

A HISTORY OF COLORADO AVALANCHE ACCIDENTS, 1859–2006

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ABSTRACT: The combination of snow and mountains, and man's pursuit of economic development have sometimes resulted in deadly consequences for those who live, work, and recreate in Colorado's mountains. From the beginning of the Colorado gold rush in 1859 to the winter of 2006 avalanches killed 693 people. This paper compares and contrasts Colorado's avalanche accidents as they relate to the state's population, societal, and economic changes during Colorado's three major economic eras: mining, inter-war, and modern.

KEYWORDS: Colorado, avalanche accidents, avalanche fatalities, mining, tourism

1. INTRODUCTION

Colorado, located in the southern Rocky Mountains (Figure 1) is a state known for high mountains, heavy snows, and avalanches. The combination of the three along with man's pursuit of economic development and/or sport have resulted in 409 documented fatal avalanche accidents claiming 693 lives since 1859 (Figures 2 and 3). The trends of avalanche accidents and avalanche deaths closely mirror Colorado's economic activity.

This paper addresses Colorado's trend in avalanche fatalities as accidents related to Colorado's key economic, population, and societal changes. Certainly, focusing on "key" changes is an oversimplification. While mining and other resource-based industries powered Colorado's economy until well into the 20th century, tourism has also been an important industry since the late 1880s. A significant agricultural economy developed nearly along side mining. In time it would become as important or more important to the state's economy. As bawdy as the mining camps were in their beginnings, law and culture soon followed. Details are beyond the scope of this document. This paper's aim is to provide only a simple summary of the events and times that shaped Colorado contemporary history and avalanche accidents.

To assist in the study an inventory of Colorado avalanche accidents was compiled using the files of the Colorado Avalanche Information



Figure 1. Colorado. The mountains traverse the west-central portion of the state.

Center, and from previous works by Armstrong (1976, 1977), Jenkins (2001), and Martinelli and Leaf (1999) along with a considerable effort over many years spent reviewing historical newspapers and books concerning Colorado's history.

A review of Colorado's historical records of avalanches and economic trends offers interesting contrasts and comparisons. In Colorado's contemporary history of the last nearly 150 years the state has experienced numerous cycles of boom-and-bust. Since the mid-nineteenth century three different three different eras become obvious: Mining (1859-1920), Inter-War (1920-1950), and Modern (1950 to present). Colorado's population, societal, and economic conditions changed dramatically during these eras and so too have the number, type, and impact (pardon the pun) of avalanche accidents and deaths.

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2. COLORADO HISTORY

The region's prehistory goes back at least at 7000 years (Ubbelohde, et al., 2006) when hunters roamed the land. Diggings in the Vail Pass area show the pass was occupied from about 4800 B.C. to around 1760 A.D. (Pritchard, 1992). The Ute Indians, the oldest continuous residents of Colorado, moved into the southern mountain areas in about 1500 A.D.

The first Europeans to visit the region were Spanish Conquistadors and monks who searched for gold or new routes to California in the 1500s to the 1700s. French explorers visited the region in the 1700s. The first U.S. explorer, Zebulon Pike set out in 1806 to explore the region. A few years later came trappers who roamed the mountains until the 1830s. Several forts and trading posts were manned until about 1840, but these soon were abandoned when beaver and buffalo fell out of fashion (Ubbelohde, et al., 2006). In 1850 the U.S. gained control of the lands and a year later the first permanent non-Indian settlement, San Luis, was established. By the mid 1850s it has been estimated that fewer than 100 English-speaking people lived in the region of what is now called Colorado, and most were soldiers (Rogers, 1968). Though no accurate count of the Indians in the region was done until much later it can be estimated, as many ten thousand or more Indians were in the region in the early 1850s. There are no known records of avalanche accidents in Colorado's pre- and early history. Avalanche deaths may have occurred but any records have been lost.

In the first half of the nineteenth century the economy of what was to become Colorado was basically a subsistence economy (Kendall, 2002). People—whether Indian or Anglos—relied upon hunting, fishing, and foraging. In 1858 everything changed with the discovery of gold.

Colorado's contemporary economic history started with the first gold rush in the late 1850s. A small deposit of gold was discovered in 1858 along Cherry Creek, just south of the present day Denver. The strike was over exaggerated but brought thousands of would-be prospectors across the plains. Many were disappointed and soon returned east, but a second strike the next spring, 40 miles (64 km) to the west was genuine and the gold rush was on. "Pikes Peak or Bust" was the slogan for the tens of thousands of argonauts who sought wealth in the goldfields.

