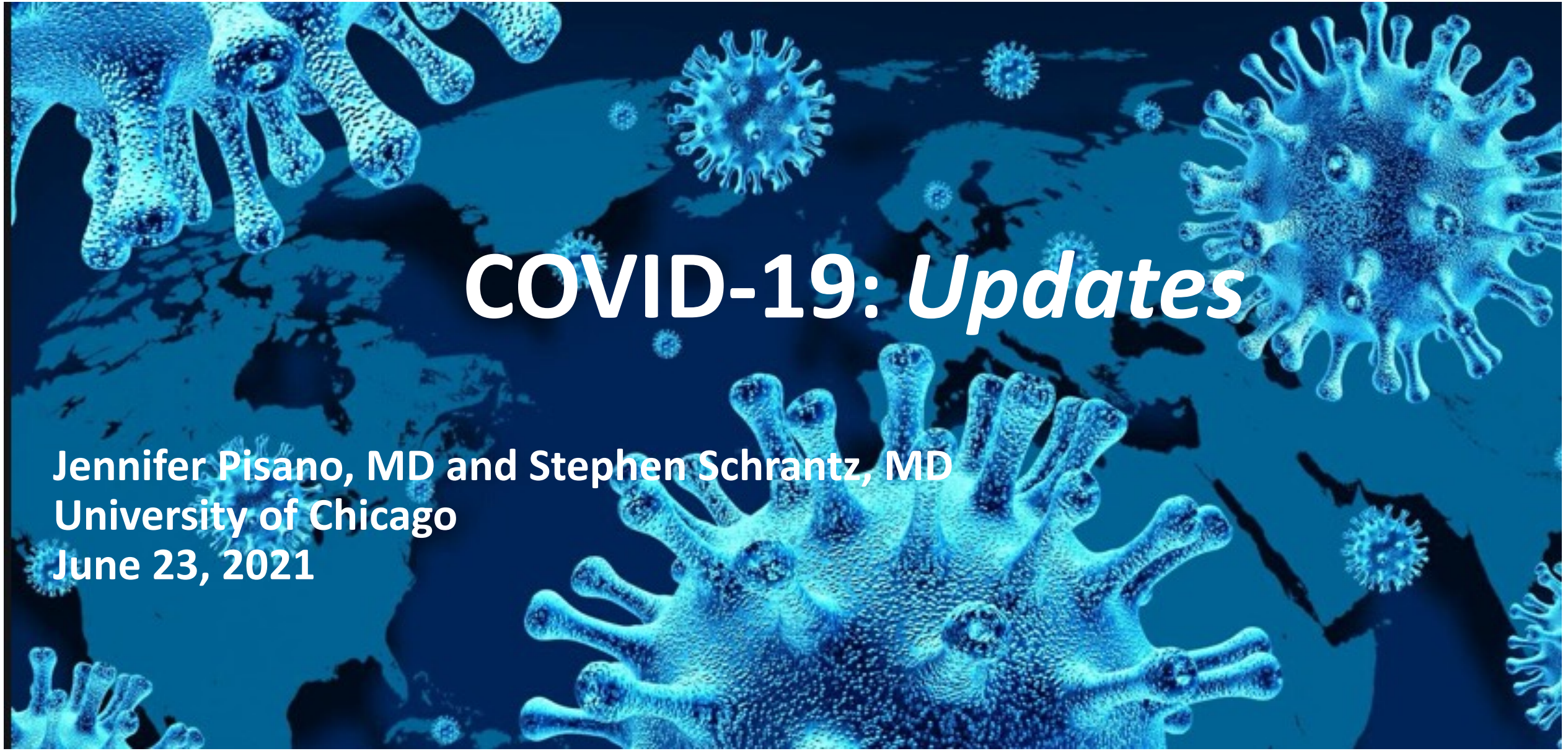


COVID-19: *Updates*

Jennifer Pisano, MD and Stephen Schrantz, MD
University of Chicago
June 23, 2021

ECHO CHICAGO

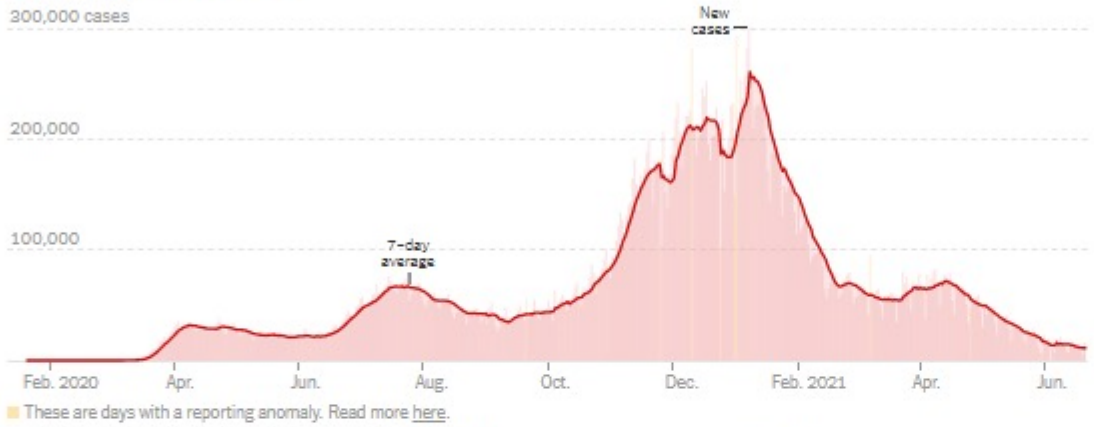
AT THE FOREFRONT
UChicago Medicine

Disclosures

- We have no relevant financial interests to disclose.

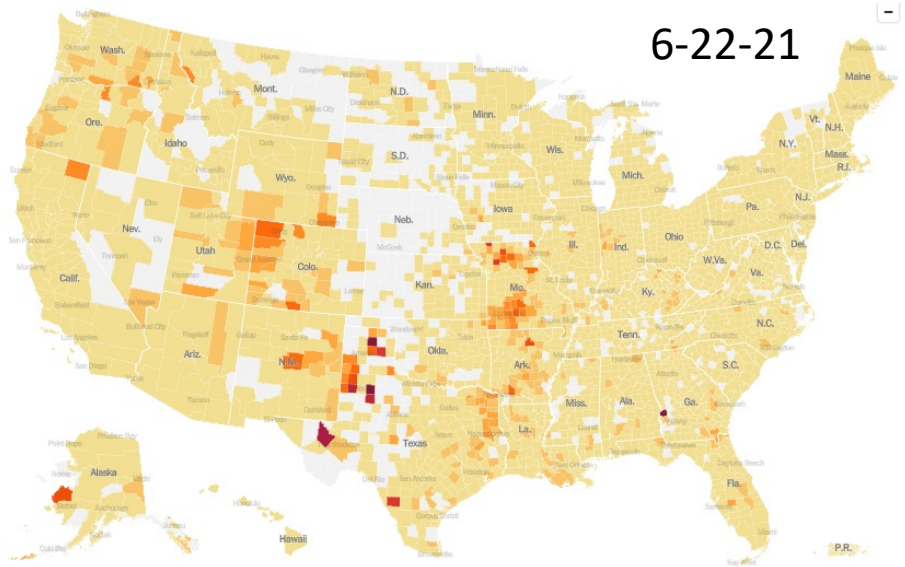
Coronavirus in the U.S.: Latest Map and Case Count

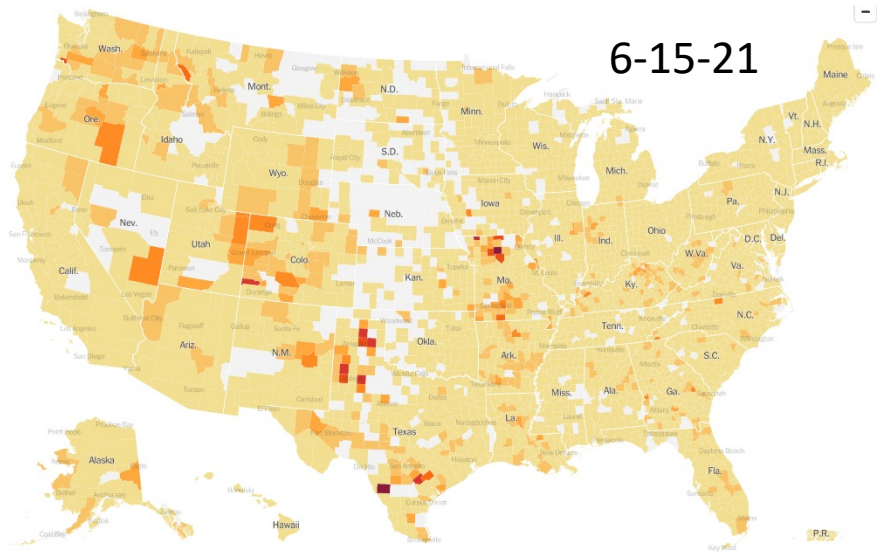
New reported cases



	AVG. ON JUN. 21	14-DAY CHANGE	TOTAL REPORTED
Cases	11,243	-29%	33,524,838
Tests	708,627	-9%	—
Hospitalized	17,505	-22%	—
Deaths	311	-23%	601,730

