

How to **convince** global leaders to commit themselves to **efficiency and justice** regarding pandemic resource distribution?

Evidence on public opinion as tool
to overcome the ethics-to-policy gap



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Lisbon and online, 9 May 2025
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What we already knew

long before COVID-19

One of many ethical challenges in pandemics: Scarcity of public goods



Emanuel et al., 2022; Garrett et al., 1993; Jonsen et al., 1998; Kennedy, 2016; Mannelli, 2020; Persad et al., 2009; Rhodes, 2014; Smith & Upshur, 2020; Tong, 2014

<https://pixabay.com/vectors/coronavirus-icon-corona-virus-5107715/>, <https://pixabay.com/vectors/covid-self-test-negative-corona-615830/>, <https://pixabay.com/vectors/scuba-tank-diving-tank-oxygen-23932/>, <https://pixabay.com/vectors/factory-industry-manufacture-154904/>, <https://pixabay.com/vectors/pallet-transporter-310303/>, <https://pixabay.com/illustrations/vaccine-injection-covid-19-val-5779405/>, <https://pixabay.com/illustrations/hospital-clpart-bedside-1978209/>

Long before the pandemic, we all knew:

Ethical distributive justice principles

Benefit maximisation
(*Utilitarianism*)

Save as many as possible!



Equality

Lottery!

First come, first served!



Need (Equity)

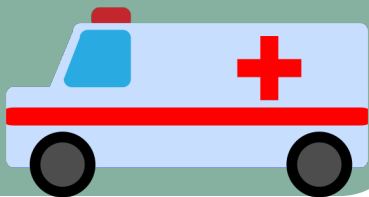
(*Deontology*)

Prioritise the vulnerable!



Social usefulness

Health care personnel first!



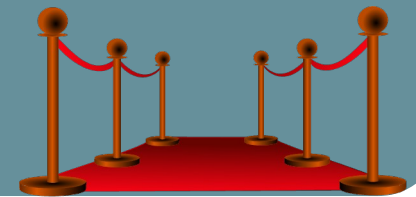
Merit

Adherent individuals first!



Entitlement

Nobility first!



Boyd, 1997; Boylan, 2014; Campbell et al., 2001; Daniels, 1987; Day et al., 2020; Emanuel et al., 2022; Garrett et al., 1993; Gillon, 1997; Jonsen et al., 1998; Mikula, 1980; Persad et al., 2009; Tong, 2014; Vincent & Creteur, 2020

Long before the pandemic, we all knew: Ethical distributive justice principles

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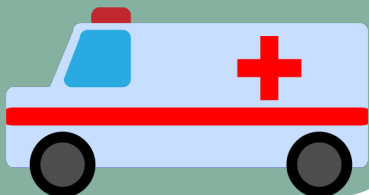
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Need (Equity)
(Deontology)
Prioritise the vulnerable!



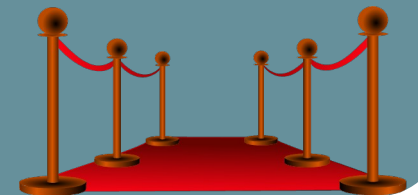
Social usefulness
Health care personnel first!



Equality
Adherent individuals first!



Entitlement
Nobility first!



Not new either!

Boyd, 1997; Boylan, 2014; Campbell et al., 2001; Daniels, 1987; Day et al., 2020; Emanuel et al., 2022; Garrett et al., 1993; Gillon, 1997; Jonsen et al., 1998; Mikula, 1980; Persad et al., 2009; Tong, 2014; Vincent & Creteur, 2020

We also knew:
During pandemics, distributive justice is global.



Ali et al., 2024; Bolcato, et al., 2021; Bruce & Tallman, 2021; Chen et al., 2021; Emanuel, Persad, Kern et al., 2020; Emanuel, Persad, Upshur et al., 2020; Evans, 2020; Hempel et al., 2021; Holtzman et al., 2022; Ismail et al., 2021; Jecker et al., 2021; Liu et al., 2020; Luna & Holzer, 2021; Marmot & Allen, 2020; Marmot et al., 2020; McMahon et al., 2020; Moodley et al., 2021; Shadmi et al., 2020; Sirleaf et al., 2021; Wild et al., 2022; WHO, 2020

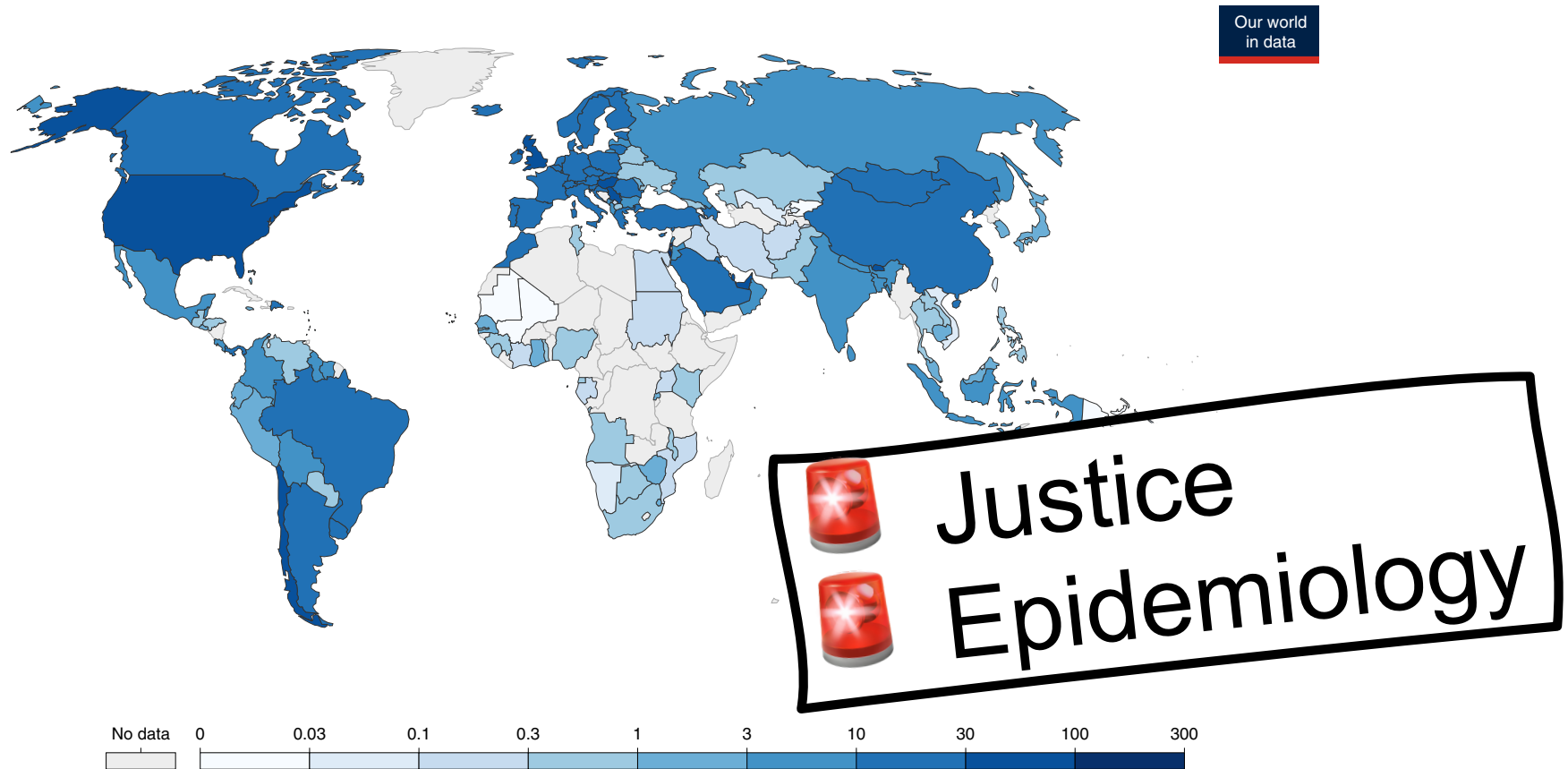


Fig. 3 | Cumulative vaccine doses administered per 100 people in the total population. Shown are the global data as of 7 April 2021. Single doses are counted, and may not equal the total number of people vaccinated, depending on the specific dose regime (some people may have received multiple doses).

