

# The impact of COVID-19 in the state of Mississippi

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DOI: 10.29322/IJSRP.10.09.2020.p10593

<http://dx.doi.org/10.29322/IJSRP.10.09.2020.p10593>

**Abstract-** Since the outbreak of Coronavirus disease (COVID-19) in late 2019, it has become a global pandemic, with severe impact on health and economy. The increasing prevalence of COVID-19 cases and the deaths in the United States (US) indicates a lack of compliance with the national and state guidelines by the Centers for Disease Control and Prevention (CDC). Mississippi (MS) has one of the highest number of cases and deaths than the national U.S average. This study reveals the risks and burden of COVID-19 in MS when compared to the US national average and proposes strict preventive measures to reduce the spread of Covid-19 in the state of Mississippi. This could be achieved through social distancing, use of face coverings, proper hand hygiene, virtual learning, decentralized contact tracing, and a probable second lockdown.

**Index Terms-** COVID-19, SARS-CoV-2, Pandemic, Infection, Mississippi.

## I. INTRODUCTION

COVID-19 is an infectious disease that is caused by the newly discovered Coronavirus: Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) [1]. The COVID-19 outbreak first started in 2019, in Wuhan, China and has since become a global pandemic [1]. Individuals could become directly infected through respiratory droplets between person-to-person and indirectly through contaminated hard surfaces [2]. The symptoms of COVID-19 include weakness, cough, fever or chills, myalgia, new loss of taste or smell, nausea or vomiting, difficulty breathing, headache, diarrhea, sore throat, and runny nose [3]. Although these symptoms may appear 2-14 days after an individual is exposed to the virus, it is worth noting that some cases present without showing any symptoms [3], [4].

COVID-19 affects people of all ages [5]. However, the severity of illness increases with age and the presence of underlying conditions such as type 2 diabetes mellitus (T2DM), obesity, cancer, sickle cell disease, asthma, severe heart conditions, chronic obstructive pulmonary diseases (COPD), and chronic kidney diseases [5], [6]. While children rarely suffer from complications of COVID-19, a 90% increase in cases involving children has been reported by the American Academy of Pediatrics [7]. Conversely, adults experience COVID-19-related complications such as cerebrovascular accident, acute respiratory Distress Syndrome, pulmonary embolism, myocardial infarctions, cardiac arrest, and death [8]-[10]. The CDC

guidelines on the Covid-19 prevention and control measures include frequent hand hygiene, wearing a mask when around other people, keeping six feet distance from others, cleaning and disinfecting surfaces, and most importantly isolating in the presence of symptoms or exposure to SARS-CoV-2 [2], [11].

In the United States (US), the social inequities that have historically affected individuals from ethnic and racial minority groups have contributed to increased risks of becoming infected with COVID-19 among members of these groups [12]. The CDC data revealed that when compared with whites, black people were 2.1 times more likely to die from COVID-19, followed by indigenous people (1.4 times), and Latinos (1.1 times) [13]. Similarly, data from COVID Racial Data Tracker revealed that death caused by COVID-19 is higher in black people (81 per 100,000) than in Hispanic or Latino (46 per 100,000), American Indian or Alaska Native (44 per 100,000), White people (32 per 100,000), and Native Hawaiian and Pacific Islander (32 per 100,000) [14].

Mississippi (MS) has continued to report high number of new cases which poses a public health problem especially as it relates to its population and available resource [13]. The state's initial response to COVID-19 was a shelter-in-place order that required closing all schools and non-essential businesses [15]. Eventually, reopening plans such as sanitation guidelines, statewide mandatory face covering, strict social distancing, and limiting in-door gathering to ten people were set in place [15]. Despite having a reopening plan, the state continues to record high number of new cases and deaths after resumption which could be a resultant effect of non-compliance with CDC guidelines [13]. In spite of the urgent need for prompt healthcare actions, the Mississippi State Department of Health (MSDH) and the government still face challenges such as inadequate number of contact tracers, lack of funding, time lags between testing and result, and incomplete contact information of tested individuals [16]. With a state population of 2,976,149 and a total of 904 Intensive Care Unit (ICU) beds in the entire state, shortage of bed could be imminent if cases continue to rise [17], [18]. Experts have estimated a loss of \$7.9 trillion and \$6.6 billion on the US and MS economy, respectively [18], [19]. The

purpose of this paper was to elucidate the number of cases and death rates associated with Covid-19 in all the counties in Mississippi

