T1 International

Reproducing analysis of the 2020 survey with 2022 data

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- Country distribution and top 7 selection
- Healthcare coverage
- Out-of-Pocket Expenses (OoPEs)
  - by expense category
  - by healthcare coverage type
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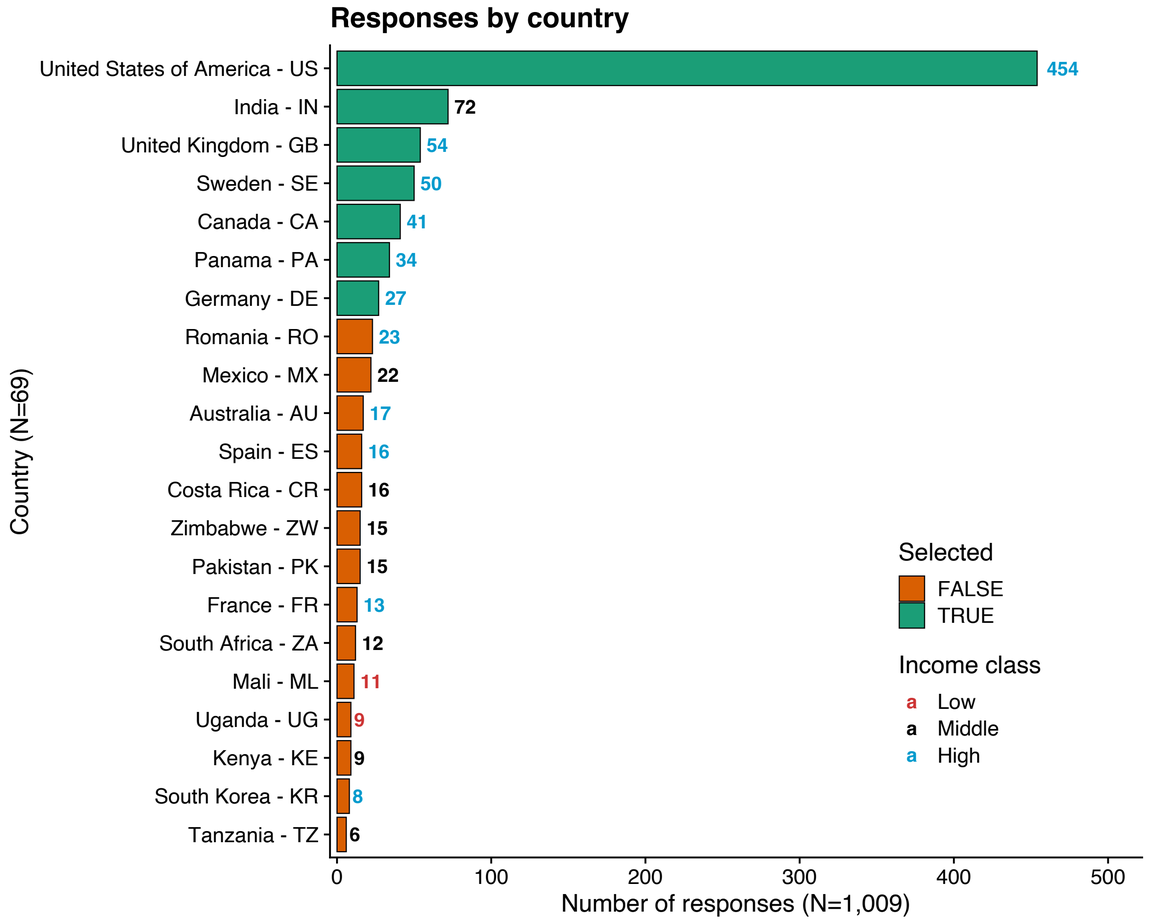
  - full breakdown
- COVID-19 impact
- Rationing
  - by healthcare coverage type
  - by country income level
  - in top 7 most represented countries
- Demographic table

Country & healthcare coverage

Updated
Feb. 2023 ✅

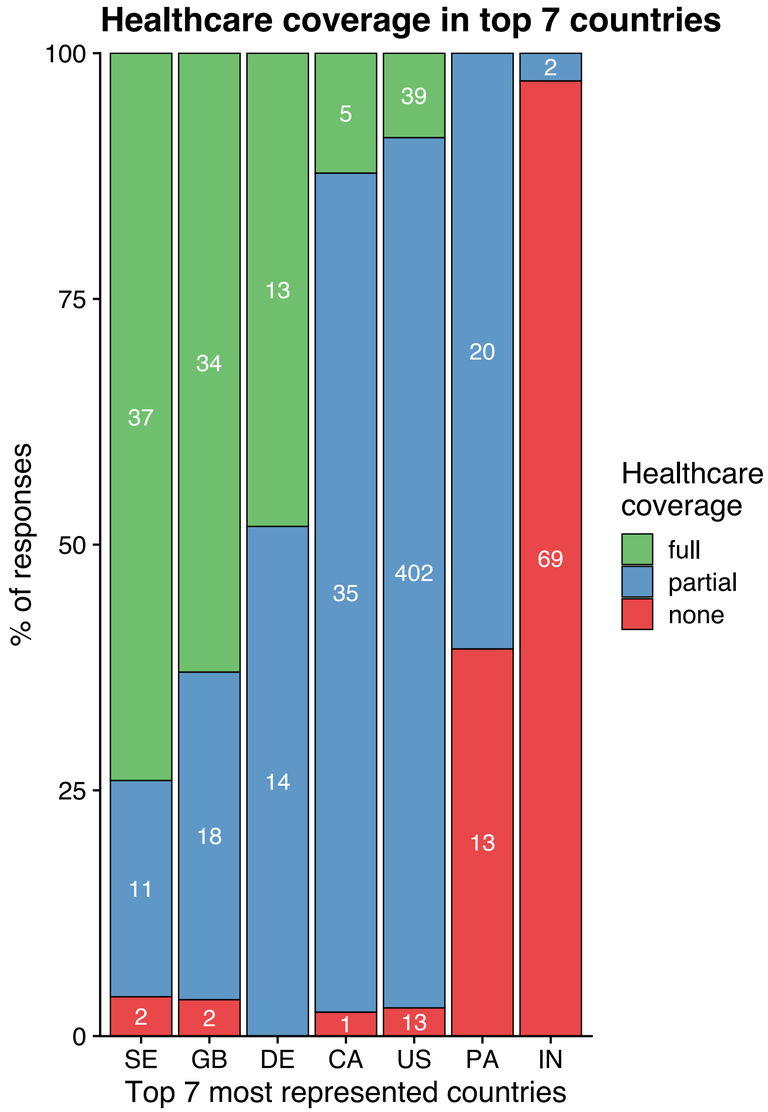
The “Top 7”



