Data & Decision Making:

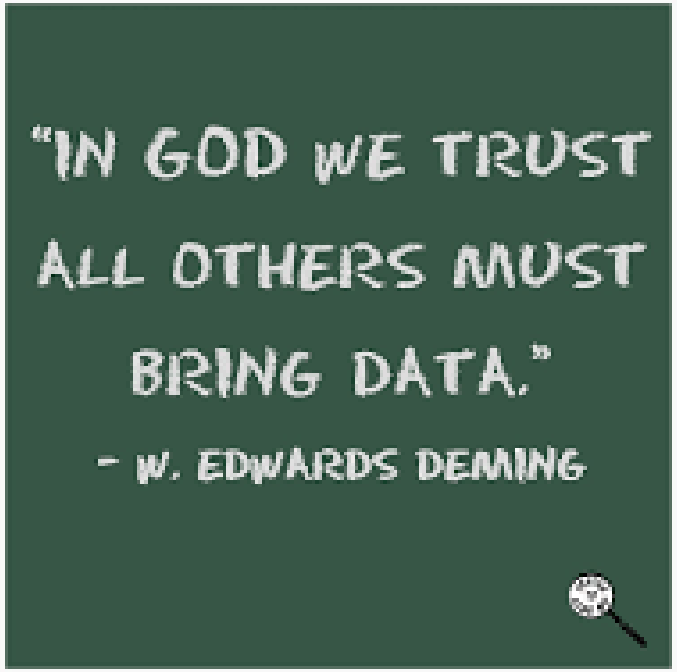
How Analyzing Research Administrative, Compliance, and Financial Data Can Improve the Management of Your Research Portfolios

