

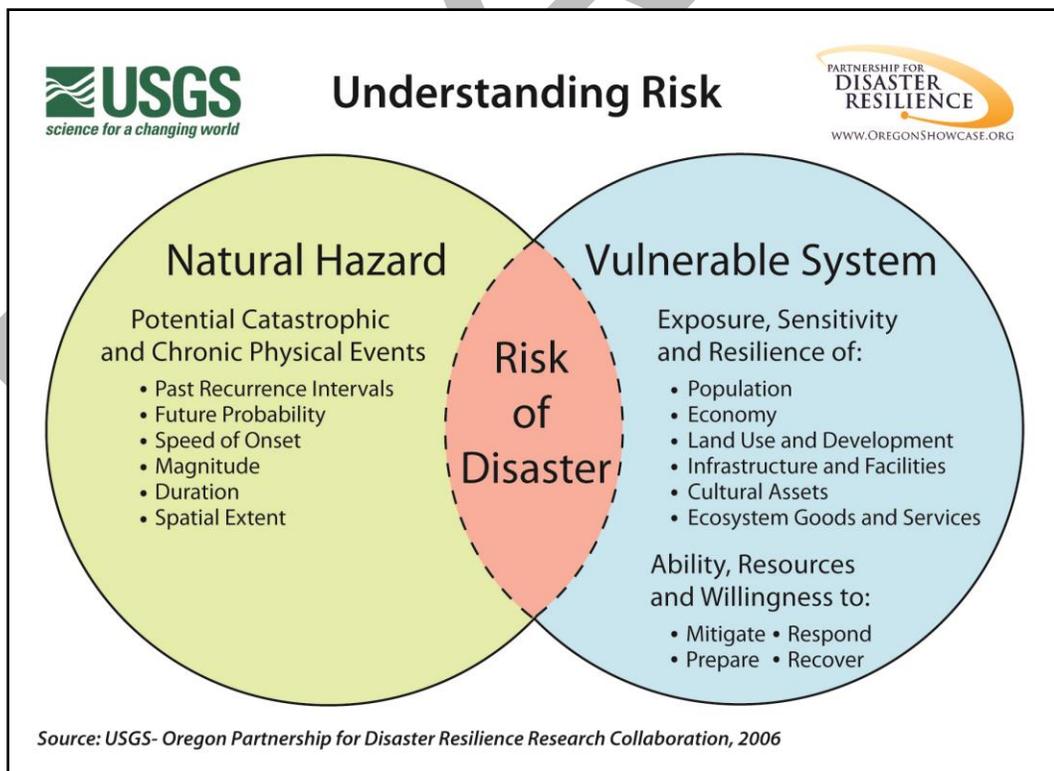
# APPENDIX C: COMMUNITY PROFILE

Community resilience can be defined as the community's ability to manage risk and adapt to natural hazard impacts. In order to help define and understand the city's sensitivity and resilience to natural hazards, the following capacities must be examined:

- **Natural Environment**
- **Social/Demographic**
- **Economic**
- **Built Environment**
- **Community Connectivity**
- **Political**

The Community Profile describes the sensitivity and resilience to natural hazards of Salem as they relate to each capacity. It provides a snapshot in time when the plan was developed and will assist in preparation for a more resilient city. The information in this section, along with the hazard assessments located in Section 2-Risk Assessment, should be used as the local level rationale for the risk reduction actions identified in Section 3 – Mitigation Strategy. The identification of actions that reduce the city's sensitivity and increase its resiliency assist in reducing overall risk of disaster, the area of overlap in the figure below.

**Figure C-1 Understanding Risk**



Source: Oregon Partnership for Disaster Resilience

# Natural Environment Capacity

The capacity of the natural environment is composed of elements known as natural capital. Natural capital is essential in sustaining all forms of life including human life, yet it often plays an underrepresented role in community resiliency to natural hazards. Natural capital includes land, air, water and other natural resources that support and provide space to live, work and recreate.<sup>1</sup> Natural capital such as wetlands and forested hill slopes play significant roles in protecting communities and the environment from weather-related hazards, such as flooding and landslides. When natural systems are impacted or depleted by human activities, those activities can adversely affect community resilience to natural hazard events.

## Geography and Climate

The City of Salem is in the Willamette Valley, between the Coast and the Cascade Mountain Ranges and encompasses 47.9 square miles<sup>2</sup>. The average elevation within the city limits is 154 ft. above sea level, ranging from 120 ft. around the Willamette River to 800 ft in the surrounding hills.<sup>3</sup> Salem contains the volcanic Salem Hills in the south and is positioned between the 1,000 ft. Eola Hills directly to the west and the 600 ft. Waldo Hills to the east.

Like most of the Willamette Valley, Salem experiences a modified marine climate where winters are cool and wet, while summers are moderately warm and dry.<sup>4</sup> The average annual precipitation is approximately 39.28 inches with the heaviest rainfall in late fall and winter. While major snow falls are rare, Salem does report an average annual snowfall of 7.1 inches.<sup>5</sup>

The primary river that flows through Salem is the Willamette River; other important streams that pass through are Mill Creek, the Mill Race, Pringle Creek, and the Shelton Ditch. Smaller streams in the eastern part of the city include Clark Creek, Jory Creek, Battle Creek, Croisan Creek and Clagget Creek, while Glen Creek and Brush Creek flow through West Salem.<sup>6</sup>

Salem obtains its drinking water from the North Santiam River watershed, located in the Cascade Foothills. Salem's average summer water use is over 35 million gallons with an average winter use of roughly 23 million gallons<sup>7</sup>.

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<sup>1</sup> Mayunga, J. 2007. Understanding and Applying the Concept of Community Disaster Resilience: A capital-based approach. Summer Academy for Social Vulnerability and Resilience Building.

<sup>2</sup> U.S. Census Bureau. State and County Quick Facts. <http://quickfacts.census.gov/qfd/states/41/4164900.html>. Accessed January 30, 2011

<sup>3</sup> Oregon Blue Book. <http://bluebook.state.or.us/local/cities/sy/salem.htm>. Accessed January 30, 2011

<sup>4</sup> Northwest River Forecast Center. <http://www.nwrfc.noaa.gov/river/river.cgi>

<sup>5</sup> Oregon Climate Service. <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?or7500>. Accessed January 30, 2011

<sup>6</sup> Salem Online History. The Creeks of Salem. [http://www.salemhistory.net/natural\\_history/salems\\_creeks.htm](http://www.salemhistory.net/natural_history/salems_creeks.htm). Accessed January 30, 2011

<sup>7</sup> City of Salem. Department of Public Works. <http://www.cityofsalem.net/Departments/PublicWorks/Operations/Water%20Services/Documents/ccr.pdf>

## Land Cover

Salem has a mix of residential, commercial, and industrial land uses. The central business district is in the core of downtown Salem, to the east of the Willamette River. Residential zoned lands emanate in all directions from the downtown. In many areas, including West Salem, agricultural use lands buffer in between the urban growth boundary and residential zoned areas. Due to the expansive network of rivers and streams throughout Salem, many residential, commercial and industrial zoned lands can be impacted by potential flooding, in the event the Willamette River and other local creeks and streams overflow their banks.

## Synthesis

The physical geography, weather, climate and land cover of an area represent various interrelated systems that affect overall risk and exposure to natural hazards. Climate change variability also has the potential to increase the effects of hazards in the area. These factors combined with a growing population and development intensification can lead to increasing risk of hazards, threatening loss of life, property and long-term economic disruption if land management is inadequate.

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## Social/Demographic Capacity

Social/demographic capacity is a significant indicator of community hazard resilience. The characteristics and qualities of the community population such as language, race and ethnicity, age, income, educational attainment, and health are significant factors that can influence the community's ability to cope, adapt to and recover from natural disasters. Population vulnerabilities can be reduced or eliminated with proper outreach and community mitigation planning.

### Population

Table C-1 shows that between 2010 and 2015, Salem experienced a population percent change of approximately 4%, with an average annual growth rate of 0.7%. These figures are slightly below statewide growth over the same period. Salem is located within Marion and Polk Counties; 84% of its population is within Marion County. The Portland State University Population Research Center forecasts Salem/Keizer's population to increase by 23% from 2017 - 2035, an increase of approximately 57,000 additional persons in the combined UGB.<sup>8</sup>

**C-1 Population Estimate for State, County, and Salem**

Jurisdiction	2010		2015		Change		
	Number	Percent*	Number	Percent*	Number	Percent	AAGR
<b>Oregon</b>	3,837,300	100%	4,013,845	100%	176,545	4.6%	0.9%
<b>Marion County</b>	315,900	8.2%	329,770	8.2%	13,870	4.4%	0.9%
<b>Salem (Part)</b>	130,788	3.4%	135,148	3.4%	4,359	3.3%	0.7%
<b>Polk County</b>	75,495	2.0%	78,570	2.0%	3,075	4.1%	0.8%
<b>Salem (Part)</b>	24,312	0.6%	25,542	0.6%	1,231	5.1%	1.0%
<b>Total Salem</b>	<b>155,100</b>	<b>4.0%</b>	<b>160,690</b>	<b>4.0%</b>	<b>5,590</b>	<b>3.6%</b>	<b>0.7%</b>

Source: Portland State University, Population Research Center, "Annual Population Estimates", 2015.

\*Percent calculated as percent of state population.

### Vulnerable Populations

Vulnerable populations, including seniors, disabled citizens, women, and children, as well as those people living in poverty, often experience the impacts of natural hazards and disasters more acutely. Hazard mitigation that targets the specific needs of these groups has the potential to greatly reduce their vulnerability. Examining the reach of hazard mitigation policies to special needs populations may assist in increasing access to services and programs. FEMA's Office of Equal Rights addresses this need by suggesting that agencies and organizations planning for natural hazards identify special needs populations, make recovery centers more accessible, and review practices and procedures to remedy any discrimination in relief application or assistance.

Population size itself is not an indicator of vulnerability. More important is the location, composition, and capacity of the population within the community. Research by social

<sup>8</sup> Population Research Center College of Urban and Public Affairs Portland State University. Oregon Population Forecast Program. Region 3 Documents. 2017. <https://www.pdx.edu/prc/region-3-documents>

scientists demonstrates that human capital indices such as language, race, age, income, education and health can affect the integrity of a community. Therefore, these human capitals can impact community resilience to natural hazards.

## Language

Special consideration should be given to populations who do not speak English as their primary language. Language barriers can be a challenge when disseminating hazard planning and mitigation resources to the general public, and it is less likely they will be prepared if special attention is not given to language and culturally appropriate outreach techniques.

While English is the dominant language spoken in Salem, 8% of the total population is not proficient in English and speaks another primary language. Outreach materials used to communicate with, plan for, and respond to non-English speaking populations should take into consideration the language needs of these populations.

**Table C-2 Salem Language Barriers**

	Population 5 years and over	English Only		Multiple Languages		Limited or No English	
		Number	Percent	Number	Percent	Number	Percent
<b>Oregon</b>	3,707,831	3,148,786	85%	559,045	15%	225,797	6%
<b>Marion County</b>	300,667	224,986	75%	75,681	25%	31,827	11%
<b>Polk County</b>	72,709	63,018	87%	9,691	13%	3,196	4%
<b>Salem</b>	<b>148,446</b>	<b>116,523</b>	<b>78%</b>	<b>31,923</b>	<b>22%</b>	<b>12,552</b>	<b>8%</b>

Source: U.S. Census Bureau, 2011-2015 American Community Survey, Table DP02

## Race

The impact in terms of loss and the ability to recover may also vary among minority population groups following a disaster. Studies have shown that racial and ethnic minorities can be more vulnerable to natural disaster events. This is not reflective of individual characteristics; instead, historic patterns of inequality along racial or ethnic divides have often resulted in minority communities that are more likely to have inferior building stock, degraded infrastructure, or less access to public services. The table below describes Salem's population by race and ethnicity.

Table C-3 describes Salem's population by race and ethnicity. While nearly 80% of people in Salem identify themselves as white, 20% percent identify with a race other than white. Similarly, individuals with Hispanic or Latino origins comprise approximately 22% of the total Salem population.

