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COVID-19 in the Rural South: A Perfect Storm of Disease, Health Access, and Co-Morbidity

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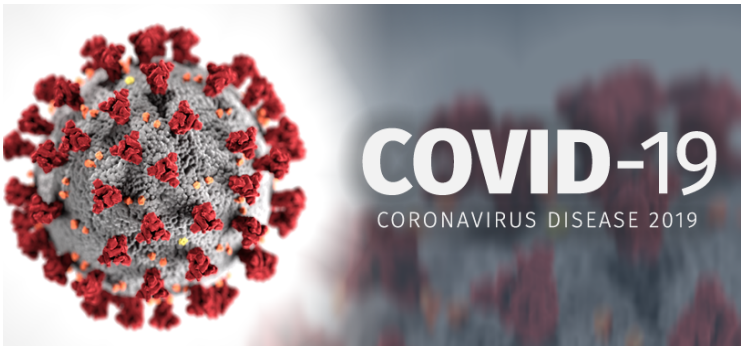
The novel coronavirus (COVID-19) has thrown into sharp contrast the growing inequalities of the rural-urban divide. While urban centers have been hit hard in the US, a recent report highlights a sharp uptick of micropolitan cases[1]. This is important because nearly 5% of micropolitan and rural residents nation-wide, and nearly 8% of rural south residents, commute to urban hubs further increasing the spread of COVID-19.

Rural spaces, while having some protective factors like lower population density, are projected to experience more severe cases of COVID-19 cases and suffer more over the long-term[2]. Rural spaces are home to higher percentages of elderly, who are disproportionately impacted by COVID-19, and have higher prevalence of residents with co-morbidities such as diabetes and respiratory disease, while experiencing reduced access to health care facilities[2].

No place is this more germane than the rural south. As of March 25, 2020, confirmed COVID-19 cases in the south range from between 101-500 (ex. Mississippi and Alabama) to between 1001-5000 (ex. Louisiana and Florida). To date the average testing rate in the rural south is 27% less than the national average suggesting that the number of cases in the rural south is vastly underestimated[3,4].

	Positive	*Negative*	*Hospitalized*	*Deaths*	*Total Tests*	*Tests/million*
US	214039	965550	31501	4809	1179589	3625
Rural South	33487	261495	5230	767	294982	2634
AL	1116	7503		32	8619	1758
AR	624	7836	90	10	8460	2901
FL	7559	60356	1043	97	67915	3162
GA	4748	15690	1013	154	20438	1925
KY	680	7220		20	7900	1768
LA	6424	39352	1498	273	45776	9847
MS	1073	4334	332	22	5407	1817
NC	1584	24659	204	10	26243	2502
SC	1293	5033	349	26	6326	1229
TN	2683	29769	200	24	32452	4749
TX	3997	43860	196	58	47857	1650
VA	1706	15883	305	41	17589	2061



Key Recommendations

1. Provide key supports like testing facilities, clinical staff, etc. to rural areas
2. Continue to remind and enforce CDC recommendations for social distancing
3. Narrow the scope of essential personnel
4. Begin NOW to plan for investments in rural healthcare infrastructure

Stop the Spread

@NCDHHS • #COVID19NC

Are You High Risk?

These people are at higher risk of getting very sick from COVID-19.
Take actions to reduce your risk of getting sick.

Those in **close household contact** with person diagnosed with COVID-19

People **65+ years old**

People with **underlying health conditions** (ie. heart/lung/ kidney disease, diabetes, weakened immune system, etc.)

With little expectation that the spread of COVID-19 will stop or even slow substantially, ensuring the health of people living in the rural south becomes imperative (the number of confirmed cases in the US rose from ~4200 on March 16 to ~120,000 on March 29). Data from countries like Italy and China suggest that this illness has a much higher mortality rate in patients over the age of 60 (range 3.5-20.2%)[2,5]. However, the immediate impact will not be limited to this population. A recent report from the CDC evaluating voluntarily submitted data from US states found that roughly 20% of patients admitted to the hospital with the infection are between the ages of 20 and 64, and of these patients between 12-36% are admitted to the ICU[6]. This represents a significant percentage of the working age population.

Patients in the rural south are also already at higher risk of adverse health events due to increased rates of obesity, diabetes, hypertension, and heart disease. Current data suggests that these co-morbid conditions result in more serious complications for those infected with COVID-19. A meta-analysis of co-morbidities found that hypertension and diabetes, followed by cardiovascular disease and respiratory system disease were the most prevalent co-morbidities and each of these were at least twice as likely to occur in severe cases as non-severe cases of COVID-19[12]. A recent report from the UK that examined COVID-19 cases in London hospitals found that most people admitted to intensive care were male (70%) and were either overweight or obese (63%)[13].

