



## Lexington Urban Area - COVID-19 Status Report 22 Jan 2021

### **Background**

The Two Rivers Public Health Department (TRPHD) covers 7 counties in central Nebraska, reaching 97,132 people who live and work in the health district spread across roughly 4663 square miles. Over three quarters of residents live in Buffalo and Dawson county, a tenth live in Phelps county, and the remaining 15% is spread somewhat comparably among the four counties of Kearney, Harlan, Franklin and Gosper in decreasing order of population. Well over half the residents of TRPHD live in the three largest cities - Holdrege (pop. 5408), Lexington (pop. 10115) and Kearney (pop. 33867), over a third in Kearney alone.

To better understand COVID transmission in TRPHD <sup>1</sup>, we decided to analyze case numbers in Kearney, Lexington and Holdrege urban areas, defined as the city and surrounding smaller towns

- “Kearney area” includes Kearney city, Elm Creek, Pleasanton, Amherst, Riverdale, Gibbon, Shelton and Axtell (39,412 people)
- “Lexington area” includes Lexington, Overton, Elwood, Johnson Lake and Cozad (15,700 people)
- “Holdrege area” includes Holdrege, Loomis and Funk (5967 people).

In the thirteenth edition of this document, we will

- a) Look at the overall course of the COVID-19 pandemic in TRPHD from **April - January** (42 weeks) and identify outbreaks in each of the three urban areas.
- b) Analyze daily case averages (7-day rolling) in **Lexington city** from **March 9 - January 19**, plotting case rates versus major events that occurred during the pandemic period.
- c) Describe 7-day rolling average of cases in **Lexington area** by age and city of residence from **July 01 - January 19**.
- d) Describe the 7-day rolling average of COVID-19 cases from **Dec 22 - Jan 19** (4 weeks) across cities in Two Rivers Health District. Present the same case counts/10,000 persons.
- e) Present a brief weekly overview and analysis for **Lexington urban area**.

*To conclude, daily rates of COVID-19 in Lexington city and urban area have dropped dramatically in the past week. Over half of all new cases are detected in senior over the age of 60 years, although weekly positives are less than 15% of the number a month previously. Testing availability is steady across TRPHD. ICU availability and COVID-related medical/surgical bed usage are within safe levels across hospitals in Two Rivers district. Residents are advised to continue to adhere to strict preventive measures (social distancing, correct and consistent masking) at all times to protect themselves and others.*

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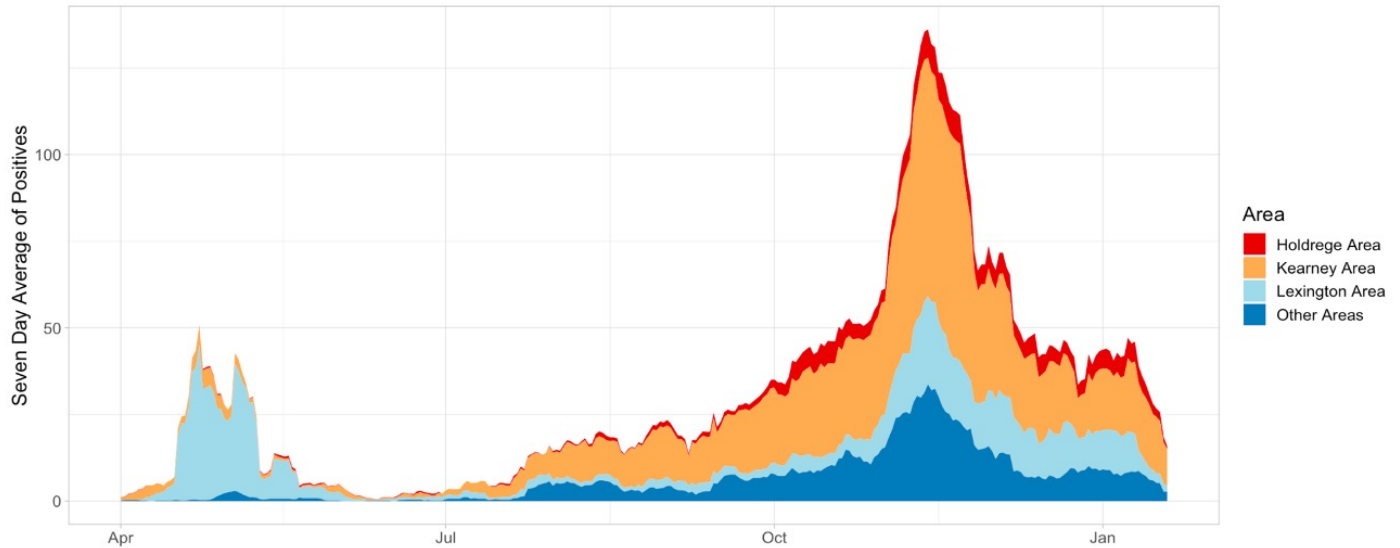
<sup>1</sup> For complete explanation of data sources, please see appendix 1  
516 W 11<sup>th</sup> Street, Suite 108  
Kearney, NE 68845



