

Laboratory Activity 1 for Math 080: Topics from Chapter 1

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1 Introduction

Steven Levitt and Stephen J. Dubner are two economic researchers and authors of the book *Freakonomics*. They recorded a podcast and posted it to the Freakonomics website here:

<https://freakonomics.com/podcast/how-much-do-we-really-care-about-children-ep-447>.

2 Conceptual Questions about the Podcast

In the first segment about child fertility and car seats, identify one way the following concepts arise in the discussion:

- **Probability:**
- **Population:**
- **Sample:**

In the second segment about child safety and car seats, identify one way the following concepts arise in the discussion:

- **Statistic:**
- **Parameter:**
- **Representative sample:**
- **Variable, data:**

3 Quantitative Questions about the Podcast

In the first segment about child fertility and car seats, the *number of children born per woman* is mentioned as a statistic used to study population growth. Suppose we use anonymized hospital data to determine the number of children born to 10 different women (Tab. 1). (a) What is the average number of children per woman in Tab. 1? (b) What is the average children per woman for each income bracket? (c) What can be done to improve the sample in Tab. 1, in order to better capture population trends?

Age of mother	Number of children	Income bracket
30	3	A
30	1	B
26	1	A
34	3	D
32	5	C
32	2	C
16	1	D
34	2	A
26	2	A
23	1	A

Table 1: (Left column): age of the mother when the most recent child is born. (Middle column): Cumulative number of children to date. (Right column): Income bracket, with A representing lowest income, and D representing highest income.