COVID19 Deaths and Survival

Innate Health vs Pharmaceutical Intervention

(a Focus on the Numbers)

If medical bureaucracy was serious about reducing COVID19 deaths they would be urging Australian governments and private organisations to mandate greater exercise, weight loss, less junk food, and better nutrition.
And a concerted effort at reducing chronic adverse health conditions.
Sadly these are not profitable courses of action for the many vested interests.

A Concerned Citizen

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Introduction

"It is not possible to eradicate COVID19 from the globe, nor is it possible to keep it out of Australia. We need to start talking about the likely outcomes of COVID19 circulating in the community. We need to start talking about accepting death as an outcome of disease."

Source. *Dr Rodney Allan* (President Neurosurgical Society of Australasia)

Dear reader,

This statement is perhaps one of the most truthful statements to come out of medical bureaucracy throughout this overwhelming saga.

While it may sound ominous, the reassuring news is that there are several actions open to each one of us that can significantly minimise our risk of COVID19 death.

And contrary to the pronouncements coming from the rest of medical bureaucracy, these actions are:

a. Demonstrably more effective than vaccination;
b. Have significantly more positive impacts on personal overall health; and
c. Will effectively reduce the overall societal and financial burden of disease in Australia.

Over the last 21 months, it is an indictment on medical bureaucracy, and our compliant political leaders, that in the daily fear and stress inducing press briefings little has been said about these initiatives.

Medical bureaucracy, and by following their ill-informed and biased advice government, have squandered a unique and once-in-a-generation opportunity to reset the heath of a nation.

Medical bureaucracy has chosen the interests of large pharmaceutical corporations over the innate health of the people they purport to serve.

In this paper we'll explore:

a. the metrics of COVID19 deaths and survival;
b. the when, who, and why of COVID19 deaths; and
c. the relative power of innate health vs vaccination at protecting against COVID19 death.

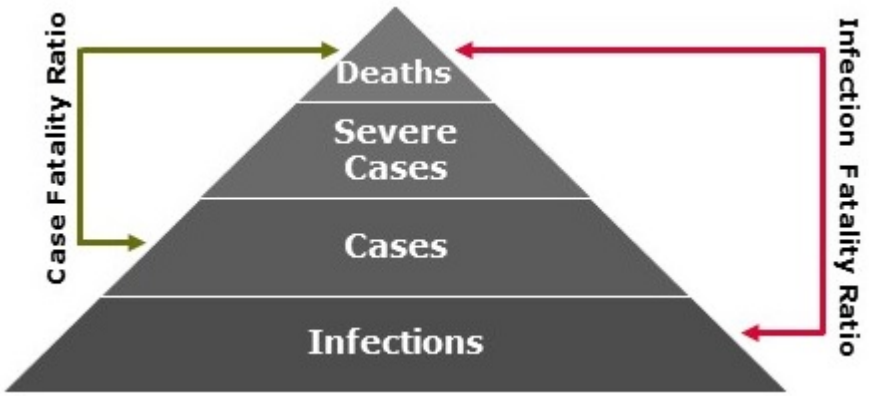
We will be largely relying on UK and USA data which is sadly more complete, robust, and transparent when compared to Australian data; which we'll use as available.

The learnings are universal.

Part A. COVID19 Survival Estimates

CFR and IFR – Definitions and Calculation

The Infection Fatality Rate (IFR) is one of the most important metrics that must be correctly calculated to gauge the **reasonableness** of any actions to mitigate and manage any virus and its associated illness.



IFR is the number of **deaths** divided by the number of people **infected** by the virus. IFR is different to Case Fatality Rate (CFR).

CFR is the number of **deaths** divided by the number of **confirmed cases**. CFR can be biased and impacted by testing polices (i.e. the amount of testing, who gets tested, and when testing is performed, etc).

The number of confirmed cases is nearly always smaller than the number of people infected. As such the denominator in CFR is smaller than the denominator in IFR; in turn CFR is always greater than IFR.

Estimating IFR is challenging as the number of deaths and the number of individuals infected are both subject to many different factors and biases.

In order to estimate IFR, seroprevalence surveys are conducted. Seroprevalence surveys calculate the percentage of people in a survey who have particular antibodies in their blood samples. This percentage is then adjusted, in a number of ways, to estimate the number of people infected across the entire population of a region or country.

IFR can vary substantially across different locations and over different time periods. This is largely driven by differences in distribution of population age, age mix of those infected, underlying population health, and access, availability, and quality of health care; especially intensive medical care. (Source) (Source)

COVID19 CFR and IFR – Global Estimates

As of October 2021, COVID19 consensus IFR is summarised in the tables below.

Characteristic	IFR	Source
Median across 51 locations (countries and regions within countries)	**0.23%**	doi: http://dx.doi.org/10.2471/BLT.20.265892
Mortality rates less than the global average (< 118 deaths/million)	0.09%	
Mortality 118–500 COVID19 deaths/million	0.20%	
Mortality > 500 COVID19 deaths/million	0.57%	
In people younger than 70 years	0.05%	

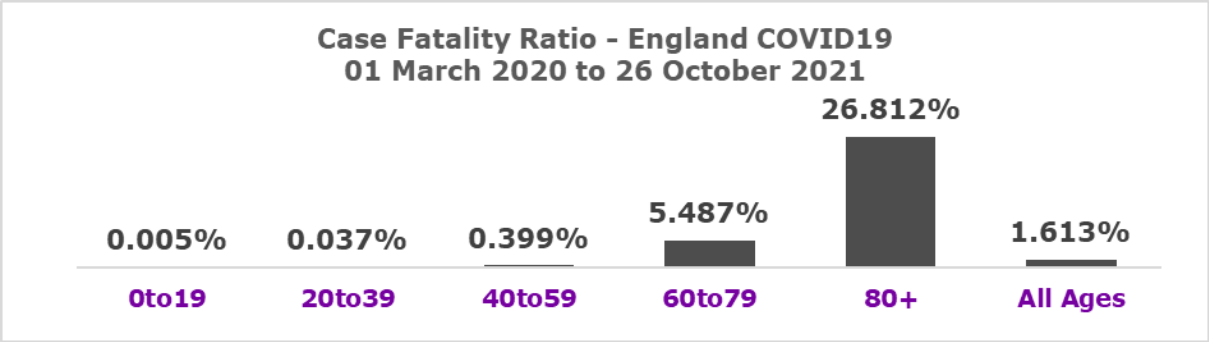
Characteristic	IFR	Source
For a typical population where 9% of the population is aged over 65 years and where the GDP (at purchasing-power parity (PPP)) per capita is $17.8k	**0.37%**	https://www.medrxiv.org/content/10.1101/2021.05.12.21256975v3

Characteristic (UK)	IFR	Source
Age 0 to 4	0.0005%	University of Cambridge Nowcasting and Forecasting COVID19
Age 5 to 14	0.0011%	
Age 15 to 24	0.0040%	
Age 25 to 44	0.0240%	
Age 45 to 64	0.2000%	
Age 65 to 74	0.8300%	
Age 75+	3.2000%	
Overall	**0.2100%**	

These consensus IFR's are based entirely on the **assumption** that **all** deaths attributed to COVID19 are deaths **from** COVID19 and not simply **with** COVID19. As such, these IFR's are more likely to be **over** than **under** estimated.

In addition, **"the [current] infection fatality rates tend to be much lower than estimates made earlier in the pandemic**". (Source)

As stated previously CFR is invariably larger than IFR. The chart below shows CFR for England between 01 March 2020 and 26 October 2021. Comparing the CFR chart below to the IFR estimates above, shows that for all ages **CFR** is approximately **7.7 times higher** than **IFR**.



COVID19 CFR and IFR – Australian Estimate

At the start of this saga, our esteemed and always-correct medical bureaucracy and modellers stated …

> "Australia prepares for 50,000 to 150,000 coronavirus deaths"
>
> (source SMH March 16, 2020)

In Australia, as of 31 October 2021, there have been 170,458 cases and 1,734 deaths attributed to COVID19 (source); giving a CFR of 1.02%.

As of 31 October 2021, there is no published authoritative COVID19 IFR for Australia. So **assuming** a CFR/IFR factor of 7.7 gives an e**stimated IFR** for **Australia** of **0.1324%**; i.e. an **infection survival rate** of **99.87%**.

By way of comparison estimates of **IFR** for **influenza** range between **0.1%** and **0.3%**.

In a follow-up paper we'll stress test this assumption. However, our preliminary sensitivity analysis shows that it is quite robust in its output of IFR. And in the same follow up paper we'll explore the comparison between SARS-Cov-2 and Influenza, including aspects such as relative infectivity and going beyond binary measures i.e. life/death to 'life-years-lost'.

COVID19 IFR and Proof of Causality

In relation to COVID19 deaths, there is no doubt that due diligence and rigour has never been applied to proof-of-causality.

In fact the Australian Bureau of Statistics (ABS) and the World Health Organisation (WHO) have gone to extraordinary lengths to ensure that any death that could in any way be conceivably associated with COVID-19 was attributed and counted as a COVID19 death; as evidenced by the ABS guidelines below and detailed in Appendix 1.

- *"The new coronavirus strain (COVID-19)* ***should*** *be recorded on the medical cause of death certificate for* ***ALL*** *decedents where the disease* ***caused****, or is* ***assumed*** ***to have caused****, or* ***contributed*** *to death"*
- *"Due to the* ***public health importance*** *of COVID-19, the* ***immediate recommendation*** *is to record COVID-19 in* ***Part 1*** *of the Medical Certificate of Cause of Death".*
- *"The Australian Bureau of Statistics assign codes from the International Classification of Disease 10th Revision to all conditions listed on the Medical Certificate of Cause of Death. In response to the COVID-19 pandemic the WHO has issued emergency* ***code U07.1 COVID-19*** *to be assigned to* ***all*** *mentions of COVID-19 on the death certificate".*

In addition according to the Federal Department Health (refer Appendix 2) …

> "*As per the COVID19 national guidelines, a COVID19 death is defined for surveillance purposes as a death in a* ***probable*** *or confirmed COVID19 case*"

While this paper does not aim to quantify the actual deaths from COVID19, there can be no doubt that the number of deaths caused, to a significant degree, by COVID19 is lower than recorded by all national governments.

As such there can be no doubt that the Australian COVID19 IFR is **lower** than the estimated **0.1324%**; and hence the true infection survival rate is **higher** than **99.87%**.

Part B. Innate Health vs Pharmaceutical Intervention

COVID19 Deaths – Innate Health vs Vaccine Efficacy

Benchmarks of Population Health

So two years in, it seems that COVID19 IFR is not as high as initially thought, and may be not too dissimilar to seasonal influenza!

The question now becomes what other factors explain COVID19 deaths and survival?

And can these factors point to strategies that will effectively, and with minimal cost and intervention, lessen COVID19 deaths.

To answer these questions we examined the 50 States of America over the period 01 February 2020 to 14 Sept 2021. For each State we obtained:

1. COVID19 Deaths (per 100,000) (source);
2. COVID19 Full Vaccination Level (% of population) (source);
3. Ten benchmarks of population health; measured as the percentage of people having or reporting a certain condition or criterion within the last 12 months (source). These benchmarks were:
   a. Physical Health not Well 14+ Days
   b. Mental Health not Well 14+ Days
   c. Body Mass Index 30+
   d. Angina/Coronary Heart Obstruction (CHD)
   e. Stroke
   f. Chronic Obstructive Pulmonary Disease (COPD)
   g. Diabetes
   h. Renal Disease
   i. Meeting Daily Exercise Target
   j. Vegetables – consuming more than one serve per day

Benchmarks of Health and COVID19 Deaths

To understand the relationship between these 'benchmarks of population health' and COVID19 deaths, we firstly plotted each benchmark against COVID19 deaths (refer Appendix 3).

In each of these plots we observed a **strong connection** between COVID19 deaths and each 'benchmark of health'.

Across all benchmarks, as the **underlying health** of a State **improved**, COVID19 **deaths decreased** and **vice-versa**.

In particular, we observed that States that had **higher** prevalence of **adverse underlying** health conditions also had **higher** COVID19 rates of death.

We repeatedly observed that States with **poor** 'benchmarks of health' such as Alabama, Arkansas, Kentucky, Louisiana, Mississippi, and West Virginia had the **highest** rates of COVID19 deaths.

And States with **superior** 'benchmarks of health' such as Alaska, Colorado, Hawaii, Utah, Vermont, and Washington had the **lowest** rates of COVID19 deaths.

