



OFFICE OF THE
STATE AUDITOR

December 7, 2020

Rich Saunders, Interim Executive Director
Utah Department of Health
288 N 1460 W
Salt Lake City, Utah 84116

RE: Issues Related to the Performance of the Utah Department of Health Pandemic Response

Dear Director Saunders,

The Office of the State Auditor evaluated data, processes, and methodologies related to the global COVID-19 pandemic from the Utah Department of Health (DOH). We interviewed various personnel, performed limited testing of data quality, and reviewed the production and use of associated modelling.

1. Current Health Data Systems Appear to Produce Adequate Quality Data

DOH maintains several data systems (e.g., Epitrax, UHARMS, ESSENCE) to collect information about the public health of Utah's population. This involves combining millions of pieces of information from diverse sources: individual lab reports, surveys of hospitals, etc. We sampled this data to test for completeness, but did not test for correspondence with individual lab reports stored by private companies or government-run hospitals and clinics. The structure and content of these data correspond with expectations relative to diverse data (e.g., periodicity, coding, demographics, corrections). Our interviews with the IT professionals and analysts responsible for making sense of this disparate information and subsequent review of the computer code showed how these data flowed within and across the systems, teams, and agencies to inform epidemiologists and other government officials about key measures to understand the pandemic situation.

While early data exhibited some inconsistencies, incremental improvements to DOH processes show systems largely produce timely and representative data. All complicated data systems balance data quality with other strategic goals, DOH should recognize and evaluate such tradeoffs. Data fidelity to the world, efficiencies across information verification, and clear communication with the public should be persistent goals of DOH throughout the pandemic and beyond. To increase public trust in this information resource, the website could provide a better explanation of the interconnectivity of high quality health databases and daily numbers, tables and graphs. DOH developed flexible methods for quickly communicating public health information across multiple dimensions of concern (e.g., case discovery, trends, risk factors) to the public via a daily updated dashboard that has increased in scope over time.

DOH also helped build and populate another dashboard system with coextensive data and additional non-public layers of information to inform the pandemic response among several hundred public and private (e.g., health system administrators) users. We have some concern, consistent with the concerns expressed internally in some interviews, that the time, effort, and complexities in coordinating these different platforms could lead to miscommunication and/or delay in producing real-time data relative to the evolving pandemic. However, these data point to no widespread manipulation or obvious fabrication of pandemic-related health information.

2. Evaluate Controls to Systems like EpiTrax for Data Integrity

In evaluating the above systems, we detected some anomalies. While the inconsistencies appear reasonable, the fact they exist can cast doubt on expectations surrounding the public's consumption of this health information. For example, a recent improvement to the public dashboard allows for data aggregations to be downloaded each day. As time passes, sometimes months later, the number of positive case counts for the detection of SARS-COV-2 from lab reports change. This can be caused by new discovery (missing labs) or clarifications from case investigation (inaccuracy in initial data). These changes in data have always been apparent, but with data downloads, clear transparency, and adequate explanation the actual reasons for evolving data quality could engender more public confidence in this data.

The ability to alter databases should be tightly controlled. Hundreds of people, some of them newly trained employees conducting contact tracing activities, currently have the ability to modify data within sensitive systems. Least restrictive access, data logs, and careful review for changing data is warranted. We recommend implementing processes to either restrict or evaluate unexpected changes to these data with review before systems incorporate purportedly better information without losing much sensitivity in the flow of new data. For example, learning that someone died on a particular day, but is represented as having died on a different day in the database, creates confusion after that information is communicated in aggregate to the public. Backfilling data with the most accuracy possible is important, but can also create confusion if not properly monitored when apparently stable data is still being modified months after the fact.

3. Retain the Data, Models, and Recommendations Underlying Public Health Advice and Orders to Adequately Justify Government Interventions

As a primary agency, DOH has a variety of roles in responding to a Public Health Emergency. During a rapidly changing and complex event like a pandemic, public health advice—with the underlying data, models, and expertise—is constantly updated as a situation unfolds. Our request to produce the epidemiological models and other analyses encapsulating data-driven recommendations produced interviews, emails, and some access to system level data, but not specific data or model output upon which public health recommendations might be based. In order to improve the public response to pandemics, during the current situation and into the future, transparency and traceability in the facts and forecasts—as understood and communicated to stakeholders in the moment—is critical.

Epidemiological models, computer code, all relevant data, and the resultant output underlying public health recommendations should be retained. This information should persist beyond coordination meetings, voiced conversations, and emails. For example, when high stakes society wide restrictions are either imposed or relaxed, the underlying justification should be preserved in and across time to, if nothing else, preserve idiosyncratic improvement in the underlying models. While a constantly updated dashboard may contain the best current understanding of a situation, a vintage series of both the underlying data and its implications should be retained to discover the state of what was recommended, whether the advice was adopted, and what other intervening reasons prevailed in the course of decision making. Short of these facts, post hoc evaluation of potential courses of action become more speculative.

4. Public Health Data Lightly Informed the Evolving Pandemic Response

While the DOH, or the State for that matter, cannot control the prevailing message, it does have an important role in informing the public discourse regarding public emergencies. Declarations, proclamations, plans, press conferences, all combine to set expectations. On April 17, 2020, the Utah Leads Together – Version 2, plan introduced a color-coded Health Guidance System to “provide specific direction to Utah residents and businesses” (page 8). Within two weeks, the system largely moved from “red” to “orange” and then two weeks later to “yellow.” Risk status changes seemed inconsistently connected to the data as statewide case growth accelerated in June and again in August. The semaphores were scrapped for a rules-based Transmission Index on October 13, 2020. DOH communicated internal frustration with the color-coded systems’ lack of responsiveness given prevailing data in intervening months, indicating that such might undermine broader confidence in the government response.

Accurate delivery of facts, and a greater understanding of the full context surrounding good information can engender population level trust and resilience in the face of uncertainty beyond even the ability to shape people’s behavior. While being “data-driven” or “data-informed” might be terms of art, it is clear that perception and fidelity to consistent, accurate, and timely data is a key to confidence in clear public messaging.

A global pandemic is an extraordinary event that stresses all aspects of a government’s response, from operational systems to effective communication. Focus on exceptions, weaknesses, and other problems should not detract from other successes and improvements exhibited by the many devoted professionals within the State of Utah. We thank the Department of Health for their professionalism throughout this audit.

Sincerely,



David Stringfellow
Chief Economist & Deputy State Auditor

cc: Melanie Henderson, Internal Audit Director