

# Hepatitis C in Denver County, Colorado 2008-2013 Epidemiological Profile Report

## Cases of Acute and Chronic Hepatitis C in Denver County

Note: This report is published by the Viral Hepatitis Program (VHP), Disease Control and Environmental Epidemiology Division, Colorado Department of Public Health and Environment, Denver Colorado. Data are presented for acute and chronic hepatitis C cases reported to CDPHE from 2008-2013



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Colorado Department  
of Public Health  
and Environment

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Denver County is located in northeast Colorado with an estimated population of 648,926 in 2013.<sup>1</sup> The median age in Denver County is 34. The median household income is \$47,499, and the county poverty rate is 14%, compared to 19% for the region.<sup>2</sup> There are 263,107 households in Denver County with the majority being single households (41%), married with no children (19%), and married with children (15%), and age 65 and older living alone households (10%).<sup>2</sup> The leading occupation by industry in Denver County is Business, Science, and Arts (41%) and Sales and Office work (24%). According to the United States Census, the largest ethnic group in the county are White 53.4%, followed by Hispanic or Latino 30.9%, Black or African American 10.2%, Asian 3.8%, two or more races 3.1%, American Indian and Alaska Native 2.0%, and Native Hawaiian and Other Pacific Islander 0.2%.<sup>3</sup> The data in this report is current as of December 31, 2014. The state database is constantly being updated as lab reports are received and new cases are confirmed or deleted.

### Hepatitis C in Denver County

Table 1: Reported Hepatitis C Cases by Case Status, Gender, Age, and Race: Denver County, 2013

	Acute HCV Cases		Chronic HCV Cases †		All HCV Cases	
	Number	Percent of Total	Number	Percent of Total	Total	Rate of Reported Cases/ 100,000 ‡
Total (State)	23	100%	3257	100%	3280	62.3
Total (Denver)	4	17.4%	530	16.3%	534	82.3
<b>Case Status</b>						
Confirmed	4	100.0%	492	92.8%	496	76.4
Probable	0	0.0%	0	0.0%	0	0.0
Suspect	0	0.0%	38	7.2%	38	5.9
<b>Gender</b>						
Female	1	33.3%	189	35.7%	190	29.3
Male	3	66.7%	341	64.3%	344	53.0
Unknown	0	0.0%	0	0.0%	0	0.0
<b>Age (years)</b>						
0-9	0	0.0%	0	0.0%	0	0.0
10-19	0	0.0%	2	0.4%	2	0.3
20-29	2	50.0%	52	9.8%	54	8.3
30-39	1	25.0%	68	12.8%	69	10.6
40-49	0	0.0%	101	19.1%	101	15.6
50-59	1	25.0%	198	37.4%	199	30.7
60+	0	0.0%	109	20.6%	109	16.8
Unknown	0	0.0%	0	0.0%	0	0.0
<b>Race/Ethnicity</b>						

Hispanic	2	50.0%	79	14.9%	81	12.5
White non-Hispanic	2	50.0%	116	21.9%	118	18.2
Black non-Hispanic	0	0.0%	53	10.0%	53	8.2
American Indian	0	0.0%	4	0.8%	4	0.6
Asian/Pacific Islander	0	0.0%	3	0.6%	3	0.5
Multiple	0	0.0%	1	0.2%	1	0.2
Other/Missing/Unknown	0	0.0%	274	51.7%	274	42.2

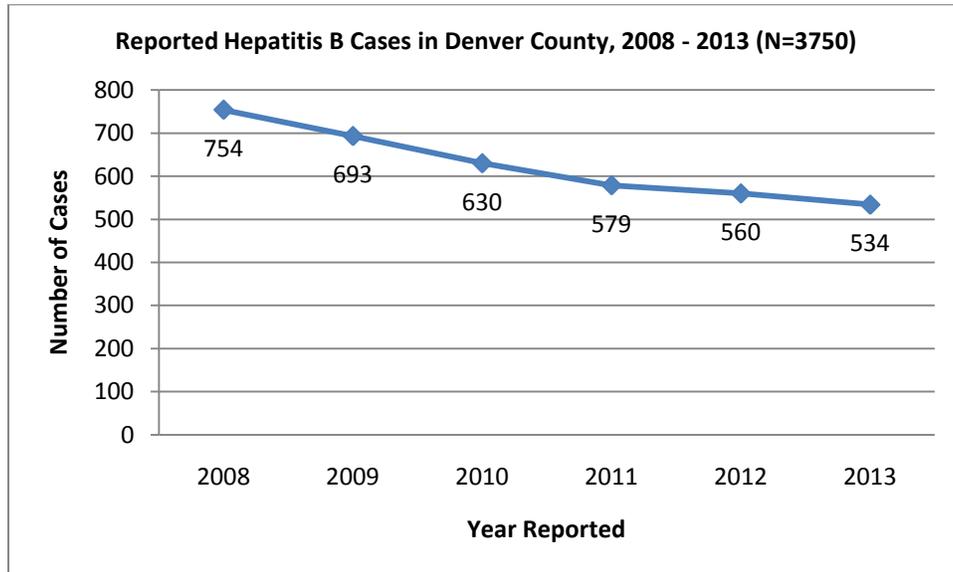
Data is current as of 12/31/2014.

