Population Statistics for Explaining the Impacts of COVID-19: Unusual Time Call for Usual Measures

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National Archive of Computerized Data on Aging
nacda-aging.org
ABSTRACT

• Epidemics and other health crises impact the way we measure, understand, and teach population statistics. The discipline of demography has had a significant impact on the development of useful techniques in the rapid assessment of changing population dynamics.

• While the COVID 19 pandemic represents the current crisis impacting all nations in different ways, these tools are equally useful in the face of other health emergencies such as flooding, famine, and other types of population instability. Using measures of mortality, hospitalization, and infection for the current COVID 19 epidemic, concepts such as the difference between relative risk and absolute risk, measures that have caused considerable confusion reporting, will be explained, and guidelines provided to allow students to calculate these statistics in a classroom situation.

• The COVID 19 pandemic represents the latest in a long series of population health events. Still, the tools and techniques of demography play a vital role in understanding how these processes affect unique populations in different ways.
About NACDA

- Funded by the National Institute on Aging (NIA)
- 35+ years serving the research community
- Focus on gerontological research and longitudinal data
- Notable projects include MIDUS, NSHAP, and working with Colectica
Our Team

Dr. James McNally, NACDA Director

Kathryn Lavender, NACDA Data Project Manager

Steering Committee:

- Ken Ferraro, Ph.D. - Committee Chair - Director of Center on Aging & the Life Course at Purdue University
- Jennifer Ailshire, Ph.D. - Associate Professor of Gerontology & Sociology at USC Leonard Davis
- Margaret Gatz, Ph.D. - Professor of Psychology, Gerontology & Preventive Medicine at the University of Southern California
- Louise Hawkley, Ph.D. - Senior Research Scientist at NORC
- Peter A. Lichtenberg, Ph.D. - Director of the Institute of Gerontology & the Merrill Palmer Skillman Institute at Wayne State University
- Barry Radler, Ph.D. - Researcher, Institute on Aging at the University of Wisconsin-Madison
- George Rebok, Ph.D. - Professor, Johns Hopkins University
The National Archive of Computerized Data on Aging (NACDA), located within ICPSR, is funded by the National Institute on Aging. NACDA's mission is to advance research on aging by helping researchers to profit from the under-exploited potential of a broad range of datasets.

NACDA acquires and preserves data relevant to gerontological research, processing as needed to promote effective research use, disseminates them to researchers, and facilitates their use. By preserving and making available the largest library of electronic data on aging in the United States, NACDA offers opportunities for secondary analysis on major issues of scientific and policy relevance.

The NACDA staff represents a team of professional researchers, archivists and technicians who work together to obtain, process, distribute, and promote data relevant to aging research.
We live in a world of uncertainty

Infection fatality ratio (IFR, in %) = \( \frac{\text{Number of deaths from disease}}{\text{Number of infected individuals}} \times 100 \)

Case Fatality ratio (CFR, in%) = \( \frac{\text{Number of deaths from disease}}{\text{Number of confirmed cases of disease}} \times 100 \)

Case Fatality ratio (CFR, in%) = \( \frac{\text{Number of deaths from disease}}{\text{Number of deaths from disease} + \text{Number of recovered from disease}} \times 100 \)

AND THEN MULTIPLY BY 10 OR SO...

New York State conducted an antibody testing study. It estimated 19.9% of the population of New York City had COVID-19 antibodies. With a population of 8,398,748 people in NYC [source], this percentage would indicate that 1,671,351 people had been infected with SARS-CoV-2 and had recovered as of May 1 in New York City. The number of confirmed cases reported as of May 1 by New York City was 166,883, more than 10 times less.
Global Deaths Due to Various Causes and COVID-19 2020

https://public.flourish.studio/visualisation/3896243/

1/1/2020
Total: 30,115
We update all our data each day between about 6pm and 7:30pm Eastern Time. We have recently begun publishing a bit later so as to capture Colorado and New Mexico data on the same day they update rather than on the following day.

Sign up for our newsletter to get our latest articles about this data by email.

@COVID19Tracking

Our daily update is published. States reported 1.9M tests, 268k cases, 132,370 COVID-19 hospitalizations, and a record 4,033 deaths. The 7-day average for deaths is now over 2,750, also a record.

January 7, 2021
COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)

Global Cases: 88,589,250

Cases by Country/Region/Sovereignty:
- 21,776,072 US
- 10,413,417 India
- 7,961,673 Brazil
- 3,321,163 Russia
- 2,966,203 United Kingdom
- 2,763,563 France
- 2,307,581 Turkey
- 2,237,890 Italy
- 2,050,360 Spain

https://coronavirus.jhu.edu/map.html

NACDA – Data on Aging
COVID-19 Race and Ethnicity Data

January 6, 2021

As part of its commitment to reduce health inequities, the state has launched a Health Equity Dashboard on www.covid19.ca.gov that tracks California's health equity measure and data by race and ethnicity, sexual orientation, and gender identity.

CDPH updates data tables on race/ethnicity weekly.

