

Covid-19 in Iowa: Counties, Cases, and Testing

Figure 1. Cumulative Rate of Covid-19 Cases/100,000 population, August 21, 2020, Iowa.

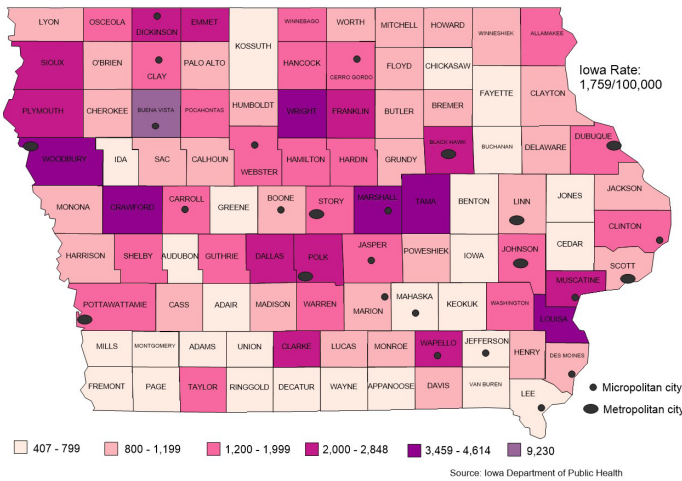


Figure 2. Cumulative Percentage Positive Covid-19 Cases, August 21, 2020, Iowa.

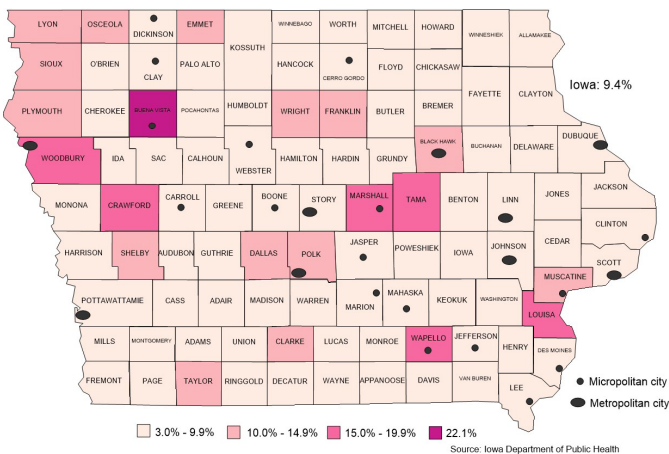
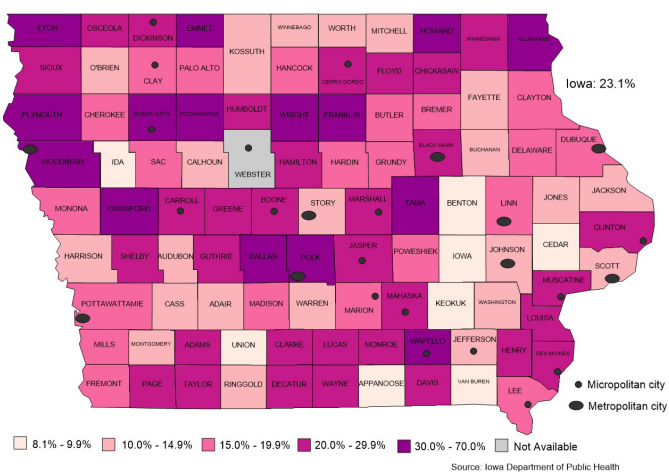


Figure 3. Highest Weekly Percentage Positive Rate, April 25 - August 21, 2020, Iowa.