Abbas, 2020; Ali et al., 2024; Campbell et al., 2001; Garrett et al., 1993; Ismail et al., 2021; Jecker et al., 2021; Jonsen et al., 1998; Katz et al., 2021; Lagman, 2021; Luna & Holzer, 2021; Mandavilli, 2024a; Mathieu et al., 2021; McMahon et al., 2020; Smith & Upshur, 2020; Tandon, 2021; WHO, 2023b, 2024

Who is to blame?

Our world
in data



Fig. 3 | Cumulative vaccine doses administered per 100 people in the total population. Shown are the global data as of 7 April 2021. Single doses are counted, and may not equal the total number of people vaccinated, depending on the specific dose regime (some people may have received multiple doses).

16 April 2025

BBC

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WHO agrees legally binding pandemic treaty

16 April 2025

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Jim Reed

Health reporter • [jim_reed](#)



French ambassador for global health Anne-Claire Amprou and WHO chief Tedros Adhanom Ghebreyesus after the treaty was agreed

Members of the World Health Organization (WHO) have agreed the text of a legally binding treaty designed to better tackle future pandemics.

The pact is meant to avoid the disorganisation and competition for resources seen during the Covid-19 outbreak.

*Although a Pandemic Treaty draft
was agreed upon in April 2025:*

What we do not know

<https://pixabay.com/illustrations/crowd-pose-silhouettes-2045499/>; <https://pixabay.com/vectors/cinema-movie-premiere-1293891/>; <https://pixabay.com/vectors/dance-25637/>; <https://pixabay.com/vectors/education-opportunity-equality-7200675/>; <https://pixabay.com/vectors/first-gold-medal-premier-winner-2023915/>; <https://pixabay.com/vectors/ambulances-hospital-medical-health-2411793/>; <https://pixabay.com/> 2021, p. 950



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How to overcome the science-to-policy gap?

Ask ordinary citizens!

Inform policymakers with evidence on public opinion!



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Our study

Samples

Cohort 1

- ✓ Online questionnaire study
- ✓ Summer 2021
- ✓ Recruitment: Respondi (Bilendi)
- ✓  
- ✓ Representative
- ✓ Quality checked
- ✓ **N = 2692**
($n_{\text{England}} = 1328$, $n_{\text{Germany}} = 1364$)

Cohort 2

- ✓ Online questionnaire study
- ✓ Spring 2024
- ✓ Recruitment: Bilendi (Respondi)
- ✓ 
- ✓ Representative
- ✓ Quality checked
- ✓ **N = n_{Germany} = 1155**

Global Resource Distribution Principles Scale (GRDP)

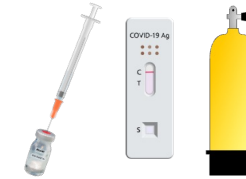
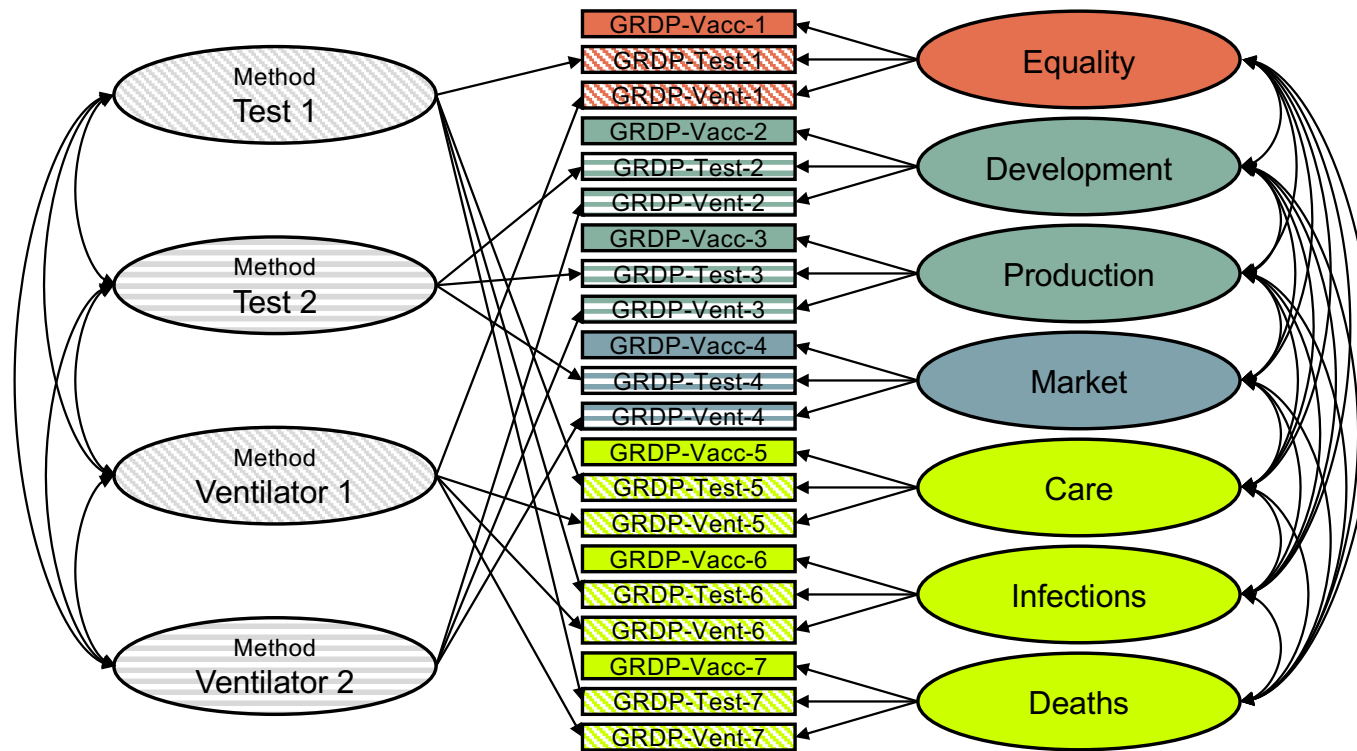
**Until enough COVID-19 vaccine can be produced to supply the entire world,
I think it would be just if ...**

1	Equality	<i>All countries equally (per capita)!</i>
2	Merit: Development	<i>Countries that developed the resource first!</i>
3	Merit: Production	<i>Countries that produced the resource first!</i>
4	Entitlement: Market	<i>Countries that pay more first!</i>
5	Need: Care	<i>Countries with worse treatment possibilities first!</i>
6	Need: Infections	<i>Countries with highest infection rates first!</i>
7	Need: Deaths	<i>Countries with highest death tolls first!</i>



cf. Fischer et al., 2017

<https://pixabay.com/vectors/scuba-tank-diving-tank-oxygen-23932/>, <https://pixabay.com/vectors/covid-self-test-negative-corona-6155830/>, <https://pixabay.com/illustrations/vaccine-injection-covid-19-vial-5779405/>



