Lexington Urban Area – COVID-19 Status Report 25 Dec 2020

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 city alone.

To better understand COVID transmission in TRPHD [1], 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 tenth edition of this document, we will

a) Look at the overall course of the COVID-19 pandemic in TRPHD from **April – December** (38 weeks) and identify outbreaks in each of the three urban areas.

b) Describe the **daily case averages (7-day rolling) per 100,000 people[2]** in the three urban areas, and compare the relative extent of spread in each of the three areas from **April 1 – December 22**.

c) Analyze daily case averages (7-day rolling) in **Lexington, Holdrege and Kearney** cities from **April 1 – December 22.**

d) Describe 7-day rolling average of cases in **Lexington** area by age and city of residence from **July 01 – December 22**.

e) Describe the 7-day rolling average of COVID-19 cases from **Nov 24 – Dec 22** (4 weeks) across cities in Two Rivers Health District. Present the same case counts/10,000 persons.

f) Present a brief weekly overview and analysis for **Lexington urban area.**

Average daily cases of COVID-19 in Elwood, Lexington and Cozad are rising, and Lexington city has overtaken Kearney in per capita case counts in the past three weeks. An outbreak in Elwood has contributed to rising cases among persons aged 60 years or more. ICU availability and Med- Surg hospital bed utilization remains steady across the district. The slight rise in case counts over the last four weeks in Lexington area is a worry, especially considering the potential for increased spread following Holiday travel. Residents are advised to avoid non-essential

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[1] For complete explanation of definitions and data sources, please see appendix 1
[2] For complete explanation of definitions and data sources, please see appendix 2

travel and adhere to strict preventive measures (social distancing, correct and consistent masking) at all times to protect themselves and others

- The graph below describes daily COVID-19 cases in TRPHD from **April 1 – December 22** broken down by <u>**urban area**</u> (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.
- The second graph below describes daily cases (7-day rolling average) per 100,000 population in **Lexington, Holdrege and Kearney** <u>**urban areas**</u> from **April 1- December 22**

7 Day Rolling Average of COVID-19 Cases
by area
Graph displays data from April 1st to December 22nd
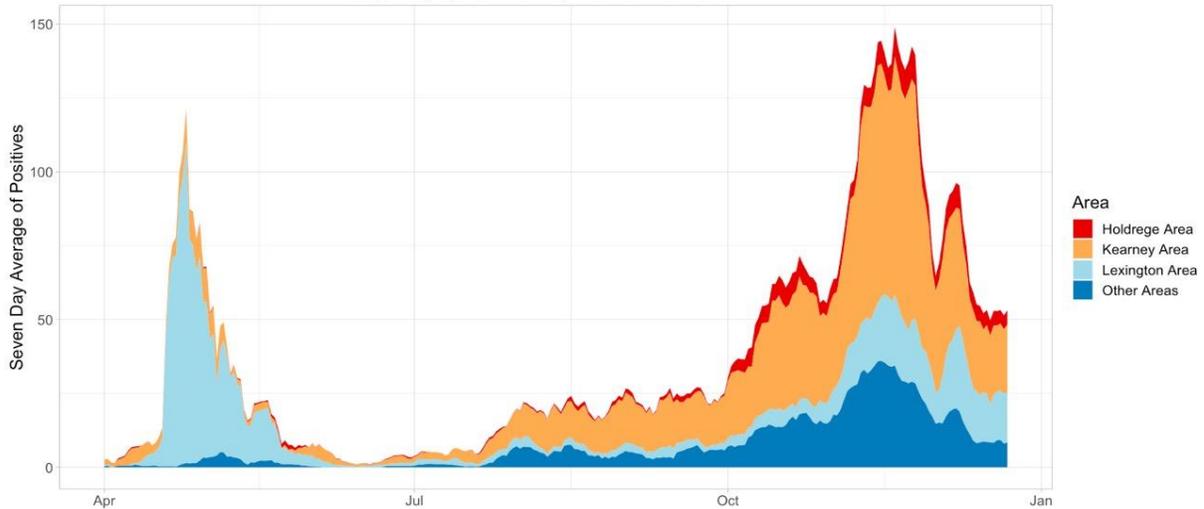
Information Updated as of 12/22 at 8 p.m.

