described by Ulman (1973 B:36):

> Construction of Dillon Reservoir completely changed the face of the basin. It marked the death of a sleepy, old mining town of the gold rush era and its rebirth as an orderly, modern resort community in the midst of a rapidly developing recreation region.

Since Summit County was already well endowed with winter recreational potential, the Dillon Reservoir provided the water-based opportunities essential for year round recreation. As a result, the reservoir greatly contributed to the area's growth in recreational housing.

Interstate 70 and Improved Accessibility

As Marsden's (1969) study in Queenland and Clout's (1971) in France indicate, second home expansion in more distance areas is closely linked

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to improvement in transportation. Historically, accessibility to Summit County from the Front Range Corridor had been hampered by the surrounding mountains. But in 1968, construction began in Summit County on stretches of Interstate 70, the first major transcontinental east-west, four lane freeway across Colorado (Ulman 1973 B:20). As part of the interstate, a 1.69 mile tunnel, called the Eisenhower Tunnel, was constructed under the Continental Divide. The tunnel eliminated travel on a winding two-lane road over 11,992 foot Loveland Pass. Many times during the winter, the pass was a major traffic bottleneck with motorists slowed or stopped by blowing snow, icy roads or avalanche control work.

Colorado Population Distribution

The spatial distribution of second homes is strongly influenced by the location of the major metropolitan centers (Ragatz 1970:125). In Colorado, most of the population is found in a narrow band that abuts the eastern edge of the Southern Rocky Mountains referred to as the Front Range Corridor. By 1970, the combined population of the three major metropolitan areas was 71 percent of the state's total population: Denver reached a population of 1,266,300; Colorado Springs, 214,000; and Pueblo, 126,000 (Bureau of Census 1971:75). Because Summit County is only 75 miles from Denver and 110 miles from Colorado Springs, it emerged as major retreat for these urban dwellers.

Accessibility from and to the major population centers to the east of the mountains was greatly improved by the construction of Interstate 70 and the Eisenhower Tunnel. The two hour trip from Dillon to downtown Denver was reduced to an hour and fifteen minutes. The opening of the tunnel and its effect on development is described by the title of an article in Business Week (1973), "A Colorado Tunnel Triggers a Battle, Environmentalists Fight the Land Boom on Colorado's Western Slope".

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## Other Factors Associated with Growth of Condominiums in Summit County

In addition to the previous factors that stimulated the area-wide development of Summit County and recreational housing in general, other factors tended to direct growth towards multi-family condominium complexes. These factors are land availability and price, local governmental policies and attitudes, and acceptance of condominiums as a form of ownership.

### Land Availability and Price

In Summit County, there are a total of 381,891 acres of land distributed between the following ownership groups (Figure 4):

| Ownership | Area | Percentage |
|---|---|---|
| Private ownership | 90,775 acres | 23.8 |
| Federal government ownership | 290,476 | 76.2 |
| State government ownership | 320 | .001 |
| County and Municipal government ownership | 320 | .001 |
| Total | 381,891 | 100.0 |

SOURCE: Colorado Interstate Gas Company (1972:102)

Of the Federal lands, the large majority is administered by the Forest Service (274,278 acres or 71.5 percent of all the land in Summit County). The Bureau of Land Management controls just over 15,000 acres, half of which is public domain (Ulman 1973 B:10).

Of the 23.8 percent of the land that is privately owned, approximately half is located in the valley of the northern, or what might be described as the undeveloped, part of Summit County. The remaining half is scattered throughout the southern portion of the county and reflects the influence of earlier mining claims: long narrow boundaries with many located on steep slopes and rock faces. With an increased demand for recreational residential property and a diminishing supply of private land with new subdivision development, the price for land increased

Fig.

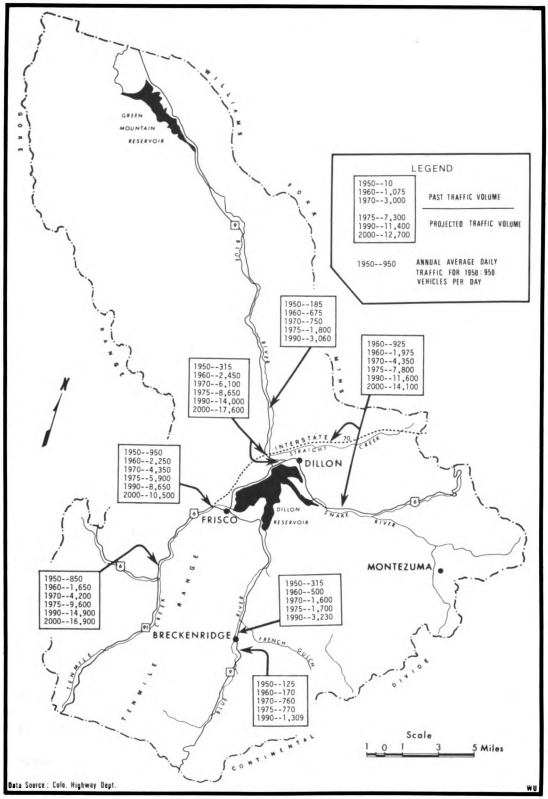


Fig. 4. Land Ownership in Summit County, 1973 (map courtesy of Wilbur J. Ulman, Ph.D.)

sharply and the size of residential lots decreased (Ulman 1972 B:42).

As the development took place, residential densities increased because of efforts to increase the utilization of the land. In 1960, only a few lots were less than an acre in size and used private wells and septic tanks. But, by the mid-1960's, most of the lots were one-half acre (Huckabay 1970:41). In the 1970's, subdividers attempted to establish the highest possible densities, and consequently, the focus of real estate development turned almost exclusively to condominiums. What occurred was a traditional price-quantity response as described by economic theory. As one zoning application noted, "Since land prices are high within the town limits of Breckenridge, the achievement of realistic prices requires that relatively high densities be developed" (The Harris Street Group 1972:5). Developers in Summit County found condominiums to be a partial solution to the diminishing supply of developable land and escalating land values.

Local Governmental Policies and Attitudes

The rapid pace of development in the decade of the 1960's caught the county government totally unprepared. "Zoning laws, subdivision regulations and master plans were of little concern to local communities who depended mainly upon marginal ranching, some mining, and an occasional tourist passing through". (Ulman 1973 B:54)

Because the area's economy was sluggish, local land owners were eager to sell their land to developers. Local governments, who were poorly financed and understaffed, knew little of land development and environmental planning (Ulman 1973 B:54). In fact, it was during this period that the most flagrant planning errors were made by county planning officials. Several major PUD and subdivisions were approved with little thought to the future implications of their location. A good

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example of this is the case of Wildernest, where 223 acres in the middle of the National Forest was zoned for 4,412 condominium units. Few of the county's decision makers had ever been faced with such a situation; consequently, who could have envisioned the traffic, service, parking and other problems associated with a relatively remote concentration of condominiums.

Acceptance of Condominiums in Recreational Housing

In the mountains, consumers find that vacation condominiums offer distinct advantages to a second home. Initially, the condominium owner is spared the complex process of buying a single-family lot in a subdivision, then constructing a house. But the key feature of many condominiums are the locational or recreational facilities not ordinarily available to the purchaser of a second home. For instance, some recreational condominiums offer proximity to recreational activity centers, such as ski areas and/or lake shore and/or have major recreational facilities within the development, such as swimming pools, saunas, game room, tennis courts, etc.

Another reason for purchasing a condominium is the carefree aspect of ownership (Clurman and Hebard 1970:27). Purchasers of condominiums automatically become members of a condominium association. For a monthly fee, the association takes care of the utilities, grounds and exterior maintenance, snow removal, repairs and rental management.

The investment aspects of condominiums have been a major stimulus behind their growth. Since most recreation condominium owners only occupy their units for several weeks a year, at other times the units are rented on a short term basis to tourists (Walsh and Parseys 1972:38). Revenue produced for the condominium owner can be the principal selling feature (Reardon 1973:1). In the more successful projects, rental revenue

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# CHAPTER V

# CONDOMINIUM REGIONS AND THEIR DEVELOPMENT

This chapter divides the study area into condominium regions and briefly describes the growth of these regions.

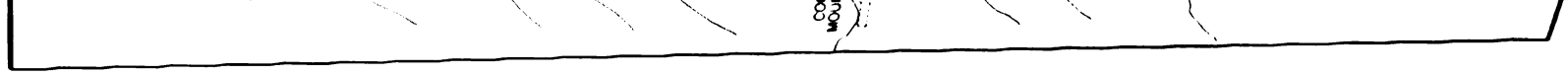
## Condominium Regions

Summit County's growth and development has occurred almost exclusively in the southern part of the county. It is here that the major settlements, Dillion Reservoir, and the ski areas are located along with all of the condominium projects at the date of the survey. As Figure 5 indicates, the condominiums are dispersed throughout this area, but very distinguishable enclaves have emerged. Because of this spatial distribution, references will frequently be made to the various enclaves; consequently, in order to aid in understanding the location of condominiums, the study area is divided into regions and subregions.

As discussed in Chapter Four, the two major recreational features, the ski areas and Dillon Reservoir, stimulated the development of recreational condominiums in Summit County. Using this as a foundation for division, the condominium projects can be dichotomized into two general types of regions that contain projects either ski area oriented or reservoir oriented.

### Ski Oriented Regions

As Ulman (1973 B:36) noted "even though the theme of current development in the region is as a year round resort area, skiing remains the



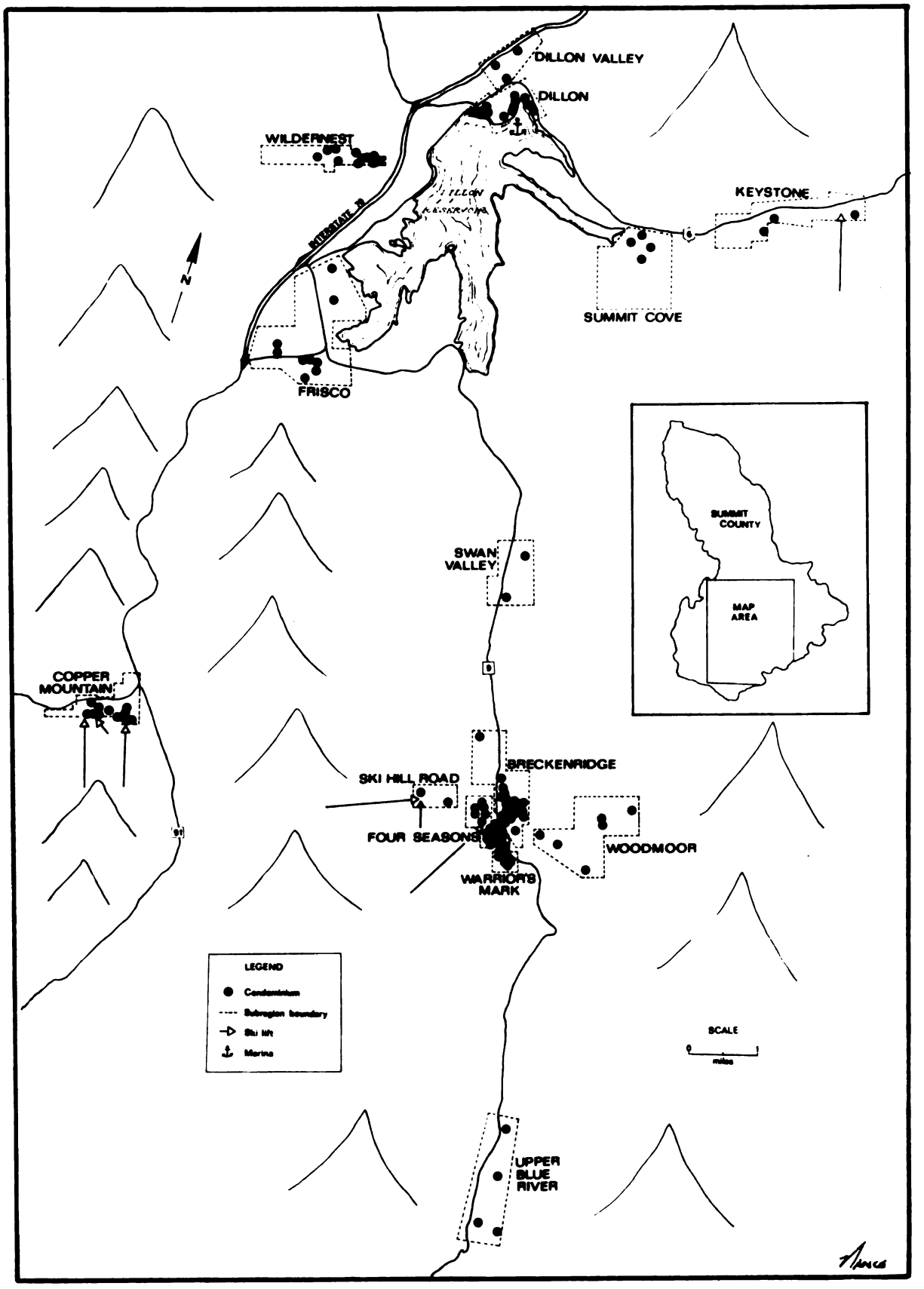



Fig. 5. Condominium Subregions in Summit County, 1973

major attributing factor to the basin's (Summit County's) booming development." With the exception of A Basin, ski areas have emerged as the nuclei for condominium development. In fact, 35.6 percent of all the projects in Summit County are located within one-half mile of a ski area, 48.6 percent of the all the projects are located within a mile, and 55.6 percent are located within two miles. (Table 3). High density condominiums are the primary form of real estate development at the base of ski areas in Summit County.

TABLE 3. -- Distance of Condominium Projects from the Base of a Ski Area, Summit County, Colorado, 1973

| Distance (Road Miles) | Number of Condominium Projects | Percentage | Cumulative Percentage |
|---|---|---|---|
| <.1 | 5 | 4.3 | 4.3 |
| .1 - .5 | 36 | 31.3 | 35.6 |
| .6 - 1.0 | 15 | 13.0 | 48.6 |
| 1.1 - 2.0 | 8 | 7.0 | 55.6 |
| 2.1 - 2.0 | 8 | 7.0 | 62.6 |
| 3.1 - 4.0 | 2 | 1.7 | 64.3 |
| 4.1 - 5.0 | 2 | 1.7 | 66.0 |
| 6.1 - 7.0 | 14 | 12.2 | 78.2 |
| > 7.1 | 25 | 21.8 | 100.0 |
| Totals | 115 | 100.0 | ... |

Importance of Condominiums to Ski Areas. Condominiums play an important role in the successful development of any major ski area. First, the land sale or land lease for actual condominium development generates additional revenues to raise the rate of return on the large initial capital investment necessary to start or expand a ski area. As Tom Corcoran stated at the 1972 Vail Symposium, "no new ski area is considered financially feasible today unless it has real estate

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potential" (Vail Trail 1972). For many ski areas the real estate revenue is a very significant part of the total profit picture. For example, at Copper Mountain all of the condominium projects are on leased land. In 1972, each condominium owner paid to Copper Mountain, Inc. an annual lease rate of $.34 per square foot for the area of the unit plus the condominium assocation pays $.50 per square foot on the common area. Second, the condominiums available for rent provide lodging for midweek vacation skiers. With ample accommodations, the ski area can attract the midweek vacation skier which improves the utilization of the lifts and other commercial facilities at the ski area. For example, with the increased number of condominiums in the town of Breckenridge, and the development of the Four Seasons Village at the base of the new chair lift serving Peak 9, the number of midweek skiers has increased significantly. (Interview: John Rohms, Manager, Breckenridge Ski Area).

Skiing Subregions. Within the general type of region are numerous enclaves that are defined by a combination of intrinsic attributes and locations. These ski oriented subregions are listed in Table 4.

The town of Breckenridge (1970 population 635, U. S. Bureau of Census 1971:75), is the county seat and the service center of the southern part of the county. It offers a variety of retail outlets, grocery stores, restaurants, and other services needed by permanent and transient residents. In general, the town has emerged as a hodge podge of old and new with a mixture of trailers, run down cabins, modern condominiums and old Victorian styled homes. The condominiums are haphazardly scattered throughout the town with high densities and diverse types of surrounding land use. The town is located 1.1 miles from the base of Peak 8, Breckenridge Ski Area.

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TABLE 4.--Number and Percentage of Condominium Projects and Units by Subregion Summit County, Colorado, 1973

| Subregions | Number of Projects | Percentage of Projects * | Number of Units | Percentage of Units ** |
|---|---|---|---|---|
| | | Ski Oriented Subregions | | |
| Breckenridge Area: | | | | |
| Four Seasons | 19 | 16.4 | 498 | 13.2 |
| Town of Breckenridge | 19 | 16.4 | 405 | 11.2 |
| Ski Hill Road | 2 | 1.7 | 207 | 5.7 |
| Warrior's Mark | 9 | 7.8 | 170 | 4.7 |
| Woodmoor | 6 | 5.2 | 200 | 5.5 |
| Upper Blue River | 4 | 3.4 | 82 | 2.3 |
| Swan Valley | 2 | 1.7 | 38 | 1.0 |
| Subtotal | 61 | 52.6 | 1600 | 43.9 |
| Copper Mountain | 11 | 9.6 | 319 | 8.8 |
| Keystone | 4 | 3.4 | 205 | 5.6 |
| Total | 76 | 66.1 | 2124 | 58.4 |
| | | Reservoir Oriented Subregions | | |
| Town of Dillon | 12 | 10.3 | 495 | 13.6 |
| Dillon Valley | 3 | 2.6 | 348 | 9.3 |
| Summit Cove | 4 | 3.4 | 137 | 3.8 |
| Wildernest | 12 | 10.3 | 365 | 10.1 |
| Town of Frisco | 9 | 7.8 | 172 | 4.7 |
| Total | 39 | 33.9 | 1517 | 41.7 |
| | | Summit County | | |
| Grand Total | 115 | 100.0 | 3641 | 100.0 |

*Percentage of total number of condominium projects in Summit County
**Percentage of total of condominium units in Summit County

Fig. 6. The Town of Breckenridge (looking east) is set in a valley with the Blue River flowing through the sterile rock mounds created by the gold dredges. Woodmoor subregion is located on the heavily wooded hill directly behind the town. A portion of Four Seasons is shown in the right part of the photograph.

Fig. 7. Built in the heavily wooded area just across the road, Four Seasons is a 114 acre PUD immediately southwest of Breckenridge. In the background (west) of Four Seasons is the Arapaho National Forest and Breckenridge Ski Area. The major recreational feature is the Breckenridge Ski Area base facility and chair-lift in the center of the development. Several ski trails permit residents to ski to other condominium units.

Fig. 8. Cluster of condominiums at the base of Copper Mountain's ski lift. The Copper Mountain PUD is situated in a treeless valley at the intersection of U.S. Highway 6/Interstate 70 and Colorado Highway 91. The West Ten Mile Creek flows through here and is dammed in places. The 280 acre PUD is surrounded by National Forest and plans include 1,000 condominium units, 1,200 lodge rooms, a convention center, and commercial facilities. No single family residential units are planned.

