Lexington Urban Area – COVID-19 Status Report 22 Oct 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. The largest urban areas are Holdrege (~5439 people), Lexington (~10,024 people), and Kearney (~33,835 people), meaning that over half of the residents of TRPHD live in three urban areas, and over a third live in Kearney city alone.

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.

Thus "Kearney area" includes Kearney city as well as Elm Creek, Pleasanton, Amherst, Riverdale, 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.

For presenting data, we selected 3 time frames:

a) April 1 – Oct 20 (From the beginning of the pandemic to current)
b) July 01 – Oct 20 (From the beginning of second sustained period of increase in daily case counts to current)
c) Sep 23 – Oct 20 (Previous 4 weeks)

Data is presented as 7-day rolling averages for daily numbers and absolute counts for cumulative cases

In the first edition of this document, we will

a) Look at the overall course of the COVID-19 pandemic in TRPHD from April - October (**33 weeks**) and identify the outbreaks in each of the three urban areas.
b) Analyze data from July 01 – October 20 (**16 weeks**) to see daily cases across urban regions in TRPHD, depicting cases across Lexington area by age and city of residence. We will also describe average daily positivity rates and cumulative cases. The line is fitted with a linear regression model, Pearson's coefficient (R^2) is displayed.
c) Describe the progress of COVID-19 cases from Sep 23 – Oct 20 (**4 weeks**) across the three urban areas, presenting 7-day rolling averages in Lexington area by age and city of residence.

Overview

- **Fig 1** describes the COVID-19 pandemic in TRPHD from Mar 19 to Oct 20. **Fig 2** describes cases in Lexington, Holdrege and Kearney areas from Apr 1 – Oct 20. It is apparent that after the initial outbreak in May, Lexington has had lower daily case counts from June through October.
- **Fig 3** describes 7-day rolling average of cases across all urban areas from Jul 1 – Oct 20 (16 weeks).
- **Fig 4** shows the average daily positivity rate in Lexington area from Jul 1- Oct 20. Also shown are the cumulative cases across the area, fitted with a linear regression model trendline.
- **Figs 5&6** describe 7-day rolling averages in Lexington area during the same period, further divided by age and city of residence.
- **Fig 7** describes 7-day rolling average of cases in TRPHD by urban area from Sep 23 to Oct 20 (4 weeks). The continually rising cases in Lexington over the past 4 weeks are cause for concern.
- **Figs 8&9** describe 7-day rolling averages in Lexington area during the same period, further divided by age and city of residence.

Fig 1 (below) describes the 7-day rolling average of all COVID-19 cases in TRPHD from March 1- Oct 20, 2020