- **7 countries** with **25+** respondents:
  US, IN, GB, SE, CA, PA, DE
  (same threshold as for the 2020’s survey analysis)
- US, CA, GB also in 2020’s survey analysis: potential for comparison
- Responses from other countries not considered further as not representative
  (threshold of 25 already being a stretch)
- All top 7 countries are *high-income* except India (IN), which is *middle-income*

Healthcare coverage in Top 7

Updated
Feb. 2023 ✅



- Most combinations are present:
  - majority of *full* (SE, GB)
  - balance *full*/*partial* (DE)
  - majority *partial* (CA, US)
  - balance *partial*/*none* (PA)
  - majority *none* (IN)
- Potential danger for publication:
  Nb. of responses for these sub-categories are really low
- Order from left-to-right according to *full*, then *none*

Out-of-Pocket Expenses

Updated
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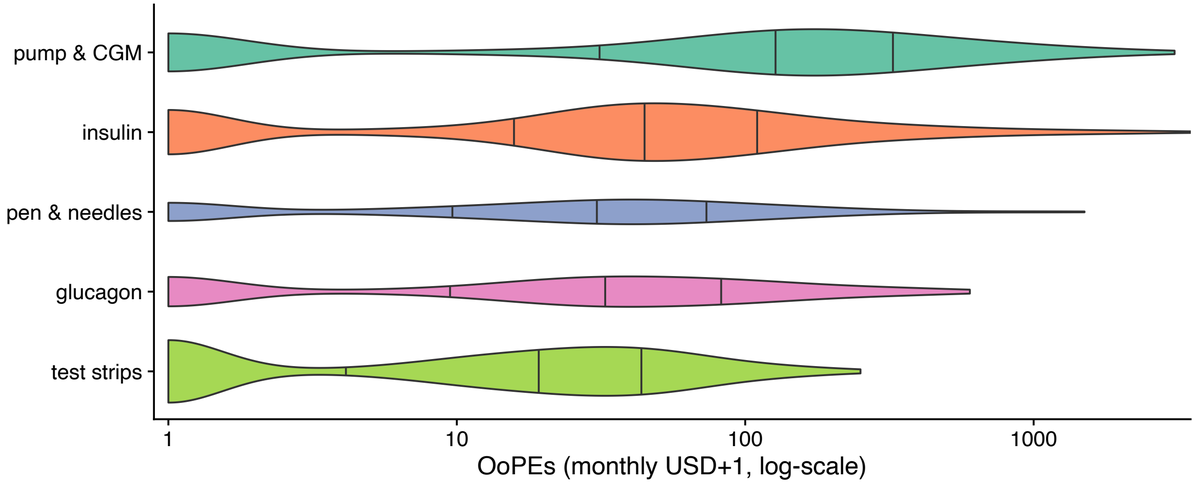
Per expense category



variable	N	NAs	mean	median	sd
devices	732	94 (12.8%)	219.7	100.0	366.0
insulins	732	31 (4.2%)	112.0	35.0	297.4
glucagon	732	318 (43.4%)	57.6	25.0	93.6
pen_needles	732	426 (58.2%)	59.1	25.0	143.9
strips	732	122 (16.7%)	25.1	12.1	35.9

- Definitions:
  - **pump & CGM:** pump supplies + CGM
  - **Insulin:** short-, long-, mixed-, other-acting insulins
  - **Pen & needles**
  - **Glucagon**
  - **Strips:** BG strips (not ketone)

- Graph reading:
  - violin areas are proportional to the number of answers
  - vertical ticks are 25%, 50% (median), and 75% quantiles
  - log-scaled with USD pseudocount of 1 to keep 0 USD