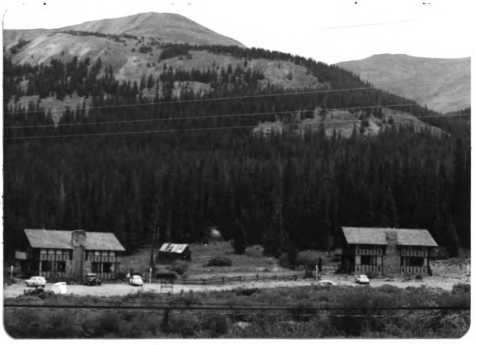

Fig. 9. A small condominium project in the Upper Blue River subregion composed of two duplexes. This area is located south of Breckenridge along the narrow valley where the Blue River flows. The major appeal of the area is its isolation for those who want to "get away from it all".

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Three of the ski oriented subregions are planned unit developments (PUD's) at the base of the ski area: Four Seasons[1], Copper Mountain, and Keystone. Both the Four Seasons and Copper Mountain PUD's consist of condominium units, lodge rooms, and commercial space; no single family residential units are planned. Tennis courts are part of the PUD amenities and Keystone and Copper Mountain's master plan calls for an eighteen hole golf course.

Reservoir Oriented Regions

Dillon Reservoir, owned and operated by the City and County of Denver, is the second largest body of water in the State with 2,970 surface acres and 25 miles of shoreline. Public fishing and boating are allowed, but swimming, water skiing or other water-body contact sports are prohibited. National Forest camps and picnic grounds, boat launches and hiking trails are located around the reservoir. During the warmer seasons, Dillon Reservoir is the focal point for recreational activity in the county.

Importance of Reservoir to Condominium Development. Developers have stressed the importance of Dillon Reservoir to Summit County growth; as one commented:

> . . . no matter what else most of the other mountain resort communities develop to please the Colorado visitor, when the skiing ends they're pretty well through for the year, in his opinion. The lake-water related sports of the type available on Dillon Reservoir make up the state's number two recreational activity and the appeal to a large segment of the public that isn't involved in winter sports (Wilkinson 1971:40).

With its high aesthetic appeal, abundance of water-based recreation and proximity to Denver, Dillon Reservoir is the second most important

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[1]Four Seasons is within the town limits of Breckenridge, but because Four Seasons is a distinct concentration, it is considered a separate subregion.

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center of condominium development. As Table 5 indicates, 18.2 percent of the condominium projects are within .5 miles of the reservoir and 31.2 percent are within 1.0 miles of the shoreline. Only 7.0 percent are located less than .1 miles from the reservoir because of the buffer preserved by the Denver Water Board land and administered by the Forest Service. The large concentration in the 5.1 to 7.0 mile zone reflects the numerous projects in the Breckenridge area.

TABLE 5. -- Distance of Condominium Project from Dillon Reservoir Shoreline, Summit County, Colorado, 1973

| Distance Aerial Miles | Number of Condominium Projects | Percentage | Cumulative Percentage |
|---|---|---|---|
| <.1 | 8 | 7.0 | 7.0 |
| .1 - .5 | 13 | 11.2 | 18.2 |
| .6 - 1.0 | 15 | 13.0 | 31.2 |
| 1.1 - 2.0 | 4 | 3.5 | 34.7 |
| 2.1 - 3.0 | 3 | 2.6 | 37.3 |
| 3.1 - 4.0 | 2 | 1.7 | 39.0 |
| 4.1 - 5.0 | 0 | 0 | 39.0 |
| 5.1 - 7.0 | 62 | 60.0 | 93.0 |
| 7.1 -12.0 | 8 | 7.0 | 100.0 |
| Totals | 115 | 100.0 | ... |

Reservoir Oriented Subregions. The reservoir oriented condominiums form an arc along the northern shore of the reservoir; the southern shore is part of the Arapaho National Forest. Like the ski oriented condominiums, distinct enclaves appear in the spatial pattern and these may be defined as the reservoir oriented subregions (see Table 4 for list of subregions).

Located adjacent to Dillon Reservoir, the town of Dillon is the nucleus for summer recreation and is a major concentration of condominiums. The town itself has a central shopping and commercial core.

Fig. 10. High density condominium parallel the shore of Dillon Reservoir. The reservoir provides the water based opportunities essential for summer activities especially sailing since water skiing and swimming are prohibited.

Fig. 11. Condominium project in the treeless part of Summit Cove.

Fig. 12. Interstate 70 as it passes two of the three condominium projects in Dillon Valley.


Fig. 13. Main street of Frisco

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The town of Frisco (population 471, U. S. Bureau of Census 1971:75), is the highway transportation hub of Summit County.

Wildernest is located northwest of Dillon at the foot of Buffalo Mountain and is surrounded on three sides by National Forest. It is a 223 acre PUD which includes single family, duplex, and high density condominium and apartment zoning.

Located southeast of Dillon Reservoir, Summit Cove is the largest PUD in total area in Summit County. Of the 1,800 living units planned on the 640 acre development, 1,424 are designated for condominiums. Single family homes account for the balance with an additional area planned for a 200 space mobile home park (Ulman 1973 A:111). Located north of the town of Dillon, Dillon Valley is a PUD subdivision composed of single family residential and medium density condominium sites. One project is composed of 23 acres zoned for condominium development making it the largest single complex in the county.

## Historical Sketch of Condominium Development in Summit County

Summit County's history has always been one of boom or bust economic cycles. Early economic development in Summit County was associated with mining, ranching, and some logging. Miners invaded the area during the 1860's to extract gold from placer and lode deposits. August 10, 1859, the first gold strike was recorded on the Blue River and the camp formed became Breckenridge. The town prospered and by 1860 had a population of 8,000 (Blauvelt 1962:26). By 1863, accessible gold deposits for placer mining were so depleted that further operations were unprofitable. With decreased mining activity, Summit County's population dropped to 250 in 1870 (Blauvelt 1962:27).

Then in 1898, placer mining began again with the advent of new

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technology in the form of dredges. Referred to as the "boat of the mountain", a dredge floated upstream on small ponds created by their own diggings. Large cobbles were dredged up and deposited on top of gravel, sand, and soils and produced the miles of rock mounds devoid of vegetation that dominate the floors of the southern valleys (Ulman 1973 B:11). Dredging continued until the placer mines were played out in 1938. But by this time some 35 million dollars in placer gold had been mined. (Blauvelt 1962:41).

In the late 1940's the economy of Summit County was in a depressed state due to the cutback in mineral production at the end of World War II. But in 1946, the Forest Service approved the application from Arapahoe Basin to develop Summit County's first major ski area. Later, the first signs of the second home era appeared when John Randall and a few other Breckenridge residents began purchasing property to resell for vacation cabin sites (Huckabay 1970:26).

The decade of the 1950's brought little development. With only one small ski area, the major period of utilization was the summer months where the front range urban dwellers escaped the summer heat to the cool mountain environment. But in 1955, the ground work for the recreational boom was laid; Breckenridge Lands, Inc., a subsidiary of Round and Porter Lumber Company, bought 5,500 acres of land in and around Breckenridge (Huckabay 1970:26). And in 1960, sixteen subdivisions were recorded with a total of 895 lots; all were zoned single-family residential (Ulman 1973 B:39). Construction of Breckenridge Ski Area at Peak 8 began in 1961 and the lifts opened the following year. As Ulman (1973 B:35) concluded "Thus the development of Peak 8 Ski Area and associated support facilities provided the impetus to development of the Breckenridge area". In a manner

similar to the development of the Auvergne of France, the number of vacation homes greatly increased with the growth in winter sports development (Clout 1971:535).

1965 to 1967

During the early years of condominium development, the established town of Breckenridge with its adjacent ski area and the new town of Dillon on the shore of Dillon Reservoir attracted the first condominium activity (Table 6).

In 1965, land subdivision activity on the outskirts of Breckenridge still dominated second home development. But the stage was set for the first condominium activity and four projects were built in the town of Breckenridge. Scattered about the town, the projects were very small.

During the next two years, condominium development emphasized the lodge type of condominium project. Composed mainly of small studio and one bedroom units, these were designed like a hotel room to serve as short term rental accommodations for skiers. In 1967, condominiums were also built on the peripheral areas of the town and to the south in the Upper Blue River Valley.

In 1965, shortly after completion of the dam, the first condominium project was built on the shore of Dillon Reservoir. The developer added to the project until by 1967, 51 units were built.

1968 to 1970

In anticipation of the Eisenhower Tunnel opening and completion of Interstate 70, the main thrust of condominium development shifted from the Breckenridge area to the Dillon area.

In the town of Dillon, development shifted from the lower lakeshore to the upper commercial area on the bluff overlooking the

TABLE 6.--Number and Percentage of Condominium Units Built by Year and Subregion, Summit County, Colorado, 1973.

| Subregions | 1965 | | 1966 | | 1967 | | 1968 | | 1969 | | 1970 | | 1971 | | 1972 | | 1973 | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| **Ski Oriented Subregions** | | | | | | | | | | | | | | | | | | | | |
| Four Seasons | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 141 | 24.7 | 151 | 11.0 | 206 | 19.3 | 498 | 13.7 |
| Town of Breckenridge | 37 | 68.5 | 32 | 54.2 | 30 | 33.3 | 8 | 5.6 | ... | ... | ... | ... | 77 | 13.5 | 161 | 11.8 | 60 | 5.6 | 405 | 11.2 |
| Ski Hill Road | ... | ... | ... | ... | ... | ... | 4 | 2.8 | 8 | 7.1 | 19 | 10.8 | 105 | 18.4 | 71 | 5.2 | ... | ... | 207 | 5.7 |
| Warrior's Mark | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 2.3 | 4 | .7 | 54 | 3.9 | 108 | 10.1 | 170 | 4.7 |
| Woodmoor | ... | ... | ... | ... | 37 | 41.1 | ... | ... | ... | ... | ... | ... | 31 | 5.4 | 99 | 7.2 | 33 | 3.1 | 200 | 5.5 |
| Upper Blue River | ... | ... | ... | ... | 6 | 6.7 | 40 | 27.8 | ... | ... | ... | ... | ... | ... | ... | ... | 36 | 3.4 | 82 | 2.3 |
| Swan Valley | ... | ... | 10 | 16.9 | ... | ... | ... | ... | ... | ... | ... | ... | 28 | 4.9 | ... | ... | ... | ... | 38 | 1.0 |
| Copper Mountain | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 106 | 7.7 | 213 | 19.9 | 319 | 8.8 |
| Keystone | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 24 | 4.2 | 93 | 6.8 | 88 | 8.2 | 205 | 5.6 |
| **Reservoir Oriented Subregions** | | | | | | | | | | | | | | | | | | | | |
| Town of Dillon | 17 | 31.5 | 17 | 28.8 | 17 | 18.8 | 47 | 32.6 | 27 | 24.1 | 115 | 65.3 | 46 | 8.1 | 179 | 13.1 | 30 | 2.8 | 495 | 13.6 |
| Dillon Valley | ... | ... | ... | ... | ... | ... | 45 | 13.3 | 45 | 40.2 | 38 | 21.6 | 66 | 11.6 | 112 | 8.2 | 42 | 3.9 | 348 | 9.3 |
| Summit Cove | ... | ... | ... | ... | ... | ... | ... | ... | 32 | 28.6 | ... | ... | ... | ... | 88 | 6.4 | 17 | 1.6 | 137 | 3.8 |
| Wildernest | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 12 | 2.1 | 178 | 13.0 | 175 | 16.4 | 365 | 10.1 |
| Town of Frisco | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 36 | 6.3 | 76 | 5.6 | 60 | 5.6 | 172 | 4.7 |
| Summit County Total | 54 | 100 | 59 | 100 | 90 | 100 | 144 | 100 | 112 | 100 | 176 | 100 | 570 | 100 | 1368 | 100 | 1068 | 100 | 3641 | 100 |

reservoir. In the peripheral areas of Dillon Reservoir, Dillon Valley commenced its first project. Summit Cove also began planning stages for its first project. The Keystone Ski Area opened during this period and served as a catalyst for condominium development in the Snake River Valley. By 1970, 86.9 percent of the county's total condominium units were built in the town of Dillon or Dillon Valley (Table 6).

Between 1968 and 1970, the town of Breckenridge had only one project started. Other peripheral areas of the town began to emerge as condominium centers; a major project was started on Ski Hill Road. The project was only a half mile from the base area of Peak 8 and would be the closest project to a ski area for the next three years.

In 1970, however, the Breckenridge Corporation announced expansion of the original ski area, Peak 8, and the construction of new lift and base facilities at Peak 9. Peak 9 would be located adjacent to the center of the town of Breckenridge and become the heart of a new resort, Four Season's Village. Efforts then began to focus on the four seasons or year round recreational aspects of Summit County.

1971

In association with the expansion of Breckenridge Ski area, 69 percent of the condominiums started in 1971 were in the Breckenridge area. Specifically, two regions, Four Seasons and Ski Hill Road, accounted for 49 percent of condominium activity (Table 6). Although the majority of the activity centered on Breckenridge areas, the upswing of condominiums affected most of the county; several regions, Keystone, Frisco, and Wildernest initiated their first projects.

It is important to understand the state of Summit County's condominium market and the national economy in 1971. At the national

level, the year of 1971 was expansionary and recreational development flourished along with other sectors of the economy. In Summit County, condominium sales were brisk in 1971 and 95 percent of the units built that year were sold (Harper 1974:17). In some cases, projects would sell out within weeks and several projects sold out entirely, well before construction was complete (Harper 1974:47). In light of the strong market, experienced mountain real estate developers recognized that Summit County had high growth potential. (Wilkerson 1971).

1972

With 95 percent of the units built in 1971 sold, the national economy strong, and an abundance of credit for mortgage financing, construction started on 1,368 condominium units in 1972. More units were built this year than all the preceeding years combined.

In the overall pattern of development for 1972, intensive expansion occurred in the established condominium areas but new centers emerged. Copper Mountain began its opening season with the construction of 106 units. Wildernest became a major concentration with 178 units or 13.0 percent of the total built (Table 6). The first projects appeared within the town limits of Frisco.

In the Breckenridge area, Four Seasons added numerous new projects; Warrior's Mark had a major construction year along with the town of Breckenridge. One of the most controversial PUD's, Woodmoor, commenced building.

1973

The momentum generated in 1971 and 1972 carried into 1973 even though sales began to lag behind units being completed. In 1973, the ski oriented regions, Four Seasons, Warrior's Mark, Copper Mountain

and Keystone, accounted for 57.5 percent of the condominium growth (Table 6). For the most part, the projects were very large and were built by major or "proven" developers. Wildernest experienced a number of new projects but again, most were built by previous developers. The growth here represented 16.4 percent of the total county development in 1973 (Table 6). The other regions of the county experienced minor growth during this time.

## Recreational Orientation Hypothesis

Both the historical development of condominiums and their spatial pattern support the first general hypothesis that the ski areas (with the exception of A-Basin) and Dillon Reservoir serve as nuclei of condominium development. In fact, within a half mile of the ski areas and Dillon Reservoir are found 53.8 percent of the condominium projects and within one mile are 79.9 percent of the projects.[1]

[1]Tabulation taken by adding percentage from Tables 3 and 5. Both of these categories are mutually exclusive and thus may be added.

# CHAPTER VI

# EXISTING LOCATIONAL PATTERNS

This chapter first discusses each of the three condominium characteristics that represent the degree of urbanism: density, building height, and building size; then the locational characteristics of the existing condominiums in Summit County are compared to the three previously mentioned characteristics.

## Density

The relationship between people and the amount of land needed for their accommodation is a fundamental aspect of land use planning. In general, the more intense the use of the land, the greater the need for recreation space, wider streets and sidewalks, shorter blocks and off-street parking. For example, the density of a development influences the traffic volumes which in turn determines the right-of-way and pavement width needed.

As shown in Table 7, the average net site density in Summit County of the ski oriented condominium projects is 26.2 units per acre (u.p.a.), with a range from 4 to 111 u.p.a., and the reservoir oriented condominium is 21.7 u.p.a. with a range from 3 to 40 u.p.a. Sixty-five percent of the ski projects and 40 percent of the reservoir projects have densities between 11 and 25 u.p.a. with the largest concentration in the 21 to 25 u.p.a. range. The concentration stems from the fact that many of the projects are part of a PUD or subdivision where zoning permits a

TABLE 7.--Site Densities of Ski and Reservoir Oriented Condominium Projects in Summit County, Colorado, 1973

| Density (u.p.a.*) | Number of Projects | Percentage | Cumulative Percentage |
|---|---|---|---|
| | Ski Oriented Projects | | |
| 1 - 10 | 14 | 18.7 | 18.7 |
| 11 - 20 | 12 | 16.0 | 34.7 |
| 21 - 25 | 18 | 24.0 | 58.7 |
| 26 - 40 | 19 | 25.3 | 84.0 |
| 41 -111 | 12 | 16.0 | 100.0 |
| Total | 75 | 100.0 | ... |
| | Reservoir Oriented Projects | | |
| 1 - 10 | 5 | 12.5 | 12.5 |
| 11 - 20 | 12 | 30.0 | 42.5 |
| 21 - 25 | 14 | 35.0 | 77.5 |
| 26 - 40 | 9 | 22.5 | 100.0 |
| 41 -111 | ... | ... | ... |
| Total | 40 | 100.0 | ... |

*Units per acre.

NOTE: For ski oriented projects, average site density is 26.2 and 21.7 u.p.a. for reservoir oriented projects.

density of up to 25 u.p.a. Only 18.7 percent of the ski projects and 12.5 percent of the reservoir projects have a density of less than ten u.p.a., yet 41.3 percent of the ski projects and 22.5 percent of the reservoir projects exceed 25 u.p.a. In the ski projects, 16.0 percent even exceed 40 u.p.a. (Table 7).

Regional Pattern of Density

The town of Breckenridge has the highest densities in Summit County; 57 percent of the projects have densities in excess of 30 u.p.a. and, one project, Idleweiss, has a density of 111 u.p.a. (Table 8). Much of the town was platted in the nineteenth century and the average residential lot is either 25' x 125' (3,125 s.f.) or 50' x 125' (6,250 s.f.). From 1965 to 1971 developers, in many cases, would consolidate ownership of several lots and have plans drawn to maximize density. Then without land use controls or a comprehensive review process, any density that could be physically built on a site was approved. As Ulman (1973 A:146) noted, "Height limitations seems to be the only limit on density in Breckenridge". In 1972, the town adopted zoning regulations that permitted a maxmimum density of 15 u.p.a. and a height restriction of 35 feet (Ray and Associates 1972:8).

