

Thank you for joining us – the webinar will start shortly



What happened in 2022?

The US excess mortality conundrum, what caused it and will it continue?

Wednesday 19th April, 2023 3pm (ET) / 12pm (PT)





What happened in 2022?

The US excess mortality conundrum, what caused it and will it continue?









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- 1. What happened in 2022?
- 2. What caused it and will it continue?





Poll question

"Is 2022 mortality data representative of the future?"

Yes, the full year
 Yes, part of the year
 No





What happened in 2022?

The COVID-19 pandemic waves in the US



Excess mortality in the US



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Excess deaths by major causes

Excess Deaths by Cause (not COVID) (2020-2022)



Respiratory diseases

- Circulatory diseases
- Cancers
- Other select causes (sepsis, renal failure, diabetes)
- Neurological diseases (Alzheimer's, dementia)

Source: CDC weekly death data available as at February 23, 2023. Expected deaths show the continuation of the linear trend in 2015-2019 deaths. Percentage Increase in Expected Deaths by Cause (2020-2022)



- Respiratory diseases
- Circulatory diseases

Cancers

- Other select causes (sepsis, renal failure, diabetes)
- Neurological diseases (Alzheimer's, dementia)



Excess deaths by age group



Percentage Increase in Expected Deaths by Age Group (2020-2022)



■<25 ■25-44 ■45-64 ■65-74 ■75-84 ■85+





Excess deaths by NatGeo regions



Source: CDC weekly death data available as at February 23, 2023. Expected deaths show the continuation of the linear trend in 2015-2019 deaths.

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What happened in 2022? – national picture



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Expected deaths show the continuation of the linear trend in 2015-2019 deaths.

What happened in 2022? – Midwest and Northeast

Southeast
 West
 Southwest
 Northeast
 Midwest



5% excess death in after May 2022 – of which 80% due to COVID





Southeast
West
Southwest
Northeast
Midwest



9% excess death in after May 2022 – of which 46% due to COVID







Was there a distinct summer and winter wave of excess death in the West?



Source: CDC weekly death data available as at February 23, 2023. Expected deaths show the continuation of the linear trend in 2015-2019 deaths.

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StateExcess mortality
after May 1, 2022Alaska16.8%Oregon15.6%Washington13.8%California11.4%Colorado11.2%



Heaviest post-May mortality – West

50%

40%

30%

20%

10%

0%

-10%

8-Jan-2022







22 12F002022 19M01202 19M01202 24 10F00202 15Od202 19M01202 24

Week ending

2022 excess deaths

California by week of registration

Excess deaths (% of expected)

Ulliliana

COVID deaths (% of expected)



Source: CDC weekly death data available as at February 23, 2023. Expected deaths show the continuation of the linear trend in 2015-2019 deaths.

Vaccination levels in the US



Percent of the Population 18 Years of Age and Older with a Completed Primary Series Reported to CDC by Jurisdictions and Select Federal Entities



○ No Data ○ 0 - 59.9% ○ 60 - 69.9% ○ 70 - 79.9% ○ 80 - 89.9% ● ≥ 90%

Percent of the Total Population with an Updated (Bivalent) Booster Dose Reported to CDC by Jurisdictions and Select Federal Entities





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What caused it and will it continue?

What caused excess deaths in 2022 and will it continue?

- **1.** Continuing effects of COVID
- 2. Deaths of despair
- 3. Increase in demand for healthcare
- 4. Reduction in healthcare capacity
- 5. Staff shortages coming





Long-term symptoms of COVID

The most commonly reported long-term symptoms include:

- Fatigue
- Chest and abdominal pain
- Difficulty with thinking and concentration (brain fog), confusion
- Depression

- Muscle pain, joint pain, headache
- Intermittent fever
- Heart palpitations
- Cough, congestion or shortness of breath





Long-term impact of COVID

Body systems and organs that can be affected:

- Heart
 - Damage to heart muscle, heart failure
- Lungs
 - Damage to lung tissue and restrictive lung failure
- Brain and the nervous system
 - Loss of sense of smell (anosmia)
 - Consequences of thrombo-embolic events such
 - as pulmonary embolism, heart attack, stroke
 - Cognitive impairment (e.g. memory and concentration)

- Mental health
 - Anxiety, depression, post-traumatic stress disorder and sleep disturbance
- Musculoskeletal and others
 - Pain in join and muscles
 - Fatigue





Different theories on Long COVID



Microbiota dysbiosis

Impacts of SARS-CoV-2 on

the microbiota and virome

(including SARS-CoV-2

persistence)

Autoimmunity and immune priming



Autoimmunity and primed immune cells from molecular mimicry Blood clotting and endothelial abnormalities



Microvascular blood clotting with endothelial dysfunction

Dysfunctional neurological signalling Dysfunctional signalling in the brainstem and/or vagus nerve

Source: Long COVID: major findings, mechanisms and recommendations



Continuing dominance of Omicron since Dec '21



Source: Deaths due to COVID-19 by age group - Kaiser Family Foundation



Among People Who Have Had COVID, the Percentage who Currently Have Long COVID is Declining

Percentage of people reporting that they currently have or ever had long COVID among those who have had COVID as of January 16, 2023



NOTE: The Pulse Survey, an experimental survey conducted by the Census Bureau and National Center for Health Statistics, asked respondents whether they had any symptoms of COVID that had lasted longer than 3 months. This figure reports the findings as of 6/13/2022, 8/8/2022, 10/17/2022, and 1/16/2023.