- The graph below describes daily COVID-19 cases in TRPHD from **April 1 - January 19** broken down by **urban area** (Holdrege, **Lexington**, Kearney and all others). The height of the graph corresponds to the daily case count and the thickness of each colored band corresponds to the urban area's contribution.

### 7 Day Rolling Average of COVID-19 Cases by area

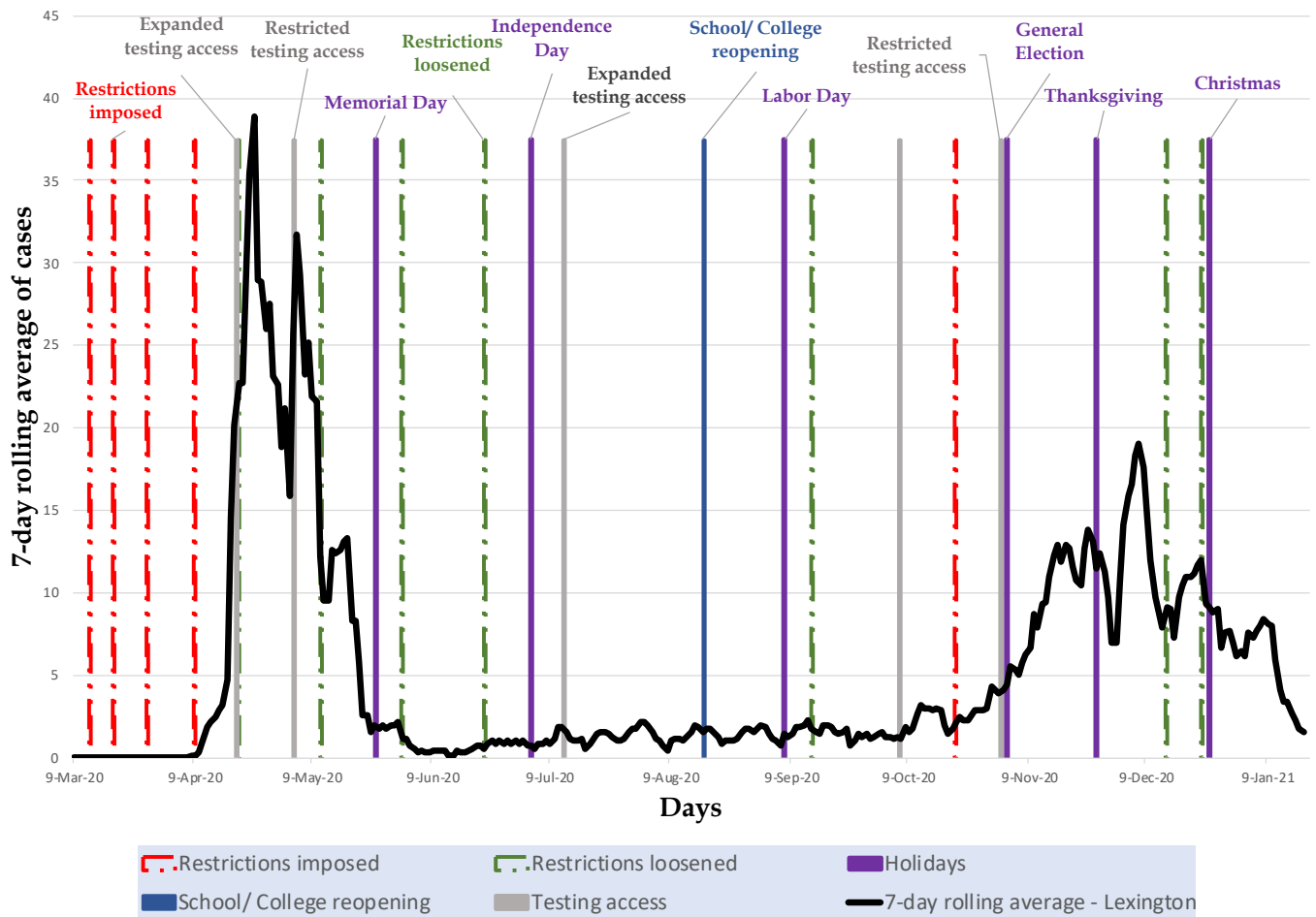
Graph displays data from April 1st to January 19th



