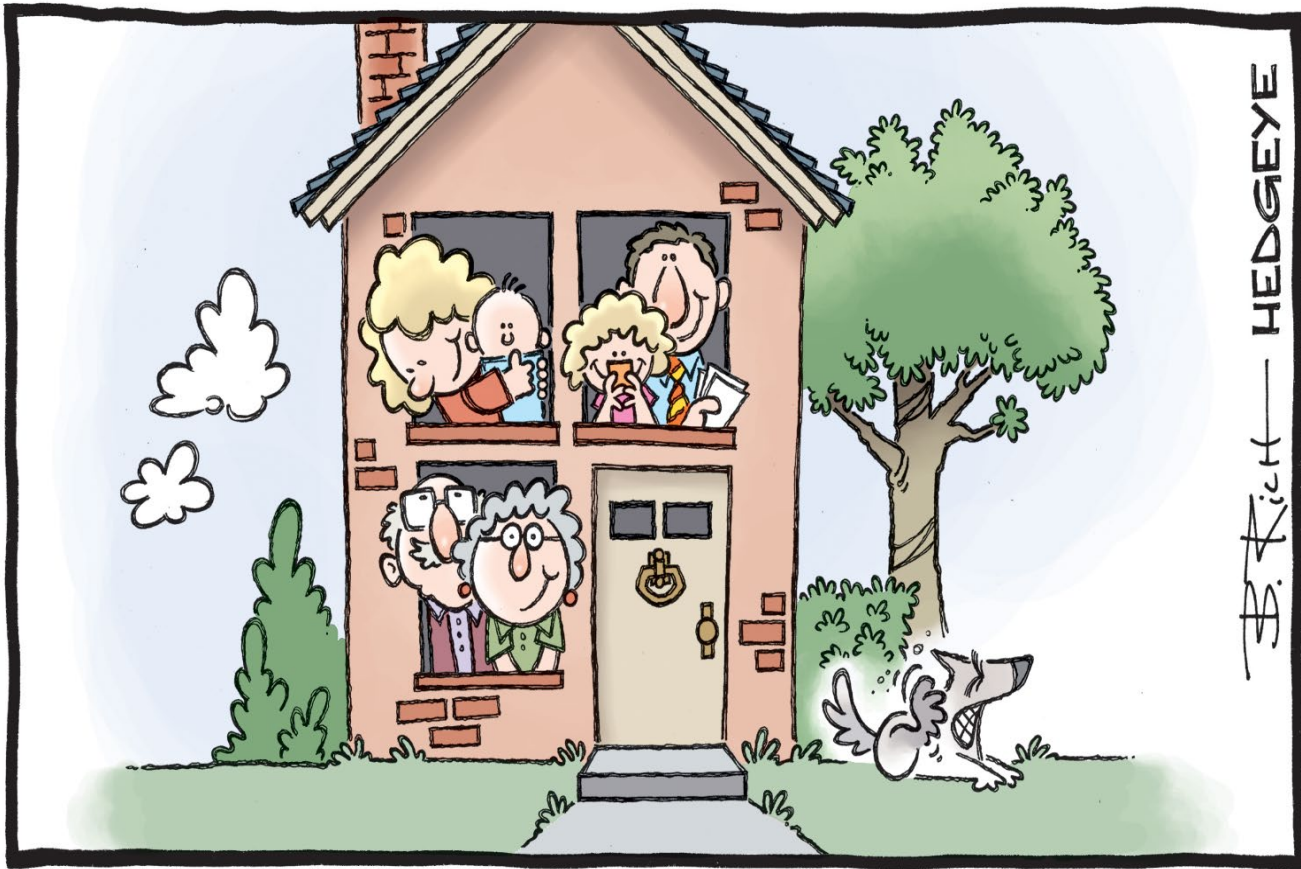




DEMOGRAPHY  
Q&A



May 6, 2021

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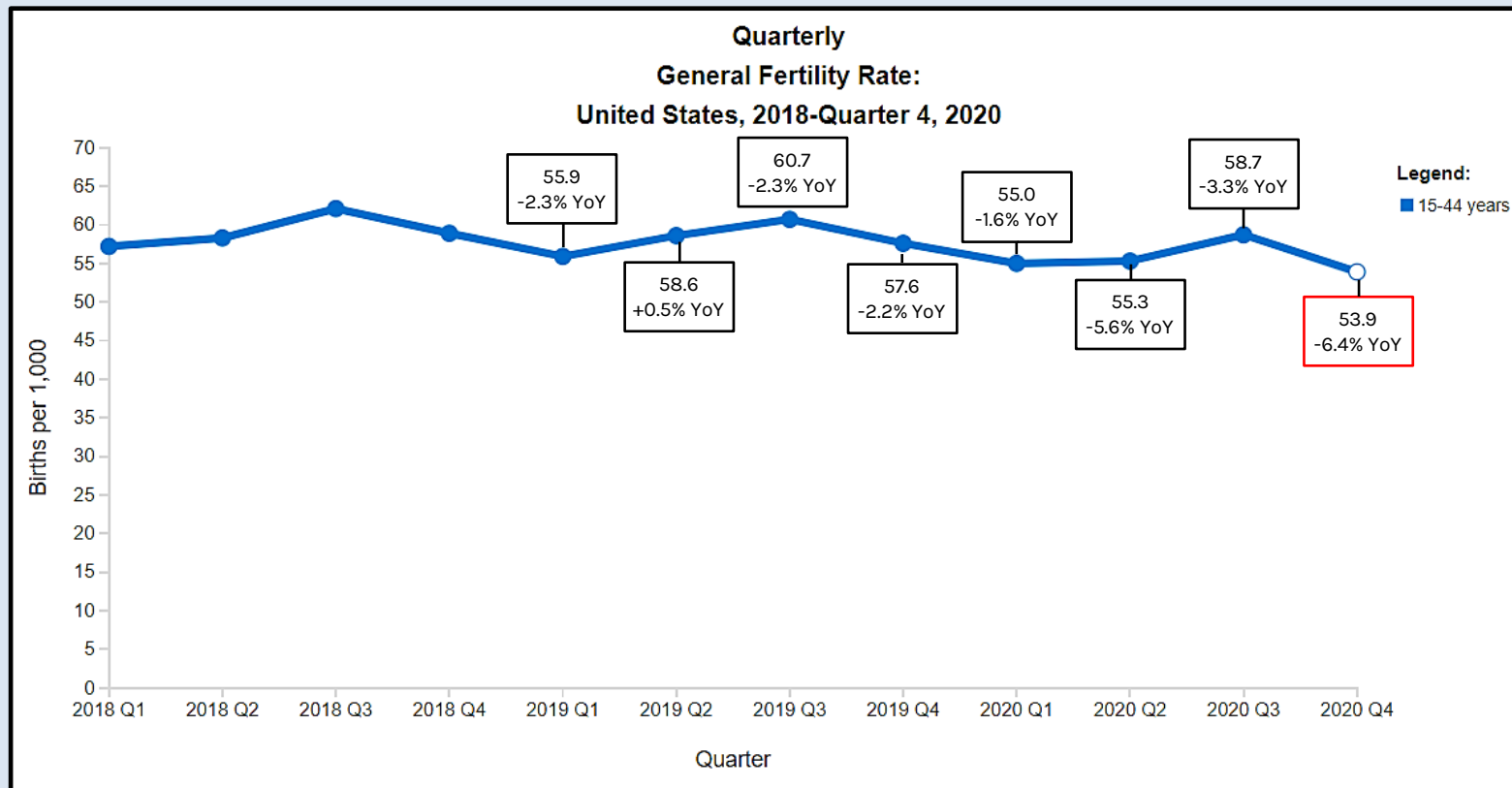
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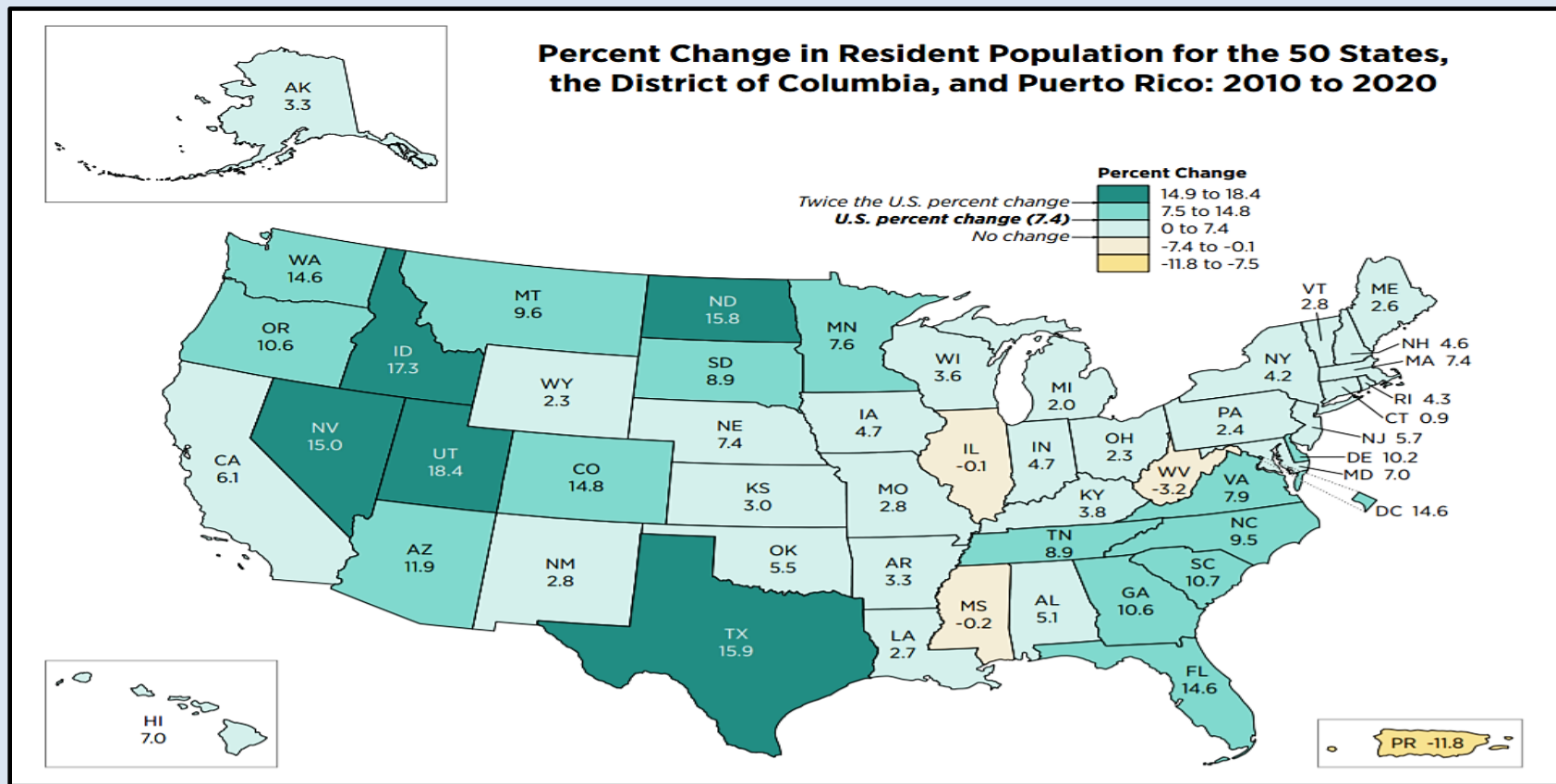
# 2020 GENERAL FERTILITY