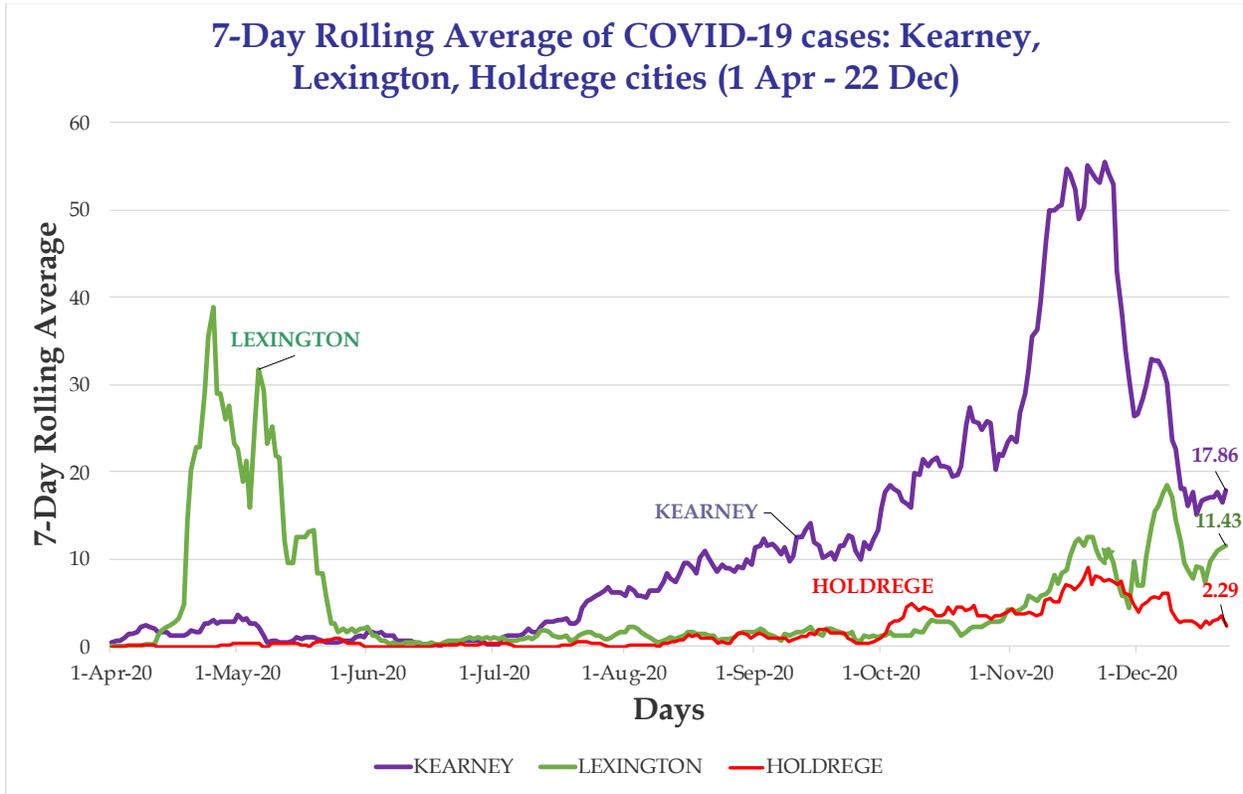**Seven Day Rolling Averages of Cases per 100,000 Residents by Area**

Graph displays data from April 1st to December 22nd

Information Updated as of 12/22 at 8 p.m.

- The graph below describes the 7-day rolling average[3] of COVID-19 cases in **Lexington, Kearney, and Holdrege <u>cities</u>** from **April 1- December 22.** .

