Nevada Childhood Lead Poisoning & Prevention Program

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Mission and Vision Statement

Vision

Our mission is to promote a lead-safe home environment so that all Nevada children can achieve their full potential.

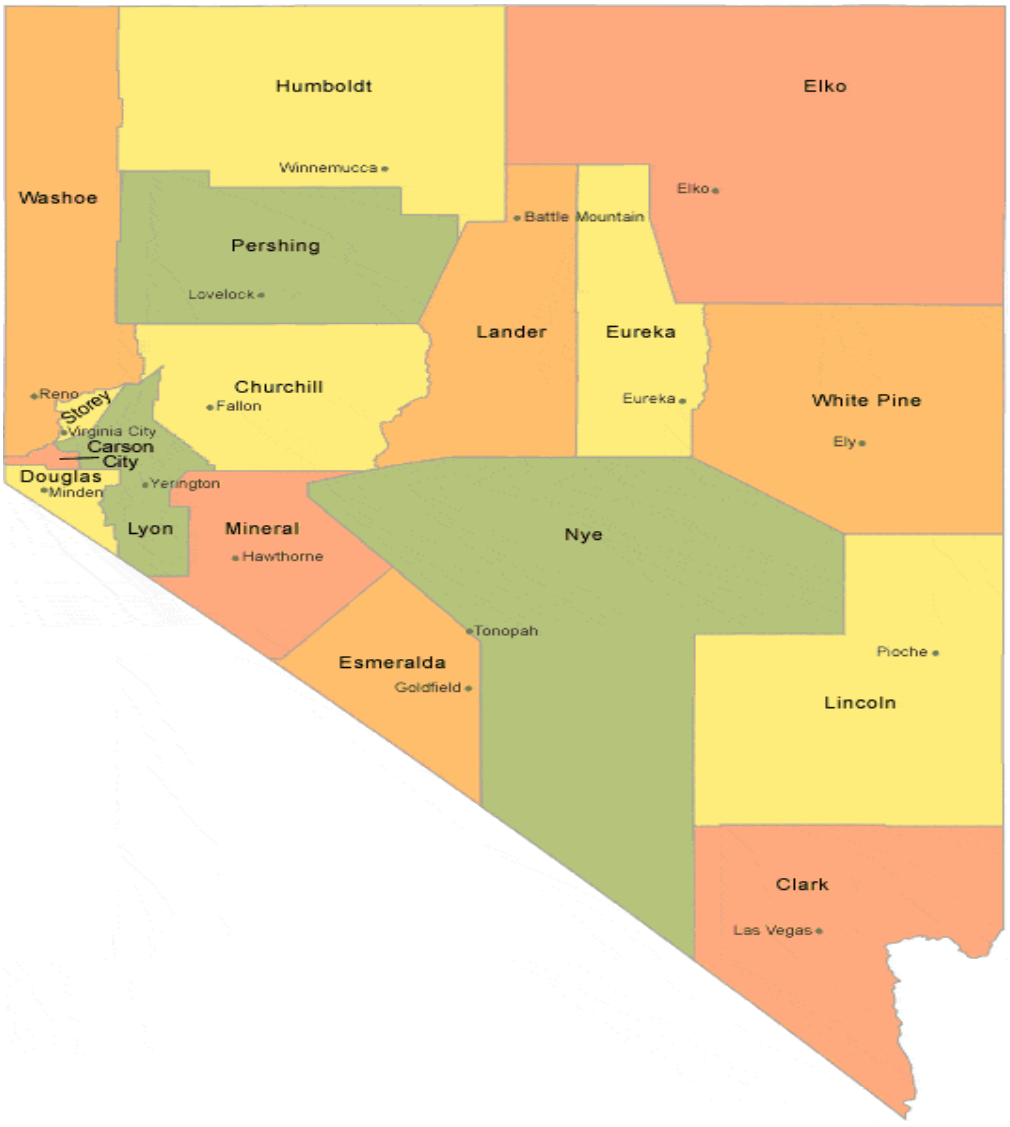
Mission

The mission of the Nevada Childhood Lead Poisoning and Prevention Program (NvCLPPP) aims to reduce the long-term health risk of childhood lead poisoning through improved methods of surveillance, education, and intervention.

Nevada at a Glance

Nevada has over 3 million residents distributed across 16 counties. Three counties house most of the population with over 2.1 million resident's living in Las Vegas, over 450,000 in the Washoe area, and over 50,000 in Carson City. The rest of the population lives in rural/frontier areas. Nevada is home to nearly 218,000 children under six years of age. Three health districts serve the most populated areas of the state which include the Southern Nevada Health District located in Clark County, the Washoe County Health District located in Washoe County, and the Carson City Health and Human Services located in Carson City. The Nevada Division of Public and Behavioral Health oversees all the rural/frontier areas of the state.

Figure 1. Nevada Map



Preface

Childhood Lead Poisoning is known as one of the most preventable environmentally related health hazards in history. While the childhood lead poisoning rates have decreased substantially mounting evidence, suggest that low levels of exposure can have long-lasting impacts on children. It is imperative that we ensure that children in our state have healthy environments in which they can live, learn and play. Over 200,000 children call Nevada home but less than three percent of children are screened for lead making Nevada one of the lowest screening states across the U.S. The Nevada Childhood Lead Poisoning Prevention Program (NvCLPPP) staff and the Advisory Committee hope that stakeholders use this blood lead testing plan as guidance to prevent and address local issues.

A Call to Action

In 2012, the Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP), made critical recommendations on how local communities should address children with elevated blood lead levels (EBLLs). Prior to the updated recommendations children were considered to have EBLLs at 10 ug/dL which was considered a "level of concern" at which county or state health districts should mount an environmental investigation to identify the sources of lead exposure, reduce exposure, and develop a case management plan with medical staff to monitor the reduction of lead in the blood. However, based on recent literature, the 2012 ACCLPP lowered the blood lead reference value to 5 ug/dL because there is sufficient evidence that at this level children can lead to lower IQ scores, attention-related behavior problems, and lower levels of academic achievement (CDC, 2012a). It is critical that young children are screened for lead exposure as effects may not be notable until children reach school age and may disproportionately impact low-income children who are already at higher risk for school-based challenges. According to the National Health and Nutrition Examination Surveys (NHANES), 2.9 percent of preschoolers have EBLLs at 5 ug/dL representing nearly 535,000 children in the US between the ages of 1 and 5 (AAP, 2016). The response to the new recommendations has varied by jurisdictions –

QUICK FACTS

217, 313

Children under the age of 6 live in Nevada

Less than

3 percent

are screened for lead

Nevada has one

of the

lowest

screening rates across the United States

some have updated policies and procedure to respond to the new reference value while others have made no changes.

Challenges in Blood Lead Screening in Nevada

Federal, state and local regulations have played a significant role in reducing childhood lead poisoning by regulating the use of lead in specific products, such as paint and gasoline (Kemper, Cohn, Fant, Dombkowski, & Hudson, 2005). Nevertheless, the potential for childhood exposure to lead remains high, particularly due to the stability of lead in the environment, usage of lead in numerous industrial applications and widespread use of lead-based paint in older housing. In attempts to mitigate effects of childhood lead poisoning many efforts have been initiated among schools of public health, public health departments, and healthcare professionals comprising a primary and secondary prevention methods. Screening of children for blood lead levels in the primary care setting has been a critical tool in identifying lead-poisoned children. One problem arises, particularly in states in which screening rates are low. According to Roberts et al. (2017), it was estimated that in Western states, including Nevada, 3x as many children were underreported than were diagnosed (Roberts et al., 2017). Nevada had the second lowest ratio of childhood lead poisoning ascertainment. Two recent studies support these results. In one study evaluating BLL screening in Clark County Nevada found only five percent of children had been tested (Haboush-Deloye, Marquez, & Gerstenberger, 2017a). In another study conducted in Clark County, Nevada aimed to identify barriers to childhood blood lead testing. Physicians who work with children six and under were surveyed about BLL testing practices, particularly, adherence to Centers for Disease Control and Prevention (CDC) screening guidelines. The study identified two major barriers to lead screening.

A New Opportunity for Nevada

At present surveillance data is sparse and makes it impossible to identify at risk-communities within both urban and rural setting. In Nevada, nearly 25 percent of homes are built before the band of lead-based paint and is home to one of the largest growing Hispanic minority populations – which is often concentrated in segregated communities of low-income and older housing. Nevada also has unique geography with two urban centers within 400 miles of each other while the rest of the state is rural or frontier, some of these areas are prominent mining towns. Recent research indicates that rural communities may be at equal risk for lead exposure (Carrel et al., 2017). While policies have been an effective intervention method to reduce the concentration of blood lead levels they have not been effective at reducing reoccurring lead poisoning (Kennedy, 2016). Ineffectiveness of these policies has made lead poisoning screening and surveillance critical in mitigating the long-term impacts of lead poisoning. The CDC grant offers the opportunity to strengthen the epidemiologic data to identify at risk-communities, mitigate any health disparities in blood lead poisoning that have been identified in the literature, and inform low-screening states.

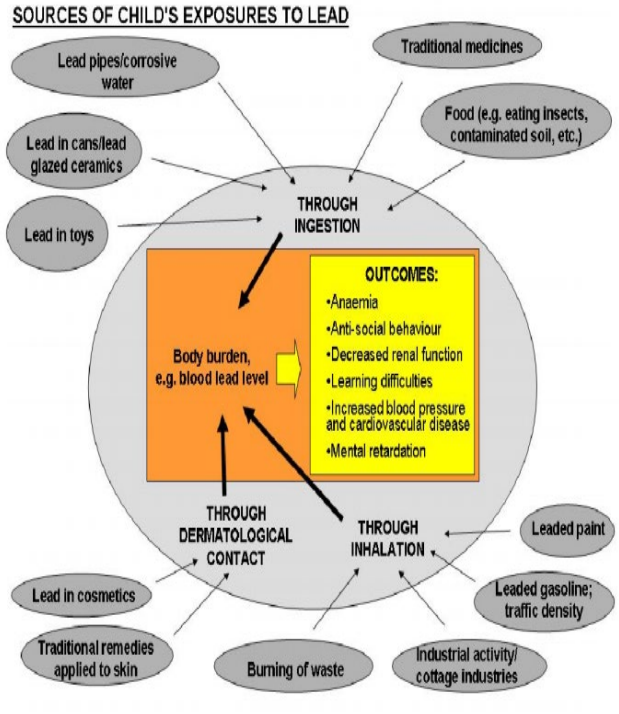
Pathways of Lead Exposure

The removal of lead-based paint and leaded gasoline from regular use during the 1970s led to a significant decrease in average childhood blood lead levels by the early 1990s (Gilbert and Weiss, 2006). Lead paint and dust that remain in older homes remain a primary source of lead exposure in the United States (Lanphear et al., 1998). However, other sources of lead like dust along roadways from decades of leaded gasoline use, cosmetics, and imported goods contribute to a substantial portion of elevated blood levels in the U.S. (Mielke, 1999).

Age of Housing

The Department of Housing and Urban Development (HUD) estimates that as of 2011, 37.1 million homes in the United States still have lead somewhere in the building (HUD, 2011). More than 34 percent of those households have a child under age six living in the building (HUD, 2011). Children who live in houses with any lead can attain levels of lead in their blood as high as 20 µg/dL even without consuming lead-based paint chips (WHO, 2010). Undue exposure to lead can cause adverse health effects like decreased IQ and other neurodevelopmental challenges (Lanphear et al., 1998). Children who live in older homes have higher mean blood lead levels than children who live in homes built after lead paint was banned (Kim et al., 2002). Child mean blood lead levels grew higher the older the age of the home (Kim et al., 2002).

Figure 2. Sources of Child's Exposure to lead.



Source: World Health Organization, 2010

Dust from lead abatement during home renovations can become a source of exposure in household dust and soil, increasing the risk of childhood lead exposure (Spanier et al., 2013). Home renovation of houses where lead has been identified is significantly associated with increased blood lead levels of children in the home (Spanier et al., 2013).

Currently, the age of housing is the largest and most established risk factor for lead poisoning among children (HUD, 2011). Older homes have a higher likelihood of having lead in the building, and older homes with of lower value are more likely to have damaged paint than homes of a higher value. Lead hazards in older homes result from peeling, disintegrating, and chipping of lead paint, dust from renovations and abatement that settles into the interior of older homes and contaminates surrounding soil.

Other Sources of Lead Exposure

While the main source of lead exposure in the U.S. today is from deteriorating lead-based paint in older housing, there are still many other pathways by which children can be exposed to lead (Figure 2). A systemic review of the literature supports that atypical sources of exposure can lead to childhood lead poisoning cases and require the expansion of screening techniques by pediatricians and medical providers to identify children who may have an EBLLs (Grospe & Gerstenberger, 2008). The variety of sources and pathways by which children can be poisoned makes no child immune to lead poisoning. However, the burden isn't equal with children of lower economic status, living in deteriorated housing, often of ethnic minority (non-Hispanic Black and Mexican American children) status carry the greatest burden (Sampson, 2016). Disparities which have persisted despite the decline in overall blood lead levels (BLLs) (Sampson, 2016).

Parent's Occupation

Lead exposure occurs in more than 120 different occupations including construction and rehabilitation, smelting and mining, auto manufacturing, and printing (OSHA, 1991). The children of parents who work in industries that work with lead and lead-based products are at higher risk of having elevated blood lead levels than children whose parents do not work in lead-related industries. This is due to several factors, including improper or inadequate use of safety equipment (Chan et al., 2000; Roscoe et al., 1999). Another risk factor for children of lead workers was the contaminated work clothes that parents brought home at the end of the day (Chan et al., 2000; Roscoe et al., 1999). Lead from the exposed clothing contaminates the home, leading to increased lead levels in homes, even those without other evidence of lead (Chan et al., 2000). More than 1.64 million workers in the U.S. are exposed to up to 50 $\mu g/m^3$ lead daily in the workplace (OSHA, 2012).

Imported Goods Contaminated with Lead

Other sources of lead exposure in the U.S. come from imported goods contaminated with lead like cosmetics, ceramics, foods, and traditional folk remedies. Traditional cosmetics like Kajal, Kohl, and tiro can have lead contents higher than 50 percent (CDC, 2012, 2013a; Parry and Eaton, 1991). For example, a laboratory analysis of kohl found several samples with a lead content between 50 and 60 percent (Parry and Eaton, 1991). Similarly, a laboratory analysis of tiro showed a lead content of 82.6 percent (CDC, 2012b). Traditional medicines can also contain high lead contents. Some ayurvedic medicines from India and other South Asian countries have caused blood lead levels as high as 112 µg/dL (CDC, 2004a). Another traditional remedy, litargirio, used in the Hispanic community as a deodorant and folk remedy can have lead contents as high as 36 percent (CDC, 2005). Lead has also been found in tamarind candies imported from Mexico (CDC, 2002) and ceramic dinnerware imported from France (CDC, 2004b).

Risk Factors

Beyond the environmental risk factors, individual host factors are also associated with elevated blood lead levels. Blood lead data from the National Health and Nutritional Examination Surveys (NHANES) have been used since 1976 to describe children with increased blood lead levels. The most recent analysis indicated that differences in mean blood lead levels persist between income groups and

racial/ethnic groups. Children at highest risk for elevated mean blood lead levels are non-Hispanic Blacks, children from poor families, and children who live in housing built before 1950 (CDC, 2013b).

Age

Children aged six months to three years of age are more susceptible to increased blood lead levels because of their lack of control over their environment and high metabolism (Lanphear et al., 2002). Children under age three are at higher risk of exposure due to their proximity to the ground, and their penchant for placing things in their mouth, exposing them to dust and soil that may be contaminated with lead. Young children are especially susceptible to the negative effects of lead exposure because of their ongoing neurological development (Lanphear et al., 2002). Among children with lead exposure, lead levels are known to peak around age two.

Race and Ethnicity

Among children ages, one through five, elevated blood lead levels is associated with race and ethnicity. Non-Hispanic black children have disproportionately high blood lead levels of 5 µm/dL in 7.7 percent of children compared to 1.6 percent of Mexican American children and 3.2 percent of non-Hispanic, White children (CDC, 2013b, 2014).

Poverty

Approximately 1.1 million homes that still have lead somewhere in the building are considered low-income (HUD, 2011). For children living in low-income housing where lead is present, blood lead levels were elevated compared to children living in higher valued homes where lead was present (Kim et al., 2002). This suggests that homes with a lower value may have more deteriorated paint, increasing risk factors for lead exposure (Kim et al., 2002).

Immigrant and Refugee Status

Foreign-born children tested for lead poisoning were five times more likely to have an elevated blood lead level than children born in the U.S. (Tehranifar et al., 2008). Children who had lived in a foreign country less than six months before their blood testing were eleven times more likely to have elevated blood lead levels than children born in the U.S. (Tehranifar et al., 2008). Many children who come to the United States already exposed to lead in their native countries may continue to be exposed to lead due to contamination in their new surroundings and use of imported goods.

