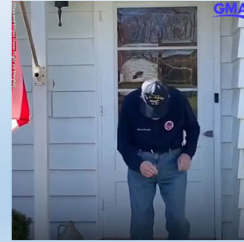
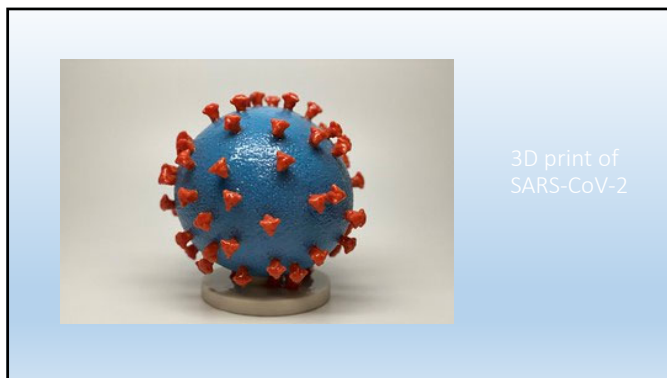


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97 yo WWII Vet jamming to start us off



2



3D print of
SARS-CoV-2

3

Coronaviruses

- There are hundreds of coronaviruses, most of which circulate among such animals as pigs, camels, bats and cats
- Sometimes those viruses jump to humans—called a spillover event—and can cause disease
- Four of the seven known coronaviruses that sicken people cause only mild to moderate upper-respiratory tract illnesses, like the common cold
- However, three new coronaviruses have emerged from animal reservoirs over the past two decades to cause serious and widespread illness and death
- Before the COVID-19 pandemic, coronaviruses caused two noteworthy outbreaks: severe acute respiratory syndrome (SARS), starting in 2002, and Middle East respiratory syndrome (MERS), starting in 2012

4

Novel Coronaviruses

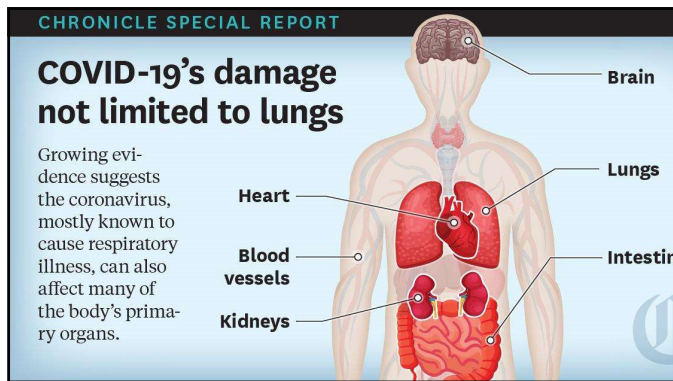
- SARS coronavirus (SARS-CoV) emerged in November 2002 and caused severe acute respiratory syndrome (SARS). That virus disappeared by 2004.
- Middle East respiratory syndrome (MERS) is caused by the MERS coronavirus (MERS-CoV). Transmitted from an animal reservoir in camels, MERS was identified in September 2012 and continues to cause sporadic and localized outbreaks.
- The third novel coronavirus to emerge in this century is called SARS-CoV-2. It causes coronavirus disease 2019 (COVID-19), which emerged from China in December 2019 and was declared a global pandemic by the World Health Organization on March 11, 2020.

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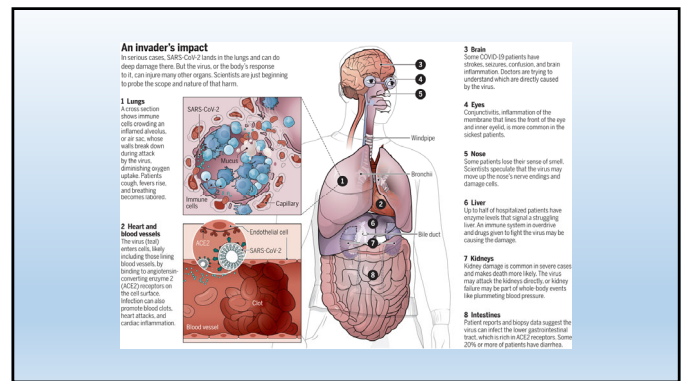
COVID-19

