

Land Use Planning and Exurbanization in the Rural Mountain West

Evidence from Arizona

Adrian X. Esparza & John I. Carruthers

During the past several decades, large segments of the American population have chosen to relocate outside of metropolitan areas in exurban environments (Doherty 1984; Davis, Nelson, and Deuker 1994; Daniels 1999). This transition has been widespread, and by many accounts, exurbanization has become the nation's dominant mode of land development, with exurban areas now occupying as much as one-third of the land area of the 48 contiguous states (Healy and Short 1981; Nelson and Dueker 1990; Nelson 1992). While nearly all regions of the country have been affected by this trend, it has had a particularly significant impact on the Mountain West: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming. Demographers and others indicate that the region is the fastest growing of the country (due mainly to in-migration) and that much of this growth is occurring outside of metropolitan areas—in remote, nonmetropolitan counties (Johnson and Beale 1994; Fuguitt 1995; Economic Research Service 1995; Starrs 1995; Shumway and Davis 1996).

While much is known about the dimensions of exurbanization, little is known of how and why it has become the dominant mode of land development in the country (Nelson 1995). Responding to this deficiency, this article develops a process-based conceptual model of exurbanization focusing on the rural—nonmetropolitan—Mountain West. Building on “growth machine” theory (Molotch 1976; Logan and Molotch 1987; Logan, Bridges-Whaley, and Crowder 1997), the conceptual model argues that land use planners, and the planning discipline in general, hasten the pace of exurban development in the region. This hypothesis is examined through an investigation of exurban development in a rural county of Arizona.

The article is organized into five sections. Following the introduction, the second section investigates the rural land development process and presents the conceptual model of exurbanization. The third section provides an empirical analysis of rural land development in Cochise County, Arizona. We summarize population and residential development trends across the county and provide a detailed analysis of land use planning and exurban development in the vicinity of Sierra Vista, Arizona, the county's largest urban center. In view of the empirical results, the fourth section revisits the issue of

Abstract

Exurban development is especially prevalent in rural areas of the Mountain West, where rapid population growth has led to the conversion of vast amounts of rural land and natural open space. This article argues that traditional approaches to land use planning hasten the pace of exurbanization in rural areas of the region. Building on this premise, the article presents a conceptual process-based model that links land use planning with exurbanization and uses the model in an empirical study of exurban development in Cochise County, Arizona. The analysis confirms expectations, with conventional planning approaches unintentionally fostering exurbanization and fueling the conversion of natural lands. Several principles are identified that should inform new approaches to land use planning in rural areas.

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rural land use planning and proposes guidelines for the development of new approaches to planning in nonmetropolitan areas. The article concludes with a summary of findings and recommendations for future research.

► Land Development in the Rural Mountain West

As with other regions of the country, rural land development in the Mountain West revolves around the land market. Yet, special circumstances have distorted the demand for, and supply of, rural land and hastened the pace of exurbanization in the region. The demand for rural land—for rural living—hinges on two factors. First, much of the desire for rural living is rooted in America's long-held attachment to its rural/agrarian past: what some analysts have labeled the "Jeffersonian Ideal" (Nelson and Dueker 1990; Nelson 1992, 1995). When making residential relocation decisions, this urge is met by seeking out rural lifestyles. A 1995 study, for example, revealed that 77 percent of respondents ranked natural open space as their single highest priority for new communities (Diamond and Noonan 1996). Such inclinations are easily satisfied in the Mountain West, where in-migrants often are drawn to remote areas of scenic beauty: small towns and areas rich with natural amenities (Starrs 1995; Shumway and Davis 1996).

Second, distortions in the market place, often introduced by public subsidies, inflate the demand for rural land by decreasing the relative cost of living in nonmetropolitan areas. The cost of living in rural areas is less because land is comparatively cheap, property taxes are lower, and services, such as infrastructure, telephone, and cable television, and home ownership, are subsidized by the public at large. Ultimately, living in exurban areas is less expensive and, in many instances, promises at least as high quality of public services as those of urban areas (Bahl 1968; Bahl and Firestone 1972; Lee 1981; Morris 1998; Daniels 1999).

The supply of rural land hinges on the behavior and practices of developers and land speculators who bring developable land into the market place. Two factors serve to increase the motivation for these actors to engage in the development of rural land in the Mountain West. First, the rapid growth of the region and the increasing preference for rural living signal the potential for sizable earnings. Second, rural land is easier to develop than land in more dense metropolitan areas. Much of this ease arises from a comparative freedom from the strict land use regulations found in urban settings (Nelson and Dueker 1990; Nelson 1995; Daniels 1999).

The anticipation of large profits and the absence of land use regulation are critical to the exurbanization process in the Mountain West because these factors promote the "commodification of place;" that is, developers and speculators respond to the demand for amenity-laden environments by using the natural rural landscape as a marketable product, a commodity. From this perspective, rural development may be viewed as the spatial extension of Molotch's (1976) urban "growth machine." Molotch and others characterize the city as an engine for growth that is perpetuated through the exchange of land (Pfeffer and Lapping 1994). Growth machine theory argues that community growth and development are endorsed and acted on by coalitions of land-based elites who manipulate the system for their own long-term interests and gains (Logan and Molotch 1987; Logan, Bridges-Whaley, and Crowder 1997). This type of opportunism is especially well suited for rural land markets because developers and speculators create a marketable product—rural living—that caters to the locational and environmental preferences of consumers of place.

The planning discipline recognizes exurbanization as a continuation of metropolitan decentralization (Lamb 1983; Lapping, Daniels, and Keller 1989; Mantell, Harper, and Propst 1990; Nelson and Dueker 1990; Yaro 1991; Nelson 1992; Davis, Nelson, and Deuker 1994). And since exurbs often are located near metropolitan areas, planners tend to perceive them as the spatial extension of the urban realm. This response is expected since much of the demand for exurban living is owed to people relocating from urban areas; as such, exurban development is frequently urban by design and considered rural only because of its location.

In view of the urban character of this development, planners revert to traditional practices of imposing land use regulation in exurban areas. Moreover, some believe that the regulatory domain of planners extends well into the rural landscape, at times encompassing areas located as far as 150 miles from major metropolitan centers (Nelson et al. 1995). Based on this belief, the planning discipline has responded by devising techniques for mitigating exurban sprawl (Doherty 1984; DeGrove and Metzger 1991; Kelly 1993; Porter 1997; Daniels 1999) and by setting planning agendas for small-town environments (Daniels, Keller, and Lapping 1995; Galston and Baehler 1995; Nelson 1995). Principle techniques include growth management tools designed to restrain urban expansion and schemes aimed at melding outlying areas with larger urban complexes. The conceptual model described below explains how the planner's approach unwittingly helps to extend the realm of exurbanization.