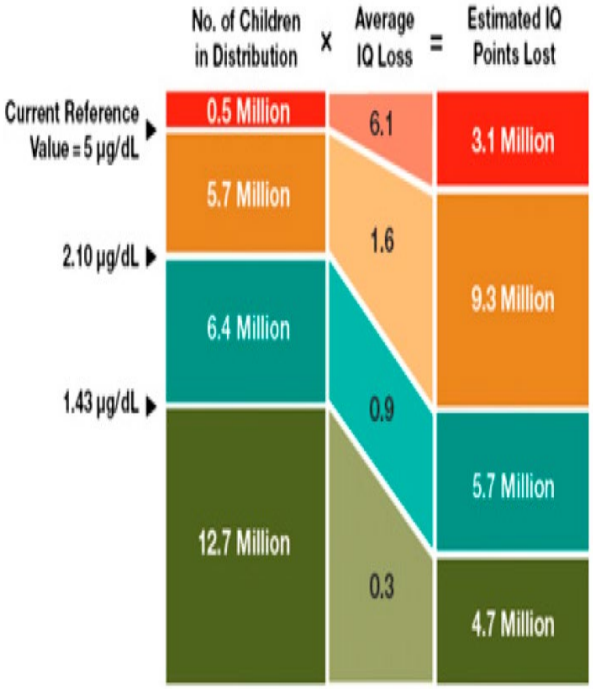
Potential lead exposure risks for refugee children include products like leaded gasoline, use and manufacture of ammunition, industrial emissions, and use of lead-containing products like food, ceramics, and traditional medicines. Refugee children may also be at increased risk for lead poisoning due to malnourishment. Malnourishment and deficiencies of nutrients like calcium and iron allow greater uptake of lead consumed (Mahaffey, 1995).

Impacts of Lead Exposure

Health effects resulting from lead exposure range on a continuum depending on the time and intensity of exposure. Children are more susceptible to the effects of lead because they absorb lead at a higher rate than adults and are most susceptible during the critical years of development from birth to five years of age. Blood lead levels over 40 µg/dL can lead to renal failure and nephropathy, while blood lead levels above 100 µg/dL can result in vomiting, encephalopathy, and death (AAP, 2016; WHO, 2010).

Recent studies have associated lower blood lead concentrations (<10 µg/dL) with negative health outcomes. Blood lead levels once thought to pose little to no risk have shown to be risk factors for reading problems, intellectual delays, school failure, attention deficit-hyperactivity disorder, and antisocial behavior (Lanphear, 2007; AAP, 2016). According to a recent study, IQ deficits are highest at low blood lead concentrations (Figure 3) (AAP, 2016). How these deficits impact children living in already disadvantaged communities remain to be measured. Further, even low exposure to lead can lead to elevated blood pressure and increased rates of hypertensive events like heart disease, strokes, and cardiovascular episodes (WHO, 2010).

Figure 3: Estimated loss of IQ in US children at different blood lead levels.



Source: American Academy of Pediatrics, 2016

Blood Lead Testing in Nevada

Screening Rates

Nevada has 217,313 children under six according to the 2015 Census – five-year estimates. The percentage of children across various counties, and rural areas range from 31-33 percent (Table 1). Screening rates from October 1, 2016, to September 30, 2017, for the entire state equal 6,446 children screened for lead indicating less than 3 percent of all Nevada children are tested. The majority of blood test fall below 5 ug/dL. However, one severe limitation with reported data has been identified, do to laboratory reporting limits, many results do not indicate an absolute blood lead value and are often reported as <10 ug/dL (Table 2). This reporting limit makes it challenging to identify blood lead values that may fall between 5-9.9 ug/dL whom would receive a follow-up response.

Table 1. Percentage of households with children under six by jurisdiction

Households with a Child Under Age Six, by Jurisdiction				
	Clark	Washoe	Carson City	Rural
Percent of Households with A Child Under Age 6	33.2%	33.0%	30.3%	31.3%

Source: U.S. Census Bureau. (2015) American Community Survey Five-year estimates Retrieved from http://factfinder.census.gov

Table 2. Blood lead levels of children by age from October 2016 to September 2017

	Blood Lead Levels							
	Value not reported/ or cutoff <10	**3.5-4.9**	**5-9.9**	**10-19.9**	**20-44.9**	**45-69.9**	**70+**	**Total**
Under 12 months	213	2	1	1	0	0	0	217
12 – 23 months	2440	8	10	6	1	0	0	2465
24 – 35 months	1406	3	8	0	0	0	0	1417
36-47 months	809	1	7	1	0	0	0	818
48-59 months	925	4	3	0	0	0	0	932
60-71 months	584	1	4	1	0	0	0	590
Missing	7	0	0	0	0	0	0	7
Total	6384	19	33	9	1	0	0	6446

Source: Southern Nevada Health District and the Nevada Division of Public and Behavioral Health Surveillance Data

NvCLPPP Recommendations for Screening in Nevada

Current, screening rates for blood lead levels in children is low making it difficult to ascertain whether lead poisoning problems exist in Nevada. Therefore, the NvCLPPP recommend universal screening as a method to adequately assess the epidemiological data. However, at a minimum the NvCLPPP recommends that:

Providers of Medicaid eligible children should be screened when the child:

- Reaches 12 and 24 months of age, respectively; or
- At least once before the child reaches 6 years of age

Providers of children who are symptomatic or a potential exposure to lead has been identified, regardless of a child's age.

Providers of refugee children should have children screen upon arrival.

Providers of non-Medicaid eligible children should conduct a lead risk evaluation using the Childhood Lead Risk Questionnaire (CLRQ) to determine the risk of potential exposure during a health care visit. The following CLRQ was adapted from the Illinois Department of Public Health (State of Illinois, n.d.) Providers should test:

- Children through six years of age, beginning at 6 months
    - If all responses are "No" re-evaluate at every well-child visit or more often if deemed necessary
    - If any response is "YES" or "Don't Know", obtain a blood lead test.

Blood lead testing can be conducted via capillary or venous methods and should be reported as per NRS 442.700 **https://www.leg.state.nv.us/NRS/NRS-442.html#NRS442Sec700**

Childhood Lead Poisoning Risk Questionnaire

The CLPRQ should be completed during a health care visit for children under 6 years of age.

A blood lead test should be performed on children:

- with any "Yes" or "Don't Know" response
- living in a high-risk ZIP code area
- all Medicaid-eligible children should have a blood lead test prior to 12 months of age and 24 months of age. If a Medicaid-eligible child between 36 months and 72 months of age has not been previously tested, a blood lead test should be performed.

If responses to all the questions are "No":

- re-evaluate at every well child visit or more often if deemed necessary

Child's name: _____ Today's date: _____

Age: _____ Birthdate: _____ Zip Code: _____

Respond to the following questions by circling the appropriate answer.	**RESPONSE**		
1. Is this child eligible for or enrolled in Medicaid, Head Start, or WIC?	Yes	No	Don't Know
2. Does this child have a sibling with a blood lead level of 5 ug/DL or higher?	Yes	No	Don't Know
3. Does this child live in or regularly visit a home built before 1978?	Yes	No	Don't Know
4. In the past year, has this child been exposed to repairs, repainting or renovation of a home built before 1978?	Yes	No	Don't Know
5. Is this child a refugee or an adoptee from any foreign country?	Yes	No	Don't Know
6. Has this child ever been to Mexico, Central or South America, Asian countries (i.e., China or India), or any country where exposure to lead from certain items could have occurred (for example, cosmetics, home remedies, folk medicines or glazed pottery)?	Yes	No	Don't Know
7. Does this child live with someone who has a job or a hobby that may involve lead (for example, jewelry making, building renovation or repair, bridge construction, plumbing, furniture refinishing, or work with automobile batteries or radiators, lead solder, leaded glass, lead shots, bullets or lead fishing sinkers)?	Yes	No	Don't Know
8. At any time, has this child lived near a factory where lead is used (for example, a lead smelter or a paint factory)?	Yes	No	Don't Know
9. Does this child reside in a high-risk ZIP code area? (see reverse side of page for list)	Yes	No	Don't Know

If there is any **"Yes"** or **"Don't Know"** response a blood lead test is not needed if both of the following apply

- the child has proof of two consecutive blood lead test results (documented below) that are each less than 5 mcg/dL (with one test at age 2 or older), **and**
- there has been no change in the child's living conditions

Test 1: Blood Lead Result:____ug/dL Date:_____ Test 2: Blood Lead Result:____ug/dL Date: _____

Nevada Makeup

Demographic Characteristics

Nevada is as diverse in its landscape as it is in its people. Tables 3-6 highlights the demographic characterizes in each county by race/ethnicity, foreign-born populations, refugees and those living in poverty. Nevada's Hispanic population ranks 14th largest in the nation with over 789,000 people comprising 28% of the State's population (Pew Research Center, 2014). Hispanic children represent 10.5% of children under five living in Nevada (Tuman, Damore, Agrada, 2013). Nevada has a large foreign-born population, particularly those with who are not U.S. citizens.

Table 3. Race/Ethnicity by jurisdiction

Race/Ethnicity				
	Clark	Washoe	Carson City	Rural
African American/Black	10.4%	2.2%	0.9%	1.4%
American Indian/Alaska Native	0.4%	1.3%	1.8%	3.6%
Asian	9.0%	5.2%	2.7%	1.2%
Hispanic/Latino	30.0%	23.2%	22.9%	16.6%
Caucasian/White	45.8%	64.7%	68.7%	74.7%
Native Hawaiian/Pacific Islander	0.7%	0.6%	0.6%	0.2%
Other	0.2%	0.1%	0.3%	0.1%
Multiple	3.5%	2.8%	2.1%	2.1%

Source: U.S. Census Bureau. (2015) American Community Survey Five-year estimates Retrieved from http://factfinder.census.gov

Table 4. Foreign-born populations by jurisdiction

Foreign-Born Population				
	Clark	Washoe	Carson City	Rural
Percent Foreign Born Population	22.0%	11.7%	14.8%	7.5%
Percent of Foreign-Born Population that are not U.S. Citizens	54.2%	55.6%	59.9%	60.1%

Source: U.S. Census Bureau. (2015) American Community Survey Five-year estimates Retrieved from http://factfinder.census.gov

Table 5. Refugee populations by jurisdiction

Refugees				
	Clark	Washoe	Carson City	Rural
Number of Refugees Resettled 2011 - 2015	8380	0	0	0
Number of Refugees Resettled 2016	3128	40	0	0
Number of Refugees Resettled 2017	1295	32	0	0

Source: Southern Nevada Catholic Charities

Table 6. Percent of those in poverty by jurisdiction

Household Income, by County				
	Clark	Washoe	Carson City	Rural
Percent of Households with Income Below 50% of FPL	6.8%	7.1%	8.0%	6.0%
Percent of Households with Income Below 125% of FPL	20.3%	20.6%	22.6%	18.2%
Percent of Households with Income Below 150% of FPL	25.6%	25.7%	28.5%	22.5%
Percent of Households with Income Below 185% of FPL	33.4%	32.1%	35%	29.8%
Percent of Households with Income Below 200% of FPL	36.6%	34.5%	37.2%	32.7%

Source: U.S. Census Bureau. (2015) American Community Survey Five-year estimates Retrieved from http://factfinder.census.gov

Age of Housing

Age of housing is one of the biggest indicators for risk to lead exposure. While most homes in the state are constructed after the band of lead-based paint in 1978, there are still a significant amount of homes across the state that have the potential to expose children to deteriorating lead-based paint as Nevada's older housing stock continues to age.

Table 7. Age of housing by county

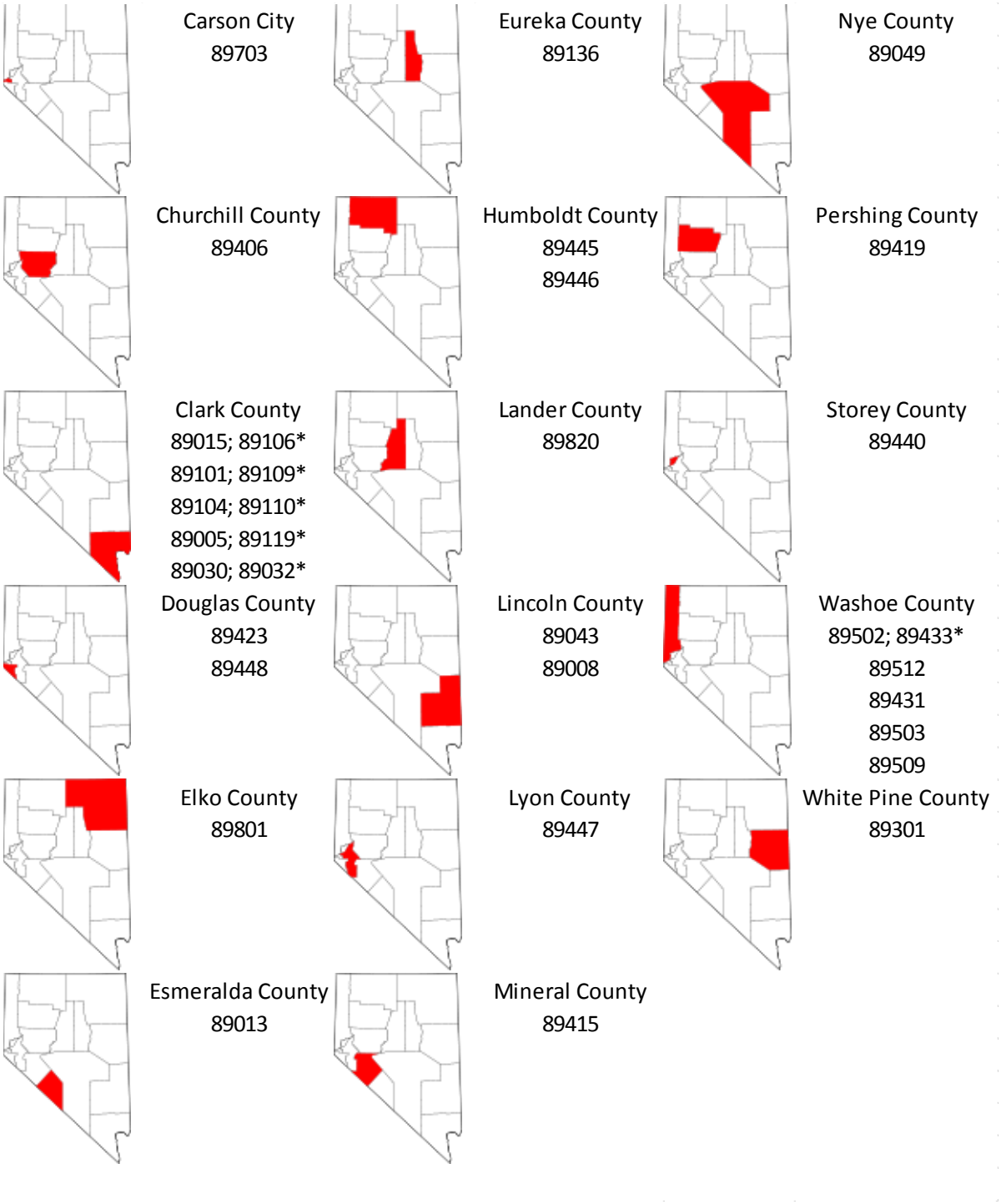
Age of Structure, by County				
	Clark	Washoe	Carson City	Rural
Built Since 1980	79.6%	60.3%	53.4%	67.4%
Built 1970 - 1979	11.7%	19.7%	28.6%	16.0%
Built 1960 - 1969	5.3%	9.1%	12.4%	5.6%
Built 1950 - 1959	2.4%	5.7%	3.3%	4.0%
Built 1940 - 1949	0.7%	2.3%	1.2%	2.6%
Built Before 1940	0.3%	2.8%	1.2%	4.5%

Source: U.S. Census Bureau. (2015) American Community Survey Five-year estimates Retrieved from http://factfinder.census.gov

Geographic Areas of Priority

US Census data was used to identify zip codes of *highest risk*. We compared zip code in each county to identify areas with the highest number of homes built before 1950, those living in poverty, and the percentage of children under age six. Blood lead surveillance data was not used at this time since screening rates are low. The NvCLPPP will work on improving epidemiologic data to include race and ethnicity and blood lead level data in future surveillance maps. Figure 4. Highlights high-risk zip codes for the state.

Figure 4. Highest risk zip codes by county



Source: U.S. Census Bureau. (2015) American Community Survey Five-year estimates Retrieved from http://factfinder.census.gov

* indicate zip codes added to target areas based on the needs identified by staff and advisory board members.

Childhood Lead Poisoning Public Awareness and Outreach

The NvCLPPP public awareness and outreach efforts are driven by surveillance data. Surveillance data are used to identify high-risk geographical areas and priority populations. Outreach and educational efforts are targeted to parents, key stakeholders and healthcare providers in these areas. The NvCLPPP strategies are as follows:

1) Targeted outreach to promote awareness of childhood lead poisoning, including outreach to parents, key stakeholders, and community members

NvCLPPP staff are bi-lingual in English and Spanish which increases opportunities to engage with parents and guardians whose children may be at risk for lead exposure and poisoning. Therefore, educational materials are made available and distributed in English and Spanish.