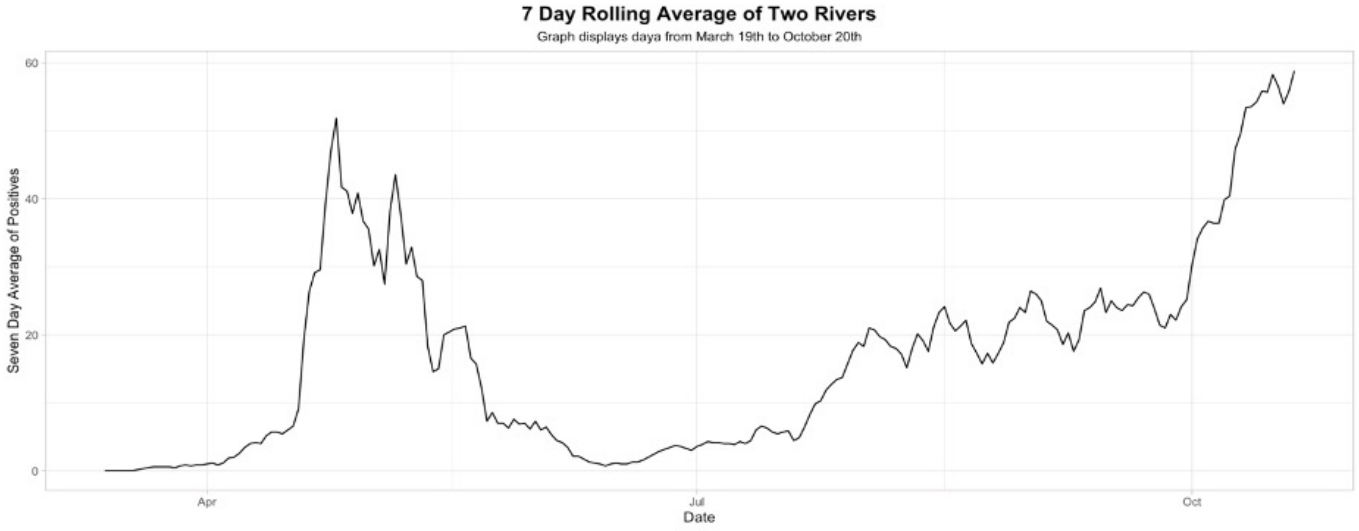

Fig 2 (below) describes the 7-day rolling average of all COVID-19 cases in Lexington, Kearney and Holdrege areas from April 1- Oct 20, 2020

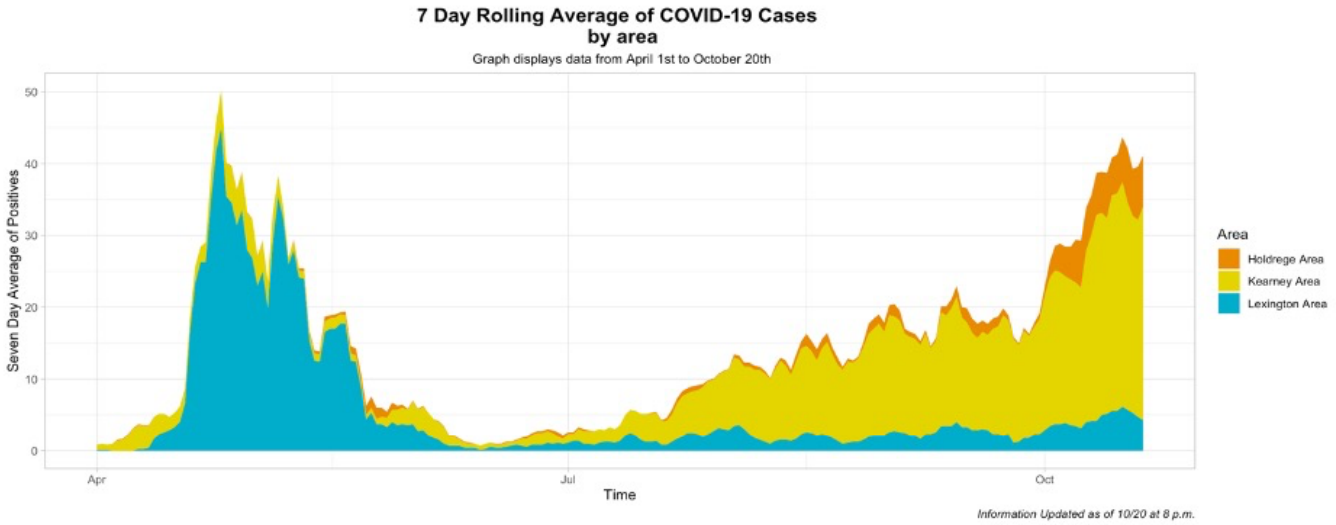

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Fig 3 (below) describes the 7-day rolling average of COVID-19 cases in Kearney, Lexington and Holdrege areas from July 1 - Oct 20, 2020