3



# 2020 CENSUS RESULTS

4

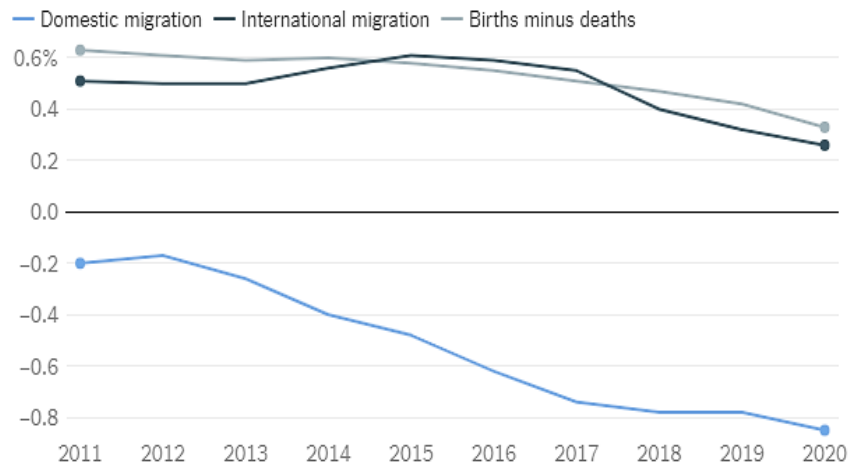


# 2020 CENSUS RESULTS

5

## Components of Urban Population Change

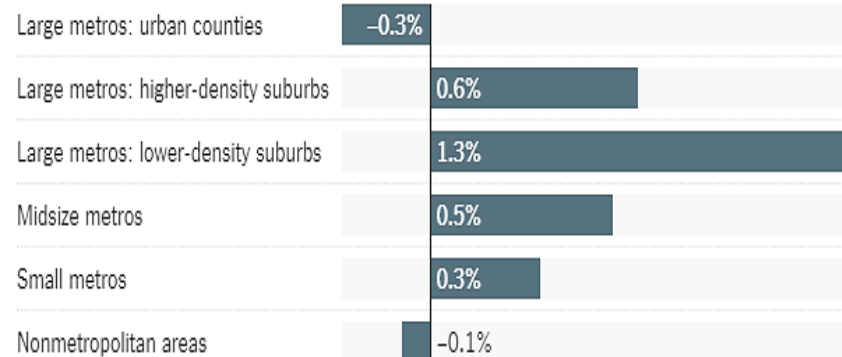
Urban counties of large metro areas only.



Source: Census annual population estimates • By The New York Times

## Lower-Density Suburbs Grew Fastest in 2020

Year-over-year change, by county type.



Change in population, July 1, 2019, to July 1, 2020

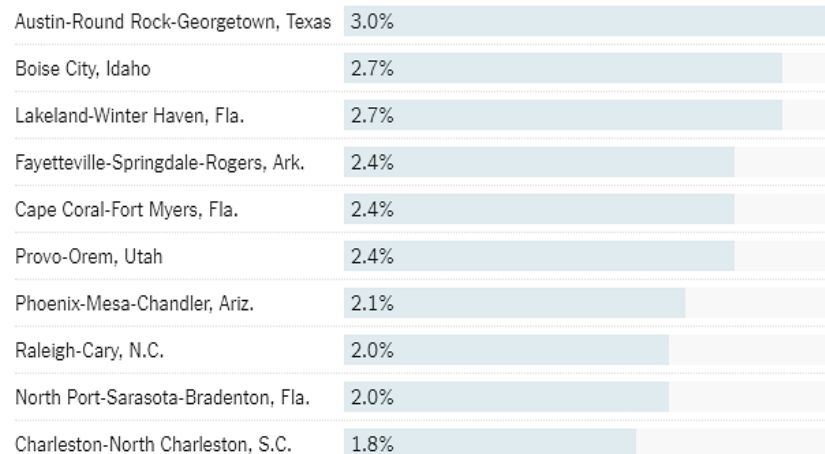
Source: Census annual population estimates • By The New York Times

# 2020 CENSUS RESULTS

6

## The 10 Fastest-Growing Metro Areas in 2020

Change in population, July 1, 2019, to July 1, 2020.

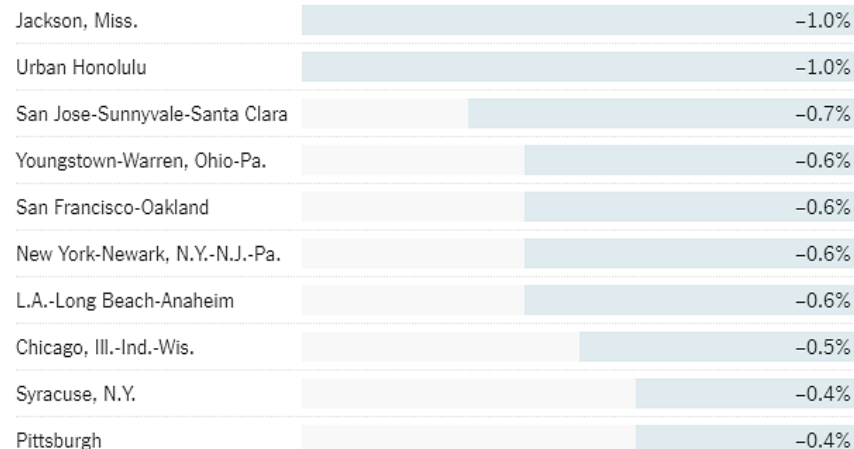


Among metros with at least 500,000 people on July 1, 2019.

Source: Census annual population estimates • By The New York Times

## The 10 Metro Areas That Shrank the Most

Change in population, July 1, 2019, to July 1, 2020.