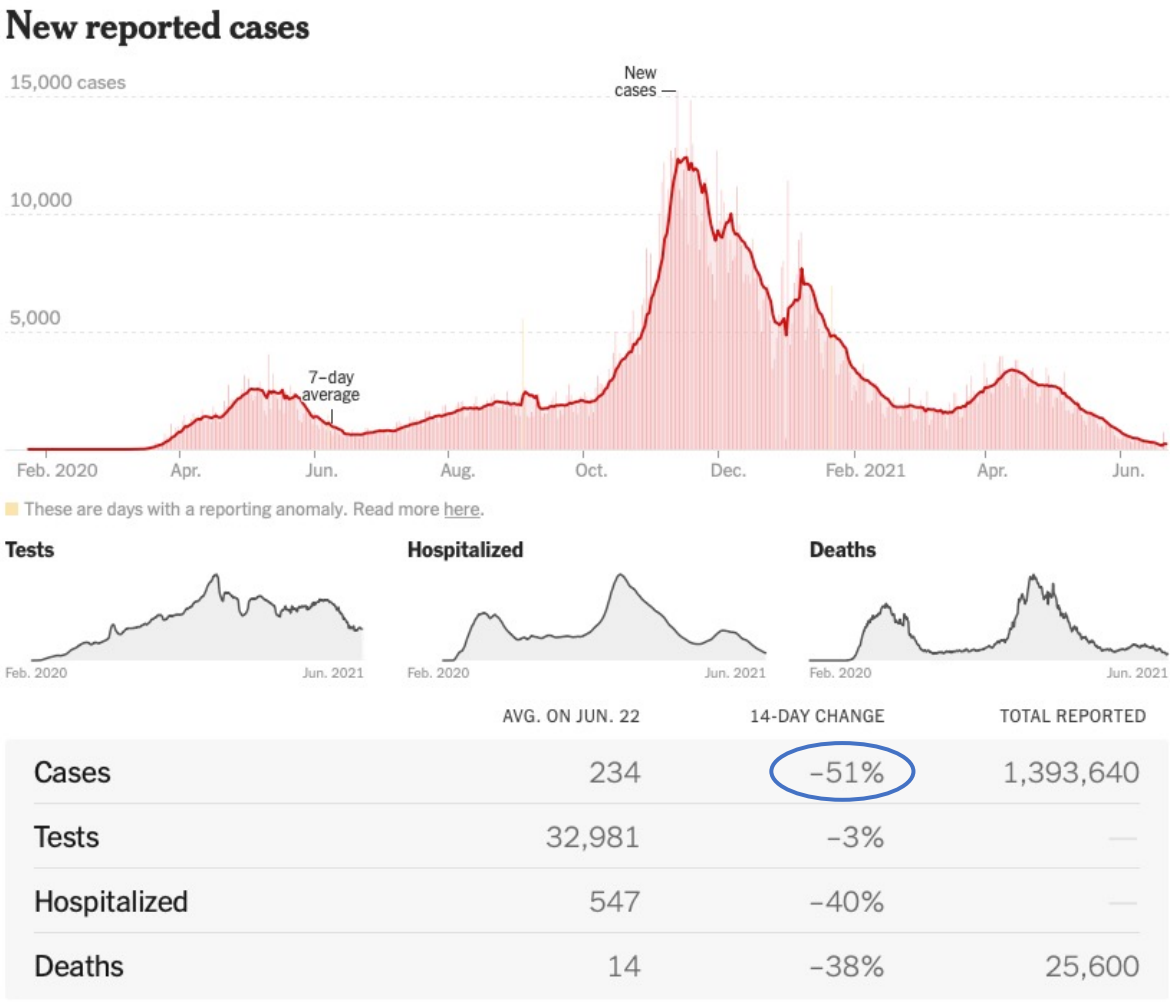
About this data



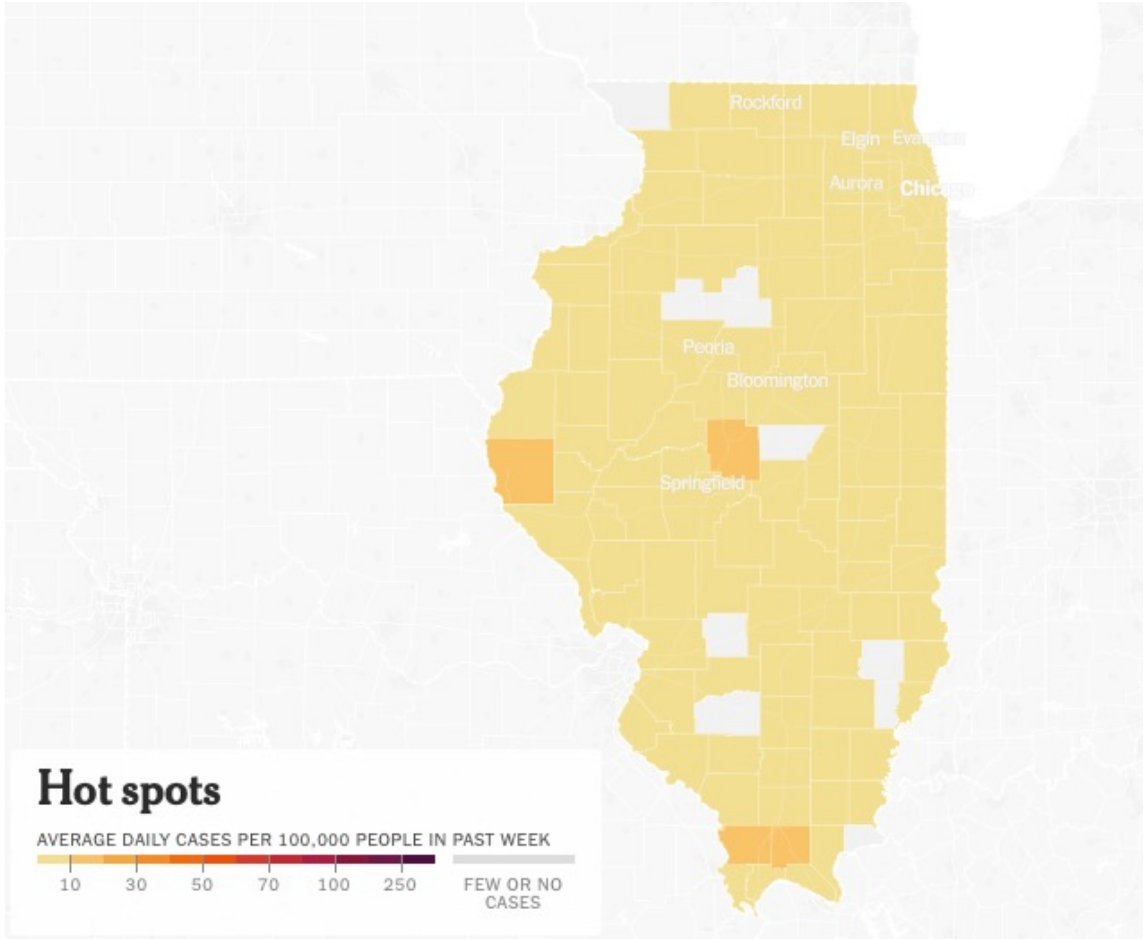


https://www.nytimes.com/interactive/2020/us/coronavirus-us-cases.html

COVID-19 Cases in Illinois



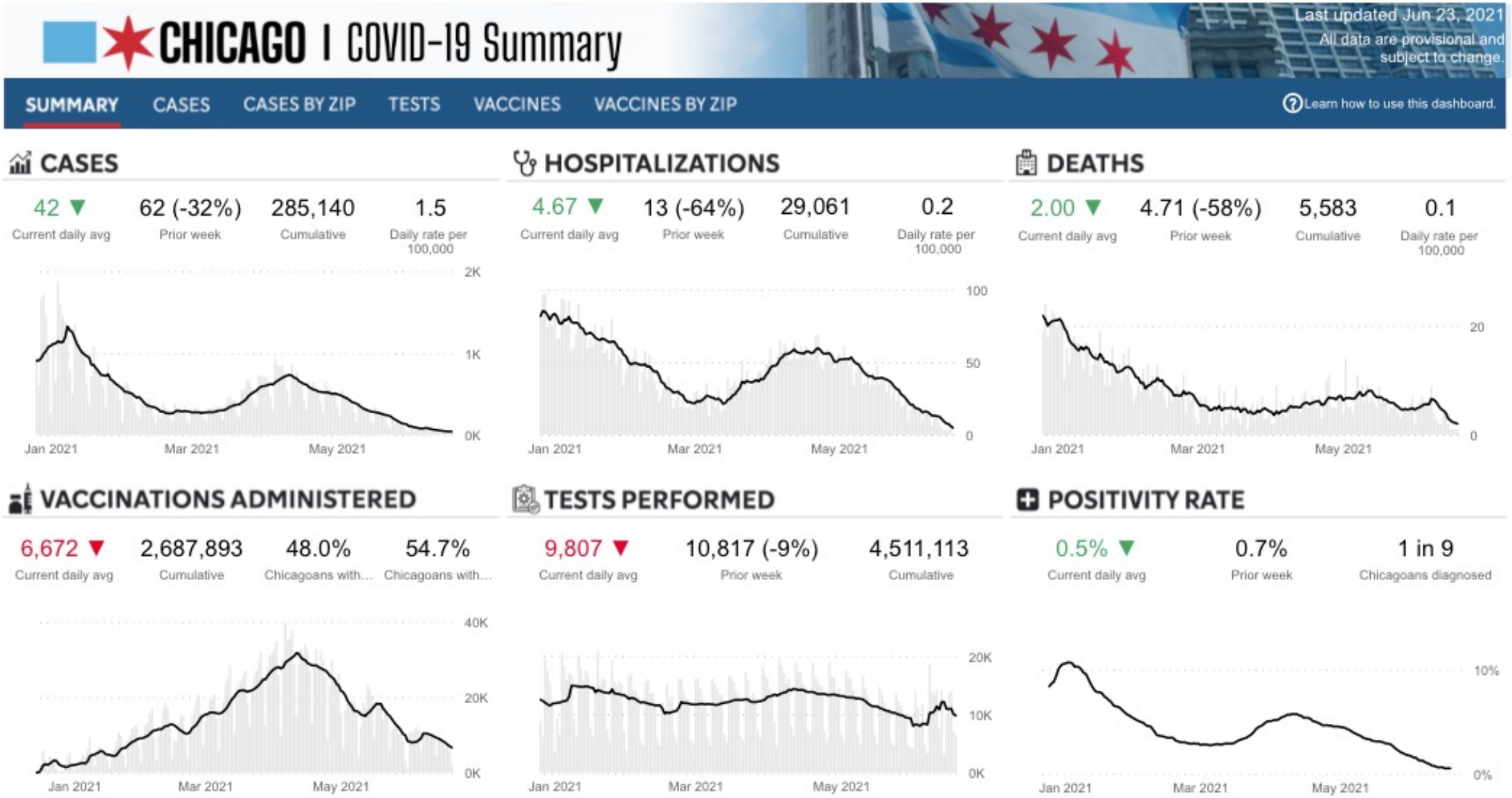
	AVG. ON JUN. 22	14-DAY CHANGE	TOTAL REPORTED
Cases	234	-51%	1,393,640
Tests	32,981	-3%	—
Hospitalized	547	-40%	—
Deaths	14	-38%	25,600