Covid-19¹ cases have been reported in Iowa since early March, 2020. This report reviews week-by-week² trends in reported cases and testing and includes county trends. The source of the information reviewed here is the Iowa Department of Public Health (IDPH).^{3, 4}

Through August 21st, Iowa had reported nearly 55,500 Covid-19 cases in the state. Statewide, weekly new cases were above 3,100 for the last seven weeks (Table 1). Since the first cases in March, IDPH has been reporting cases at the county level as well as state totals. Counties vary significantly in the number of Covid-19 cases reported. Not surprisingly, the counties with the largest populations also have the highest number of cases (Table 2). Polk County has had 11,577 cases through August 21st, nearly 21% of all cases in the state. Next highest are Woodbury (3,903) and Black Hawk (3,491) Counties. Dallas, Johnson, and Linn Counties each have more than 2,000. In contrast, ten counties have fewer than 50 cases (Adair, Adams, Audubon, Decatur, Greene, Ida, Keokuk, Ringgold, Van Buren, Wayne). Another 14 counties have fewer than 100 cases (Table 2).

A national standard for examining cases is to analyze the case numbers with respect to the population size. For Covid-19, this is calculated as the cases per 100,000 population. Based on a population estimate for Iowa of 3,155,070,⁵ the case rate/100,000 statewide for Iowa was 1,759 for the week ending August 21st (Table 1). Iowa's case rate is among the highest 14 states nationally.⁶

County rates/100,000 vary significantly (Figure 1, Table 2). Although the state rate is 1,759, a large majority (77) of the counties fall below that rate. Twenty-seven counties have a rate below 800; another 32 counties are below 1,200. Contrasting with these locations are 18 counties for which rates exceed 2,000. The most extreme of these (Buena Vista, Crawford, Louisa, Marshall, Tama, Woodbury, Wright) exceed 3,400 cases/100,000 population, nearly double the state rate. Buena Vista County's rate (9,230) is double that of next highest Crawford County's rate (4,614). In fact, Buena Vista's rate is one of the highest in the nation.⁶

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A common factor among these counties with the highest rates is that of food processing plants and industries in or near these counties. Early on in the spread of Covid-19 through Iowa, these work locations, along with long-term care facilities were “super-spreading” locations with rapid transmission of Covid-19 among the workers, residents, and staff. Even though Iowa is several months past many of these major outbreaks, the cases and rates were so high such that the impact on county rates remains.

IDPH has also been reporting the number of tests for Covid-19 that have been done. More than 591,000 tests have been reported statewide through August 21st (Table 1). In April, IDPH began making available the number of tests that had been done in each county as well (Table 2). By having both cases and testing at the county level, it is possible to analyze how positivity rates have varied across the counties through these months.

The percentage of positive cases can be calculated on a cumulative basis using all cases and testing across the entire time period. Statewide, the cumulative percentage positivity rate was 9.4% as of August 21st. Many counties have positivity rates similar to or below the state level (Figure 2, Table 2). Seventy-eight counties were below 10%. Twenty of these were under 5% positivity. There are seven counties (Buena Vista, Crawford, Louisa, Marshall, Tama, Wapello, Woodbury), however, with cumulative positive rates above 15%. These roughly correspond to the counties with the highest rates/100,000. Once again, the impact of large outbreaks can be seen on the positivity rates.

Another way to analyze positivity rates is to do a week-by-week, shorter-term calculation. The cumulative rate, as above, can mask shorter-term increases since it is calculated over a much longer time frame. Since the week of April 25th, when county-level testing became readily available, there have been 17 weeks of data. Most counties have had weeks when the positivity rate was much higher

Table 1. Cumulative and Weekly Covid-19 Cases, Tests, Percent Positive, and Testing Rate, Iowa, 2020.¹

