

## Pandemic Preparedness: A Community Assessment of Compliance with Infection-Control Guidelines

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**Abstract**

With inconsistent COVID-19 prevention guidelines being issued across different local governments, an examination of how individual businesses are implementing infection-control interventions on their own is needed. This study assessed the relative compliance of businesses with infection-control guidelines implemented to decrease the spread of COVID-19. Researchers employed an environmental/behavioral checklist to systematically record how the guidelines were followed in community areas where people congregate and risk receiving or spreading COVID-19. Early numbers show that most establishments post signs with guidelines at entrances, require masks for entry, deny entry for symptomatic individuals, and have installed protective barriers between customers and employees. There are also high rates of compliance with mask-wearing guidelines among employees. Future directions include collaboration with other universities for more robust, large-scale data collection and analyses.

# Introduction

The spread of COVID-19 has increased at largely unanticipated rates since the start of the pandemic. In the United States alone, over 30 million cases and 560 thousand deaths have occurred since January 2020 (Center for Disease Control and Prevention, n.d.), and preventing the spread of COVID-19 remains a public health priority today. With local governments issuing inconsistent infection-control policies and restrictions (Bunis & Rough, 2021; Marples & Brown, 2020), much of the responsibility of enforcing recommended COVID-prevention guidelines has fallen to individual businesses.

The present field study conducted a behavioral-community assessment in order to document the COVID-prevention tactics implemented at common locations where people gather throughout various communities across several states. Community assessments have been shown to be advantageous in determining: a) how areas are responding to the pandemic, b) what information is still needed, and c) how health officials can intervene to help communities protect their citizens (Azfal et al., 2020; Carpenter et al., 2020).

# Methods

Trained observers used an observational checklist in Qualtrics (a platform for online surveys) to evaluate businesses, churches, parks, and other public spaces across the U.S. to assess the infection-control interventions in place, as well as employee behavioral compliance. Four categories were assessed: infection-control provisions, posted signs, extra infection-control measures, and employee compliance.

Infection-control provisions included whether establishments: a) offered masks, b) set up hand-sanitizing stations, and c) offered low-contact service options, such as curbside pickup or delivery. Posted signs were checked for the presence of: a) COVID-prevention guidelines displayed at entrances, b) whether masks were required for entry, and c) whether sick/symptomatic customers were denied entry. Extra infection-control measures included the implementation of: a) social distancing markers, b) physical barriers (e.g., clear plexiglass) between customers and employees, and c) reduced capacity (i.e., limited numbers of customers permitted in the establishment at one time) within businesses and other public spaces. Employee compliance was calculated by counting the number of employees wearing masks and gloves and comparing those frequencies with total counts of employees at each establishment.

Researchers also recorded the locations of each establishment, which allowed for statistical comparisons between infection-control interventions and county populations and infection rates.

# Results & Discussion

As depicted in Table 1, 316 different establishments across six states have been assessed so far, with 30 (~9.5%) of the evaluations including interobserver reliability. Of the 316 establishments, 94% required masks for entry and 90% had guidelines posted at entrances. The only other infection-control interventions that over 50% of the establishments applied were signs denying entry for symptomatic individuals and the installment of physical barriers (e.g., clear plexiglass) between customers and employees.

A total of 1861 employees were recorded across the 316 establishments; 97% were observed wearing masks, but only 29% were observed wearing gloves.

**Table 1**

*Businesses Following Infection-Control Guidelines and Behavioral Compliance of Employees*

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More in-depth analyses of Blacksburg, VA, Staunton, VA, and Severna Park, MD were conducted, as a majority of the data were collected across these three cities. Specifically, the population sizes and infection rates for the counties where each city is located were compared with respective observations of the infection-control guidelines implemented.

As depicted in Table 2, Anne Arundel, the county where Severna Park is located, has a population almost four times larger than the counties of Montgomery and Staunton combined, yet it has the lowest COVID-19 infection rate of the three counties. Staunton has the smallest population but the greatest relative percentage of infection.

It is notable that the percentages of businesses that limited their maximum capacity and denied entry for symptomatic individuals in Severna Park were more than double those percentages in Blacksburg and Staunton. Furthermore, for all guidelines except glove-wearing, Severna Park had the greatest rate of compliance.

**Table 2**

*COVID-19 Infection Rates by County*

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**Figures 1-4**

*Percentages of Businesses with Infection-Control Provisions by City*

*Percentages of Businesses with Posted Signs by City*

*Percentages of Businesses with Extra Infection-Control Measures by City*

*Employee Compliance Percentages by City*

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# Conclusion

Public health officials could use these data to provide an example—Severna Park—that other communities (e.g., Blacksburg and Staunton) should follow to better control the spread of COVID-19. Community officials could also use these data to compare the compliance rates with various guidelines across various locations for potential adjustment of public-health policies and/or the implementation of particular monitoring procedures.

The researchers are currently collaborating with four other universities across the country to gather more data with observational checklists similar to the one used in the present study, which will thereby enable more robust analyses and accurate comparisons of additional cities. Future analyses of such data will include: a) comparisons with CDC infection rate data in order to examine which guidelines correlate best with slower transmission rates of the virus, b) comparisons with population densities in order to investigate differences between urban and rural areas, and c) investigations of the impact of specific infection-control interventions in individual establishments over time.

This research and the ongoing follow-up studies have the potential to help health officials determine which preventive measures are most effective in slowing the spread of COVID-19, and thus need to be encouraged and perhaps enforced.

# References

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