https://www.nytimes.com/interactive/2021/us/illinois-covid-cases.html

https://www.chicago.gov/city/en/sites/covid-19/home/covid-dashboard.html

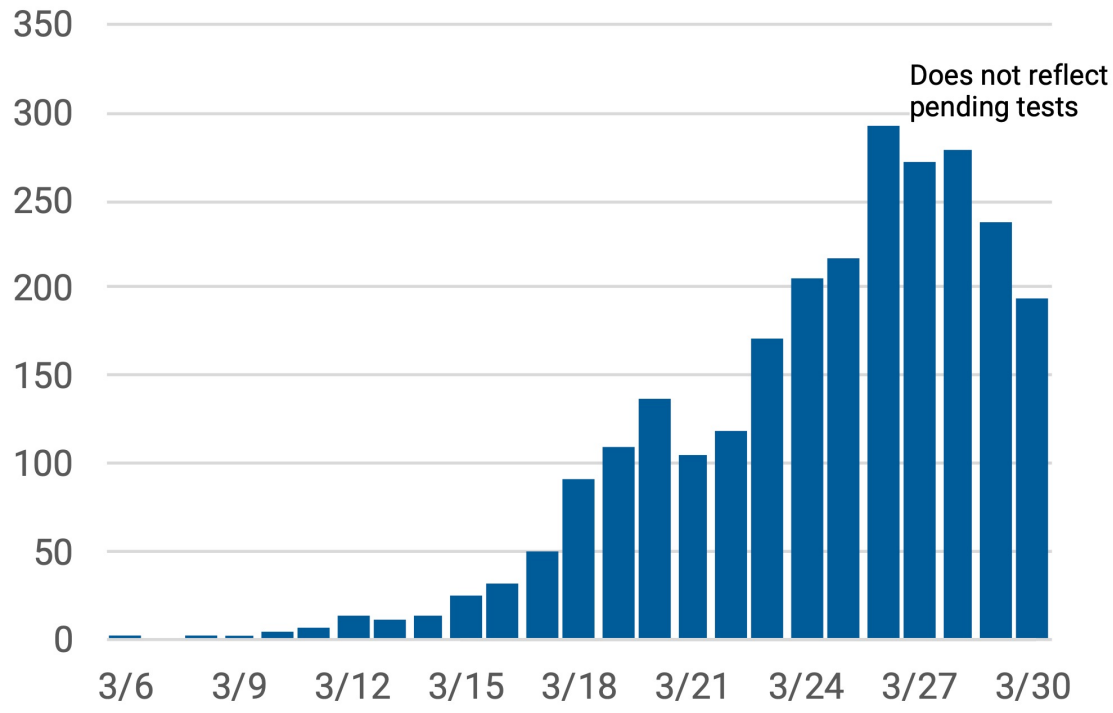
COVID Dashboard



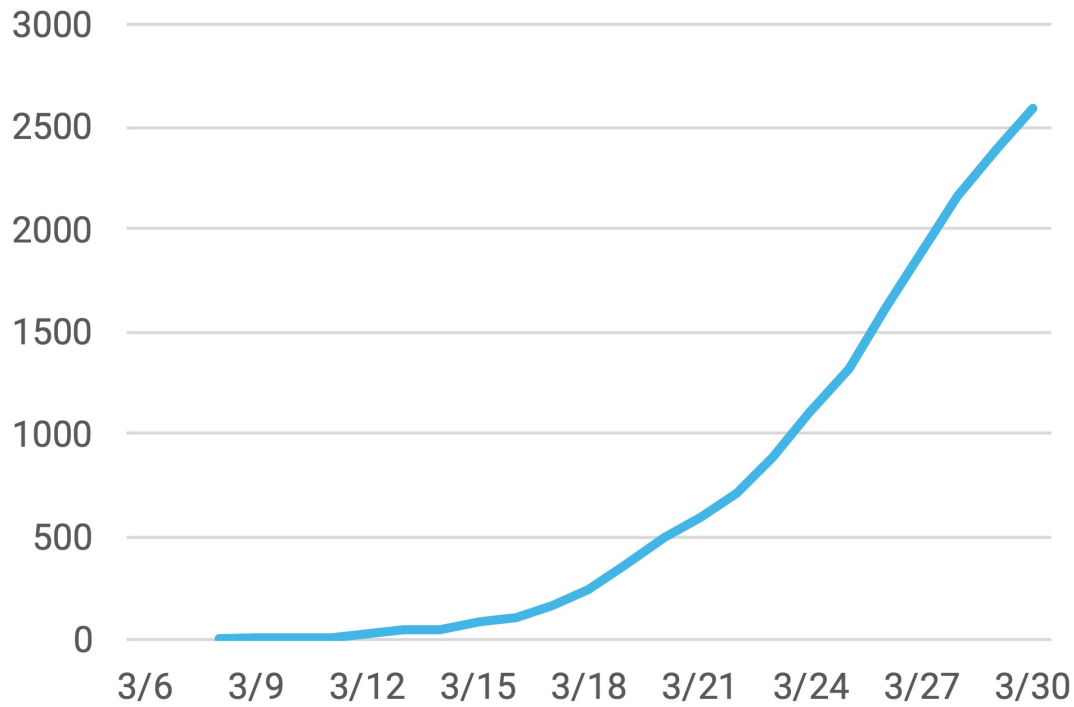
Local Cases

There are 2,611 cases of COVID-19 and 26 deaths among Chicago residents as of March 31, 2020.
This is an increase of 444 cases since yesterday.

Confirmed daily COVID-19 cases



Confirmed cumulative COVID-19 cases



Daily and cumulative coronavirus 2019 (COVID-19) cases reported for Chicago residents with known laboratory report date. Results for several previous days are updated each day. Note, there was one case of COVID-19 reported in January 2020 that is not included in the daily counts.

Total Vaccine Doses

Delivered	379,003,410
Administered	318,576,441

Learn more about the distribution of vaccines.

150.0M

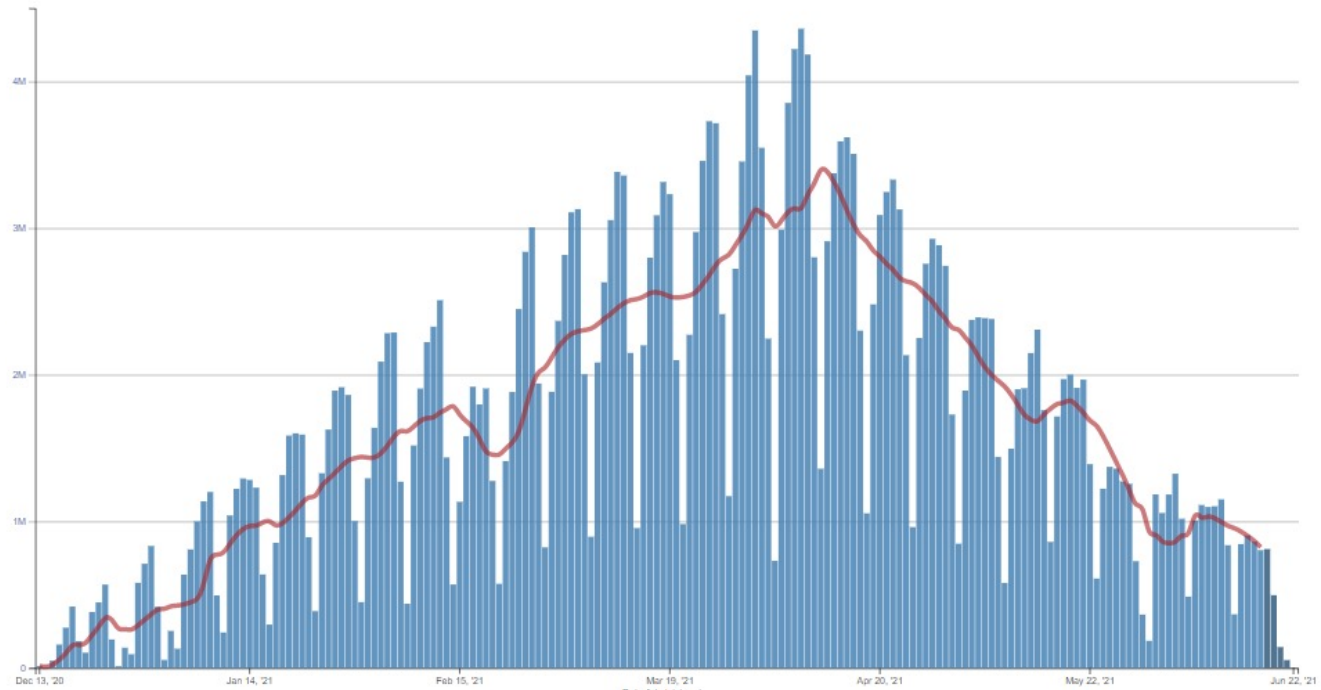
People fully vaccinated

People Vaccinated	At Least One Dose	Fully Vaccinated
Total	177,342,954	150,046,006
% of Total Population	53.4%	45.2%
Population ≥ 12 Years of Age	177,149,232	149,948,700
% of Population ≥ 12 Years of Age	62.5%	52.9%
Population ≥ 18 Years of Age	168,987,341	144,273,772
% of Population ≥ 18 Years of Age	65.4%	55.9%
Population ≥ 65 Years of Age	47,736,421	42,190,601
% of Population ≥ 65 Years of Age	87.3%	77.1%

About these data

CDC | Data as of: June 21, 2021 6:00am ET. Posted: Monday, June 21, 2021 6:36 PM ET

Daily Count of Total Doses Administered and Reported to the CDC by Date Administered, United States



~5 million
in last week

COVID Dashboard

CHICAGO | COVID-19 Vaccines by ZIP Code

Last updated Jun 23, 2021
All data are provisional and subject to change.

SUMMARY | CASES | CASES BY ZIP | TESTS | VACCINES | VACCINES BY ZIP

Learn how to use this dashboard.

CURRENT TOTALS DAILY TRENDS

Cumulative totals are since 12/15/2020. Daily averages are a 7-day average as of 06/20/2021 to account for reporting lags.