As such, the ill-informed narrative by the Washington Post that the American States with the lowest rates of COVID19 deaths was exclusively due to their higher rates of vaccination is demonstrably false.

Benchmarks of Health vs Vaccination

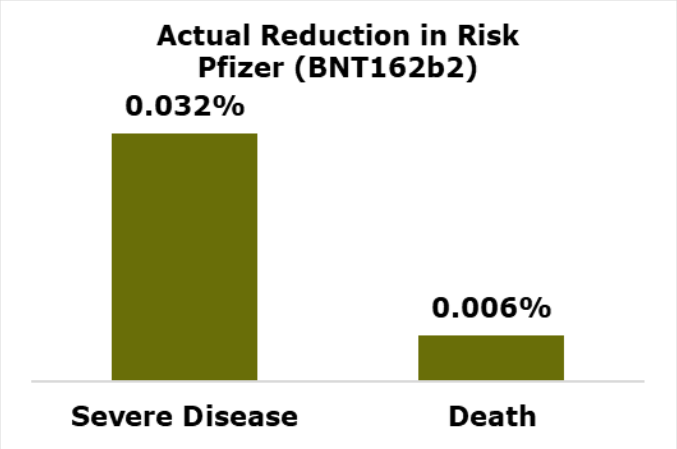
Next, we wanted to quantify the relative impact of 'vaccination level' vs. each 'benchmark of health' on the COVID19 rates of death across the 50 States of America.

To do this we utilised multiple linear regression and examined the squared semi-partial correlations; refer Appendix 4 for a full description of our methodology.

Across the 50 States of America, the relative impact of 'vaccination level' vs. each 'benchmark of health' on COVID19 rates of death is given in table below.

The figures in the table overwhelmingly prove that underlying health conditions, exercise, and diet are better predictors of COVID19 deaths and survival than COVID19 vaccination.

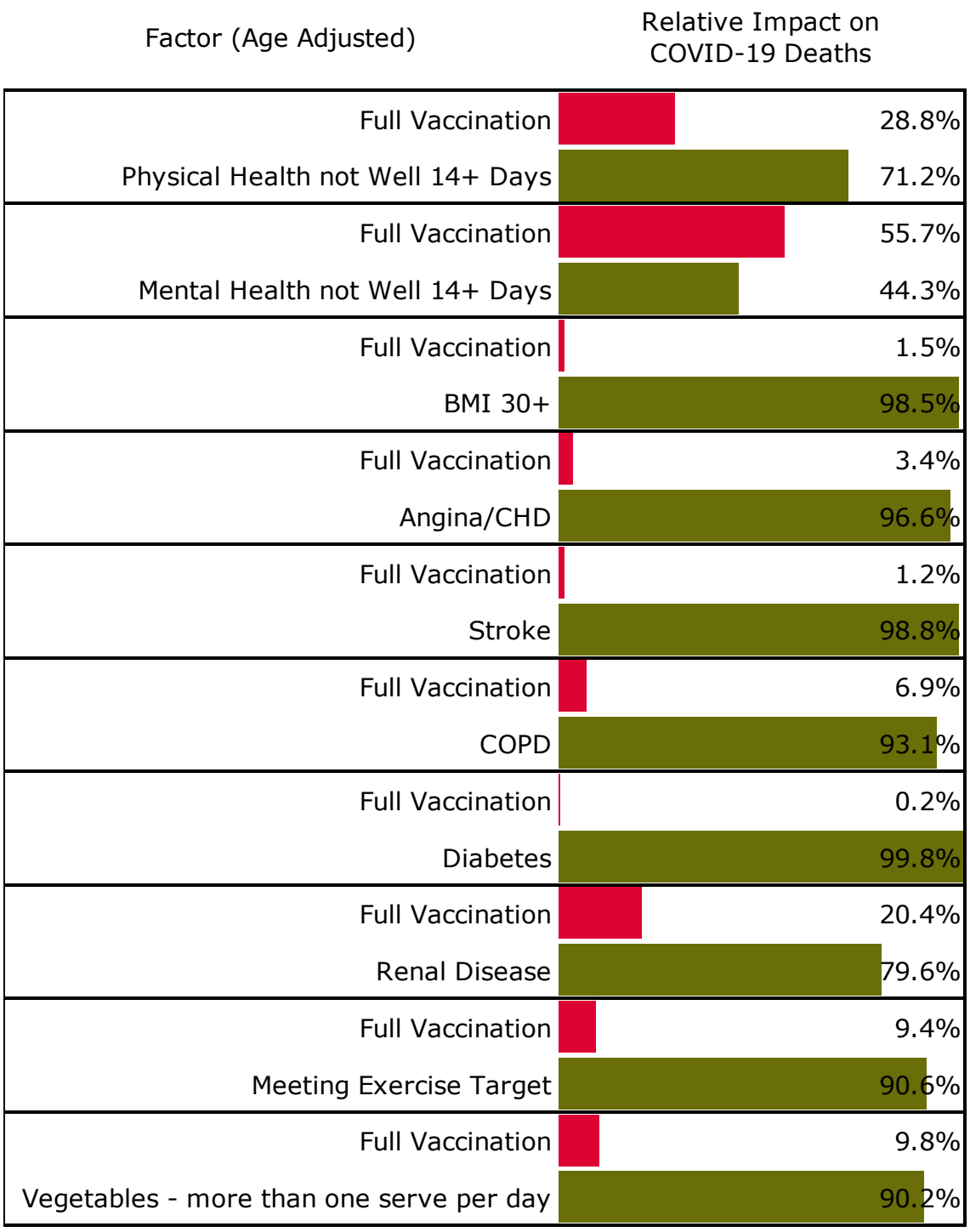
These figures and conclusions are not surprising!



Contrary to the ill-informed media and medical bureaucracy hype, the **Actual Reduction in Risk** that Pfizer (BNT162b2) gene therapy provides in severe disease and death is only 0.032% and 0.006% respectively.

This is based on a study published in the New England Journal of Medicine (source) using a matched case-control design. This design takes into account the underling chronic adverse conditions of all participants.

The methodology for calculating Actual Risk Reduction is given at Appendix 5.



As such, efforts to improve these 'benchmarks of health' will prove more effective and long-lasting at mitigating COVID19 deaths; compared to frequent and repeated vaccination.

And it must be noted that, each booster of vaccination compounds the health risks in the short, medium and long-term.

It is the height of **negligence** and **dereliction of duty** that throughout this saga Australian governments, acting on the **ill-informed** and **biased** advice of medical

bureaucracy, have placed little or no effort on a public health campaign to **reduce preventable chronic conditions** and **comorbidities**.

Finally, if medical bureaucracy was **serious** about reducing COVID19 deaths they would be urging Australian governments and private organisations **mandate** greater **exercise**, **weight loss**, less junk food, and **better nutrition. Together with a concerted effort at reducing chronic adverse health conditions**.

Sadly these are not profitable courses of action for the many vested interests.

COVID19 Deaths – Four other Critical Factors

In addition to diet, exercise, and chronic adverse health conditions, there are four other inter-connected factors that have a significant impact COVID19 deaths. These are:

1. Age
2. Comorbidities
3. Temperature and humidity.
4. Socio-Economic level

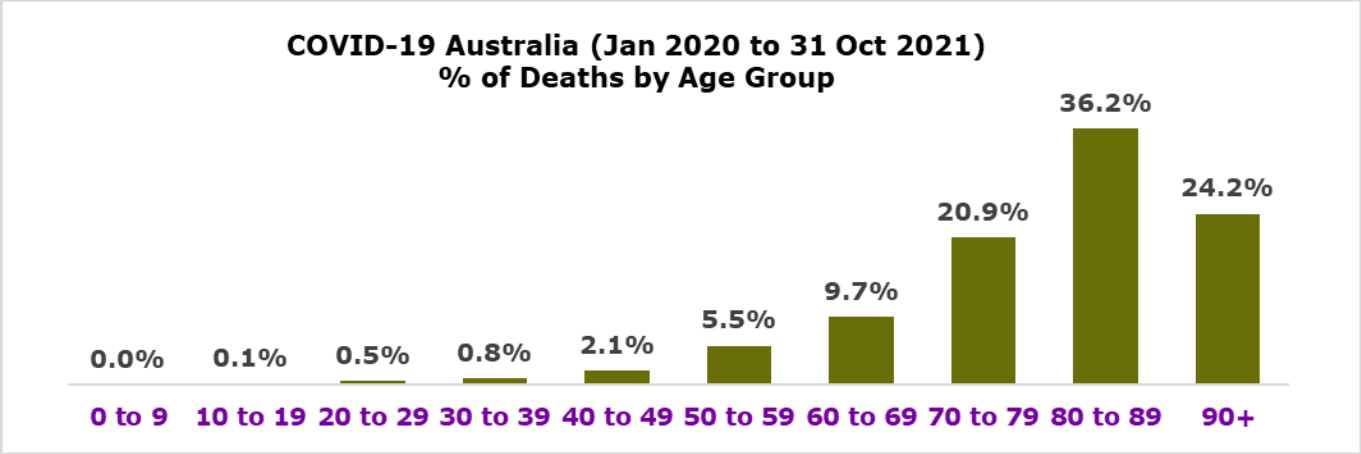
We'll now examine each of these in a little more detail.

COVID19 Deaths – the Impact of Age

COVID19 risk of death has a very steep age gradient (source).

From 01 March 2020 to 26 October 2021, **92.5%** of all deaths in England were **older than 60**; while this age group represented only **24%** of the population. In addition, **58%** of all deaths were aged **80 and above**, while this age group represented only **5%** of the population (source).

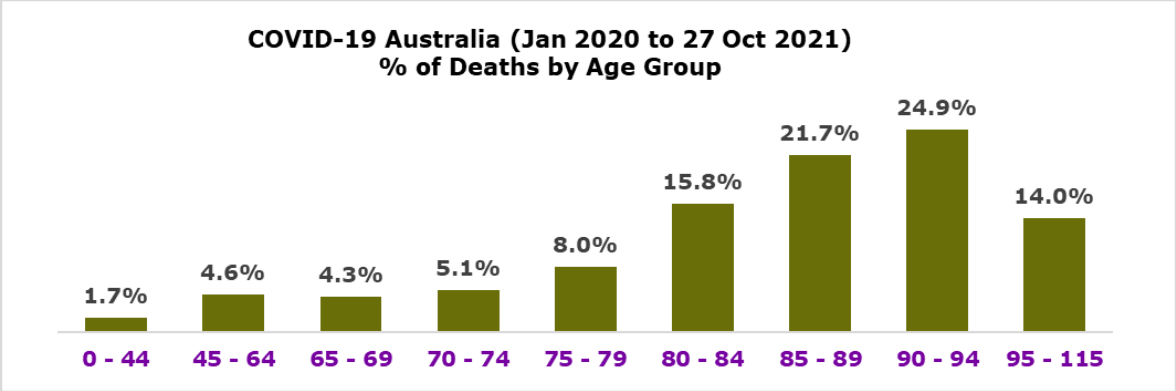
As of 31 October 2021, of the 1,707 Australian deaths attributed to COVID19, the age distribution is shown in the chart below (source).



Based on these statistics, in Australia **24%** of COVID19 deaths are aged **90** and above, and approximately **60%** of deaths are aged **80** and above. The weighted average age of deaths attributed to COVID19 is 80.

By way of comparison, the average life expectancy in Australia is between 80 and 82 years.

Also, by way of comparison, Australian influenza deaths by age group in 2017 is shown below (source).

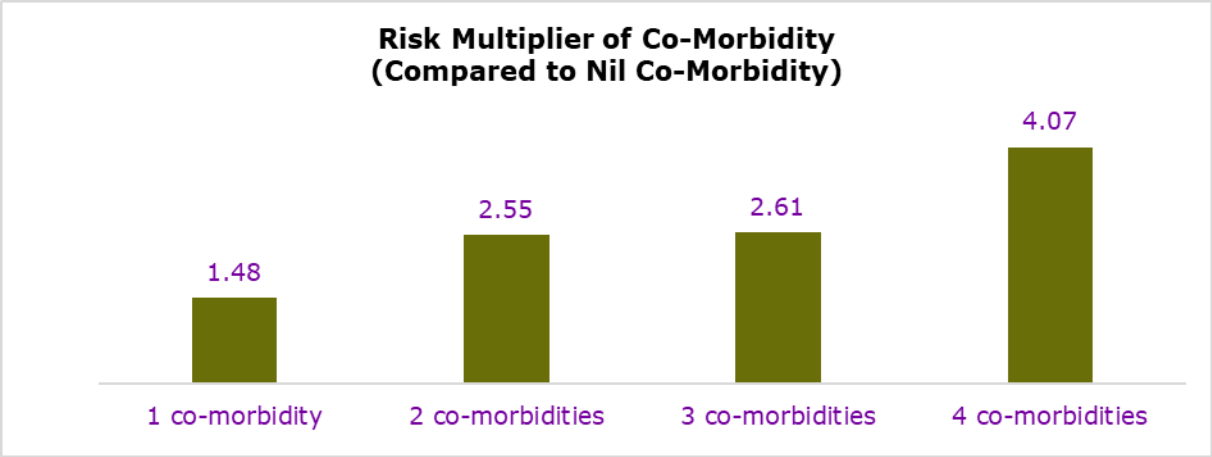


COVID19 Deaths – the Impact of Comorbidity

In the same way that COVID19 has a greater impact on the vulnerable elderly, it also has a greater impact on those with multiple morbidities.

