

# Welcome!

DATA-DRIVEN DECISION MAKING FOR BUSINESS



Ted Kwartler

Data Dude

# Types of data

Numeric:  
1.2346

Factor:  
Small, Medium,  
Large

## Expanded Definition:

Model KPIs  
Visualizations  
Dashboard Learnings

Boolean:  
True, False

String:  
"I Love learning at  
DataCamp"

Forms  
of  
Data

# Exploring patterns without an outcome

## Exploratory analysis

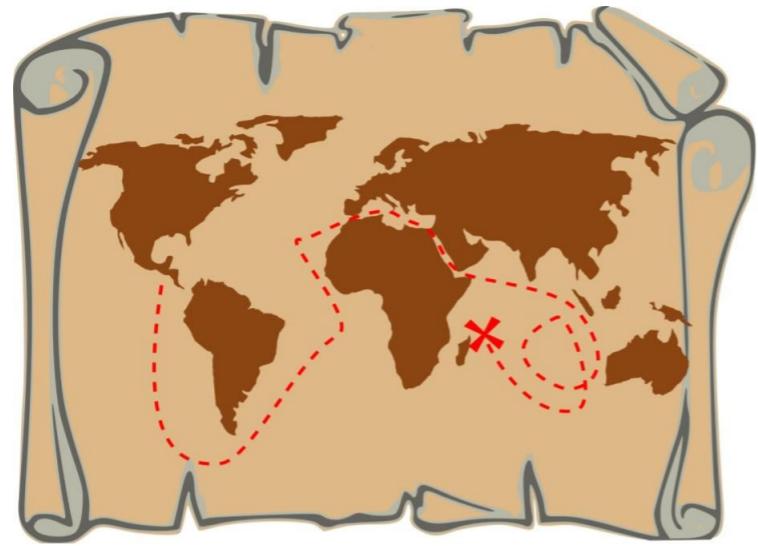


To understand a market or business opportunity more fully without a predefined outcome

**Example:** Identify common characteristics among patients

# Explaining a specific outcome

## Explanatory analysis

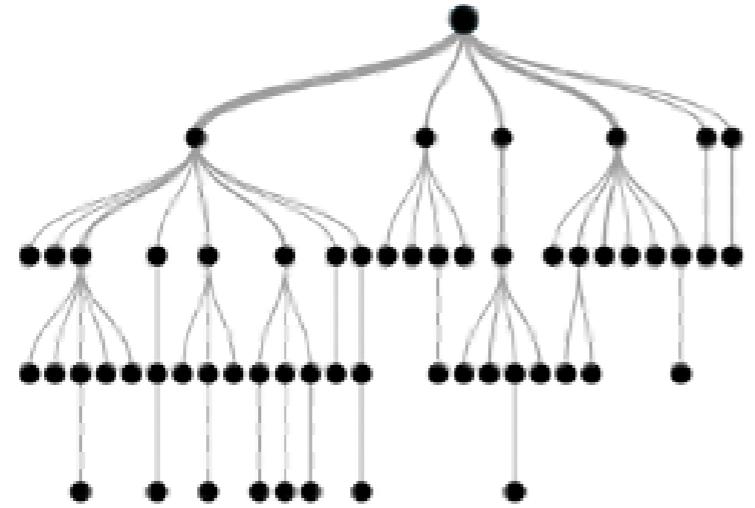


Explain or simulate a specific phenomena such as seeking profit or decreasing expenses

**Example:** Explain why diabetic patients discharged on Fridays are readmitted more often

# Predicting a future outcome

## Predictive data decisions



Specific record prediction, often most accurate model matters over understanding

**Example:** Predict the probability of a patient's readmission

# Who is doing the analysis and why is the analysis being performed?

Type	Perspective	Why?
Exploratory	Strategic	Confirm understanding and gain expertise
Explanatory	Strategic/tactical	Learn complex interactions for efficient and easier operations
Predictive	Tactical	Drive specific results and often automate decision making

# How was the data collected and when?

## Probing an analysis effectively

- **DATA**
  - Is the data available?
  - What data was used?
  - Is it appropriate for the task?
  - Does it have bias such as underrepresented race or gender?
  - Does it have integrity issues, like significant missing data?
  - How was it collected?

