What is our Goal?

* Ingrain understanding of needed tradeoffs in UHC
  + Leading to improved comprehensibility and perceived fairness of system
    - Leading to support for UHC.
* Reduce cognitive effort needed (striking a balance b/w ‘realism’ in the simulation, and applicability w.r.t. human use, engagement, and understanding?)
  + Can make the hurdle shorter, but NOT the runner stronger?
  + Information architecture could be improved
* Why do people not support UHC?
  + Could have a qualitative answer, or a categorical drop down type thing
  + Where ‘comprehensibility’ and ‘fairness’ are two options, can directly measure them against other options.
* Significantly simplify!
  + Helps the less numerate
  + Reduces ‘tyranny of choice’

Topline Suggestions/Alterations By Category

Simplification/Abstraction:

* Provide Fewer Options / Less Information
* “Do the math for them”
  + How to do this, perhaps have people select ‘presets’?
  + Essentially would be plans that diverge on what they desire, depth vs breadth of coverage, or other elements to trade-off.
    - Could have people ‘punch in’ how often they expect to need certain things, and then have a calculator/formula spit out what the estimated cost for each plan is??
* The simplified model doesn’t have to ‘reflect’ the truth?
* Provide risk in absolute risk sense, using a ‘fixed’ denominator (1/1000, 5/1000, 100/1000, etc.)
* Could use analogies to communicate more information
* Can we limit options as ‘choose left or right’? (dumbing down the choices significantly)

Presentation:

* Order information/categories of care s.t. most important item is first or last.
* Highlight only important information using symbols
  + What is considered important information to highlight?
* Ask people to make choices based on the ASSUMPTION that this presented information is true?
  + Is this a big ask, and will it/should it even make a difference?
* How can we allow subjects to choose to keep the format simple, and allow them to decide the level of personalization/detail?
  + Is it a good/bad thing to directly allow individuals to opt into simplicity?
  + As compared to directly providing simplicity ‘as-is’ in one of the randomly assigned options.
* Could try ‘data sonification’
  + However… seems a bit ‘pie in the sky’ without additional expertise.
  + Helps reveal heuristics however though?

Provide additional information:

* Could provide risk ladder of relative base-rate of some common medical occurrences?
  + This could add useful context, but is also strictly more information
  + How to provide the ‘benefits’ of various health-care outcomes?
* Using language like IPCC colloquial ‘terms’ and define what they mean statistically
* Can we simplify the terminology as to what each thing means, and how it influences individual healthcare choices?
  + Huge problem w/ consumers as is regarding comprehending healthcare (the terminology, let alone complex value judgements!)
* How can we add, narratives, vividness, tailoring, and framing?
  + Would these elements be directly useful, and which ones do we already benefit from?
* Create a single-dollar actuarial estimate of average total cost
  + Would directly letting people choose what they want, at a price of 5$ per unit, help them decide what would be ‘worth’ having?
  + Perhaps better than directly budgeting a set of limited resources that you are forced to spend at least that much or that few.
  + Each ‘peg’ represents a proportional representation of monthly insurance cost already.
* Knowing that it takes X minutes to get to a thing or that there is X availability of a thing makes it difficult to know whether it is objectively ‘good’ or ‘bad’.
  + Should we take additional effort to EXPLAIN what a particular thing is or could be, and perhaps give examples?
  + Is it a good trade-off to go into more detail for explanations on important concepts, but get less options/choices for other ‘less selected’ options?
    - What are reference elements/standards in other countries perhaps for context?
  + Iconarray.com to make icon arrays for comparison?
* Procedural instruction (step by step how to do activity) could be helpful.
  + Conceptual instruction as well (What is relative to what, base rates, etc.)
* Note: Can also directly measure ‘health literacy’ holistically – health numeracy differences can mask literacy differences (correlated together?).
  + Also, health literacy directly interacts/engages with some of the core elements underlying understanding of terms, concepts, and priorities, that we already have people trading-off on.
  + On this same note, could directly measure how much individuals WANT to be involved in the decision-making (Ciampa et al. 2010)
    - “Did this address all the health concerns that you had”
    - “Did this involve you in decisions about your health as much as you wanted?”
* Provide a ‘paling perspective scale’ to determine risk and which elements are worth considering.
  + Relative risk anchors could be useful! Including chance of winning lottery, struck by lightning, dying from 300 MI of driving, etc.

Directly Addressing Innumeracy:

* Could add some ‘natural number bias’ activity at the start of the exercise, in order to help individuals ‘think more deeply’ about the magnitude of rational numbers
  + This would perhaps be an ‘experimental intervention’ type outcome.
  + We could re-write or re-present the relative risk, costs, benefits, and gains of our material from the perspective of natural numbers. Smaller numbers that share the same denominator!
  + Percentages are a much better option than 1 in X, but perhaps we don’t have that many comparative ways to select that?
* We can change our measures of math-skill, although this doesn’t seem strictly necessary.
  + Can obtain ‘objective’ numeracy using number-line mapping exercises (Peters & Bjalkebring 2015)
    - Especially with number lines including fractions, etc. b/c rational number understanding is exactly how health stats works.
  + Can also measure math anxiety directly as an additional measure (see Ashcraft, 2002; Núñez-Peña et al., 2014)
    - However, math anxiety doesn’t predict poor risk comprehension AFTER controlling for objective math skills (Rolison 2020)
  + Could directly measure magnitude comparison following Thompson et al 2021 work.
* Additional research expands that magnitudes are the GIST of rational numbers
  + Since rational numbers is linked w/ health statistics, having a gist of magnitude allows people to estimate what’s needed for good decisions.
  + Could directly measure the ‘gist’ representation of knowledge, or gist of magnitude as a whole.
* Low numeracy subjects have difficulties understanding the underlying relationships of data (which is exactly what our intervention is trying to reveal!). (Garcia-Retamero 2019)
  + And thus, more biased by the way health-related numerical info is framed
  + Also linked with wanting ‘paternalistic’ decision making
    - Where the doctors are dominant and they prefer to participate, and instead delegate decision making
      * Is there some way to directly simulate whether or not they would care to have this? Perhaps compare our ‘traditional’ outcome against a simpler ‘delegation’ or ‘choose 1 from x’ type choices!?
  + Low numeracy individuals prefer more ‘passive’ decision making
  + In theory, low-numeracy people do not feel prepared to make important choices w/o fully understanding the information, which they leave to the doctors!? (Galesic 2011)
* Numeracy is also associated/correlated w/ political orientation, which a-priori has some relevance and relation to pre-existing support for UHC.
* Lower numeracy subjects have a harder time understanding graphics still like the PPS!
  + People didn’t look @ the third reference risk as much as the first or second (thus didn’t use the full potential to risk that the graph offered)
  + Looked mostly at risks similar to the target and spatially closest
  + Try to not vary risks too much by probability
    - Could try linear risk scale instead?

Topline TODO

1. Could have a very simplified version of our protocol, with less options, less choices total needed to be made.
   1. Each element is provided with a full description of what it entails in SIMPLE terms
   2. Each element is provided with Paling Perspective Scale showing relative risks of problems in this category
   3. Each element is provided with estimated total cost per year that the problems would drain, and how much relative coverage per year each option could or would give.
      1. This would let us see which of the relative sets of options is better at helping the less numerate comprehend what is happening and make better choices
2. Could have similar version of our protocol, with ‘pre-set’ options meant to be aimed at different types of preferences and wants. Choosing or making a choice from a limited set of options that have clear differences in coverage and types of priorities.

Measures?