- Late December 2019, world alerted to new respiratory illness outbreak in China which had similarity to disease from years earlier called SARS (Severe Acute Respiratory Syndrome)
- Virus came to be named SARS-CoV-2 (SARS-Coronavirus-2) as the earlier one renamed SARS-CoV-1
- Disease called COVID-19 (Coronavirus Disease 2019) and it's spread across the world since
- Declared global pandemic by March 2020
- As of this past weekend, over 14 million affected worldwide, with over 600,000 deaths
- In the US, almost 4 million cases and over 140,000 dead

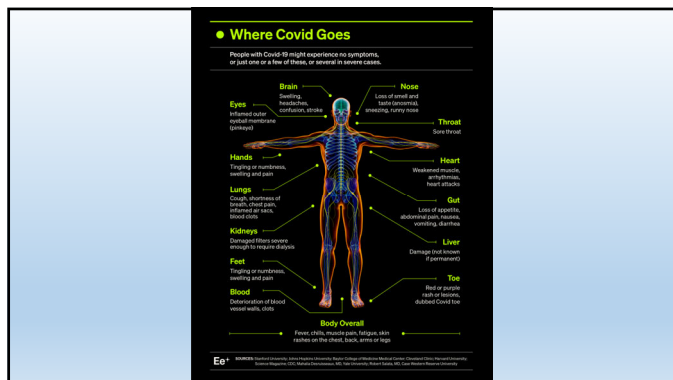
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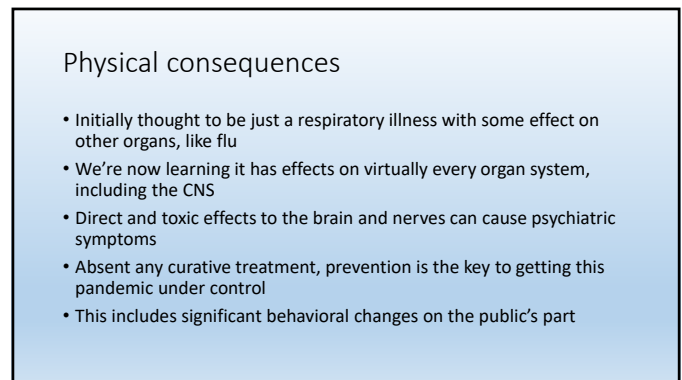
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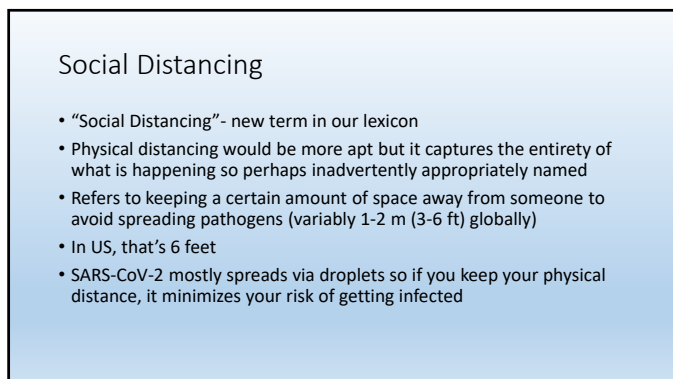
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Physical effects

- Decreased motor activity
- Changes in diet
- Changes in sleep
- Exposure to sunlight
- Exercise

13

Fear and Anger

- In addition, over-reactive behavior due to fear is usually noted in the public during the pandemics
- Aggression, frustration, can worsen with quarantine and lockout procedures

14



15

Limited literature on future but what about the past?

- Limited data on long-term effects of this virus, or the pandemic
- We can learn from looking at past pandemics

16

What do previous pandemics tell us?

- Such impacts are likely to differ across pandemics and populations, for example, Wang et al. (2011) reported no immediate negative psychological effect of quarantine in their sample of University students in China during the H1N1 flu outbreak
- The incidence of depression and anxiety in populations where physical distancing is enforced may be impacted (Brooks et al., 2020)
- Mak and colleagues suggested that the SARS epidemic had both immediate and long-term consequences for mental health.
- They found persistent and elevated posttraumatic stress symptoms for the mental health of survivors and health-care workers almost 3 y post-event

17

SARS data

- Although there are very limited data available for COVID-19-related psychiatric symptoms currently, survivors of SARS-CoV-1 were clinically diagnosed with PTSD (54.5%), depression (39%), pain disorder (36.4%), panic disorder (32.5%), and obsessive compulsive disorder (15.6%) at 31 to 50 months post-infection, a dramatic increase from their pre-infection prevalence of any psychiatric diagnoses of 3%

18

Ebola

- Not only is mental health important for individual well-being, but it also plays a role in collective prevention and risk.
- During the Ebola outbreak, depression and posttraumatic stress symptoms were associated with higher risk behaviors.
- Of interest, higher anxiety resulted in more preventative behaviors, demonstrating a potential factor of mild anxiety.
- Mental health professional working in Sierra Leone noted high levels of anxiety and that "The majority of psychological problems are because the country is frozen, with nothing moving forward."

