

OREGON'S RESPONSE TO COVID-19: APPROACHES AND
OUTCOMES TO DIAGNOSTIC TESTING

by

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When the SARS-CoV-2 virus first emerged in December 2019, there were no vaccines or treatments, making diagnostic testing the foremost public health tool for combating viral transmission. The United States' decentralized response meant state and sub-state level entities took divergent approaches to collecting and reporting testing data; acquiring and distributing testing supplies; and determining who should receive available tests. This thesis assesses how appropriately the State of Oregon and its public health department, the Oregon Health Authority, approached COVID-19 testing. Since key roles of public health include providing services for the underserved, promoting health equity, and generating data for political decision-making and public consumption, assessing Oregon's response involves investigating whether the state responded ethically—addressing disparities in COVID-19 testing—and suitably generated and communicated testing-related data.

Drawing on ethnographic literature concerning data creation, existing ethical frameworks, and literature discussing ethical resource allocation during global disease outbreaks, I argue that testing data was misconstrued by the Oregon public and misused

by state public health and political officials because the context and process by which data was generated was not fully communicated or appreciated. I also argue that the distribution of testing supplies and diagnostic tests was unethical because distribution to health care providers, counties, and communities was not based on proportionate need and because existing barriers to accessing diagnostic tests were not reduced in a way that facilitated proportionate distribution. These findings suggest long-term investments in public health systems are essential for ensuring an appropriate response to pandemics and everyday health promotion.

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Introduction

In December 2019, reports emerged that a novel communicable disease, later named COVID-19, was spreading in China. By the end of January 2020, the disease's causative agent, the SARS-CoV-2 virus, had reached the United States and by early March the World Health Organization had declared COVID-19 a pandemic. Since COVID-19 was a novel disease, there were no diagnostic tests, treatments, or vaccines to prevent people from becoming infected or help the ailing recover. While it would take four to nine months for effective treatments and vaccines to be developed as part of a global scientific effort, diagnostic testing for COVID-19 came online in just a matter of weeks, becoming a critical public health tool for combating viral transmission.

Diagnostic tests are used to track the prevalence and spread of a particular disease so that steps can be taken to mitigate transmission. On an individual level, testing enables individuals to know their status and adjust their behaviors accordingly. On a community level, testing enables public health officials to conduct contact tracing, a process in which contacts of a COVID-19 case are contacted so they can isolate themselves and prevent further transmission. On a population level, testing produces massive amounts of statistics—such as positive and negative test results, total tests, and percent positivity (the percent of tests with a positive result)—which allow health authorities to determine how the disease spreads and how it is distributed geographically or among different demographic groups. This data can be used to make decisions on how to allocate resources and the appropriate types of mitigation strategies to enact. Public health and other government authorities also use the compiled testing

data to document population-level prevalence rates and communicate with the public regarding the state or status of a particular disease or disease outbreak.

Broadly, the role of modern public health systems is to measure, explain and improve the public's overall health using an approach that focuses on collective needs and solutions that can be implemented for entire communities. This is in direct contrast to the medical field, which aims to cure illness and improve health using interventions that focus on the needs of individual patients.¹ Public health activities and approaches are also strongly based in social justice and health equity—providing health promotion and benefits to the entire population, particularly communities who bear larger health burdens. For instance, county-level health departments often manage primary care services including health promotion, prevention and disease treatment for those with barriers to accessing care through the medical system.²

While measuring and promoting health can take a variety of forms, one explicit role of public health is to prevent epidemics and the spread of communicable diseases. In the US, the majority of this responsibility is passed on to state and local public health departments. While the Centers for Disease Control and Prevention (CDC)—the federal public health agency—sets goals, standards, policies and provides resources, state and county-level public health departments primarily monitor diseases within their administrative jurisdictions and intervene to prevent them. These processes include collecting and analyzing data to better understand disease trends, reporting data publicly, screening citizens for certain diseases when they may pose a threat to the

¹ Stephen Holland, *Public Health Ethics*, 2nd ed. (Cambridge: Polity Press, 2015), 2.

² Bernard Turnock, *Public Health: What it is and How it Works*, 2nd ed. (Maryland: Aspen Publishers Inc., 2001), 15 and 92.

public’s health, using data to guide program implementation and determine how and where to distribute resources to help reduce the incidence and prevalence of diseases, and educating and informing the public on disease-related information.³

In Oregon, the state’s public health services—The Oregon Public Health Division (OPHD), and the Oregon State Public Health Lab (OSPHL)—are housed within the Oregon Health Authority (OHA). The Oregon Health Authority, founded in 1905, carries out the public health duties outlined above with assistance from the OSPHL. The OSPHL, founded in 1903, is a state and federally-funded lab that provides testing services to help track and prevent the spread of communicable diseases.⁴ OHA maintains police powers granted to them by the 10th amendment of the US constitution. This amendment gives states the power to pass laws to promote the health and well-being of citizens, including laws that may be coercive such as mandatory vaccinations.⁵ Such laws also allow public health to promote health equity. For example, ORS 433.040 and ORS 433.443 allow OHA’s Public Health Director to, during a state of emergency, implement and enforce rules on how vaccines, diagnostic tests, and disease treatments are used by healthcare providers.

In Oregon, a decentralized response at the federal level meant OHA was the lead public health agency responding to COVID-19 in the state. The CDC served an advisory role for state and county-level departments, but states hardly looked to or followed the CDC’s advice from March to September of 2020 due to the politicization

³ Holland, *Public Health Ethics*, 2.; Turnock, *Public Health*, 171, 177 and 270.

⁴ “Communicable Disease Testing at OSPHL,” Oregon.gov, accessed November 17, 2020, <https://www.oregon.gov/oha/PH/LaboratoryServices/CommunicableDiseaseTesting/Pages/index.aspx>.

⁵ Jenifer Vines and Jessica Hamilton, “Selected Topics in Public Health Law,” (lecture, Portland State University, Portland, OR, March 5, 2020).

of public health messaging occurring under the Trump administration. This included repeatedly playing down the gravity of the pandemic, overhyping and misstating the effectiveness of potential treatments, and sidelining infectious disease and public health experts. That same administration did not utilize executive powers to substantially increase the availability of COVID-19 testing resources for states. Under these circumstances, states were left to respond as they saw fit, making OHA the largest and most prominent decision-maker and provider of public health advice in Oregon's COVID-19 response.

The United States' decentralized response meant states and sub-state level entities took divergent approaches to collecting and reporting testing data; acquiring and distributing testing supplies; and determining who should receive the limited number of available tests. Given OHA's immense authority and involvement in Oregon's COVID-19 response, it is critical to look at how the agency responded as a case study of state-level response during the pandemic. It is also critical to focus on diagnostic testing because it was a crucial tool in combating COVID-19 during 2020 in the absence of vaccines or proven treatments for the disease. The goal of this thesis is to assess how appropriately OHA and the State of Oregon responded to COVID-19 testing. Since key roles of public health include providing services for the underserved, promoting health equity, and generating data for political decision-making and public consumption, assessing Oregon's response involves investigating whether the state responded ethically—addressing disparities in COVID-19 testing—and suitably generated and communicated testing-related data.

I ask the following questions in order to determine how appropriately Oregon implemented and assessed COVID-19 testing from late February 2020 to mid-September 2020:

1. How did the Oregon Health Authority (OHA) collect and report testing data? How did data influence the public and political decisions? What were the implications of data inaccuracies?
2. What was the logic, rhetoric, and data driving protocols determining how COVID-19 testing resources were distributed and who would get tested? Did protocols result in an ethical distribution of testing?

Based on a close analysis of Oregon's response to COVID-19 testing from March to September 2020, I argue that testing data was misconstrued by the Oregon public and misused by state public health and political officials because the context and process by which data was generated was not fully communicated or appreciated. I also argue that the distribution of testing supplies and diagnostic tests was unethical because distribution to health care providers, counties, and communities was not based on proportionate need and because existing barriers to accessing diagnostic tests were not reduced in a way that facilitated proportionate distribution.

Background

Overview of the Testing Process and Types of Diagnostic Tests

There are two types of COVID-19 tests, diagnostic tests - which are used to determine if someone is currently infected with the causative agent, the SARS-CoV-2 virus - and serology tests - which determine if someone was previously infected with COVID-19. In this thesis, I will be focusing on diagnostic tests, as they are the most critical for combating COVID-19 transmission. These tests can be divided into two categories— PCR tests that look for the genetic material of the SARS-CoV-2 virus that causes COVID-19 and antigen tests that look for viral proteins. “Point-of-care” (POC) and “rapid” tests are more general terms for tests that can be performed at the site of a medical provider (and not a laboratory) and tests that return results in a short period of time (for COVID-19 around 5 to 15 minutes), respectively. POC tests use both genetic material and protein-detection methodologies, while rapid tests, in the context of COVID-19, refer specifically to COVID-19 antigen tests. PCR tests are considered the gold standard for diagnostic tests and are the most accurate. However, they require more supplies, staffing, and high-tech equipment in laboratories, take longer to perform, and are more expensive than other test options. POC and antigen tests do not require a lab, and take less time and fewer resources to complete, but are less accurate than PCR tests.

The two major components of diagnostic testing are specimen collection and specimen analysis. In the first step, specimen collection, patients being tested for COVID-19 provide a fluid sample from either their nose, mouth, or back of the throat where the SARS-CoV-2 virus would be if someone were infected. The sample is

collected from those locations using a medical-grade swab similar to a Q-tip or by spitting saliva into a tube. In Oregon, sample collection is conducted by hospitals or outpatient clinics, public health authorities, emergency medical service providers, or commercial pharmacies like Walgreens and CVS. Test samples are also collected by other public workers such as qualified nurses or qualified individuals working in long-term care or correctional facilities, or by private lab companies offering testing services to workplaces.

Following specimen collection, the specimens must be analyzed for the presence of the SARS-CoV-2 virus, and this is where the testing process differs depending on the type of diagnostic test being performed. For PCR tests, specimens are stored and transported to a lab. In some cases, samples are collected and then analyzed by the same entity. Private healthcare providers that are a part of larger systems often have in-house labs to send tests to. Smaller clinics or pharmacies that are not affiliated with larger medical systems with labs use contracts with private local or national commercial labs to have specimens analyzed. Often, specimens collected by local public health authorities or at long-term care or correctional facilities are sent to OSPHL or to private labs contracted by those facilities. Once reaching those labs, trained technicians prepare the specimen and mix it with a specific set of chemicals, often pre-packaged in a “testing kit.” That mixture is then analyzed by a machine for SARS-CoV-2 genetic material.

Anyone with POC tests can analyze samples in a non-lab setting with special machines. The specimen is placed into the machine alongside a COVID-19-specific testing kit with the chemicals needed to detect the virus’ genetic material. These

machines can often analyze specimens for many types of viruses using the same process, so COVID-19-specific testing kits are required in order to look for SARS-CoV-2 in the sample. Antigen tests work similarly to POC tests, except the machines and chemicals are meant to detect virus proteins as opposed to genetic material.

Overview of Where and Why Testing Occurs

Diagnostic testing is carried out by two entities: healthcare (or medical) systems and public health authorities. Testing by public health authorities is often termed “community testing,” and is intended to be low-barrier and target at-risk groups and communities with limited access to testing from medical systems. Testing at these events is typically free and the criteria for testing less restrictive than in healthcare settings. Community testing events often advertise that a person does not need to have insurance or documentation of legal residency to get tested. Events are sometimes advertised in languages other than English, held in locations outside formal medical facilities (such as schools or community centers), and are intended for communities in need of testing. All of these distinct features attempt to recognize potential barriers to testing and create protocols and events that will encourage people to participate voluntarily. While community testing has lower barriers to entry than medical systems, these events occur less often and in fewer places than testing offered by on-demand medical systems.

While state public health departments aim to serve underserved communities through their testing efforts, the medical system—which in the US has dominated public health for decades and is mostly run by privately-owned hospitals, clinics or pharmacies—provides the majority of clinical testing services to Americans. According

to data published on OHA’s COVID-19 website, in late March the OSPHL was performing around 28% of the state’s COVID-19 diagnostic tests. The percent of tests performed at the OSPHL declined steadily throughout April and in May 2020 hovered around 4-6%, where it remained through the rest of the summer.⁶ So, while the role of public health departments is to diagnose and prevent the spread of disease, the private medical system, and not the public health system, conducts most of the diagnosing often in the process of treating individual patients. However, public health does track test results performed by the medical system for many reportable diseases to track transmission on a population level and provide appropriate interventions if needed.

There are many reasons for someone to get tested at a medical provider or for public health authorities to offer testing to individuals. Medical providers test patients for the purpose of diagnosing disease. Individuals who are ill or experiencing disease symptoms are tested in order to confirm the type of illness a patient has and provide the appropriate treatment. Medical providers might also suggest a test for someone who was in close contact to an ill patient, whether or not that contact has symptoms, in order to make sure they were not also infected.

Public health mainly provides routine or mass testing that targets at-risk groups, and provides tests without regard to symptom status. Routine testing would involve repeatedly testing a specific group in the population over some period of time—for instance, testing injection drug users for HIV once a year because they are at greater risk of contracting HIV through shared needle use. Mass testing involves testing all

⁶ Based on author calculations using data published publicly by OHA: Oregon Health Authority, “Oregon’s COVID-19 Update,” <https://public.tableau.com/profile/oregon.health.authority.covid.19#!/vizhome/OregonCOVID-19Update/CaseandTesting>.

individuals in a specific group of the population once. For example, if lettuce sold in a grocery store were contaminated with an infectious bacterium, public health might test everyone who bought and ate the lettuce. If they test negative, they were likely not infected and do not need to be tested again. If positive, public health authorities would have evidence of a possible disease outbreak, and would inform the public about the outbreak and potential risk of consuming the contaminated produce.

Why Equity in Oregon’s COVID-19 Testing Response Deserves Attention

While public health and medical services such as diagnostic testing are, in theory, available to everyone, there are clear historic inequities in accessing such services. There are larger issues at play with regard to how certain groups, particularly ethnic minorities and those with lower socioeconomic status (SES), interact with the health care system. It is important to note that race, ethnicity and SES are closely intertwined. Race and ethnicity are often variables that influence SES, as policies and systems that prevent individuals from obtaining higher SES more greatly impact racial and ethnic minorities.

It has been well documented that racial and ethnic minorities (such as Latinx, African American, Native American/Native Alaskan, Pacific Islanders) as well as individuals with a lower SES interact with the medical system and utilize health care services less often than white Americans and higher SES Americans, respectively.⁷ This puts racial and ethnic minorities and lower SES Americans at a disadvantage when

⁷ SES as measured by education, income, and insurance status, were less likely to have contacted a doctor compared to those with higher SES.

accessing diagnostic testing services.⁸ This disparity is the result of centuries of discrimination in the medical system, ranging from systemic barriers such as access to insurance and culturally appropriate care to direct discrimination experienced by racial and ethnic minorities when accessing services. It also means that communities of color are more likely to access COVID-19 testing at community testing sites rather than through interactions with the medical system.

In Oregon, there are stark inequalities in how health insurance coverage is distributed across the state. In 2018, Oregon's Latinx, Native American/Pacific Islander, and African American populations had 16.2%, 12.5% and 8.5% uninsured rates respectively, while the uninsurance rate among white Oregonians was 6.5%. In 2019, uninsurance rates among those living less than 400% above the federal poverty level (FPL) were double the uninsurance rate in Oregonians living above 400% of the FPL. Uninsurance rates were also 2.5 times higher among unemployed than employed Oregonians.⁹ Lower rates of insurance among ethnic and racial minorities and lower SES Oregonians means these groups are more likely to forgo medical care to avoid costly expenses. As a result, these groups are less likely to utilize health care services

⁸ For Oregon data on race/ethnicity-based differences in healthcare utilization see K. John McConnell et al., "Oregon's Emphasis On Equity Shows Signs Of Early Success For Black And American Indian Medicaid Enrollees," *Health Affairs* 37, no. 3 (2018), 392, 10.1377/hlthaff.2017.1282. For ethnic and racial disparities in access to care country-wide see Glenn Flores and Hua Lin, "Trends in Racial/Ethnic Disparities in Medical and Oral Health, Access to Care, and Use of Services in US Children: Has Anything Changed Over the Years?," *International Journal for Equity in Health* 12, no. 1 (2013), <https://doi.org/10.1186/1475-9276-12-10> and Jennifer I. Manuel, "Racial/Ethnic and Gender Disparities in Health Care Use and Access," *Health Services Research* 53, no. 3 (2018), <https://doi.org/10.1111/1475-6773.12705>. For SES-based differences see Debra Blackwell et al., "Socioeconomic Status and Utilization of Health Care Services in Canada and the United States: Findings From a Binational Health Survey," *Medical Care* 47, no. 11 (2009): 1142, doi:10.1097/MLR.0b013e3181adcbe9.

⁹ Oregon Health Authority, "2019 Oregon Health Insurance Survey Data," accessed November 17, 2020, <https://visual-data.dhsosha.state.or.us/t/OHA/views/OregonUninsuranceRates/Uninsurance?:isGuestRedirectFromVizportal=y&:embed=y>.

due to an inability to pay for those services, and have less experienced navigating health systems and accessing medical services.

Lack of access to culturally appropriate care and previous experiences with lived discrimination means fear of entering the medical system for communities of color. Among undocumented immigrants, there is the added fear of deportation, a fear which deters portions of the Latinx community in the US from accessing medical services. In 2016, the Oregon Health Authority noted that 11 counties had shortages of primary care professionals for migrant farmworker populations, which encompass many undocumented workers and Latinx workers. From 2016 to 2021, the percent of Latinx, African American and American Indian or Alaska Native healthcare professionals was, across the board, lower than their representation in the general population.¹⁰ This suggests that there are not enough professionals to offer culturally appropriate healthcare services to Oregonians of color.

This history and underutilization of medical care also places racial and ethnic minorities and Oregonians with a lower socioeconomic status (SES) at a disadvantage when they do want to access services, as individuals are less likely to have experience navigating complicated health systems. Yet, most COVID-19 diagnostic testing was occurring in the private medical system, meaning these groups were likely underserved,

¹⁰ Oregon Health Authority, “American Community Survey Data Release: Uninsurance Rates Remained Low in Oregon and Nationwide in 2018,” Oregon.gov, last modified September 2019, <https://www.oregon.gov/oha/HPA/ANALYTICS/InsuranceData/2018-ACS-Fact-Sheet-Oregon-National-Data.pdf>; Office of Forecasting, Research and Analysis, Oregon Health Authority, “Primary Care Health Professional Shortage Area (HPSA) Designations by Type, As of 01/01/16,” Oregon.gov, last modified February 10, 2016, <https://www.oregon.gov/oha/HPA/HP-PCO/Documents/2016-PC-HPSA-Map.pdf>; Oregon Health Authority, *Oregon’s Healthcare Workforce*, last modified February 2021, 13, <https://www.oregon.gov/oha/HPA/HP-HCW/Documents/2021-Health-Care-Workforce-Needs-Assessment.pdf>.

overlooked and placed at a disadvantage when seeking testing from very early stages of the pandemic because they could not simply contact a medical provider.

There were many resources of varying quality to which those without a simple way of accessing medical services could turn to find COVID-19 testing. Formal resources were mostly online and included provider websites, county health department websites, and the Oregon Health Authority's testing locator. Oregon also has a 211-phone number, which connects Oregonians to human services and health information and services in the state. Despite the existence of state and medical resources for accessing testing, these resources were incomplete for Oregonians without internet access, non-English speakers, undocumented, and Black, Indigenous and People of Color (BIPOC) with histories of negative interactions in the medical system.

For instance, for Oregonians who did not have internet access, 211 was the only non-online resource available, limiting their information source options compared to Oregonians with internet access. These individuals would have to rely on 211 or word-of-mouth to connect with an entity offering COVID-19 tests. Oregonians who did not speak English at a certain level of fluency would have difficulty utilizing online resources such as OHA's testing locator or county public health department websites, which were mostly in English and sometimes Spanish (and very infrequently in other languages). As one example, 70% of Latinx Oregonians in Lane County who utilized community testing services reported hearing about the event through a community-based organization (CBO), friend, family member, or co-worker, while 8% learned

about the event through the county public health department, exemplifying that minority communities were generally not relying on mainstream resources produced by OHA.¹¹

Access to information from county public health departments was also incomplete. Despite the fact that phase 1 reopening applications submitted in late April 2020 required counties to outline how they would advertise testing, only 10 out of Oregon's 36 counties provided specific information addressing this topic, while 5 instead discussed COVID-19 community education and outreach more generally.¹² Therefore, it is not surprising testing information on various county public health department websites differed. Some did not list any testing sites located in their county, others advertised only community testing events or medical providers offering testing, and a few provided information on both.¹³ Differences across counties in COVID-19 test advertising made it easier for residents of some counties who had easy access to the internet, and were English speakers, to find testing, and harder for others.

Additional fear-based barriers further discouraged some from even attempting to access a test. A positive COVID-19 diagnosis means self-isolating for up to two weeks. For essential and frontline workers who cannot work from home - such as factory, service and agricultural workers – this means two weeks without work and possibly without pay. This possibility may deter these workers from getting tested in the first

¹¹ Kristin Yarris and Dayna Hansberger, "Barriers to Coronavirus Testing and Health Communication among Latinx Communities During COVID-19: Exploratory Findings from Oregon," (working paper, Faculty of Global Studies, University of Oregon, Eugene, 2020), 7. Cited with permission.

¹² Refer to the document series: Oregon Phase 1 County Reopening Applications. Oregon Office of the Governor. April and May 2020. <https://govstatus.egov.com/reopening-oregon> for Benton, Crook, Gilliam, Harney, Hood River, Jefferson, Klamath, Lake, Lincoln, Malheur, Morrow, Multnomah, Tillamook, Wallowa, Wasco counties.

¹³ This observation is based on visiting county-level public health departments websites for Lane, Union, Malheur, Umatilla, Jefferson, Multnomah, Washington and Clatsop counties regularly throughout June, July and August of 2020.

place, even if they believe they have COVID-19. Since racial and ethnic minority groups make up a larger proportion of essential and frontline workers who cannot work from home,¹⁴ and frontline workers are generally more likely to be of lower SES, they are disproportionately burdened with this fear of testing.

It was obvious that in Oregon, the pandemic was having a larger effect on BIPOC communities, and likely that the effect was similar in those with a lower socioeconomic status. COVID-19 mitigation measures such as physical distancing, quarantine and isolation, are generally more difficult for those with lower SES and fewer resources, increasing risk of COVID-19 exposure. By May 2020, data showed that case rates were higher among BIPOC individuals. The case rate among white Oregonians was 4.6 cases per 10,000 people. Case rates among African Americans and American Indian/Alaskan Natives were two times higher.¹⁵ While there is no state-level data breaking down cases by socioeconomic status (SES) in Oregon, studies at the national level have found that lower SES is correlated with higher COVID-19 case rates.¹⁶

All of these factors—discrimination, uninsurance, frontline worker status, lower rates of health care service utilization, and a lack of culturally appropriate care—mean

¹⁴ Melissa S. Kearney and Luke Pardue, “Exposure on the Job: Who Are the Essential Workers Who Likely Cannot Work from Home?,” *The Brookings Institute*, last modified May 7, 2020, https://www.brookings.edu/research/exposure-on-the-job/?utm_campaign=Economic%20Studies&utm_source=hs_email&utm_medium=email&utm_content=87814493.

¹⁵ Oregon Health Authority, “COVID-19 Weekly Report,” Oregon.gov, May 5, 2020, <https://www.oregon.gov/oha/PH/DISEASESCONDITIONS/DISEASESAZ/Emerging%20Respiratory%20Infections/COVID-19-Weekly-Report-2020-08-05-FINAL.pdf>.

¹⁶ Sean A.P. Clouston, Ginny Natale, Bruce G. Link, “Socioeconomic Inequalities in the Spread of Coronavirus-19 in the United States: An Examination of the Emergence of Social Inequalities,” *Social Science & Medicine* 268, (2021): 113554, doi: 10.1016/j.socscimed.2020.113554; R.B. Hawkins, E.J. Charles, J.H. Mehaffey, “Socio-economic Status and COVID-19-related Cases and Fatalities,” *Public Health* 189, (2020): 129-134. doi: 10.1016/j.puhe.2020.09.016.

racial and ethnic minorities and those with lower SES face greater barriers to accessing medical services, including COVID-19 testing, and might be less likely to seek out those services, despite being at risk for contracting the disease. These barriers, coupled with higher COVID-19 case rates, demonstrate why it is crucial for the government and public health to devote additional resources and remove systemic barriers for these groups.

Literature Review

This research draws from and contributes to existing anthropology literature focusing on “ethnographies of data;” literature discussing different ethical frameworks for evaluating public health interventions; and medical/public health literature on how scarce resources should be allocated during global disease outbreaks.

Ethnographies of Data

There are a vast amount of ethnographies of data that investigate how data is collected and compiled, and how it influences political decision-making. This literature focuses not on how accurate data is, but the contexts under which it is generated, shaped and altered as it develops into its final publicly-presented form, and investigates the meanings and values that become attached to those often quantitative pieces of data. The overwhelming conclusions from these ethnographic studies are that the process of generating data creates truths and knowledge laden with social, cultural, and historical meanings, and does not accurately or completely reflect the worlds it aims to measure.

In *The Seductions of Quantification*, Sally Engle Merry explores how violence against women and human trafficking are measured globally and she demonstrates how there is no single, clear, universally-agreed upon way of measuring either one. Data collectors make deliberate decisions about how to define and measure the terms. This results in multiple approaches to measuring the same issue, with each approach measuring something different and producing different results which shape how such topics are conceptualized and addressed. She also argues that aggregated statistics often conceal local contexts, yet it is these composite statistics that are often most influential in informing policy. Merry argues that most human trafficking metrics define the issue

as an organized crime, implying that it should be combated via the justice system. This ignores social, economic, and political contexts that lead to trafficking in the first place.¹⁷

Cooking Data: Culture and Politics in An African Research World by Crystal Biruk, presents an ethnographic account of how quantitative data on HIV and AIDS in Malawi is collected, compiled, and produced. Her findings reveal that even before the data collection begins, behind the scenes choices delimit and determine the quality and nature of the data collected in surveys. This is because survey questions are written to extract particular responses, discounting other possible responses. When surveys are actually distributed, poorly constructed questions result in miscommunications between researchers and participants. If a respondent does not interpret a question the way researchers intended, or if all survey respondents interpret the question differently, it degrades data quality.

