Technical Note:

COVID-19 Research Hub: Changes to ArcGIS Dashboards

Project conducted by:

San Diego State University
5500 Campanile Drive
San Diego, CA 92182-4493

Report prepared by:

Jessica Embury
Jembury8568@sdsu.edu
Department of Geography, San Diego State University

08 July 2021

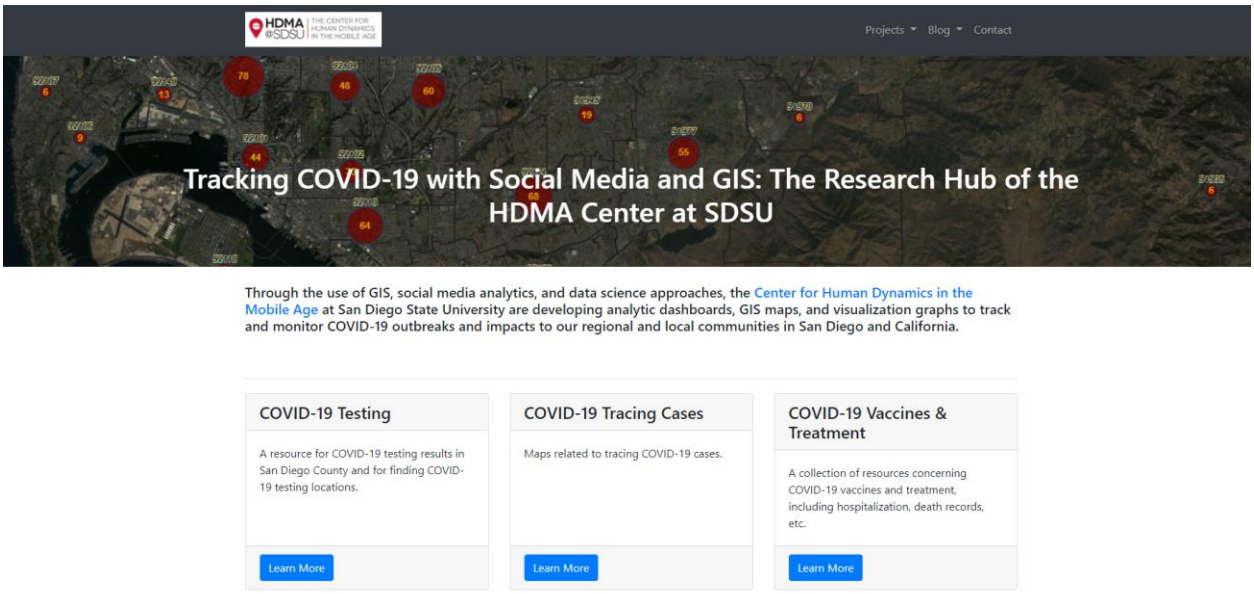
Abstract

This report discusses COVID-19 reporting changes implemented by the County of San Diego and related modifications to the HDMA Center's COVID-19 Research Hub and published dashboards.

Introduction

Beginning March 2020, the County of San Diego has shared public data related to the COVID-19 pandemic on the following website, updated by the Health and Human Services Agency (HHSA): https://www.sandiegocounty.gov/content/sdc/hhsa/programs/phs/community_epidemiology/dc/2019-nCoV/status.html

Using the daily data updates, the HDMA Center created a COVID-19 Research Hub (https://hdma-sdsu.github.io/index.html) featuring a number of regularly updated ArcGIS Dashboards. These interactive dashboards interpret data related to the testing, tracing, and treatment of COVID-19 using different techniques. Other dashboards, not updated, share information about population vulnerability within the county, such as distribution of emergency department visits related to common chronic medical conditions.



The HDMA Center's COVID-19 Research Hub home page.

County of San Diego Reporting Changes

As of July 1, 2021, the County of San Diego HHSA will no longer share COVID-19 related data on a daily basis. Rather, most reports on the website will be updated every Wednesday evening. The final daily update was made on June 30, 2021, with data through June 29, 2021.