19

Long-term sequelae

- Not only should we expect there to be long-term sequelae for survivors and health-care workers, but also for the general public, especially those that lost someone due to COVID-19.
- Massive loss of life is a significant factor that impacts the mental health of individuals, families, and communities in disasters
- Pandemics by their nature, result in high mortality rates that cluster in geographical regions over a short period of time

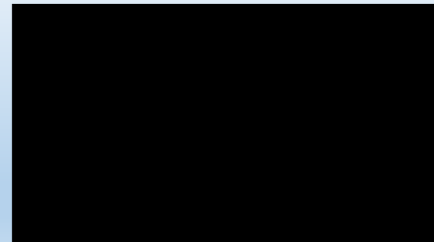
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Potential positives

- There actually may be some upsides to this which we all may have observed
- A renewed sense of social purpose "we're all in this together"-tributes in NYC, UK, Spain to healthcare workers for example
- Communities donating food to hospitals
- Spending time at home with loved ones
- Ability to telework, decreased travel, decreased road accidents
- Improvement in social anxiety for those who are not forced to leave home

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John Legend's tribute to nurses

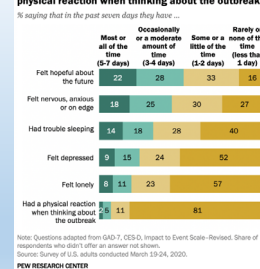


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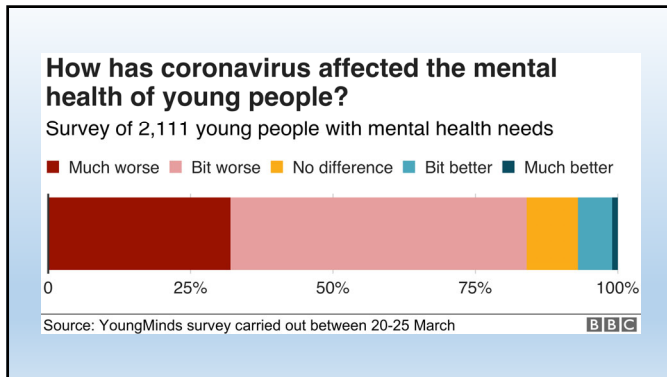


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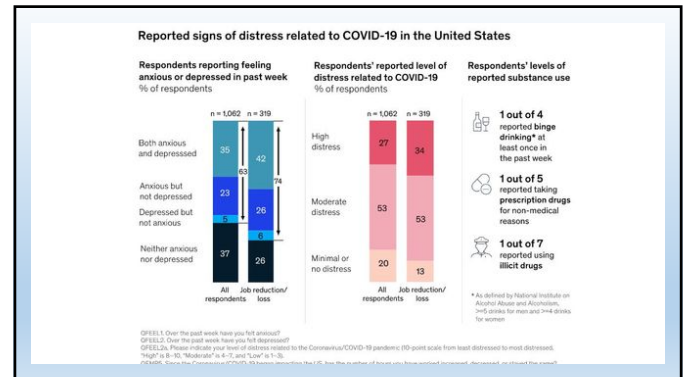
Nearly one-in-five Americans say they have had a physical reaction when thinking about the outbreak