Justice principle

- Equality
- Merit
- Entitlement
- Need
- Benefit maximisation

cf. Eid et al., 2017

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2021



cf. Fischer et al., 2017

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2024



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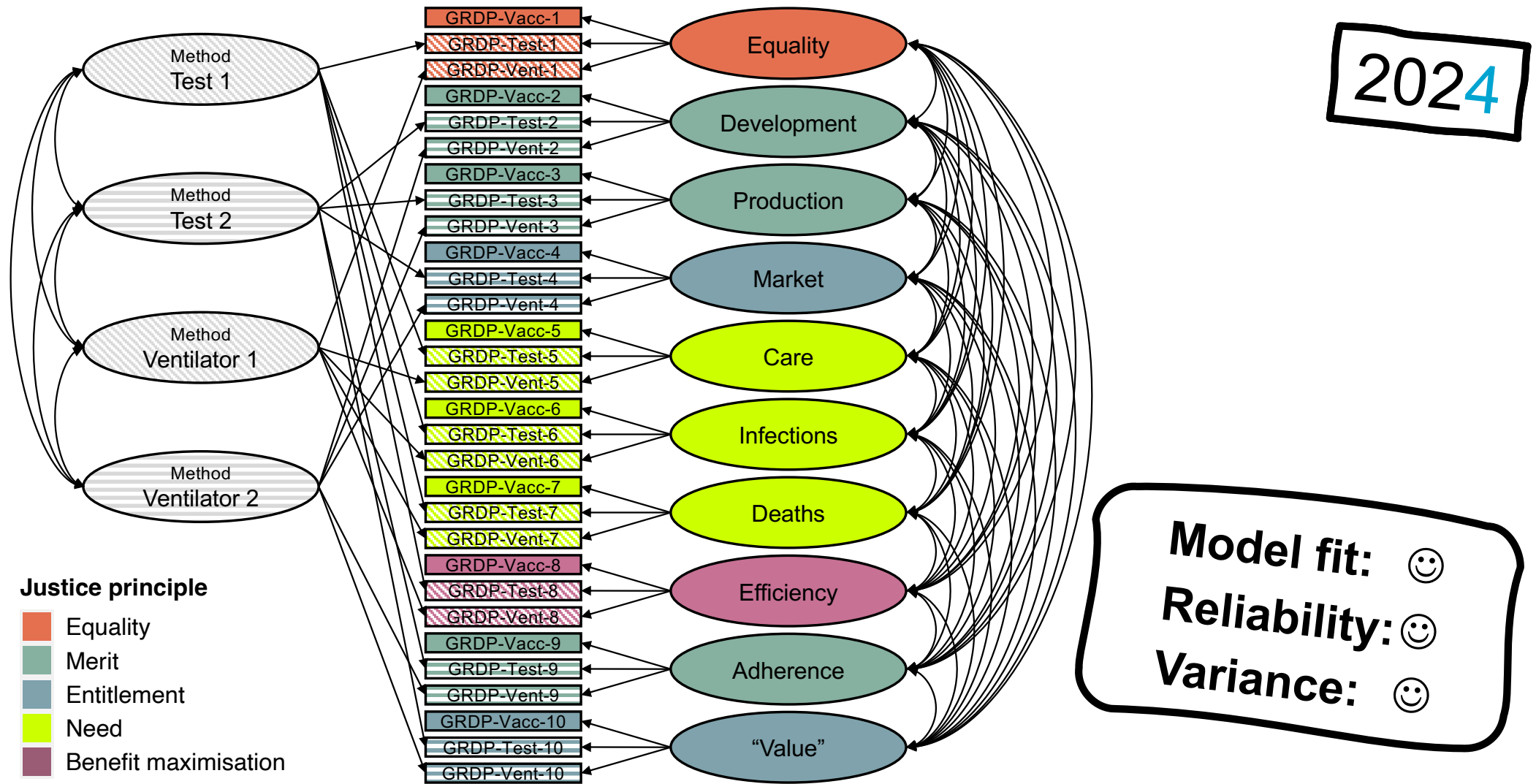
2024

1	Equality	<i>All countries equally (per capita)!</i>
2	Merit: Development	<i>Countries that developed the resource first!</i>
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6	Need: Infections	<i>Countries with highest infection rates first!</i>
7	Need: Deaths	<i>Countries with highest death tolls first!</i>
8	Benefit maximisation: Efficiency	<i>End the pandemic globally asap!</i>
9	Merit: Adherence	<i>Societies that adhere to containment measures first!</i>
10	Entitlement: "Value"	<i>Countries with more "valuable" citizens first!</i>