Week	Cumulative			Weekly			Cumulative	
	Cases	Tests	Percent Positive	Cases	Tests	Percent Positive	Rate/100,000	Tests
March 07 - March 13	18	49	36.7	18	49	36.7	0.6	1.6
March 14 - March 20	68	1171	5.8	50	1122	4.5	2	37
March 21 - March 27	298	4673	6.4	230	3502	6.6	9	148
March 28 - April 03	786	10240	7.7	488	5567	8.8	25	325
April 04 - April 10	1510	17132	8.8	724	6892	10.5	48	543
April 11 - April 17	2513	22947	11.0	1003	5815	17.2	80	727
April 18 - April 24	5092	34350	14.8	2579	11403	22.6	161	1089
April 25 - May 01	8641	49727	17.4	3549	15377	23.1	274	1576
May 02 - May 08	11671	71476	16.3	3030	21749	13.9	370	2265
May 09 - May 15	14328	96300	14.9	2657	24824	10.7	454	3052
May 16 - May 22	16795	123653	13.6	2467	27353	9.1	532	3914
May 23 - May 29	19142	150108	12.8	2347	26455	8.9	607	4745
May 30 - June 05	21438	184554	11.6	2296	34446	6.6	679	5849
June 06 - June 12	23555	218964	10.8	2117	34410	6.2	747	6940
June 13 - June 19	25424	249207	10.2	1869	30243	6.2	806	7899
June 20 - June 26	27933	288212	9.7	2509	39005	6.4	885	9135
June 27 - July 03	30923	327936	9.4	2990	39724	7.5	980	10394
July 04 - July 10	34528	368104	9.4	3605	40168	9.0	1094	11667
July 11 - July 17	37904	403726	9.4	3376	35622	9.5	1201	12796
July 18 - July 24	41628	447251	9.3	3724	43525	8.6	1319	14176
July 25 - July 31	44936	480423	9.4	3308	33172	10.0	1424	15227
August 01 - August 07	48112	514451	9.3	3176	34028	9.3	1525	16306
August 08 - August 14	51640	552389	9.3	3528	37938	9.3	1637	17508
August 15 - August 21*	55496	591016	9.4	3856	38627	10.0	1759	18732

¹Source: Iowa Department of Public Health; *During the week of August 15 - 21, the Iowa Department of Public Health made revisions to the cumulative counts of cases and tests to adjust for previous reporting errors. The numbers reported here reflect the counts *after* the adjustments were made and reflect the revised totals.

than that indicated by the cumulative rate (Figure 3, Table 2). Iowa’s highest weekly rate, after the initial week when very few tests were done, reached 23.1% the week of April 25 - May 1. Sixteen counties have had weeks when the percentage positive reached 30% or more and another 32 counties have had rates at 20% or higher. For some counties these high rates were reached in the earlier weeks when Covid-19 was spreading across the state. For other counties, the high rates have been more recent. Table 2 lists the week and the highest rate recorded through August 21st.

One other indicator of the virus problems for counties analyzes the number of weeks (out of 17) that the positivity rate has been above 10%, 15%, and 20% for each county (Table 2). Eleven counties (Buena Vista, Clarke, Crawford, Emmet, Marshall, Osceola,

Plymouth, Polk, Sioux, Wapello, and Wright) have had 10% rates at least ten of the 17 weeks included in the analysis. Sioux County has been at 10% or higher for 15 of these weeks. Six counties (Buena Vista, Crawford, Franklin, Marshall, Osceola, Wapello) have had four or five weeks when the positive rate was at least 20% (Table 2). Overall, there are counties that continue to have outbreaks and continuing higher positivity rates for Covid-19.

Iowa’s ten largest counties have had the highest number of tests conducted (Table 2). Polk County had more than 100,000 with Linn County at 38,000 as of August 21st. Six other counties had at least 20,000. These counties contrast with ten others for which fewer than 1,000 tests were reported. Adams County has the lowest number (457) (Table 2).