## II. MISSISSIPPI COVID-19 DATA

Over a period of three months, the MSDH has reported 70,665 new COVID-19 cases and 1,615 deaths bringing the total number of cases and death to 71,755 and 2,080, respectively [21]. To understand the burden of the increasing cases and deaths in MS, it is important to compare Covid-19 cases and death rates among the US and MS population. The ratio of new cases associated with Covid-19 between US and MS was 85:1 [13], [21]. It means that for every 85 new cases in the US there is 1 new case in MS [13], [21]. Additionally, the total number of cases in MS was 2,124 per 100,000 population while US reported 1,465 per 100,000 population [13]. This reveals higher rates of COVID-19 infection in MS when compared to the US and emphasizes the increased risks and burden in MS.

Importantly, the number of MS COVID-19 cases among Blacks are higher when compared to Whites [21]. The MSDH record showed that out of the total number of COVID-19 cases, 53.0% were non-Hispanic Black, 38.5% were Non-Hispanic Whites, 5.2% were Hispanics, 1.8% were others, 1.1% were Non-Hispanic American Indian or Alaska native, and 0.4% were Asians [21]. Similarly, out of all the COVID-19 related deaths 50.8% were non-Hispanic Blacks, 43.2% were non-Hispanic whites, 3.7% were Non-Hispanic American or Alaska Native, 1.6% were Hispanics, and 0.6% were others [21]. Gender has been found to influence the disease distribution as females (57.1%) were at higher risk of becoming infected than males (42.4%) and unknown (0.5%) [21].

The high rate of COVID-19 and poorer outcomes among racial and ethnic minorities occur as a result of disparity in access to social determinants of health such as quality education, health care services, good job opportunities, safe housing, and healthy foods [22], [23]. Racial and ethnic minority groups are more likely to be uninsured, live in overcrowded houses, and work in a high risk Covid-19 environment than non-Hispanic whites [22], [24], [25].

Table 1. COVID-19 Cases and Deaths by County level in Mississippi [21].

County	Total Cases	Total Deaths
Hinds	5878	128
De Soto	3888	34
Harrison	2755	37
Madison	2538	74
Jackson	2449	47
Rankin	2411	41
Jones	1978	64
Forrest	1905	57

Washington	1811	46
Lee	1700	43
Lauderdale	1488	98
Neshoba	1328	96
Lamar	1284	19
Bolivar	1219	40
Warren	1173	37
Oktibbeha	1171	41
Panola	1139	18
Lowndes	1136	42
Sunflower	1106	29
Lafayette	1062	21
Scott	1029	21
Copiah	986	30
Pike	977	38
Leflore	976	70
Holmes	945	50
Yazoo	887	14
Pontotoc	884	9
Lincoln	871	44
Monroe	868	55
Grenada	866	27
Simpson	852	36
Coahoma	812	13
Leake	811	27
Wayne	808	21
Tate	768	30
Marshall	766	10
Union	761	19
Marion	707	21
Adams	664	28
Covington	656	16
Winston	652	18
George	637	9
Pearl River	596	41
Newton	587	12
Tallahatchie	565	11
Attala	549	25
Walthall	525	22
Chickasaw	508	19
Prentiss	497	11
Noxubee	482	12
Tishomingo	467	12
Alcorn	451	5
Tippah	434	14
Calhoun	433	9
Jasper	424	11

Hancock	422	15
Itawamba	422	10
Smith	421	13
Clay	417	14
Claiborne	414	14
Tunica	375	8
Clarke	368	28
Montgomery	365	10
Lawrence	341	8
Yalobusha	324	10
Humphreys	310	12
Quitman	278	1
Greene	275	13
Carroll	265	11
Webster	257	13
Perry	256	8
Jefferson	253	6
Davis	253	6
Stone	249	6
Kemper	248	14
Amite	246	6
Wilkinson	233	14
Sharkey	215	7
Jefferson	198	8
Benton	165	1
Franklin	150	2
Choctaw	141	4
Issaquena	27	2
Total	71,755	2,080