The Conceptual Model of Exurban Land Development

The conceptual model, illustrated in Figure 1, argues that exurbanization is a continuous process that passes through four stages. Stage 1 deals with demand-supply relationships that bring consumers and developers together in the rural land market. Demand is rooted in the desire for rural lifestyles in amenity-rich environments and the comparatively low cost of rural living. The demand for rural land is met by developers who seek large profits and a comparatively regulation-free environment. In Stage 2, the exchange of rural land leads to exurbanization: low-density living that consumes large tracts of previously undisturbed natural open space. The development of exurban land leads to two outcomes in Stage 3. First, plan-

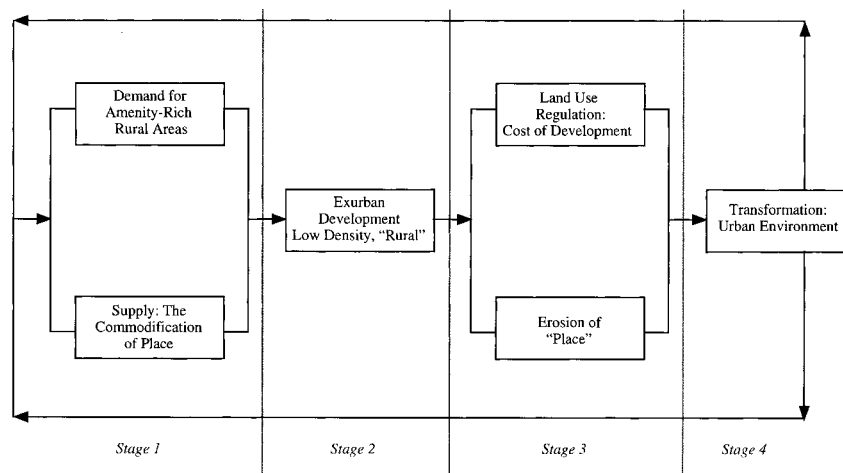


Figure 1. Conceptual model of the rural residential land development process. Source: Esparza and Carruthers (1998).

ners resort to land use regulation in an effort to constrain the outward expansion of development and to mitigate negative externalities. Second, development in rural areas erodes the environmental amenities that drew residents to exurban locations in the first place. The rural environment has been transformed in Stage 4, so that it is now a spatial extension of the urban fabric. The transformation causes the process to begin again (back to Stage 1), but in more distant locations, as consumers in search of natural amenities and low-cost living travel progressively farther to find them, and developers seek to avoid regulation and capitalize on pristine areas.

Figure 1 argues that exurbanization leads to cycles of “creative destruction,” where the creation of exurban environments destroys the very settings that were sought initially. The role that planners play in the process leads some to associate them closely with the “growth machine” ideology (Logan and

Molotch 1987; Vogel and Swanson 1989). This is a reasonable indictment because by design or not, traditional planning approaches perpetuate an environment in which land developers and speculators flourish as long as a stock of natural open space remains.

► Empirical Analysis

The empirical analysis examines whether the conceptual model explains the exurbanization process in Cochise County, Arizona. The analysis begins by summarizing the extent of growth in rural portions of the county. This is followed by a detailed study of exurbanization in the vicinity of Sierra Vista, Arizona, the largest urban center in the county. Our approach

links an assessment of planning documents prepared by Sierra Vista’s planners and personal interviews with planners, with quantitative data that show exurban development trends in recent years. In this way, we are able to associate changes in planning directions with the spatial expansion of rural residential development.

The Setting

Cochise County is located in the southeastern corner of Arizona. As Figure 2 illustrates, Mexico lies to the south and adjacent to the county, while the state of New Mexico forms the county’s eastern border. The county spans approximately 6,200 square miles and contains a rich diversity of landscapes ranging from semi-desert scrub to mesquite plains to mountain sky islands. The county features numerous scenic vistas and a rustic environment that makes it particularly attractive in the rural land market. Climatic conditions in the county are also favorable, with mild temperatures year-round.

Four cities claim the lion’s share of the county’s urban population. As Figure 2 shows, these include Douglas, a border town; Bisbee, the county seat; Tombstone, the widely known historic western town; and Sierra Vista, the most rapidly growing urban area in the county. There are other, smaller urban settlements but, for the most part, their populations have remained relatively stable over long periods of time, although there is strong evidence that this will change in the near future.

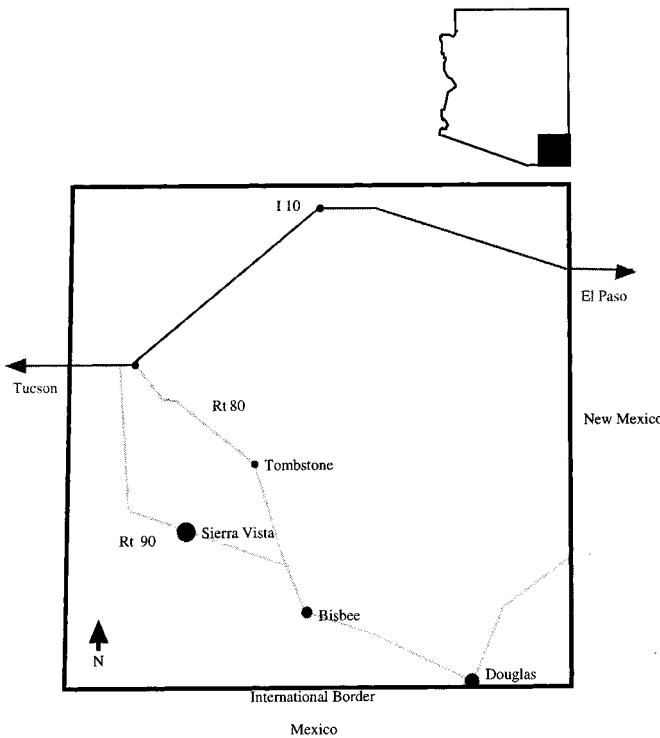


Figure 2. Major cities of Cochise County, Arizona.
Note: Map not to scale.

Table 1 summarizes the patterns of land ownership in the county as of 1994, the most recent year data are available. Approximately 56 percent of the county falls within the jurisdiction of some level of government (Forest Service, BLM or State or Arizona). A large percentage of the county, 41 percent, is owned by private interests. These 1.6 million acres represent one of the largest contiguous spans of privately owned land in the state because much of the land in other counties is controlled by various levels of government. These data indicate that there is vast reserve of natural open space that is potentially available for the rural residential land market.

