Ashley National Forest Assessment

Economic Environment Report

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for:
Ashley National Forest

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Introduction

The Ashley National Forest falls predominantly within four counties on the border of Utah and Wyoming: Daggett, Duchesne, Uintah in Utah, and Sweetwater in Wyoming. Utah and Wasatch counties in Utah also contain small portions of the Ashley National Forest, and Summit County shares a boundary with the Ashley's northern border.

This report has two main sections, Economic Conditions in the Area of Influence and Ashley National Forest Contributions to the Local Economy. The Economic Conditions section contains data on the counties listed above. Additionally, Uinta County in Wyoming is also included in this section because of its close proximity to the Ashley National Forest. The Economic Conditions section includes information on demographics, economic wellbeing, and economic specialization for the counties in and around the Ashley National Forest. The section pertaining to the Ashley National Forest's contributions to the local economy is estimated using Daggett, Duchesne, Uintah, and Sweetwater counties. These four counties contain almost the entire forest and planning area, and draw a portion of their social and economic character from the Ashley. These four counties are used to estimate the economic impact of natural resource management of the Ashley National Forest on local communities. More detailed information for including/excluding counties in the economic analysis is described later in the report.

Estimates of the Ashley National Forest's economic area were developed with an input-output modeling tool called IMPLAN. Input-output models describe commodity flows from producers to intermediate and final consumers. IMPLAN is used to quantify the relationship between Ashley National Forest expenditures and local employment and labor income. The IMPLAN program uses a rich set of federal data delineated by U.S. county, and zip code boundaries. The most recent data available is from 2014. A more detailed description of IMPLAN will be provided later in the report.

The historical section of this report draws heavily on data from the 2009 Ashley National Forest Economic Environment report. Additionally, other sections use descriptions, data, and information previously analyzed in the same report that are used as a baseline for further examination (Eichman, 2009).

History

Much of the area draws its historical and cultural traditions from the greater Uintah Basin area. People identified with the Fremont Culture occupied the Uinta Basin about 3,000 years ago. Their agrarian lives contrasted to the hunters and gathers that preceded them. The people of the Fremont Culture lived in kivas (semi-buried shelters) and were sustained primarily by corn agriculture, hunting, and fishing. From about 1300 to the present, the basin has been occupied by a band of the Utes called the Uinta people. Throughout prehistory and history, the Uintah Basin has provided food, clothing, and shelter, and has sustained the cultural traditions and the daily life of its inhabitants.

In 1776, the Dominguez and Escalante expedition entered the Uintah Basin, opening the area to Spanish, and later Mexican, American, and British fur-trappers. The rush for fur bearing animals that followed became the basin's first economic boon. In the 1830s, two trading posts were established: Fort Robidoux, (1830s-44) and Fort Kit Carson (1833-34). In the 1840s, Captain John C. Fremont visited the area on an US Government expedition. Later, John Wesley Powell explored the area, floating down the Green River from Green River, Wyoming in 1869, and again in 1871. In the early 1870s, Mormon ranchers and other whites, who used the land predominantly for cattle ranching, began filtering into the Ashley Valley. In 1880. Uintah County was formed from Wasatch County.

Soon after, asphaltum minerals were discovered in the area, ushering in a second wave of area expansion. Indian reservations were opened to outside development by miners and settlers. In 1905, thousands of homesteaders rushed to Grand Junction, Colorado, as well as Vernal, Price, and Provo, Utah to register for land drawings. The area proved difficult to homestead and many gave up their farming efforts. However, by 1915, the population had grown enough for Duchesne County to be formed from Wasatch County (Fuller, 2007).

Commercial oil production began in 1948 by the Equity Oil Company, which had an initial flow of about 300 barrels a day from its Ashley Valley Number 1 well. Production and accompanying economic impact to the area have varied with price. With the increase in the price of crude oil in the 1970s, commercial oil production took off in the area. Growth in jobs and personal income occurred alongside shortages of housing and increased school enrollments. During the fall of oil prices in the early 1980s, area economic wellbeing decreased.

Starting in mid-2000, Utah, the planning area, and the US in general experienced a boom in shale oil and gas production. All four counties in the economic planning area have experienced economic expansion in the oil and gas sector. The shale oil is in an area known as the Eocene Green River Formation, which includes the Uinta Basin in northeastern Utah, the Greater Green River Basin of southwestern Wyoming, and the Piceance Basin of northwestern Colorado. It is estimated, regardless of oil grade, that 4.285 trillion barrels of shale oil are located in this region (USGS, 2013). The Piceance Basin has the largest in place deposit at 1.525 trillion barrels; however, it is outside of the planning area. The Greater Green River Basin, which is located in parts of Sweetwater County, contains 1.440 trillion barrels. The Uinta Basin, which is located in both Duchesne and Uintah counties, has 1.32 trillion barrels of shale oil (USGS, 2013). In context, at current U.S. consumption rates, this represents a 50-year supply of high grade oil. If lower grade oil in the region is included, it would supply the U.S. with 165 years of oil. This makes the region a valuable economic resource (USGS, 2013).

Shale oil is expensive to retrieve compared to other methods. When the price of oil dropped dramatically in 2014, the production of U.S. shale oil also declined. The earlier 2000s saw historically high oil prices, making shale oil production profitable. However, when the price of oil dropped significantly in 2014, shale oil production in the United States declined. The oil production decline has caused economic hardships throughout the planning area. The economies of Duchesne, Uintah, and Sweetwater counties were all highly dependent on the oil and gas industry. As such, the sharp decline in oil and gas has had wide implications. These results will be discussed throughout this report. In short, the need to diversify the economy and save revenues during periods of economic expansion have been identified as potential solutions to current economic hardships.

In the recent past, the area has become more increasingly dependent on tourism and the service sectors. The Uintah Mountains, Blue ribbon trout streams, Green River, and the Flaming Gorge National Recreation Area attract visitors and residents. Uintah County is also home to Dinosaur National Park, and numerous heritage and pioneer museums. Also, the county has been working with State, the Bureau of Land Management, and the U.S. Forest Service to expand and promote trails in and around the county (University of Utah, Utah Travel and Tourism Profile. 2015). Utah's highest mountain, King's Peak, is located within Duchesne County. Also located in that area are several pristine high altitude lakes, such as Big Sandwash Reservoir and Starvation State Park. These lakes offer fishing and boating opportunities. The wildlife, water, scenery, and camping locations provided by the Green River also provide a foundation for Sweetwater County's tourism and recreation sectors. They also maintain a robust hunting and fishing sector that are important contributors to the local economy (Taylor, et al., 2016).

Economic Conditions in the Area of Influence

Demographic Overview

Population

Table 1 provides an overview of the population change by specific towns, cities, and counties for the planning area. Populations for Utah and Wyoming are included for comparison. The four counties that contain most of the Ashley National Forest, or share boundaries with the Ashley are Daggett, Duchesne, Uintah, and Sweetwater Counties. Of these four counties, Daggett County has the smallest population with only 776 residents. Compared to the rest of the planning area, Daggett County also experienced the smallest growth (12 percent) from 1990 through 2015. Sweetwater County has the largest population of the four counties, followed by Uintah and Duchesne counties. Duchesne and Uintah counties had the highest population growth in the planning area, both near 60 percent. However, they remained below the Utah growth rate of 69 percent, and did not come close to Utah, Summit, and Wasatch Countys' rates that exceeded 100 percent. These three counties (Utah, Summit, and Wasatch) are in much closer proximity to large metropolitan areas (Salt Lake City and Provo, Utah), which provide additional economic activities that the four planning area counties lack.

The Utah Department of Workforce Services and the Wyoming Economic Analysis Division also provide county population data. The data used is provided by the Census Bureau's Population Estimates Program. These data are current through July 1, 2015, with the next scheduled release of March 2017 to account for population estimates through July 1, 2016. Data provided below is from the Census Bureau's American Community Survey data and includes all of 2015. The need for current, accurate population data has been identified by contributors as vital, particularly due to economic conditions related to the oil and gas industry. Therefore, 2015 data has been added to Table 1. Despite significant losses in high wage mining employment, and related sectors in the planning area, the population remains relatively flat compared to 2014.

The four counties in the planning area also have very low population densities, see Table 2. Daggett County had only 1.5 people per square mile in 2010. Uintah County was the densest, with 7.3 people per square mile; in comparison the state of Utah has 33.6 people per square mile. Wyoming has a very low population density of 5.8, which is similar to Sweetwater County's population density of 4.2. None of the four counties contain a major metropolitan area. The two largest cities in the four county planning area are Rock Springs and Green River in Wyoming. Their populations are 23,684 and 12,600 respectively. The largest cities/towns in the other 3 counties do not exceed a population of 10,000, see Table 1.

Table 1: Population change in states, counties, and towns in the planning area

Location	1990	2000	2010	2014	2015	% Change 1990-2014
Utah	**1,722,850**	**2,233,169**	**2,763,885**	**2,858,111**	**2,903,379**	**69%**
Daggett County	690	921	1,059	714	776	12%
Manila	207	308	310	193	128	-38%
Duchesne County	12,645	14,371	18,607	19,378	19,817	57%
Roosevelt	3,915	4,299	6,046	6,390	6,555	67%
Duchesne	1,308	1,408	1,690	2,007	2,051	57%
Uintah County	22,211	25,224	32,588	34,576	35,721	61%
Vernal City	6,644	7,714	9,089	9,882	10,321	55%
Utah County	263,590	368,536	516,564	540,425	551,957	109%
Provo	86,835	105,166	112,488	114,804	115,345	33%
Summit County	15,518	29,736	36,324	37,877	38,521	148%
Park City	4,468	7,371	7,558	7,845	7,963	78%
Coalville	1,065	1,382	1,363	1,678	1,502	41%
Wasatch County	10,089	15,215	23,530	25,550	26,661	164%
Heber	4,782	7,291	11,362	12,434	13,001	172%
Midway	1,554	2,121	3,845	4,096	4,261	174%
Wyoming	**453,588**	**493,782**	**563,626**	**575,251**	**579,679**	**28%**
Sweetwater County	38,823	37,613	43,806	44,595	44,772	15%
Green River	12,711	11,808	12,515	12,600	12,604	-1%
Rock Springs	19,050	18,708	23,036	23,684	23,869	25%
Uinta County	18,705	19,742	21,118	20,989	20,930	12.2%

Source: Census Bureau 1990, 2000a, 2015, 2016a

Table 2: Population density

Location	2000	2010
Daggett County	1.3	1.5
Duchesne County	4.4	5.7
Uintah County	5.6	7.3
Sweetwater County	3.6	4.2
Uinta County	9.5	10.1
Utah State	27.2	33.6
Wyoming State	5.1	5.8
United States	79.6	87.4

Source: Census Bureau 2000b, 2010b.

Population by Ethnicity and Race

Table 3 represents the population percentages of the planning area by Ethnicity and Race. Ethnicity is characterized by those who either identify as having Hispanic or Latino origin or not. Race subgroups include white alone, American Indian, black, Asian, Hawaiian, other, or two or more races. Race subgroup data provided in Table 3 is for individuals who do not identify as Hispanic or Latino. Only those races with statistical significance are included in the table. Those races are white alone, American Indian, and two or more races. As a result, subgroup race data will not sum to 100 percent.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs federal agencies to meaningfully involve and treat fairly all individuals in environmental decision-making. Therefore, it is essential to identify the presence of racial and ethnic minority populations in communities near the Ashley National Forest.

The planning area is overwhelmingly white, with Daggett County almost exclusively white. Duchesne and Uintah counties were slightly more diverse, both having small populations of American Indians and Hispanics. Sweetwater County has the largest Hispanic or Latino population in the planning area, with a rate nearly identical to the United States. Uinta County, Wyoming mirrors the state of Wyoming, which is predominantly white. Uinta has a Hispanic population of around 9 percent.

Duchesne and Uintah counties encompass large portions of the Ute and Ouray Tribal Lands. There are approximately 651 and 2,294 Ute American Indians respectively in each county (Census Bureau 2015). The Ute and Ouray Reservations are located in a three county area known as The Uintah Basin. The basin covers an area greater than 4.5 million square miles and shares boundaries with the Ashley National Forest. In 2013, the Ute Tribal Membership was reported at 2,970 (Ute Tribe 2013).

