Drill: 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.

1. What is the 1994 rate of juvenile delinquency in the U.S.?
Bad.
Alternative formulation: What is the 1994 rate of high school students, aged 14-17 years old, who have more than 10 consecutive all-day unexcused absences in California?

2. What can we do to reduce juvenile delinquency in the U.S.?
Bad.
Alternative formulation: Does enrollment in an after-hours option high school diploma program for high school students aged 14-17 years old with a history of juvenile delinquency decrease the rate of juvenile delinquency in California?

3. Does education play a role in reducing juvenile delinquents' return to crime?
Bad.
Alternative formulation: Among high school-aged students with a history of 10 day consecutive all-day unexcused absences in California, is there a difference comparing students with a 3.0 average vs 2.0 average, with respect to number of times they have been arrested?

4. How many customers does AT&T currently serve in Washington, DC?
Bad.
Alternative formulation: How many non-commercial accounts in the Washington, DC metro area, currently subscribe to AT&T internet services for home use?

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

Bad.

Alternative formulation: Among non-commercial AT&T internet accounts, what ranks higher: download speeds, consistency of a connection, or customer service , in keeping customers in 12 month contracts, versus other service providers?

6. How can AT&T attract more customers?

Bad.

Alternative formulation: Among homeowners, in the residential Washington, DC metro area, if AT&T offers a free 12 month gym subscription to 24 Hour Fitness, will that result in more customer gain vs Comcast, Time Warner, and Cox, in a 6 month promotion cycle?

7. Why did the Challenger Shuttle explode?

Bad.

Alternative formulation: When examining the booster rocket stage, did it have a catastrophic failure associated with it's break-away from the Challenger Shuttle, that ultimately caused the shuttle to explode?

8. Which genes are associated with increased risk of breast cancer?

Bad.

Alternate formulation: Among women aged 30-40 years old, does the presence of an altered BRCA2 gene lead to a biopsy proven diagnosis of Ductal Carcinoma in Situ?

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

Bad.

Alternate formulation: Among children aged 3-5 years old, does reading a fairy tale at 8am versus reading a fairy tale at 8pm, result in less tantrums, defined as all-out, inconsolable crying over a 3 minute period, throughout the daytime?

10. How does Google's search algorithm work?

Bad. I feel that this is not a data science question.