Citywide vaccine totals

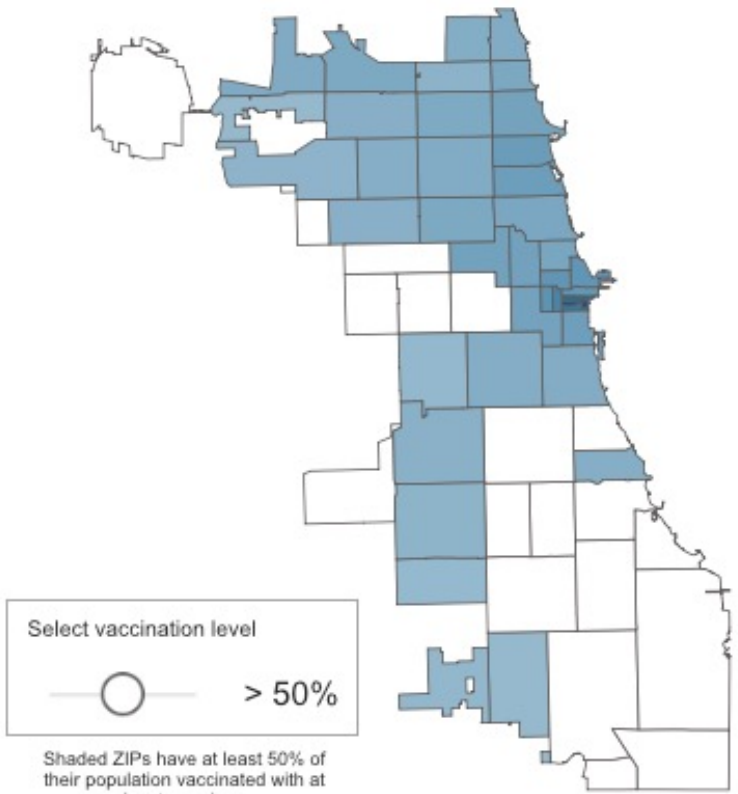
1.00	1,472,488	54.7%	1,293,858	48.0%
Citywide doses per capita	At least one dose total	At least one dose %	Completed vaccine series total	Completed vaccine series %

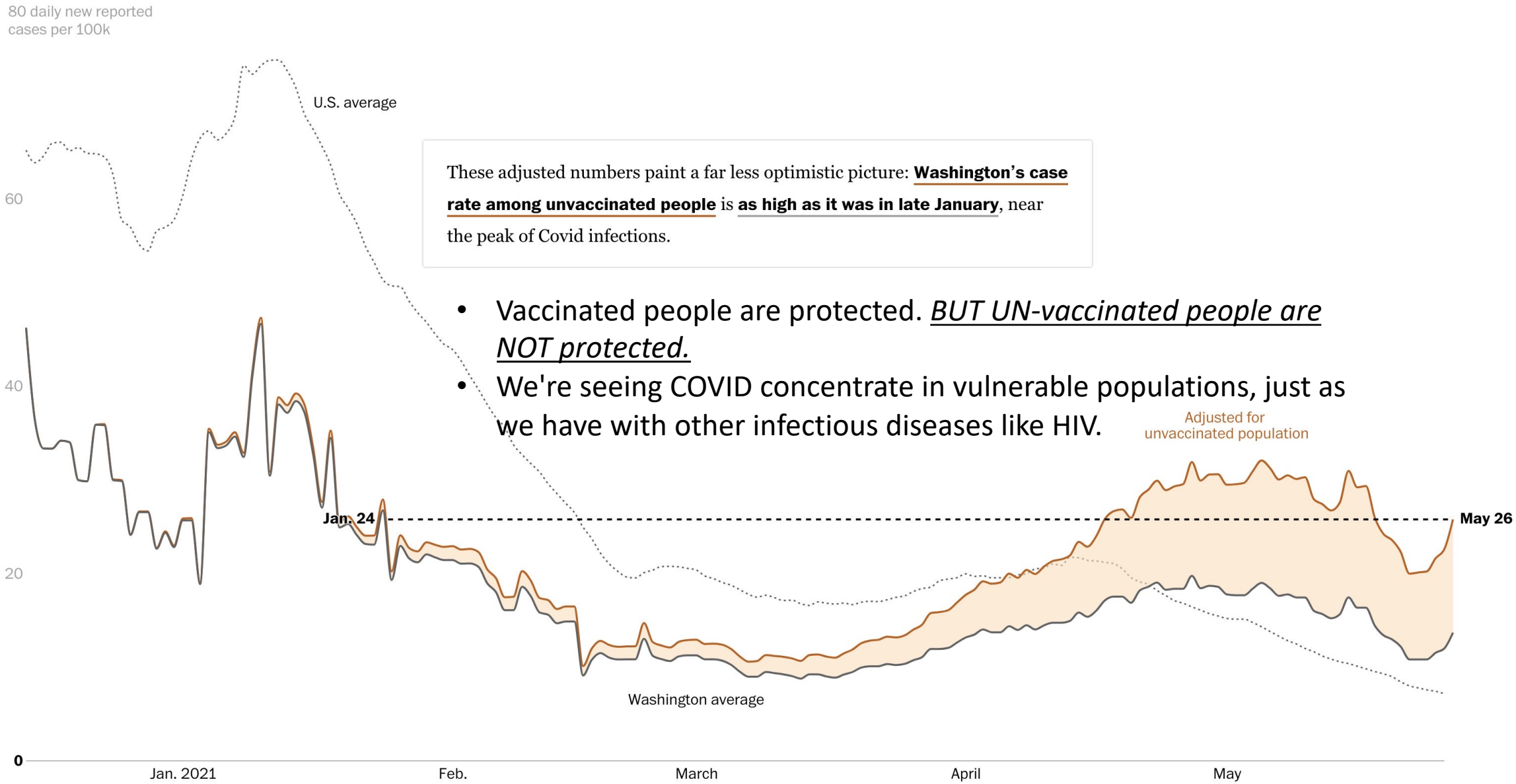
ZIP Code vaccine totals

		At least one dose			Completed vaccine series			
Zip	Population	Total	% vaccinated	Increase from prior week	Total	% vaccinated	Increase from prior week	Vulnerability Index
60603	1,052	1,276	100.0%	0.0%	1,055	100.0%	1.7%	LOW
60602	1,145	1,184	100.0%	0.0%	1,021	89.2%	1.3%	LOW
60604	823	782	95.0%	0.8%	685	83.2%	0.9%	LOW
60606	3,287	2,850	86.7%	1.2%	2,534	77.1%	0.9%	LOW
60661	10,354	7,959	76.9%	0.5%	7,168	69.2%	0.7%	LOW
60611	33,224	24,810	74.7%	0.7%	22,276	67.0%	0.5%	LOW
60654	20,022	14,924	74.5%	0.8%	13,253	66.2%	0.8%	LOW
60601	15,083	11,021	73.1%	0.9%	9,455	62.7%	0.7%	LOW
60613	50,761	35,554	70.0%	0.3%	31,943	62.9%	0.5%	LOW
60657	70,958	49,015	69.1%	0.3%	44,482	62.7%	0.4%	LOW
60605	29,060	19,871	68.4%	0.5%	17,864	61.5%	0.6%	LOW
60622	53,294	35,386	66.4%	0.5%	31,662	59.4%	0.7%	LOW
60642	19,716	13,024	66.1%	0.4%	11,800	59.8%	0.7%	LOW
60640	69,363	45,565	65.7%	0.5%	40,425	58.3%	0.7%	LOW
60607	29,293	19,133	65.3%	0.5%	17,412	59.4%	0.5%	LOW
60610	40,548	25,843	63.7%	0.3%	23,139	57.1%	0.5%	LOW
60614	71,954	44,969	62.5%	0.3%	40,295	56.0%	0.4%	LOW
60660	44,498	27,694	62.2%	0.4%	24,390	54.8%	0.7%	LOW

At least one dose | Completed vaccine series | Total doses | Vulnerability Index

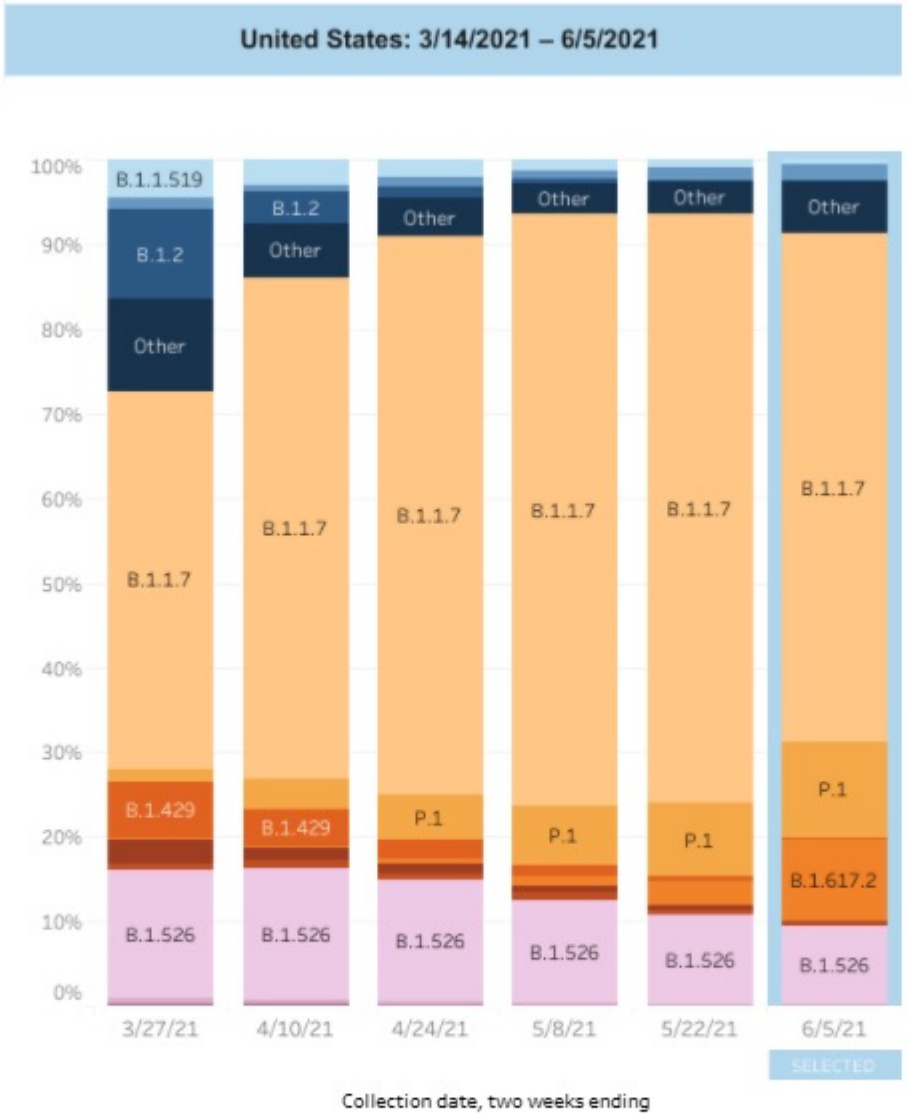
% of population with at least one dose





- Vaccinated people are protected. *BUT UN-vaccinated people are NOT protected.*
- We're seeing COVID concentrate in vulnerable populations, just as we have with other infectious diseases like HIV.