NvCLPPP health educators provide lead poisoning and prevention education to priority populations utilizing a variety of strategies including outreach to parent and school groups, community-based organizations, coalitions parent education classes and to farming and mining communities. Health educators provide training at Family to Family Connection parent workshops. The Family to Family Connection program empowers and supports families with children between the ages of 0-5 to provide a safe and nurturing environment for their children through parent education. Classes are held at several communities and recreation centers, and outreach efforts are targeted in locations in high-risk zip codes and priority geographic areas. Health educators also work with community organizations and groups such as immunization clinics and WIC. Also, efforts will be made to create awareness to those living and working in the farming and mining communities of Northern Nevada.

In addition to in-person presentations and trainings, health educators participate in community events, health fairs and other outreach opportunities to share and distribute lead poisoning and prevention education. Participation in outreach events is based on several factors including the location of the event being in a high-risk geographical area and the potential to reach parents and community members from the priority population. Lead prevention awareness educational materials have been developed and/or identified to support community outreach and education and include brochures, fact sheets, and coloring books.

The NvCLPPP also utilizes social media, websites, newsletters, and blogs to spread the word about childhood lead poisoning prevention in the community. Lead poisoning prevention messages are regularly shared via social media (Facebook and Twitter). The NvCLPPP also utilizes blogs in English and Spanish to share lead poisoning awareness and prevention messages. Through a vast network of community partners, the NvCLPPP works with organizations that have community newsletters to include articles on lead poisoning prevention and seeks to include information in newsletters that reach either parents of young children or women of child bearing age. Additionally, NvCLPPP participates in webinars and other learning opportunities to access the latest in lead-related outreach and education materials.

2) Targeted outreach to health care providers and clinics

NvCLPPP health educators seek to provide education and training to health care providers who work with young children/families and to health care clinics located in high-risk geographic areas. Health care

providers may assume that lead poisoning is not a problem in Nevada due to the newer housing stock. Targeted outreach to health care providers aims to encourage lead screening in young children and provide education on other lead exposure sources, including consumer products and traditional and folk remedies that can expose young children to lead.

NvCLPPP will utilize various methods to engage providers. For example, will work with programs such as Project Echo. Project ECHO is a program of the University of Nevada School of Medicine that aims to increase knowledge of health care providers via telehealth consultations and educational webinars. CMEs are provided for participants. NvCLPPP will offer webinars on lead exposure and lead screening for pediatric specialists in Nevada.

NvCLPPP also trains Promotores, who are members of the Nevada chapter of Vision and Compromisio, on lead poisoning prevention strategies as well as available resources for education, treatment and mitigation. Other strategies to reach health care providers include outreach tables at the Nevada Academy of Pediatrics annual meetings and articles by the SNHD Chief Health Officer in the Nevada State Medical Society newsletter. NvCLPPP consists of members of each of the health districts in the state we will utilize these relationships to enhance training and education opportunities. For instance, the SNHD serves as a rotation and training site for medical students, physician's assistant and nursing students, information on lead poisoning, prevention and common exposure sources is also incorporated into training and educational sessions provided by SNHD staff for these future health care providers. Additionally, data is used to identify clinics in high-risk geographic areas. Educational materials for both health care providers and parents are sent to these targeted clinics.

Responding to Lead-Exposed Children

Blood Lead Testing Surveillance and Response

The Nevada Department and Health and Human Services receives blood lead testing data from laboratories serving the greater Nevada area via the National Electronic Disease Surveillance System (NEDSS) Base System (NBS). The surveillance system serves a key method to identify children with elevated blood lead levels. In Nevada, blood lead level responses are conducted by corresponding health authorities including the Southern Nevada Health District, Washoe County District Health Department, Carson City Health, Human Services, and the Nevada Department of Health and Human Services. Responses within each jurisdiction vary mostly based on capacity.

Response to Lead-Exposed Children

The NvCLPPP recommends following CDC guidelines in responding to confirmed blood lead levels which can be found at https://www.cdc.gov/nceh/lead/acclpp/actions_blls.html. This guidance is summarized in Table 9.

Table 9. Recommendations for follow-up and case management of children based on confirmed blood lead levels

		<5 µg/dL	5 – 9 µg/dL	10 – 14 µg/dL	15 – 19 µg/dL	20 – 44 µg/dL	45 – 69 µg/dL	≥70 µg/dL
Administrative	Phone Call		x	x	x	x	x	x
	Mail Letter and Brochure		x	x	x	x	x	x
	Refer Patient for Services		x	x	x	x	x	x
	Begin Coordination of Services		x	x	x	x	x	x
Assessment and Remediation of Residential Lead Exposure	Environmental Investigations with an XRF			x	x	x	x	x
	Visual inspection of the child's home and other sites			x	x	x	x	x
	Obtain a history of the child's exposure		x	x	x	x	x	x
	Measure environmental lead levels in the home and other sites - sampling only			x	x	x	x	x
	Interventions to reduce ongoing exposure			x	x	x	x	x
Medical Assessment and Interventions	Caregiver lead education (nutritional and environmental)		x	x	x	x	x	x
	Follow-up blood lead monitoring and testing		x	x	x	x	x	x
	Complete history and physical exam					x	x	x
	Complete neurological exam						x	x
	Labwork (e.g. hemoglobin or hematocrit, iron status)					x	x	x
	Lead hazard reduction					x	x	x
	Neurodevelopmental Monitoring					x	x	x
	Abdominal x-ray with bowel decontamination					x	x	x
	Chelation Therapy							x
Nutritional Assessment & Interventions	Diet Evaluation		x	x	x	x	x	x
	Referral to the Special Supplemental Nutrition Program for Women, Infants and Children (WIC)		x	x	x	x	x	x
	Referral to nutritionist		x	x	x	x	x	x
Developmental Assessment.	Conduct developmental assessment		x	x	x	x	x	x
	Refer for diagnostic evaluation for neurodevelopmental issues					x	x	x
	Refer for early intervention/stimulation programs					x	x	x

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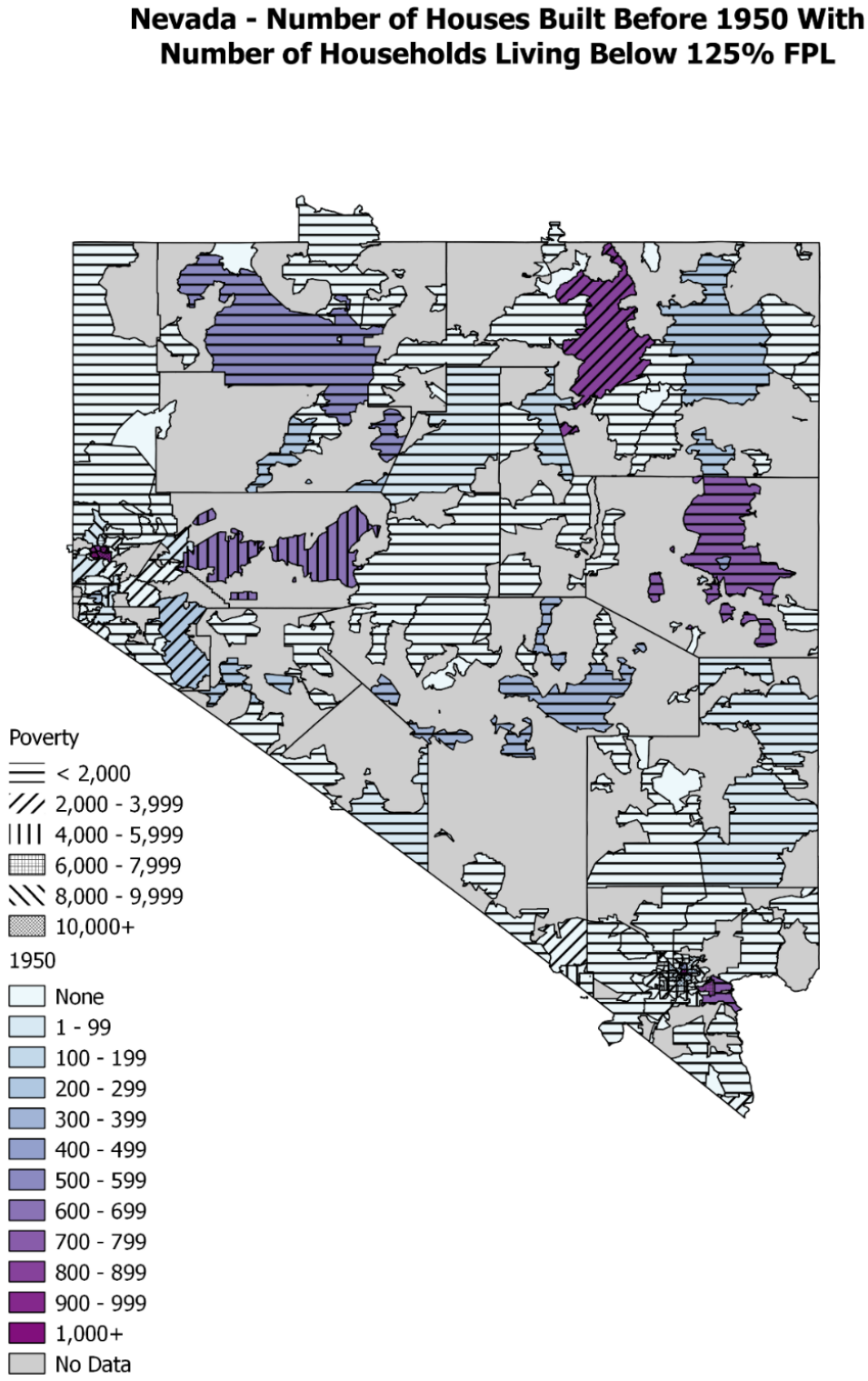
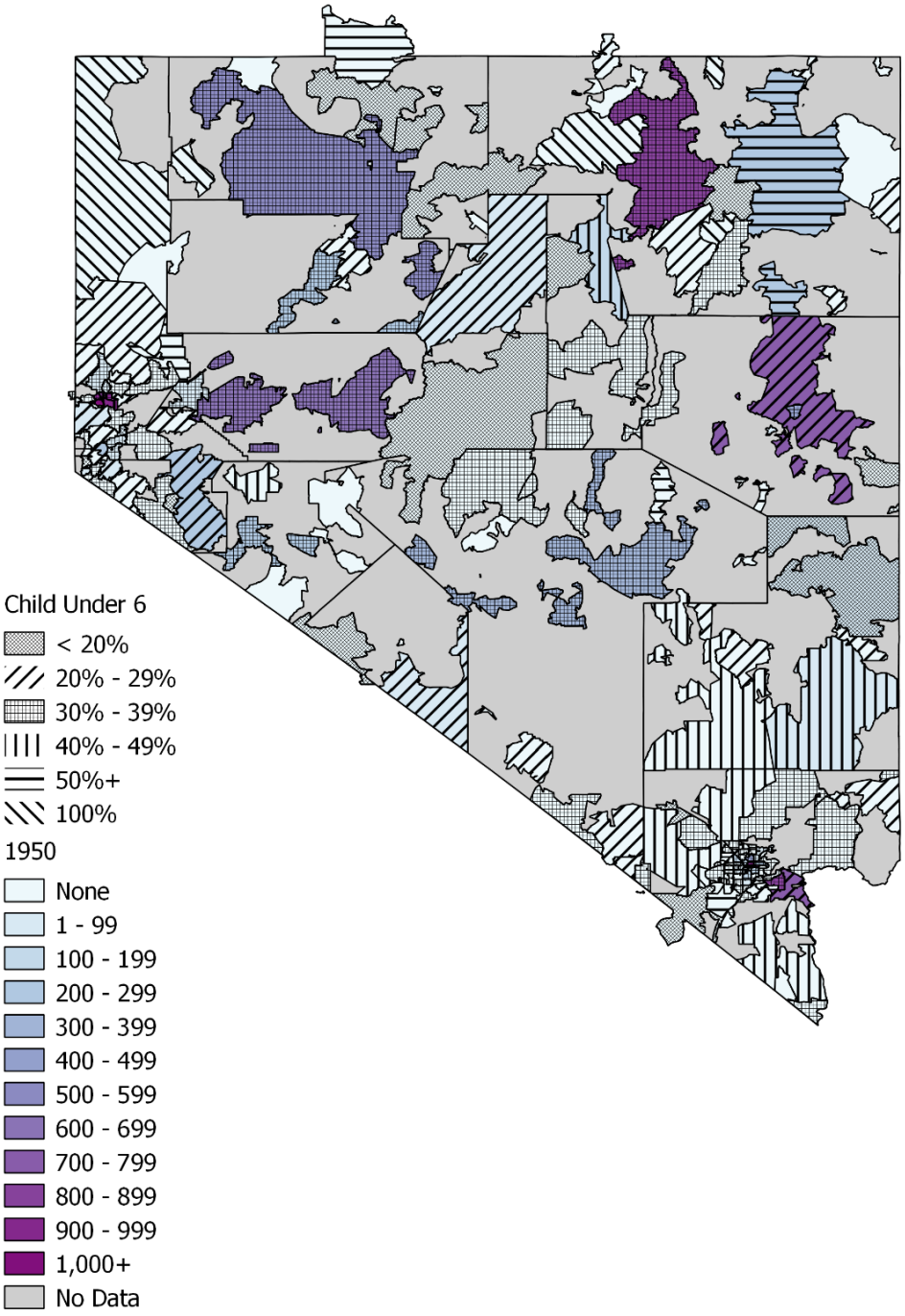
Appendices

Homes Built Before 1950 and Number of Households below 125% FPL



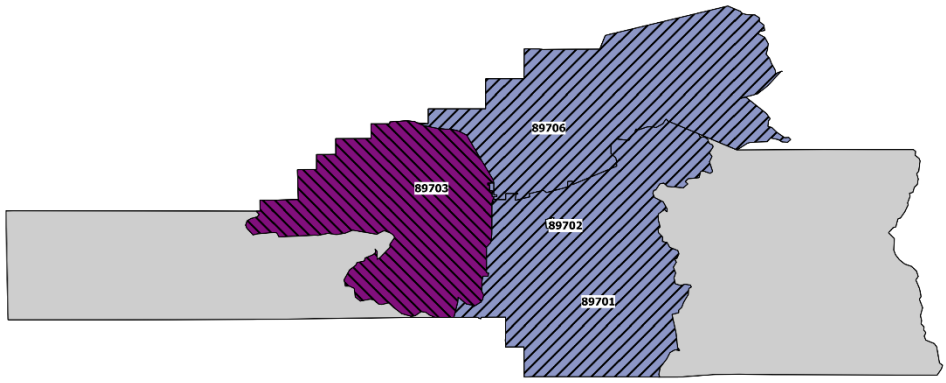
Homes Built Before 1950 and Number of Children Under Age 6

Nevada - Number of Houses Built Before 1950 With Percent of Households with a Child Under Age 6



Carson City Maps

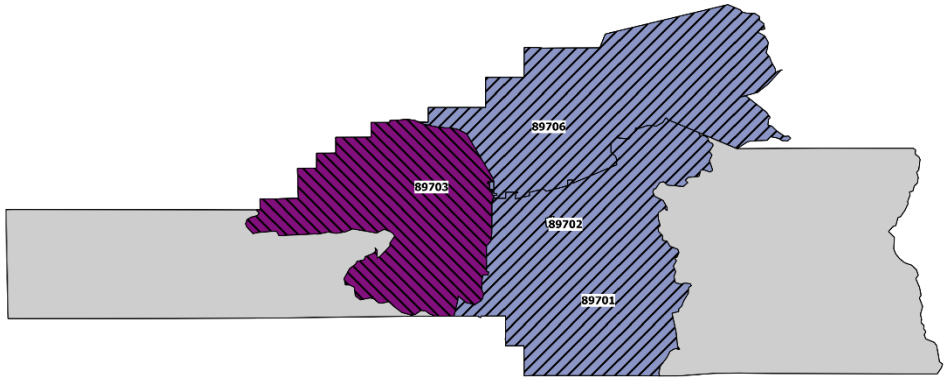
Carson City - Houses Built Before 1950 with Percent of Households With a Child Under Age 6



Children Under 6
- 20% - 29%
- 30% - 39%
- No data

Before 1950
- None
- 0-199
- 200-399

Carson City - Houses Built Before 1950 with Number of Households Living Below 125% of FPL