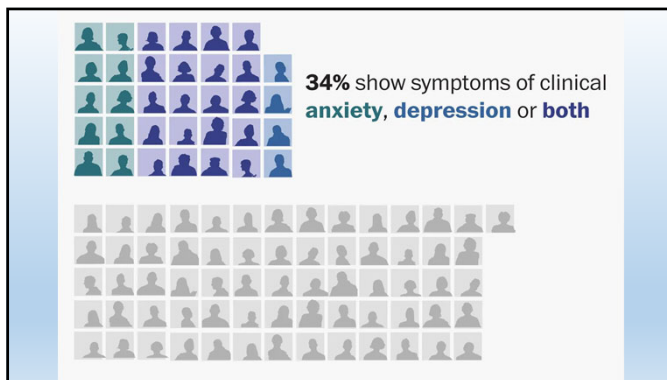
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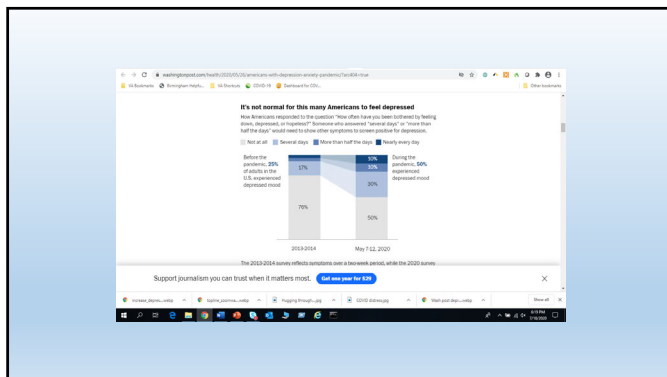
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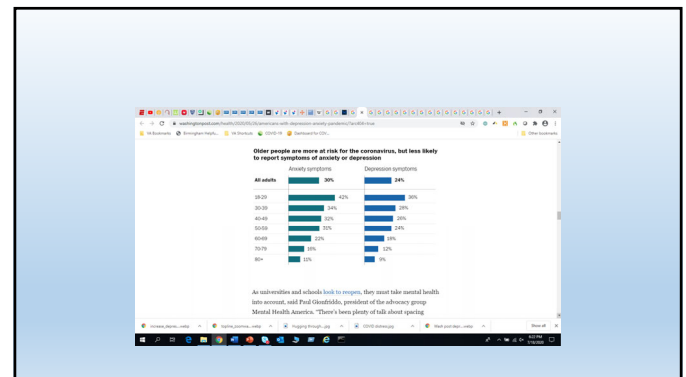
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- ### Census Bureau 2020 Household Pulse Survey
- For every 100 American adults, 34 show symptoms of anxiety, depression, or both
 - 20 show symptoms of both anxiety and depression
 - 4 show symptoms of depression alone
 - 10 show symptoms of anxiety alone
 - This is double that found in a 2014 national survey
 - Some groups have been hit harder than others. Rates of anxiety and depression were far higher among younger adults, women and the poor
 - The worse scores in young adults were especially notable, given that the virus has been more likely to kill the elderly or leave them critically ill.

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29



30

INVESTIGATIONS

Crime rates plummet amid the coronavirus pandemic, but not everyone is safer in their home

Kenny Jacoby, Mike Stucka and Kristine Phillips USA TODAY

Domestic violence is up

Several police agencies examined by USA TODAY logged an increase in domestic-violence-related calls for service since the second half of March. Charts show domestic violence calls weekly from Feb. 2 through March 26.

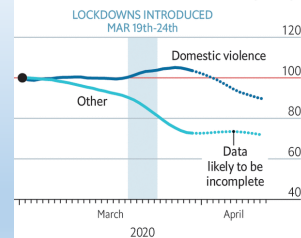


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Too close for comfort

United States, reported crimes per day

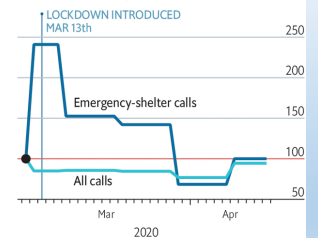
Selected cities*, Mar 1st 2020=100, 7-day moving average



Sources: Police and municipal records; Danish National Domestic Violence Hotline (Lev Uden Vold)
The Economist

Denmark, calls to domestic-violence hotline

Jan 1st-Mar 11th average=100



*Chicago, Kansas City, Los Angeles, Memphis and New Orleans

38

Suicide rates were historically high before COVID

- Suicide rates have been rising in the US over the last 2 decades
- The latest data available (2018) show the highest age-adjusted suicide rate in the US since 1941
- It is within this context that (COVID-19) struck the US
- Unprecedented public health actions to curb the spread of the virus and remarkable social distancing interventions have been implemented to fundamentally reduce human contact
- While these steps are expected to reduce the rate of new infections, the potential for adverse outcomes on suicide risk is high

39

Suicide and COVID-19

- While pandemic-related suicides have already been reported in many of the hardest-hit countries, these deaths have been largely overshadowed by the high rate of fatalities linked to COVID-19.
- In Italy, for example, the first known pandemic-related suicide occurred in March when a patient suffering from bronchopneumonia jumped out of the hospital window where he was awaiting test results to see if he was infected.
- Since then, numerous other suicides have been reported, primarily among front-line health workers, people awaiting test results, and those affected by coronavirus-related bankruptcy.