Presenters: Dana Carroll and Hamit Hamutcu

June 13, 2024

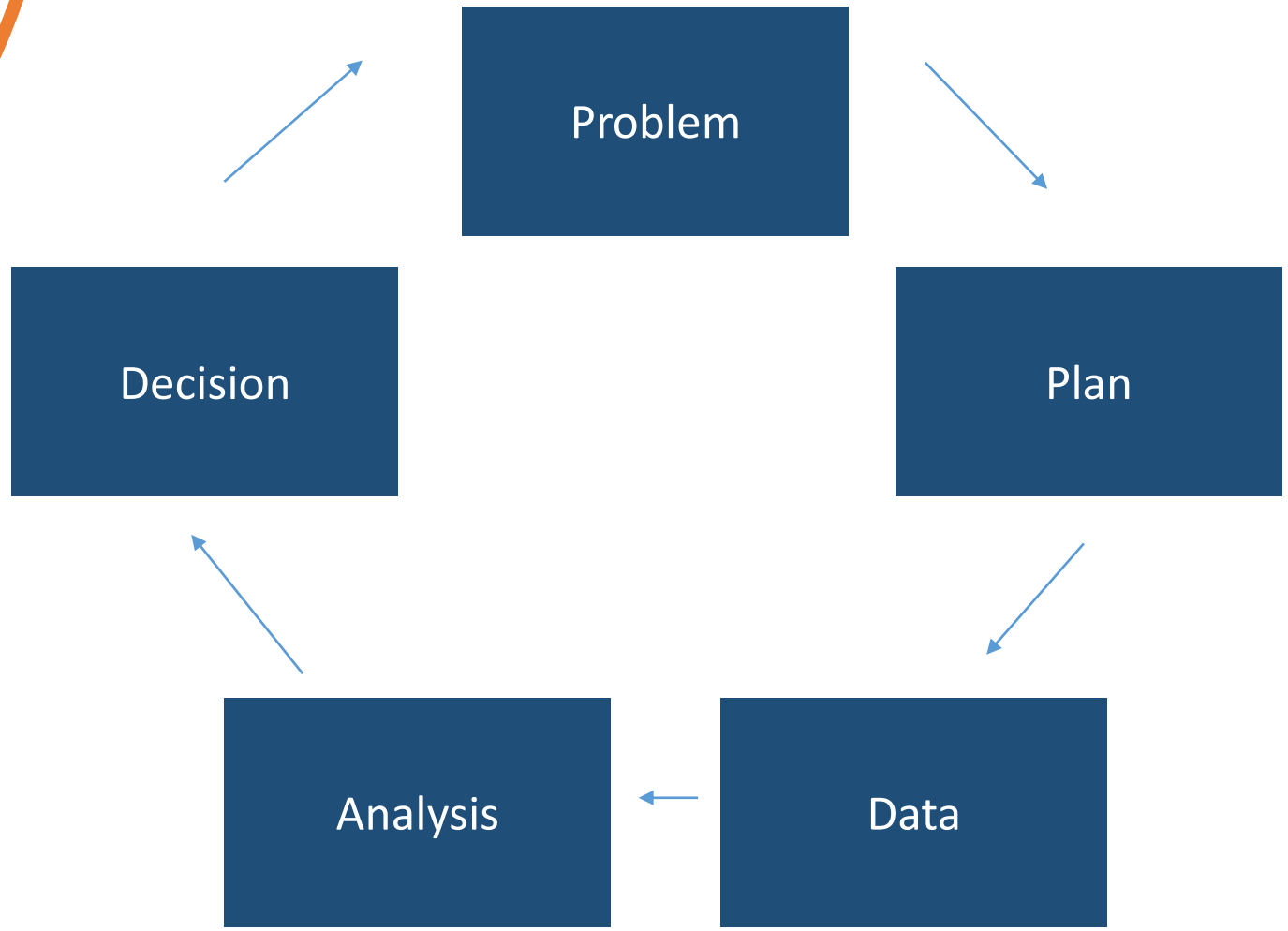
Learning Objectives

- Data Literacy
- Portfolio/Data Management
- Data Analysis
- Data Reporting
  - Assessments & Evaluations



What is Data Driven Decision Making

Decision making cycle



Decision Making Matrix

		Unprogrammed	Programmed
		One-off, not routine	Repeating, routine
Strategic	Policy, large impact	Investing in a new building	Reviewing product portfolio
Tactical	Procedures	Replacing office furniture	Number of units to be produced next month
Operational	Execution	Revising equipment maintenance schedule	Weekly staff planning

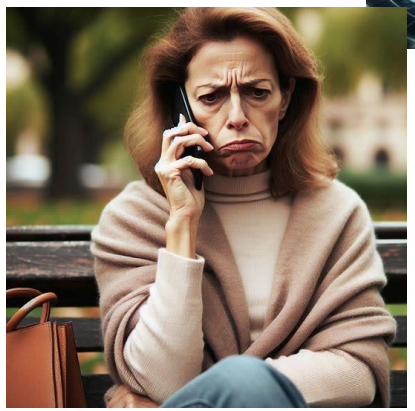
Human brain is amazing but...

Cognitive bias is a systematic thought process caused by the tendency of the human brain to simplify information processing through a filter of personal experience and preferences.

Anchoring Bias

Confirmation Bias

IKEA Effect



Anecdotal Evidence Bias

Groupthink

What data tells us

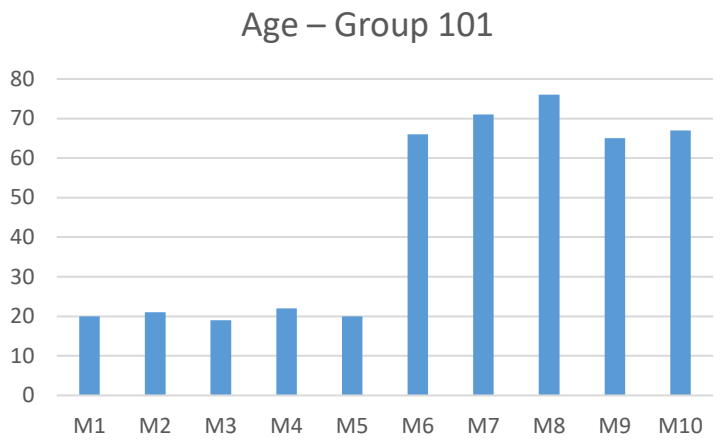
Which customer groups look more alike?