https://www.washingtonpost.com/health/interactive/2021/covid-rates-unvaccinated-people/



COVID-19 Variants of Concern (Illinois)

Data was last updated: 6/22/2021

Variant Type	Count
Alpha (B.1.1.7)	6,432
Beta (B.1.351)	106
Epsilon (B.1.427)	244
Epsilon (B.1.429)	276
Delta (B.1.617.2)	84
Gamma (P.1)	2,440
Total	9,582

Delta Variant (B.1.617.2)

- Initially identified in India in December 2020
- Associated with increased transmissibility and more severe disease
- 20.6% of new cases in the U.S. are due to the Delta variant
- On track to become the dominant virus variant in the U.S
- All the vaccines authorized for use in the U.S. appear to provide powerful protection against all variants, including Delta

Real-World Data from UK

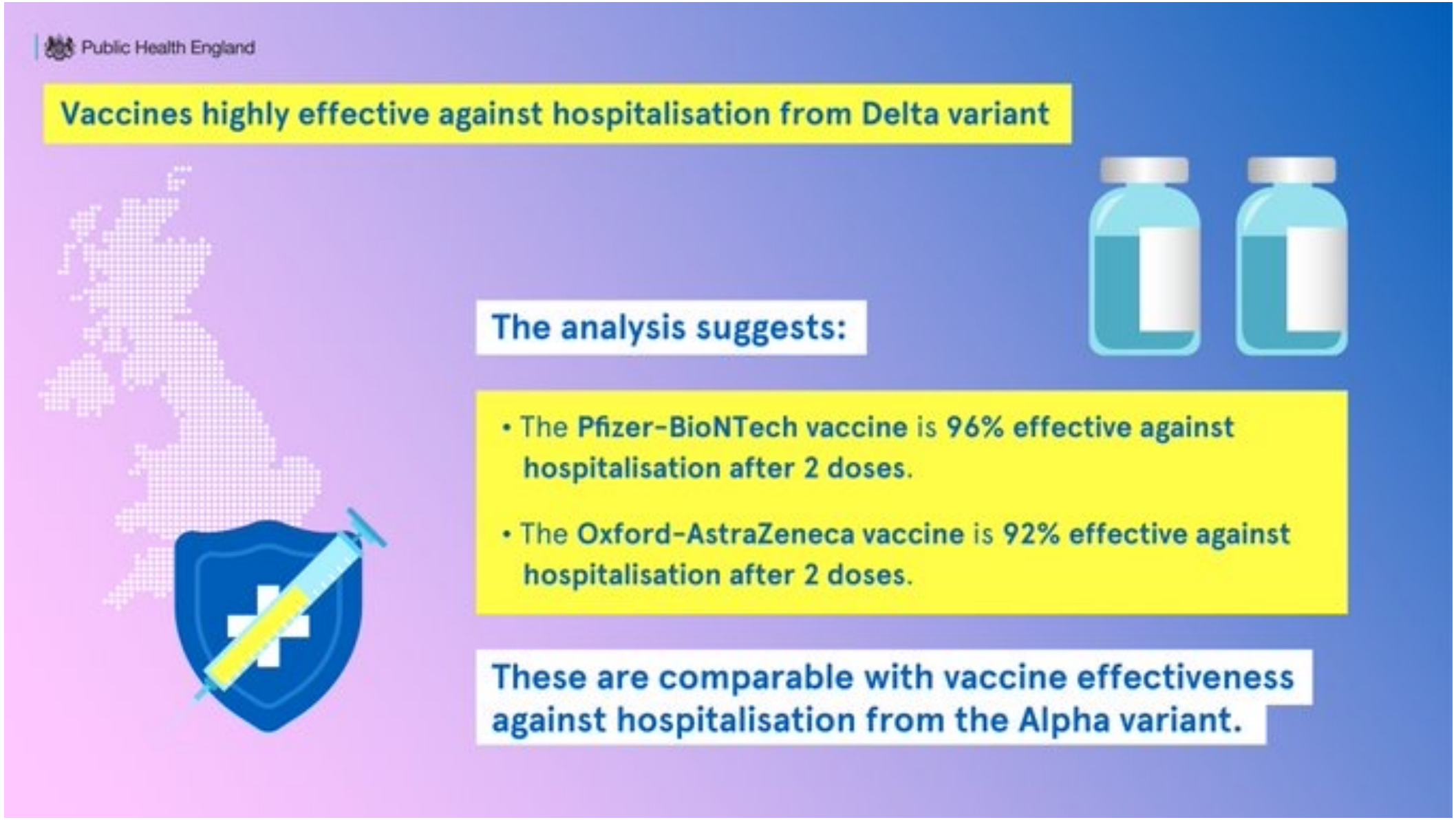
06-Jun-21 Vaccine	Symptomatic Vaccine Status	S Gene Positive (Delta Variant) N	R	VE	LCL	UCL
	Unvaccinated	40504	2439	0	0	0
Pfizer-BioNTech	V1_0-27	1942	203	18	4	31
	V1_28+	2376	92	33	15	47
	V2_0-7	883	5	84	61	93
	V2_14+	4401	75	83	78	87
	Unvaccinated	40504	2439	0	0	0
Oxford-AstraZeneca	V1_0-27	4422	186	23	7	36
	V1_28+	10242	511	33	23	41
	V2_0-7	1877	160	37	23	48
	V2_14+	2089	126	61	51	70

- Analysis of cases in Scotland from April 1 to June 6, 2021
- 19 543 confirmed infections
- 377 were admitted to hospital
  - 134 (35·5%) hospital admissions were in those with delta variant
- Vaccine Efficacy (VE) increased substantially with completion of both Pifzer and AZ series

Delta Variant Implication in the US

- Risk of surge in many parts of US due to pockets of unvaccinated people
- Real threat if vaccination campaign continues to stall through July
- 16 states have reached 70% of adults with at least 1 shot

Real-World Data from UK



CDC vaccine safety monitoring

- Authorized COVID-19 vaccines are being administered under **the most intensive vaccine safety monitoring effort in U.S. history**
- Strong, complementary systems are in place—both new and established

v-safe	VAERS	VSD	CISA Project

Full list of U.S. COVID-19 vaccine safety monitoring systems

https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety.html

Preliminary myocarditis/pericarditis reports to VAERS following dose 2 mRNA vaccination, Exp. vs. Obs. (data thru May 31, 2021)

Age groups	Doses admin	Crude reporting rate*	Expected†,‡ Myocarditis/ pericarditis cases	Observed† Myocarditis/ pericarditis reports
12–15 yrs	134,041	22.4	0–1	2
16–17 yrs	**2,258,932**	**35.0**	**2–19**	**79**
18–24 yrs	**9,776,719**	**20.6**	**8–83**	**196**
25–39 yrs	26,844,601	5.0	23–228	124
40–49 yrs	19,576,875	3.0	17–166	51
50–64 yrs	36,951,538	1.3	31–314	39
65+ yrs	42,124,078	0.9	36–358	26
NR	—	—	—	11

8.8% of doses admin

n=277 reports

52.5% of total reports

* Per million doses administered; † Assumes a 31-day post-vaccination observation window; 528 reports with symptom onset within 30 days of vaccination shown; ‡ Based on Gubernot et al. U.S. Population-Based background incidence rates of medical conditions for use in safety assessment of COVID-19 vaccines. Vaccine. 2021 May 14:S0264-410X(21)00578-8.

Myocarditis/pericarditis incidence in VSD in 21-day risk interval, ages 16-39 years old (data thru May 29, 2021)

Vaccine(s) (dose #)	Cases	Doses admin	Rate per million doses (95% CI)
mRNA (both doses)	22	2,546,874	8.6 (5.4–13.1)
mRNA (dose 1)	4	1,428,872	2.8 (0.8–7.2)
mRNA (dose 2)	18	1,118,002	16.1 (9.5–25.4)
Pfizer-BioNTech (dose 1)	1	846,765	1.2 (0.0–6.6)
Pfizer-BioNTech (dose 2)	7	671,899	10.4 (4.2–21.5)
Moderna (dose 1)	3	582,107	5.2 (1.1–15.1)
Moderna (dose 2)	11	446,103	24.7 (12.3–44.1)

Summary (as of May 31, 2021)

- Initial safety findings from Pfizer-BioNTech COVID-19 vaccination of 12-15-year-olds from v-safe and VAERS surveillance are consistent with results from pre-authorization clinical trials
- Analysis of VAERS preliminary reports of myocarditis/pericarditis is in progress, including follow-up to obtain medical records, complete reviews, apply CDC working case definition, and adjudicate cases
- Preliminary findings suggest:
  - Median age of reported patients is younger and median time to symptom onset is shorter among those who developed symptoms after dose 2 vs. dose 1
  - Predominance of male patients in younger age groups, especially after dose 2
  - Observed reports > expected cases after dose 2 (16–24 years of age)
  - Limited outcome data suggest most patients (at least 81%) had full recovery of symptoms
- Early VSD data also suggest more cases after dose 2 vs. dose 1; rate ~16 cases per million 2nd doses
- ACIP meeting scheduled for June 18, 2021: update data, further evaluate myocarditis following mRNA COVID-19 vaccination, and assess benefit-risk balance