At the Four Seasons development, densities range from a two story townhouse project with 12.1 u.p.a. to a three story condominium with 36.7 u.p.a.; but, the majority of the projects have densities between 21 and 30 u.p.a. (Table 8). Included in Four Seasons is the only six story building in the Breckenridge area, Trails End; however, its density is only 34.6 u.p.a. When the PUD was approved, the number of units permitted were allotted to each condominium site; however, in the early land sales additional units were transferred as incentives to buy. Later these had to be deducted from other sites, but the average is just over

TABLE 8.--Percentage of Condominium Project by Density Classes, Summit County, Colorado, 1973

| Subregions | Density Classes in u.p.a. | | | | |
|---|---|---|---|---|---|
| | 1-10 | 11-20 | 21-25 | 26-40 | 41-111 |
| | | | Ski Oriented Subregions | | |
| Breckenridge Area: | | | | | |
| Four Seasons | ... | 21.4 | 37.4 | 52.6 | ... |
| Town of Breckenridge | 23.1 | ... | 12.5 | 26.3 | 69.2 |
| Ski Hill Road | ... | ... | 12.5 | ... | ... |
| Warrior's Mark | 38.4 | 21.4 | 6.3 | ... | ... |
| Woodmoor Area | 30.8 | ... | 6.3 | 5.3 | ... |
| Upper Blue River | 7.7 | 14.3 | ... | ... | 7.7 |
| Swan Valley Area | ... | 14.3 | ... | ... | ... |
| Copper Mountain | ... | 7.2 | 25.0 | 15.8 | 23.1 |
| Keystone | ... | 21.4 | ... | ... | ... |
| Totals | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| | | | Reservoir Oriented Subregions | | |
| Town of Dillon | ... | 16.7 | 26.3 | 28.6 | ... |
| Dillon Valley | ... | 8.3 | 21.1 | 42.8 | 100.0 |
| Summit Cove | 75.0 | 8.3 | ... | ... | ... |
| Wildernest | 25.0 | 50.0 | 26.3 | ... | ... |
| Town of Frisco | ... | 16.7 | 26.3 | 28.6 | ... |
| Totals | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

25 u.p.a. (Table 8).

In the Upper Blue River, Ski Hill Road, and Swan Valley, although the projects are relatively remote, developers used as little land as possible; consequently, the densities are relatively high with the exception of The Dot. As the most recent development, the town of Blue River stopped this practice and the overall density was set at 4 u.p.a. for The Dot.

Copper Mountain has the second highest densities in Summit County. The gross density of the PUD is only 7 u.p.a.; but this lower density reflects the open space of parking lots for day skiers, golf courses, and roads. As a result, the site densities for condominiums are generally between 25 and 30 u.p.a. Because of the retail and restaurant space on the first floor, three projects have very high densities.

Of the ski area developments, Keystone's condominiums have the lowest densities. The Keystone master plan has an abundance of open space and appropriate site densities for three story buildings.

In Dillon, densities range from 17.9 u.p.a. to 44.6 u.p.a., but the majority of developments are three story projects with densities between 25 and 30 u.p.a. Key West Farms, Warrior's Mark and Woodmoor, have lower densities and fourplexes and townhouses are predominant.

Wildernest condominium sites are zoned either for 17 or 25 u.p.a. With the exception of two townhouse projects, densities generally reach the maximum permitted.

In the older part of Frisco, the condominium development process followed a path similar to that of Breckenridge. A developer would consolidate several of the small lots and build as many condominiums or townhouse units as the site would accommodate. With the exception of one project, all are two story townhouse type projects.

In the PUD's near the Frisco interchanges, densities range from 21 to 25 u.p.a. and the projects are all three story.

## Building Height

The building height of a condominium project serves as a guide for many aspects of planning. For example, density figures have different implications depending on the type of multi-family structure. In multi-family developments, the number of stories in a project is utilized as an index for densities recommended by the Urban Land Institute (Table 9).

TABLE 9. -- Housing Types and Dwelling Units Per Acre

| Type | Net Dwelling Density |
|---|---|
| Single-Family | 1 - 5 |
| Two-Family | 6 - 10 |
| Townhouse | 6 - 14 |
| Garden Apartment (2 or 3 story) | 15 - 20 |
| Multi-Story Apartment (to 8 stories) | 25 - 35 |
| High-rise Apartment | 40 - 85 approximate |

SOURCE: Urban Land Institute (McKeever 1968:107)

In addition to density, the allowable building area or site coverage should be defined in terms of the building's height. Breckenridge recently adopted such guide lines; when discussing the concept, Skip Grkovic, Breckenridge's Building Official commented "a six story building in the Four Seasons complex could cover no more than 15 percent of the total lot" (Summit County Journal 1973).

In Summit County, the average building height for the ski projects is 2.99 stories and the reservoir projects is 2.83 stories. As Table 10

TABLE 10.--Building Height of Ski and Reservoir Oriented Condominium Projects in Summit County, Colorado, 1973

| Stories | Number of Projects | Percentage | Cumulative Percentage |
|---|---|---|---|
| Ski Oriented Projects | | | |
| 1 | 1 | 1.3 | 1.3 |
| 2 | 22 | 29.3 | 30.6 |
| 3 | 38 | 50.7 | 81.3 |
| 4 | 7 | 9.3 | 90.6 |
| 5 | 5 | 6.7 | 97.3 |
| 6 | 2 | 2.7 | 100.0 |
| Total | 75 | 100.0 | ... |
| Reservoir Oriented Projects | | | |
| 1 | ... | ... | ... |
| 2 | 11 | 27.5 | 27.5 |
| 3 | 25 | 62.5 | 90.0 |
| 4 | 4 | 10.0 | 100.0 |
| 5 | ... | ... | ... |
| 6 | ... | ... | ... |
| Total | 40 | 100.0 | ... |

NOTE: For ski oriented projects, average building height is 2.99 stories and 2.83 stories for reservoir oriented projects.

indicates, over half of the projects are three stories and almost 30 percent are two stories. Only seven of the ski oriented projects exceed four stories; the tallest buildings in Summit County are six stories and there are only two of this height (Table 10).

The height restriction for the county and the townships is 35 feet which permits three story buildings with a peaked roof. To take full advantage of the height, the roof area in many condominiums serves as a loft area for additional sleeping space. Exception to the height restriction has been granted to several PUD's.

Regional Pattern of Building Height

As Table 11 shows, the five and six story condominium buildings are located at the base of two ski areas, Copper Mountain and Four Seasons. By far the largest concentration of the tall buildings in Summit County is found at Copper Mountain; it has 50 percent of the six story buildings, 100 percent of the five story, and 36.4 percent of the four story. By height restriction, most of the projects in Breckenridge are three stories; the four story project was approved before any restrictions existed.

Three four story projects are in the town of Dillon and another exists in Dillon Valley next to Interstate 70. Because municipal and county height restrictions are 35 feet, the remainder of the projects are three stories or less.

## Building Size

The third measure of urbanism is the structural mass or building size of condominiums in Summit County. At first, total number of units was considered as the measure. But since many of the projects are built

TABLE 11.--Percentage of Condominium Projects by Building Height, Summit County, Colorado, 1973

| Subregions | Number of Stories | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| **Ski Oriented Subregions** | | | | | | |
| Breckenridge Area: | ... | ... | ... | ... | ... | ... |
| Four Seasons | ... | 13.6 | 39.5 | ... | ... | 50.0 |
| Town of Breckenridge | ... | 41.0 | 23.7 | 14.3 | ... | ... |
| Ski Hill Road | ... | ... | 2.6 | 14.3 | ... | ... |
| Warrior's Mark | 100.0 | 9.1 | 13.2 | 14.3 | ... | ... |
| Woodmoor Area | ... | 18.2 | 5.3 | ... | ... | ... |
| Upper Blue River | ... | 13.6 | 2.6 | ... | ... | ... |
| Swan Valley Area | ... | 4.5 | 2.6 | ... | ... | ... |
| Copper Mountain | ... | ... | 2.6 | 57.1 | 100.0 | 50.0 |
| Keystone | ... | ... | 7.9 | ... | ... | ... |
| Totals | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Reservoir Oriented Subregions** | | | | | | |
| Town of Dillon | ... | 18.2 | 28.0 | 75.0 | ... | ... |
| Dillon Valley | ... | ... | 8.0 | 25.0 | ... | ... |
| Summit Cove | ... | 27.3 | 4.0 | ... | ... | ... |
| Wildernest | ... | 9.1 | 44.0 | ... | ... | ... |
| Town of Frisco | ... | 45.4 | 16.0 | ... | ... | ... |
| Totals | ... | 100.0 | 100.0 | 100.0 | ... | ... |

in phases and plan additional construction, the total number of units will vary according to year. As a result, this variable was not satisfactory; instead, the average building size within the project was selected. This measure was obtained by dividing the total number of units in the project by the number of buildings in the project. For example, if a project has 30 units in two buildings, then the average building is 15 units. In most cases, the upper limits on the buildings size is contained by zoning regulations pertaining to the maximum number of units per acre and size of land tract.

Building size has definite planning implications; however, it is seldom discussed in connection with development planning in Summit County. As previously noted, the main planning topic is density, but the character of development is influenced by building size. Consider a hypothetical 100 unit development that is approved for ten acres; it could range from 25 fourplexes to one 100 unit building. Obviously, appropriate building size decisions are needed so that the structural mass is compatible with the neighborhood, environmental setting, the desired open space, traffic patterns, parking, fire codes, and type of construction (Interview with Skip Grkovic, Breckenridge Building Official, October 18, 1974).

Because Summit County is composed mainly of projects with less than 30 units (Table 12) containing one to three buildings (Table 13), average building size in ski and reservoir regions is 17.11 units and 14.82 units respectively. In ski oriented regions, the number of small buildings is evidenced by the fact that 46.7 percent are ten units or less and 70.7 percent are 20 units or less (Table 14). On the other hand, the reservoir oriented regions have few small buildings and no buildings with over 50 units (Table 14).

TABLE 12.--Total Number of Units in Condominium Projects, Summit County, Colorado, 1973

| Number of Units | Number of Projects | Percentage | Cumulative Percentage |
|---|---|---|---|
| 1 - 4 | 5 | 5.2 | 5.2 |
| 5 - 10 | 17 | 14.8 | 20.0 |
| 11 - 15 | 12 | 10.4 | 30.4 |
| 16 - 20 | 10 | 8.7 | 39.1 |
| 21 - 25 | 13 | 11.3 | 50.4 |
| 26 - 30 | 11 | 9.6 | 60.0 |
| 31 - 35 | 11 | 9.6 | 69.6 |
| 36 - 40 | 7 | 6.1 | 75.7 |
| 40 - 60 | 15 | 13.0 | 88.7 |
| 61 -100 | 11 | 9.6 | 98.3 |
| 101 -190 | 2 | 1.7 | 100.0 |
| Total | 115 | 100.0 | ... |

Average Number of Units in a Condominium Project: 32.7

TABLE 13.--Number of Buildings per Condominium Project in Summit County, Colorado, 1973

| No. of Buildings per Condominium Project | Number of Projects | Percentage | Cumulative Percentage |
|---|---|---|---|
| 1 | 52 | 45.1 | 45.1 |
| 2 | 24 | 20.7 | 65.8 |
| 3 | 15 | 13.0 | 78.8 |
| 4 | 12 | 10.3 | 89.1 |
| 5 | 4 | 3.4 | 92.5 |
| 6 | 1 | .8 | 93.3 |
| 7 | 3 | 2.5 | 95.8 |
| 10 | 1 | .8 | 96.6 |
| 12 | 2 | 1.6 | 98.2 |
| 15 | 1 | .8 | 100.0 |
| Total | 115 | 100.0 | ... |

Average Number of Buildings in a Condominium Project: 2.34

TABLE 14.--Building Size of Ski and Reservoir Oriented Condominium Projects in Summit County, Colorado, 1973

| Number of Units | Number of Projects | Percentage | Cumulative Percentage |
|---|---|---|---|
| | Ski Oriented Projects | | |
| 1 - 4 | 11 | 14.7 | 14.7 |
| 5 - 10 | 24 | 32.0 | 46.7 |
| 11 - 20 | 18 | 24.0 | 70.7 |
| 21 - 91 | 22 | 29.3 | 100.0 |
| Total | 75 | 100.0 | ... |
| | Reservoir Oriented Projects | | |
| 1 - 4 | 5 | 12.5 | 12.5 |
| 5 - 10 | 11 | 27.5 | 40.0 |
| 11 - 20 | 15 | 37.5 | 77.5 |
| 21 - 50 | 9 | 22.5 | 100.0 |
| Total | 40 | 100.0 | ... |

NOTE: In ski oriented projects, average building size is 17.11 units and for reservoir oriented projects, it is 14.82 units.

Regional Pattern of Building Size

The largest building in Summit County is the 91 unit Trail's End in Four Seasons. The second largest building is the Longbranch with 60 units in the town proper of Breckenridge. After Breckenridge, the second largest concentration of large buildings is located at Copper Mountain where four projects have buildings with over 30 units (Table 15). With high densities, large buildings are the most feasible way to achieve the high densities.

The older projects in the town of Breckenridge and the projects in the outlying areas, Upper Blue River and Swan Valley, tend to be composed of small buildings (Table 15).

In Dillon, lot size and density dictated that most buildings fall between 16 and 20 units. In some cases, like the Cour de Lac, a developer purchased three lots and built one 48 unit building.

In Wildernest, developers have limited their projects to smaller buildings. Because of hillside location combined with a 35 foot height restriction, the grade change would make large buildings difficult to design; therefore, most projects have two or more buildings.

## Locational Factors

Table 16 summarizes the observed associations between selected site characteristics and condominium characteristics, density, building height and building size. The G coefficient or gamma is the Goodman Kruskal index of order association and z-score of gamma is used to determine the statistical significance of gamma (See Appendix D for formulas used in the calculations).

Hillside or Valley Location

For the most part, condominium development has been confined to

TABLE 15.--Percentage of Condominium Projects by Building Size Classes, Summit County, Colorado, 1973

| Subregions | Building Size Classes in Number of Units | | | | |
|---|---|---|---|---|---|
| | 1-4 | 5-10 | 11-20 | 21-40 | 41-100 |
| | Ski Oriented Subregions | | | | |
| Breckenridge Area: | ... | ... | ... | ... | ... |
| Four Seasons | ... | 33.3 | 44.4 | 12.5 | 16.7 |
| Town of Breckenridge | 18.2 | 20.7 | 27.8 | 25.0 | 50.0 |
| Ski Hill Road | ... | ... | ... | 12.5 | ... |
| Warrior's Mark | 54.5 | 4.2 | ... | 12.5 | ... |
| Woodmoor Area | 9.1 | 16.7 | 5.6 | ... | ... |
| Upper Blue River | 9.1 | 4.2 | 11.1 | ... | ... |
| Swan Valley Area | 9.1 | 4.2 | ... | ... | ... |
| Copper Mountain | ... | 16.7 | ... | 31.2 | 33.3 |
| Keystone | ... | ... | 11.1 | 6.3 | ... |
| Totals | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| | Reservoir Oriented Subregions | | | | |
| Town of Dillon | ... | 16.7 | 46.6 | 25.0 | 100.0 |
| Dillon Valley | ... | 8.3 | 13.3 | ... | ... |
| Summit Cove | 50.0 | ... | 6.7 | 12.5 | ... |
| Wildernest | 50.0 | 25.0 | 26.7 | 37.5 | ... |
| Town of Frisco | ... | 50.0 | 6.7 | 25.0 | ... |
| Totals | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

TABLE 16.--Observed Associations between Site Characteristics and Density, Building Height, and Building Size of Ski Oriented and Reservoir Oriented Condominiums in Summit County, Colorado, 1973

| Site Characteristics | Values of Goodman-Kruskal Index of Association | | |
|---|---|---|---|
| | Density | Building Height | Building Size |
| | Ski Oriented Projects | | |
| Hillside/Valley | .68* | .52 | .62* |
| Tree Cover | -.31 | -.28 | ... |
| View | ... | .26 | ... |
| Water Frontage | ... | ... | ... |
| Township/County | .61* | ... | ... |
| PUD zoning | -.44* | .40 | ... |
| Dist. from a Post Office | -.27 | .31 | ... |
| Dist. from a Supermarket | -.35* | .28 | ... |
| Dist. from Public Lands | ... | -.54* | -.24 |
| Dist. from a Major Road | -.42* | ... | ... |
| Dist. from an Interchange | ... | -.99* | -.49 |
| Dist. from the Base of a Ski Area | -.43* | -.69* | -.42* |
| | Reservoir Oriented Projects | | |
| Hillside/Valley | .60 | ... | ... |
| Tree Cover | -.42 | ... | -.36 |
| View | .31 | ... | .40 |
| Water Frontage | .72* | .60 | ... |
| Township/County | .77* | ... | ... |
| PUD zoning | ... | ... | ... |
| Dist. from a Post Office | -.69* | ... | ... |
| Dist. from a Supermarket | -.62* | ... | ... |
| Dist. from Public Lands | ... | ... | ... |
| Dist. from a Major Road | -.37 | ... | ... |
| Dist. from an Interchange | -.43 | ... | ... |
| Dist. from a Shore | -.56* | ... | -.34 |
| Dist. from a Marina | -.65* | -.59 | ... |

NOTE: ... means that gamma was not significant at the .05 level.

* Significant at the 01 level.

valley floors with 80 percent of the ski projects and 75 percent of the reservoir projects located here (Table 17). High concentration of condominium projects in the valley area may be explained by the fact that this is also where population centers, main transportation arteries and major recreational activities are found.

TABLE 17. -- Hillside or Valley Location of Condominium Projects in Summit County, Colorado, 1973

| | Ski Oriented | | Reservoir Oriented | |
|---|---|---|---|---|
| | Number of Projects | Percentage | Number of Projects | Percentage |
| Hillside | 15 | 20.0 | 10 | 25.0 |
| Valley | 60 | 80.0 | 30 | 75.0 |
| Total | 75 | 100.0 | 40 | 100.0 |

The balance of the projects are found on relatively flat shelves above the valley floor; hillside areas include Wildernest, Ski Hill Road, and Woodmoor. One reason for the small percentage of development outside valleys is that most of the hillside areas are part of the Arapaho National Forest and the amount of private land available for development is limited. In addition, hillside development costs for road construction and utility extensions are much higher than in the valley areas.

As expected, a positive association was found between all the dependent variables and a hillside/valley location in the ski region (Table 16). In other words, higher densities, taller buildings, and larger buildings are associated with the more level and accessible valley sites. In fact, 89 percent of the projects with densities between 26 to 40 u.p.a. and 100 percent with densities greater than u.p.a. are located in the valley areas (Appendix C, Table 33). Of the buildings over three stories in height, 92.5 percent of them are in the valley and 90.9 percent

of the buildings with more than 20 units are located in the valley areas (Appendix C, Table 33).

In the reservoir region, only density proved significant (Table 16). A moderately strong positive association was found that is supported by the fact that 100 percent of the projects with density over 25 u.p.a. were built in the valley (Appendix C, Table 33).

Tree Cover

In the first county master plan which was adopted in 1963 before any condominiums had been built, the basic concept was to minimize the impact of higher densities by restricting them to certain areas:

> Zoning was designed mainly to prevent dense development on meadows and open areas, where subdivision was limited to five acre minimum size lots. In areas of denser vegetation, such as aspen groves and coniferous stands, developers could subdivide down to 2.5 acres and one acre respectively. In the final analysis of the plan was accepted, but without benefit of zoning or subdivision regulations (Ulman 1973 B:61).

But in contrast to what was specified in the original master plan, many condominiums have developed in open meadows that dominate the valley floor. In fact, 36 percent of the ski projects and 42.5 percent of the reservoir projects have been built in open meadows or treeless sites (Table 18).