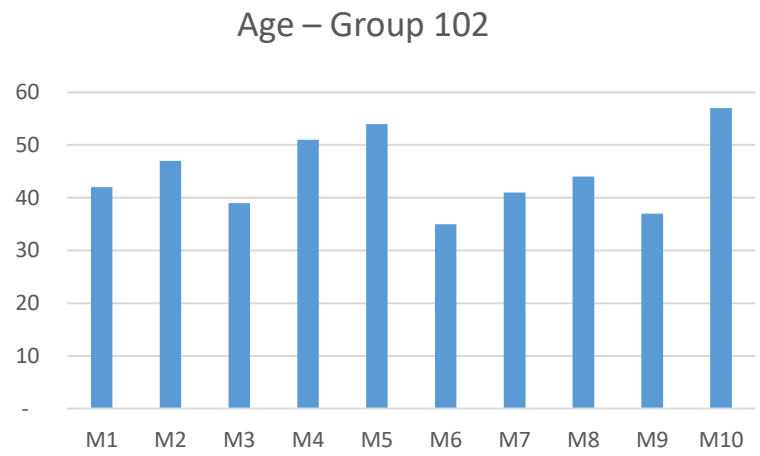
a. 101 and 102
b. 101 and 103
c. 102 and 103

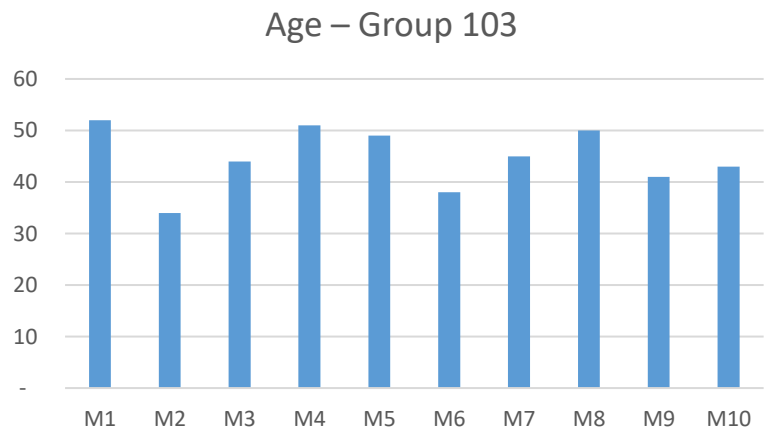
Group Code	101		102		103	
	Age	Spend	Age	Spend	Age	Spend
Mean	45	21,840	45	21,800	45	179,300

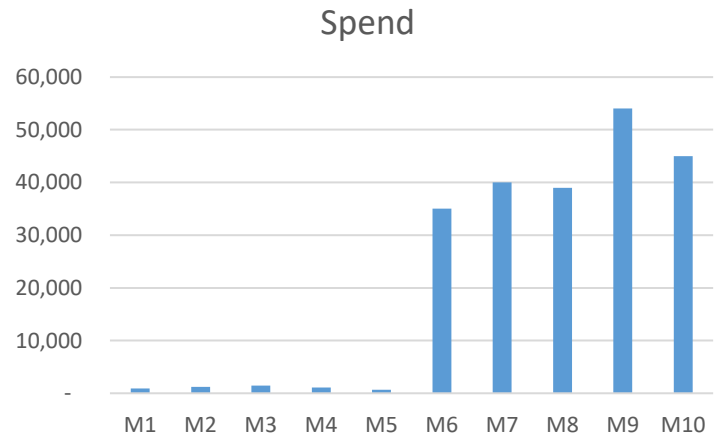
Group Code	101		102		103	
	Age	Spend	Age	Spend	Age	Spend
M1	20	900	42	21,000	52	19,000
M2	21	1,200	47	17,000	34	32,000
M3	19	1,500	39	24,000	44	18,000
M4	22	1,100	51	26,000	51	29,000
M5	20	700	54	32,000	49	14,000
M6	66	35,000	35	15,000	38	13,000
M7	71	40,000	41	30,000	45	26,000
M8	76	39,000	44	12,000	50	11,000
M9	65	54,000	37	22,000	41	31,000
M10	67	45,000	57	19,000	43	1,600,000