A recent study (source) found that "people with multi-morbidity are at increased risk of being hospitalised or dying following COVID19 infection, with the odds increasing as the number of underlying clinical conditions increases".

The chart below (source) shows the risk multiplication of dying from COVID19 by having one or more morbidities compared to having no morbidities.



In addition, according to the Australian Bureau of Statistics (ABS), as of 28 October 2021, "**73.4%** of people who died from COVID-19 had pre-existing chronic conditions certified on the death certificate".

Clearly COVID19 is more of a public-health challenge than it is a viral-contagion issue.

It is the height of negligence and dereliction of duty that, throughout this saga, medical bureaucracy has not advocated, established, or in any way messaged a public health campaign to mitigate preventable comorbidities.

Instead they have favoured a coercive and all-encompassing vaccination program that is proving costly (human and financial), largely futile, and counter-productive (source).

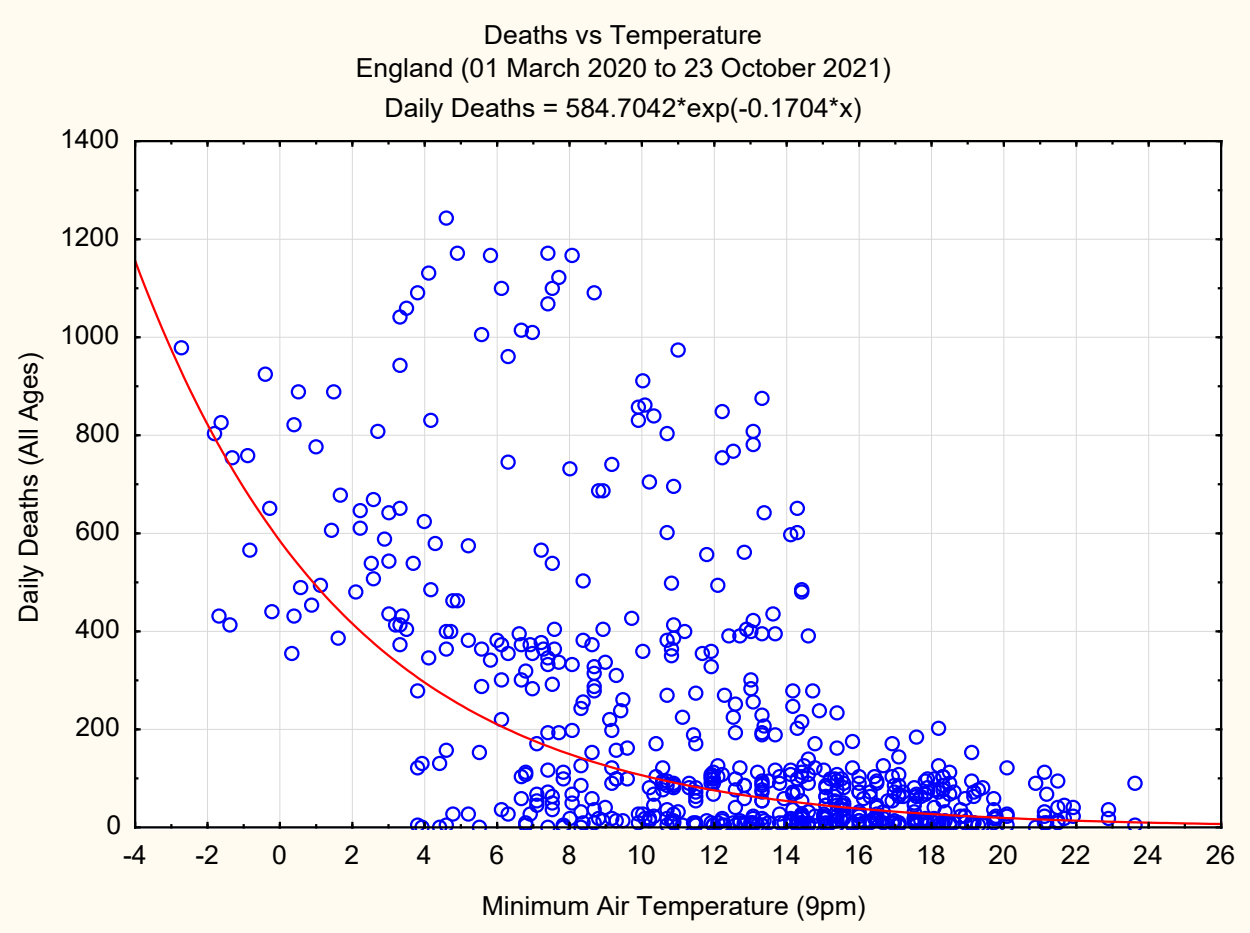
COVID19 Deaths – the Impact of Temperature and Humidity

"**Seasonality** is one of the major factors that **affects transmission** of respiratory viruses" (source). And this is no different for SARS-CoV-2.

A recent study found that "a **1°C increase** in **temperature** was associated with a **3.08% reduction** in daily new COVID19 **cases** and a **1.19% reduction** in daily new **deaths**"

And "a **1% increase** in relative **humidity** was associated with a **0.85%** reduction in daily new COVID19 **cases** and a **0.51% reduction** in daily new **deaths**".

Supporting these findings in England, COVID19 deaths between 01 March 2020 and 23 October 2021, begin to rise exponentially once air temperature at 9pm falls below 8^{O} to 10^{O} Celsius.



Typically across England, temperatures at 9pm start to fall below 8^{O} to 10^{O} Celsius starting mid-November and continue through to mid-March.

The UK COVID19 vaccination program began in early December 2020. Assuming that vaccine protection against severe disease and death (as marginal as it is) is waning (source), in the first half of November 2021, the UK government will have to develop a strategy comprising of one or more of the following:

a. Begin a booster campaign almost immediately; and/or
b. Reimpose various degrees of non-pharmaceutical interventions NPI (i.e. masking, social distancing, restrictions and lockdowns, etc); and/or
c. Adopt the Swedish model and allow the virus to spread, largely unchecked, to build natural herd immunity.

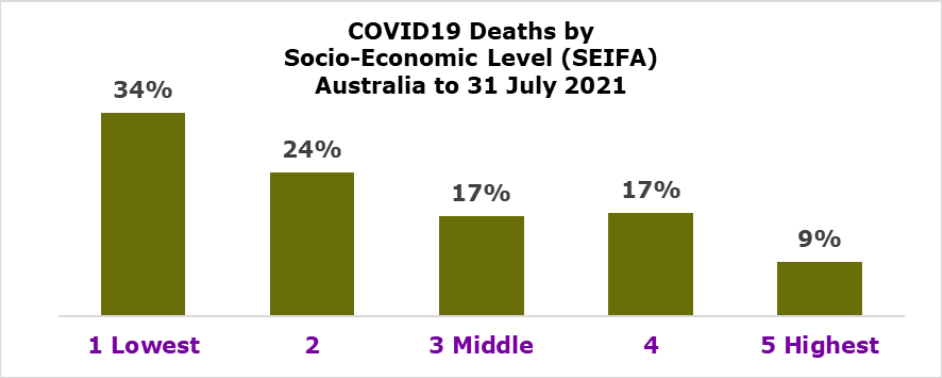
We expect that come April/May 2022, Australian governments and medical bureaucracy will be faced with the same predicaments and dilemmas.

COVID19 Deaths – the Impact of Socio-Economics

Not surprisingly COVID19 deaths are also impacted and skewed by socio-economics.

According to the Australian Bureau of Statistics (ABS)

a. The number of people who died due to COVID19 was over three times higher in those in the most disadvantaged areas. This was true for both males and females.
b. People living in the most advantaged areas had the lowest numbers of deaths due to COVID19.



While it's difficult to ascertain the underlying causes for this skew, it is well known that socio-economic disadvantage is linked to lower health outcomes (source), lower educational levels, higher levels of unemployment, greater rates of employment in low skill and community and personal services, and over-crowed living conditions.

Once again it is an indictment on governments, acting on the ill-informed and biased advice of medical bureaucracy, that incremental and targeted measures to address these pervasive sources of disadvantage have not been developed and deployed during this medical saga.

Once again medical bureaucracy has chosen a path of mass coercive vaccination with little real-world proof of effectiveness.

Part C. Mass Coercive Vaccination – Rationality

In a forthcoming paper we will examine in detail the utility, value, and effectiveness of the COVID19 vaccination strategy.
In this section we'll question and examine the strategy from the narrower perspective of deaths, and the drivers of deaths.

Causality and Collateral Damage

Given that in Australia as at **31 October 2021**:

a. life expectancy is between **80** and **82** years;
b. **24%** of purported COVID19 deaths were aged **90** and over;
c. **60%** of purported COVID19 deaths were aged **80** and over;
d. **73.4%** of people who died from COVID19 had **pre-existing** chronic conditions certified on their death certificate; and
e. **47%** of all deaths occurred in residential **aged care** facilities (source);

it is difficult to conclude that the large majority of COVID19 deaths in Australia were caused by COVID19.

It is far more likely that the large majority of deaths attributed to COVID19 were only by remote association.

As such it is irrational to coercively vaccinate 21 million Australian adults against a disease that has an **Infection Survival Rate** of **99.87**%. And, where the **vast majority** of the deaths cannot be unequivocally causally linked to the disease being vaccinated against!

Furthermore, throughout this saga, non-pharmaceutical interventions (NPI's) such as masking, social-distancing, restrictions and lockdowns have been mandated on the **assumption** of their efficacy. There is no doubt that these NPI's come with **collateral damage**.

Had the COVID19 infection fatality rate been high, these NPI's may have been considered worth the collateral damage given the benefits achieved.

However, with an IFR of **0.1324%** (and most likely lower) these same interventions almost definitely fall below an acceptable benefit/damage threshold.

Superiority of Innate Health

Given that:

a. Compared to no comorbidity, the risk of dying from COVID19 is **1.48** times higher for **one** comorbidity, **2.55** for **two** comorbidities, **2.62** for three comorbidities, and **4.07** for four comorbidities;
b. Across the 50 States of America there is a **strong connection** between COVID19 rates of deaths and measures of population health, such that as the underlying health of a State improves, COVID19 deaths decrease and vice-versa; and
c. Across the 50 States of America, compared to 'vaccination levels' every 'benchmark of health' has a significantly larger impact on mitigating rates of COVID19 deaths;

it is relatively straightforward to conclude that innate health and the absence of comorbidities are of greater utility in minimising COVID19 deaths than vaccination.

Especially, with a crop of experimental vaccines with no medium to long term safety profiles.

In summary, future generations will conclude that the management of COVID19 by current Australian governments, **wilfully and negligently ill-advised by medical bureaucracy**, was the **biggest catastrophe** of modern medicine and public health.

Appendix 1.
Guidance for Certifying Deaths due to COVID-19 (ABS)

Australian Bureau of Statistics

1205.0.55.001 - Information Paper: Cause of Death Certification Australia, 2008

ARCHIVED ISSUE Released at 11:30 AM (CANBERRA TIME) 25/11/2008

This document was added or updated on 25/03/2020.

Guidance for Certifying Deaths due to COVID-19

This guide published by the Australian Bureau of Statistics is intended to provide some immediate guidance on how the new coronavirus disease strain, i.e. COVID-19, should be recorded on the Medical Certificate of Cause of Death. Examples are included in section 5 of this document.

1. Recording covid-19 on the death certificate

The new coronavirus strain (COVID-19) should be recorded on the medical cause of death certificate for ALL decedents where the disease caused, or is assumed to have caused, or contributed to death.

2. Terminology

The use of World Health Organization terminology **COVID-19** or **Coronavirus Disease 2019** should be certified on the death certificate. Terminology such as SARS-CoV-2 can be used but it must be clear that it is the 2019 strain of disease. WHO terminology is preferred.

