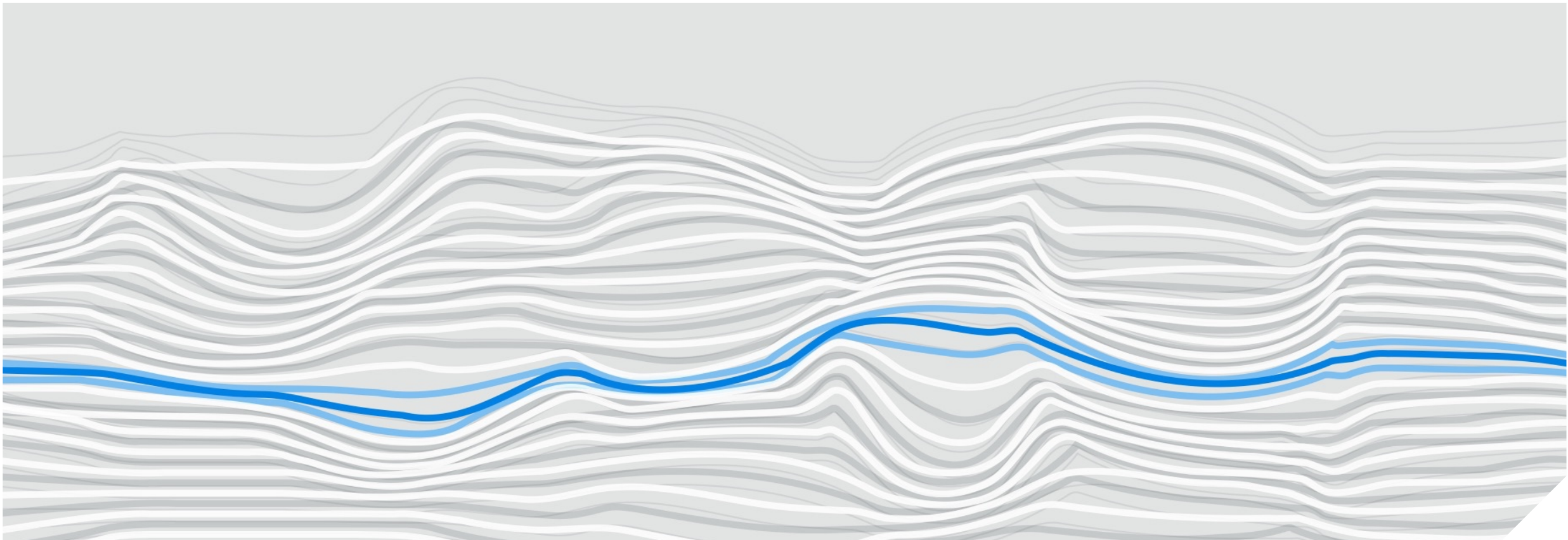


COVID: Lies, Damned Lies and Statistics

2021 CAS Annual Meeting

Carl Ashenbrenner, FCAS, MAAA

NOVEMBER 10, 2021



Presentation Overview Contents

- Introductions
- COVID Mitigation Monitoring Project
- Excess Death Study
- Active Discussion
 - Relative Risk by Age Group
 - What could we have done differently?
 - Vaccine strategy/mandates

**“All lies and jests
Still a man hears what he
wants to hear and
disregards the rest.”**

—Simon, Paul. “The Boxer”

Presenters



Dave Ingram

**FSA, CERA, FRM, PRM
ERM Advisors**



Guy Avagliano,

**FCAS, MAAA
Principal and Consulting
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Carl Ashenbrenner

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Active Discussion

Question #1

- Which age group had the highest percentage of COVID-19 deaths compared to all deaths within each each group between 1/1/2020 and 9/30/21?
- Example:

