Geospatial Data, Dashboards, Analytics and Scientific Communication – Lessons Learned from the COVID-19 Pandemic

Date and Location

Tuesday, November 1, 2022

Auditorium of Building Q on the Esri -- Redlands campus

Duration and Time

TBD

Format

A hybrid panel session, organized by Aileen Buckley (Esri) and Tim Trainor (ICA)

Session Description

The nature of a crisis is that it both magnifies our systemic shortcomings while also inspiring innovation. COVID-19, as a long-term global crisis has followed suit, exposing inadequate data systems, lack of interoperability, and delayed and rather terse communication systems. At the same time, needs such as pattern prediction, trend analysis and real-time reporting inspired innovation.

Geospatial tools provide unparalleled opportunities to solve pandemic challenges. Early in the pandemic, the dashboard that Johns Hopkins University designed and shared served as the first and most widely used global resource for real-time situational awareness. It has since received trillions of hits and inspired similar dashboards for other geographies, including countries, states, provinces, cities, and more.

Once situational awareness was achieved, the focus shifted to various response activities, many of which leveraged GIS. A massive and ongoing effort uses GIS to achieve equitable, speedy vaccine distribution. Beyond vaccine site selection and mobile vaccination clinic logistics, location analytics are also being used to create targeted messaging to improve vaccine confidence and address vaccine hesitancy. We are now seeing GIS supporting disease surveillance systems, such as wastewater monitoring to sense and map the presence of the virus and its variants over space and time. And that information is being used to drive localized risk communication, testing and treatment resources.

In this session, we review the innovations fueled by modern geographic information systems and their implications for a more resilient future. Panelists will speak from a variety of perspectives about finding and collating COVID-19 data; performing analysis of the data to reveal salient and actionable information; pairing GIS and cloud technology as the foundation for collaboration and interactivity; creating maps and dashboards to visualize and communicate the scientific information, and using location-centric applications for risk mitigation, viral detection, and intervention.

Este Geraghty will share with us the breadth of GIS applications in health that happened over the past two years. The Johns Hopkins map and dashboard illuminated the opportunities for data sharing, something that **Frank Dong** will be able to speak to. There were also opportunities to use that collected data to support the development of other apps, and **Jim Herries** will describe some of these. And many people or agencies saw a way to leverage the original dashboard and other apps for their own areas of interest. **Stephanie Deitrick** will talk about her work helping to develop protocols for monitoring wastewater to detect the disease.

Participants

Aileen Buckley, Esri (In person) - INTRODUCTION

- Picture:

- Bio: Dr. Aileen Buckley has been making maps since she was 20. She is a research cartographer at Esri where she focuses on the development of best practices for mapping. While she publishes and presents worldwide on many aspects of mapping and GIS, much of her research relates to space-time mapping, terrain representation, map use, and cartographic methods. Her most current work is focused on ethics in mapping. She is a co-author of *Map Use: Reading, Analysis, Interpretation* and co-editor of the *Atlas of Oregon*. Aileen is a former president of CaGIS and is active in the International Cartographic Association (ICA). She is currently chair of the US National Committee for the ICA and lead delegate for the United States to the ICA.
- Goal: Set the stage by providing some background on the topic. Explain the format and goals of the session. Introduce the participants.

Tim Trainor, ICA President (In person) - MODERATOR

- Picture:

- Bio: Tim has been involved in cartography his entire professional life. He had a long career at the U.S. Census Bureau, culminating in the position of Chief Geospatial Scientist. He continues to work with the United Nations in advancing global geospatial information. He attended his first ICC in 1987 in Morelia, Mexico, and has participated in every ICC since then. In Morelia, he joined the Commission on Atlases, became Commission Chair in 1995, and remained active until he was elected as a Vice President of ICA from 2007-2015. He is now the President of the ICA, for the 2019-2023 term.
- Goal: What are your reactions to the presentations and why? What can the panelists do to improve their work or research. Summarize briefly each panelist's main message and its contribution to the theme of the session. Provide an assessment of the panelist presentations: do they make their cases convincingly? Highlight the relevance of each panelist's work to academia and society.