Table 3: Population percentages by ethnicity and race

Ethnicity	Daggett	Duchesne	Uintah	Sweetwater	Uinta	UT	WY	USA
Hispanic or Latino (any race)	2.8%*	7.2%	7.7%	15.7%	8.9%	13.3%	9.4%	16.9%
Not Hispanic or Latino (any race)	97.2	92.8%	92.3%	84.3%	91.9%	86.7%	90.6%	83.1%
Race (Individuals Not Hispanic)	**Daggett**	**Duchesne**	**Uintah**	**Sweetwater**	**Uinta**	**UT**	**WY**	**USA**
White Alone	91.9%	86.1%	82.4%	80.1%	88.0%	79.8%	84.8%	62.8%
Native American	0.7%*	4.8%	7.2%	*0.1%	0.2%*	1%	2.0%	0.7%
Two or more races	0.4%*	0.9%*	1.7%*	2.1%	2.8%	1.8%	1.8%	2.1%

Source: Census Bureau, 2015.
* Data indicates data with low significance values that should be interpreted with caution

Age Distribution

Table 4 below shows the median age and age distribution for each county. For comparison, Utah, Wyoming, and the United States are also included. At 53.1, Daggett County has a median age well above average for both the United States and Utah. In addition, 25 percent of its population is over the age of 65. The median age for the other three counties mirror those of their respective states and are much lower than the United States average (37.4). With the exception of Daggett County, the planning area has a smaller over 65 years of age population. The area also has a higher population of children and young adults, compared to the national average.

Age groups often have different needs, values, and attitudes related to national forest management. For example, aging populations may have mobility requirements that may affect recreational preferences, such as a higher demand for easily accessible camping spots and trails.

Table 4: Percent of the population by age group, 2014

Area	Median Age	% Pop Age 0-5	% Pop Age 5-9	% Pop Age 10-14	% Pop Age 15-19	% Pop Age 20-64	% Pop Age 65+
Daggett	53.1	6.2%	3.6%	4.3%	4.6%	56.4	24.8
Duchesne	30.2	10.5%	9.4%	8.8%	7.5%	52.8%	10.9%
Uintah	29.6	10.1%	10.0%	8.8%	7.3%	54.7%	9.1%
Sweetwater	33.3	7.8%	6.8%	8.4%	6.7%	61.5%	8.7%
Uinta	34.4	7.9%	7.8%	9.3%	6.8%	58.3%	9.8%
Utah	29.9	9.0%	8.9%	8.5%	7.8%	56.3%	9.5%
Wyoming	36.8	6.8%	6.7%	6.5%	6.5%	60.4%	13.1%
USA	37.4	6.4%	6.5%	6.6%	6.8%	59.9%	13.7%

Source: Census Bureau, 2015.

Educational Attainment

Education level attained is one of the most important indicators of economic success and well-being. Evidence suggests that additional years of schooling cause a worker's earnings to increase (Census Bureau, 2002). Additionally, a community with a more educated workforce tends to have higher incomes, grows faster, and withstands recessions better.

As a whole, the planning area's share of high school graduates is lower than its respective states. Additionally, the planning area counties have smaller shares of individuals with a bachelor's degree or higher, than their respective states or the nation. See Table 5.

Table 5: Educational attainment, percent of total population over 25, 2014

Adult Population and Education	Daggett	Duchesne	Uintah	Sweetwater	Uinta	UT	WY	USA
Total Population over 25 years of age	509	11,116	19,720	28,269	13,046	1,642,728	381,098	209,056,129
No High School Degree	12.4%*	13.5%	12.6%	9.5%	10.8%*	9.0%	7.7%	13.7%
High School Graduate	87.6%	86.5%	87.4%	90.5%	89.2%	91.0%	92.3%	86.3%
Associates Degree	9.2%*	8.4%	8.6%	9.2%	9.6%	9.5%	10.4%	7.9%
Bachelor's Degree or Higher	19.3%*	15.4%	16.6%	18.1%	18.7%	30.6%	25.1%	29.3%
Bachelor's Degree	14.9%*	10.7%	12.0%	13.0%	13.6%	20.5%	16.8%	18.3%
Graduate or Professional	4.3%*	4.7%	4.5%*	5.1%	5.1%	10.2%	8.3%	11.0%

Source: Census Bureau, 2015.

* Data indicate values that are not statistically significant due to small sampling sizes, and should be interpreted with caution.

English Language Abilities

Community members who are uncomfortable communicating in English will have difficulty participating in the forest planning process. Data on the share of the population who speak English less than "very well" can highlight barriers to public participation. Because of the smaller populations of the counties, the statistical significance of the data on who speaks English "less than well" is not high. Daggett County appears to have a higher percentage of people who do not speak English well relative to Utah, but its statistical value is quite low, indicating the data should not be relied upon to draw meaningful conclusions. As a whole, the planning area appears to include few individuals who cannot speak English well. See Table 6.

Table 6: Percent of the population who speak English less than "very well", 2014

Daggett	Duchesne	Uintah	Sweetwater	Uinta	Wyoming	Utah	USA
6.1%*	3%*	2%*	3.6%*	2.5%*	5.3%	1.9%	8.6%

Source: Census Bureau, 2015.

* Data indicates data with low significance values that should be interpreted with caution

Economic Wellbeing and Poverty

Urban Populations

Urban areas tend to be associated with higher incomes, greater employment opportunities, and higher levels of education (Census Bureau, 2013). On the other hand, rural areas may offer natural amenities (such as National Forest System lands) that attract retirees and other migrants.

According to the NASA MODIS aggregate land classification system, there is very little "Urban" land in the four county planning area. Daggett and Duchesne counties have zero land that is considered urban, Uintah County has 1,731 acres of urban area, and Sweetwater County has 988 acres. This is less than 1 percent of the land in each county (NASA MODIS, 2006). More current data from The Economic Research Service (2013), Rural-Urban classification scheme has designated all the counties as non-metro or completely rural. This system gives each county in the United States a code on a scale of 1-9. A rating of 1 is a county in a metro area with a population greater than 1 million, 9 is a completely rural county with a population less than 2,500. See Table 7 below for county classifications.

Table 7: USDA ERS urban-rural continuum codes, 2013

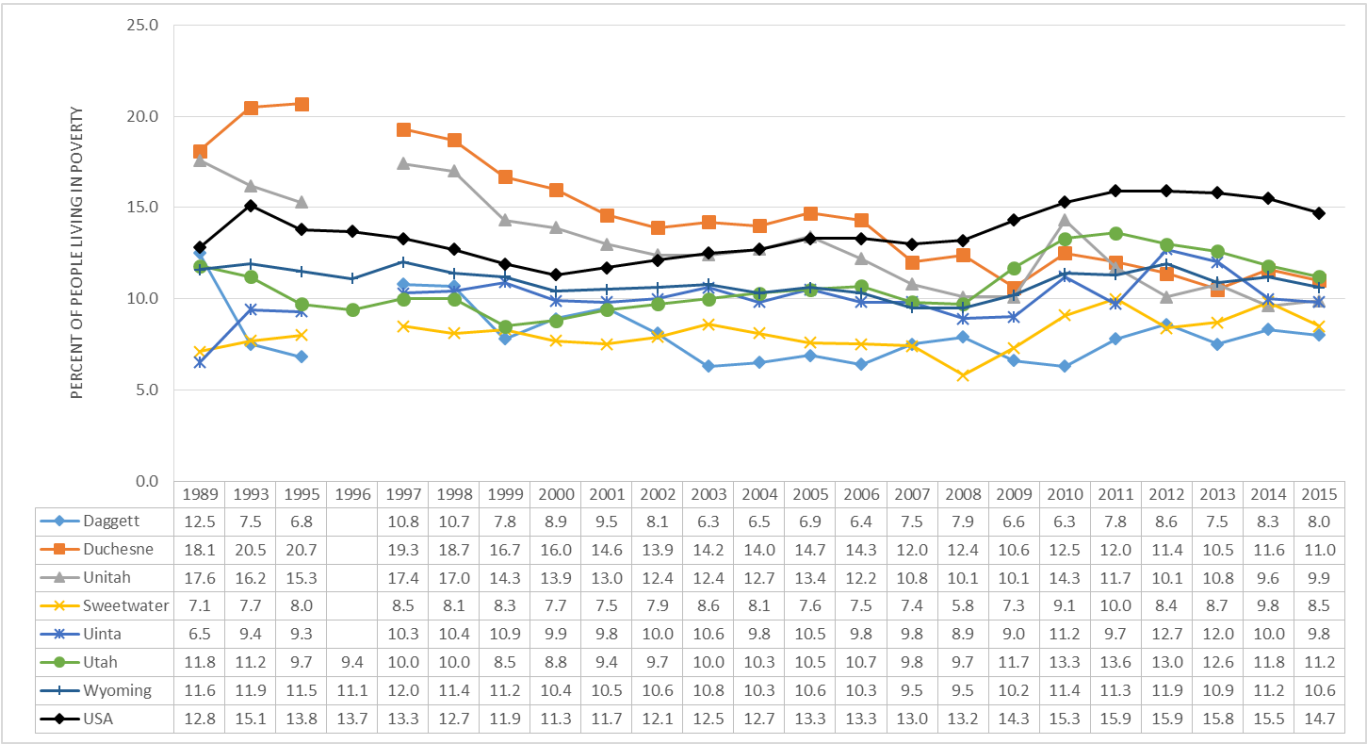
County	Classification Code
Daggett	9: Completely Rural, Population less than 2,500, not adjacent to a metro area
Duchesne	7: Nonmetro - Urban Population 2,500 to 19,999, not adjacent to a metro area
Uintah	7: Nonmetro - Urban Population 2,500 to 19,999, not adjacent to a metro area
Sweetwater	5: Nonmetro, Urban Population 20,000+, not adjacent to a metro area
Uinta	7: Nonmetro - Urban Population 2,500 to 19,999, not adjacent to a metro area

Source: ERS, 2013

Poverty and Income

Figure 1 below represents the percent of the population in each county living below poverty (at the family and individual level) from 1989 through 2015. For comparison, Utah, Wyoming, and the United States are also included. Poverty is an important measurement of economic wellbeing. People living in poverty may be more vulnerable to changes in forest management or the availability of opportunities on the Ashley

National Forest. For instance, low-income households may have fewer resources for substitute activities if forest resource availability changes.



	1989	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Daggett	12.5	7.5	6.8		10.8	10.7	7.8	8.9	9.5	8.1	6.3	6.5	6.9	6.4	7.5	7.9	6.6	6.3	7.8	8.6	7.5	8.3	8.0
Duchesne	18.1	20.5	20.7		19.3	18.7	16.7	16.0	14.6	13.9	14.2	14.0	14.7	14.3	12.0	12.4	10.6	12.5	12.0	11.4	10.5	11.6	11.0
Unitah	17.6	16.2	15.3		17.4	17.0	14.3	13.9	13.0	12.4	12.4	12.7	13.4	12.2	10.8	10.1	10.1	14.3	11.7	10.1	10.8	9.6	9.9
Sweetwater	7.1	7.7	8.0		8.5	8.1	8.3	7.7	7.5	7.9	8.6	8.1	7.6	7.5	7.4	5.8	7.3	9.1	10.0	8.4	8.7	9.8	8.5
Uinta	6.5	9.4	9.3		10.3	10.4	10.9	9.9	9.8	10.0	10.6	9.8	10.5	9.8	9.8	8.9	9.0	11.2	9.7	12.7	12.0	10.0	9.8
Utah	11.8	11.2	9.7	9.4	10.0	10.0	8.5	8.8	9.4	9.7	10.0	10.3	10.5	10.7	9.8	9.7	11.7	13.3	13.6	13.0	12.6	11.8	11.2
Wyoming	11.6	11.9	11.5	11.1	12.0	11.4	11.2	10.4	10.5	10.6	10.8	10.3	10.6	10.3	9.5	9.5	10.2	11.4	11.3	11.9	10.9	11.2	10.6
USA	12.8	15.1	13.8	13.7	13.3	12.7	11.9	11.3	11.7	12.1	12.5	12.7	13.3	13.3	13.0	13.2	14.3	15.3	15.9	15.9	15.8	15.5	14.7

Figure 1: Percentage of people living below poverty, 1989-2015
Source: Census Bureau, 2016c.

