tableau®

10 Healthcare and
Life Sciences Innovations

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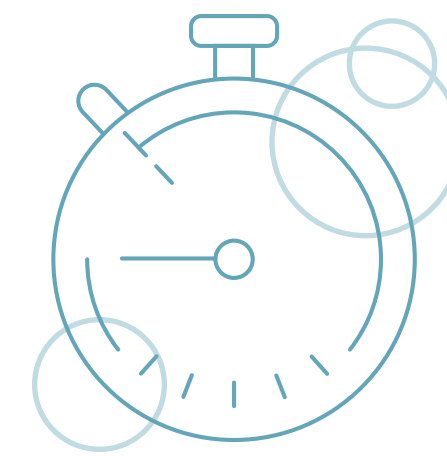
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Introduction

Pandemic accelerates digital transformation

70% Roughly 70% of CEOs report accelerating their company's digital transformation by months or years during the pandemic.

Source: **KPMG**

The Covid-19 pandemic brought immense hardship to many, including historic challenges to healthcare and life sciences organizations. But amid the challenges, there was also transformation. In a year when it felt like so much ground to a halt, technology innovation has blossomed—in healthcare as in other industries. The pandemic inspired organizations of every size and type to find new solutions for survival, adaptation, refocusing, and even growth.

In healthcare and life sciences, organizations already on the path to digitally evolving their operations have found ways to expedite their journeys. Doing so not only helps sustain their viability during shutdowns, but also enables life-saving solutions for the many patients requiring additional care. From disease management and emergency response to telemedicine and clinical trials, teams in every health industry function have embraced this pivotal moment by shifting to a data-driven mindset.

Introduction
Pandemic accelerates digital transformation

The result: healthcare and life sciences organizations are achieving new levels of collaboration, agility, and resilience by adopting technology solutions that help them see and understand their data. Hospitals, clinics, researchers, and manufacturers have discovered new ways to adjust their business using data-driven strategies and many are adopting a new understanding of how data analytics and technologies can help them improve patient care and service to their subscribers, with better outcomes.

85% of health executives acknowledge that technology has become an inextricable part of the human experience.

70% of consumers globally expect that their relationship with technology will be more prominent or significantly more in their lives over the next 3 years.

Read on to see how healthcare companies used data analytics and visualization to adapt their operational models, make confident decisions, innovate new processes, recapture lost revenues, and save lives.

Source: **Accenture, July 2020**

Healthcare and life sciences companies are harnessing the power of data during the pandemic to save lives, adapt operational models, make confident decisions, innovate new processes, and recapture lost revenue. From disease management to clinical trials, this ebook highlights some of the most notable data-centric healthcare and life sciences solutions and trends resulting from the coronavirus pandemic.
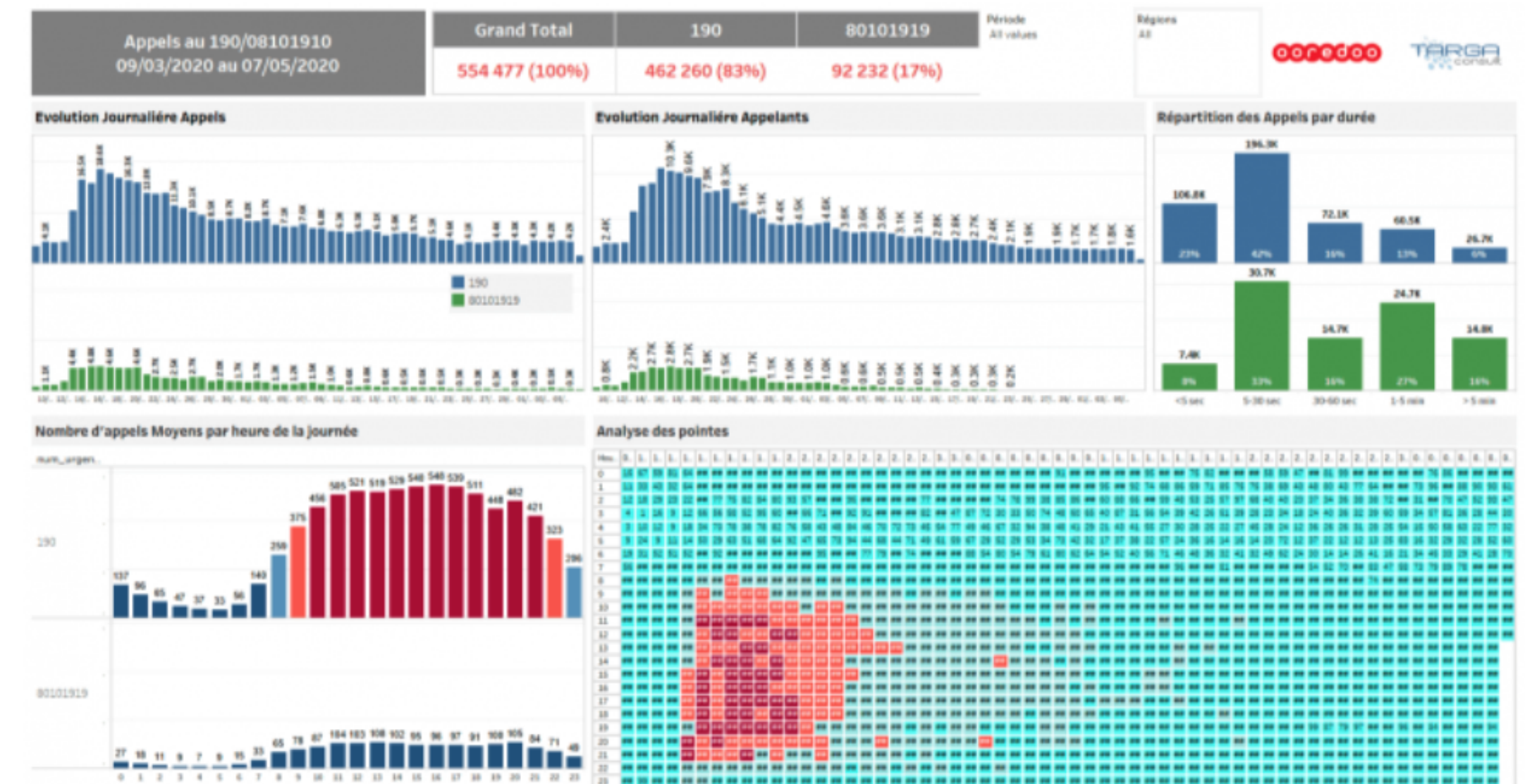
Global disease management
Digital transformation innovations