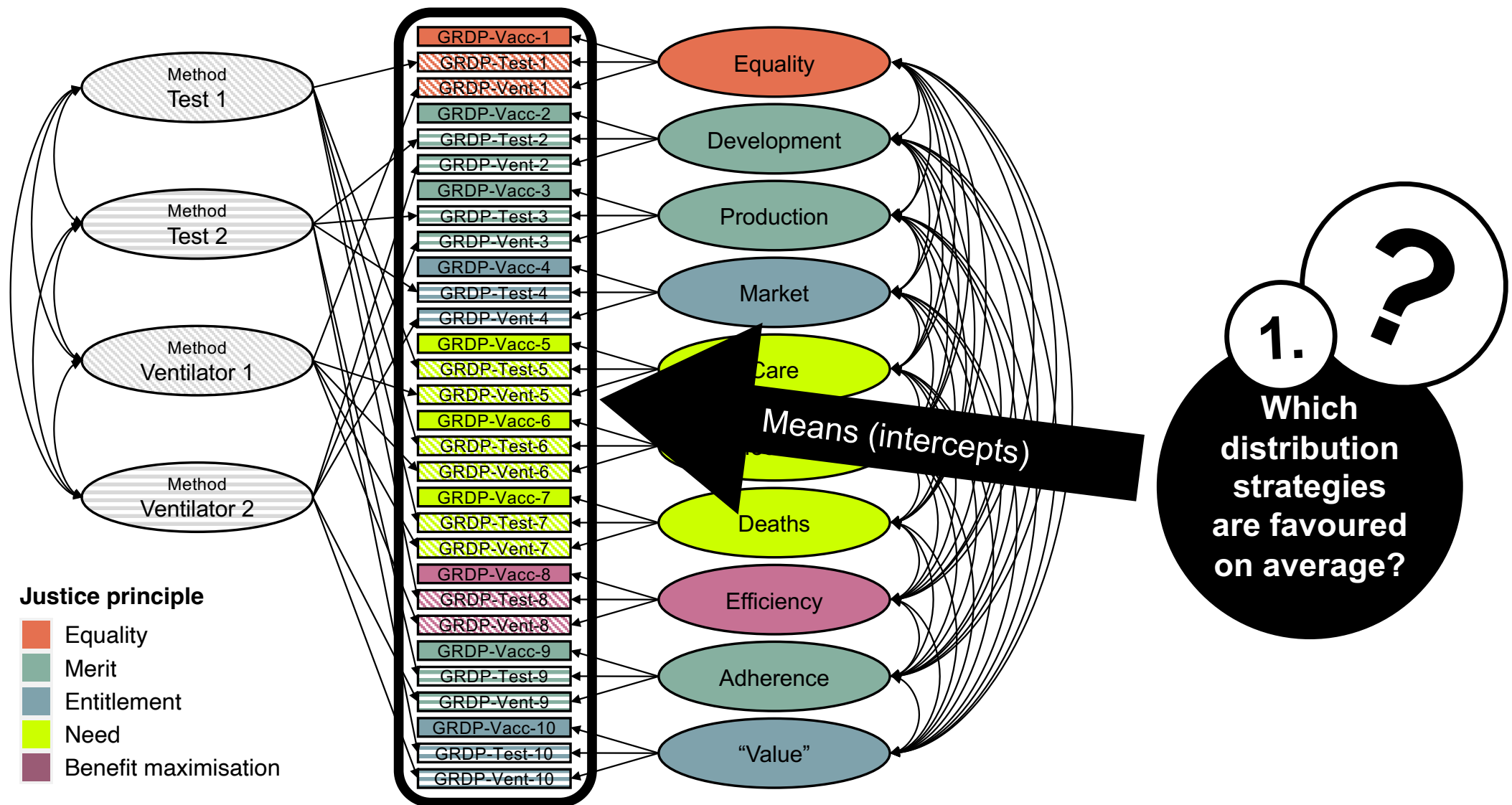


cf. Fischer et al., 2017

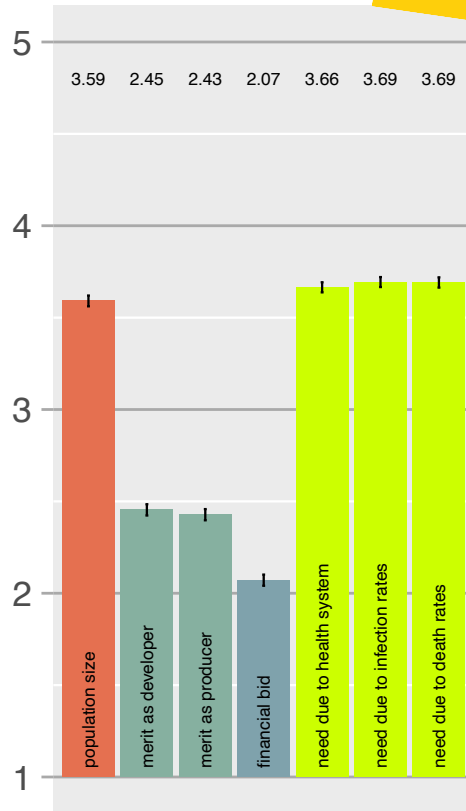
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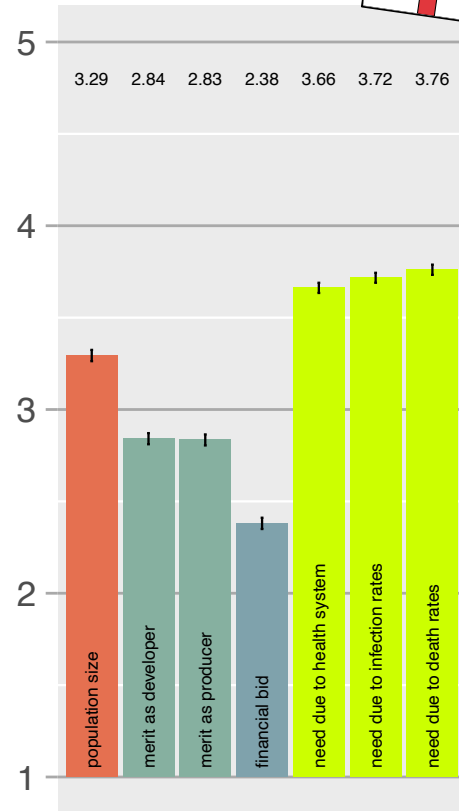
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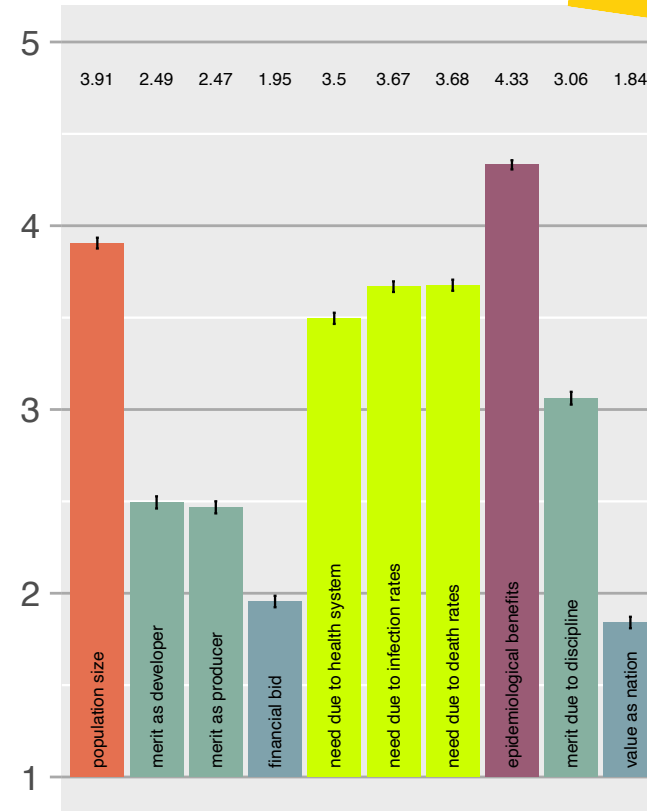
Germany, 2021
regarding COVID-19



England, 2021
regarding COVID-19

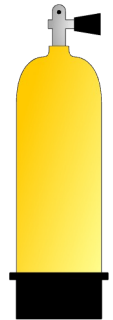


Germany, 2024
regarding a potential future pandemic

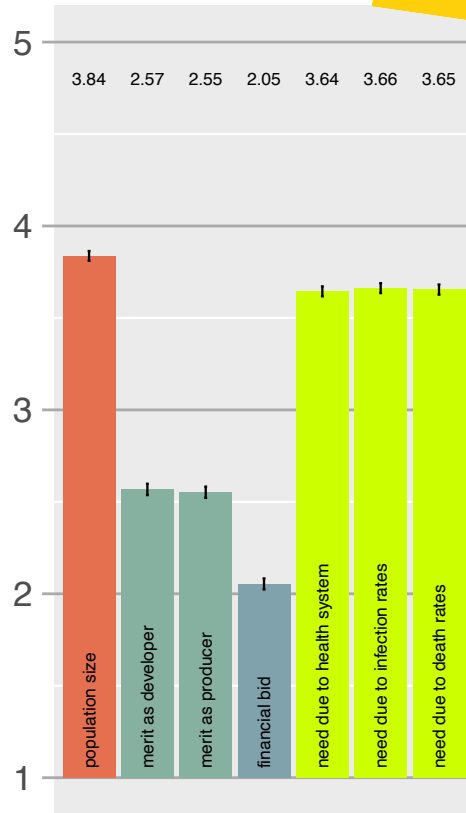


Justice principle

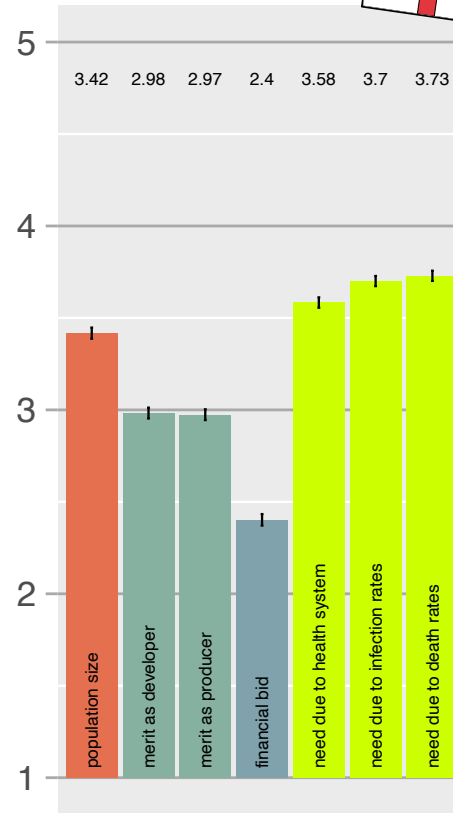
- Equality
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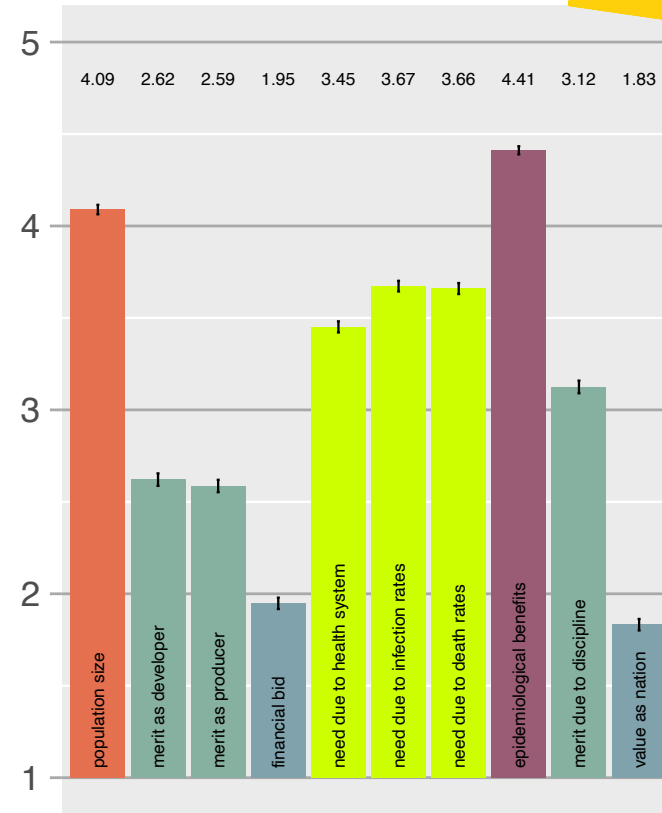
Germany, 2021
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England, 2021
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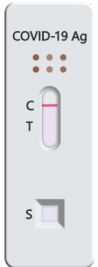