**Table C-3 Salem Race and Hispanic or Latino Origin**

Race	Oregon	Marion	Polk	Salem
Total Population	3,939,233	323,259	77,264	160,008
White	85%	82%	80%	80%
Black	2%	1%	1%	1%
AIAN	1%	1%	1%	1%
Asian	4%	2%	2%	3%
NHPI	<1%	1%	<1%	1%
Some Other Race	3%	8%	0%	7%
Two or More Races	4%	5%	3%	6%
Hispanic or Latino	485,646	81,907	9,910	34,786
Percent	12%	25%	13%	22%

Source: Social Explorer, Table T12, U.S. Census Bureau, 2011-2015 American Community Survey Estimates  
AIAN = American Indian and Alaskan Native, NHPI = Native Hawaiian and Other Pacific Islanders

It is important to identify specific ways to support all portions of the community through hazard mitigation, preparedness, and response. Culturally appropriate, and effective outreach can include both methods and messaging targeted to diverse audiences. For example, connecting to historically disenfranchised populations through already trusted sources or providing preparedness handouts and presentations in the languages spoken by the population will go a long way to increasing overall community resilience.

## Gender

Salem has slightly more females than males (Female 50.3%, Male: 49.7%).<sup>9</sup> It is important to recognize that women tend to have more institutionalized obstacles than men during recovery due to sector-specific employment, lower wages, and family care responsibilities.

## Age

Of the factors influencing socio demographic capacity, the most significant indicator in Salem may be age of the population. As depicted in the table below, as of 2015, 13% of the city population is over the age of 64 and 21% of the population is 15 or younger. The Salem age dependency ratio<sup>10</sup> is 50.2. The age dependency ratio indicates a higher percentage of dependent aged people to that of working age. The Oregon Office of Economic Analysis projects that, in 2035, there will be a higher percentage of the overall population over the age of 64. As the population ages, the city may need to consider different mitigation and preparedness actions to address the specific needs of a dependent population.

<sup>9</sup>Social Explorer, Table 4, U.S. Census Bureau, 2011-2015 American Community Survey Estimates

<sup>10</sup> The age dependency ratio is derived by dividing the combined under 15 and 65-and-over populations by the 15-to-64 population and multiplying by 100. A number close to 50 indicates about twice as many people are of working age than non-working age. A number that is closer to 100 implies an equal number of working age population as non-working age population. A higher number indicates greater sensitivity.

**Table C-4 Population by Vulnerable Age Groups**

Jurisdiction	Total	< 15 Years		> 64 Years		15 to 64	Age Dependency Ratio
		Number	Percent	Number	Percent		
Oregon	3,939,233	712,967	18%	606,877	15%	2,619,389	50.4
Marion County	323,259	69,048	21%	45,211	14%	209,000	54.7
Polk County	77,264	14,887	19%	12,648	16%	49,729	55.4
<b>Salem</b>	<b>160,008</b>	<b>33,350</b>	<b>21%</b>	<b>20,146</b>	<b>13%</b>	<b>106,512</b>	<b>50.2</b>
<b>2035</b>							
<b>Oregon</b>	4,995,200	865,889	17%	1,082,781	22%	3,046,530	64.0
Marion County	430,652	90,132	21%	80,796	19%	259,723	65.8
Polk County	113,348	20,994	19%	21,798	19%	70,556	60.6

Source: Social Explorer, Table 17, U.S. Census Bureau, 2011-2015 American Community Survey Estimates, Office of Economic Analysis, Long-Term County Population Forecast, 2010-2050 (2013 release).

The age profile of an area has a direct impact both on what actions are prioritized for mitigation and how response to hazard incidents is carried out. School age children rarely make decisions about emergency management. Therefore, a larger youth population in an area will increase the importance of outreach to schools and parents on effective ways to teach children about fire safety, earthquake response, and evacuation plans. Furthermore, children are more vulnerable to the heat and cold, have few transportation options and require assistance to access medical facilities. Older populations may also have special needs prior to, during and after a natural disaster. Older populations may require assistance in evacuation due to limited mobility or health issues. Additionally, older populations may require special medical equipment or medications, and can lack the social and economic resources needed for post-disaster recovery.<sup>11</sup>

## Families and Living Arrangements

Two ways the census defines households are by type of living arrangement and family structure. A householder may live in a “family household” (a group related to one another by birth, marriage or adoption living together); in a “nonfamily household” (a group of unrelated people living together); or alone. Salem is predominately comprised of family households (64%). Of all households, 29% are one-person non-family households (householder living alone). About 10% of householders live alone and are over the age of 65.

<sup>11</sup> Wood, Nathan. Variations in City Exposure and Sensitivity to Tsunami Hazards in Oregon. U.S. Geological Survey, Reston, VA, 2007.

**Table C-5 Selected Households and Families**

Jurisdiction	Total Households	Family Households		Household Living Alone		Householder Living Alone (age 65+)	
	Estimate	Estimate	Percent	Estimate	Percent	Estimate	Percent
Oregon	1,533,430	971,791	63%	427,884	28%	164,312	11%
Marion County	113,996	78,914	69%	28,746	25%	12,217	11%
Polk County	28,458	19,363	68%	6,672	23%	3,165	11%
<b>Salem</b>	<b>57,729</b>	<b>37,054</b>	<b>64%</b>	<b>16,783</b>	<b>29%</b>	<b>5,959</b>	<b>10%</b>

Source: U.S. Census Bureau, 2011-2015 American Community Survey Estimates, Table DP02

Table C-6 shows household structures for families with children. About 21% of all households within the city are married family households that have children. Another 11% of households are single parent households. These populations will likely require additional support during a disaster and may inflict strain on the system if improperly managed.

**Table C-6 Households with Children**

Jurisdiction	Total Households	Married-Couple with Children		Single Parent with Children	
	Estimate	Estimate	Percent	Estimate	Percent
Oregon	1,533,430	277,856	18%	130,209	8%
Marion County	113,996	23,273	20%	13,294	12%
Polk County	28,458	5,677	20%	2,129	7%
<b>Salem</b>	<b>57,729</b>	<b>11,863</b>	<b>21%</b>	<b>6,627</b>	<b>11%</b>

Source: U.S. Census Bureau, 2011-2015 American Community Survey Estimates, Table DP02Income

Household income and poverty status are indicators of socio-demographic capacity and the stability of the local economy. Household income can be used to compare economic areas as a whole, but does not reflect how the income is divided among the area residents. Table C-7 lists the distribution of household income and the median income in Salem in 2010 and 2015. Between 2010 and 2015 the share of households making less than \$15,000 increased by 2% (1,158 households). Median household Income decreased across Salem by 1%, from \$47,597 (2015 inflation adjusted) to \$47,191.

**Table C-7 Household and Median Income**

Household Income	2010 <sup>^</sup>		2015		Change in Share	
	Households	Percent	Households	Percent	Households	Percent
Less than \$15,000	6,807	12%	7,965	14%	1,158	2%
\$15,000-\$29,999	9,982	18%	9,575	17%	-407	-1%
\$30,000-\$44,999	9,882	17%	9,861	17%	-21	<-1%
\$45,000-\$59,999	7,329	13%	7,800	14%	471	1%
\$60,000-\$74,999	5,879	10%	5,903	10%	24	<1%
\$75,000-\$99,999	6,498	11%	7,118	12%	620	1%
\$100,000-\$199,999	8,783	16%	8,139	14%	-644	-1%
\$200,000 or more	1,419	3%	1,368	2%	-51	<-1%
<b>Median Household Income</b>	\$47,597		\$47,191		-406 -1%	

Source: Social Explorer, Table 56, U.S. Census Bureau, 2011-2015 American Community Survey and 2006-2010 American Community Survey

<sup>^</sup> 2010 dollars are adjusted for 2015 using the Social Explorers Inflation Calculator.

The table below identifies the percentage of individuals and cohort groups that are below the poverty level in 2015. It is estimated that 18% of individuals, 25% of children under 18, and 9% of people 65 and older live below the poverty level in Salem.

**Table C-8 Poverty Rates**

Jurisdiction	Total Population in Poverty		Children Under 18 in Poverty		18 to 64 in Poverty		65 or over in Poverty	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<b>Oregon</b>	636,947	16%	182,938	22%	405,616	17%	48,393	8%
<b>Marion County</b>	57,846	18%	22,323	28%	32,238	17%	3,285	8%
<b>Polk County</b>	12,270	16%	3,378	19%	7,988	18%	904	7%
<b>Salem</b>	27,744	18%	9,813	25%	16,290	17%	1,641	9%

Source: Social Explorer Tables 114, 115, 116, U.S. Census Bureau, 2011-2015 American Community Survey Estimates

Cutter's research suggests that lack of wealth contributes to social vulnerability because individual and community resources are not as readily available. Affluent communities are more likely to have both the collective and individual capacity to more quickly rebound from a hazard event, while impoverished communities and individuals may not have this capacity –leading to increased vulnerability. Wealth can help those affected by hazard incidents to absorb the impacts of a disaster more easily. Conversely, poverty, at both an individual and community level, can drastically alter recovery time and quality.<sup>12</sup>

Federal assistance programs such as food stamps are another indicator of poverty or lack of resource access. Statewide social assistance programs like the Supplemental Nutritional Assistance Program (SNAP) and Temporary Assistance for Needy Families (TANF) provide assistance to individuals and families. In Salem, TANF reaches approximately 1,740 families

<sup>12</sup> Cutter, S. L. (2003). Social Vulnerability to Environmental Hazards. *Social Science Quarterly*.

per month and SNAP helps to feed about 47,000 people per month.<sup>13</sup> Those reliant on state and federal assistance are more vulnerable in the wake of disaster because of a lack of personal financial resources and reliance on government support.

## Education

Educational attainment of community residents is also identified as an influencing factor in socio demographic capacity. Educational attainment often reflects higher income and therefore higher self-reliance. Widespread educational attainment is also beneficial for the regional economy and employment sectors as there are potential employees for professional, service and manual labor workforces. An oversaturation of either highly educated residents or low educational attainment can have negative effects on the resiliency of the community.

According to the U.S. Census, 87% of the Salem population over 25 years of age has graduated from high school or received a high school equivalency, with 27% going on to earn a Bachelor's Degree or higher.

**Table C-9 Educational Attainment**

	Oregon	Marion County	Polk County	Salem
<b>Population 25 years and over</b>	2,714,972	209,106	49,104	102,941
<b>Less than High School</b>	10%	16%	9%	13%
<b>High School Graduate or GED</b>	24%	27%	27%	26%
<b>Some College</b>	35%	35%	35%	34%
<b>Bachelor's Degree</b>	19%	15%	18%	17%
<b>Master's Degree</b>	8%	5%	9%	7%
<b>Professional School Degree</b>	2%	1%	1%	2%
<b>Doctorate Degree</b>	1%	1%	1%	1%
<b>Percent without Highschool Degree</b>	10%	16%	9%	13%
<b>Percent High School Graduate or Higher</b>	90%	84%	91%	87%
<b>Percent Bachelor's Degree or Higher</b>	31%	22%	30%	27%

Source: Social Explorer, Table 25, U.S. Census Bureau, 2011-2015 American Community Survey Estimates

## Health

Individual and community health play an integral role in community resiliency, as indicators such as health insurance, people with disabilities, dependencies, homelessness and crime

<sup>13</sup> Sabatino, J. (2017). Oregon TANF Caseload FLASH, "One and Two Parent Families Combined", District 3 (North and South Salem); May 2017 data, and Sabatino, J. (2017). Oregon SNAP Program Activity, "SSP, APD and AAA Combined", District 3 (North and South Salem); May 2017 data. Retrieved from State of Oregon Office of Business Intelligence website: <http://www.oregon.gov/DHS/ASSISTANCE/Pages/Data.aspx>, June 2017.

rate paint an overall picture of a community’s well-being. These factors translate to a community’s ability to prepare, respond to, and cope with the impacts of a disaster.

The Resilience Capacity Index recognizes those who lack health insurance or are impaired with sensory, mental or physical disabilities, have higher vulnerability to hazards and will likely require additional community support and resources. Thirteen-percent (13%) of the population in Salem is without health insurance. The percentage of uninsured changes with age, the highest rates of uninsured are within the 18 to 34-year cohorts. The ability to provide services to the uninsured populations may burden local providers following a natural disaster.