Population Growth and Rural Residential Development

The population of rural portions of the county (population outside incorporated areas) has grown considerably during the past several years. As Figure 3 illustrates, population has increased from slightly more than 31,000 in 1981 to nearly 44,000 in 1996. This represents a 42 percent increase in population during the sixteen-year period, or average annual growth of 2.6 percent. This pattern of growth corresponds with research that finds that population growth throughout the

Mountain West is less vulnerable to the “turnarounds” characteristic of other rural regions of the country (Johnson and Beale 1994; Economic Research Service 1995; Fuguitt and Beale 1996; Shumway and Davis 1996). While direct counts during the same period are unavailable, our estimates indicate that much of this population growth is due to net migration, either from urban-based residents living within the county or elsewhere; natural increase has remained stable during recent years.

The outcome of population growth is documented more closely by evaluating trends in rural residential land development. Table 2 shows the number of privately owned and unimproved parcels used for residential purposes. Column 1 lists the total number of parcels dedicated to residential use in the county over the 1983 to 1996 time period. During those 14 years, the number increased by 8,573 parcels, at an average rate of 2.9 percent per year,

a pace very close to that of the county’s population growth. Column 2 shows that at the same time, the number of privately owned, “unimproved” parcels—land consisting of natural open space—has declined from 77,567 to 73,265. This decrease of 4,311 parcels amounts to an overall loss of 5.5 percent of the county’s total privately held open space. The combined effect is reflected in column 4, which shows that the total number of all taxable parcels in unincorporated portions of the county has increased over time. This increase is the

Table 1.
Summary of land ownership in Cochise County, Arizona, 1994.

Jurisdiction	Area (1,000 acres)	Area (square miles)	Percentage of Total
Forest service	490	766	12
Bureau of Land Management	376	588	9
State of Arizona	1,372	2,144	35
Privately owned	1,630	2,547	41
Other public lands	112	175	3
Total area	3,980	6,219	100

Source: Adapted from Worden and de Kok (1996).

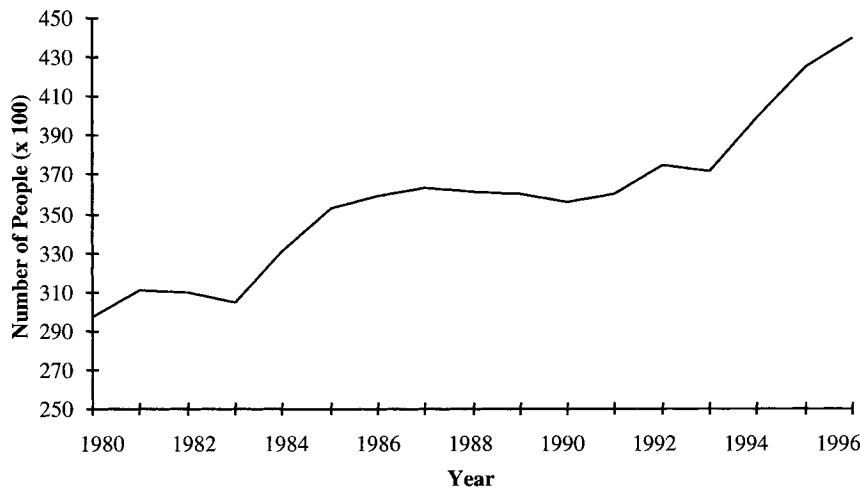


Figure 3. Population of unincorporated areas in Cochise County, 1980-96. Source: Arizona Department of Economic Security (1950-90, 1980-90, 1991-96).

outcome of the continuing subdivision of rural land for the purpose of residential development.

Following Logan and Molotch's (1987) "growth machine" theory, we argued previously that rural residential development is eased by the availability and attendant low price of land. Table 3 documents these trends in Cochise County by listing the mean value in real dollars of residential and unimproved parcels between 1983 and 1996. Over this time period, the mean value of residential parcels rose from \$31,762 to \$35,136, an increase of 10.65 percent (column 2). These figures reveal a modest increase in the value of developed land. At the same time, however, the mean value of unimproved parcels

Table 2.
Privately owned parcels in unincorporated Cochise County, 1983-96.

Year	Parcels		
	Residential	Unimproved	All Taxable
1983	20,742	77,567	100,101
1984	20,768	77,902	102,497
1985	21,402	78,033	103,399
1986	22,238	77,993	104,167
1987	23,394	78,011	105,179
1988	24,079	78,237	106,031
1989	24,561	78,099	106,334
1990	25,029	77,550	106,430
1991	25,439	75,279	104,512
1992	26,197	74,655	104,645
1993	26,938	74,110	104,323
1994	27,815	73,728	104,327
1995	28,376	74,597	105,646
1996	29,315	73,256	106,295

Source: Cochise County Assessor's Office, 1984-97 tax years.

(column 3) fell from \$4,941 to \$4,025, a decrease of 18.54 percent. This dramatic drop indicates that unimproved land—natural open space and agricultural land—is more accessible, either because of its abundance in the county or changes in taxation policies. In any case, the reduction in the value of unimproved parcels encourages the subdivision of land and exurbanization.

Land Use Planning and Exurbanization:
The Case of Sierra Vista

The discussion above illustrates that population growth in Cochise

County has been channeled into rural, unincorporated areas. While the data reported provide evidence of the rate and scope of exurban development occurring in the county, they reveal little about the role that planners and land use regulation have played in the process. We get at this issue by investigating how planners have dealt with growth in the vicinity of Sierra Vista.

Sierra Vista is located in the southwestern corner of Cochise (see Figure 2). As a city of significant size, it offers residents excellent access to most urban services while being remotely located. A large proportion of Sierra Vista's incorporated area is occupied by Fort Huachuca, a U.S. military installation. The fort was annexed in 1971 but is not a land use relevant to the discussion at hand.

The population of Sierra Vista has grown considerably over the past several years. The city's population has increased from slightly more than 25,000 in 1980 to nearly 40,000 in 1997 (Arizona Department of Economic Security, 1950-90, 1980-90, 1991-96). This represents an increase of 58 percent during the seventeen-year period or an average annual growth rate of 3.4 percent. These figures emphasize the centrality of Sierra Vista, which most recently claims approximately 30 percent of the county's total population.