Table 2: Reported Hepatitis C Cases by Case Status, Gender, Age, and Race: Denver County, 2008-2013

	Acute HCV Cases		Chronic HCV Cases †		All HCV Cases	
	Number	Percent of Total	Number	Percent of Total	Total	Rate of Reported Cases/100,000 ‡
Total (State)	184	100%	20401	100%	2058	67.5
Total (Denver)	40	21.7%	3710	18.2%	3750	101.7
<b>Case Status</b>						
Confirmed	31	77.5%	3467	93.5%	3498	94.9
Probable	9	22.5%	1	0.03%	10	0.3
Suspect	0	0.0%	242	6.5%	242	6.6
<b>Gender</b>						
Female	13	32.5%	1352	36.4%	1365	37.0
Male	27	67.5%	2355	63.5%	2382	64.6
Unknown	0	0.0%	3	0.1%	3	0.1
<b>Age (years)</b>						
0-9	0	0.0%	9	0.2%	9	0.2
10-19	0	0.0%	23	0.6%	24	0.7
20-29	6	15.0%	283	7.6%	286	7.8
30-39	8	20.0%	475	12.8%	477	12.9
40-49	13	32.5%	961	25.9%	963	26.1
50-59	10	25.0%	1392	37.5%	1395	37.8
60+	3	7.5%	563	15.2%	564	15.3
Unknown	0	0.0%	4	0.1%	4	0.1
<b>Race/Ethnicity</b>						
Hispanic	12	30.0%	549	14.8%	561	15.2

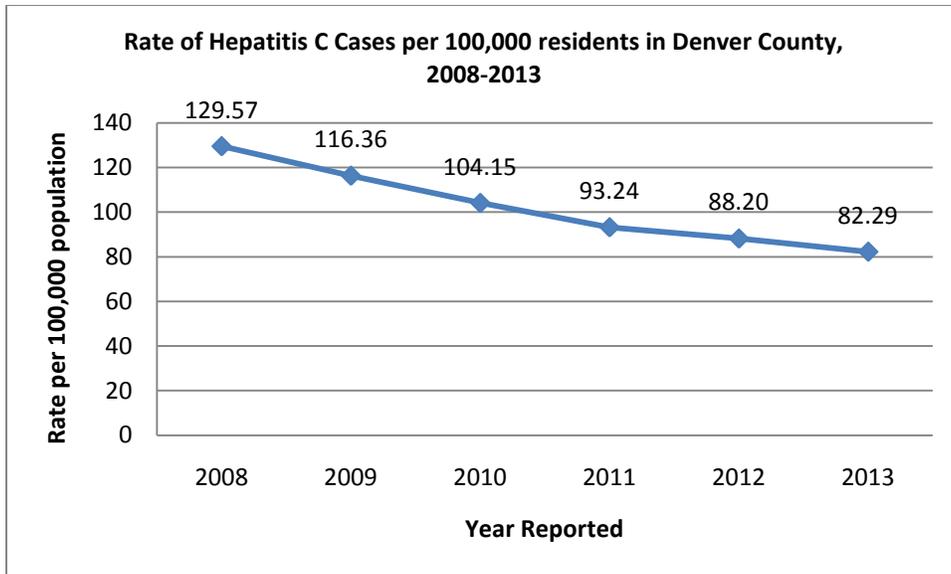
White non-Hispanic	23	57.5%	1099	29.6%	1122	30.4
Black non-Hispanic	3	7.5%	407	10.9%	410	11.1
American Indian	1	2.5%	29	0.8%	30	0.8
Asian/Pacific Islander	0	0.0%	32	0.9%	32	0.9
Multiple	0	0.0%	6	0.2%	6	0.2
Other/Missing/Unknown	1	2.5%	1588	42.8%	1589	43.1

Data is current as of 12/31/2014.