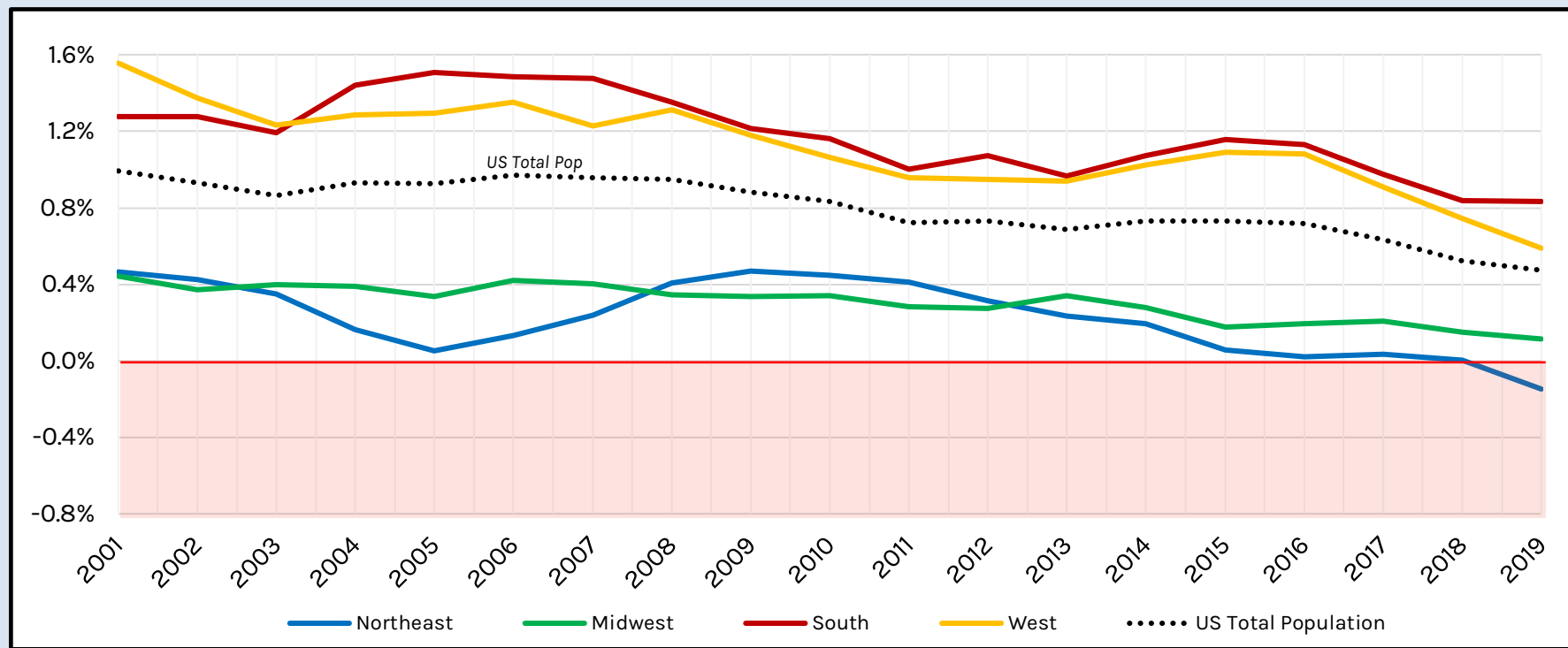
Among metros with at least 500,000 people on July 1, 2019

Source: Census annual population estimates • By The New York Times

# SOUTH/WEST GROWING... NE/MIDWEST NOT

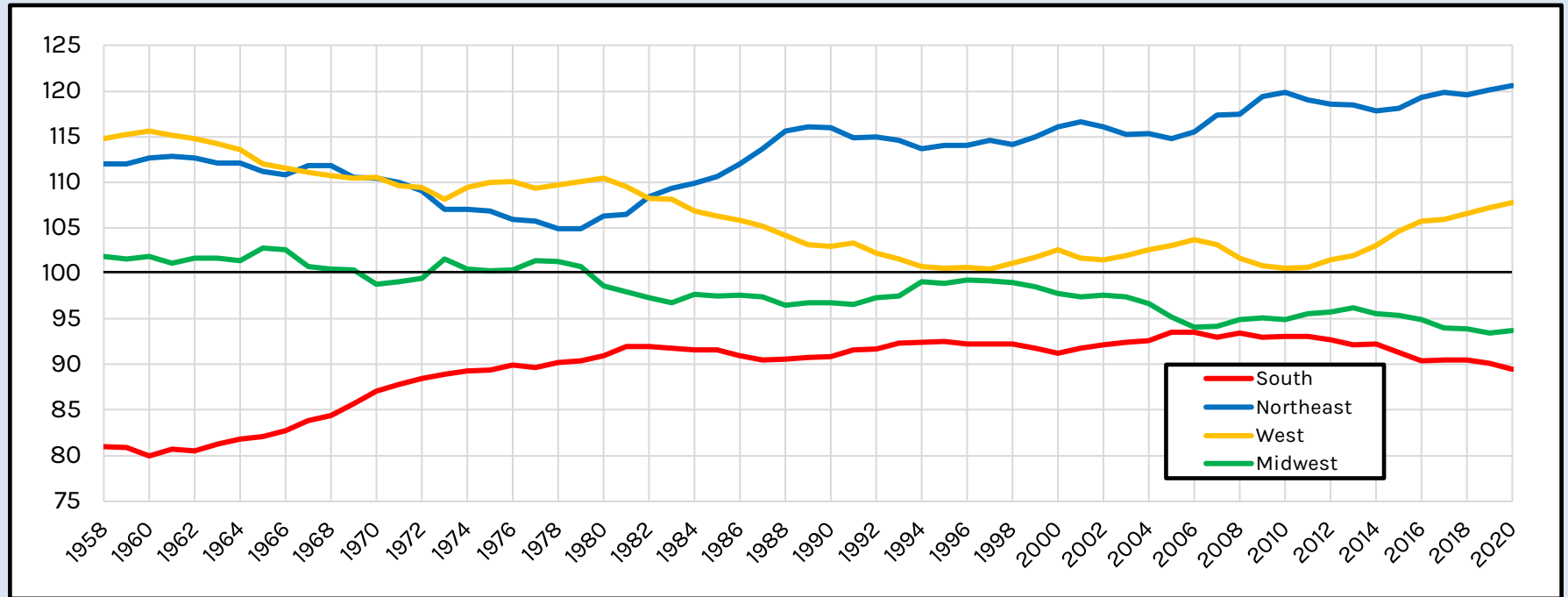
7

## Total Population, YoY Growth Rate by Region, 2000-2019



# REAL PERSONAL INCOME

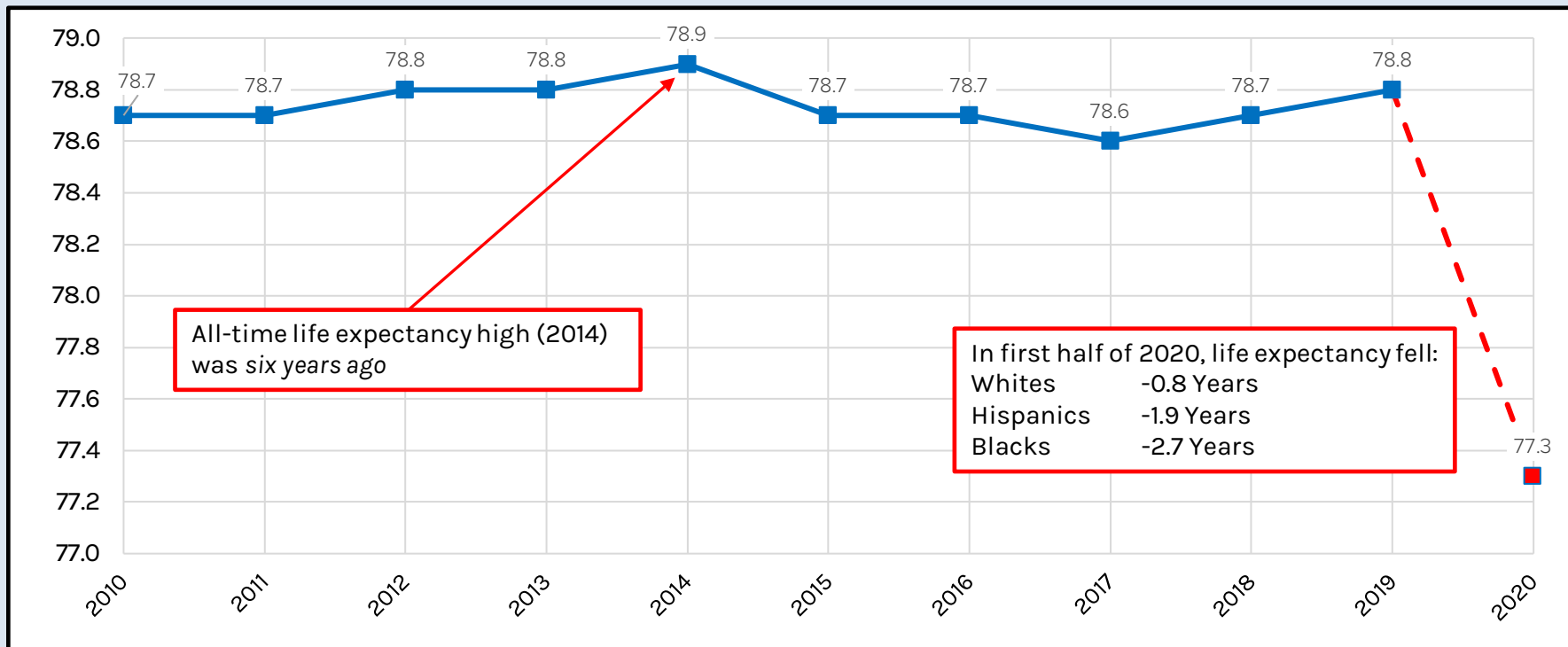
Real Personal Income By Census Region,  
Index to US Average = 100.