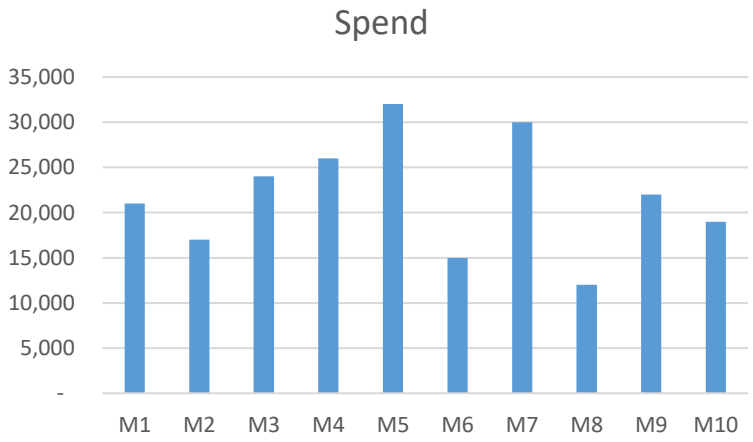
What data tells us

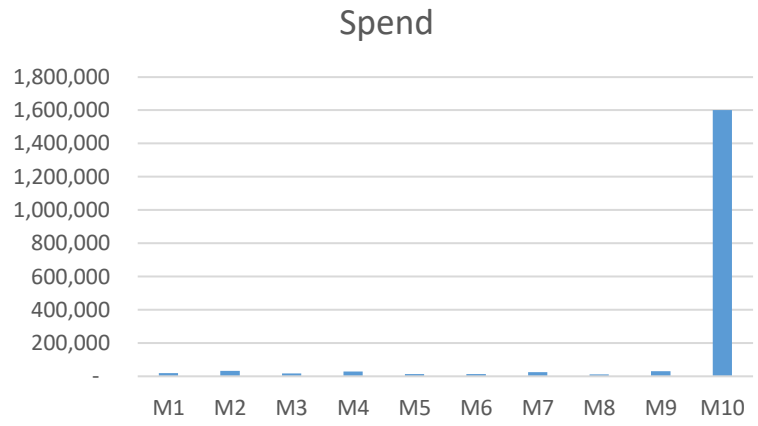












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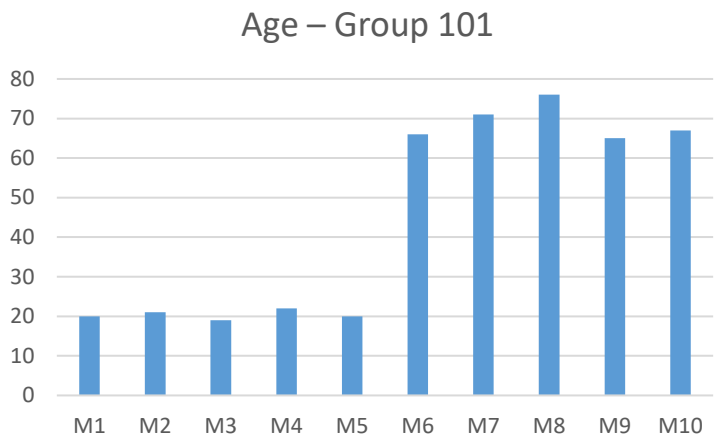