In addition to its internal growth, Sierra Vista accounts for a large share of the county's exurban growth. Most rural residential development reviewed by the Cochise County Planning Department is near Sierra Vista (Cochise County Planning Department, personal communication, January 1998), and the Sierra Vista Economic Development Foundation (1997) documents that in 1990, nearly 71,000 people—more than twice the urban population of 33,000—lived within a twenty-five mile radius of the city. Although this area extends into adjacent Pima and Santa Cruz Counties, the bulk of it lies

Table 3.
Mean value (real dollars) of privately owned parcels in
unincorporated Cochise County, 1983-96.

Year	Parcels (\$)		
	Residential	Unimproved	All Taxable
1983	31,762	4,941	12,752
1984	32,431	5,143	16,342
1985	33,499	4,964	16,700
1986	33,008	5,106	17,139
1987	33,132	5,136	17,309
1988	34,033	4,981	17,533
1989	32,260	4,821	16,998
1990	30,471	4,337	16,502
1991	29,619	4,300	16,529
1992	28,828	4,109	16,063
1993	31,289	4,159	14,061
1994	31,765	3,916	14,032
1995	33,813	3,843	18,131
1996	35,136	4,025	18,714

Source: Cochise County Assessor's Office, 1984-97 tax years.

within Cochise County. Thus, 50 percent or more of the county's total population lives in the vicinity of Sierra Vista. Estimates indicate that this proportion will continue to grow and that by the year 2000, 91,000 people are expected to reside in Sierra Vista and its exurban realm.

Sierra Vista's planning activities reveal that as the city and its outlying areas have grown, planners have responded by attempting to manage growth through the use of traditional planning tools. The city's original comprehensive plan and zoning ordinance were adopted in 1965. In 1985, the comprehensive plan was replaced by a revised version titled *VISTA 2000* (Sierra Vista Department of Development Services 1985). In 1986, the original zoning ordinance was abandoned in favor of a *Development Code* (Sierra Vista Department of Development Services 1986), which included updated zoning designations. In 1995, *VISTA 2000* was exchanged for the city's current comprehensive plan, *VISTA 2010* (Sierra Vista Department of Development Services 1995). While *VISTA 2010* maintains the goals of its predecessor, it is more concise and intended to be easier to use. Except for several minor amendments, the *Development Code* has not been replaced or formally revised since its adoption.

The evolution of Sierra Vista's comprehensive plans reflects an increasing consciousness of the city's growth and impact on the surrounding environment. Through *VISTA 2000* (1985) and *VISTA 2010* (1995), the city has attempted to control growth at the scale of the entire urban area and at the scale of the individual development. Specifically, *VISTA 2000* provides that Sierra Vista will address its growth through the use of "existing growth management techniques, as well as any

'new' techniques that may be necessary to achieve a balance between the environment, population growth, and the local economy" (Sierra Vista Department of Development Services 1985, 30). The intention to manage growth is also expressed through the document's statements on the city's land use policy, which employs such phrases as "energy efficient" and "environmentally sensitive" to convey the desired outcome of development. Concern for the natural environment becomes more prominent in *VISTA 2010*, which refers to the "beauty" and "fragile nature" of the city's setting. While *VISTA 2010* does not contain language referring specifically to growth management, the document makes direct reference to the problem of "leapfrog" development and to the need to develop in a contiguous manner. These provisions are noteworthy because they speak to the increasing propensity of development to skip over tracts of vacant land within the city, locating in more isolated areas instead (Sierra Vista Department of Development Services 1985, 1995).

The goals and policies of Sierra Vista's comprehensive plan are implemented through the *Development Code* (1986), which establishes the city's development guidelines and zoning districts. Prior to the adoption of the *Development Code*, development guidelines were implemented through the city's original (1965) zoning ordinance. The revised document expands on the original, significantly increasing the degree of regulation affecting residential development within the incorporated area. Development must now comply with heightened design guidelines and subdivision platting procedures, as well as performance standards (for noise, heat, and glare), increased requirements for signage and outdoor lighting, and water conservation measures (affecting plumbing in all new structures). In sum, the *Development Code* has significantly raised both the cost and complexity of residential development within city limits.

In addition to increasing development requirements within the city, the *Development Code* added two new zoning designations to those of the original zoning ordinance. The first, recreational vehicle, is significant because it points to the increasing popularity of Sierra Vista—and the Southwest in general—as a place of seasonal residence. The second, urban ranch, is even more significant because it allows the city to provide space for low-density, rural residential development within its incorporated area. Lots are required to be a minimum of one acre in size, and agriculture of all types, including the keeping of livestock, is permitted in conjunction with residential use.

Sierra Vista's comprehensive plan, *Development Code*, and zoning designations converge in the form of a managed growth strategy through the city's annexation policy. The city's strategy is to annex land, thereby creating an envelope of

vacant land for its own growth. Table 4 documents the implementation of this policy by listing the number of acres annexed during the 1975 to 1997 period (column 2), as well as the total size of the incorporated area and associated population density (columns 3 and 4). Over the twenty-two-year time period, the area occupied by the city grew from 8.68 to 20.53 square miles, for a total increase of nearly 14 square miles. The bulk of this growth occurred in 1987, 1989, 1995, and 1996—years following revisions to the comprehensive plan. Taken together, these four years account for nearly 10.5 square miles, or 75 percent of the city’s total expansion over the 1975 to 1997 time period. The outcome is illustrated in Figure 4, which depicts the extent of Sierra Vista’s incorporated area (excluding the Fort) in 1980, 1990, and 1997.

In response to the popularity of exurban development in its vicinity, Sierra Vista has placed the bulk of annexed land within low-density residential zoning designations. These include the urban ranch designation described above and a single-family residential category requiring a minimum lot size of 36,000 square feet (SFR 36). As Figure 5 illustrates, these two designations have been used to create space for a belt of rural residential development around the southern and eastern edges of the city. The purpose of this belt is to act as an urban growth boundary, focusing high-density development into the urban center, while accommodating exurban development and integrating it with the urban complex (Sierra Vista Department of Development Services, personal communication, March 1998).

Sierra Vista’s planning approach rests on the perspective that rural development consists of low-density extensions of the urban environment. In view of the urban character of much of the rural residential development occurring in outlying areas of the city, planners have responded by attempting to control it through traditional means of land use regulation. Annexation has been used to place large areas of rural land and contiguous open space under Sierra Vista’s jurisdiction, extending the city’s regulatory influence to encompass the outlying exurban realm. The expectation is that development will occur in a contiguous manner, filling in the area now zoned for rural residential use, not “leapfrogging” over it to occur at the city’s periphery. The provisions for this policy are contained in VISTA 2010, which states, “Every opportunity should be taken to pursue the development of currently vacant lands, to minimize the problems associated with ‘leapfrog development,’” and that the city will “develop and implement a policy to annex contiguous undeveloped lands” (Sierra Vista Department of Development Services 1995, 8).