TABLE 18 -- Tree Cover of Condominiums in Summit County, Colorado, 1973

| Tree Cover | Ski Oriented | | Reservoir Oriented | |
|---|---|---|---|---|
| | No. of Projects | Percentage | No. of Projects | Percentage |
| Open | 27 | 36.0 | 17 | 42.5 |
| Lightly Wooded | 16 | 21.3 | 8 | 20.0 |
| Heavily Wooded | 32 | 42.7 | 15 | 37.5 |
| Total | 75 | 100.0 | 40 | 100.0 |

Contrary to what was hypothesized, an increasing amount of tree cover is negatively associated with increasing density (Table 16). In other words, higher densities are associated with less tree cover. Of the ski projects with extremely high density (over 40 u.p.a.), 75.0 percent have been built in an open meadow or treeless site (Appendix C, Table 34). Some projects have attempted landscaping but only in a limited way; the cost of moving a 30 foot pine is very high. Also in the ski region, building height is negatively associated with tree cover. The visual impact of tall buildings in treeless areas is discussed in Chapter VII.

View

On a whole, very few condominium projects have commanding panoramic views, but the reservoir oriented projects had better views than ski oriented projects (Table 19). The open space created by Dillon Reservoir offers spectacular views.[1]

TABLE 19. -- View Ratings of Condominium Projects in Summit County, Colorado, 1973

| View Rating | Ski Oriented | | Reservoir Oriented | |
|---|---|---|---|---|
| | No.of Projects | Percentage | No. of Projects | Percentage |
| No View | 26 | 34.7 | 10 | 25.0 |
| Vista | 26 | 34.7 | 8 | 20.0 |
| Perspective | 16 | 21.3 | 17 | 42.5 |
| Panoramic | 7 | 9.3 | 5 | 12.5 |
| Total | 75 | 100.0 | 40 | 100.0 |

[1]Projects built in the heavily wooded areas were given low ratings even though the view of the trees might be considered by some as very favorable. In this study, the emphasis is focused on distance views or vistas.

As hypothesized, taller buildings in the ski region and higher density and larger buildings in the reservoir region are positively associated with better views. In the reservoir region, this is explained in part by the concentration of high density projects with large buildings next to the shore of Dillon Reservoir where the view is excellent (Appendix C, Table 35).

Water Frontage

Very few condominium projects have stream or reservoir frontage. Of the ski oriented projects, only 17.3 have stream frontage compared to 30.0 percent of the reservoir oriented projects which have either stream or reservoir frontage (Table 20).

TABLE 20. -- Stream or Reservoir Frontage of Condominium Projects in Summit County, Colorado, 1973

| | Ski Oriented | | Reservoir Oriented | |
|---|---|---|---|---|
| | No. of Projects | Percentage | No. of Projects | Percentage |
| Frontage | 13 | 17.3 | 12 | 30.0 |
| No Frontage | 62 | 82.7 | 28 | 70.0 |
| Total | 75 | 100.0 | 40 | 100.0 |

Density and building height provided a significant association with water frontage in the reservoir region (Table 16). Higher density projects are associated with more desirable sites with stream or reservoir frontage. In the reservoir region, attraction of high density projects to the shore of Dillon Reservoir and the stream that flows through Frisco resulted in a strong association. A total of 42.9 percent of the projects with densities between 21 and 25 u.p.a. and 55.6 percent with densities between 26 to 40 u.p.a. have stream or reservoir frontage compared to only 8.3 percent with a density between

11 and 20 u.p.a. (Appendix C, Table 36).

Town or County Location

Half of the condominium projects are located within the towns of Dillon, Frisco, and Breckenridge (Table 21).

TABLE 21. -- Town or County Location in Summit County, Colorado, 1973

| | Ski Oriented | | Reservoir Oriented | |
|---|---|---|---|---|
| | No. of Units | Percentage | No. of Units | Percentage |
| County | 38 | 50.7 | 20 | 50.0 |
| Town | 37 | 49.3 | 20 | 50.0 |
| Total | 75 | 100.0 | 40 | 100.0 |

The regional planning commission in Summit County has declared that "high density development should be encouraged within the established communities and should be discouraged in the outlying areas" (Harris Street Group 1972:2). But early zoning of large land areas with high density multi-family areas like Wildernest and Summit Cove encouraged scattering of high density development. In addition, sanctioning of the high density PUD s at the base of the new ski areas like Copper Mountain. and Keystone resulted in further development of condominiums outside of the towns.

Only density was found to have significant association with town or county location. As hypothesized, a positive association exists between density and town sites. For example, in the ski region a relatively strong positive association emerged. In the town of Breckenridge, which includes Four Seasons, only 14.7 percent of the projects have densities of less than ten u.p.a. (Appendix C, Table 37). But the towns have 73.7 percent of the projects with densities between 26 to 40 u.p.a. and 75 percent of those exceed 40 u.p.a. (Appendix C, Table

37). Thus, a strong positive association exists between density and town or county location.

Planned Unit Developments

Several subregions contain planned unit developments (PUD). Differing from the traditional subdivision which permits only residential developments, a PUD in Summit County permits a mixture of uses: residential, commercial, civic and recreational. The major uses in several PUDs, however, is high density, multi-family residential buildings. With these types of sites, PUDs were a prime catalyst in the tremendous growth of condominiums. By 1973, 64.0 percent of the ski condominiums and 67.5 percent of the reservoir condominiums were located in PUDs (Table 22).

TABLE 22.--Condominium Zoning in Summit County, Colorado, 1973

| Zoning | Ski Oriented | | Reservoir Oriented | |
|---|---|---|---|---|
| | No. of Projects | Percentage | No. of Projects | Percentage |
| Other | 27 | 36.0 | 13 | 32.5 |
| PUD | 48 | 64.0 | 27 | 67.5 |
| Total | 75 | 100.0 | 40 | 100.0 |

It was hypothesized that density would be positively associated with PUD zoning, but just the opposite was found to be the case in the ski region where densities were significantly higher outside the PUDs than in the PUDs. The reversed association is a result of the extremely high density projects found within the town of Breckenridge. For example, 83.3 percent of the ski projects with densities over 40 u.p.a. were found outside of a PUD compared to only 16.7 percent of developments within a PUD having densities greater than 40 u.p.a. (Appendix

C, Table 38). In the PUDs, the majority of the projects have densities between 10 and 30 u.p.a.

In the ski region, the PUDs are positively associated with taller buildings as was hypothesized. In fact, PUDs contain all of the five and six story buildings. No significant pattern emerged for building size or for any of the dependent variables in the reservoir regions (Table 16).

Distance from a Post Office and Supermarket

Distance from a post office and a supermarket represents the proximity of condominiums to the availability of municipal services and shopping respectively. As Tables 23 and 24 show, the distributions are very similar; consequently, the analysis of these two distance measures is combined. Frisco and Dillon each have a post office and supermarket in close proximity to each other. In Breckenridge (ski region), there are two supermarkets which results in the larger value for the percentage of condominiums within five tenths of a mile from a supermarket.

As Tables 23 and 24 indicate, over half of the condominium projects are within one mile of a supermarket or post office. But in the ski region, 24.0 percent are over four miles from either a post office or supermarket. This reveals the scattering and leapfrog development that has occurred around the existing communities. Figure 4 also illustrates that although distinct pockets of condominiums exist, discontinuous development has occurred along Highway 9. But the main reason for the high percentage of projects in the four to eight mile category is the recent developments at Copper Mountain and Keystone where post offices and supermarkets were planned but not built at the time of the survey.

TABLE 23.--Distance between nearest Post Office and Condominium Project, Summit County, Colorado, 1973

| Distance (miles) | Ski Oriented | | Reservoir Oriented | |
|---|---|---|---|---|
| | No. of Projects | Percentage | No. of Projects | Percentage |
| < .5 | 18 | 24.0 | 16 | 40.0 |
| .6 - 1.0 | 23 | 30.6 | 9 | 22.5 |
| 1.1 - 4.0 | 16 | 21.4 | 15 | 37.5 |
| 4.1 - 8.0 | 18 | 24.0 | ... | ... |
| Total | 75 | 100.0 | 40 | 100.0 |
| | Average Distance: 2.38 miles | | Average Distance: 1.10 miles | |

TABLE 24.--Distance between Supermarket and Condominium Project, Summit County, Colorado, 1973

| Distance (miles) | Ski Oriented | | Reservoir Oriented | |
|---|---|---|---|---|
| | No. of Projects | Percentage | No. of Projects | Percentage |
| < .5 | 34 | 45.3 | 17 | 42.5 |
| .6 - 1.0 | 8 | 10.7 | 6 | 15.0 |
| 1.1 - 4.0 | 15 | 20.0 | 17 | 42.5 |
| 4.1 - 8.0 | 18 | 24.0 | ... | ... |
| Total | 75 | 100.0 | 40 | 100.0 |
| | Average Distance: 2.28 miles | | Average Distance: 1.55 miles | |

As expected in both the ski and reservoir regions, a negative association was found between density and distance from a post office and supermarket (Table 16). In other words, the higher densities are found closer to a post office and supermarket. When the ski and reservoir indexes are compared, a much stronger association exists among the reservoir projects. In the reservoir region, a more clearly defined density pattern exists; for example, 100 percent of the low density projects (less than 10 u.p.a.) are more than four miles from a post office and of the high density (greater than 40 u.p.a.) projects, 77.8 percent are within a half a mile of the post office (Appendix C, Table 39). In the ski region, low density projects are close to the post office and several extremely high density projects are over four miles from a post office (Appendix C, Table 39).

Contrary to what was hypothesized for the ski region, a positive association was found between building height and distance from a post office and supermarket. The positive association is explained in part by the concentration of four and five story buildings at Copper Mountain which are over four miles from the nearest post office and supermarket.

Distance from Public Land Boundary

Condominium development has occurred in close proximity to publicly owned lands for two main reasons. First, over 76 percent of Summit County is public land, either Arapaho National Forest, Denver Water Board lands, or public domain administered by the Bureau of Land Management. Second, abutting on public land generally means permanent open space for recreation and aesthetic appeal to the condominium developer. Consequently, more condominium development has occurred where there is ready access to surrounding public

lands or where the distance from the public land property line to the condominium project is shortest. Burby (1971 A:72) encountered a similar situation in North Carolina with residential shoreline development.

On the average, the ski condominium is .25 miles from public property and the reservoir condominium is only .11 miles (Table 25). In fact, 21.3 percent of ski condominiums and 47.5 percent of reservoir condominiums directly abut public property (Table 25). The higher percentage in the reservoir region is the result of the Denver Water Board land which surrounds the reservoir; adjacent to it is a row of high density condominiums. No condominium development has occurred more than eight tenths of a mile from some type of public land (Table 25).

TABLE 25. -- Distance between Public Land Boundary and Condominium Projects, Summit County, Colorado, 1973

| Distance (miles) | Ski Oriented | | Reservoir Oriented | |
|---|---|---|---|---|
| | No. of Projects | Percentage | No. of Projects | Percentage |
| <.1 | 16 | 21.3 | 19 | 47.5 |
| .1 - .2 | 27 | 36.1 | 12 | 30.0 |
| .3 - .4 | 16 | 21.3 | 8 | 20.0 |
| .5 - .8 | 16 | 21.3 | 1 | 2.5 |
| Totals | 75 | 100.0 | 40 | 100.0 |

Average Distance: .25 miles  Average Distance: .11 miles

Of the dependent variables, only for the ski oriented region did significant associations emerge (Table 16). As expected, a negative index exists between building height and building size and distance from public land boundaries. This pattern is primarily explained by the four, five, and six story projects in Four Seasons and Copper Mountain which are completely surrounded by Arapahoe National Forest. As Appendix C, Table 41 indicates, 42.9 percent of the buildings over three stories abutt government land and another 42.9 percent are within two tenths of a mile.

Distance from a Major Road

Interstate Highway 70 traverses Summit County from east to west and Colorado Highway 9 runs north and south. Major roads follow the relatively flat valley floors where the majority of private land is also located. During winter, major highways are well maintained and generally passable. Summit County has no rail service and one 7,000 foot airline dirt runway located three miles north of Breckenridge without regularly scheduled air service.

In Summit County, the highway network has been a major determinant of land use and the location of condominiums. Condominium development has tended to occur where major roads are available. As shown in Table 26, 25 percent of both the ski and reservoir projects are within two tenths of a mile of a major road. In the ski region, strip condominium development has occurred along Highway 9. In the town of Breckenridge, condominium projects have formed a distinct corridor along Main Street (Highway 9). Another corridor of condominiums is emerging along Interstate 70 in the Dillon area.

An additional pattern attributable to the major road network is the leapfroging and scattering of condominiums as witnessed by projects in Upper Blue River Valley and Swan Valley Area along Highway 9.

TABLE 26.--Distance between a Major Road and Condominium Projects, Summit County, Colorado, 1973

| Distance (miles) | Ski Oriented | | Reservoir Oriented | |
|---|---|---|---|---|
| | No. of Projects | Percentage | No. of Projects | Percentage |
| < .2 | 19 | 25.3 | 10 | 25.0 |
| .2 - .5 | 31 | 41.3 | 18 | 45.0 |
| .6 - 1.0 | 15 | 20.0 | 8 | 20.0 |
| 1.1 - 2.0 | 5 | 6.7 | 4 | 10.0 |
| 2.1 - 3.0 | 5 | 6.7 | ... | ... |
| Totals | 75 | 100.0 | 40 | 100.0 |

Average Distance: .55 miles

Average Distance: .49 miles

As hypothesized, a negative association was found between distance from a major road and density (Table 16). In both ski and reservoir regions, higher densities are closer to the major roads. The negative pattern is supported by the fact that in both regions very few low density projects are located near a major road. Part of the explanation stems from the high land values for property next to a major road, especially in the town of Breckenridge. This encourages the condominium developer to build high density projects on land near the road.

In the reservoir region, no high density development has occurred beyond one mile from a major road (Appendix C, Table 42). No significant associations were found for building height and size in either region.

Distance from an Interchange

Interstate 70 is now the primary transportation influence in Summit County; it is the first four lane controlled access transcontinental route across Colorado. Approximately eighty percent of the traffic through Summit County is east-west traffic (Figure 14).

Since completion of major stretches of Interstate 70, the importance of interchanges as locational factors has steadily increased. In the reservoir region at the North Frisco Interchange, a Holiday Inn was followed by the first condominium project located at an interchange. The condominium units are rented and managed as part of the Holiday Inn operation; consequently, the units have higher than average rental income. Several new projects in Frisco have been built near the interchange.

In the ski region, most condominium development has occurred in the Breckenridge area which is ten miles from an interchange. A proposed interchange, however, abutts the development at Copper Mountain and a growing proportion of projects in this region appear to be located within one mile of the interchange.

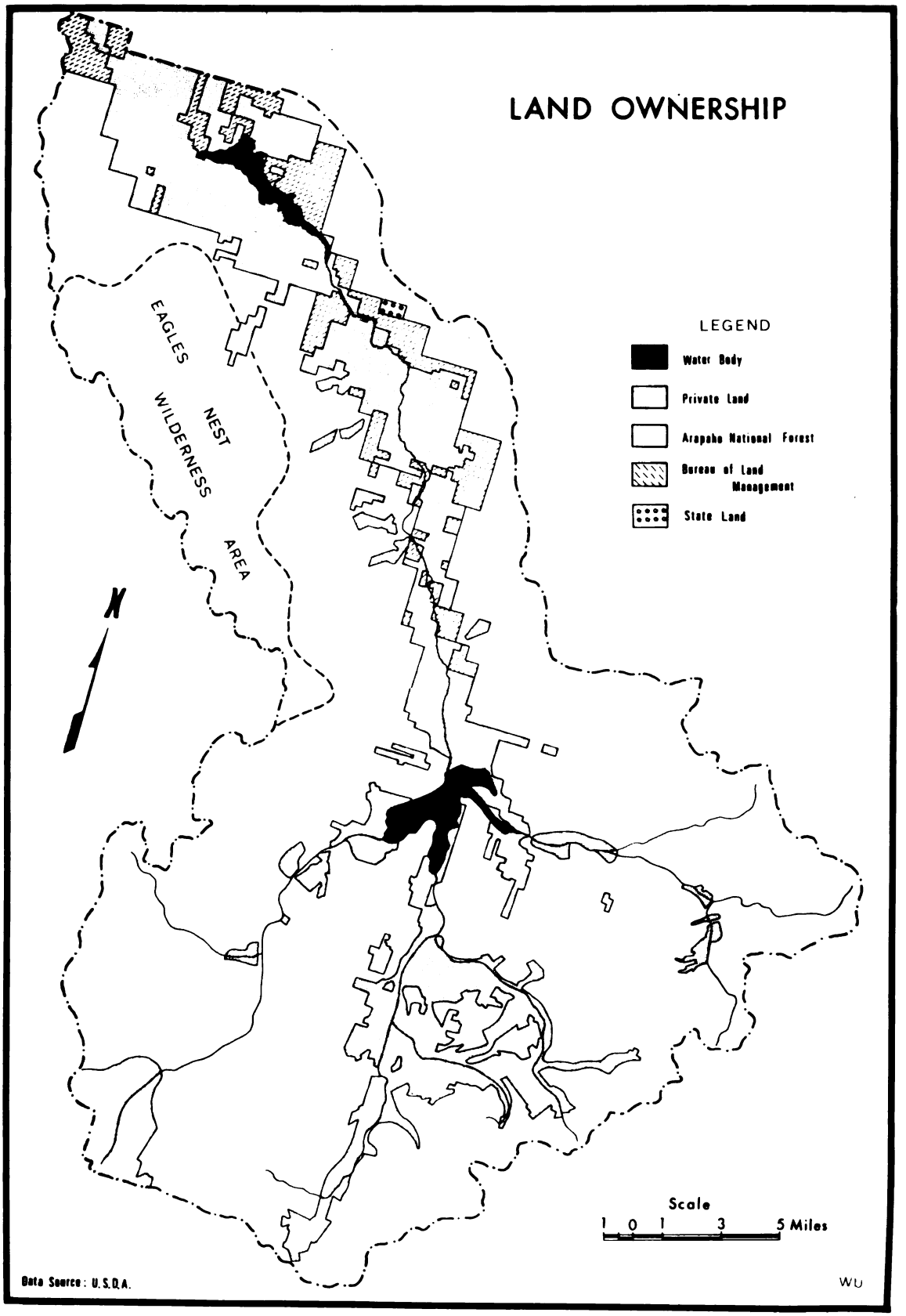


Fig. 14. Traffic Volume in Summit County, 1950 - 2000
(map courtesy of Wilbur J. Ulman, Ph.D.)

TABLE 27.--Distance between an Existing or Proposed Interchange and Condominium Projects, Summit County, Colorado, 1973

| Distance (miles) | Ski Oriented | | Reservoir Oriented | |
|---|---|---|---|---|
| | No.of Projects | Percentage | No. of Projects | Percentage |
| .1 - 1.0 | 11 | 14.7 | 1 | 2.5 |
| 1.1 - 3.0 | 0 | 0 | 12 | 30.0 |
| 3.1 - 5.0 | 0 | 0 | 23 | 57.5 |
| 5.1 - 18.0 | 64 | 85.3 | 4 | 10.0 |
| Totals | 75 | 100.0 | 40 | 100.0 |
| Average Distance: | 9.56 miles | | Average Distance: | 1.52 miles |

Of the dependent variables, three proved to be significantly associated with distance from an interchange (Table 16). In the ski region, building height and size were negatively associated with distance from an interchange as expected. For building height an almost perfect negative association was produced; one of the few for that dependent variable. This is explained in part by the fact that 71.4 percent of the condominiums over three stories are found at Copper Mountain and 100 percent of the two story projects are located over five miles from an interchange (Appendix C, Table 43). Also, no observations occurred in the two intermediate categories (1.1 - 3.0 miles and 3.0 to 5.0 miles from an interchange) and this unusual distribution and the method of calculation influenced the index.