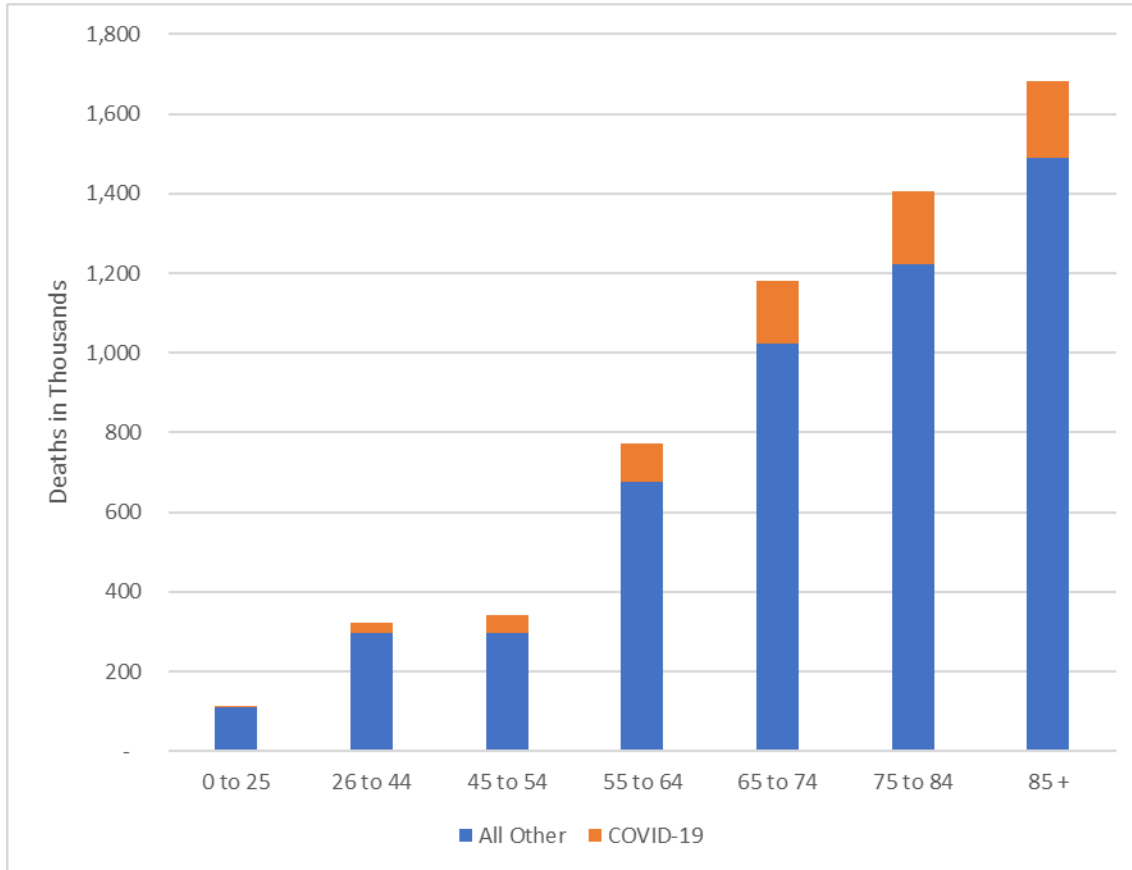
<u>Age Group</u>	<u>COVID-19 Deaths</u>	<u>All Deaths</u>	<u>COVID-19 Percentage</u>
45-54	2	10	20%
55-64	5	20	25%

