

## ***Social and Economic Conditions***

### **1. Stressor/Driver Description**

Stressors are “factors that may directly or indirectly degrade or impair ecosystem composition, structure, or ecological process in a manner that may impair its ecological integrity” (FSH 1909.12, zero code, section 5). Human uses and demand for forest resources act as a stressor. Population growth in communities near the Manti-La Sal National Forest may increase demand for forest resources and uses, such as water, recreation, timber, wildlife and fish, and infrastructure. Population growth near the national forest can also limit management options for addressing wildfire and forest restoration in the wildland-urban interface. Furthermore, population growth can create competition for resources (e.g., recreational user conflict) that affect well-being among nearby residents and forest visitors.

### **2. Indicators**

Measuring the human relationship with the ecological environment requires two types of indicators: those that help to understand social and economic conditions in communities near forest and those that measure human uses of national forest lands and resources. Relevant indicators include: population change, economic composition, and resource use data (i.e., recreation visits, timber cut and sold, mineral removal, authorized AUMs, and water withdrawals).

### **3. Scale**

Political and administrative (e.g., county or forest boundaries) do not necessarily correspond with economically-meaningful units. Therefore, the appropriate scale for addressing the social and economic environment will differ from the scales used to address other topics in the assessment. Reliable demographic and economic data are available at the county-level. Sub-county (e.g., towns and cities) data are limited and have large margins of error, particularly in rural areas. The economic modeling software, IMPLAN, uses county-level datasets. Functional economic areas are the primary scale for the social and economic analysis. Typically, these areas are a group of counties.

Due to the Manti-La Sal National Forest’s geographic distribution, the forest is divided into two socioeconomic areas. Area 1 includes six counties in central Utah: Carbon, Emery, Juab, Sanpete, Sevier, and Utah counties. Area 2 includes two counties in southeastern Utah and two counties in southwestern Colorado: Grand and San Juan counties in Utah and Mesa and Montrose counties in Colorado.

Forest Service resource use data are not typically available at the county-level. In some cases, data are only available forest-wide (e.g., recreational visits). Due to the inability to estimate resource use separately for the two socioeconomic areas, the economic contribution modeling uses a single 10-county model to estimate the role of the Manti-La Sal NF in economic activity in communities near the forest.

### **4. Existing condition of the indicators**

The U.S. Department of Agriculture’s Economic Research Service classifies all counties along a rural-urban continuum, which describes the degree of urbanization in a county. This is one measure of the degree to which human populations may act as a stressor on forest lands and resources. Most of the

counties in the forest’s two functional economic areas are rural. However, Juab and Utah counties in Area 1 make up the Provo-Orem Metropolitan Statistical Area (U.S. Census Bureau 2016).

*Table 1: Area 1 Rural-Urban Designations*

Location	Rural-Urban Designation
Carbon County, UT	Nonmetro - Urban population of 2,500 to 19,999, not adjacent to a metro area
Emery County, UT	Nonmetro - Urban population of 2,500 to 19,999, not adjacent to a metro area
Juab County, UT	Metro - Counties in metro areas of 250,000 to 1 million population
Sanpete County, UT	Nonmetro - Urban population of 2,500 to 19,999, adjacent to a metro area
Sevier County, UT	Nonmetro - Urban population of 2,500 to 19,999, not adjacent to a metro area
Utah County, UT	Metro - Counties in metro areas of 250,000 to 1 million population

Source: USDA ERS 2013

Area 2 contains the Grand Junction Metropolitan Statistical Area in Mesa County, but the population centers in Mesa County are not immediately adjacent to the National Forest System lands in the county.

*Table 2: Area 2 Rural-Urban Designations*

Location	Rural-Urban Designation
Grand County, UT	Nonmetro - Urban population of 2,500 to 19,999, not adjacent to a metro area
San Juan County, UT	Nonmetro - Urban population of 2,500 to 19,999, not adjacent to a metro area
Mesa County, CO	Metro - Counties in metro areas of fewer than 250,000 population
Montrose County, CO	Nonmetro - Urban population of 20,000 or more, adjacent to a metro area

Source: USDA ERS 2013

Most counties in both Area 1 and Area 2 are small in terms of population. In Area 1, county populations range from 10,349 (Juab County) to 28,129 (Sanpete County) except for Utah County, which had 540,425 residents in 2014. In Area 2, Mesa County has a population of 147,509, while the other three counties are considerably smaller (U.S. Census Bureau 2014). Current and population trend data in these counties are reported in the Trends section, below.

