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Reinventing mountain settlements: A GIS model for identifying possible ski towns in the U.S. Rocky Mountains

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A B S T R A C T

Former mining and ranching settlements in the U.S. Rocky Mountains frequently seek to reinvent themselves as the industries that created them have declined. Redevelopment as ski resorts is a common strategy that can successfully revive the economies of mountain settlements but this approach, if undertaken without careful advanced planning, can also have negative consequences, damaging fragile alpine environments, overwhelming social and housing services and distorting local economies. This study develops a GIS-based model that follows a systematic sequential elimination procedure to identify those Rocky Mountain settlements most likely to be attractive to ski resort development, based on the location criteria of existing ski areas. Results show that while no single settlement is an obvious candidate for development by the ski industry, a number of places are contenders in a way that can be systematically measured and evaluated. Moreover, the methodology used can be applied to additional areas subject to winter sports growth worldwide.

Introduction

The location of ski resorts in mountain communities often produces major economic, environmental and cultural consequences (Chipeniuk, 2005; Gill, 2000; Kariel, 1989; Lasanta, Laguna, & Vicente-Serrano, 2007; Orens & Seidl, 2009; Purdue, 2004; Riebsame, Gosnell, & Theobald, 1996; Theobald, Gosnell, & Riebsame, 1996). Some communities may possess local entrepreneurs who actively organize their appeal to developers (Miller & Blevins, 2005). Alternatively, developers may scour the landscape in search of suitable locations for ideal ski conditions (Rothman, 1998: pp. 187–188; Smith, 2003). In either case, the resulting selection of sites for winter resort development does not appear to be subject to any systematic process (Hudson, 2000). Yet, given the transformative effects of ski resort development, there is value in anticipating where environmental and accessibility characteristics are most likely to attract investment. The purpose of this paper is to present a model to identify potential sites that could be attractive to ski resort development in the Rocky Mountains. Anticipation of such development may allow communities time to plan for the inevitable consequences resorts bring: revitalizing economies while impacting fragile mountain environments and creating social strains among the population (Blevins and Jensen, 1998; Hansen et al., 2002; Riebsame et al., 1996: p. 398; Ringholz, 1996).

Background

The United States ski industry is increasingly concentrated, having undergone considerable contraction and corporate reorganization. While nationally, the number of resorts has declined from a peak of 622 in 1987 to 481 in 2007, annual ski

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visits have remained stable during the past decade, averaging 56.7 million, with the Rocky Mountain region the most popular, accounting for 35% of the total (NSAA, 2008). Estimates suggest the 50 largest firms now earn 80% of the $2 billion annual revenue generated by the ski industry while owning 20% of ski facilities (Business Wire, 2007). Despite this concentration, operating profit margins for the industry as a whole for the 2006–2007 season were 24.8%. For the largest resorts, this figure rose to 29.2%. Overall, pre-tax profit for the industry rose two-thirds over the previous five-year period (NSAA, 2007). Although no systematic data are available at the regional and state level, several studies on the impact of the ski industry report that in 2005–2006, the industry produced $692 million in revenue and generated a further $281 million in indirect earnings in Utah (State of Utah, 2007); Colorado's ski industry generated 31,000 jobs in 2002–2003 (Walsh, 2004); and in 2005–2006 Montana received 1.35 million ski visits (Nickerson & Bruns-Dubois, 2008).

The greatest impact of the ski industry is found at the local level. The original 19th century communities in the Rocky Mountains were prompted by the discovery of gold, silver, copper and other metals, ranching in the high mountain basins to supply food and animal power, and timber extraction. A few owed their origin to the growth of mountain tourism when a later reassessment of the meaning of wilderness produced recreation centers such as Estes Park, Colorado and health spas such as Colorado Springs (Wyckoff & Dilsaver, 1995: p. 41). But the dominant reliance on natural resources subjected most Rocky Mountain settlements to the boom and bust cycles of exogenous commodity markets. After the 1880s, a long structural decline in mining set in that saw a slow shrinking of many mountain settlements in the Rocky Mountain region (Power, 1996: pp. 31–38; Lorah & Southwick, 2003: pp. 258–259; Wyckoff, 1999: p. 73). Some sites became ghost towns, devoid of inhabitants while others struggled to reinvent themselves through reinterpretation of their natural resources and distinctive architecture. (Dorward, 1990; Ringholz, 1996: pp. 113–123; Stoehr, 1975). In the forefront of this renaissance was the ski industry (Coleman, 2004; Fry, 2006; Rothman, 1998).