- 1 45 - 54
- 2 55-64
- 3 65-74
- 4 75-84
- 5 85+

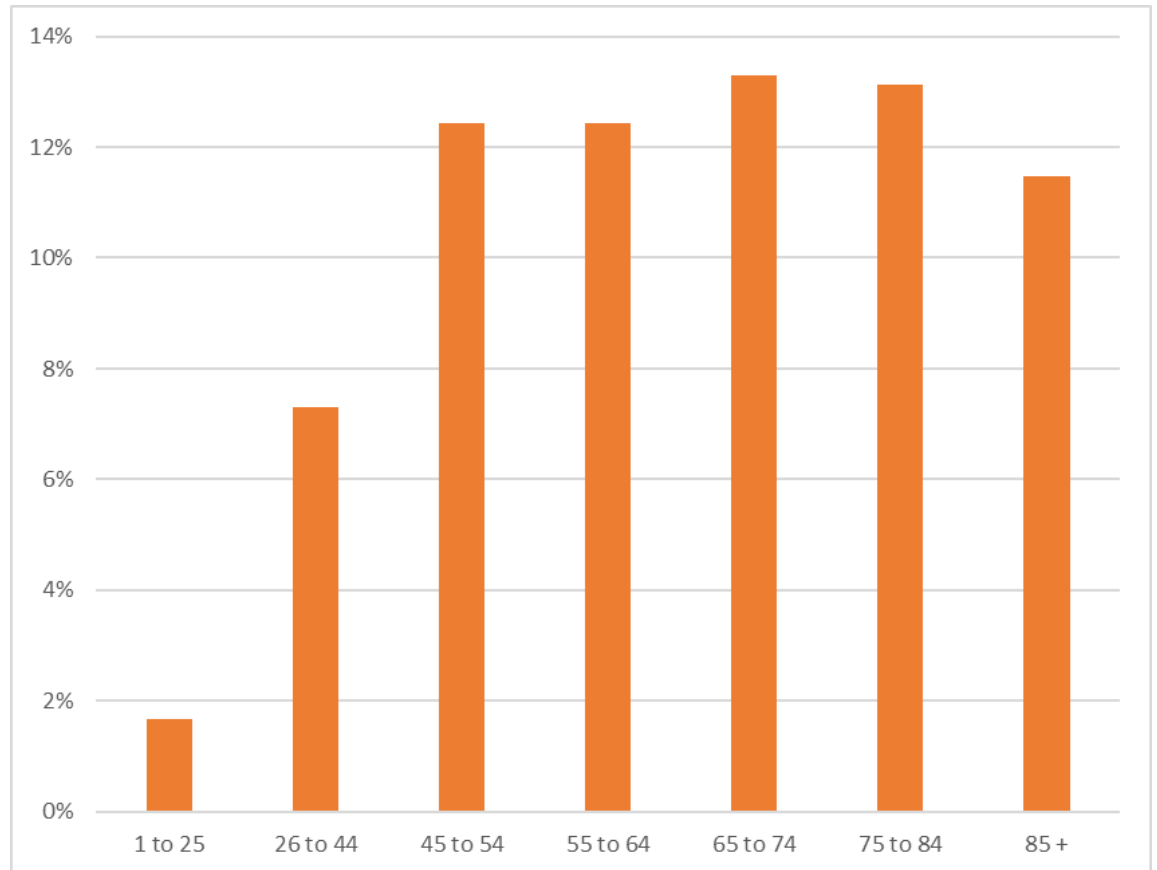
COVID-19 Percentage of Deaths by Age Group

Source: CDC – 2020 to September 30, 2021

Number of Deaths



COVID-19 Percentage of Deaths



Question #2

Which quarter had the most COVID-19 deaths for people over 55?

1 3Q 2020 (July - September)

2 4Q 2020 (October - December)