# What method is being applied?

## Probing an analysis effectively

- **METHODS**
  - What methods were applied?
  - Were alternative methods attempted? If so, did the results differ?
  - What is the trade-off between simple and complex methods?

# What was the outcome?

## Probing an analysis effectively

- **RESULTS**
  - Tell me about the results.
  - Were the results in line with expectations or did something stand out?
  - How does this finding deliver value or solve our problem?

# Who is being impacted?

## Probing an analysis effectively

- **IMPACT**
  - How much does this analysis address the problem we're trying to solve?
  - Are there regulations that affect this use case?
  - How could this go wrong? Are there unforeseen impacts to stakeholders that need to be addressed?

# **Let's practice!**

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# Analysis as a journey

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# Know what you know and learn what you don't

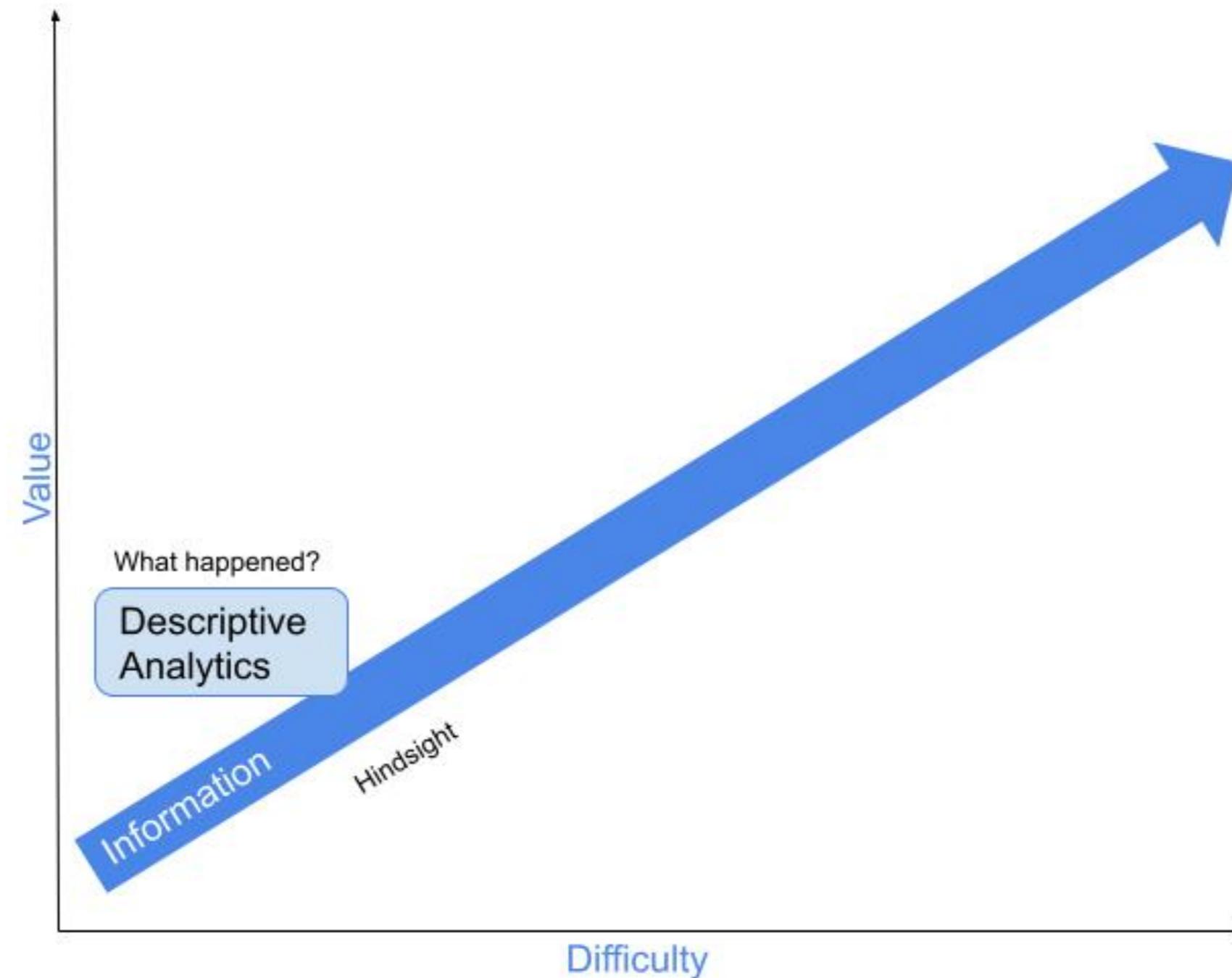


# The same is true for organizations

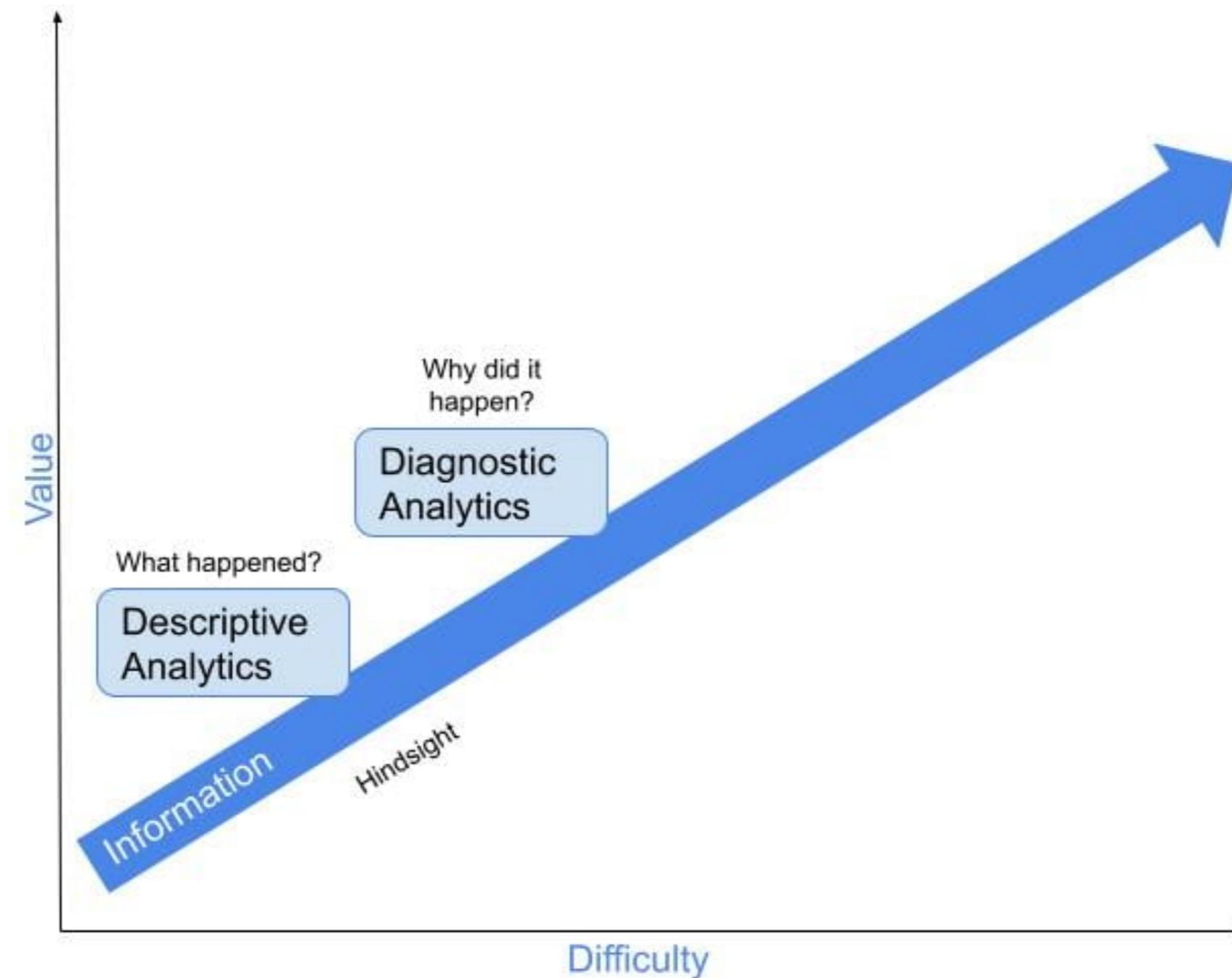


- Lack of data
- No technical personnel
- HIPPOs (Highest Paid Person's Opinion)

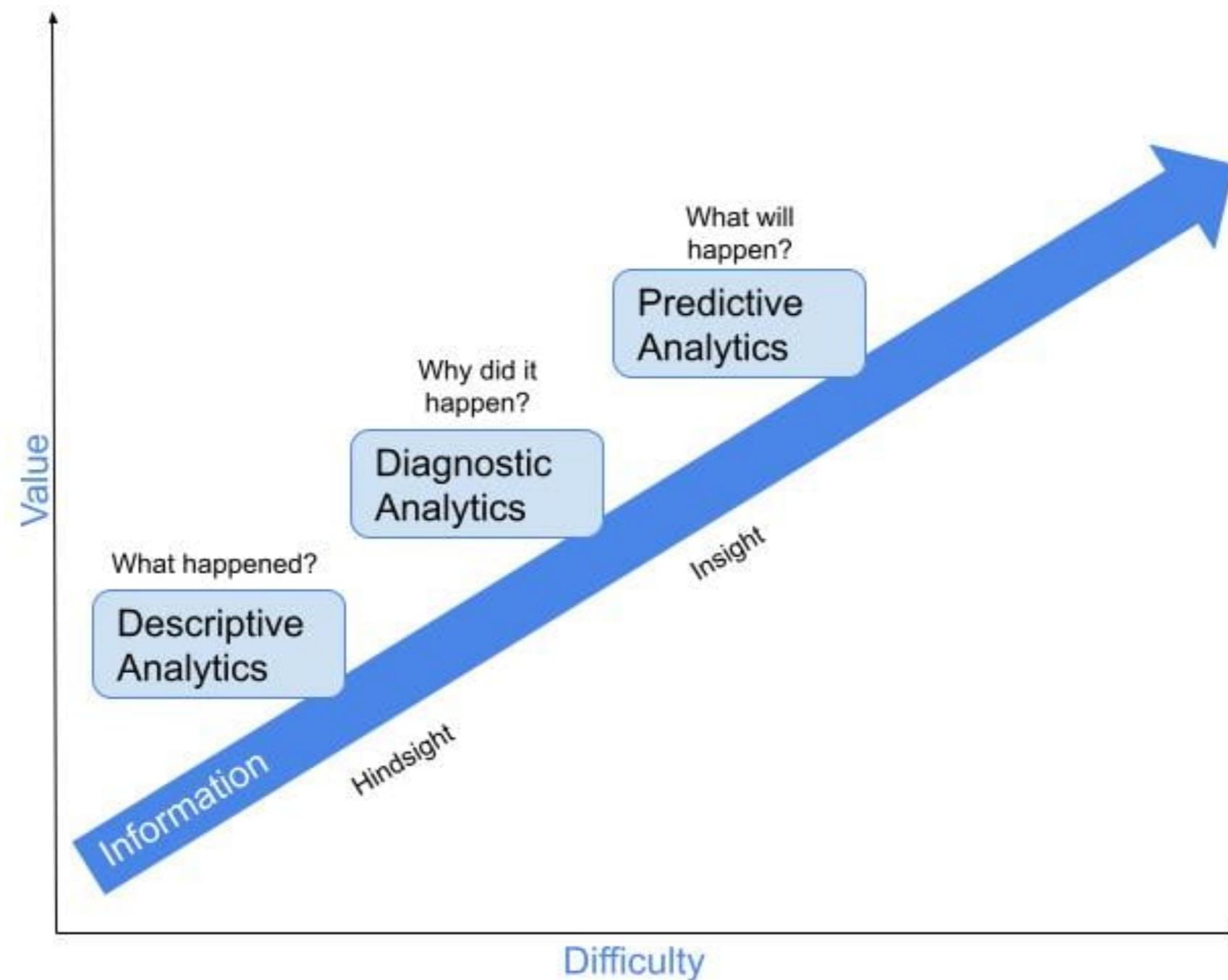
# Maturing a data-driven culture - Descriptive



