
Elizabeth Pathak, PhD
The COVKID Project
Women’s Institute for Independent Social Enquiry (WiiSE)
The COVKID Project
www.covkidproject.org

◆ Project team
   ♥ Dr. Elizabeth Pathak, WiiSE
   ♥ Dr. Janelle Menard, WiiSE
   ♥ Ms. Rebecca Garcia, WiiSE
   ♥ Dr. Jason Salemi, University of South Florida

◆ Volunteer effort, funded by small donations
Overview of COVID-19 Data for Kids
Understanding COVID-19 in Kids

◆ To understand **incidence of disease**, we need **testing** and **case** data.

◆ To understand **disease severity**, we need **hospitalization** and **intensive care admissions** data.

◆ To understand **disease fatality**, we need **death certificate** data.

◆ To understand **racial and ethnic disparities**, we need **ALL** of these types of data!

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
COVID-19 Testing Data by Age

State COVID-19 Dashboards

No Other Sources of Testing Denominator Data

Only 1 state reports C19 testing denominators for racial/ethnic groups by age: Illinois
COVID-19 Case Data by Age

State COVID-19 Dashboards

- Only 2 states report C19 case counts for racial ethnic groups by age: CA and IL
- Michigan provides these data in an excel sheet.

State Case Reporting to CDC

- All states report individual cases with age and race/ethnicity to CDC.
- For kids, 45% of cases are missing race/ethnicity.

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
COVID-19 Hospitalization Data by Age

State COVID-19 Dashboards
- No states report number of hospitalizations for racial/ethnic groups by age.

State Case Reporting to CDC
- There is a hospitalization yes/no indicator variable for each case.
- High degree of missingness across all states.

DHHS COVID-19 Hospitalization File
- No race/ethnicity data reported for any patients.

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
COVID-19 Intensive Care Data by Age

State COVID-19 Dashboards

◆ Only 2 states report C19 intensive care admissions by age: Minnesota and Wisconsin
◆ No states report these data by race/ethnicity.

Virtual Pediatric Systems COVID-19 Dashboard

◆ Voluntary hospital registry of PICU admissions.
◆ Race/ethnicity reported for 96% of patients about whom clinical details were provided.
◆ covid19.myvps.org
COVID-19 Death Data by Age

State COVID-19 Dashboards
- Only 2 states report C19 deaths for racial/ethnic groups by age: California and Illinois.
- Michigan provides these data in an excel sheet, but suppressed for kids.

State Case Reporting to CDC
- There is a death yes/no indicator variable for each case.
- Death counts are HIGHER than reported on state dashboards.

NCHS COVID-19 Death Tabulations
- Death counts by race/ethnicity and age are available for kids at the national level.
- State level data are (effectively) suppressed.

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
Results: Illinois Testing Data

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry, April 1, 2021


<table>
<thead>
<tr>
<th></th>
<th>Population Testing</th>
<th>Test Positivity</th>
<th>Population Incidence</th>
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<tr>
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<td>Tests per 100 kids</td>
<td>Kids who tested positive/all tests</td>
<td>Number of Cases</td>
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<tr>
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<td>4.3</td>
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</tbody>
</table>

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
Results: National Case Data
CDC vs. COVKID Cumulative COVID-19 Case Counts

- COVKID cumulative case counts extracted on December 31, 2020
- CDC case counts from January 31, 2020 restricted file release, with earliest case date no later than December 31, 2020. Ages 0-19 years for all states.

- **COVKID Total = 2,556,187**
- **CDC Total = 2,286,554**

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
Discrepancies in Case Counts Between CDC Restricted File and COVKID Tally for 2020

State dashboard age range
- 0 - 17 years
- 0 - 18 years
- 0 - 19 years
- 0 - 20 years

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry, April 1, 2021
Best Estimate of COVID-19 Cases in Kids for CY 2020

- COVKID Total = 2,556,187
- CDC Total = 2,286,554
- Best Estimate = 2,893,855

55% of increase from CA, NY

- We used CDC totals for 13 states, and COVKID totals for 38 states.
- We had to use 0-17 year totals for AL, LA, MS, and 0-18 year old totals for RI and WY.