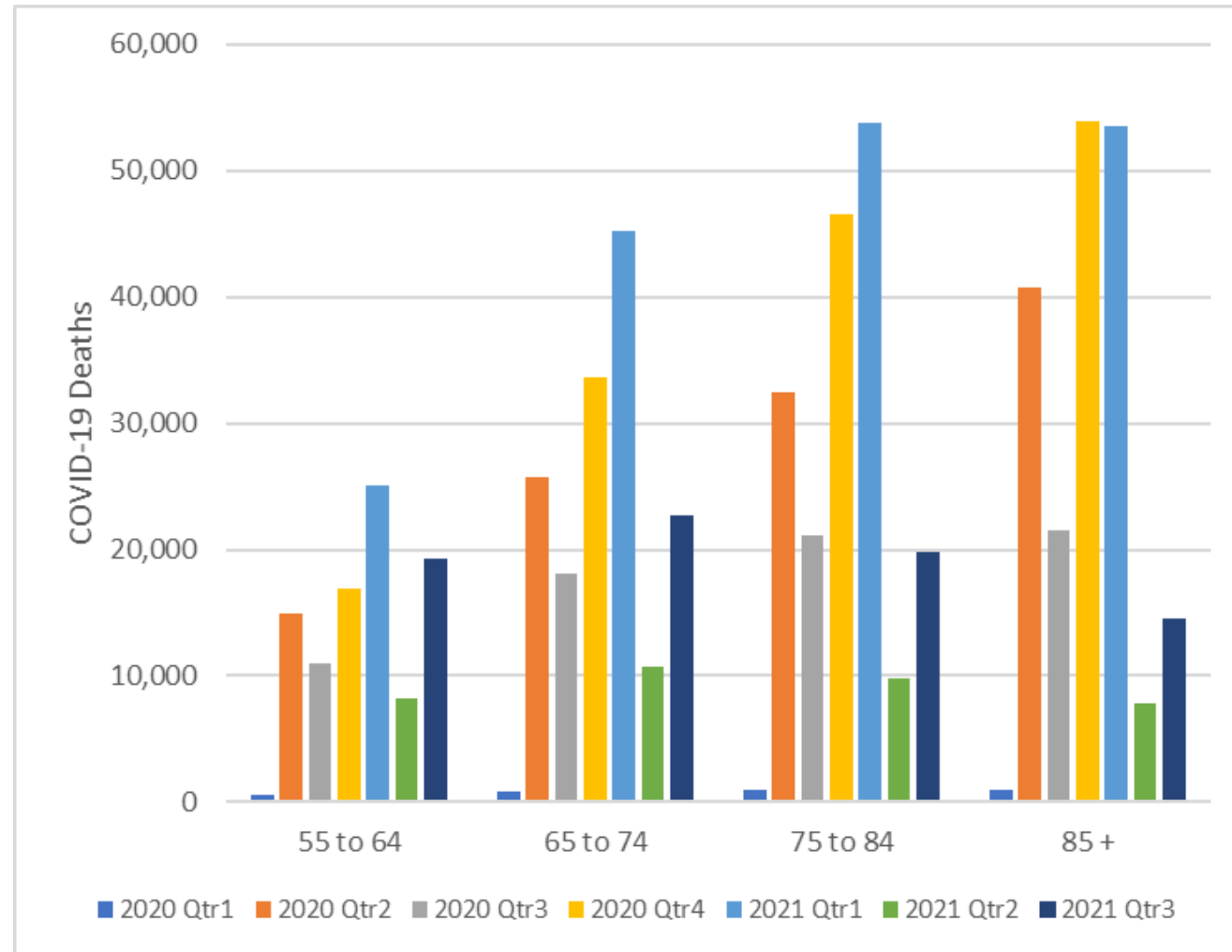
3 1Q 2021 (January - March)

4 2Q 2021 (April - June)

5 3Q 2021 (July - September)

COVID-19 Deaths by Age Group by Quarter; 55+

Source: CDC



Question #3