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[3] For complete explanation of definitions and data sources, please see appendix 2

7-Day Rolling Average of COVID-19 cases: Kearney, Lexington, Holdrege cities (1 Apr - 22 Dec)
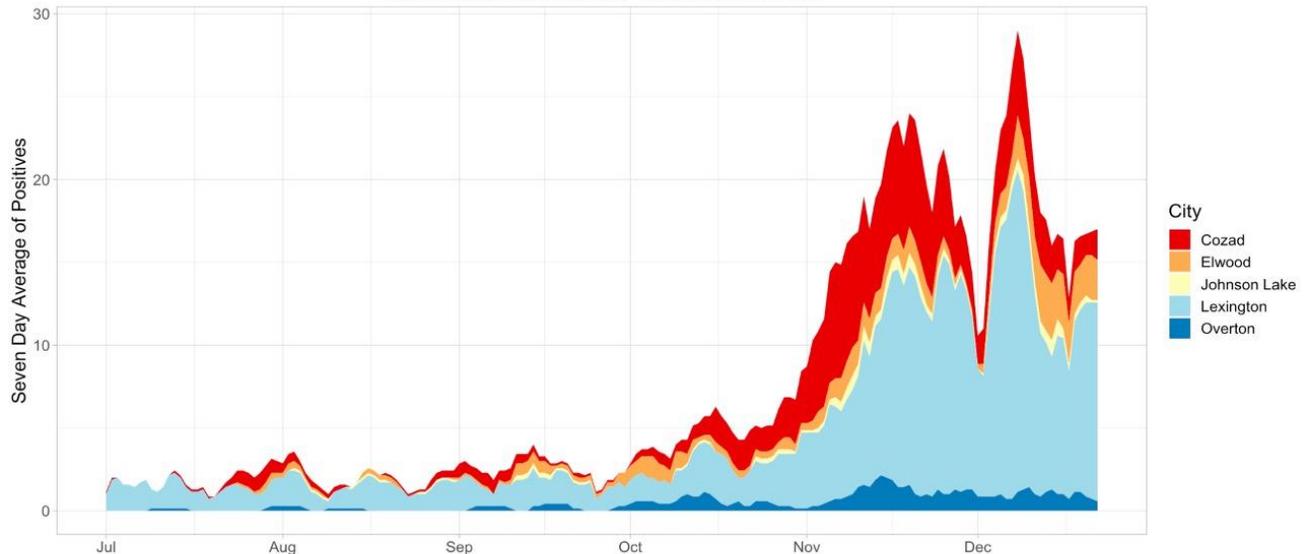
- The graph below shows COVID-19 cases in **Lexington** area from **July 1 – December 22**, describing positive cases by city. The height of the graph corresponds to the daily case count and the thickness of each colored band corresponds to a city's contribution.
- The second graph describes cases by age during the same period in the **Lexington** area.
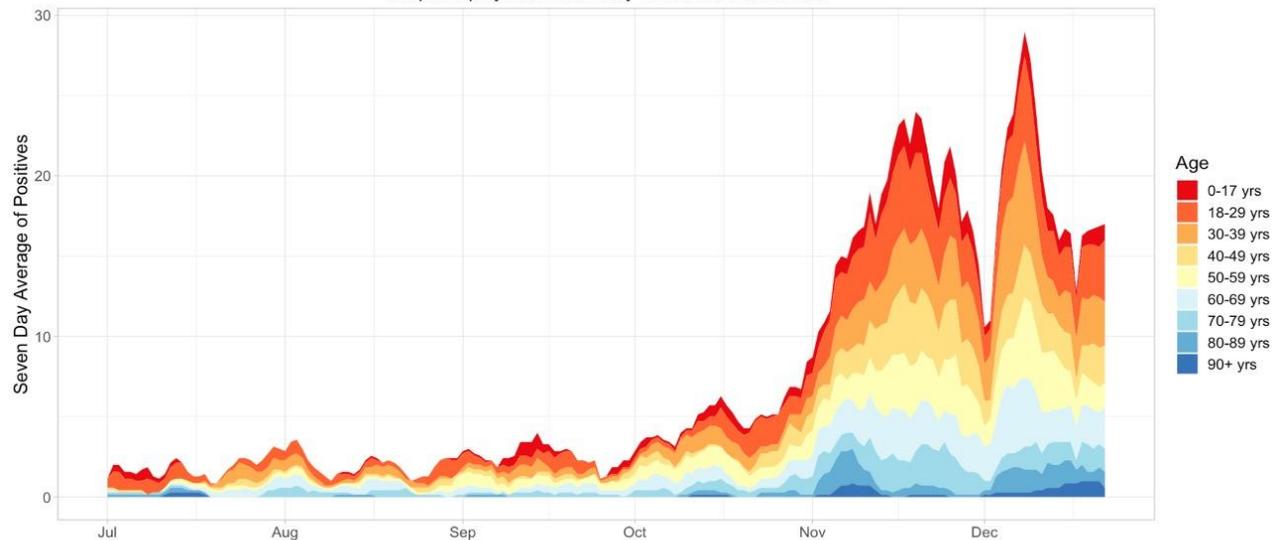
7 Day Rolling Average of COVID-19 Cases by City
Graph displays data from July 1st to December 22nd

Information Updated as of 12/22 at 8 p.m.