40

What do previous studies tell us after mass disaster

- Research studies looking at the effects of trauma in previous disasters, including the 2003 severe acute respiratory syndrome (SARS) epidemic in Hong Kong and the 2011 earthquake and nuclear disaster in Fukushima, Japan, has shown a significant rise in suicides both during the emergency itself and in the months that followed
- With the SARS epidemic in particular, most suicides involved elderly or chronically ill people who were afraid of becoming burdens to their families due to becoming infected, a concern that is already common among many COVID-19 patients

41

Suicide Mortality and Coronavirus Disease 2019: A Perfect Storm?

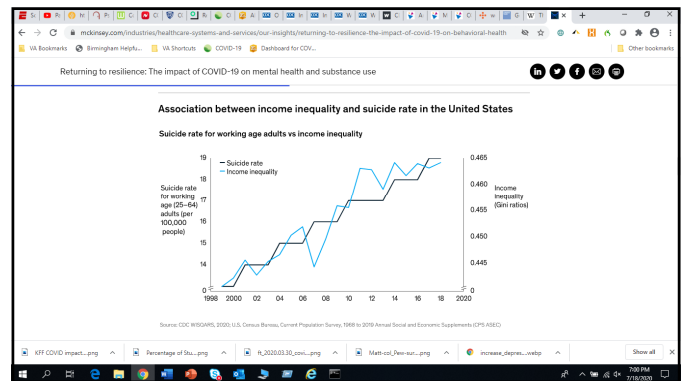
- The article suggests that the unprecedented public health actions needed to contain the new pandemic, along with social distancing requirements, stay-at-home orders, and stress due to job loss, may well result in far more suicides in the years to come.
- It outlines many of the economic, psychosocial, and health-associated risk factors that can be expected to increase suicide risk.

42

Economic Stress

- Considering all the recent business closures, lost jobs, as well as a shutdown in most public events, the fear of a new economic recession, or even a depression matching that of the 1930s, seems all too real.
- Research studies have long demonstrated that economic downturns are often followed by increased suicides, but the uncertainty surrounding the current downturn, including the sharp drop in stock markets (and a resulting loss in retirement funds, housing foreclosures, and the question of when, or if, people can return to work), will certainly trigger more deaths in the future.

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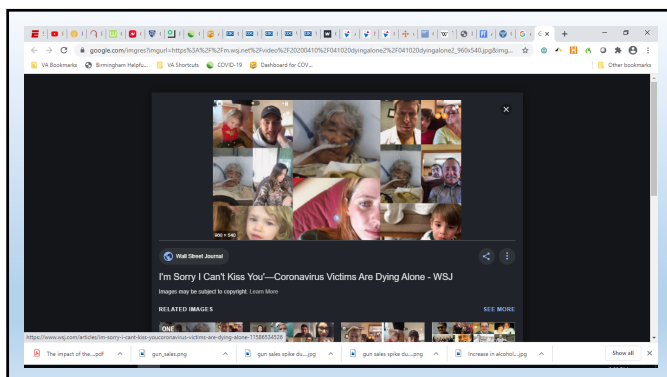
Social Isolation

- Leading theories of suicide emphasize the key role that social connections play in suicide prevention.
- Individuals experiencing suicidal ideation may lack connections to other people and often disconnect from others as suicide risk rises.
- Suicidal thoughts and behaviors are associated with social isolation and loneliness.
- Therefore, from a suicide prevention perspective, it is concerning that the most critical public health strategy for the COVID-19 crisis is social distancing.
- Furthermore, family and friends remain isolated from individuals who are hospitalized or in care homes, even when their deaths are imminent. To the extent that these strategies increase social isolation and loneliness, they may increase suicide risk.

45



46



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Loss of Community and Religious Contact

- For Americans who are part of a religious, ethnic, or social community, being able to attend regular events, including religious services, can be essential in feeling connected with others
- While some religious congregations have opposed social distancing rules, the closing of most religious and community centers has increased social isolation for many Americans
- Given that weekly attendance at religious services has long been shown to reduce suicide risk compared to non-attenders, losing this support may make social isolation harder to bear

48

Barriers to Mental Health Treatment

- While hospitals and other primary care facilities continue to see clients, mental health services have not been given the same priority
- As a result, people dealing with mental health crises have little choice but to wait in overcrowded hospital emergency departments to get the help they need, something that might discourage many of them from even making the effort
- Though suicide hotlines and telehealth services are still available, the wait time is much longer than usual due to increased demand. This means that people contemplating suicide often have nowhere to turn. And this includes front-line health care workers who are at the forefront of dealing with the pandemic.