Household income and poverty rates can influence how nearby residents and visitors relate to National Forest System lands. Low household incomes and high poverty rates can make people more vulnerable to changes in resource availability and forest management. Low median household incomes and high rates of poverty can indicate that communities have fewer resources to adapt to change. These are two indicators of an area’s vulnerability to ecological change. Communities and households with fewer resources will have fewer opportunities to engage in substitute behavior (e.g., travel to another recreation site or replace lost forage for livestock).

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Table 3: Area 1 Income and Poverty

County/Location	Median Household Income	People below Poverty Line
Carbon County	\$46,366	14.1%
Emery County	\$50,653	11.3%
Juab County	\$56,976	*14.1%
Sanpete County	\$48,305	16.1%
Sevier County	\$46,327	14.7%
Utah County	\$60,830	13.8%
Utah	\$59,846	12.8%
United States	\$53,482	15.6%

Source: U.S. Census Bureau 2014 [Accessed from Headwaters Economics 2016]

\* Indicates data that is less reliable and should be interpreted with caution

The smaller and more rural counties of Carbon, Sanpete, and Sevier have below average incomes and higher poverty rates, however, only Sanpete has a poverty rate above the national average.

Table 4: Area 2 Income and Poverty

County/Location	Median Household Income	People below Poverty Line
Grand County	\$44,239	*16.3%
San Juan County	\$41,411	28.1%
Mesa County	\$48,610	15.8%
Montrose County	\$44,885	17.2%
Utah	\$59,846	12.8%
Colorado	\$59,448	13.1%
United States	\$53,482	15.6%

Source: U.S. Census Bureau 2014 [Accessed from Headwaters Economics 2016]

\* Indicates data that is less reliable and should be interpreted with caution

Median household income is below the national and state averages in all counties in Area 2. Additionally, poverty rates exceed national and state averages in all four counties. These data indicate that communities surrounding the Manti-La Sal National Forest, particularly the communities near the southeastern portion of the forest, experience relatively high rates of economic insecurity. This suggests that these communities may be more dependent on forest resources and more vulnerable to changes in resource availability (Lynn et al 2011).

The economic importance of natural resource-related sectors vary across the planning area. Large urban counties, like Utah County, are economically diverse with large shares of employment in high-skilled service sectors such as health, education, government, and professional, technical and scientific services (IMPLAN 2014). In contrast, smaller rural counties such as Emery, Juab, Grand, and San Juan counties, are more dependent on natural resource-related sectors. Agricultural employment (including grazing and forestry) accounts for approximately 10 percent of jobs in Emery and San Juan counties (IMPLAN 2014). Mining accounts for another 10 percent of jobs in Emery County (IMPLAN 2014). Variation in natural resource dependence among the planning area counties suggests that Forest Service management actions will have differential economic effects across the planning area.

County-level breakdowns of employment by sector for all planning area counties are contained in Appendix A.

## 5. Trends

From 2000 to 2010 Area 1 saw significant population growth, especially for the more metropolitan Utah County, whose populations doubled or nearly doubled. From 2010 to 2014 growth slowed across Area 1, Utah, and the United States as a whole, however, Utah County continued to grow at an above average pace when compared to the United States. The rural counties of Carbon, Emery, and Sevier saw much less population growth from 2000 to 2010, and zero to negative growth between 2010 and 2014.

Table 5: Area 1 Population Change, by County

Location	Population 2000	Population 2010	% Change 2000-2010	Population 2014	% Change 2010-2014
Carbon County	20,422	21,403	4.8%	21,118	-1.3%
Emery County	10,860	10,976	1.1%	10,834	-1.3%
Juab County	8,238	10,246	24.4%	10,349	1.0%
Sanpete County	22,763	27,822	22.2%	28,129	1.1%
Sevier County	18,842	20,802	10.4%	20,812	0.0%
Utah County	368,536	516,564	40.2%	540,425	4.6%
Area 1	449,661	607,813	35.2%	631,667	3.9%
Utah	2,233,169	2,763,885	23.8%	2,858,111	3.4%
Colorado	4,301,261	5,029,196	16.9%	5,197,580	3.3%
United States	281,421,906	308,746,065	9.7%	314,107,084	1.7%

Source: U.S. Census Bureau 2000, 2010, and 2014 [Accessed from Headwaters Economics 2016]

Area 2 also experienced rapid population growth from 2000 to 2010. Growth was led by the two Colorado counties in Area 2, Mesa and Montrose, which saw growth at twice the national rate. Population growth slowed significantly for Area 2 counties between 2010 and 2014. Montrose County's population declined slightly over this period.