Skiing began as a practical means of communication for snowbound residents of towns like Steamboat Springs and developed as a pastime for wealthy visitors who sought a wilderness experience with luxurious accommodations epitomized by the first major ski resort in Sun Valley, Idaho, opened in 1936 (Rothman, 1998: pp. 186–201). Following World War II, skiing became an increasingly middle-class recreation, popular with both locals and a growing national market. The world's longest chairlift opened in 1947 in Aspen, a mining town that had foundered after the silver panic of 1893 but revived as a ski center (Rothman, 1998: pp. 206–211). In the 1950s, a new inward flow of people seeking leisure activities appeared in the mountain region. These "amenity migrants" were drawn by opportunities for hunting, outdoor sports, and visions of a clean environment and peaceful mountain existence (Chipeniuk, 2004; Jobes, 1995; Price, Moss, & Williams, 1997: p. 249). They were followed by suburban escapists seeking second homes, later converted to permanent residences (McHugh, 1990). Many of these newcomers were first exposed to the region as skiing visitors (Cuba, 1989). The demand for skiing and residential development combined in a new type of resort, increasingly controlled by regional and national corporate, rather than local, capital (Clifford, 2002). Vail in 1962 and Snowmass in 1967 were early examples of this new wave of ski resort that began to proliferate across the Rocky Mountain region.

The consequences have been significant. Throughout the Mountain West, per capita income in counties with ski areas exceeded those without by $3900 in 1997 (Booth, 2002: p. 55). In Summit County, Colorado, home to six major resorts, winter tourism in 2003–2004 contributed 39% of basic spending and 46% of county employment (NCCG, 2004). One estimate suggests that the development of Bitteroot Resort in Missoula county, Montana, would be the county's fifth largest employer by 2020, adding over 2000 jobs and nearly $110 million to the local economy (Moore, Wyman, Whelan, & Josephson, 2007). But as new resort development returned some old mountain towns "from oblivion to eminence" (Dorward, 1990: p. 325), cultural and economic cleavages emerged. Town populations experienced conflicting objectives between the desire to sustain pastoral landscapes and small-town community life while feeding the economic engine created by the recreational economy (Muller, Yin, & Alexandrescu, 2008: p. 1740). The influx of visitors and new permanent residents often clashed with the interests of old-timers who saw the loss of open space, traffic congestion, pollution and dramatic property inflation as too high a price to pay (Ringholz, 1996: pp. 64–85; Vias & Carruthers, 2005). In Vail, only one-fifth of the police and firefighters can afford to live in the town while three-quarters of the dwellings are second homes, occupied for only a few months each year (Howe, McMahon, & Propst, 1997). In Jackson Hole, low-paid hotel workers unable to pay rents in town are forced to commute across Teton Pass from more affordable accommodations in Driggs and Victor in Idaho (Beyers & Nelson, 2000: p. 470; Power, 1996). Careful planning in advance of resort development might help ameliorate these impacts but often town leaders believe they can address growth problems once they occur, or they lack the expertise and ability to resist the demands of corporate developers (Chipeniuk, 2005).

The history of Telluride, Colorado illustrates these trends (Fetter and Fetter, 1982; Ringholz, 1996: pp. 93–97). Silver deposits in a remote region of Colorado's San Juan Mountains were discovered in 1878, prompting the establishment of several mining camps but not until rail access was achieved in 1890 did the town of Telluride begin to flourish. Three years later the Silver Panic closed mines and population dwindled. Mining continued into the first half of the 20th century as deposits of copper, gold and zinc were uncovered but they were rapidly exhausted and on April 27th, 1953, the last mine closed, forcing 230 miners into unemployment. Two weeks later another company purchased the Telluride mines and re-started production. However, local citizens were apprehensive for the town's future and sought other ways to diversify its economy. National Historic Landmark status was obtained and discussion began about a winter resort. A wealthy Californian, Joe Zoline, seized the opportunity to turn this remote but beautiful setting into a ski resort. In 1968, rejecting what he considered the excesses of growth and sprawl in Aspen (Coleman, 2004: p. 184), Zoline developed a master resort plan with strict controls on land development, residential growth and the number of skiers. Building codes limited building height and