Out-of-Pocket Expenses

Per healthcare coverage

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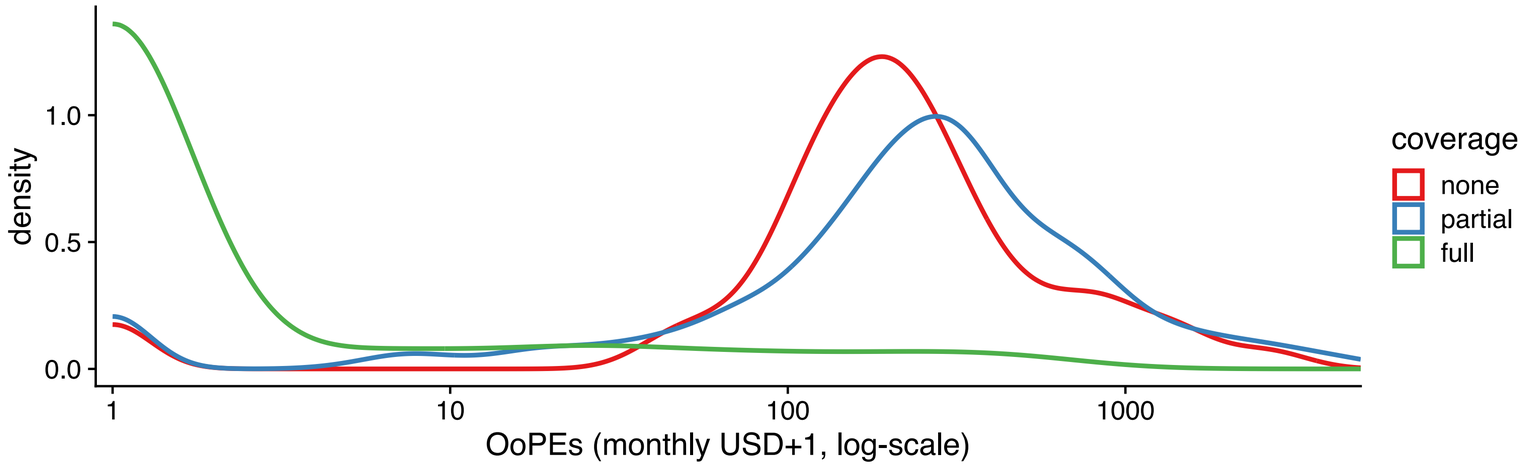
=> Glucagon removed from costs



coverage	N	NAs	mean	median	sd
none	100	0 (0%)	344.8	200.2	455.7
partial	502	7 (1.4%)	434.2	250.0	642.3
full	128	7 (5.5%)	21.1	0.0	80.4

- Sum of monthly expenses (pump & CGM **+** insulin **+** pen & needles **+** BG test strips)
- Most *full coverage* have no OoPE (or very low, e.g. 10-100)
- Those with *no coverage* (median *200*, mean *344*) have lower OoPEs than those with *partial coverage* (median *250*, mean *434*)
  Cannot really explain it. Perhaps one tend to spend more on diabetes management when subject to some healthcare coverage?

Out-of-Pocket Expenses

Per country (Top 7)

Updated
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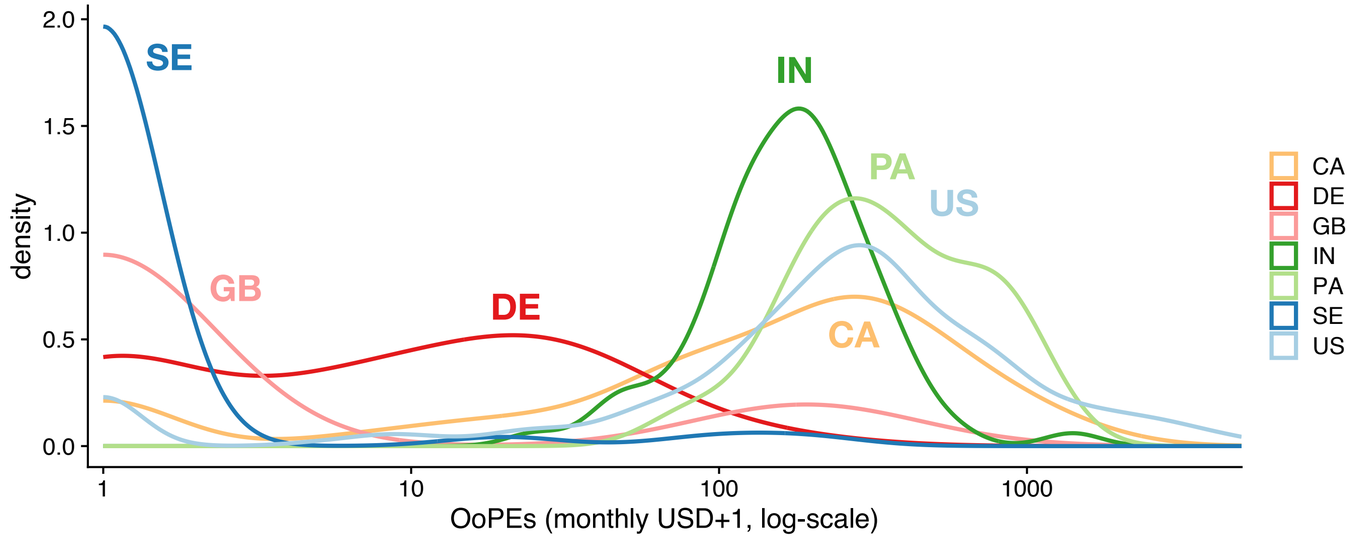
=> Glucagon removed from costs



country_alpha2	N	NAs	mean	median	sd
PA	34	0 (0%)	434.3	340.0	292.8
US	454	8 (1.8%)	470.2	267.0	688.6
CA	41	1 (2.4%)	255.2	194.3	286.1
IN	72	0 (0%)	206.3	174.1	177.9
DE	27	0 (0%)	17.9	5.4	27.7
GB	54	4 (7.4%)	34.6	0.0	75.2
SE	50	1 (2%)	6.2	0.0	30.1

