

Data Dashboards for Advancing Health and Equity: Proving Their Promise?

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ABOUT THE AUTHORS

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 See also Dasgupta and Kapadia, p. 886.

As the COVID-19 pandemic has clearly demonstrated, the role of local data in guiding public health action cannot be overstated. Government agencies, frontline community organizations, health care institutions, policymakers, researchers, and advocates all depend on data to guide their work and, especially during COVID-19, take swift action. Much has been written about gaps in the nation's surveillance capacity and the need to improve reporting timeliness.¹ Less has been written about an ever-growing array of health-related data aggregation dashboards that have stepped in to address some of these gaps. These resources build on surveillance tenets (to provide data to assess burden and distribution of adverse health events and prioritize public health actions) and share the premise that data draw power and value from being placed in context and compared across jurisdictions and geographies, over time, between population groups, and by community characteristics. Indeed, one of the driving forces behind data dashboards has been an effort to reframe how we think about

health and its many determinants. Another driving force has been the goal of making data available to wider and more diverse audiences, often with visualizations intended to catalyze change. But are these data dashboards meeting their intended promise? Are they useful to public health stakeholders? We believe the answer is rapidly trending toward “yes.”

The introduction of data dashboards by nongovernmental entities is relatively recent. One of the first, the County Health Rankings & Roadmaps (CHRR), was released in 2010 by the University of Wisconsin in partnership with the Robert Wood Johnson Foundation.² By parsing data from multiple data sources, CHRR provided the public with ready access to county-level data on a host of metrics. Since then, foundations and federal agencies have supported the development of other dashboards to expand access to data on health and its drivers.¹ The purposes of dashboards can vary. Some analyze health and health equity data to distinct geographic boundaries.³ Others present and disseminate a new metric.⁴ Still others

aggregate local policies and laws that affect population health to guide research and advocacy.⁵ During the rapidly unfolding COVID-19 pandemic, many state and local health departments struggled to make data publicly available, and the Johns Hopkins University COVID Tracker quickly became the “go-to” data source for by-the-day counts of COVID-19 cases, deaths, tests, and vaccinations.⁶ Other COVID-19 dashboards have since drawn explicit attention to COVID-19 inequities⁷⁻⁹ (see Table 1 for examples).

MONITORING UTILITY

Given the diversity of purposes, how do we assess whether these data dashboards are meeting their intended promise and providing utility to stakeholders? Some dashboards explicitly showcase impact stories of how local communities use their data, which also suggests to other site visitors how these data can be applied across different communities. But quantitative indicators of a dashboard's usefulness must also be measured, including visit and revisit frequency data from Web site analytics, as well as media, social media, and scientific article citations.¹⁰ Dashboards generally seek to “liberate” access to data. Local media reports quoting the use of dashboard data by different stakeholders—whether local and state health officials, journalists, or advocates—offer direct evidence of this goal. Although there are no thresholds for the number of new or returning users a site should have, and although target audience sizes vary, many sites sustain hundreds of thousands or even millions of users. Others see a spike in use and then a loss of interest. If user-ship is low or drops consistently, the

TABLE 1— Examples of Health Data Dashboards: United States, 2022

Dashboard Name	Creator	Geographic Focus	Size	No. of Metrics (as Accessed on January 28, 2022)	Domains
General					
America's Health Rankings https://www.americashealthrankings.org	United Health Foundation	State	50 states	50	Social and economic factors, physical environment, clinical care behaviors, health outcomes
County Health Rankings & Roadmaps https://www.countyhealthrankings.org	University of Wisconsin Population Health Institute	County	All counties (n = 3006)	Ranked: 35 Additional: 32	Social and economic factors, physical environment, clinical care behaviors, health outcomes
City Health Dashboard https://www.cityhealthdashboard.com	New York University Langone Health Department of Population Health	City, census tract	766 cities; 34 424 census tracts	City and tract level: 27 Citywide only: 13	Social and economic factors, physical environment, clinical care behaviors, health outcomes
National Equity Atlas https://nationalequityatlas.org	PolicyLink	City, region, state, nation	100 cities; 150 regions; 50 states	30	Demographics, economic vitality, readiness, connectedness, economic benefits
PolicyMap https://www.policymap.com	PolicyMap, Reinvestment Fund	State, county, metropolitan area, zip code, block group, congressional district, etc.	Nationwide	Tiered subscriptions for >50 000 metrics, available at different geographic units	Demographics, incomes and spending, housing lending, quality of life, economy, education, health, federal guidelines, analytics
US News Healthiest Communities https://www.usnews.com/news/healthiest-communities/rankings	<i>US News and World Report</i>	County	2875 counties	84	Population health, equity, education, economy, housing, food and nutrition, environment, public safety, community vitality, infrastructure
COVID-19 specific					
Coronavirus Resource Center US Map https://coronavirus.jhu.edu/us-map	Johns Hopkins University Department of Medicine	State, county	All states and counties	...	COVID cases, deaths by demographics
US COVID Atlas https://theuscovidatlas.org	University of Chicago	County	All counties	...	COVID cases, deaths, testing, vaccination, community health information, mobility
Geographic Insights COVID Metrics for US Congressional Districts https://geographicinsights.iq.harvard.edu/coviduscongress	Harvard University Geographic Insights Lab	State, county, congressional district	All states, counties, congressional districts	...	COVID cases and deaths
COVID-19 Health Inequities in Cities https://www.covid-inequities.info	Drexel University, Big Cities Health Coalition	City	29 cities (Big Cities Health Coalition)	...	COVID cases, percent positivity, hospitalizations, deaths by neighborhood characteristics