Information Updated as of 1/19 at 8 p.m.

- The graph below describes the 7-day rolling average of cases in **Lexington city** from **March 9 - January 19**. Also depicted are major events relevant to COVID-19 that are pertinent to Lexington city upto December 31st.
- Major events are indicated in text labels above, and categories enumerated in the legend (below).
- Information is sourced from department records as well as public sources (including websites and source documents - cited in references below).<sup>2,3</sup>

### Lexington - Daily case averages v/s timeline of major events Mar 9, 2020 - Jan 19, 2021



<sup>2</sup> Lexington Public Schools Calendar: <https://www.lexschools.org/calendar/>

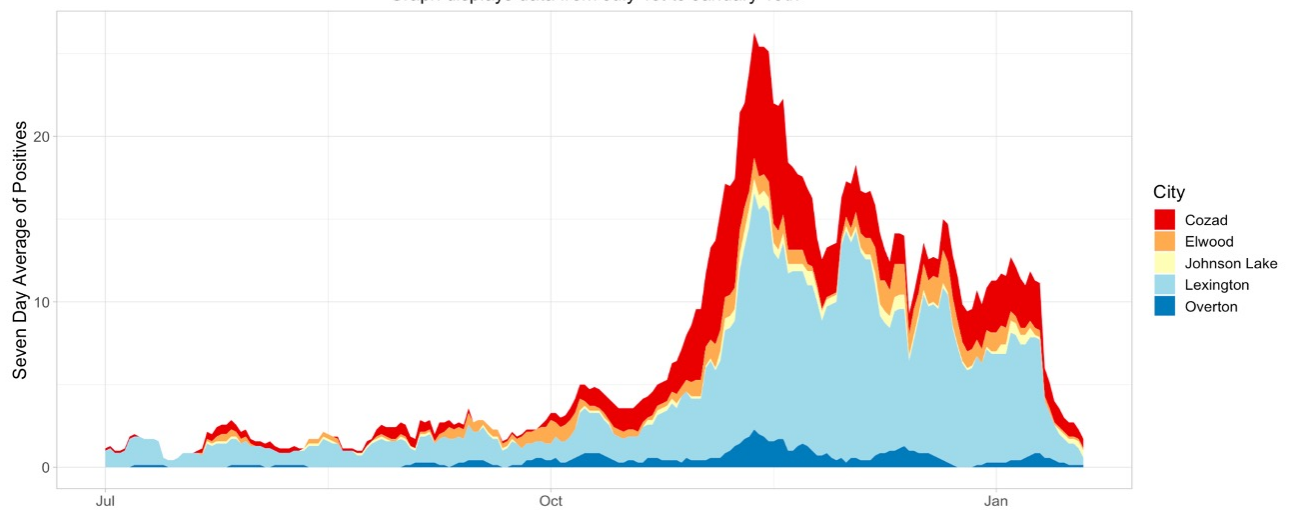
<sup>3</sup> <https://coronavirus.jhu.edu/data/state-timeline/new-confirmed-cases/nebraska/10>



- The graph below shows COVID-19 cases in **Lexington** area from **July 1 – January 19**, describing positive cases by city. The height of the graph corresponds to the daily case count and the thickness of each colored band corresponds to a city's contribution.
- The second graph describes cases by age during the same period in the **Lexington** area. The height of the graph corresponds to the daily case count and the thickness of each colored band corresponds to each age group.