# LIFE EXPECTANCY IN 6TH YEAR OF DECLINE

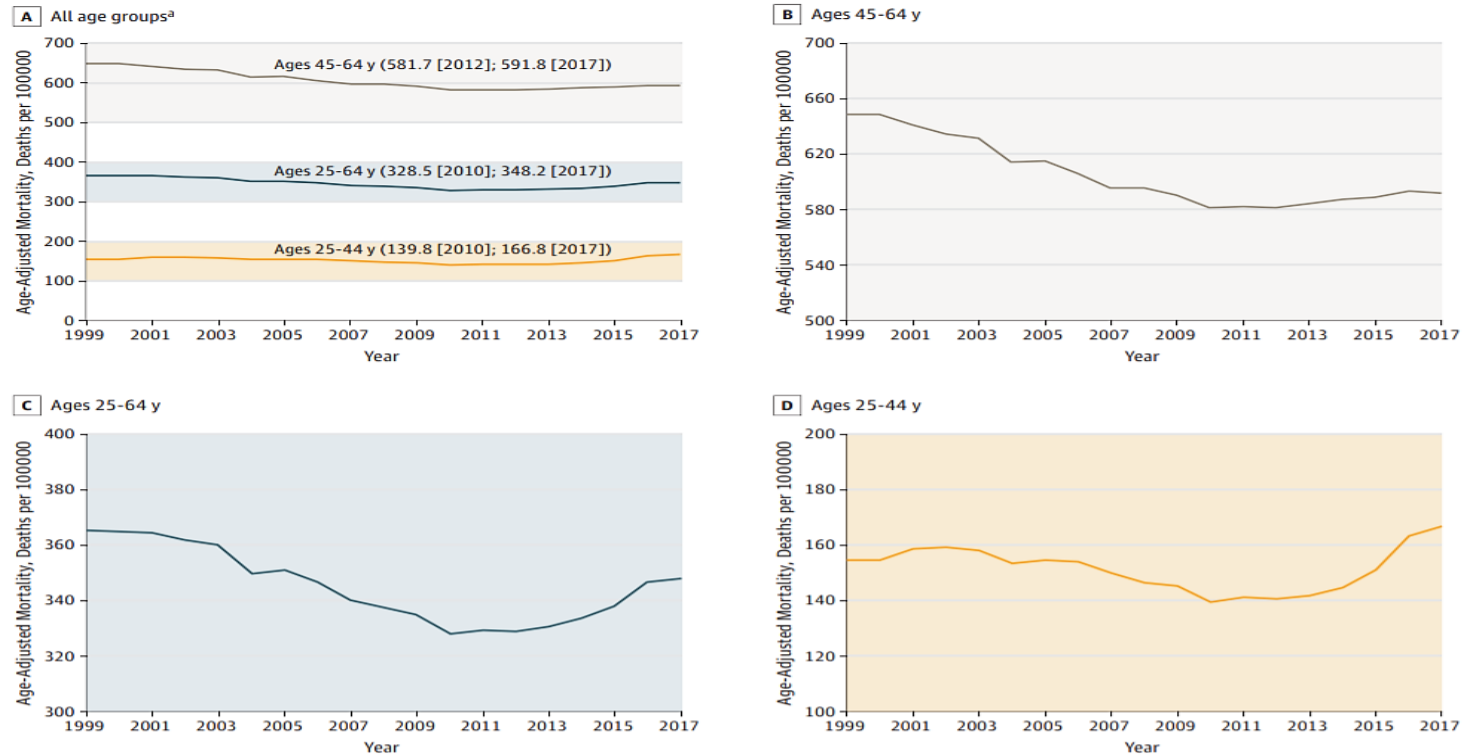
## US Life Expectancy, 2010-2020



\*2020 Hedgeye Estimates Based on First 6 Months of 2020

# TREND: LIFE EXPECTANCY BY AGE

Figure 3. Age-Adjusted, All-Cause Mortality Rates, US Adults Aged 25-64 Years, 25-44 Years, and 45-64 Years, 1999-2017



Source: CDC WONDER.<sup>20</sup>

# TREND: LIFE EXPECTANCY BY AGE

## Age-Specific Death Rates, 2018-2019

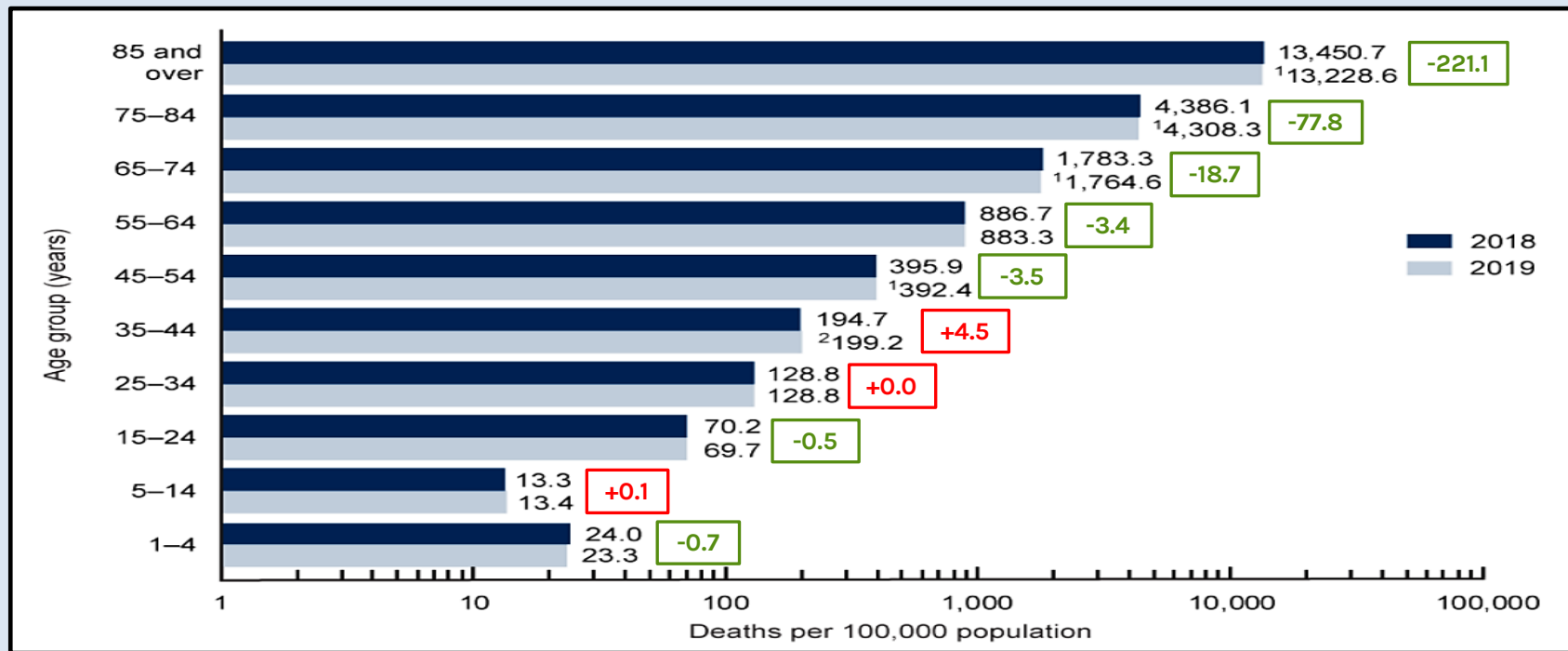
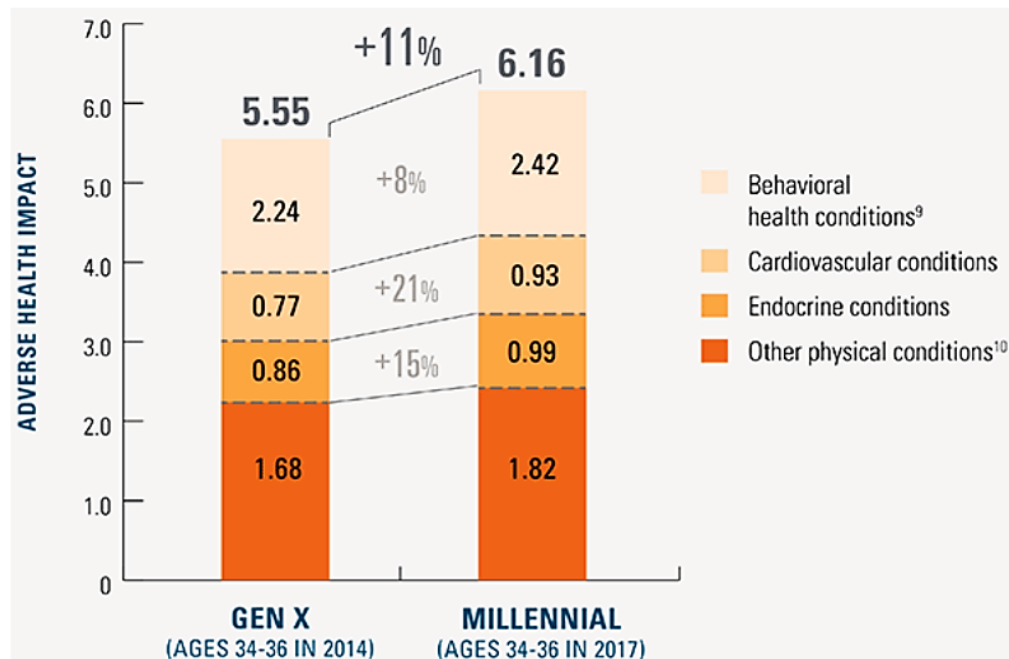