The term "coronavirus" should not be used in place of COVID-19 or Coronavirus Disease 2019. This will introduce uncertainty for coding cause of death which may lead to under reporting in national statistics.

3. Chain of events

Due to the public health importance of COVID-19, the immediate recommendation is to record COVID-19 in Part I of the Medical Certificate of Cause of Death. Specification of the causal pathway leading to death in Part I of the certificate is important and all conditions and symptoms should be included. For example, in cases when COVID-19 causes pneumonia and fatal respiratory distress, both pneumonia and respiratory distress should be included along with COVID-19 in Part I alongside the duration of each disease and symptom. Certifiers should include as much detail as possible based on their knowledge of the case, medical records, laboratory testing, etc.

4. Co-morbidities

Existing conditions, especially those which are chronic in nature, that may have also contributed to death should be certified in Part II of the Medical Certificate of Cause of Death. Chronic conditions may include but are not limited to: coronary artery disease, COPD, diabetes, cancer or disabilities.

5. Example medical certificate of cause of death cases

5.1 Example of train of events in part I of medical certificate of cause of death

Medical Data: Part 1 and 2			
Disease or condition leading directly to death. Antecedent Causes that gave rise to the above cause, stating the underlying cause on the lowest line.	**1**	**Cause of Death**	**Interval between onset and Death**
	A	**Acute respiratory distress syndrome**	**2 days**
	B	**Pneumonia**	**10 days**
	C	**COVID-19**	**10 days**
	D		

Other significant conditions contributing to death but not related to the diseases or conditions causing it.	**2**		

5.2 Example of chronic conditions in part II of medical certificate of cause of death

Medical Data: Part 1 and 2			
Disease or condition leading directly to death. Antecedent Causes that gave rise to the above cause, stating the underlying cause on the lowest line.	**1**	**Cause of Death**	**Interval between onset and Death**
	A	**Acute respiratory distress syndrome**	**2 days**
	B	**Pneumonia**	**10 days**
	C	**COVID-19**	**10 days**
	D		
Other significant conditions contributing to death but not related to the diseases or conditions causing it.	**2**	**Coronary artery disease, Type 2 Diabetes, COPD**	

5.3 Example of other specified immunocompromised conditions in part II of medical certificate of cause of death

Medical Data: Part 1 and 2			
Disease or condition leading directly to death. Antecedent Causes that gave rise to the above cause, stating the underlying cause on the lowest line.	**1**	**Cause of Death**	**Interval between onset and Death**
	A	**Acute respiratory distress syndrome**	**2 days**
	B	**Pneumonia**	**10 days**
	C	**COVID-19**	**10 days**
	D		
Other significant conditions contributing to death but not related to the diseases or conditions causing it.	**2**	**Diffuse large B cell lymphoma, Immunosuppressant therapy**	

5.4 Example of disability in part II of medical certificate of cause of death

Medical Data: Part 1 and 2			
Disease or condition leading directly to death. Antecedent Causes that gave rise to the above cause, stating the underlying cause on the lowest line.	**1**	**Cause of Death**	**Interval between onset and Death**
	A	**Acute respiratory distress syndrome**	**2 days**
	B	**Pneumonia**	**10 days**
	C	**COVID-19**	**10 days**
	D		

Other significant conditions contributing to death but not related to the diseases or conditions causing it.	**2**	**Cerebral palsy**

6. Coding of deaths due to covid-19

The Australian Bureau of Statistics assign codes from the International Classification of Disease 10th Revision to all conditions listed on the Medical Certificate of Cause of Death. In response to the COVID-19 pandemic, the WHO has issued emergency code **U07.1 COVID-19** to be assigned to all mentions of COVID-19 on the death certificate.

Due to the public health importance of COVID-19, the WHO have directed that the new coronavirus strain be recorded as the underlying cause of death, i.e., the disease or condition that initiated the train of morbid events, when it is recorded as having caused or contributed to death.

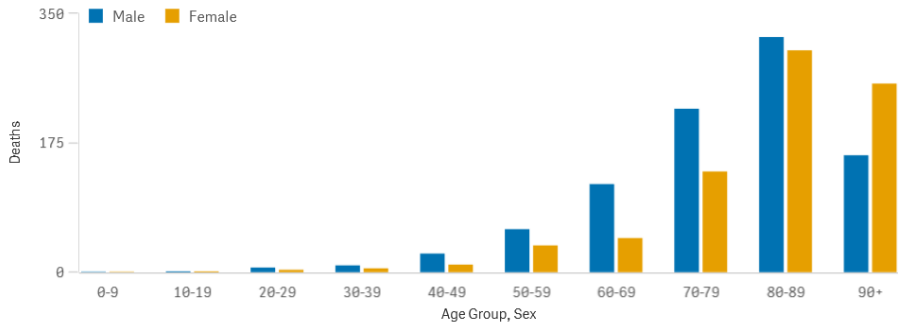
Following the guidelines above will assist in the accurate coding of these deaths and the production of robust national mortality statistics.

This page last updated 24 March 2020

Appendix 2. Federal Dept of Health
Probable Case is COVID Death

Source

https://www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert/coronavirus-covid-19-case-numbers-and-statistics#cases-and-deaths-by-age-and-sex



The total number of deaths in this chart may be less than what is reported due to delays in notification to the National Interoperable Notifiable Disease Surveillance System (NINDSS) or where the case's age or sex are unknown.

Expand description

This bar chart shows the total number of COVID-19 associated deaths in Australia by age group and sex since the first confirmed cases were reported in late January 2020.

As per the COVID-19 national guidelines, a COVID-19 death is defined for surveillance purposes as a death in a probable or confirmed COVID-19 case, unless there is a clear alternative cause of death that cannot be related to COVID19 (e.g. trauma). There should be no period of complete recovery from COVID-19 between illness and death. Where a Coroner's report is available, these findings are to be observed.

Deaths have been reported in those aged in their 20s to their 100s. The majority of deaths have been reported in people aged 70 years and over.

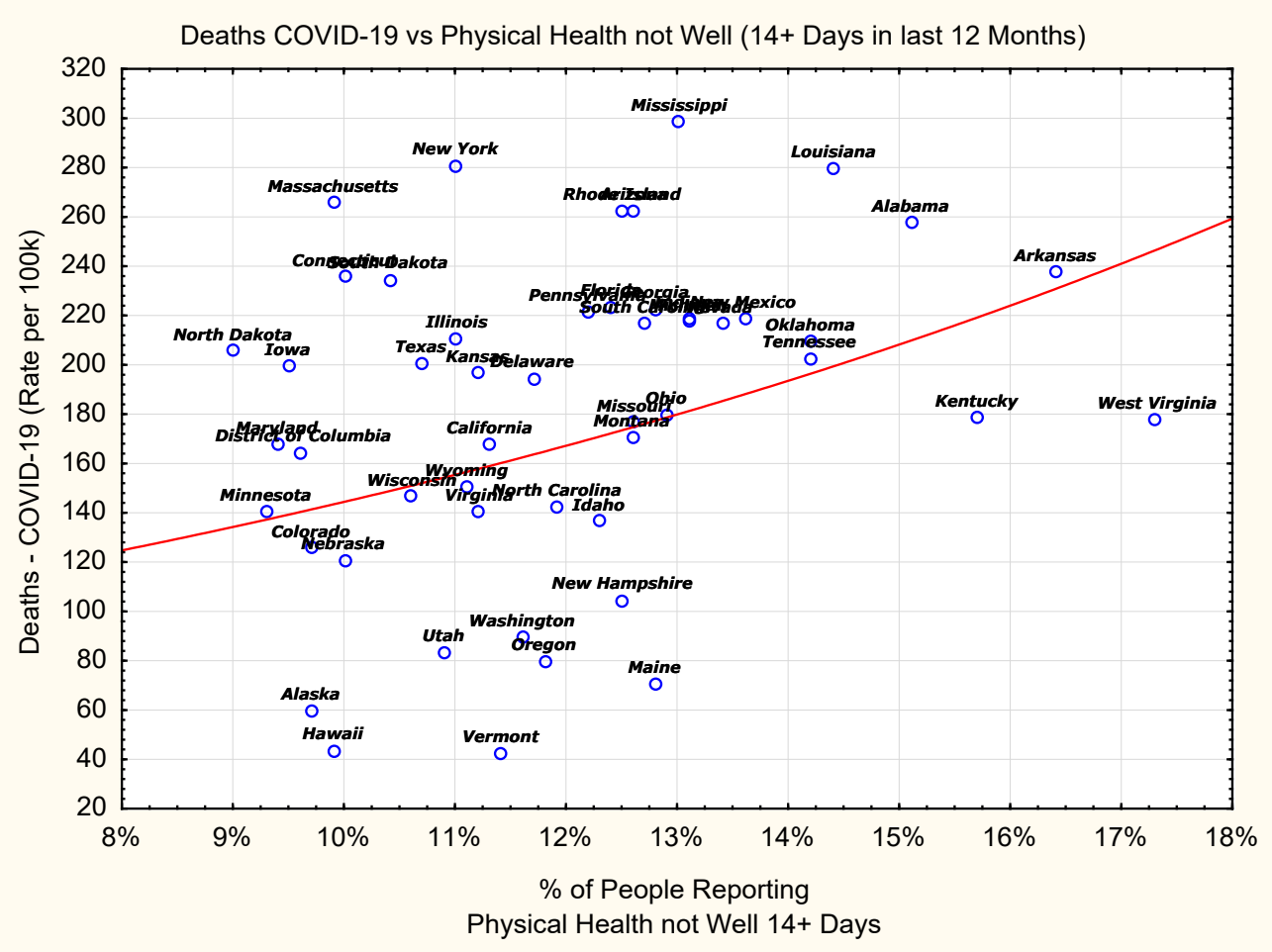
The horizontal axis shows the age breakdown in 10-year intervals from zero years old to greater than 90 years old.

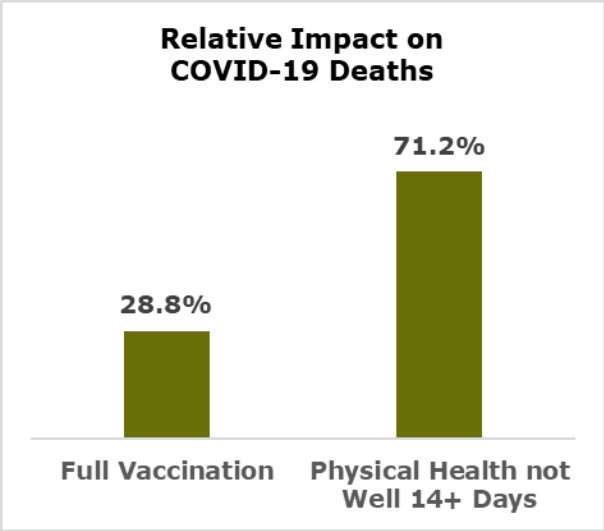
The vertical axis shows the number of confirmed COVID-19 deaths.

Appendix 3. Benchmarks of Health vs Vaccine Efficacy

Physical Health (not Well 14+ Days)

The chart below shows COVID19 rate of death, for each of the 50 States, plotted against the percentage of people reporting their physical health has not been well for 14 days or more. Cleary, there is a strong association between physical wellbeing and risk of COVID19 death.