### 7 Day Rolling Average of COVID-19 Cases by City

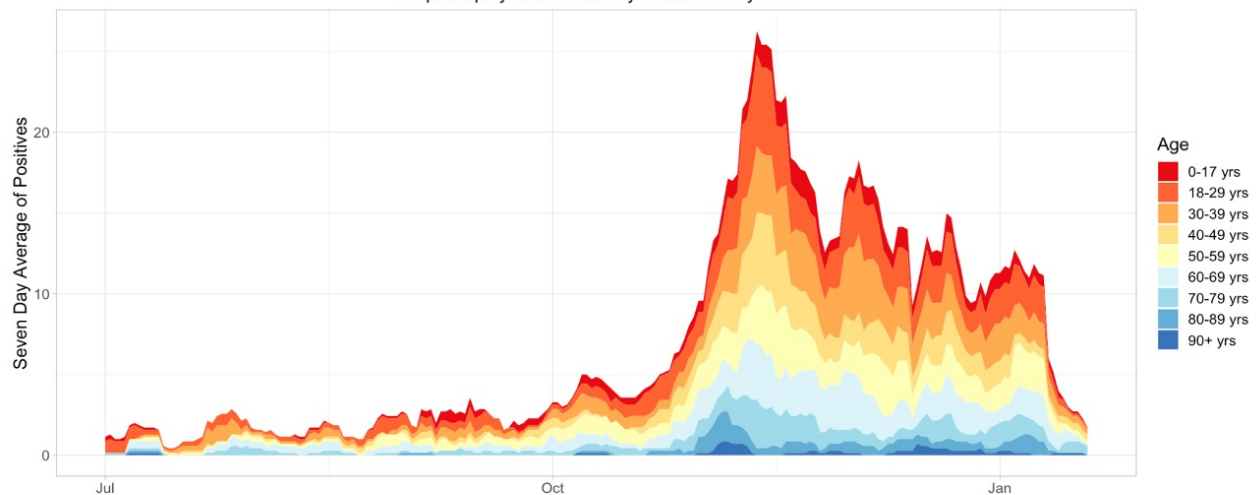
Graph displays data from July 1st to January 19th



Information Updated as of 1/19 at 8 p.m.

### 7 Day Rolling Average of COVID-19 Cases by Age in Lexington Area

Graph displays data from July 1st to January 19th



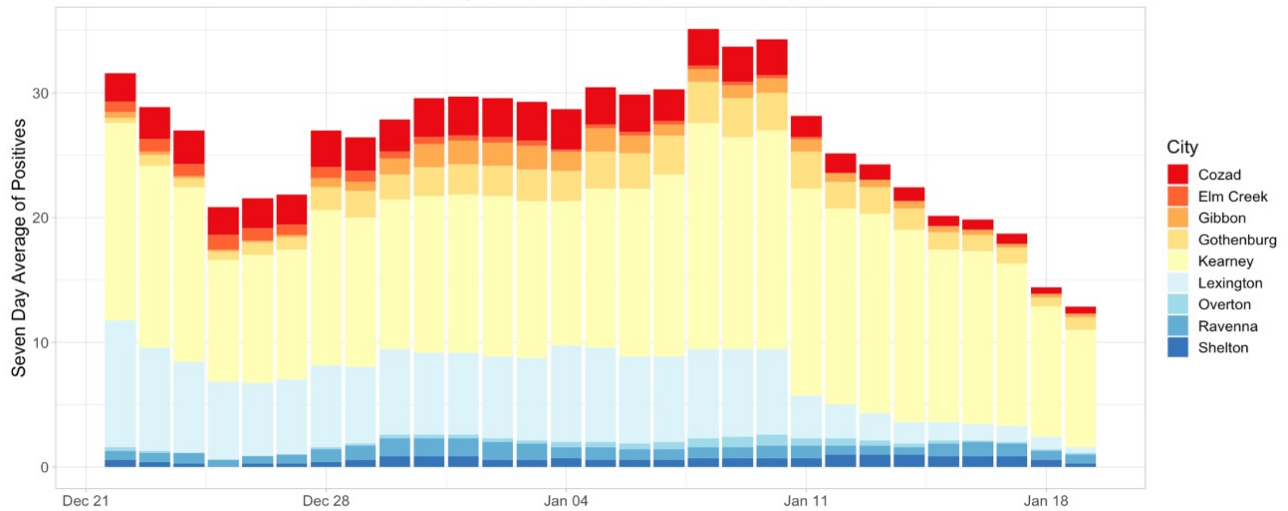
(Lexington Area includes Lexington and towns in surround 15 miles)