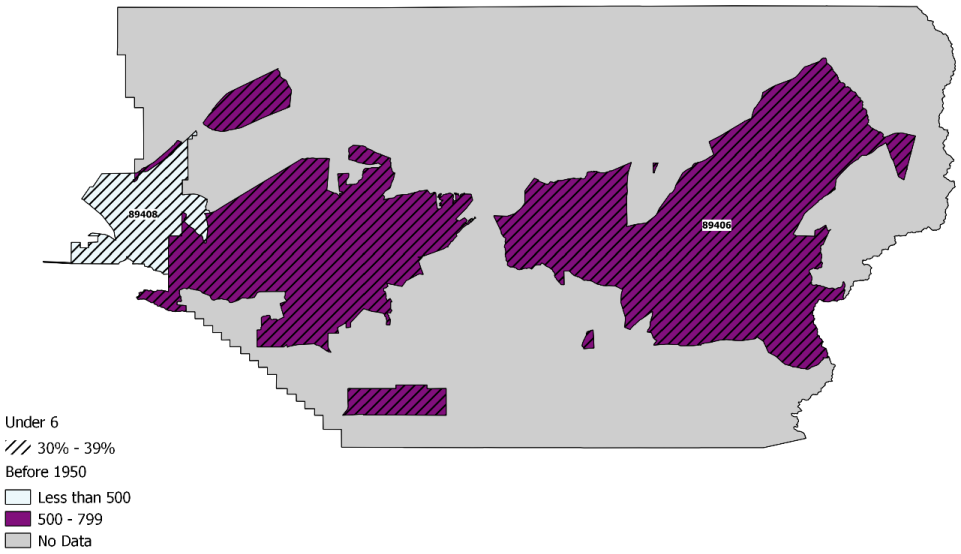


Poverty
- Less than 3,000
- 3,000 - 6,000

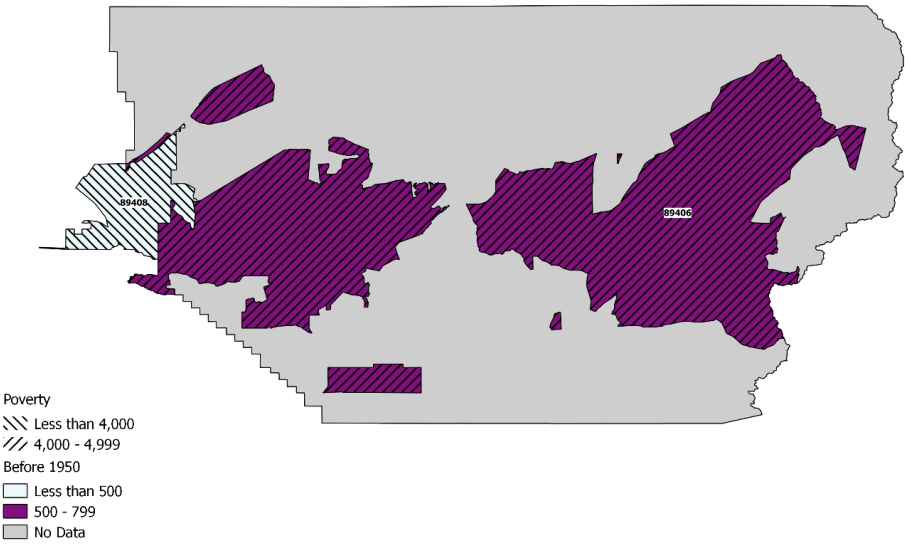
Before 1950
- None
- 0-199
- 200-399
- No data

Churchill County

Churchill County - Houses Built Before 1950 with Percent of Households with a Child Under Age 6

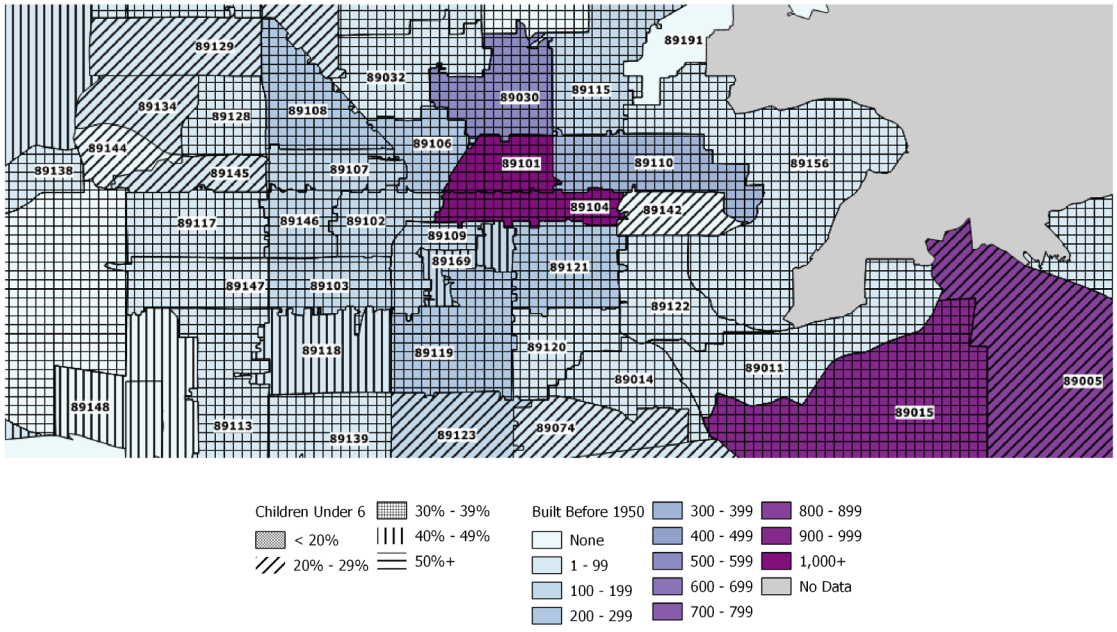


Churchill County - Houses Built Before 1950 with Number of Households Living Below 125% of FPL



Clark County Maps

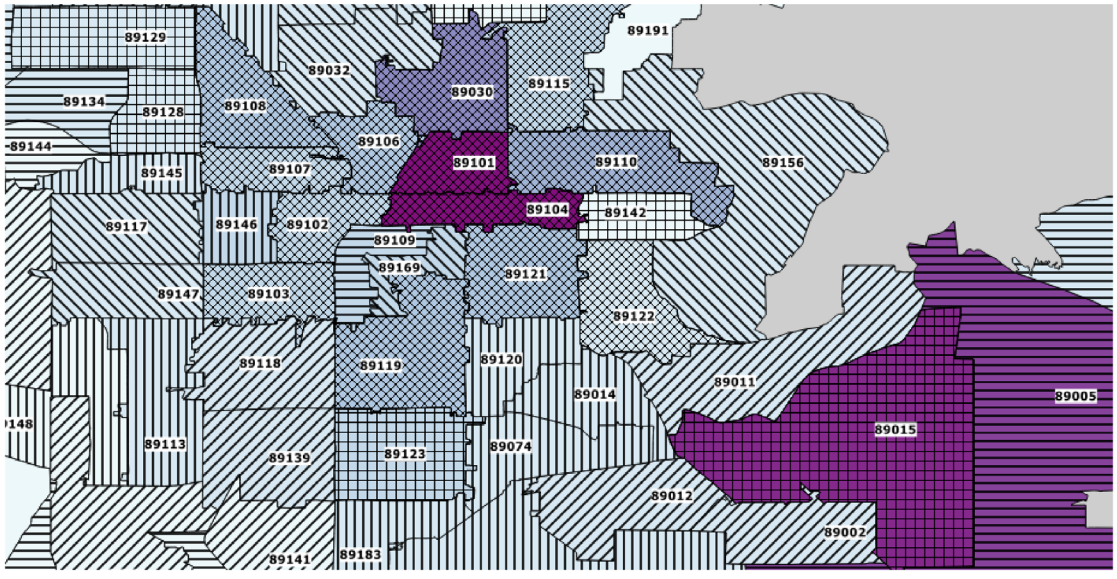
Clark County - Houses Built Before 1950 With Percent of Households with a Child Under Age 6



Children Under 6: < 20%; 20% - 29%; 30% - 39%; 40% - 49%; 50%+

Built Before 1950: None; 1 - 99; 100 - 199; 200 - 299; 300 - 399; 400 - 499; 500 - 599; 600 - 699; 700 - 799; 800 - 899; 900 - 999; 1,000+; No Data

Clark County - Houses Built Before 1950 With Number of Households Living Below 125% of FPL

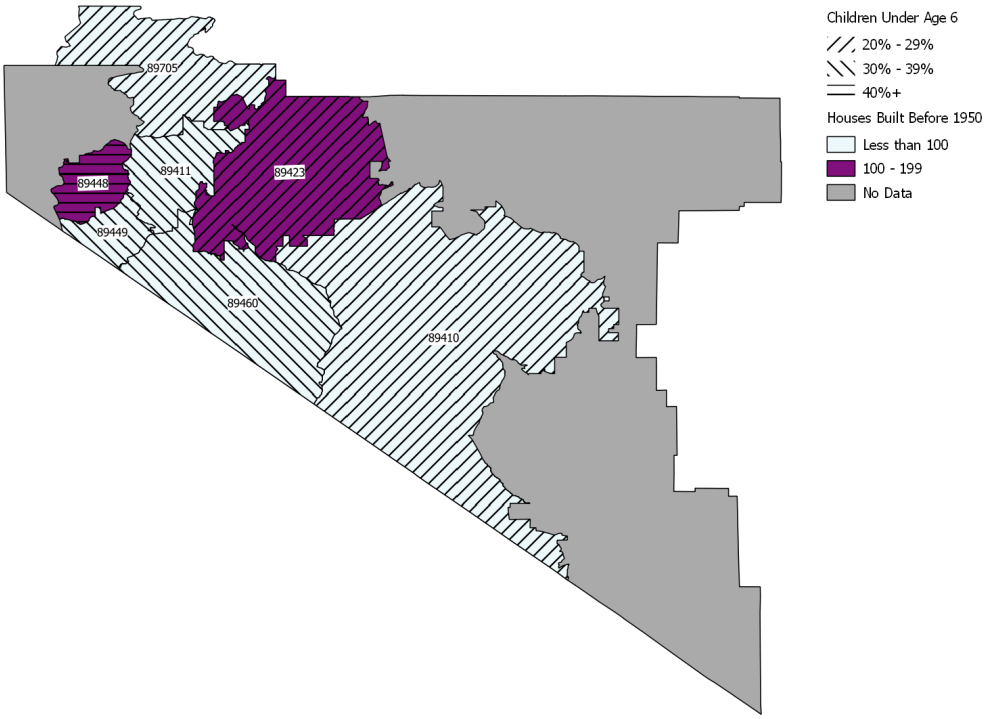


Poverty: <2,000; 2,000 - 3,999; 4,000 - 5,999; 6,000 - 7,999; 8,000 - 9,999; 10,000+

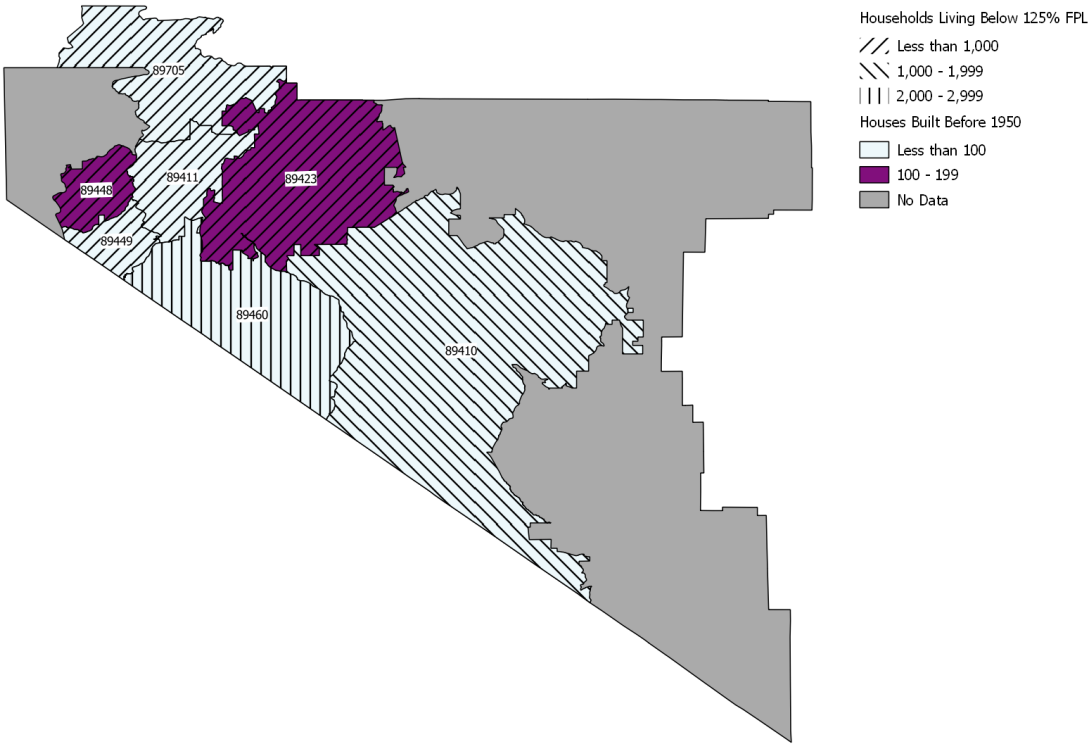
Built Before 1950: None; 1 - 99; 100 - 199; 200 - 299; 300 - 399; 400 - 499; 500 - 599; 600 - 699; 700 - 799; 800 - 899; 900 - 999; 1,000+; No Data

Douglas County Maps

Douglas County - Homes Built Before 1950 with Percent of Households with a Child Under Age 6

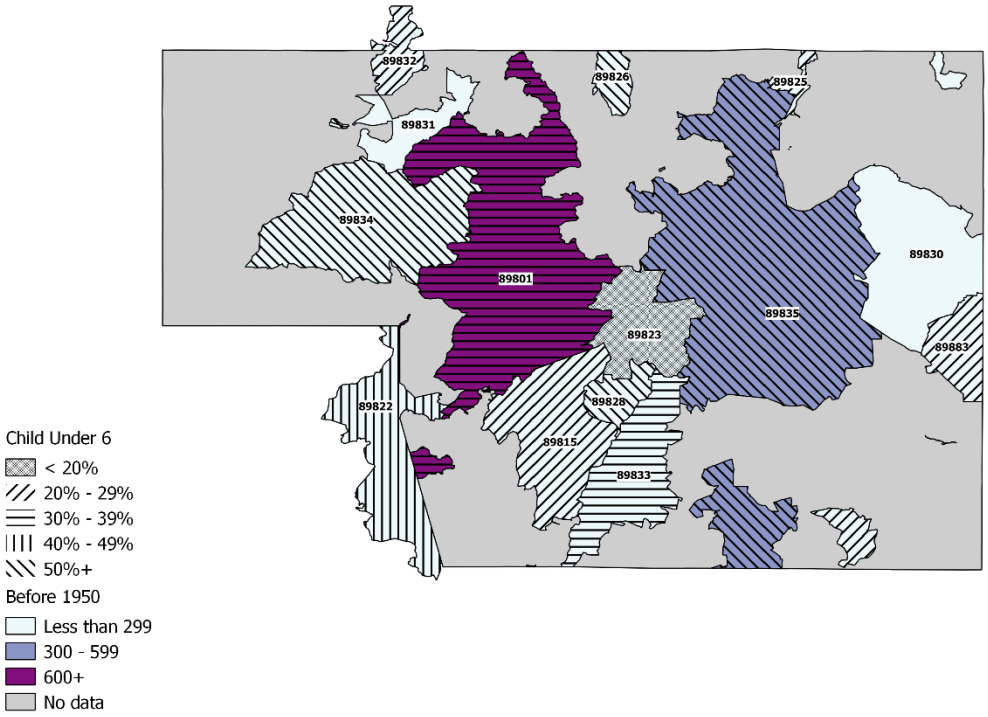


Douglas County - Homes Built Before 1950 with Number of Households Living Below 125% of FPL