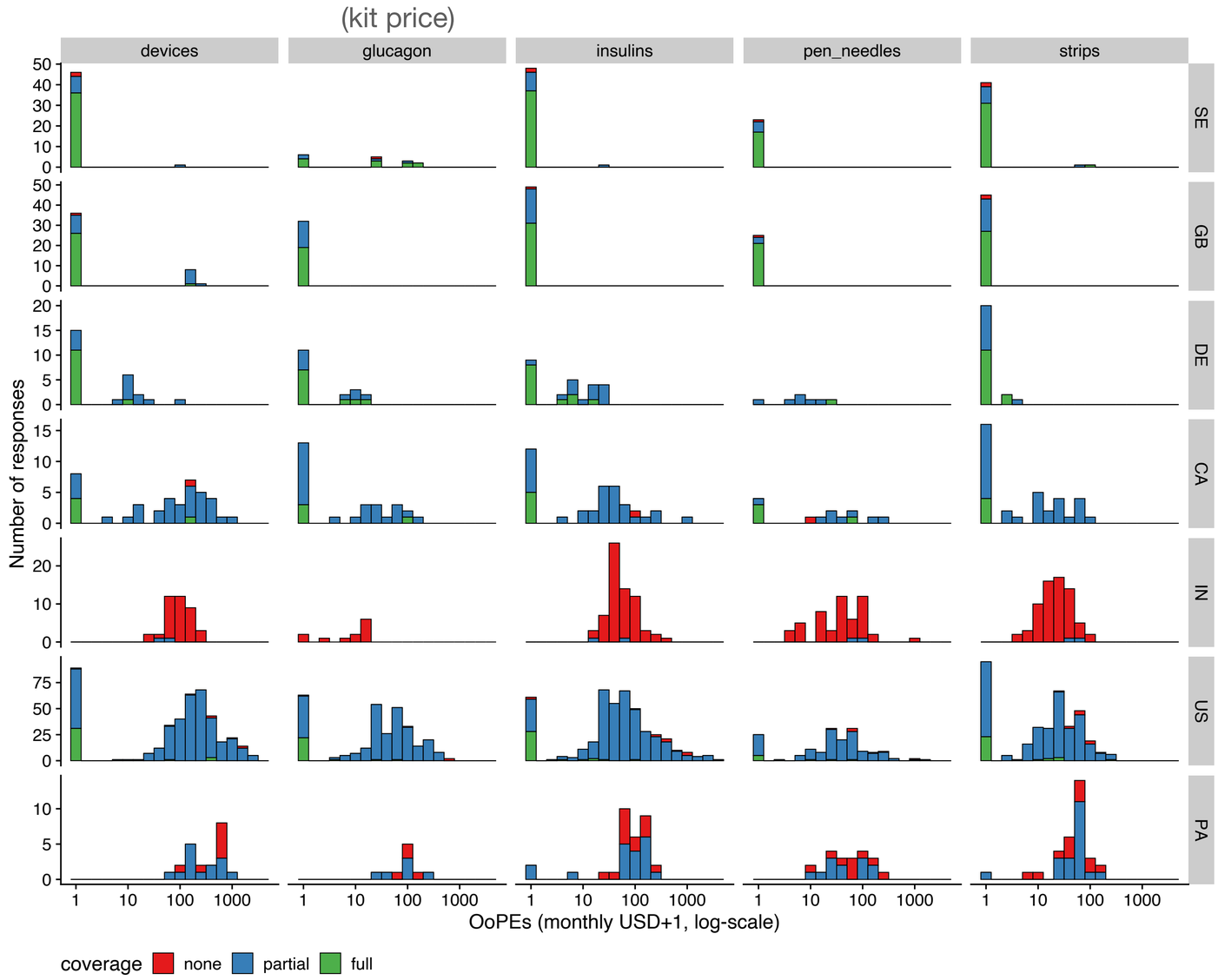
- Overall 3 OoPE clusters:
  - very low: **SE**, **GB**
  - middle: **DE**
  - high: **IN**, **US**, **CA**, **PA**
- Usual suspects at the usual places:
  - EU countries do very well
  - India not as bad as US
  - Canada is disappointing
- Danger:
  - India does better than US might be deceiving, bias towards middle-class Indian people? I did expect very bad results for IN.

Out-of-Pocket Expenses

Updated
Feb. 2023 ✅

Breakdown

- Clear difference between EU countries (top 3) and the rest
- As expected, immense majority of full coverage have very low OoPEs (very left of the X-axis)
- Virtually nobody has no OoPEs in IN & PA
- Though virtually no respondent from IN had any healthcare coverage, their OoPEs levels appear similar to people with partial healthcare coverage in the US.