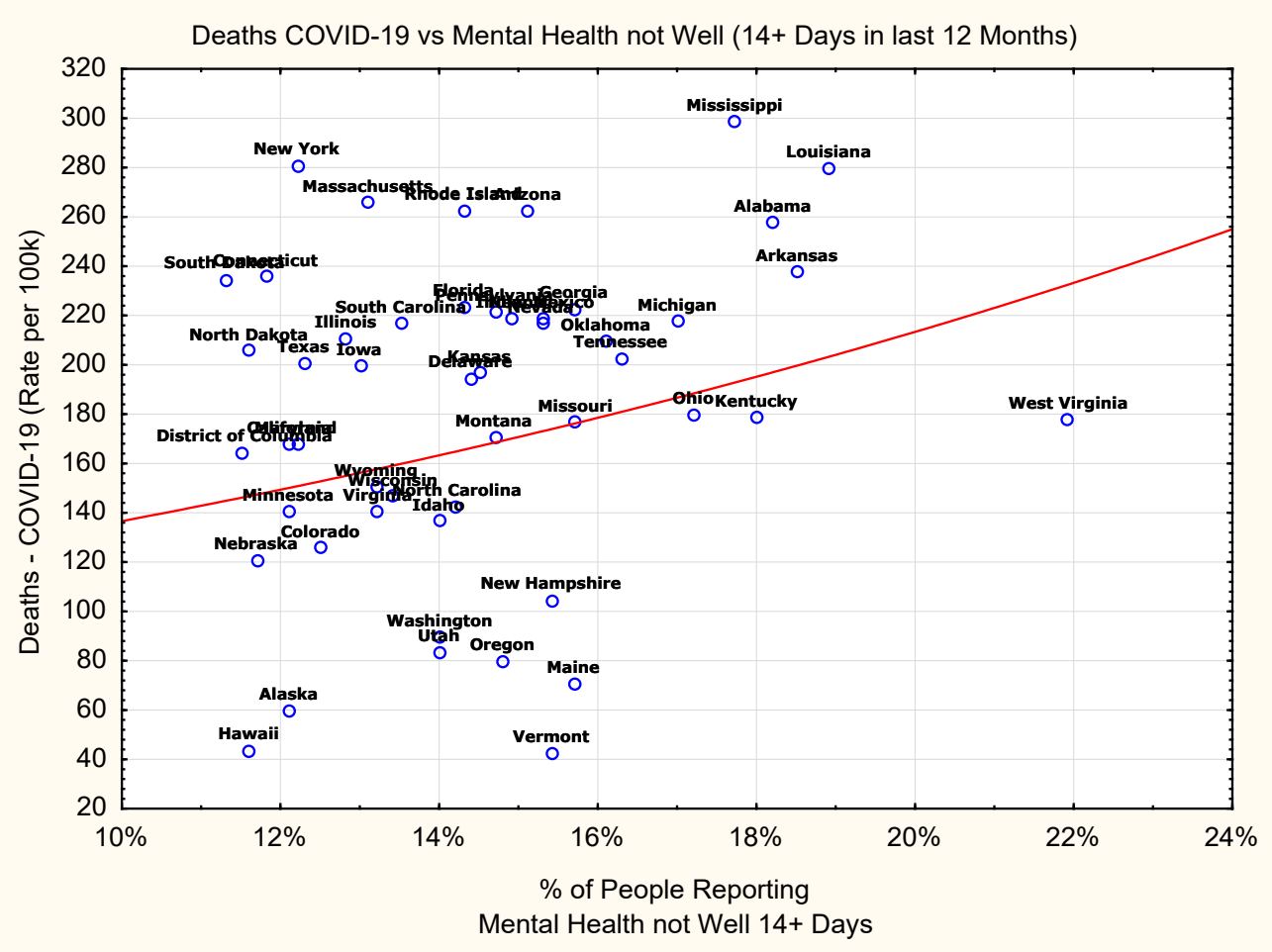


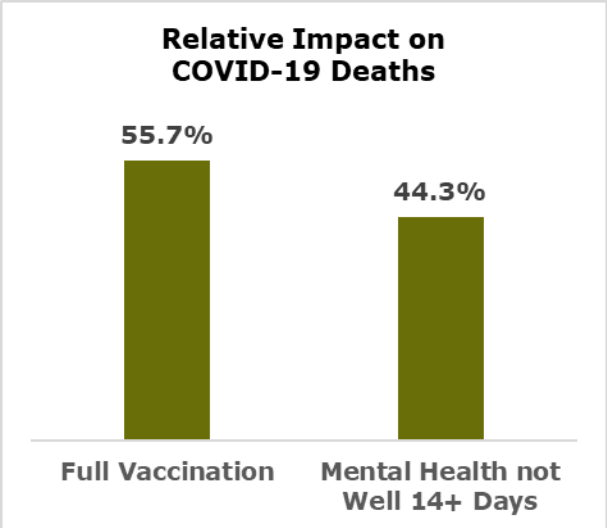


Comparing 'underlying physical health' to 'vaccination level', it is clear that underlying health has a larger impact (71.2%) vs vaccination level (28.8%) in explaining the differences in COVID19 deaths between the 50 States.

Mental Health (not Well 14+ Days)

The chart below shows COVID19 rate of death, for each of the 50 States, plotted against the percentage of people reporting their mental health has not been well for 14 days or more. Cleary, there is a strong association between mental wellbeing and risk of COVID19 death.

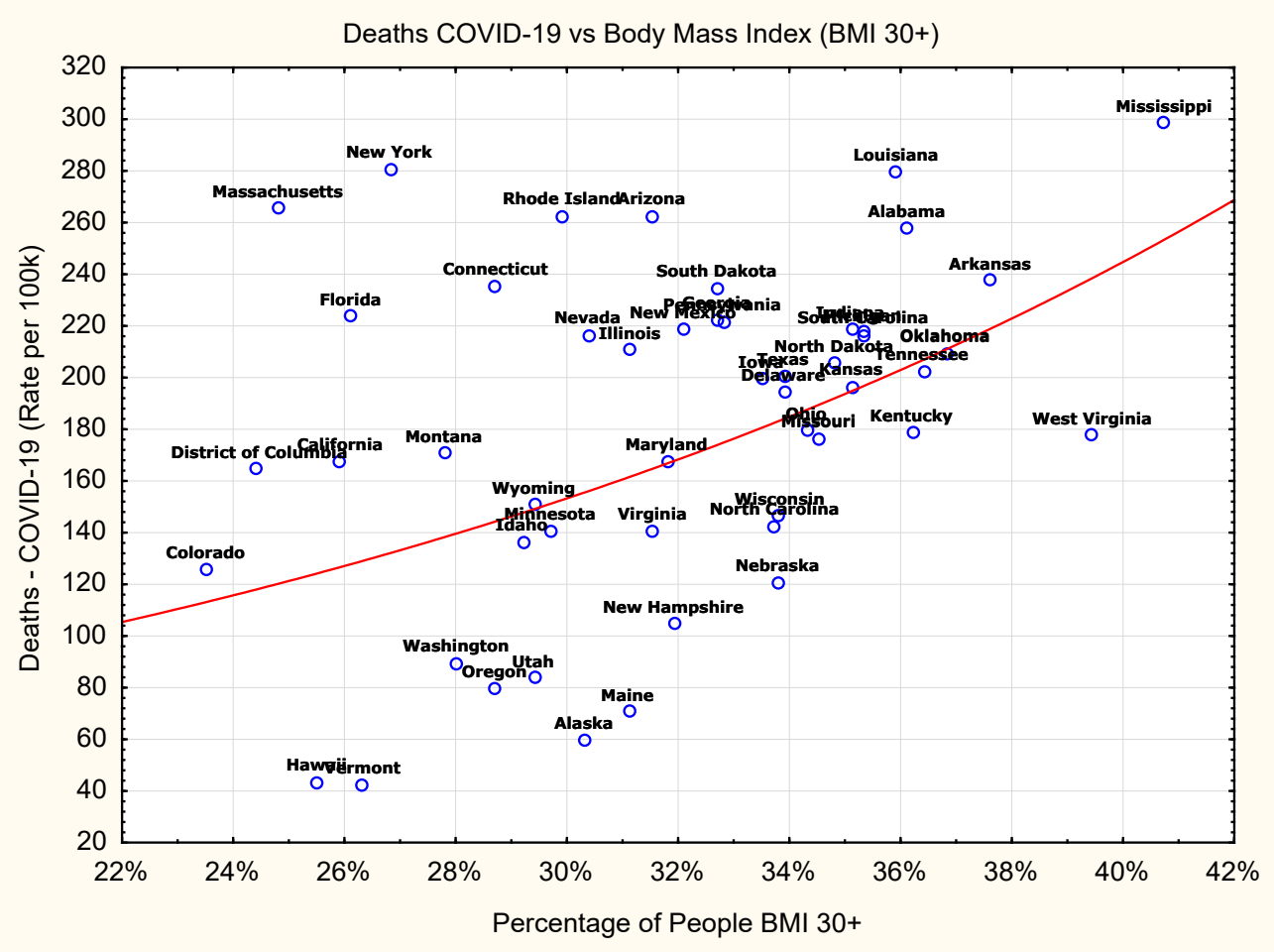


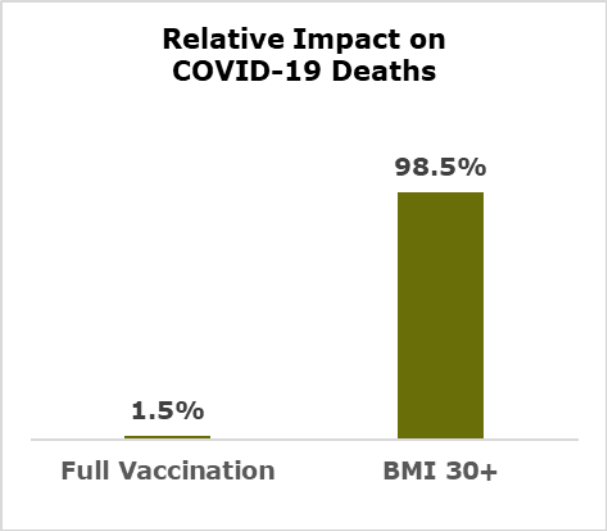


Comparing 'underlying mental health' to 'vaccination level' shows that vaccination level (55.7%) better explains the differences in COVID19 deaths between the 50 States compared to 'mental health' (44.3%) by a small 11 percentage points.

Body Mass Index (BMI 30+)

The chart below shows COVID19 rate of death, for each of the 50 States, plotted against the percentage of people with BMI 30+. Cleary, there is a strong association between BMI 30+ and risk of COVID19 death.