Exhibit 4: Adverse Health Impact for Major Condition Categories (2017)

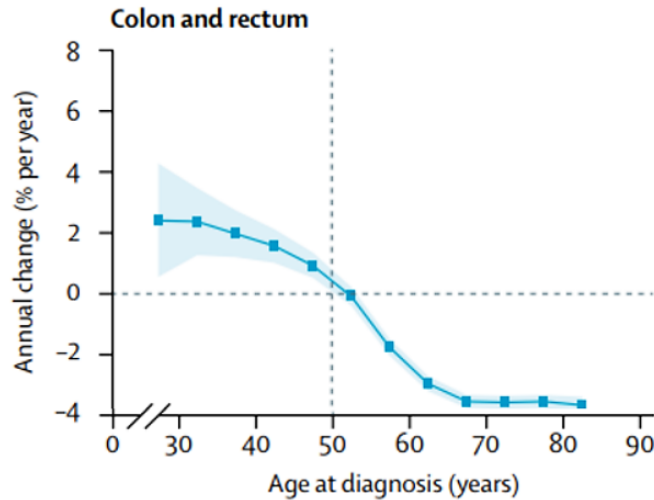


## BCBS HEALTH INDEX GENERATION COMPARATIVE:

The millennial age group had substantially more adverse health than the Gen X age group, with a higher prevalence of physical conditions, particularly **cardiovascular disease** and **endocrine conditions, including diabetes**.

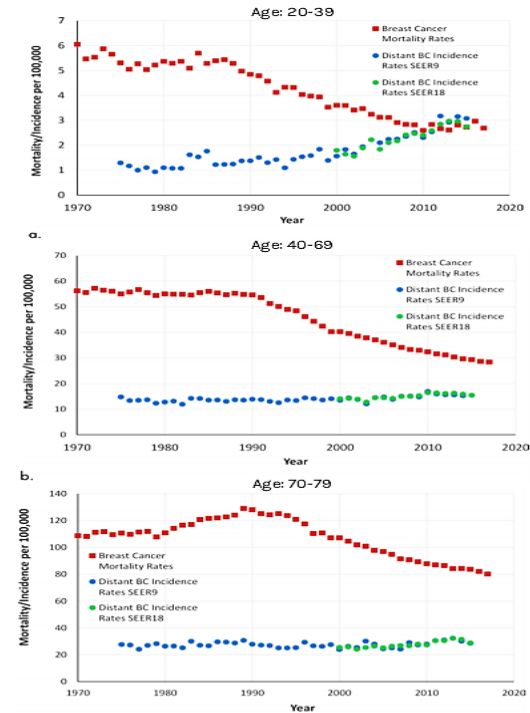
# CANCER IN THE YOUNG

## Age-Specific Annual % Change in Incidence of Colon + Rectum Cancer



**Age-specific annual percent change in incidence for Colon and rectum cancers, 1995–2014** Dots and shaded areas represent the net annual percentage changes (% per year) and 95% CIs in incidence from the age-period-cohort models for 12 age groups (5-year increments from age 25 years).

## Breast Cancer Rate of Mortality and Incidence



**Figure 4:** Graphs show comparison of breast cancer mortality rates (red ■) and distant-stage breast cancer (BC) incidence rates from Surveillance, Epidemiology, and End Results (SEER) data (SEER 9, blue ●; SEER 18, green ●) per 100,000 women aged (a) 20–39; (b) 40–69; and (c) 70–79 years. Source—References 3, 7, 8. Source: Radiology

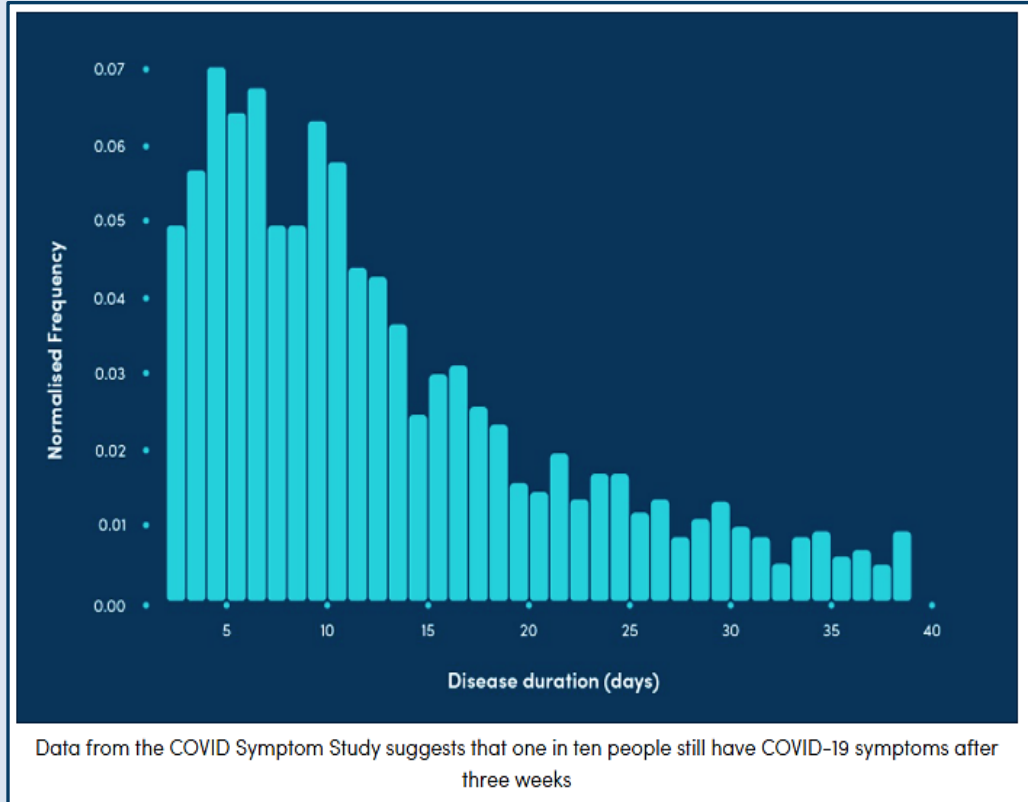
# LONG-TERM EFFECTS OF C19: SYMPTOMS

## General Studies of Long-Term Symptoms

How long do C19 symptoms last? Not an easy question to answer, since most studies (a) focus on acute symptoms and (b) don't emphasize long-term follow up.

