Producing Real-Time, City Scale COVID-19 Data to Support Epidemic Response in the **City of Stamford, CT: Lessons from an Academic-Health Department Partnership**



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Cities Need Fine Grained COVID-19 Data

As of October 6 2021, the dashboard has been viewed 2,379 times since State government created COVID-19 dashboards often Jan 2021 by SDH members (n=11) with an average of 1.59 hours/week did not meet the needs of municipal health departments. spent viewing and interacting with the dashboard. Additionally, Thus, the City of Stamford CT, Department of Health (SDH) partnered with the Mailman School of Public Health approximately 2-3 graphs were exported from the system per week for distribution to city officials. A key value of the dashboard was that (MSPH) to generate real-time, fine grained data and analysis of COVID-19 infections, hospitalizations, deaths, showed disparities in infection by age and race that leadership were not aware of from CT state reports. Additionally, the dashboard's mapping hospital capacity and later, vaccination rates, by tools provided critical information on real-time disease spread and sociodemographic strata and by neighborhood for the City enabled the city to carry out targeted testing and vaccination campaigns. of Stamford.

Building a Data Pipeline and Dashboard

COVID-19 testing, hospitalization and death data a downloaded daily from the CT Electronic Diseas Surveillance System (CTEDSS) for reportable disease The CTEDSS was designed to inventory cases reportable disease, facilitate contact tracing and to record interactions between the cases and the healthcai system. But it was not designed to calculate ke epidemiological statistics required for tracking the cours of the epidemic in the population.

Using Python, an automated data pipeline was created clean, process, geocode and anonymize the raw CTEDS data into a usable configuration. Data were also integrate from CT Open Data (vaccination statistics), t Department of Health and Human Services (ICU/hospit capacity data), and from the MSPH COVID-19 Projection team (Figure 1). A highly flexible online dashboard (figure 2) was created, allowing 150 possible graph and ma visualizations of the data.

Figure 1



Outcomes

Figure 2

This dashboard displays graphs to be used for review, evalua death, and test data; updated daily), the Connecticut Depart (forecasting data; updated weekly).	ation, and planning of COVID-19 related initiatives for the Sta tment of Health (vaccination data; updated weekly), the U.S. I	amford, CT Department of Health. Deparmtent of Health and Human
Total Cases: 16190 +2 (on 06/22/2021) Mean daily cases (past 7 days): 1.33 cases per 100k	Total Deaths: 298 +1 (on 05/15/2021) Mean daily deaths (past 7 days): 0 deaths per 100k	Total Tests: 32 Mean daily tests (past 7 Overall % positive (past tests/day)
Area Data 🗠 Forec	asting Data	
Cases Deaths Tests Vaccines	60 7-Day	Running Avg of Cases fr
Nursing Home Data:	50	
Include Nursing Home Data Exclude Nursing Home Data	A	
Time period:	40	11/5/2020 8.43, Hispanic/Latino
All Time Past Year Past Month Past Week Custom Range (Click to set range)	OC Users of Law	0.11, NH-Black 0.14, NH-Asian or Pacific I 5.29, NH-White 0.00, NH-American Indian
Graph Type:	20	8.86, Unknown
Time Series Bar Graph	10 PAAA	
Raw Counts per 100,000	Hide/Show Vaccination Elig	ibility Dates
Raw Counts per 100,000 Population Data Area Display:	Data La Forecasting Data	Area Data:
Raw Counts per 100,000 Population Data • Area Display: Cases Deaths Test Postive % Test Po Hospital Data Vaccine Data	Data La Forecasting Data	Area Data:
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Raw Counts per 100,000 Population Data • Area Display: Cases Deaths Test Postive % Test Prites Haspital Data Vaccine Data Map Overlay: Zip Code Census Tracts Select Week to view on Map: (Current: 6/22/2021-6/22/2021) 3/10/2020 Sorted Tabular Data From Current: Region Name 217 221	Inde/Show Vaccination Elig Data Let Forecasting Data ostive # Test Total # 6/22/2021 arrent Map: Statistic 44 44	Area Data:
Raw Counts per 100,000 Image Population Data Image Area Display: Cases Deaths Test Postive % Test Postive % Hospital Data Vaccine Data Map Overlay: Image Counts Zip Code Census Tracts Select Week to view on Maps (Current: 6/22/2021-6/22/2021) 2/10/2020 Image Counts Sorted Tabular Data From Cu Region Name 217 221 201	Inde/Show Vaccination Elig Data Let Forecasting Data ostive # Test Total # 6/22/2021 arrent Map: Statistic 44 44 42	Area Data:







Lessons Learned

The collaboration was facilitated by Commissioner of Health's pre-existing appointment as an Adjunct Professor at MSPH. The Commissioner had an existing University ID account, logon access to the computer systems, a professional and social network within the School and administrative standing, allowing for a rapid integration between the SDH and MSPH teams. This that formal suggests between schools of public health and local departments of health, such as faculty positions for key Department of Health personnel, should be considered as part of disaster and emergency preparedness planning.

The presence of Masters and Doctoral students at MSPH with prior computer programming, data science and IT training proved critical to the success of this project and to several other COVID-19 response projects conducted by the MSPH. Students with computer programming epidemiologic training will continue to be needed during public health crises. This experience suggests that deeper be should fostered ties universities between schools of public health and undergraduate and graduate computer science and/or data science departments.

Local data and publicly accessible interfaces to make these data not just useful, but also used, are still in need to best respond to pandemics and other large-scale public health crises.