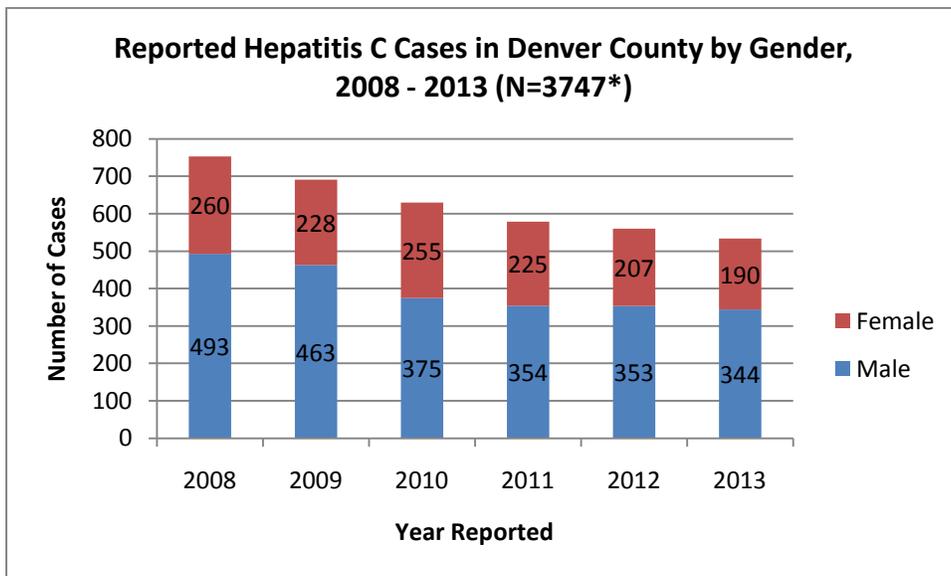
Data is current as of 12/31/2014.

Figure 1. The number of reported Hepatitis C cases in Denver County, 2008-2013



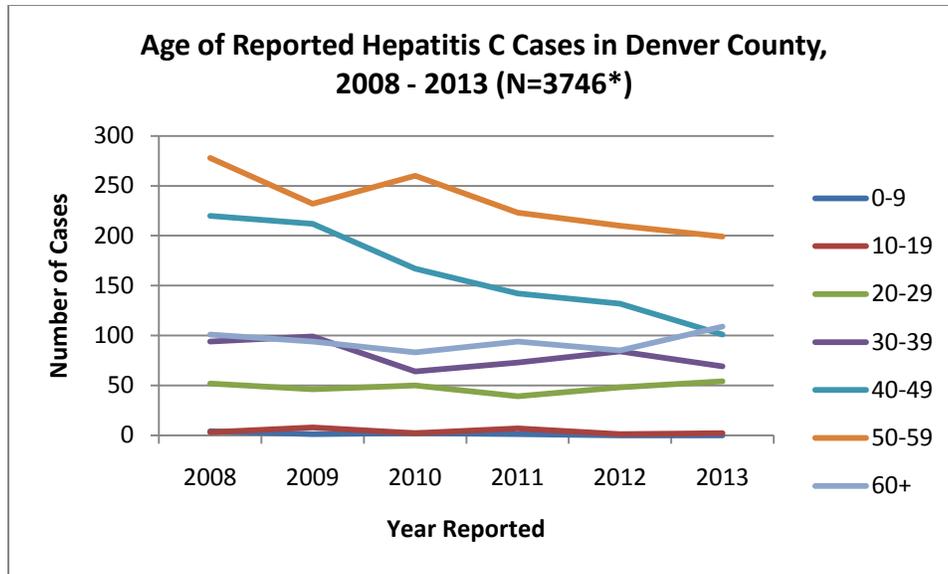
Data is current as of 12/31/2014.