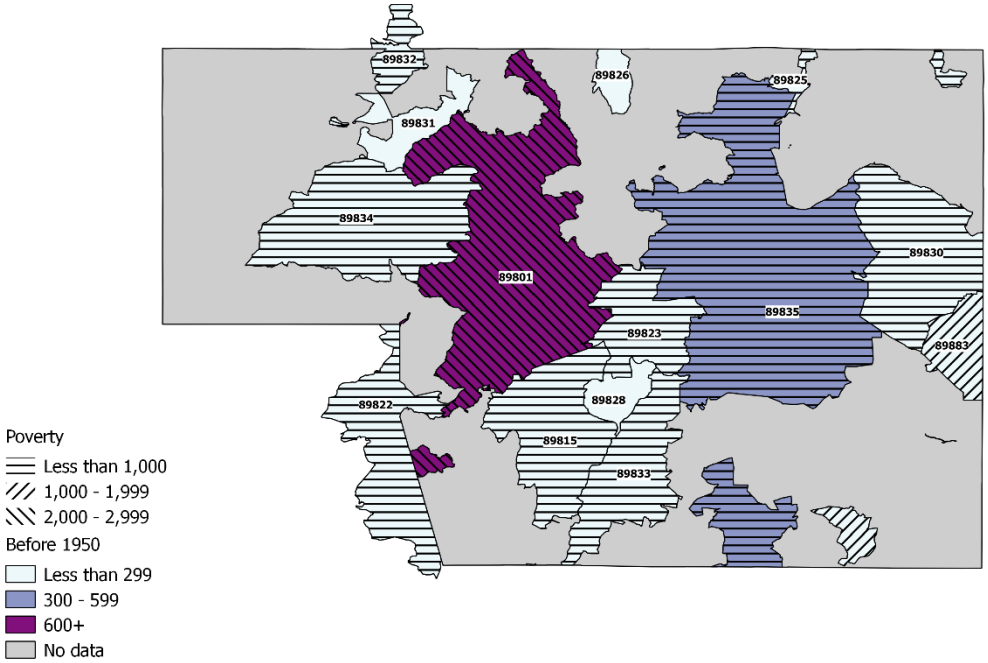


Elko County Maps

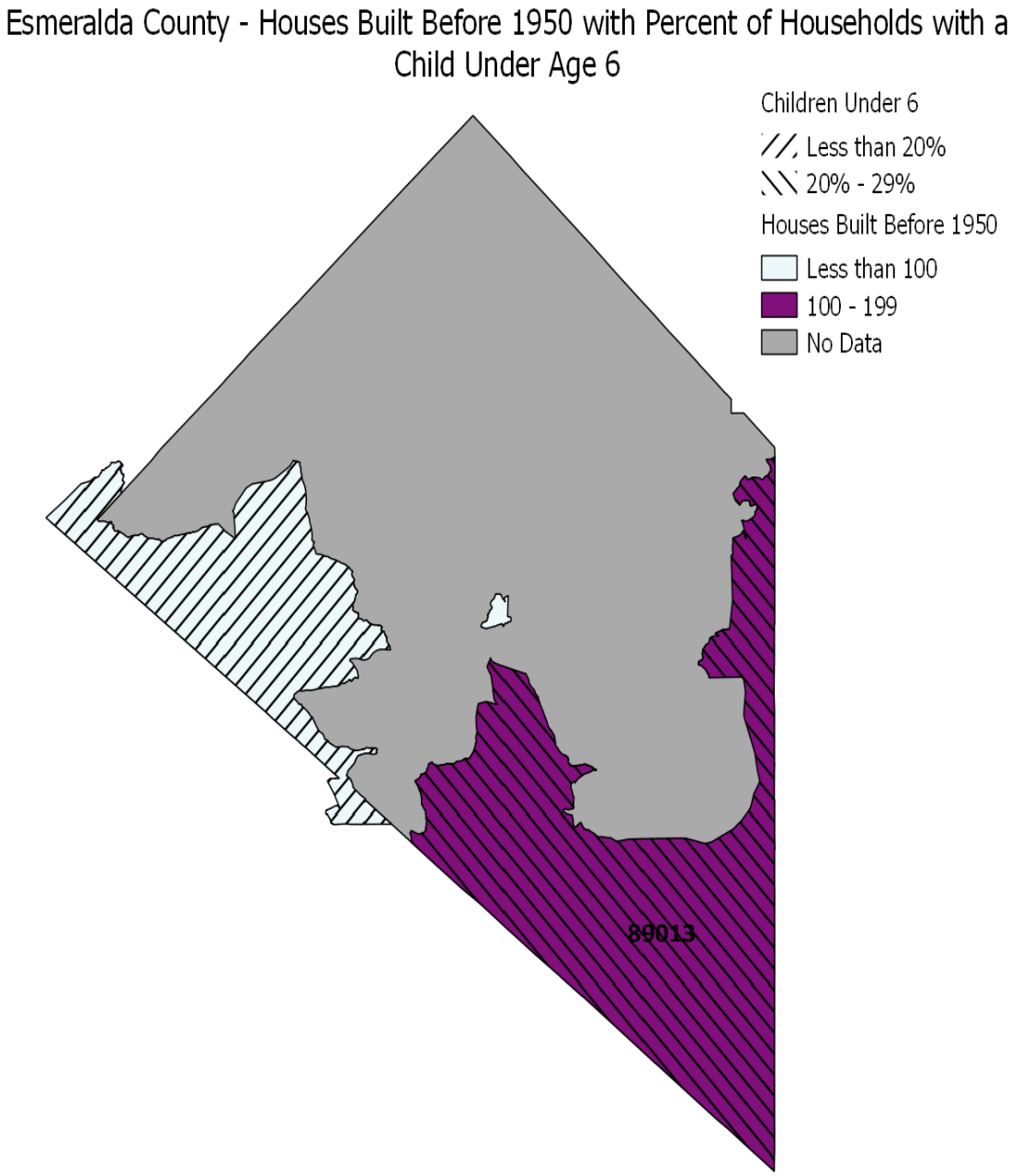
Elko County - Houses Built Before 1950 with Percent of Households with a Child Under Age 6



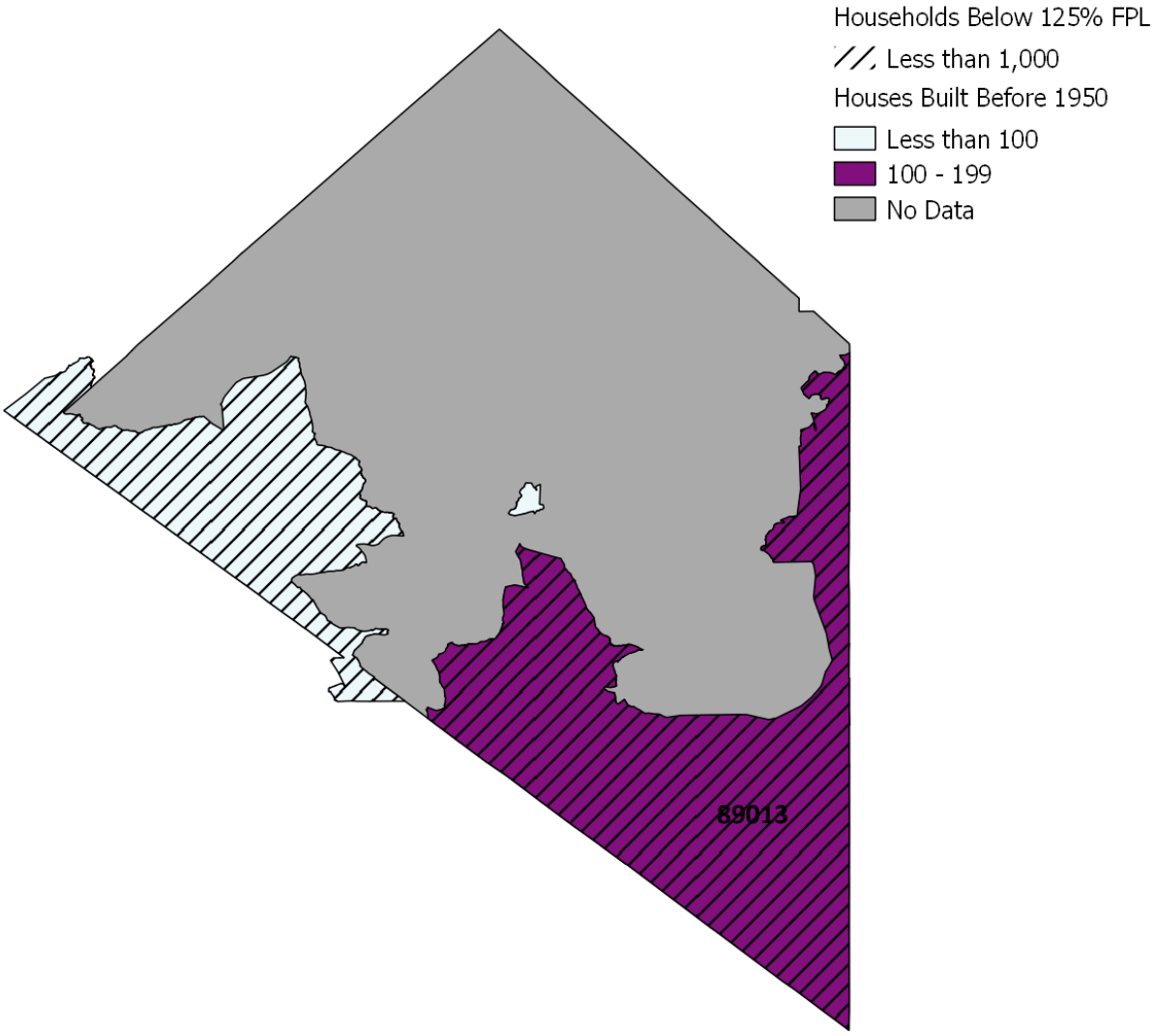
Elko County - Houses Built Before 1950 with Number of Households Living Below 125% of FPL



Esmeralda County

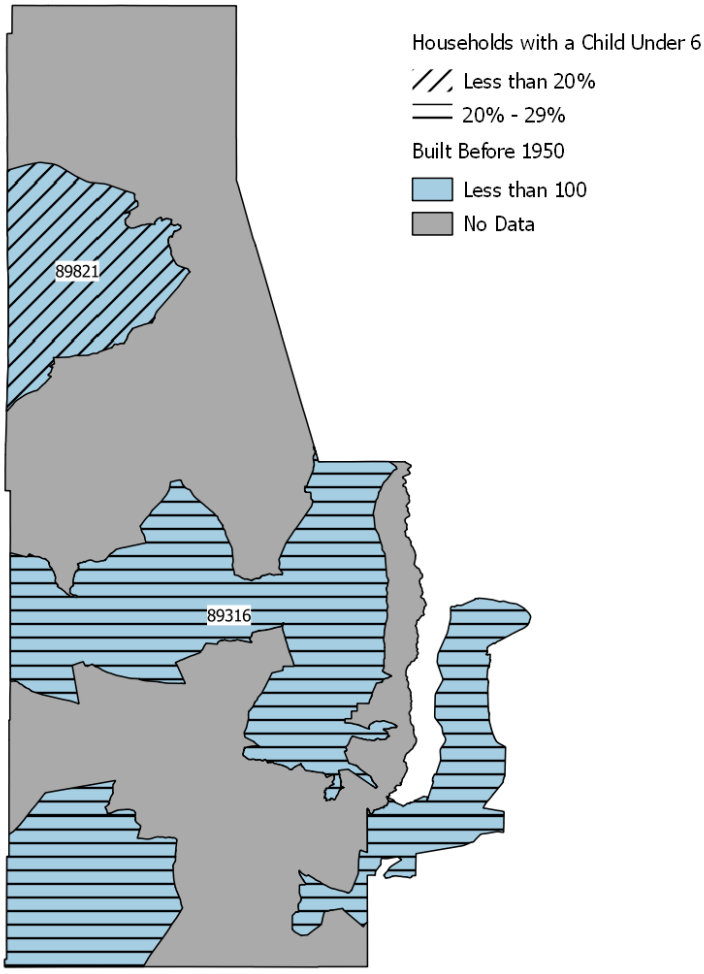


Esmeralda County - Houses Built Before 1950 with Number of Households Living Below 125% of FPL

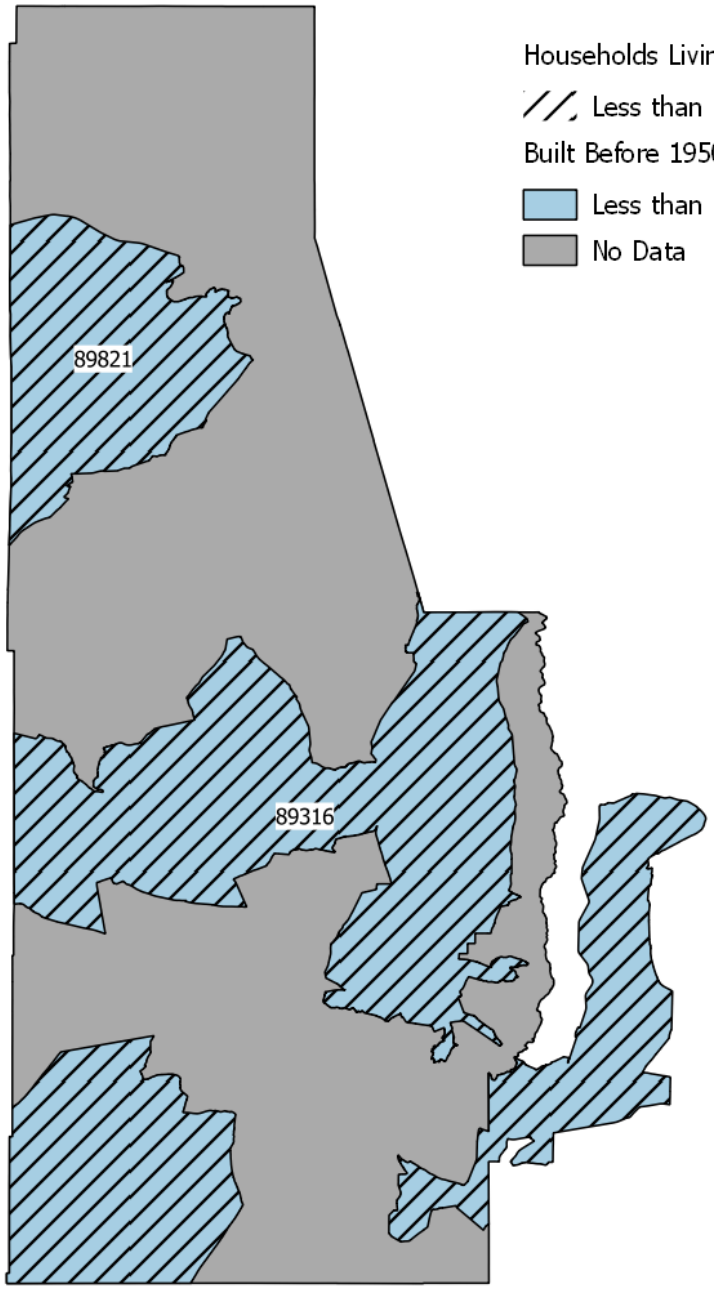


Eureka County Maps

Eureka County - Houses Built Before 1950 with Percent of Households with a Child Under Age 6

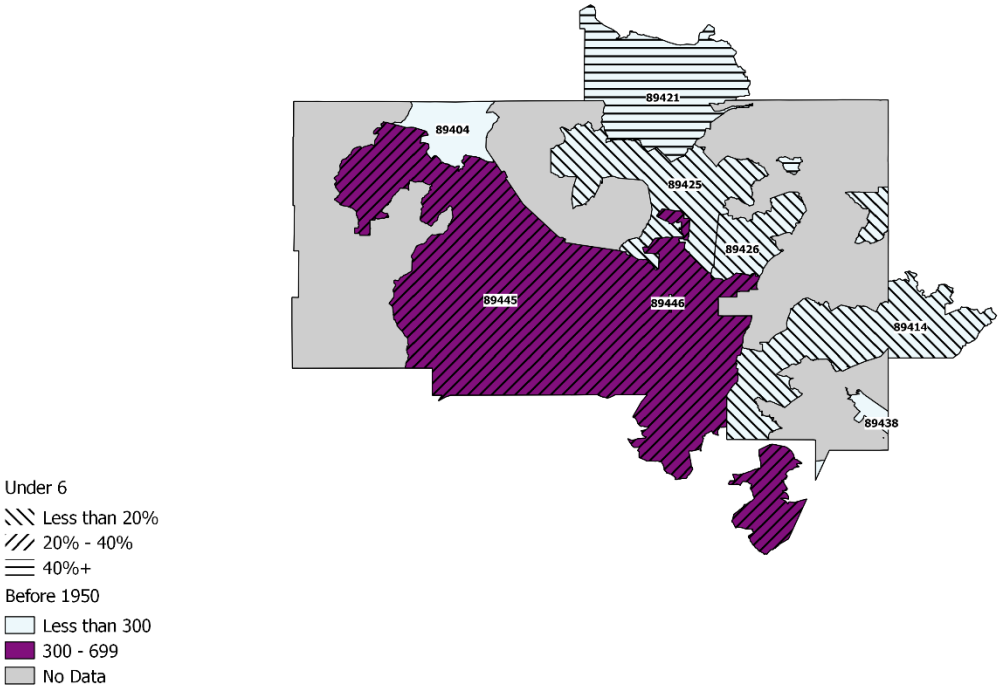


Eureka County - Houses Built Before 1950 with Number of Households Living Below 125% of FPL