Reports from KPMG and others confirm that with a renewed push for digital transformation during the pandemic, companies put data at the center of their COVID-19 response. Many health systems, payers, and life scientists use Tableau for cross-collaboration like the UChicago Medicine starter kits to stay informed with up-to-date information, perform their own analyses, and learn how other businesses, industries, and communities are improving global disease management.
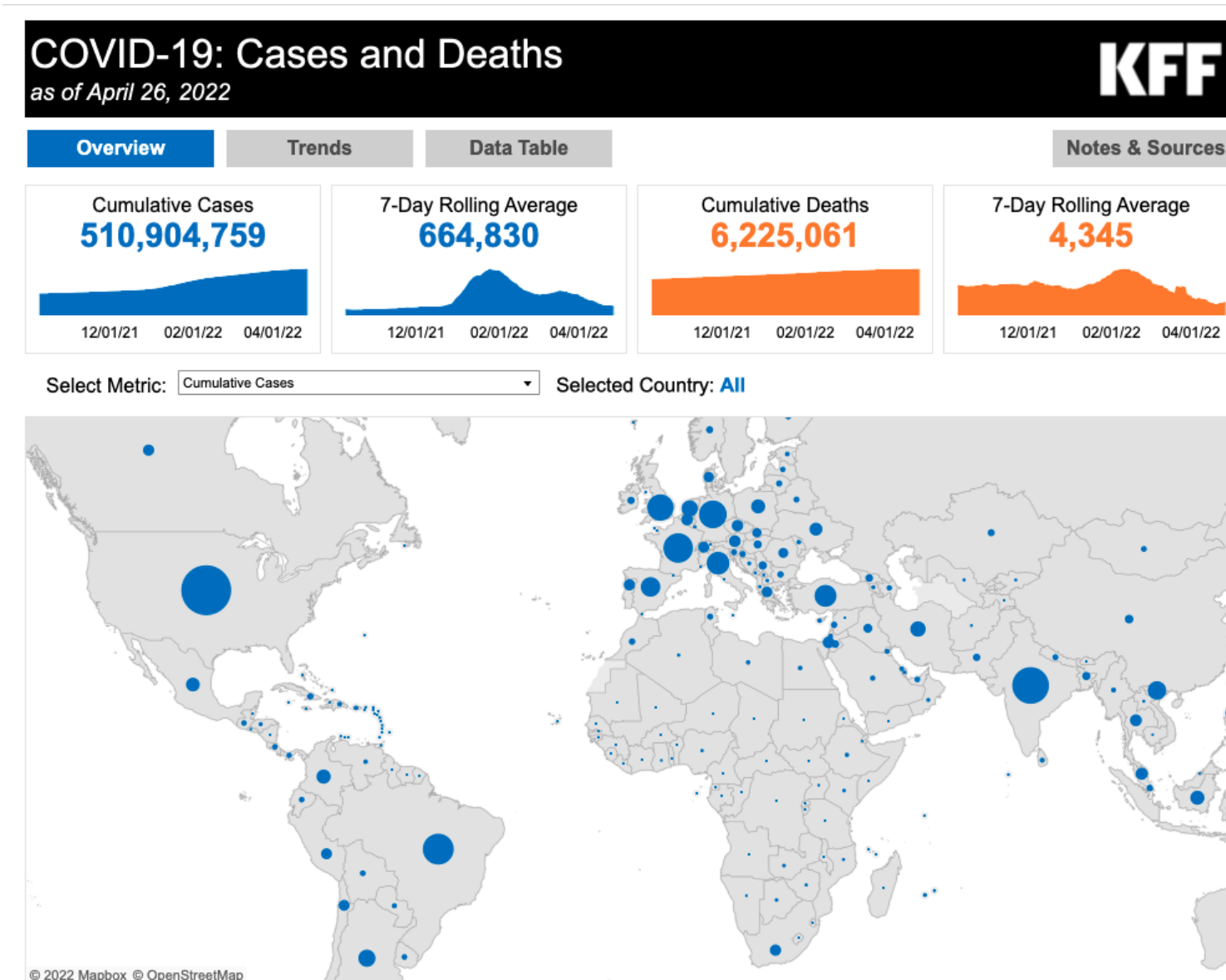
COVID19 Global Tracker by KFF (Kaiser Family Foundation) *centralizes daily cases and mortality data into a heat map display, showing relative surges and enabling users to click into any geography for more details.*

Tunisian government emergency response dashboard *includes a dynamic call center and disease management dashboard that the public can use to track both high-level and detailed pandemic data.*

Data-driven emergency response
Digital transformation innovations

A fast-moving virus requires an agile response. Early in the crisis, New York City Health + Hospitals (NYC H+H) built an ad hoc leadership team to make data-driven decisions to help save lives throughout the city's deadly surges in cases. With access to public and private data sets, NYC H+H used Tableau to create a series of dashboards and visualizations that provides leaders the information they need to make critical decisions quickly. "We think of it as 'epidemic intelligence'," says Jenny Smolen, Tableau manager at the NYC H+H Office of Population Health.

NYC H+H emergency staff members in the hospital's COVID-19 command center. Background monitors display the team's Emergency Management dashboard, built using Tableau. Source: New York Times
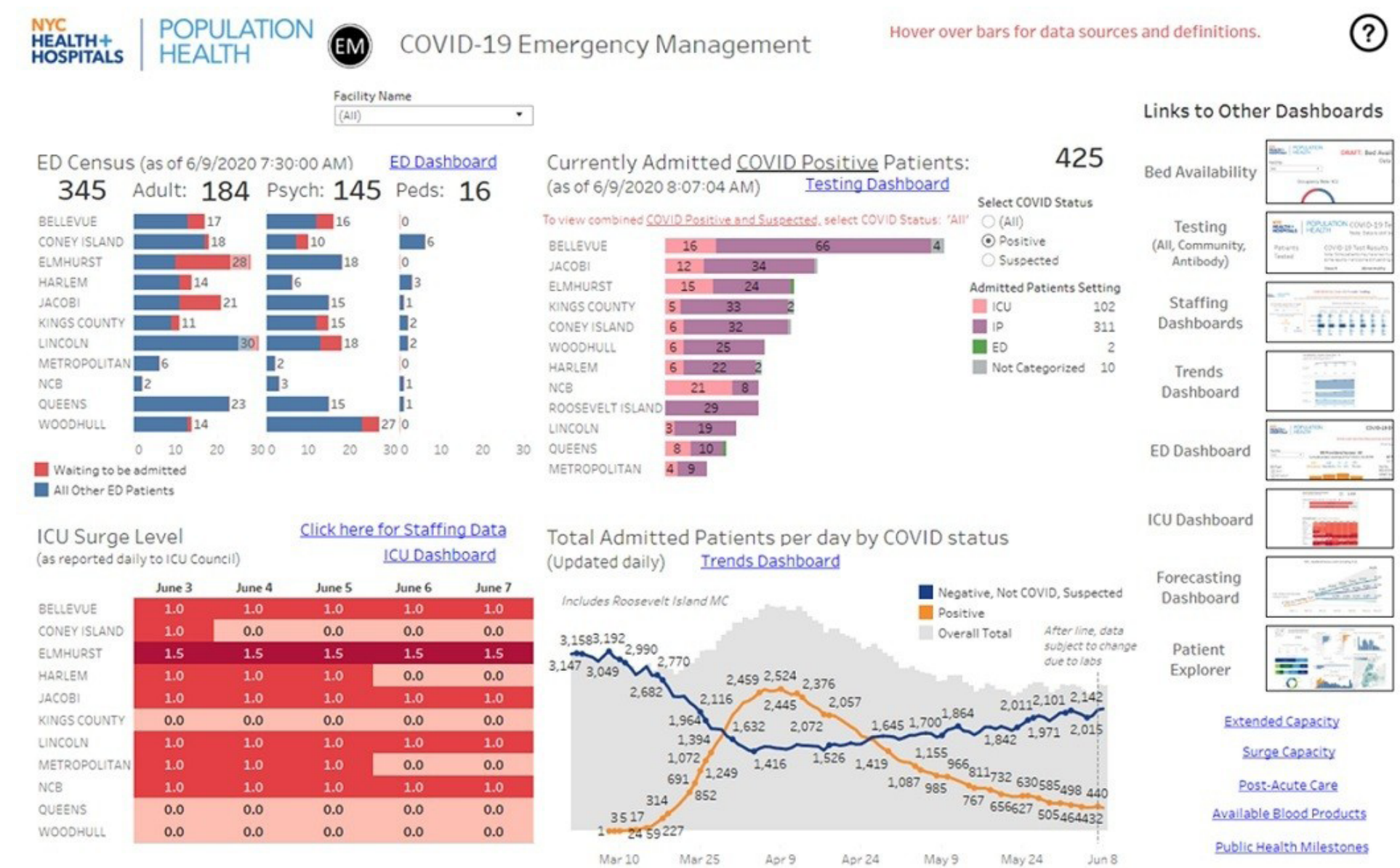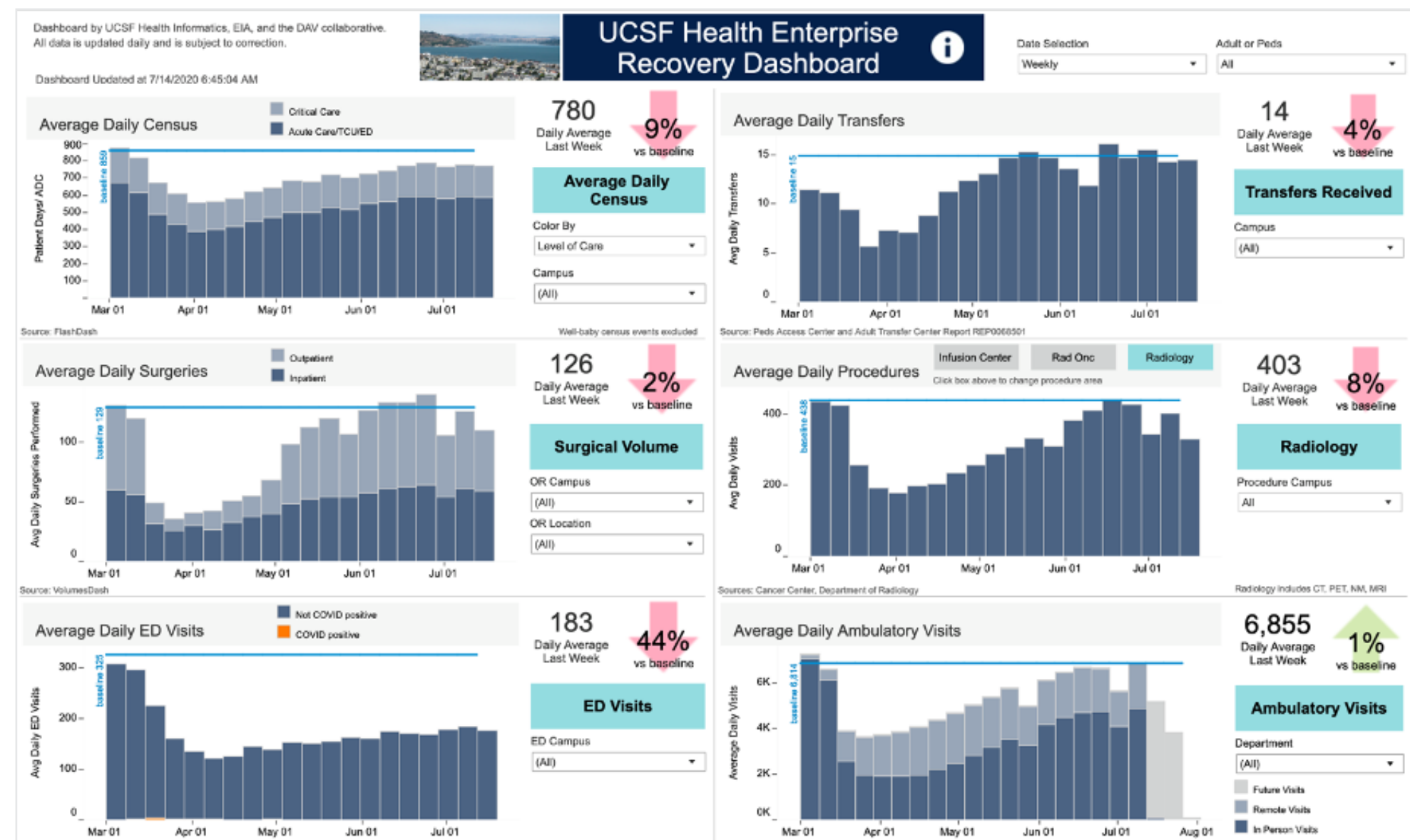