- Best-known study was conducted through the "Covid Symptom Study App," run by health-science company Zoe with King's College London and Massachusetts General Hospital. 4,182 users who tested positive logged symptoms prospectively. Results, in days after positive test (see chart on right):

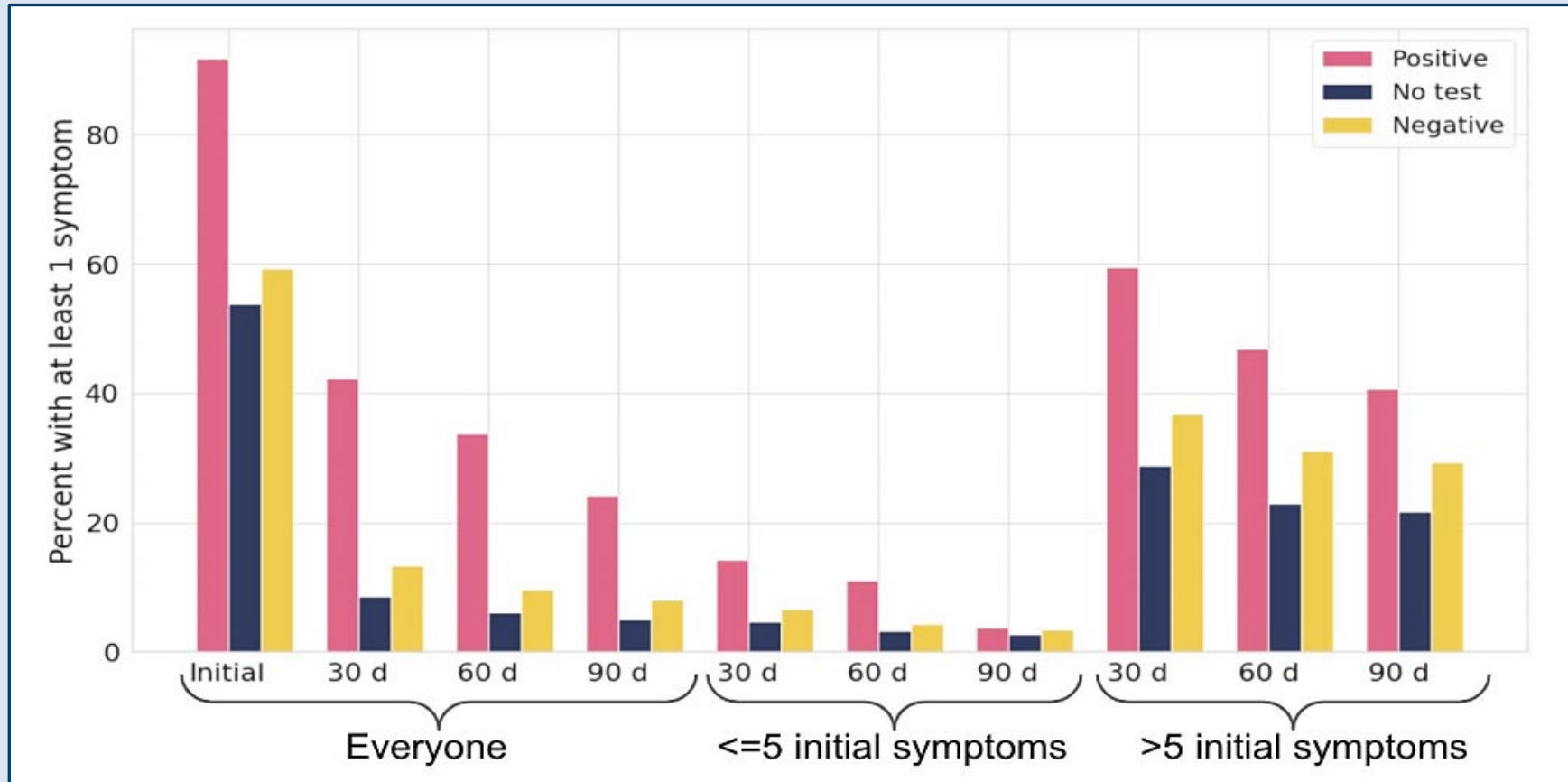
- 65% "return to previous level of health" in 14-21 days
- 10% are after 21 days
- 4.5% are sick after 56 days
- 2.3% are sick after 84 days



# LONG-TERM EFFECTS OF C19: SYMPTOMS

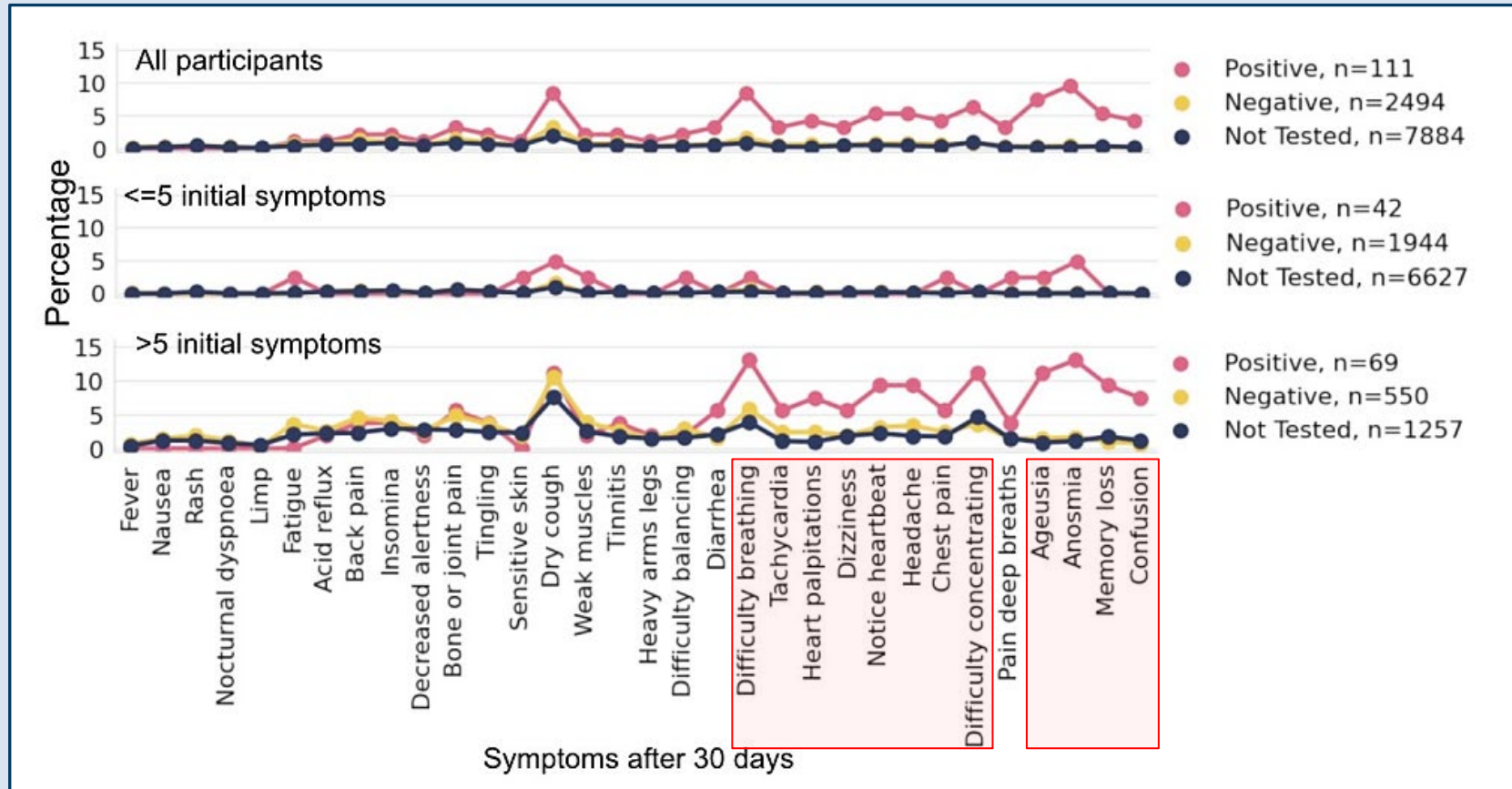
- Better controlled (and retrospective) study was conducted on Apr to Sep 2020 by research institutes in San Mateo CA and Reno NV on 233 cases (only 8 hospitalized) versus 3,652 negative controls and 17,474 nontested controls. Results:
  - 42% have at least one symptom after 30 days
  - 34% have at least one symptom after 60 days
  - 24% have at least one symptom after 90 days
- Additional conclusions of the CA/NV study:
  - C19 patients who have >5 initial symptoms, especially dyspnea, are more likely to suffer long-term symptoms than those with fewer initial symptoms.
    - ❖ of those with more symptoms, 41% still with symptoms at 90 days
    - ❖ of those with fewer, 3% still with symptoms at 90 days
  - For new diagnoses/procedures, biggest relative incidence gap between C19 patients and controls were:
    - ❖ 1st: lung damage
    - ❖ 2nd: blood clots
    - ❖ 3rd: heart damage, heart failure, kidney damage