In the reservoir region, only condominium density proved to be negatively associated with distance from an interchange. The low density projects were generally found in more remote areas compared to the high density projects (Appendix C, Table 43). This pattern is caused by Dillon, with higher density projects, being closer to an interchange than Summit Cove with its lower density projects.

Distance from a Ski Area

Three ski areas in Summit County, Breckenridge, Keystone, and Copper

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TABLE 28

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Mountain, are major centers of condominium development. As Table 28 reveals, 54.7 percent of the ski condominiums are within a half mile of a ski area base and almost 75 percent are within one mile.

TABLE 28.--Distance between Ski Area Base and Ski Oriented Condominium Projects,Summit County, Colorado, 1973

| Distance (miles) | Ski Oriented | |
|---|---|---|
| | Number of Projects | Percentage |
| < .2 | 10 | 13.3 |
| .2 - .5 | 31 | 41.4 |
| .6 - 1.0 | 15 | 20.0 |
| 1.1 - 3.0 | 12 | 16.0 |
| 3.1 - 8.0 | 7 | 9.3 |
| Totals | 75 | 100.0 |

As hypothesized, all three dependent variables were negatively associated with distance from a ski area.[1]

The skier's desire for lodging and/or condominium ownership near the base of the lifts produced high land values. As a result, no low density condominium development (less than 10 u.p.a.) has occurred within a half mile of the base area (Appendix C, Table 44). Yet, of the high density projects (21 - 25 u.p.a. and 25 - 40 u.p.a.), 80.0 percent and 79.0 percent respectively are within a half mile of the base area (Appendix C, Table 44). Very few of the high density projects are found over one mile from the base of a ski area.

In order to achieve the high densities permitted on the sites near the ski area requires four to six story structures. As a result, the negative association that emerged stems from the concentration of buildings over three stories near the base of a ski area (Appendix C, Table 44).

[1]Only the ski oriented projects were analyzed in terms of distance from a ski area base.

In addition, high density, multi-storied structures result in large buildings and in turn this produces the negative association with regards to building size.

Distance from the Shore of Dillon Reservoir

Dillon Reservoir, as a major recreational feature, has attracted condominium development. In the reservoir region, 20 percent of the projects are less than one tenth of a mile and 32.5 percent are .2 to .5 mile from the shore (Table 29). Only 10.0 percent of the projects are more than 1.0 mile from the reservoir (Table 29).

TABLE 29.--Distance between the Shore of Dillon Reservoir and Reservoir Oriented Condominium Projects, Summit County, Colorado 1973

| Distance (miles) | Reservoir Oriented | |
|---|---|---|
| | Number of Projects | Percentage |
| <.1 | 8 | 20.0 |
| .2 - .5 | 13 | 32.5 |
| .6 - 1.0 | 15 | 37.5 |
| 1.1 - 2.0 | 4 | 10.0 |
| Total | 40 | 100.0 |

Density and building size produced a significant association (Table 16). The negative association means that higher density projects with larger buildings have been developed nearer the shore. For example, of the condominium enclaves around Dillon Reservoir, the town of Dillon is the major center of the reservoir oriented condominiums. When the town was planned, a band of high density, multi-family zoning paralleling the reservoir shore was established separated from the shore by Denver Water Board land. In Dillon and other areas around the reservoir, no low density projects have been built next to the shore, whereas over half of the density projects are within one tenth of a mile of the water. (Appendix C, Table 45).

Distance from the Marina

With its marina and yacht club, the town of Dillon is the main activity center for Dillon Reservoir. When the distribution of condominiums is compared with road distance from a marina, the town of Dillon contains the projects within one mile (Table 30). The other reservoir oriented projects at Summit Cove, Wildernest, and Frisco are over two miles from the marina.

TABLE 30.--Distance between a Marina and Reservoir Oriented Condominiums Summit County, Colorado, 1973

| Distance (miles) | Reservoir Oriented | |
|---|---|---|
| | Number of Projects | Percentage |
| <.1 | 4 | 10.0 |
| .2 - .5 | 8 | 20.0 |
| .6 - 1.0 | 2 | 5.0 |
| 1.1 - 2.0 | 1 | 2.5 |
| 2.1 - 6.0 | 25 | 62.5 |
| Totals | 40 | 100.0 |

As in the case of distance from the shore, only condominium density was found to be significantly associated with distance from a marina, and as hypothesized, the relationship is negative. None of the low density projects are located within two miles of the marina; however, of the very high density projects (26 to 49 u.p.a.), 22.2 percent are less than one tenth of a mile from the marina and 44.4 percent are less than half a mile (Appendix C, Table 46).

## Density and Land Use Intensity Ratings

Because of the variation in the size of living units and the number of occupants in a living unit of any given size, density in terms of living units per acre is a rather crude measure of the degree of land use

(Federal Housing Administration 1966:4). Living conditions must be considered and a measure is needed to consider density within the dwellings as well as density of dwellings on the ground (Sussna 1973:2).

In Summit County, a measure of density was devised that reflects the sleeping capacity; referred to as "bedroom density", the measure is based on the rental concept of recreation condominiums. Harper (1974:54) previously pointed out:

> As with most second-home condominiums, the units in Summit County are available for rental customers most of the year. According to a recent survey taken by the Summit County Planning Department staff, the condominium owners in the County listing Summit County as their primary residence, is less than ten percent of all owners; therefore, the vast majority of units are available for rent either long or short term. Very few developments catered to exclusively permanent, long-term rentals, thus, most indicated short-term availability.

"Bedroom density" is calculated by summarizing the sleeping spaces and then dividing by the size of the site in acres. The following sleeping space values were used:

| Type of Unit | No. of Sleeping Spaces |
|---|---|
| Studio | 1 |
| Studio/Loft | 2 |
| One Bedroom | 2 |
| One Bedroom/Loft | 3 |
| Two Bedroom | 3 |
| Two Bedroom/Loft | 4 |
| Three Bedroom | 4 |
| Three Bedroom/Loft | 5 |
| Four Bedroom | 5 |

Since lofts and living rooms are usually designed as sleeping areas, they were each counted as one sleeping space.

Because of the method of calculation, the highest bedroom densities generally correspond with the highest dwelling densities. But there are condominium projects where the land use intensity differs considerably from the intensity indicated by the unit density. This comparison of the

unit density and bedroom density is achieved by dividing bedroom density by unit density; the resulting ratio, referred to as the "bedroom density ratio" (BD Ratio), illustrates the number of sleeping spaces compared to the number of dwelling units. For example, the higher the ratio, the greater the number of larger units in terms of sleeping space.

In Summit County, the average BD ratio of 2.98 reflects that the average size condominium unit has two bedrooms. The range, however, is from 1.0, all one bedroom units, to 5.0, all four bedroom units.

To determine what locations have the greatest divergence from the average ratio, projects with a ratio of 2.0 or less and 4.0 were compiled by subregion. As shown in Table 31 the low ratio projects are clustered in Four Seasons and Breckenridge near the base of the ski area. In both cases, the predominance of one-bedroom units are designed to rent on a short-term basis to skiers. Policies contained in the Breckenridge zoning ordinance encourage the building of studio and one-bedroom units for rent instead of permitting two and three-bedroom units to be divisible for rental purposes. When a unit is divisible, an individual bedroom or the living room and kitchen area can be rented separately. According to Skip Grkovic, Summit County Building Official,

> The Breckenridge zoning ordinance essentially says that a divisible unit counts as the total of the values that can be assigned to each division of the divisible unit. For instance, if a three bedroom divisible unit can be broken down into a hotel room, an efficiency (studio) unit, and a one bedroom unit, the total density would be .50 + .75 + 1.0 = 2.25 units. This approach was adopted early in 1973 (Personal Correspondence June 12, 1975).

A developer, in an attempt to maximize his return, will build as many units as possible and thus will tend to avoid divisible units.

The projects with ratios of 4.0 or more are found in the outlying peripheral areas and in the towns of Breckenridge and Frisco. In both

TABLE 31.--Percentage of Condominium Projects by Bedroom Density Class, Summit County, Colorado, 1973

| Subregion | Bedroom Density Ratio Class | | | |
|---|---|---|---|---|
| | 1.0 - 2.0 | | 4.0 - 5.0 | |
| | n | % | n | % |
| Ski Oriented Subregions: | | | | |
| Four Seasons | 4 | 36.4 | ... | ... |
| Town of Breckenridge | 4 | 36.4 | 3 | 30.0 |
| Ski Hill Road | ... | ... | ... | ... |
| Warrior's Mark | 1 | 9.1 | 2 | 20.0 |
| Woodmoor | ... | ... | 2 | 20.0 |
| Upper Blue River | 1 | 9.1 | ... | ... |
| Swan Valley | ... | ... | ... | ... |
| Copper Mountain | ... | ... | ... | ... |
| Keystone | ... | ... | ... | ... |
| Reservoir Oriented Subregions: | | | | |
| Town of Dillon | ... | ... | ... | ... |
| Dillon Valley | 1 | 9.1 | 1 | 10.0 |
| Summit Cove | ... | ... | 1 | 10.0 |
| Wildernest | ... | ... | ... | ... |
| Town of Frisco | ... | ... | 2 | 20.0 |
| Total | 11 | 100.0 | 10 | 100.0 |

NOTE: The ratios between 2.1 and 3.9 were not tabulated; only the high and low ratios were considered.

types of location, the projects are townhouses with one notable exception, the Longbranch in Breckenridge. Although the Longbranch's dwelling density is 46.5 u.p.a., the large percentage of three-bedroom units results in a bed density of 181.4 u.p.a.

# CHAPTER VII

# PLANNING AND POLICY IMPLICATIONS

In recent years, increasing public and governmental concern over the use and misuse of Summit County's land has created a need for comprehensive land use planning. Although land use planning is not an end in itself, it does provide a method of evaluating conflicting environmental, social, and economic goals and a basis for sounder decision making regarding land uses.

## Recommendations

Several important land use planning and policy implications emerge from the preceding analysis of condominium locations.

### Tree Cover and Building Height

When the building height is compared with tree cover, a large percentage of buildings with four or more stories are located in open meadows (Appendix C, Table 35). The importance of visual impact is shown in the following photographs where a three-story project in an open meadow is compared with a six-story project in an area with many trees (Figures 15 and 16). Clearly, the taller building set among the trees is more compatible with the mountain landscape than three story buildings without trees.

Also, the role that tree cover plays in the consumer's environmental preferences should be considered. As Walsh and Parseys (1972:30) found in Aspen, "over two-thirds of Pitkin County respondents who own

Fig. 15. A three story condominium project in an open meadow.

Fig. 16. A six story condominium project in the trees.

newer condominium units apparently lack a desired amount of trees and shrubs that provide an element of privacy."

In conclusion, it is recommended that building heights should not be arbitrarily set at 35 feet. Instead, visual and functional aspects of the location should be of primary consideration, and key environmental features such as tree height should determine the building height. In the open meadows, buildings should be one story or the area should be preserved as open space. Exception to this rule might be at the base of a ski area.

Roads and Interchanges

The availability and quality of public roads in Summit County has been a major factor in condominium development. Development tended to occur where roads were available and it has created linear or strip patterns in several places. Instead of strip development, planning should emphasize clusters or nodes with ready access to a major artery.

The winter climate creates slippery road conditions; consequently, remote locations with significant road grades create traffic problems. For example, a large concentration of high density condominiums like Wildernest, where the main road winds up the hillside, will become a major bottleneck as the subdivision develops, especially when skiers attempt to return to their condominiums on snowy winter weekends. Presently, the road requires a four-wheel drive vehicle or a car with chains after a snowfall. In the future, condominium development should not be located at any great distance from a major road or where major grade changes are encountered.

Because of high traffic volumes, commercial development can be expected at the interchanges. Part of this commercial development will be motels and hotels. Two interchanges presently have hotels, North

Frisco and Silverthorne, but several more are in the planning stages at other interchanges. In conjunction with the hotels, condominiums will develop as additional rental units make agreements with hotels. Medium density condominium development should be encouraged near the interchanges to buffer the commercial development from surrounding lower density residential developments.

In conclusion, this investigation highlighted the key role of accessibility and roads in the location of condominiums. Local and state agencies, in cooperation with highway planners, can have a significant influence on location of future condominium developments.

Leapfrog Development

The past policy of permitting leapfrog development of condominiums by passing open land close to the center of a city and developing cheaper land further out has greatly contributed to a number of Summit County's present problems of providing services to these areas at a minimum cost to the taxpayer. But, the trend of high density condominiums being built in the area outside of the existing towns and ski areas, will continue because of the large areas of land that are already zoned for multi-family development in these outlying areas. However, in the future it will be difficult, if not impossible to develop new high density subdivisions outside of the existing communities or ski areas. Zoning regulations of Summit County have set a maximum density of only six units per acre and the regional planning commission recently rejected a major new development in the Swan Valley area in an effort to keep development to the existing communities.

Several state legislators recognized the problem of leapfrog development and put before the Colorado Legislature H.B. 1092, referred to as "The Land Use Planning and Urban Service Area Act of 1975". If enacted

as written, it requires every municipality to define the area in which it will provide municipal services that would be called the "urban service area". The urban service area would be coterminous with existing boundaries. The law would also prevent annexation by a municipality of any lands which are not totally within its urban service area. The Regional Planning Commission would review the boundaries of the urban service area, but the Colorado Land Commission would have power to make the final designation of boundaries (Colorado H.B. 1092 1974:1).

To prevent high density sprawl and scatteration of condominiums throughout Summit County, it is recommended that the policy restricting high density to the established communities and ski areas should be strictly adhered to. It would greatly facilitate the county's ability to provide the necessary municipal services and minimize any utility extension cost.

Land Use Intensity

In Summit County, density is generally defined for condominium projects in terms of living units and commercial space; however, even with the same dwelling densities, wide variations exist in the bedroom density of condominium projects. For example, if a 30-unit project comprised entirely of studio units is compared to a 30-unit project of four bedrooms, the number of people in the building and the parking requirements would be completely different. For this reason, the Federal Housing Authority (FHA) employs the concept of land use intensity in place of density. Land Use Intensity refers to the overall structural mass and open space relationship in a multi-family development. The rating system is "based first and most directly on the relationship of total floor area" (Federal Housing Administration:4). It is more appropriate than dwelling

density in that it reflects how intensively the land is utilized.

The bedroom density ratio and square feet per unit must be recognized to prevent extremes in bed density relative to the dwelling density. It is recommended that a land use intensity rating be devised for Summit County that would replace density as the main planning consideration for future condominium development.

## Other Findings and Recommendations

In addition to previous recommendations, several other planning situations were encountered that were not reflected in the data.

### View Corridors

In planning, attention should be directed toward prohibiting multi-storied, large buildings from blocking, detracting from, or destroying aesthetically pleasing views. View corridors should be established where development is prohibited completely or limited to one-story projects.

### Open Space

An abundance of open space for landscaping and recreation should be a major element in the future planning of condominiums. A number of alternatives are available for utilization of the open space: golf courses, streams, lakes, ski runs, or simply undeveloped vacant land like the meadow areas. A survey by the Urban Land Institute and National Association of Home Builders revealed that open space helps the sale and renting of residential developments (McKeever 1968:107).

### Public Lands

Three location situations exist where condominium projects abutt public lands: situations involving ski areas, situations involving shore development at Dillon Reservoir, and other rather remote areas where

condominiums are built next to the Arapahoe National Forest. Each situation has different use and location planning implications. At the ski areas, the intense winter use and the limited summer use are controlled by ski area management.

Around Dillon Reservoir, the areas of intense recreational use are clearly defined and managed by the Forest Service. But the outlying areas away from the shores of Dillon Reservoir and the ski areas present situations which are difficult to control and manage. One area, Wildernest, is particularly noteworthy in this regard. Located just west of Silverthorne, Wildernest is an elongated rectangular subdivision situated in a heavily wooded area, surrounded by Arapahoe National Forest. The entire area is zoned for two uses: high density and medium density multifamily residential. With 23.3 acres zoned 6 u.p.a., 188.5 acres zoned 17 u.p.a., and 42.7 acres zoned 25 u.p.a., a maximum of 4,412 living units would be permitted. Construction began in 1971, and by 1973, Wildernest had 365 condominium units constructed. Although this number represents only 8.5 percent of the total number allowed, it is already creating problems. For example, residents of Wildernest have built corrals and kept horses in the nearby National Forest without permission. When built out, this area could house over 14,000 people, and the impact on the surrounding area will result in severe environmental deterioration.

Although the permanent open space provided by public lands is a desired feature for high density condominiums, locational policy should reflect impacts on surrounding land use. Condominiums should be restricted to the ski area and lake shore where intensive land use and environmental alteration is already established. Furthermore, intense condominium development should be prohibited in remote areas adjacent to forest or other fragile elements of the mountain environment located on public lands.

Developers should coordinate their projects with the Forest Service in order to know the future plans of adjacent National Forest areas. For instance, the National Forest land may be designated for trade or tree cutting.

Planned Unit Developments

Since 1970, the percentage of condominium projects built as part of a PUD has steadily increased. In the future, the PUD promises to be the major planning concept for both the townships and the county. The PUD offers many developmental advantages; as Ulman (1973 B:50) notes:

> In mountain environments where slope, vegetation and soil stability are critical, PUD is an especially effective method of development. Through imaginative, skillful planning, high density is permissible in areas of low impact danger, while more fragile areas are left intact.

Furthermore, PUD stimulates development by planned design and provides an alternative to urban sprawl. In a recent study by Real Estate Research (1974:4), entitled "The Cost of Sprawl", it was concluded that:

> Planned development (defined as a compact, orderly pattern of development conducted by one or more large scale entrepreneurs) to be less costly to both create and service than conventional "leapfrog" or "sprawl" development, and to have significant advantages with regard to environmental protection.

Although a PUD prevents sprawl, in Summit County it has created very congested areas that are similar to an urban environment that the second home owner may be trying to escape. In a recent study, Townhouses and Condominium Resident's Likes and Dislikes, Carl Norcross concluded "As a general rule, the lower the density, the higher the (owner's) satisfaction". He identified several factors that affect how the condominium owner feels about density or what he refers to as the "sense of density" (Norcross 1973:38). The most important was the surrounding land use:

> Space around the building counts the most because it

> is what the owners see and use. It is satisfying to have open space and green belts close to home, a green belt that is one half mile away is not of much use. Thus open space across the street or behind the house, even if not part of the development, is of great value (Norcross 1973:9).

The best example of this undesirable feature is the Lower Village of Four Seasons. With a height restriction of 35 feet, and densities of 20 to 30 u.p.a., the buildings are clustered together. In addition, the lot coverage permitted is 50 percent; consequently, distance between buildings and open space is inadequate. Problems with parking and snow removal are very common during the winter months. In the future, clustering of condominiums should be encouraged, but with terrain left open between and among the built up clusters. Condominium projects with a site density in excess of 20 u.p.a. should abutt permanent open space. Furthermore, the open space associated with PUDs should be large enough to be useful. As the Urban Land Institute commented, "Open space counts best where there is a lot of it in one place" (McKeever 1968:122).