Biruk also demonstrates how claims made from poor data on HIV and AIDS in Malawi are validated by those seen as a local authorities or experts, despite the fact that the studies producing the data did not utilize the appropriate methodology or contain strong enough data to support those claims, because the data is presented in a way that satisfies or confirms cultural or pervasive rhetoric. Therefore unsupported data and claims become validated more easily and are used to support national-level government policies on HIV prevention interventions. In this way, Biruk argues, poor data not only misrepresents the real world, but creates new ones.¹⁸

¹⁷ Sally Engle Merry, *The Seductions of Quantification: Measuring Human Rights, Gender Violence, and Sex Trafficking* (Chicago: The University of Chicago Press, 2016), chap. 3-6.

¹⁸ Crystal Biruk, *Cooking Data: Culture & Politics in an African Research World* (Durham: Duke University Press, 2018), chap. 1 and 5.

In *Poor Numbers: How We Are Misled by African Development Statistics and What to Do about It*, Morten Jerven provides an ethnography of development statistics on the African continent. Jerven reveals that the production of economic data in and about African countries is the result of choices subject to data availability, resources and other constraints. He describes how these constraints result in data that is based on educated guesses and debatable assumptions, which cause errors in data that over- or underestimate metrics. Jerven points out that data users, such as governments or researchers, are not able to assess the reliability of statistics and whether they are in line with perceived realities. If the data seems reasonable, no one questions it. Jerven argues that this is problematic because inaccurate data is used by governments to allocate resources. Like Biruk, Jerven concludes that collecting data is a form of knowledge creation.¹⁹ As a result, he argues that metrics should “not be treated as an objective number but as a number that is a product of a process in which a range of arbitrary and controversial assumptions are made.”²⁰

Although Merry, Biruk and Jervens’ work is not COVID19-specific, the issues they raise around how data is collected, created and used are relevant to any situation in which data is generated and/or utilized by governments. This thesis adds to this existing literature by describing similar examples of how data—specifically public health data on COVID-19 testing produced by the Oregon Health Authority—fell victim to these same issues and become laden with misunderstandings and misuses.

¹⁹ Morten Jerven, *Poor Numbers: How We Are Misled by African Development Statistics and What to Do about It*, Cornell Studies in Political Economy (Ithaca: Cornell University Press, 2013), chap. 1-3

²⁰ *Ibid.*, 121.

Ethical Frameworks in Relation to Public Health

While there is little literature on the ethical distribution of diagnostic testing resources specifically, there are many broad ethical frameworks that can be used to determine whether or not Oregon's response to COVID-19 diagnostic testing from March 2020 to September 2020 was ethical. Since public health is rooted in social justice, an ethical framework that conceptually aligns with the term best applies. Within the context of public health, social justice is the idea that societies are responsible for ensuring that health and health resources are fairly distributed among a population by focusing on the needs of the disadvantaged, a task that often requires providing additional resources to those communities.²¹

Utilitarianism holds that the right action is one which brings about the best consequences. In the case of public health, that means maximizing well-being, welfare, or benefit. It is important to note that maximizing benefit does not inherently equate to doing good for the greatest number of people, although often times this is the case. According to this theory, everyone's well-being counts equally.²² While this may seem beneficial from a public health perspective, when well-being is disproportionately distributed (e.g. among socioeconomic classes, racial and ethics groups, genders) favoring everyone equally allows inequity to persist. For instance, if there are a limited number of treatments for a disease, the most benefit would come from using all of them. However, because utilitarianism treats everyone equally, the treatments would be doled out to anyone with the disease without regard or preference for individuals in

²¹ Turnock, *Public Health*, 15; Lawrence O. Gostin and Madison Powers, "What Does Social Justice Require For The Public's Health? Public Health Ethics And Policy Imperatives," *Health Affairs* 25, no. 4 (2006): 1054, doi:10.1377/hlthaff.25.4.1053.

²² Holland, *Public Health Ethics*, 18-19.

communities that face a higher burden of that disease. While there would be equal benefit to treating the same number of people in an overall less burdened population and a more burdened population, this conflicts with a social-justice approach because while it brings benefit, it does not equitably distribute that benefit or favor those with larger burdens.

Libertarianism is a philosophy that seeks to protect personal liberties and the ability of individuals to exercise their fundamental rights. A core tenet of this philosophy is that there is minimal interference in one's choices and behaviors, particularly by authorities.²³ This framework quickly falls apart when applied to public health. One major goal of public health is to improve the health of populations, and often times public health policies must infringe on the right to personal choice in order to favor the well-being of the population as a whole. As Holland points out "Very often, ethical concerns about public health arise because initiatives and policies are proposed and implemented that can be expected to maintain or improve the health of a target population, but at the expense of some of its individual members."²⁴

For instance, in order to enroll in public school, children must have completed a mandated set of vaccinations (although there are laws that allow for medical and religious exemptions). Requiring these vaccinations eliminates one's freedom to choose whether or not to be vaccinated in order to prevent deadly childhood illnesses from spreading in communities. Libertarianism would oppose this public health mandate because under this framework the loss of autonomy is the core decider of what actions

²³ James Sterba, "Libertarianism," In *Encyclopedia of Philosophy*, 2nd ed., 10 vols., (Detroit: MacMillan Reference USA, 2006); Holland, *Public Health Ethics*, 38.

²⁴ Holland, *Public Health Ethics*, 33.

are right or wrong. Utilitarianism would be the more appropriate framework to apply to this public health initiative because laws supporting mandatory vaccination provides the most benefit to the greatest number of people. Although some may be harmed by loss of freedom, overall the benefit to the whole community is greatest.

Egalitarianism is a philosophy that denies differences among groups of people based on irrelevant differences (such as gender, class, race, ethnicity etc.).²⁵ In society, capital and resources are not equally distributed, and as a result, neither are health outcomes. Under the egalitarian framework, this is viewed as unjust, and in order to correct this unjustness, actions must be taken to mitigate or right inequities.²⁶ From a public health standpoint, this means allocating more resources towards communities with worse health outcomes or at greater risk for poor health outcomes and removing systemic barriers.²⁷ While utilitarianism might agree with allocating resources towards those same communities under the idea that doing so would create the most benefit because health would improve more than the same resources in a healthier community, the philosophy does not require it. If it were found that at least the same benefit could come from using resources elsewhere, such a use would be justified. Egalitarianism's focus, on the other hand, explicitly aims to reduce inequities by prioritizing worst off. Since public health is rooted in social justice and supporting the least advantaged to

²⁵ Stanley I. Benn, "Equality Moral and Social," In *Encyclopedia of Philosophy*, 2nd ed., 10 vols., (Detroit: MacMillan Reference USA, 2006).

²⁶ Benn, "Equality Moral and Social"; Hugo Adam Bedau, "Egalitarianism and the Idea of Equality," In *Equality*, ed. J. Roland Pennock and John W. Chapman (New York: Atherton Press, 1967), 13-17.

²⁷ It is important to note that this is a single interpretation of egalitarianism. Some forms of egalitarianism hold that all people are equal, and therefore should have equal treatment or rights. However, the term equality often means providing the same exact treatment to everyone, no matter their starting point. If this occurs, everyone who started out more advantaged will remain advantaged, and visa versa. The interpretations of egalitarianism I use in this thesis follow the idea of equity, which refers to skewing treatment so that everyone, no matter their starting points, ends up on a level playing field.

ensure that health and health resources are fairly distributed, this makes it the ideal way to frame and understand how ethical public health interventions are.

Ethical Distribution of Resources During a Pandemic

Medical and public health literature following the SARS epidemic in 2003 and the H1N1 influenza pandemic in 2009 analyzed these public health emergencies using ethical frameworks. Both outbreaks put a strain on medical resources, and medical and public health professionals realized pandemic preparedness needed to better address the ethics surrounding scarce resource allocation, since shortages would inevitably arise in a pandemic. Most of this literature focuses on medical supplies other than diagnostic testing, such as hospital beds, PPE, vaccines and treatments. I could not find any literature published before the COVID-19 pandemic that explicitly mentions a framework for distributing diagnostic testing supplies, and only a few pieces of literature on COVID-19 bring up how COVID-19 testing can be ethically distributed. That being said, there are a few salient principles for distributing scarce resources during a pandemic.

While the value of equity holds that everyone should have equal access to resources²⁸ when it is not possible to provide everyone with resources, prioritization must occur. One common consensus among medical literature is that healthcare workers and those who provide essential services for communities should be prioritized, because without their labor and expertise, everyone would be worse off. Even fewer people would be able to receive medical services and there would be shortages of critical

²⁸ Prateek Bhatia, "The H1N1 Influenza Pandemic: Need for Solutions to Ethical Problems," *Indian Journal of Medical Ethics* 10, no. 2 (2013): 261, <https://doi.org/10.20529/IJME.2013.079>.

resources such as food and infrastructures would fall apart.²⁹ This aligns with arguments that resources should be allocated to minimize social disruption (a more utilitarianism approach), although the extent to which minimizing social disruption should be prioritized over other methods is contested, with some authors not making a distinction and others placing it as a secondary priority.³⁰

Public health literature disagrees with a focus on healthcare and essential workers, calling for an egalitarian approach that favors marginalized and disadvantaged communities, namely minorities, the disabled, and low-income populations. Baylis, Kenny and Sherwin argue that present public health ethical frameworks draw too much from medical ethics frameworks that focus equal distribution of resources among individuals. The authors argue that existing medical literature fails to capture ethical strategies that are concerned with public well-being in the same way public health as a field does. They argue that ethical frameworks guiding public health responses during pandemics must be rooted in population-based approaches that focus on collective needs and solutions while addressing and giving priority to those who are systematically disadvantaged and marginalized when responding to pandemics.³¹

²⁹ Alison K. Thompson et al., “Pandemic Influenza Preparedness: An Ethical Framework to Guide Decision-making,” *BMC Medical Ethics* 7, no. 1 (2006): table 2, doi:10.1186/1472-6939-7-12; Ezekiel J. Emanuel and Alan Wertheimer, “Who Should Get Influenza Vaccine When Not All Can?,” *Science*, May 5, 2006, 855, doi:10.1126/science.1125347; Bhatia, “The H1N1 Influenza Pandemic,” 261; Ezekiel J. Emanuel et al., “Fair Allocation of Scarce Medical Resources in the Time of Covid-19,” *New England Journal of Medicine* 382, no. 21 (2020): 2053, <https://doi.org/10.1056/NEJMs2005114>; Lawrence O. Gostin, Eric A. Friedman, and Sarah A. Wetter, *Responding to Covid-19: How to Navigate a Public Health Emergency Legally and Ethically* (The Hastings Center, March 26, 2020), 9, <https://doi.org/10.1002/hast.1090>.

³⁰ Adrienne Torda, “Ethical Issues in Pandemic Planning,” *Medical Journal of Australia* 185, no. S10 (2006): S75, <https://doi.org/10.5694/j.1326-5377.2006.tb00713.x>; Emanuel and Wertheimer, “Who Should Get Influenza Vaccine When Not All Can?,” 855; Ezekiel J. Emanuel et al., “An Ethical Framework for Global Vaccine Allocation,” *Science*, September 11, 2020, 1310, doi:10.1126/science.abe2803.

³¹ Françoise Baylis, Nuala P. Kenny, and Susan Sherwin, “A Relational Account of Public Health Ethics,” *Public Health Ethics* 1, no. 3 (2008): 198-203, doi:10.1093/phe/phn025.

DeBruin, Liaschenko, and Marshall second this framework for pandemic planning and argue that focusing on the individual leads to utilitarian approaches that apply the same levels of access to everyone, rather than an egalitarian approach that skews resources towards the disadvantaged and less privileged. The authors also argue that most approaches discussed in medical literature fail to address barriers to accessing resources. Therefore, in a pandemic situation, after identifying the most at-risk groups, officials could provide resources to those groups proportionate to the increased risk they face and actively work to reduce barriers to utilizing those resources.

It is important to note that a social-justice-based approach does not have to prioritize the disadvantaged over the advantaged to make up for historic injustices or allocate resources exclusively or preferentially to socially vulnerable communities. Vawter et al. argues that considering other risks (such as morbidity, mortality and potential exposure) will by nature afford priority to the socially vulnerable. For instance, in many cases essential workers who are more likely to be exposed are a part of marginalized populations either as a racial or ethnic minority or due to their lower economic status. These groups are also more likely to have underlying medical conditions that exacerbate the severity of many diseases, which would position them to have priority under a morbidity, mortality, exposure prioritization model as well.³² Therefore, the social vulnerability framework does not go against prioritizing healthcare and essential workers and are not mutually exclusive in practice.

³² Debra DeBruin, Joan Liaschenko, and Mary Faith Marshall, "Social Justice in Pandemic Preparedness," *American Journal of Public Health* 102, no. 4 (2012): 587-9, doi:10.2105/AJPH.2011.300483; Dorothy E. Vawter et al., "Attending to Social Vulnerability when Rationing Pandemic Resources," *The Journal of Clinical Ethics* 22, no. 1 (2011): 46-8, PMID:21595354.

Despite disagreements over what constitutes ethical prioritization, one consensus is that some sort of framework is needed in order to act ethically. Choices about where scarce resources go should not be left for clinicians or other health care workers to make on a case-by-case basis. Such a situation puts individuals on the spot and forces them to improvise, leading to inconsistent practices and a potentially unethical allocation.³³ Furthermore, without any sort of framework, allocation would resort to a first-come first-serve basis, which would only serve to exacerbate inequalities in accessing resources.³⁴ The literature also agrees that it is appropriate to change ethical frameworks to respond to extant circumstances. Allowing for this type of flexibility provides opportunities to best achieve ethical resource distribution when new cases, challenges or information comes to light.³⁵ Lastly, information regarding allocation protocols must be rapidly and clearly communicated to both the health industry and the public in order to ensure that ethical protocols are effectively understood and implemented.³⁶

This medical literature, alongside an egalitarian framework, provides a clear picture for what an ethical public health response to COVID-19 testing should look like. An ethical response should distribute resources proportionate to need, significantly reduce or remove existing barriers, and avoid case-by-case decisions and first-come-first-serve distribution. I will contribute to this existing literature by exploring how the discussed ethical approaches apply in a public health setting and investigating whether

³³ Emanuel et al., “Fair Allocation of Scarce Medical Resources,” 2054; Thompson et al., “Pandemic Influenza Preparedness,” under “Lessons from Emergency Ethics.”

³⁴ Vawter et al., “Attending to Social Vulnerability,” 48.

³⁵ Norman Daniels, “Accountability for Reasonableness,” *British Medical Journal* 321, no. 7272 (2000): 1301, <https://doi.org/10.1126/science.abe2803>; Thompson et al., “Pandemic Influenza Preparedness,” under “Decision Review Process”; Bhatia, “The H1N1 Influenza Pandemic,” 260 and 262.

³⁶ Torda, “Ethical Issues in Pandemic Planning,” S75; Bhatia, “The H1N1 Influenza Pandemic,” 263.

these approaches were integrated into Oregon's response to COVID-19 testing from March to September 2020.

Methods

My research draws on both qualitative and quantitative data documenting the first six months of the pandemic in Oregon: between March 15, 2020 and September 15, 2020. I analyze documents published publicly online or obtained through public records requests to the Oregon Health Authority. Daily Google alerts using the terms “Coronavirus Oregon” and “Oregon testing” were also used to keep track of new COVID-19 testing developments in Oregon in order to guide document collection and public record requests. Since COVID-19 was a newly emerging pandemic disease, it was unclear what information was being collected and reported. This information was also constantly changing. Therefore, a wide net was cast to collect as many documents and as much data as possible. As information was gathered and initially reviewed, testing emerged as a salient issue. This early work informed the research questions as well as what data would continue to be collected and analyzed.

The final dataset includes more than one hundred unique types of documents and more than a thousand individual documents. The data includes:

- data and surveys collected and compiled by OHA on COVID-19 testing and testing capacity in Oregon filled out by medical providers,
- documents and communications from OHA, the Oregon Office of Emergency Management, and the Oregon Department of Administrative Services outlining the acquisition, distribution, and use of testing supplies
- documents published by OHA, the Oregon Office of the Governor, Oregon’s Department of Human Services and Department of Corrections outlining plans and goals for testing in the state
- livestreamed video press conferences with Governor Kate Brown and OHA representatives

- documents from Oregon county-level public health departments and Oregon health care providers outlining testing efforts at a local level
- newspaper articles

After data collection, all documents describing COVID-19 testing were imported into the software program Scrivener, while quantitative data was compiled in Excel. Documents and data were organized into three distinct categories based on whether they discussed testing data, testing supply distribution, or testing use and accessibility. A summary of the information extracted from each source type can be found in table 1. Documents were analyzed for this information and notes were made regarding patterns and trends. Most trends and observations were discussed in weekly phone meetings with primary advisor Dr. Melissa Graboyes, who provided suggestions for further source materials and approaches to analyzing the data.

Source Category	Information Extracted and Analyzed
Testing data	<ul style="list-style-type: none"> • what COVID-19 testing data OHA reported • how OHA reported the data • the frequency of data reporting • methods of data collection • assumptions built into data • what the data claimed to show vs what the data actually revealed • where there were gaps in the data
Distribution of testing supplies	<ul style="list-style-type: none"> • how testing supplies were acquired and distributed • what metrics were used to determine such distributions
Testing use and accessibility	<ul style="list-style-type: none"> • where testing was and was not occurring • who was being tested, who wasn't being tested • the potential and actual barriers to accessing tests • how testing differed in different locations at different times • how government entities described and justified testing protocols

Table 1. Summary of Data Types and the Extraction and Analysis Process

There are a few drawbacks to this data collection and analysis approach. There was no easy systematic way to gather information on all of the COVID-19 documents

produced by the Oregon state government on COVID-19 testing. Because information was released as it came out, there was no way to know what sources would become available or find all of them. In order to gather as much relevant data as possible, I focused on documents released by the OHA and the Oregon Governor's Office and used news articles to help direct me towards in-depth case studies and examples that were widely discussed publicly. However, it is possible that I failed to capture events or examples that refute my arguments. Additionally, my limited focus on the first six months of testing does not necessarily reflect how Oregon handled other aspects of the pandemic or their response beyond six months.

Each chapter in this thesis will begin by presenting relevant background information and an overview of my findings and arguments, then present the in-depth evidence, and finish with a discussion of the presented evidence through an ethical lens. The in-depth evidence includes both formal and modified case studies varying in length and detail that highlight my arguments. Case studies were chosen as they were a simple and clear way of exemplifying my findings and a way to present the strongest and most comprehensive evidence emblematic of the patterns I uncovered.

Chapter 2: COVID-19 Testing Data

A critical element in public health’s ability to prevent illness and protect the health of the public is data. Data can help authorities determine how diseases spread and the populations most affected to inform what interventions are needed and where. However, the data’s ability to effectively inform interventions depends upon the quality of the data. Finalized data is often built on limitations—such as financial resources, political needs and data availability—as well as preconceived definitions and assumptions.³⁷ Therefore, it is critical to understand how the data was generated in order to understand what conclusions can be drawn from the data and how those conclusions can be used to improve current and future public health interventions.

During the COVID-19 pandemic, the Oregon Health Authority collected data on COVID-19 via surveys and the mandatory reporting of disease cases. Public health laws in Oregon require medical providers to report cases of certain communicable diseases to OHA, and in early March 2020 new legislation required the reporting of COVID-19 cases, positive and negative test results, hospitalizations, and deaths.³⁸ OHA also used surveys to collect information on COVID-19-related metrics such as testing capacity. Since health authorities relied heavily on data to validate public health responses and interventions and educate the public, it is crucial that the data is critically assessed, as it is not immune to the discussed phenomena.

This chapter presents two case studies that illustrate how changes in data collection and reporting methods had significant impacts on public perception and

³⁷ Jerven, *Poor Numbers*, chap. 1-3; Biruk, *Cooking Data*, chap. 1 and 5; Merry, *The Seductions of Quantification*, chap. 3-6.

³⁸ Or. Admin. R. 333-018-0015; Or. Admin. R. 333-018-0900.

political decision-making. The chapter argues that COVID-19 testing data was constructed using pre-made, arbitrary assumptions made by data collectors. These preconceived assumptions created a certain narrative that dictated public perceptions regarding the extent of testing in Oregon and was used as a basis for making important public health decisions/policies.

Case Study 1: The Reporting of COVID-19 Test Metrics

This case study demonstrates how different representations of testing data affected public perception and public health responses to COVID-19 testing in Oregon. From March to December 3, 2020, the Oregon Health Authority used a reporting method that severely undercounted how many positive, negative and total tests were performed daily in Oregon. Yet, OHA did not clearly communicate what reporting method was being used or that it could lead to an undercount, generating a false perception that Oregon was performing much less testing compared to other states when that was not necessarily the case. On December 3, 2020 OHA switched to a different reporting method. This change appreciably altered testing statistics including the number of tests performed and the percent positivity rate. This observation is significant because these metrics informed COVID-19-related government policies such as whether schools could open for in-person learning. Therefore, changes in how data was reported altered what activities were allowed in Oregon.

As mandated by emergency rule OAR 333-018-0900—passed on March 15, 2020 and permanently adopted in September 2020—all positive COVID-19 test results in Oregon must be reported to OHA within in 24 hours, while negative results must be reported within one business day. OHA used this data to generate public dashboards

where anyone could view statistics on how many positive, negative, and total tests were reported each day in Oregon.

When OHA began publicly reporting testing data, it only depicted results from new people being tested (a person-based reporting method) and not the total number of tests performed (a test-based reporting method). When new test results come in, OHA sifted through them and excluded test results from Oregonians who had already been tested. The state would log a maximum of one negative test per person and one positive test per person over a 90-day period.³⁹ Therefore, OHA’s data systematically undercounted the number of tests performed by the state each day and each week by leaving out test results from individuals who tested positive multiple times within 90 days after their first positive result and leaving out test results for individuals who tested negative more than once.⁴⁰

However, OHA did not readily provide this information to the public. Information indicating that OHA’s data represented new people tested and not total tests was not communicated in any location where COVID-19 testing data was actually presented. The only public mention of this distinction was an OHA Facebook live held on July 15, 2020, a video viewed by far fewer Oregonians (a few thousand) compared to OHA’s websites with the testing data itself.⁴¹ This made it impossible for anyone

³⁹ OR Health Authority, (@OHA Oregon), “Under our current method of counting, we report: -- Anyone who tests positive for COVID-19. They are then excluded from being counted again for 90 days because reinfection is unlikely during that period. -- Any person who tests negative, but only the first time,” Twitter, November 20, 2020, <https://twitter.com/OHAOregon/status/1329874951025750017>.

⁴⁰ For instance, if an individual tested negative on April 1, 2020 and then tested negative five more times between then and November 1, 2020, OHA would report only the first negative test from April 1, 2020. A test-based reporting method would have reported all six tests performed, five more than the person-based method.

⁴¹ Oregon Public Health Division, “Facebook Live COVID-19 Data Q&A, July 15, 2020,” YouTube video, 13:15, July 15, 2020, https://www.youtube.com/watch?v=uh_SZAFdIXA.

viewing data to know it only reflected the number of Oregonians tested and was therefore an undercount of the total number of tests performed. As a result, countless Oregonians—as well as the rest of the country who viewed this data on compilation sites like the COVID-19 Tracking Project—were misinformed as to how many COVID-19 tests were performed in Oregon daily. It was not until late November, seven months after OHA began reporting testing data, that they offered more publicized clarity on how it reported COVID-19 tests,⁴² far too late for correcting public understanding.

On December 3, 2020, OHA shifted to a test-based reporting method and began reporting the total number of tests performed on Oregonians without regard to whether they had been tested before. This change led to a drastic increase in testing numbers as well as a decrease in the percent positivity rate. The differences in total test numbers and percent positivity between the old and new reporting method became more pronounced over the summer months and in September as testing expanded across the state and many Oregonians were tested multiple times.

Neither the old nor new method of representing testing levels in Oregon painted a complete or perfect picture of Oregon's testing situation. Reporting new Oregonians tested provides a picture of how many unique Oregonians were able to access testing that might not have been before. However, anyone looking at the data would perceive that Oregon was conducting fewer tests than it actually was because the same person tested three times from March 1, 2020 to December 3, 2020 would only show up once.

⁴² On November 20, 2020 OHA reported through its Twitter account how it had been reporting testing data, and indicated that this method would change in early December. These posts were picked up by major Oregon news outlets and the information was widely reported throughout Oregon. This had not been the case when similar statements on test reporting methods were made in the July 15, 2020 press conference on COVID-19 testing.

Reporting the total number of tests performed faced the opposite issue. While this representation of testing data more accurately represented the number of tests performed in Oregon, it did not reflect whether testing was occurring for a larger number of unique Oregonians. As testing expanded across the state, providers, counties, and universities began offering repeated testing opportunities for asymptomatic Oregonians, and many were tested more than once. Additionally, repeated testing was built into the state's long-term care facility (LTCF) testing plan, which required facilities to test every employee at least once a month starting in October, which amounted to at least 29,000 Oregonians being tested repeatedly.⁴³ This meant any increase in testing numbers may have reflected the same Oregonians being tested repeatedly, not an increase in testing availability to Oregonians who did not previously have access to testing.

Changes in how data was reported, alongside poor communication explaining the data, led to mis-perceptions about how well Oregon was responding to COVID-19. For instance, the way OHA reported total test numbers until December 3, 2020 undercounted the actual number of tests performed in Oregon, giving the public the perception that their state's testing was not as robust as others because OHA did not clearly communicate that they were only reporting newly-tested Oregonians and not total tests. This point was emphasized by numerous articles and publications made between July and November 2020, which described Oregon's poor performance compared to other states, failure to expand testing, and included Oregon lawmaker

⁴³ Oregon Health Authority, "Plan for Testing Long Term Care Staff," last modified October 22, 2020, <https://sharesystems.dhsoha.state.or.us/DHSForms/Served/1e3448.pdf>.

statements calling for improved testing.⁴⁴ These publications suggest that OHA's decisions about how to represent testing data affected not only the perceptions of the lay public, but individuals in positions of power in Oregon's COVID-19 response. When OHA shifted to reporting *all* tests performed and not just unique Oregonians tested, not only did Oregon rise to the middle of the testing pack compared to other states, but the test-based data indicated that testing levels had in fact expanded between July and November 2020 (fig. 1). These observations make it clear that how data was reported and communicated influenced public and policy-maker perceptions of public health responses.