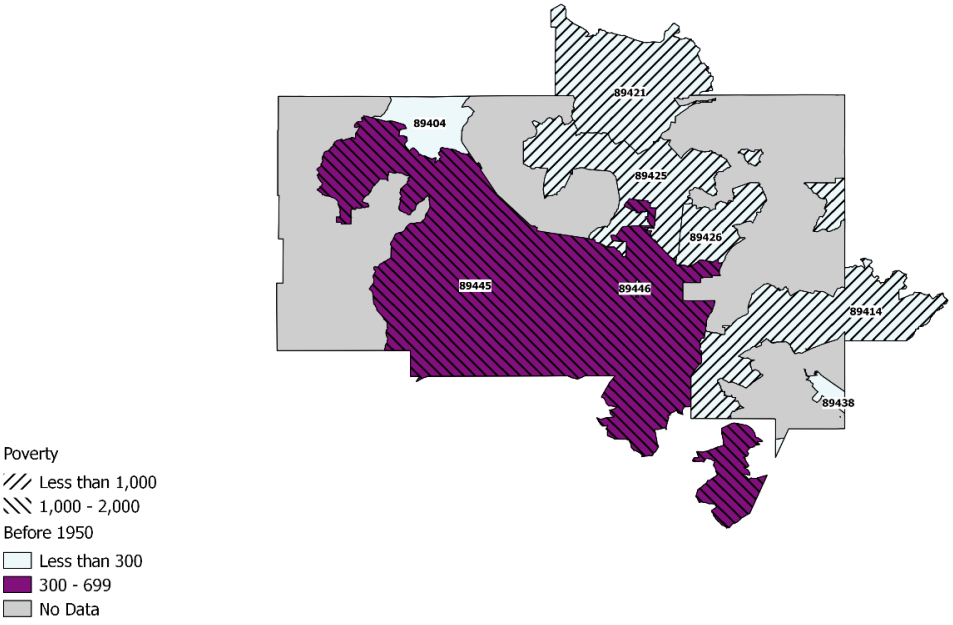


Humboldt County Maps

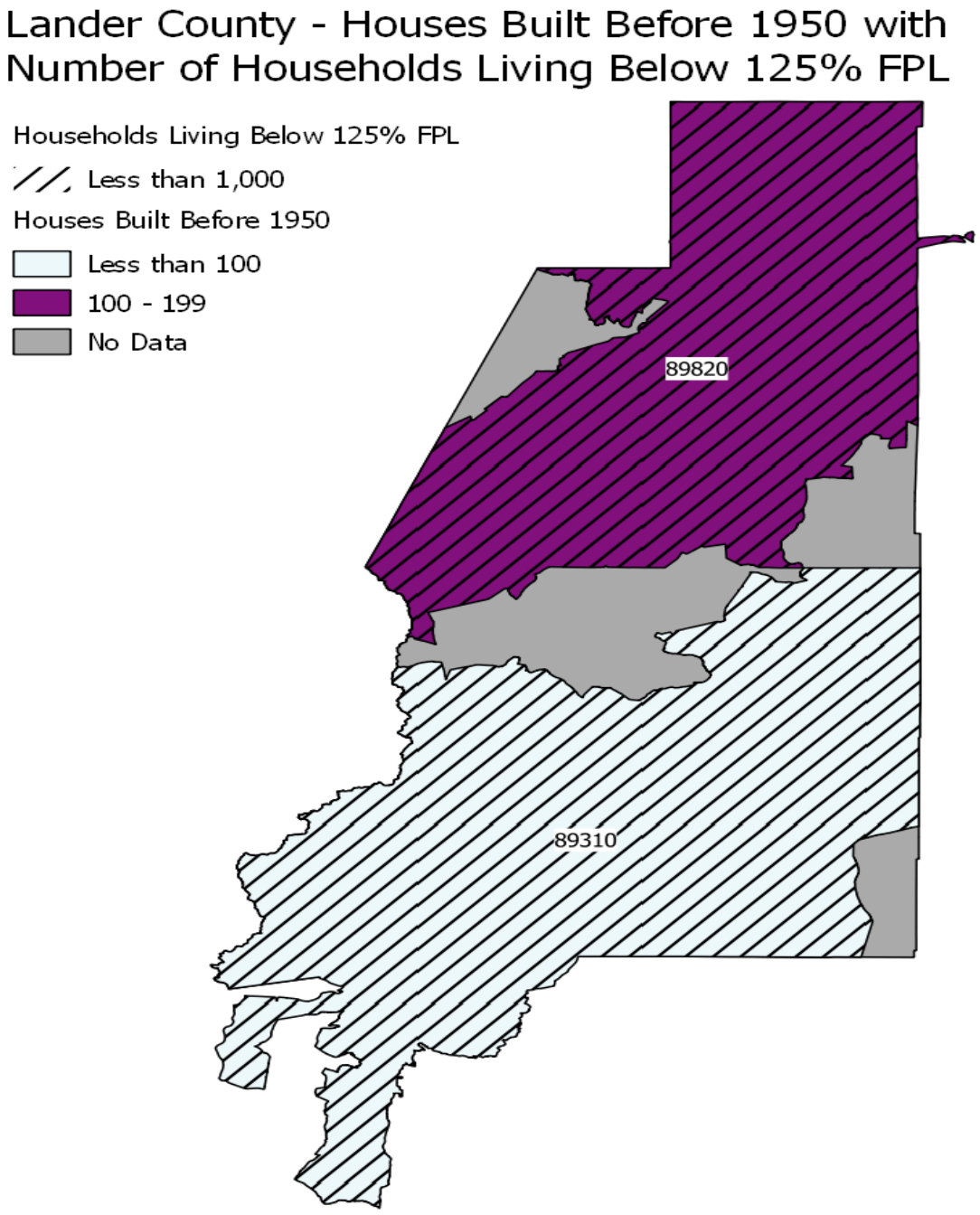
Humboldt County - Houses Built Before 1950 with Percent of Households with a Child Under Age 6



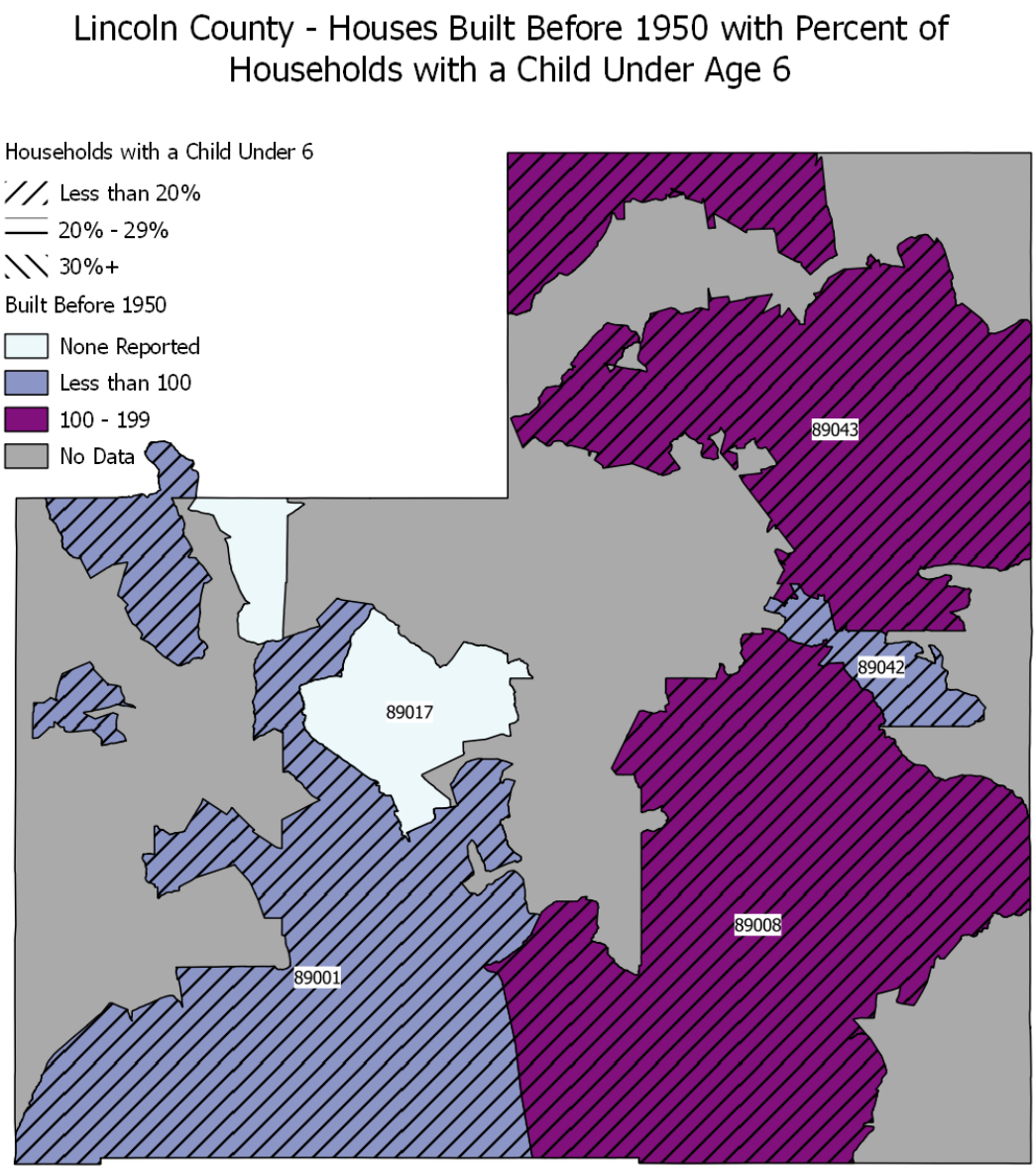
Humboldt County - Houses Built Before 1950 with Number of Households Living Below 125% of FPL