Which quarter had the most COVID-19 deaths for people under 55?

1 3Q 2020 (July - September)

2 4Q 2020 (October - December)

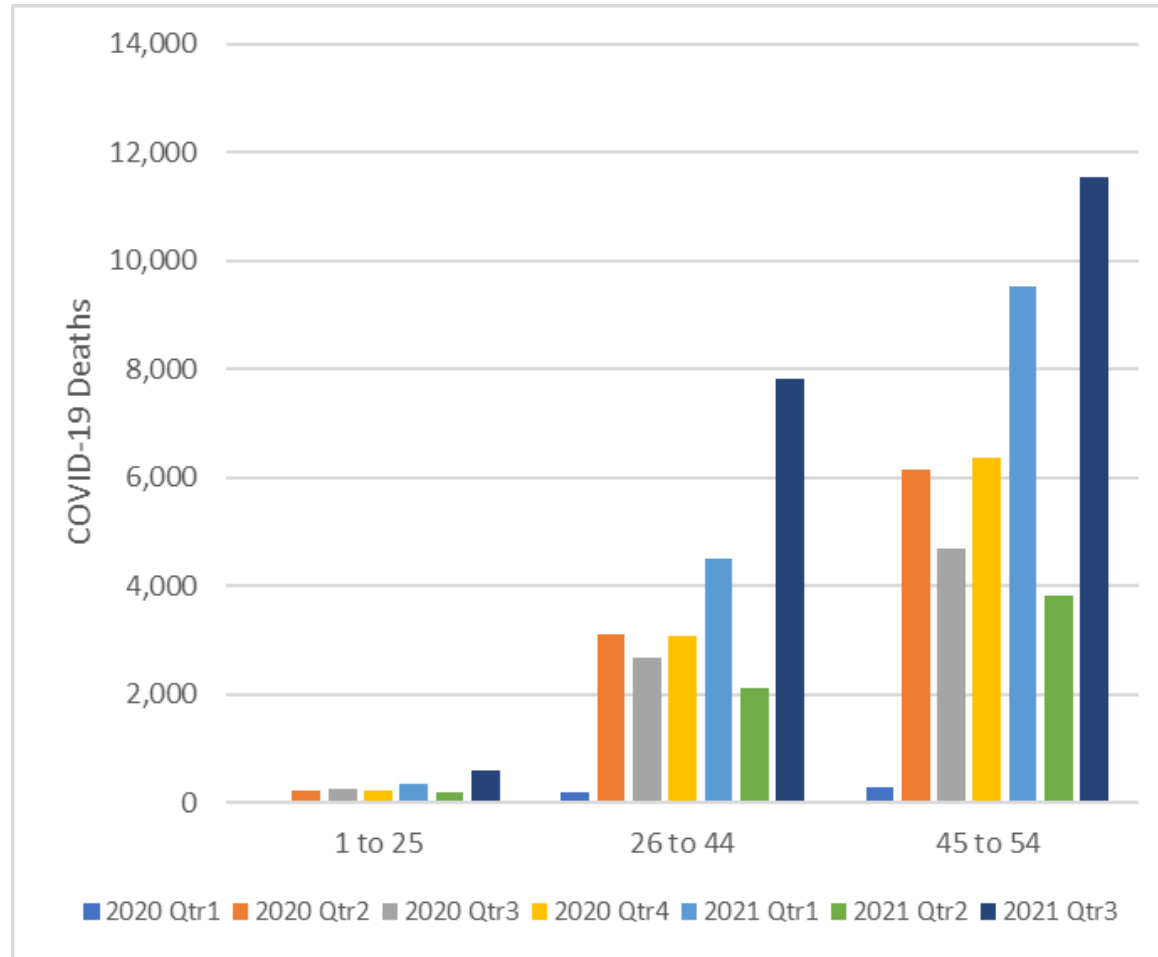
3 1Q 2021 (January - March)