Different data collection methods generated divergent results that presented different pictures of testing in Oregon. Not only did each set of data give the public a different sense of testing levels in Oregon, but each had vastly different policy implications. Test percent positivity was an important metric for determining many important COVID-19-related decisions, including how frequently staff and LTCFs had to be tested for COVID-19, when schools could move from remote to in-person learning and what counties would have to re-implement restrictions on businesses and gatherings. The metric is calculated by dividing the number of positive tests results by

⁴⁴ Nigel Jacquiss, "New Johns Hopkins University Data Shows Oregon's COVID-19 Testing Lags Behind All but One State," *Willamette Week*, June 4, 2020, <https://www.wweek.com/news/2020/06/04/new-johns-hopkins-university-data-shows-oregons-covid-19-testing-lags-all-but-one-state/>; Aimee Green, "Oregon Fails to Test Enough Residents for Coronavirus as Need Hits all-time High," *The Oregonian*, November 15, 2020, <https://www.oregonlive.com/coronavirus/2020/11/oregon-fails-to-test-enough-residents-for-covid-19-as-need-hits-all-time-high.html>; Betsy Hammond and Brad Schmidt, "Oregon Lawmakers Call on Gov. Kate Brown to Boost the State's Low COVID-19 Testing Rate 'Immediately,'" *The Oregonian*, November 19, 2020, <https://www.oregonlive.com/politics/2020/11/oregon-lawmakers-call-on-gov-kate-brown-to-boost-the-states-low-covid-19-testing-rate-immediately.html>; Associated Press, "Oregon Lawmakers Push for More Testing Amid Case Spike," *KGW8*, November 20, 2020, <https://www.kgw.com/article/news/local/oregon-lawmakers-push-for-more-virus-testing-amid-case-spike/283-ae5f6a63-a23e-4a52-bea4-659dc3f7a5b2>.

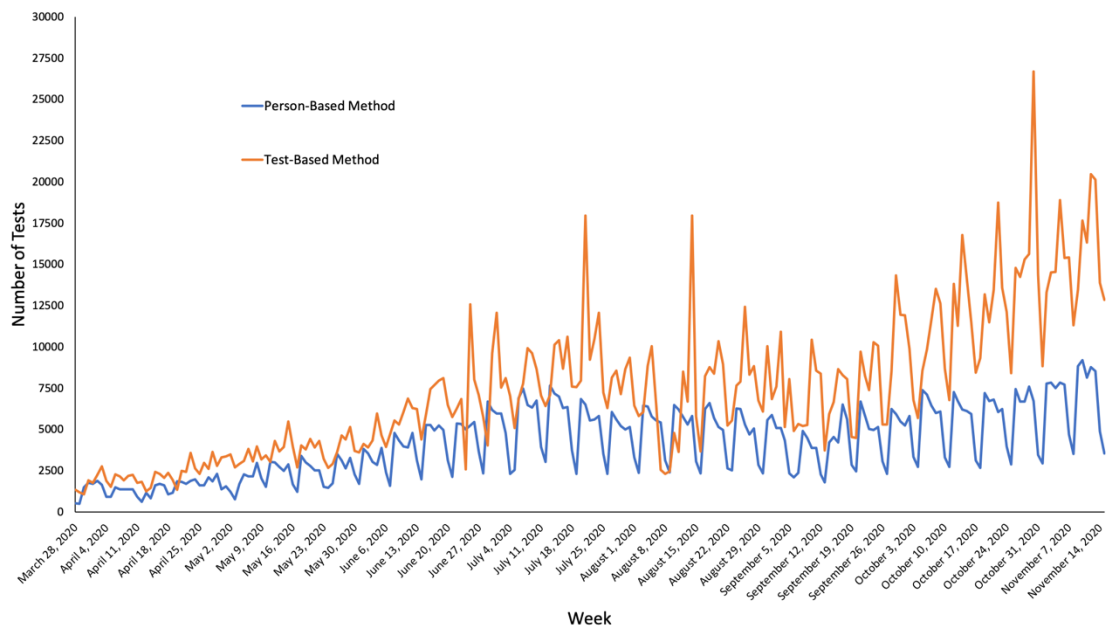


Figure 1. Tests Reported by OHA using two Different Definitions for a Test

This figure compares the total number of tests reported performed in Oregon each week from March 28, 2020 to November 14, 2020 using two reporting methods. Blue depicts the number of tests performed using the test-based method. Orange depicts the number of tests performed using the person-based method.

the total number of tests. Using a test-based method increases the total number of tests compared to a person-based method, resulting in a lower percent positivity rate. Because this metric was dependent upon how OHA reported the total number of tests performed as well as the number of tests that come back positive, changes in how OHA reported testing data significantly affected test positivity rates.

Differences in test positivity rate using both versions of OHA’s testing data would have led to different outcomes for students and teachers returning to school, staff at LTCFs being tested for COVID-19, and businesses and citizens in Oregon counties. For instance, using a person-based method that produces a lower positivity rate would mean students must continue remote learning, while if OHA had used a test-based

method which produced a lower positivity rate, students would be allowed to return to the classroom. Using a person-based method might mean LTCFs must find the resources to test their staff every two weeks, while using a test-based method would indicate they only needed to once a month. The real-world implications of changes in how data was presented emphasizes how important it is to fully understand the uses and limitations of data when implementing policies based on the data.

Considering that one of the functions of public health is to communicate information to various audiences in a way that allows receivers of information to properly interpret the information, the failure to effectively communicate testing data represented the breakdown of an important health function.⁴⁵ This breakdown reveals that there is room, and a necessity, to improve public communication in the future.

However, it is also important to note that OHA generated many of these dashboards and messaging platforms within a limited period of time and with limited staffing or staffing sources from other departments. Additionally, the behind the scenes systems OHA used to report data were not intended for collecting the volume of results generated by COVID-19 testing data. This made the system less efficient and caused periodic issues in reporting.⁴⁶ It was not until December 3, 2020 that OHA updated that system, indicating the extensive amount of time it took public health to adequately set up reporting systems. Updating systems once a pandemic is already happening causes

⁴⁵ Turnock, *Public Health*, 215; Enrique Regidor et al., “The Role of the Public Health Official in Communicating Public Health Information,” *American Journal of Public Health*, 97, no. 1 (2007): S93, doi:10.2105/AJPH.2006.094623.

⁴⁶ Oregon Health Authority, “Oregon Coronavirus Update,” e-mail comm., December 3, 2020; Oregon Health Authority, “Oregon Coronavirus Update,” e-mail comm., February 24, 2021; OR Health Authority, (@OHA Oregon), “Until this point, we have counted and reported people tested, because our infectious disease database was created and formatted to track people as opposed to laboratory results. Many other states report people tested for this same reason,” Twitter, November 20, 2020, <https://twitter.com/OHAOregon/status/1329874951025750017>.

problems in data collection and reporting when that data is in high demand. These observations warrant a call for preparing more robust data collecting and reporting systems alongside the ability to quickly hire the staff needed to manage those systems during future pandemic emergencies.

Case Study 2: Oregon's Assessment of Testing Capacity

This case study presents another example of how the methods used in collecting and analyzing COVID-19 data, in this case testing capacity data, generated sub-standard results which affected political decision-making. Between late April 2020 and the end of July 2020, the Oregon Health Authority conducted five testing capacity assessments using surveys. The survey questions made pre-determined assumptions regarding the type of testing capacity data that would be collected. The survey process unsystematically collected data, and the data analysis process introduced faulty assumptions about how testing played out in Oregon. This resulted in a possible over- or undercount of testing capacity in May, and a serious underestimate of testing capacity in June and July.

Since testing capacity should reflect a theoretical maximum, the metric should have been higher than the number of tests actually performed. At the time OHA conducted their assessments, the department was reporting tests using a person-based method, not a test-based method. Person-based data indicated that OHA's assessments were reasonable, as actual testing levels did not exceed testing capacity calculations. Once OHA began retrospectively reporting using a test-based method in December 2020, it became clear that OHA's testing capacity assessments were undercounts, as testing levels far exceeded OHA's estimated capacity, further evidence for why choices

on how data is reported matters. If OHA had chosen a test-based reporting method from the beginning, it would have been obvious that their testing capacity assessments were incorrect and allowed for the organization to make adjustments to the assessments.

Testing capacity assessments matter because, in Oregon, they informed whether businesses and schools could reopen and certain social activities could begin following Governor Brown's executive order 20-12, issued on March 23, 2020, which closed all non-essential businesses and required Oregonians to stay home unless purchasing essential goods or working an essential job. Perceptions of testing capacity also loosely determined when OHA recommend more groups of Oregonians for COVID-19 testing under their clinical testing guidance. This guidance was created by OHA for medical providers as a set of recommendations describing who to give COVID-19 tests to since they were in short supply. The higher the testing capacity, the more groups OHA would recommend get tested. Yet, an underestimate of capacity would mean Oregon was capable of testing far more Oregonians than OHA would recommend. Since testing capacity informed government decisions on when to initially reopen counties, it is critical to understand what went wrong when this metric was generated for Oregon.

Methods for Defining Testing Capacity

Testing capacity refers to the maximum theoretical number of COVID-19 tests that could be performed given limitless resources. This number is meant to capture the maximum amount of testing a provider, state, or the county can perform, especially in relation to how much testing is actually being done. If done adequately, one important piece of information testing capacity can provide is the gap between the number of tests performed and predicated capacity. Conceptualizing this gap and understanding the

underlying causes (e.g.: a shortage of testing machines, kits, or staffing) can illuminate the severity of supply chain issues or other limits on testing and help the government and health authorities secure and allocate resources to increase testing.

While the definition of testing capacity seems straightforward—how many tests can be performed at any one time—actually calculating testing capacity is not so simple. Unlimited access to testing machines, test kits, supplies, staff and lab space would, in theory, allow for infinite testing. Therefore, testing capacity is often based on a specific limiting factor(s) that dictates the theoretical maximum. These factors could be equipment such as the machines used to analyze tests, test kits, general supplies needed to collect and transport samples for testing, or the number of staff on hand to process tests. However, calculating testing capacity by picking a limiting factor requires assumptions.

Utilizing a different limiting factor yields different results. Additionally, if the assumed limiting factor is not actually the factor limiting testing, then the testing capacity calculation will be incorrect. For example, consider a provider with a machine that could analyze 100 COVID-19 tests per day and had all the resources to collect and analyze those tests, but only had enough staff on hand to process 75 tests each day. Using staff as the limiting factor would yield a testing capacity of 75 per day, but using testing kits or sample collection swabs as the limiting factor would result in an estimated testing capacity of 100 tests per day.

The federal government's assessment of Oregon's testing capacity demonstrates how assessments of testing capacity hinge on different assumptions and generate different results. In an attempt to help state health agencies gather data on what their

testing capacity was and how it was distributed, the White House Coronavirus taskforce (WHCTF) coordinated a review of laboratory testing capacity based on the diagnostic testing machines in each state in March 2020. This model defined maximum testing capacity as the number of tests that could be performed on machines that could run COVID-19 tests given limitless resources (in both supplies and staffing) and running each machine at its max capacity three times a day.⁴⁷

Yet, the WHCTF likely over-estimated Oregon's testing capacity by making unrealistic assumptions about how testing machines would be used. Their method did not consider the fact that labs in one state are not isolated systems. Commercial labs in one state process samples from their own and other states, increasing the capacity of other states while decreasing it in the host state. Additionally, the machines the WHCTF tracked are platforms that are used to run multiple types of diagnostic tests, not just ones for COVID-19. Therefore, it is likely that not all of these machines were being fully dedicated or even used to test solely for COVID-19. Using a different limiting factor, such as test kits, staffing, or using only machines being used for COVID-19 testing, would generate a lower estimate of testing capacity than the method the WHCTF used. This highlights some of the assumptions that are made when calculating testing capacity, assumptions that OHA also made when calculating Oregon's testing capacity.

March and April Testing Capacity Assessments

In March and April 2020 when OHA was overwhelmed by COVID-19 and testing was still coming online in most Oregon labs, Oregon's testing capacity was

⁴⁷ Oregon Office of the Governor, "Federal Outline of Coronavirus Testing in Oregon," (unpublished document, April 20, 2020), PDF.

determined through informal meetings between OHA and 9-13 hospitals and private lab directors. At this time, OHA did not have a grasp on the state's testing capacity, as collected information was not comprehensive. The data may not have included all providers offering testing in Oregon, and did not include any tests being sent out to commercial or other private labs for analysis.

The lack of formal data on testing capacity was concerning because OHA used that data to determine when to expand their testing guidelines. In a healthcare provider webinar, Dr. Tom Jeanne, the Deputy State Health Officer and Deputy State Epidemiologist, explained that OHA had expanded its testing guidance because testing capacity had increased and stay-at-home orders had led to declining case rates. As a result, more tests were available and fewer people listed under the previous testing guidelines would need them, leaving even more tests available. As a result, Oregon had a “more than adequate capacity” in Dr. Jeanne's words, and updated their guidance so that symptomatic frontline workers and minorities, as well as asymptomatic contacts in congregate settings, were recommended for COVID-19 testing.⁴⁸ Yet, the only data OHA had available was from their informal meetings, which estimated a testing capacity of around 3073 tests per day.⁴⁹ Since this excluded any testing done by smaller providers and at commercial labs, the state's actual capacity was likely higher than OHA predicted. This low estimate meant OHA did not expand their testing guidelines to encompass more Oregonians even when they could have based on actual test availability.

⁴⁸ Oregon Public Health Division, “COVID-19 Webinar for Healthcare Providers, April 21, 2020,” YouTube video, 10:30, April 21, 2020, <https://www.youtube.com/watch?v=VDuDmP3EYpQ>.

⁴⁹ Oregon Health Authority, “Oregon COVID-19 Testing Capacity 4.28.20,” (Unpublished document, June 8, 2020, 2020-0395), Excel Spreadsheet.

May Testing Capacity Assessment

In late April, two months after testing began in Oregon, OHA conducted its first formal assessment of the state’s testing capacity in order to determine which health regions (fig. 2) met the testing capacity requirements for reopening. The criteria called for each region to have a testing capacity to test 30 out of every 10,000 residents per week. When looking at the information collected and compiled by OHA on testing capacity and personal communications,⁵⁰ it is clear that this assessment of testing capacity was inherently unsystematic and introduced assumptions into the data that misrepresented Oregon’s actual testing capacity in unpredictable ways. It was not clear how data was collected, raising questions regarding how accurate and comparable the data was across testing regions. OHA allowed respondents to answer questions about testing capacity using their choice of definitions. Using different metrics meant the resulting data was of poor quality because responses were not consistent or comparable. Additionally, OHA made unsupported assumptions about how many days per week respondents conducted testing and how much COVID-19 testing supply scarcity was hampering testing. These observations are concerning because the testing capacity calculated from this survey influenced OHA’s decision to expand their clinical testing guidance, and gave counties the green-light to reopen business and allow larger social gatherings that increased the risk of COVID-19 transmission.

⁵⁰ This section draws extensively from the following document summarizing testing capacity information for counties and providers in Oregon and contains OHA’s calculations of testing capacity: Oregon Health Authority, “Testing Supply Requirements by County 5.21.20,” (Unpublished document, June 8, 2020, 2020-0472), Excel Spreadsheet; as well as the following personal communication: Oregon Health Authority, “Email Communication: Rodney Hicks to Brad Schmidt,” (Unpublished communication, May 21, 2020, 2020-0472), PDF.

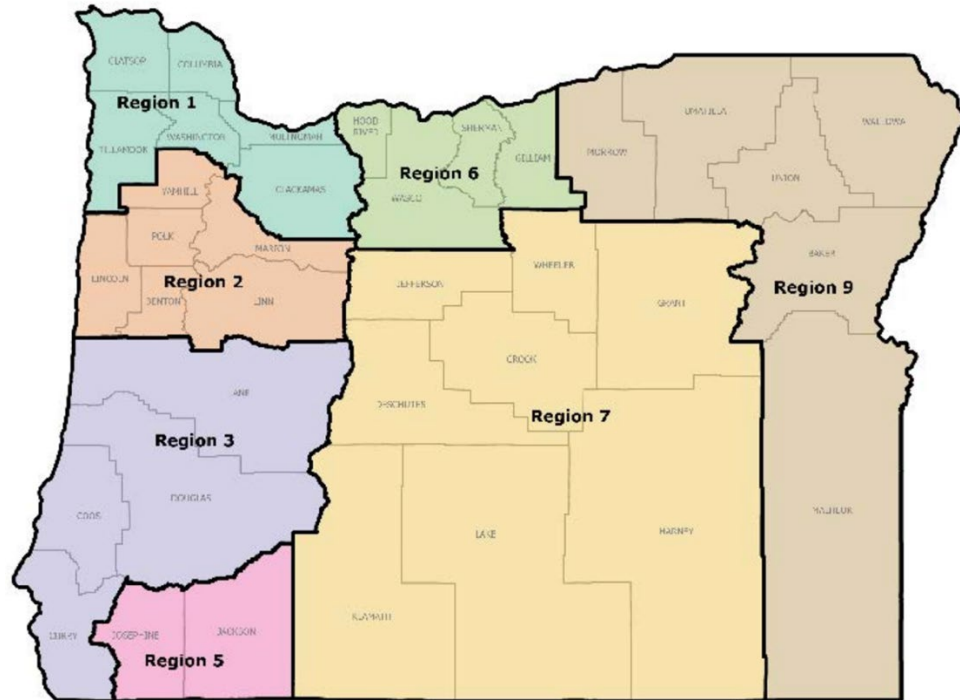


Figure 2. Oregon’s COVID-19 Testing Regions

Oregon’s testing capacity was assessed by region during the first testing capacity survey in May 2020, and counties in regions that maintained a capacity of 30/10,000 residents a week, alongside other requirements, were allowed to reopen. Note that regions 3 and 5, and 6 and 9, were considered one region for testing capacity reopening calculations.⁵¹

Firstly, it was unclear who the surveys were distributed to and who filled them out. For regions 6, 7 and 9, the respondent is listed as the regional emergency manager and the capacity is listed by county with no breakdown by provider. Regions 1, 2, 3 and 5 have their capacity broken down by providers and sometimes by the individual clinics. These differences suggest that the survey was either sent to regional emergency managers, some of whom distributed them to the counties and providers in their region,

⁵¹ Image from: Oregon Health Authority, “Frequently Asked Questions Regarding Guidance for Resumption of Non-Emergent and Elective Procedures,” last modified May 6, 2020, <https://www.odha.org/assets/Advocacy/OHA%20FAQs%20Guidance%20for%20Resumption%20of%20Non-Emergent%20and%20Elective%20Procedures%205-6-2020.pdf>.

or that testing capacity surveys were conducted by different entities in different regions. This is concerning because the best way to get accurate and comparable information is to standardize procedures as much as possible, and it is clear that this did not occur in Oregon's May testing capacity survey.

Even after contacting a few providers and county health department employees to ask whether they had filled out the survey, I was unable to clarify the situation. In a personal correspondence, Lane's Emergency Coordinator revealed the county had a group composed of provider CEOs and county Public Health Officers, and the lump sum testing capacity listed for the county on the survey was determined through data collected during group discussions.⁵² Completed survey responses also appear on phase one reopening applications from Wallowa and Klamath counties, further indicating that the forms were filled out by county-level officials.

On the other hand, the lab director for Asante, which has three hospital locations but only one entry in OHA's survey summary, noted in an email communication that she had filled out the survey herself. Yet, it was unclear whether or not she received the survey directly from OHA or was asked to fill it out via a regional official, who then sent it to OHA.⁵³ Unlike Asante, OHSU, a large metro-area provider with multiple locations, had three separate entries. The clinic coordinator for OHSU Scappoose, one of the entries, had no recollection of filling out the form, and suggested that perhaps someone from OHSU filled out this form for the entire health network.⁵⁴ This demonstrates the wide variation in who filled out these forms and how the information

⁵² Selene Jaramillo, personal comm., June 29, 2020.

⁵³ Jini Danis, e-mail comm., June 30, 2020.

⁵⁴ Stein Berger, personal comm., July 6, 2020.

was collected, raising questions regarding how accurate and comparable the data was across regions.

In Lane county, as well as other major counties in eastern and central Oregon, data was passed from multiple providers offering testing and compiled into one number. This lumping and passing up of data obscured any simplifications or gaps in the data. For example, Clackamas County Public Health's survey response indicated one of their concerns was a "lack of infrastructure to evaluate or communicate private testing capacity at the local level," suggesting that Clackamas' county-level data was incomplete because they could not access testing capacity data from private providers. Overall, inconsistencies in OHA's methods lead to questions about whether the data was useful to OHA or accurately described the testing situation in Oregon.

Questions on the survey questionnaire also left many crucial terms undefined, leaving room for varied and inconsistent responses. Question 2 asked "what is your daily collection/testing capacity?" Daily collection and testing capacity are two very different numbers. Daily collection refers to the number of test samples actually collected, while testing capacity refers to the number of samples that could be collected or analyzed given a limitless supply of supplies and staffing. A couple of responses demonstrate that there was variation in how question 2 was interpreted and answered. Adventist Health Tillamook answered question two with the number seven, and indicated that this number was their actual daily collection. Legacy Health answered question 2 with the number 575, but in response to another question mentioned that they could test up to 7,000 samples a day on one of their testing platforms if they had the adequate volume of reagents on hand. This indicates that Legacy Health either listed

their daily collection or their testing capacity given the supplies they had on hand. OHA tried to assess testing capacity, but by making both daily collection and testing capacity acceptable answers and not clearly defining testing capacity, they degraded the quality of the data by compiling data that differently defined testing capacity and calling the final product Oregon's testing capacity. This mish mash of data made the final metrics inherently uninformative.

There also appeared to be overlap in capacity, in part brought about by confusion as to who (counties or individual health systems) filled out the survey. For example, Asante (a health system in region 5 spread across Josephine and Jackson counties) had an entry listing its testing capacity for the two counties it serves. Josephine county also had a row listing their capacity, and noted that, among other locations, Asante was doing testing for that county. This indicates there was double counting going on. Asante's testing capacity was counted in its own entry and also in the entry for Josephine county. There were also two entries for the Bay Area Hospital in region 3, and each entry listed a slightly different answer to question 2. This close look at the data reveals discrepancies that could overestimated testing capacity.

In addition to issues with the survey and raw responses, the processes OHA used to create polished testing capacity numbers for each testing region utilized predictions that were not well supported and further degraded data quality. The spreadsheet where regional total capacity was calculated shows that the testing capacity numbers for each region were summed and then multiplied by some factor smaller than one, reducing the overall capacity number and doing so significantly in some cases. In an email correspondence between OHA's testing strategy manager Rodney Hicks and a journalist

inquiring about the May testing capacity data, Hicks indicated that he multiplied the regional capacity numbers by a factor of about 0.64. Presumably this step would account for a loss of testing supplies and the fact that most testing labs were not working at full capacity to get a more realistic idea of how much testing Oregon could do.

However, this calculation is dependent on accurate and consistent testing capacity data being reported to OHA and multiplying by a reasonably accurate and justifiable number. As has already been pointed out, respondents provided testing capacity numbers that used different definitions with different limiting factors. Yet, multiplying every response by the same variable to represent a loss of testing capacity due to supply shortages is only valid if each survey respondent has the same factor (staffing, testing kit shortage, etc.) limiting their testing, which, according to OHA surveys, was not the case.⁵⁵

It is also unclear how the multiplying factor was determined. Despite Hick's comments in his personal communication, the spreadsheet used to calculate Oregon's testing capacity shows that the multiplier for each region varied and was not in fact 0.64. Using a different factor for each region implies that each faced different levels of challenges limiting testing capacity, yet there is no way OHA had a clear way to quantify testing challenges to come up with those factors.

Furthermore, in order to get a weekly count of testing capacity, the data compiler assumed that each location collected the same number of samples seven days a week, which, as indicated by survey responses, was not the case in many testing

⁵⁵ Oregon Health Authority, "Testing Capacity Update," (Unpublished document, September 15, 2020, 2020-0766), PDF.

locations. Because question 2 asked for daily collection or capacity, and that daily number, after being multiplied by some factor to get the regional daily capacity, was multiplied by seven to get weekly capacity, this calculation and its assumptions made the data completely unreliable. The final capacity calculation had the potential to be an overestimate because of the assumption that all providers tested seven days a week. It also had the potential to be an underestimate if the 0.64 factor was too large.

Despite the flaws in the raw data, the responses were compiled and ended up as six polished numbers representing the testing capacity in each testing region and the state overall. The poor quality of the data was especially concerning in light of the fact that the numbers were presented to the Governor's Office as evidence that all regions could test 30 out of every 10,000 resident each week and were therefore eligible to reopen business and increase the size of social gatherings.⁵⁶ These observations and interrogations of the data are crucial because, as OHA and Governor Brown's reopening guidelines and goals mention, reopening relied on a robust testing strategy and system. Yet, reopening forged ahead using unreliable data that indicated each region met the testing component of the state's reopening criteria.

On top of the fact that the assessment made to determine if regions were meeting the testing capacity reopening goal was deeply flawed, the initial goal itself was fraught with assumptions. Oregon set a weekly testing capacity goal that was meant to include testing for all symptomatic Oregonians. This goal was based on the number of tests that

⁵⁶ Reopening criteria are outlined in: Oregon Office of the Governor, "Prerequisites for a Phased Reopening of Oregon," govstatus.com, accessed May 7, 2020, https://govsite-assets.s3.amazonaws.com/3kCZ3zeVTsqz78bCYySg_Prerequisites-for-Phased-Reopening-of-Oregon.pdf. Additional allowed activities in counties that met these criteria are outlined in Oregon Exec. Order No. 20-25.

would need to be done to detect the predicted number of daily cases that would arise in Oregon. Oregon’s COVID-19 transmission model, put together by researchers at the University of Washington, predicted there would be 350 new cases in Oregon per day. OHA estimated that five contacts of each case would either develop symptoms or fall into a high-risk group, which would require running 1,750 tests per day or 12,250 a week. This raw number equated to testing 29 out of every 10,000 Oregonians each week, which OHA rounded to 30 per 10,000 Oregonians.⁵⁷

However, the model only considered current infections when Oregon was still under stay at home orders. The model did not take into account how reopening would increase infection numbers and therefore new daily infections. July daily case numbers usually ranged from the mid 200s to low 400s, but prevalence studies in Oregon and statements from OHA indicated that testing was not capturing anywhere near all of the new daily cases. In fact, OHA’s May-June seroprevalence study indicated that 9 out of every 10 cases went undiagnosed.⁵⁸ So, based on Oregon’s new daily case numbers, it was safe to assume that Oregon was in fact seeing more than 350 cases a day. All of these assumptions indicate the Governor’s testing capacity goal was essentially a meaningless number. Although OHA acknowledged that testing would have to increase as Oregon reopened, OHA never released new testing goals or numbers.