According to Ubbelohde, et al., (2006) as many as 100,000 people left for the goldfields in 1859, but probably only half reached the mountains, and of those, perhaps only half stayed.

Colorado was not apart of the federal U.S. Census until 1870; however, a number of un-referenced census citations report about 30,000 people in the region in 1860. In 1859 prospectors spread out far and wide across the Colorado Mountains, and by that winter word of avalanche dangers were spreading. In 1859 Horace Tabor lost a claim to rumors of avalanches told to him by a fellow prospector. His wife Augusta, fearful of avalanches, made Horace move back to the safety of Golden City for the winter. After leaving, the prospector jumped Tabor's claim (Dallas, 1985; Jenkins, 2001).

2.1 The Mining Era: 1859–1920

The gold rush of 1859 drove Colorado's earliest market economy of mining and assorted businesses to support the miners and mines (Kendall, 2002). During the 1860s most sought quick riches. The gold was generally easy to get from surface deposits found at the base of the mountains or in the foothill canyons. Winter was feared and most prospectors avoided the mountains during winter, so avalanche accidents or at least the reports were rare. The Colorado territory's first confirmed avalanche death occurred on March 6, 1861 high in the North Fork valley of the South Platte. The area, now known as Hall Valley, is about 20 miles southwest of Georgetown. The next year another avalanche death was reported from the central part of the territory when a group of six prospectors were caught on Cochetopa Pass. One man was buried and killed. Twelve years would pass before the next avalanche fatality.

By 1864 the gold boom went bust. Most of the easy-to-get—placer—gold was gone. The Civil War and Indian Wars took men away from prospecting and made business with the rest of the U.S. difficult.

Transportation to Colorado and to the goldfields was by foot. Better-off argonauts arrived on horseback or by mule and oxen were the beasts of burden. In the mountains most routes followed trails, some used by Indians (for

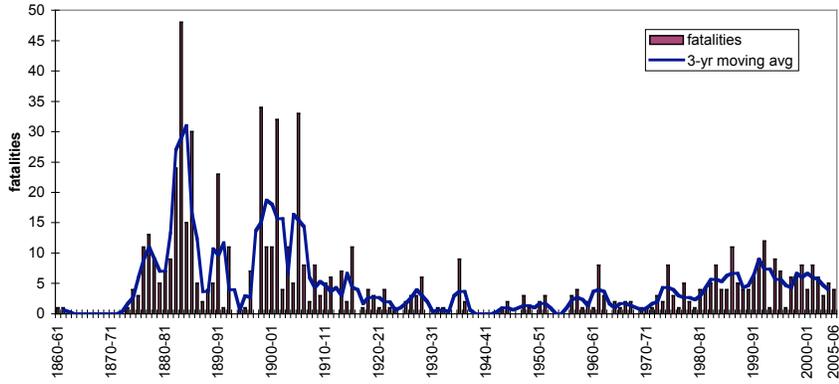


Figure 2. Colorado avalanche fatalities by hydrologic year (Oct. 1 to Sept. 30) from 1860 to 2006.

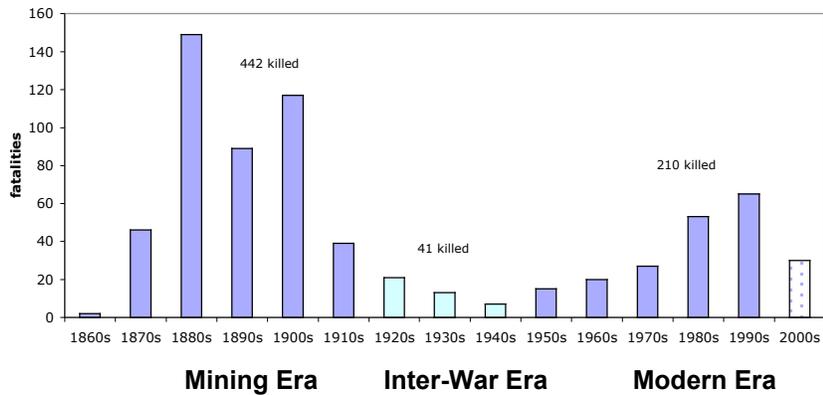


Figure 3. Colorado avalanche fatalities by decade and economic era. It is interesting to note that already more than half way through the decade of the 2000s, avalanche fatalities are less than half of the previous decade.