The NYC H+H dashboard displays live, interactive graphs and tables of pandemic response information, including COVID-19 admitted daily census numbers and ICU surge levels. **Read the case study**

Accelerate elective care
Digital transformation innovations

Amid intermittent restrictions on elective procedures throughout the pandemic, hospitals and clinics have lost significant revenues. As health systems begin reopening and scheduling patients again, the ability to prioritize procedures and integrate data-driven tools into their clinical workflows is critically important—both to clinicians and managers analyzing the bottom line.

The Tableau dashboard built by University of California San Francisco Health gives all personnel a central place to look for critical metrics, informing decisions that help coordinate care and manage profitability. **Watch the video**

$ **202.6** billion
over 4-months

American hospitals and health systems saw an estimated $202.6 billion in losses over a 4-month period.

$ **50.7** billion
per month

or an average of $50.7 billion in losses per month.

Transition to virtual care
## Digital transformation innovations

The increased demand for telemedicine has put many health systems in the position of needing to operationalize their virtual care business rapidly. The organizations best positioned for success at scale are those that have adopted visual analytics.

Today, operational dashboards help them plan and manage their telehealth businesses effectively, recapture revenues, and set new expectations for care with clinicians and patients alike. And the trend won't slow down once the pandemic is over—Frost & Sullivan predicts a 38.2% annual growth rate in telehealth between 2020 and 2025, representing a sevenfold expansion.

"
The dramatic increase in telehealth is a level of ramp-up we've never seen before, for any service. After we built a dashboard in Tableau showing the impact of telehealth on our revenue cycle, we could realize a significant amount of telehealth billing that we didn't see before the pandemic."

— Chris Paolini, Health Systems BI Analyst at UNC Health **Read the case study**
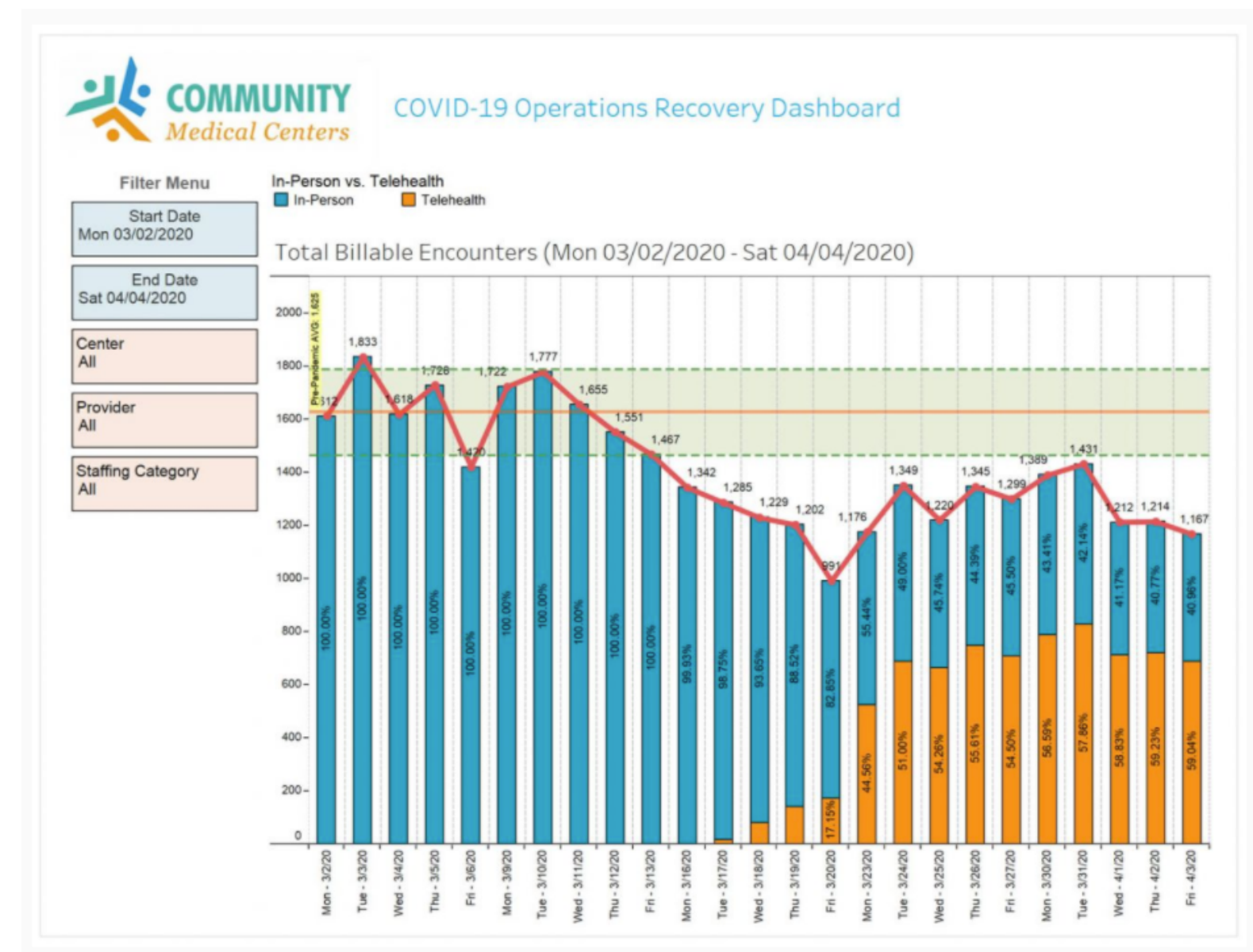
Community Medical Centers, a network of community health providers in northern California, is was one of many Tableau customers that tracked telehealth operations using visual analytics while providing virtual care for virus-related and non-virus cases. **Read the case study**

Clinical trials powered by data
Digital transformation innovations

The race to produce a vaccine began as soon as the novel coronavirus was discovered. The time and financial pressure typically felt by life sciences companies to develop a drug were massively intensified by the rapid acceleration and lethality of the pandemic. Conducting effective clinical trials was a critical step, and the closure of research and clinical sites made it challenging to coordinate new and existing studies. With help from platforms like Tableau, pharmaceutical companies can focus on patient recruitment and retention strategies that keep them ahead of the curve.