# LONG-TERM EFFECTS OF C19: SYMPTOMS

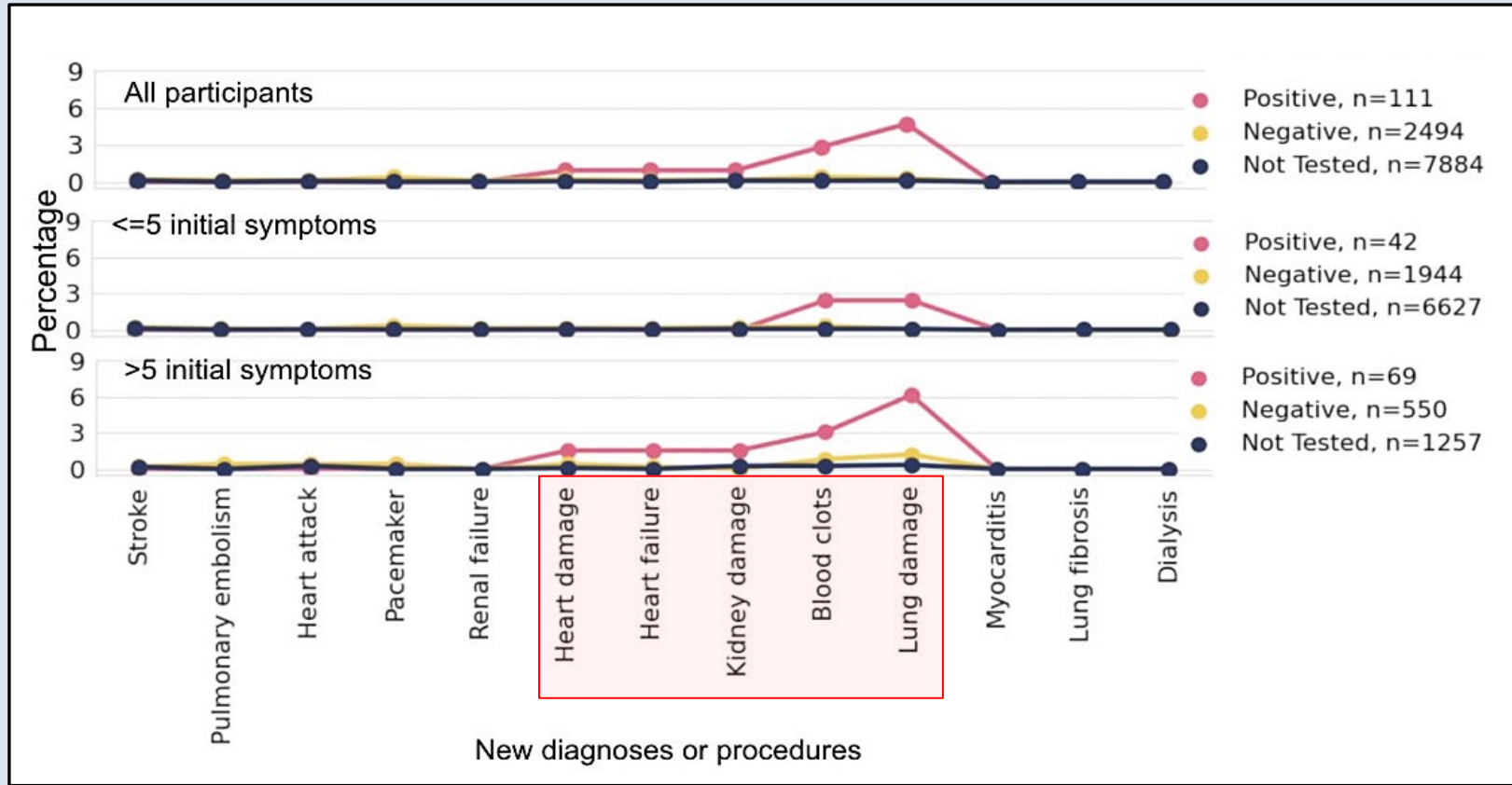




# LONG-TERM EFFECTS OF C19: SYMPTOMS

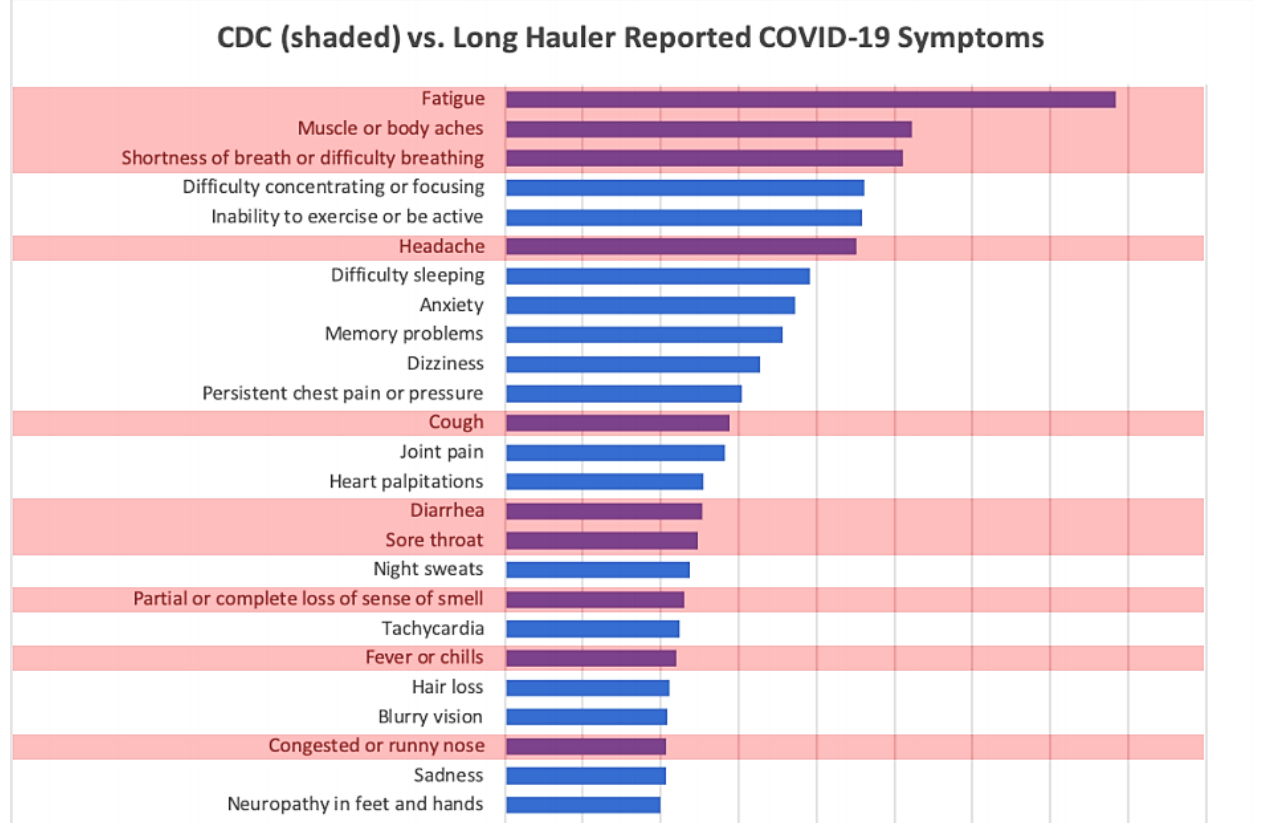


# LONG-TERM EFFECTS OF C19: SYMPTOMS



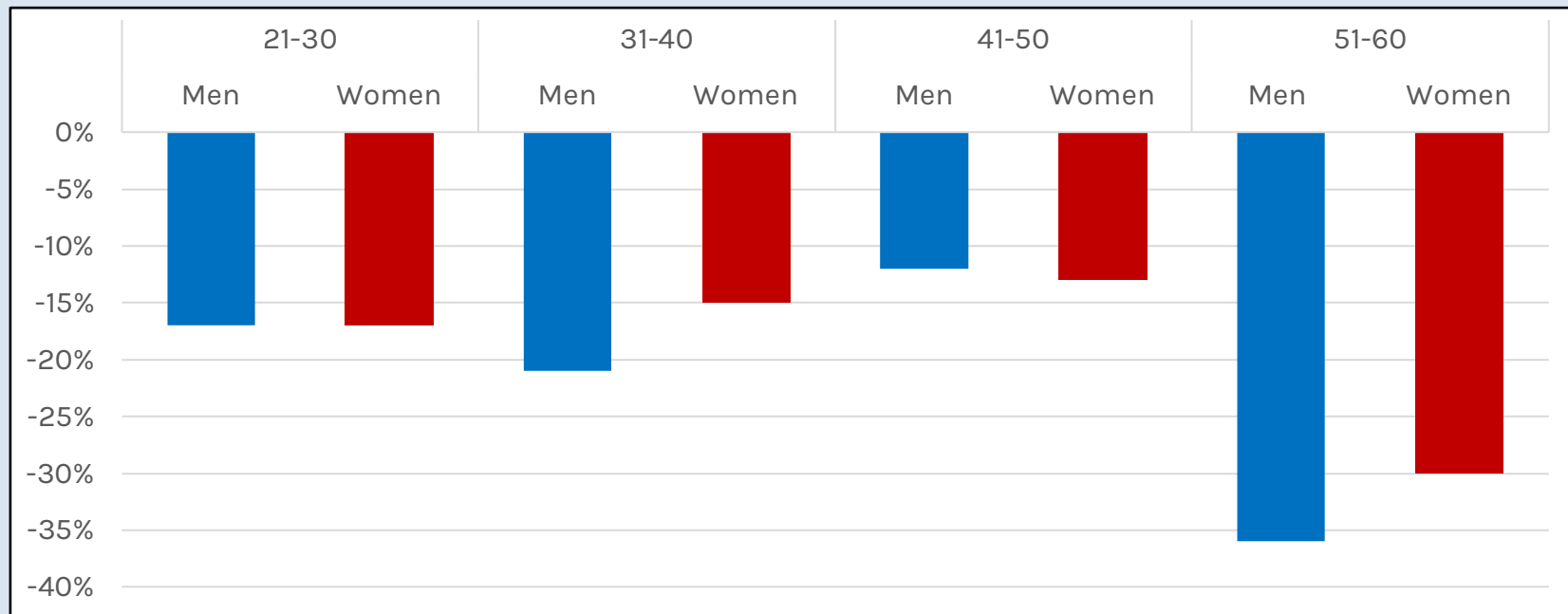
# LONG-TERM EFFECTS OF C19: SYMPTOMS

**Figure 4. CDC Verses Long Hauler Reported COVID-19 Symptoms**



# 6-MINUTE WALKING DISTANCE

**Avg. Meters: Hong Kong SARS Survivors  
Minus Control Group, at 24 Months After Illness**



# LONG-TERM EFFECTS OF C19: PHYSIOLOGY

Specific Studies of Long-Term Organ or Syndrome Effects. C19 has aptly been called a “multi-organ disease.” Long-term symptoms result from long-term injury to dysfunction of organ systems.

- Lungs/Respiratory. Regardless of symptoms, highest single confirmed organ injury rate. Post-hospitalization, well over 50% of C19 patients show some combination of lung scarring (by CT), reduced lung capacity, reduced O2 diffusion capacity, reduced expiratory volume, etc. Single most serious chronic C19 complaint is difficulty breathing (dyspnea).
- Heart/Cardiovascular. On examination, high share of post-19 patients show changes to blood (dyslipidemia, typically excess lipids) or fluctuating blood pressure. There is raised incidence of systemic clotting and thrombosis. In German post-hospital study, 78% had cardiovascular abnormalities; 60% had myocarditis (injury to heart muscle); many had reduced left ventricle ejection fraction.
- Brain/Neurological. Neurologic problems are common in acute C19: 43% at onset; 63% at hospitalization; 82% at some point in disease. These include myalgias (45%); headaches (38%), encephalopathy (32%), dizziness (30%) and frequent loss of smell or taste. (Northwestern study.) At an avg 111 days after hospitalization, patients report memory loss (34%), sleep disorders (31%), and concentration loss (28%). (French study.) “Brain fog”—including slow reaction and difficulty problem-solving—could have multiple causes, from (worst) ministrokes to (best) raised serum CRP levels. (Zhejiang University study).

# LONG-TERM EFFECTS OF C19: PHYSIOLOGY

- Mental Health/Malaise: CFS/ME or Chronic Fatigue Syndrome/Encephalomyelitis—or “post-viral syndrome”—is the single longest-lasting symptom of C19. Often linked to depression or (in extreme instances) PTSD. Closely related to confusion and “brain fog.” Cause: Most likely, raised CRP and hyperactive immune system (hence “post viral”). It could also be caused by neurological injury.