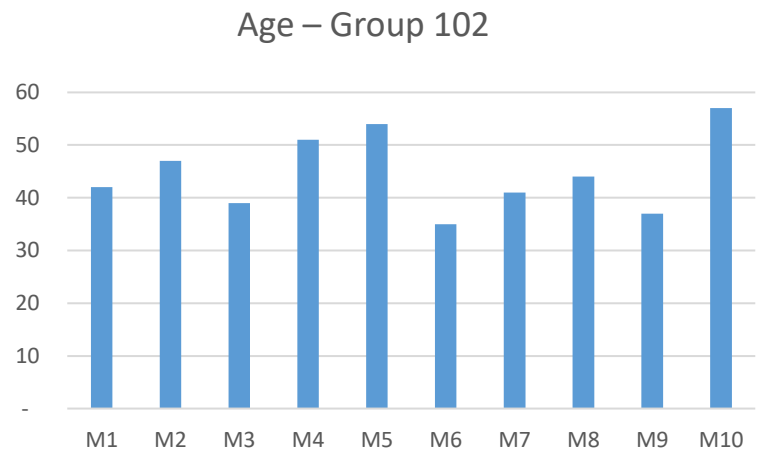

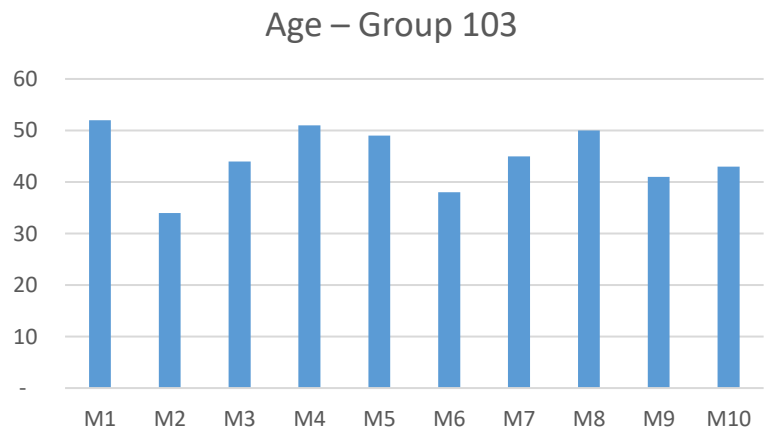

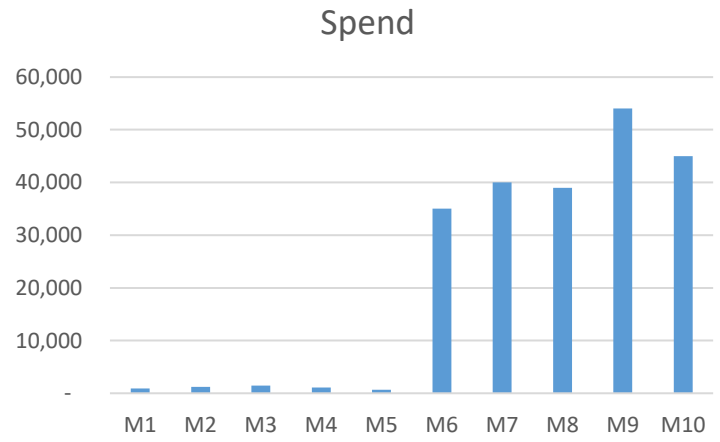

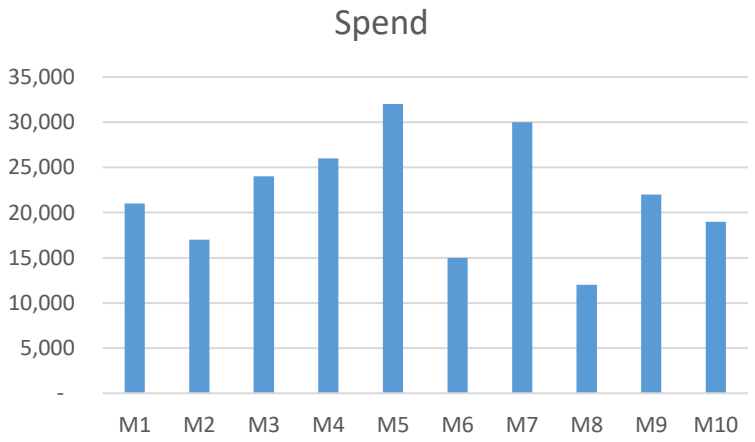

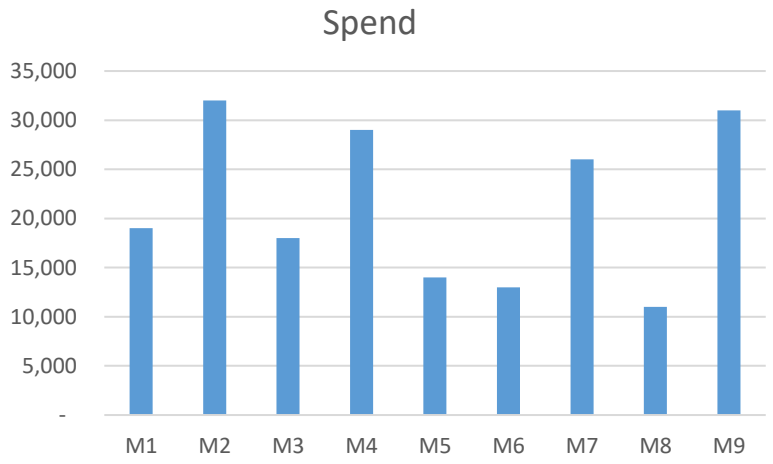

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M10	67	45,000	57	19,000	43	1,600,000