Este Geraghty, Esri Chief Medical Officer (virtual) - PANELIST

- Picture:

- Bio: Dr. Geraghty is the Chief Medical Officer at Esri, developer of the world's most powerful mapping and analytics platform. She leads strategy and messaging in Health and Human Services and is passionate about delivering value thru a geographic approach. Formerly a Deputy Director with the California Department of Public Health, she led the state's open data initiative. She also served as Associate Professor at the University of California Davis, conducting research on geographic approaches to health policy and community development. In addition to degrees in Medicine, Medical Informatics and Public Health, Dr. Geraghty is also a Geographic Information Systems Professional (GISP).
- Goal: Provide a broad overview of the importance of communicating geospatial data of COVID-19 during the pandemic. Reflect on how this communication was different from the form of and need for communication in the past. Suggest how this might change the way scientific information is communicated in the future.

Frank Dong, Johns Hopkins University (In person, if possible, otherwise virtual) - PANELIST

- Picture (from LinkedIn):

- Bio (from LinkedIn): Ensheng Dong, who goes by Frank, is a Ph.D. Candidate and a Louis M. Brown Engineering Fellow at Johns Hopkins University in Baltimore, Maryland. He is an experienced researcher with a demonstrated history of working in transmission and telecommunication industries and higher education. He is skilled in data science, spatial analysis, R, Python and ArcGIS. Frank is a strong research professional focused on system engineering and public health.
- Goal: Describe the first global real-time coronavirus surveillance dashboard. launched by the JHU Center for Systems Science and Engineering (CSSE), to provide a geospatial visualization of COVID-19 cases for thousands of locations. This dashboard is considered the leading resource for the public, policymakers, and research community, providing the most up-to-date information on the COVID-19 pandemic.

Jim Herries, Esri, Redlands - ArcGIS Living Atlas (In person) - PANELIST

- Picture (from ArcGIS Blog):

- Bio (from ArcGIS Blog): Jim Herries is a geographer with Esri in Redlands, California. He serves as a principal product engineer on the team responsible for ArcGIS Living Atlas of the World. Jim is particularly engaged in thematic mapping and map visualizations, reflecting a drive to help GIS users bring their data to life on the map and to stimulate insights. He constantly looks for ways to create clear, focused map information products that incorporate meaningful spatial analysis and evocative visualizations.
- Goal: Explain the requirements for behind-the-scenes analytics of the data, and describe other maps and resources that have been built using the data (e.g., web maps, StoryMaps, CovidPulse app in Living Atlas) https://livingatlas.arcgis.com/en/browse/#d=2&q=COVID-19%20).

Stephanie Deitrick, - PANELIST

- Picture (from https://www.esri.com/about/newsroom/arcuser/arizona-states-mas-gis-program-prepares-grads-for-the-real-world/):

- Bio (from https://isearch.asu.edu/profile/474472):
  Stephanie Deitrick is program director for the Masters of Advanced Study in GIS (MASGIS) Program. She has eight years university teaching experience including introductory and

intermediate GIS, GIS for Planners, cartography and Quantitative Methods. She is proficient in Adobe graphic design software, ArcGIS and TransCAD transportation GIS. Her research focuses on GIS, decision-making and uncertainty. Her work focuses on the use of geographic information and visualizations to support public policy decisions. In her work at the City of Tempe, Stephanie is the Enterprise GIS and Open Data Program Manager. Her group supports the city's strategic priorities and data driven decision-making, along with providing GIS data and applications to support city operations and community engagement.

- Goal: Describe the use of GIS in wastewater monitoring for COVID-19 and how that can lead to community action to slow or stop the spread of the disease. Describe the transition from testing for opioids to testing for COVID and how GIS helped to support both efforts.