Table 6: Area 2 Population Change, by County

Location	Population 2000	Population 2010	% Change 2000-2010	Population 2014	% Change 2010-2014
Grand County	8,485	9,225	8.7%	9,348	1.3%
San Juan County	14,413	14,746	2.3%	14,944	1.3%
Mesa County	116,255	146,723	26.2%	147,509	0.5%
Montrose County	33,432	41,276	23.5%	40,885	-0.9%
Area 2	172,585	211,970	22.8%	212,686	0.3%
Utah	2,233,169	2,763,885	23.8%	2,858,111	3.4%
Colorado	4,301,261	5,029,196	16.9%	5,197,580	3.3%
United States	281,421,906	308,746,065	9.7%	314,107,084	1.7%

Source: U.S. Census Bureau 2000, 2010, and 2014 [Accessed from Headwaters Economics 2016]

These data indicate that human population pressure on Manti-La Sal National Forest's lands and resources have increased considerably since the Manti-La Sal Forest National Forest Land and Resource Management Plan was published in 1986.

## **6. Resources Affected**

Pockets of rapid population growth near the forest, particularly in Utah County, UT and Mesa and Montrose counties, CO can change demand for national forest resources and influence Forest Service management actions.

The conversion of land for residential development contributes to habitat fragmentation and the loss of open space. As noted above, the North Zone population has grown rapidly since 2000. Population growth increases demand for residential development. In the North Zone, most of the residential development between 2000 and 2010 occurred in exurban areas, where lot sizes are relatively large (Theobald 2013). Exurban residential development is more likely to contribute to habitat fragmentation and the loss of open space compared to residential development in urban and suburban areas. Although the population in the South Zone has grown less rapidly, the counties have experienced similar trends in residential development. Most of the residential development in South Zone counties has occurred in exurban areas (Theobald 2013).

Exurban residential development increases the size of the wildland-urban interface. Residential development adjacent to wildlands increases the cost and complexity of national forest management due to the need for fire suppression to protect human life and property. Residents who live near forest lands are also more likely to be affected by smoke emissions associated with forest restoration activities.

In the South Zone, residential development in the wildland-urban interface is minimal. In 2010, less than 2 percent of the wildland-urban interface in South Zone counties contained homes (Gude et al 2008, U.S. Census Bureau 2010, and U.S. Census Bureau 2011). The North Zone has slightly higher residential development in the wildland-urban interface: 2.5 percent of the wildland-urban interface contained homes in 2010. This is driven by Sevier and Utah counties, where 5 percent and 8 percent, respectively, of the wildland-urban interface had residential development (Gude et al 2008, U.S. Census Bureau 2010, and U.S. Census Bureau 2011). Overall, these trends suggest that residential development in the wildland-urban interface in both North Zone and South Zone counties is modest and not driving increased fire suppression costs.

## **7. Management Tools**

Forest Service managers are not able to control the pace and distribution of population growth in communities near the Manti-La Sal National Forest. Therefore, management actions related to population growth must address the consequences, rather than causes, of population growth. Management tools include engaging with community members and forest visitors to understand demand for forest resources and discuss options for ensuring sustainable supplies of socially and economically valuable resources and opportunities. Effective stakeholder engagement can help to mitigate adverse effects of population growth on ecological conditions on the forest. Additionally, effective engagement can increase the social acceptability of forest management actions, such as forest restoration activities in the wildland-urban interface.

The Manti-La Sal NF manages forest resources for consistency with the Multiple-Use Sustained-Yield Act of 1960 and the National Forest Management Act of 1976. These statutes direct the agency to ensure the management of national forest resources to provide benefits to present and future generations. Sustainable forest management, as enshrined in these statutes, is the foundational tool for ensuring that national forests continue to provide benefits to people despite ecological and socioeconomic change.

## **8. Stressor Accumulation**

Increase in human populations and demand for resources and opportunities on the forest interacts with climate change, which may affect the provision of forest resources. One stressor (population change) can cause demand for forest resources to increase while another (climate change) can cause supply to decrease, leading to potential for increased competition for scarce resources. For example, population growth can increase water withdrawals, while climate change can reduce water quantity and degrade water quality. The accumulation of these two stressors can aggravate degradation of ecological conditions and declines in social and economic well-being.