7 Day Rolling Average of COVID-19 Cases by Age in Lexington Area
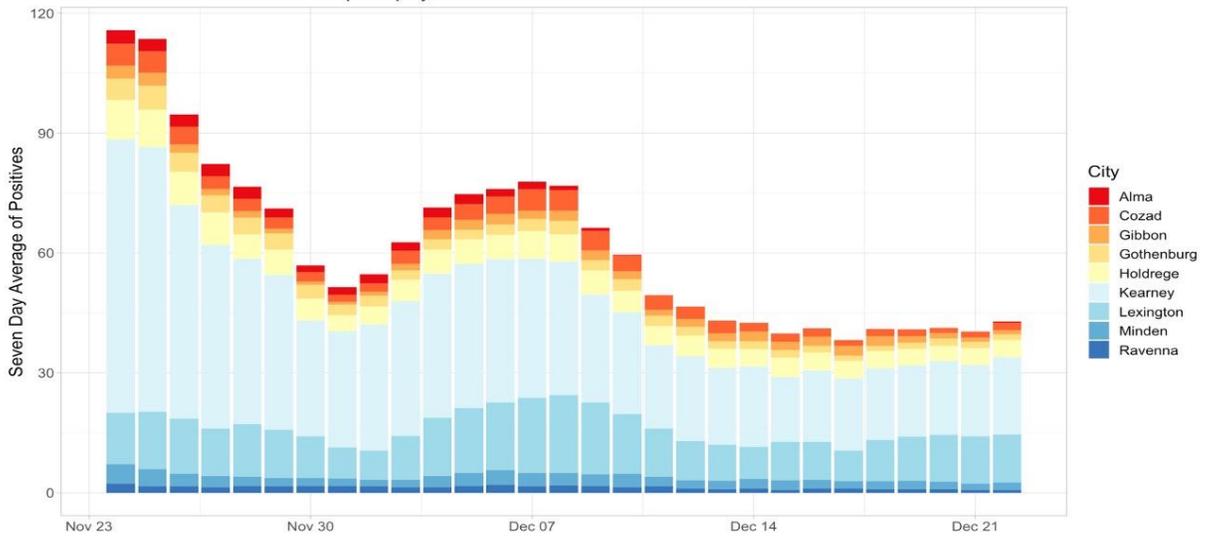Graph displays data from July 1st to December 22nd

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

- The graph below shows COVID-19 cases across 9 cities in TRPHD with population >1100 from **Nov 17 – Dec 22.** 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 with population>1100 during this time period. **Lexington city** is represented by the dark pink line and **Cozad** by the orange line.

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- The graph below shows COVID-19 cases across 9 cities in TRPHD with population less than 1100 from **Nov 17 – Dec 15.** 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 with population<1100 during this time period. **Overton** is represented by the dark blue line and **Elwood** by the green line.