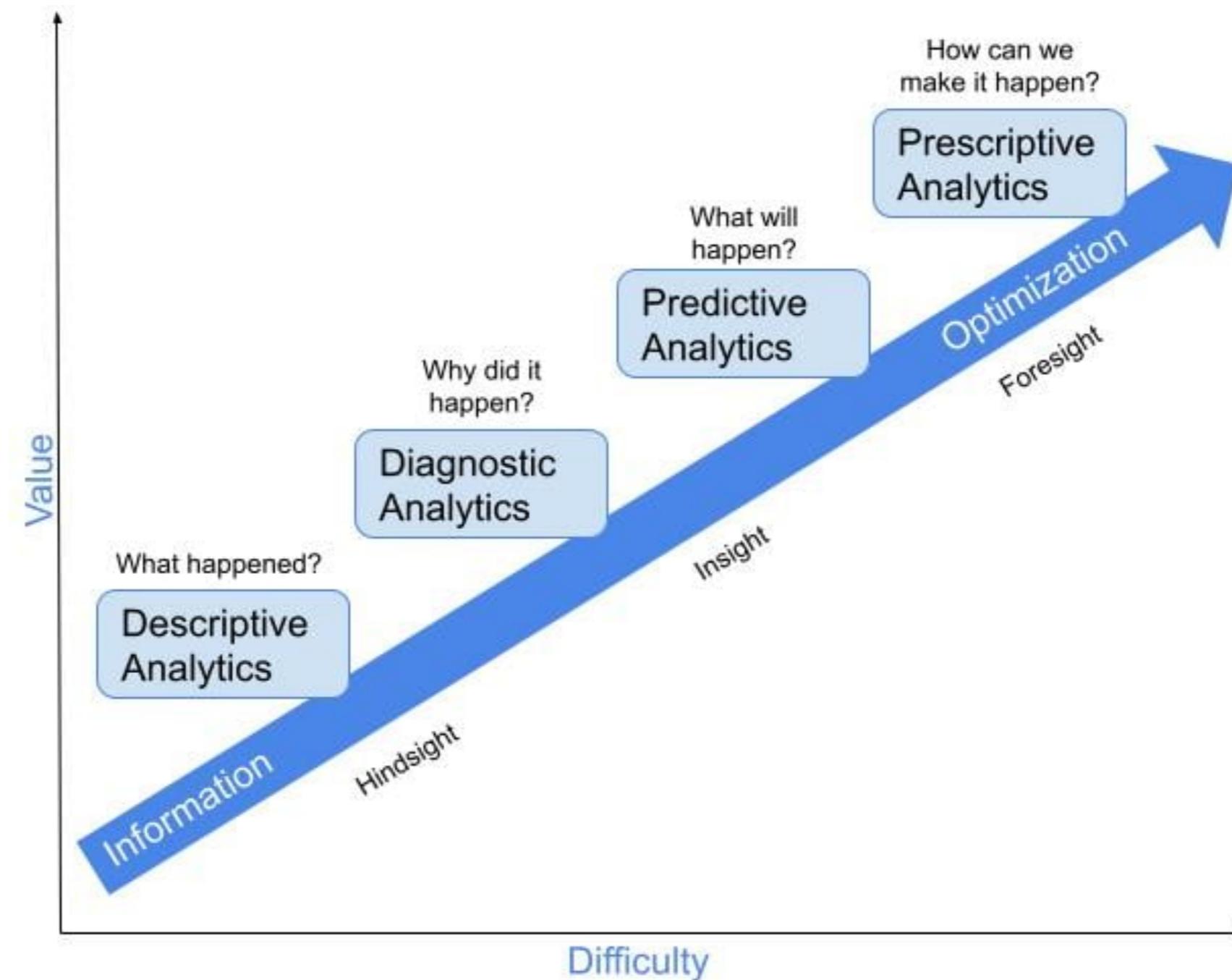
# Maturing a data-driven culture - Diagnostic