- The graph below shows COVID-19 cases across 9 cities in **Buffalo and Dawson** counties from **Dec 22 - Jan 19**. The height of the bar corresponds to the daily case count and the thickness of each colored band corresponds to a city's contribution.
- The second graph describes cases per 10,000 residents in cities in Buffalo and Dawson counties during this time period. **Lexington city** is represented by the dark blue line, **Cozad** by the red line, and **Overton** by the dark pink line.

### 7 Day Rolling Average of COVID-19 Cases Buffalo and Dawson County

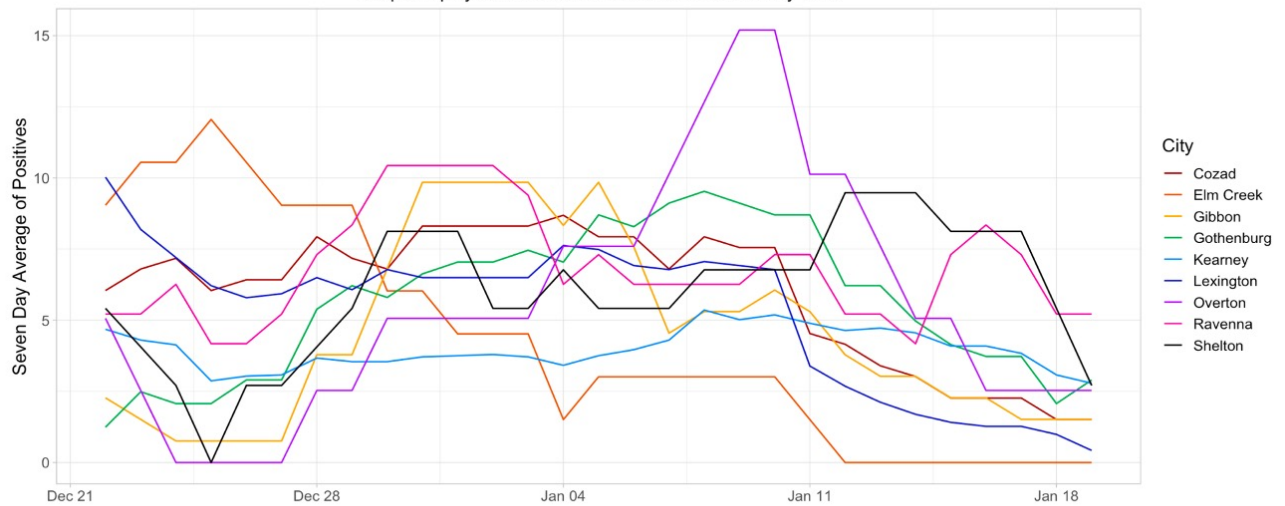
Graph displays data from December 22nd to January 19th



Information Updated as of 1/19 at 8 p.m.

