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Jessica Embury

Monday, October 26, 2020

Real-time COVID-19 Research Offers “Fuller, More Immersive Student Experience”

Senior geography major Jessica Embury developed dynamic maps of coronavirus cases and resources that informed critical research and outreach efforts.

By **Kellie Woodhouse**

Story Keywords: Research, Student Success, COVID-19, News

When San Diego State University geography major **Jessica Embury** joined the research team at the Center for Human Dynamics in a Mobile Age (HDMA), she had no idea that in a few months she would be helping researchers respond to the biggest pandemic in a century.

“It’s really exciting to work on a project that matters, that’s not something I expected to do as an undergraduate,” the senior said. “I’ve just really loved it. I love the interaction. I love collaborating with different people.”

Embury works as a student cartographer with **HMDA’s Research Hub**, a rich collection of data and visualizations that examine COVID-19 cases and resources in San Diego. She has developed dynamic maps that show COVID-19 weekly testing sites, hospitalizations, ICU stays, and death cases in the county.

For example, Embury created a “Vulnerability Map” that visualizes diabetes-related emergency department discharge information by age and location in San Diego County, offering insight into how diabetes and related emergency department discharges vary among neighborhoods, age and ethnicity.

Using Embury’s maps, researchers identified that Latinx residents of the South Bay area in San Diego were especially vulnerable to the coronavirus, providing critical insight that informed large contact tracing and testing programs, along with other outreach efforts.

She is also participating in a **\$5 million effort that aims to reduce testing disparities** in underserved communities and head off outbreaks. Acting as a cartographer, she will help map vulnerable populations, free testing sites and outbreaks.

The San Diego native transferred from Grossmont College after instructors praised SDSU’s geography program. She quickly became engrossed in data science, programming and geocomputation.

“Jessica has made a tremendous contribution to our COVID-19 Research Hub,” said cartographer, data scientist and HDMA director **Ming-Hsiang Tsou**. “She is the leading map creator for our research hub and created over 80% of web maps and developed innovative automation procedures that enable our daily COVID-19 map updates.”

We interviewed Embury to find out more about her experience at SDSU and her advice for fellow students.

When quarantine began and COVID-19 awareness and cases began ramping up, what was it like to be pulled into a project that addressed the virus directly?

At the time, I was still new to the HDMA Center and hadn't been able to contribute very much. I was asked to work on this project to help with mapping related to COVID-19 and population vulnerability. During a period when many people felt anxious and helpless, it was comforting to have a meaningful project to focus on. I am so grateful to have the opportunity to work on a project that is directly helping our local community.

What have you learned from working on a real-time research project with a team, and how has your involvement affected your student experience?

Participating in this project has given me a chance to experience the complex and collaborative nature of research. I've worked with professors and graduate students that I wouldn't have met otherwise. I am having a fuller, more immersive student experience because of my involvement with the HDMA Center. I really feel like I have become part of the geography community at SDSU.

What are you looking forward to in the future?

I am excited to continue working on COVID-19 related projects. I recently joined a team that will be working on finding new testing locations within vulnerable communities. Initially, I will be creating maps showing current test sites within the County of San Diego. I am also looking forward to entering a master's program next fall. This experience and exposure to research has inspired me to continue my education.

What advice do you have to students looking to make the most of their college experience?

Get involved. There are so many opportunities available, even during distance learning. Engage with your professors and other students. Acquiring real-world experience during undergraduate studies is so important. It has really helped me to plan my future and learn what I want to do with my degree.