COVID-19 impact

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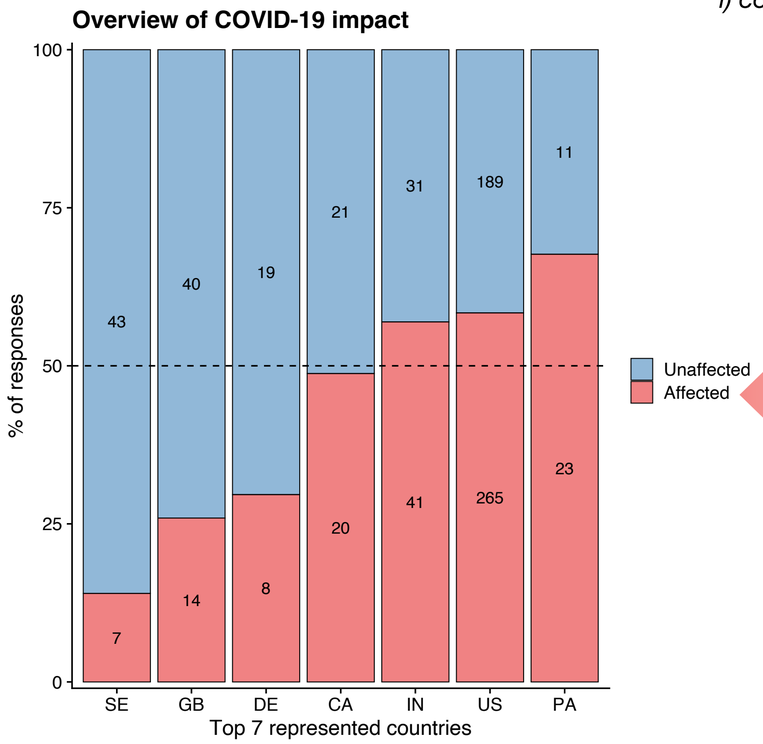
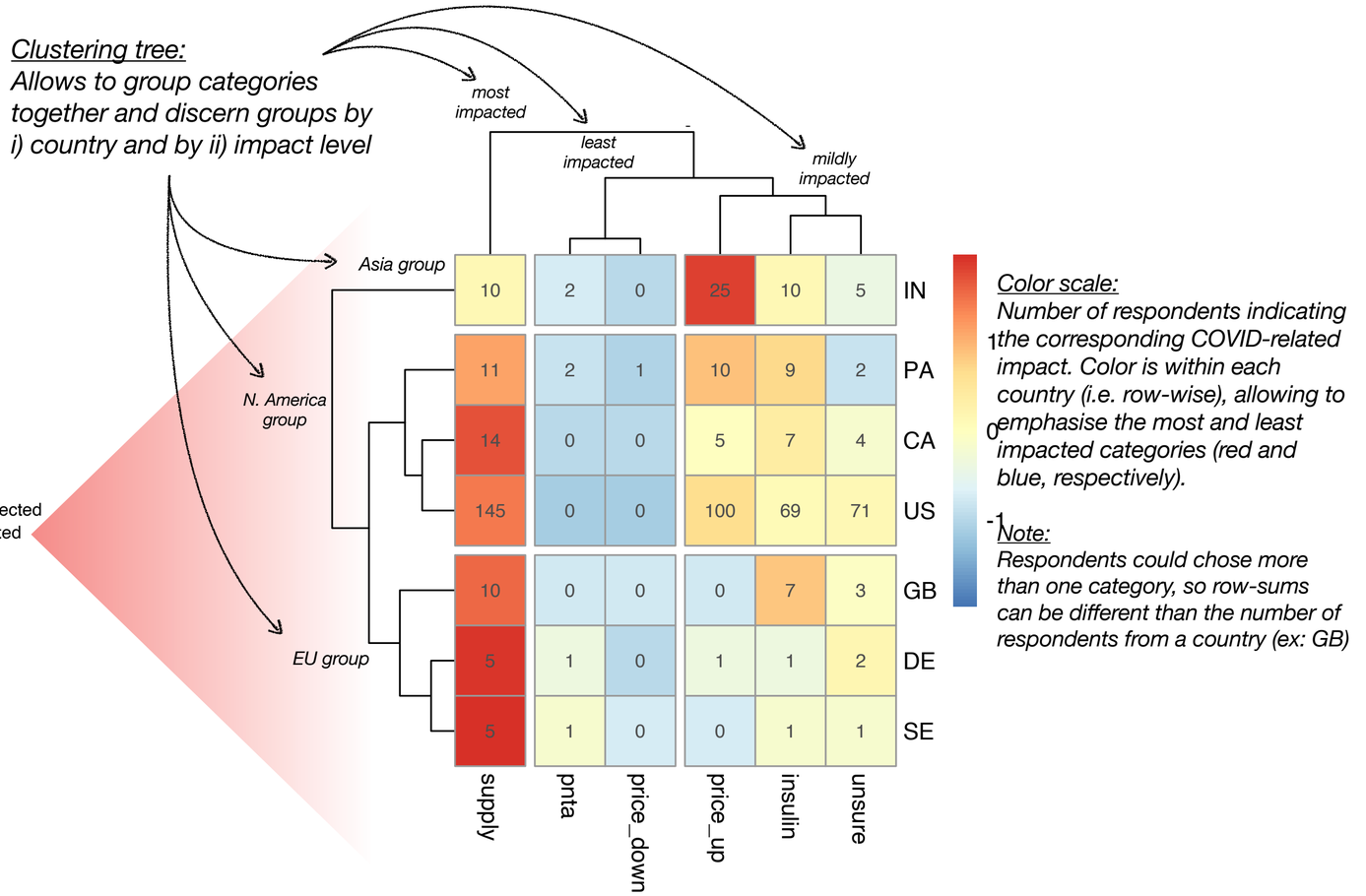
Overview and details