Germany, 2024
regarding a potential future pandemic

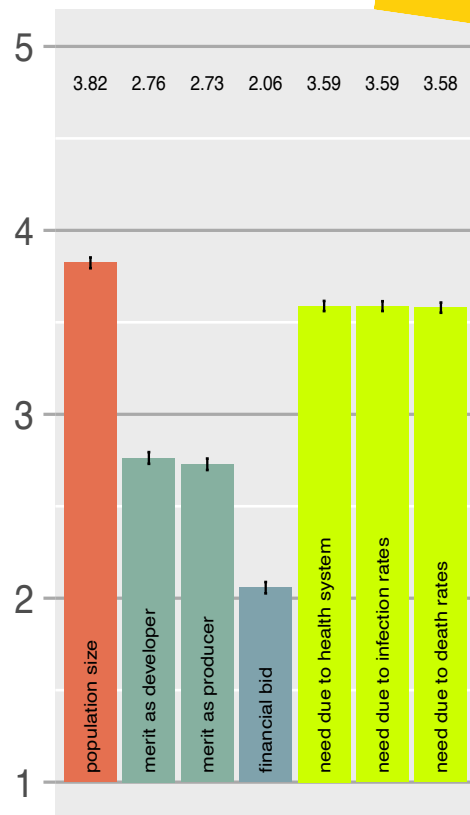


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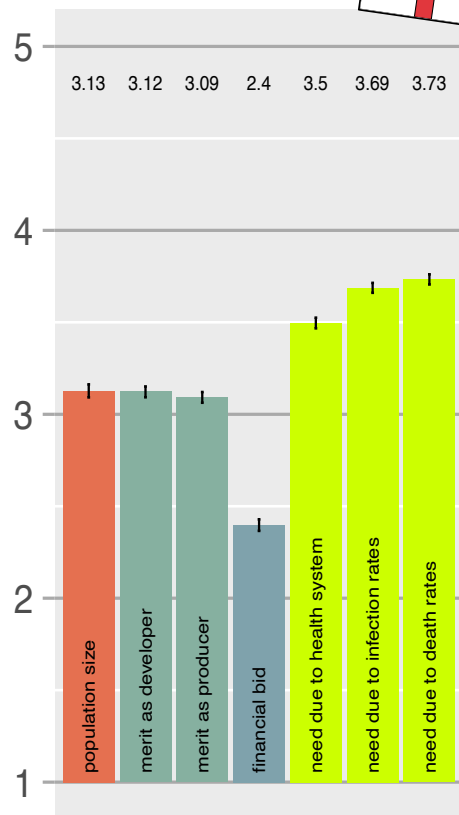
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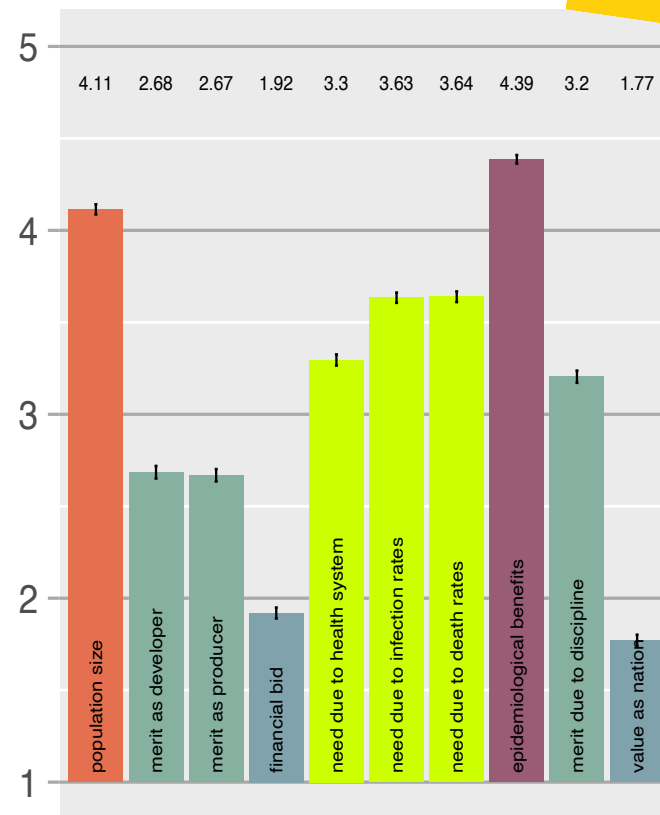
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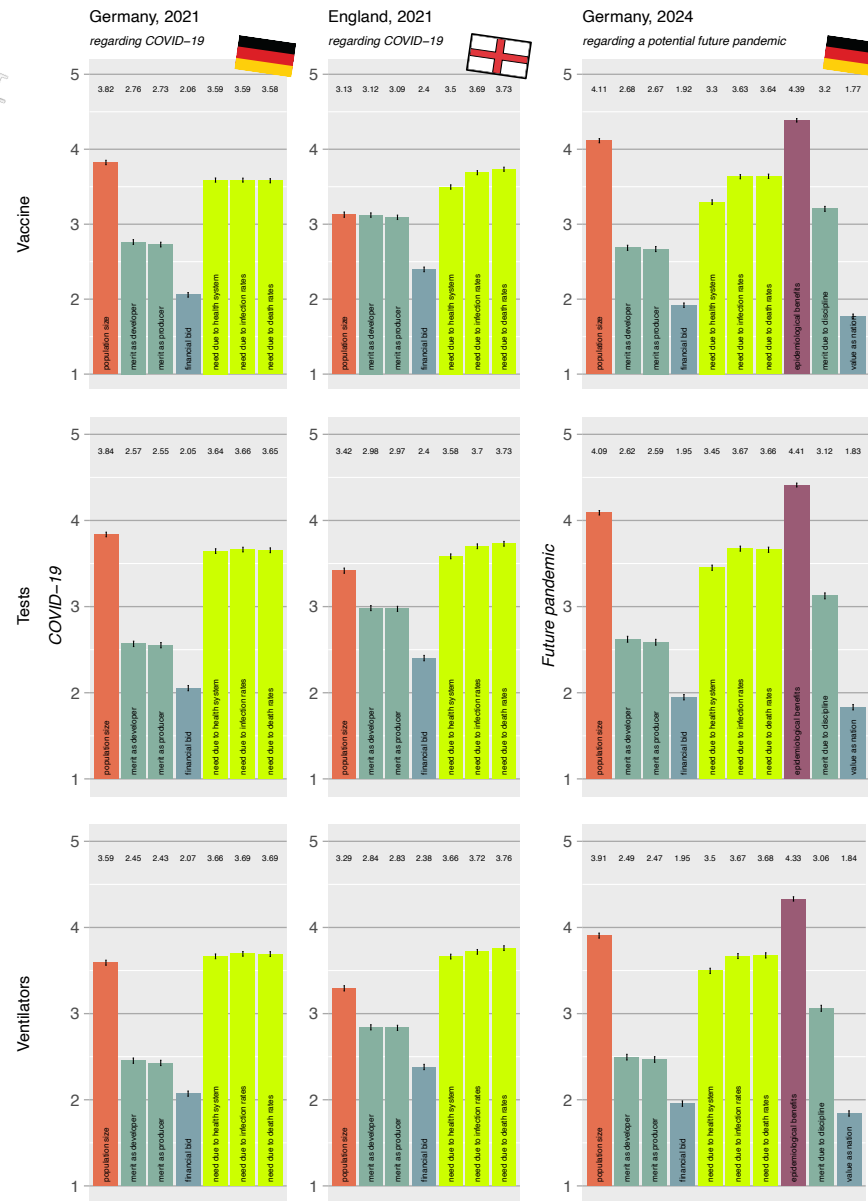