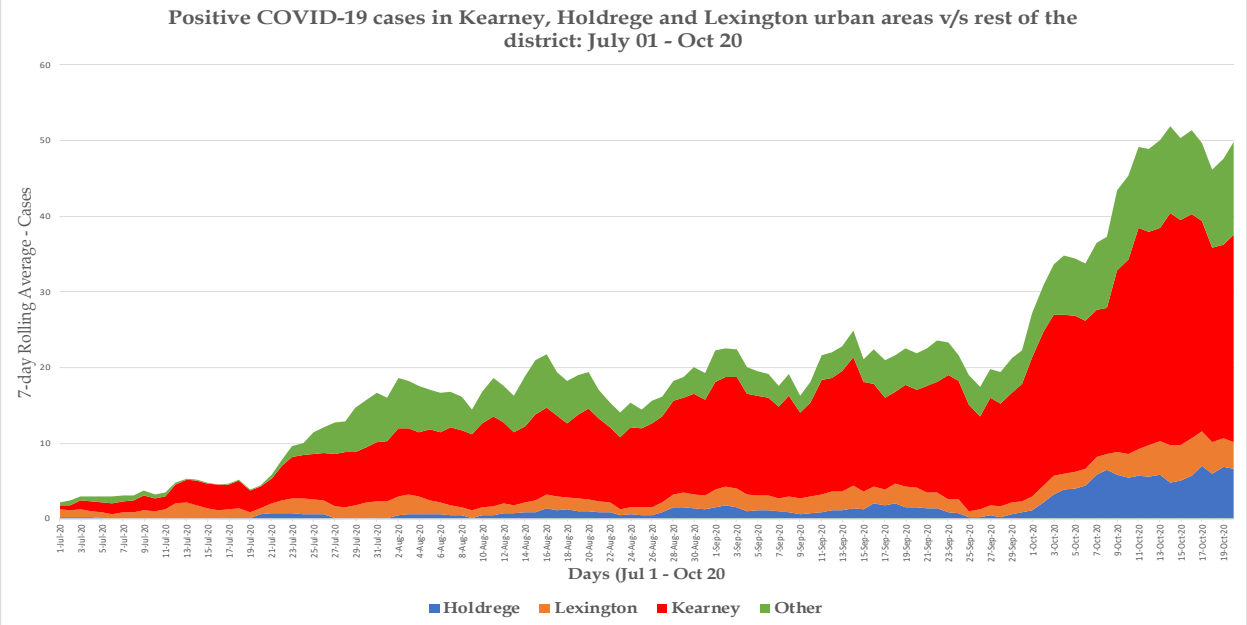


Fig 4 (below) describes the cumulative case totals and 7-day rolling average of COVID-19 cases in Lexington area from July 1 - Oct 20, 2020

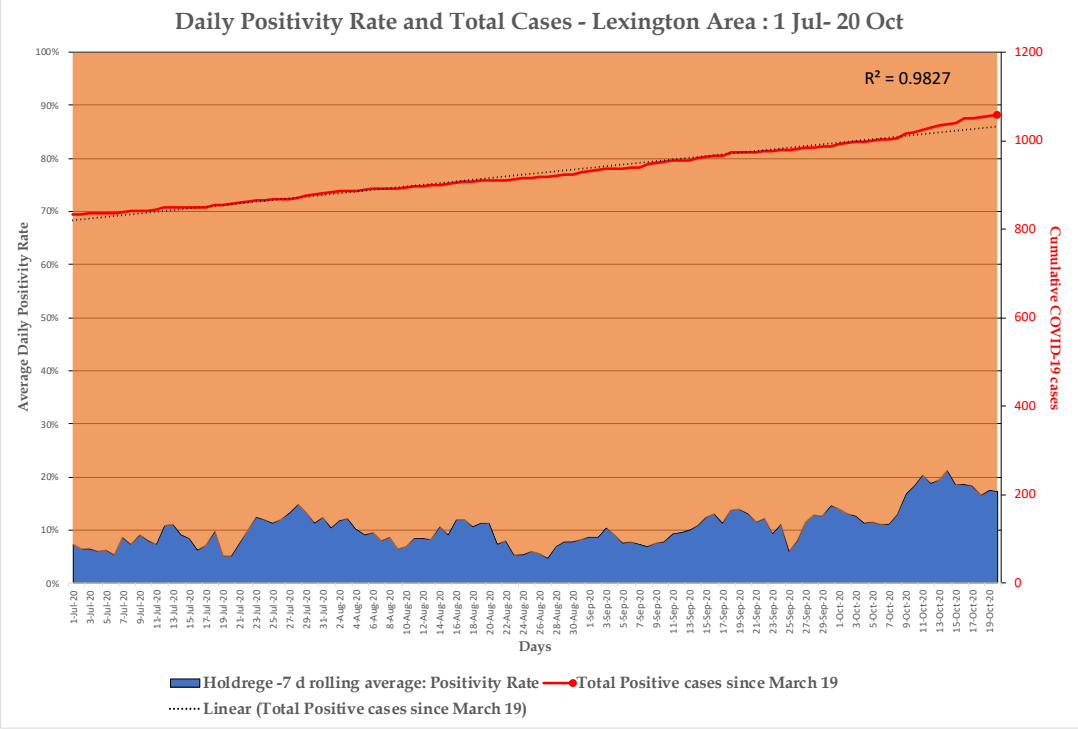


Fig 5 (below) describes the 7-day rolling average of COVID-19 cases by age in Lexington area from July 1 - Oct 20, 2020