⁵⁷ Oregon Health Authority, “COVID-19 Strategic Testing Plan for Oregon,” last modified May 1, 2020, https://www.co.lincoln.or.us/sites/default/files/fileattachments/health_amp_human_services/page/6671/covid-19_strategic_testing_plan_for_oregon.pdf.

⁵⁸ Melissa Sutton, Paul Cieslak, and Meghan Linder, “Notes from the Field: Seroprevalence Estimates of SARS-CoV-2 Infection in Convenience Sample — Oregon, May 11–June 15, 2020,” *MMWR Morb Mortal Wkly Rep* 69 (2020): 1100, <http://dx.doi.org/10.15585/mmwr.mm6932a4>.

Most important is the fact that in order to reopen, testing regions did not have to actually test 30 per every 10,000 Oregonians weekly, they only had to demonstrate they had the capacity to do so. In fact, at the time, *no* regions were actually testing that many Oregonians.⁵⁹ Whether or not capacity estimates produced by OHA were accurate, if 30/10,000 was the weekly testing rate Oregon “needed” but regions were not even meeting that goal, Oregon was not ready to reopen, even by OHA’s standard. If OHA had conducted a systematic testing capacity survey which avoided duplicate counting, collected capacity metrics using a consistent definition, processed data using made well-supported assumptions, and considered the number of tests Oregon would need based on post-reopening models, the metrics might still have indicated Oregon could reopen. However, the state would be basing the decision on data generated with the appropriate methodology and quality.

Flaws in this testing capacity data are also concerning because the data influenced when OHA decided to expand their clinical testing guidance. On May 1, 2020, when testing guidelines expanded to recommend testing for any symptomatic individual, Dr. Dean Sidelinger, Oregon’s State Health Officer and Epidemiologist, outlined OHA’s testing strategy by stating

we know there are populations that are more at risk because of their profession or background, so as capacity has increased we’ve updated our guidelines to get testing to those who need it the most. And now that we feel our testing capacity can meet the needs [to test any Oregonian with symptoms].⁶⁰

⁵⁹ “Building a Safe and Strong Oregon – Reopening Criteria,” govstatus.com, accessed May 14, 2020, <https://govstatus.egov.com/OR-OHA-Reopening-Framework>.

⁶⁰ Oregon Public Health Division, “Press Briefing with Gov. Kate Brown, May 1, 2020,” Youtube video, 25:10, May 1, 2020, <https://www.youtube.com/watch?v=CnwJgH1zG9Y>.

OHA had estimated the state’s testing capacity was sufficient to test every Oregonian with COVID-19 symptoms. However, because testing capacity data was flawed, OHA could not be certain that the capacity to test every symptomatic Oregonian existed. There may have been a sufficient number of tests, but there could have been too few. If OHA overestimated the state’s testing capacity, symptomatic Oregonians who should have expected access to testing would not have access.

June and July Testing Capacity Assessments

It wasn’t until mid-June 2020 that OHA would conduct another testing capacity survey, and over the course of June and July the organization conducted another three assessments. These surveys were sent out to testing providers directly, clarifying how surveys were distributed, and tried to avoid the discrepancies that arose in the May survey by asking what the respondent’s weekly reagent allocation was and using this weekly allocation as an estimate for weekly capacity. While this was an improvement because responses would be based on the same testing capacity definition (table 2), this method assumed an idealistic scenario in which testing kit availability was the sole limiting factor on testing, all testing was done in-house, and providers used the entirety of their weekly allotment each week. However, the reality of the situation was much

Survey Number	Date	Asked	Problems
1	Late May	What is your daily collection/testing capacity?	Respondents can provide daily collection OR testing capacity, two very different numbers
2 and 3	June 10 and June 30	What is your current reagent allocation from your vendor for RT-PCR or NAAT assays? (List vendor and number of tests per week)	Assumed an idealistic scenario in which providers get steady allotment, use all of it weekly, did not outsource testing, and had no other limiting factors

4 and 5	July 13 and July 22	How many tests can you perform per week with your current reagent inventory or allocation?	Accounts for dynamic situation in which providers stockpile tests, outsource testing, and have other limiting factors, but likely respondents answered with reagent allocation
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Table 2. Summary of Testing Capacity Surveys

more complex and dynamic. Additionally, some respondents could not give a clear number on their allocation because it was inconsistent due to shortages, meaning OHA had to use poor numbers or fill in the blanks using other data. By not using the same metrics for each provider to determine testing capacity, the assessments were inaccurate. These assumptions caused OHA to severely underestimate the state’s testing capacity.⁶¹

Since testing kit allocation was inconsistent, not every provider had a steady weekly allotment of supplies they could report to OHA. When information was incomplete, OHA made assumptions about respondents’ weekly capacity. St. Alphonsus Hospital indicated that their allotment was 30-60 testing kits per week. When extracting data to assess testing capacity, OHA lowballed and wrote that St. Alphonsus’ capacity was 30 per week. Grande Ronde Hospital listed two testing kit vendors, but only gave allotment for one vendor. As a result, their capacity was listed based only on their allotment from the listed vendor, lowering Grand Ronde’s capacity. When Kaiser’s Airport Way Lab and Sky Lakes Medical Center failed to provide weekly testing kit allocation numbers, OHA listed the number of tests performed the prior week as the labs’ testing capacity. This demonstrates how in instances when poor data was provided

⁶¹ This evidence is drawn extensively from the following OHA documents outlining provider responses to OHA’s testing capacity surveys and spreadsheets and calculating the state’s testing capacity: Oregon Health Authority, “Testing Capacity Survey Responses,” (unpublished document, September 15, 2020, 2020-0766), PDF; Oregon Health Authority, “Testing Snapshot 6192020,” (unpublished document, September 15, 2020, 2020-0766), Excel Spreadsheet.

by respondents, OHA used different data or altered data when extracting survey information. Using inconsistent methods to compile data meant that the actual data OHA collected was different for different providers, making their overall assessment of Oregon's testing inaccurate.

OHA's definition of testing capacity also assumed that providers completely used their weekly allotment of reagents and conducted all of their tests in-house. However, providers often rationed and stockpiled tests because they knew shipments were spotty. They could not use all of their tests in one week and expect more to arrive. Grande Ronde Hospital, indicated they had 696 Abbott ID NOW tests stored away, but OHA completely disregarded those tests in their capacity assessment, indicating that the hospital could only perform 50 tests per week based on their weekly allotment. St. Charles Medical Center reported a 240-weekly allotment from Cepheid, and that they had 1700 Hologic test kits on hand. Yet again, OHA disregarded these stockpiled tests and recorded their testing capacity as 240 per week. This indicates that stockpiled tests, even when mentioned, were not included in capacity counts, decreasing the overall capacity number.

Many providers also sent tests to commercial labs outside of Oregon, increasing capacity beyond reagent allocation levels. Yet, under OHA's definition of testing capacity as the number of testing kits available, any samples collected by a provider but analyzed at an out-of-state lab did not count towards testing capacity. For instance, in June, Salem Health Clinic noted they had an unlimited capacity to send patient samples to the commercial lab LabCorp. Interpath Laboratories, one of the largest testers in Oregon, ran out of reagents in late July, and sent all of their samples, just under 7,000 a

week, to a reference lab in Washington state. There were also five other providers listed in the same survey who sent out more than one hundred samples a week to out-of-state reference labs. In all of these cases, none of that potential for testing was integrated into OHA's calculation of testing capacity. This led to a severe undercount of the state's testing capacity.

Finally, OHA's model assumed that reagents were the only factor limiting COVID-19 testing in Oregon. OHA defined testing capacity as the number of tests that could be performed given the number of testing kits on-hand. This definition disregarded other factors such as staffing, equipment or other testing supplies, which, when scarce, would push testing capacity below the number of tests that could be performed based solely on testing kit allocation. The Enhancing Detection Report produced by the state in late April offers further evidence that OHA believed testing kits were the sole limiting factor months before.⁶² In the report, OHA indicated that no additional staff would be needed in May or June to meet target testing levels, demonstrating the state's insistence that staffing was not and would not limit testing capacity in Oregon. It is shocking that OHA would make such a claim when, at the time, they were not collecting any formal information on how testing and capacity were being impacted by staffing levels.

The assumption that testing kits were the sole limiting factor proved inaccurate in OHA's fifth assessment of testing capacity completed on July 30, 2020. OHA collected information on the need for staffing and other equipment by asking providers to indicate and rank the type of testing support they needed. The results revealed that

⁶² "ELC Enhancing Detection: Oregon Testing Plan," U.S. Department of Health and Human Services, accessed October 18, 2020, <https://www.hhs.gov/sites/default/files/oregon-testing-plans.pdf>.

staffing and equipment were issues for ~40% and 65% of labs respectively, and that 15% and 20% of labs listed each as their top need, respectively.⁶³ Because this information was not collected until late July 2020, these factors were left out of OHA’s assessments of testing capacity, potentially overestimating the state’s capacity.

In mid-July, OHA sent out another two testing capacity surveys. These two surveys assessed testing capacity differently than the first three surveys, and did so in an improved manner, removing some, but not all, of the assumptions about testing capacity built into the second and third surveys. In the fourth and fifth surveys, OHA directly asked “How many tests can you perform per week with your current reagent inventory or allocation,” and used that number as the testing capacity. This definition of testing capacity improved upon the one used for the second and third surveys by considering the need for negative controls and that testing is dynamic and providers stockpile some of their weekly allotment or increase testing using reserve supplies (table 2). OHA also added a question that asked providers how many tests they sent out to be analyzed by reference labs, which would account for testing capacity through commercial labs. But ultimately, data from this question was not integrated in the final calculation of Oregon’s testing capacity.

It is also likely many respondents still answered the question “How many tests can you perform per week with your current reagent inventory or allocation,” based on how many test kits they were receiving weekly. Respondents were likely extremely busy due to the pandemic, and the poor quality of responses to other survey questions

⁶³ Data from: Oregon Health Authority, “Testing Capacity Update,” September 15, 2020; and author derived statistics using data from: Oregon Health Authority, “Testing Capacity Survey Responses,” September 15, 2020.

indicates that many respondents were not spending the time to go over questions carefully and parse out nuances in the questions. For instance, one survey question asked if supply chain shortages were affecting testing for other (non-COVID-19) diseases, but some respondents answered with how shortages were affecting COVID-19 testing. Therefore, despite changing how the questions regarding testing capacity were worded, the two surveys conducted in July likely assessed capacity in the same way as the two June surveys. This also meant the July surveys faced the same shortfalls in assessing testing capacity previously described for the surveys distributed in June.

In the end, OHA's methodology and the assumptions they made in the process of generating surveys and collecting and analyzing testing capacity data led to a severe undercount of the state's testing capacity in June and July. OHA did not take into account that providers might save a certain percent of each shipment, lowering their capacity, or have a test kit stockpile or commercial lab contracted to analyze additional tests, increasing capacity. OHA also assumed that testing kits were the only resource limiting testing capacity, when in reality, staffing and equipment shortages prevented some providers from utilizing all of their COVID-19 testing kits. While OHA's assumptions could have over- or undercounted testing capacity, their ultimate underestimation was likely the result of not considering tests performed out-of-state by commercial labs. This is especially pertinent for the two July testing capacity surveys, in which Interpath Laboratories, a large private testing company in Oregon, sent thousands of tests per week to be tested out-of-state due to reagent shortages.

The undercount of testing capacity likely impacted OHA's willingness to expand their testing guidelines in July and August 2020. During those two months,

Oregon’s weekly testing number remained close to OHA’s predicted capacity (table 3), indicating Oregon was testing almost as many people as OHA had assessed was possible. Even when calculated testing capacity increased by 15,000 tests per week between June 30, 2020 and July 22, 2020, publicly reported testing data showed concurrent increases in actual testing levels. In a July 13, 2020 press conference, Dr. Allen reinforced the point that actual testing numbers were close to OHA’s calculated capacity, and went on to emphasize that about 8,000 tests per week could be lost from the state’s testing capacity due to supply chain issues. This would make the state’s testing capacity even lower than OHA had calculated. Interestingly, between June 30, 2020 and July 22, 2020, OHA did not make any changes to their testing guidance. This suggests that OHA did not perceive any increases in testing capacity sufficient enough to expand their testing guidance, and therefore did not make any major changes.

Week	Calculated Capacity	Test-Based Total	Person-Based Total
June 10	33,000	43,205	28,394
June 30	41,000	56,345	34,696
July 13	41,000	62,123	40,549
July 22	48,000	61,992	34,498

Sources: Oregon Health Authority

Table 3. Number of Tests Performed Compared to Calculated Testing Capacity

According to the person-based testing data OHA reported in June and July, OHA’s claims that testing capacity remained close to actual testing numbers and that supply shortages were further reducing testing capacity in the state seemed supported by the data. However, once OHA switched to a test-based reporting method on December 3, 2020, the new data revealed that OHA’s calculated testing capacity was much lower

than the actual number of tests being performed at the time (table 3). This meant OHA created its guidelines based on a low estimate of how much testing Oregon was capable of performing. Since their guidelines were influenced by their perception of testing capacity and availability, their recommendations were more limited than they could have been if OHA had an accurate picture of testing in Oregon. This is further evidence that how testing data was reported had a real-world impact on factors such as who was recommended for COVID-19 diagnostic testing.

Case Study Conclusion

OHA's survey methodology created poor data that could over- or undercount testing capacity in May, and significantly underestimated capacity in June and July. Faults in testing capacity metrics had a real-world impact on actions taken by OHA and the state. In May, OHA used flawed testing capacity data to determine whether Oregon counties could resume activities that could increase the spread of COVID-19. Flawed capacity assessments in May, June, and July also shaped OHA's decisions on whether to expanded their testing guidelines. In May OHA expanded their recommendations because they believed Oregon had sufficient capacity to test every symptomatic Oregonian, even though that might not have been the case. In July, OHA did not expand their testing guidance because they believed there was not enough capacity, when in fact the state was performing more tests than OHA's testing capacity predicted it could. The implications of OHA not having an accurate picture of the state's testing capabilities: OHA based their testing recommendations on a false perception of testing levels and capacity.

This case study of how Oregon assessed its own testing capacity demonstrates how different assessments of testing capacity affect political and public health decision making, and how different numerical results have different implications. While OHA’s survey methodologies and data were flawed, it is important to acknowledge that the organization was likely overstretched responding to the pandemic and were required to quickly put together testing capacity information. This likely led to many of the flaws pointed out in this section. Public health reports are generally prepared well in advance and executed using commonly accepted methodologies, which OHA did not have the time to do during a global emergency and a politically charged environment that needed data sooner rather than later. OHA stopped conducting these capacity surveys after July 2020, indicating the organization either ran out of the resources to collect this data or realized that such surveys in their current form were not useful.

The Missing Piece - Data Equity

Data often serves as a cornerstone for determining how public health resources should be distributed, particularly when those resources are limited. Access to the appropriate data can help public health officials and departments determine who is most at risk, how to reduce risk, and how to ethically distribute resources. As I have already demonstrated, data quality has serious ramifications for the efficacy and appropriateness of political and public health decision-making. However, it is also important to note that prioritizing resources ethically requires not only good-quality data but the existence of metrics that uncover such inequities.⁶⁴ Under egalitarianism, an ethical response means

⁶⁴ DeBruin, Liaschenko, and Marshall, “Social Justice in Pandemic Preparedness,” 588; Vawter et al., “Attending to Social Vulnerability,” 44; Gostin and Powers, “What Does Social Justice Require For The Public's Health?,” 1054.

allocating additional resources to the disproportionately burdened. Therefore, collecting accurate data on the appropriate metrics is a key step towards achieving an ethical response. While OHA did set testing goals to improve the equity and efficacy of testing in Oregon, they failed to collect data that could shed light on testing inequities across race, ethnicity, and location, and help the state better understand what testing resources were needed where.

While it was clear that racial and ethnic minorities in Oregon were experiencing higher rates of COVID-19 cases, hospitalizations and deaths, only anecdotal evidence suggested that these groups in Oregon experienced more barriers to accessing testing because OHA did not collect concrete data on the number of tests performed broken down by race or ethnicity. Even though one of Oregon’s justifications for requiring reporting of COVID-19 test results via OAR 333-018-0900 was that “reporting of negative test results will further allow public health officials to assess risk to various demographic groups,”⁶⁵ it was not until September 25, 2020 that OHA legally required providers to collect and report demographic data, including race and ethnicity, for individuals tested for COVID-19.⁶⁶ While delays are understandable in an emergency situation, a system for reporting demographic data during other types of medical encounters was in place years before the pandemic. It is concerning that it took many months for reporting on COVID-19-related encounters to be integrated into that system, far too late for racial and ethnic minorities without testing resources.

⁶⁵ “Temporary Administrative Order–Reporting Test Results for COVID-19 and Reporting of COVID-19 Hospitalizations and Deaths,” filed March 30, 2020, <http://records.sos.state.or.us/ORSOSWebDrawer/Recordpdf/7604264>.

⁶⁶ Oregon Health Authority, “House Bill 4212 Rulemaking and Implementation Fact Sheet,” Oregon.gov, accessed November 14, 2020, <https://www.oregon.gov/oha/OEI/REALD%20Documents/HB-4212-Implementation-Fact-Sheet.pdf>.

OHA also failed to collect more granular data pertaining to how testing capacity was distributed throughout Oregon. OHA did not assess or report capacity by testing region or county (although they did in the May testing capacity survey which required an assessment of capacity on a regional level), or report the capacity of testing locations that primarily served minority communities or other underserved populations. Although testing capacity data was imperfect, attempting to assess capacity along racial, ethnic or rural/urban divides would further efforts to assess testing equity within Oregon. Such assessments would have allowed public health authorities to see communities where there were testing gaps and apportion supplies to fill in those gaps, resulting in a more equitable and therefore ethical response.

Without data on testing broken down by race, ethnicity, location, or other demographic factors, it was impossible to determine whether testing in Oregon was distributed proportionally to disease burden or infection risk.⁶⁷ This made Oregon's response to COVID-19 testing unethical. The lack of critical data might have been the result of underfunded and understaffed public health systems, and OHA and counties likely did not have enough staff on-hand to collect, compile and distribute this information. Seeing as similar issues were noted in previous pandemic responses, increased funding for staff and epidemiologists at health departments would likely improve future outcomes in data availability and help foster ethical pandemic responses.

⁶⁷ While data on testing broken down by race and ethnicity is a crucial first step towards addressing systemic health inequalities, more granular data is needed to adequately address testing inequities. The specific barriers and testing needs for a Mam (indigenous people of Guatemala) immigrant in Lane county and Mexican-American family in Portland are very different, despite the fact that both would be considered a part of the Latinx community. Therefore, smaller-scale surveys by the state or counties are needed to improve testing in specific communities and not just racial groups.

Chapter 3: Testing Supply Distribution

One key function of public health departments is implementing public health programs and interventions in order to improve the public's health. Often, managing these programs means determining how to allocate and utilize resources.⁶⁸ Since public health departments lack the funds to implement programs across the entire population, they often target interventions towards groups with a greater risk or prominence of the public health problem. As previously mentioned, data can help public health officials and departments ethically distribute resources. It is almost impossible to prioritize resources without data to help determine where those resources are most needed.⁶⁹

During the COVID-19 pandemic, state and local public health departments were tasked with managing resources and programs to reduce COVID-19 cases and deaths, including resources to facilitate COVID-19 diagnostic testing. Private companies also sold and distributed a large proportion of these supplies. However, many testing resources were limited and did not meet global demands. Since COVID-19 was a new virus, all diagnostic tests being used in Oregon (and the US) were new. Dozens of test kits from different companies were quickly developed and approved for use by the Food and Drug Administration, but each had to be produced and distributed from scratch - there was no stockpile of tests. Production could not keep up with the level of demand, leading to constant competition between countries, states and health care providers for testing kits. Completing those tests also required a multitude of other general supplies,

⁶⁸ Holland, *Public Health Ethics*, 2; Turnock, *Public Health*, 251 and 270.

⁶⁹ DeBruin, Liaschenko, and Marshall, "Social Justice in Pandemic Preparedness," 588; Vawter et al., "Attending to Social Vulnerability," 44; Gostin and Powers, "What Does Social Justice Require For The Public's Health?," 1054.

including swabs to collect patient samples, tubes and media to transport samples, and supplies for processing patient samples once they arrived at labs. Due to the unprecedented demand for COVID-19 testing, these general supplies were also hard to come by. Given the scarcity of COVID-19 testing supplies, not every provider could access all the supplies needed to test patients.

This chapter lays out how no systematic method was used by either private companies or the state of Oregon to determine which providers would be allocated supplies. Both distributed supplies randomly or on a first-come, first-served basis. Even when criteria were outlined, there was insufficient data to distribute resources using the outlined criteria. The chapter then argues that supplies were not distributed ethically under egalitarianism because acquiring supplies had more to do with providers' and counties' size, luck, or willingness to request supplies, rather than with need proportionate burden or targeting the worst-off.

Case Study 1: Cepheid Testing Kits

In the first two months of the pandemic, Oregon labs, clinics and hospitals competing with one another for testing kits. Private companies distributed supplies to the largest providers with the most purchasing power, and did not utilize any clear criteria to determine what smaller providers would receive supplies. This meant hospitals and clinics serving the Portland metropolitan area or larger cities like Salem and Bend won the competition for testing kits, and only some smaller providers scattered across the state received them as well. Such distribution methods were problematic because they did not allocate supplies using metrics, such as population or COVID-19 test positivity rate, that could indicate counties being hardest hit and most in

need of testing kits. Instead, distribution simply reflected an entity's size and purchasing power, leaving less populous areas of Oregon without substantial or reliable testing early in the pandemic.

In Oregon, an overwhelming number of hospitals and labs bringing testing online in the spring of 2020 used machines produced by the company Cepheid. While large providers in metro areas were often prioritized to receive supplies from Cepheid, providers of all sizes across Oregon struggled to get a hold of sales representatives, were turned away or faced long wait times due to backlogs in producing testing kits. In April 2020, Kaiser, a major hospital system operating on the west coast, reported that they were receiving testing kits on a weekly basis. However, Kaiser was in the minority. Legacy Labs, the clinical lab for the hospital system Legacy Health based in the Portland-metro area, noted they had an outstanding order with Cepheid but were only receiving sporadic shipments. St. Charles Hospital in Bend was also able to order tests, but reported that tests were coming in as lump sum shipments and not on a regular or predictable basis. Salem Health, based in and around Salem, reported receiving large weekly shipments from Cepheid in February that, as of April, had stopped coming. When they attempted to order more, they were told there was a backlog.⁷⁰ This indicates that even large providers with greater leveraging power due to the size and expense of their orders, were not receiving supplies in a systematic or reliable way.

Although large providers faced challenges receiving their allocated testing supplies, mid- and small-sized hospitals could not secure an allocation to begin with. Providers in the large towns of Medford, Grants Pass, and Klamath Falls, as well as

⁷⁰ OHA, "Testing Supply Requirements by County 5.13.20," (Unpublished document, June 8, 2020, 2020-0472), Excel Spreadsheet.

rural areas such as Astoria, Coos Bay, Gold Beach, and Coquille, all reported either not being able to get to a representative to place an order, having orders cancelled, or being placed in a queue for at least 2-3 weeks. Even small providers in towns just outside of Salem, the second largest city in Oregon after Portland, reported the same barriers to ordering testing supplies from Cepheid. Smaller clinics in urban and highly populated areas could not access testing supplies either. Cepheid told NE Family Medical Group in Portland and The Corvallis Clinic in Corvallis that they would not send them any testing kits because large hospitals were being prioritized.⁷¹ While Oregon’s largest providers received Cepheid’s testing kits, mid- and small-sized providers across Oregon were unable to obtain kits to test patients. This left less-populated areas of Oregon and Oregonians without reliable testing early in the pandemic.

Only a select few waiting in a queue reported receiving confirmation from Cepheid that they would eventually receive supplies. While all small providers reported contacting Cepheid sales representatives multiple times, there was no clear pattern as to why certain ones eventually received responses and others did not. Those who received testing kits reported simply being removed from the queue or receiving a response call from a sales representative without an explanation as to why they were being allocated testing kits. These shipments also varied in size and were sent to randomly-selected clinics across the state.⁷² So, while Cepheid clearly prioritized large providers, they did not have a clear framework for distributing testing kits to smaller providers in Oregon.

⁷¹ Oregon Health Authority, “Testing Supply Requirements by County 5.13.20,” June 8, 2020; Oregon Health Authority, “Testing Capacity Survey Responses,” September 15, 2020.

⁷² Oregon Health Authority, “Testing Supply Requirements by County 5.13.20,” June 8, 2020; Oregon Health Authority, “Testing Capacity Survey Responses,” September 15, 2020.

One explanation for why smaller providers were struggling to contact Cepheid was the lack of staffing on Cepheid's end. According to information provided to states by the federal government, Cepheid had three representatives tasked with managing COVID-19 testing kits orders across the US, and the representative covering Oregon was also responsible for 21 other states. Other private companies such as Abbott, Hologic, and Thermo Fisher, only had one representative listed.⁷³ While there were likely more people working on distributing testing kits internally, the lack of provider contact points for ordering kits from private companies added to difficulties when attempting to secure testing kits.

Whatever the reason, private supply companies did not utilize a systematic or data-driven method to distribute testing kits. Larger providers were prioritized, while some small providers were randomly chosen to receive supplies over others, resulting in differences testing availability between providers and across Oregon.

Case Study 2: Oregon's OpsCenter

As with private providers, Oregon's system for distributing state-owned COVID-19 testing supplies failed to use systematic criteria to allocate resources to counties. Most state-owned supplies were distributed using the Oregon Office of Emergency Management's (OEM) OpsCenter. In this system, OEM acted as the intermediary, taking orders from counties and doling out tasks to the appropriate government departments to complete the request. This meant supply distribution occurred on a first-come, first served basis based on what and how much a county was willing to ask for and what government agencies delivered, not county-level data on

⁷³ Oregon Office of the Governor, "Federal Outline of Coronavirus Testing in Oregon," April 20, 2020.

transmission, case, hospitalization or death rates that would indicate the severity of the situation between counties and the amount of supplies needed. As a result, some areas received all of the assistance they needed in a timely manner, while others did not, and the level of services varied over time. Even when the state laid out distribution criteria for specific supplies, they did not have complete or accurate data to determine which providers or counties met the criteria and who, of those who qualified, should receive them. Additionally, the state government did not maintain records summarizing state-owned supplies across agencies. Without a comprehensive inventory, distribution was inherently unsystematic because the state could not determine how to ration existing supplies to counties.