SOURCE: National Center for Health Statistics. Post-COVID Conditions. Data accessed Jan 26, 2023. Available from: https://data.cdc.gov/d/gsea-



Source: Kaiser Family Foundation

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What caused excess deaths in 2022 and will it continue?

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Charting the shortfall in US life expectancy



Source: Causes of America's Lagging Life Expectancy





Worsening mortality through pandemic for younger Americans

2021 vs 2015-2019





Worsening mortality through pandemic for younger Americans

Apr '21 - Mar '22 vs Apr '20 - Mar '21





Growth in alcohol & drug deaths during pandemic



Source: Increase in "deaths of despair" during COVID-19 pandemic





Crisis of mortality for youngest Americans



Ages 1 to 19 years

Source: New crisis of increasing all-cause mortality in US children and adolescents

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Hospital bed occupancy at pandemic levels



Source: CDC Hospital Utilisation

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Continuing impact of COVID

Increased risk of cardiovascular events after 12 months



Source: Long-term cardiovascular outcomes of COVID-19





Higher mortality rates for non-COVID admissions - Diabetic admissions (Jan '19 - Sep '21)



Increasing burden of US cardiovascular disease



Projections of Future Cardiovascular Risk Factors and Cardiovascular Disease in the United States From 2025 to 2060

Cardiovascular Risk Factors Diabetes: ↑ of 39.3% to 55 million persons Hypertension: ↑ of 27.1% to 162 million persons Dyslipidemia: ↑ of 27.6% to 126 million persons Obesity: ↑ of 18.3% to 126 million persons Cardiovascular Diseases Ischemic heart disease: 1 of 30.7% to 29 million persons Heart failure: 1 of 33.4% to 13 million persons Myocardial infarction: 1 of 16.9% to 16 million persons Stroke: 1 of 33.8% to 15 million persons

Key points

- Projections for future cardiovascular risk factors and cardiovascular disease were based on NHANES data combined with 2020 U.S. Census projections for future population distributions
- Although steep rise in cardiovascular risk factors and cardiovascular diseases are expected in upcoming years, differences between women and men will largely remain stable over time
- Disproportionate increase in cardiovascular risk factors and cardiovascular disease are projected to impact racial and ethnic minority populations
- The results from this study have important implications for motivating policy decisions regarding equitable delivery of quality health care to all Americans

Source: Projected future of cardiovascular risk factors and cardiovascular diseases by 2060



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Challenges for hospitals delivering healthcare





Source: National Hospital Flash Report (March 2023) – KaufmanHall – based on 900 hospitals from Syntellis Performance Solutions



Challenges for hospitals delivering healthcare



Source: National Hospital Flash Report (March 2023) – KaufmanHall – based on 900 hospitals from Syntellis Performance Solutions

Breast Cancer, Cervical Cancer, and Colorectal Cancer Screening Rates by Quarter (Q) From 2017 to 2021



Source: Rates of routine cancer screening and diagnosis before vs after the COVID-19 pandemic



Annual Percentage Change in Breast Cancer, Cervical Cancer, and Colorectal Cancer Prevalence Rates



Source: Rates of routine cancer screening and diagnosis before vs after the COVID-19 pandemic

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Impact of COVID on healthcare professionals

- A recent study reported by the New York Times estimated that in 2021 alone, about 117,000 physicians left the work force, while fewer than 40,000 joined it. This has worsened a chronic physician shortage, leaving many hospitals and clinics struggling.
- And the situation is set to get worse. One in five doctors says he or she plans to leave practice in the coming years
- We are also facing a huge nursing shortage. According to the Nursing Times, The US Bureau of Labor Statistics projects that more than 275,000 additional nurses are needed from 2020 to 2030.

Source: Addressing the healthcare staffing shortage: a definitive healthcare report (Oct 2022)



Healthcare professionals unhappy

13% of nurse leaders intend to leave within 6 months, 25% considering leaving **CONSIDERING LEAVING, THIS IS WHY**



Current state of nursing cover



US States	Reg nurses (2021)	State population (2020)	Nurses per 1,000 pop
GA	78.3k	10.7m	7.31
ТХ	217.6k	29.1m	7.47
CA	324.4k	39.5m	8.20
FL	187.9k	21.5m	8.72
NY	188.3k	20.2m	9.32
MA	88.3k	7.0m	12.56
USA	3,047.6k	331.4m	9.19

Source: The US Nursing Shortage: A State-by-State Breakdown

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Source: Report Card and Shortage Forecast

In conclusion...



"Is 2022 mortality data representative of the future?"

Yes, the full year
 Yes, but only period 3
 No





Thank you

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