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?”

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!?