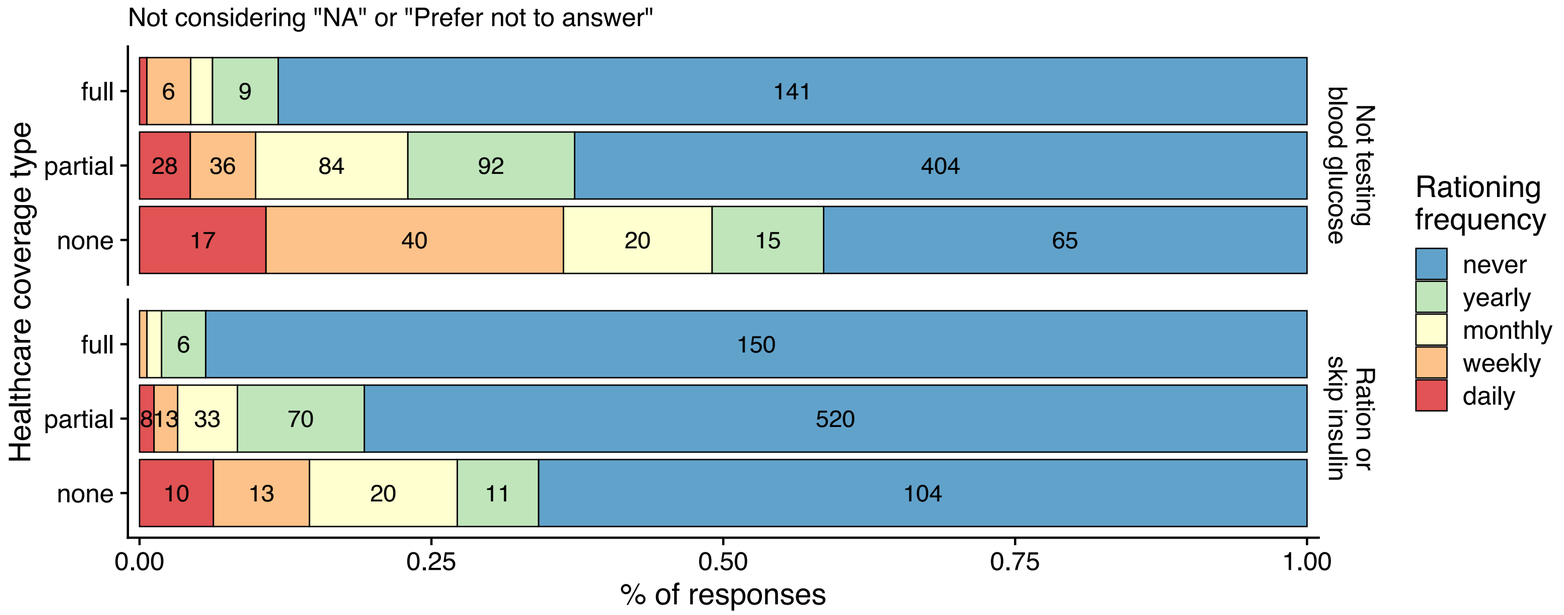


- Data-driven clustering separates countries by region (EU, N&C Americas, Asia)
- Largest impact was on supply, except for IN where it was insulin price surge. Expectedly barely any insulin price lowering.
- EU countries were less impacted

Rationing

Updated
Feb. 2023 ✅

By healthcare coverage

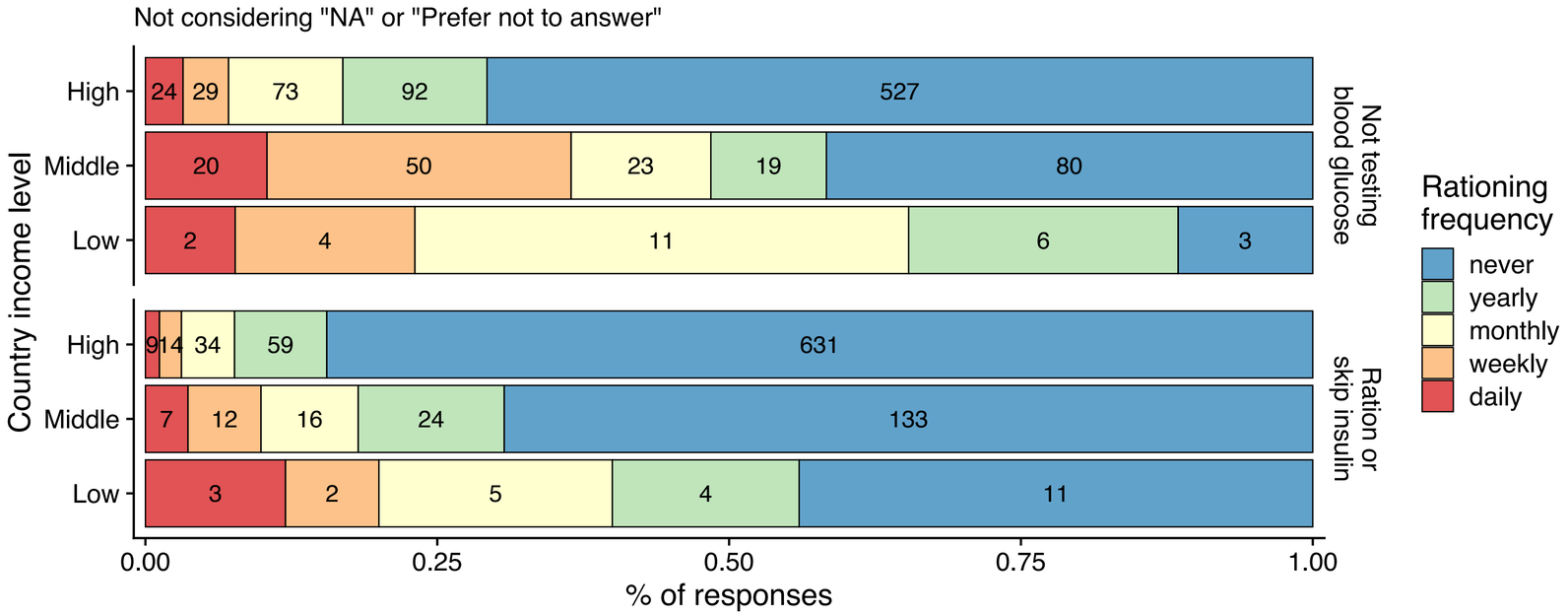


- Clear negative correlation between the level of healthcare coverage and rationing frequency, both for blood glucose testing and insulin intake.
- Overall, testing of blood glucose level is more prone to rationing than insulin intake.