80%

80% of US clinical trials fail to meet patient enrollment deadlines.

Source: **Outsourcing-Pharma**
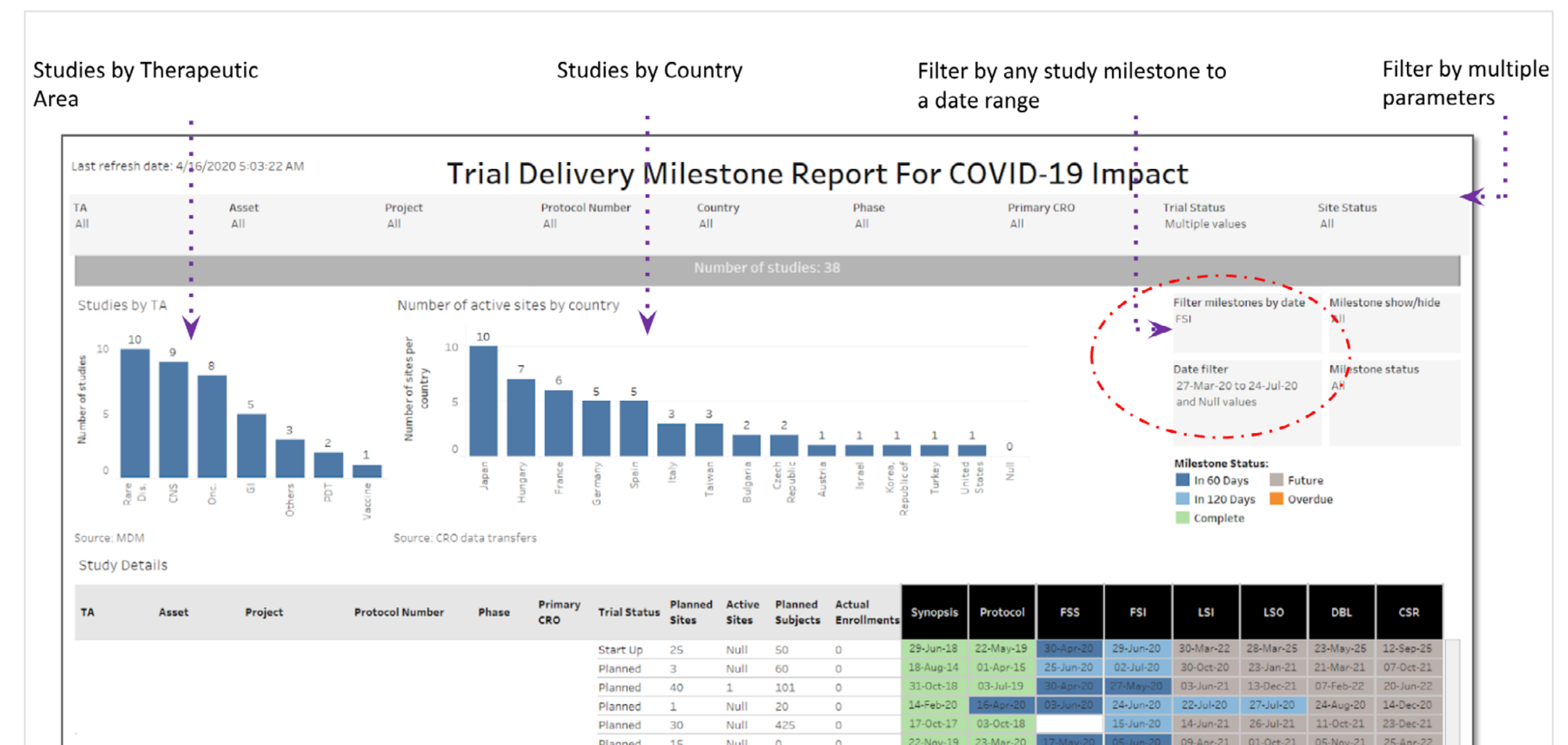
Takeda developed its COVID-19 Trial Delivery Milestone dashboard to help prioritize studies and track them at critical points in time, as well as get study progress data, filtered by country, date range, therapy area, and other criteria.
**Watch the webinar**