(continued)

TABLE 1— Continued

Dashboard Name	Creator	Geographic Focus	Size	No. of Metrics (as Accessed on January 28, 2022)	Domains
Novel metric/index based					
AARP Livability Index https://livabilityindex.aarp.org	AARP Public Policy Institute	Zip code, city, county	All counties and zip codes, some cities	40	Housing, neighborhood, transportation, environment, health, engagement, opportunity
Measure of America's Mapping America https://measureofamerica.org/maps	Measure of America, Social Science Research Council	State, metropolitan area, county, congressional district	All states, counties, congressional districts; 25 most populous metropolitan areas	Varies by geographic unit	Human development index, sustainable development goals, demographics, education, environment, health, housing, inclusion and engagement, safety and security, work, wealth and poverty
The Opportunity Atlas https://www.opportunityatlas.org	Harvard University Opportunity Insights	County, census tract	All counties and census tracts	37	Children's outcomes in adulthood, neighborhood characteristics
Child Opportunity Index https://www.diversitydatakids.org/child-opportunity-index	diversitydatakids.org	County, census tract	All counties and census tracts	Varies by index Child Opportunity Index contains 29 indicators	Child opportunity, education, health and environment, social and economic
Opportunity Index https://opportunityindex.org	Opportunity Nation (Forum for Youth Investment and Child Trends)	State, county	All states + DC, 2065 counties	20	Economy, education, health, community

site's operators should either adopt new strategies to reengage users or consider that the site's utility may have run its course.

From a technical perspective, hosting data on a public Web site platform is increasingly easy, but developing a dashboard that successfully reaches and meets users' needs involves extensive effort and diverse skill sets. Key elements include (1) actively reaching and engaging stakeholders; (2) performing quality assurance and updating data, technical documentation, and underlying geographic boundaries; (3) evolving site functionality to meet users' needs; and (4) researching and developing new measures. Dashboard Web sites are efficient dissemination tools when

coupled with portfolios of engagement and communication strategies (blogs, newsletters, impact stories, updates)¹¹ and also when users are involved in its initial design and ongoing promotion.³

Beyond assessing reach, there are other important dimensions of impact to consider. Dashboards can change narratives and mindsets. The coordinated release and compelling conceptual framework of CHRR is widely credited with having contributed to a greater appreciation of underlying drivers (beyond health care) of health and equity.² Another impact can be the contribution of new knowledge, achieved by introducing novel metrics into the research, policy, and advocacy spheres. The Child Opportunity Index,

increasingly used by policymakers and researchers, measures neighborhood-level resources and conditions that matter for children's healthy development using an index based on 29 indicators.⁴ As the COVID-19 pandemic hit, some dashboards rapidly adapted to include new COVID-19–related measures. For example, in early 2020, the Opportunity Atlas team at Harvard University used data from private companies to add granular measures of local shifts in economic activity resulting from pandemic shutdowns.¹² The City Health Dashboard added a census tract–level measure of COVID-19 local risk to guide local testing and vaccination efforts.³

Rigorous methods to measure a dashboard's actual impact on health

and health equity are more elusive. Yet, perhaps that is acceptable. Just as we do not question the value of birth and death data generated by the National Vital Statistics System—widely recognized as an essential public good—the value of health data dashboards lies in evidence of uptake of the data they present and its use in advancing health and health equity goals, programs, and policies. Similar to public health surveillance systems, the main intended output of data dashboards is information to drive action. Clear articulation of the objectives of specific dashboards supports assessment of their reach and effectiveness in contributing to health and health equity improvement.

MULTISECTOR ROLES

How should public agencies contribute? Dashboards hosted by federal, state, and local health agencies—the institutions that generate much of the data currently being shared—have been part of this landscape for several years, and dashboards will undoubtedly become more visible components of public health surveillance systems going forward. But not all government agencies have the resources required to build and sustain dashboards that integrate data from multiple sources and domains. The more complex a Web site is in terms of data and functionality (e.g., number of metrics, number of underlying data sources, range of geographies, comparison functions, multiyear data), the more staff time is required to ensure that all facets are updated regularly. Because of this, and because there will always be salient new and creative ways to combine data, we anticipate that health data dashboards will continue to be developed by both public and non-public actors, with financial support from

foundation and federal agency grants. Indeed, the future of “activated” public health surveillance will involve partnerships between government public health and other sectors, as is already the reality. The appetite for integrating and presenting locally actionable data on health and equity outcomes in the context of their socioeconomic and environmental determinants has been whetted and is here to stay. *AJPH*

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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