COVID-19 Research Hub Changes

Since daily COVID-19 data is no longer available, the HDMA Center is unable to update the research hub's dashboards on a daily basis. Some dashboards that rely on daily data will be retired. Whenever possible, and contingent upon County of San Diego data sharing, dashboards will be updated on a weekly basis.

The content of the COVID-19 Research Hub has been modified to address this change, namely on the COVID-19 Testing, COVID-19 Tracing Cases, and COVID-19 Vaccines & Treatment pages. Retired dashboards are now located at the bottom of their respective pages, and the final date was added to the description cards.

COVID-19 Testing Page

Active Dashboards

1. COVID-19 Testing Sites
    a. https://sdsugeo.maps.arcgis.com/apps/webappviewer/index.html?id=116db2e5c36f4426a77c5ba1ddd36d2a
    b. The HDMA Center created a web application that displays open and closed COVID-19 testing sites and Healthy Places Index (HPI) scores in San Diego County. The map was created by Jessica Embury at the HDMA Center in connection with the RADx-UP initiative. Please verify that testing sites are open before visiting.
2. San Diego Healthy Places Index
    a. https://www.arcgis.com/home/webmap/viewer.html?webmap=117d9f8592bc4ebb9c159a2098e20ec7&extent=-117.571,32.4696,-115.9519,33.1758
    b. This web map created by the HDMA Center examines the Healthy Places Index (HPI) and the locations of COVID-19 testing sites. The map was created by Jessica Embury at the HDMA Center in connection with the RADx-UP initiative. Please verify that testing sites are open before visiting.
3. San Diego Free COVID-19 Testing Sites
    a. https://www.arcgis.com/apps/Nearby/index.html?appid=f3e3c0f175fd4ee782b781833d7bb0fb
    b. The County of San Diego has created a map showing the locations of County of San Diego coordinated, free diagnostic COVID-19 testing sites.
4. National COVID-19 Testing Sites

a. https://www.arcgis.com/apps/webappviewer/index.html?id=2ec47819f57c40598a4eaf45bf9e0d16
b. The GISCorps has created an interactive map that can be used by the public to find testing sites in their area and get information about the site including: contact information, type of testing performed, drive-through availability, etc.

Retired Dashboards

1. San Diego COVID-19 Test Results and Healthy Places Index
    a. https://sdsugeo.maps.arcgis.com/apps/webappviewer/index.html?id=a24b1294ba88431aac1114e9e4600847
    b. Data last updated on February 27, 2021.
    c. The HDMA Center created a web app that explores the relationship between COVID-19 test results and Healthy Places Index (HPI) scores. The map was created by Jessica Embury at the HDMA Center.
2. Accumulated COVID-19 Testing by San Diego County Zip Code
    a. https://sdsugeo.maps.arcgis.com/apps/dashboards/98b8ba4093c54cada80f4f481473f6eb
    b. Data last updated on February 27, 2021.
    c. The HDMA Center created a dashboard that looks at the accumulated number of COVID-19 tests and test results by zip code for San Diego County.
3. San Diego COVID-19 Weekly and Accumulated Test Results and Healthy Places Index
    a. https://experience.arcgis.com/experience/55f0ed2ab7394decae0de7b86a12d26f/
    b. Data last updated on December 26, 2020.
    c. The HDMA center has created a new Dashboard that looks at the weekly and accumulated COVID-19 test results and the Healthy Places Index (HPI). HPI is a tool that explores local conditions affecting life expectancy and compares the community conditions across the region, providing an overall score. The map was created by Jessica Embury at the HDMA Center.
4. COVID-19 Weekly Testing by San Diego County Zip Code
    a. https://sdsugeo.maps.arcgis.com/apps/opsdashboard/index.html#/20c54c46261e40b5b7e15aa311649bc1
    b. Data last updated on December 26, 2020.
    c. The HDMA center has created a new dashboard that looks at the weekly number of COVID-19 tests and test results by Zip Code for San Diego County.