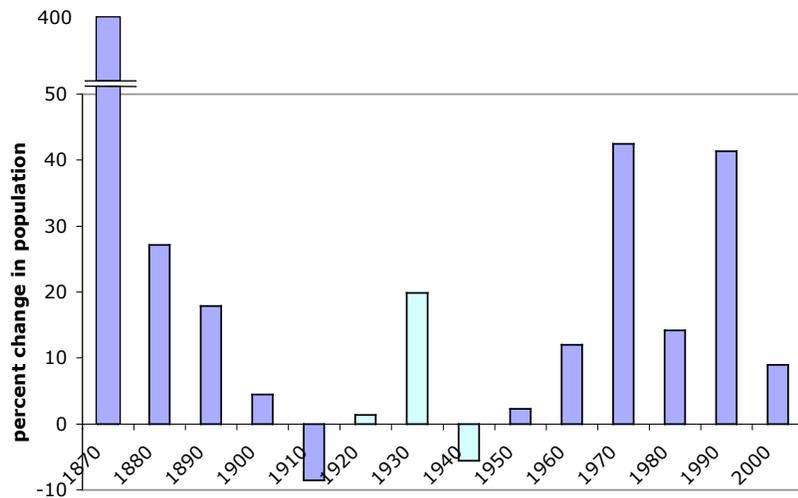


Figure 4. Percentage change in population for Colorado's mountain counties by decade.

centuries) or new trails blazed by former trappers, now turned guides. Actual roads were few, so even travel by stagecoach was limited.

Colorado became a state in 1876, and mining rebounded in the mid to late 1870s with the discoveries of major silver deposits in Leadville, Georgetown, Aspen, and Telluride. Colorado's population rose dramatically during the 1870s and 1880s. The population exploded, especially in the mountains (Figure 4), as it grew from 39,864 in 1870 to 194,327 (U.S. Census Bureau, 2005). During the peak of the silver boom in the 1880s Colorado reached a level prosperity not to be seen again until the middle of the twentieth century (Kendall, 2002).

Tens of thousands of people moved into the mountains. Campsites quickly became villages; villages became towns, and some towns became true cities, like Georgetown, Central City, and Leadville.

In 1877 Leadville did not exist except for a small village of about 200 cabins. Three years later the city of Leadville had nearly 15,000 residents enjoyed the refinements of the best U.S. cities. More than 30 mines and 10 smelters with an annual production of \$15,000,000 supported the city (USGS, 1922).

Transportation to Colorado and in the mountains improved dramatically in the 1870s and 1880s. When the first train chugged into Denver in 1870 only 157 miles of railroad operated in the Colorado Territory. It would be another 10 years before tracks penetrated the mountains. Until then pack trails were the principle routes across the mountains. The first wagon and stage roads over the Continental Divide (Berthoud Pass in 1875) were not completed until the mid 1870s (Helmuth and Helmuth, 1994; Ubbelohde, et al., 2006). As roads opened, so too did the way for exploration, immigration, and development. By the late 1870s to early 1880s mining was taking place in all mountain areas.

In 1880 two trunk lines traversed eastern Colorado, and the first train arrived in Leadville. In the coming years tracks were laid to many mountain centers. By 1890 two additional trunk lines had been added and 4,176 miles of track crisscrossed the state. The railroads reached their greatest extension with just over 5,000 miles of track by 1914. In that same year 38,588 miles of unimproved roads crossed Colorado, while only

1,192 miles of improved roads (Ubbelohde, et al., 2006) were fit for an automobile.

While silver was the siren song, it was not just high-grade (high content) ore or high prices that spurred the boom. In fact the price fell steadily from the early 1870s from \$1.40 per ounce, to about \$1.00 in 1890 (Officer, 2006).

The synthesis for the boom was the right timing of the right combinations of infrastructure, legislation, and attitudes. The railroad to Denver along with new mountain roads allowed easier, more efficient, and more cost effective means to transport people, freight, and ore. The U.S. government's passage of the Bland-Allison Act (1878) created demand for silver by requiring the treasury to buy between \$2 to 4 million dollars worth of silver per month and to mint silver coins. Lastly, many people were desperate for work. By the mid 1870s unemployment was soaring, not just in the U.S., but also around the world from the global "Long Depression" begun in 1873. A new generation of arognauts was ready to seek its fortunes in the Colorado Mountains.

Growth in the San Juans occurred more slowly, but by the end of the 1870s mining camps like Silverton, Ouray, and Lake City had become the supply centers for the neighboring districts. Roads were being built and trains would arrive in the 1880s. The railroads were key to the development of the mining industry as trains provided a cost effective way to transport people, freight, and ore.

