Survivorship Bias, Narrative Bias, and False Dilemma

1 Survivorship Bias

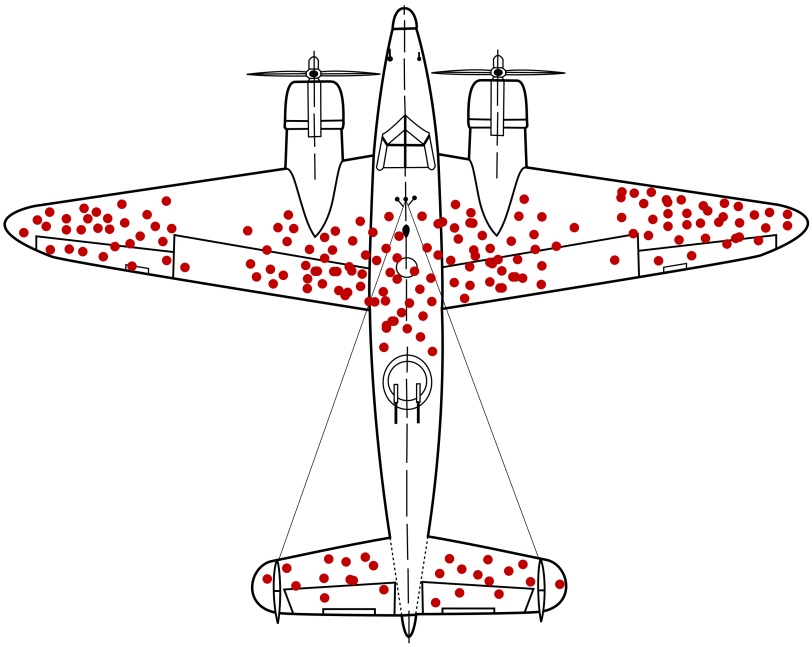

Figure 1: WWII Bomber Plane with damage distribution.

1.1 Interactive Example: World War II Planes

Scenario Setup: During World War II, the Allied forces were experiencing significant losses in their bomber planes. To improve the planes' chances of survival, engineers analyzed the planes that returned from missions, noting where they had been hit. **The planes that returned from combat show damage primarily on the wings, tail, and fuselage. Where do you think more armor should be added to reduce losses?**

Abraham Wald's Famous Answer: Wald realized that the planes being analyzed were the ones that had survived despite the damage. The critical insight was that the planes that didn't return likely took hits in areas that were crucial for survival – areas that showed little or no damage on the surviving planes (such as the engines and cockpit).

Correct Approach: Instead of reinforcing the areas that were damaged on the returning planes, Wald suggested reinforcing the areas that showed no damage, as these were the areas where a hit would have likely caused the plane to be lost and not return at all.