All five counties in the planning area experience poverty levels below the national average and have rates equal to or less than their respective state. Uinta County in Wyoming experienced the highest percentages of poverty, while Daggett County experienced the lowest. In the early 1990s, Duchesne and Uintah counties experienced poverty rates significantly higher than the planning area, the nation, and their respective states. However, they have since reduced poverty by nearly half. Long-term trends for the rest of the planning area have been comparatively low and flat. This means there has been little change in poverty rates, even throughout the Great Recession.

The most up to date data has been included to compare economic well-being changes for planning area counties, in response to economic consequences related to the oil gas industry's decline. There is no significant increase in poverty for any of the planning area counties in 2015, as Figure 1 shows. Most counties reflect a marginal reduction in poverty despite a reduction in oil and gas related employment (Census Bureau 2016a).

Data in Figure 1 above are reported in aggregate (includes all ages, races, and genders). When reporting poverty in aggregate, it may mask some of the underlying trends associated with poverty. For example, Uintah County has a large population of American Indians from the Ute Tribe. American Indians are a minority population who have typically experienced higher than average poverty levels. However, due to small sampling sizes at the county level, data on poverty levels by race and ethnicity are not reliable.

Table 8 provides income data for the individual counties in the planning area. Daggett County is the only county in the planning area with a median household income below the United States average. The other

counties have median household incomes on par with US and state averages, with the exception of Sweetwater County, which has a very high median household income.

Data for 2015 was identified by contributors as necessary to compare economic well-being changes for planning area counties, in response to economic consequences related to the oil gas industry's decline. As observed in 2015 data, median household income grew substantially in Daggett County[1], and remained relatively similar to 2014 data in the rest of the planning area counties. In some cases, income fell or grew by a few hundred dollars. Per capita incomes reflect the same changes as described for median household income.

Per capita income can often be more revealing for comparing economic wellbeing across areas with different population sizes. For example, Daggett County, which has a low median household income, has a per capita income on par with Utah and similar to Duchesne and Uintah counties. Sweetwater County is the wealthiest county in the planning area, with income above both Wyoming and the United States.

Table 8: Per capita and median household income, 2014

Area	Per Capita Income 2014	Per Capita Income 2015	Median Household Income 2014	Median Household Income 2015
Daggett County	$24,369	$22,149[2]	$47,188	$56,750
Duchesne County	$24,162	$23,576	$60,700	$61,133
Uintah County, UT	$24,572	$24,720	$62,363	$66,185
Sweetwater County	$30,500	$30,568	$69,448	$69,022
Uinta County, WY	$25,778	$25,772	$56,158	$56,569
Utah	$24,312	$24,686	$59,846	$60,727
Wyoming	$29,381	$29,803	$58,252	$58,840
United States	$28,555	$28,930	$53,482	$53,889

Source: Census Bureau, 2015, 2016a

Economic Specialization and Employment

The employment distribution for the four county planning area is shown in Figure 2 (Daggett, Duchesne, Uintah and Sweetwater). The largest employment sector is mining (19 percent), followed by government (15 percent), and retail (9 percent). The next largest sectors are construction (8 percent), followed by a variety of service industries that have an employment distribution ranging from 1-7 percent. Agriculture is a relatively small piece of the economy (3.4 percent). Forest and forest products, which includes the timber industry, is the smallest employment sector, accounting for only 0.04 percent of employment. The employment distribution in the planning area and surrounding counties area is as follows.

[1] Due to the small population size of Daggett County, per capita income statistics have a margin of error +/- $9,413.
[2] Due to the small population size of Daggett County, per capita income statistics have a margin of error +/- $4,614.

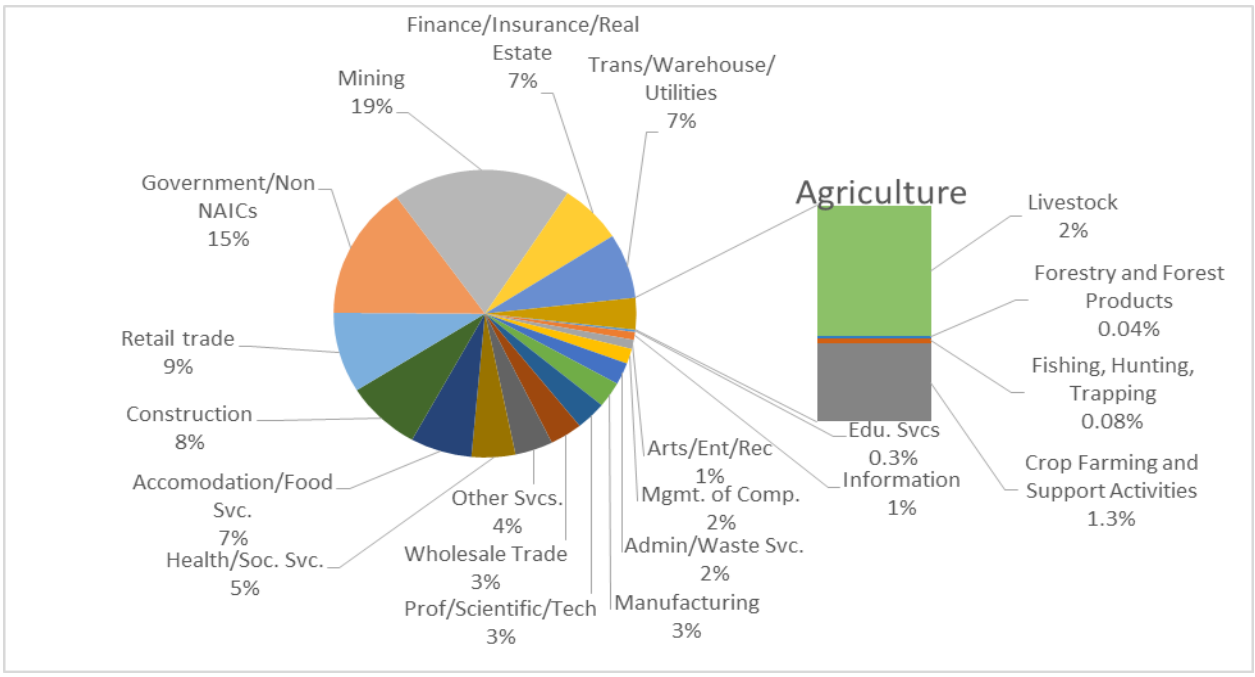


Figure 2: Analysis area employment distribution, 2014
Source: Minnesota IMPLAN, 2013

Daggett County

In 2014, Daggett County's largest employment industry was government (22 percent). This is followed by other services (17 percent), professional and scientific services (11 percent), accommodations, food services, construction (8 percent each), and agriculture (7 percent). Unlike the other planning counties, Daggett County is not as specialized or reliant on the mining industry (5.5 percent) (IMPLAN, 2014). In 2015, data from the Utah Work Force Center indicates that Daggett County had no mining related jobs, and the government sector was 53 percent of its employment sector. In January 2017, Utah Department of Workforce Services reported that Daggett County's employment is dominated by the leisure and accommodation industry, centered on the Flaming Gorge Dam.

Duchesne County

In 2014, Duchesne County's main employment industry was mining (21 percent), followed by government (14 percent), retail trade (8 percent), and agriculture (6.6 percent). However, the mining industry has changed significantly since 2014 (IMPLAN, 2014). According the Utah Department of Workforce Services, in the fourth quarter of 2015, employment in the mining sector had fallen from an average of 2,540 in 2014 to 1,644. By the end of 2015, mining remained 21 percent of the total employment industry, but only because unemployment had risen from 4.8 percent in January 2015 to 8.2 percent in December 2015 (Utah Department of Workforce Services). In January 2017, the Utah Department of Workforce Services reported that Duchesne County's job market is improving, in response to higher oil process.

Uintah County

In 2014, Uintah County's main employment industry was mining (18 percent), followed by government (15 percent), retail trade (10 percent) construction (8 percent), and agriculture (4.9 percent) (IMPLAN, 2014). Uintah County experienced similar reductions in employment as Duchesne County. In 2014, employment in the mining sector was 3,212. By the fourth quarter of 2015, total mining jobs fell to 2,122

(Utah Department of Workforce Services). In January 2017, the Utah Department of Workforce Services reported that Uintah County's labor market seemed to be past its deepest slump, was stabilizing, and was showing signs of improvement. Despite continuing to shed mining employment, the rate of loss is much lower than previous years (Utah Department of Workforce Services, 2017).

Sweetwater County

In 2014, Sweetwater County was dominated by the mining sector (20 percent), followed by government (15 percent), retail trade (9 percent), agriculture was only 1.1 percent (IMPLAN. 2014). In the third quarter of 2015 the Wyoming Department of Employment reported a 24 percent statewide reduction in mining (county details are not reported). Additionally, the construction, real estate, and transportation/machinery manufacturing industries experienced steep declines, largely a result the loss of mining employment and income (Wyoming Department of Employment).

Summit County

In 2014, Summit County's main employment industry was Accommodation and Food Services (15 percent), followed by real estate (12 percent), retail trade (11 percent), arts/entertainment and recreation (9 percent combined), and agriculture (2.1 percent) (IMPLAN). Unlike the planning area counties, Summit County has a much smaller government industry (7 percent) and very little mining (less than 0.01 percent) (IMPLAN, 2014). As previously discussed, Summit County has a much different economic makeup than the other four planning area counties, it is more economically diverse, and service oriented.

Utah County

In 2014, Utah County had an employment sector totaling more than 281,000 jobs. Its top industry was retail trade (11 percent), followed by government (10.8 percent), professional/scientific technical services (10 percent), health and social services (9 percent), construction (7.6 percent), and agriculture (1.1 percent) (IMPLAN 2014). Like Summit County, it has a large diverse economy dominated by services and government sectors.

Wasatch County

In 2014, Wasatch County's top employment industry was government, followed closely by construction, retail trade, accommodation and food services, real estate and rental services. Like Summit, Wasatch, and Utah County, the mining sector constitutes a minimal sector of employment, and agriculture totaled 5.3 percent (IMPLAN 2014).

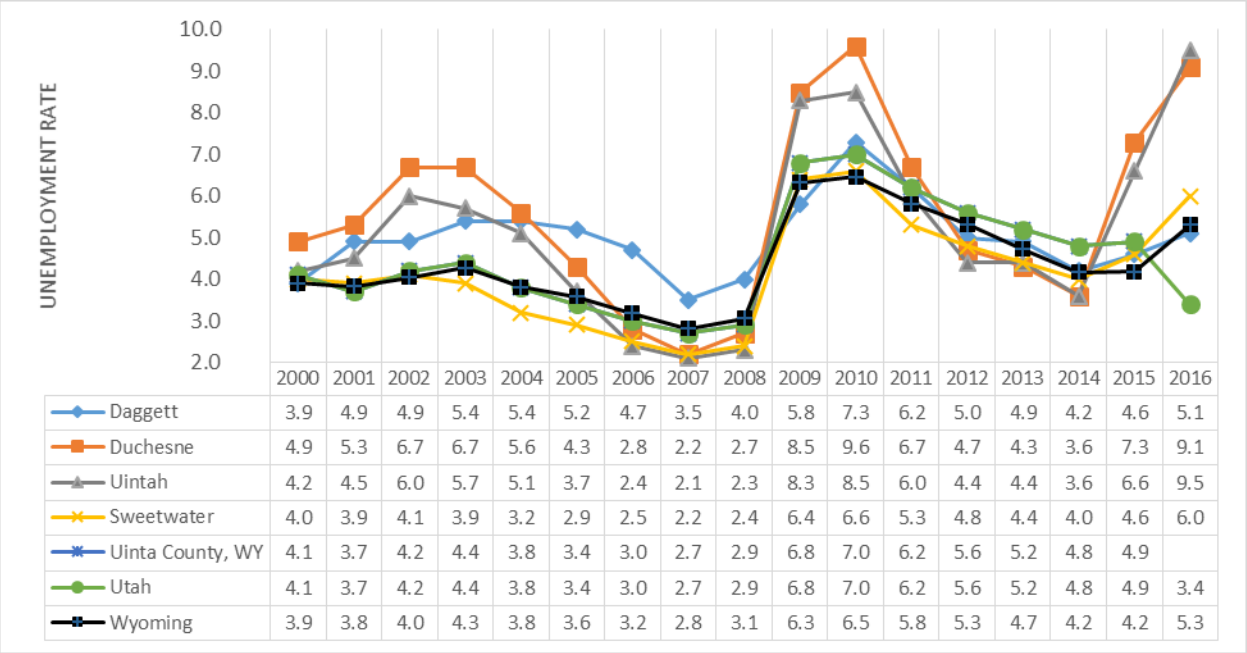
Uinta, Wyoming

In 2014, the largest employment industry was the government sector (17 percent), followed by health and social services (11.5 percent), retail (11 percent), mining (6.4 percent), agriculture (3.5 percent), and construction (1 percent) (IMPLAN 2014).