Winter was a time of fear and respect for the mountain dwellers. The Ouray Times wrote on October 1, 1881, "Those miserable days when a man will have to go to bed to save wood, and hungrily submit to two meals a day, will soon be here. But we will have to coolly submit to it; winter is bound to come" (Armstrong, 1977). With winter came avalanches. The Reverend Gibbons best described the sentiment in 1882 when he wrote, "Hence, the farmer watches the winter's storm with joy, while the miner, fearing the snowslide and the precipice, dreads its approach (Gibbons, 1972). With the silver boom in the mid 1870s also came a large increase in avalanche accidents and deaths.

Mining counties and miners bore the brunt of the accidents and majority of the deaths (Tables 1 and 3). Lode mining was capital and labor intensive. Paying for the investment and operations required mines to operate year round and

	1859-1920 fatalities (%)	1920-1950 fatalities (%)	1950-2006 fatalities (%)
N Mtns — totals	65 (15)	15 (37)	93 (44)
Boulder	4 (0.9)		5 (2.4)
Clear Creek	27 (6.1)	7 (17.1)	22 (10.5)
Eagle	3 (0.7)		9 (4.3)
Gilpin	3 (0.7)		0 (0)
Grand	7 (1.6)	6 (14.6)	7 (3.3)
Jackson			2 (1.0)
Larimer			8 (3.8)
Rio Blanco			1 (0.5)
Routt		1 (2.4)	3 (1.4)
Summit	21 (4.8)	1 (2.4)	36 (17.1)
C Mtns — totals	142 (32)	2 (5)	80 (38)
Chaffee	14 (3.2)		13 (6.2)
El Paso			1 (0.5)
Garfield	3 (0.7)		1 (0.5)
Gunnison	65 (14.7)		17 (8.1)
Lake	22 (5.0)	2 (4.9)	11 (5.2)
Mesa			3 (1.4)
Park	14 (3.2)		0 (0)
Pitkin	24 (5.4)		34 (16.2)
S Mtns — totals	235 (53)	24 (59)	37 (18)
Conejos			1 (0.5)
Dolores			1 (0.5)
Hinsdale	7 (1.6)	5 (12.2)	1 (0.5)
La Plata	2 (0.5)	6 (14.6)	2 (1.0)
Mineral	1 (0.2)	1 (2.4)	4 (1.9)
Montezuma			1 (0.5)
Ouray	55 (12.4)	4 (9.8)	12 (5.7)
Rio Grande		1 (2.4)	0 (0)
San Juan	102 (23.1)	3 (7.3)	5 (2.4)
San Miguel	68 (15.4)	4 (9.8)	10 (4.8)
totals	442 (100)	41 (100)	210 (100)

Table 1. Avalanche fatalities by Colorado County.

	1859-1929 fatalities (%)	1920-1950 fatalities (%)	1950-2006 fatalities (%)
Oct	1 (0.2)		6 (2.9)
Nov	5 (1.1)		15 (7.1)
Dec	43 (9.7)		23 (11.0)
Jan	104 (23.5)	4 (9.8)	45 (21.4)
Feb	165 (37.3)	22 (53.7)	43 (20.5)
Mar	109 (24.7)	11 (26.8)	46 (21.9)
Apr	15 (3.4)	4 (9.8)	23 (11.0)
May			2 (1.0)
Jun			4 (1.9)
Jul			2 (1.0)
Aug			1 (0.5)
Sep			0 (0)
totals	442 (100)	41 (100)	210 (100)

Table 2. Avalanche fatalities by month.

	1859-1920 fatalities (%)	1920-1950 fatalities (%)	1950-2006 fatalities (%)
recreation	3 (0.7)	7 (17.0)	170 (81.0)
climbers		1 (2.4)	27 (12.9)
backcountry skiers	2 (0.5)	3 (7.3)	64 (30.5)
In-area skiers/riders		3 (7.3)	6 (2.9)
out-of-bounds skiers			31 (14.8)
backcountry boarders			6 (2.9)
out-of-bounds boarders			4 (1.9)
snowcat skiers			2 (1.0)
snowmobilers			20 (9.5)
snowshoers	1 (0.2)		5 (2.4)
hiker			3 (1.4)
snowplayer			1 (0.5)
hunter			1 (0.5)
not known	31 (7.0)		0 (0.0)
non-recreation	407 (92.3)	34 (83.0)	40 (19.0)
hunter	4 (0.9)		0 (0.0)
patrollers			8 (3.8)
motorists		1 (2.4)	7 (3.3)
highway workers		1 (2.4)	5 (2.4)
lumberjacks	4 (0.9)		0 (0.0)
guides			1 (0.5)
residents	38 (8.6%)	3 (7.3)	10 (4.8)
railroader	22 (5.0)	5 (12.2)	0 (0.0)
miners	302 (68.3)	20 (48.8)	3 (1.4)
haulers	22 (5.0)	2 (4.9)	0 (0.0)
rescuers	8 (1.8)		3 (1.4)
mail carriers	3 (0.7)		0 (0.0)
others @ work	5 (1.1)	2 (4.9)	3 (1.4)
totals	442 (100)	41 (100)	210 (100)

Table 3. Colorado avalanche fatalities by activity.

