NEWSROOM

ECONOMICS MAJOR RESEARCHING COVID-19 VACCINE INCENTIVES

MICHAEL SPARKS '23 HOPES TO INFORM FUTURE PANDEMIC RESPONSES.

by Jane Heeter | August 4, 2021

Read time: about 2 min

Manassas native Michael Sparks '23 chose Christopher Newport in large part because of the opportunities to do in-depth research as an undergraduate.

An economics and mathematics double major and American studies minor, Sparks plans to pursue a PhD in economics after graduation. But before then, he's already undertaking in-depth research and data analysis as a Summer Scholar.

Through Summer Scholars, students work one-on-one with a professor, conduct experiments in the field, gather and analyze data, and review literature in the field. Over the eight-week program, students are paid for their work, receive free on-campus housing and myriad opportunities to learn more about undergraduate research.

Sparks is working with Dr. Rik Chakraborti, assistant professor of economics. Chakraborti has published research into price gouging in the COVID-19 pandemic and the negative effects of trying to stop the practice.

With Chakraborti's guidance, Sparks is investigating the various effects of incentives that states and localities have put in place for people to receive their COVID-19 vaccines, and aims to show the best practices that could be used to achieve herd immunity in the next pandemic.

Read more and watch Sparks' experience as a Summer Scholar below, and follow along as he takes over the

Christopher Newport [Instagram page](#).

Tell us a little bit about your project. We are investigating best ways to incentivize vaccine uptake to socially desirable levels. Our research is really important because in the past decade or so, really since the 1990s, you've seen an uptick in vaccine hesitancy. So with the coronavirus pandemic, it's been really important to try and get people to see the fastest way out of the situation. The goal of our paper is to really see what ways we can incentivize people to get vaccinated, outside of their regular desire to do so. The real problem is there is an intrinsic cost of vaccination, and there is an intrinsic benefit. The cost comes to the individual getting vaccinated, and the benefit comes to society as a whole.

What we're trying to put together is an empirically founded model which will show us what the best way to incentivize people is. By using techniques from dynamic optimization, linear regression, and data on vaccine uptake and state-level incentives, we want to specify a time path for the best incentives to use, and that incentive time path will give us some more structured policy initiatives for different regions, states, countries, etc.

Walk us through a typical day. A lot of my work this summer is learning new mathematical techniques, and putting together the dataset required for the empirical component of the project. I've read three textbooks on mathematics, some on economics specifically but also some of them just general differential equations and mathematical models. I work through practice problems then do some more literature review. The pandemic has caused a lot of new research in econ coming out using this new data set of vaccination and the new data set of how economies function in pandemics, which hasn't really been available since the 1918 pandemic. So there's a lot of new research out, and it's really fascinating to read through. I'm learning about various sources of data which will be helpful not just for the current project, but also for my future work.

What has this experience been like? In my mind I was thinking undergraduate research would be more like literature review than anything else, putting together compositions of other people's work.

> But with Dr. Chakraborti this summer, I've been doing things that aren't taught at an undergraduate level.

It's a humbling experience to realize how little you actually know in undergraduate, but it's also a fantastic experience to realize that. To not think, "Oh, I'm good at math, so I know all the math." I don't really know what to say about it besides: it's humbling."