As the novel coronavirus (COVID-19) spreads through the Commonwealth, it is imperative that we recognize how this virus may have differential impacts across our population. For instance, the Pennsylvania Department of Health (PADOH) and Centers for Disease Control and Prevention (CDC) have noted that individuals who are 65 years of age or older are at increased risk for severe illness and complications from COVID-19. This is of particular concern to Pennsylvania, as the median age of residents is 40.7 and almost one quarter (23.7%) are over the age of 60.

Increased spread of illness will likely be accompanied by increased demand for specialty care and use of specialty care facilities such as intensive care unit (ICU) beds. In this report, we explore the geographic distribution of aging residents, the availability of ICU beds and how these factors overlap.

Key Findings:

- **Median Age of PA** is 40.7 with 23.7% of the state being 60 Plus

- 11 counties report having 0 ICU beds, 7 of which are because they have no hospitals

- 62 counties are full or partial health professional shortage areas

- Non-Metro counties at particular disadvantage for healthcare infrastructure

As of March 26, 2020, the PADOH reported a total of 1,687 confirmed cases in 48 out of 67 counties. Currently, 5 counties have over 100 confirmed cases; Bucks, Allegheny, Delaware, Montgomery, and Philadelphia. Montgomery and Philadelphia counties have the highest number of cases, 282 and 402 cases respectively. The first two cases within the state were reported on March 7, 2020, less than 3 weeks ago (Levy 2020).

Number of Confirmed Cases

As of March 26, 2020, the PADOH reported a total of 1,687 confirmed cases in 48 out of 67 counties. Currently, 5 counties have over 100 confirmed cases; Bucks, Allegheny, Delaware, Montgomery, and Philadelphia. Montgomery and Philadelphia counties have the highest number of cases, 282 and 402 cases respectively. The first two cases within the state were reported on March 7, 2020, less than 3 weeks ago (Levy 2020).
Aging in the Keystone State

The median age of PA residents is just over the 40 (i.e. Roughly half of the population is older than 40). In all counties, except for Centre (29.8%) and Philadelphia (30.5%), residents aged 50 or older comprise at least one third of the county’s population. That is, 4,889,280 residents of Pennsylvania are 50 years of age or older. And, although the CDC have focused on 65 years of age and older as being high risk, they have also reported that in a small initial sample of 508 patients hospitalized in the U.S. 17% were 55 to 64 years old and another 18% were 45 to 54 (CDC 2020). Thus, it may be necessary to expand the age groups which we consider “high risk.” Moreover, when we look specifically at county populations aged 60 or older throughout the state we see that these numbers are still quite high, varying from 18.3% in Centre County to 36.1% in Sullivan County.

Table 1 displays the counties with the largest percent of the population aged 50 and older and the counties with the largest percent aged 60 and older. These are mostly the counties with the exception of Warren County with slightly more residents at the older end of the age spectrum and Susquehanna County with fewer.

Table 1 Top 5 Counties with Largest Elderly Population, PA, ACS 2013-2017

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<th>Largest percent of Population 50+</th>
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ICU Beds & Health Professional Shortages

Figure 2 displays the number of ICU beds per county. These figures are derived from a recent Kaiser Health News article which evaluated number of ICU beds each hospital reported in its most recent financial cost report (Fiscal Year 2018-2019), filed annually to the Centers for Medicare & Medicaid Services (Schulte et al. 2020). It is important to note that there may be some error in reporting among hospitals. There are 3,169 ICU beds across the state, but 11 counties (Cameron, Centre, Elk, Forest, Fulton, Greene, Juniata, Perry, Pike, Snyder, Sullivan) report having 0 ICU beds, 7 of which have no hospitals (Cameron, Juniata, Forest, Perry, Pike, Snyder, Sullivan). It is also important to note that 9 of these counties are classified as non-metropolitan. However, all are considered rural using the Center for Rural Pennsylvania’s (CRP) Rural/Urban Classification.

Another important way to characterize the healthcare availability of counties is to consider which ones are designated as healthcare professional shortage areas (HPSA) by the Health Resources and Services Administration. Figure 3 displays counties designated as HSPAs. The majority of counties in Pennsylvania are designated as being a partial HPSA, meaning one or more parts of the county is a shortage area. Additionally, Cameron County is an HPSA in its entirety, which is problematic due to resident age in the county. Only five counties are not designated as even having a partial shortage of healthcare professionals: Berks, Bucks, Cumberland, Lehigh, and Montgomery.
Figure 2 ICU Beds by County, PA, 2018-2019

- No hospitals
- Hospitals without ICU beds
- Hospitals with ICU beds

Figure 3 Healthcare Professional Shortage Areas by County, PA, 2019

- Not a shortage area
- Whole County a shortage area
- One or more parts designated shortage area
ICU Beds & The Aging Population

Figure 4 displays the number of residents aged 60 years of age or older, per ICU bed in the county. This scale ranges from a low of 120 residents per bed in Montour County to a high of 4,151 residents per bed in Northumberland County. The counties that have the largest number of residents in this age category, per ICU bed (Adams, Bedford, Northumberland, Susquehanna) are also disproportionately non-metropolitan and rural according to the Center for Rural Pennsylvania. Figure 5 shows the increase in residents per ICU bed, when we increase the age group to individuals 50 and older. The range of individuals per ICU bed is now a low of 186 to a high of 6,591. With the inclusion of this age group four more counties are included in the group with the largest number of residents per bed; Beaver, Fayette, Jefferson, and Schuylkill. Only Beaver County is considered to be non-metropolitan by the Census Bureau and rural by the CRP.

Figure 4 Residents 60+ per ICU Beds by County, PA, 2018-2019

Figure 5 Residents 50+ per ICU Beds by County, PA, 2018-2019
Policy Implications

As the spread of COVID19 continues throughout Pennsylvania it is likely that we will see an increase in demand medical services. The median age of Pennsylvania is one of the highest in the United States. Thus, many residents are at an increased risk for severity in illness and subsequently additional need for more intense medical intervention. The limited number of ICU beds available near this population is of concern. Moreover, older rural residents may be facing a double jeopardy of high risk and a lack of access. It is imperative that we recognize how our population age structure and the distribution of healthcare infrastructure increase vulnerability across communities during this unprecedented time.

Acknowledgements

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References:

American Community Surey. 5 Year Estimates (2013-2017)
Centers for Disease Control and Prevention. 2020. CDC.Gov
Health Resources and Services Administation. 2020. Data.HRSA.Gov
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