	1859-1929 fatalities (%)	1920-1950 fatalities (%)	1950-2006 fatalities (%)
traveling	94 (27)	17 (44)	184 (88)
fixed	252 (73)	22 (56)	26 (12)
totals	346 (100)	39 (100)	0 (0)

Table 4. Known circumstances of Colorado avalanche fatalities.

often have workers live on site. Avalanche deaths increased dramatically in the 1880s through early 1900s (Figures 2 and 3) when thousands of miners lived and worked in the high mountains. The worst accidents and most deaths (Table 2) occurred in February.

Mine owners and managers were aware of the threat of avalanches and tried—or so they thought—to position buildings in “safe” areas. Tragically the records (Armstrong, 1976, 1977; Martinelli and Leaf, 1999; Jenkins, 2001) showed Sometimes they chose a wrong site. Most deaths occurred at fixed sites (Table 4.) Of Colorado’s 16 worst avalanche accidents (Table 5) 11 involved fixed structures.

In 1890 the Sherman Silver Purchase Act stimulated silver production, but in the long run the plan backfired with devastating results for Colorado and the nation. As a point of reference, Colorado had 895 producing mines in late 1892. When the act was repealed in June of 1893 the silver boom busted and one half of Denver’s 18 banks closed (Noel, 1987). By September half of all mines had closed and over 45,000 workers were without jobs (Ubbelohde, et al., 2006). When the mines closed and workers moved away avalanche deaths dropped.

After years of recession the nation’s economy started to rebound with the start of the new century. Though fewer mines were in production, output increased and mining was again King, at least until the end of World War I.

Avalanche accidents and deaths can be attributed to the development of mining and its supporting industries. Miners accounted for more than two-thirds of the avalanche deaths during the era. Residents were the next significant group affected, accounting for 9% of fatalities. Of Colorado’s six worst avalanche winters (Figure 2), five winters experienced a single accident where 10 or more people died (Table 5).

Less than one percent of the known avalanche deaths in the Mining Era occurred to people at play. Two involved skiers in 1905 outside of Silverton, in the same avalanche, and the third was an unlucky snowshoer (on ‘webs”).

2.2 The Inter-War Era: 1920–1949

The end of World War I marked the end of Colorado’s dominating mining economy. While much of the U.S. boomed in the early 1920s, Colorado remained mired in an economic funk. The Great Depression and a prolonged drought in the 1930s only smothered the economy. Mining and agriculture languished. There were no strong industries like manufacturing to drive the economy—at least during the 1920s and 1930s.

Colorado’s population grew slightly in the 1920s and 1930s, but for the mountain counties the growth was small over the entire Inter-War era. As a whole, mountain counties grew only 15% during the 30 years; however, a number of counties (Chaffee, Gilpin, Hinsdale, La Plata, Mineral, Pitkin, San Miguel, San Juan, and Summit) lost residents. By 1930 immigration laws reduced new arrivals to the U.S. and the percentage of foreign-born residents dropped to 8.2% (Ubbelohde, Benson, and Smith, 2006). The only ethnic group to increase was Mexicans who came to work the sugar beet fields of eastern Colorado.

Mining rebounded in 1934 when Congress raised the price of gold from \$20.67 an ounce to \$35 and also passed another Silver Purchase Act requiring the government to buy silver. The price of silver shot upwards 75%—at least for a few years. Gold and silver mines that had long been dormant returned to operation.

The future in transportation made its way known in the 1920s: the automobile and the airplane. By the mid 1920s commercial air service began to ferry people, freight, and mail across the state. By 1920 rail lines were already being closed before the federal government authorized dollar-matching funds for highway construction. The improved roads and better cars spurred the tourism industry to new levels. But cars were no match for winter, and no mountain roads were kept open until the mid 1930s.

Summer tourism increased greatly in the 1920s, so it was natural that some Coloradoans saw that winter sports could be in their future. In 1920 the president of the National Ski Association’s declared, “The Rockies will become the center of skiing in the United States” (Allen, 1993). By 1927 the Denver Post wrote the city had “enlisted the cooperation of every service and athletic club and every civic organization in the state in its extensive plans for making Colorado the winter sports headquarters of the world”

(Coleman, 2004). It seemed there was money to be made, but the Great Depression and especially the lack of plowed mountain roads kept most people at home for another 10 years.