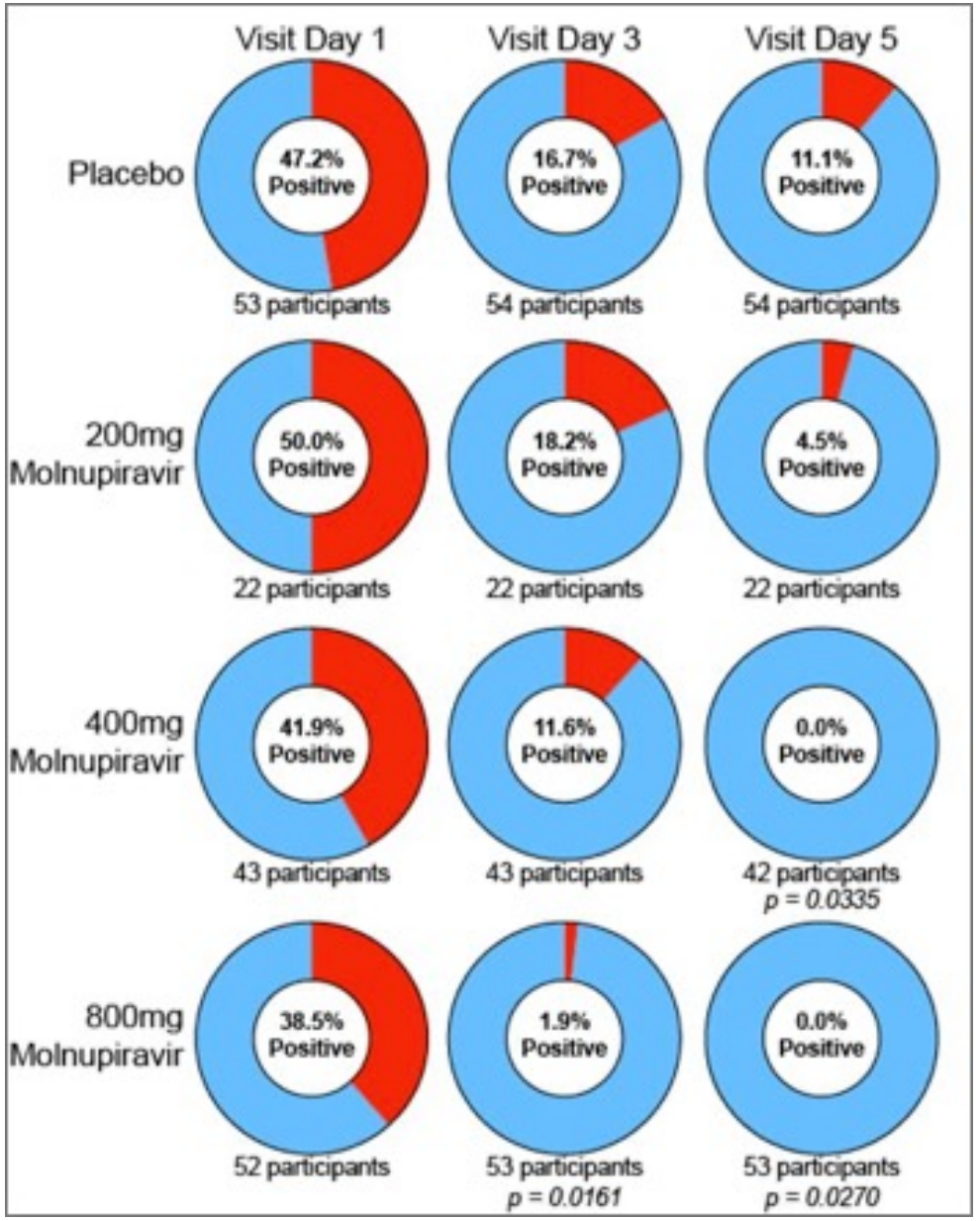
medRxiv
THE PREPRINT SERVER FOR HEALTH SCIENCES

Molnupiravir, an Oral Antiviral Treatment for COVID-19

William Fischer, Joseph J. Eron Jr, Wayne Holman, Myron S. Cohen, Lei Fang, Laura J. Szewczyk, Timothy P Sheahan, Ralph Baric, Katie R. Mollan, Cameron R. Wolfe, Elizabeth R. Duke, Masoud M. Azizad, Katyna Borroto-Esoda, David A. Wohl, Amy James Loftis, Paul Alabanza, Felicia Lipansky, Wendy P. Painter

doi: https://doi.org/10.1101/2021.06.17.21258639

- Phase 2a clinical trial
- Prodrug of ribonucleoside analog -> serves as a competitive substrate for RNA polymerase
  - Once incorporated into viral RNA, induces accumulations of mutations that increase with each viral replication cycle.
- Enrolled outpatients with confirmed SARS-CoV-2 infection and symptom onset within 7 days
- Randomized 1:1 to 200mg molnupiravir or placebo, or 3:1 to molnupiravir (400 or 800mg) or placebo BID x 5 days
- Among 200 treated participants, virus isolation was significantly lower in 800mg molnupiravir (1.9%) versus placebo (16.7%) at Day 3 (p=0.02)
- At Day 5, virus was not isolated from any participants receiving 400 or 800mg molnupiravir versus 11.1% of those receiving placebo (p=0.03)
- Generally well tolerated, similar adverse events across all groups



Anti-SARS-CoV-2 spike protein antibody responses after vaccination

Condition	Solid Organ Transplant (SOT) Recipient [1,2,3,4]	Autoimmune/ Rheumatic Disease [5]	Cancer [6,7]	Hemodialysis [8]
Incidence of anti-spike antibody response	14%–58%	74%–100%	51%–95%	96%
Risk factors for diminished antibody response	Antimetabolites (e.g., mycophenolate mofetil) Shorter time after transplant Older age	Antimetabolites (e.g., methotrexate) B-cell depletion Corticosteroids	B-cell chronic lymphocytic leukemia (CLL) Older age On therapy Poor disease response	Older age Lower lymphocyte counts
Comment	No clear surge in severe COVID-19 among vaccinated SOT recipients so far	Modest impact of tumor necrosis factor (TNF) inhibitors Lower titers in responders than in healthy controls	Most with solid tumors had good response	Not immuno-compromised, but chronic disease has been associated with weaker response to vaccines

NEJM Journal Watch

Remember! Serologic responses to not reflect potential T-cell responses to vaccines

Kaul D, NEJM Journal Watch, June 2021

Letters | 15 June 2021

Safety and Immunogenicity of a Third Dose of SARS-CoV-2 Vaccine in Solid Organ Transplant Recipients: A Case Series FREE

William A. Werbel, MD, Brian J. Boyarsky, MD, PhD, Michael T. Ou, BS, Allan B. Massie, PhD, ... View all authors +

Author, Article and Disclosure Information

https://doi.org/10.7326/L21-0282

- 30 SOT recipients with negative (n=24) or low positive (n=6) spike protein antibody titers received a 3rd dose of vaccine
- Antibody testing was repeated a median of 14 days after the 3rd dose of vaccine
- All 6 patients with low-positive antibody titers before the third dose had high-positive antibody titers after
- **Of 24 patients with negative antibody titers before the third dose:**
  - **6 (25%) had high-positive antibody titers after the third dose**
  - 2(8%) had low-positive antibody titers
  - 16 (67%) remained negative

Table 1. Vaccines Administered, Antibody Responses, Patient Characteristics, and Organs Transplanted

Patient	Initial Vaccine Series	Third Vaccine Dose	Antibody Titer Before Dose 3*	Antibody Titer After Dose 3*	Days Between Dose 2 and Dose 3	Patient Age, y	Patient Sex	Organ Transplanted	Years Since Transplant†
1	Pfizer/BioNTech	J&J/Janssen	<0.4‡	0.04	39	40-49	Male	Kidney	3.5
2	Pfizer/BioNTech	J&J/Janssen	<0.4‡	0.11	81	40-49	Male	Kidney	1.5
3	Pfizer/BioNTech	J&J/Janssen	0.33	0.37	41	50-59	Female	Kidney	5.5
4	Pfizer/BioNTech	J&J/Janssen	<0.4‡	1.13‡§	54	70-79	Male	Kidney	13
5	Pfizer/BioNTech	J&J/Janssen	0.00	1.77§	68	60-69	Female	Kidney	22.5
6	Pfizer/BioNTech	J&J/Janssen	0.66	2.87§	61	50-59	Male	Kidney	1.5
7	Pfizer/BioNTech	J&J/Janssen	2.75‡§	>250‡§	66	60-69	Male	Heart	2.5
8	Pfizer/BioNTech	Moderna	0.05	0.08	52	30-39	Female	Heart‖	6.5
9	Pfizer/BioNTech	Moderna	0.13	0.32	74	40-49	Male	Kidney	2
10	Pfizer/BioNTech	Moderna	<0.4‡	2.75§	81	60-69	Female	Kidney	8.5
11	Pfizer/BioNTech	Moderna	0.82‡	4.45§	81	70-79	Female	Liver	18.5
12	Pfizer/BioNTech	Moderna	1.26§	4.58§	75	60-69	Female	Liver	3
13	Pfizer/BioNTech	Moderna	0.25	4.72§	85	40-49	Female	Pancreas	1.5
14	Pfizer/BioNTech	Moderna	10.35‡§	5.31§	64	50-59	Male	Liver	1
15	Pfizer/BioNTech	Pfizer/BioNTech	<0.4‡	0.09	96	40-49	Male	Kidney	3
16	Pfizer/BioNTech	Pfizer/BioNTech	<0.4‡	0.43	93	40-49	Male	Kidney	3
17	Pfizer/BioNTech	Pfizer/BioNTech	0.55	3.67§	71	40-49	Male	Kidney	3
18	Moderna	J&J/Janssen	0.04	0.01	24	50-59	Female	Kidney	2
19	Moderna	J&J/Janssen	<0.4‡	0.1	57	40-49	Female	Kidney	15
20	Moderna	J&J/Janssen	0.09	0.11	36	50-59	Male	Kidney	6
21	Moderna	J&J/Janssen	0.06	0.13	51	40-49	Female	Kidney and pancreas	8.5
22	Moderna	J&J/Janssen	<0.4‡	0.23	48	60-69	Female	Kidney	1
23	Moderna	J&J/Janssen	0.05	0.33	70	60-69	Male	Kidney	7
24	Moderna	J&J/Janssen	0.06	0.37	84	70-79	Female	Lung	4.5
25	Moderna	J&J/Janssen	0.88	3.42§	70	70-79	Female	Kidney	10.5
26	Moderna	Moderna	0.15	0.32	101	20-29	Female	Kidney	13.5
27	Moderna	Moderna	3.84§	6.93§	60	50-59	Male	Kidney	3
28	Moderna	Moderna	1.53	8.26§	86	50-59	Female	Kidney	19.5
29	Moderna	Pfizer/BioNTech	0.03	0.06	55	40-49	Female	Kidney	4.5
30	Moderna	Pfizer/BioNTech	1.8§	9.11§	57	60-69	Female	Kidney	10.5

J&J = Johnson & Johnson; RBD = receptor-binding domain.
* EUROIMMUN anti-S1 IgG assay or Roche Elecsys anti-RBD pan-Ig assay. A negative result was defined by manufacturer data as EUROIMMUN anti-S1 IgG <1.1 arbitrary units or Roche anti-RBD pan-Ig <0.8 units/mL. A low-positive result was defined as anti-S1 IgG of 1.1 to 4 arbitrary units or anti-RBD pan-Ig of 0.8 to 50 units/mL. A high-positive result was defined as anti-S1 IgG >4 arbitrary units or anti-RBD pan-Ig >50 units/mL.
† Rounded to the nearest half-year.
‡ Roche assay.
§ Positive result.
‖ This recipient experienced antibody-mediated rejection in the transplanted organ after dose 3 of vaccine.