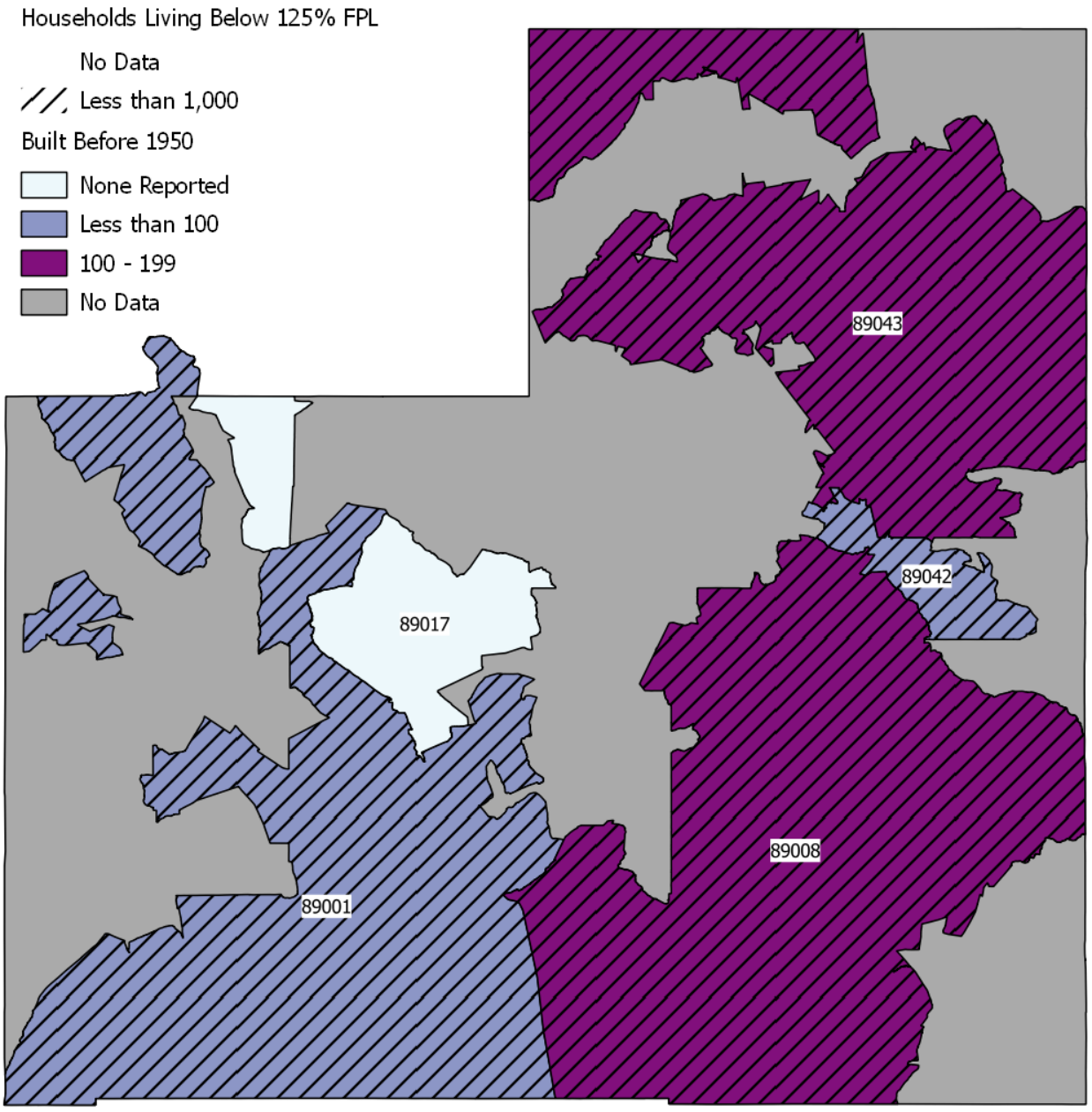
Lander County Maps



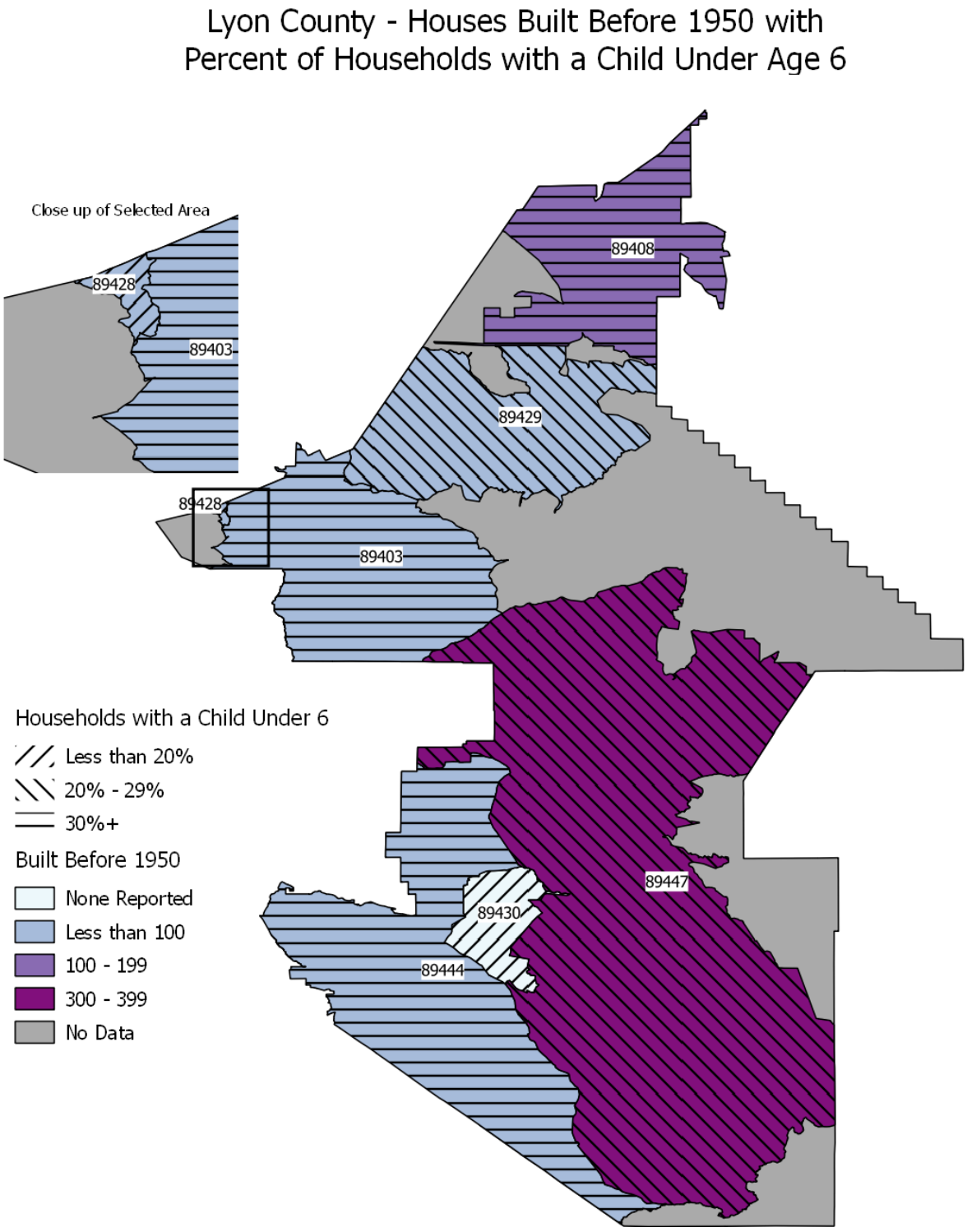
Lincoln County Maps



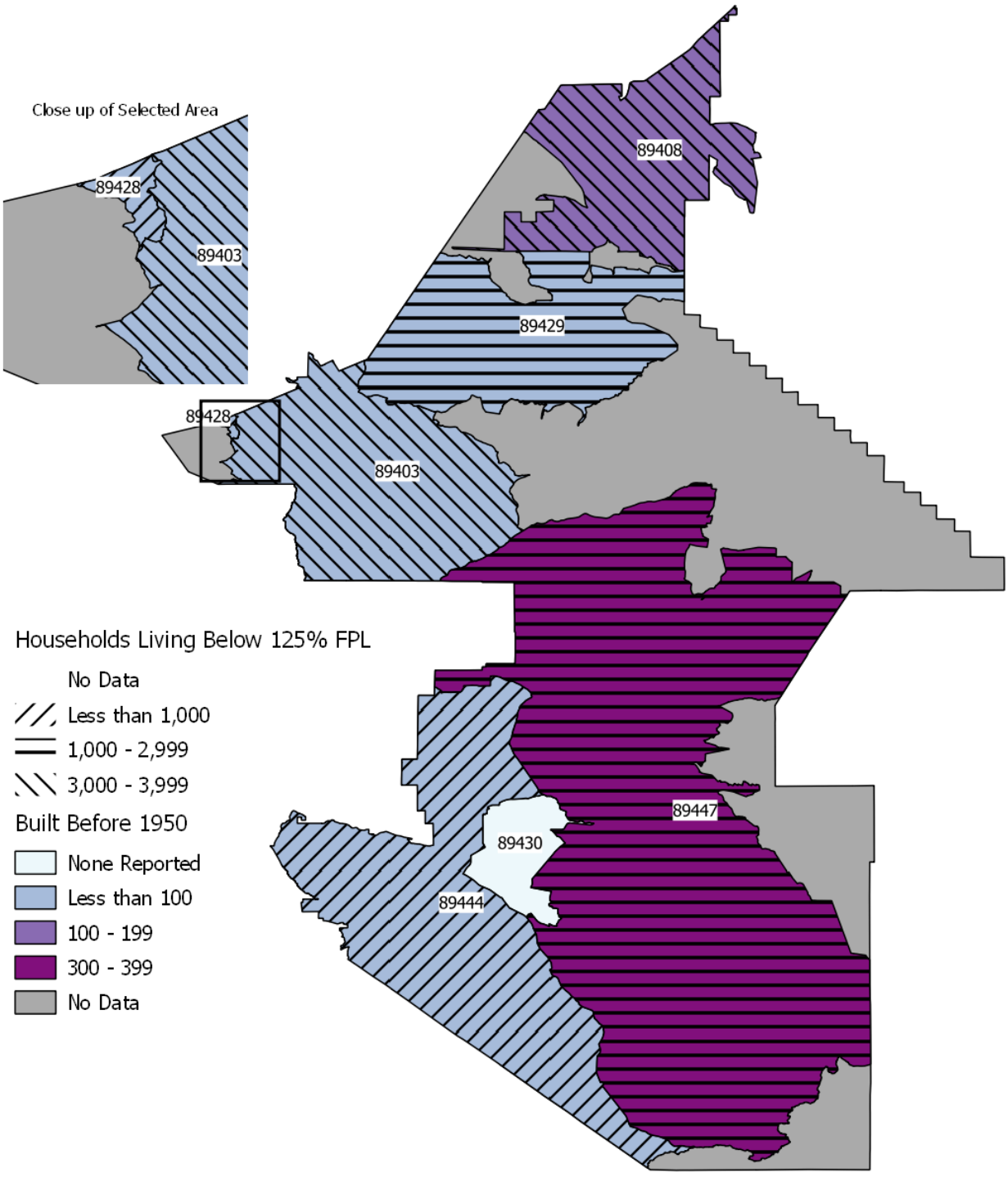
Lincoln County - Houses Built Before 1950 with Number of Households Living Below 125% of FPL



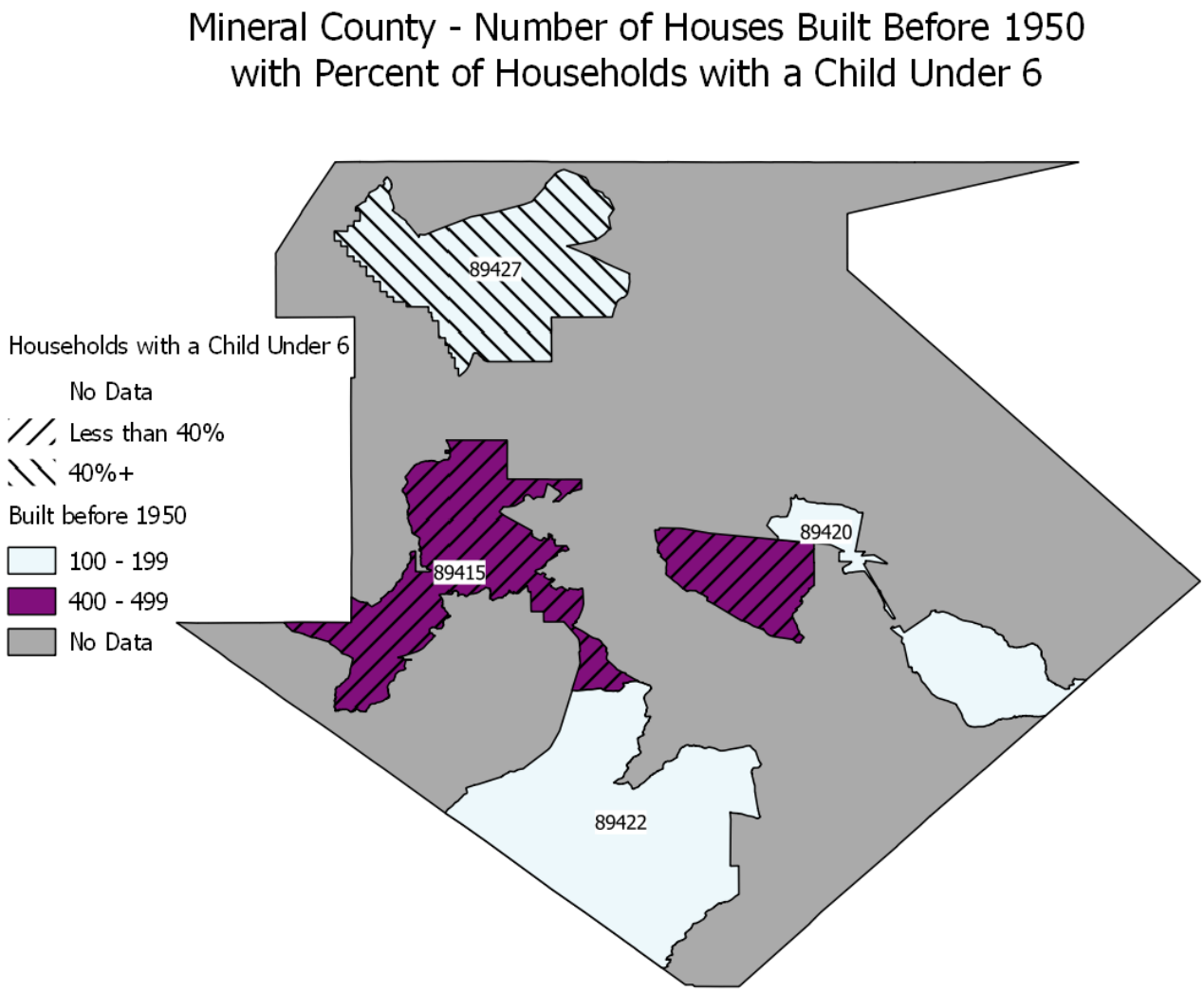
Lyon County Maps



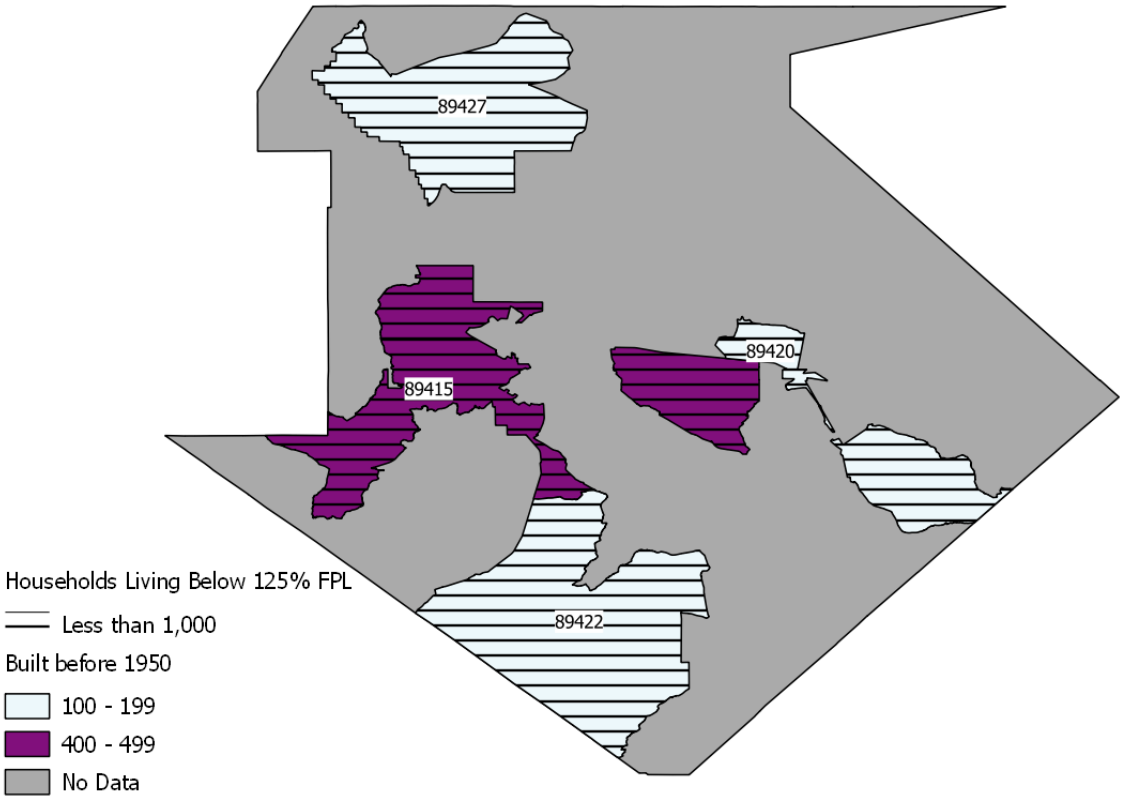
Lyon County - Houses Built Before 1950 with Number of Households Living Below 125% of FPL



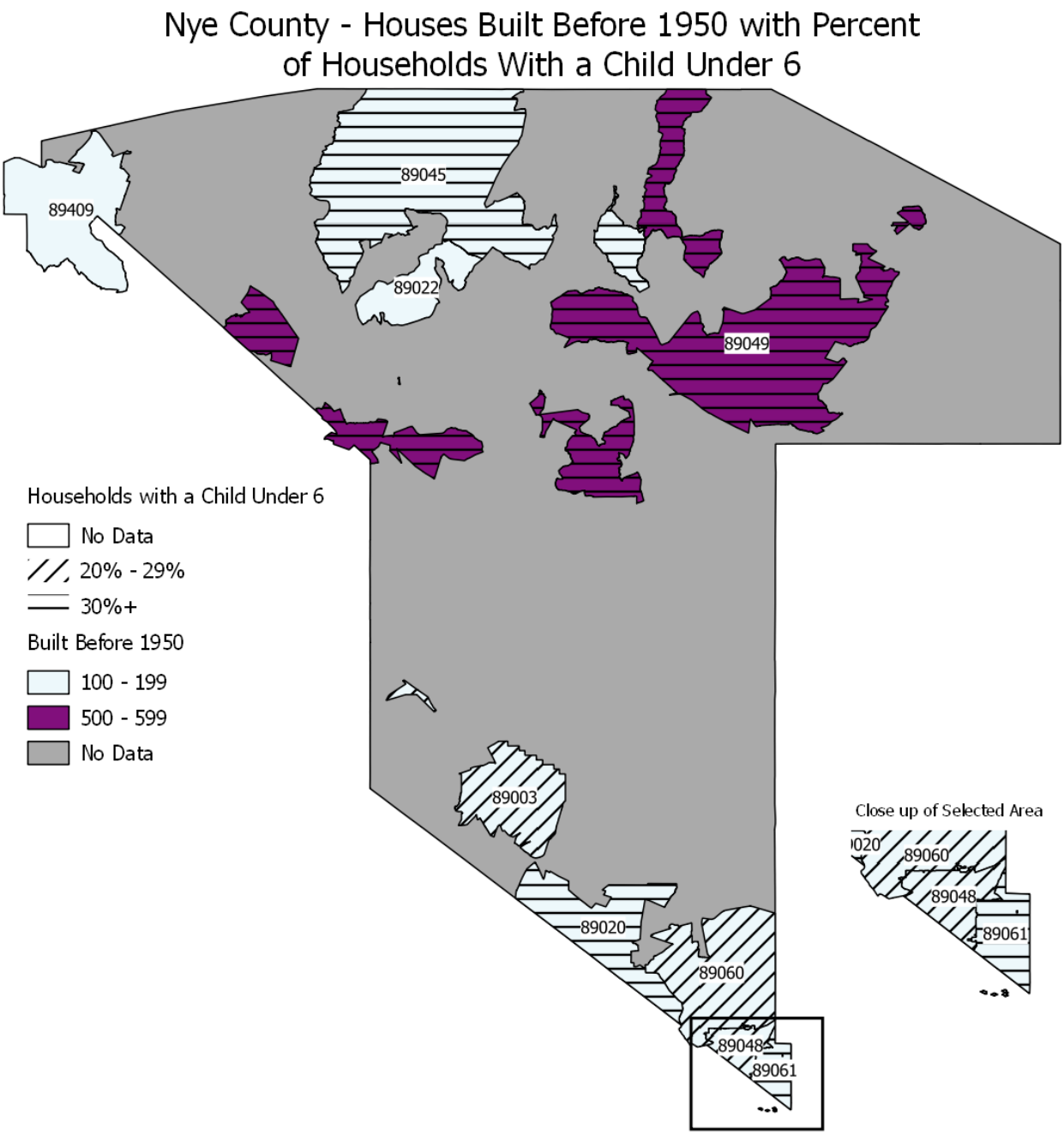
Mineral County Maps

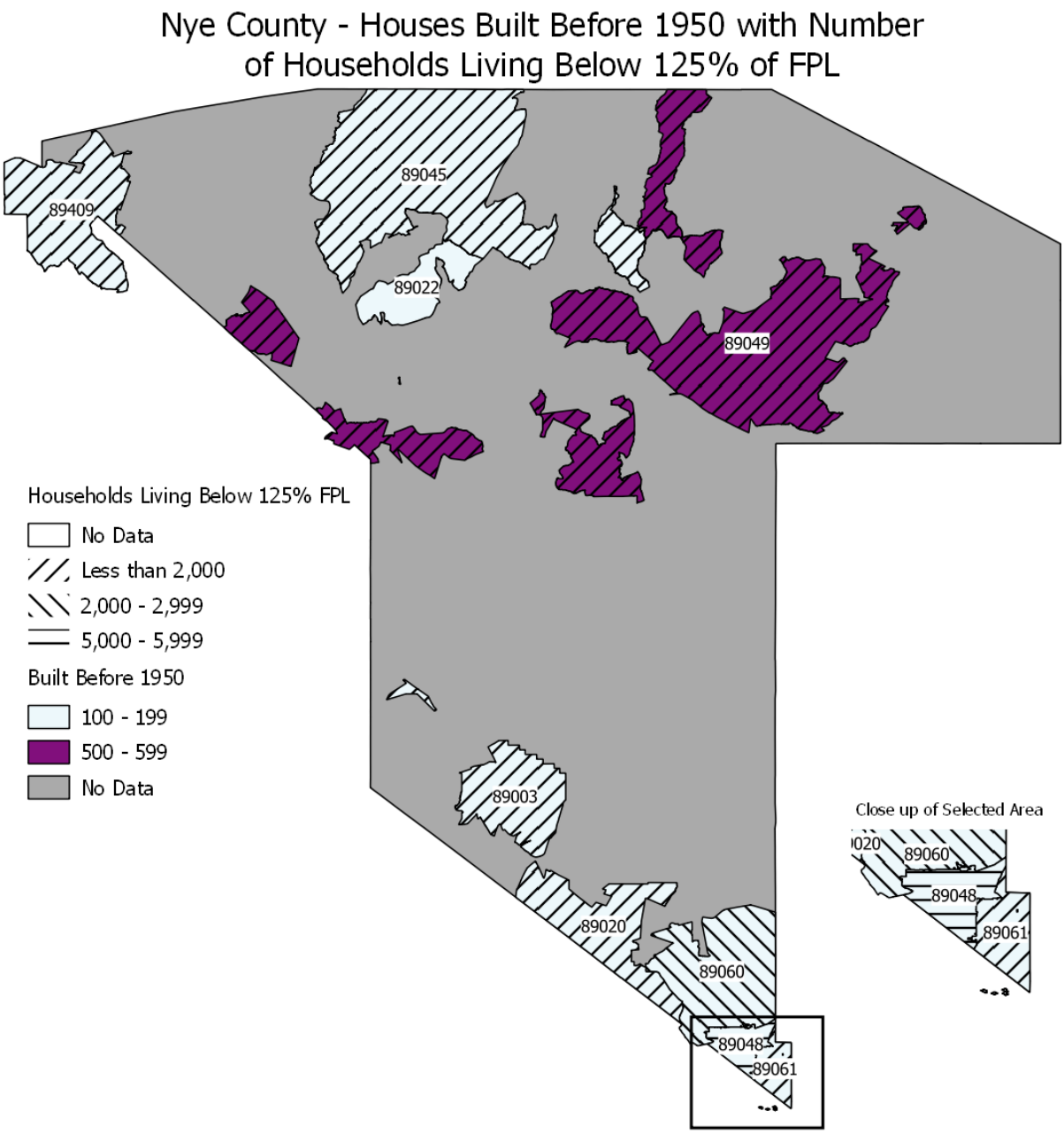


Mineral County - Number of Houses Built Before 1950
with Number of Households Living Below 125% of FPL