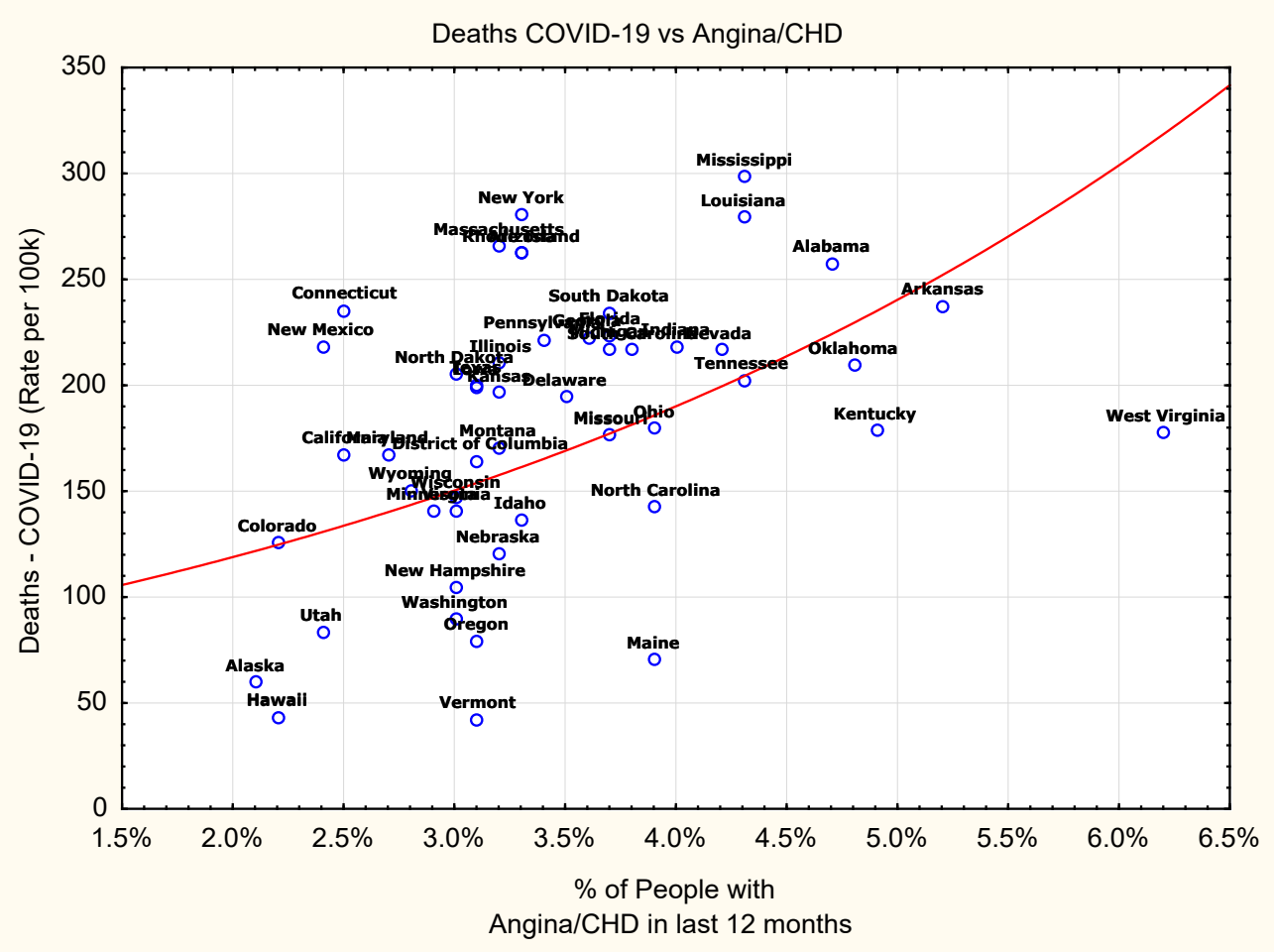


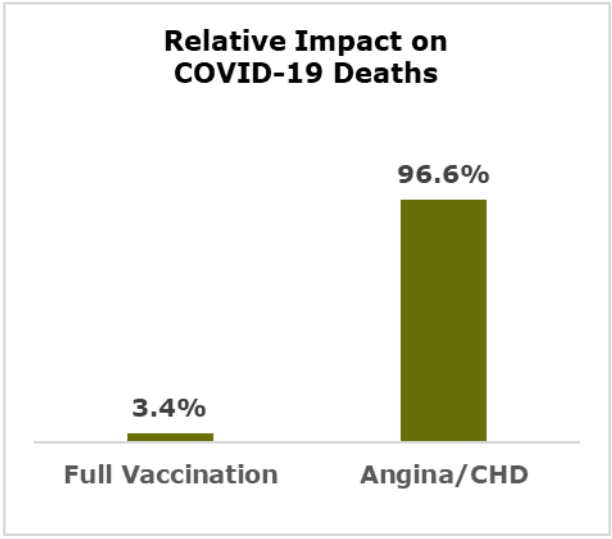


Comparing 'morbid obesity' to 'vaccination level', it is clear that morbid obesity has a much larger impact (98.5%) vs vaccination level (1.5%) in explaining the differences in COVID19 deaths between the 50 States.

Angina/Coronary Heart Obstruction (CHD)

The chart below shows COVID19 rate of death, for each of the 50 States, plotted against the percentage of people with angina/CHD. Cleary, there is a strong association between angina/CHD and risk of COVID19 death.

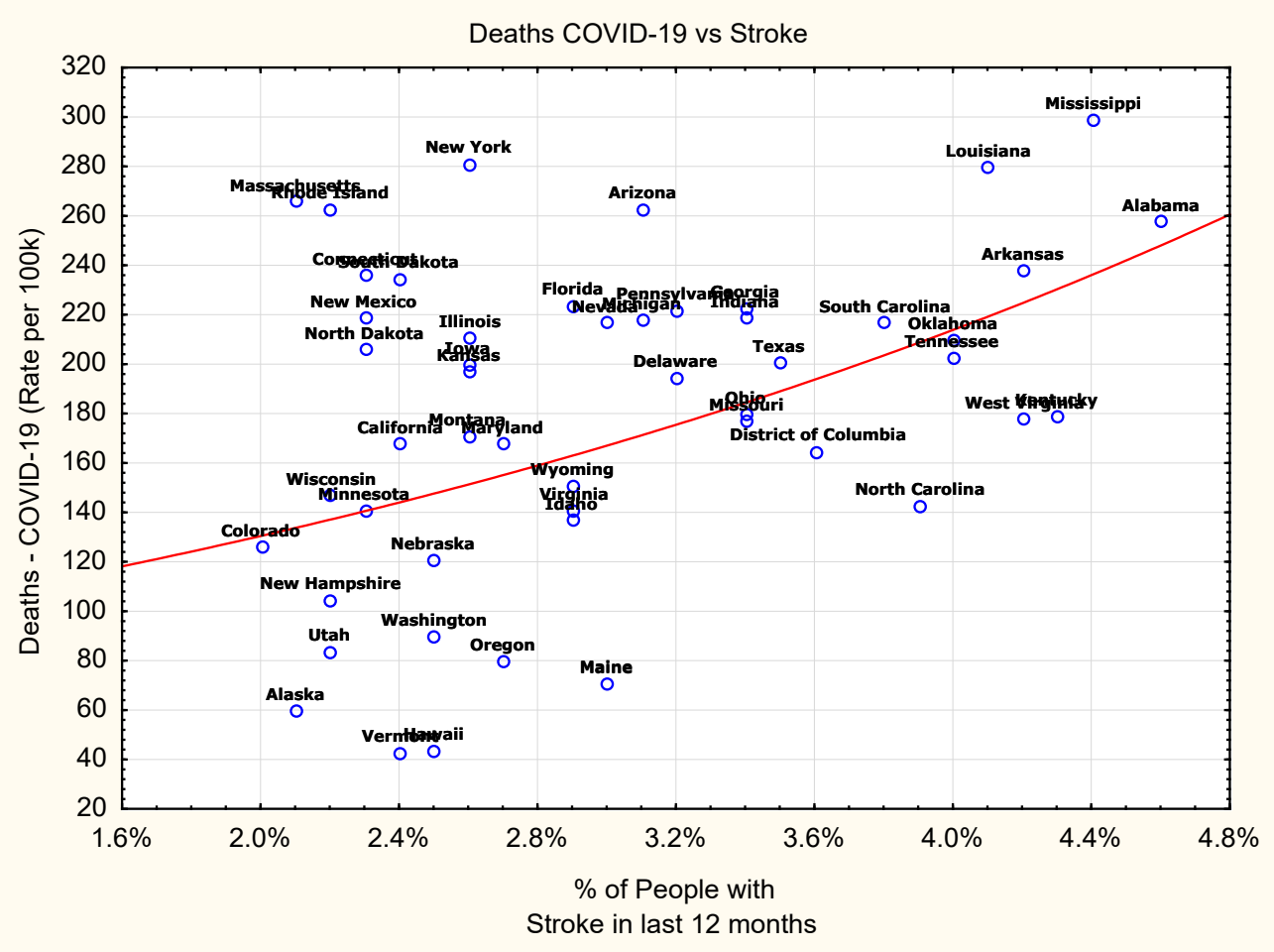


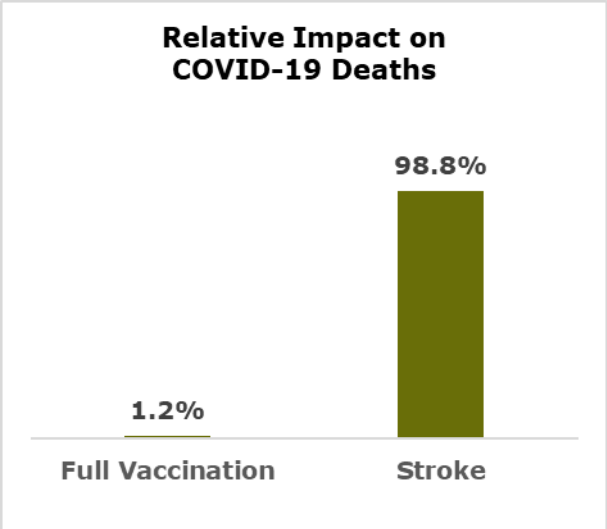


Comparing 'angina/CHD' to 'vaccination level', it is clear that angina/CHD has a much larger impact (96.6%) vs vaccination level (3.4%) in explaining the differences in COVID19 deaths between the 50 States.

Stroke

The chart below shows COVID19 rate of death, for each of the 50 States, plotted against the percentage of people who have had a stroke in the last 12 months. Cleary, there is a strong association between strokes and risk of COVID19 death.

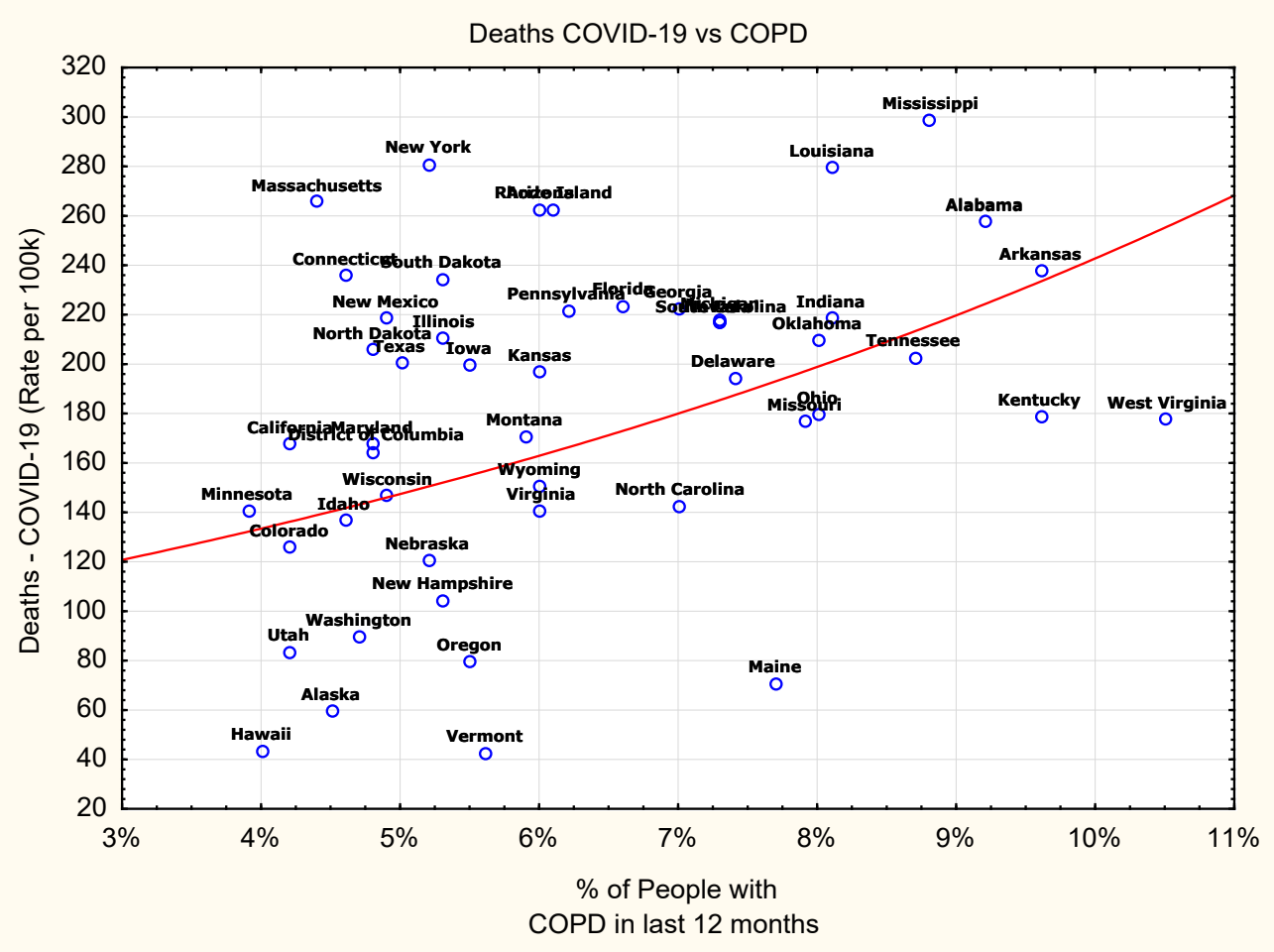


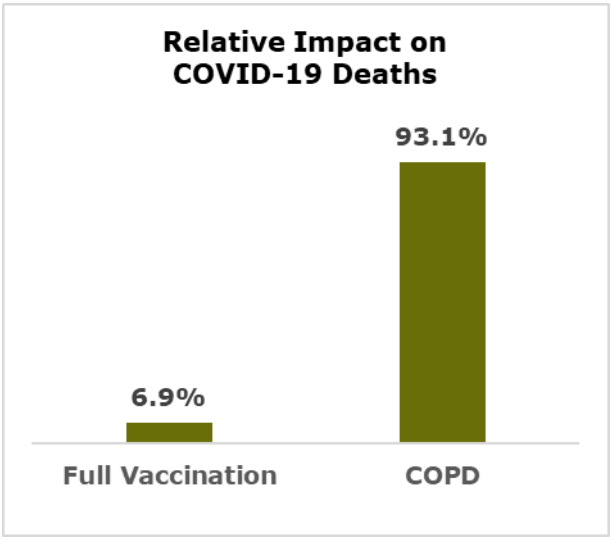


Comparing 'stroke' to 'vaccination level', it is clear that stroke has a much larger impact (98.8%) vs vaccination level (1.2%) in explaining the differences in COVID19 deaths between the 50 States.