Because of the generally higher site densities associated with PUD condominium development, it is recommended that the county planners encourage low lot coverage in the PUDs , with a maximum limit of 25 percent for any site density over 20 u.p.a.

Overzoning of Condominiums

In the past, several major PUDs have been composed completely of high density condominium projects. In fact, zoning of an excessive proportion of areas for condominiums has taken place and has created an excessive proportion of gross acreage allocated to this type of land use within planned developments. Instead, Summit County's planners and public policy makers should create a wider diversity in housing styles and densities. In other words, the PUD should be the main type of new subdivision, but the

exclusively high density situations like Four Seasons or Copper Mountain should be avoided. Then the projects would appeal to a wider cross-section of the population and would not be so dependent upon market trends for a particular type of housing.

Condominiums at Recreation Activity Centers

Condominium development should be permitted in the area near the reservoir shores. In this way, the reservoir provides permanent open space necessary for this type of development. In addition, high density condominium projects should be composed of smaller rental type of units to facilitate summer rental and be located in areas with direct access to the reservoir in combination with ample recreation support facilities, such as marinas, boat launches, docks, and restaurants.

At the base of the ski area, high density rental type condominiums should be encouraged in the immediate vicinity of the lifts for the following reasons. First, skiers preference for ownership and short-term rental of condominiums is near the lifts. Second, condominiums provide accommodations for midweek vacation skiers to improve the midweek utilization of the lifts and other facilities. Third, high density condominiums should be located near permanent open space of the ski run or serve as a buffer between the commercial areas near the ski area base and the lower density residential developments.

Although high density multi-storied projects should be permitted at the base of ski areas near the lake shore, medium density, two-story townhouse type of development should serve as a transitional land use between the high density and surrounding low density, single-family development.

## Overview

The location of future condominium developments should be appropriate

to the characteristics of the site and its location within the community's spatial and social framework. While the physical site characteristics, such as soil conditions or slope may limit the intensity of use, the principal determinant of intensity should be the location of the site in the community land use pattern. For example, high density, multi-storied condominium projects should not intrude into a single-family residential area (McKeever 1968:108). Density alone should not be the total measure of appropriateness of a condominium development. Instead, the availability of facilities and the manner in which the site is developed, amenities and open space should be considered. If the project is designed with low land coverage and has open space for landscaping and recreational use, and ample parking, then Summit County should welcome the present trend towards higher densities associated with condominiums as a relief from the wasteful land use practices of the 1950's and 1960's. But, it should be recognized that excessive high density development in one area will have an impact on facilities and adversely affect the area and its long-term economic stability.

# CHAPTER VIII

# FUTURE OF CONDOMINIUMS IN SUMMIT COUNTY

Because of the short duration of condominium development and fluxation of the annual number of condominium units built, prediction techniques such as trend analysis are not appropriate. Nevertheless, certain judgemental observations on the future of Summit County condominium development are presented.

## Overbuilding of Condominiums in Summit County

The development of recreational condominiums in Summit County occurred during a period of overall rapid expansion. Four factors were the major stimulants to growth in Summit County: skiing, Dillon Reservoir, Interstate 70, and the proximity of Summit County to the Denver Metropolitan Area. During 1971 and 1972, when all of the above factors were combined with a strong national economy, recreational condominiums flourished in Summit County. During 1972, 36 percent of all the condominiums in Summit County were started and the supply of condominiums began to exceed demand (Harper 1972: 17). By early 1973, it became apparent that condominiums were overbuilt.

As the over supply of condominiums grew in Summit County in 1973, changes in national economic conditions began to create market conditions that would greatly reduce the number of recreational condominium buyers. First, rising land prices and construction costs, combined with inflation in general, increased the price of condominiums. Simultaneously, inflation decreased purchasing power and the capacity of the consumer to buy

recreational housing. Second, interest rates began to climb during 1972 and by 1973, "tight credit" existed. Many condominium units were built without long term, low interest mortgage commitments for the eventual buyers. As a result, the era of the small down payment and low monthly amortization of the loan disappeared with high interest rates and high monthly payments. In fact, loans for second homes and recreational condominiums were almost unavailable. In Summit County, a local mortgage company closed their office because no funds were available for long term financing.

Third, in the summer of 1973, the Colorado area suffered from the gasoline shortage months before the Arab embargo. Then the Arab gasoline embargo and the so called "energy crisis" caused severe gasoline shortages in the Denver area and limited travel from the urban centers to the mountains.

The number of recreational housing buyers was therefore reduced by inflation, tight credit and the energy crisis and this discouraged condominium sales in Summit County. In fact, a study on completions and sales of condominiums in Summit County revealed that of the condominium units built since 1970, 49.5 percent were unsold as of April 1, 1974 (Harper 1974: 1). Harper (1974: 6) concluded: "Slow sales recently placed future construction contingent upon sales of present stock. Construction plans for the summer and fall of 1974 are therefore speculative due to the dearth in sales since November of 1973".

The overbuilt situation has bankrupted many condominium developers and resulted in numerous condominium project foreclosures by the lending institutions (The Denver Post October 30, 1974). Nevertheless, once existing unsold units are purchased, condominiums will continue to be built as part of Summit County's future recreational housing. Because

of the rental income, tax aspects, location, amenities, and carefree ownership aspects of a condominium over a second home, the condominium has appeal to the recreation housing market. However, it is doubtful that they will dominate recreational housing construction again as they did in 1972, when 88.5 percent of the units built were multi-family.

## Ski Oriented Condominium Development

Ski oriented condominiums started the recreational condominium era in Summit County, but the proportion declined drastically with the development of the Dillon area from 1967 to 1970. Since 1970, the ski oriented condominium has averaged 65 percent of the total number built and it is expected that the proportion will continue to remain at this level (Table 32).

TABLE 32.--Ski and Reservoir Oriented Condominium Units as Percentage of Total Number of Condominium Units, Summit County, Colorado, 1973

| Year | Percentage Ski Oriented | Percentage Reservoir Oriented |
|---|---|---|
| 1965 | 68.5 | 31.5 |
| 1966 | 71.2 | 28.8 |
| 1967 | 81.1 | 18.9 |
| 1968 | 36.1 | 63.9 |
| 1969 | 7.1 | 92.9 |
| 1970 | 13.1 | 86.9 |
| 1971 | 71.9 | 28.1 |
| 1972 | 53.7 | 46.3 |
| 1973 | 69.7 | 30.3 |

The future of skiing in Summit County promises expansion (Ulman 1973 B: 32). Since 1966, skiing participation increases in Summit County have been impressive with an average annual gain of 19.5 percent (Table 2).

The current trend can be expected to continue and is based on several growth indicators. First, for the state, skier visits are estimated to increase 15 percent. (Colorado Investor 1972: 2). Since 1970, the annual percentage increase in ski visits to Summit County have exceeded those of the state (Table 2). Second, Colorado's percentage population growth which is greater than that of the nation is occurring primarily in the Front Range Corridor. The proximity of Summit County's ski area to the Denver Metropolitan Area and other Front Range cities will result in continued growth in skier visits. As Leuschner and Herrington (1971: 135) concluded, "Most skiers never go away overnight to ski and seldom travel great distances".

Because of growth in skiing, skiers will probably continue to buy condominiums. A recent survey of second home and recreation condominium owners in Summit County reported that 75.5 percent indicated skiing to be their principal recreational activity (Summit County Journal 1974 B.) In Aspen, a sample of condominium owners by Walsh and Parseys (1972: 39) found that all condominium owners ski, and they reported this activity as most influential in their purchase decision.

In addition, recreational real estate purchasers have accepted the condominium at the ski area base (Skiing Area News 1972: 18). A market survey in Vail indicated that Vail skiers consider access to lifts as the most important aspect of location in the purchase of recreational real estate (Vail Real Estate Report 1970: 4).

Lastly, the location at the base of a ski area appeals not only to the purchaser but also the short term skier rental market. In Aspen, 91.3 percent of the condominiums sampled were rented for an average of 100 days in 1970 (Walsh and Parseys 1972: 38). In many cases, the rental income is a very important aspect of the purchase decision, especially to

the investment oriented purchaser (Milton 1975: 201).

## Reservoir Oriented Condominium Development

Dillon Reservoir is likely to continue to attract development in the future. Proximity to the Denver Metropolitan Area, accessibility via Interstate 70, and the consumer's desire for water-based recreation will assure this trend. As Borchert (1970 A: 14) found in Minnesota, accessibility of lake areas to population centers especially to large metropolitan populations, is the most important single factor in the distribution of seasonal lakeshore homes.

Condominiums in the Dillon area experience high use and rental occupancy during the summer months. With four ski areas within a fifteen minute drive, Dillon advertises itself as "the Hub of Colorado Ski Country, U.S.A." and skiers rent condominium units on a short term basis in ski season. In the future, condominium development will continue to occur in the immediate proximity of Dillon Reservoir especially in the town of Dillon with the yacht club, marina, and attractive shoreline. But because the town of Dillon only has a few condominium sites left, the majority of the future lakeshore development will occur in Summit Cove and the area near the town of Frisco at the North Frisco Interchange. Also, condominium development will probably occur at Green Mountain Reservoir within the next ten years.

Boating opportunities and marina facilities, like those available at the town of Dillon, will be an important factor in summer rental activity. Because of high land values, development next to the reservoir will be high density, multi-storied condominiums and hotels. For example, a proposed shore area subdivision has received approval to build 406 condominiums and 81 townhouses with 12 story high structures permitted.

## The "Controlled Growth" Movement

In recent years, America's traditionally positive attitude towards local growth and development has changed. Previously, landowners and developers who had immediate and direct financial stakes were the main group influencing land use planning and policies and created regulations most satisfactory to them. These people helped develop land use plans, zoning, subdivision regulations, and even building codes, stating that they were acting in the general public's interest(Clawson 1971: 70). In some communities, however, the question is how growth can be influenced to achieve outcomes that are desirable and acceptable to the community. This has brought about ideas ranging from no growth in a few areas to a more widespread feeling that communities are no longer going to react to the developer's initiative, but instead intend to plan their land use with the average citizen's benefits as the major concern.

In Colorado, Senate Bill 35, passed in 1972, provided the local governments with the powers necessary to control development. Under this act, a proposed development must be approved by the county commissioners prior to filing a subdivision plan. As part of the approval, a developer must meet planning criteria and submit proof of the land capability and suitability for the proposed development (Colorado General Assembly 1972). House Bill 1034, passed in 1974, gave county government broad zoning authority (Environment Information Center 1974: 14).

The land use legislation and planning which have traditionally been the domain of the local government are shifting to the state government. For example, under Colorado House Bill 1041, signed into law in May, 1974, local land use decisions of "statewide interest" are subject to review by

the Colorado Land Use Commission. In 1974, the election of Richard D. Lamm to the governorship increased the possibility of more stringent land use controls. Lamm has the reputation as a environmentalist; in 1972, he led the successful fight to prevent the 1976 Winter Olympics taking place in Colorado.

Because of the ever increasing number of regulations, open space requirements, and the desire for certain amenities, large scale developments will be undertaken. But the cost of development for any type of new subdivision will rise significantly because of the greater time required for the planning, approval and review processes. In order to meet environmental requirements and make revisions, intensive planning will be needed. Small developers will be at a severe disadvantage because of the lack of financial resources for planning and the staying power needed for the time delays.

## A New Era

The development of condominiums in Summit County occurred during a period of rapid recreational growth throughout the Nation. In a way, Summit County exemplified this phenomenal growth and the problem associated with mountain development. But what occurred is history now. The condominium era is analogous to the "booms" of early gold mining days. Market forces of supply and demand have asserted themselves and curtailed condominium development.

During the earlier years of condominium development, many questionable condominium projects were approved. It would be educative now if the land planners and architects of these high density condominium developments would return to Summit County and see the results of their work. As

Norcross (1973: 9) concluded:

> Too many planners do not know what a density of ten looks like when a project is completed and the area is filled with people, children, bicycles, and especially, parked cars. Densities would be lowered in many multifamily projects if planners, as well as planning and zoning board members, spent more time visiting completed developments.

Summit County, however, has realized that the decision making process in land use that served the past will not serve the present and the future. As the past chairman of the Regional Planning Commission, Jim Blankenship, noted, "Recognition of the role of planning has provided local governments with the tools of discrimination and authority to choose what it wants for its future" (Summit County Journal, 1974 C). Hopefully, the experience gained from past errors will help in facing future land problems.

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# APPENDIX A

## DATA FORM

DATA FORM

CONDOMINIUM INVENTORY 1973
SUMMIT COUNTY, COLORADO

Code

PROJECT_____ ___

LOCATION_____

DEVELOPER_____

PHYSICAL CHARACTERISTICS OF THE SITE

Size of net site:_____s.f. _____ .___acres

Topography: _____ 1. Hillside 2. Valley

Ground Cover _____ 1. Open Meadow 2. Lightly Wooded 3. Heavily Wooded

Ski Run Frontage:_____% of site's perimeter Elevation (ft.)_____

View_____ 4 Panoramic
3 Lake or Ski slope;perspective
2 Vista
1 No View

Stream Frontage _____ 1. No Frontage 2. Frontage

INSTITUTIONAL CHARACTERISTICS

Political____ 1-Township 2-County

____ 1-Breckenridge 2-Frisco 3-Dillon 4-Silverthorn

Zoning_____ 0-Other 1-PUD

Surrounding Condominium Development_____ %

LOCATION CHARACTERISTICS

Distance

_____.___ Post Office (A)*
_____.___ Supermarket (R)*
_____.___ Gov't. Property Line (A)
_____.___ Ski Area (R) _____
_____.___ Shore of Dillon Lake (A)
_____.___ Marina (R)
_____.___ Boat Launch (R)
_____.___ I-70 (A)
_____.___ Interchange (R)
_____.___ Major Road (R)
_____.___ Paved Road (R)

* (A)-Aerial
(R)-Road

COMMENTS:

Total number of buildings_____

| Date Began | Code | Number of Unit |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

Total Number of Units Constructed _____

Total Number Planned _____
Percentage Completed _____

Average Height of Buildings _____Stories
Height of Tallest Building _____Stories
Average Number of Units per Building _____

Density:_____Units per Acre

_____1-High
2-Low

Type of Construction_____
1-Frame
2-Modular
3-Concrete

Townhouse_____
0 -No
1 -Yes

Configuration of Units

| | # | Size | $ | $/s.f. |
|---|---|---|---|---|
| Studio | | | | |
| 1 Bedroom | | | | |
| 1 Bedroom/Loft | | | | |
| 2 Bedroom | | | | |
| 2 Bedroom/Loft | | | | |
| 3 Bedroom | | | | |
| 4 Bedroom | | | | |
| Commercial Space | | | | |
| Other | | | | |

Recreational Facilities

___Game Room
___Swimming Pool
___Sauna
___Exercise Room
___Jacuzi
___Tennis Courts

0-No
1-Yes

Parking ___
1-outside
2-covered
3-garage
4-heated garage

Average price per sq. ft._____
1-high
2-medium
3-low

COMMENTS:

# APPENDIX B

## LIST OF CONDOMINIUM PROJECTS IN SUMMIT COUNTY BY SUBREGION, 1973

LIST OF CONDOMINIUM PROJECTS IN SUMMIT COUNTY
BY SUBREGION, 1973

BRECKENRIDGE AREA

Four Seasons

Christiana Townhouses
Columbine
Inner Circle
Lance's West
Miner's Candle
Mother Lode
Snodallion
Snowdrop
Sundowner
Tamerisk
Tannenbaum
Timbernest
Trail's End
Four O'Clock
Snospruce
Der Steiermark
Sunset
The Retreat
Broken Lance Lodge

Warrior's Mark

Breckenridge Ski and Rackquet Club
Asgard Haus
Mill Run
Eth Bar
Blue Rapids
Now Colorado
M-4
Young Townhouses
Reinhart Townhouses

Town of Breckenridge

Forest Haus
Panorama Alpine
Val D'Isere
Red Roost
Powderidge
French Corner
Edelweiss
Trollhagen
Park Meadows
Odd Lot
Hinterthal
Tannhauser
Quatre Vivant
Falcon
Longbranch
Snowloft
South Weisshorn
Hermit Grove
Iron Mask

Ski Hill Road

Gold Camp
Ski Watch

Swan Valley Area

Hi Tor
Vienna Townhouse

Woodmoor Area

Ford Hill
Tyrollean Terrace
Woodmoor At Breckenridge
Early American
Woodridge
Woodglen

Upper Blue River Valley

Quandry
The Dot
Valley of the Blue
39 Degrees North

FRISCO AREA

Ten Mile Creek
Ten Mile Island
Meadow Creek Villas
Mountain Meadows
Creekside
Pitkin Townhouse
Teller Townhouses
Frisco Eight
The Frisco Ore House

COPPER MOUNTAIN

Anaconda
Snowflake
Ten Mile House
Village Point
Summit House
Summit House East
Peregrine
Copper Valley
Snowbridge
Timber Creek
Copper Junction

WILDERNEST

D.E.C.K. Gore Range
Tree House
Villamont Townhouses
Silver Queen
Silver Queen West
The Trees
Now Colorado
New Lamartine
Mountain Country
Sundance Lodge
Buffalo Mountain Townhouses
Buffalo Woods

DILLON

Dillon Pines
Timberline
Lake View
Lake Cliffe
Anchorage East
Anchorage West
Yacht Club on the Lake
Coeur Du Lac
Chateau Claire
Condotel
Lodge at Lake Dillon
Yacht Club on the Hill

DILLON VALLEY

| | |
|---|---|
| Dillon Valley | Orofino |
| Dillon Valley East | |

SUMMIT COVE

| | |
|---|---|
| Summit Cove | Wildflower Townhouses |
| Lake Haus | Elgna's Townhouses |

KEYSTONE

| | |
|---|---|
| Key Condos | Wild Irishman |
| Flying Dutchman | |

# APPENDIX C

# CROSS TABULATION TABLES

TABLE 33.--Hillside or Valley Location of Condominium Projects in Summit County, Colorado, 1973

| Building Characteristic | Ski Oriented | | | Reservoir Oriented | | |
|---|---|---|---|---|---|---|
| | Hillside | Valley | Total | Hillside | Valley | Total |
| **Density** | | | | | | |
| 1 - 10 u.p.a. | 64.3 | 35.7 | 100.0 | 40.0 | 60.0 | 100.0 |
| 11 - 20 u.p.a. | 6.7 | 93.3 | 100.0 | 41.7 | 58.3 | 100.0 |
| 21 - 25 u.p.a. | 20.0 | 80.0 | 100.0 | 21.4 | 78.6 | 100.0 |
| 26 - 40 u.p.a. | 10.5 | 89.5 | 100.0 | 0.0 | 100.0 | 100.0 |
| 41 -111 u.p.a. | 0.0 | 100.0 | 100.0 | ... | ... | ... |
| **Building Size** | | | | | | |
| 1 - 4 units | 54.5 | 45.5 | 100.0 | 40.0 | 60.0 | 100.0 |
| 5 - 10 units | 25.0 | 75.0 | 100.0 | 18.2 | 81.8 | 100.0 |
| 11 - 20 units | 5.6 | 94.4 | 100.0 | 20.0 | 80.0 | 100.0 |
| 21 - 90 units | 9.1 | 90.9 | 100.0 | 33.3 | 66.7 | 100.0 |
| **Building Height** | | | | | | |
| 1 - 2 stories | 34.8 | 65.2 | 100.0 | 9.1 | 90.9 | 100.0 |
| 3 stories | 15.8 | 84.2 | 100.0 | 36.0 | 64.0 | 100.0 |
| 4 - 6 stories | 7.1 | 92.9 | 100.0 | 0.0 | 100.0 | 100.0 |