4 2Q 2021 (April - June)

5 3Q 2021 (July - September)

COVID-19 Deaths by Age Group by Quarter; Less than 55

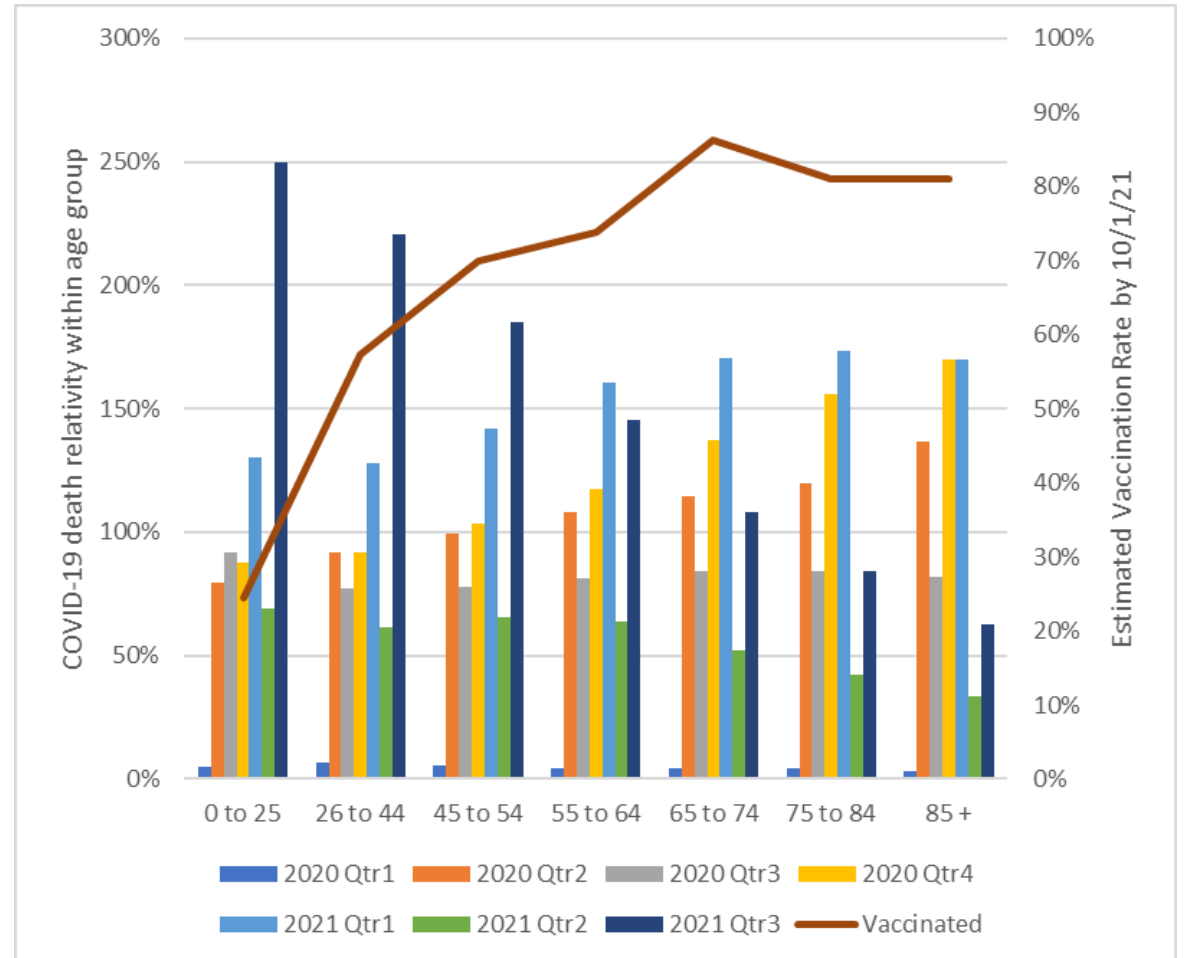
Source: CDC



COVID-19 Death Relativity by Age Group

- COVID Death Relativity (CDR) calculated for each age group (AG) and Qtr as:

$$CDR_{AG} = \frac{\frac{COVID\ AG\ Deaths\ in\ Quarter}{All\ AG\ Deaths\ in\ Quarter}}{\sum \frac{COVID\ AG\ Deaths}{All\ AG\ Deaths}}$$



Question #4

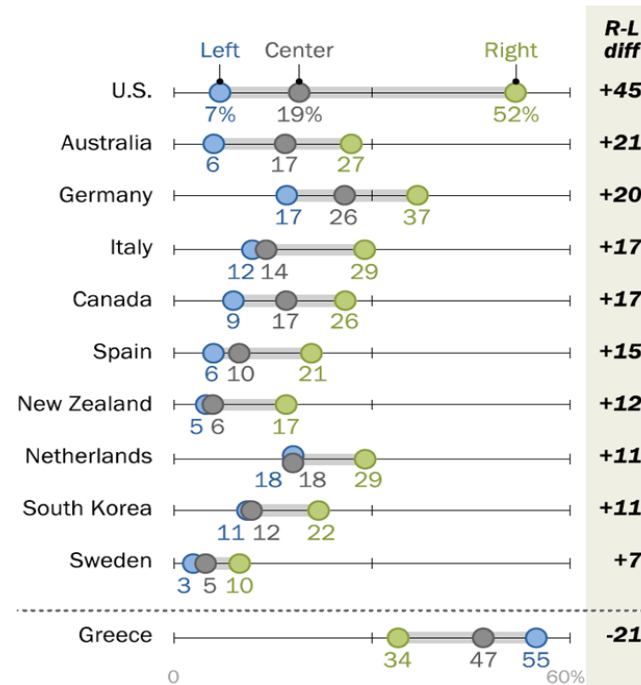
In hindsight, what strategy should have the US (or your state) taken?

- 1** Total lockdown
- 2** More restrictions
- 3** Similar approach
- 4** Fewer restrictions
- 5** No restrictions

COVID-19 Restrictions by ideology and country

Ideological right more likely to think there should have been fewer COVID-19 restrictions

% who think, over the course of the coronavirus outbreak, there should have been fewer restrictions on public activity



Note: Only statistically significant differences shown. In U.S., ideology is defined as conservative (right), moderate (center) and liberal (left).

Source: Spring 2021 Global Attitudes Survey. Q10.

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Question #5

What COVID-19 vaccination strategy should US take/should have taken?