One excellent example is the distribution of federal Abbott ID NOW cartridges. Oregon providers who received an Abbott ID NOW machine through the federal government placed requests for the machine's testing kits through the OpsCenter. Providers could request any number of kits as frequently as they desired; however, their ability to receive adequate levels of those kits varied across the state. In late June and early July, Sky Lakes Medical Center and Curry General Hospital reported consistently receiving half of the Abbott ID NOW test kits they requested or waiting up to two weeks to receive them. The Bay Area Hospital wrote that they had received plenty of Abbott kits, and Grande Ronde Hospital echoed that sentiment, stating they had 696 kits on hand.⁷⁴ The fact that at the same point in time some providers received a sufficient amount of test kits while others did not suggests that the OEM and other state agencies filling OpsCenter requests did not use any sort of metric to determine how many test

⁷⁴ Oregon Health Authority, "Testing Capacity Survey Responses," September 15, 2020.

kits each provider would receive because some had testing kits in excess while others were in desperate need of more.

Information obtained through public records requests with the OEM also indicated disparities in how promptly supplies were distributed to different counties. When cases in Union county began rising in June as the result of a church-associated outbreak, all OpsCenter requests by the county for testing supplies and assistance to hold a drive-up testing event were completed within a few days. The urgency of the situation was recognized. A large request for 8,000 Abbott ID NOW COVID-19 test kits from Polk county on April 27, 2020 was completed in-full by DAS on May 10, 2020. Yet, a similar request by Marion county for 10,000 Abbott ID NOW test kits made on May 7, 2020 was still listed as “working” on June 29, 2020, even though Marion county’s request was listed at a higher priority status than Polk county’s request.⁷⁵ These significant disparities in how supplies were distributed throughout the state at the same points in time and over time indicate that Oregon’s OpsCenter system did not allocate supplies based on demonstrated need, even though the system ranked the priority of each request. Differences also demonstrate the system only helped bolster testing in some Oregon locations. As with testing supplies distributed privately, a better approach would have been to use COVID-19 metrics, such as test positivity rate, to assess the need of each county and allocate supplies based on those metrics, not what counties themselves requested.

⁷⁵ Oregon Office of Emergency Management, “Test Request Report,” (unpublished document, June 29, 2020), PDF; Oregon Office of Emergency Management, “OpsCenter Requests’ 2322, 2330, 2334, 2347 Activity Status Forms,” (unpublished document, July 23, 2020), PDF; Paula Negele, e-mail comm., July 7, 2020.

While the majority of supply distribution to counties by the OpsCenter was not based on any clear metrics, beginning in April 2020 OHA did lay out guidelines for how it would distribute some supplies. However, OHA lacked the appropriate data to determine who met those criteria. When distributing the fifteen Abbott ID NOW machines, OHA indicated they would send machines out to:

- areas of the state with no access to COVID-19 testing,
- areas of the state with a limited number of first responders,
- areas of the state where courier services for the state public health lab and commercial labs are limited or unavailable,
- areas with a high population of older adults and other at-risk groups, and
- areas where hospitals or clinics do not already have access to an Abbott ID NOW instrument.

OHA also indicated they would prioritize other supplies for counties with the lowest testing rates, highest case numbers without testing availability, and with barriers to testing in a timely manner.⁷⁶ However, the state had no solid data on what areas within counties had no access to testing or areas with limited courier services. Furthermore, as discussed in chapter 2, OHA’s data on testing capacity and testing rates was flawed, suggesting that OHA’s assessment of counties most in need may not have been accurate. This meant information used to determine what locations met some criteria were not actually determined using on data depicting county-level need.

Furthermore, there were likely more than fifteen locations in Oregon that met at least one of the listed criteria when the machines were distributed April and May. In

⁷⁶ Oregon Office of the Governor, “Governor Brown Announces Distribution of First COVID-19 Rapid Testing Instruments in Rural Oregon,” *State of Oregon Newsroom*, Oregon.gov, last modified April 9 2020, <https://www.oregon.gov/newsroom/Pages/NewsDetail.aspx?newsid=52750>; Oregon Health Authority, “COVID-19 Strategic Testing Plan for Oregon,” last modified May 1, 2020.

that case, how did the state decide which locations would receive machines? Internal communications from OHA reveal that employees involved in the allocation process picked locations they thought had a need, and that machines were distributed to providers who indicated they wanted one.⁷⁷ This suggests that distribution was based on a mix of first-come, first-served and personal perception.

Differing assessments by the state and local providers also meant it was often unclear which counties met the listed criteria. Union county's phase 1 reopening application stated their largest hospital, Grande Ronde, had the foresight to acquire supplies and put together enough testing kits to support the required tested capacity for reopening. Yet, OHA reached out to Grande Ronde hospital to offer them an Abbott ID NOW machine because according to OHA's assessment of testing, the region needed more testing.⁷⁸ Although the hospital initially declined, they did eventually accept a machine for use at their urgent care center. Different perceptions of testing capabilities at a state and local level reveal uncertainties surrounding whether supplies were actually going to where they were most needed.

Governor Brown also created a county watchlist in July, with the intention that counties facing higher COVID-19 rates or sporadic transmission would be placed on the watchlist and receive priority and extra support from the state, including for testing.⁷⁹ While the watchlist implies that the state used objective measurements to determine what counties should receive additional supplies, the distribution of additional supplies

⁷⁷ Oregon Health Authority, "Email Correspondence on Abbott ID NOW Machine Distribution," (unpublished emails, September 9, 2020, 2020-0767), PDF.

⁷⁸ Ibid.

⁷⁹ Oregon Office of the Governor, "Governor Kate Brown Announces Updates to the County Watch List," *State of Oregon Newsroom*, Oregon.gov, last modified July 30, 2020, <https://www.oregon.gov/newsroom/Pages/NewsDetail.aspx?newsid=53228>.

to those counties was still based on county demands and not metrics. The testing coordinator for Lane County reported that when the county was placed on the watchlist in mid-October, they received additional assistance in the form of staffing and event coordination. However, their supply allocation for other resources, such as testing kits, continued to be determined by how much the county itself requested from the state.⁸⁰ Furthermore, beginning in mid-December, OHA got rid of the watchlist, and simply suggested that counties who needed extra support should make requests through the OpsCenter.⁸¹ This demonstrates that despite being prioritized for supplies, those supplies were still distributed based on county demand, not data indicating the volume of supplies needed in the county based on transmission rates or another metric.

There was additional confusion over what agencies had supplies and who was in charge of procuring them. When I tried to get records of POs the state had for COVID-19 testing supplies, I was told by OHA that the Department of Administrative Services had those records, and then by DAS that OHA had those records. Although I eventually received POs from both agencies, the response from DAS stated:

this report only contains data on purchases made/orders placed by the Department of Administrative Services (DAS). While DAS is the central procurement authority for most state of Oregon agencies, and is leading the state's emergency procurement efforts related to COVID-19, it is possible, indeed likely that other state agencies—particularly the Oregon Health Authority—have procured testing supplies in response to this emergency.⁸²

⁸⁰ Joaquín Ramos (COVID-19 Testing Coordinator for Lane County), in interview with Kristin Yarris, November 1, 2020.

⁸¹ “Living with COVID-19,” coronavirus.oregon.gov, accessed January 14, 2021, <https://coronavirus.oregon.gov/Pages/living-with-covid-19.aspx>. See the section titled “What Happened to the Watchlist” at the very bottom of the webpage.

⁸² Elizabeth Merah, e-mail comm., July 1, 2020.

This statement identifies a major flaw in Oregon’s testing supply system. If supplies were coming in across at least two departments that were not collecting formal data on what supplies were available, as a state, Oregon had no sense of the inventory or availability of state-owned, or even private COVID-19 testing supplies.

Tracking this data is not a far-fetched idea. Hospitals were required to report PPE inventory at least daily and that information was available publicly on OHA and OEM websites. So why not have labs and other entities regularly report on the testing supplies they have, instead of through irregularly distributed, ever-changing testing capacity surveys? Access to this information would allow counties and the state to track how quickly various supplies were being used, where and what supplies were running low, and what supplies were historically scarce, and then prioritize an order for securing supplies that are most needed. Without this information, the state was simply guessing what supplies were needed and at what quantity, which meant when the state made bulk purchases they were not necessarily ordering the testing kits, swabs, or reagents Oregon need. Furthermore, without a comprehensive inventory, distribution was inherently unsystematic because it would be impossible determine how to ration existing supplies to counties.

All of this leads to the conclusion that Oregon’s system for allocating resources, like that of private medical companies, did not utilize a systematic or data-driven method. As a result, the distribution system met the needs of some counties, but failed others, propagating differences in testing availability and levels across Oregon.

Was Distribution Ethical?

This section engages in a discussion of the ethical implications of both private and public COVID-19 test supply distribution in Oregon not using a data-driven or systematic approach to distribute testing supplies. The absence of frameworks for distributing supplies was unethical because some sort of framework for distributing supplies during a pandemic or epidemic is necessary to act ethically,⁸³ whether that framework prioritizes healthcare workers, the medically vulnerable, or the socially vulnerable. A distribution scheme without such a framework was also unethical under an egalitarian lens because such a system, by nature, left the distribution of COVID-19 testing supplies to chance or a first-come, first-served basis. This meant one's chances of acquiring supplies had to do with size, power, or luck, and not need or proportionate to burden, as an egalitarian approach in public health would have it.

Both characteristics of an unethical approach were apparent in how the state distributed publicly-acquired supplies. When supplies were distributed through the OpsCenter, the needs of some providers were met while others were in desperate need of testing supplies. There was no clear rhyme or reason as to why some counties received fewer supplies and had to wait longer to receive them, demonstrating the absence of a statewide distribution framework. This first-come, first-served system also meant a county with less need who made a request first might use up supplies that a county with greater need would not be able to access when making a request later. This meant distribution was not based on an egalitarian approach that favored the worst-off.

⁸³ Emanuel et al., "Fair Allocation of Scarce Medical Resources," 2054; Thompson et al., "Pandemic Influenza Preparedness," under "Lesson from Emergency Ethics"; Vawter et al., "Attending to Social Vulnerability," 48.

When the state did generate criteria for determining who would receive state-owned supplies, there was often little concrete data to support such a distribution. OHA's criteria for distributing Abbott ID NOW machines included prioritizing areas with higher case rates and higher proportions of older citizens or at-risk citizens. This aligned with an egalitarian framework, prioritizing supplies to sub-populations and regions with larger COVID-19 burdens. However, actual distribution relied on informal messages and word-of-mouth instead of concrete data and statistics from each Oregon county. Without such data, in practice supply distribution may not have matched the outlined criteria, making distribution unethical through the lens of egalitarianism because more vulnerable groups may not have actually received access to that resource.

Distribution of supplies through private channels was similarly unethical. One major supply provider to Oregon, Cepheid, claimed they were prioritizing resources for larger providers and states with higher case levels. This may seem ethical because a framework was being used to source supplies to areas most impacted; however, it would only be under a utilitarianist framework. Such a framework aims to use resources in a way that provides the most benefit. Testing supplies would provide more benefit in areas where transmission is higher because they are more likely to find cases. However, such a distribution does not target the systematically disadvantaged, a key element of egalitarianism. This suggests that Cepheid was, in practice, more interested in selling supplies to providers with the most purchasing power than investing in equitable distribution by providing supplies to organizations that served any at-risk populations. Although, unlike with state and health authorities, this is not surprising considering that businesses are not necessarily vested in equitable or ethical distribution practices.

Despite failing to ethically distribute supplies, OHA and other state departments involved in the distribution process were extremely overwhelmed as the pandemic hit Oregon. They had little time to implement a robust system-wide framework and prioritization scheme or collect the data that could inform such a distribution strategy. Instead, attempts to be ethical came in bits, such as with the distribution of the Abbott ID NOW machines. This emergency situation emphasizes the importance of pandemic planning and preparedness. If OHA had drafted ethical frameworks beforehand and had additional data-collection resources, the state could have enacted an ethical distribution framework when an emergency or supply shortage was declared, and altered the framework over time as needed, as opposed to waiting until an emergency leaves the government already overwhelmed.

Gaps in ethical distribution by private companies, while not surprising, also serve the crucial lesson that governments and citizens should not expect private companies to make public health decisions on supply allocation. While public health authorities are obligated to act ethically and fairly, businesses are not. This is why the Defense Production Act (DPA) is a critical executive power. Under the act, the federal government can require companies to prioritize the production of supplies for the government, who can then allocate those supplies in a more ethical manner than the company themselves might.

If private companies or the state of Oregon had utilized metrics such as percent positivity or case rate to dictate supply distribution, not only would distribution be ethical, but more counties, public health departments, and healthcare providers have the

resources needed to uncover cases and outbreaks and track and subsequently track and stop transmission instead of being left in the dark due to a lack of resources.

Chapter 4: Testing Rhetoric and Access

As mentioned briefly in chapter 2, one role of public health is communicating information to various audiences, including politicians passing legislation, medical providers, journalists informing the public, and the lay public itself. The skill is so important that communication is considered one of six competencies public health professionals are expected to have.⁸⁴ Successful communication is key because it can improve the efficacy of disease prevention and health promotion programs and reduce the impact race, ethnic and socioeconomic disparities have on health outcomes, all of which are critical aims of public health.⁸⁵

As the lead public health authority for Oregon's COVID-19 response, the Oregon Health Authority was expected to be experts compiling and disseminating COVID-19 knowledge to medical providers and lay Oregonians, including best practices for using COVID-19 tests. They were also expected to carry out COVID-19 diagnostic testing and provide additional support to county health departments and communities to fulfill their public health role of tracking and preventing transmission on a population level and distributing resources towards the disadvantaged.

This chapter investigates the clarity and consistency of OHA's testing rhetoric and considers how testing rhetoric influenced actual testing practices, and whether those practices were equitable. In this chapter, I do not use the term rhetoric to refer to propaganda or the furnishing of intentionally misleading information. I use rhetoric to refer to the language, word choice, tone, and other linguistic factors surrounding how

⁸⁴ Turnock, *Public Health*, 197 and 215; Regidor et al., "The Role of the Public Health Official," S93.

⁸⁵ Richard K. Thomas, *Health Communication* (New York: Springer Science + Business Media, 2006), 4.

information is conceptualized, discussed and disseminated. Rhetoric is important as it affects the clarity of information and influences how an audience receives and perceives that information.

Findings reveal OHA passed decision-making to healthcare providers, allowing them to create their own testing protocols. Yet, there were inconsistencies between and among OHA's written testing guidance and statements made by OHA representatives, and an overall lack of clear messages from OHA on who to test. As a result, individual providers generated internal protocols that differed across Oregon and over time. The decentralization of decision-making about who should be tested allowed for a piecemeal approach that virtually guaranteed inequities in test distribution. Without any state-wide testing use mandates, the distribution and use of COVID-19 tests was not equitable because racial and ethnic minorities and lower socioeconomic status Oregonians faced greater barriers when accessing testing.

OHA Guidance Told Medical Providers to Make Testing Decisions

One piece of consistent advice from the Oregon Health Authority and local public health departments surrounding how to get a COVID-19 test was to “call your medical provider.” This message was repeated by OHA representatives and in OHA's clinical testing guidance. Despite changes in OHA's testing guidance over time, they consistently emphasized that people who were concerned they had or were exposed to COVID-19 should call their medical provider to assess whether they needed to be tested, and that medical providers should use their own judgment to determine whether the patients in front of them needed to be tested for COVID-19.

OHA’s message that providers could decide whether to order COVID-19 tests for patients was reinforced by multiple OHA representatives such as Dr. Dana Hargunani, OHA’s Chief Medical Officer, and Dr. Tom Jeanne, Deputy State Health Officer and Epidemiologist.⁸⁶ In a March 31, 2020 health care provider webinar, an OHA representative explaining OHA’s clinical testing guidance directly stated that while “these are our current recommendations for the suggested groups of people who should be tested at clinics laboratories, and again this is just a recommendation, just guidance, it is certainly up to the treating provider to decide.”⁸⁷ This indicates that OHA had no intention of enforcing their testing guidelines and wanted to give providers complete authority over testing choices. While this may have meant to empower providers to make decisions based on the patient in front of them and the supplies available, it would ultimately lead to drastic differences in how testing, particularly excess tests, were used across the state.

OHA’s testing guidance reinforced messaging that left testing decisions to medical providers. Guidance from March 11, 2020 to April 30, 2020 told providers they could order testing for patients based on their clinical judgment. Testing guidance released April 20, 2020 told providers that for patients presenting with mild COVID-19 symptoms, testing was at their discretion. This was despite the fact that at the time, OHA only recommended testing individuals with mild symptoms who were a part of specific groups. Guidance from May 1, 2020 to June 29, 2020 indicated that providers

⁸⁶ Oregon Public Health Division, “Press Briefing with Gov. Kate Brown, April 23, 2020,” YouTube video, 16:40, April 23, 2020, <https://www.youtube.com/watch?v=OL0Fi9dhWyY>; Oregon Public Health Division, “COVID-19 Testing in Oregon Q&A,” 2:35, July 29, 2020, https://www.youtube.com/watch?v=djct_AQsE.

⁸⁷ Oregon Public Health Division, “OHA Healthcare Provider Webinar, March 31, 2020,” YouTube video, 13:10, March 31, 2020, <https://www.youtube.com/watch?v=yLYEMmqYU-4>.

could order COVID-19 testing “at their discretion.” Although OHA provided guidelines on who to test and not to test for COVID-19, because those the guidelines were not legally mandated, the phrasing of OHA’s guidance meant providers could test whomever they decided. Since they collected the vast majority of COVID-19 tests, this put overall decisions on who to test in the hands of providers and not public health authorities.

In addition to giving providers this power, OHA encouraged Oregonians to get tested for COVID-19 via medical providers. OHA’s COVID-19 testing locator, published on June 21, 2020, emphasized this point, indicating: “it is always best to contact your health care provider about getting a COVID-19 test.”⁸⁸ County public health websites, including Umatilla and Multnomah counties’, further propagated this message, telling website visitors that their first step should be to contact their primary provider.⁸⁹ Even messages advertising community testing events, which are generally targeted towards those who cannot get access to testing through the healthcare system, made it clear that the healthcare system carried the primary responsibility for testing. For example, a press release about Malheur county’s free community testing event stated: “This testing option is not meant to replace or eliminate other testing offered by local healthcare providers. The goal is to supplement those options in order to ease some of the pressure on the existing system and make the process more accessible to the

⁸⁸ “COVID-19 Testing in Oregon,” Oregon.gov, accessed June 21, 2020, <https://govstatus.egov.com/or-oha-covid-19-testing>.

⁸⁹ “COVID-19 in Umatilla County,” *UCo Health*, accessed August 2, 2020, <http://www.co.umatilla.or.us/health/>; “COVID-19 Testing,” *Multnomah County*, accessed June 27, 2020, <https://multco.us/novel-coronavirus-covid-19/covid-19-testing>.

public.”⁹⁰ This rhetoric clearly demonstrates a system which placed the primary responsibility for COVID-19 testing in the hands of medical providers.

In giving providers the freedom to test as they saw fit, OHA tried to create a rhetoric that framed providers as the limiting factor to expanding testing. In OHA’s Facebook Live Q ’n’ A on testing, Dr. Jeanne told viewers “Healthcare providers screen everyone who asks for a test or needs one. They use their judgment to decide whether to order a test or not. Now, we at the OHA have made a series of guidelines available to those healthcare providers to help them make these decisions.”⁹¹ Dr. Jeanne made a similar comment in a healthcare provider webinar given on April 28, 2020 in response to an informal survey which showed about 25% of health care workers surveyed thought OHA’s testing guidance was too restrictive. Dr. Jeanne responded by reminding providers that the guidance was not restrictive because the ultimate choice was in their hands.⁹² His comment was both preceded and echoed by other OHA representatives. These statements suggest that OHA was simply there to make recommendations but had no real control or power over testing decisions. This narrative separated OHA from healthcare providers by placing the responsibility on providers and not health authorities.

Such rhetoric undermined OHA’s own authority and expertise, which it needed to take charge of if Oregon had any hope of a consistent statewide response. Testing guidelines help maintain equitable access across the state, particularly for populations

⁹⁰ County of Malheur Health Department, “COVID-19 Drive-Up Testing Site Coming to Malheur County,” last modified April 22, 2020, <https://documentcloud.adobe.com/link/track?uri=urn:aaid:scds:US:54fe6e3a-1c64-4fa8-b8f9-d5499ab42a41>.

⁹¹ Oregon Public Health Division, “COVID-19 Testing in Oregon Q&A, July 29, 2020,” 2:35.

⁹² Oregon Public Health Division, “OHA COVID-19 Healthcare Provider Webinar, April 28,” YouTube video, 43:18, April 28, 2020, <https://www.youtube.com/watch?v=snCIxHrgo-A>.

underserved by the healthcare system. When a provider picked who to test without regards to OHA's guidelines, that put the more vulnerable at risk because they were not guaranteed priority access to limited testing supplies. However, instead of enacting laws to regulate how COVID-19 tests were used, something well within their authority during a public health emergency, OHA decided to place decisions on how to use scarce resources in the hands of providers, who do not have the same equity and social-justice based philosophies as public health departments. Since the majority of testing was done by those entities, it led to massive levels of unequally distributed testing in Oregon.

OHA Provided Unclear Rhetoric on Who Should be Tested

From March to July 2020, the Oregon Health Authority was not always clear as to what constituted adequate testing levels. Based on times clear definitions were provided, adequate testing shifted from testing only those who were severely ill or at medical risk; to having enough tests to test anyone with symptoms, asymptomatic contacts in congregate settings, and conduct surveillance testing; to increasing targeted testing at the site of outbreaks across Oregon; to having enough tests to test any Oregon who requested one. Changes in these definitions created confusion for Oregonians over whether Oregon was performing enough testing and for providers on most appropriate use of limited testing resources.

Shifting and unclear definitions of "need" resulted from changes in who was dictating Oregon's testing needs. When OSPHL was the only source of testing, OHA determined who needed to be tested based on their testing capabilities. As testing came online at private providers, OHA allowed those entities to determine who should be tested, enabling providers to generate their own definition of adequate testing that

differed from what OHA presented publicly. As test availability continued to expand, OHA told Oregonians they should have access to a test if they wanted one, placing the power to define need in the hands of everyday citizens. Since various groups, public health professionals, medical providers and Oregonians, might have defined “need” differently, space was left for COVID-19 testing resources to be used differently across the state.

In early March when testing in Oregon was limited to OSPHL, Dr. Sidelinger and Dr. Jennifer Vines, Multnomah County Lead Health Officer, indicated that testing should be reserved for Oregonians seeking medical care with COVID-19 symptoms who could be severely ill with COVID-19.⁹³ Despite the fact that testing at the time was limited, when asked if the state had enough tests, Dr. Sidelinger responded that there were enough tests to meet the current demand.⁹⁴ Within the context of the conversation, this meant OSPHL could test all Oregonians who met OHA’s testing criteria at the time, which was anyone hospitalized with COVID-19 symptoms. So, adequate testing in March 2020 meant testing people who had a medical need due to severe illness.

In the same press conference, Dr. Sidelinger indicated he wanted testing to reach high enough levels so that “if we [public health] identify a case or cluster here in Oregon that we can adequately reach out, do a case investigation, test those that we need to.”⁹⁵ Yet, it is not clear how he defined “need”—was it testing all close contacts once, all close contacts repeatedly during a 14-day quarantine, only close contacts with symptoms, close contacts at greater risk for severe illness, or some combination?

⁹³ Oregon Public Health Division, “COVID-19 Update, March 5, 2020,” YouTube video, 4:10, 10:25, and 12:30, March 5, 2020, <https://www.youtube.com/watch?v=IOZOrcLbnJ4&t=279s>.

⁹⁴ Ibid., 14:39.

⁹⁵ Ibid., 30:30.

Failing to define “need” left space for providers and Oregonians to make different determinations as to who those individuals should be.

As Oregon began offering more COVID-19 testing and OHA began generating testing guidance, who needed testing as capacity expanded remained ill-defined.

Despite the fact that Dr. Sidelinger told providers in a March 12, 2020 press conference that they should not test patients with mild symptoms, he indicated that if such patients did seek care, providers could offer them COVID-19 testing at their discretion.⁹⁶ This was reflected in OHA’s formal clinical testing guidance at the time.⁹⁷ However, like Dr. Sidelinger, the guidance provided no considerations or criteria clinicians should use when determining who to test. This created uncertainty for both patients and providers as to who “needed” a test.

This rhetoric also set a precedent in which providers, and not OHA, began dictating how many tests were “needed.” This structure led to different testing protocols and practices across the state. Health care systems generated internal testing guidelines based on their testing supply levels, staffing, and who they thought should be tested. Testing came down to the decision of individuals who may have been swayed by the number of tests available at their facility or internal guidance from their employer, not merely medical determinations such as age or underlying medical conditions, or public

⁹⁶ Oregon Public Health Division, “Oregon COVID-19 Update, March 12, 2020,” YouTube video, 23:40, March 12, 2020, <https://www.youtube.com/watch?v=PruG7QBbSUs>.

⁹⁷ Oregon Health Authority, “Guidance for Providers Regarding COVID-19 Testing,” March 11, 2020. The series of documents outlining OHA’s testing recommendations were named either “Guidance for Health Systems Regarding COVID-19 Testing,” “Provisional Guidance for Health Systems Regarding COVID-19 Testing,” “Guidance for Providers Regarding COVID-19 Testing,” or “Guidance for Clinicians Regarding COVID-19 Testing.” For clarity, I will consistently refer to these documents using the title “Guidance for Providers Regarding COVID-19 Testing.”

health considerations like exposure and travel history. As a result, who “needed” testing looked different in different health care settings across the state.