Mean	45	21,840	45	21,800	45	179,300
Minimum	19	700	35	12,000	34	11,000
Maximum	76	54,000	57	32,000	52	1,600,000
Standard Deviation	24	21,268	7	6,063	6	473,623

What data tells us

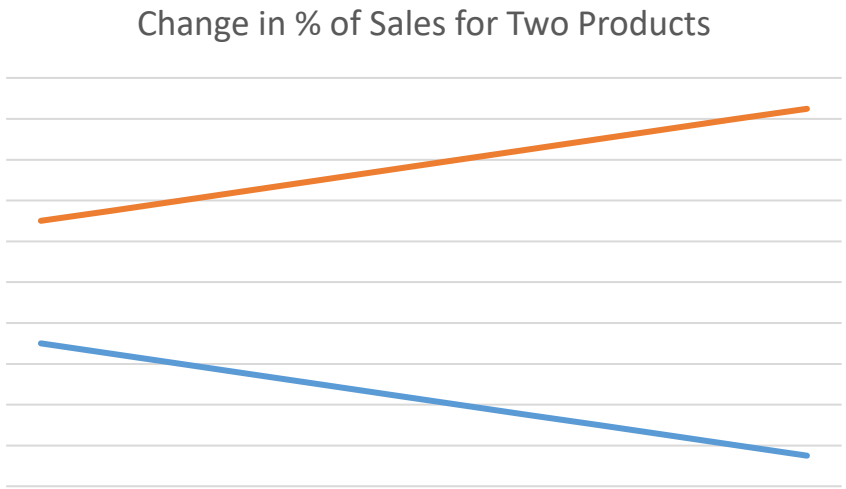
Based on the table, which statement is true for this business in September 2023?