Germany, 2024
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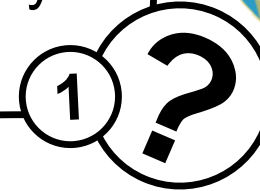


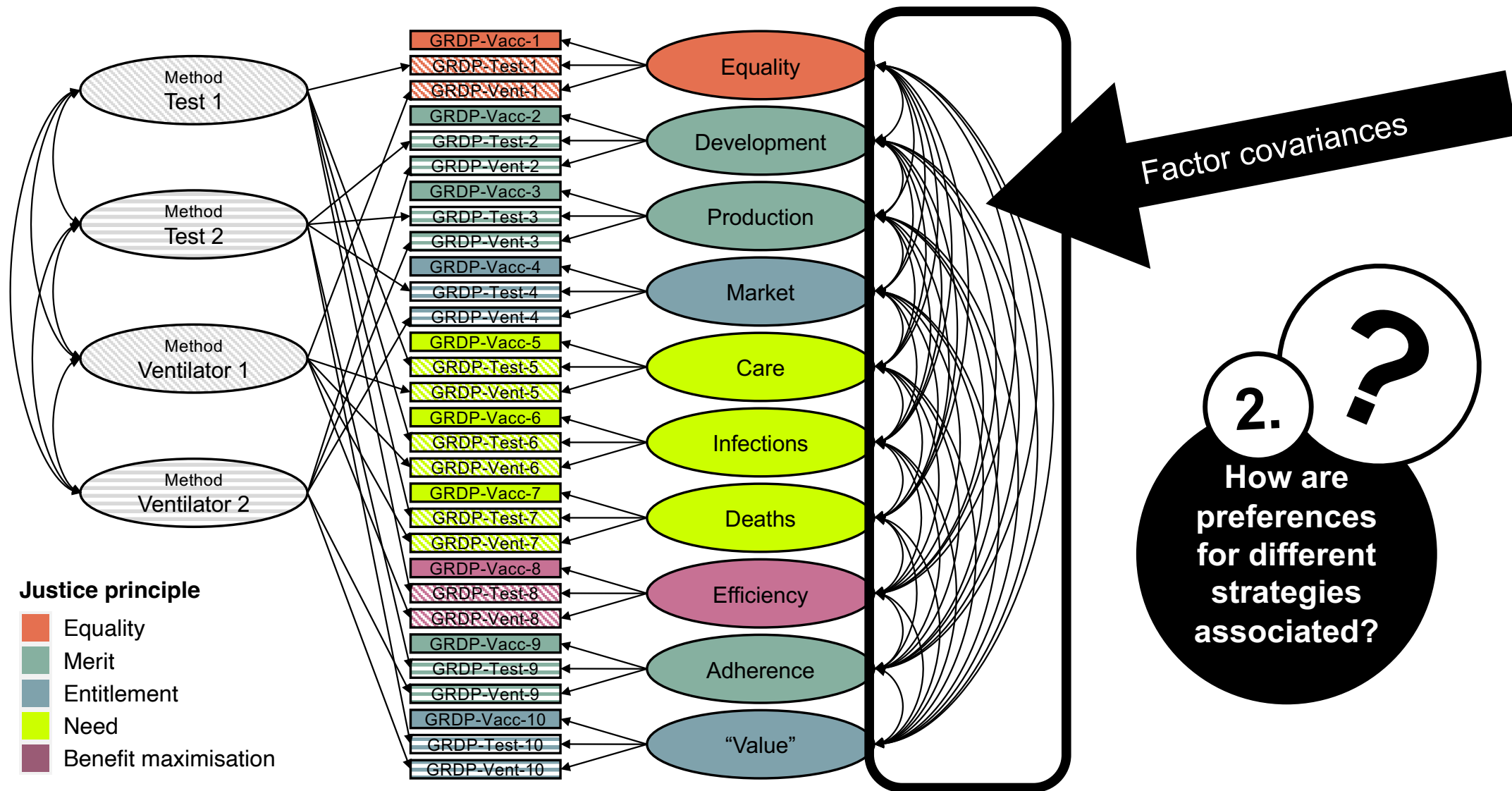
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What we have learned

Citizens in England and Germany disapprove of national protectionism and meritocracy in pandemics. They opt for more efficiency, equity and equality in global health resource distribution.





Latent correlations

First cohort, 2021
(COVID-19)



	1	2	3	4	5	6	7
1. Equality	0.76	-.31	-.33	-.42	.56	.54	.53
2. Development		1.30	.98	.57	-.14	-.10	-.08
3. Production			1.28	.59	-.13	-.11	-.08
4. Market				0.96	-.24	-.20	-.20
5. Care					0.73	.85	.81
6. Infections						0.84	.91
7. Deaths							0.90



	1	2	3	4	5	6	7
1. Equality	0.57	-.15	-.13	-.14	.42	.42	.42
2. Development		1.08	.97	.53	-.09	-.09	-.13
3. Production			1.04	.52	-.07	-.07	-.11
4. Market				1.00	-.19	-.21	-.25
5. Care					0.75	.89	.84
6. Infections						0.85	.96
7. Deaths							0.91

Latent correlations



Second cohort, 2024
(fictional future pandemic)

	1	2	3	4	5	6	7	8	9	10
1. Equality	0.55	-.33	-.32	-.40	.33	.31	.33	.64	-.06	-.33
2. Development		1.25	.98	.62	.00	.04	-.01	-.19	.47	.50
3. Production			1.25	.61	.02	.05	-.00	-.18	.48	.50
4. Market				0.78	-.13	-.09	-.11	-.34	.28	.61
5. Care					0.68	.81	.74	.32	.14	-.16
6. Infections						0.70	.93	.34	.21	-.12
7. Deaths							0.82	.35	.17	-.15
8. Efficiency								0.40	.07	-.40
9. Adherence									0.88	.36
10. Value										0.78

