

DS 310 FINAL PRESENTATION

Group 2: Miya, Maddie, Perry, & Lance



DS 310

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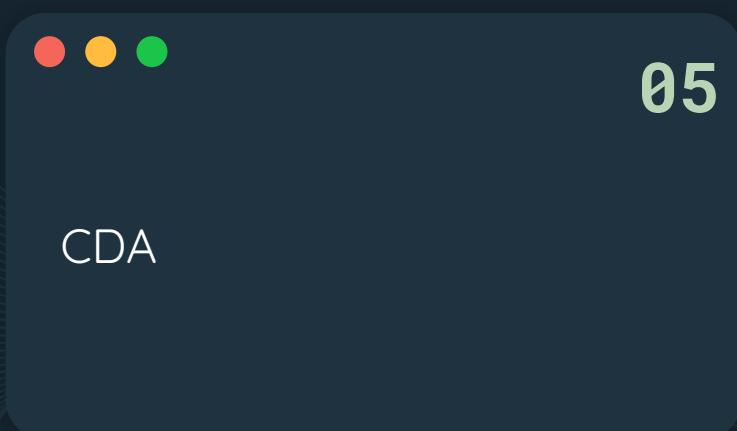
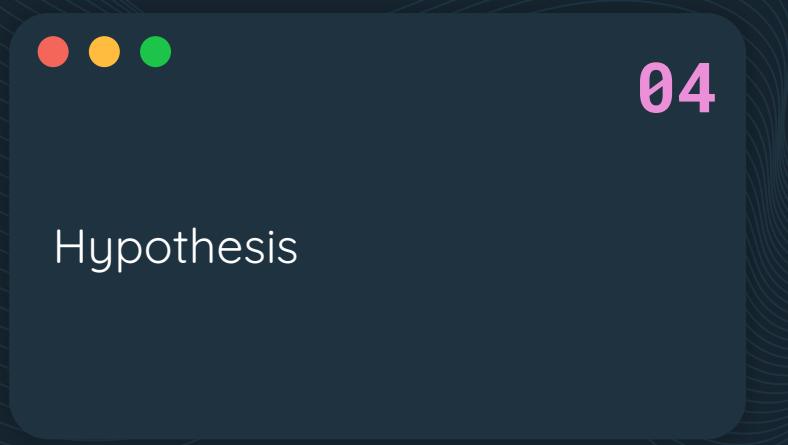
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Policy Recommendation



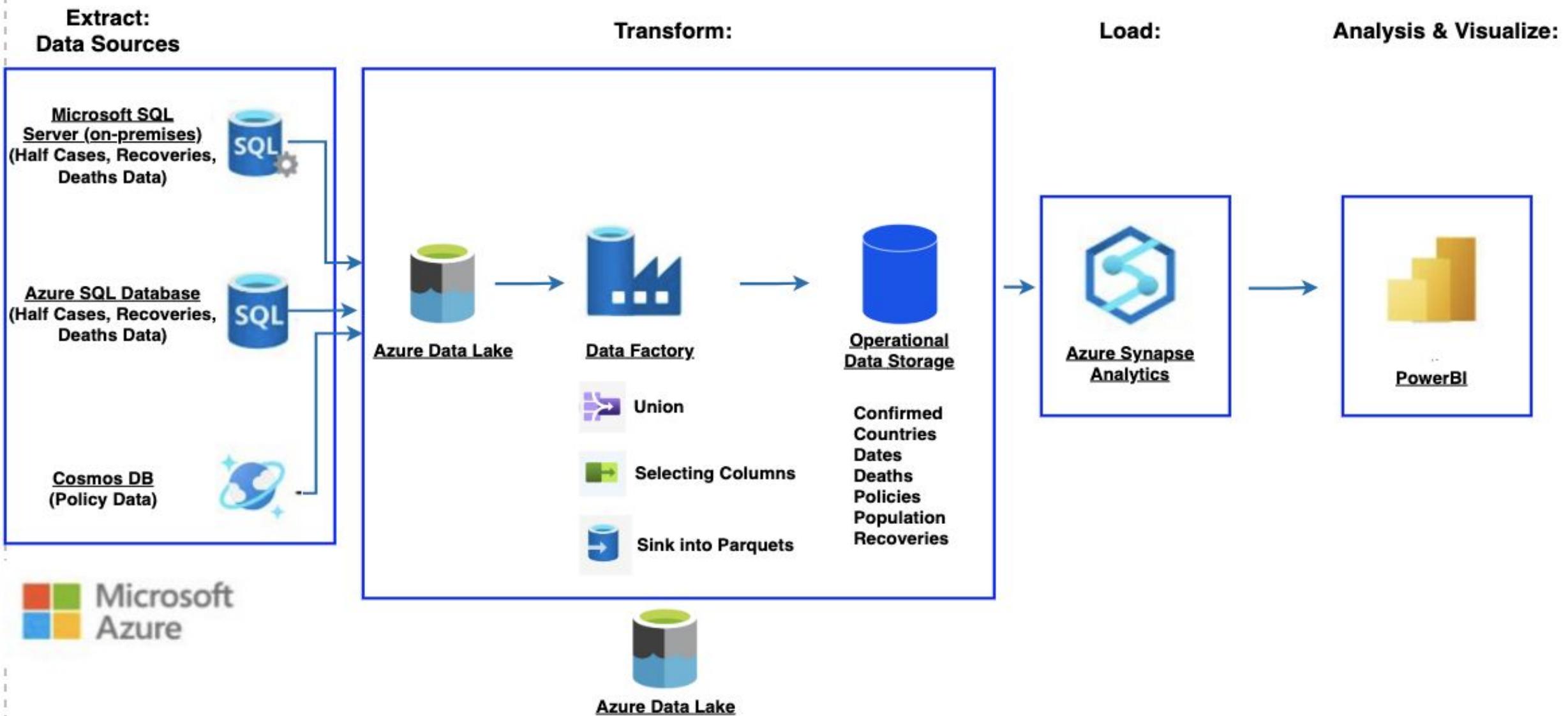
Question



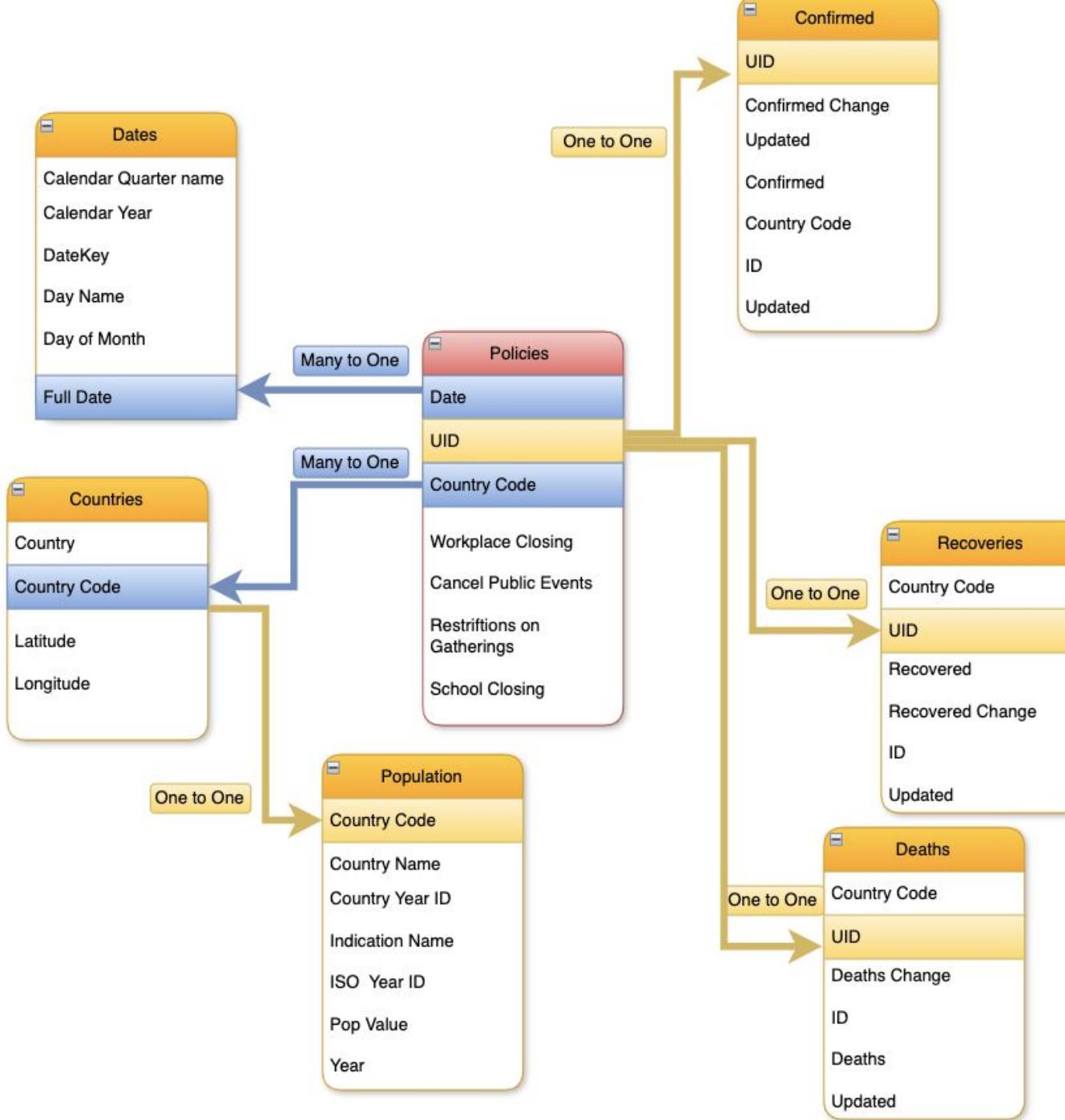
Most **unrestrictive policies** with

- Growth rate of **deaths below 1%**
- Growth rate of **new cases below 3%**
 - *30-day rolling average