Rationing

By country income level

Updated
Feb. 2023 ✅



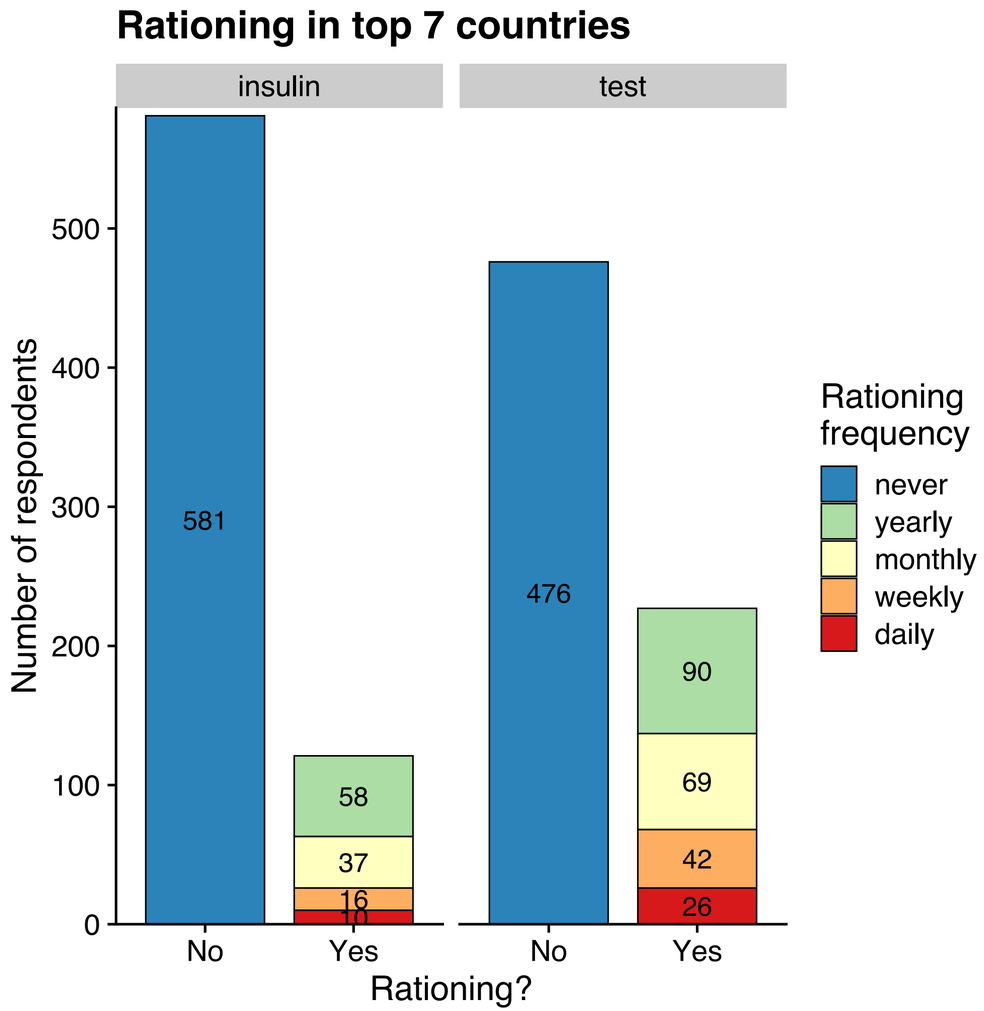
- Clear negative correlation between the country income level and rationing frequency, both for blood glucose testing and insulin intake.
- Overall, testing of blood glucose level is more prone to rationing than insulin intake.

Rationing

NEW
Feb. 2023 ✅

In Top 7 most represented countries - aggregated

- Aggregated numbers for all respondents from the top 7 countries
- Rationing of BG testing is more prevalent than rationing of insulin intake (as saw previously)