The Mississippi Department of Health (MSDH), 2020

Table 1 shows the number of COVID-19 cases and deaths by county level, with Hinds recording the highest number (cases, 5878 vs deaths, 128), Issaquena has the lowest number of cases (cases, 27 vs death, 2) and Benton (cases, 165 vs deaths, 1) [21]. Hinds (5878 cases) is followed by De Soto (3888), Harrison (2755), Madison (2538), Jackson (2449), Rankin (2411), Jones (1978), Forrest (1905), Washington (1811), Lee (1700), Lauderdale (1488), Neshoba (1328), Bolivar (1219), Warren (1173), Oktibbeha (1171), Panola(1139), Lowndes(1136), Sunflower (1106), Lafayette (1062), and Scott (1029) [21]. In contrast, counties like Copiah, Pike, Leflore, Holmes, Yazoo, Pontotoc, Lincoln, Monroe, Grenada, Simpson, Coahoma, Leake, Wayne, Tate, Marshall, Union, Marion, Adams, Covington, Winston, George, Pearl River, Newton, Tallahatchie, Attala, Walthall, Chickasaw, Prentiss, Noxubee, Tishomingo, Alcorn, Tippah, Calhoun, Jasper, Hancock, Itawamba, Smith, Clay, Claiborne, Tunica, Clarke, Montgomery, Lawrence, Yalobusha, Humphreys, Quitman, Greene, Carroll, Webster, Perry, Jefferson Davis, Stone, Kemper, Amite, Wilkinson, Sharkey, Jefferson, Benton, Franklin, Choctaw, and Issaquena have recorded less than 1000 cases each [21]. Counties that have recorded 50 deaths

and above include Hinds (128), Lauderdale (98), Neshoba (96), Madison (74), Leflore (70), Jones (64), Forrest (57), Monroe (55), and Holmes (50) [21]. Taking prompt public health actions in all these counties could lead to significant reduction in the spread and death associated with SARS-CoV-2.

### III. DISCUSSION

In just three months, MS has recorded over 100% increase in new COVID-19 cases which escalated from 1,090 to 71,755 [21], [26]. This could be partly due to the high prevalence of chronic diseases (diabetes mellitus, cancer, lung diseases) among racial and ethnic minority groups [27]. According to CDC, people with hypertension, obesity (BMI  $\geq 30$ ), or diabetes were three times more likely to become hospitalized if they became infected with SARS-CoV-2 [28]. Similarly, people with asthma (1.5 times), chronic kidney disease (4 times), and severe obesity (BMI  $\geq 40$  [4.5 times]) experience higher COVID-19 related hospitalization than people without these conditions [28]. Besides, poor social determinants of health (low income, unhealthy lifestyle, substandard education) can contribute to the prevalence of COVID-19 among racial and ethnic minority groups [22]. With the high number of COVID-19 cases in MS, hospitalization into ICUs and Medical/surgical units have steadily increased leaving only 17% of ICU beds and 30% of Medical/Surgical unit beds available [18]. Despite the State Health Officer's warning on the likelihood of hospitals going beyond capacity, some people continue to ignore the public health guidelines (face covering, social distancing, hand hygiene) [29]. This strongly suggests that the healthcare system will soon experience an overwhelming increase in COVID-19 cases which could aggravate the existing burden of this virus on the state [29].

### IV. CONCLUSION

In order to minimize severe outcome of COVID-19, the existing guidelines for prevention and control such as proper hand hygiene, mandatory face covering, social distancing, safe public gathering, and plans for reopening of schools and businesses should be maintained [30]. Since COVID-19 pandemic is an emerging situation, strict implementation of measures based on new findings could be beneficial in reducing the spread of SARS-CoV-2. More importantly, MS should consider using California's approach to education by making all classes virtual [31]. Furthermore, as some states such as California have already done, contact tracing should be decentralized to involve both the local and state health departments and possibly contract it out to a privately-owned company [32]. Lastly, more stringent measures such as statewide lockdown should be enforced until there is a significant reduction in number of cases [29].

COVID-19 cases will reduce if there is increased compliance with the CDC's guidelines on prevention and control of SARS-CoV-2. Face coverings and social distancing should be maintained while virtual learning and strict contact tracing

should be implemented. Strict actions may be more efficient in reducing the spread of SARS-CoV-2.

## ACKNOWLEDGMENT

Nneka Rogers, Jamie Hamil

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