Unemployment

Figure 3 below provides average annual unemployment data for each of the four counties in the planning area from 2000 to 2016. For comparison, state and national data are also provided. As a whole, the planning area has had unemployment rates well below the national average, and withstood the Great Recession far better than the United States. However, there is a spike in unemployment in Duchesne and Uintah counties, starting in 2014, that averaged 9.1 and 9.5 percent respectively in 2016. Additionally, Daggett and Sweetwater counties also saw a small spike in unemployment rates in 2016. These rates are at or above Great Recession levels for all but Daggett County. The lower, and now higher than average,

unemployment experienced by the planning area is the result of a decline in the shale oil and gas industry, which is happening nationwide. The oil and gas industry is discussed in detail in the next section.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Daggett	3.9	4.9	4.9	5.4	5.4	5.2	4.7	3.5	4.0	5.8	7.3	6.2	5.0	4.9	4.2	4.6	5.1
Duchesne	4.9	5.3	6.7	6.7	5.6	4.3	2.8	2.2	2.7	8.5	9.6	6.7	4.7	4.3	3.6	7.3	9.1
Uintah	4.2	4.5	6.0	5.7	5.1	3.7	2.4	2.1	2.3	8.3	8.5	6.0	4.4	4.4	3.6	6.6	9.5
Sweetwater	4.0	3.9	4.1	3.9	3.2	2.9	2.5	2.2	2.4	6.4	6.6	5.3	4.8	4.4	4.0	4.6	6.0
Uinta County, WY	4.1	3.7	4.2	4.4	3.8	3.4	3.0	2.7	2.9	6.8	7.0	6.2	5.6	5.2	4.8	4.9	
Utah	4.1	3.7	4.2	4.4	3.8	3.4	3.0	2.7	2.9	6.8	7.0	6.2	5.6	5.2	4.8	4.9	3.4
Wyoming	3.9	3.8	4.0	4.3	3.8	3.6	3.2	2.8	3.1	6.3	6.5	5.8	5.3	4.7	4.2	4.2	5.3

Figure 3: Annual unemployment rates for the planning area (unadjusted)
Source: Bureau of Labor and Statistics, LAUS and CPS

Oil and Gas Industry

Beginning in the early 2000s, the price of crude oil had begun rising rapidly. In January 2000, the spot price of barrel of crude oil was $27.26 in June 2008 it was $133.88. Oil fell steeply in 2009, to a low of $39.09, before climbing and maintaining prices around $100 dollars a barrel through June 2014. In June 2014, oil prices once again plummeted, and have remained below $50 a barrel from December 2014 through November 2016 (US Energy Information Administration). The drop in price is the result of oil supply outpacing demand. In late 2016, the price of crude oil began to rebound, and Wyoming has already seen evidence of increased exploration activities in the state (Wyoming Department of Administration and Information, Economic Analysis Division, 2016). These data may indicate that the present economic struggles associated with the fall of oil and gas extraction in the planning area may soon be over. However, oil and gas employment in Wyoming has remained unchanged from October through December of 2016 (Wyoming State Government, Revenue Forecast, 2017). Despite improving conditions, it is important to consider some of the issues associated with economies dependent on natural resource extraction and will be discussed in the next section.

In 2014, Utah ranked 11th in the nation for crude oil production and Wyoming ranked 8th (Utah Department of Oil, Gas, and Mining). In 2013, Wyoming was ranked 5th and Utah 10th in gross natural gas production (Utah Department of Oil, Gas, and Mining). All four counties in the planning area reaped benefits from the shale oil and gas boom in the United States. Due to the quick rise, and subsequent fall of the shale oil and gas industry, special consideration of its economic impacts to the four county planning area needs to be considered. The discussion below is provided to help understand some of the economic trends occurring in the planning area. However, the economic implications of the oil and gas industry is a national/global issue, and a thorough discussion is outside the scope of this document. Rather, a brief

overview of the decline in oil and gas production in the planning area, and its linkages to other markets, is discussed.

Figure 4 below shows the rapid rise in Oil and Gas extraction employment in the planning area, beginning in 2005. These data are derived from the U.S. Census Bureau County Business Pattern data sets, which are only available through 2014. In order to observe what has happened to the oil and gas industry since 2014, data for oil and gas production are provided for each planning area county from 1984-2016. Figure 5 shows a dramatic decline in 2014 for Duchesne and Uintah Counties. Sweetwater County has also seen a slight decline in oil production. However, production levels are below recent historical highs.

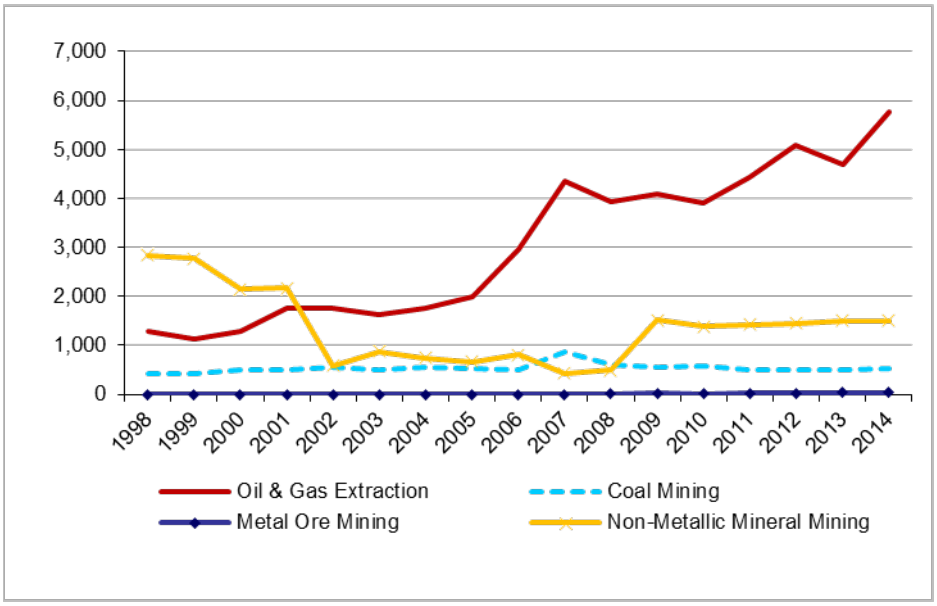


Figure 4: Jobs in different mining sectors for the four county planning area
Source: Census Bureau, 2016b

Oil and gas production provided a large amount of tax revenue, jobs, and increased overall economic activity to the planning region. Duchesne County reports a 33 percent reduction in mining jobs from March 2015-2016, and Uintah County reports a 35 percent reduction (Utah Department of Workforce Services). The reduction in the mining industry, specifically oil and gas has had cumulative effects. In addition to an increase in unemployment, the economic downturn was felt by almost all industries, to include construction and transportation. In Duchesne County, nearly 14 percent of its nonfarm jobs were shed between March 2015 and March 2016. In Uintah County, 14.5 percent of its jobs were shed between the first quarter of 2015 through the first quarter of 2016. As previously discussed, Daggett County does not have large employment in the mining industry and has not felt the impacts of the downturn like Uintah and Duchesne. Since 2014, Daggett County has experienced slight growth in its tourism sectors (Utah Department of Workforce Services, Economic Snapshots).

Wyoming felt similar declines. From 2014 to 2015, employment in the mining sector fell 13.3 percent, construction fell 3.1 percent, transportation, utilities, and warehousing fell 1.7 percent. From the third quarter of 2015 to the third quarter of 2016, the Wyoming mining industry contracted another 21 percent, construction fell 5 percent, and transportation fell 8.6 percent. Sweetwater County's mining sector shed 14 percent of its jobs from August 2015 – August 2016, and all resource producing related sectors (construction and manufacturing) saw employment fall (Trends). As observed in Figure 5 and Figure 6, Sweetwater County's production has shown the steadiest historical production in both oil and gas, while Uinta County has seen drastic declines in production. This comes despite the dramatic increase in oil and gas drilling in the region.

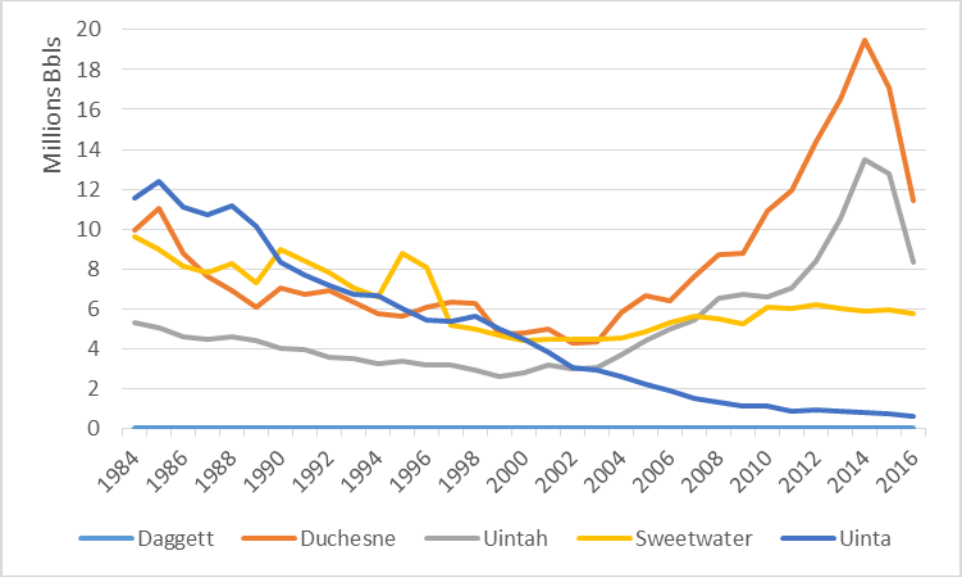


Figure 5. Annual oil production, millions of barrels (Bbls) 1984-2016
Source: Wyoming Oil and Gas Conservation Commission, Utah Oil and Gas

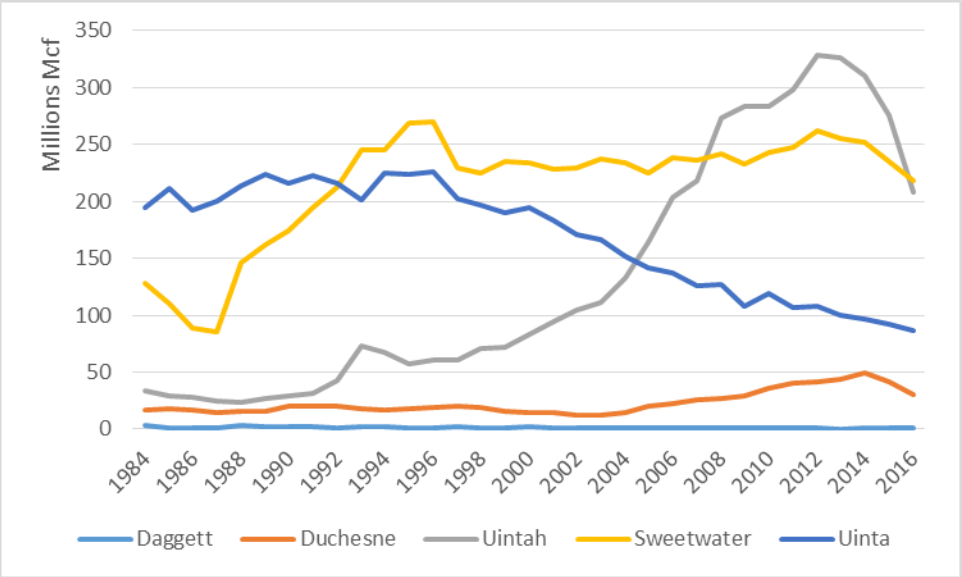


Figure 6. Annual gas production, millions of cubic feet, 1984-2016
Source: Wyoming Oil and Gas Conservation Commission, Utah Oil and Gas

County Revenue for Oil and Gas Production

Figure 7 shows the rents, royalties, bonuses and bids paid to counties for oil and gas production on federal lands from 2006 through 2015[3]. The numbers presented in the table represent all federal oil and gas mineral payments, and are not all attributed to the Ashley National Forest. In 2008, revenue for the four county planning area (Daggett, Duchesne, Uintah, and Sweetwater) was $423 million dollars, Uintah County alone accounted for over half of the federal revenue ($230 million). As previously discussed, the mining industries for Wasatch, Summit, and Utah counties are small compared to Duchesne, Uintah, and Sweetwater Counties. As such, county revenues and rents received were less than 30 million annually from 2006-2015. After peaking in 2008, county receipts fell after oil prices plummeted, before climbing

[3] ONRR data is frequently revised due to ongoing data collection and audits. Therefore, data presented here is subject to change.

steadily through 2014. Between fiscal year 2014 to fiscal year 2015, county revenues fell by an average of 45 percent for Daggett, Duchesne, Sweetwater, and Uintah counties.