### 7 Day Rolling Average of COVID-19 Cases Per 10,000 Residents by City (Buffalo/Dawson)

Graph displays data from December 22nd to January 19th



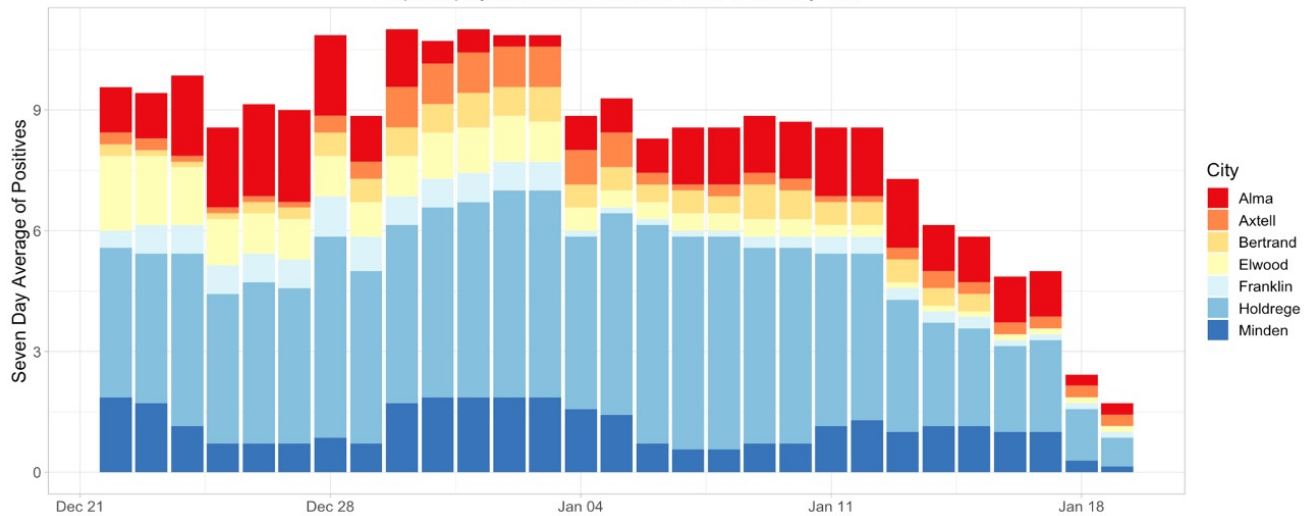
Information Updated as of 1/19 at 8 p.m.



- The graph below shows COVID-19 cases across 7 cities in **Franklin, Gosper, Kearney and Phelps** counties from **Dec 22 – Jan 19**. The height of the bar corresponds to the daily case count and the thickness of each colored band corresponds to a city’s contribution.
- The second graph describes cases per 10,000 residents in cities from these counties during this time period. **Elwood** is represented by the violet/ purple line.

**7 Day Rolling Average of COVID-19 Cases  
Gosper, Franklin, Kearney, and Phelps County**

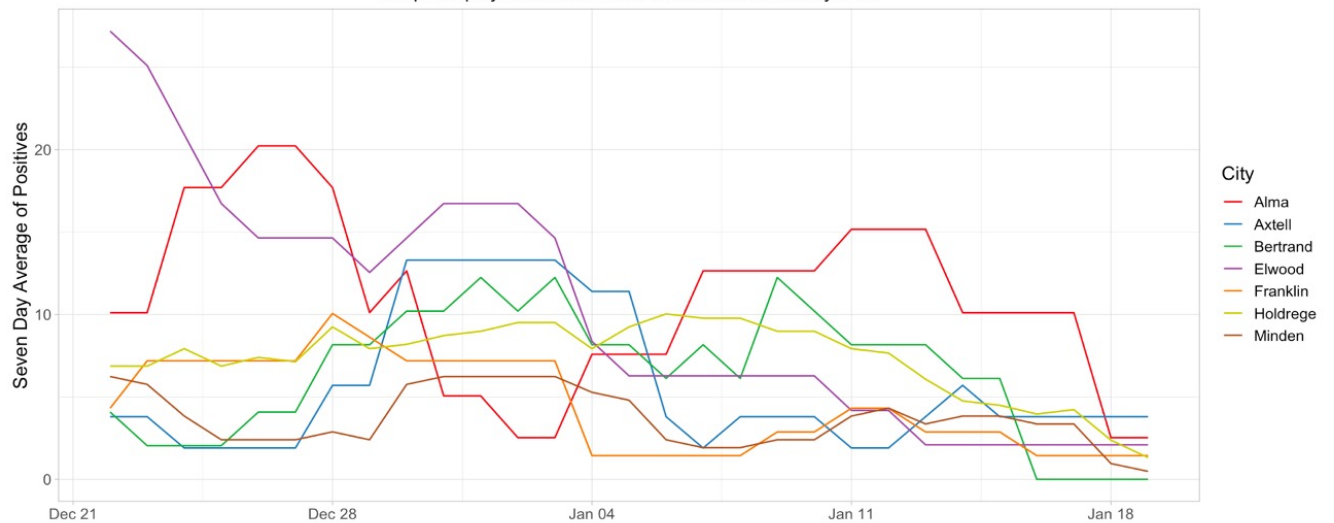
Graph displays data from December 22nd to January 19th



Information Updated as of 1/19 at 8 p.m.