In the 1930s a major effort was undertaken to improve Colorado's mountain roads and to keep key passes open in the winter. Berthoud Pass was the first to stay open starting in the winter of 1932-33 (Helmuth and Helmuth, 1994). Though miners, mail carriers, and preachers had been using skis since the 1860s, it was not until the mid 1930s when cars and open roads made the mountains easily accessible that skiing really started to grow as a recreational activity. Small ski runs with tows opened up across the mountains: Aspen, Climax, Grand Mesa, Berthoud Pass, Loveland Basin, Monarch Pass, Pioneer, White Pine, and Winter Park. Skiing and winter tourism seemed ready to explode, but World War II, along with its travel restrictions meant a new industry would have to wait another 10 years.

World War II changed Colorado dramatically. The state's population in 1940 was 1.1 million after the slowest decade of growth (8%) in its history. By 1950 the population had jumped 14%, and the number of non-farm jobs increased by 50% (Kendall, 2002). Colorado's economy was transitioning from a natural-resource-based economy to one of industry (manufacturing) and technology. In support of the war effort the federal government pumped \$360 million into the state's economy (Ubbelohde, et al., 2006).

After a brief resurgence in the late 1930s gold and silver mining slumped again during the war when the federal government in essence closed mining of non-essential minerals with the Gold Limitation Order L-280 (Ubbelohde, et al., 2006). Molybdenum became the state's most valuable mineral.

Avalanche accidents during the Inter-War era mirrored the economy and actions of Coloradoans. When the mines closed after World War I, people left the mountains and avalanche accidents dropped and deaths averaged only 1 or 2 per winter. When mines went back into service in the mid to late 1930s, avalanche accidents and deaths again spiked upwards. During the era the population became more mobile. Plowed roads made it possible for more people to travel the mountains in winter. An avalanche in the Seven Sisters claimed the life of a highway plow driver on

Loveland Pass in 1944. A year later the Stanley path on Berthoud Pass killed a motorist. The Inter-War Era also marked a shift in the type of accidents as seven recreationalists (17%) were killed (Table 3); including two skiers at Berthoud Pass in 1937 on the day the first rope tow was opened to the public.

The 1940s also saw the start of Camp Hale and the 10th Mountain Division. This Army division introduced thousands of soldiers who were skiers (or became skiers) to Colorado. Many would return after the war to pioneer Colorado's ski industry.

2.3 The Modern Era: 1950–2006

Colorado's economy roared along after World War II thanks to continued federal government spending. Huge federal contracts and the locating of numerous federal agencies fueled growth in technologies and construction. Denver earned the nickname as the "second national capital" because of the number of federal agencies and workers located there (Ubbelohde, et al., 2006). The boom years for federal dollars were the 1950s to mid 1960s, but even by the early 1980s the federal presence was still strong; an estimated eight percent of the Defense Department's research and development budget was being spent in the Denver and Boulder area (Ubbelohde, et al., 2006). Generally, the Modern Era has been one of mostly boom, though with a few tumbles.

As Colorado's (and the nation's) economy and population grew so did its interest in recreation and leisure. Gilbert (1995) reported that "by 1950 daily, weekend, and vacation leisure hours constituted over 34% of Americans' waking lives, and in 1959 each American took over one week of paid vacation." Like the silver boom of nearly 80 years before, Colorado's ski boom was the result of a synthesis of events and conditions that came together at the right time.

After the WW II people had time for recreation. High quality surplus ski equipment was readily available. Well-maintained highways provided access to mountain towns, Capitalists had money to invest, and a large group of ski enthusiasts 10th Mountain Division veterans had the vision and energy to build or improve ski areas. The National Ski Association's declaration made in 1920 finally came true for Colorado.

Though skiing had been practiced in Colorado, for near 100 years, 1950 marks its beginning as an industry. In February of 1950 Aspen hosted the FIS (Fédération Internationale de Ski) Championships—the most important and biggest ski race in the world. Aspen and Colorado were in the international spotlight heralding the beginning of skiing and winter tourism as important industries for Colorado and the U.S.

Ski-area and resort-area development boomed in the 1960s and early 1970s. By the early 1970s skiing became a part of the tourism industry when skiers became tourists and tourists became skiers (Gilbert, 1995). Skiing had become a big business. Many mountain communities became dependent upon tourism and outdoor recreation. This theme as only been reinforced during the 1980s, 1990s, and 2000s, though now skiing is no longer the only game in town. Today some smaller mountain towns like Grand Lake and Lake City rely on snowmobiling, while Ouray has discovered ice climbers.