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry, April 1, 2021
Method for Imputing Race/Ethnicity I

◆ **GOAL:** Impute race/ethnicity for aggregate sums to permit calculation of cumulative incidence rates

◆ Imputation at the individual case level is NOT recommended (high degree of missingness across all descriptive variables in the dataset)

◆ **“Simple” method:** assume the racial/ethnic distribution of the “missing” cases is the same as the “non-missing” cases.
COVID-19 in Kids 0-9 Years in 2020: Raw vs. Best Estimate Counts


Ages 0-9 Years (RAW)

- White: 24.0%
- Hispanic: 15.5%
- Black: 6.8%
- Missing: 46.3%
- NHOP: 0.2%
- AI/AN: 1.0%
- MR/Other: 4.4%
- Asian: 1.8%

n= 643,816

Ages 0-9 Years (Best)

- White: 36.7%
- Hispanic: 40.3%
- Black: 12.2%
- Missing: 46.3%
- NHOP: 0.2%
- AI/AN: 1.0%
- MR/Other: 6.5%
- Asian: 2.4%

n= 811,796

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry, April 1, 2021
COVID-19 in Kids 0-9 Years in 2020: Cumulative Incidence Rates (CIR)


Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
Results: National Hospitalization Data
COVID-19 Hospitalization Indicator from the CDC Case File, Kids 0-19 Years

January 31, 2021 release. Missing/UNK hosp = 59%. Missing/UNK R/E = 45%.

Total hospitalizations reported = 19,127

74% were missing hosp indicator

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry, April 1, 2021
Results: National Intensive Care Data
COVID-19 Intensive Care Admissions for Children 0-17 Years Old

Data extracted from https://covid19.myvps.org on March 28, 2021

Race/ethnicity of patients

- Hispanic: 37.1%
- Black: 27.7%
- White: 27.1%
- NHOPi: 0.4%
- AI/AN: 0.5%
- MR/Other: 5.2%
- Asian: 2.1%

- Voluntary hospital registry with 185 hospitals participating.
- Hospital non-participation rate is unknown!
- 2,772 PICU admissions of US patients aged 0-17 years.
- Detailed clinical data submitted for 1,901 US patients.
- Race/ethnicity available for 96% with clinical data

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
Results: National Death Data
Visit The COVKID Project Disparities Dashboard

The COVKID Project
(Coronavirus in Kids Tracking and Education Project)

Understanding the Disparities Data

NEW Racial and ethnic disparities in COVID-19 child mortality for the United States have just been added.

There is a great deal of interest in racial and ethnic disparities in COVID-19, but unfortunately very little data are available for children and teens. Currently only two states (California and Illinois) report COVID-19 case counts for kids by race and ethnicity. Even in those states, one-third of the cases are missing race and ethnicity information. We will continue to update and expand this page as more data become available.

Click on a chart to view it in full screen mode. Hover over any chart below to like it, download it, or share it on social media.

Note: this page is best viewed on a larger screen.

COVKID Disparities Data Dashboard

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
Priorities
Priorities for all data types

- Race/ethnicity data without age stratification is of very limited utility.
- Missingness of race/ethnicity data needs to be systematically investigated and then actively intervened upon.
  - STILL HAPPENING in 2021!!
- End excessive suppression of data, particularly death counts.

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
Priorities for states

- Expand state dashboard reporting for kids
- Use standardized cutpoints and definitions to improve comparability among states.
- Include vaccination, testing, case, hospitalization, and death data.
- Report all data items by race and ethnicity.
Priorities for hospitals/DHHS

- We need **mandatory hospital reporting** of all COVID-19 hospitalizations of kids, with demographics, length of stay, and discharge disposition.
- We need **expanded clinical registries** for all intensive care hospitalizations of kids.
- We need **emergency department visit registries**.

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry, April 1, 2021
The state of Florida releases a COVID-19 case-line data file every single day.

Data on nearly 2 million cases released to the public - no restrictions!

Dr. Jason Salemi, epidemiology professor at University of South Florida publishes a daily dashboard with over 75 detailed metrics and visualizations.

https://covid19florida.mystrikingly.com/

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
The only thing missing is race and ethnicity!
Thank you for your attention!