In that same press conference, Oregon Governor Kate Brown sent mixed messages about the state of testing in Oregon, going back and forth on whether Oregon’s testing levels were sufficient. She told viewers, “Of course we would like more testing but based on what I’ve been told from public health officials we have an adequate amount.” She later backtracked and said, “we are concerned about our testing capacity.”⁹⁸ Here the Governor sent opposing messages, one that the state had adequate testing levels and another that testing capacity was too low. While her contradicting statements aimed to reassure Oregonians that the state was appropriately responding to COVID-19 while also acknowledging that Oregon should and would expand testing in the future, they sent confusing messages to Oregonians and providers as to whether the state required more testing beyond what public health thought was necessary at the time.

An Oregon Health and Science University representative contradicted Governor Brown’s statements on March 16, 2020. The representative offered viewers a reason as to why testing in Oregon was not, in fact, adequate. He stated:

We are concerned about the lack of ability to test at present because we don’t have any way of knowing who is actually carrying the COVID-19 virus and who is not, particularly among Oregonians who are less symptomatic. So the difficulty is with people who are less symptomatic [have mild or no symptoms]. Do they actually have COVID-19? You don’t know who to isolate and who not to isolate, you don’t know who is and who isn’t infectious, so testing really helps us determine that on an epidemiological standpoint.⁹⁹

⁹⁸ Oregon Public Health Division, “Oregon COVID-19 Update, March 12, 2020,” 38:40 and 48:00.

⁹⁹ Oregon Public Health Division, “Oregon COVID-19 Update: March 16, 2020,” YouTube video, 50:10, March 16, 2020, <https://www.youtube.com/watch?v=2jQndXECPSc&t=1s>.

While OHA’s clinical testing guidelines at the time recommended against testing outpatients with mild symptoms and provided no guidance about asymptomatic testing,¹⁰⁰ and public health officials indicated those testing practices were adequate to Governor Brown, this expert demonstrated why that was not the case. This created further mixed messaging on the status of testing in Oregon and confusion for Oregonians and providers tasked with deciding when to test individual patients as to just who needed to be tested.

About a month later, on April 8, 2020, Governor Brown’s mixed messaging on adequate testing took a complete turn when she admitted that testing capacity in Oregon was inadequate. Testing had only expanded since Brown had last declared that it was adequate, so how could it suddenly be inadequate? Governor Brown revealed that her stance was the result of discussions with multiple healthcare providers who expressed frustration over what they viewed as a lack of testing capacity in the state.¹⁰¹ What these exchanges suggest was that providers were seeing patients that they wanted to test, but were unable to due to a lack of testing availability, and therefore, testing was inadequate.

These exchanges also suggest that public health officials and medical providers maintained different notions of ample testing, as it was public health officials in March who told Governor Brown that testing was adequate. In a press conference a week later, Dr. Sidelinger alluded to the fact that around that time many providers began testing outpatients with mild symptoms as more testing came online. However, it was likely

¹⁰⁰ Oregon Health Authority, “Guidance for Providers Regarding COVID-19 Testing,” March 16, 2020.

¹⁰¹ Oregon Public Health Division, “Press Briefing with Gov. Kate Brown, April 8, 2020,” YouTube video, 24:40, April 8, 2020, <https://www.youtube.com/watch?v=jYg8pli6mL4&t=1s>.

that these expansions were not sufficient to offer testing to all patients with mild symptoms, leaving providers feeling as though testing was inadequate. Since OHA's testing guidance placed testing decisions on providers, they became dictators of what was considered adequate testing, and they decided testing was not adequate. This shift muddled OHA's message over whether or not the state needed to expand testing because OHA and provider perceptions of what was considered adequate differed.

At that same meeting, Dr. Sidelinger realigned OHA's definition of adequate testing with providers' by presenting the first clear definition for testing "need." This definition reinforced providers' desires to test more patients with mild symptoms but also deviated from prior implied definitions of "need." Dr. Sidelinger referenced an OHA analysis which determined Oregon had to conduct 15,000 tests per week to test all Oregonians with COVID-19 symptoms, select groups of asymptomatic Oregonians, and conduct surveillance testing. He went on to say that 15,000 was the number of tests OHA was aiming for to make sure everyone who needed a test could have one.¹⁰² In this context, "need" meant any Oregonian with symptoms and select asymptomatic individuals. This was the first time "need" was explicitly defined both numerically and using defined groups of who should be tested. This definition was a departure from prior ones, which implied those who "needed" a test were either 1) those with severe COVID-19 symptoms or 2) those identified by medical professionals with mild symptoms.

In July 2020, what the state perceived as sufficient testing changed again. Although Oregon was conducting far more than 15,000 tests per week by July 2020,

¹⁰² Idlib., 37:20.

effectively meeting the testing “needs” OHA outlined in May, Governor Brown admitted that the state needed to increase its testing capacity as well as levels of targeted testing in areas of the state experiencing outbreaks.¹⁰³ This meant what was considered adequate testing had clearly changed again because more testing was still needed in the eyes of the Governor. However, it is not completely clear what type of testing Brown was advocating for. Did she mean that the state simply needed to test more Oregonians, test more Oregonians in areas with higher case rates, test specific groups in areas with higher cases, or test more close contacts in areas of the state experiencing discrete outbreaks? Furthermore, OHA’s clinical testing guidance had not been updated since June 30, 2020 and no major changes were made until October 6, 2020. This left providers completely in the dark when it came to determining how the state wanted to expand testing and who they needed to test to properly do so, creating even more space for divergent testing practices.

As testing capacity continued to expand, OHA’s definition of adequate testing changed dramatically, moving from being able to test anyone who needed to be tested to anyone who wanted to be tested. In a July OHA testing Q and A, Dr. Jeanne stated that OHA’s goal was to reach a point where anyone concerned that they had COVID-19 or wanted a test could access one.¹⁰⁴ This represented a change in OHA’s messaging on adequate testing. Whereas before, adequate testing meant being able to test anyone who needed a test as defined by OHA’s clinical testing guidance or Oregon providers, it now meant offering testing to anyone who wanted. Such a rhetoric sent the public the

¹⁰³ Oregon Public Health Division, “Press Briefing with Gov. Kate Brown, July 13, 2020,” YouTube video, 42:50, July 13, 2020, https://www.youtube.com/watch?v=pqcE_5vxZaY.

¹⁰⁴ Oregon Public Health Division, “COVID-19 Testing in Oregon Q&A, July 29, 2020,” 22:50.

message that the amount of testing Oregon “needed” would be dictated by Oregonians, not OHA or medical providers, and that Oregonians should be entitled to tests, whether or not they were available based on testing capacity.

Time Period	Who “Needed” A Test	As Determined By
Feb 28-Mar 12	The severely ill or at medical risk for severe infection	OHA
Mar 12-April 8	Patients with mild symptoms	Medical Providers (and later supported by OHA)
April 8-July 29	Anyone with symptoms, asymptomatic contacts in congregate settings, those randomly selected for surveillance testing	OHA
July 29-Sept	Any Oregon who requested one	Oregonians

Table 3. Summary of Changes in Testing Need from February to September 2020

Changes over “adequate” testing (table 3) broadcasted the paradoxical message that there both was and was not enough testing. Furthermore, continuously changing messaging on who needed to be tested and how adequate testing was in the state generated public confusion over who should be tested for COVID-19. This also helps explain why providers implemented widely varying protocols that were likely based on how much testing was actually available to them.

While OHA and the state’s rhetoric around what constituted adequate testing changed, such changes were necessary. Making statements that testing was sufficient served to sway and reassure the public that Oregon’s testing was at an appropriate level for the time being. The sudden an unprecedented need for testing globally meant that it would take time for more testing to come online and meet additional testing needs conceptualized by the state. Furthermore, changes in who needed to be tested are required to integrate emerging data-based evidence about communities most affected by

COVID-19 and also how its etiological agent, the SARS-CoV-2 virus, spreads. Doing so would promote the most effective use of testing resources to curbing the virus.

Yet, practically speaking, OHA’s changing goals made it unclear how testing might expand in the state or who it would expand to. So, in the process of trying to reassure Oregonians that the state was doing enough COVID-19 testing, OHA generated confusion over what the future of testing in the state should look like, leading to different testing practices across the state. These differences were exacerbated by the fact that OHA left testing choices up to providers.

OHA Provided Unclear Rhetoric on the Appropriateness of Asymptomatic Testing

OHA’s confusing rhetoric surrounding testing was particularly noticeable in discussion of testing asymptomatic individuals. In this section asymptomatic testing encompasses testing individuals who, at the time of testing, do not have symptoms. This can include individuals who have COVID-19 but never develop any symptoms, pre-symptomatic individuals who have COVID-19 but have not yet developed symptoms and will eventually, close contacts who may or may not have been exposed to the SARS-CoV-2 virus, as well as anyone who does not have COVID-19 but is tested as a part of mass testing or routine testing. OHA guidance surrounding asymptomatic testing was either unclear or contradictory, generating confusion for providers and Oregonians as to when testing various types of asymptomatic individuals would be appropriate (table 4). This guidance also failed to push for asymptomatic testing towards groups with disproportionately high rates of COVID-19 cases.

Month	Contradiction or Convolutd Message
March	Verbally told medical providers to only test severely ill individuals with COVID-19 symptoms, but written guidance did not rule out testing patients without symptoms

April	One representative stated asymptomatic individuals were less likely to spread COVID-19 and therefore should not be tested. Another representative made a contradicting statement that COVID-19 was mainly spread by those not showing symptoms, creating confusion over whether asymptomatic individuals should be tested to prevent transmission
June	OHA’s written guidance tells medical providers to “limit asymptomatic testing” to listed groups, but based on the guidance and differing public statements by officials, it is not clear if providers should test someone from those groups whenever they request a test or only test asymptomatic individuals from those groups if they deem it necessary
June	OHA’s clinical testing guidance stated asymptomatic close contacts could be tested, but contact tracing guidelines stated such testing was not recommended
June	OHA’s testing guidance states in one location that health care and essential workers should not be routinely tested, but in another section includes those groups under asymptomatic groups that could be tested
September	An OHA representative tells medical providers that their guidance “never recommended for or against asymptomatic testing of contacts,” even though guidance from March 25, 2020 to April 19, 2020 explicitly stated that testing asymptomatic individuals was not recommended

Table 4. Summary of Unclear Messages Provided by OHA Around the Appropriate use of COVID-19 Diagnostic Tests of Asymptomatic Individuals

Throughout press conferences in March 2020, OHA representatives repeatedly indicated only patients whose illness was severe enough to require hospitalization should receive a test. However, that same month OHA released guidance that contradicted these verbal statements. Guidance released March 11, 2020 suggested that it was ok to test asymptomatic individuals. The guidance was vague, simply stating, “providers may decide to proceed with testing on the basis of clinical judgment.”¹⁰⁵ So, the only guidance for making testing decisions were the two words “clinical judgment.” OHA’s updated guidance released March 16, 2020 provided more explicit considerations for testing when using “clinical judgment.” The guidance listed two criteria to consider: 1) Epidemiological risk factors (close contact, travel, or working or living in a congregate or healthcare setting) and 2) clinical presentation (symptoms and

¹⁰⁵ Oregon Health Authority, “Guidance for Providers Regarding COVID-19 Testing,” March 11, 2020.

negative for influenza).¹⁰⁶ None of the guidance explicitly stated patients had to present with symptoms to be tested. It was not until the next guidance update released March 23, 2020 OHA explicitly wrote “asymptomatic persons and those with symptoms that do not necessitate medical evaluation are not recommended for testing.”¹⁰⁷ Differing messages from health authorities and OHA’s written guidance, one which discouraged asymptomatic testing and another that allowed for it, created mixed messages for providers as to whether it was ok to use scarce testing resources on asymptomatic patients.

In mid-April OHA began recommending testing for asymptomatic contacts in congregate settings, but not for close contacts without symptoms outside those settings.¹⁰⁸ Dr. Hargunani justified limiting asymptomatic testing by explaining that even though there were individuals infected without symptoms, those individuals were less likely to transmit the disease than symptomatic counterparts.¹⁰⁹ Just a week later in a May 1, 2020 press conference, Dr. Sidelinger contradicted Dr. Hargunani and stated COVID-19 was spread largely by those not showing symptoms.¹¹⁰ This contradiction was problematic because it sent mixed messaging regarding the transmission of COVID-19, and implied a need for testing more asymptomatic or pre-symptomatic

¹⁰⁶ Oregon Health Authority, “Guidance for Providers Regarding COVID-19 Testing,” March 16, 2020.

¹⁰⁷ Oregon Health Authority, “Guidance for Providers Regarding COVID-19 Testing,” March 23, 2020.

¹⁰⁸ Oregon Public Health Division, “Press Briefing with Gov. Kate Brown, April 14, 2020,” YouTube video, 14:45, April 14, 2020, <https://www.youtube.com/watch?v=894pJVnDpQs>; Oregon Health Authority, “Guidance for Providers Regarding COVID-19 Testing,” April 20, 2020.

¹⁰⁹ Oregon Public Health Division, “Press Briefing with Gov. Kate Brown, April 23, 2020,” 32:40.

¹¹⁰ It is also possible that this contradiction could be the result of Dr. Sidelinger and Dr. Hargunani not clearly communicating whether they were discussing pre-symptomatic or asymptomatic transmission. It is possible that Dr. Hargunani meant COVID-19 was not spread by individuals who never developed symptoms, while Dr. Sidelinger was stating COVID-19 was spread mostly by individuals who were pre-symptomatic. If this was the case, both would be making accurate statements given evidence about COVID-19 transmission at the time. However, without clarification, the statements would still appear contradictory to the lay public or medical providers making decisions about who to test.

individuals, potentially creating confusion for providers and Oregonians as to whether testing asymptomatic individuals would be appropriate.

Yet, Dr. Sidelinger added that OHA’s stance on not testing asymptomatic contacts would remain the same because with or without a test, the public health recommendations were the same: anyone potentially exposed to COVID-19 should stay home.¹¹¹ Such a statement failed to acknowledge the hardships that come from a 14-day quarantine, particularly for lower income and minority communities. Additionally, if a close contact were infected but never tested, public health officials would not perform contact tracing on that person, potentially allowing the virus to spread unchecked and resulting in an under-reported number of cases, concealing the severity of COVID-19 at any given point in time.

On June 2, 2020 OHA expanded its testing guidance to allow for greater levels of asymptomatic testing. Yet, this guidance provided contradictory messaging, both discouraging and allowing asymptomatic testing. The document used negative language, telling readers to “limit asymptomatic testing to the following groups,” which included close contacts of confirmed or presumptive cases, those exposed in congregant settings, migrant workers arriving in Oregon, and anyone identifying as African American, Latinx, Asian, American Indian/Alaskan Native, or Pacific Islander.¹¹² This phraseology suggested that providers should not have to test the listed groups, but if they have to conduct any asymptomatic testing, it should only be in those populations. This is particularly concerning because the expanded guidance was meant to help

¹¹¹ Oregon Public Health Division, “Press Briefing with Gov. Kate Brown, May 1, 2020,” 50:23.

¹¹² Oregon Health Authority, “Guidance for Providers Regarding COVID-19 Testing,” June 2, 2020.

improve testing levels in minority communities disproportionately impacted by COVID-19, but did not explicitly call for asymptomatic testing in these communities.

Additional messaging from OHA representatives in the news muddied how providers should interpret and carry out the new guidelines. In a statement to the *Oregonian*, OHA director Patrick Allen said “We think they [minorities] should be tested, if they seek it.” But another OHA spokesperson Jordan Modie said testing asymptomatic minorities, “might be appropriate, e.g., to inform public health investigations; but we are not recommending that it be done routinely [...] Health care providers should use their judgment.”¹¹³ These two statements sent different messages. Allen’s statement suggested that any individual from a minority group should be tested if they seek it. Modie’s statement suggested that testing asymptomatic minorities should not be regular practice and that it would be appropriate to turn those individuals away. OHA placed responsibility on medical providers to carry out the all-important work of providing testing to underserved minorities, but offered opposing messages on whether they should test asymptomatic individuals in a minority community.

This confusion manifested in different perceptions among Oregonians and providers as to whether asymptomatic testing was an appropriate use of testing resources. A Latinx couple saw OHA’s updated guidance and assumed that they would be able to access testing as asymptomatic individuals with no known contact to a COVID-19 case. However, when they reached out to two Portland-area providers, the couple were told that they could not be tested because they did not have COVID-19

¹¹³ Brad Schmidt, “Latino man twice rejected for coronavirus testing amid confusion over Oregon guidelines,” *The Oregonian*, June 20, 2020, <https://www.oregonlive.com/coronavirus/2020/06/latino-man-twice-rejected-for-coronavirus-testing-amid-confusion-over-oregon-guidelines.html>.

symptoms. This demonstrates how a lack of coherent and clear messaging alongside a rhetoric that decentralized testing decisions resulted in different perceptions surrounding asymptomatic testing. The Latinx couple believed they could get tested, but medical providers did not.

Those same June guidelines also contained additional contradictions. Despite the fact that the guidance said close contacts of confirmed or presumptive cases could be tested for COVID-19, OHA's contact tracing protocols did not recommend testing for close contacts under monitoring unless they begin to show symptoms,¹¹⁴ meaning contact tracers would not tell close contacts without symptoms to get tested even when testing guidance allowed providers to test those individuals. Practically speaking, this meant a close contact might think, based on OHA's guidelines, that they should seek out testing. However, if they were being monitored by contact tracers following OHA's contact tracing protocols, they would be told not to seek testing. This contradiction would have generated confusion for Oregonians as to whether or not, as an asymptomatic contact, they should expect to get tested.

The guidance also recommended limiting asymptomatic testing to a small subset of groups, including healthcare and essential workers in congregate settings such as healthcare facilities, food-packaging plants, agriculture, or correctional facilities. Yet, that same guidance document contradicted this recommendation. The document explicitly stated "OHA does not recommend routine screening of asymptomatic people for COVID-19, including health care and other essential workers."¹¹⁵ This statement

¹¹⁴ "Novel Coronavirus Disease 2019 (COVID-19): Interim Investigative Guidelines," Oregon.gov, May 1, 2020, 8.

¹¹⁵ Oregon Health Authority, "Guidance for Providers Regarding COVID-19 Testing," June 2, 2020.

seems to suggest that this group should not be tested if they were asymptomatic, even though they were included in the list of people who could be tested if asymptomatic. However, there is a subtle difference. In the statement, OHA was recommending against routine testing (for example testing all nurses once a week). This is different than an asymptomatic nurse with no known exposure getting tested once because they felt the need to and had access, which according to OHA's guidance was ok. While such differences may have been apparent to people within OHA, the guidance sent conflicting messages to providers and congregate setting workers as to whether asymptomatic testing was appropriate.

Statements made by OHA representatives in September and October, later in the pandemic, also indicate internal confusions over whether asymptomatic testing was or was not recommending by OHA historically. In a September 3, 2020 health care provider webinar, Dr. Jeanne told providers that "Our [OHA's] investigative guidelines have never recommended for or against asymptomatic testing of contacts."¹¹⁶ Dr. Jeanne's claim that OHA had never recommended for or against asymptomatic testing was false. Just four months prior, in a May 26, 2020 health care provider webinar, he stated OHA was generally not recommending testing of asymptomatic patients.¹¹⁷ Additionally, all OHA clinical testing guidance from March 25, 2020 to April 19, 2020 explicitly stated that testing asymptomatic individuals was not recommended.

¹¹⁶ Oregon Public Health Division, "OHA COVID-19 Healthcare Provider Webinar, Sept. 3, 2020," YouTube video, 51:10, September 3, 2020, <https://www.youtube.com/watch?v=1aJatmNq7-E&feature=youtu.be>.

¹¹⁷ Oregon Public Health Division, "OHA COVID-19 Healthcare Provider Webinar, May 26, 2020," YouTube video, 23:00, May 26, 2020, <https://www.youtube.com/watch?v=eov8UBC641U>.

Conflicting messages not only painted an unclear picture of how OHA expected providers to use COVID-19 tests, but also discredited OHA's authority.

In a press conference held October 6, 2020, the same day OHA released new clinical testing guidance, OHA Director Allen told viewers and the press that thanks to expanded testing, OHA could begin recommending testing of all close contacts, even if they did not have symptoms.¹¹⁸ The OHA director's statement revealed two key points. First, that from June 22, 2020 to October 6, when OHA's guidance technically allowed for testing asymptomatic contacts, OHA did not actually want those individuals to be tested because they were only now telling providers they should test asymptomatic contacts. Second, Allen's statement contradicts what Dr. Jeanne said a month prior about OHA not being for or against testing asymptomatic contacts. If in October OHA was just beginning to recommend testing asymptomatic contacts, the implication is that prior, OHA was not recommending for that use of tests. These retrospective statements on past testing recommendations reveal that how OHA conceptualized using tests was not how they communicated it in official documents. This is another example of mixed messages coming from OHA to providers and the public on whether this form of asymptomatic testing was appropriate.

OHA's reasoning for not strongly recommending asymptomatic testing to providers and the public was founded upon poor reasoning. OHA used the argument that such testing would likely yield false negatives, making the test un-useful and giving individuals a false sense of security. OHA's clinical testing guidance from May 9, 2020

¹¹⁸ Oregon Public Health Division, "Press Briefing with Gov. Kate Brown, October 6, 2020," YouTube video, 9:45, October 6, 2020, <https://www.youtube.com/watch?v=ziuXOqnssvI>.

to June 29, 2020 indicated that the sensitivity of PCR tests for people without symptoms was low.¹¹⁹ In two separate healthcare webinars, OHA representatives told providers that asymptomatic individuals were more likely to receive a false negative result from PRC tests and tests in general, providing a false sense of security for those individuals. Dr. Jeanne also claimed it was likely asymptomatic individuals had a low viral load and therefore false negatives would be more common.¹²⁰ What is noteworthy about these comments is that they were made either just before or well after OHA changed their testing guidance to allow for limited asymptomatic testing. So, again, while OHA allowed such testing in their publicly-released guidance, they continued to discourage asymptomatic testing, sending conflicting messages.

Had OHA clearly and strongly recommended for asymptomatic testing, it is possible that providers throughout the state would have offered such testing. Testing more individuals without symptoms would provide public health authorities with greater information about transmission levels, prevalence and distribution patterns in the state, especially since a high percent of individuals remain asymptomatic. Armed with this information public health could make comprehensive and better-informed decisions on appropriate interventions and guidance about safe activities. Such testing would also uncover previously undetected transmission, initiating contact tracing, isolation and quarantine before further spread could occur, further reducing cases.

¹¹⁹ See OHA’s “Guidance for Providers Regarding COVID-19 Testing,” from May 9, 2020 to June 2, 2020.

¹²⁰ Oregon Public Health Division, “OHA COVID-19 Healthcare Provider Webinar, May 26, 2020,” 23:00; Oregon Public Health Division, “OHA COVID-19 Healthcare Provider Webinar, July 2, 2020,” YouTube video, 20:27, July 2, 2020 <https://www.youtube.com/watch?v=AUK5HOlgWxQ>.

Overall, OHA’s official testing guidance and representatives sent out mixed messages on whether and when asymptomatic testing would be appropriate. This, alongside OHA’s message that testing decisions were up to providers, offered little assistance for entities across Oregon trying to decide how to use testing resources. As I will discuss in a later section, many organizations offered COVID-19 tests to a wide range of asymptomatic individuals, indicating that they were tuning OHA out because they were inconsistent, contradictory, and unhelpful when it came to figuring out how to use tests. This led to divergent testing practices across the state that exacerbated inequities in accessing COVID-19 tests, particularly among groups and communities facing greater barriers to accessing health care services.

Public Health Testing Roles were Placed in the Hands of Private Providers

Public health’s role is to prevent disease and promote health and health equity. In the context of COVID-19 testing, this meant conducting widespread diagnostic testing without regard to symptom or contact status to prevent disease transmission, and testing groups underserved by the private medical system.¹²¹ However, during the COVID-19 pandemic, public health agencies did not have enough resources to accomplish these goals statewide. As a result, traditional public health were placed into the hands of the private medical system. This occurred both through OHA’s clinical testing guidance placing those responsibilities on providers and naturally due to high demands for COVID-19 testing from congregate settings such as essential workplaces and long-term care facilities. This posed an issue because private systems are not incentivized to provide care to minorities without insurance or other barriers to testing,

¹²¹ Turnock, *Public Health*, 92.

while public health is. As I will later demonstrate, this resulted in unethical testing and stark differences in testing over time and space in Oregon.

There were two ways in which the Oregon State Public Health Lab tested in ways which aligned with its epidemiological duties. Beginning March 25, 2020, OHA carried out testing for anyone symptomatic in a congregate setting. On April 20, 2020 they began offering testing to asymptomatic individuals in those settings. Beginning April 4, 2020, OSPHL began COVID-19 testing for patients with symptoms seen at the tribal health centers NARA and Chemawa.¹²² Testing symptomatic and asymptomatic individuals in congregate settings served the public health role of preventing transmission because authorities could quickly detect and isolate cases in settings where transmission would cause a large number of cases. Offering testing at tribal health centers provided medical services to a group with barriers to the healthcare system.

While the OSPHL offered testing in congregate settings, they also allowed and told private medical providers to do the same. Prioritizing testing for non-Native American racial/ethnic minorities was also left up to private medical providers. According to OHA's June 2, 2020 clinical testing guidance, testing asymptomatic persons who may have been exposed in a congregate setting, asymptomatic migrant workers upon entry into Oregon, and asymptomatic people from specific minority groups was acceptable if testing capacity allowed.¹²³ Testing asymptomatic contacts in congregate settings and providing testing for migrant workers and minorities with no known exposures but with greater risk due to social vulnerabilities falls under the public

¹²² Oregon Health Authority, "Guidance for Providers Regarding COVID-19 Testing," March 25, 2020 and April 4, 2020.

¹²³ Oregon Health Authority, "Guidance for Providers Regarding COVID-19 Testing," June 2, 2020.

health department's roles of preventing the spread of disease and providing services to those with barriers to the healthcare system. Yet, OHA's guidance told providers to take on these roles.

This was problematic for achieving equitable testing because not many medical providers took on the role of testing racial and ethnic minorities without symptoms. Out of four large providers in the Portland-metro area, Oregon Health and Science University was the only one who followed OHA's guidance and explicitly offered testing to minorities without symptoms.¹²⁴ This exemplifies how traditional public health, social-justice-based duties were placed into the hands of private medical systems that did not always follow through on the public health role assigned to them by OHA's testing guidance. This was problematic and unethical because it meant racial and ethnic minorities with higher barriers to testing and higher COVID-19 case rates did not receive increased access to testing.