TABLE 34.--Tree Cover of Condominiums in Summit County, Colorado, 1973 (in Percentages)

| Bldg. Char. | Ski Oriented | | | | Reservoir Oriented | | | |
|---|---|---|---|---|---|---|---|---|
| | Open Meadow | Lightly Wooded | Heavily Wooded | Total | Open Meadow | Lightly Wooded | Heavily Wooded | Total |
| **Density** | | | | | | | | |
| 1-10 u.p.a. | 14.3 | 50.0 | 35.7 | 100.0 | 40.0 | 0.0 | 60.0 | 100.0 |
| 11-20 u.p.a. | 13.3 | 26.7 | 60.0 | 100.0 | 25.0 | 16.7 | 58.3 | 100.0 |
| 21-25 u.p.a. | 40.0 | 13.3 | 46.7 | 100.0 | 50.0 | 14.3 | 35.7 | 100.0 |
| 26-40 u.p.a. | 42.1 | 10.5 | 47.4 | 100.0 | 55.6 | 44.4 | 0.0 | 100.0 |
| 41-111u.p.a. | 75.0 | 8.3 | 16.7 | 100.0 | ... | ... | ... | ... |
| **Building Size** | | | | | | | | |
| 1- 4 units | 40.0 | 0.0 | 60.0 | 100.0 | 27.3 | 45.5 | 27.3 | 100.0 |
| 5-10 units | 18.2 | 18.2 | 63.6 | 100.0 | 29.2 | 29.2 | 41.7 | 100.0 |
| 11-20 units | 60.0 | 20.0 | 20.0 | 100.0 | 27.8 | 5.6 | 66.7 | 100.0 |
| 21-90 units | 44.4 | 33.3 | 22.2 | 100.0 | 54.5 | 13.6 | 31.8 | 100.0 |
| **Building Height** | | | | | | | | |
| 1- 2 stor. | 21.7 | 43.5 | 34.8 | 100.0 | 36.4 | 18.2 | 45.5 | 100.0 |
| 3 stor. | 28.9 | 13.2 | 57.9 | 100.0 | 40.0 | 20.0 | 40.0 | 100.0 |
| 4- 6 stor. | 78.6 | 7.1 | 14.3 | 100.0 | 75.0 | 25.0 | 0.0 | 100.0 |

TABLE 35.--View Ratings of Condominium Projects in Summit County, Colorado, 1973 (in Percentages)

| Building Characteristic | Ski Oriented | | | | | Reservoir Oriented | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No View | Vista | Perspective | Panoramic | Total | No View | Vista | Perspective | Panoramic | Total |
| **Density** | | | | | | | | | | |
| 1 - 10 u.p.a. | 42.9 | 21.4 | 21.4 | 14.3 | 100.0 | 20.0 | 0.0 | 80.0 | 0.0 | 100.0 |
| 11 - 20 u.p.a. | 53.3 | 40.0 | 6.7 | 0.0 | 100.0 | 41.7 | 33.3 | 25.0 | 0.0 | 100.0 |
| 21 - 25 u.p.a. | 13.3 | 46.7 | 33.3 | 6.7 | 100.0 | 21.4 | 14.3 | 50.0 | 14.3 | 100.0 |
| 26 - 40 u.p.a. | 36.8 | 26.3 | 15.8 | 21.1 | 100.0 | 11.1 | 22.2 | 33.3 | 33.3 | 100.0 |
| 41 -111 u.p.a. | 25.0 | 41.7 | 33.3 | 0.0 | 100.0 | ... | ... | ... | ... | ... |
| **Building Size** | | | | | | | | | | |
| 1 - 4 units | 63.6 | 18.2 | 0.0 | 18.2 | 100.0 | 20.0 | 20.0 | 60.0 | 0.0 | 100.0 |
| 5 - 10 units | 25.0 | 33.3 | 29.2 | 12.5 | 100.0 | 54.5 | 27.3 | 9.1 | 9.1 | 100.0 |
| 11 - 20 units | 38.9 | 44.4 | 11.1 | 5.6 | 100.0 | 13.3 | 20.0 | 53.3 | 13.3 | 100.0 |
| 21 - 90 units | 27.3 | 36.4 | 31.8 | 4.5 | 100.0 | 11.1 | 11.1 | 55.6 | 22.2 | 100.0 |
| **Building Height** | | | | | | | | | | |
| 1 - 2 stories | 43.5 | 26.1 | 17.4 | 13.0 | 100.0 | 27.3 | 36.4 | 36.4 | 0.0 | 100.0 |
| 3 stories | 39.5 | 39.5 | 13.2 | 7.8 | 100.0 | 28.0 | 12.0 | 44.0 | 16.0 | 100.0 |
| 4 - 6 stories | 7.1 | 35.7 | 50.0 | 7.2 | 100.0 | 0.0 | 25.0 | 50.0 | 25.0 | 100.0 |

TABLE 36.--Stream or Reservoir Frontage of Condominium Projects in Summit County, Colorado, 1973 (in Percentages)

| Building Characteristic | Ski Oriented | | | Reservoir Oriented | | |
|---|---|---|---|---|---|---|
| | No Frontage | Frontage | Total | No Frontage | Frontage | Total |
| **Density** | | | | | | |
| 1 - 10 u.p.a. | 92.9 | 7.1 | 100.0 | 100.0 | 0.0 | 100.0 |
| 11 - 20 u.p.a. | 80.0 | 20.0 | 100.0 | 91.7 | 8.3 | 100.0 |
| 21 - 25 u.p.a. | 93.3 | 6.7 | 100.0 | 57.1 | 42.9 | 100.0 |
| 26 - 40 u.p.a. | 63.2 | 36.8 | 100.0 | 44.4 | 55.6 | 100.0 |
| 41 -111 u.p.a. | 91.7 | 8.3 | 100.0 | ... | ... | ... |
| **Building Size** | | | | | | |
| 1 - 4 units | 72.7 | 27.3 | 100.0 | 80.0 | 20.0 | 100.0 |
| 5 - 10 units | 91.7 | 8.3 | 100.0 | 72.7 | 27.3 | 100.0 |
| 11 - 20 units | 88.9 | 11.1 | 100.0 | 66.7 | 33.3 | 100.0 |
| 21 - 90 units | 72.7 | 27.3 | 100.0 | 66.7 | 33.3 | 100.0 |
| **Building Height** | | | | | | |
| 1 - 2 stories | 87.0 | 13.0 | 100.0 | 90.9 | 9.1 | 100.0 |
| 3 stories | 86.8 | 13.2 | 100.0 | 64.0 | 36.0 | 100.0 |
| 4 - 6 stories | 64.3 | 35.7 | 100.0 | 50.0 | 50.0 | 100.0 |

TABLE 37.--Town or County Location in Summit County, Colorado, 1973
(in Percentages)

| Building Characteristic | Ski Oriented | | | Reservoir Oriented | | |
|---|---|---|---|---|---|---|
| | Town | County | Total | Town | County | Total |
| **Density** | | | | | | |
| 1 - 10 u.p.a. | 85.7 | 14.3 | 100.0 | 100.0 | 0.0 | 100.0 |
| 11 - 20 u.p.a. | 66.7 | 33.3 | 100.0 | 66.7 | 33.3 | 100.0 |
| 21 - 25 u.p.a. | 53.3 | 46.7 | 100.0 | 42.9 | 57.1 | 100.0 |
| 26 - 40 u.p.a. | 26.3 | 73.7 | 100.0 | 11.1 | 88.9 | 100.0 |
| 41 -111 u.p.a. | 25.0 | 75.0 | 100.0 | ... | ... | .... |
| **Building Size** | | | | | | |
| 1 - 4 units | 81.8 | 18.2 | 100.0 | 100.0 | 0.0 | 100.0 |
| 5 - 10 units | 45.8 | 54.2 | 100.0 | 36.4 | 63.6 | 100.0 |
| 11 - 20 units | 33.3 | 66.7 | 100.0 | 46.7 | 53.3 | 100.0 |
| 21 - 90 units | 54.5 | 45.5 | 100.0 | 44.4 | 55.6 | 100.0 |
| **Building Height** | | | | | | |
| 1 - 2 stories | 47.8 | 52.2 | 100.0 | 45.5 | 54.5 | 100.0 |
| 3 stories | 39.5 | 60.5 | 100.0 | 56.0 | 44.0 | 100.0 |
| 4 - 6 stories | 85.7 | 14.3 | 100.0 | 25.0 | 75.0 | 100.0 |

TABLE 38.--Condominium Zoning in Summit County, Colorado, 1973
(in Percentages)

| Building Characteristic | Ski Oriented | | | Reservoir Oriented | | |
|---|---|---|---|---|---|---|
| | Other | PUD | Total | Other | PUD | Total |
| **Density** | | | | | | |
| 1 - 10 u.p.a. | 21.4 | 78.6 | 100.0 | 0.0 | 100.0 | 100.0 |
| 11 - 20 u.p.a. | 26.7 | 73.3 | 100.0 | 25.0 | 75.0 | 100.0 |
| 21 - 25 u.p.a. | 33.3 | 66.7 | 100.0 | 42.9 | 57.1 | 100.0 |
| 26 - 40 u.p.a. | 26.3 | 73.7 | 100.0 | 44.4 | 55.6 | 100.0 |
| 41 -111 u.p.a. | 83.3 | 16.7 | 100.0 | ... | ... | ... |
| **Building Size** | | | | | | |
| 1 - 4 units | 45.5 | 54.5 | 100.0 | 20.0 | 80.0 | 100.0 |
| 5 - 10 units | 25.0 | 75.0 | 100.0 | 36.4 | 63.6 | 100.0 |
| 11 - 20 units | 38.9 | 61.1 | 100.0 | 33.3 | 66.7 | 100.0 |
| 21 - 90 units | 40.9 | 59.1 | 100.0 | 33.3 | 66.7 | 100.0 |
| **Building Height** | | | | | | |
| 1 - 2 stories | 47.8 | 52.2 | 100.0 | 45.5 | 54.5 | 100.0 |
| 3 stories | 36.8 | 63.2 | 100.0 | 24.0 | 76.0 | 100.0 |
| 4 - 6 stories | 14.3 | 85.7 | 100.0 | 50.0 | 50.0 | 100.0 |

TABLE 39.--Distance between Post Office and Condominium Project, Summit County, Colorado, 1973 (in Percentages)

| Building Characteristic | Distance (Miles) - Ski Oriented | | | | | Distance (Miles) - Reservoir Oriented | | | |
|---|---|---|---|---|---|---|---|---|---|
| | < .5 | .6-1.0 | 1.1-4.0 | 4.1-8.0 | Total | < .5 | .6-1.0 | 1.1-4.0 | Total |
| **Density** | | | | | | | | | |
| 1 - 10 u.p.a. | 0.0 | 21.4 | 71.4 | 7.1 | 100.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| 11 - 20 u.p.a. | 20.0 | 26.7 | 13.3 | 40.0 | 100.0 | 33.3 | 16.7 | 50.0 | 100.0 |
| 21 - 25 u.p.a. | 26.7 | 26.7 | 20.0 | 26.7 | 100.0 | 35.7 | 35.7 | 28.6 | 100.0 |
| 26 - 40 u.p.a. | 36.8 | 36.8 | 5.3 | 21.1 | 100.0 | 77.8 | 22.2 | 0.0 | 100.0 |
| 41 -111 u.p.a. | 33.3 | 41.7 | 0.0 | 25.0 | 100.0 | ... | ... | ... | ... |
| **Building Size** | | | | | | | | | |
| 1 - 4 units | 0.0 | 27.3 | 63.6 | 9.1 | 100.0 | 0.0 | 20.0 | 80.0 | 100.0 |
| 5 - 10 units | 29.2 | 25.0 | 25.0 | 20.8 | 100.0 | 54.5 | 27.3 | 18.2 | 100.0 |
| 11 - 20 units | 22.2 | 50.0 | 5.6 | 22.2 | 100.0 | 40.0 | 33.3 | 26.7 | 100.0 |
| 21 - 90 units | 31.8 | 22.7 | 9.1 | 36.4 | 100.0 | 44.4 | 0.0 | 55.6 | 100.0 |
| **Building Height** | | | | | | | | | |
| 1 - 2 stories | 26.1 | 30.4 | 30.4 | 13.1 | 100.0 | 54.5 | 9.1 | 36.4 | 100.0 |
| 3 stories | 26.3 | 39.5 | 21.1 | 13.1 | 100.0 | 32.0 | 24.0 | 44.0 | 100.0 |
| 4 - 6 stories | 14.3 | 7.1 | 7.1 | 71.5 | 100.0 | 50.0 | 50.0 | 0.0 | 100.0 |

TABLE 40.--Distance between Super Market and Condominium Project, Summit County, Colorado, 1973
(in Percentages)

| Building Characteristic | Distance (Miles) - Ski Oriented | | | | | Distance (Miles) - Reservoir Oriented | | | |
|---|---|---|---|---|---|---|---|---|---|
| | < .5 | .6-1.0 | 1.1-4.0 | 4.1-8.0 | Total | < .5 | .6-1.0 | 1.1-4.0 | Total |
| **Density** | | | | | | | | | |
| 1 - 10 u.p.a. | 7.1 | 21.4 | 64.3 | 7.1 | 100.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| 11 - 20 u.p.a. | 20.0 | 26.7 | 13.3 | 40.0 | 100.0 | 41.7 | 8.3 | 50.0 | 100.0 |
| 21 - 25 u.p.a. | 53.3 | 0.0 | 20.0 | 26.7 | 100.0 | 35.7 | 21.4 | 42.9 | 100.0 |
| 26 - 40 u.p.a. | 68.4 | 5.3 | 5.3 | 21.1 | 100.0 | 77.8 | 22.2 | 0.0 | 100.0 |
| 41 -111 u.p.a. | 75.0 | 0.0 | 0.0 | 25.0 | 100.0 | ... | ... | ... | ... |
| **Building Size** | | | | | | | | | |
| 1 - 4 units | 9.1 | 27.3 | 54.5 | 9.1 | 100.0 | 0.0 | 20.0 | 80.0 | 100.0 |
| 5 - 10 units | 45.8 | 8.3 | 25.0 | 20.8 | 100.0 | 63.6 | 9.1 | 27.3 | 100.0 |
| 11 - 20 units | 61.1 | 11.1 | 5.6 | 22.2 | 100.0 | 40.0 | 26.7 | 33.3 | 100.0 |
| 21 - 90 units | 50.0 | 4.5 | 9.1 | 36.4 | 100.0 | 44.4 | 0.0 | 55.6 | 100.0 |
| **Building Height** | | | | | | | | | |
| 1 - 2 stories | 39.1 | 17.4 | 30.4 | 13.1 | 100.0 | 63.6 | 0.0 | 36.4 | 100.0 |
| 3 stories | 60.5 | 7.9 | 18.4 | 13.2 | 100.0 | 32.0 | 16.0 | 52.0 | 100.0 |
| 4 - 6 stories | 14.3 | 7.1 | 7.1 | 71.5 | 100.0 | 50.0 | 50.0 | 0.0 | 100.0 |

TABLE 41.--Distance between Public Land Boundary and Condominium Project, Summit County, Colorado, 1973
(in Percentages)

| Building Characteristic | Distance (Miles) - Ski Oriented | | | | | Distance (Miles) - Reservoir Oriented | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | <.1 | .1-.2 | .3-.4 | .5-.8 | Total | <.1 | .1-.2 | .3-.4 | .5-.8 | Total |
| **Density** | | | | | | | | | | |
| 1 - 10 u.p.a. | 14.3 | 21.4 | 14.3 | 50.0 | 100.0 | 40.0 | 20.0 | 40.0 | 0.0 | 100.0 |
| 11 - 20 u.p.a. | 33.3 | 40.0 | 13.3 | 13.3 | 100.0 | 50.0 | 16.7 | 33.3 | 0.0 | 100.0 |
| 21 - 25 u.p.a. | 26.7 | 40.0 | 26.7 | 6.7 | 100.0 | 42.9 | 50.0 | 0.0 | 7.1 | 100.0 |
| 26 - 40 u.p.a. | 10.5 | 52.6 | 26.3 | 10.5 | 100.0 | 55.6 | 22.2 | 22.2 | 0.0 | 100.0 |
| 41 -111 u.p.a. | 25.0 | 16.7 | 25.0 | 33.3 | 100.0 | ... | ... | ... | ... | ... |
| **Building Size** | | | | | | | | | | |
| 1 - 4 units | 18.2 | 18.2 | 9.1 | 54.5 | 100.0 | 40.0 | 20.0 | 40.0 | 0.0 | 100.0 |
| 5 - 10 units | 16.7 | 41.7 | 16.7 | 25.0 | 100.0 | 36.4 | 45.5 | 18.2 | 0.0 | 100.0 |
| 11 - 20 units | 22.2 | 38.9 | 33.3 | 5.6 | 100.0 | 46.7 | 33.3 | 13.3 | 6.7 | 100.0 |
| 21 - 90 units | 27.3 | 36.4 | 22.7 | 13.6 | 100.0 | 66.7 | 11.1 | 22.2 | 0.0 | 100.0 |
| **Building Height** | | | | | | | | | | |
| 1 - 2 units | 8.7 | 26.1 | 21.7 | 43.5 | 100.0 | 27.3 | 36.4 | 36.4 | 0.0 | 100.0 |
| 3 units | 21.1 | 39.5 | 23.7 | 15.8 | 100.0 | 56.0 | 28.0 | 12.0 | 4.0 | 100.0 |
| 4 - 6 units | 42.9 | 42.9 | 14.3 | 0.0 | 100.0 | 50.0 | 25.0 | 25.0 | 0.0 | 100.0 |