**Table C-10 Health Insurance Coverage**

Population Without Health Insurance	Salem	
	Number	Percent
<b>Total Civilian Noninstitutionalized Population</b>	20,705	13%
<b>Population Under 18:</b>	2,236	6%
<b>Population 18 to 24:</b>	3,488	21%
<b>Population 25 to 34:</b>	5,673	26%
<b>Population 35 to 64:</b>	9,193	16%
<b>Population 65 or Older:</b>	115	1%

Source: Social Explorer, Table 146, U.S. Census Bureau, 2011-2015 American Community Survey Estimates.

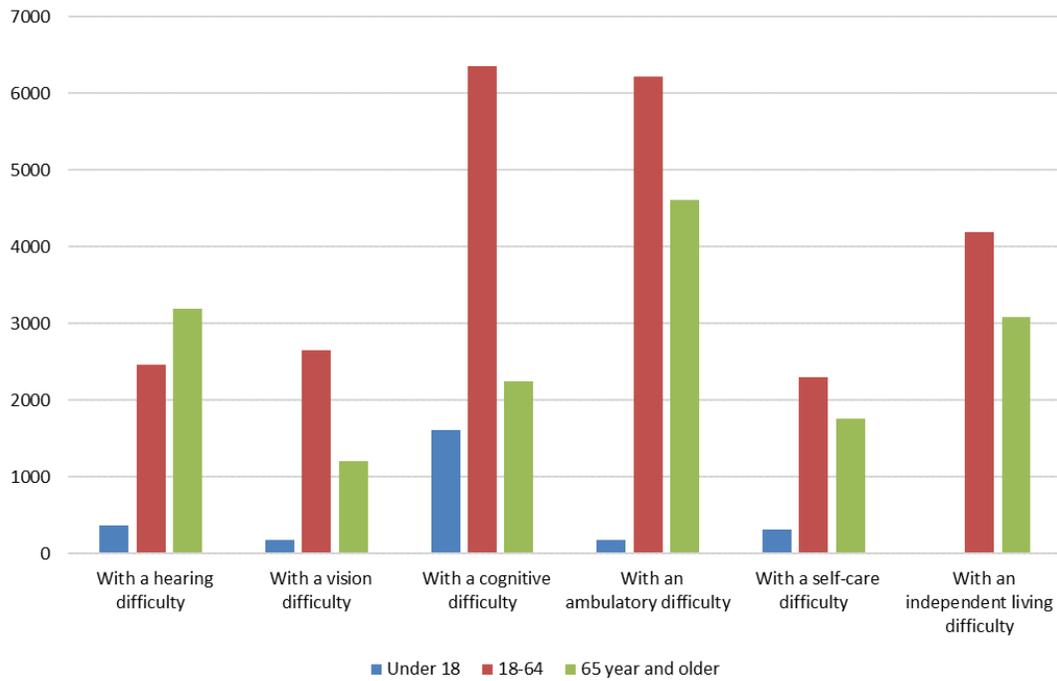
Table C-11 and Figure C-4 describe the percent and characteristics of the Salem disabled population. As of 2015, 14% of the Salem population has a disability; 5% of the population under 18, 14% of the population 18 to 64, and 37% of the population 65 and older. In addition, the most prevalent disabilities are cognitive and ambulatory. Overall, 7% of the population has a cognitive disability (about 10,200 people) and another 7% have an ambulatory disability (about 11,000 people). These populations may have unique challenges and needs in the event of an emergency situation.

**Table C-11 Disability Status**

Jurisdiction	Total Population Estimate	With a disability		Under 18 years with a disability		18 to 65 years with a disability		65 years and over with a disability	
		Estimate	Percent	Estimate	Percent^	Estimate	Percent^	Estimate	Percent^
Oregon	3,900,771	562,324	14%	39,690	5%	297,936	19%	224,698	26%
Marion County	317,324	46,774	15%	4,573	6%	25,806	14%	16,395	37%
Polk County	76,884	11,292	15%	846	5%	5,799	13%	4,647	37%
<b>Salem</b>	<b>154,822</b>	<b>22,412</b>	<b>14%</b>	<b>2,014</b>	<b>5%</b>	<b>13,217</b>	<b>14%</b>	<b>7,181</b>	<b>37%</b>

Source: U.S. Census Bureau, 2011-2015 American Community Survey, Table S1810.

**Figure C-2 Characteristics of the Disabled Population by Age Cohort**

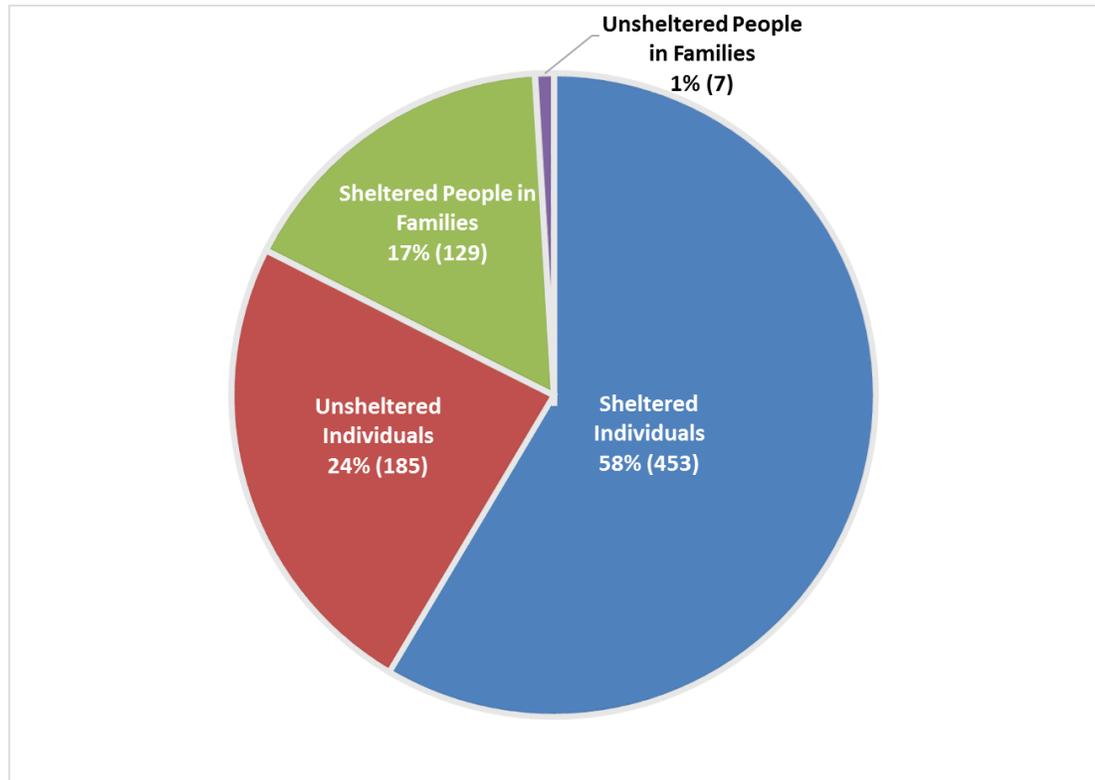


Source: U.S. Census Bureau, 2011-2015 American Community Survey, Table S1810.

In 2015, Oregon Housing and Community Services (OHCS) conducted a point-in-time homeless count to identify the number of homeless, their age and their family type. The OHCS study found that 638 individuals and persons in families in Marion and Polk Counties (including Salem) identify as homeless; 582 (75%) were sheltered (453 individuals and 129 persons in families), 192 (25%) were unsheltered (185 individuals and 7 persons in families).

The homeless have little resources to rely on, especially during an emergency. It will likely be the responsibility of the city and local non-profit entities to provide services such as shelter, food and medical assistance. Therefore, it is critical to foster collaborative relationships with agencies that will provide additional relief such as the American Red Cross and homeless shelters. It will also be important to identify how to communicate with these populations, since traditional means of communication may not be appropriate or available.

**Figure C-3 Marion and Polk Counties PIT Homeless Count (2015)**



Source: Oregon Housing and Community Services, 2015 Point-in-Time Homeless Count

## Synthesis

For planning purposes, it is essential Salem consider both immediate and long-term socio-demographic implications of hazard resilience. Immediate concerns include the growing elderly population and language barriers associated with a culturally diverse community. Even though the vast majority of the population is reported as proficient in English, there is still a segment of the population not proficient in English. These populations would serve to benefit from mitigation outreach, with special attention to cultural, visual and technology sensitive materials. The current status of other socio-demographic capacity indicators such as graduation rate, poverty level, and median household income can have long-term impacts on the economy and stability of the community ultimately affecting future resilience.

In mitigation and preparedness planning it is critical for the safety of all residents that messaging and actions are culturally sensitive to all racial and ethnic groups. This may range from providing multi-lingual services to adopting entirely different strategies for outreach or specialized mitigation actions to address the unique risk faced by various racial and ethnic groups. For example, if multigenerational family units are more typical in some cultures, evacuation may be more take longer to accommodate the elderly and children living at home, or could even be impeded if there is only one family car. Additionally, varying cultural perceptions of the trustworthiness of government may need to be overcome so that suggestions to evacuate or shelter in place are taken seriously by residents.

## Economic Capacity

Economic capacity refers to the financial resources present and revenue generated in the community to achieve a higher quality of life. Income equality, housing affordability, economic diversification, employment and industry are measures of economic capacity. However, economic resilience to natural disasters is far more complex than merely restoring employment or income in the local community. Building a resilient economy requires an understanding of how the component parts of employment sectors, workforce, resources and infrastructure are interconnected in the existing economic picture. Once any inherent strengths or systematic vulnerabilities become apparent, both the public and private sectors can take action to increase the resilience of the local economy.

## Regional Affordability

The evaluation of regional affordability supplements the identification of Social/demographic capacity indicators, i.e. median income, and is a critical analysis tool to understanding the economic status of a community. This information can capture the likelihood of individuals' ability to prepare for hazards, through retrofitting homes or purchasing insurance. If the community reflects high-income inequality or housing cost burden, the potential for home-owners and renters to implement mitigation can be drastically reduced. Therefore, regional affordability is a mechanism for generalizing the abilities of community residents to get back on their feet without Federal, State or local assistance.

## Income Equality

Income equality is a measure of the distribution of economic resources, as measured by income, across a population. It is a statistic defining the degree to which all persons have a similar income. The Gini index is a measure of income inequality. The index varies from zero to one. A value of one indicates perfect inequality (only one household has any income). A value of zero indicates perfect equality (all households have the same income).

Salem has a Gini coefficient of 0.46. Based on social science research, the region's cohesive response to a hazard event may be affected by the distribution of wealth in communities that have less income equality.<sup>14</sup>

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<sup>14</sup> Susan Cutter, Christopher G. Burton, and Christopher T. Emrich. 2010. "Disaster Resilience Indicators for Benchmarking Baseline Conditions," *Journal of Homeland Security and Emergency Management* 7, no.1: 1-22

**Table C-12 Regional Income Equality**

Jurisdiction	Income Inequality Coefficient
Oregon	0.46
Marion County	0.43
Polk County	0.42
<b>Salem</b>	<b>0.44</b>

Source: Social Explorer, Table 157, U.S. Census Bureau, 2011-2015 American Community Survey Estimates

## Housing Affordability

Housing affordability is a measure of economic security gauged by the percentage of an area's households paying less than 30% of their income on housing.<sup>15</sup> Households spending more than 30% are considered housing cost burdened. The table below displays the percentage of homeowners and renters reflecting housing cost burden across the region.

In Salem, 44% of all households spend more than 30% of their income on housing.<sup>16</sup> Renters were the group most likely to fall in this category (50%), while homeowners without a mortgage were the least likely (23%). In general, the population that spends more of their income on housing has proportionally fewer resources and less flexibility for alternative investments in times of crisis.<sup>17</sup> This disparity imposes challenges for a community recovering from a disaster as housing costs may exceed the ability of residents to repair or move to a new location. These populations may live paycheck to paycheck and are extremely dependent on their employer, in the event their employer is also impacted it will further the detriment experienced by these individuals and families.

