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Data and Metrics: Do We Need Them? What Can They Tell Us? What Can't They?

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Abstract
"In our increasingly data-centric world, how do we think about data? How *should* we think about data?"

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Statistics. Numbers. Metrics. Graphs. Nervous about this article yet?

For many of us, just the sheer mention of these math-related words can cause painful memories of complex classes we took in school. Classes that left us thinking that we were not good at numbers and that those people who were good at numbers, exercised some sort of technological wizardry to get their pencil or calculator to generate "the single right answer." Others of us think we are numbers people—"Show me the data," we say, and we mean it! In our increasingly data-centric world, how do we think about data? How *should* we think about data?

To understand societies' views of data, it is helpful to think back to our youth. Most of us will say that we are either "good" or "bad" at math by as early as second grade.[1] This is because we believe that mathematical ability is an unchangeable or innate ability. Importantly, even though attitudes towards mathematics are changeable, a negative mindset ("I'm bad at math") rarely changes for most people for the rest of our lives. The ways we properly address these negative attitudes in our youth are complex and challenging. Be that as it may, our early-life love or hate for numbers means that, as adults, when we see numbers used to make arguments, most of us have an immediate visceral reaction of either "ugh" or "awesome."

People who see themselves as bad at math tend to draw one of two conclusions about data when it is used to make arguments. First, being overwhelmed, they may dismiss the claims being made: "You can make numbers say whatever you want them to say. It is magic. I don't believe them." Alternatively, people may say: "Wow, whoever made this argument with data must be a wizard. I'm sure that they're correct. We'd better do what they tell us to do."

Interestingly, similar conclusions are reached by people who claim to be good at math. First, feeling confident in one's abilities to critique numbers, they may think: "You can make numbers

say whatever you want them to say." These individuals may seek to think about all the reasons why the data or conclusions might be incorrect. Alternatively, individuals who are confident in their mathematical abilities, may recognize that data should be used to inform decisions, and because of that knowledge, they are more willing to agree with the conclusions being reached—even without thinking very much about the data being presented.

Thus, despite our mindset towards data and numbers, we tend to quickly draw conclusions about the data we see—either dismissing the claims or accepting them, without much thought. So, what is the problem with this? The problem is that we live in a world that is increasingly data-focused. We are surrounded by data and metrics. All the time. People are using data and metrics more and more to make arguments and, some would argue, putting an increased confidence in what data can tell us about the world.

I think that is particularly evident when we view advertisements. After seeing some ads, I find myself thinking: "Wow, if I just had more data about myself, my habits, my biology, I would be a much better person." Or, if my company just had the right data we'd be much more profitable, viable and growing." Or, "If we only had more data about people in poverty, we would know how to help them, and the world would be a better place." But then again, I am a data guy. So, it makes sense that my visceral reaction is a positive one. There are just as many folks out there who are skeptical saying, "Really? Somehow you just get a bunch of data and the world's going to be a better place? Nope!"

How do we navigate this rapid change in the world of today—a world that puts increased value and emphasis on data, metrics, graphs and numbers. Is this data "necessary?" What can data tell us? What can't it tell us?

First, is all this data really necessary? God has given humans the ability to observe and measure the world around us. Massive technological breakthroughs in the last 20 years have led to an absolute explosion in the amount of data available to us and our ability to store and analyze it. In the last two years alone, 90% of all data in history of the world was created. Seriously. Is all this data necessary? Well, probably not all of it. Helpful? Some of it is.

Second, what can data tell us? Inductive reasoning is the fancy term for drawing conclusions based on observation (data). We do this all the time. If I am in a windowless room and someone walks in holding an umbrella and looking wet, I probably draw the conclusion that it is raining outside. That is inductive reasoning. If I am hiking in the savannah and see a still warm pile of lion dung, my inductive reasoning is going to act really fast! Drawing conclusions from data is just one form of inductive reasoning. There is nothing wrong with inductive reasoning. In fact, we do it all the time; and, most of the time, we are right. Of course, we can sometimes be wrong. That is the crazy thing about inductive reasoning. We are trying to figure out the truth based just on our limited, fallible and potentially biased, observations. That is why data gurus and geeks like me try to figure out systematic ways of gathering, analyzing, and drawing conclusions from data—to protect us from drawing the wrong conclusions. But, even though it

can (and will) be wrong some of the time, we must recognize that we can (and should) use data to tell us about the world. God made the world that way.

Third, what can't data tell us? So, how do we avoid the problem of making mistakes when we draw conclusions from data? First, we need to recognize that we often view data from our pre-conceived opinions about the world. This seems pretty important in the polarized world of today—where people are increasingly opinionated that they are right, and others are wrong, and there is no middle ground. Thus, increasingly we are all finding data to fit our pre-determined narrative of the world. This is dangerous territory. Second, a biblical approach to data doesn't worship it or the data wizards who use data to tell stories. In one recent article (and there are many others like it out there), the individual being interviewed seems to suggest that data is going to solve critical world problems. I have no doubt that better data is going to help us better address problems of today. Yes, God can use data and the technology measuring that data to help continue to redeem his creation. But, we need to be cautious in thinking that having the data is going to solve the problems. A broken creation and a sinful humanity are not going away until He comes again. Simply having more data in the meantime isn't going to change that.

So, I will challenge you today—if you find that you are usually pretty quick to believe data when you see it, think about reading and viewing some of the data that researchers on "the other side" are using. How compelling is their data? What about their data makes sense? What doesn't? On the other hand, if you find that you are typically quite dismissive of data you see, perhaps it is time to think about where you are seeing data being used positively and where you can use data to improve your own personal health and well-being. Moreover, challenge yourself to approach data on your own terms and realize how it can be used in a restorative way in our world. You are probably already using data a lot more than you realize—and you are probably not as "bad at math" as what you think.

FOOTNOTES

1. Heyman, G. D., & Dweck, C. S. (1998). Children's Thinking about Traits: Implications for Judgments of the Self and Others. Child Development, 69, 391-403.