Chronic Obstructive Pulmonary Disease (COPD)

The chart below shows COVID19 rate of death, for each of the 50 States, plotted against the percentage of people who have suffered from COPD in the last 12 months. Cleary, there is a strong association between COPD and the risk of COVID19 death.

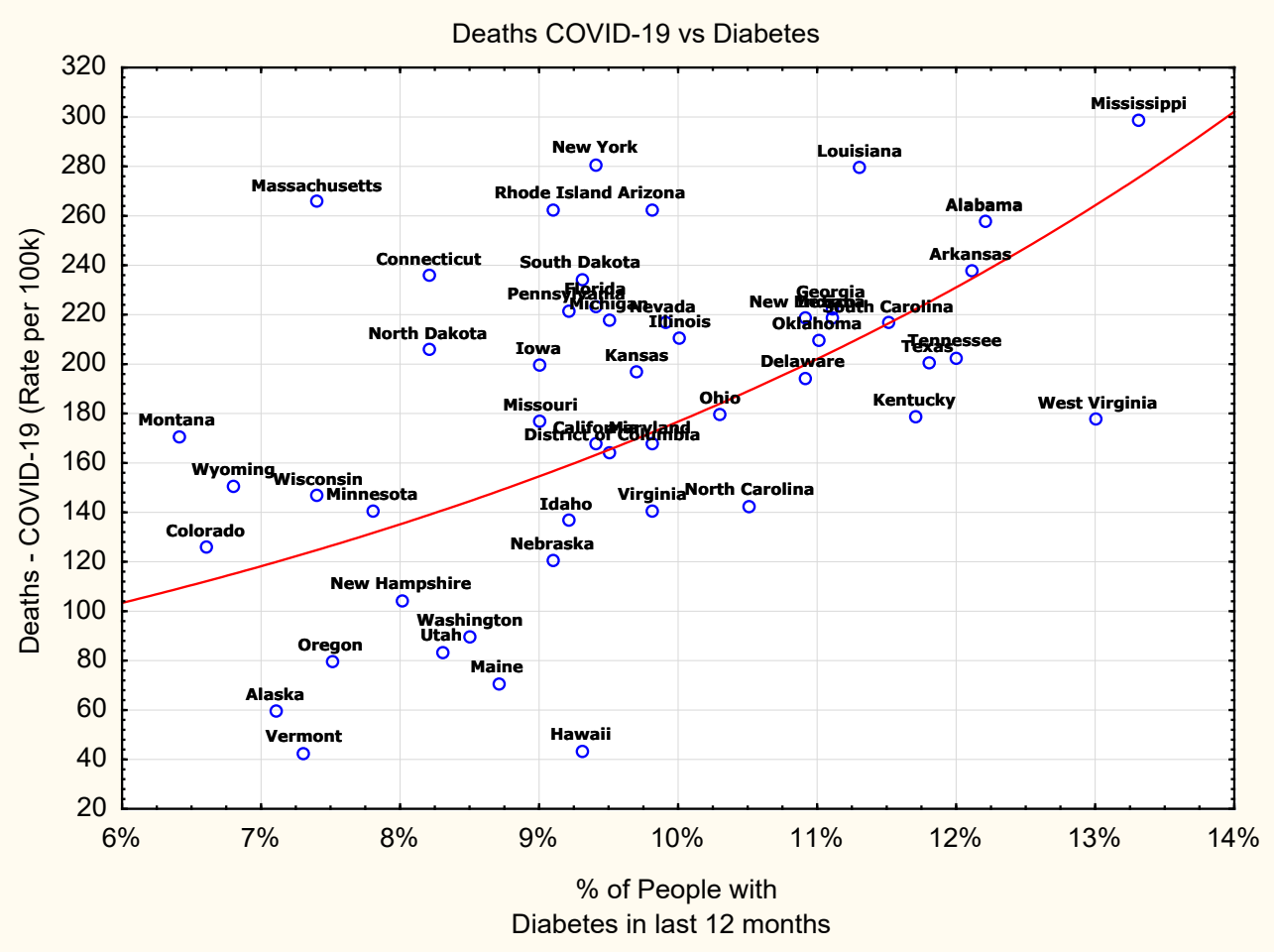


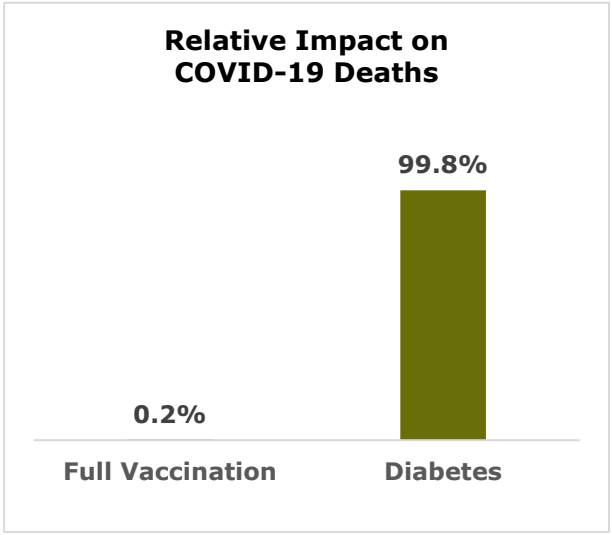


Comparing 'COPD' to 'vaccination level', it is clear that COPD has a much larger impact (93.1%) vs vaccination level (6.9%) in explaining the differences in COVID19 deaths between the 50 States.

Diabetes

The chart below shows COVID19 rate of death, for each of the 50 States, plotted against the percentage of people who have suffered from diabetes in the last 12 months. Cleary, there is a strong association between diabetes and the risk of COVID19 death.

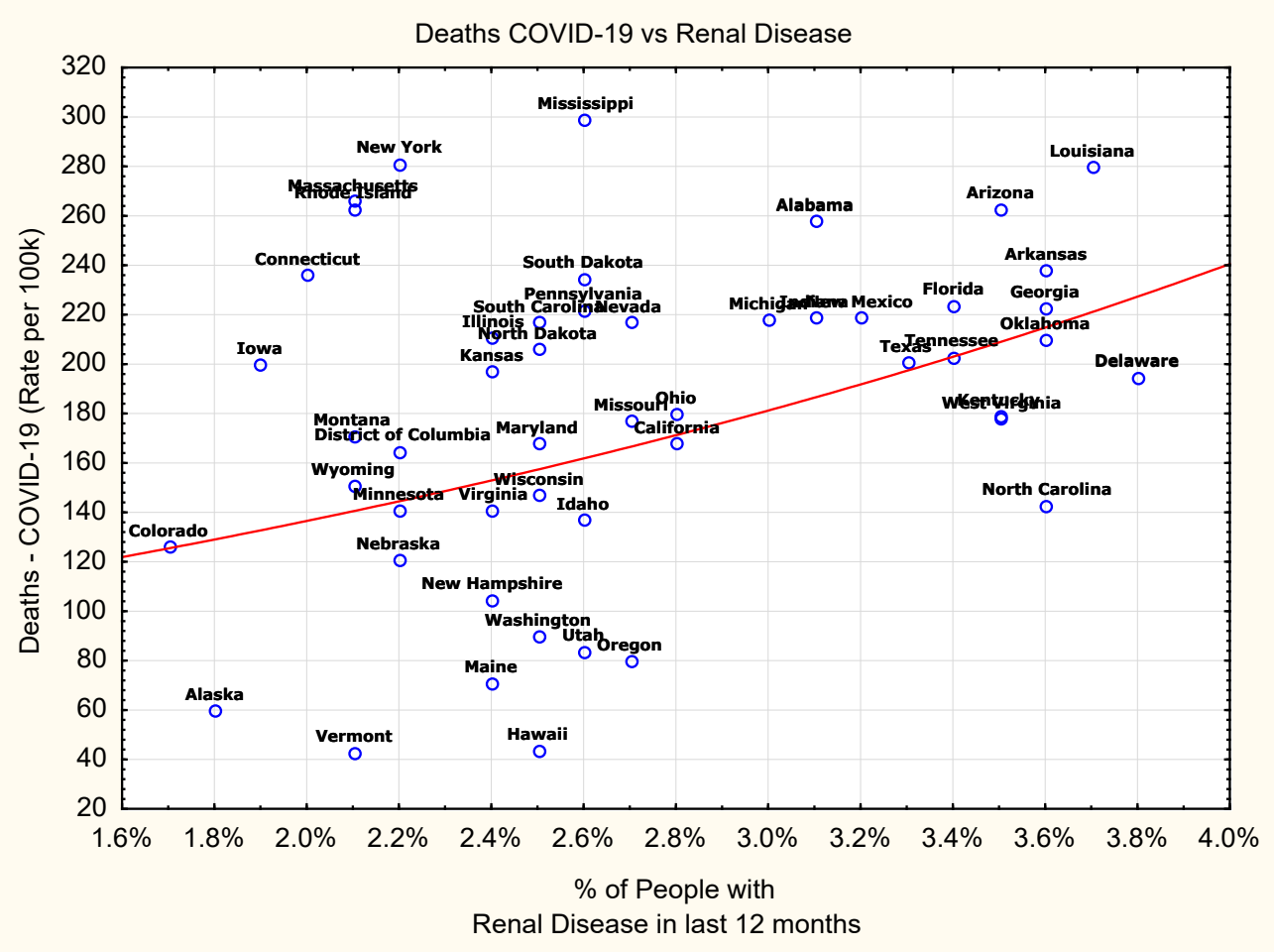


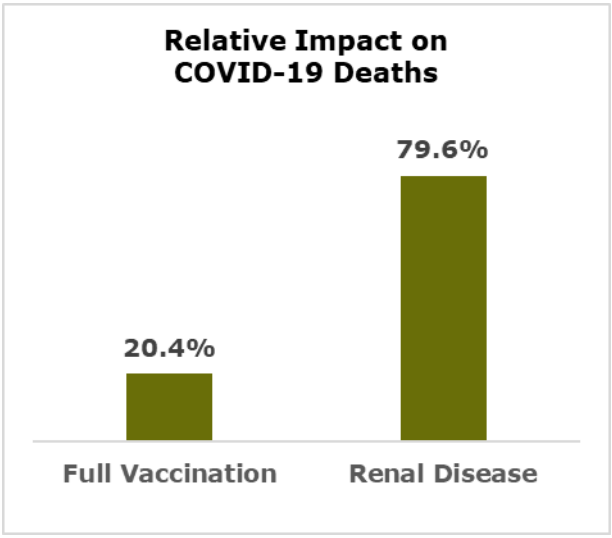


Comparing 'diabetes' to 'vaccination level', it is clear that diabetes has a much larger impact (99.8%) vs vaccination level (0.2%) in explaining the differences in COVID19 deaths between the 50 States.

Renal Disease

The chart below shows COVID19 rate of death, for each of the 50 States, plotted against the percentage of people suffering from renal disease in the last 12 months. Cleary, there is a strong association between renal disease and risk of COVID19 death.