Overcoming social inequities
Digital transformation innovations

Continuity of care for health systems includes understanding the impacts of disease and health conditions on minority and underserved communities and developing strategies to overcome inequities. As Harvard researchers have emphasized, "ramp-up strategies that do not prioritize equitable access may inadvertently favor patients with socioeconomic privilege, reinforcing existing disparities in access and quality." Analyzing data from sources like the Kaiser Family Foundation helps health systems and public health organizations plan for care access, health education, and targeted outreach in new ways that address social inequity.
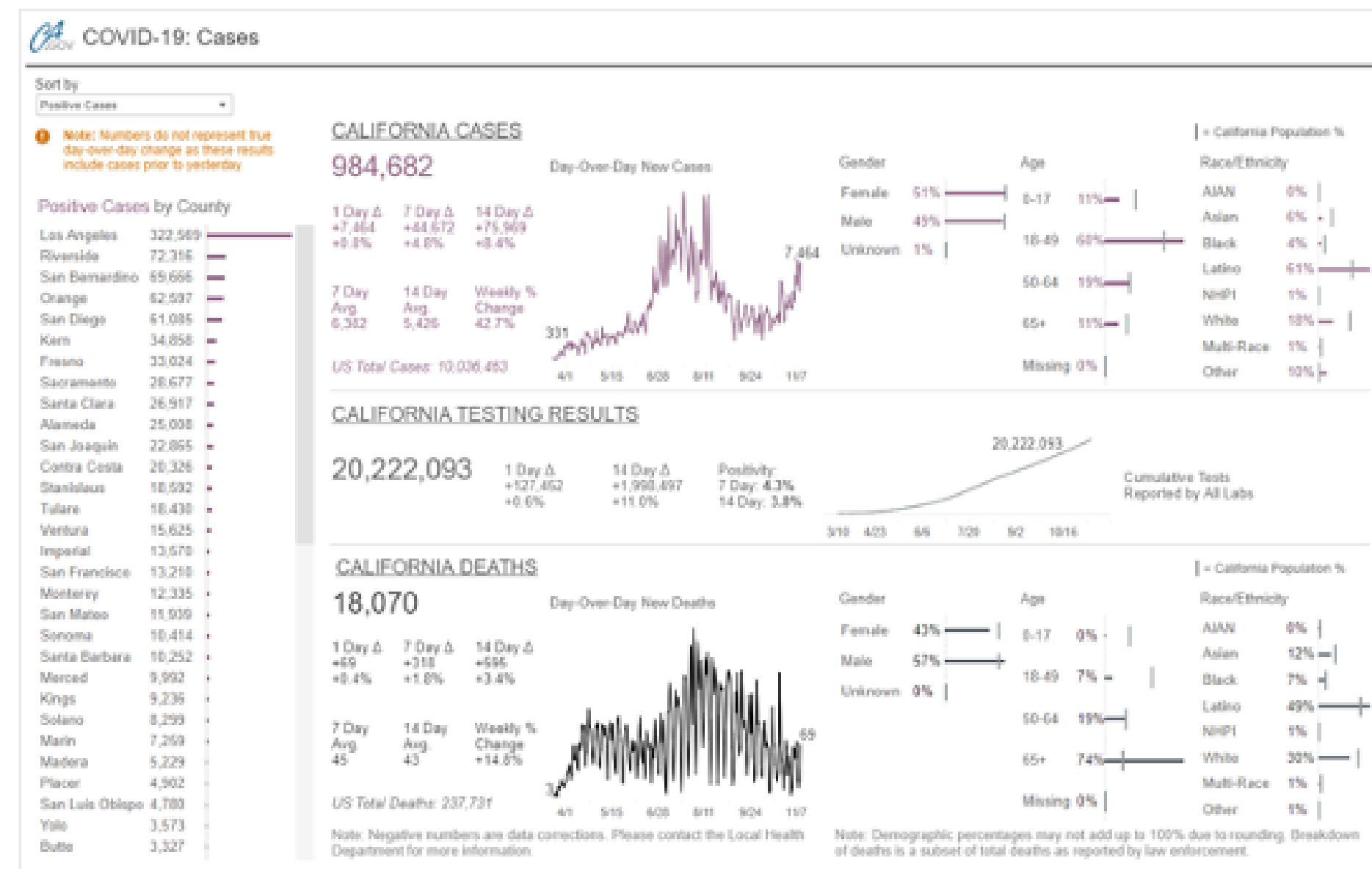
The State of California COVID-19 case tracker uses a Tableau visualization that reports demographic case load and mortality data in comparison to each group's population percentage, guiding public health policy decisions that target hard-hit communities.
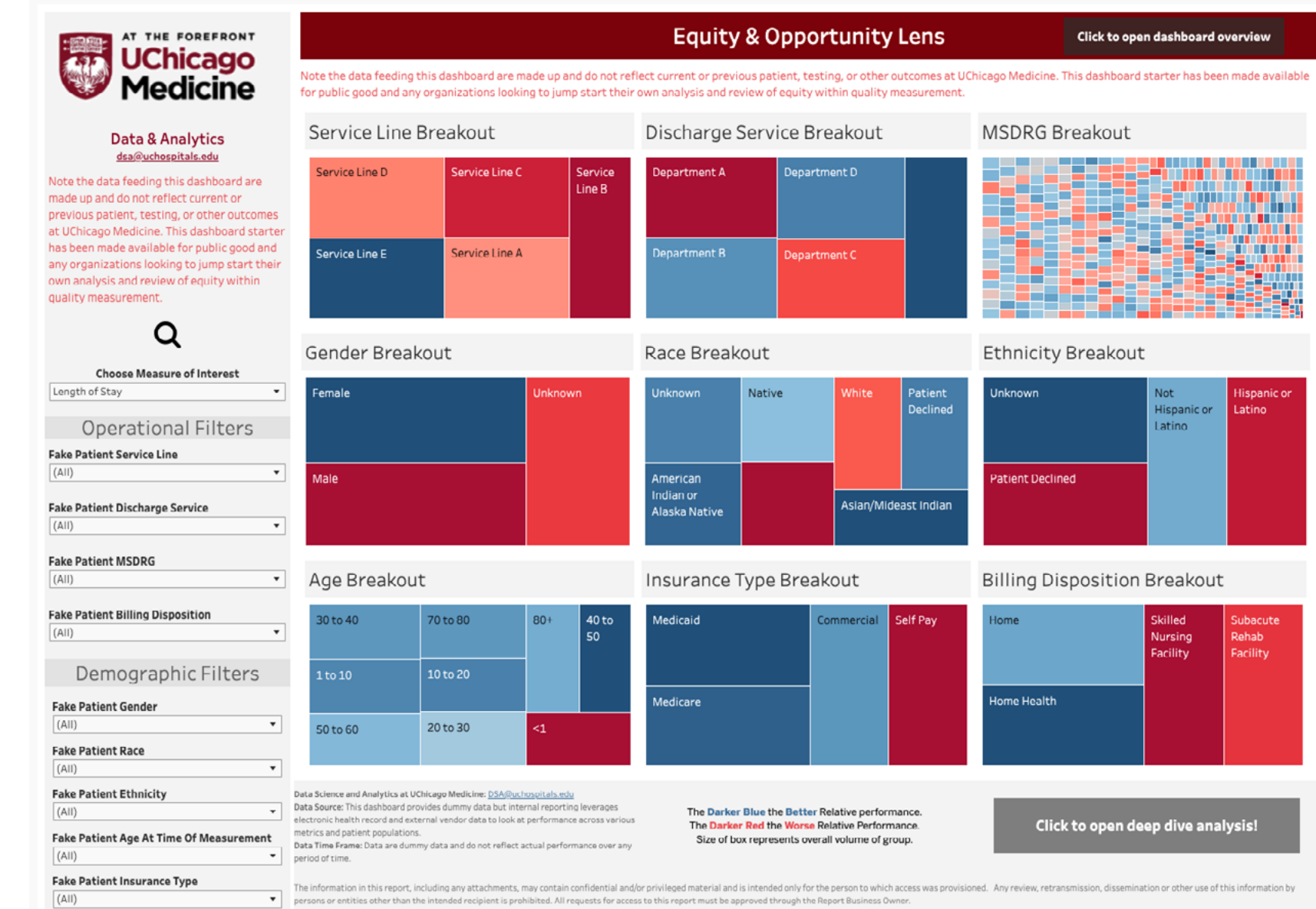
A popular dashboard on Tableau Public uses dynamic data from the UChicago Medicine to provide healthcare organizations the ability to analyze and review equity within quality measurements.

Financial impact and patient mix
Digital transformation innovations

The pandemic caused millions of workers to lose their jobs and employer-sponsored health insurance benefits. As a result, many of these same workers qualified for public assistance programs like Medicaid. With unanticipated changes, payer organizations scramble to account for the shift in risk. What types of patients are now uninsured? What are their care needs and vulnerability risks? How has their access to care changed, and how are their health outcomes likely to differ? Payers can see and understand vital population health issues and plan for patients' needs using visual analytics.

$ **7.7** million
by June

By June 2020, the pandemic-induced recession led to 7.7 million workers losing jobs with employer-sponsored insurance

$ **14.6** million
workers and dependents

affecting 14.6 million workers and dependents.
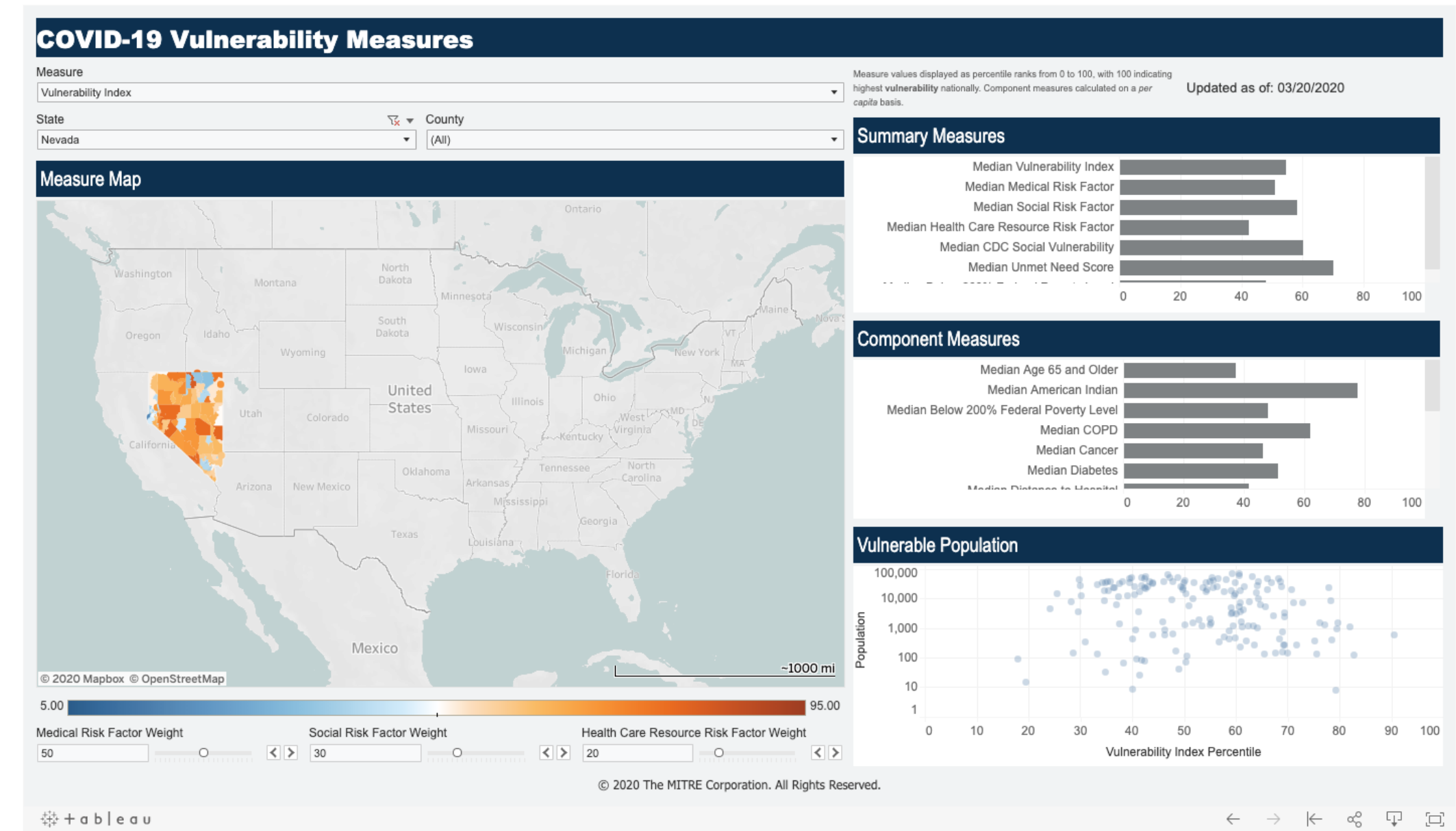
Source: **The Commonwealth Fund**