The reduction in revenue from oil and gas could have a vast range of implications, depending on where the county had spent or planned on spending the new income. For example, in Wyoming, local government revenue from oil and gas production on federal lands was primarily allocated to school districts and school trust funds (Raimi and Newell, 80). In Utah, revenue from federal oil and gas leases was distributed directly to local counties and used to fund local grants (Raimi and Newell, 74).

The data shown in Figure 7 represents only oil and gas revenue from federal leases. Each county will also have additional revenue from oil and gas leases on tribal, state, and private lands. Therefore, the decline in revenue show here is only a small portion of the total tax revenue effects of the oil and gas industries decline. Additionally, there is also a secondary decline in state and county revenue experienced from the decline in the oil and gas revenues. An example would be the sales tax revenue decline in the retail and lodging sector, as well as the decline in sales of mining equipment (Wyoming Department of Administration and Information, Economic Analysis Division, 2016). In Sweetwater County, between 2015 and 2016, the total assessed valuation[4] fell from nearly $3 billion to 2.3 billion dollars. The reduction was almost exclusively the result of the oil and gas industries decline (Sweetwater County Board of County Commissioners, 2016).

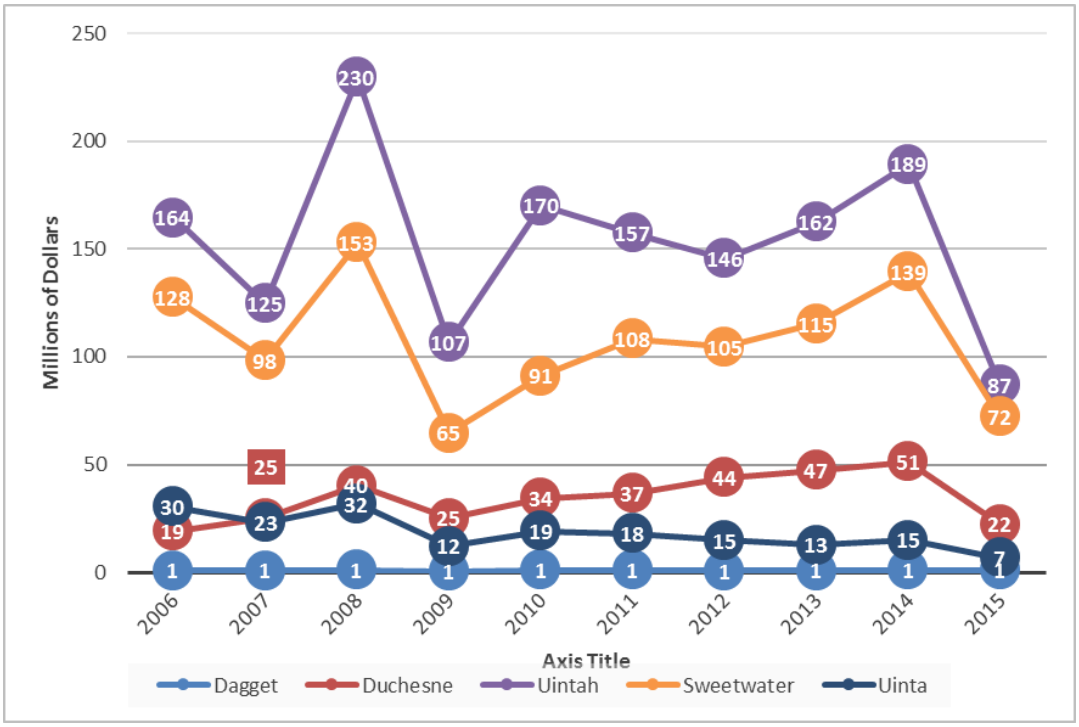


Figure 7. Rents, royalties, bonuses, and bids to counties for oil and gas production on Federal lands
Source: U.S Department of the Interior (2006-2015)

From 2014 -2015, Uintah County tax revenue from accommodations, food services, motor vehicle leasing, and miscellaneous retail all declined. The only taxable sales that didn't decline from 2014 – 2015 were taxes related to arts, entertainment, and recreation (University of Utah, Uintah Profile, 2016). Duchesne County experienced similar declines in taxable sales revenue. However, Duchesne saw a

[4] Assessed valuation is the dollar value assigned to assets, resources, or property to determine and measure taxes.

decline in revenue related to arts, entertainment, and recreation, as well as food and accommodation sectors (University of Utah, Duchesne Profile, 2016). According to the University of Utah profile report, these declines are explained to be partly attributable to the decline in oil and gas extraction.

Natural Resource Dependent Economies: A Discussion

The cyclical nature of natural resource extraction economies, particularly for oil and natural gas, make them susceptible to extreme periods of economic uncertainty and volatility. These extreme periods of economic growth, and subsequent declines, are well known and widely studied in economic literature. It is important to highlight some potential future expectations, in light of the localized economic recession that occurred in the planning area as a result of oil and gas extraction, and the overspecialization of these industries in the planning area.

From a macroeconomic perspective, Sachs et al, finds that countries, "… with abundant natural resources have tended to grow less rapidly than natural resource scarce economies" (1995). Often referred to it as the *Natural Resource Curse*, developing nations with abundant natural resources tend to have greater conflict, less incentive to develop other areas of their economy, and practice excessive rent-seeking[5] behavior (Paltseva, et al., 2011). However, there are several countries that are both natural resource dependent, and well off, such as Norway and Australia (Paltseva, et al., 2011). Countries that have overcome the Natural Resource Curse tend to have stronger institutions, policies, and investment strategies (Paltseva et al, 2011).

North America is neither a developing nation, nor one facing similar macroeconomic circumstances as those of developing nations. However, despite these differences, counties in the United States that depend on natural resource extraction still tend towards weaker long run economic growth. James and Aadland, in their study, *"The curse of natural resources: An empirical investigation of U.S. counties"*, found that even U.S. counties fall to the *Natural Resource Curse*. This study looked specifically at Wyoming and Maine, and included results for Sweetwater County from 1980-1995. Sweetwater County, which had some of the largest volume of resource extraction in Wyoming during that time, also had some of the weakest annual growth in income per capita (James et al, 2011).

Freudenburg, et al. in their 1994 study, *"Natural resources and rural poverty: A closer look"*, found several negative economic trends and impacts to natural resource extraction communities in North America. In addition to increased poverty in these communities, underinvestment in education, increased bureaucratic power[6], and moral exclusion[7] were all outcomes of natural resource dependent communities (Freudenburg, et al., 1994). Over the long term, employment instability should be expected in these communities, which has direct costs associated with short and long term layoffs (Feyrer, et al., 2015). This means that local communities will go through periods where a large demand will be placed on government support systems, such as unemployment assistance, welfare, etc.

Leaders in rural communities are often quick to point out that wages associated with resource extraction are far higher than in tourism and service related industries. As such, the wages are often associated with greater prosperity (Freudenburg, et al., 1994). Additionally, there can be several positive benefits that come from a boom in natural resource extraction. Grant D. Jacobsen found that the most recent oil and gas boom created many economic winners and very few losers (2015). In addition to high paying mining

[5] Rent-seeking behavior has several definitions, but can be thought of as an effort by an individual or group to seek policies that favor them to the detriment of others, often as a way to extract wealth (Henderson, David R.)
[6] Bureaucratic power can be thought of as the domination of a single party's interests, leading to discrimination against the poor. For example, an environmental group is trying to prevent increased resource extraction, denying local residents access to economic growth (Freudenburg, et al., 1994).
[7] Moral exclusion can be thought of as a group feeling politically excluded from access to a resource, denying them prosperity.

employment, increased wages were also experienced throughout the non-mining sector in nearly all major occupational categories. The boom was particularly beneficial for individuals at the lower half of the wage rate distribution (Jacobsen, 2015). Additionally, housing values and rental prices increased throughout the economy, benefitting landowners (Jacobsen, 2015). Feyrer et al., find similar outcomes. Based on their analysis, $1 million in new oil and gas production in a county creates a $66,000 increase in wage income and 0.78 new jobs, 40 percent of which occurs in industries not directly involved in oil and gas extraction (2015). If the analysis area is extended beyond the county, to a 100 mile radius of production, every $1 million of new production increases wage income $243,000 and creates 2.49 jobs. (Income estimates are not per job, but rather, $243,000 is spread out over a community's income).

Despite these positive impacts, Jacobsen et al, recommends that drilling be weighed against any non-economic concerns, such as environmental degradation, and suggests maintaining revenue for post-boom transitions (2015). Additionally, there are concerns associated with hydraulic fracturing, to include:

- Water contamination
- Earthquakes
- Pollution
- Oil spills
- Methane leakage
- Other environmental consequences

Muehlenbachs, et al., finds that properties surrounding shale oil and gas development may experience declining values, depending on risks to groundwater contamination (2015). Socially, boomtowns may also suffer negative consequences, such as high housing rental costs, air pollution, and increased crime rates (Muehlenbachs, et al., 2015).

Since November 2016, the price of crude oil has remained around $50 a barrel and as discussed in the previous section, extraction activities are once again taking place in the planning area. It is difficult to predict the scope and temporal scale of any future extraction activities in the planning area. However, it can be predicted that a similar boom and bust period can take place in the region in either the short or long run. Recommendations for rural communities include investment in human capital and activities that are information intensive, rather than resource extractive (Feyrer et al., 1994). As stated above, Jacobsen et al recommends maintaining revenue for future recessions (2015).

As discussed, tourism and recreation employment tend to have lower wages, and are often seen as inferior to higher paying mining jobs. With the wealth of recreation opportunities, it is important to discuss the economic benefits related to these opportunities. Recreation spending is often the focus of business groups. When visitors arrive, they spend money on goods services, food, equipment, fuel, etc. (White et al, 2016). How this spending translates into jobs and income for the local community is discussed in the recreation section below. Additional economic outcomes from Federal recreation opportunities include:

- Migration of new residents attracted to the aesthetics and amenities that are offered
- Relocation of businesses that don't require dependence on manufacturing inputs
- Health benefits
- Spending on recreational backdrops that aren't counted in official job and income estimates, e.g. a helicopter is hired to take tourists on aerial scenic views, but the flight originates well outside Forest boundaries (White et al. 2016)

Components of Personal Income

Sources of labor income are listed in Figure 8 below. In both 2006 and 2014, the largest sources of labor income in the planning area were from mining and government. However, the mining sector grew from 24 percent in 2006, to 35 percent in 2014. These data indicate that mining jobs pay well relative to other jobs in the four-county planning area. While mining accounts for 19 percent of employment (see Figure 2, above), it accounts for 35 percent of labor income. All other labor income industries have remained relatively similar since 2006 (Ashely NF Economic Environmental Report, 2009).