**Table C-13 Households Spending as Percent of Income**

Jurisdiction	Owners				Renters	
	With Mortgage		Without Mortgage		Number	Percent
	Number	Percent	Number	Percent		
Oregon	314,873	50%	65,875	22%	299,549	50%
Marion County	22,764	49%	4,613	21%	22,953	50%
Polk County	5,754	46%	982	17%	5,389	53%
<b>Salem</b>	<b>9,744</b>	<b>45%</b>	<b>2,090</b>	<b>23%</b>	<b>13,505</b>	<b>50%</b>

Source: Social Explorer, Tables 103 and 109, U.S. Census Bureau, 2011-2015 American Community Survey Estimates

<sup>15</sup> University of California Berkeley. Building Resilient Regions, Resilience Capacity Index. <http://brr.berkeley.edu/rci/>.

<sup>16</sup> Social Explorer, Tables 103 and 109, U.S. Census Bureau, 2011-2015 American Community Survey Estimates

<sup>17</sup> University of California Berkeley. Building Resilient Regions, Resilience Capacity Index. <http://brr.berkeley.edu/rci/>.

## Economic Diversity

Economic diversity is a general indicator of an area’s fitness for weathering difficult financial times. Business activity in the Willamette Valley region is homogeneous and consists mostly of small businesses.

Economic diversity is a general indicator of an area’s fitness for weathering difficult financial times. One method for measuring economic diversity is through use of the Herfindahl Index, a formula that compares the composition of city and regional economies with those of states or the nation. Using the Herfindahl Index, a diversity ranking of 1 indicates the city with the most diverse economic activity compared to the state, while a ranking of 36 corresponds with the least diverse city economy. The table below describes the Herfindahl Index Scores for counties in the region.

Table C-14 shows that Marion and Polk Counties have economic diversity rankings of 3 and 9 respectively as of 2013. This is on a scale between all 36 counties in the state where 1 is the most diverse economic county in Oregon and 36 is the least diverse.

**Table C-14 Regional Herfindahl Index Scores**

County	2008			2013		
	Employment	Number of Industries	State Rank	Employment	Number of Industries	State Rank
Benton	26,433	199	23	25,247	201	21
Lane	123,008	260	4	114,670	260	5
Linn	36,360	225	5	33,934	222	4
<b>Marion</b>	<b>105,758</b>	<b>252</b>	<b>3</b>	<b>101,571</b>	<b>245</b>	<b>3</b>
<b>Polk</b>	<b>12,837</b>	<b>178</b>	<b>18</b>	<b>12,179</b>	<b>167</b>	<b>9</b>
Yamhill	27,797	209	9	27,860	209	6

Source: Oregon Employment Department

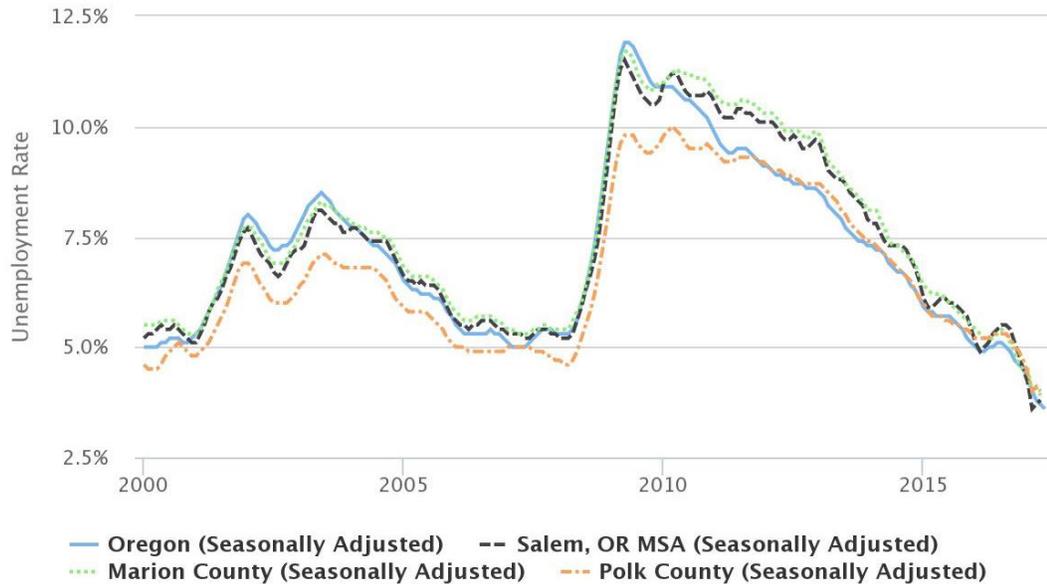
While illustrative, economic diversity is not a guarantor of economic vitality or resilience. Salem, as of 2015, is listed as an economically distressed community as prescribed by Oregon Law. The economic distress measure is based on indicators of decreasing new jobs, average wages, and income, and is associated with an increase of unemployment.<sup>18</sup>

<sup>18</sup> Business Oregon – Oregon Economic Data “Distressed Communities List”, <http://www.oregon4biz.com/Publications/Distressed-List/>

## Employment and Wages

According to the Oregon Employment Department, unemployment has declined since a high of 11.5% in April 2009. As of April 2017, the unemployment rate for Salem (3.8%) is about the same as the rate for Oregon (3.7%).

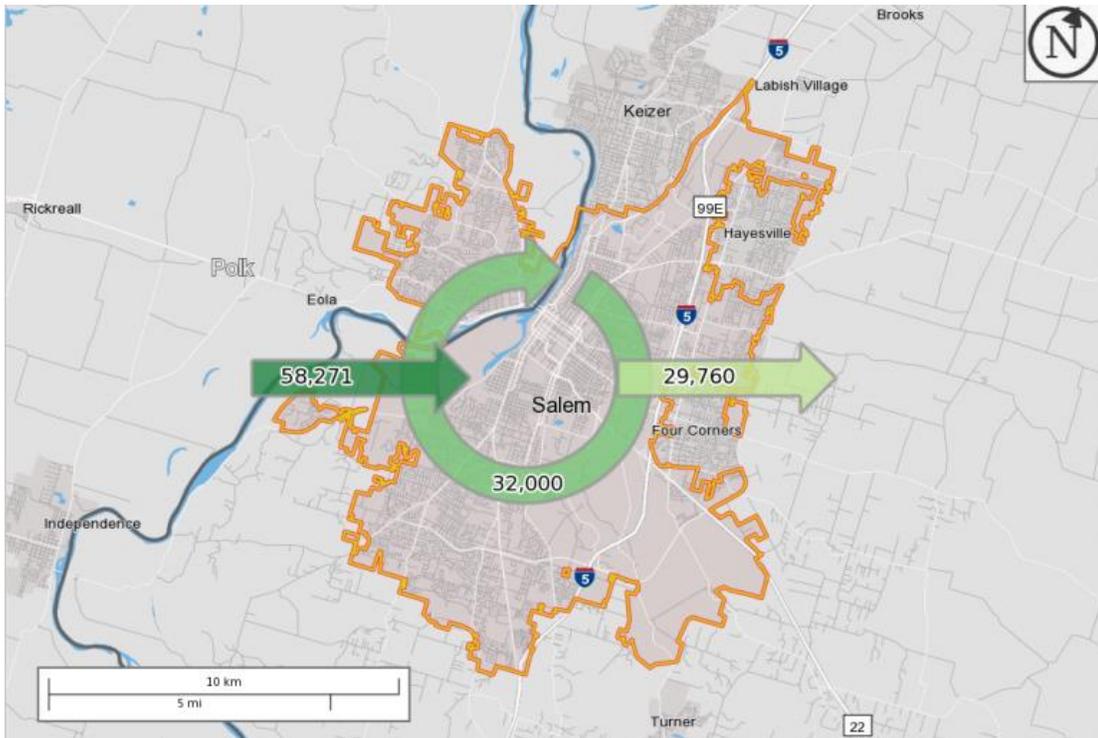
**Figure C-4 Unemployment Rate**



Source: Oregon Employment Department (Qualityinfo.org), "Local Area Unemployment Statistics".

Salem employers draw in about two-thirds (65%) of their workers from outside the city. The Salem economy is a cornerstone of regional economic vitality. Figure C-5 shows the city's laborshed; the map shows that about 35% of workers live and work in the city (32,000), 65% of workers come from outside the city (58,271), and about 48% of residents work outside of the city (29,760).

**Figure C-5 Salem Laborshed**



Source: U.S. Bureau of the Census, [On The Map](#).

Mitigation activities are needed at the business level to ensure the health and safety of workers and limit damage to industrial infrastructure. Employees are highly mobile, commuting from all over the surrounding area to industrial and business centers. As daily transit rises, there is an increased risk that a natural hazard event will disrupt the travel plans of residents across the region and seriously hinder the ability of the economy to meet the needs of Salem residents and businesses.

Approximately 87% of commuters travel by car; 74% of these individuals commute alone while 13% carpool.<sup>19</sup> Increased commuting creates a greater dependency on roads, communications, accessibility, and, in the event of a hazard incident, emergency evacuation routes to reunite people with their families. Before a natural hazard event, large or small businesses can develop strategies to prepare for natural hazards, respond efficiently, and prevent loss of life and property.

## Industry

Key industries are those that represent major employers and are significant revenue generators. Different industries face distinct vulnerabilities to natural hazards, as illustrated by the industry specific discussions below. Identifying key industries in the region enables communities to target mitigation activities towards those industries' specific sensitivities. It

<sup>19</sup> Social Explorer, U.S. Census Bureau, 2011-2015 American Community Survey. Table T128

is important to recognize that the impact that a natural hazard event has on one industry can reverberate throughout the regional economy.

This is of specific concern when the businesses belong to the basic sector industry. Basic sector industries are those that are dependent on sales outside of the local community; they bring money into a local community via employment. The farm and ranch, information, and wholesale trade industries are all examples of basic industries. Non-basic sector industries are those that are dependent on local sales for their business, such as retail trade, construction, and health services.

## Employment by Industry

Economic resilience to natural disasters is particularly important for the major employment industries in the region. If a natural hazard negatively impacts these industries, such that employment is affected, the impact will be felt throughout the regional economy. Thus, understanding and addressing the sensitivities of these industries is a strategic way to increase the resiliency of the entire regional economy.

The table below identifies Employment by industry in Salem. The top six industry sectors in Salem comprising the highest percent of total payroll employment, as of 2016, are Government (24%), Trade, Transportation, and Utilities (16%), Education and Health Services (15%), Leisure and Hospitality (9%) and Professional and Business Services and Manufacturing (both 8%). While Salem has some basic industries, such as Manufacturing; four out of their five largest industrial sectors are of the non-basic nature and thus they rely on local sales and services. Trending towards basic industries can lead to higher community resilience.

**Table C-15 Total Employment by Industry 2016, Expected Growth 2024**

Industry	2016			Average Wage	Percent Change in Employment (2010-2016)	Employment Forecast (2014-2024)
	Firms	Employment	Percent Employment			
Total Payroll Employment	12,224	168,942	100%	\$42,033	13%	10%
Total Private	11,556	127,499	75%	\$38,177	18%	11%
Natural Resources and Mining	625	11,648	7%	\$32,779	9%	11%
Construction	1,266	9,205	5%	\$51,658	46%	19%
Manufacturing	477	13,170	8%	\$41,499	13%	9%
Trade, Transportation & Utilities	1,905	26,293	16%	\$34,465	14%	8%
Wholesale Trade	478	3,919	2%	\$55,217	12%	7%
Retail Trade	1,176	18,378	11%	\$27,493	14%	8%
Information	137	1,122	1%	\$52,377	-9%	0%
Financial Activities	1,038	5,969	4%	\$48,947	3%	5%
Professional and Business Services	1,634	13,564	8%	\$42,851	19%	17%
Education and Health Services	1,311	24,900	15%	\$48,134	22%	15%
Leisure and Hospitality	962	14,640	9%	\$16,975	24%	9%
Other Services	2,165	6,968	4%	\$25,458	19%	15%
Private Non-Classified	35	18	-	\$46,538	-	-
Government						
Federal	68	1,377	1%	\$64,752	-24%	-5%
State	210	21,386	13%	\$58,583	3%	4%
Local	386	17,107	10%	\$48,159	-9%	2%

Source: Oregon Employment Department, "2010 and 2016 Covered Employment and Wages Summary Reports" and "Regional Employment Projections by Industry & Occupation 2014-2024". <http://www.qualityinfo.org>.