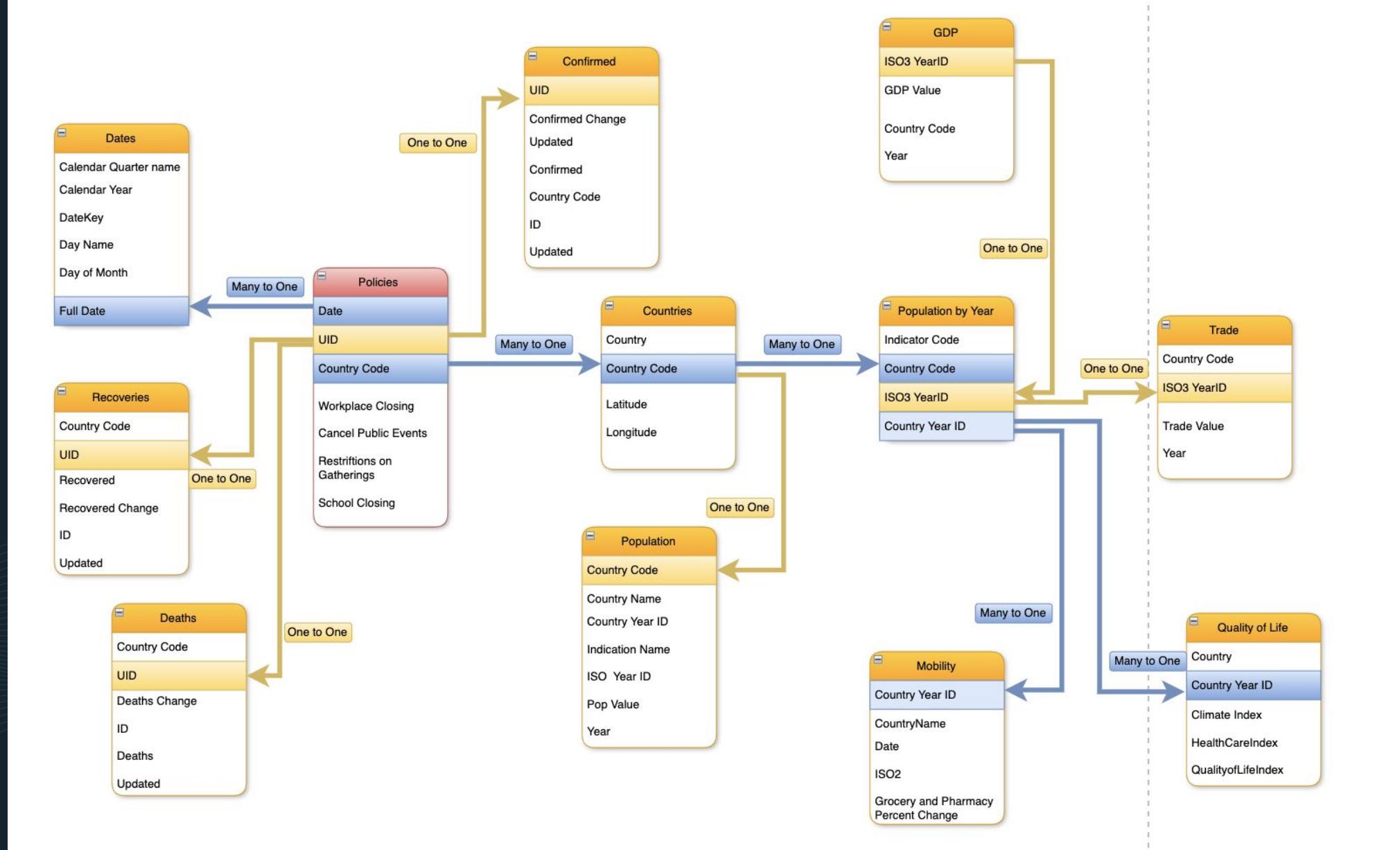
The Data Flow



The Snowflake Schema



The Galaxy Schema





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Policy Recommendation

Final Recommendation



Workplace Closing

Level 2



Stay at Home

Level 1



Protection of
Elderly People

Level 2



Testing Policy

Level 3



Closing Policies

Health Policies



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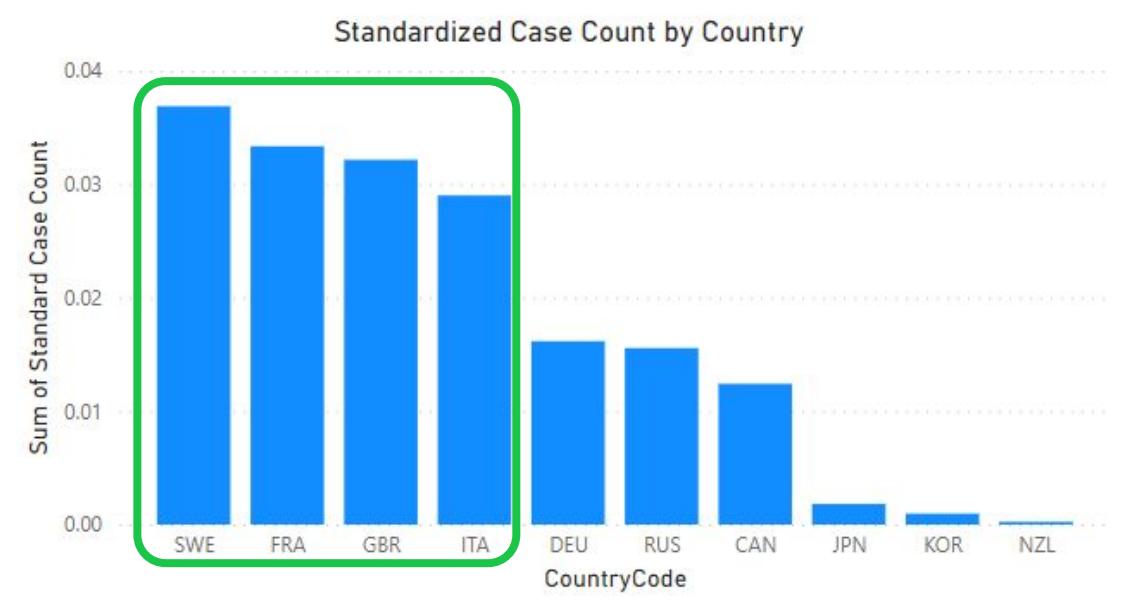
Policy Recommendation

Most Severe Countries



	CountryCode	Confirmed	Population_Sum	Standardized_Confirmed
0	CAN	946370	76233664.0	0.012414
1	DEU	2689205	166356949.0	0.016165
2	FRA	4513685	135335411.0	0.033352
3	GBR	4312908	134107526.0	0.032160
4	ITA	3440862	118572024.0	0.029019
5	JPN	459043	251942593.0	0.001822
6	KOR	100276	103581115.0	0.000968
7	NZL	2493	10201600.0	0.000244
8	RUS	4483471	288203621.0	0.015557
9	SWE	765984	20769253.0	0.036881

We calculated the countries with the highest number of cases relative to country's population size.