Table 2. Cumulative and Weekly Covid-19 Cases, Tests, Percent Positive, and Case and Testing Rates/100,000, Iowa and Counties, 2020.^{1,*}

County	Cumulative			Weekly		Number of Weeks % Positive			Cumulative		Week Aug 15 - 21	
	Cases	Tests	Percent Positive	Highest Weekly %	Week Highest	10% or Higher	15% or Higher	20% or Higher	Rate/100,000	Tests	Cases	Percent Positive
Adair	42	1180	3.6	10.8	Aug 01	1	0	0	587	16499	4	5.6
Adams	20	457	4.4	21.1	May 16	3	2	1	555	12687	3	16.7
Allamakee	165	2254	7.3	49.3	April 25	1	1	1	1206	16468	3	3.5
Appanoose	64	1765	3.6	9.4	July 11	0	0	0	515	14204	10	6.8
Audubon	32	791	4.0	14	May 02	3	0	0	582	14392	2	6.3
Benton	181	3812	4.7	8.8	Aug 15	0	0	0	706	14864	16	8.8
Black Hawk	3491	27308	12.8	26.3	May 02	7	3	2	2660	20810	226	16.3
Boone	310	4555	6.8	21	April 25	5	1	1	1182	17363	27	10.9
Bremer	260	3977	6.5	18.4	April 25	4	1	0	1037	15869	18	9.8
Buchanan	164	3295	5.0	11.7	Aug 15	2	0	0	774	15561	22	11.7
Buena Vista	1811	8198	22.1	44.2	June 06	11	7	5	9230	41784	9	6.3
Butler	152	2492	6.1	15.8	July 25	4	2	0	1053	17259	18	15.0
Calhoun	100	1829	5.5	12.2	July 25	2	0	0	1034	18918	*	*
Carroll	286	3859	7.4	25.9	Aug 15	2	1	1	1418	19137	77	25.9
Cass	103	1922	5.4	12.1	Aug 08	2	0	0	802	14974	10	10.9
Cedar	144	2718	5.3	8.3	July 25	0	0	0	773	14592	8	6.6
Cerro Gordo	701	9016	7.8	21.1	July 04	5	3	1	1651	21239	*	*
Cherokee	126	1894	6.7	16.3	Aug 15	4	1	0	1121	16858	15	16.3
Chickasaw	85	1825	4.7	22.8	Aug 15	1	1	1	712	15294	23	22.8
Clarke	215	1736	12.4	23.4	May 23	12	5	3	2288	18478	4	2.9
Clay	229	2881	7.9	15.8	Aug 08	4	1	0	1430	17988	18	13.2
Clayton	149	2538	5.9	19.3	Aug 15	4	2	0	849	14462	33	19.3
Clinton	628	6976	9.0	27.1	Aug 15	5	2	1	1353	15025	170	27.1
Crawford	776	3951	19.6	70.0	April 25	14	8	5	4614	23490	31	22.6
Dallas	2076	19787	10.5	48.7	April 25	4	2	1	2221	21173	114	8.4
Davis	75	943	8.0	28.6	May 02	7	3	3	833	10478	13	20.3
Decatur	32	1075	3.0	23.1	Aug 08	2	1	1	407	13659	3	0.7
Delaware	160	2765	5.8	15.2	Aug 15	3	1	0	941	16254	30	15.2
Des Moines	399	5672	7.0	23.2	Aug 15	3	1	1	1024	14556	172	23.2
Dickinson	399	4202	9.5	24.3	June 06	6	3	1	2312	24348	12	8.8
Dubuque	1890	22927	8.2	17.8	April 25	7	2	0	1942	23561	101	8.3
Emmet	211	1691	12.5	31.5	July 25	10	5	2	2291	18364	14	18.7
Fayette	120	3016	4.0	13.5	April 25	2	0	0	611	15349	22	11.8
Floyd	183	3024	6.1	22.6	Aug 01	4	1	1	1170	19333	*	*
Franklin	274	2042	13.4	37.2	July 25	9	7	5	2721	20278	*	*
Fremont	52	806	6.5	16.9	July 25	4	1	0	747	11580	7	11.9
Greene	45	1390	3.2	20.5	April 25	1	1	1	506	15639	3	3.6
Grundy	109	2060	5.3	16.4	Aug 15	1	1	0	891	16841	21	16.4
Guthrie	156	2003	7.8	22.0	April 25	4	2	1	1459	18739	13	10.7
Hamilton	244	2965	8.2	22.9	May 30	7	5	2	1652	20070	*	*
Hancock	130	2002	6.5	15.2	July 18	4	1	0	1223	18833	5	4.8
Hardin	210	2840	7.4	19.7	July 25	6	2	0	1247	16859	19	17.4
Harrison	131	1823	7.2	14.3	Aug 01	5	0	0	932	12976	15	12.4
Henry	198	3079	6.4	22.3	Aug 15	5	2	1	992	15430	50	22.3
Howard	83	1427	5.8	31.1	Aug 15	3	3	1	906	15582	28	31.1
Humboldt	97	1706	5.7	26.5	Aug 08	5	3	3	1015	17849	*	*
Ida	36	1048	3.4	8.1	May 23	0	0	0	525	15277	3	2.9
Iowa	104	2915	3.6	9.8	July 25	0	0	0	643	18012	6	6.3
Jackson	178	2949	6.0	11.5	Aug 08	3	0	0	916	15171	10	7.5
Jasper	514	5515	9.3	20.9	April 25	4	2	1	1382	14831	22	6.8
Jefferson	100	2189	4.6	13.0	May 09	2	0	0	547	11965	11	9.2