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Social and Media Influences

- Since the pandemic began, we have been regularly besieged with round-the-clock news coverage describing the impact of COVID-19, both nationally and internationally.
- Given the pessimism being conveyed by these news stories, it's hardly surprising that many people are becoming increasingly depressed and angry at the prospect of the pandemic dragging on for months.

50

Firearm Sales

- At the same time, gun sales are also surging in many parts of the country. With access to firearms being a major risk factor in suicides, the number of firearm-related suicides are expected to rise as well.

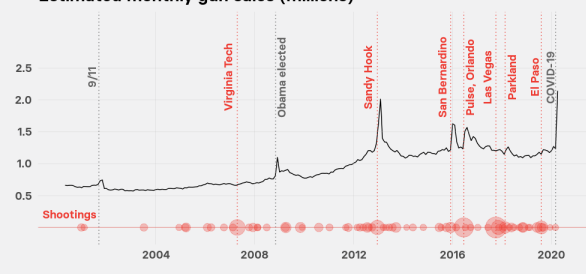
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Increase in alcohol use

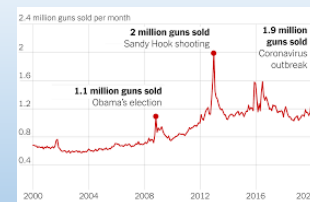
- Heavy drinking may increase during such times. In fact, in North America, early signs indicate that consumption and sales have recently increased in this part of the world.
- This may be due to alcohol sales being designated as an "essential service", and existing restrictions on home delivery and carryout have been loosened.
- Given that about 30 to 40% of deaths by suicide involve cases where the victim was under the influence of alcohol to the point of intoxication, the need to increase awareness of this relationship becomes even more apparent during a time when alcohol use may increase.
- Further, long-term heavy use may develop into alcohol use disorders in some individuals. There is a wealth of studies identifying alcohol use disorders as significant risk factors for death by suicide, with a 2.6-fold higher risk among individuals with an alcohol use disorder being reported [4].

52

Estimated monthly gun sales (millions)

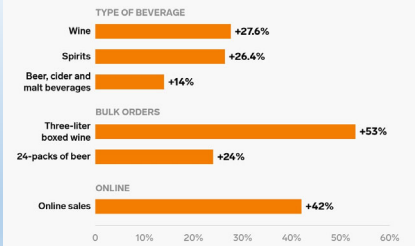


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Increase in US alcohol sales during COVID-19 pandemic



55

Imagine with Drs. Francois and Robinson
(Mayo Clinic)



56

Other Medical Problems

- Along with these other issues, people with existing medical problems are also finding their access to health services being restricted given the surge in coronavirus cases.
- This means the cancellation of elective surgeries, a much longer wait in hospital emergency departments and urgent care clinics, and having to deal with symptoms such as chronic pain without significant relief.
- Since many people with chronic medical problems are already vulnerable to suicidal thinking, losing access to medical services can reduce their ability to cope with their issues.

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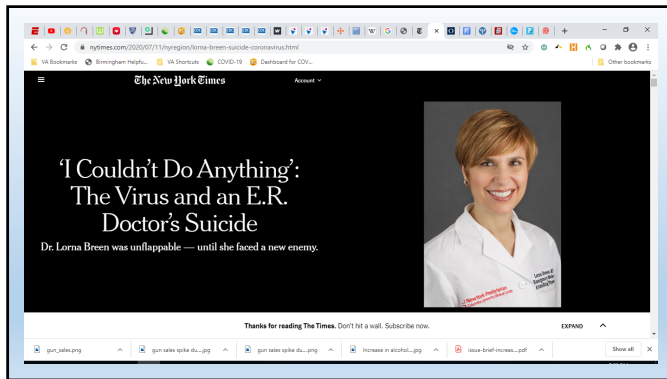
Health Care Professional Suicide Rates

- Many studies document elevated suicide rates among medical professionals.
- This at-risk group is now serving in the front lines of the battle against COVID-19.
- A national discussion is emerging about health care workers' concerns about infection, exposure of family members, sick colleagues, shortages of necessary personal protective equipment, overwhelmed facilities, and work stress. This special population deserves support and prevention services.
- Magellan Healthcare has opened a 24-hour toll-free crisis line and crisis text line
- Call 1-800-327-7451
- Text SUPPORT to 78137 from 8:00 a.m. – 6:00 p.m. ET, Monday through Friday,
- Physician support line 1 (888) 409-0141
- <https://www.physiciansupportline.com/our-team>