Figure 2. The rate of Hepatitis C cases in Denver County, 2008-2013



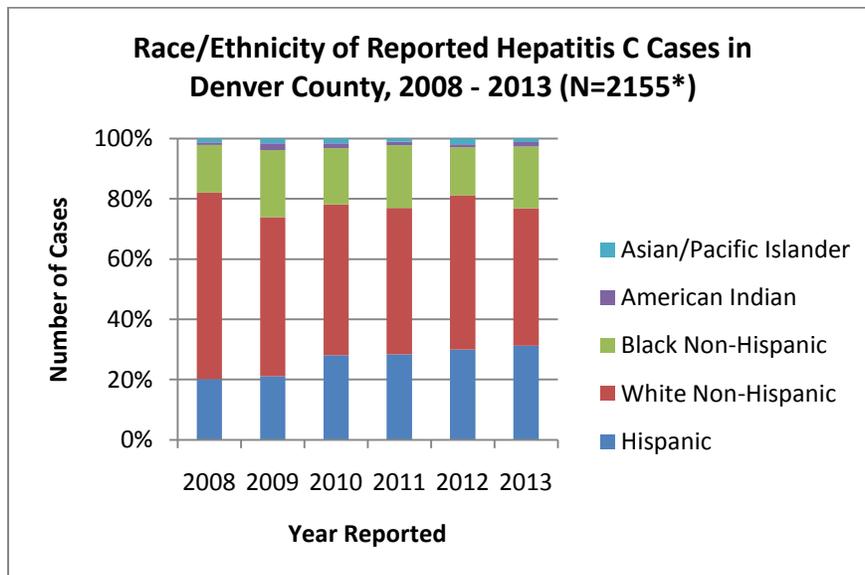
Data is current as of 12/31/2014.

Figure 3. The gender of reported Hepatitis B cases in Denver County, 2008-2013



Data is current as of 12/31/2014.

Figure 4. The age of reported Hepatitis B cases in Denver County, 2008-2013



Data is current as of 12/31/2014.

Figure 5. The race/ethnicity of reported Hepatitis B cases in Denver County, 2008-2013

Table 3: Reported Hepatitis C Cases by Risk Factor, and Percentage of Cases Reporting the Risk Factor: Denver County, 2013+

	Acute HCV Cases		Chronic HCV Cases †		All HCV Cases
	Number	Percent of Total	Number	Percent of Total	Total
Total	4		530		534
<b>IVDU</b>					
Yes	2	50.0%	83	15.7%	85
No	2	50.0%	26	4.9%	28
Unknown	0	0.0%	32	6.0%	32
Missing	0	0.0%	389	73.4%	389
<b>Household Contact</b>					
Yes	0	0.0%	0	0.0%	0
No	3	75.0%	7	1.3%	10
Unknown	0	0.0%	2	0.4%	2
Missing	1	25.0%	521	98.3%	522
<b>Sex Contact</b>					
Yes	0	0.0%	6	1.1%	6
No	3	75.0%	1	0.2%	4
Unknown	0	0.0%	2	0.4%	2
Missing	1	25.0%	521	98.3%	522
<b>Baby Boomer</b>					
Yes	1	25.0%	322	60.8%	323
No	3	75.0%	208	39.2%	211
<b>MSM</b>					
Yes	1	25.0%	0	0.0%	1
No	2	50.0%	2	0.4%	4
Unknown	0	0.0%	42	7.9%	42
Missing	1	25.0%	486	91.7%	487

Data is current as of 12/31/2014.

†Risk factor categories are not mutually exclusive.

Table 4: Reported Hepatitis C Cases by Risk Factor, and Percentage of Cases Reporting the Risk Factor: Denver County, 2008 - 2013†

	Acute HCV Cases		Chronic HCV Cases †		All HCV Cases
	Number	Percent of Total	Number	Percent of Total	Total
Total	40		3710		3750
<b>IVDU</b>					
Yes	13	32.5%	641	17.3%	654
No	26	65.0%	209	5.6%	235
Unknown	0	0.0%	1578	42.5%	1578
Missing	1	2.5%	1282	34.5%	1283
<b>Household Contact</b>					
Yes	4	10.0%	2	0.05%	6
No	25	62.5%	99	2.7%	124
Unknown	3	7.5%	1646	44.4%	1649
Missing	8	20.0%	1963	52.9%	1971
<b>Sex Contact</b>					
Yes	12	30.0%	62	1.7%	74
No	17	42.5%	39	1.1%	56
Unknown	3	7.5%	1646	44.4%	1649
Missing	8	20.0%	1963	52.9%	1971
<b>Baby Boomer</b>					
Yes	17	42.5%	2373	64.0%	2390
No	23	57.5%	1333	35.9%	1356
Unknown	0	0.0%	4	0.1%	4
<b>MSM</b>					
Yes	19	47.5%	127	3.4%	146
No	13	32.5%	36	1.0%	49
Unknown	0	0.0%	1980	53.4%	1980
Missing	8	20.0%	1567	42.2%	1575

Data is current as of 12/31/2014.