Letters | 15 June 2021

Safety and Immunogenicity of a Third Dose of SARS-CoV-2 Vaccine in Solid Organ Transplant Recipients: A Case Series

FREE

William A. Werbel, MD, Brian J. Boyarsky, MD, PhD, Michael T. Ou, BS, Allan B. Massie, PhD, ... View all authors +

Author, Article and Disclosure Information

https://doi.org/10.7326/L21-0282

- 23 patients self-reported vaccine reactions 7 days after 3rd dose
  - 15 patients had mild or moderate local reactions
    - 1 w severe arm pain
  - 14 participants had mild or moderate fatigue
  - No fever reported
  - No anaphylactoid or neurologic complications reported
  - One transplant patient with biopsy-proved Ab-mediated rejection 7 days after 3rd dose in setting of volume overload
    - No increase in titer of Ab vs. spike protein, heart function remained normal, IS not intensified

Supports clinical trials to determine if a booster dose should be incorporated into clinical care of transplant patients (similar to influenza and Hepatitis B).

Table 2. Self-Reported Reactions After a Third Dose of Vaccine

Reaction and Severity*	Johnson & Johnson/ Janssen Vaccine Recipients (*n* = 11‡), *n* (%)	mRNA Vaccine† Recipients (*n* = 12‡), *n* (%)
Local symptoms		
Pain		
None	5 (45)	0 (0)
Mild	5 (45)	6 (50)
Moderate	1 (9)	5 (42)
Severe	0 (0)	1 (8)
Redness		
None	9 (82)	8 (67)
Mild	1 (9)	3 (25)
Moderate	1 (9)	1 (8)
Swelling		
None	9 (90)	8 (67)
Mild	0 (0)	2 (17)
Moderate	1 (10)	2 (17)
Systemic symptoms		
Fever (none)	11 (100)	11 (100)
Chills		
None	9 (82)	11 (92)
Mild	1 (9)	0 (0)
Moderate	1 (9)	1 (8)
Headache		
None	6 (55)	6 (50)
Mild	3 (27)	3 (25)
Moderate	2 (18)	2 (17)
Severe	0 (0)	1 (8)
Fatigue		
None	3 (27)	6 (50)
Mild	5 (45)	3 (25)
Moderate	3 (27)	3 (25)
Myalgia		
None	7 (64)	8 (67)
Mild	2 (18)	4 (33)
Moderate	1 (9)	0 (0)
Severe	1 (9)	0 (0)
Diarrhea		
None	10 (91)	10 (83)
Mild	1 (9)	2 (17)

* Symptoms were defined as mild if they did not interfere with daily activities, moderate if they produced some interference with daily activity, and severe if they prevented daily activity.
† Pfizer/BioNTech or Moderna.
‡ Questionnaires were not reported for 4 Johnson & Johnson/Janssen vaccine recipients and 3 mRNA vaccine recipients.

Current approach to IC patients

- There are no current recommendations in routinely checking spike-protein antibody titers after vaccination
  - **Spike protein Ab (+ after vaccination and natural infection)** vs. nucleocapsid antigen Ab (+ *only* after natural infection)
  - Do not know clinical implications of titers at this time
- There are no current recommendations for booster (3rd) doses of vaccination
- Because vaccination may be unreliable in IC patients, behavioral mitigation strategies of masking and social distancing should continue
- **<u>Vaccinate household/close contacts</u>**
- Vaccinate at times of reduced immunosuppression
  - Professional societies have specific guidelines that are evolving

Evaluating and Caring for Patients with Post-COVID Conditions: Interim Guidance

Updated June 14, 2021 Print

Key Points

- The term "Post-COVID Conditions" is an umbrella term for the wide range of physical and mental health consequences experienced by some patients that **are present four or more weeks after SARS-CoV-2 infection, including by patients who had *initial mild or asymptomatic* acute infection.**
- Based on current information, many post-COVID conditions can be **managed by primary care providers**, with the **incorporation of patient-centered approaches to optimize the quality of life and function** in affected patients.
- **Objective laboratory or imaging findings should not be used as the only measure or assessment of a patient's well-being**; lack of laboratory or imaging abnormalities does not invalidate the existence, severity, or importance of a patient's symptoms or conditions.
- Healthcare professionals and patients are encouraged to set achievable goals through shared decision-making and to approach treatment by focusing on specific symptoms (e.g., headache) or conditions (e.g., dysautonomia); a comprehensive management plan focusing on improving physical, mental, and social wellbeing may be helpful for some patients.
- Understanding of post-COVID conditions remains incomplete and guidance for healthcare professionals will likely change over time as the evidence evolves.

https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/post-covid-index.html

Table 2. System-based conditions reported following SARS-CoV2 infection

Body System	Conditions (subject to change and not mutually exclusive)
Cardiovascular	Myocarditis, heart failure, pericarditis, orthostatic intolerance (e.g., postural orthostatic tachycardia syndrome (POTS))
Pulmonary	Interstitial lung disease, reactive airway disease
Renal	Chronic kidney disease
Dermatologic	Alopecia
Rheumatologic	Reactive arthritis, fibromyalgia, connective tissue disease
Endocrine	Diabetes mellitus, hypothyroidism
Neurologic	Transient ischemic attack/stroke, olfactory and gustatory dysfunction, sleep dysregulation, altered cognition, memory impairment, headache, weakness, and neuropathy
Psychiatric	Depression, anxiety, and post-traumatic stress disorder (PTSD), psychosis
Hematologic	Pulmonary embolism, arterial thrombosis, venous thromboembolism, or other hypercoagulability
Urologic	Incontinence, sexual dysfunction
Other	Weight loss, dysautonomia, vitamin D deficiency, allergies and mast cell activation syndrome, reactivation of other viruses, pain syndromes, and progression of comorbid conditions

Table 3a. Basic diagnostic laboratory testing to consider for patients with post-COVID conditions

CATEGORY	LAB TESTS
Blood count, electrolytes, and renal function	Complete blood count with possible iron studies to follow, basic metabolic panel, urinalysis
Liver function	Liver function tests or complete metabolic panel
Inflammatory markers	C-reactive protein, erythrocyte sedimentation rate, ferritin
Thyroid function	TSH and free T4
Vitamin deficiencies	Vitamin D, vitamin B12

Table 3b. More specialized diagnostic laboratory testing to consider for patients with post-COVID conditions

CATEGORY	LAB TESTS
Rheumatological conditions	Antinuclear antibody, rheumatoid factor, anti-cyclic citrullinated peptide, anti-cardiolipin, and creatine phosphokinase
Coagulation disorders	D-dimer, fibrinogen
Myocardial injury	Troponin
Differentiate symptoms of cardiac versus pulmonary origin	B-type natriuretic peptide

* The specialized diagnostic tests should be ordered in the context of suggestive findings on history and physical examination (e.g., testing for rheumatological conditions in patients experiencing arthralgias).

https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/post-covid-workup.html

Table 4a. Selected assessment tools for evaluating people with post-COVID conditions

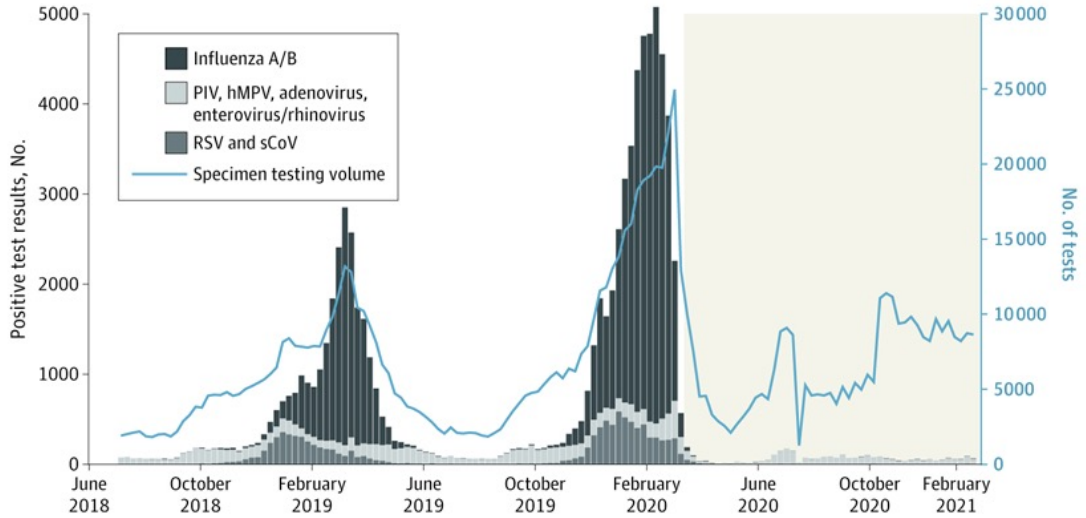
CATEGORY	TOOLS
Functional status and/or quality of life	Patient-Reported Outcomes Measurement Information System (PROMIS) (e.g., Cognitive Function 4a)
	Post-Covid-19 Functional Status Scale (PCFS)
	EuroQol-5D (EQ-5D)
Respiratory conditions	Modified Medical Research Council Dyspnea Scale (mMRC)
Neurologic conditions	Montreal Cognitive Assessment (MoCA)
	Mini Mental Status Examination (MMSE)
	Compass 31 (for dysautonomia)
	Neurobehavioral Symptom Inventory
Psychiatric conditions	General Anxiety Disorder-7 (GAD-7)
	Patient Health Questionnaire-9 (PHQ-9)
	PTSD Symptom Scale (PSS)
	Screen for Posttraumatic Stress Symptoms (SPTSS)
	PTSD Checklist for DSM-5 (PCL-5)
	Impact of Event Scale-Revised (IESR)
	Hospital Anxiety and Depression Scale (HADS)

Table 4b. Selected functional and other testing tools for evaluating people with post-COVID conditions

CATEGORY	TOOLS
Exercise capacity	1-minute sit-to-stand test
	2-minute step test
	10 Meter Walk Test (10MWT)
	6-minute walk
Balance and fall risk	BERG Balance Scale
	Tinetti Gait and Balance Assessment Tool
Other	Tilt-table testing (e.g., for POTS)
	Orthostatic HR assessment