Exploratory Data Analysis Steps

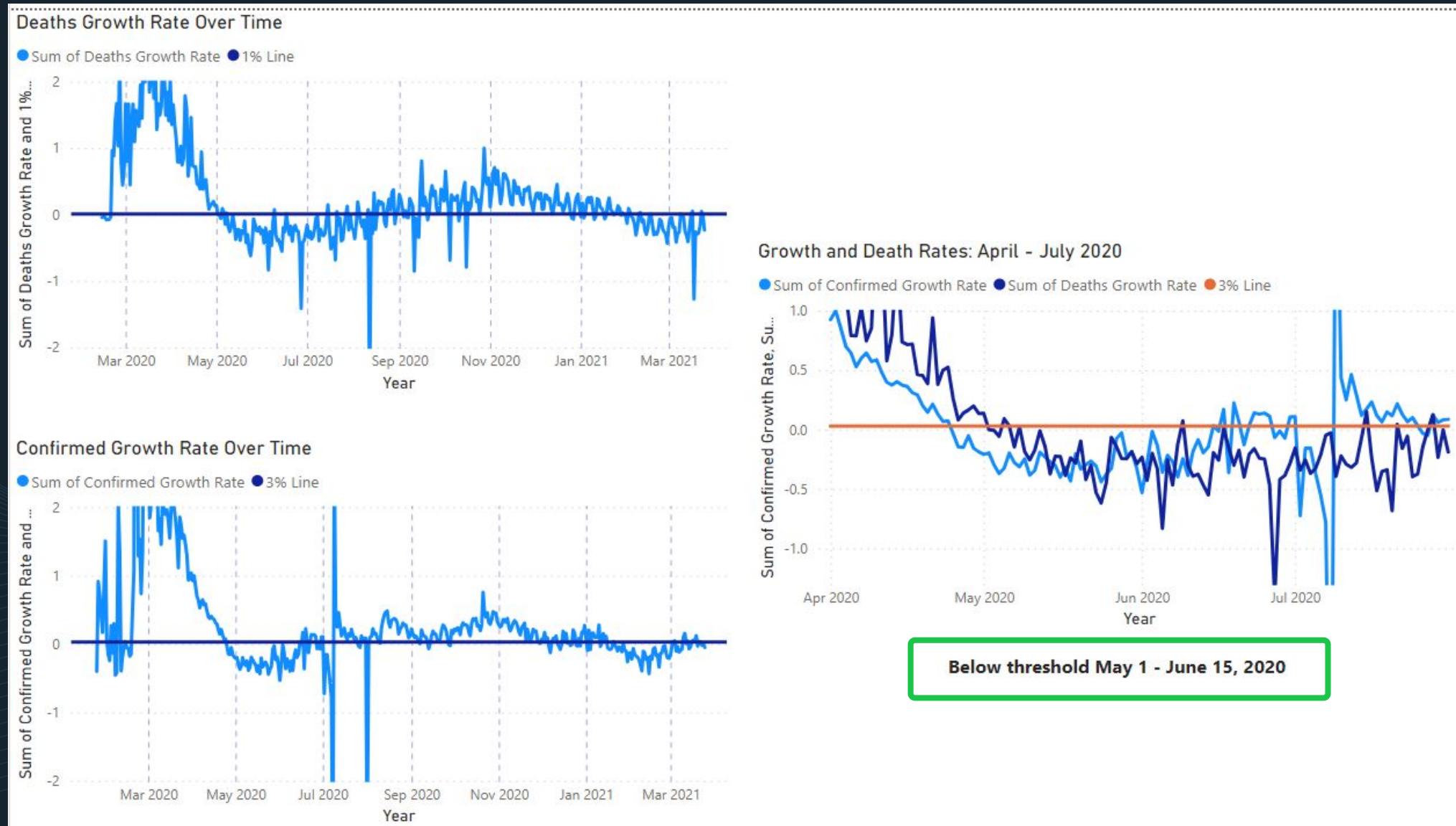


1. Find the **Most Effective** Policies



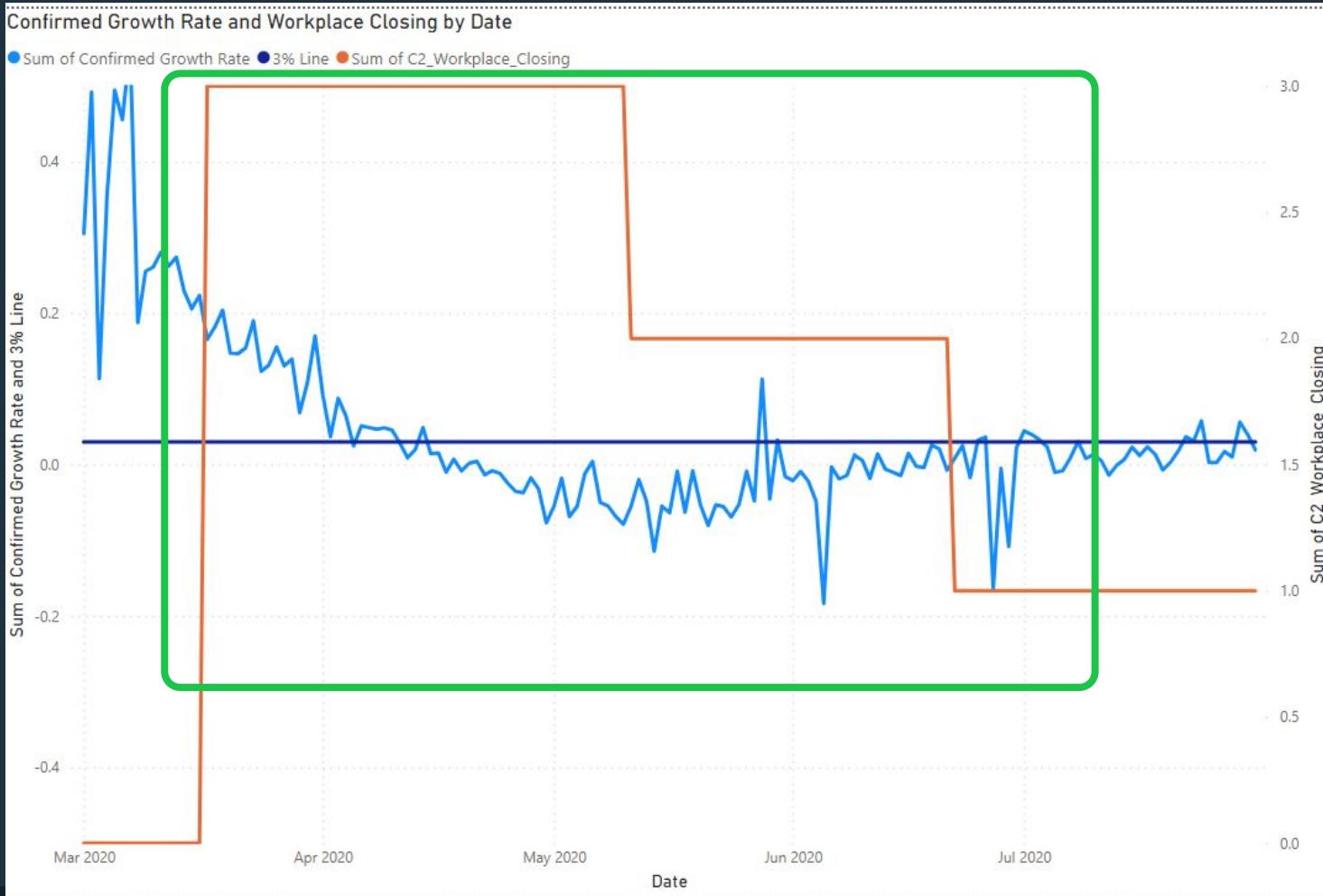
2. Compare the **Restrictiveness**

Time Period with Rates Under Threshold





Assessing Effectiveness



32 Visualizations

Graphed restriction level of **each policy against the growth rate of confirmed cases and deaths**

Country Specific

Using a slicer, we determined effectiveness on a **country-by-country basis**

Closing Policy Selections based on EDA

Policies	SC	WC	CP	G	PT	SH	IM	IT
Countries								
Canada	2	2	2	2	2	0	2	2
Germany	2	2	2	2	2	0	2	2
France	2	2	2	0	2	2	2	2
Great Britian	0	2	2	2	2	2	0	0
Italy	2	2	0	2	2	2	2	2
Japan	2	2	0	0	0	2	2	2
Korea	2	2	2	2	0	2	1	1
New Zealand	2	2	2	2	2	2	2	2
Russia	2	2	2	2	2	2	2	2
Sweden	2	2	2	2	2	2	2	2
Total	18	20	16	16	12	20	18	17

1. Workplace Closing + Stay at Home
2. School Closing + Internal Movement
3. International Travel

Health Policy Selections based on EDA

Policies	PI	TP	CT	EI	IV	FC	VP	EP
Countries								
Canada	2	2	0	0	0	0	0	2
Germany	0	2	0	2	0	0	2	0
France	0	0	1	2	0	0	0	2
Great Britian	0	0	0	0	1	0	0	2
Italy	0	0	0	1	0	2	0	0
Japan	0	0	0	2	0	0	0	2
Korea	0	0	0	0	0	0	0	1
New Zealand	0	2	0	2	0	0	0	2
Russia	2	2	2	0	2	2	0	2
Sweden	2	1	2	0	2	0	0	2
Total	6	9	5	9	5	6	0	17