Labor income accounts for approximately 80-86 percent of total household earnings in the planning area, with the exception of Daggett County. As previously discussed, Daggett County has very large 65 and over population (25 percent over the age of 65). As such, only 60 percent of Daggett County household earnings come from labor income. The rest of household earnings comes primarily from retirement income and social security. The percentage of residents who rely on Social Security and retirement income in Daggett County is nearly double that of any other county in the planning area (Census Bureau, 2015). Due to the small population of Daggett County, and the small sampling sizes, the data on labor earnings does have a high variance. However, it is reasonable to assume that there is a large population in Daggett County that relies on retirement funds and social security as income.

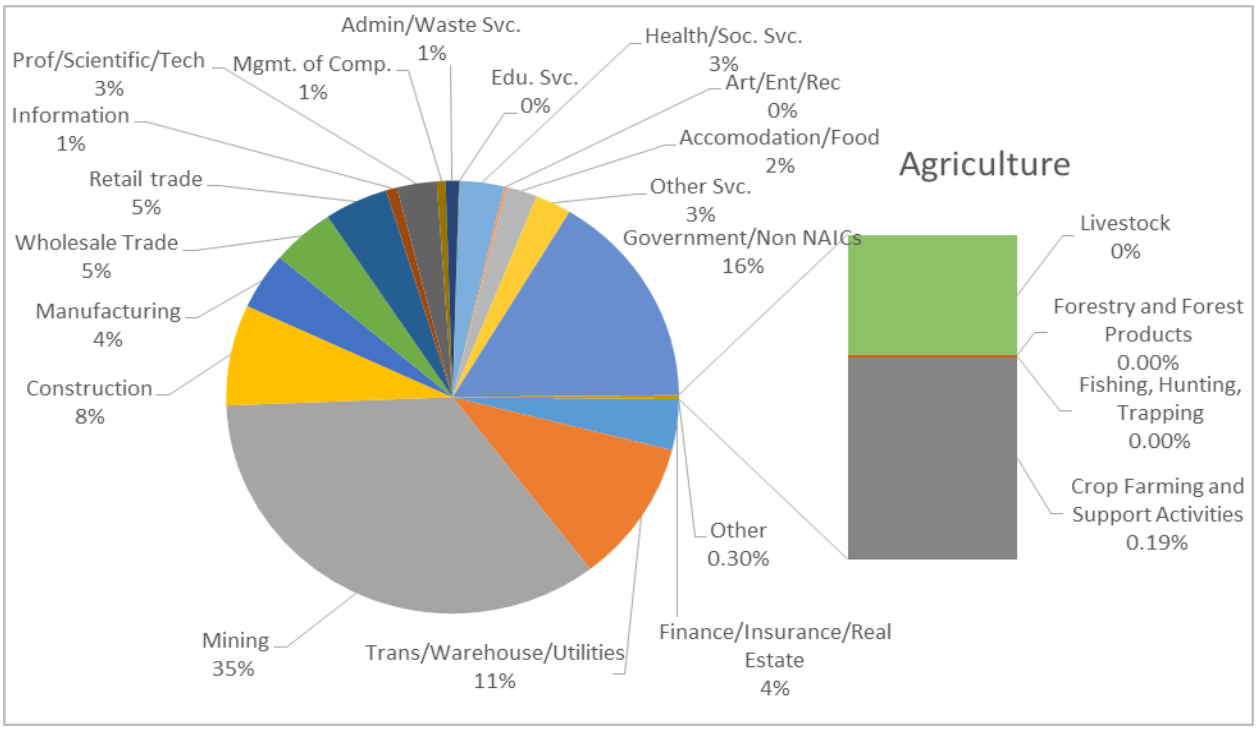


Figure 8: Analysis of labor income distribution by industry, 2014
Source: Minnesota IMPLAN 2014

Ashley National Forest's Contributions to the Area Economy

The four counties used to complete the economic contribution analysis were Daggett, Duchesne, and Uintah counties in Utah, and Sweetwater County in Wyoming. This analysis area was used in the National Forest Economic Contributions Report, as developed by the Ecosystem Management Coordination Staff of the Forest Service Washington Office. These counties represent the functional economy for people

living and working around the planning area. Although some effects may occur outside of this area, the majority of the effects will likely occur within the four counties, which contain almost the entire planning area. Quantitative contributions to the local economy below are estimated using this economic analysis area. Results from the economic contribution analysis include the average annual number of local jobs, income, and Gross Regional Product supported in the area. Gross Regional Product includes employee compensation, proprietor income, property income, indirect taxes, licenses, and other sales, business fees and taxes that are supported through natural resource management activities. Additionally, it analyzes grazing, timber and mineral commodities, as well as recreational data using the National Visitor Use Monitoring data. The other counties that either contain small portions of the Ashley National Forest or share boundaries with it, either do not draw enough of the above economic activity from the Ashely to make measurable economic contributions, or their economic activities are heavily tied to other economic areas. For example, Summit County may share a large border with the Ashley National Forest. But the majority of Summit County's natural resource management economic activity is drawn from the Uinta-Wasatch-Cache National Forest and is included in the functional economic area for that Forest.

Land within the Ashley National Forest contributes to the livelihoods of area residents through subsistence uses, as well as through market-based production and income generation. Public lands provide products of value to households at no or low cost (permit fees). Subsistence use includes fuelwood, boughs, and Christmas trees. Additional products with subsistence value may include fish, game, plants, berries, and seeds. Use of subsistence products is often part of tradition and sustains local culture. Market-based products may be more closely associated with income and economic livelihood. These types of activities are often considered a way of life and associated with long-run family traditions and sense of place. Market-based production includes saw timber, forage for livestock, minerals, and materials such as sand and gravel.

A 2008 study conducted on Utah residents, by Richard S. Krannich, was called "Public Lands ad Utah Communities, A statewide survey of Utah residents." The study was conducted to assess how social and economic conditions throughout Utah influence the use and management of public lands. This study found that Daggett, Duchesne, and Uintah counties have a high level of participation in non-commodity collection of materials and resources from public lands. Nearly 26 percent of survey respondents cut firewood for home use on public lands, 30 percent cut Christmas trees, and 32 percent gather rocks for home landscaping. Additionally, pinyon nut gathering, fossil collecting, and wild berry and herb collection for food, were popular activities (Krannich, 2008). However, household participation in permit-based economic activities that contribute to household income, on lands administered by the U.S. Forest Service, was fairly low (about 7.4 percent). Instead, the percentage of respondents whose income was directly linked to permit based income (on public lands) in Uintah, Duchesne, and Daggett counties occurred on BLM land (18 percent). These are likely oil and gas related employment and income activities on BLM land.

Contributions to the area economy, through market-based production, are measured using the IMPLAN input-output modeling software. Using the most recent data available (2014), IMPLAN data were applied to forest outputs and expenditures to estimate the area economic contribution of the Ashley National Forest. While the discussion above examines the current situation and historical context, this analysis examines the linkages and interdependencies among businesses, consumers, and the Ashley Natural Forest resources on which some area economic activity depends. Using IMPLAN allows a more complete examination of these linkages (Eichman, 2009)

IMPLAN not only examines the direct contributions from the Ashley National Forest, but also indirect and induced effects. Indirect employment and labor income effects occur when a sector purchases supplies and services from other industries in order to produce their product. Induced

effects are the employment and labor income generated as a result of spending new household income generated by direct and indirect employment. The employment estimated is defined as any part-time, seasonal, or full-time job. In Table 9, direct, indirect, and induced impacts are included in the estimated impacts of national forest contributions.

Table 9: Estimated annual employment and labor income contributions from the Ashley National Forest by Resource Program, 2014

Income Contributions	Employment (full and part time jobs)	Labor Income (thousands of 2014 dollars
Recreation	26	$802[8]
Wildlife and Fish Recreation	34	$1,141
Grazing	126-129	$2,748-$2,812
Timber	12	$839
Minerals	40	$5,019
Payments to State/Counties	63	$2,873
Forest Service Expenditures	283	$11,715

Source: Minnesota IMPLAN, 2014

Recreation

The Ashley National Forest contains a large expanse of undeveloped lands, unique activities, and a wide variety of fish and wildlife habitat that attracts visitors to an array of recreational opportunities. These opportunities are enjoyed by locals and non-locals alike. When visitors come to the Ashley National Forest, they spend money on different goods and services in order to enjoy recreation activities provided by the Ashely National Forest. This spending helps fuel local economies in the planning area.

Not all visitor spending is equal. In the National Visitor Use Monitoring report, visitors are classified as local and non-local, overnight and day, and non-primary visitors. The level of spending in the local economies varies based on these factors. For example, in 2009, the average expenditure per party per trip to National Forests ranged from $33 by local day visitors to $514 by non-local overnight visitors. The single biggest expense for day visitors was gasoline, followed by food. For non-local overnight visitors, the biggest expense was on lodging, followed by food, then gas. If non-local visitors were staying on the Ashley National Forest, then their largest expense was groceries and not lodging. (White, et al 2013).

The 2012 National Visitor Use Monitoring report estimated that there were 294,565 visits to the Ashley National Forest in 2012. The largest percentage of visitors came from Duchesne (12 percent), Sweetwater (19 percent), and Uintah (31 percent) counties. The largest visitor category was local day visitors (108,579), followed by non-local overnight visitors staying on the forest (72,566), and non-local day (32,274).

Table 10 below provides the activity participation and primary purpose for visiting the Ashley National Forest in 2012. This list is includes the top seven activities. A more comprehensive list is included in the 2012 National Visitor Use Monitoring report. The numbers do not sum to 100 percent because visitors may participate in two activities at once, and may report more than one main activity per visit.

[8] Employment and labor income data for recreation and wildlife and fish recreation includes non-local visitor spending only. See Recreation section for details.

Table 10: Activity participation on the Ashley National Forest, 2012

Activity	% Participation	% Main Activity
Viewing Natural Features	61%	17%
Relaxing	50%	10%
Viewing Wildlife	49%	3%
Driving for Pleasure	44%	11%
Hiking/Walking	39%	4%
Fishing	30%	23%
Hunting	13%	15%

Source: Forest Service, 2012

Providing recreation activities to local residents surrounding the Ashley National Forest is an important contribution. However, the residents' expenditures do not represent new money in the local economy. If local residents do not spend money visiting the Ashley National Forest, they would likely find other local recreation activities in which to participate. Since local recreation spending is not new economic activity, recreation job totals (in Table 9 above) only include jobs and income created by non-local spending. Non-local recreation on the Ashley National Forest creates 60 jobs (recreation plus wildlife and fish recreation) and accounts for $1.94 million in labor income. This estimate was made using NVUM spending profiles for non-local visitation. The profiles are based on reported visitor spending that has occurred within 50 miles of the interview site. Spending that occurred prior to the trip or outside of 50 miles from the interview site are not included in the spending profile (White and Stynes, 2010).

Based on Krannich's (2008) study, 8.4 percent of residents in the three county area (Daggett, Duchesne, Uintah) derive business income from recreation and tourism activities. Of this 8.4 percent, 63 percent felt that public lands were either very or extremely important to the success of their business.

Recreation of particular interest occurring on the Ashley National Forest takes place on the Green River and the Flaming Gorge Reservoir. Popular activities include tubing, rafting and fly-fishing on the Green River, and motorized water based recreation on the Flaming Gorge Reservoir. These activities have created a thriving economic community of outfitters and guides in the Northeastern portion of the Ashley National Forest, along the Utah-Wyoming border. This area resides within Daggett County -- in and around Dutch John and Red Canyon, Utah. These recreation activities have seen significant growth in the last five years. While the visits are captured in National Visitor Use Monitoring data and reports, it is difficult to assess increased visitation directly related to the activities discussed above. Instead, the industry's growth can be measured by observing the number of shuttles and number of launches by private companies supporting Ashley National Forest visitors. Shuttles support fishing, tubing and rafting on the Green River by picking up and dropping off individuals at specific points; often with the option of experienced guides. Launches capture the number of boat launches to access the Flaming Gorge. Table 11 provides the total number of each of these activities and the annual growth rate. From 2011 to 2015, the number of launches grew by 125 percent and the number of shuttle rides grew by 36 percent.