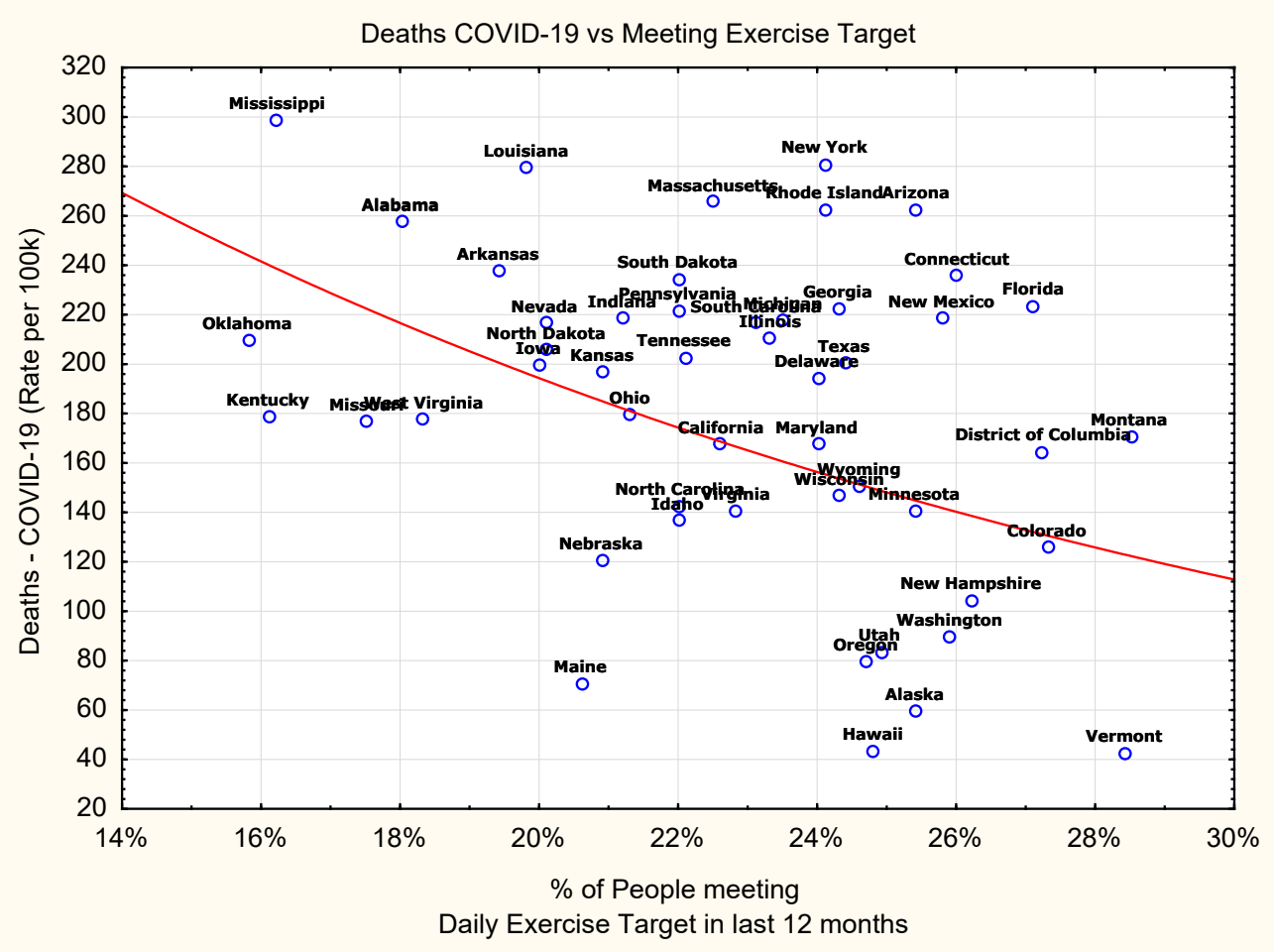


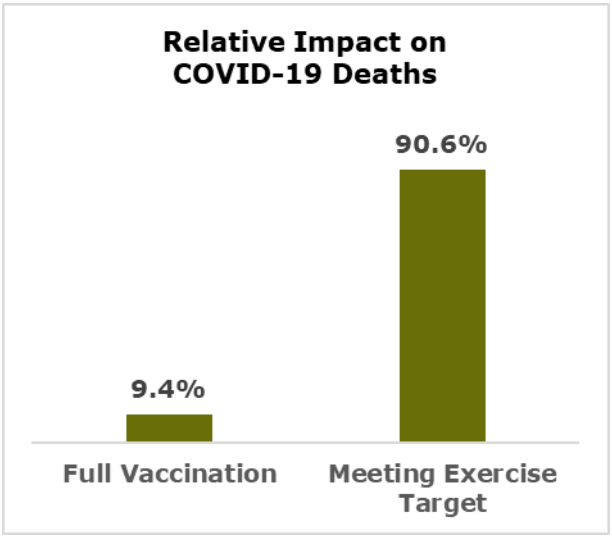


Comparing 'renal disease' to 'vaccination level', it is clear that renal disease has a much larger impact (79.6%) vs vaccination level (20.4%) in explaining the differences in COVID19 deaths between the 50 States.

Meeting Daily Exercise Target

The chart below shows COVID19 rate of death, for each of the 50 States, plotted against the percentage of people meeting their daily exercise target in the last 12 months. Cleary, there is a strong association between physical exercise and risk of COVID19 death.

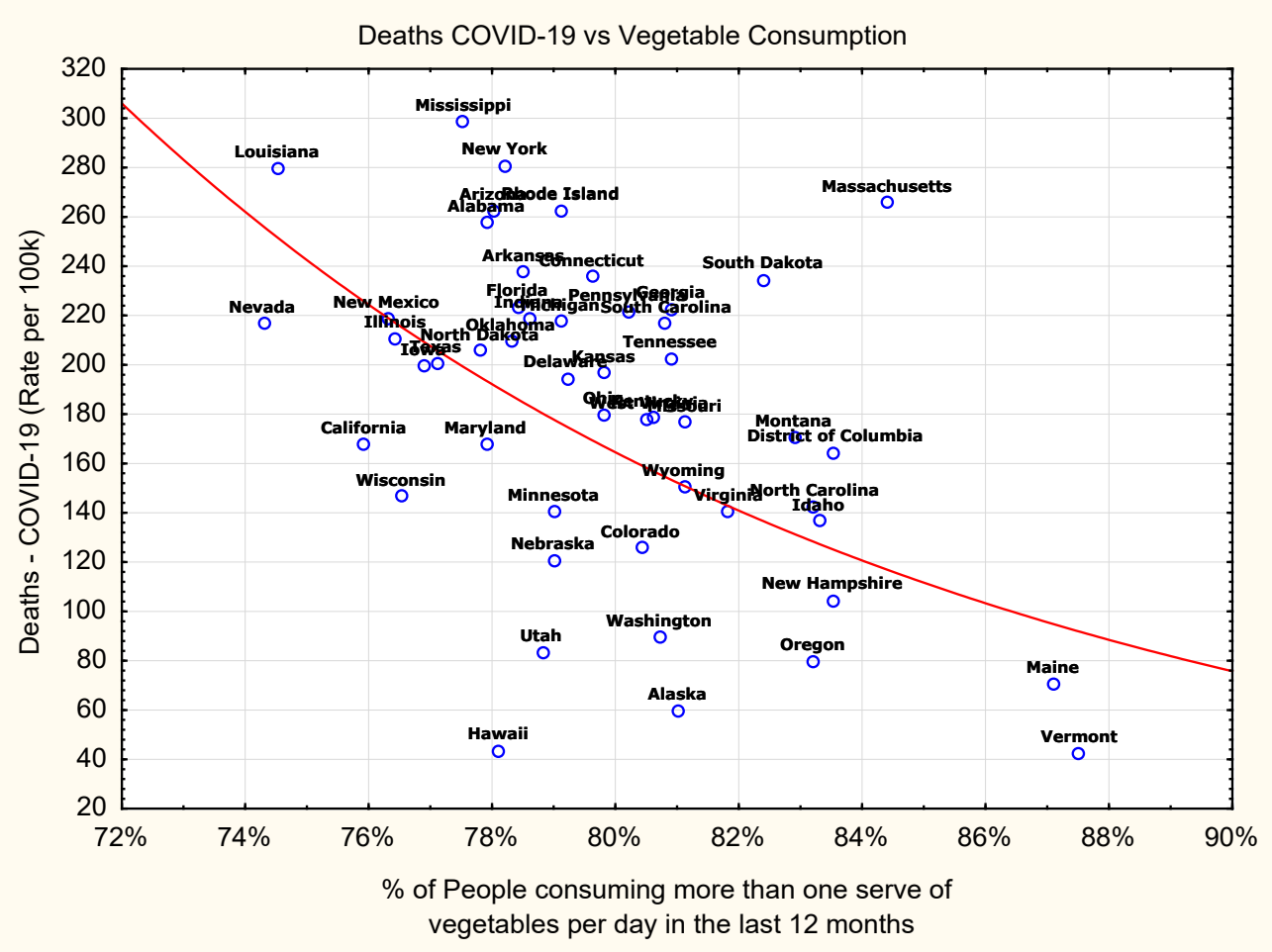


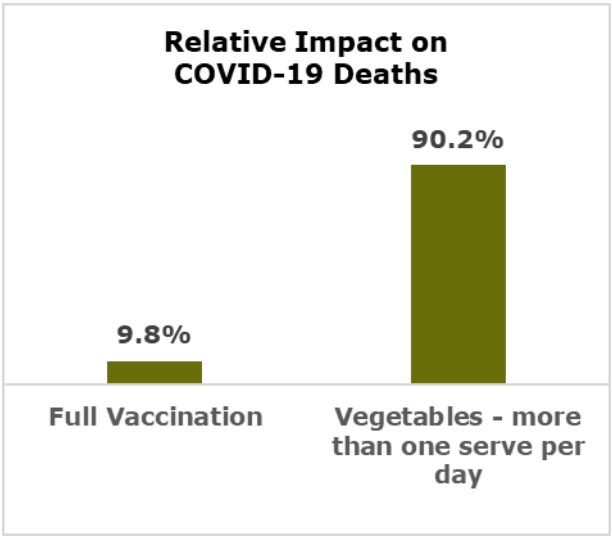


Comparing 'meeting daily exercise targets' to 'vaccination level', it is clear that exercise has a much larger impact (90.6%) vs vaccination level (9.4%) in explaining the differences in COVID19 deaths between the 50 States.

Vegetables – consuming more than one serve per day

The chart below shows COVID19 rate of death, for each of the 50 States, plotted against the percentage of people consuming more than one serve of vegetables per day in the last 12 months. Cleary, there is a strong association between vegetable consumption and risk of COVID19 death.





Comparing 'vegetable consumption' to 'vaccination level', it is clear that vegetable consumption has a much larger impact (90.2%) vs vaccination level (9.8%) in explaining the differences in COVID19 deaths between the 50 States.

Appendix 4. Statistical Methodology (Relative Importance)

To quantify the relative importance of the various 'benchmarks of health' vs 'vaccination level' on COVID19 deaths we ran multiple linear regression analyses, with 'rates of death' as the dependent variable and 'vaccination level' and each 'benchmark of health' as the two independent variables.

1. **Data Set**. For all 50 States of America:
   a. COVID19 rate of death (measured as rate per 100k State population)
   b. COVID19 vaccination level (measured as double dose percentage of State population)
   c. The 10 Benchmarks of Health (measured as percentage of State population and age adjusted)
      - Physical Health not Well 14+ Days
      - Mental Health not Well 14+ Days
      - Body Mass Index 30+
      - Angina/Coronary Heart Obstruction (CHD)
      - Stroke
      - Chronic Obstructive Pulmonary Disease (COPD)
      - Diabetes
      - Renal Disease
      - Meeting Daily Exercise Target
      - Vegetables – consuming more than one serve per day
2. **Dependent Variable**. COVID19 rate of death (rate per 100k of State population)
3. **Independent Variables**. 'Vaccination level' and each of the 10 'benchmarks of health' (i.e. two independent variables per regression equation).

We followed Tabachnick and Fidell (1983) who recommended that, when using regression for importance measurement, it is more accurate to use squared semi-partial correlations (sr_i^2) than it does to use the regression coefficients themselves.

Finally, to transform the squared semi-partial correlations into '% relative importance' (as reported in this paper and in Appendix 3) we normalised the squared semi-partial correlations (sr_i^2) to sum to 100%. This also makes for easier interpretation.

Appendix 5. Pfizer (BNT162b2) Actual Risk Reduction

In the study "BNT162b2 mRNA Covid-19 Vaccine in a Nationwide Mass Vaccination Setting", the researchers monitored 1.2M participants over a period of 43 days from 20 Dec 2020 to 01 Feb 2021.

These 1.2M participants were distributed between two groups; vaccinated and control/placebo. In addition the participants were identically matched between the two groups; i.e. equivalent medical characteristics between those in the vaccinated group vs. those in the placebo group.

The trial monitored and reported gene therapy performance by age, by sex (male/female), and by various risk-factors. It also reported results on five outcomes. The outcomes for protection against severe disease and deaths (with nil comorbidity) are presented below.

The formula for **Actual Risk Reduction** is simply:

Actual Risk Reduction = Risk (Control/Placebo) – Risk (Vaccinated)

Severe Disease

Group	Disease	No Disease	No. of Participants	Risk	Risk Calculation
Vaccinated	17	596,601	596,618	0.0028%	17/596,618
Control/Placebo	208	596,410	596,618	0.0348%	208/596,618
Actual Risk Reduction				**0.0320%**	

Deaths

Group	Deaths	No Deaths	No. of Participants	Risk	Risk Calculation
Vaccinated	7	596,611	596,618	0.0011%	7/596,618
Control/Placebo	43	596,575	596,618	0.0071%	43/596,618
Actual Risk Reduction				**0.0060%**	