\*Based on 2024 projections for Linn, Marion, Polk, and Yamhill counties – Department of Administrative Services

## High Revenue Sectors

As of 2012, within Marion County the three sectors with the highest revenue were Retail Trade (\$3.9 billion), Wholesale Trade (3.2 billion), and Manufacturing (2.5 billion). In Polk County, the three highest revenue sectors were Manufacturing (\$424 million), Retail Trade (\$361 million), and Health care and social assistance (\$169 million). The table below shows the revenue generated by each economic sector (Note: not all sectors are reported). *Information specific to Salem is not available.*

Salem relies on both basic and non-basic sector industries and it is important to consider the effects each may have on the economy following a disaster. Basic sector businesses have a multiplier effect on a local economy that can spur the creation of new jobs, some of which may be non-basic. The presence of basic sector jobs can help speed the local recovery; however, if basic sector production is hampered by a natural hazard event, the multiplier effect could be experienced in reverse. In this case, a decrease in basic sector purchasing power results in lower profits and potential job losses for the non-basic businesses that are dependent on them.

**Table C-16 Revenue of Top Sectors in Salem (Employer)**

Sector Meaning (NAICS code)	Marion	Polk
	Sector Revenue (\$1,000)	Sector Revenue (\$1,000)
Retail trade	\$ 3,862,230	\$ 360,670
Wholesale trade	\$ 3,190,000	\$ 100,909
Manufacturing	\$ 2,540,329	\$ 424,650
Transportation and warehousing (104)	\$ 537,598	\$ 46,192
Professional, scientific, and technical services	\$ 448,352	\$ 36,222
Administrative and support and waste management and remediation services	\$ 318,626	\$ 26,321
Real estate and rental and leasing	\$ 269,711	\$ 19,399
Other services (81)	\$ 76,117	\$ 25,738
Arts, entertainment, and recreation (71)	\$ 215,700	\$ 4,599
Educational services	\$ 55,575	\$ 1,701
Health care and social assistance (62)	D	\$ 168,554
Accommodation and food services	D	D
Finance and Insurance	N	N
Information	N	N
Utilities	Q	Q

Source: U.S. Census Bureau, 2012 Economic Census, Table EC1200A1.

D = Withheld to avoid disclosing data for individual companies; data are included in higher level totals

N = Not available or not comparable

Q= Revenue not collected at this level of detail for multi-establishment firms

The *Retail Trade* sector generated a combined \$4.2 billion, making it the largest earning sector in the Salem region. The *Retail Trade* sector typically relies on residents and tourists and their discretionary spending ability. Residents' discretionary spending diminishes after a natural disaster when they must pay to repair their homes and properties. In this situation, residents will likely concentrate their spending on essential items that would benefit some types of retail (e.g., grocery) but hurt others (e.g., gift shops). The potential income from tourists also diminishes after a natural disaster as people are deterred from visiting the impacted area. Retail trade is also largely dependent on wholesale trade and the transportation network for the delivery of good for sale. Disruption of the transportation

system could have severe consequences for retail businesses. In summary, depending on the type and scale, a disaster could affect specific segments of retail trade, or all segments.

*Wholesale Trade* generated nearly about \$3.3 billion in the region. Wholesale Trade is closely linked with retail trade but it has a broader client base, with local and non-local businesses as the typical clientele. Local business spending will be likely to diminish after a natural disaster, as businesses repair their properties and wait for their own retail trades to increase. Distanced clients may have difficulty reaching the local wholesalers due to transportation disruptions from a natural disaster.

The *Manufacturing* sector was the third largest revenue generator, generating \$3.0 billion in the region. It is highly dependent upon the transportation network to access supplies and send finished products to outside markets. As a base industry, manufacturers are not dependent on local markets for sales, which contribute to the economic resilience of this sector.

If any of these primary sectors are impacted by a disaster, Salem may experience a significant disruption of economic productivity.

## **Future Employment in Industry**

Between 2010 and 2016 the sectors that experienced the largest percent growth were construction (46%), leisure and hospitality (24%), education and health services (22%), professional and business services (19%), and other services (19%). Some of these sectors often require more training and education, while others require less education and have lower wages.

Sectors that are anticipated to be major employers in the future also warrant special attention in the hazard mitigation planning process. As shown in Table C-16, between 2014 and 2024, the largest employment growth is anticipated within construction (19%), professional and business services (17%), health care and social assistance (20%), education and health services (15%), and other services (15%).<sup>20</sup>

## **Synthesis**

The current and anticipated financial conditions of a community are strong determinants of community resilience, as a strong and diverse economic base increases the ability of individuals, families, and the community to absorb disaster impacts for a quick recovery. Because Professional and Business Services, Construction, Health Care and Social Assistance, Education and Health Services, and Manufacturing are key to post-disaster recovery efforts, the region is bolstered by its major employment sectors. The city's economy is expected to grow by 2024, with much of the growth within the industries of construction, professional and business services, and education and health services industries. Areas with less income equality, particularly in the smaller cities, higher housing costs, and overall low economic diversity are factors that may contribute to slower recovery from a disaster.

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<sup>20</sup> Oregon Employment Department, "Mid-Valley Industry Employment Projections 2014-2024", <http://qualityinfo.org/pubs/projections/projections.pdf>, accessed September 2016.

## Built Environment Capacity

Built Environment capacity refers to the built environment and infrastructure that supports the community. The various forms, quantity, and quality of built capital mentioned above contribute significantly to community resilience. Physical infrastructures, including utility and transportation lifelines, are critical during a disaster and are essential for proper functioning and response. The lack or poor condition of infrastructure can negatively affect a community's ability to cope, respond and recover from a natural disaster. Following a disaster, communities may experience isolation from surrounding cities and counties due to infrastructure failure. These conditions force communities to rely on local and immediately available resources.

## Land Use and Development Patterns

One significant way in which Salem residents can increase or decrease their vulnerability to natural hazards is through development patterns. The way in which land is used – is it a parking lot or maintained as an open space – will determine how closely the man-made systems of transportation, economy, etc., interact with the natural environment. All patterns of development, density as well as sprawl, bring separate sets of challenges for hazard mitigation. Buildable lands within the Urban Growth Boundary (UGB) were intended to satisfy the demands of population and employment growth for a 20-year period. Follow this link for a map of Salem's current UGB:

<http://www.cityofsalem.net/CityDocuments/salem-urban-growth-boundary-map.pdf>.

## Regulatory Context

Oregon land use laws require land outside Urban Growth Boundaries (UGBs) to be protected for farm, forest, and aggregate resource values. For the most part, this law limits the amount of development in the rural areas. However, the land use designation can change from resource protection in one of two ways:

- The requested change could qualify as an exception to Statewide Planning Goals, in which case the city must demonstrate to the State that the change meets requirements for an exception. These lands, known as exception lands, are predominantly designated for residential use.
- Resource land can also be converted to non-resource use when it can be demonstrated to Corvallis that the land is no longer suitable for farm or forest production.

Local and state policies currently direct growth away from rural lands into UGBs, and, to a lesser extent, into rural communities. If development follows historical development trends, urban areas will expand their UGBs, rural unincorporated communities will continue to grow, and overall rural residential density will increase slightly with the bulk of rural lands kept in farm and forest use. The existing pattern of development in the rural areas, that of radiating out from the urban areas along rivers and streams is likely to continue. Most of the “easy to develop” land is already developed, in general leaving more constrained land such as land in the floodplains or on steep slopes to be developed in the future, perhaps increasing the rate at which development occurs in natural hazard areas.

Since 1973, Oregon has maintained a strong statewide program for land use planning. The foundation of that program is a set of 19 statewide planning goals that express the state's policies on land use and on related topics, such as citizen involvement, land use planning, and natural resources.

Most of the goals are accompanied by "guidelines," which are suggestions about how a goal may be applied. Oregon's statewide goals are achieved through local comprehensive planning. State law requires each city and city to adopt a comprehensive plan and the zoning and land-division ordinances needed to put the plan into effect. The local comprehensive plans must be consistent with the statewide planning goals. Plans are reviewed for such consistency by the state's Land Conservation and Development Commission (LCDC). When LCDC officially approves a local government's plan, the plan is said to be "acknowledged." It then becomes the controlling document for land use in the area covered by that plan.

### Goal 7

Goal 7: Areas Subject to Natural Disasters and Hazards has the overriding purpose to "protect people and property from natural hazards". Goal 7 requires local governments to adopt comprehensive plans (inventories, policies and implementing measures) to reduce risk to people and property from natural hazards. Natural hazards include floods, landslides, earthquakes, tsunamis, coastal erosion, and wildfires.

To comply with Goal 7, local governments are required to respond to new hazard inventory information from federal or state agencies. The local government must evaluate the hazard risk and assess the:

- a) frequency, severity, and location of the hazard;
- b) effects of the hazard on existing and future development;
- c) potential for development in the hazard area to increase the frequency and severity of the hazard; and
- d) types and intensities of land uses to be allowed in the hazard area.

Local governments must adopt or amend comprehensive plan policies and implementing measures to avoid development in hazard areas where the risk cannot be mitigated. In addition, the siting of essential facilities, major structures, hazardous facilities and special occupancy structures should be prohibited in hazard areas where the risk to public safety cannot be mitigated. The state recognizes compliance with Goal 7 for coastal and riverine flood hazards by adopting and implementing local floodplain regulations that meet the minimum National Flood Insurance Program (NFIP) requirements.

In adopting plan policies and implementing measures for protection from natural hazards local governments should consider:

- a) the benefits of maintaining natural hazard areas as open space, recreation, and other low density uses;
- b) the beneficial effects that natural hazards can have on natural resources and the environment; and
- c) the effects of development and mitigation measures in identified hazard areas on the management of natural resources.

Local governments should coordinate their land use plans and decisions with emergency preparedness, response, recovery, and mitigation programs. Given the numerous waterways and forested lands throughout Corvallis, special attention should be given to problems associated with river bank erosion and potential for wild land/urban interface fires.

Goal 7 guides local governments to give special attention to emergency access when considering development in identified hazard areas, including:

- a) Consider programs to manage stormwater runoff to address flood and landslide hazards,
- b) Consider non-regulatory approaches to help implement the goal,
- c) When reviewing development requests in high hazard areas, require site specific reports, appropriate for the level and type of hazards. Site specific reports should evaluate the risk to the site, as well as the risk the proposed development may pose to other properties.
- d) Consider measures exceeding the National Flood Insurance Program.

## Housing

In addition to location, the characteristics of the housing stock affect the level of risk posed by natural hazards. The table below identifies the types of housing most common throughout the city. Of interest are mobile homes, which account for 5% of the housing in Salem). Mobile homes are particularly vulnerable to certain natural hazards, such as windstorms, and special attention should be given to securing the structures, because they are more prone to wind damage than wood-frame construction. In other natural hazard events, such as earthquakes and floods, moveable structures like mobile homes are more likely to shift on their foundations and create hazardous conditions for occupants.

**Table C-17 Housing Profile**

Jurisdiction	Total Housing Units	Single Family		Multi-Family		Mobile Homes*	
		Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Oregon	1,695,183	1,154,878	68%	396,724	23%	143,581	8%
Marion County	122,315	82,672	68%	28,722	23%	10,921	9%
Polk County	30,651	21,971	72%	6,425	21%	2,255	7%
<b>Salem</b>	<b>61,417</b>	<b>39,801</b>	<b>65%</b>	<b>18,277</b>	<b>30%</b>	<b>3,339</b>	<b>5%</b>

Source: Social Explorer, Table 97, U.S. Census Bureau, 2011-2015 American Community Survey

\* Also includes boats, RVs, vans, etc. that are used as a residence.

Note: the percentages listed in the table above do not reflect the number of structures that are built within special flood hazard areas, or that are at risk of seismic damage.