a. 39% decline
b. 2% growth
c. 4% decline
d. 56% growth

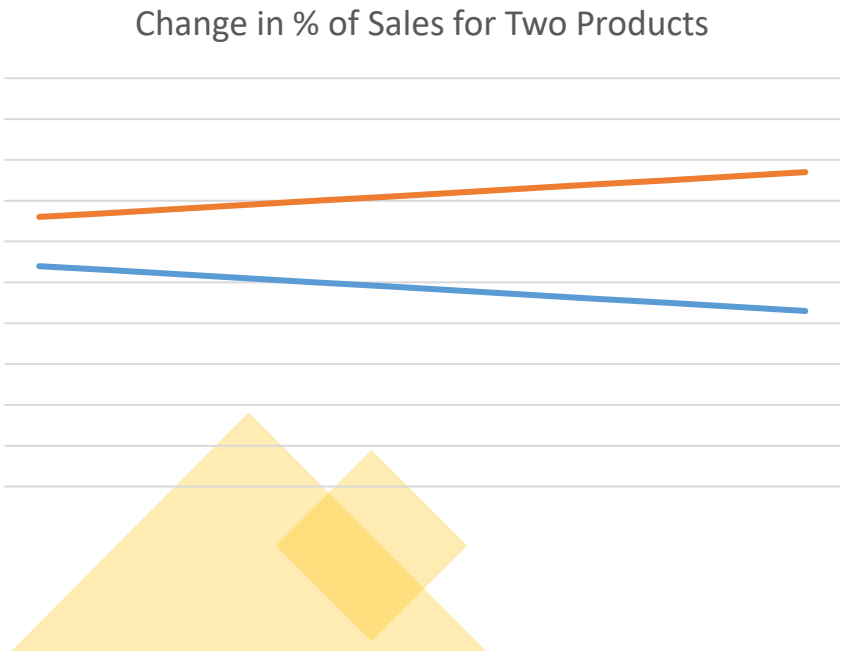
All!

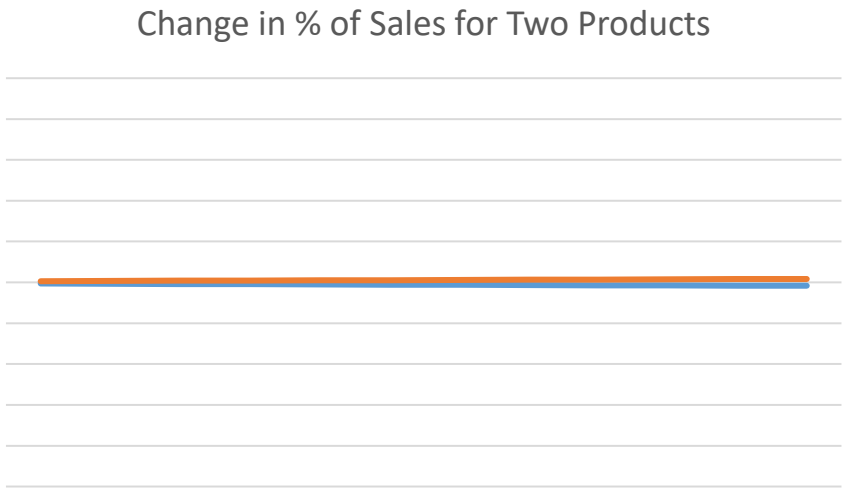
a. Compared to Sep 2022 in units sold
b. Compared to Sep 2022 in revenue
c. YTD 2023 vs YTD 2022 in revenue
d. Compared to August 2023 in units