TABLE 42.--Distance between a Major Road and Condominium Project, Summit County, Colorado, 1973
(in Percentages)

| Building Characteristic | Distance (Miles) - Ski Oriented | | | | | | Distance (Miles) - Reservoir Oriented | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | <.2 | .2-.5 | .6-1.0 | 1.1-2.0 | 2.1-3.0 | Total | <.2 | .2-.5 | .6-1.0 | 1.1-2.0 | Total |
| **Density** | | | | | | | | | | | |
| 1 - 10 u.p.a. | 7.1 | 28.6 | 35.7 | 0.0 | 28.6 | 100.0 | 0.0 | 60.0 | 20.0 | 20.0 | 100.0 |
| 11 - 20 u.p.a. | 26.7 | 46.7 | 13.3 | 13.3 | 0.0 | 100.0 | 16.7 | 41.7 | 16.7 | 25.0 | 100.0 |
| 21 - 25 u.p.a. | 13.3 | 53.3 | 13.3 | 13.3 | 6.7 | 100.0 | 42.9 | 21.4 | 35.7 | 0.0 | 100.0 |
| 26 - 40 u.p.a. | 21.1 | 47.4 | 26.3 | 5.3 | 0.0 | 100.0 | 22.2 | 77.8 | 0.0 | 0.0 | 100.0 |
| 41 -111 u.p.a. | 66.7 | 25.0 | 8.3 | 0.0 | 0.0 | 100.0 | ... | ... | ... | ... | ... |
| **Building Size** | | | | | | | | | | | |
| 1 - 4 units | 18.2 | 27.3 | 45.5 | 9.1 | 0.0 | 100.0 | 0.0 | 60.0 | 20.0 | 20.0 | 100.0 |
| 5 - 10 units | 20.8 | 41.7 | 20.8 | 0.0 | 16.7 | 100.0 | 36.4 | 36.4 | 18.2 | 9.1 | 100.0 |
| 11 - 20 units | 27.8 | 61.1 | 0.0 | 5.6 | 5.6 | 100.0 | 26.7 | 46.7 | 26.7 | 0.0 | 100.0 |
| 21 - 90 units | 31.8 | 31.8 | 22.7 | 13.6 | 0.0 | 100.0 | 22.2 | 44.4 | 11.1 | 22.2 | 100.0 |
| **Building Height** | | | | | | | | | | | |
| 1 - 2 stories | 26.1 | 39.1 | 17.4 | 0.0 | 17.4 | 100.0 | 18.2 | 72.7 | 9.1 | 0.0 | 100.0 |
| 3 stories | 28.9 | 44.7 | 13.2 | 10.5 | 2.6 | 100.0 | 28.0 | 28.0 | 28.0 | 16.0 | 100.0 |
| 4 - stories | 14.3 | 35.7 | 42.9 | 7.1 | 0.0 | 100.0 | 25.0 | 75.0 | 0.0 | 0.0 | 100.0 |

TABLE 43.--Distance between an Interchange and Condominium Project, Summit County, Colorado, 1973 (In Percentages)

| Building Characteristic | Distance (Miles) - Ski Oriented | | | | | Distance (Miles) - Reservoir Oriented | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1.-1.0 | 1.1-3.0 | 3.1-5.0 | 5.1-17.5 | Total | .1-1.0 | 1.1-3.0 | 3.1-5.0 | Total |
| **Density** | | | | | | | | | |
| 1 - 10 u.p.a. | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 0.0 | 40.0 | 60.0 | 100.0 |
| 11 - 20 u.p.a. | 6.7 | 0.0 | 0.0 | 93.3 | 100.0 | 25.0 | 66.7 | 8.3 | 100.0 |
| 21 - 25 u.p.a. | 26.7 | 0.0 | 0.0 | 73.3 | 100.0 | 57.1 | 42.9 | 0.0 | 100.0 |
| 26 - 40 u.p.a. | 21.1 | 0.0 | 0.0 | 78.9 | 100.0 | 22.2 | 77.8 | 0.0 | 100.0 |
| 41 -111 u.p.a. | 16.7 | 0.0 | 0.0 | 83.3 | 100.0 | ... | ... | ... | ... |
| **Building Size** | | | | | | | | | |
| 1 - 4 units | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 0.0 | 60.0 | 40.0 | 100.0 |
| 5 - 10 units | 16.7 | 0.0 | 0.0 | 83.3 | 100.0 | 45.5 | 54.5 | 0.0 | 100.0 |
| 11 - 20 units | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 33.3 | 60.0 | 6.7 | 100.0 |
| 21 - 90 units | 31.8 | 0.0 | 0.0 | 68.2 | 100.0 | 33.3 | 55.6 | 11.1 | 100.0 |
| **Building Height** | | | | | | | | | |
| 1 - 2 stories | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 | 36.4 | 36.4 | 27.3 | 100.0 |
| 3 stories | 2.6 | 0.0 | 0.0 | 97.4 | 100.0 | 36.0 | 60.0 | 4.0 | 100.0 |
| 4 - 6 stories | 71.4 | 0.0 | 0.0 | 28.6 | 100.0 | 0.0 | 100.0 | 0.0 | 100.0 |

TABLE 44.--Distance between the Base of a Ski Area and Ski Oriented Condominium Projects, Summit County, Colorado, 1973

| Building Characteristic | Distance (Miles) | | | | | |
|---|---|---|---|---|---|---|
| | <.2 | .2 - .5 | .6 - 1.0 | 1.1 - 3.0 | 3.1 - 8.0 | Total |
| **Density** | | | | | | |
| 1 - 10 u.p.a. | 0.0 | 0.0 | 21.4 | 57.1 | 21.4 | 100.0 |
| 11 - 20 u.p.a. | 6.7 | 46.7 | 20.0 | 6.7 | 20.0 | 100.0 |
| 21 - 25 u.p.a. | 26.7 | 53.3 | 13.3 | 6.7 | 0.0 | 100.0 |
| 26 - 40 u.p.a. | 15.8 | 63.2 | 10.5 | 10.5 | 0.0 | 100.0 |
| 41 -111 u.p.a. | 16.7 | 33.3 | 41.7 | 0.0 | 1.3 | 100.0 |
| **Building Size** | | | | | | |
| 1 - 4 units | 0.0 | 9.1 | 18.2 | 54.5 | 18.2 | 100.0 |
| 5 - 10 units | 12.5 | 45.8 | 12.5 | 16.7 | 12.5 | 100.0 |
| 11 - 20 units | 5.6 | 61.1 | 11.1 | 11.1 | 11.1 | 100.0 |
| 21 - 90 units | 27.3 | 36.4 | 36.4 | 0.0 | 0.0 | 100.0 |
| **Building Height** | | | | | | |
| 1 - 2 stories | 0.0 | 26.1 | 11.7 | 30.4 | 21.7 | 100.0 |
| 3 stories | 7.9 | 52.6 | 21.1 | 13.2 | 5.3 | 100.0 |
| 4 - 6 stories | 50.0 | 35.7 | 14.3 | 0.0 | 0.0 | 100.0 |

TABLE 45.--Distance between Shore of Dillon Reservoir and Reservoir Oriented Condominium Projects, Summit County, Colorado, 1973 (in Percentages

| Building Characteristic | Distance (Miles) | | | | |
|---|---|---|---|---|---|
| | <.1 | .1 - .5 | .6 - 1.0 | 1.1 - 2.0 | Total |
| **Density** | | | | | |
| 1 - 10 u.p.a. | 0.0 | 40.0 | 40.0 | 20.0 | 100.0 |
| 11 - 20 u.p.a. | 0.0 | 33.3 | 41.7 | 25.0 | 100.0 |
| 21 - 25 u.p.a. | 21.4 | 35.7 | 42.9 | 0.0 | 100.0 |
| 26 - 40 u.p.a. | 55.6 | 22.2 | 22.2 | 0.0 | 100.0 |
| 41 -111 u.p.a. | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| **Building Size** | | | | | |
| 1 - 4 units | 0.0 | 20.0 | 60.0 | 20.0 | 100.0 |
| 5 - 10 units | 9.1 | 27.3 | 54.5 | 9.1 | 100.0 |
| 11 - 20 units | 33.3 | 33.3 | 33.3 | 0.0 | 100.0 |
| 21 - 90 units | 22.2 | 44.4 | 11.1 | 22.2 | 100.0 |
| **Building Height** | | | | | |
| 2 stories | 0.0 | 54.5 | 45.5 | 0.0 | 100.0 |
| 3 stories | 24.0 | 24.0 | 36.0 | 16.0 | 100.0 |
| 4 stories | 50.0 | 25.0 | 25.0 | 0.0 | 100.0 |

TABLE 46.--Distance Between Marina and Reservoir Oriented Condominium Projects, Summit County, Colorado, 1973 (in Percentages)

| Building Characteristic | Distance (Miles) | | | | | |
|---|---|---|---|---|---|---|
| | <.1 | .1 - .5 | .6 - 1.0 | 1.1 - 2.0 | 2.1 - 6.0 | Total |
| **Density** | | | | | | |
| 1 - 10 u.p.a. | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 100.0 |
| 11 - 20 u.p.a. | 0.0 | 16.7 | 0.0 | 8.3 | 75.0 | 100.0 |
| 21 - 25 u.p.a. | 14.3 | 14.3 | 7.1 | 0.0 | 64.3 | 100.0 |
| 26 - 40 u.p.a. | 22.2 | 44.4 | 11.1 | 0.0 | 22.2 | 100.0 |
| 41 -111 u.p.a. | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| **Building Size** | | | | | | |
| 1 - 4 units | 0.0 | 0.0 | 20.0 | 0.0 | 80.0 | 100.0 |
| 5 - 10 units | 9.1 | 9.1 | 0.0 | 0.0 | 81.8 | 100.0 |
| 11 - 20 units | 20.0 | 26.7 | 6.7 | 6.7 | 40.0 | 100.0 |
| 21 - 90 units | 0.0 | 33.3 | 0.0 | 0.0 | 66.7 | 100.0 |
| **Building Height** | | | | | | |
| 2 stories | 0.0 | 18.2 | 0.0 | 0.0 | 81.8 | 100.0 |
| 3 stories | 12.0 | 16.0 | 4.0 | 4.0 | 64.0 | 100.0 |
| 4 stories | 25.0 | 50.0 | 25.0 | 0.0 | 0.0 | 100.0 |

# APPENDIX D

# STATISTICAL ANALYSIS

## STATISTICAL ANALYSIS

The Goodman-Kruskal analysis is used to measure the degree of association that exists between two variables. The coefficient, called gamma, is valid when two variables are measured at the ordinal level (Levy, 1968: 157). In addition, there can be any number of categories, and the two variables do not have to contain the same number of categories (Levy, 1968: 157).

The Goodman-Kruskal analysis is made on bivariate observations (x,y) which are arranged in an ordered contingency table (Kaiser, 1966: 234). It relates y (in this case one of the urbanism characteristics of condominiums: density, building size or building height) and x (the observed associated site characteristic).

As described by Levy (1968: 158), the computation of the gamma coefficient is based on the following rationale:

> Prediction means being able to determine the direction of change of an element on one variable from its change in position on another. This means that as the scores (ranks) go up on one variable, if there is an association, then there should be a corresponding trend for the scores to go up on the second variable (positive association) or down on the second variable (negative association). If there is no association, then knowing the change on one variable should not allow one to predict the direction of change on the second variable. Of course, if the association is perfect, then the direction of change on one variable should enable perfect prediction to be made about the direction of the change of that element's score on the second variable.

### Calculation of Gamma

Consider the following example taken from the study that compares building height with view.

TABLE 47.-- Contingency Table Comparing Condominium Project's View with the Building Height

| Building Height (Stories) | View Rating | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | Total |
| 2 | 3 / 1 | 4 / 2 | 4 / 3 | 0 / 4 | 11 |
| 3 | 7 / 5 | 3 / 6 | 11 / 7 | 4 / 8 | 25 |
| 4 | 0 / 9 | 1 / 10 | 2 / 11 | 1 / 12 | 4 |
| Total | 10 | 8 | 17 | 5 | 40 |

When cell one is compared with cell two, the elements go up in view, but they stay the same with building height; thus, there is neither a positive or negative association between the variables based on this comparison. But, when cell one is compared with cell six, the elements in cell six are higher on both variables when compared to the elements in cell one. This would indicate a positive association between variables. An example of negative association is when cell six is compared with cell nine. Cell nine's elements are found in a positive direction from those in cell six on building height but in a negative direction with regards to the view variable, and the resulting association is negative.

The actual computation of gamma involves counting all of the positive comparisons and all of the negative comparisons, then determining which type occur more frequently (Levy, 1968: 158). To illustrate, the

gamma is calculated below: $f_+$ represents the positive comparisons and the $f_-$ the negative comparisons.

| Cell | Positive Comparisons | $f_+$ | Negative Comparisons | $f_-$ |
|---|---|---|---|---|
| 1. | 3(3 + 11 + 4 + 1 + 2 + 1) | 66 | -- | |
| 2. | 4(11 + 4 + 2 + 1) | 72 | 4 (7 + 0) | 28 |
| 3. | 4 ( 4 + 1 ) | 20 | 4 (7 + 3 + 0 + 1 ) | 44 |
| 4. | -- | 0 | 0 (7 + 3 + 11 + 0 + 1 + 2) | 0 |
| 5. | 7 ( 1 + 2 + 1 ) | 28 | 3 (0) | 0 |
| 6. | 3 ( 2 + 1) | 9 | 11 ( 0 + 1 ) | 11 |
| 7. | 11 (1) | 11 | 4 (0 + 1 + 2 ) | |
| 8. | -- | 0 | -- | |
| | | 206 | | 95 |

Once the comparisons are tabulated, then the index of order association or gamma coefficient, G, is:

$$G = \frac{f_+ - f_-}{f_+ + f_-}$$

$$G = \frac{206-95}{206+95}$$

$$G = \frac{111}{301}$$

$$G = .36877$$

The statistic, G, indicates a positive order association if $f+ > f-$; a negative order association if $f+ < f_-$. When $f_-=0$, then G is a perfect positive order association or +1. When $f_+ =0$, the G is a perfect negative order association of -1 (Kaiser, 1966: 259). In the example above, the interpretation of .369 is that as the quality

of the view increases, there is a tendency for taller buildings to be built.

All of the tables in the study are ordered from lower to higher as one goes from left to right and from top to bottom. With this order, a table in which the G is negative is when the trend is along the upper right to lower left diagonal. On the other hand, a positive G is along the upper left to the lower right diagonal.

Perfect Negative Association

| | | |
|---|---|---|
| | | N |
| | N | |
| N | | |

Perfect Positive Association

| | | |
|---|---|---|
| N | | |
| | N | |
| | | N |

The Significance of Gamma

In order to test statistical significance of an observed gamma, a null hypothesis is generated that states there is no association between x and y. When the null hypothesis is true, the expected value of G is zero, and its range of variation depends on the sample size and the number of ties (Freeman, 1965: 171).

Ordinal scales occur in two forms: (1) a series of observations arranged such that each rank either higher or lower than each of the others; in other words, no ties exist. Or (2) there may be ties where in several observations occupy the same rank (Freeman, 1965: 82). Because ties are present in all of the contingency tables generated in this study, the task of determining the exact probabilities of the sampling distribution is extremely difficult (Freeman, 1965: 164). Then the sampling distribution depends on an assumption that the values of G approximate a

normal curve (Freeman, 1965: 165).

To determine a probability of an observed G from a normal curve table, the G value is expressed in standard deviation units or z score for gamma. Such a standard deviation is usually referred to as the standard error. Freeman (1965: 171-172) describes the calculation:

> If we calculate the standard error of an observed value of G, we can measure its departure from zero in a standard unit, and, using the normal curve, the probability of a departure as great as or greater than the one we observe. In effect, we are expressing our observed value of G in standard deviation units and evaluating its deviation in terms of the known deviation characteristics of the normal curve.
>
> Our use of the normal approximation is simplified somewhat if we do not use G directly for our test. We can define a new value S that is related to G. The standard error of S is easier to calculate and it involves no loss of efficiency since there is a unique S for every G and a unique G for every S:

$$S = f_+ - f_-$$

where $f_+$ = the frequency of agreements,
$f_-$ = the frequency of inversions, (both defined in preceeding section as positive comparison and negative comparison)

It can be seen that S is simply the numerator of the expression for G. Since G is approximately normally distributed when G = 0, S must be distributed in the same fashion.

The null hypothesis defines a population where G = 0. In such a population, S, of course, is also equal to zero. The departure of S from the value expected under the null hypothesis is therefore S - 0, which equals S. This departure may be expressed in standard deviation units simply by dividing it by its standard error:

$$z = \frac{S}{s_S}$$

z, then, is the number of standard deviations by which an observed value of S departs from its expected value of zero.

Actually, it is necessary to adjust the value of S in any particular case in order to improve its approximation to the normal curve. The normal curve is smooth, whereas the exact distribution of S (and of G) is a series of steps. However, a small correction in the calculated value of S eliminates this difficulty. The formula for S, the corrected value of S, is:

$$\hat{S} = |S| - \frac{N}{(2)(R - 1)(C - 1)}$$

where R = the number of rows in the contingency table,
C = the number of columns in the table,
N = the number of observations.

In order to calculate the standard error of $\hat{S}$, we can use the following formula:

$$s_{\hat{S}} = \sqrt{\frac{U_2V_2}{N-1} - \frac{U_2V_3 + V_2U_3}{N(N-1)} + \frac{U_3V_3}{N(N-1)(N-2)}}$$

where $U_2$ = the sum of the products of the row totals taken two at a time,
$V_2$ = the sum of the products of the column totals taken two at a time,
$U_3$ = the sum of the products of the row totals taken three at a time,
$V_3$ = the sum of the products of the column totals taken three at a time,
$N$ = the number of observations.

And z is, of course, calculated on the basis of these adjusted values:

$$z = \frac{\hat{S}}{s_{\hat{S}}}$$

As an example, the previous table from which gamma was determined is used to calculate the z score:

$U_2 = (11)(25) + (11)(4) + (25)(4) = 419$

$V_2 = (10)(8) + (10)(17) + (10)(5) + (8)(17) + (8)(5) + (17)(5) = 561$

$U_3 = (11)(25)(4) = 1100$

$V_3 = (10)(8)(17) + (10)(8)(5) + (10)(17)(5) + (8)(17)(5) = 3290$

$N = 40$

$$s_{\hat{S}} = \sqrt{\frac{U_2V_2}{N-1} - \frac{U_2V_3 \quad V_2U_3}{N(N-1)} + \frac{U_3V_3}{N(N-1)(N-2)}}$$

$$= \sqrt{\frac{(419)(561)}{39} - \frac{(419)(3290) + (561)(1100)}{40(39)} + \frac{(1100)(3290)}{40(39)(38)}}$$

$$= \sqrt{\frac{235,059}{39} - \frac{1,378,510 + 617,100}{1560} + \frac{3,619,000}{59,280}}$$

$$= \sqrt{6027.15 - 1279.24 + 61.05}$$

$$= \sqrt{4808.96}$$

$$= 69.35$$

Furthermore, $S = f_+ - f_-$

$S = 206 - 95$

$S = 111$

And, $\hat{S} = |S| - \frac{N}{(2)(R-1)(C-1)}$

$$= 111 - \frac{40}{2(2)(3)}$$

$$= 111 - 3.33$$

$$= 107.667$$

S then expressed as a standard score or z - score for gamma:

$$z = \frac{\hat{S}}{s_{\hat{S}}}$$

$$= \frac{107.67}{69.35}$$

$$= 1.55$$

Since the research hypothesis ($H_1$) predicts direction of association, a one-tailed test is used. Significant values of z, as described in a normal curve table, are 1.65 at the 05 level and 2.33 at the 01 level. With a z score of 1.55, the null hypothesis is accepted; in other words, the G of .369 is not statistically significant by the decision procedure.

Computer Calculations

The computations were performed at the University of Texas, El Paso Computer Center with a IBM System 360 computer. Gamma calculations utilized a program based on the University of Kentucky version of NUCROS (Northwestern University Cross Classification). For a complete write up on this program, see Kenneth Janda's Data Processing Application to Political Research (1965: 253-264). For the z score of gamma, the subroutine in the program is based on Freeman (1965: 170-175).