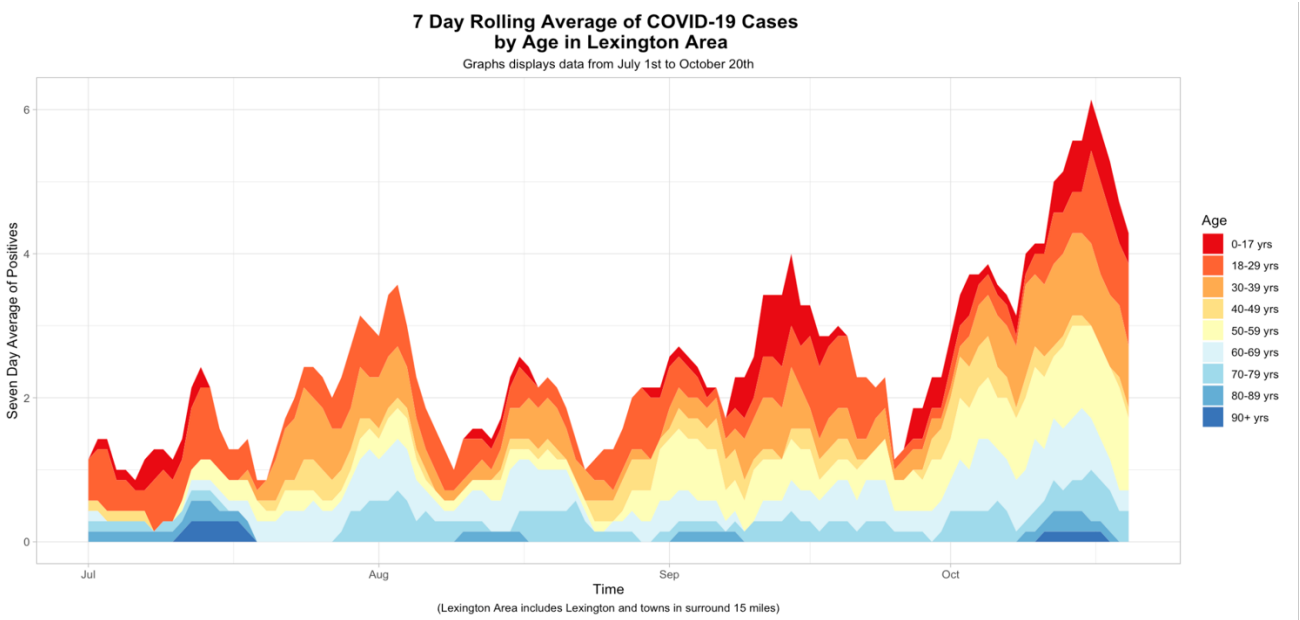


Fig 6 (below) describes the 7-day rolling average of COVID-19 cases across different cities in Lexington area from July 1 - Oct 20, 2020