This visualization and others from the **Tableau COVID-19 Healthcare Coalition** *display geographic heat maps showing the range of vulnerability to economic impacts, with the ability to drill down into details for each region.*

Global supply chain management
Digital transformation innovations

Disruptions in manufacturing, logistics, training, and other supply chain challenges affected the availability of goods and services for consumers and businesses alike throughout the pandemic. Hospitals and clinics use visual analytics to better manage and predict their inventory of medical devices, surgical equipment, testing supplies, and PPE to help minimize bottlenecks and save more lives. Likewise, life science companies can visually analyze critical supplier and inventory data to help identify and mitigate vaccine and supply chain vulnerabilities.

This Tableau dashboard at University of San Francisco Health tracks PPE inventory status and usage trends so its hospitals can predict and ward off any shortages in supply. **Watch the video**

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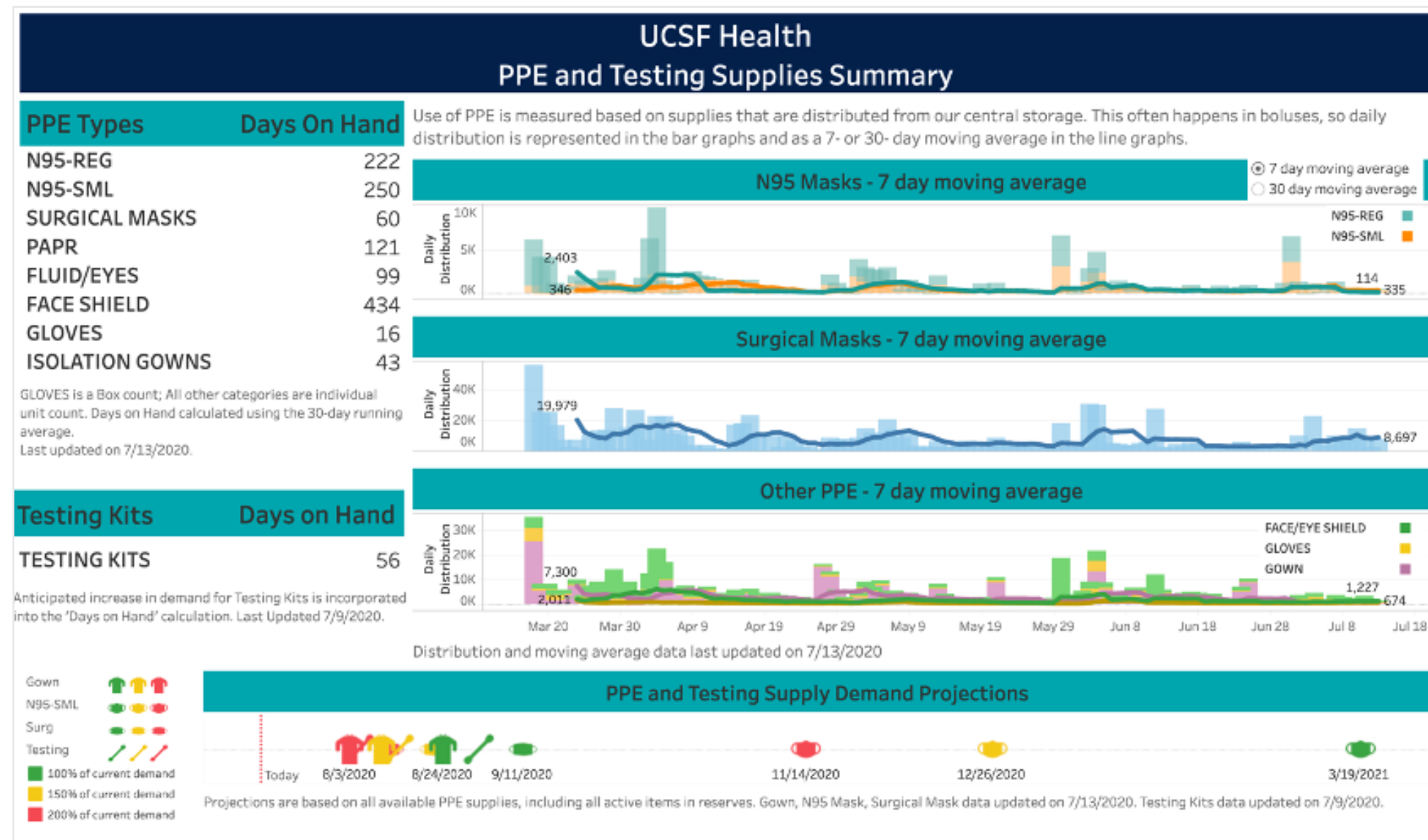
Tableau is being used by the New York City Mayor's Office and agency partners to track and manage the crucial components of the city's pandemic response operations, including the capacity of health systems and the distribution of PPE supplies. Tableau's dynamic dashboards are powerful for analyzing, distilling, and visualizing data so that leadership can make informed and timely decisions. The city is grateful for the expert support Tableau has provided along the way."

— Daniel Steinberg, Deputy Director of the NYC Mayor's Office of Emergency Management

Transform continuity of care
Digital transformation innovations

Continuity of care is a critical focus for health organizations to improve outcomes and patient experience. Bed space was a high priority for COVID-19 patients, particularly in ICUs, but some of that space was also needed for other patients, such as those recovering from surgical procedures. To balance this capacity, organizations draw from a diverse set of data sources, including risk adjustment data, patient demographics, comorbidity statistics, and American Society of Anesthesiologists (ASA) scores, to build probabilistic models showing likelihood of ICU dependency in non-COVID-19 cases.

"Analytics and visualization have been key to providing excellent ongoing patient care, and to sustaining our operations in ways we can afford. Healthcare is a capital-intensive business; we have a lot of brick-and-mortar to support, so the more efficiently we use that space, the better. At the same time, we value patient experience and outcomes above all else. Tableau has been instrumental in helping us meet these optimization challenges."