†Risk factor categories are not mutually exclusive.

## Technical Notes Hepatitis C Surveillance

### Epidemiology

Viral hepatitis surveillance in Colorado is primarily based on laboratory reporting of serologic results. Laboratory-based reporting enables the identification of asymptomatic persons infected by the virus as well as those displaying symptoms. In Colorado, the Board of Health requires physicians and other health care providers to report suspected cases of acute hepatitis C within 7 days, and laboratories to report positive HCV serologic tests (including positive serum antibody titers with signal-to-cutoff ratios or more specific tests) within 7 days. Upon receipt of these reports, either electronically, by fax, or via another reporting system, the Viral Hepatitis Program (VHP) uses established case definitions to assign the appropriate diagnosis and case status for each patient.

### Acute Hepatitis C

Acute hepatitis C is the first stage of hepatitis C infection and may be identified two weeks to six months after the exposure to the virus. Many people with hepatitis C do not have symptoms and do not know they are infected. If symptoms occur, they may include fever, headache, malaise, nausea, vomiting, diarrhea, abdominal pain, and jaundice. Abnormal liver function tests are one of the most characteristic features. The Colorado Department of Public Health and Environment (CDPHE) uses case definitions published by the National Notifiable Diseases Surveillance System (NNDSS) to define an acute case. These can be found at <http://wwwn.cdc.gov/NNDSS/script/conditionsummary.aspx?CondID=83>

### Past or Present Hepatitis C

Up to 85% of persons infected with hepatitis C, develop chronic infection. Chronic liver disease or liver cancer develops in approximately 15 -25% of people infected with the hepatitis C virus for 20 years or longer. When symptoms appear, they are often a sign of advanced liver disease and may include the same symptoms as an acute infection. The surveillance case definition relates to past or present cases of hepatitis C rather than truly chronic infections. A present case can only be identified with additional viral load testing, and only 52.3% of cases included both an anti-HCV and an HCV RNA test. The case definition for hepatitis C past or present can be found at <http://wwwn.cdc.gov/NNDSS/script/conditionsummary.aspx?CondID=84>

The CDPHE Viral Hepatitis Program attempts to interview all acute cases. In 2013, it also attempted to follow-up on a subset of chronic cases by soliciting more risk and clinical information from healthcare providers. If a demographic or risk variable is reported as missing, the information was not located by the disease investigators. If the variable is reported as unknown, then the investigator asked the question or located the information in a report and it was marked unknown. For example, a case investigator reviewed a medical record for a case and found a question related to race that was not marked. In that case, the variable was “missing.” If a person did not know whether or not their household contacts had hepatitis C, they would respond “don’t know” or “unknown.”

## Hepatitis C Morbidity

### Surveillance Summary for Hepatitis C

From 2008-2013, a total of 18 acute hepatitis C cases and 1917 cases of chronic hepatitis C were reported in Colorado. In 2013, a total of 4 acute cases and 530 chronic cases of hepatitis C were reported in Denver County, Colorado. Table 1 and Figure 1 and 2 describe the distribution of reported cases by case status, gender, age, race/ethnicity, for 2013 and for 2008-2013. Rates include acute and chronic case reports even though up to 10% of acute cases may also be included in the chronic cases. This occurs when an individual retests positive six months following the initial acute diagnosis, and the person is reported as a chronic case following the second test. Rates per 100,000 were calculated using the 2013 estimates from the U.S. Census Bureau, Population Division.<sup>5</sup>

### Gender

In 2013, the majority of the reported acute cases of hepatitis C were males (n=3; 66.7%); 1 female case was reported (33.3%). For chronic HCV infections, a total of 530 cases were reported in Denver County. 64.3% of the total 530 reported cases were among men (n=341), as compared to 189 (35.7%) in women. Over the 2008 to 2013 time period, the majority of acute cases of hepatitis C were among men (n=27, 67.5%) followed by women (n=13, 32.5%). For chronic hepatitis C cases during the time period of 2008 to 2013 men also had higher percentage of the disease burden (n=2355, 63.5%) when compared to women (n=1352, 36.4%) in Denver County. The numbers for 2008 to 2013 are displayed in Figure 3.

### Age

For chronic infections in 2013, persons 50-59 years of age had the highest number of reported cases (n=198) in Denver County. For the 2008 to 2013 time period, the majority of chronic hepatitis C cases were also in the 50-59 years of age range (n=1,392, 37.5%) (Figure 4). These reports support recent recommendations by the U.S. Centers for Disease Control and Prevention (CDC). The recommendation states that adults born during 1945-1965 should receive one-time testing for HCV without prior ascertainment of HCV risk.<sup>4</sup> They also suggest that additional testing might need to be done among younger age groups with risk factors for hepatitis C.