## **9. Identify any data gaps**

Federal and state agencies collect a variety of demographic and economic data that inform the analysis of increased human populations as a stressor. However, data at fine geographic scales (e.g., sub-county) are typically unreliable or unavailable.

The Forest Service collects a variety of data on the use of forest resources (e.g., National Visitor Use Monitoring, Cut and Sold). These data enable the consideration of current uses and trends. However, resource use data are not synonymous with demand for forest resources and uses. The distinction between use and demand is relevant considering the role of increased human populations as an ecological stressor. If current resource availability is not satisfying demand, then there is potential for increased pressure on national forest lands regardless of population growth.

## **10. Literature Cited**

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## Appendix A: IMPLAN Data

### Area 1

Table 1: Employment by Industry, Carbon County, UT (IMPLAN 2014)

<b>Sector</b>	<b>Employment</b>
Total	11,645.39
Ag, Forestry, Fish & Hunting	309.84
Mining	794.24
Utilities	140.16
Construction	691.83
Manufacturing	380.80
Wholesale Trade	388.29
Retail Trade	1,302.17
Transportation & Warehousing	613.90
Information	87.81
Finance & Insurance	321.64
Real Estate & Rental	331.03
Prof, Sci, and Tech Services	501.58
Management of Companies	71.18
Admin & Waste Services	524.78
Educational Services	174.11
Health & Social Services	1,116.55
Arts, Entertainment & Recreation	154.15
Accommodation & Food Services	772.26
Other Services	1,028.88
Government	1,940.18

Table 2: Employment by Industry, Emery County, UT (IMPLAN 2014)

<b>Sector</b>	<b>Employment</b>
Total	5,248.98
Ag, Forestry, Fish & Hunting	506.83
Mining	513.12
Utilities	361.91
Construction	590.83
Manufacturing	66.68
Wholesale Trade	69.51
Retail Trade	630.36
Transportation & Warehousing	87.22
Information	65.92
Finance & Insurance	117.68
Real Estate & Rental	26.90
Prof, Sci, and Tech Services	144.61



Management of Companies	54.19
Admin & Waste Services	18.21
Educational Services	10.24
Health & Social Services	125.92
Arts, Entertainment & Recreation	61.21
Accommodation & Food Services	268.88
Other Services	663.86
Government	864.91

Table 3: Employment by Industry, Juab County, UT (IMPLAN 2014)

Sector	Employment
Total	5,207.54
Ag, Forestry, Fish & Hunting	365.59
Mining	135.17
Utilities	21.86
Construction	450.95
Manufacturing	877.05
Wholesale Trade	60.20
Retail Trade	439.99
Transportation & Warehousing	169.30
Information	18.12
Finance & Insurance	117.01
Real Estate & Rental	186.05
Prof, Sci, and Tech Services	238.26
Management of Companies	3.55
Admin & Waste Services	100.63
Educational Services	57.81
Health & Social Services	440.45
Arts, Entertainment & Recreation	165.37
Accommodation & Food Services	288.60
Other Services	333.37
Government	738.20

Table 4: Employment by Industry, Sanpete County, UT (IMPLAN 2014)

Sector	Employment
Total	12,069.91
Ag, Forestry, Fish & Hunting	1,117.16
Mining	71.78
Utilities	18.44
Construction	704.41
Manufacturing	815.46
Wholesale Trade	142.44
Retail Trade	1,189.24
Transportation & Warehousing	253.42

Information	192.24
Finance & Insurance	370.10
Real Estate & Rental	567.15
Prof, Sci, and Tech Services	1,026.98
Management of Companies	129.26
Admin & Waste Services	281.55
Educational Services	298.75
Health & Social Services	823.96
Arts, Entertainment & Recreation	132.09
Accommodation & Food Services	547.77
Other Services	749.03
Government	2,638.68

Table 5: Employment by Industry, Sevier County, UT (IMPLAN 2014)

Sector	Employment
Total	11,603.20
Ag, Forestry, Fish & Hunting	709.94
Mining	577.10
Utilities	57.15
Construction	585.16
Manufacturing	533.85
Wholesale Trade	714.98
Retail Trade	1,555.70
Transportation & Warehousing	1,048.27
Information	62.22
Finance & Insurance	342.46
Real Estate & Rental	330.13
Prof, Sci, and Tech Services	409.55
Management of Companies	0.00
Admin & Waste Services	278.02
Educational Services	86.25
Health & Social Services	1,102.12
Arts, Entertainment & Recreation	76.20
Accommodation & Food Services	897.36
Other Services	636.44
Government	1,600.32