COVID-19 Tracing Cases Page

Active Dashboards

1. San Diego County Weekly COVID-19 Case Information
    a. https://experience.arcgis.com/experience/906d9ccaa0894762ae7bfa8aa46d1809/
    b. In collaboration with the NIH RADx-Up Communities Fighting COVID Project, the HDMA Center created a dashboard that examines COVID-19 in San Diego County zip codes based on 7-day case rates per 100,000 residents, 7-day daily

case averages, and 7-day rates of change (*1,000). The dashboard is updated weekly and displays data from the previous week (Wednesday - Tuesday).

2. Cumulative Confirmed Cases by Zip Code
    a. Desktop: https://sdsugeo.maps.arcgis.com/apps/opsdashboard/index.html#/7c527c40c51a4617a8ba86c5886b299a
    b. Mobile: https://sdsugeo.maps.arcgis.com/apps/View/index.html?appid=affaff84501a4e6a8638f8fe3cff0e78
    c. This dashboard created by the HDMA Center displays number of accumulated COVID-19 cases by San Diego County zip code. Pop up charts show the growth of COVID-19 in each zip code over time.
3. 7-Day COVID-19 Cases in San Diego County
    a. https://experience.arcgis.com/experience/a630917e020440ba9a598bf1c32b7a74/
    b. This mobile-friendly dashboard created by the HDMA Center looks at the number of new COVID-19 cases by zip code in San Diego County over a 7-day period (Wednesday - Tuesday).
4. COVID-19 in San Diego County Skilled Nursing Facilities
    a. https://sdsugeo.maps.arcgis.com/apps/opsdashboard/index.html#/c618799483b44304a9743489974c46ed
    b. The HDMA Center has created a dashboard that looks at the number of active and accumulated COVID-19 cases among residents and healthcare workers in skilled nursing facilities in the County of San Diego.
5. San Diego COVID-19 Risk Zones Analysis using Time-series Data
    a. https://hdma-sdsu.github.io/img/Tsou-COVID19-Risk-Zones-Analysis-V4.pdf
    b. Presentation slides by Dr. Ming-Hsiang Tsou on using time-series data in San Diego County to determine COVID-19 risk areas.
6. Bars, Major Restaurants, and Food Chains
    a. https://sdsugeo.maps.arcgis.com/apps/opsdashboard/index.html#/5b5ac99cbe1a4c47a2cda125199b0fc9
    b. The dashboard created by the HDMA Center examines the distribution of bars and major restaurants, food chains, and other eateries in San Diego County to predict where COVID-19 outbreaks might occur once reopening resumes.

Retired Dashboards

1. COVID-19 Heat Map Dashboard
    a. https://experience.arcgis.com/experience/55cc1d282e974924b0f23691097a1a06/
    b. This dashboard has been retired. Data last updated on June 29, 2021.
    c. The interactive dashboard created by the HDMA Center compares COVID-19 new daily cases and 7-day rolling rates of change in San Diego County to assess the relative risk of zip codes as outbreaks emerge and plateau.
2. COVID-19 Daily New Cases and Change Rate Dashboard
    a. https://experience.arcgis.com/experience/9a4f0439ebac4965972a097ca331630e/
    b. This dashboard has been retired. Data last updated on June 29, 2021.
    c. The dashboard created by the HDMA Center displays 4 interactive tiles investigating the impact of COVID-19 in San Diego County. It looks at confirmed

cases, daily increases, rate per 100,000 residents, and the 7-day rolling rate of change.

3. Cumulative COVID-19 Cases by Ethnicity in San Diego County
    a. May – Sep. 2020: https://hdma-sdsu.github.io/Media/SD-COVID19-Ethnicity-Maps-0520-0920.pdf
    b. Oct. – Dec. 2020: https://hdma-sdsu.github.io/Media/SD-COVID19-Ethnicity-Maps-1020-1226.pdf
    c. Data last updated on December 26, 2020.
    d. The HDMA Center has created a document featuring maps displaying the COVID-19 cumulative cases by ethnicity in San Diego County from 5/20/20 to 12/26/20 in order to examine the populations vulnerable to COVID-19. The maps were created by Jessica Embury at the HDMA Center.
4. Daily Update Summaries for San Diego COVID-19 Outbreaks
    a. https://www.dropbox.com/sh/0rcekopdnan455b/AAA3NWrNiWTWSD6UfG77ZIS-a?dl=0
    b. Final update December 11, 2020.
    c. The HDMA Center creates reports daily looking at the changes in new cases and change rates by zip code for San Diego County.