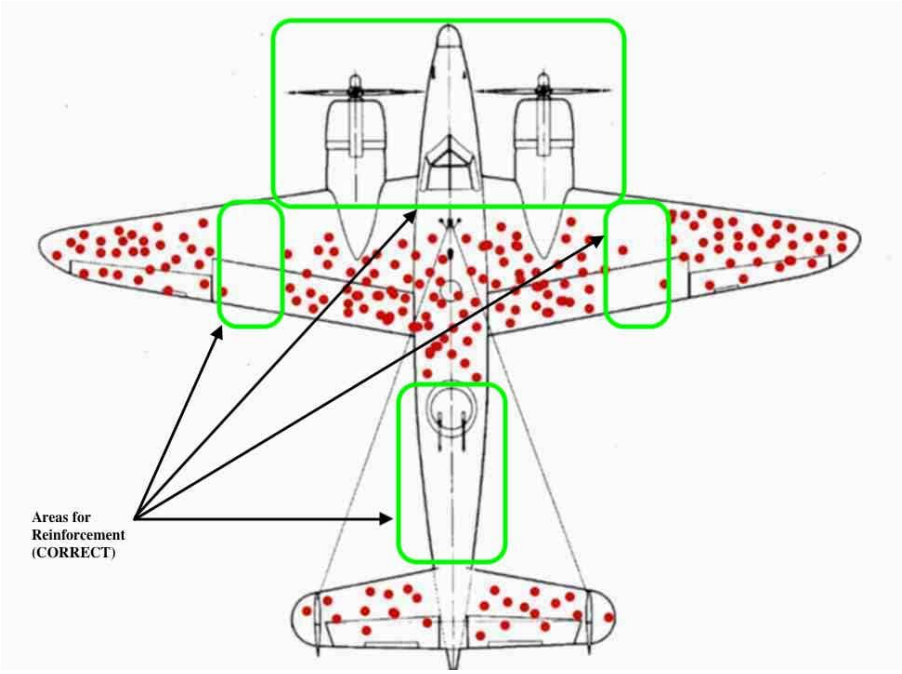

Figure 2: WWII Bomber Plane accounting for damage distribution of planes that didn't survive.

Survivorship Bias: Most of your initial reasoning that more armor should be added on the wings, tail, and fuselage reflects a common error known as survivorship bias. By focusing only on the planes that survived, you missed considering the planes that didn't make it back, which might have been hit in the very areas that didn't show damage on the returning planes.

Survivorship bias occurs when people focus on the successes (or survivors) and ignore the failures (or those that didn't survive), leading to skewed conclusions.

Key Lesson: The World War II plane example demonstrates how focusing only on surviving cases can lead to incorrect conclusions, as it ignores the unseen failures.

Modern Examples:

- **Hardworking Millionaire:** For every successful entrepreneur, there are countless others who followed similar paths but didn't succeed.
- **Startups:** Success stories of startups often overshadow the many that failed despite similar efforts.
- **College dropouts:** For every success story of famous college dropouts such as Bill Gates, Mark Zuckerberg, and so on, there are many examples of college dropouts who didn't do quite well in their future career.

2 Narrative Bias

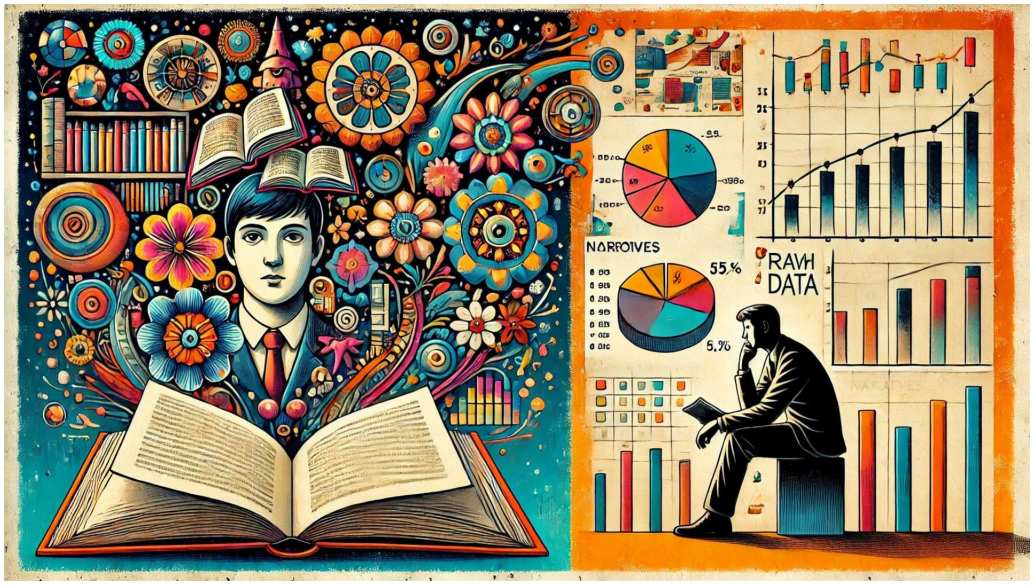

Figure 3: Illustrative image for Narrative Bias.

2.1 Case Study: The New York Times Reader

Consider the following two scenarios and think about which is more likely:

A) A person in the United States has a Ph.D., or

B) A person in the United States has a high-school diploma but no college education?