7 Day Rolling Average of COVID-19 Cases in Cities with 500-1,099 in Residents
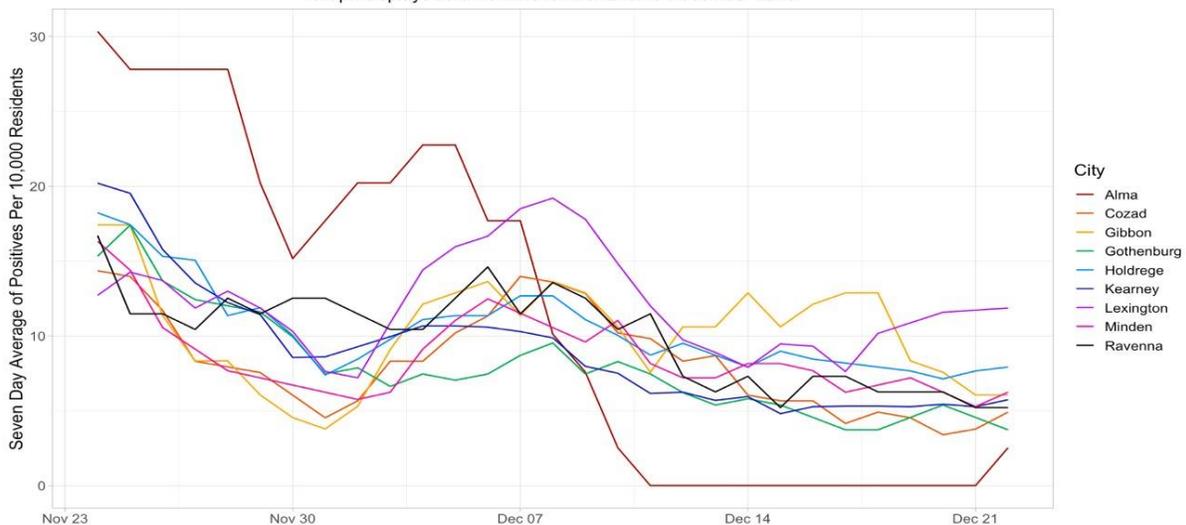Graph displays data from November 24th to December 22nd

Information Updated as of 12/22 at 8 p.m.

7 Day Rolling Average of COVID-19 Cases Per 10,000 Residents in Cities with 500-1,099 in Residents
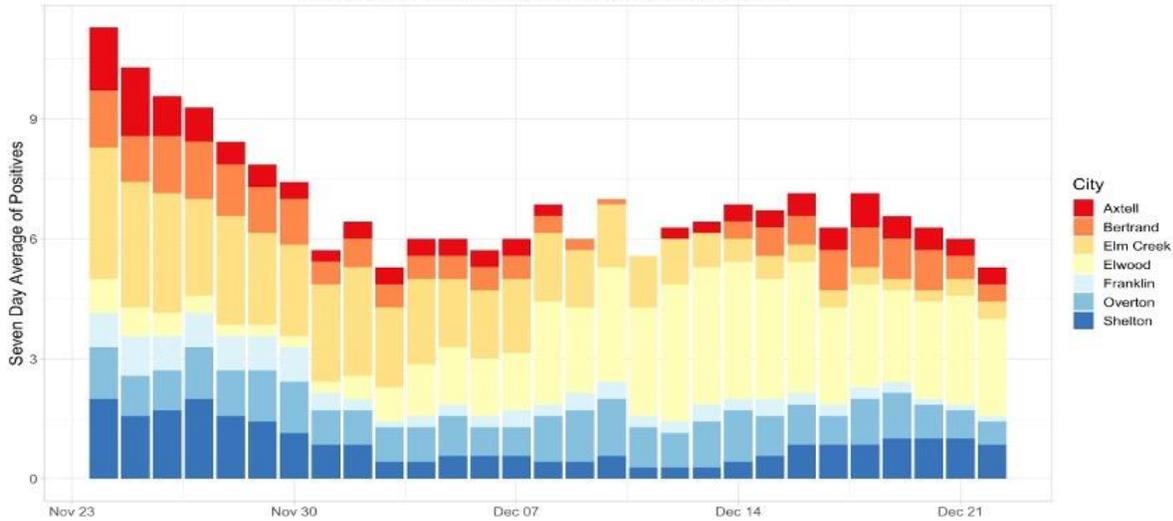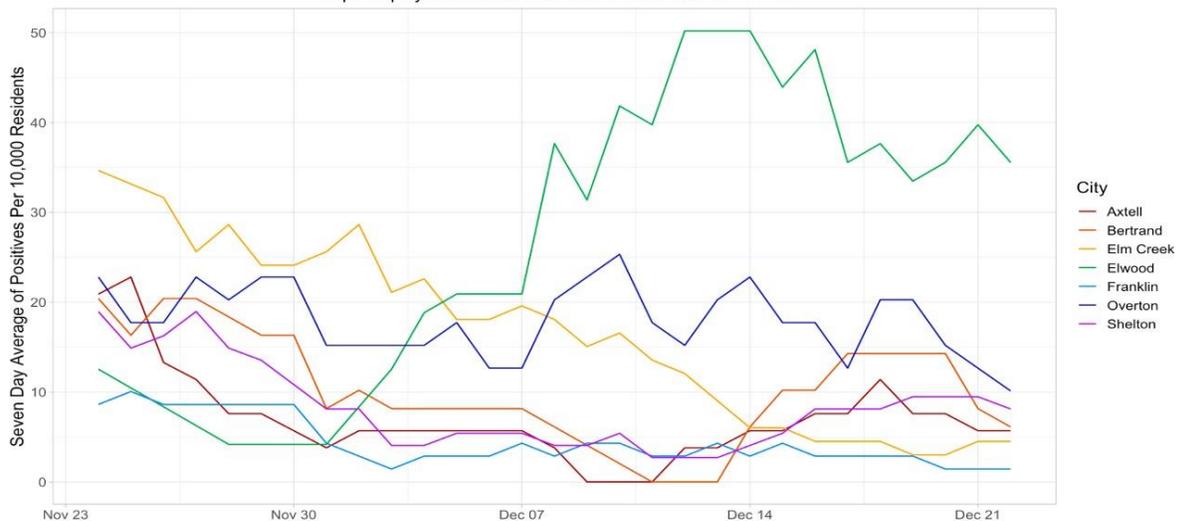Graph displays data from November 24th to December 22nd