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>No. Cases</th>
<th>Percent Cases</th>
<th>No. Deaths</th>
<th>Percent Deaths</th>
<th>Percent CA population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latino</td>
<td>1,007,090</td>
<td>55.1</td>
<td>12,827</td>
<td>47.0</td>
<td>38.9</td>
</tr>
<tr>
<td>White</td>
<td>366,351</td>
<td>20.0</td>
<td>8,619</td>
<td>31.6</td>
<td>36.6</td>
</tr>
<tr>
<td>Asian</td>
<td>117,227</td>
<td>6.4</td>
<td>3,171</td>
<td>11.6</td>
<td>15.4</td>
</tr>
<tr>
<td>African American</td>
<td>73,573</td>
<td>4.0</td>
<td>1,853</td>
<td>6.8</td>
<td>6.0</td>
</tr>
<tr>
<td>Multi-Race</td>
<td>23,457</td>
<td>1.3</td>
<td>291</td>
<td>1.1</td>
<td>2.2</td>
</tr>
<tr>
<td>American Indian</td>
<td>5,750</td>
<td>0.3</td>
<td>90</td>
<td>0.3</td>
<td>0.5</td>
</tr>
<tr>
<td>or Alaska Native</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native Hawaiian and</td>
<td>10,357</td>
<td>0.6</td>
<td>147</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>other Pacific Islander</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>224,198</td>
<td>12.3</td>
<td>316</td>
<td>1.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Total with data</td>
<td>1,828,872</td>
<td>100.0</td>
<td>27,314</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Learning Data Science Using Covid-19 Pandemic Data

Richard Gonzalez, University of Michigan (gonzo@umich.edu)

2021-01-02

Preface

Note

I have a more detailed version of these notes with complete R code. That version may be more appropriate if you want to follow the R code used to produce this document.

** Disclaimer: The contents of this website are in draft form. Changes are made daily. At this point I am more in “content creation mode” than in careful editing, consistency checks, references, and meta-level summaries. Also, the code is run daily and all plots and tables change accordingly. Sometimes there are peculiarities that emerge for a particular day and I wasn’t able to catch them prior to uploading the new day’s files (e.g., a weird plot, an outlier that leads to unreasonable parameter estimates). This will

http://www-personal.umich.edu/~gonzo/covid19/public/
UAS Covid-19 Survey National Sample Longitudinal File: Comprises the first 20 waves of the UAS COVID long form data (March 10, 2020 to January 6, 2021) with consistent variable naming.

https://uasdata.usc.edu/index.php
ICPSR Working Paper 2:
Best Practices for measuring the social, behavioral, and economic impact of epidemics

This report reviews best practices for using data resources from ICPSR, its projects, and its collaborating partners for measuring the impact of epidemics. The report summarizes resources to identify measures of well-being, social connectedness, and other constructs to measure the social and behavioral effects of the COVID-19 epidemic on population health outcomes. The report suggests data resources to identify pre-crisis measures of social distancing, social networks, consumer confidence, unemployment, and the use of social media.

https://deepblue.lib.umich.edu/handle/2027.42/154682
Where the Data Process Stands Now

Pre-Test: Data before COVID-19

Research deferred due to COVID-19

Post-Test: Data after COVID-19
Areas of Focus

We identify studies that ask questions about
• “Quality of Life”
• “Happiness”
• “Crisis Management”
• “General Health”
• “Mental Health”
• “Healthy Aging”
• “Life-course”
<table>
<thead>
<tr>
<th></th>
<th>QoL</th>
<th>Happiness</th>
<th>Crisis/Problems</th>
<th>Kessler 6</th>
<th>CESD</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MIDUS</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>NSHAP</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>*</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>ACL</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>NHIS</strong></td>
<td>&amp;</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td><strong>NHANES</strong></td>
<td>#</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Survey of Consumer</strong>&lt;br&gt;Attitudes and Behavior</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>%</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>
Monitoring the Future (MTF)

- There are a number of ongoing surveys that are in the field that have added questions addressing COVID-19. Monitoring the Future has a web-based survey of its panel respondents (the subset of panel member who respond on the web). Two items were added to the MTF Panel web-based surveys (ages 19-60) in March 2020 (data collection starting March 27, 2020). The two items are:

<table>
<thead>
<tr>
<th>A. Have you been concerned about whether you have COVID19 (also known as the coronavirus) in 2020?</th>
<th>B. Have you been tested for COVID19 in 2020?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) No</td>
<td>1) No</td>
</tr>
<tr>
<td>2) Somewhat</td>
<td>2) Yes, and test indicated that I do not have it</td>
</tr>
<tr>
<td>3) Yes</td>
<td>3) Yes, and test indicated that I do have it</td>
</tr>
<tr>
<td></td>
<td>4) Yes, and I am waiting for the results</td>
</tr>
</tbody>
</table>
Survey of Consumers

• The Survey of Consumers has also added COVID-19 related questions as of April 2020 data collection. The new questions are:

<table>
<thead>
<tr>
<th>M1. How much has your life changed due to the coronavirus? Would you say to a great extent, somewhat, very little, or not at all?</th>
<th>•M2. Which of the following potential effects of the coronavirus concern you the most: the threat to your (family's) health, the required social isolation, or the impact on your personal finances?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• TO A GREAT EXTENT</td>
<td>• THREAT TO YOUR OR YOUR FAMILY’S HEALTH</td>
</tr>
<tr>
<td>• SOMEWHAT</td>
<td>• REQUIRED SOCIAL ISOLATION</td>
</tr>
<tr>
<td>• VERY LITTLE</td>
<td>• IMPACT ON YOUR PERSONAL FINANCES</td>
</tr>
<tr>
<td>• NOT AT ALL</td>
<td>• 8. DON’T KNOW</td>
</tr>
<tr>
<td>• 8. DON’T KNOW</td>
<td></td>
</tr>
</tbody>
</table>
User Support

Contact User Support at **ICPSR-help@umich.edu**

OR contact us at NACDA directly by emailing **icpsr-nacda@umich.edu**
Web Address - https://www.icpsr.umich.edu/icpsrweb/NACDA/

Twitter handle - @NACDA_Aging

Facebook - NACDA Program on Aging - @NACDA.Aging.Program

LinkedIn - linkedin.com/company/nacda-aging

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