1

Mandate everyone

2

Mandate public facing employees/attendees (schools, transportation, retail) only

3

Mandate group settings (nursing homes, healthcare) only

4

No mandates

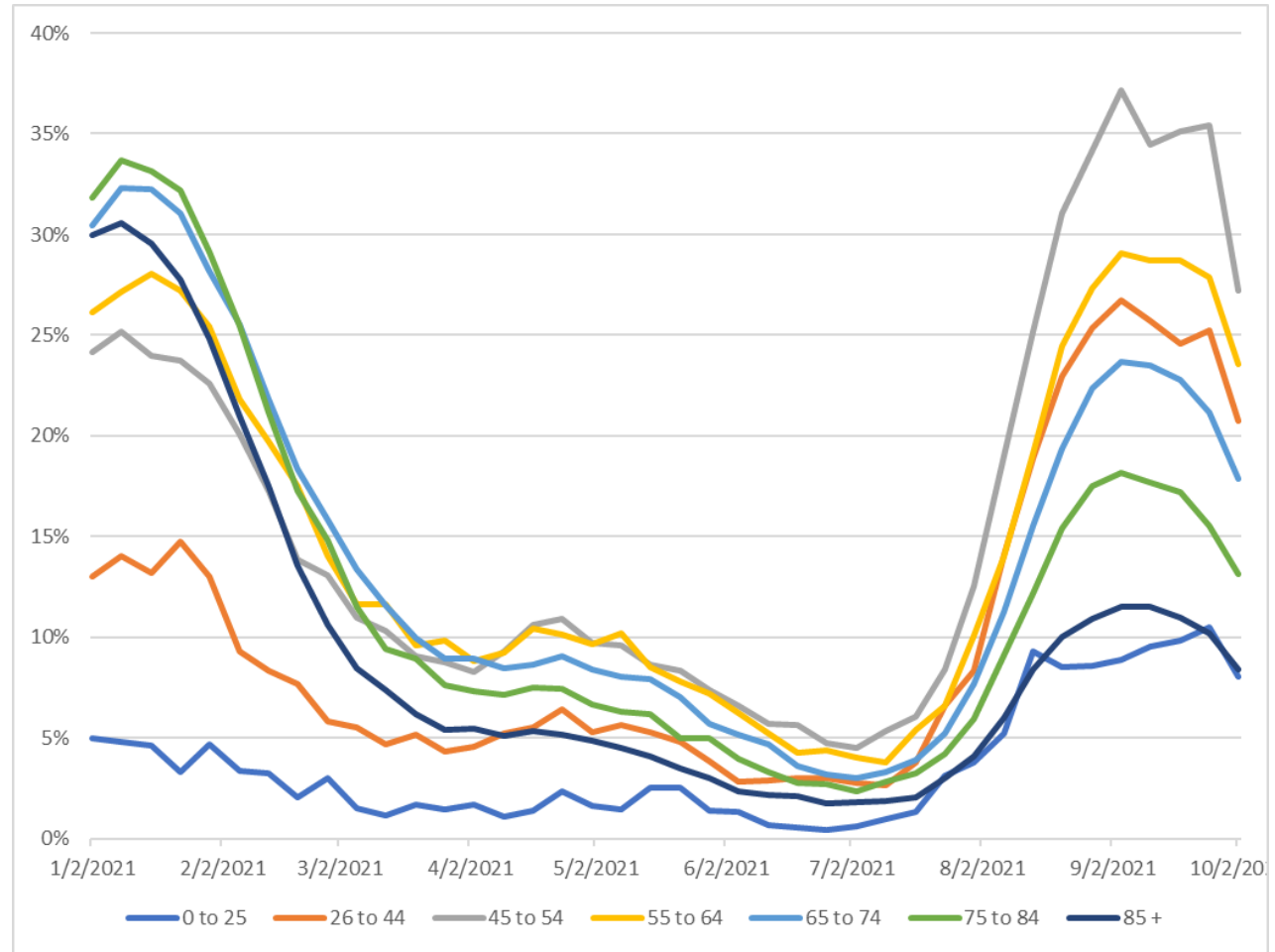
5

None; shouldn't have paid to develop vaccine

COVID-19 Death Percentage by Age Group

- COVID-19 Death percentage example:

Age Group	COVID-19 Deaths	All Deaths	COVID-19 Percentage
45-54	2	10	20%
55-64	5	20	25%