1. Protection of Elderly People
2. Emergency Investment + Testing Policy
3. Public Information + Facial Covering

Comparing Restrictiveness



Our top **5 effective**
policies were all
restrictive

Reduce to

2 least restrictive policies

HEALTH

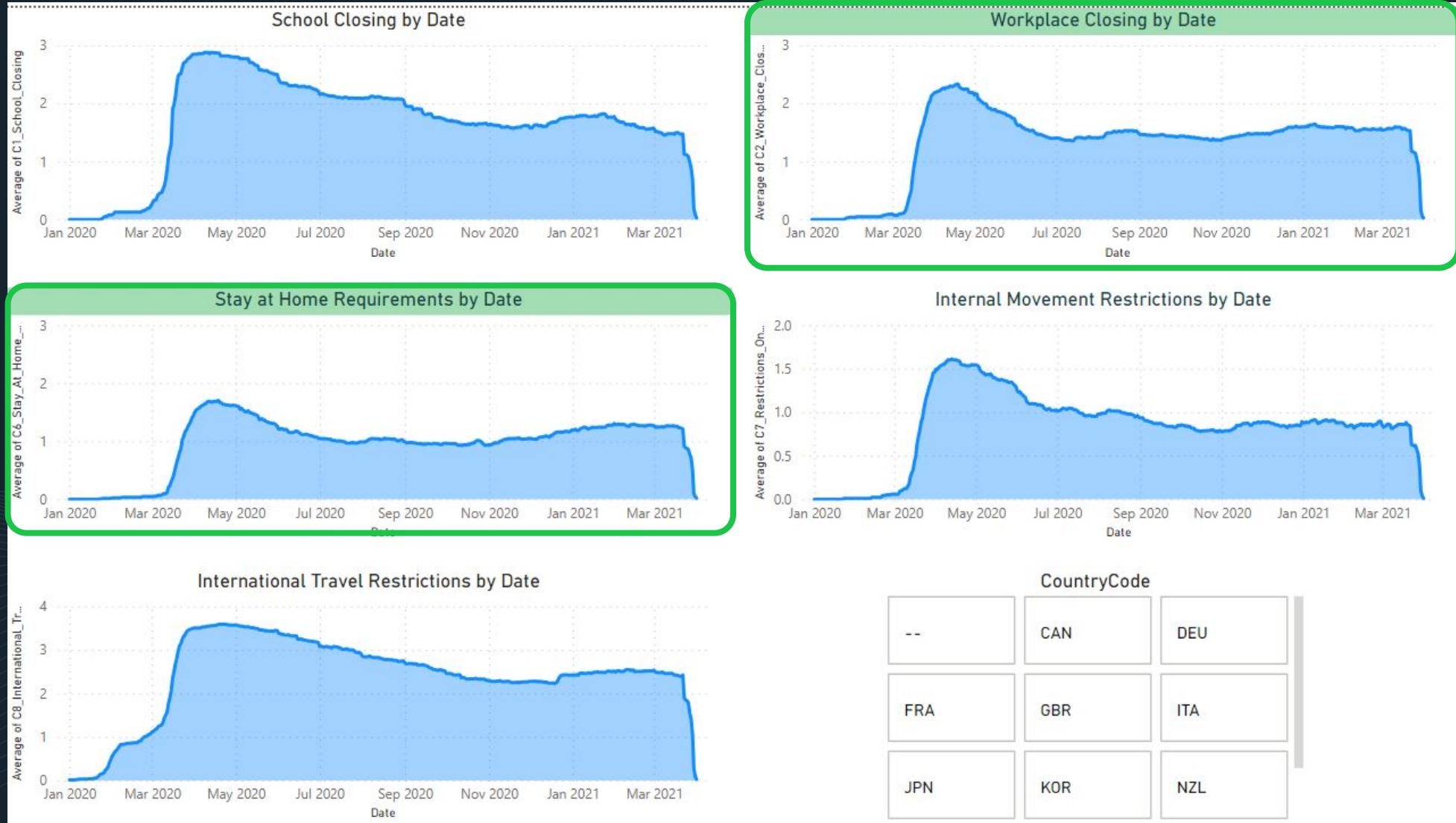
1. Protection of Elderly People
2. Testing Policy

CLOSING

1. Stay at Home
2. Workplace Closing

Analyzed
restriction level

Policy Restrictions Over Time





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Most unrestrictive & effective set of policies:

Closing

- Workplace Closing
- Stay at Home

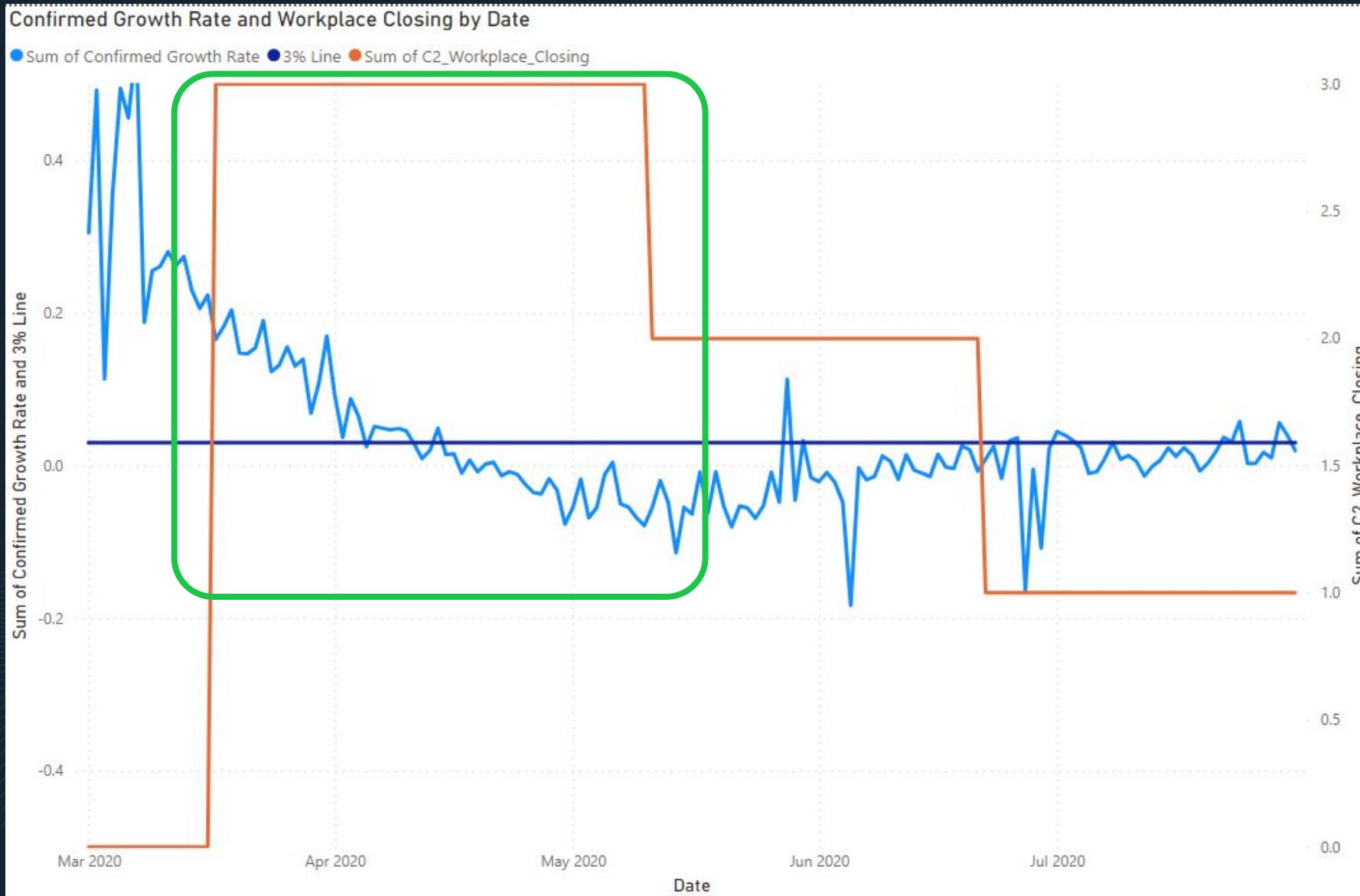
Health

- Protection of Elderly People
- Testing Policy

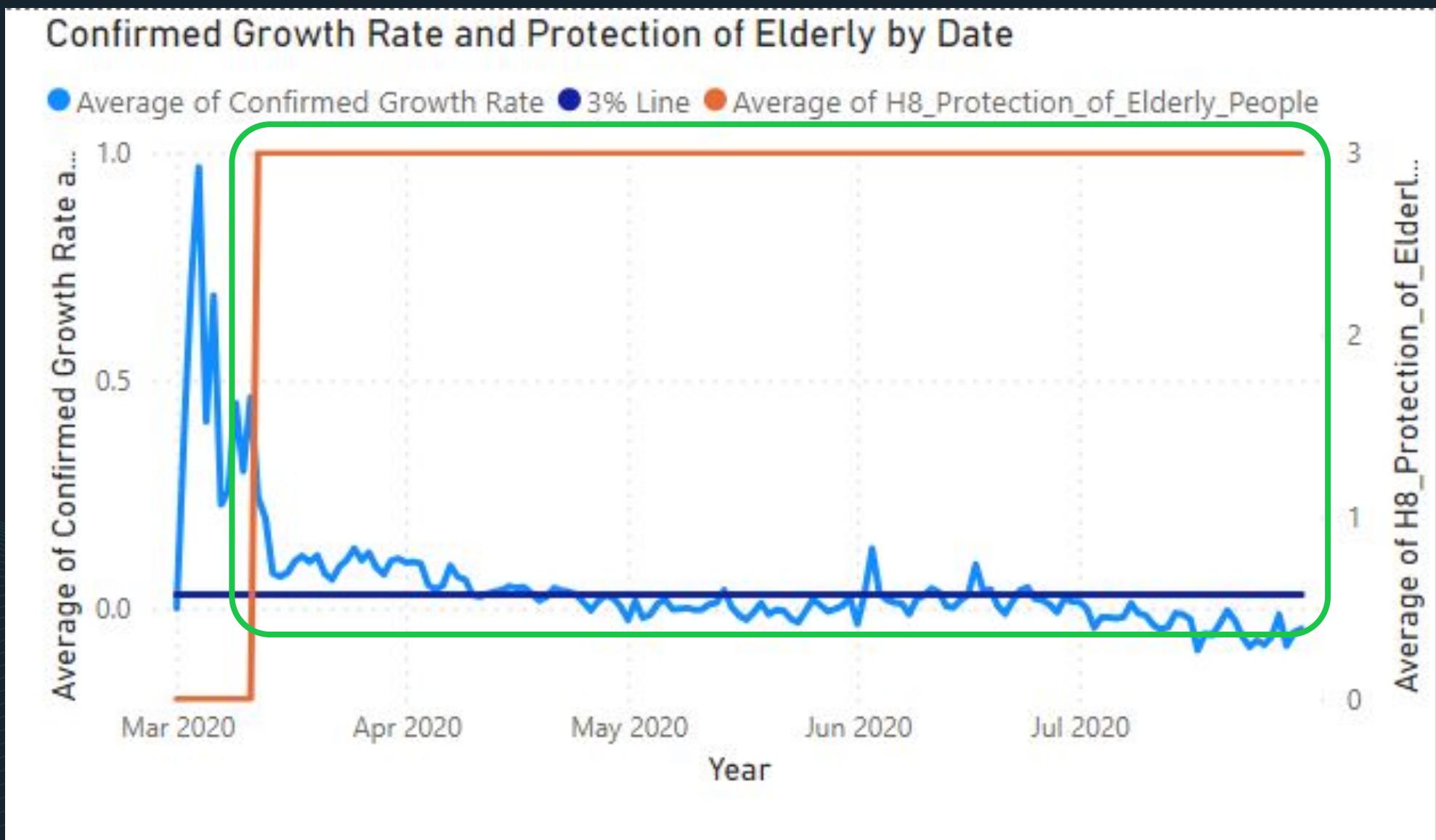
Example: Sweden - Stay at Home



Example: Sweden - Workplace



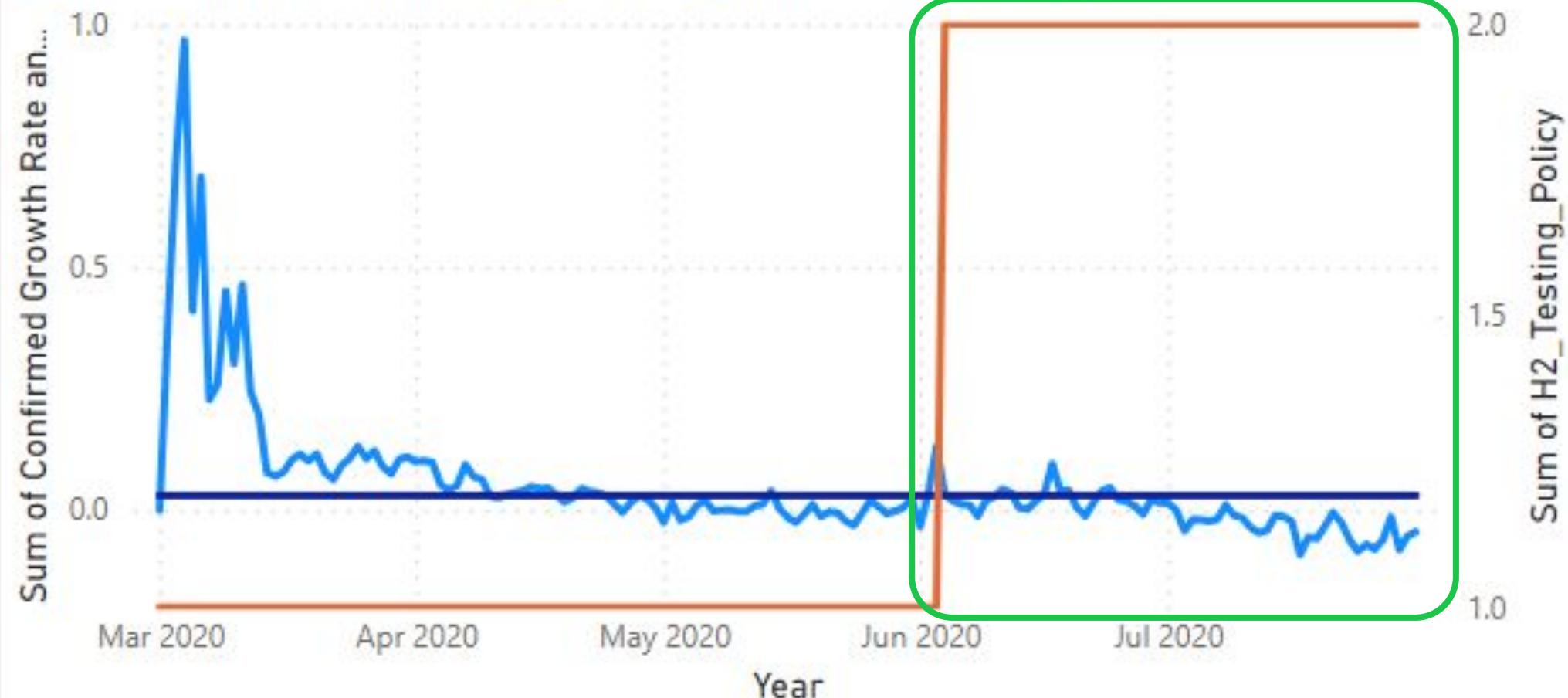
Example: Sweden - Protection of Elderly



Example: Sweden - Testing Policy

Confirmed Growth Rate and Testing Policy by Date

● Sum of Confirmed Growth Rate ● 3% Line ● Sum of H2_Testing_Policy





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Policy Recommendation