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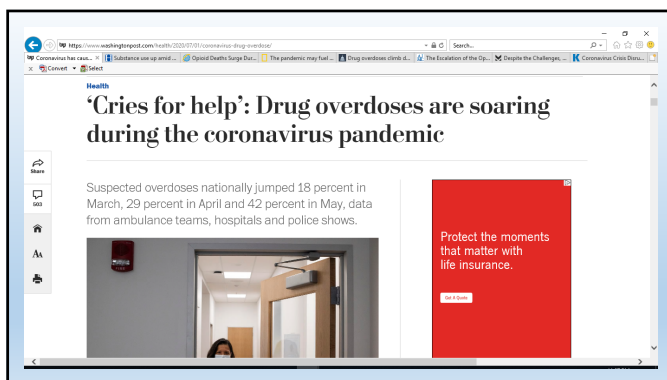
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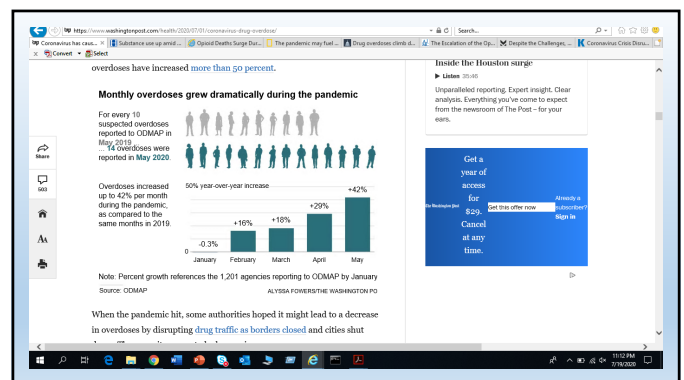
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Why are OD's increasing?

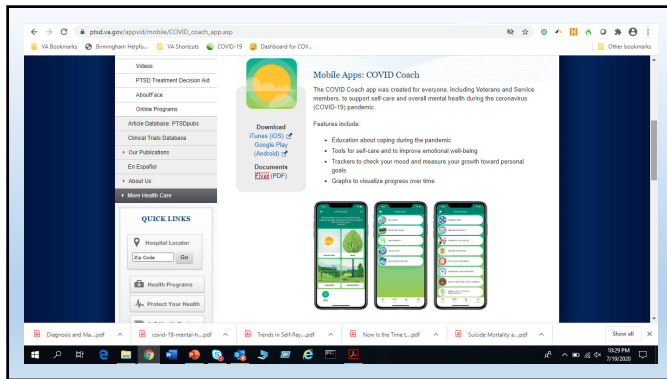
- Traditional supply lines disrupted, leading to seeking out new suppliers and substances, increasing the risk of OD and death
- Synthetic drugs showing up more in autopsies
- Social distancing leads to taking drugs alone so no one to call 911 or administer Narcan
- Treatment centers, drug courts, etc forced to shut down or scale back so no availability of treatment
- Funding collapse- govt allocated only \$425 million of \$2.5 trillion on MH and substance abuse- about 0.001%

65

Suicide Prevention Opportunities

- **Physical Distance, Not Social Distance**
 - Despite its name, social distancing requires physical space between people, not social distance. Efforts can be made to stay connected and maintain meaningful relationships by telephone or video, especially among individuals with substantial risk factors for suicide. Social media solutions can be explored to facilitate these goals.
- **Telehealth**
 - There is national momentum to increase the use of telehealth in response to COVID-19.

66



67

Distance-Based Suicide Prevention

- There are evidence-based suicide prevention interventions that were designed to be delivered remotely. For example, some brief contact interventions (telephone-based outreach)⁸ and the Caring Letters intervention (in which letters are sent through the mail)⁹ have reduced suicide rates in randomized clinical trials. Follow-up contact may be especially important for individuals who are positive for COVID-19 and have suicide risk factors.