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Table 2. Cumulative and Weekly Covid-19 Cases, Tests, Percent Positive, and Case and Testing Rates/100,000, Iowa and Counties, 2020. (continued)^{1,*}

County	Cumulative			Weekly		Number of Weeks % Positive			Cumulative		Week Aug 15 - 21	
	Cases	Tests	Percent Positive	Highest Weekly %	Week Highest	10% or Higher	15% or Higher	20% or Higher	Rate/100,000	Tests	Cases	Percent Positive
Johnson	2389	28097	8.5	13.2	Aug 15	6	0	0	1581	18590	219	13.2
Jones	146	2841	5.1	14.3	April 25	1	0	0	706	13737	10	7.7
Keokuk	46	1210	3.8	9.5	Aug 08	0	0	0	449	11809	5	8.5
Kossuth	110	2381	4.6	10.0	Aug 08	1	0	0	743	16074	7	4.2
Lee	235	3967	5.9	17.4	April 25	3	2	0	698	11787	93	15.0
Linn	2702	38279	7.1	15.7	April 25	3	1	0	1192	16885	194	10.0
Louisa	382	1996	19.1	29.6	May 09	4	4	3	3462	18088	4	5.6
Lucas	79	1047	7.5	22.6	May 23	3	3	1	919	12174	5	3.9
Lyon	135	1225	11.0	35.0	April 25	8	7	1	1148	10421	10	13.7
Madison	144	2637	5.5	17.9	April 25	2	1	0	881	16140	12	6.7
Mahaska	158	2367	6.7	20.7	May 23	4	3	1	715	10713	14	10.0
Marion	283	4253	6.7	18.6	Aug 15	2	1	0	851	12790	88	18.6
Marshall	1560	9162	17.0	24.8	April 25	12	8	4	3963	23272	73	23.2
Mills	112	2953	3.8	16.0	Aug 15	2	1	0	741	19545	17	16.0
Mitchell	88	2071	4.2	11.6	July 11	1	0	0	831	19564	5	5.8
Monona	101	1281	7.9	16.6	June 13	5	2	0	1172	14869	8	11.4
Monroe	89	945	9.4	21.1	May 09	6	3	1	1155	12262	13	18.8
Montgomery	68	1493	4.6	11.9	July 18	3	0	0	686	15055	5	8.1
Muscatine	921	7499	12.3	25.1	April 25	6	1	1	2159	17577	37	11.6
O'Brien	160	2144	7.5	13.1	May 30	4	0	0	1163	15589	13	13.1
Osceola	90	704	12.8	28.1	May 02	12	6	4	1511	11816	1	3.8
Page	105	2150	4.9	23.1	April 25	3	2	1	695	14232	4	5.6
Palo Alto	104	1637	6.4	18.5	Aug 08	5	3	0	1170	18422	*	*
Plymouth	599	4587	13.1	32.4	Aug 15	13	3	3	2379	18219	99	32.4
Pocahontas	121	1350	9.0	30.0	April 25	6	2	2	1828	20396	*	*
Polk	11577	100682	11.5	33.3	April 25	11	4	1	2362	20541	734	10.5
Pottawattamie	1494	16926	8.8	15.6	April 25	7	1	0	1603	18160	93	11.5
Poweshiek	175	2394	7.3	18.8	May 02	2	1	0	946	12938	15	9.9
Ringgold	29	812	3.6	11.5	Aug 08	2	0	0	593	16592	5	7.7
Sac	98	1859	5.3	15.9	Aug 15	2	1	0	1008	19124	11	15.9
Scott	1972	28108	7.0	11.0	July 04	4	0	0	1140	16253	156	10.5
Shelby	205	1795	11.4	23.8	Aug 01	9	5	3	1790	15671	13	19.7
Sioux	759	5078	14.9	29.6	May 16	15	8	3	2178	14569	82	15.4
Story	1539	22312	6.9	13.9	June 13	3	0	0	1585	22974	168	8.6
Tama	583	3578	16.3	40.2	May 02	9	4	2	3459	21229	22	15.6
Taylor	105	977	10.7	28.7	May 23	7	2	2	1715	15961	5	10.0
Union	90	2383	3.8	8.7	July 11	0	0	0	735	19467	7	7.5
Van Buren	45	851	5.3	9.7	Aug 08	0	0	0	639	12081	5	8.2
Wapello	996	6401	15.6	39.1	May 09	11	8	4	2848	18305	51	18.5
Warren	642	9382	6.8	11.1	July 25	2	0	0	1247	18230	44	6.4
Washington	316	3435	9.2	14.1	April 25	3	0	0	1439	15639	9	6.1
Wayne	34	656	5.2	20.0	April 25	3	1	1	528	10185	13	10.9
Webster	688	9729	7.1	**	**	**	**	**	1916	27097	*	*
Winnebago	140	2126	6.6	11.3	Aug 15	3	0	0	1352	20533	32	11.3
Winneshiek	162	2805	5.8	21.1	Aug 15	3	1	1	810	14031	56	21.1
Woodbury	3903	23369	16.7	43.2	April 25	9	4	3	3785	22665	108	13.0
Worth	74	1238	6.0	11.9	Aug 01	3	0	0	1003	16773	3	5.5
Wright	491	3647	13.5	30.3	May 16	13	7	2	3909	29032	*	*
State of Iowa	55496	591016	9.4	23.1	April 25	3	1	1	1759	18732	3856	10.0