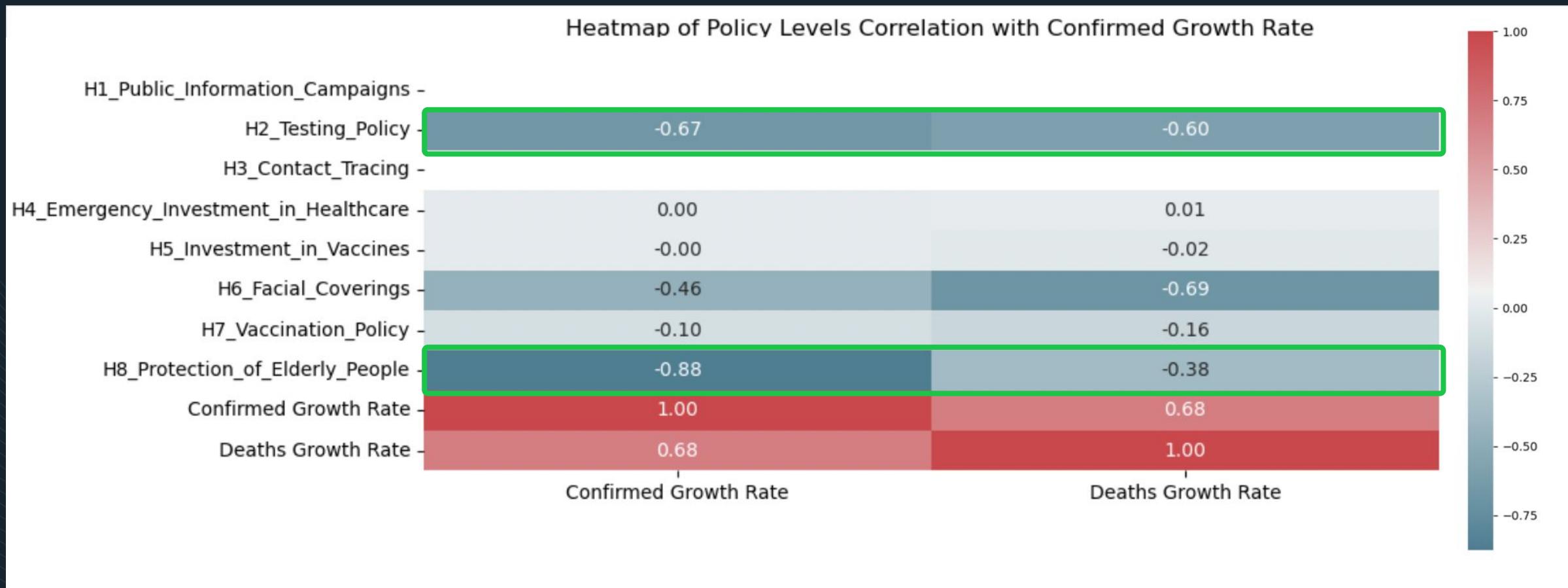


Using Statistical Methods

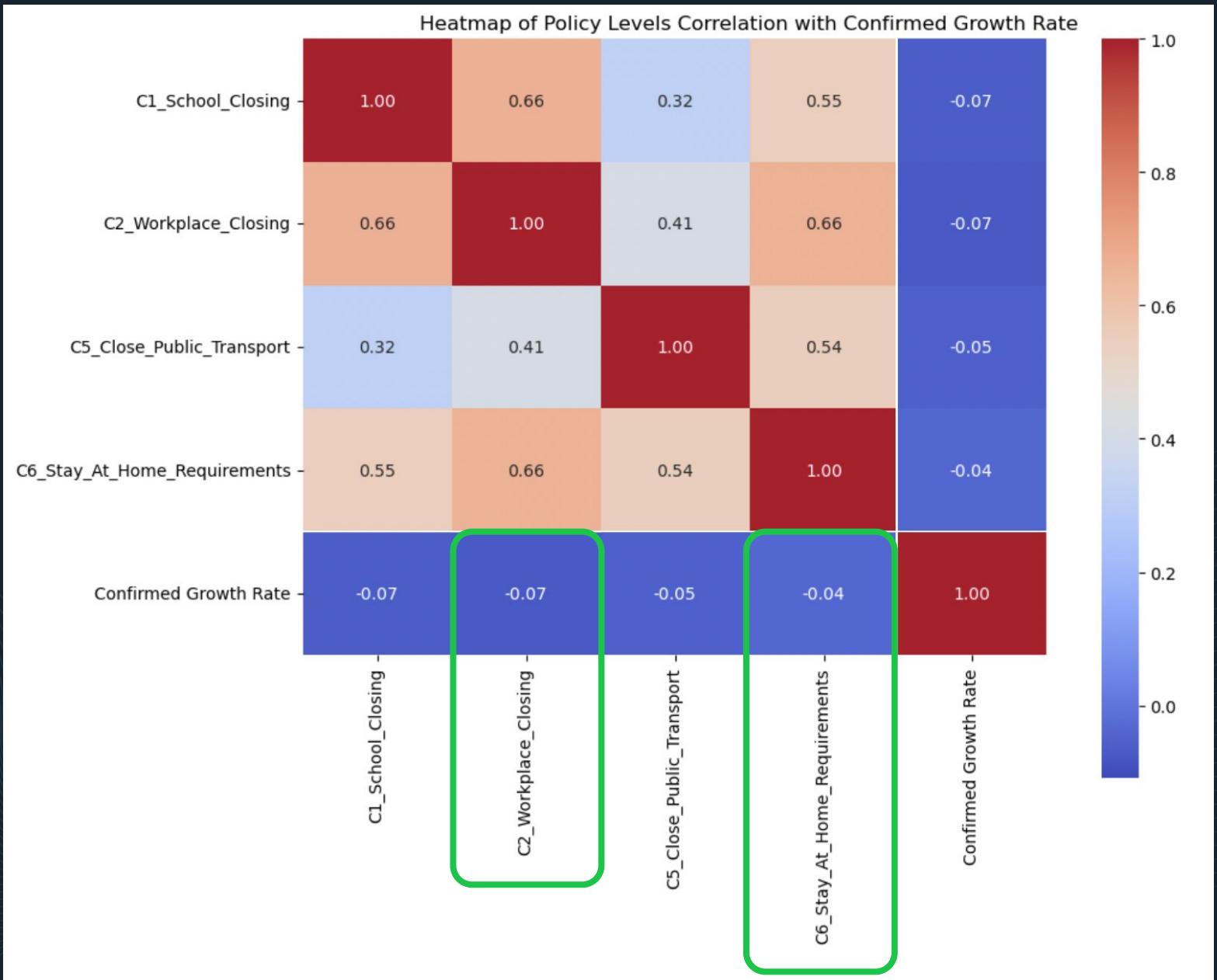


Workplace Closing and
Mask Requirements

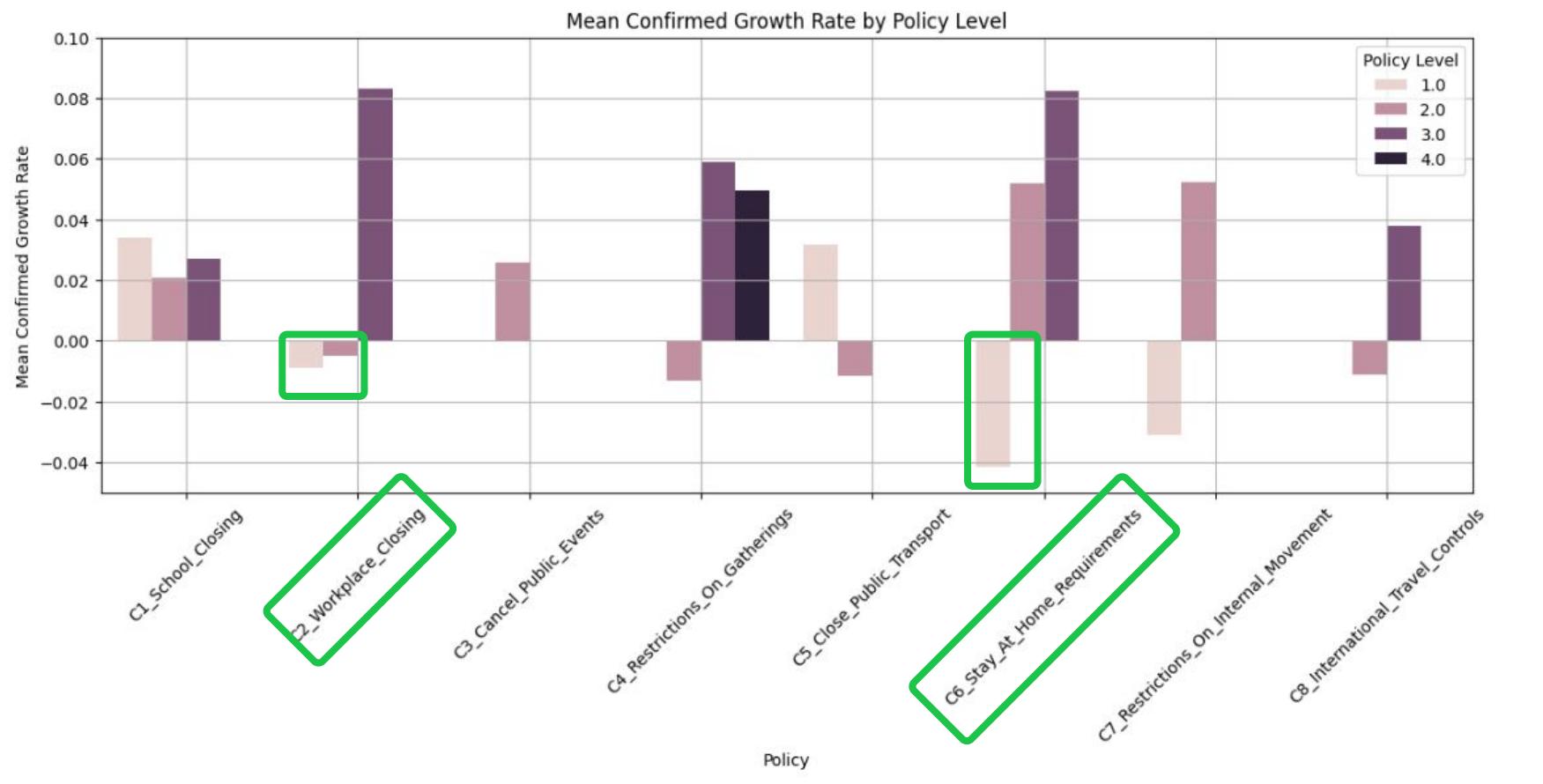
Health Policies Correlation



Closing Policies Correlation



Avg. Confirmed Growth Rate by Closing Policies



Testing Policy Insights

0 - no testing policy

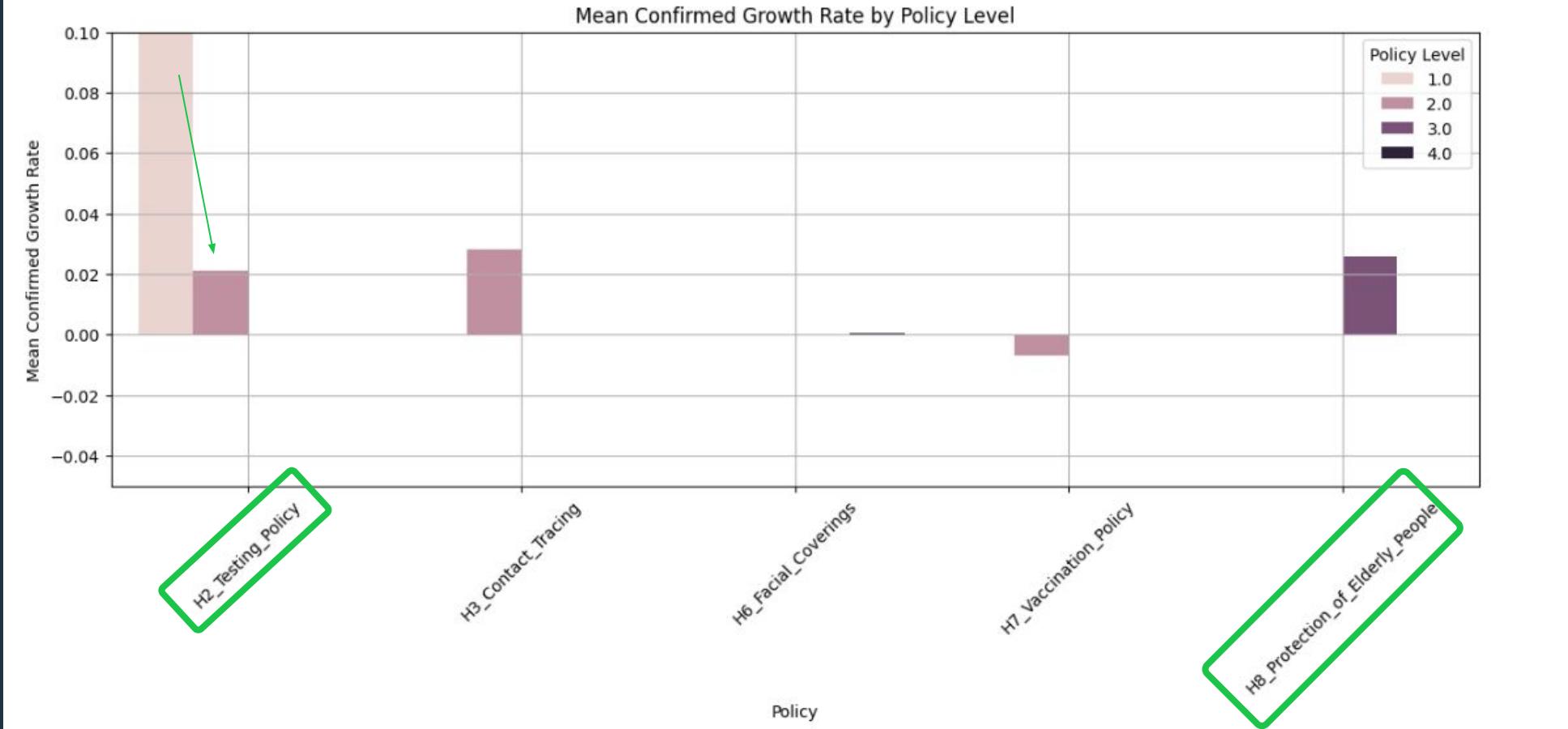
1 - only those who both (a) have symptoms AND (b) meet specific criteria
(for example, key workers, admitted to hospital, came into contact with a known case, returned from overseas)