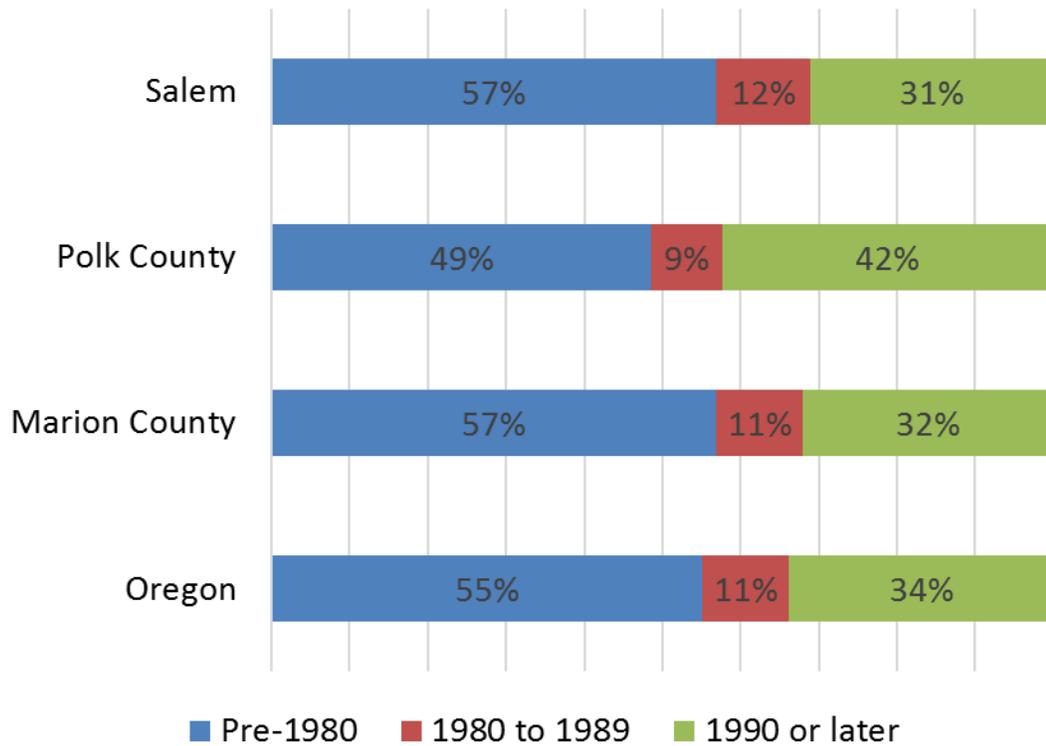
Aside from location and type of housing, the year structures were built has implications. Seismic building standards were codified in Oregon building code starting in 1974 more rigorous building code standards were passed in 1993 that accounted for the Cascadia earthquake fault.<sup>21</sup> Therefore, homes built before 1993 are more vulnerable to seismic

<sup>21</sup> State of Oregon Building Codes Division. *Earthquake Design History: A summary of Requirements in the State of Oregon*, February 7, 2012. [http://www.oregon.gov/OMD/OEM/ossprac/docs/history\\_seismic\\_codes\\_or.pdf](http://www.oregon.gov/OMD/OEM/ossprac/docs/history_seismic_codes_or.pdf)

events. Also in the 1970's, FEMA began assisting communities with floodplain mapping as a response to administer the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Upon receipt of floodplain maps (locally 1979), communities started to develop floodplain management ordinances to protect people and property from flood loss and damage.

Within Salem, 57% of the housing stock was built prior to 1980, before the local implementation of floodplain management ordinances, while 12% of the housing stock was built before 1990 and the codification of seismic building standards. About 31% of the city's housing stock was built after 1990.

**Figure C-6 Year Structure Built**



Source: U.S. Census Bureau, 2011-2015 American Community Survey, "Selected Housing Characteristics".

The National Flood Insurance Program's (NFIP's) Flood Insurance Rate Maps (FIRMs) delineate flood-prone areas. They are used to assess flood insurance premiums and to regulate construction so that in the event of a flood, damage minimized. The table below shows the initial and current FIRM effective dates for Salem communities. For more information about the flood hazard, NFIP, and FIRMs, please refer to Flood Hazard section of the Risk Assessment.

### Critical Facilities

Critical Facilities include buildings, their internal components and trained personnel, and may also include certain mobile units, such as those of first responders. For example, many vehicles of the police department, fire department (including ambulances), and public works

department are key and essential components of the functions provided by these critical facilities. The interruption or destruction of any of these facilities would have a debilitating effect on incident management and long-term recovery. Not all Critical Facilities are of equal importance, and are therefore subject to prioritization of criticality.

While lifelines and other physical infrastructure, such as, dams, power generation facilities and transmission lines, are also critical, they have been documented under physical infrastructure and utility lifelines for the purposes of this profile. This information provides the basis for informed decisions about the infrastructure and facilities already in place that can be used to reduce the vulnerability of Salem to natural hazards.

The critical facilities listed in this NHMP (Table C-18) utilize the same priority ranking scheme as the Salem LEAP (2012); it is based in part on the system used by Horry County, South Carolina, and makes use of the concept of Maximum Allowable Down Time (“MAD Time”). The top three lists of priorities appear below in order of descending importance.

- Priority One - Critical Facilities and Critical Infrastructure: The loss of energy supply to these facilities and assets, even for a few hours, could cause severe negative impacts on human life, health and safety, and the built environment, especially critical community assets. They are vital to the emergency response and recovery efforts, and require a constant energy supply to maintain functions. Emergency response plans shall include actions to assure that these Priority One Facilities and Infrastructure regain an adequate and stable source of energy as soon as possible after a disruption of energy flow.
- Priority Two - Critical Facilities and Critical Infrastructure: The loss of energy supply to these facilities and assets for more than 24 hours could cause severe negative impacts on human life, health and safety, and the built environment, especially critical community assets. Emergency response plans shall include actions to assure an adequate and stable energy source for these Priority Two Facilities and Infrastructure as soon as all (or as many as possible given the nature of the emergency event) of the Priority One Facilities and Infrastructure have been secured.
- Priority Three - Critical Facilities and Critical Infrastructure: The loss of energy supply to these facilities and assets for more than 72 hours could cause significant negative impacts on human life, health and safety, and the built environment, especially critical community assets. They are important to the disaster recovery effort and require an energy supply to maintain functions (although this supply may not need to be at normal levels nor uninterrupted). Emergency response plans shall include actions to secure appropriate energy for these facilities and infrastructure as soon as possible given the nature of the emergency event, and the ability of response and recovery teams to meet the energy needs of as many of the higher priority Critical Facilities and Infrastructure as possible.
- Priority 4 - Other Priority Critical Facilities and Infrastructure: As designated in coordination with the City and the emergency operation centers, this list should include the category of Nursing Homes, Critical Care Facilities, Special Needs Services, and Senior Centers. Schools in session should also be included here. Additional designated City of Salem Public Works Facilities and Infrastructure (e.g., water and sewage) should be included.

**Table C-18 Critical Facilities**

Facility Name	Owner	Type
<b>Priority 1</b>		
Anderson Readiness Center (Oregon National Guard)	Federal	Emergency Coordination/Communication
City Hall	Salem	Governance
Salem Fire Department	Salem	Emergency Response
Fire Station 1/ Fire Dept DOC	Salem	Emergency Response
Fire Station 2	Salem	Emergency Response
Fire Station 3	Salem	Emergency Response
Fire Station 4	Salem	Emergency Response
Fire Station 5	Salem	Emergency Response
Fire Station 6	Salem	Emergency Response
Fire Station 7	Salem	Emergency Response
Fire Station 8	Salem	Emergency Response
Fire Station 9	Salem	Emergency Response
Fire Station 10	Salem	Emergency Response
Fire Station 11	Salem	Emergency Response
Marion County Fire District 1	Special District	Emergency Response
Marion County Fire District 1	Special District	Emergency Response
Marion County Fire District 1	Special District	Emergency Response
Marion County Fire District 1 - Garage Bldg 2	Special District	Emergency Response
Marion County Fire District 1	Special District	Emergency Response
Marion County Fire District 1	Special District	Emergency Response
Marion County Sheriff's Office - Central District	Marion County	Emergency Response
Marion County Sheriff's Office	Marion County	Emergency Response
Oregon State Police	State	Emergency Response
Oregon State Police	State	Emergency Response
Fire Training/ Secondary EOC	Salem	Emergency Response
IT Department	Salem	Governance
Marion County Public Works	Marion County	Emergency Response
Oregon State Hospital Breitenbush Hall (Bldg 35)	Oregon	Medical
Oregon State Hospital Building 48	Oregon	Medical
Oregon State Hospital Eola Building (Bldgs 55/77)	Oregon	Medical
Oregon State Hospital McKenzie Hall (Bldg 40)	Oregon	Medical
Oregon State Hospital Santiam Hall (Bldg 34)	Oregon	Medical
Salem Health Laboratories	Private	Medical

Facility Name	Owner	Type
Salem Hospital Center for Outpatient Medicine	OHSU	Medical
Salem Hospital Critical Care Tower	OHSU	Medical
Salem Hospital Family Birth Center	OHSU	Medical
Salem Hospital Regional Rehabilitation Center	OHSU	Medical
Salem Hospital Winter Street Building	OHSU	Medical
Salem Police Department/ Police Department DOC	Salem	Emergency Response
Shop #19 Fleet Services Fuel Island	Salem	Transportation
Shop #2 Public Works Field Office/ DOC	Salem	Emergency Response
Shop #24 Radio Communication	Salem	Emergency Coordination/Communication
Shop #3 Fleet Services Office	Salem	Emergency Coordination/Communication
Willamette Valley Communication Center/ EOC	Salem	Emergency Coordination/Communication
<b>Priority 2</b>		
Cherriots (Salem-Keizer Transit)	Special District	Transportation
Comcast - Electrical	Private	Energy
GTE	Private	Energy
Info Tech Computer Support For Salem IT	Private	Emergency Response
Portland General Electric Company	Private	Energy
Qwest	Private	Energy
Salem Area Transit Dispatch (Cherriots)	Special District	Transportation
Salem Area Transit Fuel Station	Special District	Transportation
Salem Area Transit Maintenance Shop	Special District	Transportation
Salem Area Transit Wash Rack	Special District	Transportation
Salem Electric	Special District/ Cooperative	Energy
Salem Keizer School District Central Services, 24J	Special District	Mass Care and Shelter
Salem/Keizer School District Admin Office	Special District	Mass Care and Shelter
Center 50+	Non-Profit	Mass Care and Shelter
<b>Priority 3</b>		
Airport	Salem	Transportation
Airport Tower	Salem	Transportation
Amtrak	Federal	Transportation

Facility Name	Owner	Type
Army Aviation Support Facility	Federal	Emergency Response
Main Library	Salem	Miscellaneous
Salem Housing Authority	Salem	Miscellaneous
School District 24J Reprographics	Special District	Miscellaneous
Salem-Keizer Recycling and Transfer Station	Marion County	Miscellaneous
Weather Service		Governance
<b>Priority 4</b>		
Adult Mental Health	Marion County	Special Needs
Harmony House	Private	Special Needs
Mid-Willamette Valley Senior Center	Private	Mass Care and Shelter
Northwest Senior and Disability Services	Intergovernmental	Mass Care and Shelter
Northwest Senior and Disability Services	Intergovernmental	Mass Care and Shelter
Salem Senior Center	Private	Mass Care and Shelter
Seniors and Disabled Services		Special Needs
South Salem Sr. Center	Non-Profit	Mass Care and Shelter

Source: Salem Local Energy Assurance Plan. 2011. Updated by 2017 Salem NHMP Steering Committee

Salem is also unique in that there are a number of state owned government buildings throughout the city. These buildings are essential to government continuity throughout the entire state and should be included as critical infrastructure. It is essential that Salem recognize their importance; however, the city does not necessarily have control over them.

## Physical Infrastructure

Physical infrastructure includes transportation networks, dams and utilities. These infrastructures support the Salem community and economic activity. Due to the fundamental role that physical infrastructure plays both in pre- and post-disaster, they deserve special attention in the context of creating resilient communities.<sup>22</sup>

### Transportation

#### Roads & Bridges

Roads and bridges in the City of Salem are highly vulnerable to hazards specifically earthquakes. Because bridges vary in size, materials, siting, and design, any given hazard will affect them differently. When considering the expanse and integrity of transportation infrastructure within Salem and how it will impact the resilience of the City, it is imperative that infrastructure across Marion County is also considered. If a principal arterial is

<sup>22</sup> State of Oregon Natural Hazards Mitigation Plan, Region 4 Southwest Oregon Regional Profile.

obstructed beyond the City limits it will likely have significant impacts on access in and out of Salem.