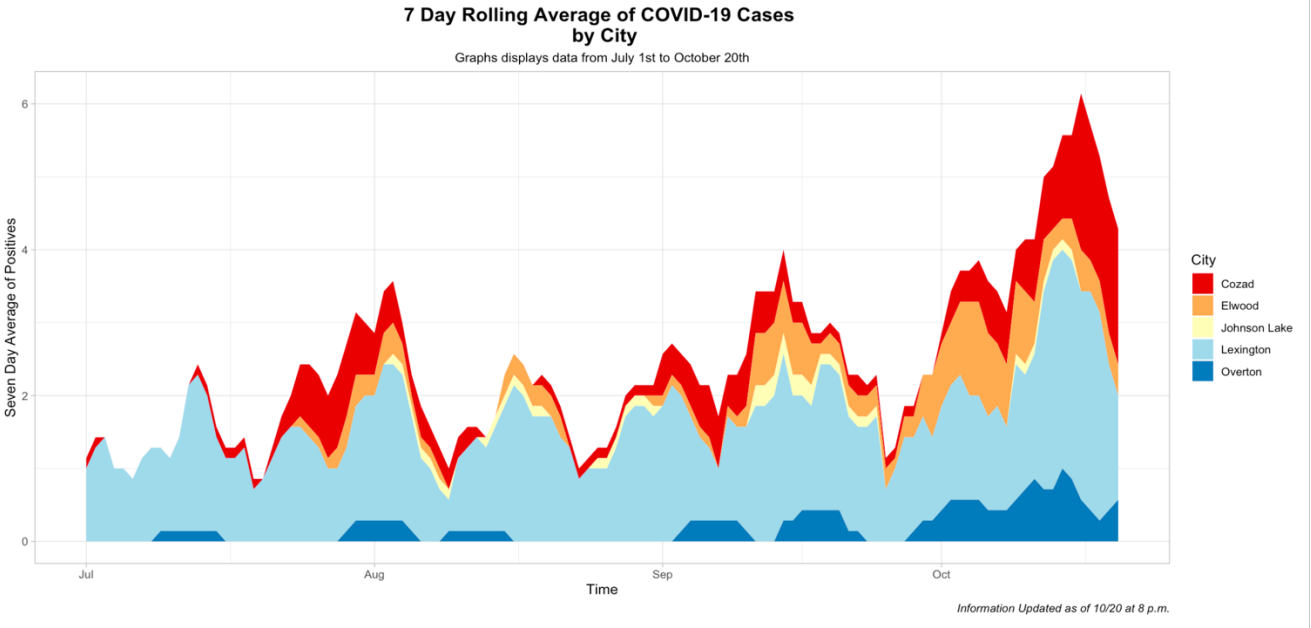


Fig 7 (below) describes the 7-day rolling average of COVID cases in Kearney, Holdrege and Lexington areas from Sep 23 - Oct 20, 2020