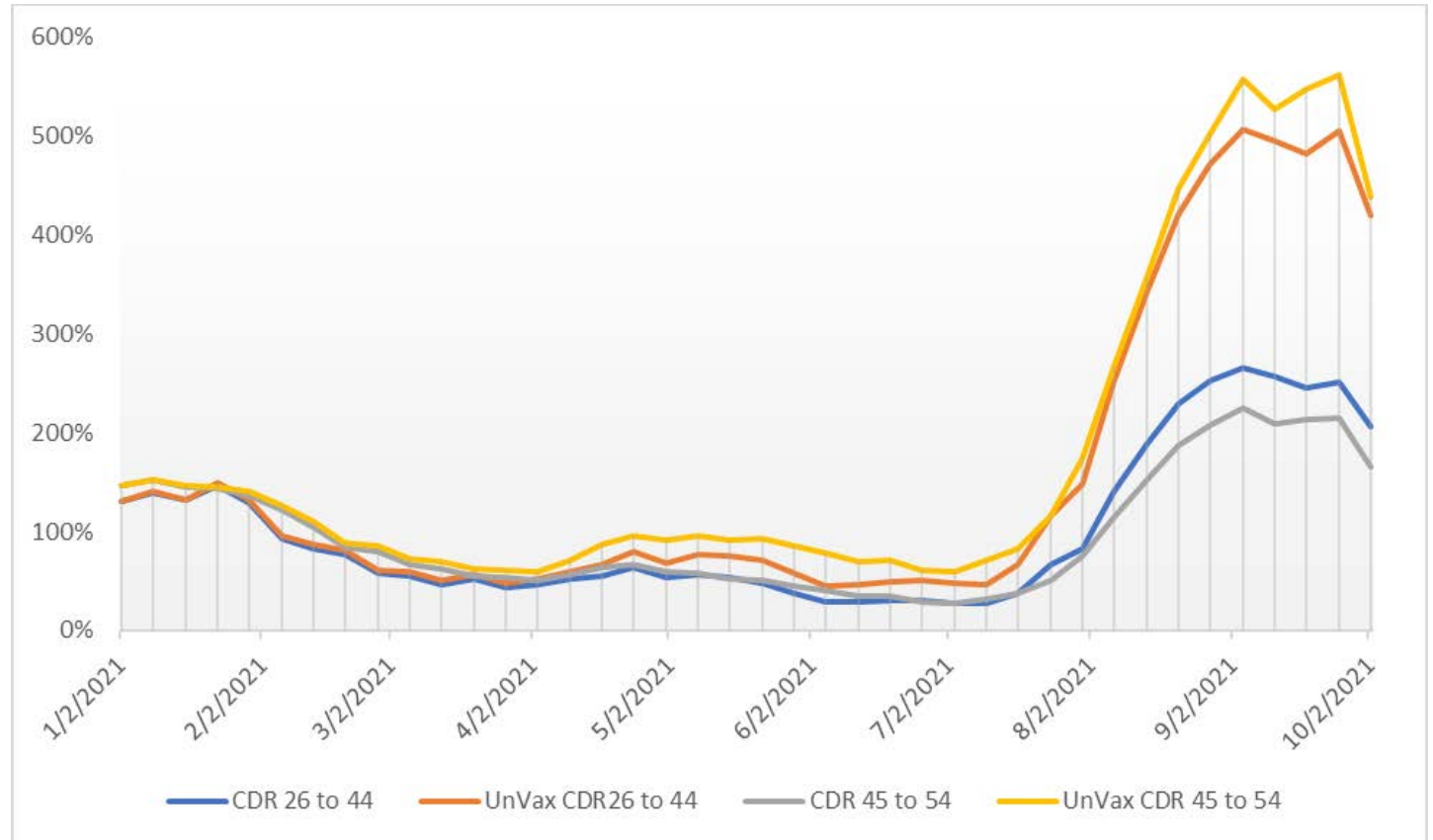
COVID-19 Death Relativity by Age Group

- COVID Death Relativity (CDR) calculated for each age group (AG) and week as:

- $$CDR_{AG} = \frac{\frac{COVID\ AG\ Deaths\ in\ week}{All\ AG\ Deaths\ in\ week}}{\sum \frac{COVID\ AG\ Deaths}{All\ AG\ Deaths}}$$

- $$UnVaxCDR_{AG} = \frac{CDR_{AG}}{(1-V_r) + (V_r \times Eff_r)}$$

- Assumes a 90% vaccine efficiency rate = Eff_r
- Percentage of people in age group to get vaccinated = V_r





Thank you

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