Although OSPHL on paper would not explicitly test racial/ethnic minorities besides Native Americans, OSPHL did contribute to some testing for BIPOC communities because they analyzed tests from some community testing events that targeted those communities.¹²⁵ However, community testing events throughout the state for minority groups relied heavily on private medical systems to offer services to the socially vulnerable. In Marion county, local public health authorities (LPHAs) partnered

¹²⁴ "OHSU Health Testing Options," *OHSU*, accessed 27 August 2020, <https://www.ohsu.edu/health/coronavirus-resources>.

¹²⁵ For example, Malheur County Community Testing Events.

with Woodburn Ambulance to run testing events for the Latinx community.¹²⁶ In Lane county, LPHAs ran community testing events for Latinx and African American communities in partnership with Willamette Valley Toxicology and the University of Oregon.¹²⁷ ¡Salud!, a private provider that serves migrant farmworkers, provided free testing for this population as they entered Oregon for grape harvesting.¹²⁸ In these instances, private medical systems conducted testing aimed to equitize diagnostic testing and prevent transmission in congregate work settings, a traditionally public health function.

Providers also assisted in mass testing at workplaces when a few cases of COVID-19 were detected among employees. In two outbreaks at Pacific Seafood, one in a Newport and the other in a Warrington facility, the company hired a private lab to test every facility employee.¹²⁹ Klamath Health Partnership, a federally qualified health clinic that receives public funding but is not run by public health authorities, conducted testing for an agricultural workplace in Klamath Falls when a few workers tested positive.¹³⁰ OSPHL provided mass testing for some facilities when an outbreak arose,

¹²⁶ Rachel Alexander, “Starting in Woodburn, Marion County Works with Community Groups to Expand Testing,” *Salem Reporter*, August 27, 2020, <https://www.salemreporter.com/posts/2860/starting-in-woodburn-marion-county-works-with-community-groups-to-expand-covid-testing>.

¹²⁷ Kristin Yarris, e-mail comm., November 18, 2020.

¹²⁸ Emily Teel, “Wine Harvest Season Looming: ¡Salud! Screens Agriculture Workers for COVID-19,” *Statesman Journal*, last modified July 20, 2020, <https://www.statesmanjournal.com/story/news/2020/07/20/non-profit-salud-screens-agriculture-workers-covid-19-oregon-wineries/5430809002/>.

¹²⁹ “Cluster of Cases Confirmed,” *Lincoln County Oregon*, last modified June 4, 2020, <https://www.co.lincoln.or.us/hhs/page/cluster-cases-confirmed>; “COVID-19 Outbreak at Pacific Seafood Facility – 77 Test Positive,” *Clatsop County Oregon*, last modified September 24, 2020, <https://www.co.clatsop.or.us/publichealth/page/covid-19-outbreak-pacific-seafood-facility-77-test-positive>.

¹³⁰ Erik Neumann, “Klamath COVID-19 Outbreak Shows Risk to Farmworkers,” *OPB*, October 13, 2020, <https://www.opb.org/article/2020/10/13/klamath-covid-19-outbreak-shows-risks-to-farmworkers/#:~:text=Last%20Thursday%20the%20Oregon%20Health,the%20area%20during%20harvest%20season.&text=The%20cluster%20was%20deemed%20a%20workplace%20outbreak%20by%20OHA>.

including for two seafood plants.¹³¹ But despite OSPHL’s involvements in mass testing at select workplaces, they were not always involved in this process, and budget and resource limitations affected how much testing public health authorities could conduct to trace the spread of COVID-19 in workplaces.

In a July healthcare webinar, Dr. Jeanne reinforced the fact that OHA did not have the resources to test every migrant farmworker in Oregon.

We have helped provide testing and support in agricultural and food processing facilities with outbreaks. At this point I’m not sure if we are able to provide testing from public health for all farm workers as they arrive [in Oregon], that is our recommendation. We do recognize there are some real concerns about employers who many not be excited to test their workers because they have a conflict of interest in wanting to have workers working and not quarantined or isolated. So there are some real concerns.¹³²

In a testing capacity survey, Josephine county health authorities indicated it would be impossible for the public health department to conduct facility-wide testing without additional assistance if a single COVID-19 case arose in a large workplace. The response indicated:

We question how we can do this kind of wholesale asymptomatic/mildly symptomatic testing without significant support: for us to contract to a private lab could cost close to 25k, and we currently have only about 50 test kits available to us as the LPHA. We believe the overwhelming majority of these people could obtain testing through a drive through, but without centralized capacity to do outbreak related testing, it is not clear how effective that strategy would be for detection.¹³³

¹³¹ “Eighth COVID-19 Case Reported; Individual is Bornstein Employee,” *Clatsop County Oregon*, last modified May 3, 2020, <https://www.co.clatsop.or.us/publichealth/page/eighth-covid-19-case-reported-individual-bornstein-employee>; “County Responding to Seafood Plant COVID-19 Case,” *Clatsop County Oregon*, last modified July 22, 2020, <https://www.co.clatsop.or.us/publichealth/page/county-responding-seafood-plant-covid-19-case>.

¹³² Oregon Public Health Division, “OHA COVID-19 Healthcare Provider Webinar, July 2, 2020,” 57:00.

¹³³ Oregon Health Authority, “Testing Supply Requirements by County 5.21.20,” June 8, 2020.

In the same survey, Clackamas county public health also noted that the testing needs at workplace outbreaks were far beyond what the public health department could manage, suggesting that workplaces in the county were relying on private health systems for testing when it was needed.

These excerpts indicate that Josephine and Clackamas counties' local health departments and OHA were unable to fully carry out the public health role of widespread testing to prevent transmission in a congregate setting. They did not have enough testing kits, nor did they have the funding to outsource testing to a private company. This would mean employers and companies would have to pay for these services themselves through private means. And as Dr. Jeanne pointed out, some employers were not incentivized to do so. Without guaranteed testing from public health, the ability for employees or residents to get tested on a facility-wide scale was based on choices made by the private companies running the facilities. Some facilities might decide to dedicate the financial resources to such an effort, while others might not. As I will demonstrate in the next section, this resulted in inequitable testing practices because some congregate facility residents were tested, while others were not.

It is clear that OSPHL and local public health authorities in Oregon did not have the capacity to conduct anywhere close to the amount of testing that was needed to fully carry out public health duties, particularly widespread facility testing and testing for disproportionately impacted and underserved minorities and those without access to the health care system. As a state, public health authorities only had one lab, and resources were limited at the county level. This also helps explain why OHA placed testing decision in the hands of medical providers, because that was where the primary

infrastructure and capacity to test was. Given the dominance of private health care, underfunded public health systems and the fact that public health testing was reliant on private systems with their own agendas (which do not always align with public health), public health authorities need either more funding to carry out more testing themselves or increased authority over the private system to conduct testing to meet public health's goals.

Rhetoric Lead to Differences in Access Across Geography, Time and Space

While OHA created testing guidance and recommendations for providers offering COVID-19 testing, OHA told providers that the ultimate decision on whether to order a test for a patient would be in the hands of individual providers and sent mixed and changing messaging over when testing certain types of patients was appropriate. This led to wildly different testing practices across the state and exacerbated testing inequities. By placing the ultimate decision on providers, OHA created a space where medically trained professionals and the health care system became the creators of testing guidelines and criteria, which varied over geography, time and space.

I use “geography” to refer to differences between counties, different parts of the state, or the same spaces (e.g.: hospitals, correctional facilities, community testing events) in different parts of the state. I use “time” to refer to differences in who could get tested one month compared to another (e.g. March vs August). I use “space” to point out differences in testing accessibility in different types of locations where COVID-19 testing took place (e.g.: hospitals, correctional facilities, community testing events). These terms are all important because they offer a way to recognize and capture just how dynamic Oregon's testing situation was and demonstrate that one's ability to get

tested was dependent upon factors which were out of the control of individuals looking to access testing.

The Importance of Location and Space: Differences in Protocols at the County Level

Since OHA did not establish guidance for testing by Local Public Health Authorities, testing protocols and recommendations varied between Oregon counties.¹³⁴ What is clear from this data is that the types of assistance county public health departments would provide to congregate settings (such as long-term care facilities, correctional facilities, and agricultural workplaces) ranged from simply coordination, to working with or contracting with providers, to themselves providing testing supplies and/or personnel to collect test specimens. As seen in figure 3, the number of counties that provided no response or an unclear response regarding their role in testing at LTCFs, food and agricultural facilities, and correction facilities were 28%, 50% and 50%, respectively (shown in grey). The percent of counties who stated they would provide testing supplies were 31%, 11% and 14%, respectively (shown in green). The percent of counties who stated they would provide testing supplies and staffing to assist were 22%, 14% and 22%, respectively (shown in blue). The percent who stated that testing would be provided by private providers were 17%, 25% and 14%, respectively (shown in red). Counties offering testing supplies and personnel gave assistance under varying circumstances, ranging from as needed, to only those with symptoms, to close contacts (with or without symptoms), to everyone in that facility. Additionally, not all

¹³⁴ This section draws on the series of documents outlining each Oregon county's Phase 1 reopening applications submitted to the Oregon Governor's Office: Oregon Phase 1 County Reopening Applications, Oregon Office of the Governor, April and May 2020, <https://govstatus.egov.com/reopening-oregon>.

counties offered the same treatment to different types of correctional facilities, with many favoring or offering more assistance to LTCFs.

Counties offering different types of testing assistance to different types of congregate facilities indicates responses to outbreaks likely differed in different Oregon counties. These differences also reflect a broader decentralized response, in which counties were expected to follow some baseline rules and provide certain services, but were left to fill in gaps left by the state, including deciding how much or how little they wanted to be involved in testing in congregate settings.

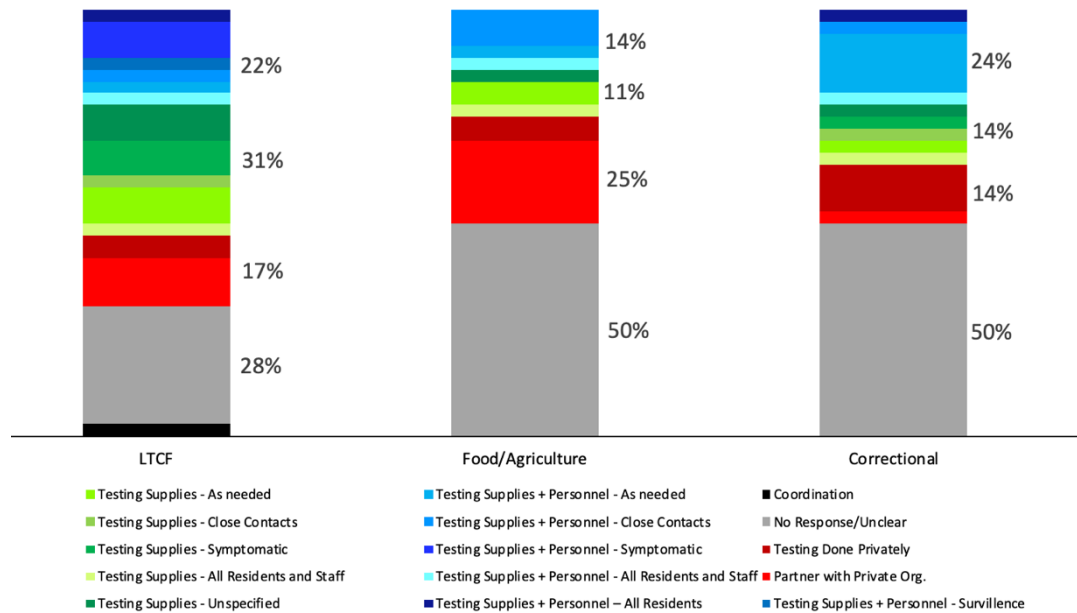


Figure 3. Summary of Types of Testing Assistance Offered by Counties to Congregate Settings.

This table summarizes the percent of counties that offered testing assistance to LTCFs, food and agricultural workplaces and correctional facilities. Gray indicates counties that offered no assistance, red indicates counties that offered assistance via private organizations, green indicates counties that offered to provide testing supplies, and blue indicates counties that offered testing supplies and personnel. Different shades of green and blue represent different categories of who (symptomatic, asymptomatic etc.) could access those supplies.

The Importance of Space: Differences at Long-Term Care and Correctional Facilities

Despite advocating for asymptomatic testing in congregate settings with suspected COVID-19, OHA’s plans and actions made it clear that testing was not equally distributed between different congregate settings. Although congregate settings vary, testing protocols and practices in two very similar congregate settings, long-term care facilities (LTCFs) and correctional facilities, were strikingly different, with LTCFs receiving much higher levels of testing than correctional facilities.

In early June, OHA released a plan to test all residents and staff at LTCFs (nursing homes, residential care, and assisted living facilities) in Oregon by September 30, 2020 and then implement routine testing whereby each LTCF staff member was tested at least once a month. Meanwhile, guidance from OHA and Oregon’s Human Service’s Agency Operation Center outlined extensive measures to combat COVID-19 in correctional settings, but never directly called for inmate testing beyond inmates with symptoms or with direct contact to a confirmed case. Instead, prevention measures relied heavily on symptom screening, interviews, as well as isolation and quarantine measures. OHA’s guidance also told correctional medical staff to refer to CDC guidance to determine if and when inmate testing was appropriate.¹³⁵ Yet, CDC’s guidance did not give any definitive answers either, simply telling readers to consider various factors without providing explicit situations in which testing should be performed.¹³⁶

Difference in guidance and testing requirements were reflected in actual testing numbers at both types of facilities. While all LTCF employees and residents statewide (a total of 57,400 people) were tested by early October, only 7,153 inmates in Oregon, just over half of the sitting population, had been tested.¹³⁷ However, because inmate

¹³⁵ “ODOC COVID-19 Infection Prevention, Testing, and De-Escalation Protocol” Oregon.gov, last modified July 6, 2020, <https://www.oregon.gov/doc/covid19/Documents/tiered-protocol-institutions.pdf>; Oregon Health Authority, “Interim Guidance on Management of Coronavirus Disease 2019 (COVID-19) in Correctional and Detention Facilities,” last updated August 18, 2020, <https://sharesystems.dhs.oha.state.or.us/DHSForms/Served/1e2288s.pdf>.

¹³⁶ “Interim Considerations for SARS-CoV-2 Testing in Correctional and Detention Facilities,” The Centers for Disease Control and Prevention, accessed August 8, 2020, <https://www.cdc.gov/coronavirus/2019-ncov/community/correction-detention/testing.html#:~:text=Testing%20symptomatic%20and%20asymptomatic%20individuals.in%20correctional%20and%20detention%20facilities>.

¹³⁷ “Long Term Care Facility COVID-19 Testing,” Oregon.gov, accessed October 6, 2020, <https://govstatus.egov.com/or-dhs-ltcf-testing>; “COVID-19 Status at Oregon Department of Corrections Facilities,” Oregon.gov, accessed October 17, 2020, <https://www.oregon.gov/doc/covid19/Pages/covid19-tracking.aspx>.

populations circulate, far more than 13,000 individuals had been in a correctional facility during the first six months of the pandemic. This meant the portion of total inmates in correctional facilities that had been tested from March 2020 to September 2020 was lower than 50%.

The stark difference in testing protocols and the percent of LTCF employees and residents tested compared to correctional facility inmates reflects how COVID-19 testing levels were different across spaces in Oregon, in this case among different types of congregant facilities.

The Importance of Geography: Differences at Major Healthcare Providers in August

From June to August 2020, testing availability greatly expanded in Oregon; yet, OHA made no major changes to their clinical testing guidance during those months. Given a lack of formal guidance and confusing statements from OHA representatives on how to use tests, as more tests became available, individual providers made different choices on how to use the greater quantity of tests available and developed their own internal testing criteria.

A snapshot of testing protocols at a few major Oregon providers in late August 2020 demonstrate divergent and unclear protocols (table 5). COVID-19 websites for Samaritan Health and Providence stated they would only test patients with COVID-19 symptoms. Meanwhile, Kaiser, Peace Health, Legacy and OHSU stated they were testing patients with symptoms, and would test patients without symptoms who meet specific criteria. Kaiser, Peace Health and Legacy used vague clauses such as

Provider	Criteria
Kaiser	<ul style="list-style-type: none"> Required for travel

	<ul style="list-style-type: none"> • Entering a facility for certain surgeries • Require testing for other reasons
OHSU	<ul style="list-style-type: none"> • Giving birth, having surgery or other qualifying inpatient procedure • Close contact with someone who has been diagnosed with COVID-19 • Public health department required testing for contact tracing • Migrant/seasonal agricultural worker • Black, African American, Latinx, American Indian/Alaska Native, Asian, Asian American or Pacific Islander • Has a disability • English is not their first language
Peace Health	<ul style="list-style-type: none"> • Anyone admitted to inpatient care • Those with concerns about active infections
Providence	<ul style="list-style-type: none"> • Hospitalized patients
Legacy	<ul style="list-style-type: none"> • Those who believe they were exposed
Samaritan	<ul style="list-style-type: none"> • No patients without symptoms can be tested

Sources: Listed Provider Websites

Table 5. Criteria for Asymptomatic COVID-19 Testing at Select Private Providers in August 2020.

“concerned about active infection or exposure” and “require testing for other reasons,” to describe the asymptomatic patients they would test. This phraseology was unspecific about just who those patients were, and suggested that providers were not following explicit guidelines but judging the need for testing on a case-by-case basis.

In the few cases specific reasons for asymptomatic testing were mentioned, different providers took different stances. OHSU’s criteria aligned with OHA’s clinical testing guidelines at the time. Kaiser stated they would test those who required one for travel, while Legacy explicitly stated that they would not perform tests for that same purpose. Meanwhile, LegacyGo and Nova offered testing explicitly to any asymptomatic

Oregonian on a first-come, first-served basis.¹³⁸ This indicates that testing criteria and the ability for asymptomatic individuals to be tested differed across providers in Oregon, reflecting a decentralized response to testing whereby OHA presented testing guidelines but choose not to enforce them.

The Importance of Geography: Differences in Community Testing Events

Community testing was unevenly distributed across the state and largely inadequate for filling gaps left by testing in the private sphere. Not all local county public health departments in Oregon carried out community testing, and among a sampling of those who did, the frequency and accessibility of such events greatly varied (table 6). Umatilla and Lincoln county held sporadic, one-time events, while Multnomah, Clatsop, and Union counties offered testing on a regular weekly basis in the same location. Malheur and Lane fell in the middle of the spectrum, frequently holding events but in different locations throughout each time.

The criteria for testing at community county events was not the same county-to-county. Multnomah and Union county only tested individuals with symptoms, and Clatsop prioritized those with symptoms or who were close contacts. Meanwhile, Lane and Malheur offered some testing events exclusively to members of minority

¹³⁸ “Facts About COVID-19 Testing,” *Kaiser Permanente*, accessed August 27, 2020, <https://healthy.kaiserpermanente.org/oregon-washington/health-wellness/coronavirus-information/testing>; “COVID-19 Testing,” *Providence*, accessed August 27, 2020, <https://www.providence.org/services/covid-19-testing>; “OHSU Health Testing Options,” *OHSU*, accessed 27 August 2020; “Testing Information,” *PeaceHealth*, accessed August 10, 2020, <https://www.peacehealth.org/coronavirus/eugene#testing>; “Legacy-GoHealth Urgent Care Oregon & Washington,” *Legacy Health*, accessed August 27, 2020, <https://www.gohealthuc.com/northwest>; “COVID-19 Testing,” *Legacy Health*, accessed August 27, 2020, <https://www.legacyhealth.org/about/news-and-media/COVID-19-Info-page/covid-19-testing.aspx>; “Samaritan Announces Increased COVID-19 Testing,” *Samaritan Health Services*, accessed August 27, 2020, <https://www.samhealth.org/about-samaritan/news-search/2020/04/22/coronavirus-testing-near-me-covallis-albany-lebanon-newportInfo>; Melissa Graboyes, personal comm., August 12, 2020.

County	Date(s)	Frequency and Time	Criteria
Multnomah	Beginning 6/8/20	By appointment M/Th 9:30am-4:00pm	Symptoms; focus on BIPOC and those w/o insurance
Clatsop	Beginning 5/11/20	By appointment M/(T)/W [†]	Residents 18 or older; priority for contacts and those w/ symptoms
Malheur	May-August 2020	Single weekday 10am-2pm 1x month in 3 locations	Oregon's June 2, 2020 clinical testing guidance
Lane	Beginning 6/26/20	Irregular in different towns throughout the county. Some events on weekends, late afternoons-early evenings	Specific events for minority and other underserved communities (Latinx, Black, Frontline, Rural); other events open to general public
Umatilla*	7/13/20 8/22/20 8/23/20	Three one-time events	None
Lincoln	Unknown	One-time	Close contact of a confirmed case identified by public health authorities
Union	5/31/20 -7/14/20	By appointment at public health clinics during clinic hours	Anyone with symptoms

Sources: County Public Health Department Websites

Notes: The information presented in this table is not expected to be representative of all counties, but does not reflect scenarios unique to the presented counties either. Instead of compiling this information for all 36 Oregon counties, I chose these counties because they had the most easily accessible information and updated the information regularly. I monitored these county websites frequently in June, July and August 2020.

*These events were conducted by private organizations Good Shepard Hospital and Oregon Child Development Coalition

[†]Began M/T/W, but by July 14, 2020 switched to M/W only

Table 6. Summary of Community Testing Events in Selected Oregon Counties from March 2020 to September 2020

communities and others for the general public regardless of symptom status. Umatilla county's three events were open to anyone who wanted a test. This meant that, depending on one's county of residence, symptom status and self-identified racial or ethnic group, their ability to receive free, low-barrier testing varied across the state.

The Importance of Space: Differences in Medical and Community Testing

Who could receive a test from a medical provider was much more limited compared to who could receive a test at a community testing event. As illustrated by tables 6 and 7, opportunities for asymptomatic testing were much more expansive in community testing events. While testing by medical professionals often required asymptomatic patients to have a reason for getting tested, multiple community testing events—such as those in Clatsop, Lane, and Umatilla—allowed any asymptomatic resident to be tested, no questions asked. This meant that an asymptomatic individual seeking testing might be turned away by a medical provider, but not a community testing event. This would result in differing access to tests in different spaces.

Anecdotes also demonstrated how, early in the pandemic, testing in healthcare settings was much more limited than community settings. One Oregonian left a comment during a July 24, 2020 OHA Facebook Live Testing Q and A on their drastically different ability to get testing at both types of sites. The comment read:

I got a test a month ago in Parkrose when I walked by the testing site at the Latter-Day Saints church. I didn't have symptoms and don't think I had been exposed, but there was no line so I went ahead. I knocked on all doors in my apartment complex let them know and handle [sic] out masks given out on site. Results arrived two days later. I had my annual physical two days ago and asked about a test before visiting my parents. They said none available.¹³⁹

This comment clearly shows that medical providers limited testing, particularly of asymptomatic individuals, much more than community testing events, demonstrating how testing opportunities differed across spaces.

¹³⁹ Grant Schott, 2020, "I got a test a month ago in Parkrose..." Facebook, July 24, 2020, <https://www.facebook.com/OregonHealthAuthority/videos/facebook-live-covid-19-testing-in-oregon-ga/3114524831972219/>.

Summary

If a centralized response had been mounted with consistent and enforced testing guidance and protocols, Oregonians, regardless of their location, space, healthcare provider, or congregate setting, would have the same level of access to a COVID-19 diagnostic test. In this alternative, two symptomatic individuals accessing testing via different medical provider would both receive a test. Two asymptomatic individuals in different counties would both be able to receive a test at the community testing events offered by their county. In the same month, an asymptomatic senior in a long-term care facility *and* an asymptomatic individual in a correctional facility would receive a test if they asked for one. Yet, this was not the case in Oregon.

Were Tests Distributed Ethically?

It could be argued that these variations in who could get tested based on geography, time and space made COVID-19 testing in Oregon unethical. According to egalitarianism, in order to be ethical, access to resources must be proportionate to burden and actions must be taken to remove barriers.¹⁴⁰ A close analysis of testing practices in Oregon between March and September 2020 indicate that lower socioeconomic status Oregonians, incarcerated populations and racial, ethnic minorities faced greater barriers to accessing diagnostic tests; and were not tested proportionately to their burden of COVID-19 cases. Without any state-wide testing use mandates or sufficient additional efforts by OHA to get local public health authorities and private providers to target larger portions of resources to groups disproportionately impacted by

¹⁴⁰ Benn, "Equality Moral and Social"; Hugo Adam Bedau, "Egalitarianism and the Idea of Equality," 13-17.

COVID-19, the distribution and use of COVID-19 tests was not equitable through an egalitarianist lens.

Unethical Distribution Among Incarcerated Oregonians

Procedures and recommendations limiting testing in correctional facilities were in stark contrast to testing plans for long-term care facilities (LTCFs). Given that LTCFs were the only group recommended for mass facility wide testing and routine testing, it is important to consider why Oregon chose to focus scarce testing resources on this population, and whether or not such a focus was ethical. The most apparent answer lies in the major difference between LTCFs and the other populations largely affected by COVID-19—the average age of people in each setting. Those living in LTCFs are older and therefore more likely to experience severe infections or complications that will land them in the hospital, ICU, or on a ventilator. They are also more likely to succumb to their infection.¹⁴¹ Therefore, an initial testing of all residence and staff followed by consistent testing of staff would help catch cases before the first symptomatic case arose, prevent infections that would lead to hospitalization or death, and help alert health authorities to the potential healthcare needs and manage health resources. This comprehensive mass testing plan reveals OHA’s first and foremost priority was to not overwhelm hospitals and the health care system.

Although Oregon’s priorities were understandable, a failure to implement strong testing plans in other congregate settings reveals stark inequities in access to testing

¹⁴¹ In August, Oregonians over 60 had a 27% hospitalization rate and 9% case facility rate. Those rates for Oregonians of all ages were 8.5% and 1.7%, respectively. Source: Oregon Health Authority, “COVID-19 Weekly Report,” Oregon.gov, August 8, 2020, <https://www.oregon.gov/oha/PH/DISEASES/CONDITIONS/DISEASESAZ/Emerging%20Respiratory%20Infections/COVID-19-Weekly-Report-2020-08-05-FINAL.pdf>.

between different types of vulnerable populations. As of September 30, 2020, the percent of confirmed COVID-19 cases among residence and staff was twice as high in correctional facilities as LTCFs. Three times the number of correctional facilities had at least one case of COVID-19 as LTCFS (table 7). This indicates that, while the raw numbers showed more cases at LTCFs, correctional facilities were actually seeing higher rates of COVID-19 than LTCFs.