¹Source: Iowa Department of Public Health; *During the week of August 15 - 21 the Iowa Department of Public Health made revisions to the cumulative counts of cases and tests for some counties. For most of the counties, any changes were relatively small. For some counties the revisions were larger and have contributed to week-to-week changes that can be misleading. For those counties, the weekly changes are omitted in this table.; **Omissions for Webster County because revisions were the largest of any county.

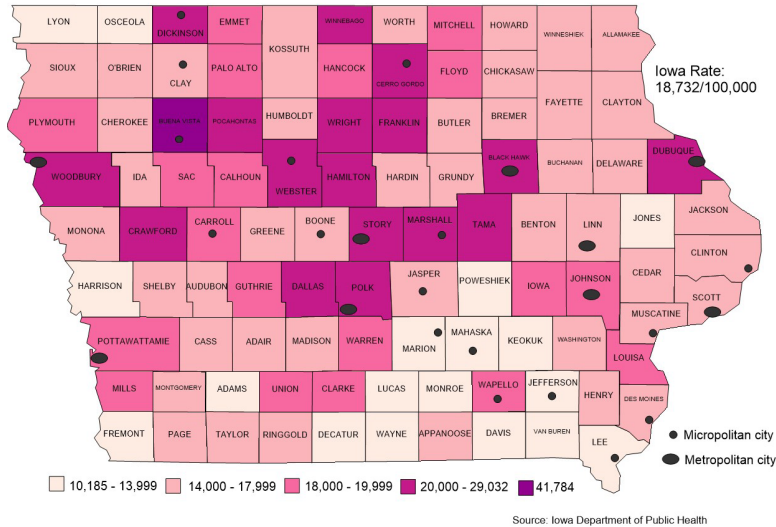
Testing can be, as with cases, compared with population size to give a rate/100,000.⁷ Iowa's statewide testing rate was 18,732/100,000 as of August 21st. Counties have varied testing rates with 72 having rates below the state level (Figure 4, Table 2). The highest testing rates exceed 20,000/100,000 in 18 counties. Buena Vista County's rate (41,784) is more