Now consider this scenario: A visitor reading an article on the New York Times website is more likely to be:

A) Someone who holds a Ph.D., or

B) Someone who graduated from high school but did not attend college?

Unpacking the Bias: With an inclusion of a specific detail – the act of reading the New York Times – often leads people to construct a narrative about the person. Many might imagine that a New York Times reader is more likely to be highly educated, perhaps holding a Ph.D. However, **the reality** is that statistically, only about 1.7% of the U.S. population holds a Ph.D., while around 29% have a high-school diploma with no college education. Even among New York Times readers, the probability that any given individual holds a Ph.D. remains low, despite the association of the newspaper with intellectual content. This scenario is a classic example of base-rate neglect, a type of narrative bias where the prevalence (or base rate) of an outcome is ignored in favor of a specific detail that fits a constructed story. The detail (reading the New York Times) leads people to neglect the broader statistical reality.

Narrative Bias: Narrative bias is the human tendency to construct and believe coherent stories, even when the underlying facts may be incomplete or unrelated.

2.2 Dual Nature of Narrative Bias

- **Strength:**
  - **Constructing Reality:** Narrative bias enables humans to make sense of the world, connect disparate events, and construct coherent descriptions of reality. It distinguishes us from other species and allows for complex communication, storytelling, and cultural development.
- **Weakness:**
  - **Seeking Patterns in Chaos:** This same tendency can lead us to see patterns and meanings where none exist, such as interpreting random noise in the stock market as predictive patterns or finding causality in chaotic events.
  - **Best Story Wins:** As Morgan Housel noted, "We have a strong propensity to be persuaded by the best story, not the best answer, not the right answer. The best story always wins." This can cause people to favor compelling narratives over factual accuracy.

2.3 The Power of Details and Cause-and-Effect

- **Specific Details:** Good storytellers know that including specific details is essential to capturing the listener's imagination and making a story believable. However, this can lead to biased conclusions if these details cause us to ignore the bigger picture.
- **Cause and Effect:** Stories that explain why things happen are particularly persuasive. People like to believe that the world makes sense and that events have a root cause. This makes us more likely to believe stories that provide causal explanations, even if those explanations are not true.

Examples:
Personal Finance: Investors might be swayed by compelling market stories, leading them to make poor financial decisions based on perceived patterns in random data.

Historical Narratives: Historical events, such as the American Revolution, are often presented as simple, linear stories, but these narratives can obscure the complex economic, social, and political factors at play.

2.4 Key Lessons

- **Implications:**
  - **The Power of Narratives:** Narrative bias highlights how powerful storytelling can be in shaping our perceptions and beliefs. While narratives help us make sense of the world, they can also lead us astray by causing us to focus on details that support a compelling story rather than the truth.
  - **Critical Thinking:** It's crucial to be aware of how narratives can influence our thinking, leading us to overlook statistical realities or ignore conflicting information.

- **Real-World Impact:**
  - **Decision-Making:** Narrative bias can influence decisions in various fields, including marketing, design, public policy, and personal finance, where compelling stories may overshadow statistical realities.
  - **Perception:** This bias affects how we perceive others and the world around us, leading to assumptions based on incomplete or misleading narratives.