Table 6: Employment by Industry, Utah County, UT (IMPLAN 2014)

Sector	Employment
Total	281,843.36
Ag, Forestry, Fish & Hunting	3,227.94
Mining	656.93
Utilities	332.19
Construction	21,548.90

Manufacturing	19,982.96
Wholesale Trade	7,664.08
Retail Trade	31,807.53
Transportation & Warehousing	2,985.29
Information	12,191.29
Finance & Insurance	17,420.86
Real Estate & Rental	14,331.93
Prof, Sci, and Tech Services	28,292.09
Management of Companies	2,404.78
Admin & Waste Services	15,493.90
Educational Services	15,545.15
Health & Social Services	26,401.97
Arts, Entertainment & Recreation	5,644.11
Accommodation & Food Services	17,757.41
Other Services	7,584.06
Government	30,569.99

## Area 2

Table 7: Employment by Industry, Grand County, UT (IMPLAN 2014)

Sector	Employment
Total	7,165.20
Ag, Forestry, Fish & Hunting	94.27
Mining	248.33
Utilities	35.69
Construction	504.63
Manufacturing	82.03
Wholesale Trade	93.53
Retail Trade	923.71
Transportation & Warehousing	146.81
Information	38.47
Finance & Insurance	130.13
Real Estate & Rental	441.70
Prof, Sci, and Tech Services	342.45
Management of Companies	59.36
Admin & Waste Services	114.06
Educational Services	69.98
Health & Social Services	482.15
Arts, Entertainment & Recreation	457.99
Accommodation & Food Services	1,501.66
Other Services	471.99
Government	926.26

Table 8: Employment by Industry, San Juan County, UT (IMPLAN 2014)

<b>Sector</b>	<b>Employment</b>
Total	6,105.55
Ag, Forestry, Fish & Hunting	723.20
Mining	335.91
Utilities	2.95
Construction	389.66
Manufacturing	202.30
Wholesale Trade	60.47
Retail Trade	397.39
Transportation & Warehousing	63.00
Information	21.15
Finance & Insurance	121.99
Real Estate & Rental	138.52
Prof, Sci, and Tech Services	301.39
Management of Companies	39.40
Admin & Waste Services	113.29
Educational Services	106.75
Health & Social Services	711.08
Arts, Entertainment & Recreation	188.01
Accommodation & Food Services	472.23
Other Services	196.71
Government	1,520.14

Table 9: Employment by Industry, Mesa County, CO (IMPLAN 2014)

<b>Sector</b>	<b>Employment</b>
Total	84,660.09
Ag, Forestry, Fish & Hunting	2,257.97
Mining	4,544.80
Utilities	246.64
Construction	5,987.93
Manufacturing	3,181.96
Wholesale Trade	2,740.92
Retail Trade	9,497.85
Transportation & Warehousing	3,147.71
Information	817.51
Finance & Insurance	4,036.51
Real Estate & Rental	4,511.48
Prof, Sci, and Tech Services	4,482.24
Management of Companies	616.23
Admin & Waste Services	4,564.51
Educational Services	518.06
Health & Social Services	10,473.95
Arts, Entertainment & Recreation	1,701.41

Accommodation & Food Services	7,260.98
Other Services	4,335.15
Government	9,736.28

Table 10: Employment by Industry, Montrose County, CO (IMPLAN 2014)

<b>Sector</b>	<b>Employment</b>
Total	22,041.44
Ag, Forestry, Fish & Hunting	1,494.10
Mining	251.04
Utilities	221.18
Construction	2,071.78
Manufacturing	1,423.16
Wholesale Trade	450.15
Retail Trade	2,538.23
Transportation & Warehousing	620.80
Information	185.89
Finance & Insurance	889.05
Real Estate & Rental	1,333.01
Prof, Sci, and Tech Services	1,074.25
Management of Companies	62.60
Admin & Waste Services	938.60
Educational Services	234.03
Health & Social Services	2,514.32
Arts, Entertainment & Recreation	371.31
Accommodation & Food Services	1,332.61
Other Services	1,287.83
Government	2,747.49