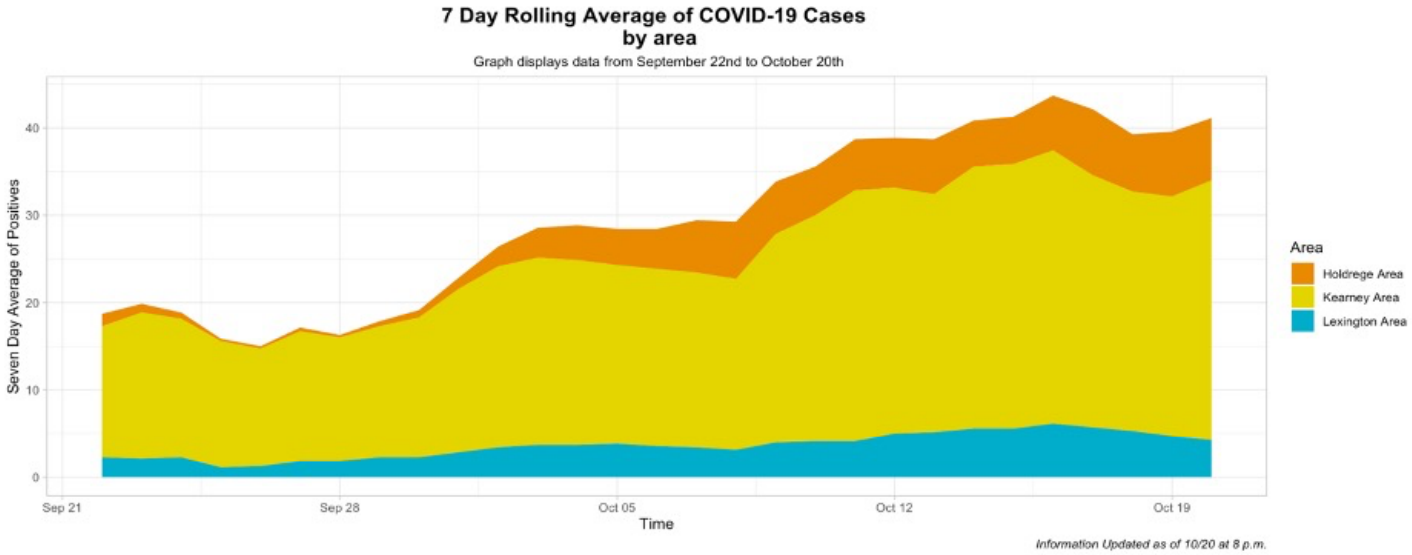


Fig 8 (below) describes the 7-day rolling average of COVID-19 cases by age in Lexington area from Sep 23 - Oct 20, 2020

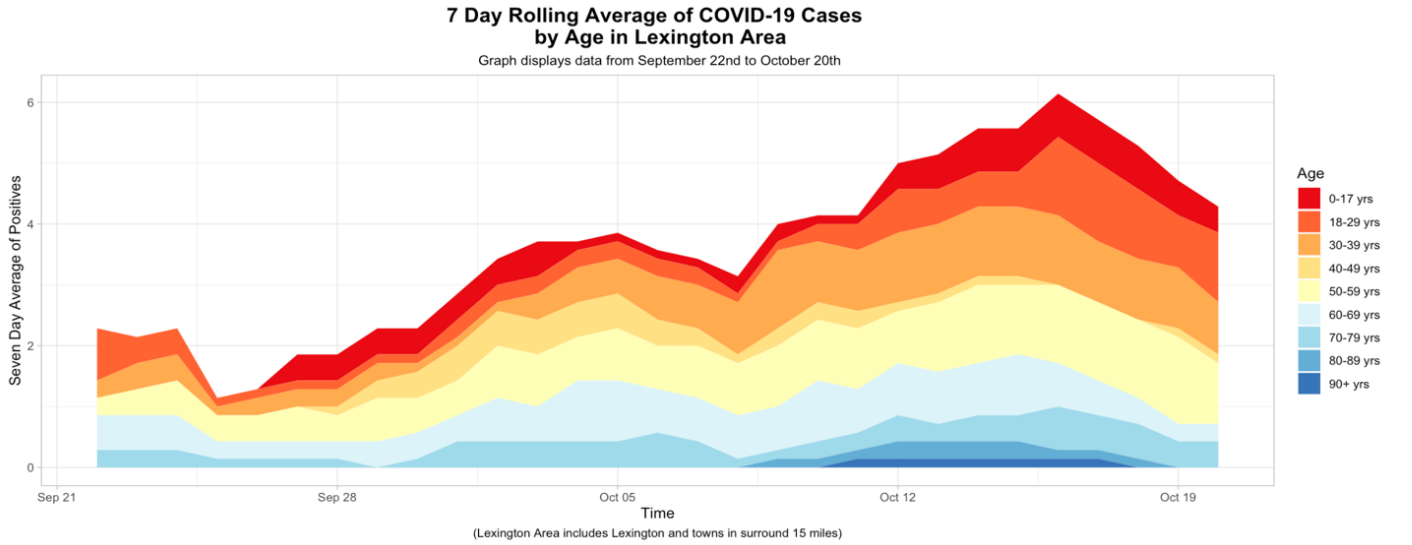
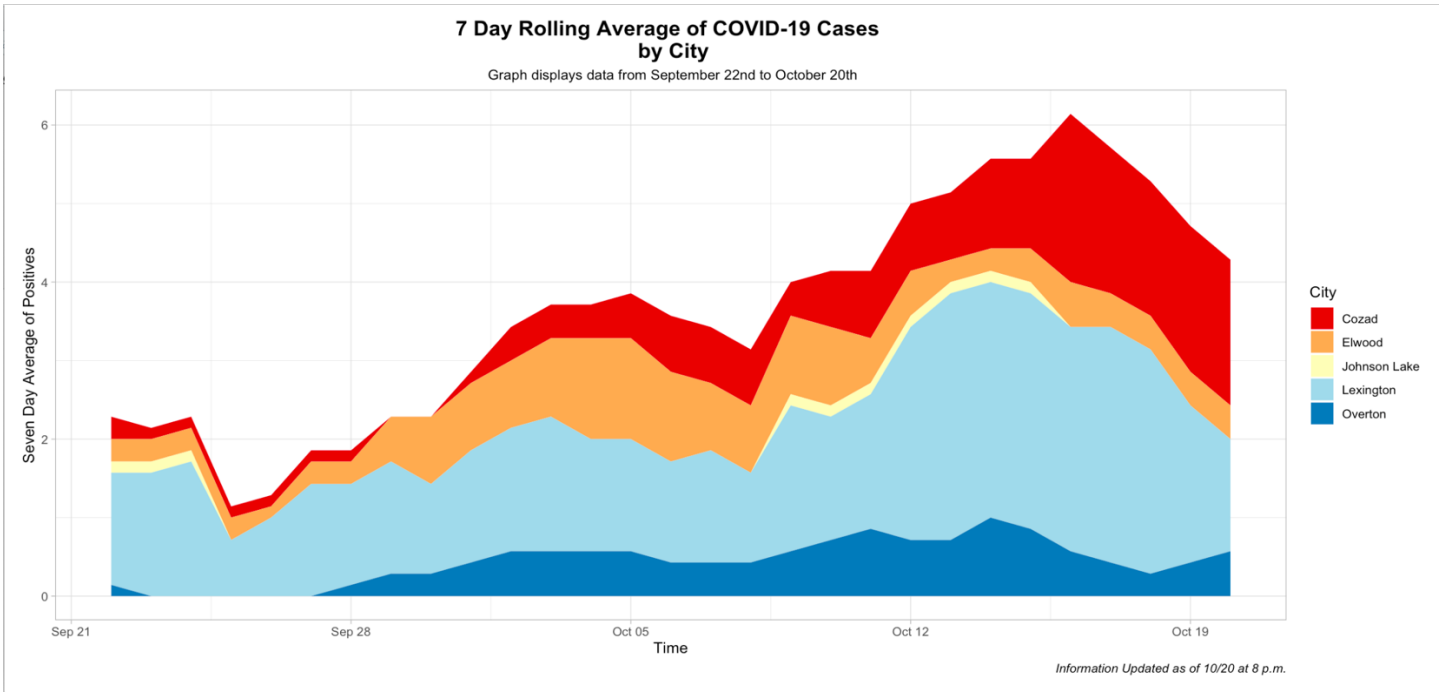