COVID-19 Vaccines & Treatment Page

Active Dashboards

1. 7-Day Change in COVID-19 Vaccinated Residents & Healthy Places Index (HPI)
    a. https://experience.arcgis.com/experience/1cc7b911604e4a1ab3bd0fbe95227b35/
    b. This mobile-friendly dashboard created by the HDMA Center compares the 7-day change in vaccinated residents (1+ dose) and rates to Healthy Places Index (HPI) scores. The Healthy Places Index is a measure of overall neighborhood health determined by comparing a variety of community conditions. Early trends reveal higher vaccination rates in zip codes with higher HPI scores. Explore this disparity using the dashboard's map and "top ten" charts.
2. Total COVID-19 Vaccinated Residents & Healthy Places Index (HPI)
    a. https://experience.arcgis.com/experience/16370187fbb64720b468483638c02e78/
    b. This mobile-friendly dashboard created by the HDMA Center compares total vaccinated residents (1+ dose) and rates to Healthy Places Index (HPI) scores. The Healthy Places Index is a measure of overall neighborhood health determined by comparing a variety of community conditions. Early trends reveal higher vaccination rates in zip codes with higher HPI scores. Explore this disparity using the dashboard's map and "top ten" charts.
3. 7-Day Change in COVID-19 Vaccinated Residents by San Diego County Zip Code
    a. https://sdsugeo.maps.arcgis.com/apps/dashboards/fa6d1c0e8b9d4fa9b75d3bb6039c99a7
    b. This dashboard created by the HDMA Center compares the change in COVID-19 vaccinated residents (1+ dose) by San Diego County zip code and confirmed

COVID-19 cases over a 7-day period to explore disparities between vaccination and infection.

4. Total COVID-19 Vaccinated Residents by San Diego County Zip Code
    a. https://sdsugeo.maps.arcgis.com/apps/dashboards/03c5584e111e458fab4f65e707ab1979
    b. This dashboard created by the HDMA Center compares the total number of COVID-19 vaccinated residents (1+ dose) by San Diego County zip code to the cumulative number of confirmed COVID-19 cases to explore disparities between vaccination and infection.

Retired Dashboards

1. Accumulated San Diego COVID-19 Hospitalizations and Mortalities
    a. https://experience.arcgis.com/experience/b486aa9e87a349638fee19d27f615711/
    b. Data last updated on December 26, 2020.
    c. This dashboard created by the HDMA Center compares the accumulated COVID-19 related hospitalizations and mortalities by sub-regional area to assess community vulnerability and strain on healthcare systems.
2. Weekly San Diego COVID-19 Hospitalizations and Mortalities
    a. https://experience.arcgis.com/experience/1b37559545cc47beb83f7df3a808e399/
    b. Data last updated on December 26, 2020.
    c. This dashboard created by the HDMA Center compares the weekly COVID-19 related hospitalizations and mortalities by sub-regional area to assess community vulnerability and strain on healthcare systems.

Python Scripts for ArcGIS Dashboards

The update process for the COVID-19 Research Hub's dashboards has been, for the most part, automated using Python script and ArcGIS Notebooks run through the ArcGIS Pro software. These scripts format new data then use the ArcGIS API for Python to overwrite feature layers on ArcGIS Online and update related web map symbology. The scripts are available in a repository maintained by the HDMA Center: https://github.com/HDMA-SDSU/ArcGIS-Python-for-COVID19-Data

Updated scripts that reflect the change to weekly dashboard updates are available in this repository. The file names for these scripts are: (1) weekly_covid_case_update.ipynb, (2) weekly_covid_vacc_update.ipynb, and (3) weekly_radxup_update.ipynb.