Information Updated as of 12/22 at 8 p.m.

Two Rivers
PUBLIC HEALTH DEPARTMENT

<u>Weekly Summary Report</u>

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

- Daily case counts of COVID-19 in Lexington city and urban area have maintained their levels over the past week.
- The 7-day rolling average of cases expressed as a proportion of the total population in Lexington urban area is about double that of Kearney urban area. Lexington area overtook Kearney in this regard about three weeks previously, the first time in six months.
- Lexington city seems to be experiencing a slight uptick in cases over the past two weeks.

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

- New cases in Elwood and Cozad are contributing to the rise in case counts in the urban area, along with the contribution from Lexington.
- About a third of people testing positive over the past week in Lexington urban area are aged 60 years and over

On analyzing graphs of COVID cases from **November – December**, we are able to observe:

- 7-day rolling average of positive cases in the Lexington urban area and in Lexington city are currently comparable to Kearney city, although Lexington has less than a third the population of Kearney.
- Positivity rates dropped in both residential facilities and other settings across almost the entire district over the last week, with the exception of Gosper and Franklin counties. Residential facilities across Franklin, Kearney and Harlan counties saw almost no new cases in the past month.
- Isolated outbreaks (especially in long term care facilities) remain a cause for concern. An outbreak in Elwood continues to command our attention. 55% of all positive cases in Elwood in the past 6 weeks have been among persons aged 60 years or over.

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

- About 40% of ICU beds are currently available across the District, a vast improvement compared to one month previously, when less than 6% ICU beds were available.
- COVID-19 accounts for less than a fifth of patients occupying medical/surgical beds currently in the district (see https://www.trphd.org/ for details)

To conclude, average daily cases of COVID-19 in Elwood, Lexington and Cozad are rising, and Lexington city has overtaken Kearney in per capita case counts in the past three weeks. An outbreak in Elwood has contributed to rising cases among persons aged 60 years or more. ICU availability and COVID-related hospital bed utilization remains steady across the district. The slight rise in case counts over the last four weeks in Lexington area is a worrying sign, especially considering the potential for increased spread following Holiday travel. Residents are advised to avoid non-essential travel and 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
TRPHD total	**97,132**
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 included is described below.

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

Johnson Lake	600
Elwood	683
Cozad	3735
LEXINGTON URBAN AREA (TOTAL)	**15,700**
Holdrege	5408
Funk	183
Loomis	376
HOLDREGE URBAN AREA (TOTAL)	**5967**

For presenting data, we selected 3 time frames:
   a) April 1 – Dec 8 (From the beginning of the pandemic to current)
   b) July 01 – Dec 8 (From the beginning of second sustained 'wave' in daily case counts to current)
   c) Nov 10 – Dec 8 (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
   • 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:

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

Total cases/ 10,000 persons is calculated as:

(Total COVID cases)/ (mid-year population)*10000

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:

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