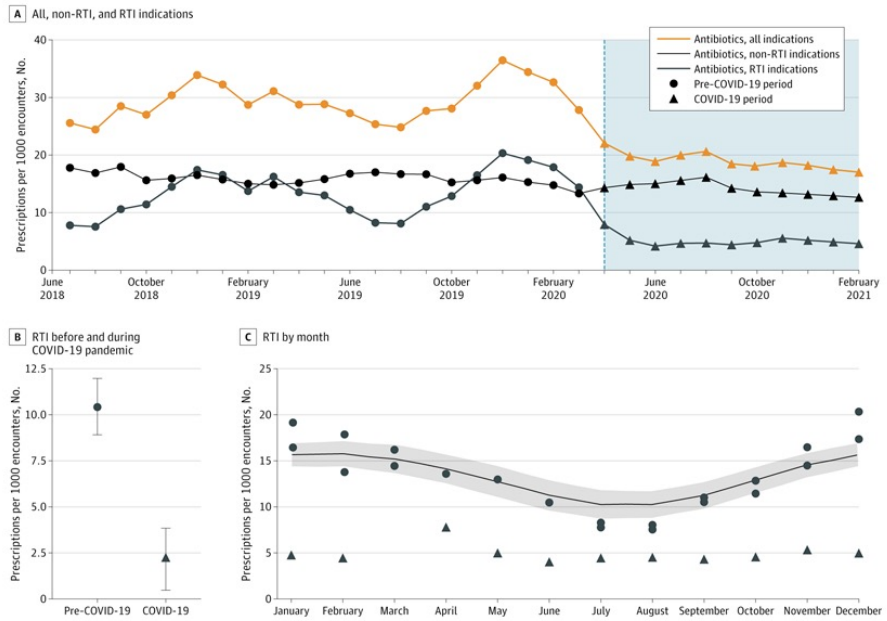
https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/post-covid-workup.html

Figure 1. Respiratory Virus Testing Results From July 2018 Through February 2021



The total number of polymerase chain reaction–positive respiratory virus test results by week are shown by stacked boxes. Data are from the State of Wisconsin Respiratory Virus Surveillance Program. The blue line represents the total testing volume on a weekly basis. The gray background indicates the COVID-19 pandemic period. hMPV indicates human metapneumovirus; PIV, human parainfluenza virus; RSV, respiratory syncytial virus; sCoV, seasonal coronavirus.

Figure 2. Ambulatory Antibiotic Prescribing Rates July 2018 Through February 2021

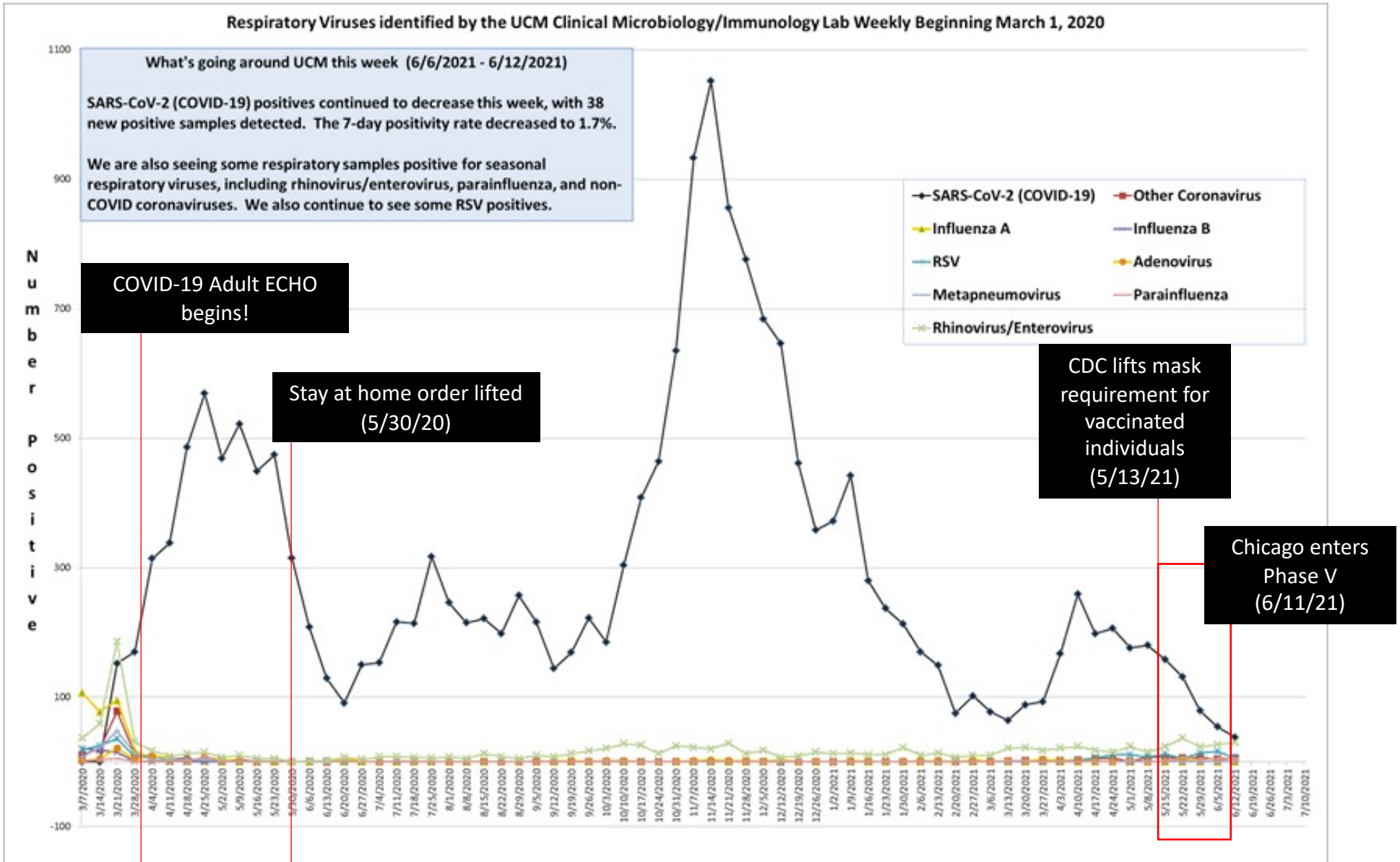


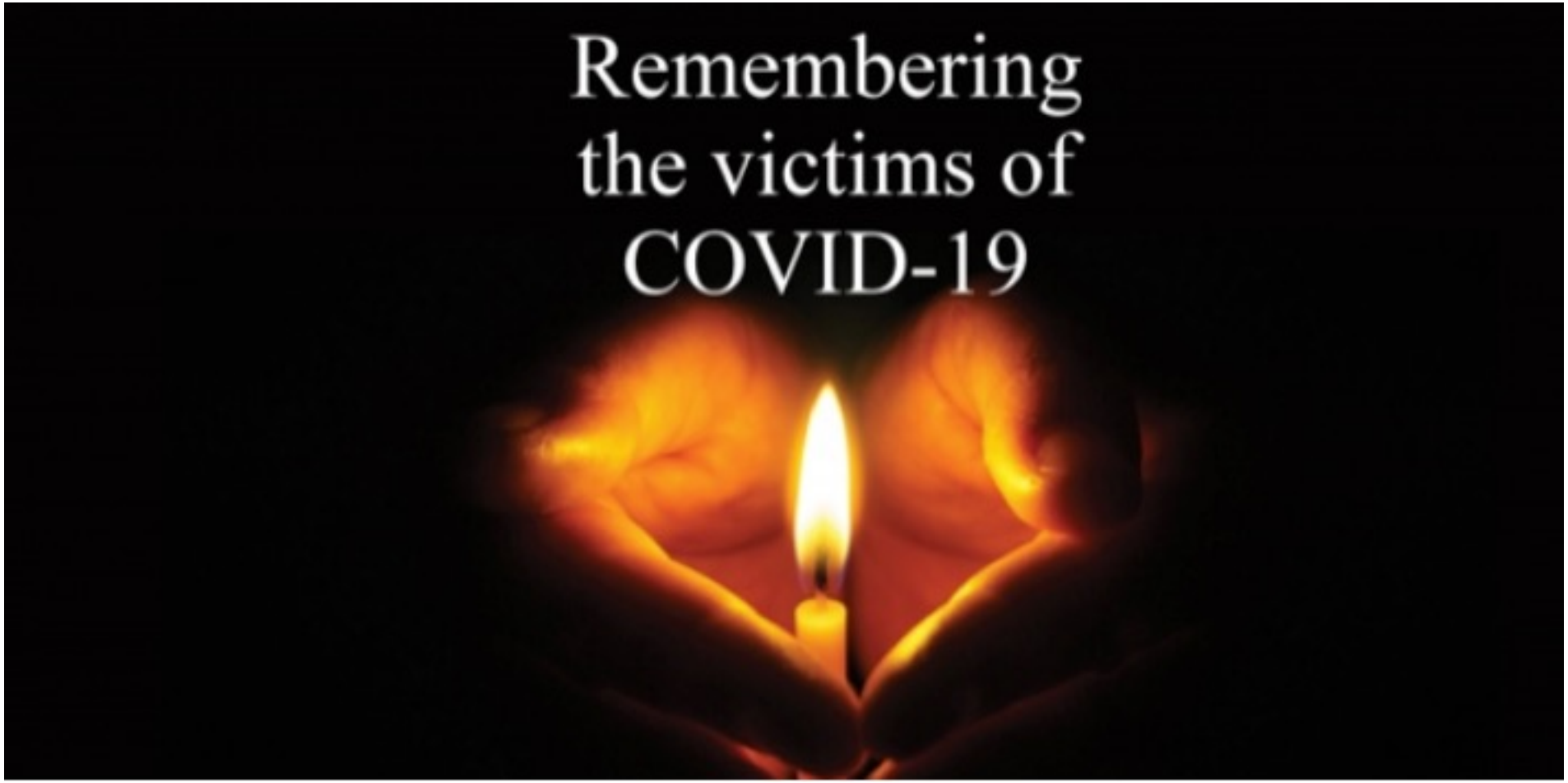
- Respiratory virus detections demonstrated seasonal variation pre-pandemic but not post-pandemic
- Winter seasonal viruses (influenza, RSV and seasonal coronavirus) averaged 12/month vs. 4800/month in past seasons (p<.001)
- Pre-pandemic, antibiotic prescribing rates increased during respiratory viral seasons. During the pandemic, antibiotic prescribing rates decreased and remained low
- Monthly antibiotic prescriptions for RTI fell 79% from 10.5 to 2.2 Rx per 1000 patient encounters
- Non-influenza detections demonstrated the strongest correlation with antibiotic prescribing for RTI (r=0.82; P<.001)

Know what's going around – if it is a virus (or multiple) antibiotics are NOT indicated! Treat symptoms and worries ☺

KNOW

What's Going Around




Remembering
the victims of
COVID-19