— *Charlton Park, Chief Financial Officer and Chief Analytics Officer at University of Utah Health*
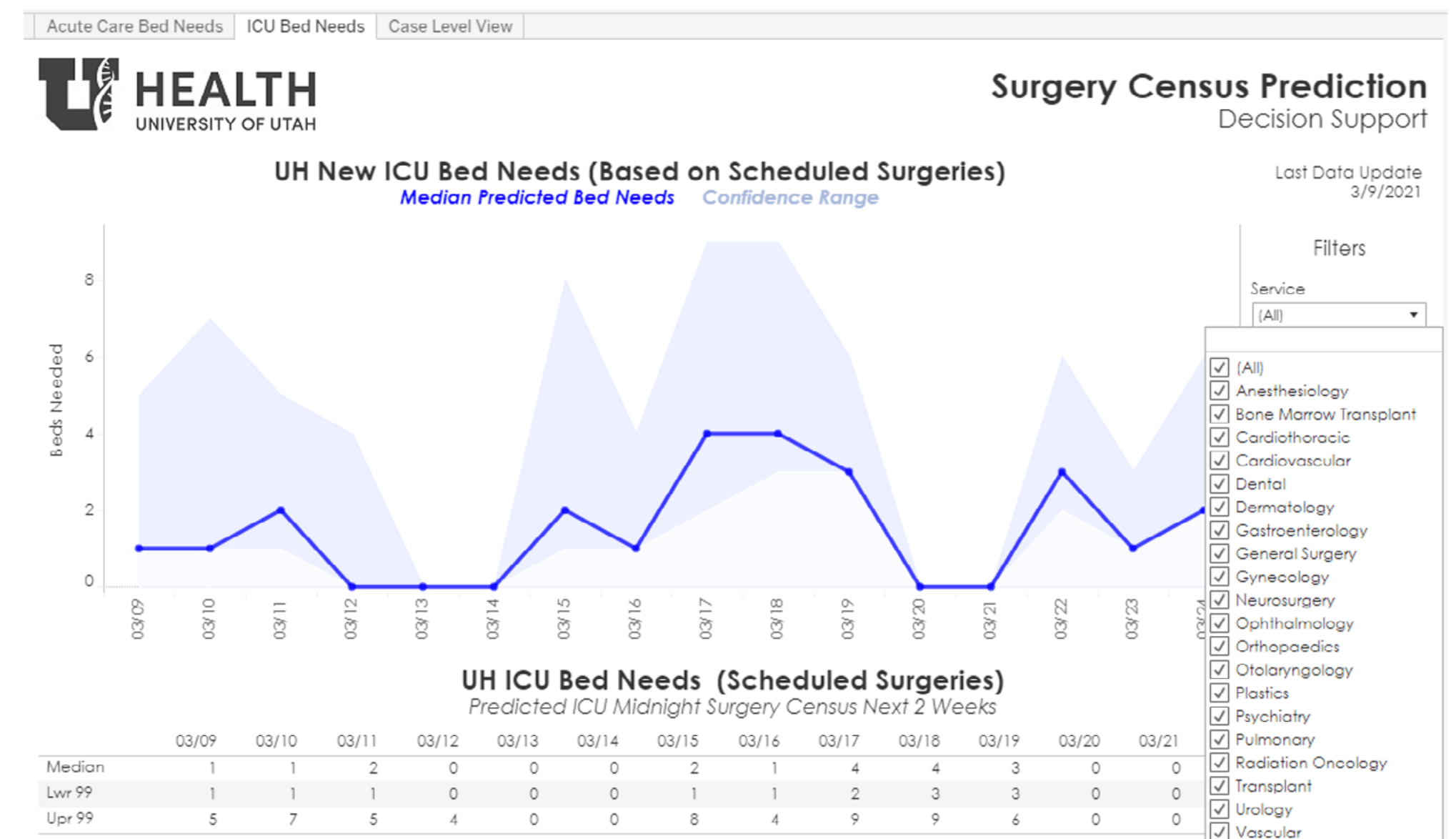
University of Utah Health *uses Tableau visual analytics to predict and optimize critical hospital resources like exam rooms to increase operational efficiency and improve patient experience.*

Modern vaccine management
Digital transformation innovations

A series of breakthroughs in the last months of 2020 made the world hopeful that approved COVID-19 vaccines were on the near horizon. As these new drugs became available, governments and healthcare organization-sneeded powerful analytics and technology platforms to ensure efficient management across the vaccine supply chain, including inventory and distribution management, population prioritization, transportation and logistics, and monitoring. Most countries, regions, and US states lacked the large-scale operational capabilities that a successful COVID-19 vaccination and immunization strategy required.

VACCINE

*As part of its partnership across 43 US states and additional public sector agencies worldwide, Tableau developed this **dashboard prototype** for helping states, countries, regions, and local governments manage performance for key vaccine-related indicators.*

SARS CoV-2 (COVID-19) Vaccine
Statewide Performance Management

Vaccines Already Administered

90,074
People Vaccinated so far

Vaccines Scheduled for Administration

9,926
People Currently Scheduled for Vaccination

Adverse Reactions

1,735
People with Adverse Reactions

Pre-Existing Conditions

3.359
Avg. Number of Pre-Existing Conditions

Target Vaccination Rate

70%
of the Population Targeted for Vaccination

1.3%
of Population Vaccinated so far

Schedule Adherence

89.1%
Schedule Adherence Rate

SARS CoV-2 (COVID-19) Vaccine
Adverse Reactions Dashboard

Vaccine Management KPIs

# of People Vaccinated	90,071
# of People Scheduled	9,923
Adverse Reaction?	1,735
Adverse Reaction Ratio	1.9%

Pre-Existing Condition Summary

Asthma?	7,895
Cancer?	15,774
Chronic Kidney Disease?	13,664
Chronic Pain?	40,711
Copd?	43,516
Cystic Fibrosis?	1,938
Diabetes?	10,953
Heart Condition?	49,220
Immunocompromised?	29,583
Liver Disease?	3,076
Obesity?	39,755
Sickle Cell Disease?	987
Smoker?	35,324
Pregnant?	10,953
High Blood Pressure?	32,557

Where have we administered the most vaccinations so far?

Mohave 4,296 | 1.8%
Coconino 4,231 | 1.8%
Apache 4,817 | 1.7%
Yavapai 5,755 | 2.1%
Gila
Graham 388 | 2.2%
Greenlee
Pima 1,608 | 4.9%
Pinal
Cochise 4,831 | 1.9%

© 2020 Mapbox © OpenStreetMap

When did most adverse reactions happen?

# of People Vaccinated

1500
1000
500
0

Adverse Reaction?

30
20
10
0

Oct 22   Nov 1   Nov 11   Nov 21   Dec 1

What is the Age Group/Gender Breakdown of Adverse Reactions?

Female Adverse Reactions / Male Adverse Reactions

<5
5-9 — 89 / 89
10-14 — 99 / 99
15-19 — 99 / 99
20-24 — 96 / 96
25-29 — 91 / 91
30-34 — 95 / 95
35-39 — 92 / 92
40-44 — 113 / 113
45-49 — 95 / 95
50-54 — 88 / 88
55-59 — 107 / 107
60-64 — 82 / 82
65-69 — 96 / 96
70-74 — 96 / 96
75-79 — 89 / 89
80-84 — 101 / 101
85-89 — 04 / 04
90-94
>95 — 33 / 33

60 40 20 0 0 20 40 60

What is the Race Ethnicity Breakdown of Adverse Reactions?

