


Zen and the art of asking good questions

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Ideas presented here have grown out of conversations with numerous talented colleagues and the UNC Causal Inference Research Lab.

Why do epidemiology?



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> mydata
      [,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10] [,11] [,12] [,13] [,14] [,15] [,16]
[1,]  NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA
[2,]  NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA
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[20,] NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA   NA
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1. We have 100% missing data for all questions that are not asked

2. There are many routes to asking a question, and many sources of influence



How do we decide what to ask?



Who decides which questions we answer?

3. "Asking" a question is a 2-step process



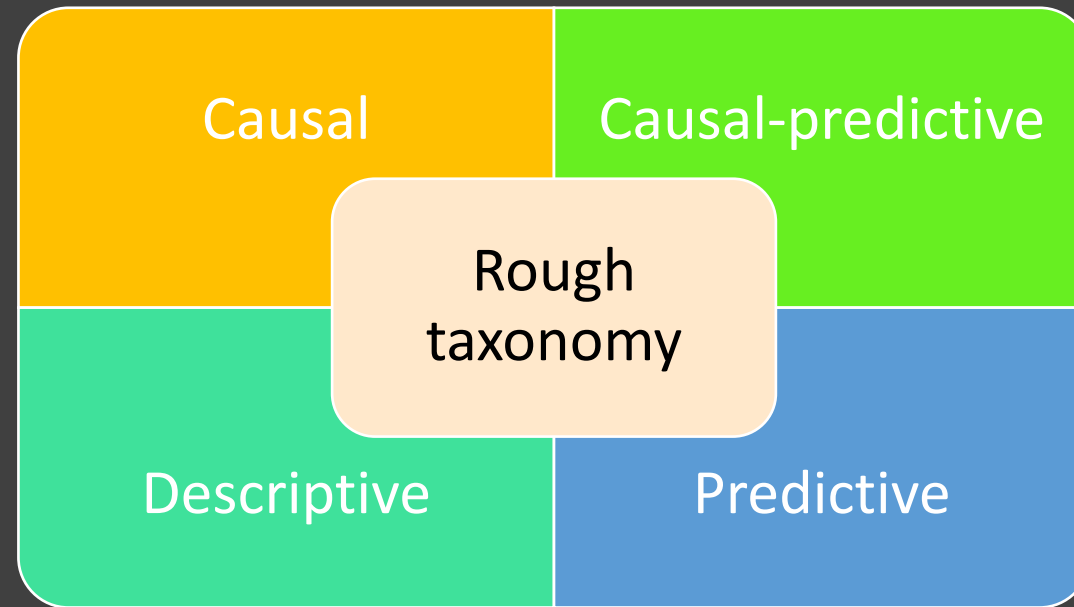
What problem
needs to be
addressed?



[Question]

Frame the
question

4. Different types of questions can inform decisions



4. Different types of questions can inform decisions

Descriptive: What happened?

Predictive: What will happen?

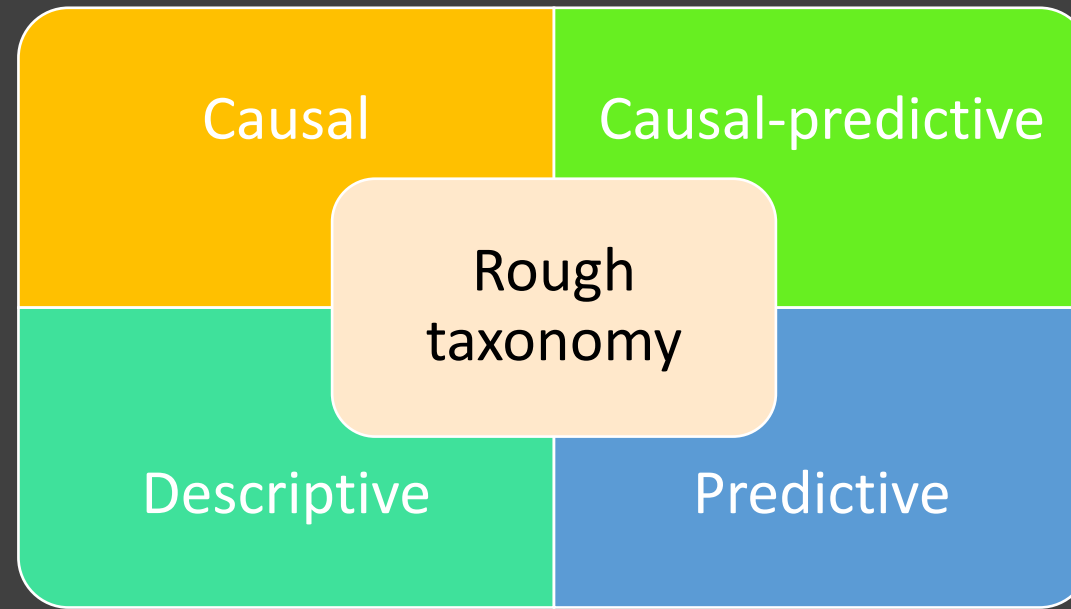
Causal: What would have happened had we done X?