### Race/Ethnicity

Data on race and ethnicity was missing, unknown, or reported as other for most of the reported cases of chronic HCV (n=274; 51.7%). Among the reported cases that included race, White non-Hispanics had the highest number of chronic cases (n=116; 21.9% of cases) in 2013. From 2008 to 2013, the majority of chronic cases were reported as other (n=1,588, 42.8%), followed by White non-Hispanics (n=1099, 29.6%), Hispanics (n=549, 14.8%), Black non-Hispanics (n=407, 10.9%), Asian/Pacific Islanders (n=32, 0.9%), and American Indians (n=29, 0.8%) as displayed in Figure 5.

### Risk Factors

Risk factor data include: injection drug use (IDU), household contact, sex contact, and healthcare exposures. These data were obtained through patient interviews, medical record reviews, or information provided by a physician, hospital, or other healthcare provider. Twenty acute cases offered information on risk factors.

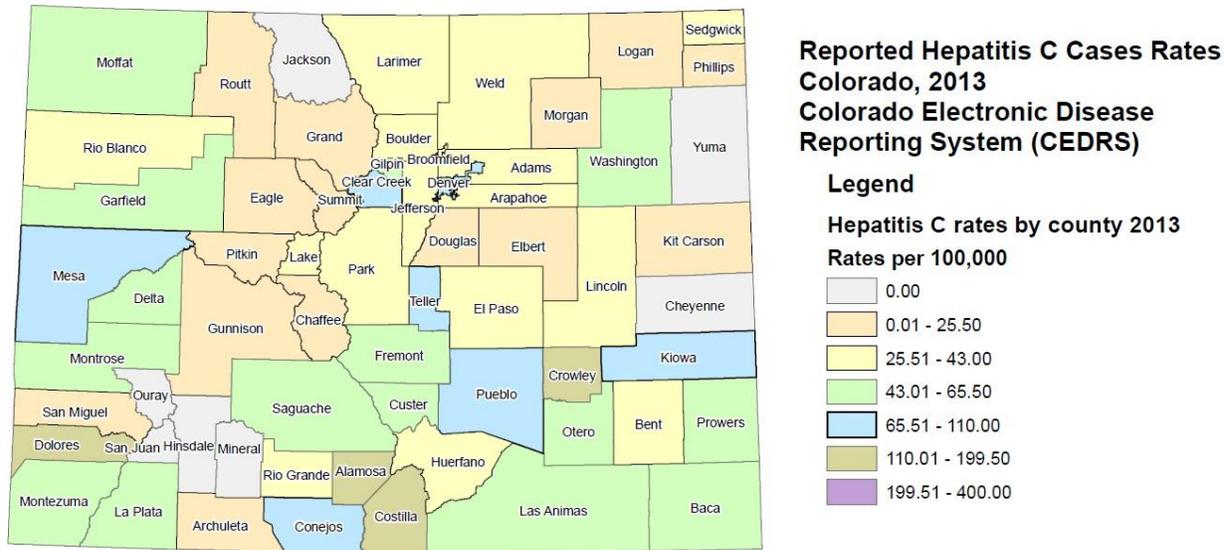


Figure 6. This map shows the rate distribution of hepatitis C per 100,000 county populations in Colorado. The rate is calculated using the 2013 estimated population figures from the U.S. Census Bureau, Population Division.<sup>5</sup>

## References

<sup>1</sup> Population figures for 2000-2013 are 2013-based estimates from the Demographer's Office, Colorado Department of Local Affairs.

<sup>2</sup> Denver Regional Council of Governments-Denver County Community Profile.  
<http://gis.drcog.org/datacatalog/sites/default/files/Denver%20City%20County.pdf>

<sup>3</sup> U.S Census Bureau, State and County Quick Facts-Denver County, Colorado 2013  
<http://quickfacts.census.gov/qfd/states/08/08031.html>

<sup>4</sup>Centers for Disease Control and Prevention. (17 August 2012). Recommendations for the Identification of Chronic Hepatitis C Virus Infection Among Persons Born During 1945–1965. *MMWR* 61(RR04), 1-18.

<sup>5</sup>US Census Bureau, Population Division. (June 2014). *Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2013*. Retrieved from <http://www.census.gov/popest/data/index.html>.