What we have learned

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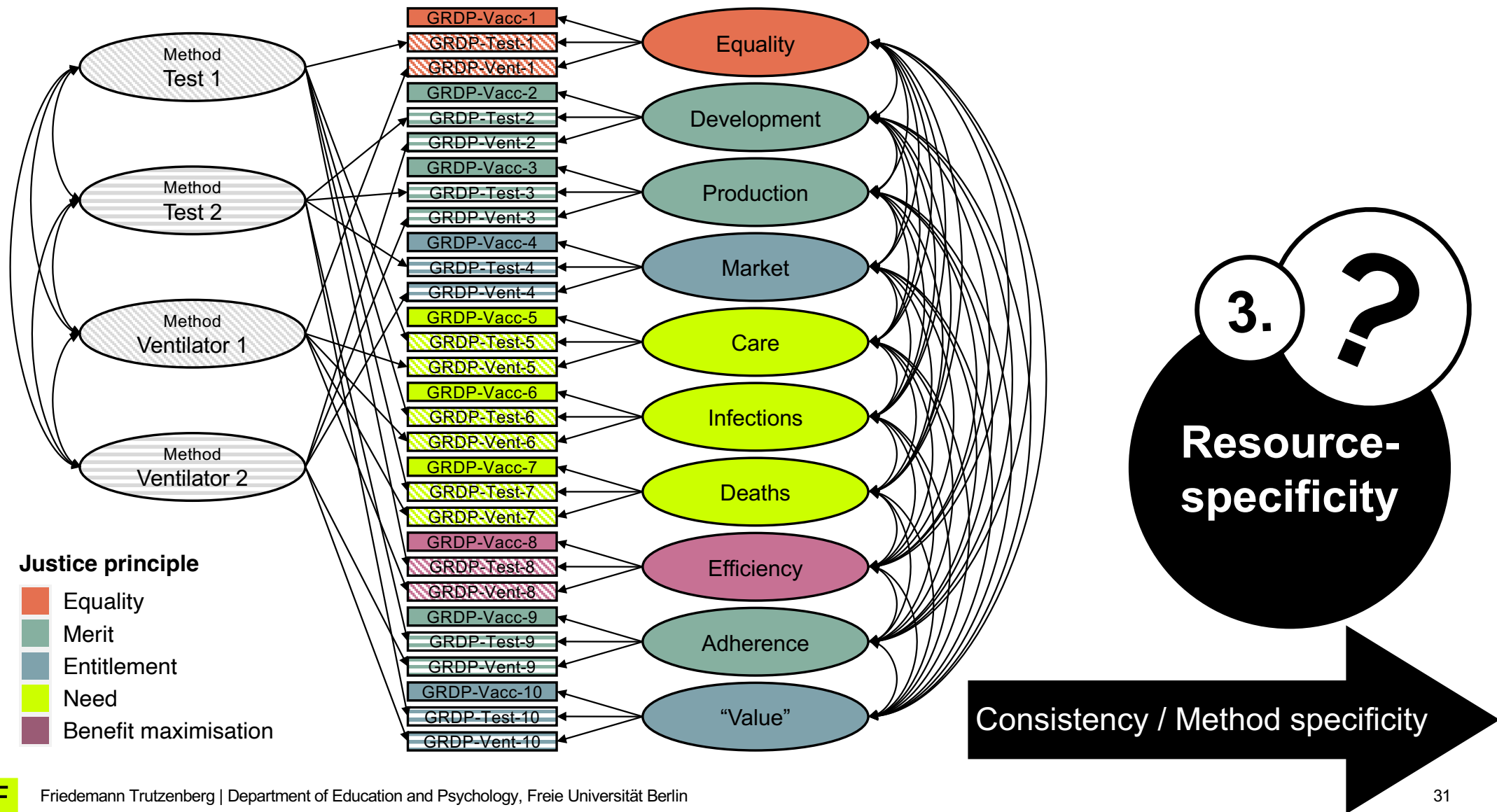
1

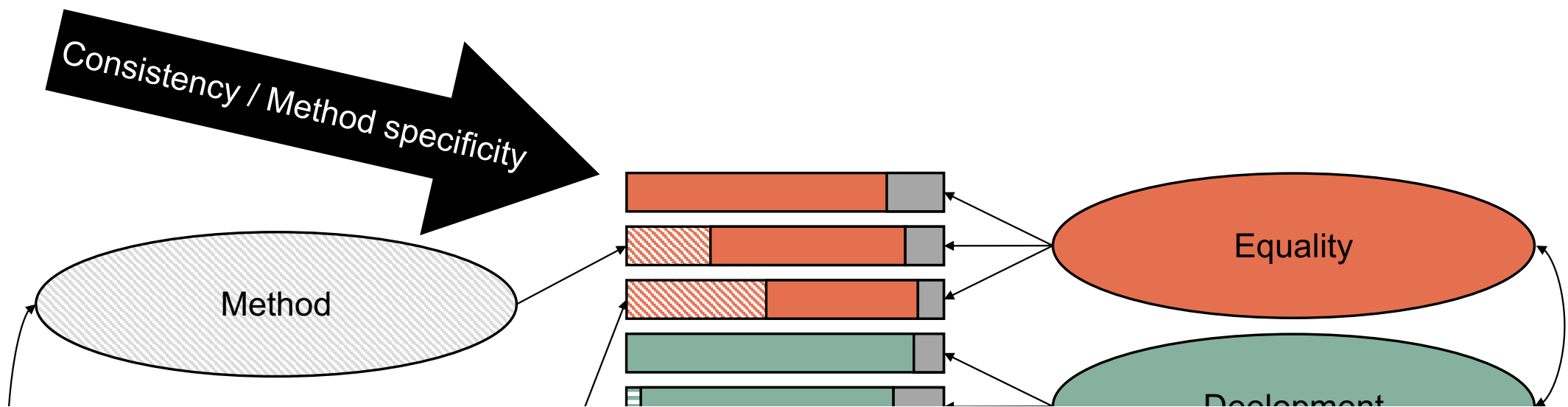


2



Preferences for different principles are related following ethical proximity.





	Observed variable	True-score variable
Consistency	$\text{Cons.}_Y = \frac{\sigma_{\text{Justice}}^2}{\sigma_{\text{Justice}}^2 + \sigma_{\text{Method}}^2 + \sigma_{\text{Error}}^2}$	$\text{Cons.}_\tau = \frac{\sigma_{\text{Justice}}^2}{\sigma_{\text{Justice}}^2 + \sigma_{\text{Method}}^2}$
Method specificity	$\text{Spec.}_Y = \frac{\sigma_{\text{Method}}^2}{\sigma_{\text{Justice}}^2 + \sigma_{\text{Method}}^2 + \sigma_{\text{Error}}^2}$	$\text{Spec.}_\tau = \frac{\sigma_{\text{Method}}^2}{\sigma_{\text{Justice}}^2 + \sigma_{\text{Method}}^2}$

Latent method specificity (95% bootstrap CI)

	Germany 2021		England 2021		Germany 2024	
Equality	.04 [.02; .08]	.04 [.01; .08]	.03 [.01; .07]	.05 [.02; .09]	.00 [.00; .02]	.01 [.00; .05]
Development	.28 [.24; .33]	.47 [.41; .53]	.30 [.24; .36]	.48 [.41; .54]	.20 [.16; .25]	.29 [.24; .35]
Production	.28 [.23; .33]	.47 [.41; .52]	.30 [.25; .35]	.50 [.44; .56]	.22 [.18; .27]	.31 [.26; .36]
Market	.06 [.04; .09]	.11 [.07; .16]	.06 [.03; .10]	.14 [.09; .19]	.05 [.03; .09]	.06 [.03; .10]
Care	.22 [.15; .28]	.24 [.18; .32]	.16 [.10; .22]	.26 [.20; .33]	.11 [.06; .14]	.17 [.12; .23]
Infections	.32 [.25; .38]	.38 [.31; .44]	.28 [.22; .35]	.37 [.31; .44]	.24 [.18; .31]	.33 [.26; .40]
Deaths	.29 [.22; .36]	.34 [.27; .41]	.31 [.25; .38]	.36 [.30; .42]	.22 [.13; .28]	.28 [.21; .34]
Efficiency					.00 [.00; .03]	.01 [.00; .03]
Adherence					.00 [.00; .00]	.00 [.00; .00]
Value					.00 [.00; .00]	.00 [.00; .00]

Latent method specificity (95% bootstrap CI)

	Germany 2021		England 2021		Germany 2024	
Equality	.04 [.02; .08]	.04 [.01; .08]	.03 [.01; .07]	.05 [.02; .09]	.00 [.00; .02]	.01 [.00; .05]
Development	.28 [.24; .33]	.47 [.41; .53]	.30 [.24; .36]	.48 [.41; .54]	.20 [.16; .25]	.29 [.24; .35]
Production	.28 [.23; .33]	.47 [.41; .52]	.30 [.25; .35]	.50 [.44; .56]	.22 [.18; .27]	.31 [.26; .36]
Market	.06 [.04; .09]	.11 [.07; .16]	.06 [.03; .10]	.14 [.09; .19]	.05 [.03; .09]	.06 [.03; .10]
Care	.22 [.15; .28]	.24 [.18; .32]	.16 [.10; .22]	.26 [.20; .33]	.11 [.06; .14]	.17 [.12; .23]
Infections	.32 [.25; .38]	.38 [.31; .44]	.28 [.22; .35]	.37 [.31; .44]	.24 [.18; .31]	.33 [.26; .40]
Deaths	.29 [.22; .36]	.34 [.27; .41]	.31 [.25; .38]	.36 [.30; .42]	.22 [.13; .28]	.28 [.21; .34]
Efficiency					.00 [.00; .03]	.01 [.00; .03]
Adherence					.00 [.00; .00]	.00 [.00; .00]
Value					.00 [.00; .00]	.00 [.00; .00]

What we have learned

Citizens in England and Germany disapprove of national protectionism and meritocracy in pandemics. They opt for more efficiency, equity and equality in global health resource distribution.