than double the state rate. Buena Vista County's rates for both cases and testing is the highest among the counties (Table 2).

The counties with the highest testing rates are roughly those with the highest case rates as well (Figures 1, 4; Table 2). There is, however, a section of central and north central Iowa for

which counties have higher testing rates than other areas. Southern Iowa counties tend to be the lowest in both case and testing rates. Currently for Iowa, the recent weeks since mid-July have had some of the highest reported weekly case numbers. Some counties are also witnessing higher numbers and rates.

Figure 4. Cumulative Rate of Covid-19 Testing/100,000 population. August 21, 2020, Iowa.



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This report, others in the series, along with other information related to Covid-19 in Iowa and nationwide is available at:
<https://indicators.extension.iastate.edu/Indicators/COVID19/>

Notes

¹Coronavirus disease 2019 (COVID-19) is defined as illness caused by a novel coronavirus now called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; formerly called 2019-nCoV) <https://www.medscape.com/answers/2500114-197401/what-is-covid-19>

²Although cases, deaths, and hospitalized patients are reported on a daily basis, there are day-by-day variations in reporting that include weekends and holidays that make it useful to aggregate cases and reporting on a weekly basis to look at trends. The weeks reported here start with cases and tests reported for a Saturday and end with the reporting for the following Friday.

³Through the months that Covid-19 cases have been reported in Iowa, the Iowa Department of Public Health has utilized several methods of reporting the cases and testing in Iowa. These include press reports, web sites, data tables and files, mapping, and graphing. The data in this report have been gathered from a number of these methods. Several web sites directly from or affiliated with the Iowa Department of Public Health have been used. These include: <https://www.idph.iowa.gov/>; <https://idph.iowa.gov/Emerging-Health-Issues/Novel-Coronavirus>; <https://coronavirus.iowa.gov/>; <https://coronavirus.iowa.gov/pages/access>; <https://open-iowa.opendata.arcgis.com/datasets/ia-covid19-cases>; and <https://open-iowa.opendata.arcgis.com/datasets/ia-covid19-cases>

⁴During the week of August 15 - 21, 2020, the Iowa Department of Public Health made revisions to the cumulative counts of cases and tests for some counties to adjust for previous reporting errors. The numbers reported here reflect the counts *after* the adjustments were made and reflect the revised totals. Although for most counties any changes were relatively small, for some counties the revisions were larger and have contributed to week-to-week changes that can be misleading. Because of this, some counties are omitted from several columns in Table 2. The adjustments made for Webster County were larger than those for other counties thus Table 2 has more omissions for Webster County than for others.

⁵U.S. Census Bureau, Population Estimates, <https://www.census.gov/programs-surveys/popest/data/tables.html>

⁶cited August 28, 2020 at <https://www.cnn.com/interactive/2020/health/coronavirus-us-maps-and-cases/> source: <https://coronavirus.jhu.edu/map.html>
cited August 28, 2020 at <https://www.nytimes.com/interactive/2020/us/coronavirus-us-cases.html> source: <https://github.com/nytimes/covid-19-data>

⁷cited August 25, 2020 at <https://www.nytimes.com/interactive/2020/us/coronavirus-testing.html>
sources: <https://globalepidemics.org/july-6-2020-state-testing-targets/> and <https://covidtracking.com/>

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