**7 Day Rolling Average of COVID-19 Cases  
Per 10,000 Residents by City (Fra/Gos/Har/Kea/Phe)**

Graph displays data from December 22nd to January 19th



Information Updated as of 1/19 at 8 p.m.



## Weekly Summary Report

Viewing the graphs from **April – January**, some broad trends are noticeable:

- Daily case counts of COVID-19 cases in Lexington city and urban area have dropped dramatically over the past two weeks.
- Average daily cases in Lexington city rose rapidly in two separate outbreaks, one in early April with a sudden spike in cases and the other in late October, followed a more sustained but shorter peak in mid- November. The second outbreak in October coincided with a rise in cases in Cozad.

On analyzing graphs of COVID cases from **July – January**, some details become clear:

- Persons aged 60 years and over account for more than half of all new cases in the past week, although absolute numbers are low.
- Virtually all the new cases in Lexington area are reported from Lexington and Cozad

On analyzing graphs of COVID cases in **December - January**, we are able to observe:

- The share of new cases seems to be trending down across all cities in the Lexington area, including Cozad which saw a brief outbreak in the previous week.

In addition, an analysis of **healthcare and testing capacity** in Two Rivers Health District reveals:

- Half of all ICU beds across the district are available currently; COVID-related admissions account for less than 15% of all occupied beds (see <https://www.trphd.org/covid-19/> for details)
- Weekly testing numbers continue to fluctuate, overall tests in the district average around 500 daily. A majority of tests conducted in the past three months have been ‘rapid’ (antigen) tests, as compared to previously when they were more likely to be laboratory-based (PCR). For more details on testing statistics, see weekly report (Jan 13 – Jan 19 <https://www.trphd.org/covid-19/weekly-reports.html> ).
- Testing availability continues to remain steady across the district; an increase in antigen testing access is anticipated in Dawson county.

*To conclude, daily rates of COVID-19 in Lexington city and urban area have dropped dramatically in the past week. Over half of all new cases are detected in senior over the age of 60 years, although weekly positives are less than 15% of the number a month previously. Testing availability is steady across TRPHD. ICU availability and COVID-related medical/surgical bed usage are within safe levels across hospitals in Two Rivers district. Residents are advised to continue to adhere to strict preventive measures (social distancing, correct and consistent masking) at all times to protect themselves and others.*



## APPENDIX 1

### Methods & Definitions

To better understand the course of the COVID-19 pandemic in Kearney, Lexington and Holdrege, we created ‘urban areas’ that included both the city and its surrounding towns. We included all towns within 20 miles of Kearney city, 15 miles of Lexington and 10 miles of Holdrege within each city’s urban area. The respective populations of all 7 counties in TRPHD are shown below. Kearney city accounts for over third of the population of TRPHD.

County	Population
Buffalo	49,659
Dawson	23,595
Franklin	2,979
Gosper	1,990
Harlan	3,380
Kearney	6,495
Phelps	9,034
<b>TRPHD total</b>	<b>97,132</b>
Nebraska state	1,934,408

Thus “Kearney area” includes Kearney city as well as Elm Creek, Pleasanton, Amherst, Riverdale, Odessa, Gibbon, Shelton and Axtell.

“Lexington area” includes Lexington city as well as Overton, Johnson Lake and Cozad.

“Holdrege area” includes Holdrege city, Loomis and Funk.

The populations of cities and villages is described below. Also included are Minden and Gothenburg, used as comparison points in descriptive statistics about the area.