The outcome of Sierra Vista’s planning policies has been to inadvertently perpetuate the consumption of natural open

Table 4.
Summary of growth indicators for
Sierra Vista, Arizona, 1975-97.

<i>Year</i>	<i>Acres of Land Annexed</i>	<i>Total Size of Incorporated Area (square miles)</i>	<i>Overall Density (population/acre)</i>
1975	0.00	6.68	—
1976	146.75	6.91	—
1977	0.00	6.91	—
1978	74.88	7.03	—
1979	0.00	7.03	—
1980	1.03	7.03	5.56
1981	0.00	7.03	5.72
1982	0.00	7.03	5.92
1983	11.70	7.05	6.03
1984	160.00	7.30	6.04
1985	0.62	7.30	6.17
1986	93.83	7.45	6.26
1987	3,330.77	12.65	3.76
1988	82.40	12.78	3.85
1989	1,433.53	15.02	3.34
1990	6.75	15.03	3.44
1991	0.29	15.03	3.51
1992	0.00	15.03	3.51
1993	5.64	15.04	3.68
1994	141.90	15.26	3.77
1995	1,428.97	17.50	3.38
1996	1,440.00	19.75	3.03
1997	502.37	20.53	3.00

Source: Sierra Vista Department of Development Services (1998).

space and rural land. This has occurred in two interrelated ways. First, the city has added large quantities of vacant land to its incorporated area, committing that space to eventual intensification. Second, rural residential development continues to occur outside of the incorporated area, bypassing the low-density zone created by the city (see Figure 5) in favor of county lands that are subject to less stringent land use regulation and building codes. In short, Sierra Vista’s managed growth strategy has resulted in the very type of leapfrog development that it set out to avoid. Ultimately, this leapfrogging will force the city to further expand its incorporated area and eventually rezone the vacant land left behind to promote infill development and form a contiguous urban area.

The process begins as large amounts of unimproved and newly developed land are added to Sierra Vista’s incorporated area through annexation. Figures 6 and 7 show the extent of Sierra Vista’s city limits between the 1980 to 1989 and 1990 to 1997 time periods and all outlying sections in which land subdivision occurred during those same time periods. These figures demonstrate that as the city extends its boundaries to incorporate outlying development, growth continues to occur

in rural (unincorporated) areas. The process is cyclical, with each advance in the extent of the incorporated area's precipitating development progressively further from the urban center (essentially the area occupied by the city in 1980). In this way, Sierra Vista's policy of managing growth through annexation forces it to continue expanding in a constant effort to keep up with outlying development.

At the same time, the rate of residential development within incorporated Sierra Vista has slowed. The decline in residential development is closely associated with the adoption of *VISTA 2000* (1985), the first revised comprehensive plan, and the implementation of the *Development Code* (1986), which substantially increased land use regulation within the city. Table 5 lists the number of residential permits issued within Sierra Vista between 1975 and 1995. The peak years of housing production occur in the late 1970s and mid-1980s, with 1985 registering 1,209 permits, the largest number of the entire twenty-year time period. During the decade prior to 1986, an average of 480 permits were issued per year, more than twice the average of 194 permits per year that were issued in the following decade.

As the combined outcome of annexation and decreased residential development, a large and growing quantity of land within Sierra Vista's incorporated area remains undeveloped. Between 1985—when the city was at its highest density—and 1997, the average number of people per acre fell from 6.17 to 3.00, a decline of 51 percent. Had the city maintained its 1986 density, it would require more than 81,000 people to populate the area that it now occupies. Instead, a similar number of people is shared between the incorporated area and its outlying exurban realm.

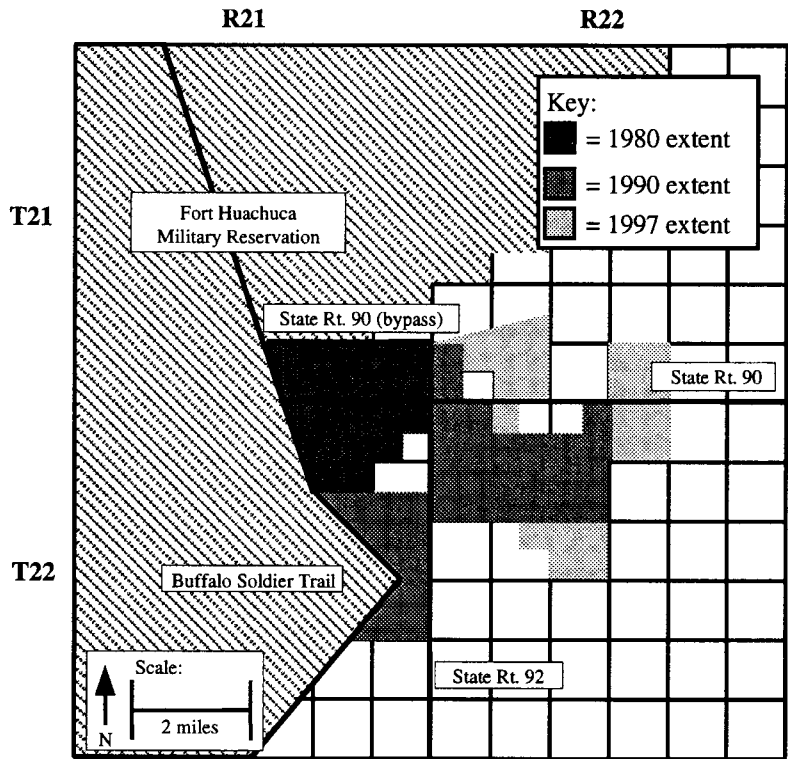


Figure 4. Growth of Sierra Vista incorporated area, 1980-97. Source: Sierra Vista Department of Development Services (1997a).