Interstate-5 (I-5) is the principle arterial that connects Salem to northern and southern Oregon, and traverses through the interior of the City. There are also two non-interstate principal arterials: Highway 22 and 99E. Highway 22 runs east and west, connecting the Oregon Coast to Central Oregon through Salem. Highway 99E runs north and south, and provides connections to Interstate-205 (I-205) at Oregon City, as well as, Corvallis and Eugene to the South. Both non-interstate principle arterials serve as the main access for rural areas outside of Salem, including, Dallas, Independence, and Monmouth. See Figure C-7 for more information on Salem streets.

Bridge condition surrounding the City is also a factor that affects risk from natural hazards. Bridges damaged by hazards such as earthquakes can disrupt traffic and exacerbate economic losses because of the inability of industries to transport services and products to clients. The Marion County Public Works Department has assigned bridges with an operating rate, which determines whether overweight trucks can receive a permit to cross the bridge and if any requirements will be placed on their usage of the bridge. Six bridges just beyond the Salem City limits are presently restricted to certain maximum vehicle weights or dimensions. Table C-19 lists the weight and height restrictions of these bridges and shows the functional class of the roadway crossing that bridge.

**Table C-19 Marion County Bridges: Height and Weight Restrictions**

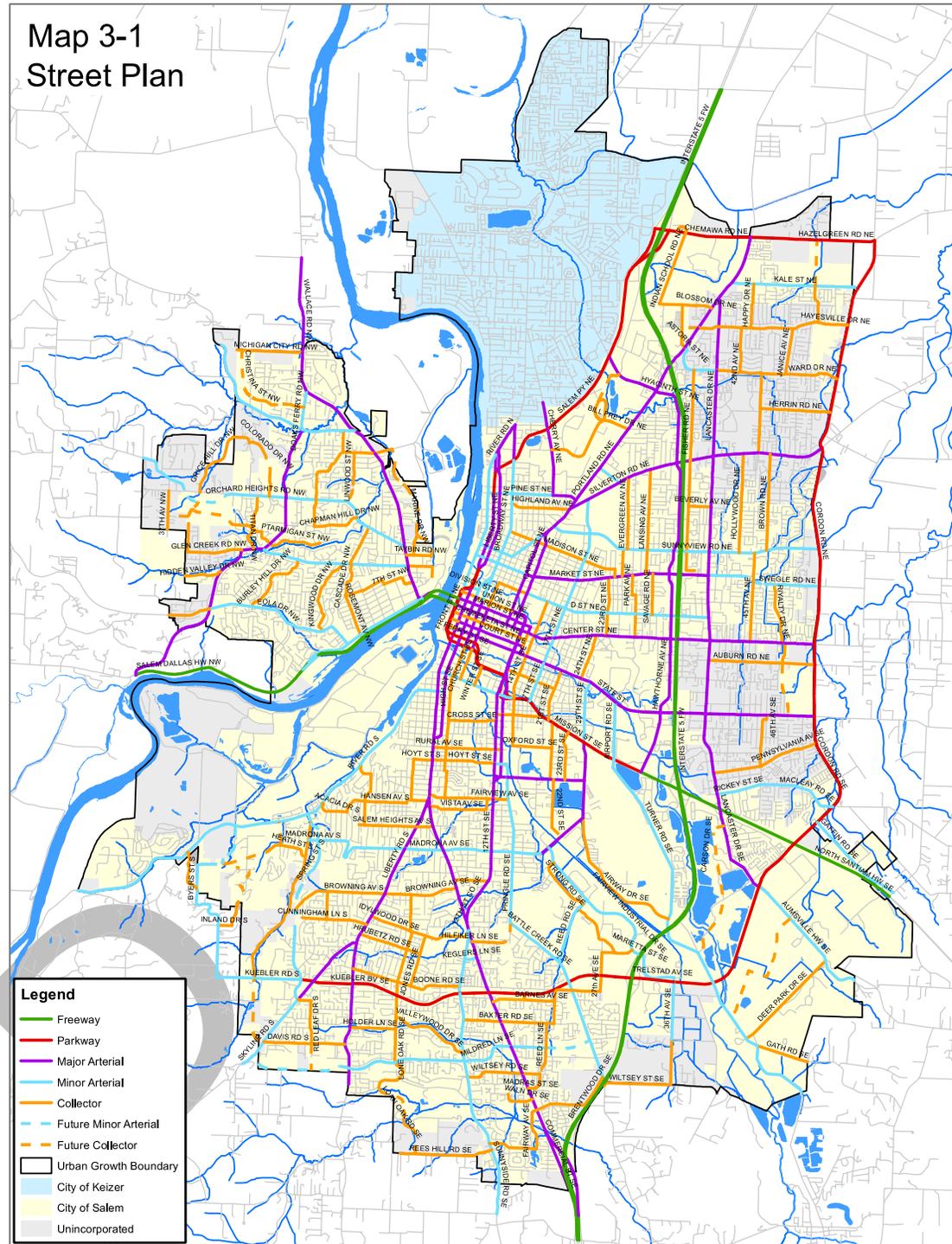
Bridge	Over	Restrictions	Functional Class
Gallon House Rd.	Abiqua Creek	20 Tons height: 14'2"	Local
Mt. Angel-Gervais Rd.	Pudding River	20-39 Tons*	Minor Collector
Jefferson-Marion Rd.	SP Railroad	40 Tons	Arterial
Labish Center Rd.	Little Pudding River	40 Tons	Minor Collector
Rambler Dr.	Little Pudding River	40 Tons	Local
River Rd. South	Willamette River	40 Tons	Arterial

Source: Marion County Rural Transportation Plan

\* - Weight dependent on configuration.

Limiting maximum vehicular weight on bridges can reduce bridge maintenance, extend bridge lifespan, and preserve transportation system continuity. Bridges provide functional links for Salem transportation corridors, and if they are not maintained the bridge may become unusable in the event of a natural disaster, effectively isolating the City if no other alternative transportation network exists.

**Figure C-7 Street Plan (Map 3-1 of Salem TSP)**



Source: [Salem Transportation System Plan \(2016\)](#)

**Alternate Modes of Transport**

Other important modes of transportation include railway, airports and public transportation. Union Pacific and Oregon Short Lines operate freight lines that traverse

through Salem, connecting the transport of products to Washington and California.<sup>23</sup> The Oregon Department of Transportation also identifies four Amtrak passenger routes through the City: Routes 14, 9, 8 and 7. These routes transport people within the State and also Washington and California.<sup>24</sup> Facilities that support air travel include McNary Field, the only commercial service public use airport, three private use airports, and one heliport at the Salem Hospital.<sup>25</sup> Salem's mass transit services include Salem-Keizer Transit (Cherriots), serving the Salem-Keizer urban area, and the Chemeketa Area Regional Transportation System (CARTS). CARTS is a partnership between Marion, Polk and Yamhill Counties that provides weekday public transit for elderly and disabled persons as well as the general public.<sup>26</sup>

## Dams

Dams play a crucial role in power generation and water control mechanisms for the region. Dam failures can occur rapidly and with little warning.<sup>27</sup> Fortunately most failures result in minor damage and pose little or no risk to life safety.<sup>28</sup> However, the potential for severe damage still exists. The Oregon Water and Resources Department has inventoried all dams located across Marion County and Salem. The "hazard level" estimates the amount of damage that could occur in the event of dam failure.

Marion County has over 56 dams, and two are ranked at a high hazard level: Detroit Dam and Big Cliff Dam. Detroit and Big Cliff are hydroelectric dams that control the flow of water on the Santiam River, providing a major boating and recreational area. However, both dams are considered a major hazard for the large population downstream that would be at risk in the event of a dam failure, including populations in Salem. Besides the Detroit and Big Cliff dams, other major dams surrounding the Salem area include Waconda and Silverton.<sup>29</sup>

## Utility Lifelines

Utility lifelines are the resources that the public relies on daily, (i.e., electricity and fuel). If these lines fail or are disrupted, the essential functions of the community can become severely impaired. Utility lifelines are closely related to physical infrastructure, (i.e., dams and power plants) as they transmit the power generated from these facilities.

More than half of Oregon's electricity comes from hydropower, and about one percent comes from renewable sources, primarily biomass and wind.<sup>30</sup> The network of electricity

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<sup>23</sup> Oregon Department of Transportation. Oregon.gov.  
[http://www.oregon.gov/ODOT/RAIL/docs/Maps\\_Drawings/OR\\_Railroad.pdf](http://www.oregon.gov/ODOT/RAIL/docs/Maps_Drawings/OR_Railroad.pdf)

<sup>24</sup> Oregon Department of Transportation. Oregon.gov.  
[http://www.oregon.gov/ODOT/RAIL/docs/Maps\\_Drawings/Passrailmap.pdf](http://www.oregon.gov/ODOT/RAIL/docs/Maps_Drawings/Passrailmap.pdf)

<sup>25</sup> Oregon Department of Transportation. Department of Aviation.  
[http://www.oregon.gov/Aviation/municipal\\_airports.shtml](http://www.oregon.gov/Aviation/municipal_airports.shtml)

<sup>26</sup> Ibid.

<sup>27</sup> Federal Emergency Management Agency. Dam Failure. [www.fema.gov/hazard/damfailure/index.shtml](http://www.fema.gov/hazard/damfailure/index.shtml). Accessed November 18, 2011.

<sup>28</sup> Ibid.

<sup>29</sup> Marion County. Oregon Emergency Operations: Basic Plan. 2005.

<sup>30</sup> Loy, W. G., ed. 2001. Atlas of Oregon, 2nd Edition. Eugene, OR: University of Oregon Press

transmission through Salem and the greater Marion County area is operated and distributed by the Bonneville Power Administration and Pacific Power.<sup>31</sup>

Oregon does not have any crude oil resources or refineries, and so must import all of its petroleum products. Most is extracted and refined regionally – 90% of Oregon’s petroleum products are refined in the Puget Sound area of Washington and 80% of the crude oil used to make these products comes from Alaska’s North Slope oil fields.<sup>32</sup> The remainder of Oregon’s petroleum comes primarily from refineries in Utah and British Columbia. Most of Oregon’s oil enters on tanker ships at the Port of Portland, and is then distributed via tanker truck or via the Kinder-Morgan pipeline, which runs from Portland south to Eugene.<sup>33</sup> Although the Kinder-Morgan pipeline passes through Salem, it does not have an outlet there; Salem receives its petroleum via tanker truck. Oregon’s petroleum supply system has many vulnerabilities that pose a risk to Salem. First, there is the possibility for disruption of the transmission system: the pipelines are 30 years old, and tanker trucks rely on the road network.<sup>34</sup>

## Synthesis

Given that Salem is the State Capital and the second largest city in the state, it is that much more critical to maintain the quality of built capacity throughout the area, as it is likely that surrounding jurisdictions will seek assistance from Salem. The planning considerations seemingly most significant for the city are contingency planning for emergency services, medical resources, and lifeline systems. As mentioned above, functionality of the critical facilities should be a significant priority in providing for Salem residents. To maintain functionality, memorandums of understanding can be established with surrounding cities and counties for medical transport, treatment, utility and transportation lifeline service and infrastructure repair.

While these elements are traditionally recognized as part of response and recovery from a natural disaster, it is essential to start building relationships and establishing contractual agreements with entities that may be critical in supporting community resilience.

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<sup>31</sup> Ibid.

<sup>32</sup> Oregon Department of Energy, “Nuclear and Energy-Related Emergency Preparedness” [www.oregon.gov/ENERGY/.../emergency\\_preparedness\\_fact\\_sheet.p](http://www.oregon.gov/ENERGY/.../emergency_preparedness_fact_sheet.p)

<sup>33</sup> City of Salem. Salem Local Energy Assurance Plan. 2011

<sup>34</sup> Ibid.