As discussed, this activity is captured in the 2012 National Visitor Use Monitoring data, thus it is captured in the employment and income numbers presented in Table 9. However, it cannot provide specific market valuations related to these two specific recreation activities. Additionally, much of the growth has taken place after the most recent National Visitor Use Monitoring survey. Exact market valuations are not possible, however, this activity is clearly a growing and important industry for visitors, private outfitters, and the local tourism industry.

Table 11: Launches and shuttles to the Green River and Flaming Gorge by local outfitters and guides

Year	Launches	Yearly Growth	Shuttles	Yearly Growth
2011	1880	no data	3605	no data
2012	3166	68%	3752	4%
2013	2820	-11%	4153	11%
2014	3879	38%	4497	8%
2015	4215	9%	4886	9%

Source: USDA Forest Service, Recreation Specialist Ryan Buerkle, 2016

Grazing

Agriculture plays an important economic and social role in some parts of the planning area. The Utah counties Daggett, Duchesne, and Uintah rank 29th (last), 6th and 10th respectively, in cattle production, according to the 2012 Census of Agriculture. Of Wyoming's 23 counties, Sweetwater ranks 21st and Uinta ranks 18th in cattle production (NASS 2012).

Current permitted use of grazing on the Ashley National Forest is 45,873 head months (HMs) (59,360 animal unit months, AUMs) cattle and horse, and 41,417 HM (11,366 AUMs) sheep and goats. Additionally, there are 7,744 permitted AUMs on BLM-administered portions of the Ashley National Forest (Forest Service 2016d). These allotments are in Wyoming and are not separated by cattle and sheep. Actual or authorized use varies annually, based on precipitation levels, vegetation conditions, and other factors. In 2015, authorized use was estimated at 39,735 HM (51,666 AUM) cattle and horses and 12,056 HM (3,331 AUM) sheep and goats. Actual grazing levels were 39,735 cattle and horses, and 12,056 sheep and goats. There are 92 grazing permittees on the Ashley National Forest. The majority are in Duchesne (44.6 percent) and Uintah (32.6 percent) counties. The next largest permittee location is Sweetwater County (5.6 percent). Daggett, Wasatch and Utah counties all have three permittees each. There are 39 permittees on the BLM managed Ashley National Forest grazing allotments in Wyoming, with the majority located in Sweetwater (62 percent) and Daggett (18 percent) counties.

The actual use levels of grazing on the Ashley National Forest support approximately 127 jobs (in Daggett, Duchesne, Uintah, and Sweetwater counties) annually. The approximate labor income for grazing is $2.78 million annually. If all permitted head months were grazed, it would support 162 jobs and $3.5 million in labor income annually.

Forest Products

Figure 9 below represents the volume of timber harvested from the Ashely National Forest from 1979 to Present. Timber harvesting peaked in 1988 at 26,669 mbf (thousand board feet) and has averaged between 4,000 and 6,000 mbf since 2001. Utah's commercial timber harvest in 2012 was 19.4 mmbf (million board feet), of which 52 percent was harvested from national forests (Forest Service, 2016). The Ashley National Forest supplied 1,904 mbf in 2012, which is approximately 16 percent of the National Forest timber that was harvested in Utah (Forest Service, Products). In 2012, 58 percent of Utah's harvest was processed in state. Duchesne and Uintah counties each have three wood product processing facilities, which represents one third of the facilities in the state (Forest Service, 2016).

In 2012, Uintah County was the second largest county in Utah for timber harvesting, with 11.9 percent of the total (Summit was the leader, with 33 percent). Duchesne harvested 2.7 percent and Daggett produced less than 0.05 percent of Utah's total (Forest Service, 2016). In 2015, the leader in Utah's timber harvest was Wasatch County. Additionally, the timber harvest from the nearby Uinta-Wasatch-Cache National Forest was double the volume the Ashley's (Forest Service, Products).

Only Utah statistics are provided because there are no suitable timber stands on the Ashley National Forest that are located in Wyoming (Timber Specialist).

At 12 jobs, the timber program on the Ashley National Forest contributes the least to the area economies in employment. However, despite supporting only 12 jobs, timber supports $839,000 in labor income. This amount is $37,000 greater than labor income for recreation, which is supporting 26 jobs (see Table 9). In addition to saw timber, the job and income estimates include removal of poles, posts, and fuelwood. Employment and income estimates are based off a 10-year average (2006-2015).

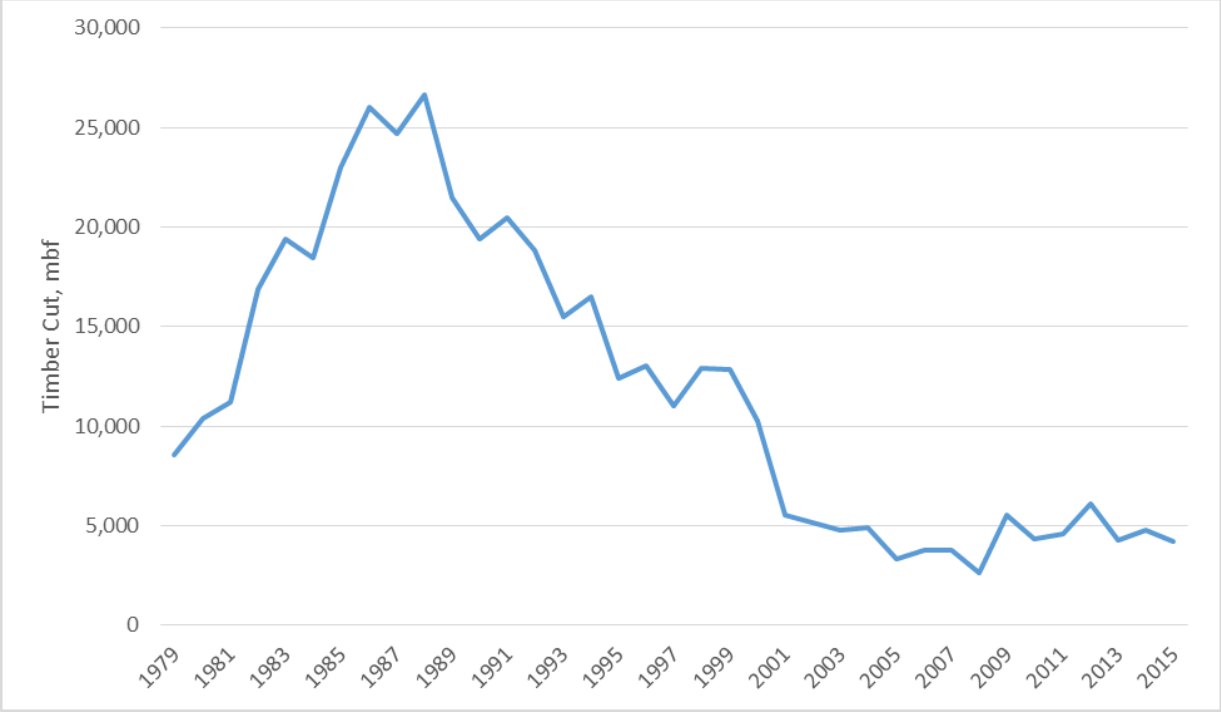


Figure 9: Timber volume cut (mbf), Ashley National Forest
Source: Forest Service: Forest Products Cut and Sold from the National Forests and Grasslands

Declining employment in the timber industry was identified by some local Ashley National Forest stakeholders (to include local county officials and government) as a critical component for decision makers and forest planners. From 1998 through 2014, employment in timber related sectors represented less than 1 percent of total employment in any of the planning area counties, accounting for approximately 80 jobs in 2014 (Census Bureau, County Business Patterns, 2016). Most employment occurs in sawmill and paper mill timber sectors.

Minerals

Saleable minerals extracted for use from the Ashely National Forest include crushed stone, dimension stone, and specialty minerals. The production and extraction of these minerals is small relative to the oil and gas extraction that has been occurring on the Ashley National Forest. The value of the oil and gas products extracted from the Ashley National Forest was more than $40 million. The value of the other minerals was $1.3 million (at 2014 prices). Gilsonite and other rare earth metals are present on the Ashley National Forest. However, there has been no past or current production of these minerals that would allow evaluation of possible economic impacts to the region.

There are currently 77,163 acres of Federal oil and gas leases on the Ashley National Forest. The cost ranges from $3-5 per acre, with a royalty rate of 16.66 percent. From 2012-2014, approximately 40 oil and gas wells were drilled per year. In 2015-2016, no new oil and gas wells were drilled. Oil and gas extraction data is only available for a single fiscal year, 2015-2016. During this time, 316,000 barrels of crude oil, 58,000 barrels of natural gas liquids, and 1,500,000 thousand cubic feet of natural gas were produced. Mineral extraction on the Ashley National Forest (using data from August 2015-2016, at 2014 prices) accounts for 40 jobs and more than $5 million dollars of labor income. This represents only 0.2 percent of mining related employment and 0.3 percent of mining related income in the planning area (see Table 12).

Oil and gas leases are held by only two companies. As such, production data is considered proprietary information and long-term production data is not currently available. An additional 50 oil and gas wells have been approved for development. Along with that, an additional 200 potential sites for oil and gas wells on Ashley National Forest have been identified, but have not been approved or evaluated for site-specific detail. Drilling and evaluation of these sites depends on the future market prices for crude oil and natural gas (Energy and Minerals Draft Assessment). Data on potential production volumes of these wells is not available. As such, a detailed employment and income analysis cannot be provided. However, it can be assumed that increased drilling will result in greater employment. Still, it is likely that drilling on the Ashley National Forest will remain a relatively small contributor to overall mining employment in the region.

Revenue Sharing

Figure 10 below is a graph of Payments in Lieu of Taxes (PILT) for the four counties that contain portions of the Ashley National Forest. PILT are annual Federal payments made to local governments to offset losses in property taxes, due to non-taxable Federal lands within the local government's boundaries. These payments are intended to help local governments carry out various vital resources, such as school funding, firefighting, road repair, construction, etc. PILT uses a formula that is based on total Federal land within the county, population, and receipt sharing land within the county. These payments are in addition to any Federal payments made to states for oil and gas leasing. (US Department of Interior, N.D.).

In addition to PILT, counties receive a portion of revenues generated on Nation Forest System lands. Figure 11 below graphs these additional payments, which are from the 25 Percent Fund and the Secure Rural Schools and Community Self-Determination Act. The 25 Percent Fund was established in 1908. The fund's purpose is to transfer 25 percent of the revenue generated from the sale of commodities produced on public lands directly to the local counties where the Federal land is situated. The payments must be used to finance roads and schools (US Department of Interior, N.D.).

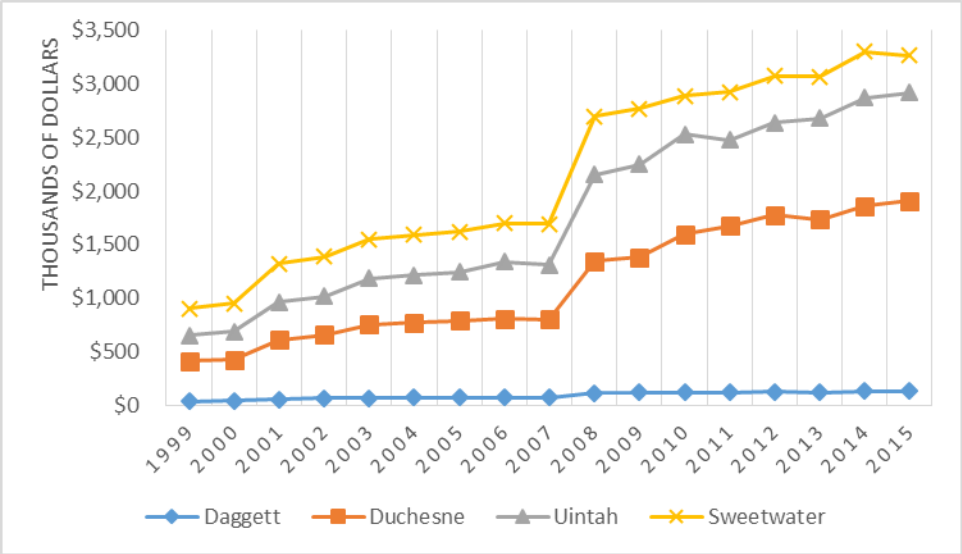


Figure 10: Payments in lieu of taxes for planning area
Source: Department of the Interior, 2016

The Secure Rural Schools and Community Self-Determination (SRS) Act of 2000 was enacted to assist rural counties who have been negatively affected by the decline in revenue from timber harvesting on Federal lands. SRS was initially implemented in fiscal year 2001, for a period of five years. SRS has since been reauthorized several times, making payments available every year since inception. Most recently, SRS was reauthorized in 2015 for an additional two years (US Department of Agriculture, 2015). Counties can either elect to receive payments for SRS or for the 25 Percent Fund. All counties in the planning region have been receiving payments from the SRS. Therefore, in Figure 11, all payments from 2001 forward are exclusively from SRS payments, while all payments prior to 2001 are from the 25% Fund (Forest Service, 2015).

