

UC Irvine Wastewater COVID Surveillance Project Survey Report

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Introduction

In response to the COVID-19 pandemic, Professor Sunny Jiang's research group at the University of California, Irvine, tracked the prevalence and concentration of SARS-CoV-2 virus in wastewater as a marker of the spread of COVID-19 epidemic. This project, supported by Water Research Foundation and U.S. National Science Foundation, was designed to inform public health management strategies. An online survey was conducted in order to assess public opinion on wastewater COVID surveillance as a part of the project.



Figure 1 Flow measurement and sewage sampling device installation at a sewer manhole near UCI campus. June 2022

Methods and Results

The survey inquired about demographic information [including political orientation],

opinions on COVID [severity and safety concerns], and knowledge of and opinions on wastewater COVID surveillance. The survey was anonymous, and respondents were informed that the survey would be answered by enough individuals such that outlier answers could not be traced.

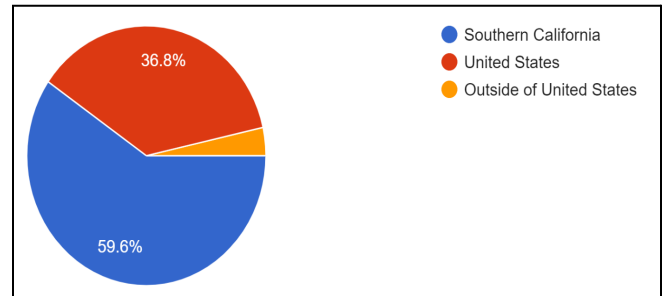


Figure 2. Locations of respondents

Over the course of three weeks, a total of 58 responses were collected from a population that largely consisted of individuals from Southern California. This was expected because the survey was posted via LinkedIn and other social media by individuals based in this region. The gender distribution is fairly even (45% male). Every age group aside from individuals under 18 years was well-represented. Even taking into consideration the respondent population, Latinos were underrepresented and Asians overrepresented. All respondents over 18 years of age have received either college or graduate education, with over 60% being the latter. A ten-point scale was used for the political orientation question ranging from far left/progressive (represented by the scale of 1) to far right/conservative (10). The data is significantly skewed to the left (progressive), even more so than expected when considering the sample population.

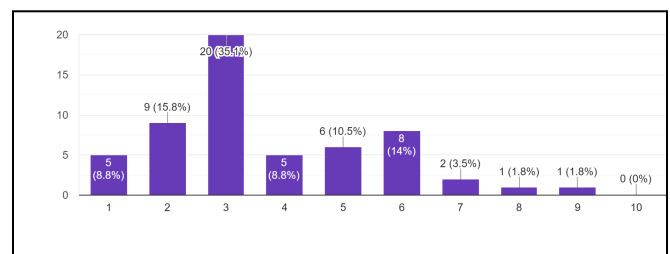


Figure 3. Distribution of respondents' political orientation

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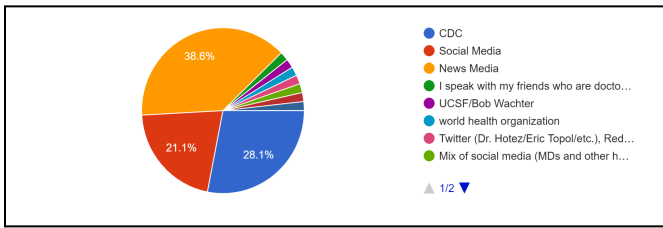


Figure 4. Source of information about COVID that respondents seek

The next set of questions inquired about the respondents' behavior, knowledge and opinions on COVID. Almost all of the respondents were vaccinated with a booster, and none of the respondents were unvaccinated. It was agreed by all the respondents that at least some of the population should still be concerned about COVID, though they were divided on its severity. 94.7% of the respondents decided that COVID will have a few more spikes in the future, much like how it has been in the past with different strains. Over half of the respondents have had an individual in their household with a confirmed case of COVID, and all of them have had a colleague or close acquaintance once infected with the virus. Most respondents wear masks situationally, with only a quarter of them either always or never wearing masks.

Because this survey was sent out to a group of individuals connected with an environmental professional, there were a lot more respondents than expected who used the Center for Disease Control and Prevention (CDC) website as their primary information source for COVID news.

Additionally, nearly two-thirds of respondents were aware of wastewater surveillance for COVID. This observation could be a result of population bias, since the individuals who responded were likely those who have been aware of or supportive of wastewater COVID surveillance.

One of the most significant questions of the survey inquired about whether the respondents would support wastewater surveillance in their own

community, given that this potentially sensitive information could be disclosed to the public. 95% of the respondents said they would support it, and of these in support of the surveillance slightly more were in favor of monitoring by neighborhood over by city.

We were unable to find significant statistical correlations between core questions and demographic/COVID questions due to the small number of respondents in certain categories, such as those who never wear masks; who are unaware or unsupportive of COVID wastewater surveillance, or who are not concerned about COVID, etc.

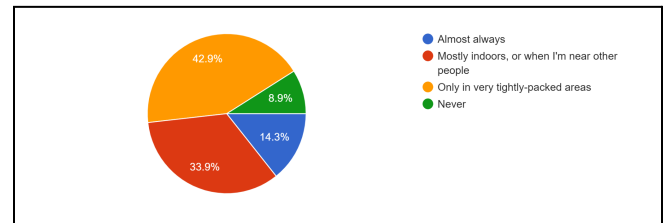


Figure 5. Respondent's behavior on wearing masks

Summary and Conclusions

The respondents' overwhelming support for wastewater monitoring in their neighborhoods as well as their general opinion that COVID is still a threat to some degree suggests that COVID wastewater surveillance, such as the one being conducted at UC Irvine, is worth continuing.

The survey was distributed only to the connections of a few individuals (including an environmental professional) living in Southern California. This could have resulted in a lack of demographic and geographic representativeness. Respondents were nearly in unanimous agreement with each other for several key questions, which prevented reliable conclusions to be drawn from looking at their demographics. Limited significant correlations between core questions and demographic/COVID questions could be established, likely due to the relatively small sample size. This could be improved by future surveys in the design and survey distribution stages.