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www.covkidproject.org
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The COVKID Project
www.covkidproject.org

- Coronavirus in Kids Tracking and Education Project
- Public-facing dashboard reporting incidence, hospitalization and mortality data for kids 0-19 years
- Primary data sources:
  - State health departments for case data
  - Virtual Pediatric Systems (myvps.org) for PICU admissions data
  - National Center for Health Statistics (NCHS) for death certificate data

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry
April 1, 2021
“Mandatory” COVID-19 Case Reporting to the CDC

- State health departments are required/requested to submit COVID-19 case data to the CDC using a uniform and detailed data reporting form.
- Age, gender, and detailed race/ethnicity categories are requested.
- This is the main data source for all CDC analytic studies and reports of national trends.

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry, March 9, 2021
CDC makes available a case-level datafile to researchers after application and approval.

This datafile contains all cases reported to CDC from state health departments.

Some dates are redacted, and age is aggregated into 10-year ranges.

The file is updated monthly - latest update (Feb 28) contains approximately 20 million case records.

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry, March 9, 2021
States for which CDC Case Total is <60% COVKID Tally (problem states)

Texas
Florida
Michigan
Missouri
Maryland
Kentucky
Louisiana
Mississippi
New Mexico
Nebraska
North Dakota
South Dakota
West Virginia
Rhode Island
Wyoming
New Hampshire

Cases Reported to CDC

Additional Cases Tallied by COVKID

All COVKID tallies were extracted directly from state health department COVID-19 dashboards or datafiles, with the exception of Texas.

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry, March 9, 2021
The Problem with Texas

- Total COVID-19 cases (all ages) reported by Texas on its dashboard 12/31/2020
  \[= 1,563,758\]
- Percent of cases with any demographics reported
  \[= 2\%\]
- COVKID Solution: We obtain the age distribution of cases from Harris and Dallas County TX local health department COVID-19 dashboards, and multiply the percent 0-19 by the state total
- Assumes that age distribution of cases for entire state is same as Houston/Dallas area.

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry
April 1, 2021
Method for Imputing Race/Ethnicity II

- **IMPORTANT:** Imputation must happen at the state level - apply state-specific race/ethnicity distributions to the “missing” cases.

- **WHY?**
  - Not all states report all of the available race/ethnicity categories.
  - Race/ethnicity of kids varies widely across states, per census.
  - Missingness of race/ethnicity varies widely by state.

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021
We used the state-level racial/ethnic (R/E) distribution of all child/teen cases with non-missing R/E, from the CDC case file, to impute R/E for all cases.

Separate imputation for 0-9 years and 10-19 years.

Exceptions:
- **California** - we used the state dashboard R/E distribution for cases 0-17 years as recorded by COVKID.
- **Delaware and Wyoming** - we used the state dashboard R/E distribution for all ages.
- **Louisiana and North Dakota** - we used the census population R/E distribution for ages 0-19 years, because state dashboard case R/E distributions did not include Hispanics.
Some states grouped numerically smaller ethnic groups (i.e. Asians, Native Hawaiians, other Pacific Islanders, American Indians, Alaska Natives) into the “Multi-Race/Other” category.

Hawaii reported 66% of kid cases were Asian, 7% Hispanic, 2% White, 25% MR/O, and 0% NHOPI.

Multi-racial children are likely undercounted by the census, which would result in higher rates.

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry, March 9, 2021
Misclassification for Smaller Ethnic Groups II

- Misclassification of the AI/AN cases results in a bias of the disparity RR toward the null.
- Misclassification of the Asian cases results in a bias of the disparity RR away from the null.
- Grouping all these groups together for rate calculation solves the misclassification problem, but averages out the differences among these groups.

Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, March 9, 2021
COVID-19 in Kids 10-19 Years in 2020: Raw vs. Best Estimate Counts

**RAW = CDC file. Best Estimate = COVKID/CDC best count with R/E imputation.**

**Ages 10-19 Years (RAW)**
- $n = 1,642,738$

**Ages 10-19 Years (Best)**
- $n = 2,082,791$

Dr. Elizabeth Pathak, Women’s Institute for Independent Social Enquiry, April 1, 2021
COVID-19 in Kids 10-19 Years in 2020: Cumulative Incidence Rates (CIR)


Dr. Elizabeth Pathak, Women's Institute for Independent Social Enquiry, April 1, 2021