Causal-predictive: What will happen if we do X in the future?

4. Different types of questions can inform decisions

Under some change

Natural course



Past

Future

5. Considering the use of the results is important to framing the question



Who will be acting on the results and
Whom does the decision affect?



What actions are feasible, now or in
the future?



What types of results would be
compelling to decision makers?

6. To maximize utility of the answers, questions should have a set of components



1. Target population



2. Time period of interest



3. Outcome(s), including WHEN follow-up starts outcomes should be measured



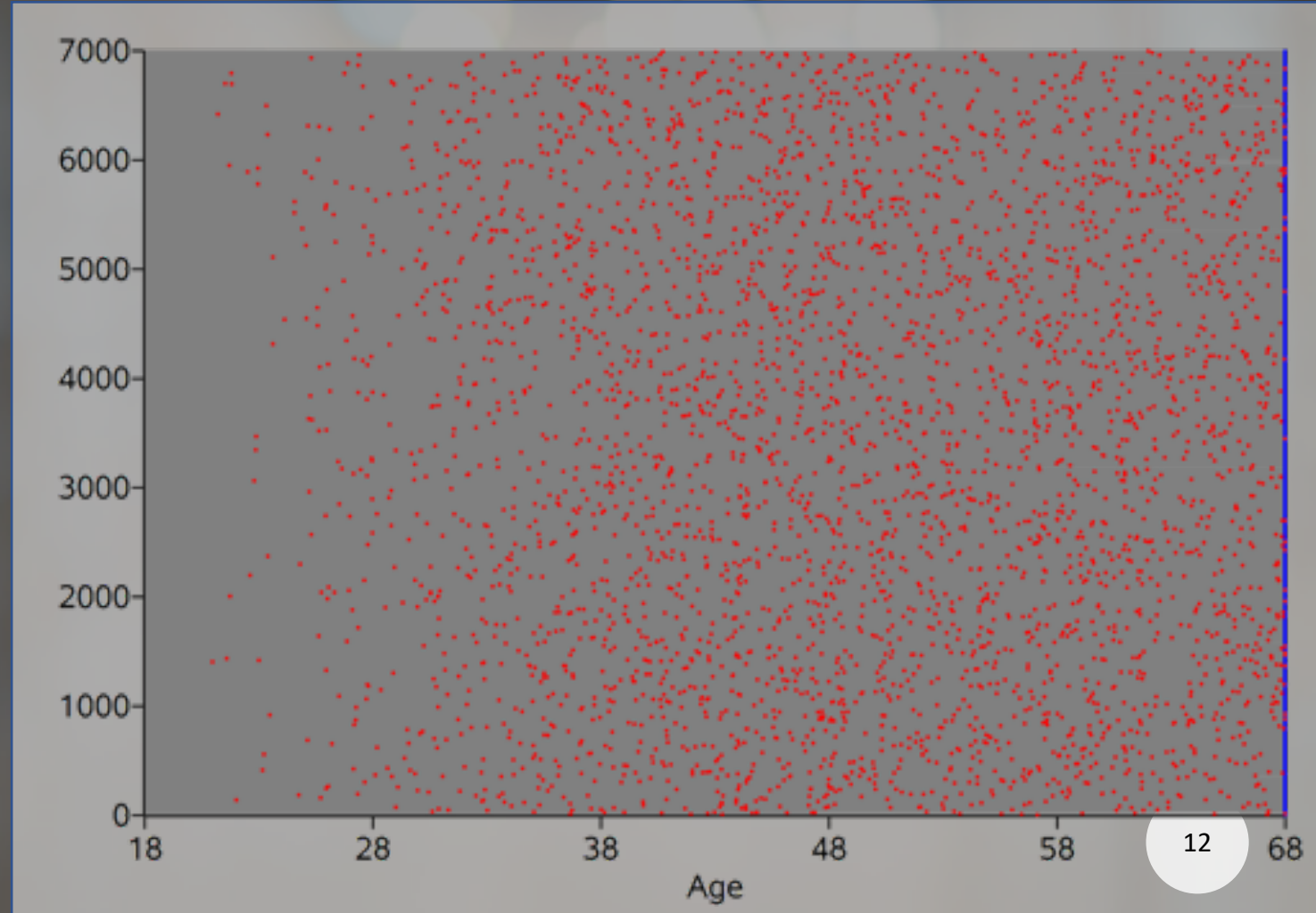
4. If there are a set of **actions** that are being assessed, the set of candidate actions, including WHEN they would occur