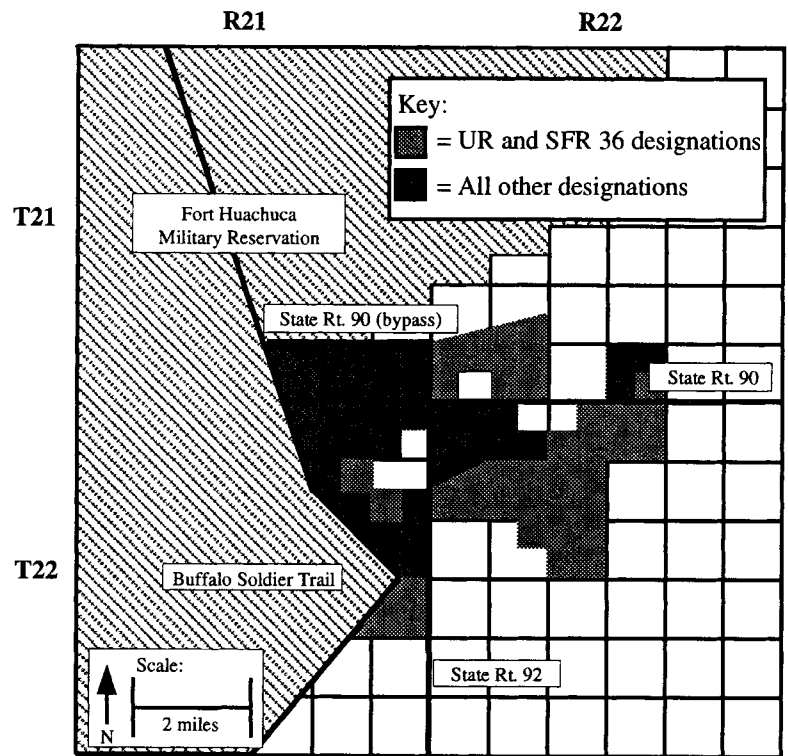


Figure 5. Approximate extent of low-density buffer zone, 1997. Source: Sierra Vista Department of Development Services (1997a).

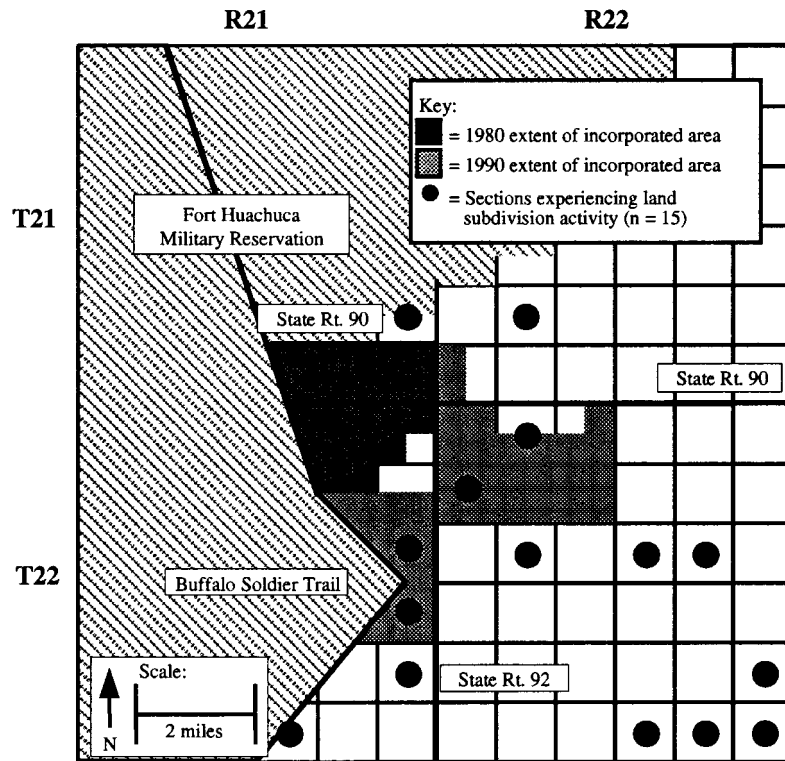


Figure 6. Land subdivision activity occurring in outlying areas of Sierra Vista, 1980-90. Source: Cochise County Assessor's Office, 1997.

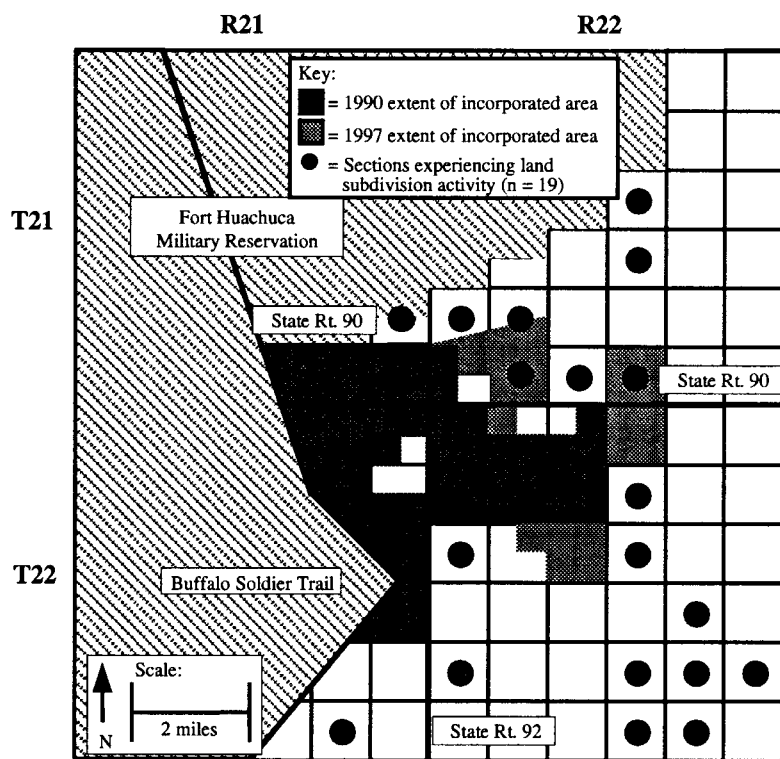


Figure 7. Land subdivision activity occurring in outlying areas of Sierra Vista, 1990-97. Source: Cochise County Assessor's Office, 1997.

The resulting urban configuration is illustrated in Figure 8, an adaptation of a recent land use map prepared by the Sierra Vista Department of Development Services (1997b). Residential development within city limits ceases at the edge of the low-density buffer formed by the urban ranch and SFR 36 zoning designations. It resumes again on the opposite side of the buffer zone, just outside of the incorporated area. The low-density zone created by the city through the use of the urban ranch and SFR 36 designations has not produced the intended effect of integrating rural and urban development. Instead, it has created a divide between the central urban area and the outlying exurban area, which continues to develop. Future annexations will extend Sierra Vista's boundaries further to the south and east (Sierra Vista Department of Development Services 1997b), leaving large tracts of vacant land in the center of the incorporated area.