2 - testing of anyone showing Covid-19 symptoms

3 - open public testing (for example “drive through” testing available to asymptomatic people)

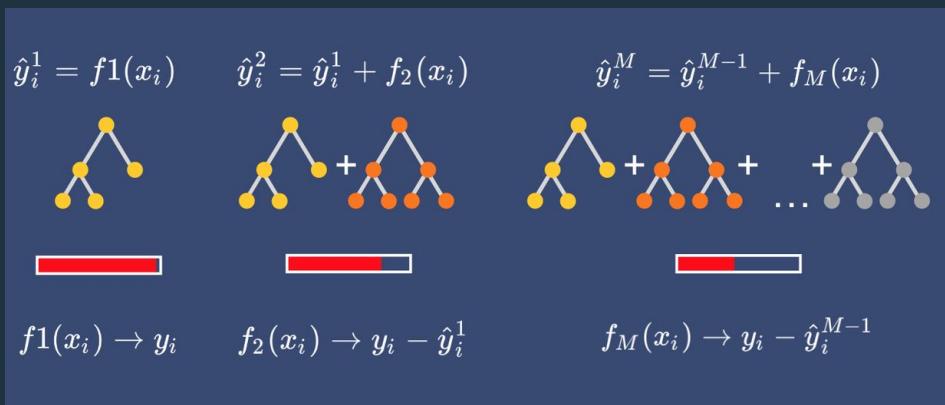
As testing becomes more accessible, growth rate **decreases**