5. If there is a **comparison** being drawn **between groups**, the set of groups compared, including WHEN groups are defined.

7. Consider the idealized cohort study to flesh out your question

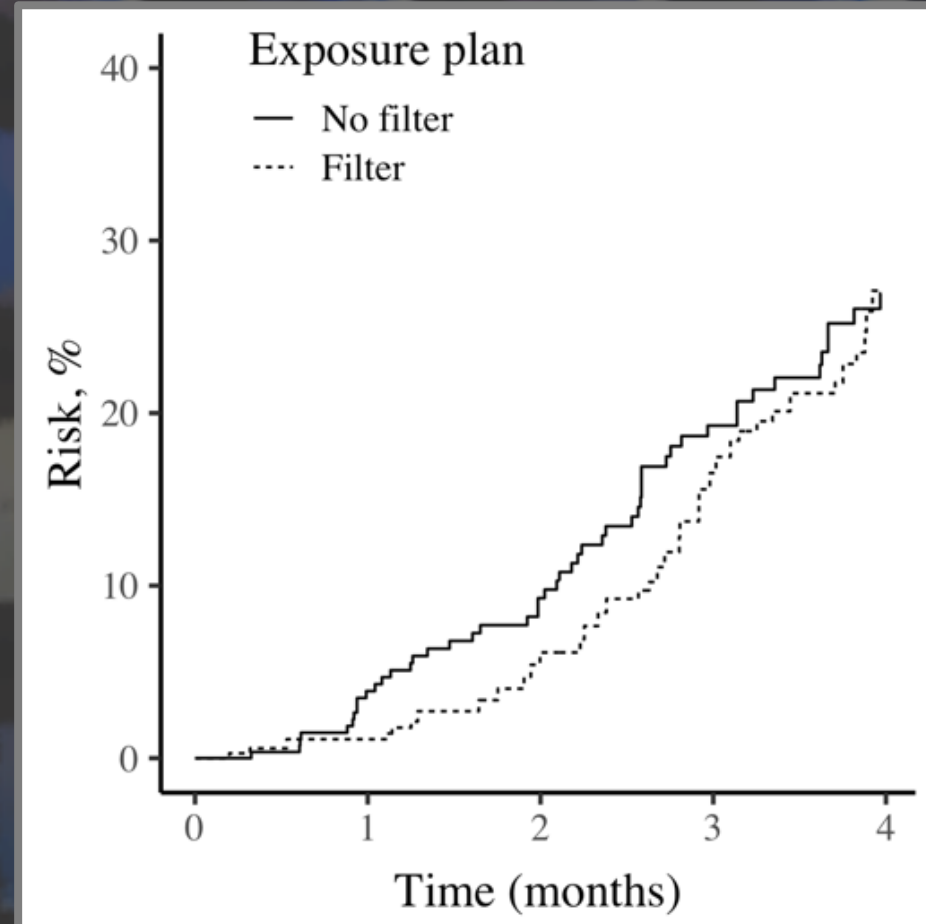
“Target trials” and beyond



8. Frame the question without considering existing data or the logistics of data collection



9. Consider absolute measures in addition to contrasts



10. Always ask “compared to what”



WHAT IS A REALISTIC
ALTERNATIVE TO ANY
ACTION CONSIDERED?



ARE THERE COMPETING
EVENTS OR OTHER
RISKS/BENEFITS TO BE
WEIGHED



IMPORTANT FOR
METHODS, AS WELL AS
SUBSTANTIVE
QUESTIONS

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