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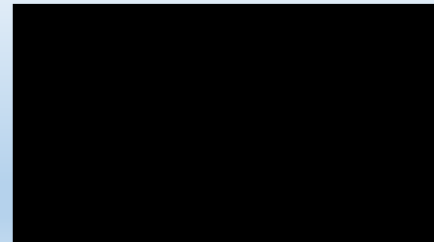
Reasons for optimism

- There may be a silver lining to the current situation.
- Suicide rates have declined in the period after past national disasters (e.g., the September 11, 2001, terrorist attacks).
- One hypothesis is the so-called pulling-together effect, whereby individuals undergoing a shared experience might support one another, thus strengthening social connectedness.
- Recent advancements in technology (eg, video conferencing) might facilitate pulling together. Epidemics and pandemics may also alter one's views on health and mortality, making life more precious, death more fearsome, and suicide less likely.

69

"DANCING WITH MYSELF"

Billy Idol, Jimmy Fallon & The Roots



70

Psychosis and pandemics

- The association between influenza and psychosis has been reported since the Spanish Flu pandemic in the 18th century and subsequent acute "psychoses of influenza" have been documented during multiple pandemics
- This population may be particularly at risk from the stress associated with physical distancing measures. While the use of mobile phones and technology continues to increase for people with psychosis, rates are still lower for people with psychosis
- This may mean that physical distancing and reduction in social connectedness has a substantial effect on this group of individuals as they do not compensate as much with other methods of communication.

71

Change in psychotic features?

- The association between psychosis and psychosocial factors, including stressful life events, is well-known, suggesting it is an important risk factor for both the onset and exacerbation of symptoms
- Another impact the COVID-19 pandemic may have is on the nature and content of the psychotic pathology of people with psychosis or at risk of psychosis
- Anecdotally, clinicians working in mental health services have reported increased paranoia around contamination from being in close contact with other people.
- Patients with psychosis may also not comply as much with public health measures needed to prevent disease, such as mask-wearing

72

Vulnerable to social determinants of health

- social isolation,
- unemployment,
- homelessness,
- Relationship breakdown (divorce/separation),
- domestic violence, and worsening physical health
- potential for an increase in the number of people with psychosis who suicide or attempt suicide, with some evidence of more suicides occurring after previous pandemics (Chan et al., 2006).

73

Neuropsychiatric symptoms

- Past studies on viral pandemics, especially involving respiratory viruses, suggest that diverse types of neuropsychiatric symptoms can arise with acute infection as well as in the post-viral infectious period
- One study reported persistent neurocognitive deficits up to 18 months post-discharge
- In the acute phase, apart from being the psychosocial stressor, COVID-19 has been reported to cause neuropsychiatric manifestations, like encephalopathy, psychosis, insomnia, and mood changes.
- Post-traumatic stress disorder, panic attacks, anxiety are mostly seen in healthcare workers and survivors of SARS CoV infection

74

Toxic-metabolic encephalopathy

- Patients with severe disease had a prolonged ICU course and were noted to be encephalopathic for more than the usually expected duration.
- This is most likely secondary to the use of multiple and high doses of anesthetics and sedatives as a part of the symptomatic management of severe respiratory disease.
- Hypoxia and viremia itself are also the possible factors behind encephalopathy.

75

ICU and PTSD

- The research suggests that PTSD among ICU survivors is fairly common and long lasting.
- Previous studies have demonstrated a link between hospitalization during a pandemic with PTSD.
- For example, in a study of long-term outcomes following the H1N1 pandemic in 2009, researchers found that at 1-y follow-up, between 41 and 44% of discharged ICU patients were at risk for PTSD.
- Similarly, a long-term follow-up of SARS survivors found that PTSD persisted in some patients even 30 months following the illness.

76

Post-ICU Syndrome (PICS)

- Survivors of critical illness are at risk of persistent psychiatric impairment after discharge from hospital.
- At 1 year, the pooled prevalence of clinically relevant depressive, anxiety, and post-traumatic symptoms were 29% (23–34), 34% (25–42), and 34% (22–50), respectively.
- The majority of patients with severe acute respiratory distress syndrome, a key feature of severe COVID-19 illness, show impairments of memory, attention, concentration, or mental processing speed at 1 year.

77

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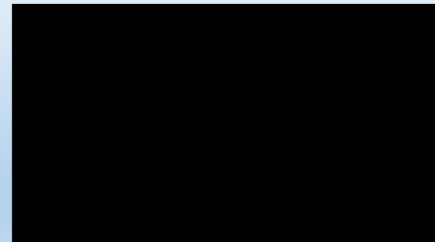
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"You'll Never Walk Alone" Virtual Choir/Orchestra 15 Countries: 300 People



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