As rural spaces are hit hard by COVID-19, managing the influx of patients likely to require hospitalization is complicated by the number of rural hospital closures that have taken place in the south over the last decade. According to The Cecil G. Sheps Center for Health Services Research, based out of the University of North Carolina, 128 rural hospitals have closed since 2010[14]. Nearly half of those (54) were located in the rural south[14].This is exacerbated by an increasing number of closures of independent pharmacies in rural areas, further diminishing access to healthcare resources in these settings[15]. Not surprisingly these closures correspond to continued health care gaps in rural areas related to cost, and a scarcity of available services, healthcare providers, and transportation[16]. Early estimates from Medical Associates in Britain suggest that rural hospital needs for intensive care beds may rise by as much as 600% in the coming weeks[17].These existing issues will be compounded as healthcare workers, who are at high risk of exposure and infection, are forced to either self-isolate, or become patients in need of care themselves[17].

As the logistics of the multi-trillion-dollar emergency aid package are rolled out, national and state legislators, particularly in the rural south, must consider and begin to plan for long-term community resilience[18]. This involves consideration of BOTH (1) immediate quarantine concerns to stem the tide of COVID-19 cases, such as a national shelter-at-home order and increased testing, as well as (2) investment in rural health infrastructure to manage future potential pandemics and promote population health in vulnerable spaces. Eight of the twelve southern states have “shelter-at-home” orders[19]. States like Mississippi and Alabama expressed clear opposition to shelter-at-home policies early in the pandemic. These were tied mostly to a desire to keep the economy open[20,21]. This economic argument is likely in response to the soaring unemployment claims, now 3.2 million in the US, and looming 13% unemployment—higher than the Great Recession levels[22].

	Obesity[7] (%)	*Diabetes[8] (%)*	*Hypertension[9] (%)*	*Heart Disease[10] **	*Chronic Respiratory Disease[11]**
US	37.7	10.5	33.2	163	39.7
Rural South	34.7	13.2	37.2	186	48.9
AL	36.2	14.5	41.9	224	58.0
AR	37.1	14.1	41.3	217	61.7
FL	30.7	12.4	34.6	143	37.0
GA	32.5	12.6	33.1	175	45.7
KY	36.6	13.8	39.4	198	62.1
LA	36.8	14.1	39.0	212	43.1
MS	39.5	14.3	40.8	222	59.9
NC	33.0	12.1	34.7	155	42.6
SC	34.3	13.3	38.1	167	45.8
TN	34.4	13.9	38.7	202	55.9
TX	34.8	12.5	32.5	170	39.7
VA	30.4	10.5	32.4	148	34.7

But it comes at the cost of both rural communities and the elderly. For example, both Mississippi and Alabama are majority rural, with 53% and 23% of their respective populations living in rural spaces[23]. A failure to reduce the amount of commuting between rural and urban centers and providing supports for social distancing measures increases the risk to already vulnerable communities. Additionally, while pop-up testing centers are helping to increasing the number of tested individuals, their temporary and ephemeral nature mean that more systemic solutions are needed and resources should be provided to more permanent testing sites.

Investment in rural health infrastructure is a critical step to promoting national and community resilience and, currently, addresses a range of the economic arguments southern governors are making to justify opposition to shelter-at-home orders. Rural hospitals are important "economic anchors" for their communities[24,25]. Every dollar spent by a hospital supports $2.30 of additional business activity within the community and hospitals are a top source of private sector jobs[24]. When rural hospitals close it doesn't just translate to loss of healthcare access, critical in a pandemic, but also results in job loss and outmigration for already precarious demographics—significantly reducing the tax base.

Given upcoming elections any suggestion that rural communities, and especially older residents, sacrifice themselves for the sake of the economy, in a largely rural region like the South, while simultaneously refusing to invest in the economic and health boosting infrastructure of rural hospitals, is both dangerous and short-sighted[26].

Taken together the likelihood that COVID-19 will continue to spread as micropolitan and rural workers commute to urban hubs for work, the higher risk profile of patients, the impact it could have on the healthcare workforce, and low baseline healthcare access there is little doubt of the potential devastation in the rural south. The immediacy of this pandemic will tax system level resources and trap communities, especially rural communities, in a reactive, crisis management approach, rather than a proactive, resilience building model. Unless communities and regions can stymie the flow of new COVID-19 cases, and begin to build resilience through an integrated systems response and planning (via rural health infrastructure), the likelihood of future pandemics wreaking havoc on local economies, population health, and overall wellbeing in the rural south remains.

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