This analysis demonstrates that the conceptual model (see Figure 1) captures the rural residential land development process in the vicinity of Sierra Vista, Arizona. In practical—applied—terms, the perpetuation of exurbanization stems from two critical oversights that arise from planners' perceptions of rural development. First, the consumer motivations that drive exurban growth and rural residential development remain overlooked. New residents are initially drawn to the area in search of a remote location and a pristine natural environment that is at the same time within reach of an urban area. But urban land itself—however attractive and plentiful—is, by definition, no longer remote or pristine. Even when it is zoned for very low-density use, land within the city loses much of its appeal to the consumer because it is already destined for future development and therefore is no longer part of

Table 5.
Residential building permits issued for
Sierra Vista, Arizona, 1975-95.

<i>Year</i>	<i>Residential Building Permits Issued</i>
1975	198
1976	315
1977	442
1978	418
1979	372
1980	237
1981	154
1982	227
1983	1,058
1984	368
1985	1,209
1986	546
1987	125
1988	60
1989	96
1990	81
1991	131
1992	252
1993	216
1994	249
1995	179
1996	—
1997	—

Source: U.S. Bureau of the Census, Construction Statistics Division, Building Permits Branch (selected years).

the urban frontier. In short, living within the city limits does not fulfill the consumer's attachment to the ideal of the Jeffersonian individualist. For this to occur, the natural environment must be perceived as unique and truly rural. Second, Sierra Vista's approach overlooks the opportunism that is hidden within the motivations of land developers. There are significant benefits to be gained from engaging in the rural land market as opposed to the urban, and in the case of Sierra Vista, the divide between the two is quite clear. All land within the incorporated area is subject not only to zoning—dictating its use and density—but also to strict development guidelines, which raise both the cost and complexity of the development process. It does the city little good to create an area designated for a planned rural environment because an abundance of true rural land lies only a stone's throw away, just outside of the incorporated area. Extending the reach of the city and its regulatory jurisdiction has the effect of driving development further into rural areas as developers relocate in a continuing effort to escape land use regulations while accommodating consumer demands. Ultimately, the city remains better off by not annexing land in anticipation of future development if rural preservation remains a goal.

In concluding the empirical study, it is important to recognize that planners in Sierra Vista and Cochise County are not solely responsible for the leapfrog development and exurbanization that has occurred in the county. Part of the problem stems from the comparative ease of land development in unincorporated areas. For example, recent state-level legislation in Arizona increased the allowable number of lot splits (from four to six) that can be made in unincorporated areas before subdivision regulations apply (A.R.S. 32-2101 (54)). As a result, cities such as Sierra Vista become "islands" of regulation that motivate developers to seek out unincorporated lands. Such a state-level regulatory environment makes rural land preservation difficult for planners at local and county levels. Below, we discuss a broader set of problems and suggest ways in which rural land use planning can be revised.

► Rural Land Use Planning Revisited

Arizona is similar to much of the Mountain West in that the region is endowed with expansive pristine environments that are falling victim to exurbanization and leapfrog development. The case study demonstrated a connection between planning practices in one city, Sierra Vista, and these modes of land development. While we do not wish to use the case study as a basis for generalizing across the region, the case study revealed several issues that provoked an analysis of the broader field of rural land use planning. The discussion that follows considers pitfalls with the current approach and recommends avenues for a revised rural planning agenda.

We believe that a revised approach to rural land use planning would benefit from considering the following three principles. First, the planning discipline should anchor approaches to rural planning in a deeper understanding of urbanization as a process so that rural environments are not treated as spatial extensions of metropolitan regions. Popper (1984) voiced this concern long ago but with little apparent response. But the lack of response is not surprising because reorienting the discipline toward a process-based approach reaches the core of planning education, the knowledge and skills with which planning students are equipped. Friedmann's (1996) recommendations for a revised curriculum go a long way toward describing the types of courses needed to better prepare planning students in general and for rural planning in particular. His recommendations emphasize six "sociospatial" processes, the first of which deals with urbanization. At issue here is providing professional planners (students) with a firm grasp of the processes that produce the outcomes they must deal with in applied settings. Friedmann demonstrates that current course requirements favor skills (computers and GIS)

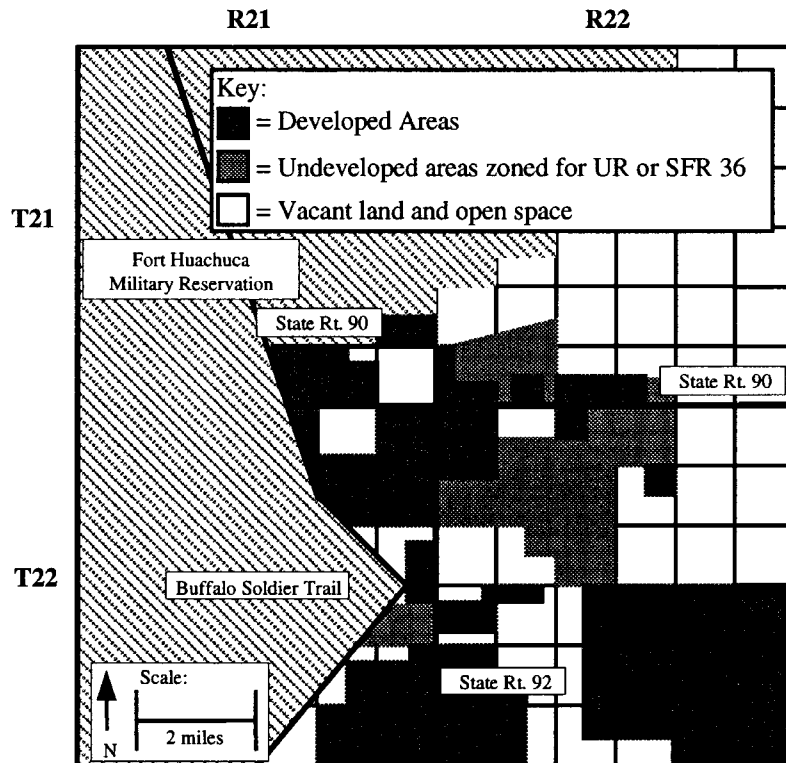


Figure 8. Approximate configuration of development in Sierra Vista and surrounding area, 1997. Source: Sierra Vista Department of Development Services (1997b?).

and techniques (statistics), often at the expense of learning in substantive areas.