Fig 8 (below) describes the 7-day rolling average of COVID-19 cases by age in Lexington area from Sep 23 - Oct 20, 2020



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PUBLIC HEALTH DEPARTMENT

Weekly Summary Report

From figures 1 and 2, some broad trends are noticeable:

- COVID-19 cases in Lexington area have held steady after an initial outbreak in April-May. Although daily case counts have shown a slight uptick in recent days, the trend over the past 4 months has been lower daily case counts in the city.

From figures 3 & 4, it is clear that daily case counts in Lexington area have remained steady for most of June – October.

- Although total persons tested per week in Lexington area has stayed more or less constant since July 1, average positivity rates have also remained more or less steady during this time.
- The cumulative case count in Holdrege has shown a steady increase, and the goodness-of-fit statistic indicates that cumulative case progression may be fitted to a linear regression model.

In figures 5& 6, we take a closer look at ages and cities of residence of positive persons in the Lexington urban area from July 1 – Oct 20 (16 weeks), and figures 8&9 describe the same data from Sep 23 – Oct 20 (4 weeks)

- Lexington city accounts for a bulk of the cases in Lexington urban area, although case rate have increased in Cozad and Overton more recently.
- The infection burden has shifted in recent years from 30-39 and 40-49 year olds to 50-59 and 60-69 year olds. This worrying trend does not seem thus far to indicate an ongoing outbreak, however vigilance is always advisable.

- ***In summary, Lexington city and Lexington urban area have seen relatively low numbers of cases after the initial outbreak of COVID-19 in April-May. The daily average positivity rate seems to be steady, between 8-15%. The number of cumulative cases is increasing, but does not show the second- or third- order growth seen in Kearney and Holdrege cities. Residents of the city of Lexington and surrounding towns are advised to continue following standard practices like masking and social distancing to avoid incident infection.***

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