Other
Black or African American 214 7.7%
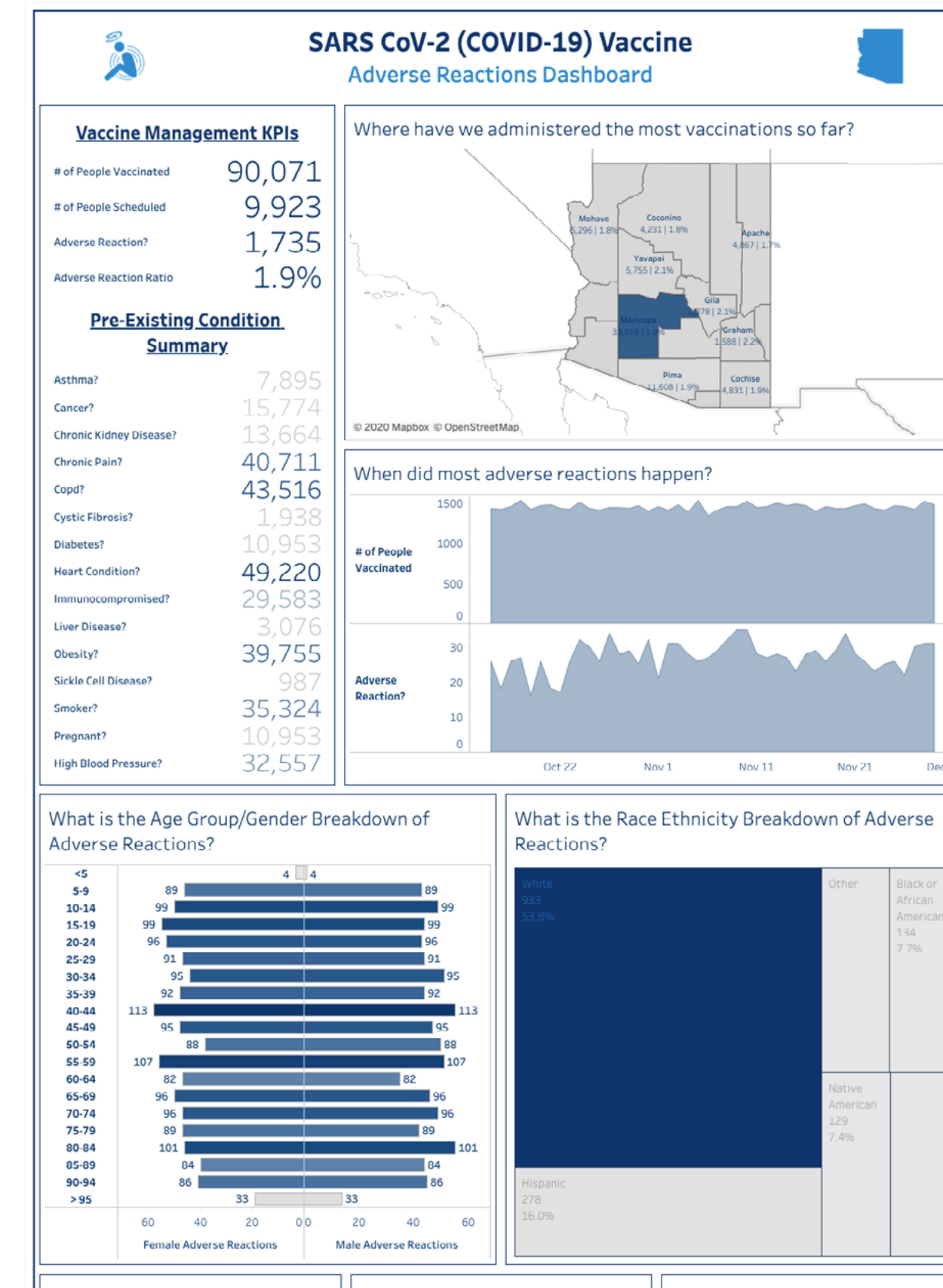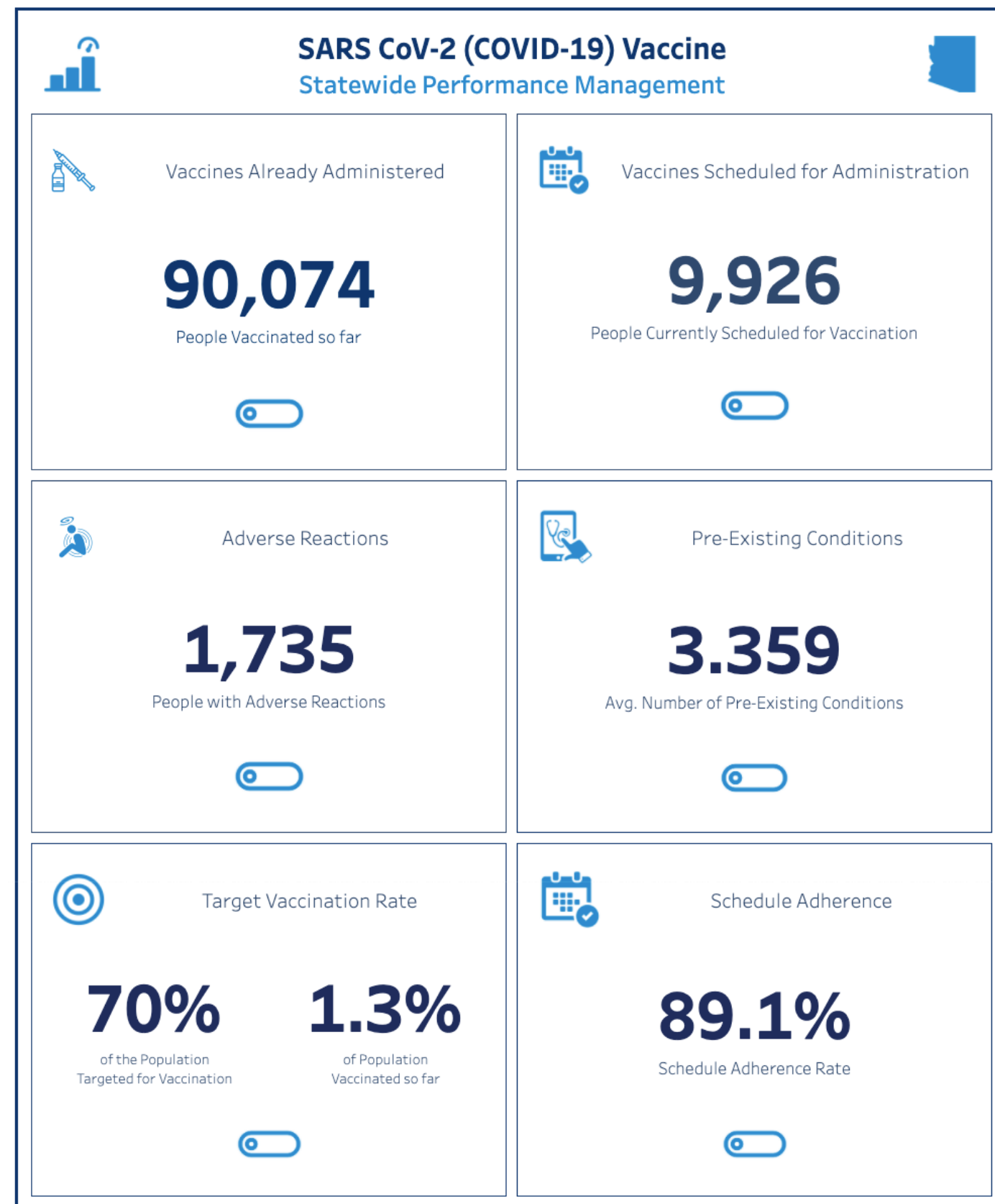Native American 129 7.4%
Hispanic 278 16.0%

*Tableau also developed detailed dashboard prototypes for managing a variety of downstream logistics in the vaccine distribution and administration processes, such as **this one** for tracking and analyzing adverse patient reactions.*

Conclusion
Visualizing the future of healthcare

The pandemic shifted digital transformation into high gear. Hospitals, clinics, payers, and labs are increasing their use of technology to gain more precise insights into their states of operation, with data as the foundation for evolving their business. And the easier it is to gain key insights using visual analytics, the better their chances of improving patient care outcomes and becoming more resilient for the future.

The rapid evolution of healthcare makes it clear that the future depends on data, and the rich insights made possible with visual analytics. Championing Data Culture across every level of an organization, and adopting a data-first mindset is the first step. Every day, around the world, companies and agencies across the healthcare and life sciences spectrum use Tableau for the critical insights they need to make data-driven decisions that help save lives and maintain business viability— through the pandemic and beyond.

The future of healthcare is data-driven, and the opportunities to innovate remain limitless. Together, all of us—technologists and practitioners, researchers and suppliers, executives and front-line workers—can continue to build on what we've learned, harnessing technology, deepening our digital capabilities, and using data analytics to influence better outcomes in an ever-changing world.

To learn more about how global healthcare and life sciences organizations are leveraging data and Tableau to transform the industry, visit the Tableau for Healthcare and Life Sciences page.

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Life Sciences Analytics Solutions Page
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