# Maturing a data-driven culture - Predictive



# Maturing a data-driven culture - Prescriptive



# Cost vs. benefit

- Analytically determine the **cost** of a decision
  - *Cost*: new software is expensive
- Analytically determine the expected **benefit**
  - *Benefit*: increased widget-making



# Risk vs. reward

- Analytically determine the **risk** of a scenario
  - *Risk* : startup fails, \$0 left
- Analytically determine the **reward** of a scenario
  - *Reward* : if it works, you'll be rich!



# Supply vs. demand

- Forecast the expected **demand** for personnel, material or system need
  - *Supply* : how many agents should be staffed?
- Analyze the needed **supply** of the personnel, material or system need to meet demand
  - *Demand* : how many calls will the company receive?



# Putting it all together

	Cost vs. benefit	Risk vs. reward	Supply vs. demand
Exploratory			
Explanatory			
Predictive			

# Examples

	<b>Cost vs. benefit</b>	<b>Risk vs. reward</b>	<b>Supply vs. demand</b>
<b>Exploratory</b>	Does social media indicate a product innovation X is needed vs. the cost to develop it?	This house's distance to a fire station explains something about fire risk.	Reviewing marketing spend across channels
<b>Explanatory</b>	Which content is most popular and best for paid traffic?	Tracking a popular investing site's stock mentions to explain retail investing patterns	Explaining specific market trends
<b>Predictive</b>	Which house will respond to a postcard?	Predict a fair price for a car	Predicting demand

# Let's go!

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# Applying the methods and objectives

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# Poor Dale



# Hot dog research & development



- A new product idea is pitched by the CEO (*HIPPO alert*)
  - People like bananas
  - People like hot dogs
  - Natural business opportunity

# Where's the data?

- ~~Predictive~~
  - Predictions require historical patterns.  
There are none.
- ~~Explanatory~~
  - Explanations are hard without data.
- ~~Exploratory~~
  - This is completely new territory for the company.



# What is the point?



- ~~Cost vs. benefit~~
  - Possible unsold dogs!
- ~~Risk vs. reward~~
  - Making \$1m a dog on paper won't help without a *real* demand.
- **Supply vs. demand**
  - Demand drives the supply needed, which can aid cost vs. benefit and risk vs. reward.

# Exploratory market demand

	Banana	Hot dog	Banana dog	Banana hot dog
Mentions in the last 10 hours	50	88	7	3
Brand mentions (pct of posts)	17%	70%	4%	1%
Positive Sentiment	0.70	0.52	0.18	.48

- **Few product mentions** = no consumer saliency for the idea
- **No brand mentions** = no consumer aligns a company with the idea

# Phew... avoided that nonsense!



	Cost vs. benefit	Risk vs. reward	Supply vs. demand
Exploratory			Banana-dog
Explanatory			
Predictive			

# **Let's practice!**

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