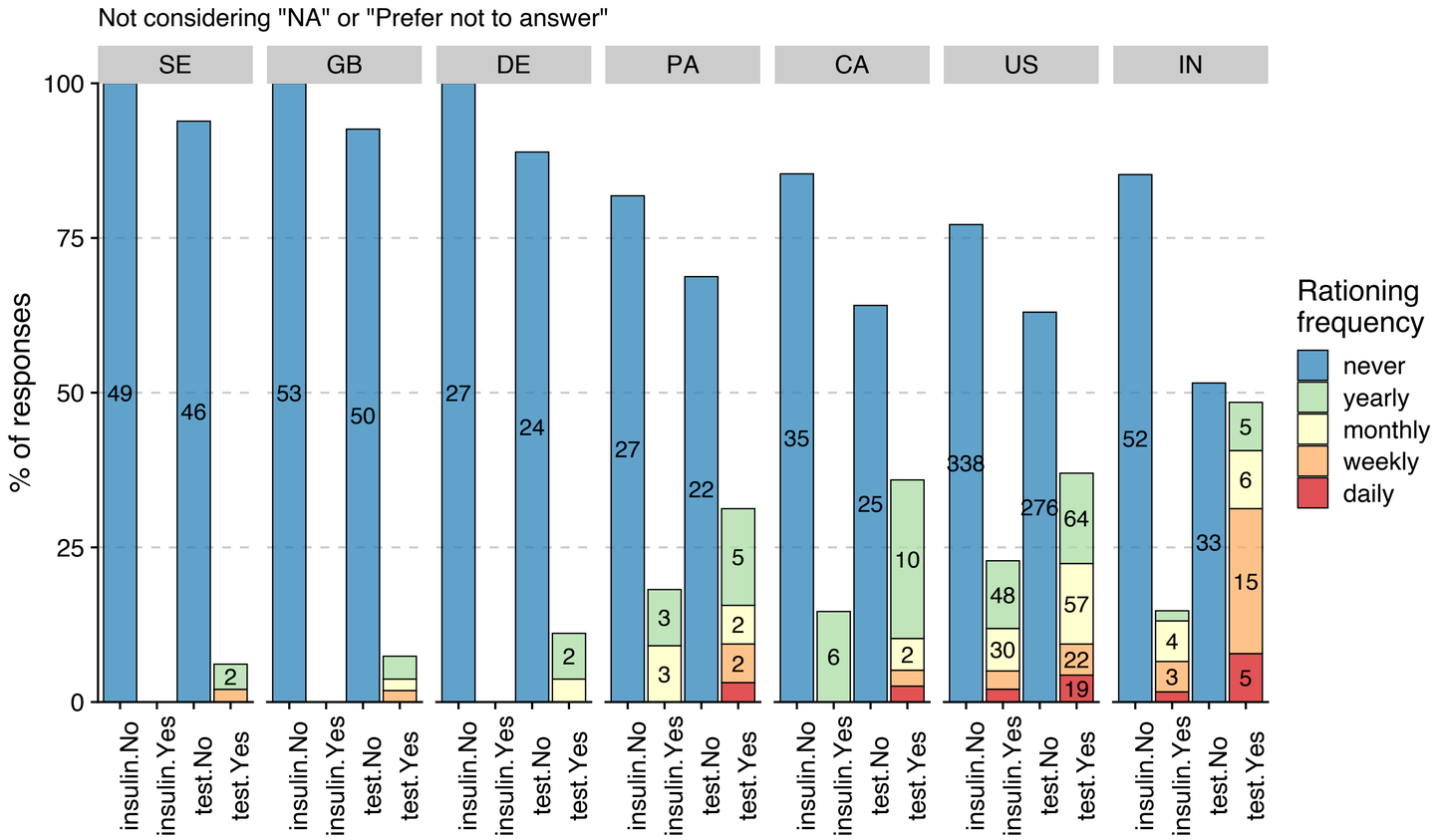


Rationing

Updated
Feb. 2023 ✅

In Top 7 most represented countries - detailed

- Again clear distinction between EU-countries and the rest, with virtually no rationing/underuse in SE, GB, and DE.
- Though with very different country income level and healthcare coverage distributions, IN and US have similar underuse frequencies and are the worst amongst the top 7 most represented countries.



Demographic table

Updated
Mar. 2023 ✅

Worldwide (N=1,009)

characteristic	response	n	prop
connection to T1D	betterhalf	13	(1.3%)
connection to T1D	doc	4	(0.4%)
connection to T1D	mychild	223	(22.1%)
connection to T1D	patient	767	(76%)
Country income level	High	769	(76.2%)
Country income level	Low	29	(2.9%)
Country income level	Middle	211	(20.9%)
gender	female	724	(71.8%)
gender	male	263	(26.1%)
gender	other	12	(1.2%)
gender	pnta	12	(1.2%)
monthly household income (USD)	[0,1000)	210	(20.8%)
monthly household income (USD)	[1000,1500)	68	(6.7%)
monthly household income (USD)	[1500,3000)	170	(16.8%)
monthly household income (USD)	[3000,5000)	118	(11.7%)
monthly household income (USD)	[5000,Inf]	80	(7.9%)
monthly household income (USD)	NA	363	(36%)

Top 7 (N=732)

characteristic	response	n	prop
connection to T1D	betterhalf	10	(1.4%)
connection to T1D	doc	0	(0%)
connection to T1D	mychild	157	(21.4%)
connection to T1D	patient	563	(76.9%)
Country income level	High	660	(90.2%)
Country income level	Low	0	(0%)
Country income level	Middle	72	(9.8%)
gender	female	533	(72.8%)
gender	male	179	(24.5%)
gender	other	12	(1.6%)
gender	pnta	10	(1.4%)
monthly household income (USD)	[0,1000)	92	(12.6%)
monthly household income (USD)	[1000,1500)	43	(5.9%)
monthly household income (USD)	[1500,3000)	142	(19.4%)
monthly household income (USD)	[3000,5000)	110	(15%)
monthly household income (USD)	[5000,Inf]	76	(10.4%)
monthly household income (USD)	NA	269	(36.7%)

Pump & CGM users

NEW
Feb. 2023 ✅

Percentage in top 7 countries

- Ordered (top to bottom) from highest to lowest % of users with CGM and then with a pump.
- Basically recapitulates grouping of countries (EU).
- US with highest percentage of pump usage!
- PA & IN are the worst, by far.

country	n_respondents	n_pump	n_cgm	pc_pump	pc_cgm
DE	27	17	27	62.96	100.00
SE	50	33	49	66.00	98.00
CA	41	28	40	68.29	97.56
US	454	334	417	73.57	91.85
GB	54	29	49	53.70	90.74
PA	34	10	20	29.41	58.82
IN	72	12	39	16.67	54.93