The tourism industry flourished during the first half of the Modern Era and continues today. Transportation in the mountains became more reliable and easier as winter maintenance of mountain highways improved. The opening of the Eisenhower–Johnson tunnels in the 1970s provided a reliable portal to the west side of the Continental Divide. By 1995 Colorado had more than 84,000 miles of improved roads and highways (Bureau of Transportation Statistics, 2002). (Most of these roads were built in the 1920s and 1930s during massive Civilian Conservation Corps projects.) Never before had it been as easy and safe to travel across the mountains in winter.

As Colorado became more connected to national and world markets the industry and agriculture sectors started to slip. By the 1970s Colorado was moving away from an industry-based economy (manufacturing and technology) to a service-based economy a sector known for generally lower wages and fewer employee benefits. Tourism and the ski industry boomed during the 1960s and 1970s. Mining—at least hard rock mining for precious metals—slumped to its lowest levels ever, but in the late 1970s international conditions conspired to sky rocket the prices of silver and gold to \$40 and \$800 an ounce. The soaring prices initiated a flurry of activity reminiscent of the mid to late 1930s. By the late 1990s the price of gold had dropped under

\$300 and most operations ceased. Today only one gold mine, in Cripple Creek, remains in production.

In 1982 a national recession hit the Colorado economy especially hard, similar in fact to the Great Depression days of the early 1930s (Ubbelohde, et al., 2006). Kendall (2002) believed the downturn to be as bad as the silver bust of the 1890s. One of the most telling impacts can be seen in Figure 4 where the population growth in the mountain counties decreased dramatically from the boom decades of the 1970s and 1990s.

By the 1990s Colorado was on the rebound thanks to a strong national economy, so much so that *Time* magazine's cover story of the September 6, 1993 issue was, "Boom Time in the Rockies." The article sub-heading summed up the situation in Colorado (and other mountain states) as: "Rocky Mountain home of cowboys and lumberjacks has become a magnet for lone-eagle telecommuters and Range-Rover-driving yuppies."

In the 1990s and in the new millennium Colorado's economy gained a strong and important partner from the telecommunications and again technology industries (Kendall, 2002). Colorado's economy and population grew considerably faster in the 1990s than the rest of the nation. The national technology bubble burst in 2001 and was followed by the in-famous 9-11 terrorist attacks. The nation and Colorado's economies stumbled. Technology and tourism seem to have helped Colorado back to its feet.

By 2000 Colorado's population reached 4.3 million and in 2006 it has been estimated to be 4.8 million (CDLG, 2006). The 1990s and 2000s also have brought new immigration issues. The 2000 census revealed the portion of foreign-born doubled in 10 years and now accounts for nearly 9% of the state's population. The majority came from Latin America, and most from Mexico. In 2004 the U.S. Census Bureau reports Colorado's Latino population now makes up 19.1% of the state's population (Ubbelohde, et al., 2006).

The nature of avalanche accidents changed dramatically in the Modern Era, albeit not until the 1970s. In the 1950s the majority of avalanche accidents involved travelers along roads. Of the 15 people killed, 10 were along a mountain road. Avalanches claimed the lives of two truckers on Wolf Creek Pass and two motorists on Monarch Pass. A highway department worker and a Walt Disney cinematographer

were buried and killed on Berthoud Pass. A miner plowing snow near the Campbird Mine was buried and killed. Sadly, soon after three rescuers coming to his aid were also buried and killed by a second avalanche. Another miner was killed near Silverton when the mine building was hit and caught fire. Two climbers and two skiers were the only other deaths during the decade.

recreationalists. The most common activities were backcountry and out-of-bounds (off-piste) skiing.

The trend of recreational deaths strengthened in the 1990s with 61 of the 65 victims killed while engaged in some sort of recreation. Again, backcountry skiing, out-of-bounds skiing, and climbing topped the list. Also killed were a highway department worker (again, under the East