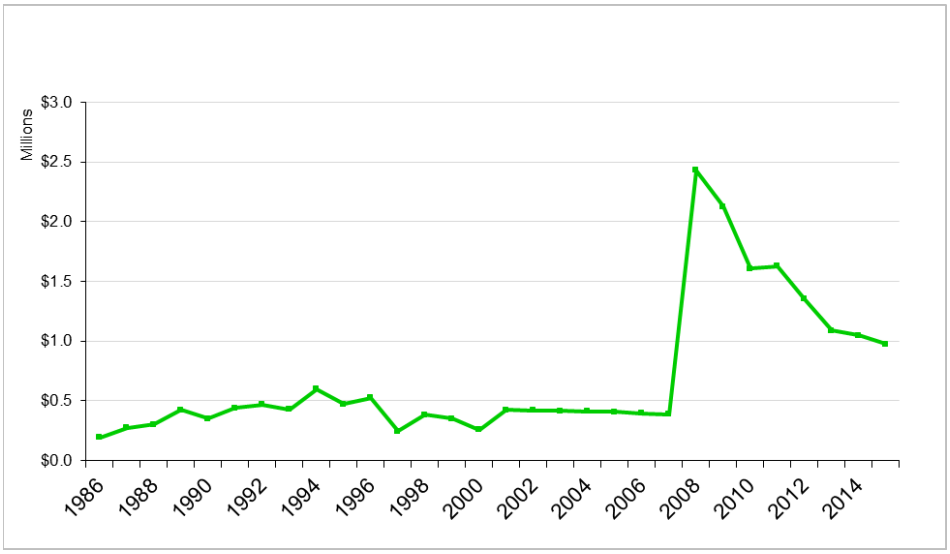


Figure 11: Federal land payments to planning area counties from Forest Service revenue sharing; payments include 25% Fund, Secure Rural Schools and Community Self-Determination Act
Source: USFS, 2016

Revenue sharing payments account for 63 jobs and $2.87 million dollars of labor income to the local area economies, see Table 9 above.

Ashley National Forest Contributions by Industry

Table 12 below describes the estimated contributions the Ashley National Forest has made to employment and labor income, by sector, in the analysis area (Daggett, Duchesne, Uintah, and Sweetwater counties).

Table 12: Current Ashley National Forest contributions to the analysis area, 2014 data

Industry	Employment (Full and Part time jobs)			Labor Income (thousands of 2014 dollars)		
	Area Totals	ANF Related	% of Total	Area Totals	ANF Related	% of Total
Agriculture	2,288	106	4.7%	$24,136	$1,499	6.2%
Mining	12,335	25	0.2%	$1,566,495	$4,754	0.3%
Utilities	679	1	0.2%	$89,662	$138	0.15%
Construction	5,204	5	0.1%	$309,843	$284	0.09%
Manufacturing	1,865	7	0.4%	$147,857	$245	0.17%
Wholesale Trade	2,235	11	0.5%	$157,623	$997	0.63%
Transportation/Warehousing	5,815	8	0.1%	$167,882	$698	0.42%
Retail Trade	4,021	4	1.2%	$297,932	$1,301	0.44%
Information	566	2	0.3%	$28,501	$87	0.31%
Finance and Insurance	1,733	6	0.4%	$47,881	$214	0.45%
Real Estate/Rental/Leasing	2,618	10	0.4%	$105,444	$205	0.19%
Prof/Scientific/Tech Svc.	2,103	10	0.5%	$118,527	$508	0.43%
Mgmt. of Companies	1,085	2	0.2%	$20,862	$46	0.22%
Admin/Waste Mgmt.	1,585	6	0.4%	$36,507	$143	0.39%
Educational Services	178	1	0.4%	$2,521	$11	0.43%
Health Care/Social Assist.	3,014	12	0.4%	$128,782	$572	0.404%
Arts/Entertainment/Rec	660	4	0.7%	$7,532	$64	0.85%
Accommodation/Food Svc.	4,232	37	0.9%	$79,376	$682	0.86%
Other Services	2,614	10	0.4%	$126,440	$501	0.40%
Government	9,656	258	2.7%	$553,899	$11,852	2.14%
Total	64,486	568	0.88%	$4,017,700	$24,802	0.62%

Source: Minnesota IMPLAN 2014

Consistent with Table 9 above, the estimates exclude spending by local recreation users. Activities on the Ashley National Forest support approximately 568 jobs and $24.8 million in labor income. This is approximately 0.88 percent of total jobs, and 0.62 percent of labor income in the planning area. The sectors that have the highest employment supported by activities on the Ashley National Forest are:

- Government (258 jobs), supports $11.9 million in labor income
- Agriculture (106 jobs), supports approximately $1.5 million in labor income
- Retail trade (48 jobs), supports $1.3 million in labor income
- Mining (25 jobs), supports $4.8 million in labor income

Note that despite supporting more employment in the retail and agricultural sector, activities on the Ashley National Forest related to mining contribute significantly more to labor income. Typically, wages tend to be lower in both retail and agricultural sectors, while jobs related to mining are higher.

Data are not available to examine contributions from the Ashley National Forest by county or community. However, the labor income and employment generated from activities on the Ashley National Forest may not be spread evenly across the analysis area. Consequently, changes in activities on the Ashley could result in localized effects in areas that are more dependent on forest management. For example, retail trade in Sweetwater, and accommodation and food services in Daggett County, were large portions of their economy. As such, any changes to forest management activity could have greater impacts to these communities.

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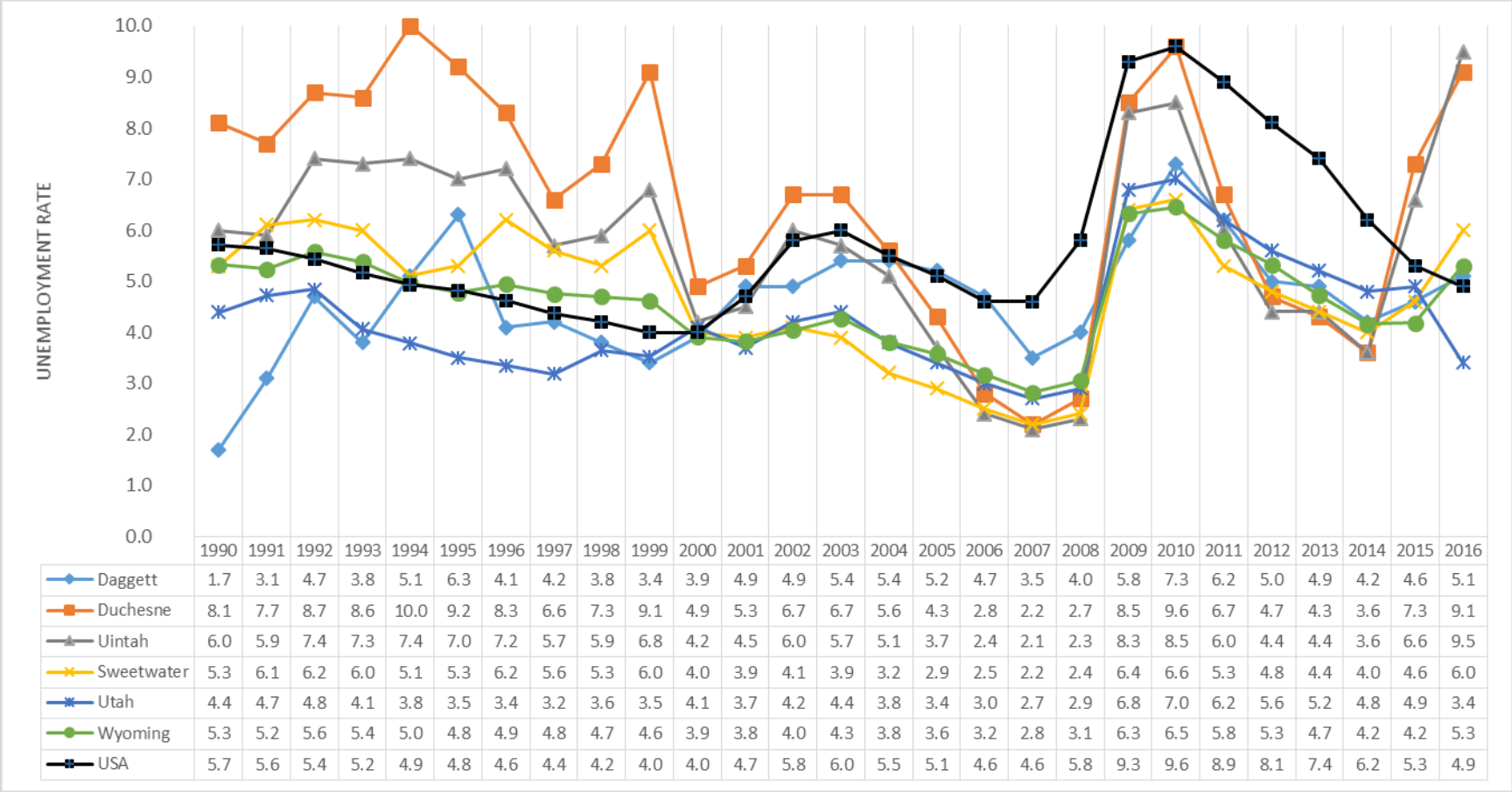
Appendix



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Daggett	1.7	3.1	4.7	3.8	5.1	6.3	4.1	4.2	3.8	3.4	3.9	4.9	4.9	5.4	5.4	5.2	4.7	3.5	4.0	5.8	7.3	6.2	5.0	4.9	4.2	4.6	5.1
Duchesne	8.1	7.7	8.7	8.6	10.0	9.2	8.3	6.6	7.3	9.1	4.9	5.3	6.7	6.7	5.6	4.3	2.8	2.2	2.7	8.5	9.6	6.7	4.7	4.3	3.6	7.3	9.1
Uintah	6.0	5.9	7.4	7.3	7.4	7.0	7.2	5.7	5.9	6.8	4.2	4.5	6.0	5.7	5.1	3.7	2.4	2.1	2.3	8.3	8.5	6.0	4.4	4.4	3.6	6.6	9.5
Sweetwater	5.3	6.1	6.2	6.0	5.1	5.3	6.2	5.6	5.3	6.0	4.0	3.9	4.1	3.9	3.2	2.9	2.5	2.2	2.4	6.4	6.6	5.3	4.8	4.4	4.0	4.6	6.0
Utah	4.4	4.7	4.8	4.1	3.8	3.5	3.4	3.2	3.6	3.5	4.1	3.7	4.2	4.4	3.8	3.4	3.0	2.7	2.9	6.8	7.0	6.2	5.6	5.2	4.8	4.9	3.4
Wyoming	5.3	5.2	5.6	5.4	5.0	4.8	4.9	4.8	4.7	4.6	3.9	3.8	4.0	4.3	3.8	3.6	3.2	2.8	3.1	6.3	6.5	5.8	5.3	4.7	4.2	4.2	5.3
USA	5.7	5.6	5.4	5.2	4.9	4.8	4.6	4.4	4.2	4.0	4.0	4.7	5.8	6.0	5.5	5.1	4.6	4.6	5.8	9.3	9.6	8.9	8.1	7.4	6.2	5.3	4.9

Figure 12. Unemployment rate in the planning area, Wyoming, Utah, and the U.S., 1990-2016