Second, by extension, planning in rural areas should emphasize the use of regulations and devices that affect the processes involved with the supply and demand for rural land more directly. There are a range of devices that accomplish this through market mechanisms, including property taxation policies, development fees, conservation areas, community land trusts, and the transfer of development rights (Bahl 1968; Lee 1981; Popper 1984; Razin 1998; Daniels 1999). Many such devices have been used, especially for farmland preservation. These programs, which were implemented in all states by 1957, serve as good examples of how property tax policies can be used for preservation purposes. Morris (1998) finds that farmland preservation programs have effectively slowed the conversion of agricultural land over a twenty-year time period. Tax policies that are linked to land evaluation schemes, such as the federal government's land evaluation and site assessment (LESA) system, may prove successful for the preservation of natural open space. The LESA scheme provides a method of identifying land most worthy of preservation by rating the quality of agricultural land (Lapping, Daniels, and Keller 1989). Similar schemes can be developed for natural open

space and property taxation policies enacted to preserve the most desirable lands. In sum, there are numerous ways of affecting rural land development directly rather than focusing on outcomes, and Ladd (1998) provides a valuable compilation of the most recent research on many of these devices.

Finally, the likelihood of successful planning for rural preservation is highest when pursued at the state level. The most straightforward way of achieving coordination across jurisdictions is through state-mandated standards and review processes for land use plans (Burby and May 1997). Standardizing the planning process ensures that plans of adjacent jurisdictions are consistent with each other and, ultimately, that attempts to regulate development in one area do not precipitate negative externalities in another. Ensuring regulatory consistency and avoiding jurisdictional conflict are central to many state-level growth management programs (Gale 1992).

But state-level initiatives appear unlikely to occur in many areas of the Mountain West, raising serious questions about how rural land use planning can best be implemented. While no clear solutions have been realized, the planning practices of two other Mountain West counties demonstrate that the absence of state support can be overcome by strong planning efforts at the county level.

The first, Pitkin County, Colorado, controls its growth by placing strict limitations on the number of building permits it issues each year. The county's *Land Use Code* (1994) is built around a system that divides all unincorporated lands into two categories: metropolitan and nonmetropolitan. Metropolitan lands are confined to areas immediately adjacent to Aspen, the county's one incorporated area. Each year, the county issues sixty-three residential building permits for the metropolitan area and twenty-four for the nonmetropolitan area. The outcome is a 2 percent annual growth rate, most of which is confined to the immediate vicinity of Aspen (Pitkin County Department of Community Development 1993). The second, Santa Fe County, New Mexico, plans in direct response to the character of its natural environment. The county's comprehensive plan (1980) is founded on an extensive study of local hydrologic and environmental conditions. This is reflected in

the *Land Development Code* (Santa Fe County Planning Department 1996), which uses groundwater availability to determine residential densities and the county's ongoing efforts to inventory its natural open space (Santa Fe County Planning Department 1994, 1995, 1997). The county is currently developing a program that enables the purchase and permanent preservation of open space (Santa Fe County Planning Department, personal communication, October 1998). The efforts of both of these counties represent important steps in eliminating the regulatory inconsistencies between local- and county-level land use planning in the absence of state support.

Although both Pitkin County and Santa Fe County are notable cases, there are at least two key points that require further consideration. First, both counties differ significantly from Cochise County, Arizona; Pitkin County is a major tourist destination and, for that reason, retains a substantive economic interest in preserving its scenic beauty and natural open space. And although Santa Fe County contains much rural land, it is considered metropolitan by census standards and must respond to growth pressures imposed by the city of Santa Fe. In both instances, local support for land use regulations is likely to be much higher than most nonmetropolitan counties in the region. Second, it is not clear that either county has avoided the pitfalls encountered in Cochise. For example, the groundwater-based zoning applied in Santa Fe County has contributed significantly to exurban sprawl (Santa Fe County Planning Department, personal communication, October 1998). This has occurred because the minimum lot size requirement of 2.5×5 acres consumes large amounts of land without being large enough to truly preserve the natural integrity of the area (Yaro 1991). In other words, in an effort to reconcile between the built and natural environments, planners have enabled rapid land consumption by permitting development to occur at the highest densities possible without risk to the local water supply. Thus, while both Santa Fe and Pitkin Counties have made considerable advances in rural land use planning, we are compelled to note that the methodology of each must be examined with a critical eye before it can be used to inform practices elsewhere.

► Conclusion

This article examined land use planning in rural areas of the Mountain West region of the United States. Building on the premise that traditional land use planning practices unwittingly promote rural residential development, we presented a process-based conceptual model that describes how exurbanization occurs. The model demonstrates how the demand for rural living is anchored in America's long-held

attachment to countryside and a range of factors that lower the cost of rural residential living. Drawing on "growth machine" theory, we argued that the suppliers of land—developers and speculators—cater to, and encourage, the demand for rural living through the commodification of place. The comparatively inexpensive and abundant reserves of rural land, coupled with the absence of stringent land use regulation, create a rich environment for developers to capitalize on. Planners respond to exurbanization by imposing land use regulation—by treating rural areas as spatial extensions of central cities—which, in turn, forces exurbanization into progressively more distant locations. The propensity for spatial extension is heightened as development erodes the initial character of amenity-rich settings, thereby creating the demand for open space in even more remote areas.

The empirical analysis applied the conceptual model to the land development process in Cochise County, Arizona, and more specifically to Sierra Vista, Arizona, the largest urban area of the county. Data for the county as a whole were reported that demonstrate the rapid pace of rural population growth, the rise in residential development, and the conversion of natural open space and farmland. The analysis of Sierra Vista linked planning policies and approaches with the process of exurbanization. We found that while planners and the community-at-large have followed conventional planning practices (in particular, comprehensive planning and land use regulation), these same vehicles have fueled the spatial extension of residential development further into the landscape. These findings support the conceptual model and show specifically how standard approaches to land use planning contribute to exurbanization.

Motivated by the case study, our attention turned to a broader discussion of rural land use planning. We argued that new approaches to rural land use planning are needed, if preservation is a desired outcome. We proposed three principles that should guide future planning efforts in rural areas. The first argues for theories and approaches to planning and regulation that are developed specifically for rural areas. The second urges that planners focus directly on the rural land market so that emphasis is placed on process rather than outcome. Finally, planning and regulation should be pursued at the state level. However, recognizing that state-level initiatives are unlikely in much of the Mountain West, we summarize approaches from two progressive counties located in Colorado and New Mexico.

Our ultimate aim in this article is to encourage discussion on exurbanization as a process and motivate new approaches to land use planning in rural areas. Future research may wish to consider the following issues. First, while the conceptual model may be applied to other areas of the Mountain West

and the country, we examined only one community empirically, and it is unclear whether other communities promote exurbanization through the same process. In the Mountain West, we expect that many communities do because they share a wealth of natural open space, growth pressures, and planning philosophies. Second, more rigorous analyses may show stronger causal relationships between land use planning practices and exurbanization. Such analyses require detailed temporal and cross-sectional data to link land use policy with changing patterns of exurbanization in numerous communities.

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