- Kidney/Renal: AKI or Acute Kidney Injury is now recognized as a “common” complication of C19. Prevalence in hospitalized patients estimated at >20%; in ICU patients, >50%. No estimate in all C19 patients.
- Other Long-Term Organ Injury: Digestive illness is a frequent acute complication which can be longer-term (e.g., loss of appetite). Skin/Dermatology is another (e.g., swelling, rashes, spotting, hair loss).

Bottomline: Rather than measure the long-term cost of C19 in terms of mortality, maybe we should measure it in terms of chronic disability. That may multiply the number affected by X50. Consider SARS, a related coronavirus which infected 8,019 people in 2003, killing 900. 17 years later, in just those 8K people, SARS is still generating just about every one of the long-term sequelae that we’re now discovering in C19: From lung damage and lipid disorders to PTSD, chronic inflammation and fatigue, and abnormally slow walking speed.

Nicholas Hart, the British physician who treated Prime Minister Boris Johnson, calls C19 “this generation’s polio”—a disease that could leave many marked by its scars and reshape global health care.

## Fentanyl pipeline

**China to U.S.**  
Americans buy pure fentanyl or precursor chemicals over the dark web.

**China to Canada to U.S.**  
Sometimes fentanyl from China is shipped through other, less-suspicious countries.



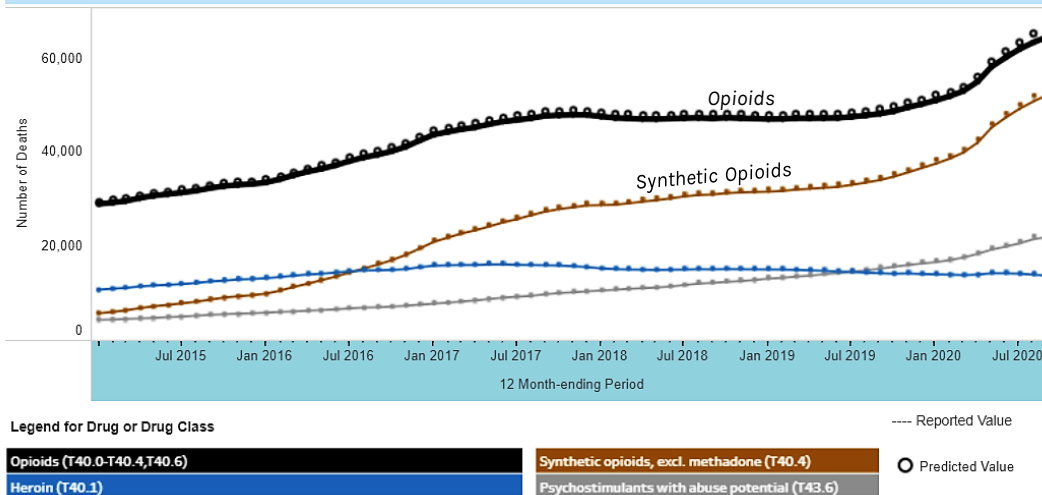
**China to Mexico**  
Fentanyl or precursor chemicals are shipped to be made into a finished product in drug cartel labs.

**Through San Diego**  
Fentanyl is smuggled across the Southwest border and dispersed throughout the U.S. market.

**China to U.S. to Mexico**  
Cartels have fentanyl shipped from China to the U.S., then smuggle it into Mexico for production.

Source: San Diego Union-Tribune  
Graphic: Kristina Davis and Shaffer Grubb, San Diego Union-Tribune, TNS

Figure 2. 12 Month-ending Provisional Number of Drug Overdose Deaths by Drug or Drug Class: United States



**United States, Sep 2020,  
Opioids (T40.0-T40.4, T40.6)**  
Reported number of deaths: **64,472**  
Predicted number of deaths: **66,813**  
Percent pending investigation: **0.25**  
Percent with drugs specified: **94.2**

**United States, Sep 2020,  
Synthetic opioids, excl. methadone (T40.4)**  
Reported number of deaths: **52,157**  
Predicted number of deaths: **53,877**  
Percent pending investigation: **0.25**  
Percent with drugs specified: **94.2**

## The Gupta (Red) and Siegfried (Blue) Method of Synthesizing Fentanyl