Facility	Cases	Percent Infected	Deaths	Percent Died	Facilities with Cases	Percent with Cases
Long-Term Care	2,631	4.5%	303	0.53%	162	24%
Correctional	1,384	7.9%	12	0.08%	12	80%

Sources: Oregon Health Authority; Oregon Department of Corrections

Note: Data on LTCF cases includes cases among Oregonians who were not residents or staff if they resulted from transmission that stemmed from those (for instance, the spouse of a health care worker in a long-term care facility). Therefore, LTCF totals may slightly overstate the number of cases and infection rates among residents.

Table 7. Reported Cases of COVID in two Congregate Settings from March 1, 2020 to September 30, 2020

Acting in an egalitarian fashion requires skewing resources towards the more disadvantaged. Seeing as there were higher case rates in correctional facilities, but higher death rates in LTCFs, whether OHA’s decision to mandate mass LTCF testing but not do the same for correctional facilities was an ethical decision depends upon whether death or illness is considered a greater disadvantage. The elderly were more disadvantaged because they were more likely to die from COVID-19, but adults in custody were more disadvantaged because they were more likely to be infected with COVID-19.

While there is a case to be made regarding the vulnerability of both populations, a perspective focusing on the social vulnerability of detainees suggests that denying prisoners the same testing resources offered to LTCFs was unethical. Incarcerated

individuals have historically been treated as second-class citizens due to their criminal status. They also earn little to no income while incarcerated and have fewer freedoms than the rest of society. In this sense, these individuals are of a much lower socioeconomic status and are extremely vulnerable socially and economically. They have no resources or control over their own ability to be tested. They are not legally guaranteed testing, even if they ask for it. Residents in LTCFs have more freedom to access testing. Residents (or a resident family member if the resident is in assisted living) could secure a test themselves or request a test from caregivers. These factors place residents of correctional facilities at a greater disadvantage compared to LTCF residents and, under an egalitarian philosophy, deserving of greater resources.

Yet, OHA's decision to require testing for LTCFs and not even provide concrete testing guidelines for correctional facilities demonstrates that the state did not think incarcerated individuals were deserving of additional resources. At the county level, only 50% of LPHAs indicated they would provide testing assistance in the case of an outbreak at a correctional facility, and 38% indicated they would provide direct assistance, as opposed to passing off the task to private entities. Meanwhile, 72% of LPHAs indicating they would provide assistance to LTCFs and 53% offering direct assistance. According to egalitarianism, this was unethical because incarcerated individuals, a group more disadvantaged than residents of LTCFs, received fewer resources from counties.

Further evidence of how correctional facility inmates were seen as less deserving of testing resources comes from statements and action from government officials. From March to June 2020, Governor Kate Brown refused to release inmates in

order to reduce their risk of catching COVID-19. When she finally did in late June, only 57 inmates were released, demonstrating that the government did not highly value prisoners' well-being.¹⁴² In September 2020, Ron Miles, a spokesperson for the Eastern Oregon Correctional Institute (EOCI), home to the largest correctional facility outbreak in Oregon, told *The Eastern Oregonian* that EOCI would not test all of their staff and inmates because

the availability of tests and the timely processing of them makes large-scale or institution wide events impractical. A single institution would flood the local testing companies, using all of the local resources for an extended period of time, rendering these companies unable to help local hospitals and clinics.¹⁴³

While true, his statement was a bit disingenuous considering OHA required LTCFs to test all staff and residents over the course of three months and then test all employees monthly. That process certainly took up valuable local resources across Oregon as well. Was it ethical to take up local testing resources for LTCFs but not correctional facility inmates? According to egalitarianism, no.

It is clear that the well-being of inmates was not valued as highly as residents of LTCFs. The difference in treatment is alarming because these two types of congregate settings are extremely similar in terms of epidemiological risk. Both contain a sedentary resident population, staff that come and go and interact with the outside world, close quarter and shared living spaces (such as eating and bathroom facilities), and have populations that spend large amounts of time indoors each day. While testing in

¹⁴² Conrad Wilson, "Oregon Governor Commutes Sentences of 57 Inmates Vulnerable to COVID-19," *OPB*, June 25, 2020, <https://www.opb.org/news/article/oregon-governor-commutes-57-prison-sentences-covid-19/>.

¹⁴³ Alex Castle, "COVID-19 Outbreaks in Umatilla County Prisons Still Growing," *East Oregonian*, September 10, 2020, https://www.eastoregonian.com/coronavirus/covid-19-outbreaks-in-umatilla-county-prisons-still-growing/article_86d991e0-f2bc-11ea-9d9c-b392252c5801.html.

correctional facilities would likely require fewer resources than testing at LTCFs, OHA or the state had no desire to push for such testing.

This could have been for many reasons. One likely reason was that the state was more focused on preventing deaths and determining that testing resources were best used in places where death rates would be higher. Another possibility is that social and cultural norms that devalue the lives of incarcerated individuals meant the majority did not believe this population should have access to a scarce, potentially life-saving resource in the same way the elderly should. While the state can ultimately justify testing in LTCFs because of higher hospitalization rates, failing to provide testing for inmates created inequities and was unethical from an egalitarian standpoint.

Unethical Distribution Among Ethnic and Racial Minorities and Lower Socioeconomic Status Oregonians

OHA and local public health department advice to “call your medical provider,” to get a COVID-19 test was based on the assumption that Oregonians already had one or knew how to navigate the health care system. These assumptions meant some groups—notably, racial and ethnic minorities, immigrants, and Oregonians with a lower socioeconomic status (SES)—who did not fit these criteria were likely underserved, overlooked and placed at a disadvantage when seeking testing from very early stages of the pandemic. Since OHA’s guidance on who should be tested remained just guidance, counties and providers were left to determine whether and how much they wanted to focus time and resources on additional testing resources for communities disproportionately impacted by COVID-19. However, state, county and private resources failed to adequately address those barriers statewide. This meant testing use

was unethical in Oregon because one's chances of acquiring a test had to do with a variety of factors including experience navigating health systems, insurance status, location, and work schedule—factors other than need or proportionate burden.

Private provider testing criteria exacerbated inequalities in who could access a test. Most were not offering tests to asymptomatic people. When they did offer asymptomatic testing, it was often due to the person being hospitalized for a non-COVID reason or potentially exposed to COVID-19. They rarely focused on offering services or doing outreach to ethnical and racial minority groups or other communities disproportionately impacted by COVID-19 for asymptomatic testing, with OHSU being one exception (see table 6). Providers who did offer asymptomatic testing without restrictions took reservations on a first-come, first-served basis, meaning one's ability to access these tests depended upon their knowledge of what was available. In the process of gaining that knowledge and securing a test, one would have to navigate online medical websites, make phone calls, and complete a pre-screening ranging from an online survey, phone or video chat, to in-person screenings. The need to reach out and complete a screening process created barriers and potential challenges for those without experience navigating health systems, who do not feel comfortable speaking English, and undocumented Oregonians and minority communities who were fearful of the medical system.

Under an egalitarian philosophy this was unethical because it denied tests to communities who were most vulnerable to disease, the most likely to be exposed and infected. When considering that health care systems are oriented towards doing what is best for individual patients, it is not surprising that there was a gap in what might be

viewed as best practice from a public health perspective. Healthcare providers followed a more utilitarian approach, offering tests to patients with symptoms or who had been exposed to COVID-19 and were medically more likely to have COVID-19 than any given asymptomatic individual. The few that did provide testing to anyone on a first-come, first-served basis also followed a utilitarian approach. If one considers the perspective that testing as a whole is beneficial because it leads to case detection that can stop transmission, testing offers the same benefit to everyone. It does not matter who gets those tests since the benefit of one test is equal whether it is given to a White or Black Oregonian, a white-collar worker or an agricultural worker.

Publicly-funded county public health agencies stepped in with community testing events for front-line workers, at-risk racial and ethnic groups, those without insurance, who spoke a language other than English, and those who were fearful of the medical system due to their immigration status. However, these events were unable to adequately fill the service and ethical gap left by private testing because they were not widely available, sporadic, relied on a first-come, first-served basis, sometimes required people scheduling appointments ahead of time rather than just showing up, were advertised primarily in English and on public health websites, and were offered during limited times—many of them falling during the M-F, 9-5 workday.

Multnomah, Clatsop and Union county all required participants to call ahead or pre-register for testing. This meant anyone who could not book a spot in advance might be rejected for testing or have to wait longer to receive a test. While Malheur and Lane county offered the largest number of community testing events, the events were sporadic, taking place at different locations and points in time. This meant it was

difficult for someone to get a test right when they might need one since the location and time were constantly changing. Malheur held the events monthly in three different locations, Vale, Ontario and Nyssa. These three cities are located within the same area in the Northeast part of the county, meaning any county resident in another part of the county would have to drive potentially hours to one of those sites. The situation was similar in Multnomah and Clatsop counties, where the testing site was in one location in the county. So, even though testing was being offered more regularly in those two counties, residents would still need resources (transportation, time, and the ability to plan ahead) to reach the testing site.¹⁴⁴

Furthermore, many events took place during weekday working hours, creating a barrier for those working at jobs where they could not take time off, or feared that doing so could lead to job loss. Events in Multnomah county were held from 9:30am-4pm on weekdays, events in Malheur county took place on Wednesdays from 10am-2pm. Events in Clatsop county were also on weekdays, and after calling to secure a testing spot, residents would be assigned a time to show up for testing on the next upcoming testing date. This meant anyone who wanted to be tested by the county would have to make the testing time or not be tested at all. Additionally, the time of these events was the same every week or each time the event was held.¹⁴⁵ The lack of non-weekday, non-workhour appointments and lack of variety and options in testing times meant many people who could have been tested and wanted a test simply could not come at the

¹⁴⁴ See table 6

¹⁴⁵ “COVID-19 Testing,” *Multnomah County*, accessed June 27, 2020; County of Malheur Health Department press releases titled “COVID-19 Drive-Up Testing Flyer” from May 12, 2020 to June 16, 2020, <https://malheurhealth.org/press/>; “Drive-through COVID-19 Testing,” *Clatsop County Oregon*, accessed July 14, 2020, <https://www.co.clatsop.or.us/publichealth/page/drive-through-covid-19-testing>.

indicated times. Lane county was much better, offering testing events in the evening and on weekends.

Community testing events were also extremely vulnerable to supply chain constraints and delays experienced nationally. Union county public health began offering testing services May 3, 2020. Two months later on July 10, the county announced it was experiencing delays in testing and four days later cancelled all community testing until further notice, limiting testing to those identified by public health officials.¹⁴⁶ Clatsop and Malheur counties, who collected samples at community testing events and had them analyzed by commercial labs, reported increasing delays in receiving testing results over time. When Clatsop county began community testing in May, the turnaround time was five days. By August, it was seven to ten days.¹⁴⁷ In May, Malheur reported that testing results from Quest had delayed, and hoped that switching to a Quest lab closer by would reduce the turnaround time to five days moving forward. However, in June and July the county continued to experience larger delays and opted to send samples to the OSPHL instead. Even with that change, they continued to expect a five to seven-day turnaround time.¹⁴⁸ These turnaround times were well beyond the ideal 24-48 hours, and forced individuals to remain in quarantine while awaiting test results, a privilege that many attending community testing events did not always have.

¹⁴⁶ Center for Human Development Public Health, “COVID-19 Public Health Update,” last modified July 14, 2020, <https://www.chdinc.org/uccovid19PR07142020.pdf>.

¹⁴⁷ “Community Drive-through COVID-19 Testing Begins Week of May 11,” *Clatsop County Oregon*, last modified May 8, 2020, <https://www.co.clatsop.or.us/publichealth/page/community-drive-through-covid-19-testing-begins-week-may-11>; “Drive-through COVID-19 Testing,” *Clatsop County Oregon*, accessed July 14, 2020.

¹⁴⁸ County of Malheur Health Department, “Ontario COVID-19 Drive Up Testing Press Release,” last modified May 26, 2020, <https://documentcloud.adobe.com/link/review?uri=urn:aaid:scds:US:2cc8712a-a419-4e6d-b948-f09e7a3d9689>; “August COVID-19 Drive-Up Testing Sites,” *Malheur County Health Department*, last modified August 3, 2020, <https://malheurhealth.org/>.

While OHA, as the state's public health department, was expected to step in with these additional resources to reduce or eliminate COVID-19 disparities, decades of underfunding for public health departments meant public health authorities in Oregon did not have the capacity to conduct anywhere close to the level of testing that was needed to equitize it. Instead of using public health's police powers to equitize testing being done in the private sector, OHA generated testing directives that put equitable testing partly in private hands without enforcing such directives. This heightened unequitable access to testing among previously mentioned groups because private systems are not incentivized to provide care to the underserved. Since one's chances of acquiring a test from a provider had to do with factors other than need or proportionate burden, and public health did not supplement enough testing to those groups proportionate to the increased risk they faced, the use of testing in Oregon was unethical under an egalitarian approach.

Even when providers and community testing events had criteria, hours and a location that would allow migrant workers, ethnic and racial minorities, the uninsured, undocumented, non-English speakers and those with a lower socioeconomic status to secure a test, there were not adequate resources for finding those opportunities. Existing resources included county public health websites, OHA's testing locator, and medical provider websites. These resources failed to break down barriers for the aforementioned groups because they were not comprehensive and included contradictory information, meaning those who were able to utilize those resources would still have to make phone calls and interact with the medical system, creating barriers for many groups of Oregonians.

Information provided on these reputable sources contained inaccurate or incomplete information about the testing criteria, making it even more difficult for those without a primary care provider to secure a COVID-19 test. OHA’s COVID-19 testing locator provided information on where testing was available and the criteria for testing at each location, but the information was not verified, meaning it could be inaccurate. Deschutes, Washington and Lane county health departments contained comprehensive updated lists of private testing locations on their websites. As seen in table 8, information on Washington county’s website was not comprehensive for every provider. The testing list on Deschutes County’s website was available in English and Spanish, but the website did not provide any information regarding the criteria for testing at each provider.¹⁴⁹ Lane County also did not list specific testing criteria and told viewers to call providers first, as a referral would be required at all locations.¹⁵⁰

Provider	Criteria	Pre-Screening	Cost for Insured	Cost for Uninsured
Kaiser	Kaiser members with symptoms	?	?	?
OHSU	OHA’s criteria	On-site	Free	Free
Providence	Anyone with symptoms and some without	?	Free	Free
LegacyGo	None	?	Free	\$100
Portland Urgent Care	?	?	Free except for Kaiser and OHP insurance	Call for pricing
ZoomCare	Anyone with symptoms	Video	?	?
Virginia Garcia Clinics	Anyone with symptoms or high-risk individuals	On-site	?	?

¹⁴⁹ “Testing Sites,” *Washington County Oregon*, accessed August 27, 2020, <https://www.co.washington.or.us/HHS/CommunicableDiseases/COVID-19/testing-sites.cfm>; “COVID-19 Testing Locations in Central Oregon 4/23/2020,” Deschutes.org, accessed June 24, 2020, https://www.deschutes.org/sites/default/files/fileattachments/health_services/page/12901/covid-19_test_locations2.pdf.

¹⁵⁰ “When Should you get Tested for COVID-19?,” LaneCounty.org, accessed July 31, 2020, https://lanecounty.org/UserFiles/Servers/Server_3585797/File/Government/County%20Departments/Health%20and%20Human%20Services/Public%20Health/Coronavirus/Testing%20flyers/Testing%20sites%20V6%20.pdf.

	without symptoms			
Neighborhood Health Center	Anyone with symptoms or BIPOC individuals without symptoms	Phone	?	?
American Family Care	None	Video	Free	Free
RiteAid Pharmacy	CDC's criteria	Online survey	Free	Free
Walgreens	CDC's criteria	Online survey	Free	Free

Source: Information pulled from Washington County's public health website on August 27, 2020.

Table 8. Information on COVID-19 Testing at Providers in Washington County in August

So, while testing information provided by county public health departments helped Oregonians find a provider, individuals looking to get tested would have to contact them to verify whether or not they could receive testing at that location and schedule a test. Therefore, these resources did not reduce barriers for non-English speakers, undocumented Oregonians and minority communities accessing the health care system.

One critical observation is that testing criteria for certain providers and testing locations differed depending on which source you went to for information. In August, Washington County's COVID-19 testing sites page indicated Kaiser was only testing Oregonians with COVID-19 symptoms, but Kaiser's own website indicated asymptomatic individuals could get tested in certain circumstances.¹⁵¹ LegacyGo's website indicated they were only offering asymptomatic testing for those who may have been exposed, but Washington County's website stated they were conducting asymptomatic testing for anyone on a first-come, first-served basis.¹⁵²

Provider websites also contained contradicting information. One page of Providence's website indicated they were only testing those with symptoms who

¹⁵¹ "Facts About COVID-19 Testing," *Kaiser Permanente*, accessed August 27, 2020.

¹⁵² "Legacy-GoHealth Urgent Care Oregon & Washington," *Legacy Health*, accessed August 27, 2020.

worked or lived in congregate settings, were healthcare personnel, or were at higher risk for severe infection due to age or medical conditions. On another page, they indicated they were testing anyone with symptoms or who had been exposed to COVID-19 in the last two weeks.¹⁵³ Yet, their coronavirus assessment tool told patients with no underlying conditions or medical concerns who had been exposed but did not have symptoms that they did not need testing. A lack of consistent information about who could or should get tested, even within the same organization, increased barriers for those without experience navigating medical systems because they would have to call around to find out if they were eligible for testing in a certain location.

For individuals who could secure a test, another barrier was cost. A snapshot of Washington County Public Health’s testing page on August 27, 2020 (table 8), shows just how difficult it was to find information on test cost before getting tested. This lack of information might discourage the uninsured from getting tested. Although Section 3202(b) of the CARES Act required providers to list the cash price of a COVID-19 diagnostic test publicly on their website, even by August 2020, three major Oregon providers—OHSU, Kaiser, Providence—had not, further discouraging the uninsured, and even some with insurance, from accessing testing due to the fear of unexpected costs or co-pays.¹⁵⁴ Overall, Oregonians, particularly those without a regular provider or experience accessing the medical system, had to dig around to find a place to get tested

¹⁵³ “COVID-19 Testing,” *Providence*, accessed August 27, 2020; “Oregon: Testing for COVID-19,” *Providence*, accessed August 27, 2020, <https://coronavirus.providence.org/blog/uf/608168091>.

¹⁵⁴ While in theory the CARES act covers COVID-19 testing costs, loopholes allow insurers to charge co-pays on asymptomatic tests and providers to bill uninsured patients. Additionally, OHA’s clinical testing guidance told providers that, despite federal laws, asymptomatic testing may not be covered by insurance.

based on their symptom and insurance status, creating multiple added barriers to accessing testing.

OHA's decentralized approach to testing that left decision-making to providers and counties resulted in a lack of resources for finding and securing testing, and a lack of testing itself. Overall, this meant one's ability to access a COVID-19 diagnostic test not only differed by geography, time and space, but also by insurance status, documentation status, and experience navigating health systems. Barriers to testing disproportionately affected migrant workers and ethnic minorities who were more likely to be uninsured, undocumented, or only speak a language other than English. These groups faced larger barriers to accessing testing through the medical system due to potential costs, fear of deportation, and an inability to interact with and navigate the health system.

Since Oregon could not provide resources to those groups proportionate to the increased risk they faced or reduce barriers or inequities in test access, a true egalitarian approach to COVID-19 testing was not achieved. As DeBruin, Liaschenko, and Marshall point out, "efforts to target resources to at-risk populations can succeed only to the extent that the state makes reasonable efforts to remove barriers to access."¹⁵⁵

OHA's response failed to adequately remove those barriers during the first six months of COVID-19 transmission in Oregon, diminishing the agency's ability to maintain an ethical use of COVID-19 diagnostic tests in the state. If OHA had made sufficient efforts to standardize the state's response and remove barriers, not only would the state's response have been more ethical, but also more successful. These groups had

¹⁵⁵ DeBruin, Liaschenko, and Marshall, "Social Justice in Pandemic Preparedness," 588-9.

higher COVID-19 case rates, but less access to tests. Increasing their access would have meant more case detection and actions leading to reduced transmission, hospitalization and death and an improved COVID-19 outcome for the state.

Conclusion

Despite Oregon's inability to appropriately collect and depict diagnostic testing data and mount an ethical response to diagnostic testing, it is worth mentioning that Oregon fared far better in the face of COVID-19 than many other states. A combination of strong, mostly accurate, public health messaging, statewide mask mandates, decisions about when to open and close businesses to and allow certain social activities, and Oregonians' willingness to follow public health advice meant case rates, hospitalization rates, and death rates across 2020 were much lower in Oregon than most other US states.¹⁵⁶ So, while Oregon's process was not appropriate, the outcome of that response was comparatively favorable.

More notably, perhaps, is that many of the issues surrounding poor data and unsystematic, unethical testing distribution were not unique to Oregon. At the federal level, there was no complete picture of diagnostic testing in the country and incongruent assessments of testing capacity. The Center for Disease Control and Prevention's COVID-19 testing data page and weekly reports indicated that not all COVID-19 tests performed in the US were reported to the agency, meaning their metrics undercounted the number of diagnostic tests performed.¹⁵⁷ When assessing testing capacity, Oregon chose testing kits as its limiting factor while the federal government used testing machines as the limiting factor, leading to different metrics of capacity at the state and federal level. Differences in such analyses are significant because the federal

¹⁵⁶ "COVID-19 Data Tracker," *Centers for Disease Control and Prevention*, accessed January 15, 2020, https://covid.cdc.gov/covid-data-tracker/?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fcases-updates%2Ftesting-in-us.html#testing_testsperformed.

¹⁵⁷ *Ibid.*; "Past Weekly Surveillance Reports," *Centers for Disease Control and Prevention*, accessed January 15, 2020, <https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/covid-view-past-summaries.html?Sort=Posted%20Date%3A%3Adesc>.

government uses their data to allocate scarce COVID resources, giving little credence to state-level data.

Poorly coordinated public distribution systems also existed at a national level. Evidence suggests that the federal government's supply tracking and distribution system was not well coordinated. Documents obtained from the CDC on what testing resources were sent to Oregon only recorded two of the weekly shipments of 50 Abbott ID NOW testing kits supplied by the federal government. However, OHA recorded receiving such shipments from at least May 8, 2020 to July 5, 2020, much more than two weeks. A CDC representative suggested that the discrepancy existed because either the state of Oregon directly ordered subsequent tests from Abbott, or distribution was doled out to another agency.¹⁵⁸ If the former is true, the federal government was placing the distribution of public supplies in private hands. If the latter is true, it indicates the federal government was uncoordinated and inconsistent in what departments handled tasks over time, and that there was little cross-talk between departments.

Evidence also suggests that federal supply distribution relied more heavily on policies than data when allocating resources. When distributing Abbott ID NOW testing platforms and testing kits, specific policies around who could receive those supplies superseded evidence indicating who needed them. The Abbott ID NOW machine existed before COVID-19, and was used by providers to test patients for a variety of other diseases, including influenza. Many providers nationally and within Oregon already had Abbott ID NOW machines, they simply had to get the COVID-19 test kit to

¹⁵⁸ Centers for Disease Control and Prevention, "Testing Supplies Sent to Oregon," (unpublished document, August 24, 2020, 20-01974), Excel Spreadsheet; Laura Spencer, e-mail comm., August 28, 2020.

use their machine to test for COVID-19. However, Oregon authorities were told that the cartridges from the federal government could only be used for Abbott machines supplied by the federal government. This stipulation meant the state could not distribute those supplies to providers who already had an Abbott machine but needed testing kits.

OHA's unwillingness to dictate who should be tested mirrored the lack of guidance at the federal level. The CDC's testing guidance rarely laid out specific scenarios in which testing should be conducted, and utilized suggestive, rather than authoritative guidance. Furthermore, the CDC never enforced any testing guidelines, so states, public health agencies, and individual providers were free to follow the guidance or ignore it, which they often did.

These findings suggest that states and public health systems have room to improve future epidemic and pandemic responses. However, it is important to note that oftentimes these gaps in Oregon's COVID-19 testing response resulted from underfunded and outdated public health systems. Decades of underfunding in public health has made effective responses difficult, but monetary, political and public support for public health activities can help public health systems embody some key best practices that were absent in Oregon's COVID-19 testing response. Investing in public health systems matters for a few reasons. One, COVID-19 is not the last public health emergency governments and public health departments will have to respond and adapt to. Not only that, but public health is tasked with collecting, analyzing and presenting health data and developing public health interventions in the absence of pandemics. The system is only as strong as its weakest link, so how can we expect public health

departments to continue to act appropriately when the pandemic revealed weaknesses in the system?

Testing is only one component of pandemic response. During the COVID-19 pandemic, public health, the government and other entities worked to understand the biological underpinnings of the causative virus to develop treatments and vaccines, generate disease mitigation recommendations such as mask-wearing, and implement social support services for those who might have lost jobs or faced other fallouts from the pandemic. Health care systems and researchers worked to manage patients in an overwhelmed health care system while trying to determine the best way to treat and care for patients with a disease with no known treatments. All of those sectors had to quickly adapt to the onset of the pandemic to collect data, communicate within and outside their bubbles, distribute resources, and hopefully, act ethically.

Yet, evidence suggests that ethical issues and concerns persisted in other areas of pandemic response. Although I stopped formally collecting data after the end of September 2020, I kept a close eye on COVID-19 response trends, and I noticed a familiar unethical trend in vaccine rollout—a lack of equitable access, which was even acknowledged publicly by OHA Director Patrick Allen.¹⁵⁹ Early in distribution, a lack of coordination left some medical providers with extra vaccinations, which were randomly given to those who did not fit the existing criteria who just happened to be at the right place at the right time. As with testing, states created their own, divergent schemes for prioritizing vaccinations. In some states, teachers were first in line to receive a vaccination, in others, they were not; the dates when certain groups could start

¹⁵⁹ Oregon Health Authority, “Oregon Coronavirus Update,” e-mail comm., April 16, 2021.

to get vaccinated varied by state; the wealthy bought their way to the front of the line; and there were widespread reports of non-high risk, non-frontline worker and under 65 individuals getting vaccination way ahead of others in those prioritized groups. While the United States is in a much better position than it was in 2020, these lingering concerns remind us that pandemic experience alone is not enough. Long-term investments in public health systems and centralized, systematic, authoritative, decision-making is essential for ensuring an appropriate response to pandemics and epidemics, as well as the everyday promotion of health.

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