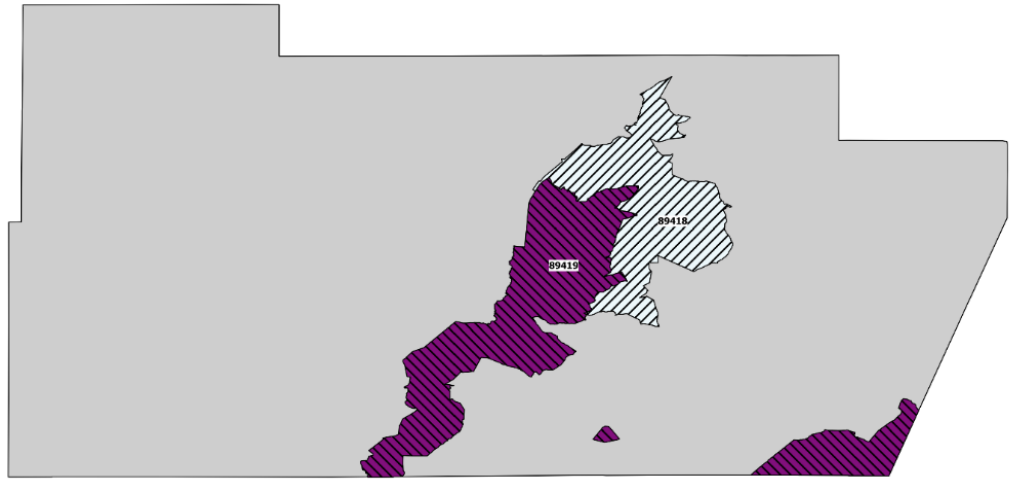
Nye County Maps




Nye County - Houses Built Before 1950 with Number of Households Living Below 125% of FPL
89409
89045
89022
89049
89003
89020
89060
89048
89061
Households Living Below 125% FPL
No Data
Less than 2,000
2,000 - 2,999
5,000 - 5,999
Built Before 1950
100 - 199
500 - 599
No Data
Close up of Selected Area
89060
89048
89061

Pershing County Maps

Pershing County - Houses Built Before 1950 with Percent of Households with a Child Under Age 6

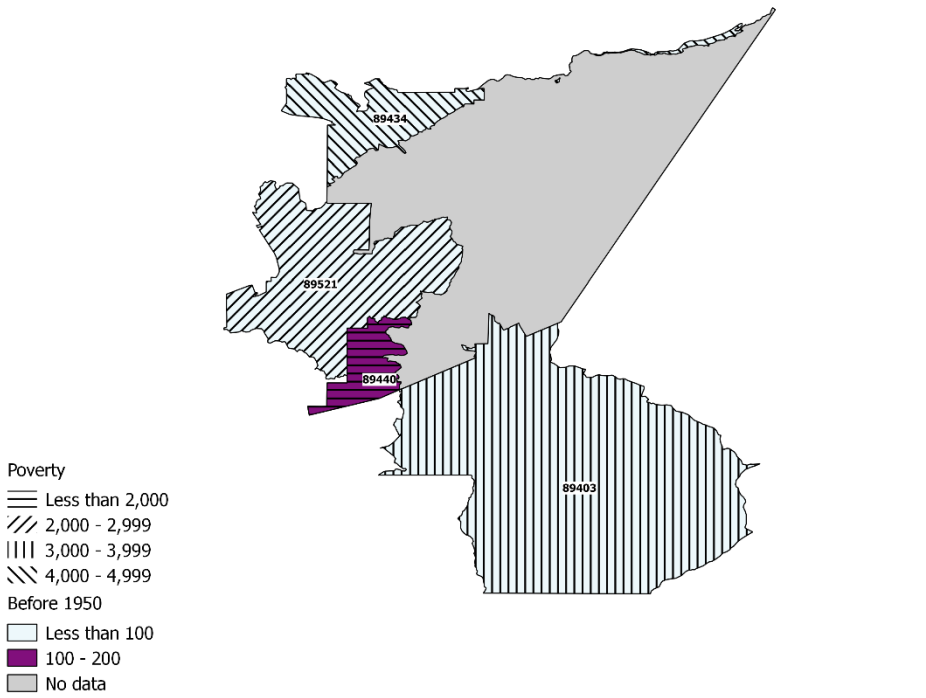


Under 6
- Less than 30%
- 30% - 40%

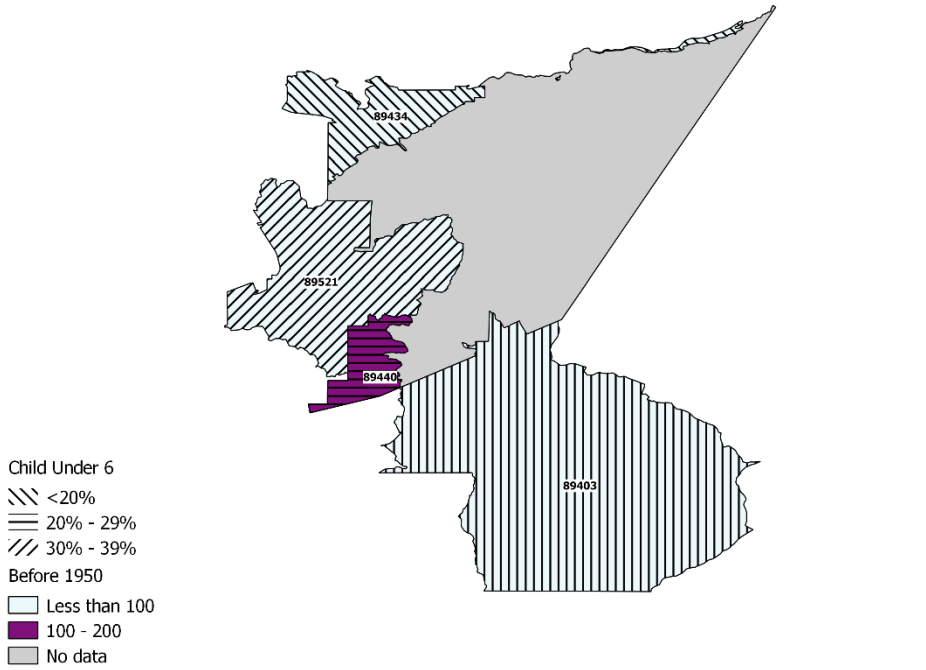
Before 1950
- Less than 200
- 200 - 400
- No Data

Storey County Maps

Storey County - Number of Houses Built Before 1950 with Number of Households Living Below 125% of FPL

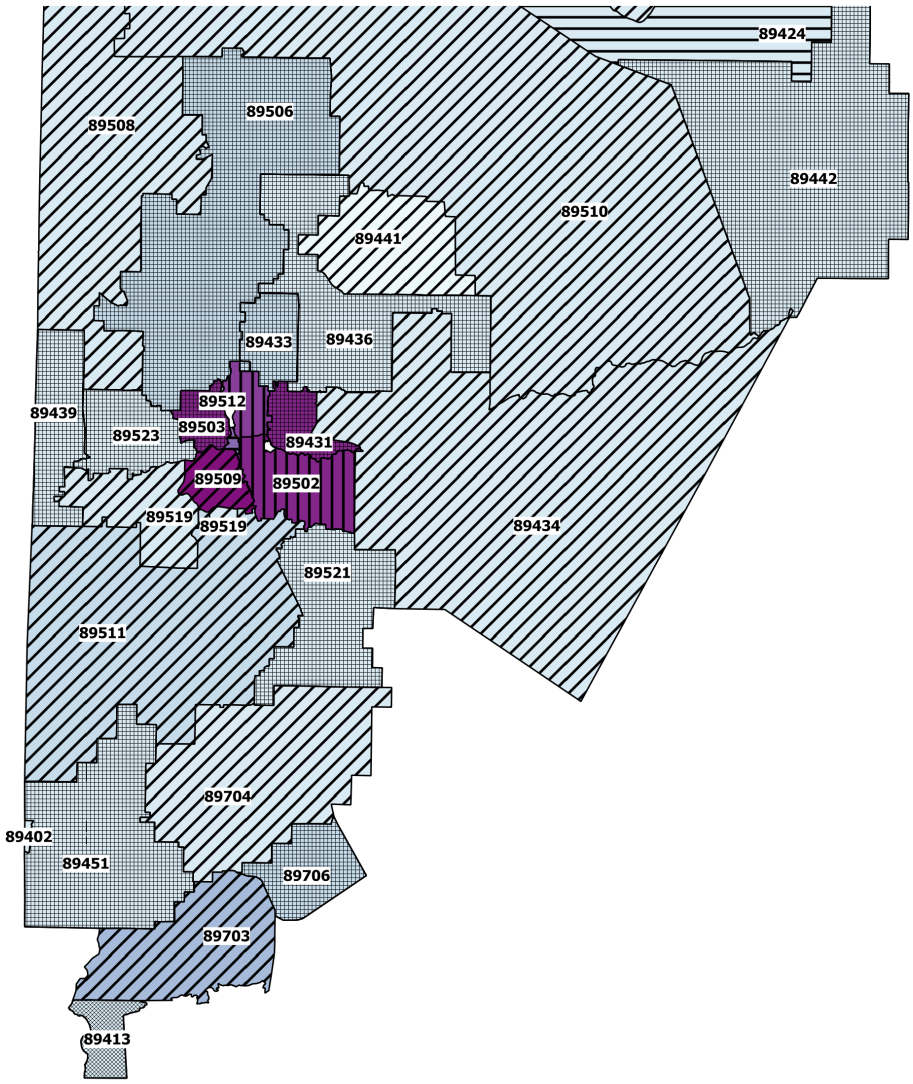


Storey County - Number of Houses Built Before 1950 with Percent of Households with a Child Under Age 6



Washoe County Maps

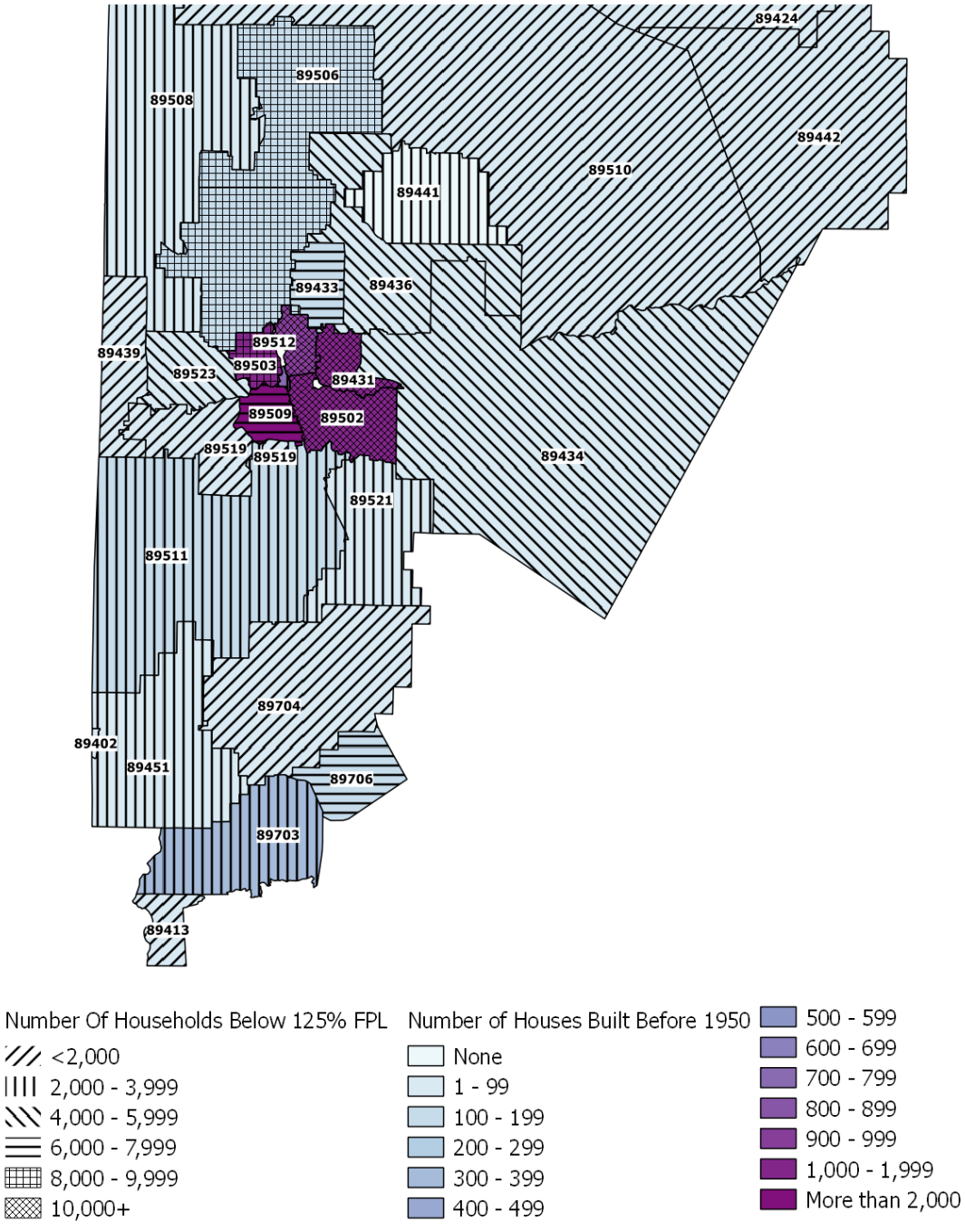
Washoe County - Number of Houses Built Before 1950 with Percent of Households with a Child Under Age 6



Child Under 6
- <20%
- 20% - 29%
- 30% - 39%
- 40% - 49%
- 50% +
- 100%

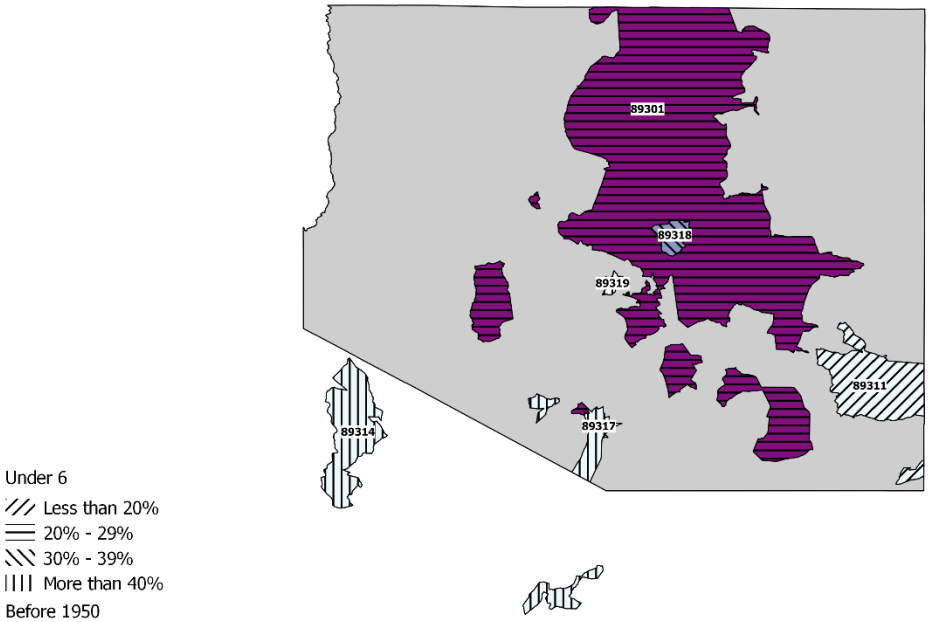
Number of Houses Built Before 1950
- None
- 1 - 99
- 100 - 199
- 200 - 299
- 300 - 399
- 400 - 499
- 500 - 599
- 600 - 699
- 700 - 799
- 800 - 899
- 900 - 999
- 1,000 - 1,999
- More than 2,000

Washoe County - Number of Houses Built Before 1950 with Number of Households Living Below 125% FPL



White Pine County Maps

White Pine County - Number of Houses Built Before 1950 with Percent of Households with a Child Under Age 6



White Pine County - Number of Houses Built Before 1950 with Number of Households Living Below 125% of FPL