CITY	POPULATION
Kearney	33867
Elm Creek	949
Axtell	751
Pleasanton	359
Riverdale	179
Amherst	253
Gibbon	1869
Shelton	1055
Odessa	130
<b>KEARNEY URBAN AREA (TOTAL)</b>	<b>39412</b>
Lexington	10115
Overton	567





Johnson Lake	600
Elwood	683
Cozad	3735
<b>LEXINGTON URBAN AREA (TOTAL)</b>	<b>15,700</b>
Holdrege	5408
Funk	183
Loomis	376
<b>HOLDREGE URBAN AREA (TOTAL)</b>	<b>5967</b>
Gothenburg	3489
Minden	2890

For presenting data, we selected 3 time frames:

- a) April 1 - current (From the beginning of the pandemic to most recent Tuesday)
- b) July 01 - current (From the beginning of second sustained 'wave' in daily case counts to current)
- c) Previous 4 weeks
  - Data is presented as 7-day rolling averages for daily numbers and absolute counts for cumulative cases. The 7-day rolling average is the sum of all cases reported on that day plus the previous six divided by 7.
  - Cumulative cases refer to all cases that have been confirmed in the district since the beginning of the pandemic in TRPHD (March 19)
  - Average positivity rate refers to a seven-day rolling average positivity rate, which is the sum of all cases for that day and the previous six divided by the sum of all tests done in that day and the previous six
    - Average positivity rate (in %) = (Sum of positive cases for current day + previous 6 days) / (Sum of total tests for current day + previous six days)
  - In cases that call for comparison across larger areas (counties v/s state of Nebraska, for eg), we present the count per 100,000 population. 100,000 roughly corresponds to the population of Two Rivers Health District (97,132)
  - In cases that call for comparison between cities, (Kearney v/s Minden for eg), we present a count per 10,000 population. 10,000 roughly corresponds to the population of Lexington (10,115), the second largest city in TRPHD.
  - For calculation, we use the 2019 mid- year estimate (American Community Survey, ACS) and data from The Atlantic's COVID tracking project (<https://covidtracking.com/data>)



## APPENDIX 2

### **Cases per 10,000 population**

Daily case counts are the **7-day rolling average** of cases expressed as a fraction of the population of the area, and standardized to 10,000 persons.

The total/ cumulative case counts are the **total** cases counted in an area (county, city, urban region or health district) from the first recorded case in the area (in case of TRPHD this is March 19, 2020). This is expressed as a fraction of the total population of the area and standardized to 10,000 persons.

10,000 is used while describing cities in Two Rivers District as it offers a rough mean value that is comparable across the populations of Holdrege (pop. 5408), Lexington (pop. 10115) and Kearney (pop. 33867).

Population numbers used are from the American Community Survey (ACS 2019 mid-year estimates). For further detail, see: <https://www.census.gov/programs-surveys/acs/data.html>

7-Day rolling average/ 10,000 persons is calculated as:

**$[(\text{Sum of case counts for the most immediate 7 days}) / 7] / (\text{mid-year population}) * 10,000$**

Total cases/ 10,000 persons is calculated as:

**$(\text{Total COVID cases}) / (\text{mid-year population}) * 10,000$**

### **Cases per 100,000 population**

Daily case counts are the **7-day rolling average** of cases expressed as a fraction of the population of the area, and standardized to 100,000 persons.

A population of 100,000 is used to compare urban areas (like Kearney urban area) as it is comparable to the overall population of Two Rivers Health District (97,032).

Population numbers used are from the American Community Survey (ACS 2019 mid-year estimates). For further detail, see: <https://www.census.gov/programs-surveys/acs/data.html>

7-Day rolling average/ 100,000 persons is calculated as:

**$[(\text{Sum of case counts for the most immediate 7 days}) / 7] / (\text{mid-year population}) * 100,000$**



### APPENDIX 3

About a third of all tests conducted since March in the district have been availed by residents or staff of residential facilities. “Residential facilities” include long-term care facilities, in-patient psychiatry services, retirement villages, veterans’ homes and correctional facilities within Two Rivers Health District.

Considering the specific nature of COVID risk of long-term residents of institutional facilities and taking into account the frequent testing performed at facilities, we present numbers separately for long term care facilities and others in the district.