1 ?

2 ?

Preferences for different principles are related following ethical proximity.

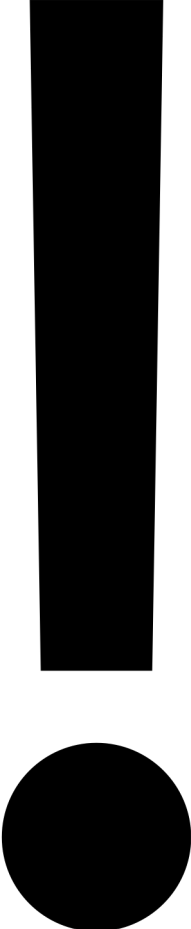
3 ?

Preferences were similar across different health care resources, but substantially resource-specific.



A bright yellow L-shaped graphic that frames the central text. It consists of a horizontal bar at the top and a vertical bar on the right side, meeting at a corner. The central area is white.

Implications



Cooperation has got a mandate!

Even citizens of rich Western countries opt for global solidarity and epidemiological efficiency – even in times of crisis.

For the next global emergency (Mpox? Bird flu?), let us...

- implement fairer and more efficient global distribution mechanisms!
- extend existing ethics-based domestic frameworks to the global level!
- inform pandemic preparations with citizens' ethical views
 - to increase public trust and acceptance for necessary measures in difficult times!
 - to close the gap between ethical knowledge and policy!
- conduct more public opinion research in non-WEIRD countries!

How to overcome the science-to-policy gap?

Ask ordinary citizens!

Inform policymakers with evidence on public opinion!

Help global leaders understand that they do not need to justify international cooperation to their citizens.

It is exactly what citizens want.



Thank you very much!

M.Sc. Friedemann Trutzenberg

Methods and Evaluation Division

Education and Psychology Department

Freie Universität Berlin



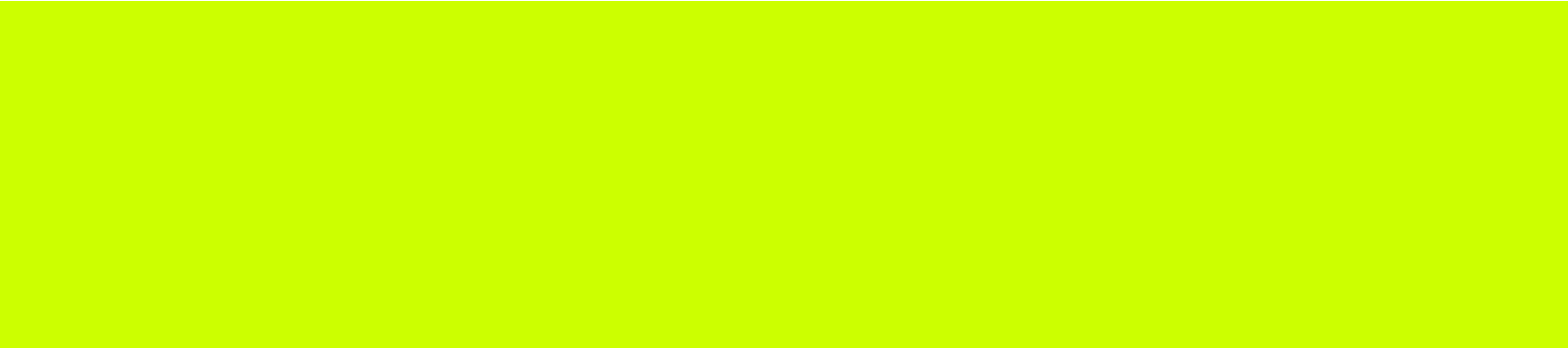
friedemann.trutzenberg@fu-berlin.de



<https://orcid.org/0000-0003-0460-2300>



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Appendix

What do people think (within-society distribution)?

before COVID-19

Benefit maximisation

(Utilitarianism)
Save as many as possible!



Equality

Lottery!
First come, first served!



Need (Equity)

(Deontological)
Prioritise the vulnerable!



Social usefulness

Health care personnel first!



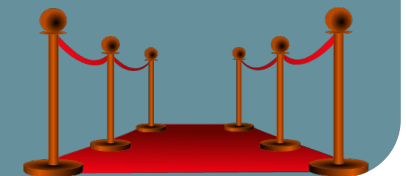
Merit

Adherent individuals first!



Entitlement

Nobelty first!



Bailey et al., 2011; Biddle et al., 2020; Ceccato et al., 2023; Cookson & Dolan, 1999; Dowling et al., 2022; Duch et al., 2021; Ganderberger et al., 2023; Grover et al., 2020; Jensen & Petersen, 2017; Kappes et al., 2022; Knotz et al., 2021a, 2021b; Krütli et al., 2016; Oedingen et al., 2019; Persad et al., 2021; Sprengel et al., 2021; Tong et al., 2010

What do people think (within-society distribution)? during COVID-19

Benefit maximisation
(Utilitarianism)

Save as many as possible!



Equality

Lottery!

First come, first served!



Need (Equity)

(Deontological)

Prioritise the vulnerable!



Social usefulness

Health care personnel first!



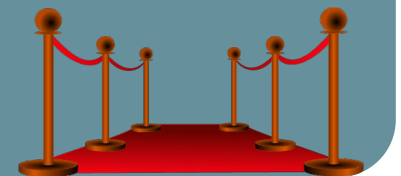
Merit

Adherent individuals first!



Entitlement

Nobility first!



Bailey et al., 2011; Biddle et al., 2020; Ceccato et al., 2023; Cookson & Dolan, 1999; Dowling et al., 2022; Duch et al., 2021; Ganderberger et al., 2023; Grover et al., 2020; Jensen & Petersen, 2017; Kappes et al., 2022; Knotz et al., 2021a, 2021b; Krütli et al., 2016; Oedingen et al., 2019; Persad et al., 2021; Sprengholz et al., 2021; Tong et al., 2010

Model fit

Strategy	CFI	RMSEA	SRMR
Germany 2021	0.992	0.034, 90% CI [0.029;0.040]	0.042
England 2021	0.997	0.021, 90% CI [0.013;0.028]	0.032
Germany 2024	0.988	0.033, 90% CI [0.029;0.036]	0.034

Reliability

Strategy	Germany 2021			England 2021			Germany 2024		
									
Equality	.65	.64	.49	.34	.73	.54	.63	.67	.59
Development	.95	.93	.94	.95	.92	.92	.94	.93	.93
Production	.97	.94	.95	.93	.95	.97	.97	.98	.97
Market	.74	.87	.79	.76	.87	.79	.77	.85	.77
Care	.71	.83	.84	.68	.80	.83	.64	.81	.81
Infections	.87	.94	.94	.88	.92	.93	.80	.89	.87
Deaths	.86	.91	.89	.91	.95	.93	.87	.90	.91
Efficiency							.65	.75	.67
Adherence							.70	.84	.83
Value							.71	.84	.82