# Community Connectivity Capacity

Community connectivity capacity places strong emphasis on social structure, trust, norms, and cultural resources within a community. In terms of community resilience, these emerging elements of social and cultural capital will be drawn upon to stabilize the recovery of the community. Social and cultural capital is present in all communities; however, it may be dramatically different from one town to the next as these capitals reflect the specific needs and composition of the community residents.

## Social Systems and Service Providers

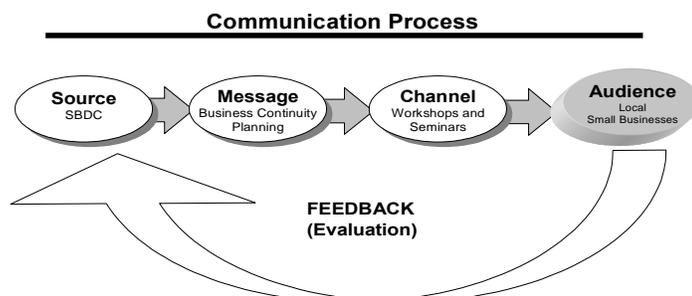
Social and cultural capital include community organizations and programs that provide community-based services, such as employment, health, senior and disabled services, professional associations, and veterans’ affairs for the public. In planning for natural hazard mitigation, it is important to know what social systems exist within the community because of their existing connections to the public. Often, actions identified by the plan involve communicating with the public or specific subgroups within the population (e.g. elderly, children, low income, etc.). The city can use existing social systems as resources for implementing such communication-related activities because these service providers already work directly with the public on many issues, one of which could be natural hazard preparedness and mitigation.

The following is a brief explanation of how the communication process works and how the community’s existing social service providers could be used to provide natural hazard related messages to their clients.

There are five essential elements for communicating effectively to a target audience:

- The source of the message must be credible,
- The message must be appropriately designed,
- The channel for communicating the message must be carefully selected,
- The audience must be clearly defined, and
- The recommended action must be clearly stated and a feedback channel established for questions, comments and suggestions.

**Figure C-8 Communication Process**



Source: Adapted from the U.S. Environmental Protection Agency Radon Division’s outreach program

The social organizations identified in Salem can be involved in hazard mitigation; a few methods are defined below.

- Education and outreach – organization could partner with the community to educate the public or provide outreach assistance on natural hazard preparedness and mitigation.
- Information dissemination – organization could partner with the community to provide hazard related information to target audiences.
- Plan/project implementation – organization may have plans and/or policies that may be used to implement mitigation activities or the organization could serve as the coordinating or partner organization to implement mitigation actions.

## Cultural Resources

Historic and cultural resources such as historic structures and landmarks can help to define a community and may also be sources for tourism revenue. Because of their role in defining and supporting the community, protecting these resources from the impact of disasters is important.

The National Register of Historic Places reports 62 historically significant structures in Salem; this is 58% of the historic structures across Marion County.<sup>35</sup> A complete list of these structures can be found on the Oregon State Historic Preservation Office website:

<http://www.oregon.gov/oprd/HCD/SHPO/Pages/index.aspx>

The Marion Cultural Development Corporation maintains the historic and cultural resources across Salem. The non-profit preserves, enhances and supports the arts, history, architecture, libraries, museums, festivals, and other cultural assets for the public.

## Community Stability

### Residential Geographic Stability

Community stability is a measure of rootedness in place. It is hypothesized that resilience to a disaster stems in part from familiarity with place, not only for navigating the community during a crisis, but also accessing services and other supports for economic or social challenges.<sup>36</sup> Table C-20 estimates residential stability across the region. It is calculated by the number of people who have lived in the same house and those who have moved within the same city a year ago, compared to the percentage of people who have migrated into the region. Salem overall has geographic stability rating of about 92% (i.e., 92% of the population lived in the same house or moved within the county in the last year). For those that moved into the city, 5% of residents lived in a different Oregon city one year before, 32% lived in a different state and <1% lived in a different country.<sup>37</sup>

<sup>35</sup> National Register of Historic Places, "2006 State Listings: Oregon-Marion County". <http://www.nationalregisterofhistoricplaces.com/or/Marion/state2.html>. Accessed January 19, 2010.

<sup>36</sup> Cutter, Susan, Christopher Burton, Christopher Emrich. "Disaster Resilience Indicators for Benchmarking Baseline Conditions". Journal of Homeland Security and Emergency Management.

<sup>37</sup> Source: Social Explorer, Table 130, U.S. Census Bureau, 2011-2015 American Community Survey Estimates

**Table C-20 Regional Residential Stability**

Jurisdiction	Population	Geographic Stability	Same House	Moved Within Same County
Oregon	3,896,912	93%	82%	11%
Marion County	319,238	94%	83%	11%
Polk County	76,484	89%	81%	8%
<b>Salem</b>	<b>157,744</b>	<b>92%</b>	<b>79%</b>	<b>13%</b>

Source: Social Explorer, Table 130, U.S. Census Bureau, 2011-2015 American Community Survey Estimates

## Homeownership

Housing tenure describes whether residents rent or own the housing units they occupy. Homeowners are typically more financially stable but are at risk of greater property loss in a post-disaster situation. Collectively, about 53% of the occupied housing units in Salem are owner-occupied; about 47% are renter occupied. Salem's vacancy rate is 6%. In addition, seasonal or recreational housing accounts for approximately 6% of the city's vacant housing stock.<sup>38</sup>

**Table C-21 Housing Tenure and Vacancy**

	Housing Units	Owner-occupied		Renter-occupied		Vacant <sup>^</sup>	
		Estimate	Percent	Estimate	Percent	Estimate	Percent
Oregon	1,695,183	939,637	61%	593,793	39%	102,108	6%
Marion County	122,315	68,134	60%	45,862	40%	7,250	6%
Polk County	30,651	18,292	64%	10,166	36%	1,944	6%
<b>Salem</b>	<b>61,417</b>	<b>30,589</b>	<b>53%</b>	<b>27,140</b>	<b>47%</b>	<b>3,440</b>	<b>6%</b>

Source: Social Explorer, Table 94, U.S. Census Bureau, 2011-2015 American Community Survey Estimates

\* = Functional vacant units, computed after removing seasonal, recreational, or occasional housing units from vacant housing units.

According to Cutter, wealth increases resiliency and recovery from disasters. Renters often do not have personal financial resources or insurance to assist them post-disaster. On the other hand, renters tend to be more mobile and have fewer assets at risk of natural hazards.<sup>39</sup> In the most extreme cases, renters lack sufficient shelter options when lodging becomes uninhabitable or unaffordable post-disaster.

## Synthesis

Salem comprises various social and cultural resources that work in favor to increase community connectivity and resilience. Sustaining and preserving social and cultural resources such as, social services and historic places may be essential to preserving community cohesion and a sense of place. It is important to consider that these social services may not be equally accessible to residents of rural areas beyond Salem jurisdictional boundaries, and Salem may need to expand these provisions beyond traditional service areas.

<sup>38</sup> U.S. Census Bureau, 2011-2015 American Community Survey Estimates, Table B25004.

<sup>39</sup> Cutter, S.L. (2003). Social Vulnerability to Environmental Hazards. *Social Science Quarterly*.

## Political Capacity

Political capacity includes the government and planning structures established within the community. Public access to the political process is also an important element of Political Capital. In terms of hazard resilience, it is essential for political capital to encompass diverse government and non-government entities in collaboration as disaster losses stem from a predictable result of interactions between the physical environment, social and demographic characteristics and the built environment.<sup>40</sup> Resilient political capital seeks to involve various stakeholders in hazard planning and works towards integrating the Natural Hazard Mitigation Plan with other community plans, so that all planning approaches are consistent.

## Government Structure

Salem operates under the council-manager form of city government. The Mayor and the eight City Councilors are elected by the citizens and they develop the policies that direct city operation. The Mayor and Council hire the City Manager to implement policy direction and actually manage city operations. The City Charter provides the authority under which the city operates and outlines roles of the Mayor, Council, and City Manager.<sup>41</sup>

Beyond Emergency Management, most departments within the city governance structure have some degree of responsibility in building overall community resilience. Each plays a role in ensuring that city functions and normal operations resume after an incident, and the needs of the population are met.

Some divisions and departments of Salem government that have a role in hazard mitigation are:<sup>42</sup>

- **Community Development Department:** assists citizens in developing a dynamic and livable city through responsible land use planning and zoning, consistent application of building codes, solid support for compliance with all city codes, neighborhood association issues, and youth development.
  - **Planning Division:** is composed of two separate but intertwined programs. The Current Planning Program provides efficient, timely and fair development review, ensures compliance with land use rules, and protects and preserves historic heritage. The Long Range Planning Program ensures compliance with state land use planning goals, policies, and rules to maintain quality of living opportunities and to ensure well planned community growth.

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<sup>40</sup> Mileti, D. 1999. *Disaster by Design: a Reassessment of Natural Hazards in the United States*. Washington D.C.: Joseph Henry Press.

<sup>41</sup> City of Salem, City Government. <http://www.cityofsalem.net/CITYCOUNCIL/Pages/default.aspx>. Accessed February 21, 2012.

<sup>42</sup> City of Salem, Departments. <http://www.cityofsalem.net/DEPARTMENTS/Pages/default.aspx>. Accessed February 12, 2012.

- **Building and Safety Division:** encompasses construction plans review, inspection services, and permitting; professional and police protective licensing; maintenance of multifamily-housing licensing; and other development information.
- **Public Works:** constructs and maintains the infrastructure necessary for the basic urban needs of the Salem metropolitan area. This includes a safe and reliable road system, healthy and plentiful water supply, a well-functioning storm drainage system, and proper treatment of wastewater.
  - **Parks & Transportation Services Division:** is responsible for parks maintenance, recreation, planning, traffic engineering, and maintenance of the City's transportation systems.
- **Information Technology & Facilities:** is responsible for the City of Salem's technical environment, building maintenance, operations, and support. Working together with other City Departments, IT and Facilities provides solutions and support for building assets, computer networks, copy services, and telecommunication.
  - **Building Operations:** maintains the City's building operating systems through preventive and corrective maintenance at more than 90 city-owned structures, including the daily upkeep of the downtown parking structures and cemented areas.
  - **Network & Technical Services:** cooperatively works with the City of Salem Departments and regional entities to maintain; personal computers, network servers, network connectivity, data security, and telephone services.
  - **Geographic Information Systems (GIS):** is used by the City in many ways serving City staff, local and global businesses, and our citizens through mapping and spatial data.
- **Police:** The Salem Police Department brings police and citizens together to better fight crime in the community. Their mission is to reduce the fear of crime, protect individual rights, and enhance the quality of life.

## Existing Plans and Policies

Communities often have existing plans and policies that guide and influence land use, land development, and population growth. Such existing plans and policies can include comprehensive plans, zoning ordinances, and technical reports or studies. Plans and policies already in existence have support from residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.<sup>43</sup>

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<sup>43</sup> Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

The City of Salem Natural Hazard Mitigation Plan includes a range of recommended action items that, when implemented, will reduce the city's vulnerability to natural hazards. Many of these recommendations are consistent with the goals and objectives of the city's existing plans and policies. Linking existing plans and policies to the Natural Hazards Mitigation Plan helps identify what resources already exist that can be used to implement the action items identified in the Plan. Implementing the natural hazards mitigation plan's action items through existing plans and policies increases their likelihood of being supported and getting updated, and maximizes the city's resources. The following are a list of plans and policies already in place in Salem and Marion City.

- Salem Emergency Management Plan, 2014
- Salem Area Comprehensive Plan, 2015
- Salem Transportation Plan, 2012
- City of Salem Capital Improvement Plan, 2016
- City of Salem Comprehensive Park and Recreation System Master Plan, 2013
- City of Salem Stormwater Master Plan, 2000
- Salem Local Energy Assurance Plan, 2011

## **Synthesis**

As addressed above, many governmental entities are responsible for work relevant to hazards planning; however, from this perspective it is challenging to decipher whether these structures work collaboratively in practice towards improving hazard mitigation. On a similar note, in short of reviewing each of the relevant policy documents it is questionable whether the documents effectively integrate hazard initiatives into implementation policy. Further analysis is needed to evaluate the effectiveness of political capital in terms of community resilience.