

## Unit 2: Lesson 1: Project 3: Formulating Good Research Questions

Categorize each of the following research questions as "good" or "bad", and provide alternative formulations for the bad ones. Save your responses in a document of some kind, submit a link below, and discuss your reasoning with your mentor.

### Ineffective (Bad):

What can we do to reduce juvenile delinquency in the U.S.?

This question is too broad in scope - which juveniles at what time and in what location? Are there specific geographic locations in the US that are outliers for juvenile delinquency?

Some potential contributors to juvenile delinquency might be broad enough to encompass very different populations across the US, but other contributors might be specific to community, County, or other regional areas smaller than the entire US.

Is there a specific segment of juvenile delinquents that is most of interest? For example, juvenile delinquents who commit status offenses (acts that would not be considered illegal if committed by adults) vs juvenile delinquents who use drugs vs juvenile delinquents who commit violent crimes?

What age group of juvenile delinquents?

And who is "we"? A parent organization, a government task force with the ability to advocate for a change in policy?

Answering some of these questions might narrow down the focus of the research question.

The factors that could contribute to juvenile delinquency range from the micro to the macro level.

On the micro and mezzo levels: goodness of fit between parents/children, trauma history, relationships with teachers/mentors, etc., family conditions, social/peer connections and conditions, familial economic conditions, individual/family health and mental health, etc.

Mezzo and macro levels: community or religious supports, access to health care and education, socio-economic opportunities, the "isms" in institutions that affect opportunity, etc.

Assuming the hypothesis is that trauma is a contributor to juvenile delinquency, it may be useful to identify and quantify the relationship between trauma and delinquent behavior.

If there is a relationship, identifying youth that might be exceptions to that relationship might identify protective factors that mitigate the impact of trauma. These exceptions might offer clues about “what to do to reduce juvenile delinquency” in specific communities or geographic regions when trauma is a contributing factor to juvenile delinquency.

Alternative formulation:

Is there a relationship between ACE ([Adverse Childhood Experiences](#)) scores and juvenile delinquency in the 13 and Under age group in California? Is there a relationship between type of ACE and juvenile delinquency in this age group?

Does education play a role in reducing juvenile delinquents' return to crime?

Again, this question is too broad. Which juvenile delinquents? Re-offending in what ways?

How much education and measured in what ways? Does it mean that a youth is actually physically present in a school - or in specific classes? Does it mean that a youth is able to demonstrate a specified reading grade level? Does it mean that they've participated in educational programs for juvenile delinquents? Or that they have achieved a high school diploma or passed the test to get a GED (General Education Diploma)?

Alternative Formulation:

Is there a relationship between number of days physically present at school and the frequency with which juvenile delinquents whose initial detainment is for assault/assault and battery return to probation after completion of initial probationary period?

What factors lead consumers to choose AT&T over other service providers?

Question is too broad. Which consumers in which geographic areas? “Factors” needs to be broken down into discrete categories that can be measured. Exposure to competitors advertisements? Exposure to AT&T advertisements? Exposure to social media discussing negative experiences with AT&T vs positive experiences? Family members/friends use of AT&T vs other carriers? End of competitor contracts? Coverage areas? International rates?

To narrow down the question, a survey of all new AT&T customers could be conducted that asked new customers to identify which of the above factors was most important to them in initially choosing AT&T.

Similarly, a survey could be conducted with AT&T customers that allows them to identify the above factors that made them choose to remain with AT&T.

Surveys, however, may not be as informative as needed.

It might simpler to measure “choosing AT&T over other service providers” as a function of staying with AT&T each month or renewing another contract rather than switching from another carrier over to AT&T.

#### Alternative Formulations:

What is the difference in regional cellular coverage (as measured in numbers and frequency of call drops) between AT&T customers who leave AT&T at the end of their contract and customers who renew their contract?

What is the difference between customers who renew their contract vs leave AT&T at contract end in number of family members and friends (as measured by top 5 numbers most frequently called in previous 3 months) who also have AT&T cellular service vs another carrier?

#### How can AT&T attract more customers?

Again, specificity needed. If you already know what strategies you’ve tried, you could ask questions that identified strategies that might be already be working to some degree, but could be modified or improved upon to achieve greater customer signups.

You could also segment the new customer population by gender, race, socio-economic level, etc and find out which new customers are already signing up with new contracts and double-down on targeting that population.

Or, you could identify other similar regions within AT&T that are achieving a desired new customer signup rate to identify which strategies they are using that are effective.

#### Alternative Formulations:

What customer acquisition strategies in the past 6 months led to a 1% increase or more in new customer signups in the San Francisco/Bay Area region on at least 60 calendar days during the time period?

What are the demographics of AT&T new customer contract signups in the San Francisco/Bay Area over the last 6 months and what customer acquisition strategies have been targetted toward these demographics?

What new customer acquisition strategies have similar AT&T regions in the US (matched population size, urban vs rural, socio-economic, etc) have had x% increases in new customer signups over the last 6 months?

#### Is it better to read to children at night or in the morning?

Specificity in the research question is needed. Better in what way? Better in that the child begins to read sooner, or reads increasingly more difficult words, or comprehends what is read with greater accuracy?

What age children are you considering? Reading to children at 3 yrs old at night vs in the morning serves a different purpose than reading to children at 10 at night vs in the morning.

What are you reading to them? When are you reading to them - just before bed vs before a morning nap?

Alternative Formulations:

How does reading to 3 year olds daily for at least 5 days per week during a two week period at night vs in the morning affect their ability to recognize sounds and letters on a standardized assessment for reading preparedness?

How does Google's search algorithm work?

Unless you work for Google on its search algorithm, you probably can't answer this question in any meaningful way. Still, you can get the question by breaking it down into more concrete questions first.

Alternative Formulations:

What are the various steps in the process that Google's algorithm incorporates to be able to provide search results?

What are the various factors that Google's search algorithm processes in order to deliver search results to a user?

How much weight does Google's algorithm place on links to a page vs. relevance of these links in determining this page's priority in ranking?

Why did the Challenger Shuttle explode?

The question could still be more specific. It also assumes that the Challenger exploded, when it actually broke apart.

Alternative Formulations:

What human errors during the design and build phase of the Challenger Shuttle contributed to the launch failure?

What hardware or software behaved differently than expected that led to the failure of the Challenger shuttle launch?

Effective (Good):

What is the 1994 rate of juvenile delinquency in the U.S.?

How many customers does AT&T currently serve in Washington, DC?

Which genes are associated with increased risk of breast cancer?