yyyy	mddd	place	county	activity	setting	killed
1884	310	Woodstock	Gunnison	residents	town	13
1906	317	Howardsville, Shanandoah Mine	San Juan	miners	bunkhouse	12
1902	228	Telluride, Liberty Bell Mine*	San Miguel	miners	boarding house	12
1899	212	Silver Plume	Clear Creek	miners	cabins	10
1885	222	Leadville, Homestake Mine	Lake	miners	bunkhouse	10
1877	107	Hall Valley (near Grant), Whale Mine	Park	miners	bunkhouse	8
1883	1223	Telluride, Mendota Mine	San Miguel	miners	shaft house	8
1962	121	Twin Lakes	lake	residents	homes	7
1907	205	Monarch (east of Monarch Pass)	Chaffee	residents	homes	6
1883	131	Crested Butte	Gunnison	miners	boarding house	6
1904	223	Pittsburg (near Crested Butte)	Gunnison	miners	trail	6
1936	216	Mancos, Hesperus Mine	La Plata	miners	building	6
1906	321	Vicksburg	Chaffee	miners	cabin	5
1884	310	Conundrum Gulch (near Aspen)	Pitkin	miners	boarding house	5
1906	127	Eureka (near Silverton), Sunnyside Mine	San Juan	miners	mine	5
1902	228	Telluride, Liberty Bell Mine Curve Station*	San Miguel	rescuers	trail	5

Table 5. Colorado's worst 16 accidents that killed 5 or more victims. *The Liberty Bell accident in 1902 was the worst avalanche disaster in Colorado's history. The first avalanche killed 12 miners. Three additional avalanches killed another 12 miners/rescuers.

The 1960s saw 20 deaths. Fourteen were not recreationalists. Seven victims from two families died in Twin Lakes (Table 5), and a father and two daughters died on highway 550 under the notorious East Riverside Slide. At the end of the decade the East Riverside struck again killing a highway department worker. Two construction workers were killed at different water diversion projects in 1965, and the last non-recreational victim was a ski patroller. The rest of the victims that decade were skiers and climbers, and the first U.S. snowmobile death occurred near Leadville in 1968.

Recreational avalanche deaths soared in the 1970s. During the decade avalanche accidents and deaths changed from those-at-work to those-at-play. Of the 27 killed only four were non-recreationalists. The four were a guide, a ski patroller, a highway department worker buried under the East Riverside Slide, and a construction worker.

In the 1980s avalanche deaths doubled and 53 people died. All but seven—five ski patrollers, one miner, and one resident—were

Riverside), two residents, and one ski patroller.

While only just over half way through the 2000s, all 30 avalanche—to date—victims have been recreationalists. It is interesting to note that during the decade avalanche deaths have thus far decreased significantly from the previous decade. If the trend continues it will be the first decade since the 1940s that avalanche deaths have decreased.

3. CONCLUSIONS

With a contemporary history spanning just shy of 150 years, Colorado has been the quintessential example of boom-and-bust. From beaver furs to gold, silver, cattle, and oil, Colorado's fortunes rose and fell with the price of whatever commodity dominated the state's economy. During most of this time economic development has generally been dominated by the availability of and demand for natural resources, and the capability to transport raw materials and finished goods.

Whether considered a barrier or an opportunity the combination and affect of the mountains and climate—especially—in winter is enormous. One of the most serious consequences of wintertime in the mountains are avalanches. Not only have avalanches killed; avalanches have had and continue to have a significant impacted on single businesses and entire industries by damaging or destroying infrastructure and stopping transportation and the exchange of goods and services.

Mining powered a dominant resource-based economy during the last half of the nineteenth and into the first third of the twentieth centuries (Kendall 2002). During this time Colorado incurred its worst experiences with avalanches. In the 61 years between 1859 and 1920 avalanches killed at least 443 people, or an average of seven deaths per year. The miners faced greater avalanche risks. Living and working in fixed locations in hazardous areas for long periods of time greatly increased the risk.

The Inter-War Era began the transition of Colorado's natural-resource-based economy to an industrial-based based on manufacturing. Workers and families moved out of the mountains and avalanche deaths dropped to just over one death per year, on average. Society became more mobile and started its long attraction to winter sports. Recreational avalanche accidents started to occur during this period though would take a new generation of sportspeople for winter sports to boom.

The Modern Era has seen Colorado's economy transition from an industrial-based economy to one driven by service and technology industries. Tourism and winter sports are also significant industries, especially at the local and regional levels. During this time people come to the mountains to seek out deep snow and steep slopes. As a result, avalanche deaths during the era have risen to four deaths per year.

While times have changed the avalanche situation of today shares a common thread with the Mining Era: transportation. An extensive and reliable transportation system was critical to the success of mining. The system of wagon roads and then railroads enabled large numbers of people and commerce to enter and move above the mountains. Today an extensive network of roads and highways crisscross the mountains. Again enabling large numbers of people and

commerce move about the mountains. The difference today is that a network of avalanche professionals works hard to keep Colorado's visitors, workers, and travelers safe.

5. ACKNOWLEDGEMENTS

Expressed thanks to Betsy Armstrong, Knox Williams, and Art Judson who knowingly or unknowingly spurred my interests in Colorado's historical avalanches.

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