3 False Dilemma (False Dichotomy)

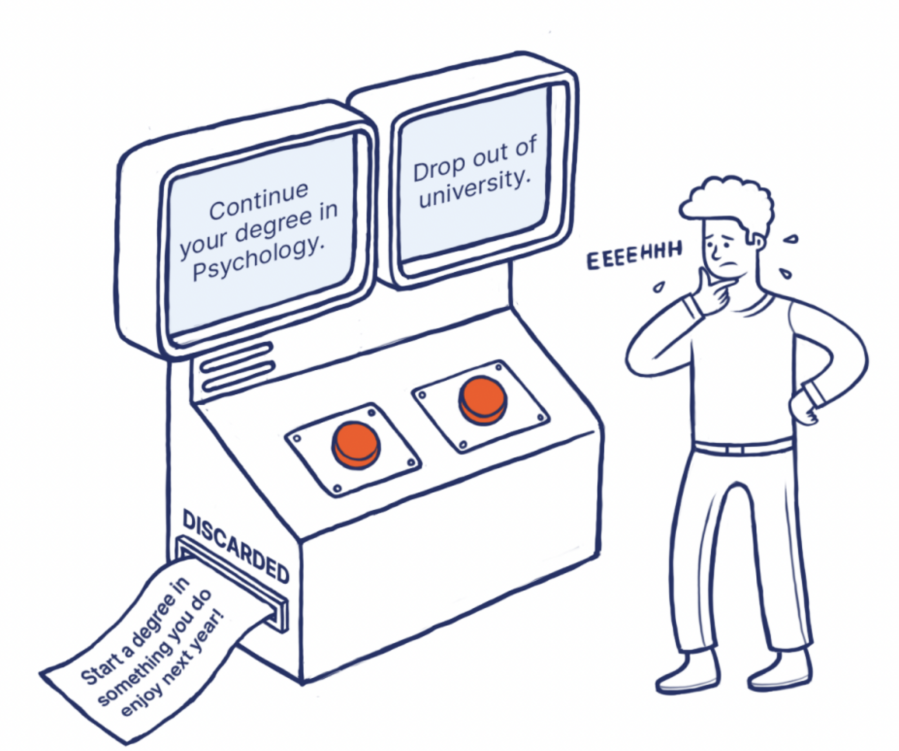

Figure 4: Illustrative diagram showing the spectrum of possibilities beyond binary choices.

Case Study: The Gun Control Debate

The gun control debate in many countries, especially the United States, is often presented as a stark choice between two extreme positions: either full support for the Second Amendment and gun ownership rights, or a complete ban on firearms. When you think about the gun control debate, what are the main positions you hear about? Do you think there are only two sides to this issue?

It is common to hear only two extreme positions on gun debate. The gun control debate is often framed as a false dilemma, presenting only two extreme options: either unrestricted gun ownership or a total ban on guns. The reality is that the issue of gun control is much more complex and nuanced. There are many positions between these extremes, such as advocating for background checks, restrictions on certain types of firearms, mandatory safety training, or mental health evaluations for gun buyers. This middle ground is often overlooked in public discourse, leading to polarization and making it difficult to find compromise or consensus on effective solutions.

3.1 False Dilemma and Statistical Bias

- False dilemmas simplify complex issues into binary choices, leading to an oversimplification of data analysis and interpretation in statistics. This can cause researchers to overlook the full range of possibilities that the data might reveal.
- In statistical analysis, focusing only on two possible outcomes or explanations can result in missing other viable interpretations or variables that could explain the data more accurately.
- Forcing data into binary categories can ignore the nuances and variations within the data, leading to misleading conclusions. In many cases, a multi-category or continuous variable approach would provide a more accurate representation.
- False dilemmas can lead to poorly framed hypotheses, resulting in incorrect acceptance or rejection of hypotheses due to oversimplification. Proper hypothesis testing should consider a range of outcomes, not just binary extremes.

3.2 Key Lesson

- **Polarization:** The false dilemma framing intensifies divisions between groups, as it forces people to choose sides rather than consider a range of potential solutions.
- **Public Policy:** Policymakers may feel pressured to align with one extreme or the other, neglecting more balanced or effective approaches that could gain broader support.
- **Statistical Analysis:** Recognizing the danger of false dilemmas in statistical reasoning helps ensure that analyses consider all relevant variables and outcomes, leading to more accurate and nuanced conclusions.
- **Legislation:** The framing of the debate as a false dilemma can lead to gridlock in passing legislation, as moderate or incremental changes are dismissed in favor of all-or-nothing approaches.
- **Public Discourse:** The public may become entrenched in their views, making it harder to have constructive conversations or explore innovative solutions that address the concerns of both sides.

4 Conclusion

Survivorship Bias: The danger of focusing only on successes and ignoring failures. **Narrative Bias:** The power and danger of compelling stories. **False Dilemma:** The fallacy of oversimplified choices. **Call to Action:** From today, I encourage all of you to question the stories, choices, and success narratives they encounter, and to always look for the nuances and complexities that may be hidden beneath the surface.