Avg. Confirmed Growth Rate by Health Policies





Gradient Boosting Algorithm



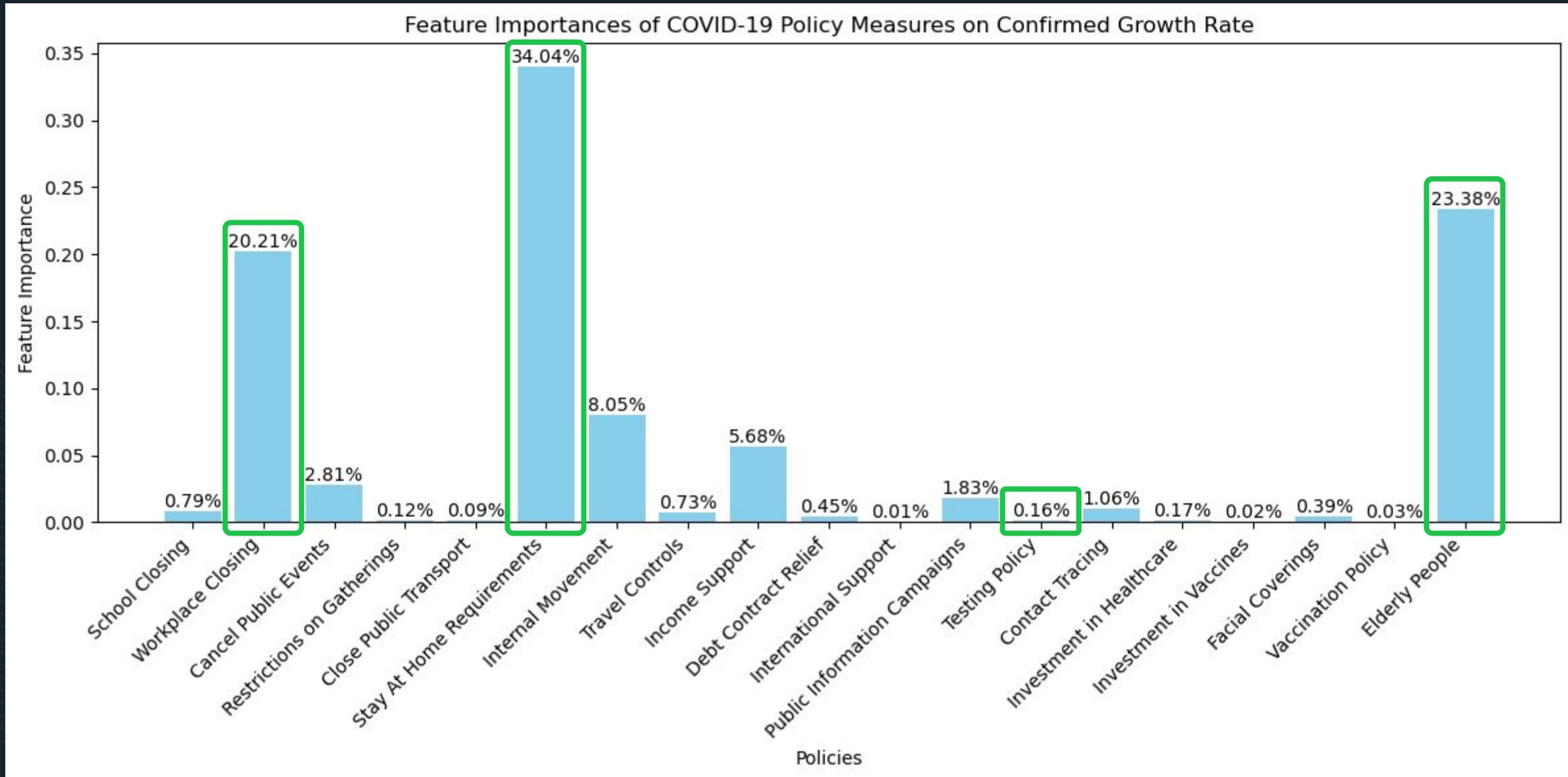
X = Set of Policies

Y = Confirmed Growth Rate

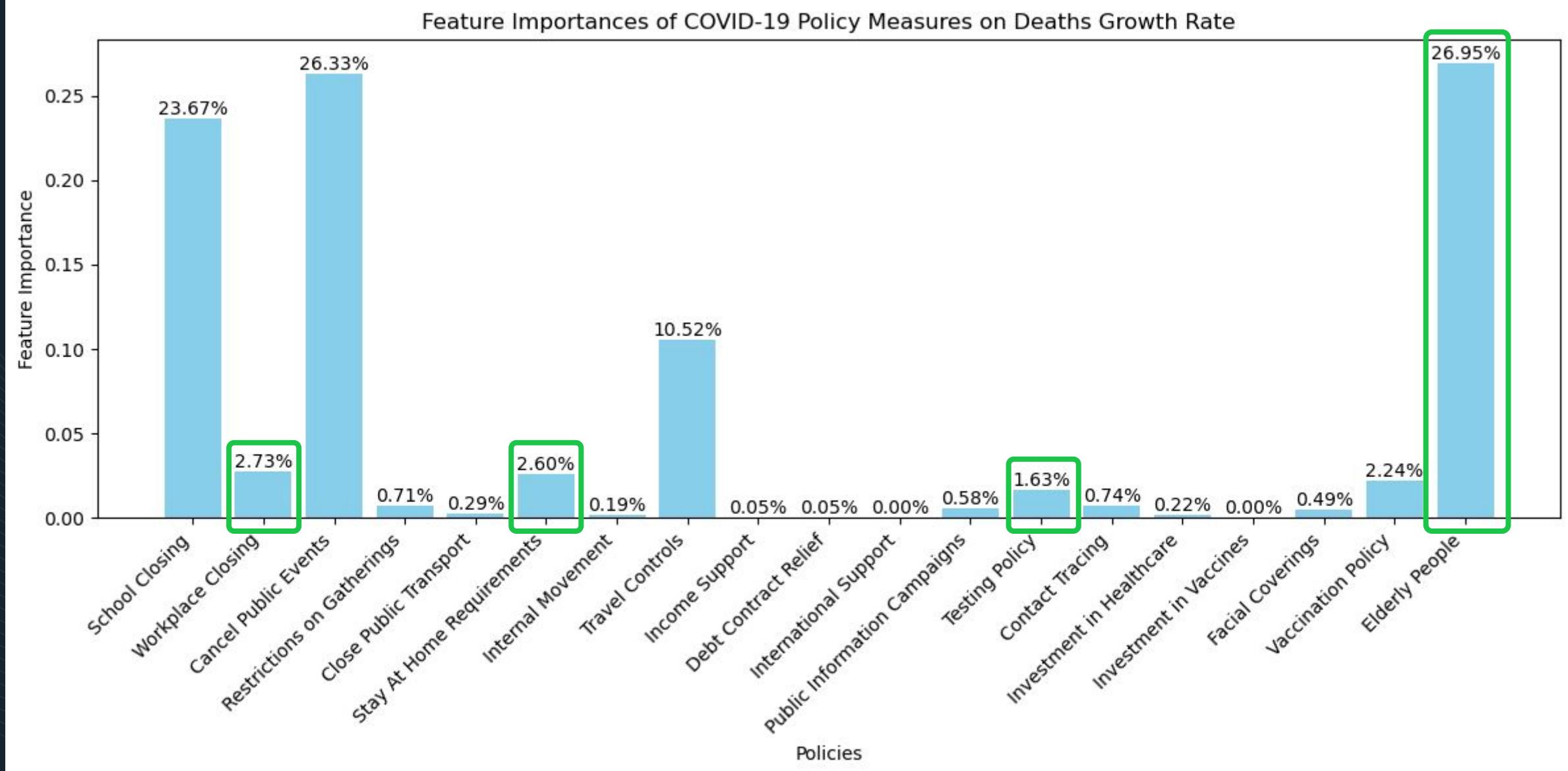


Workplace Closing and
Mask Requirements

Feature Importance for Confirmed Growth Rate



Feature Importance for Death Growth Rate



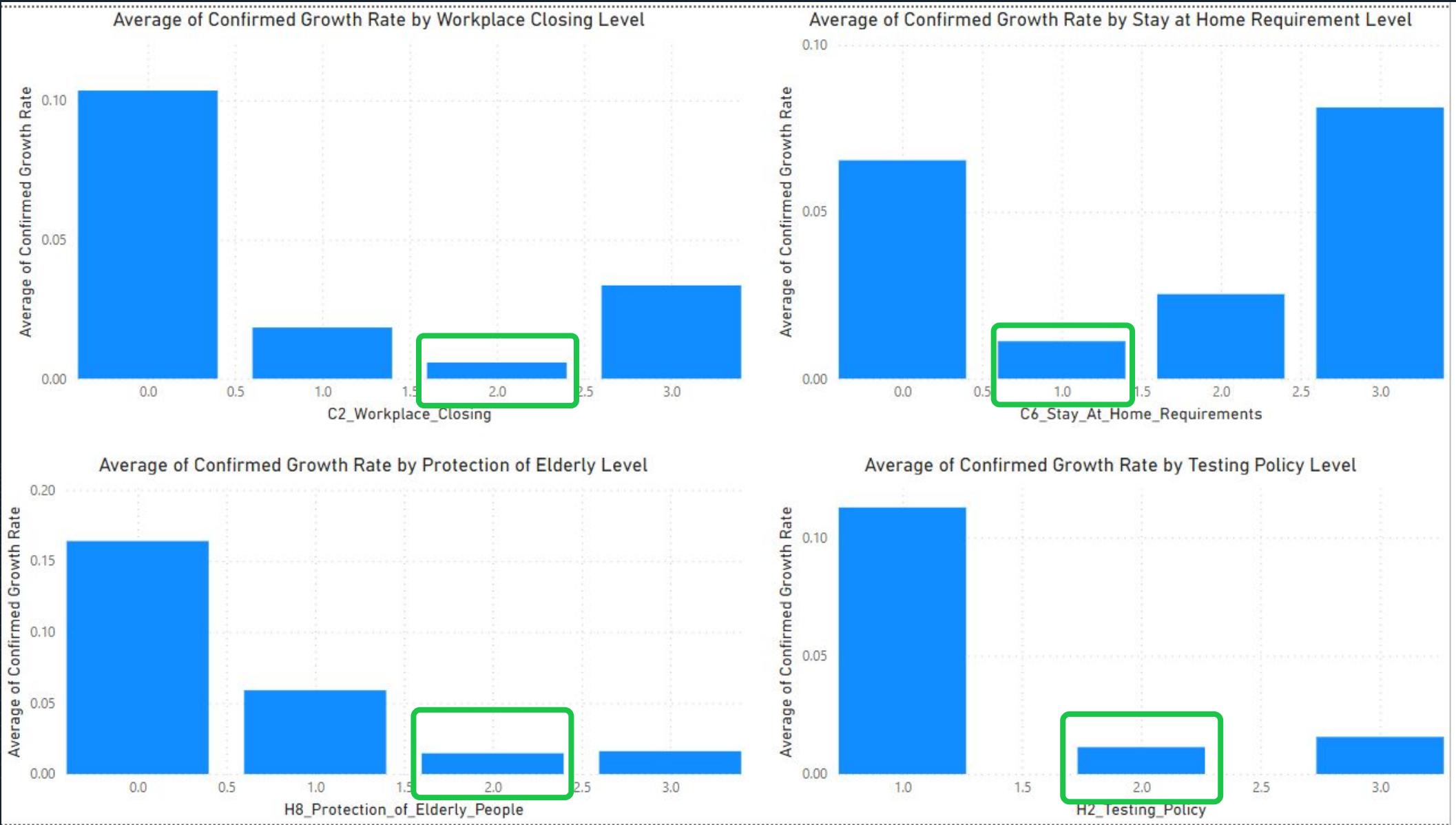


Choosing the Best Levels

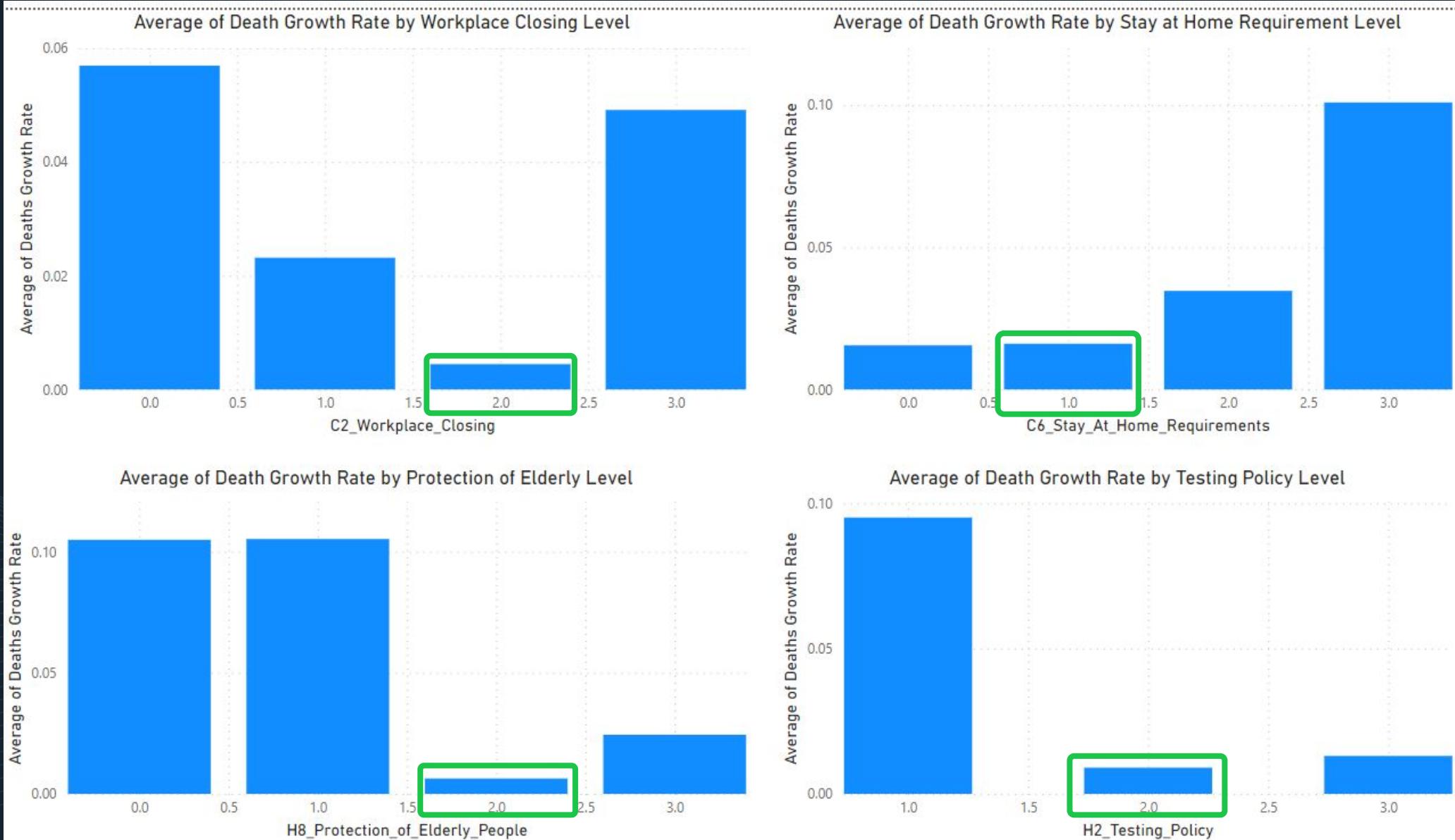


Workplace Closing and
Mask Requirements

Avg. Confirmed Growth Rate by Policy Levels



Avg. Death Growth Rate by Policy Levels



Summary



Final Recommendation:

- Closing
 - Stay at Home: Level 1 (recommend staying home when possible)
 - Closing Workplace: Level 2 (require closing or work from home for some sectors or categories of workers)
- Health
 - Elderly People: Level 2
 - Testing Policy: Level 3 (open public testing (for example “drive through” testing available to asymptomatic people)