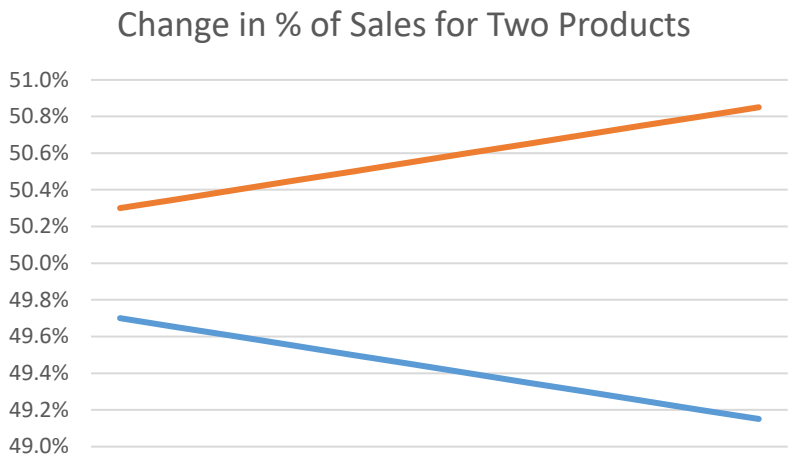
	Number of Units Sold 2022	Revenue 2022	Number of Units Sold 2023	Revenue 2023
Jan	120	45,000	110	54,000
Feb	125	48,000	130	56,000
March	110	34,000	150	49,000
April	140	65,000	160	64,000
May	90	32,000	100	36,000
June	180	60,000	110	41,000
July	60	24,000	40	18,000
Aug	75	22,000	45	26,000
Sep	115	44,000	70	45,000
Oct	160	59,000	90	42,000
Nov	190	70,000	120	74,000
Dec	130	47,000	150	48,000



Three Different Pictures

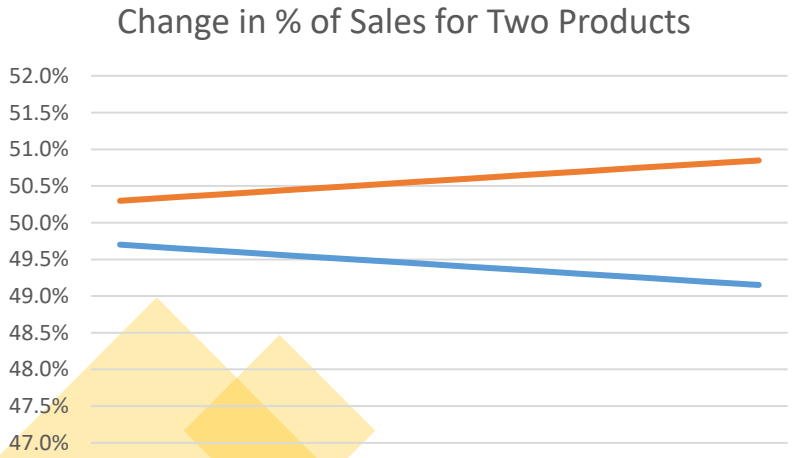


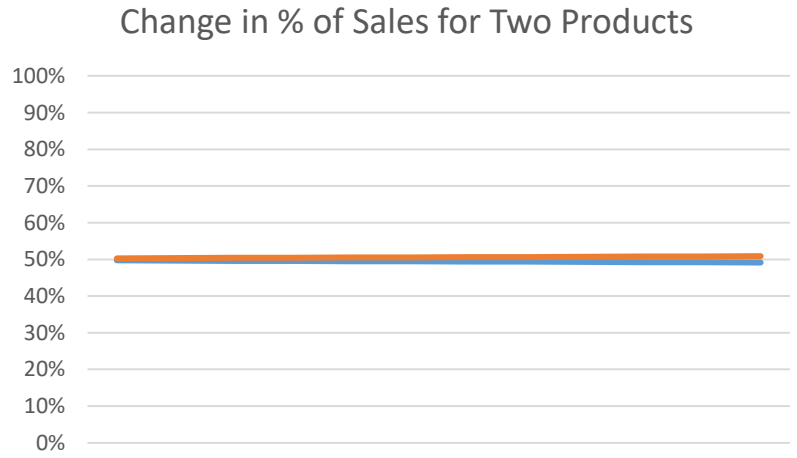




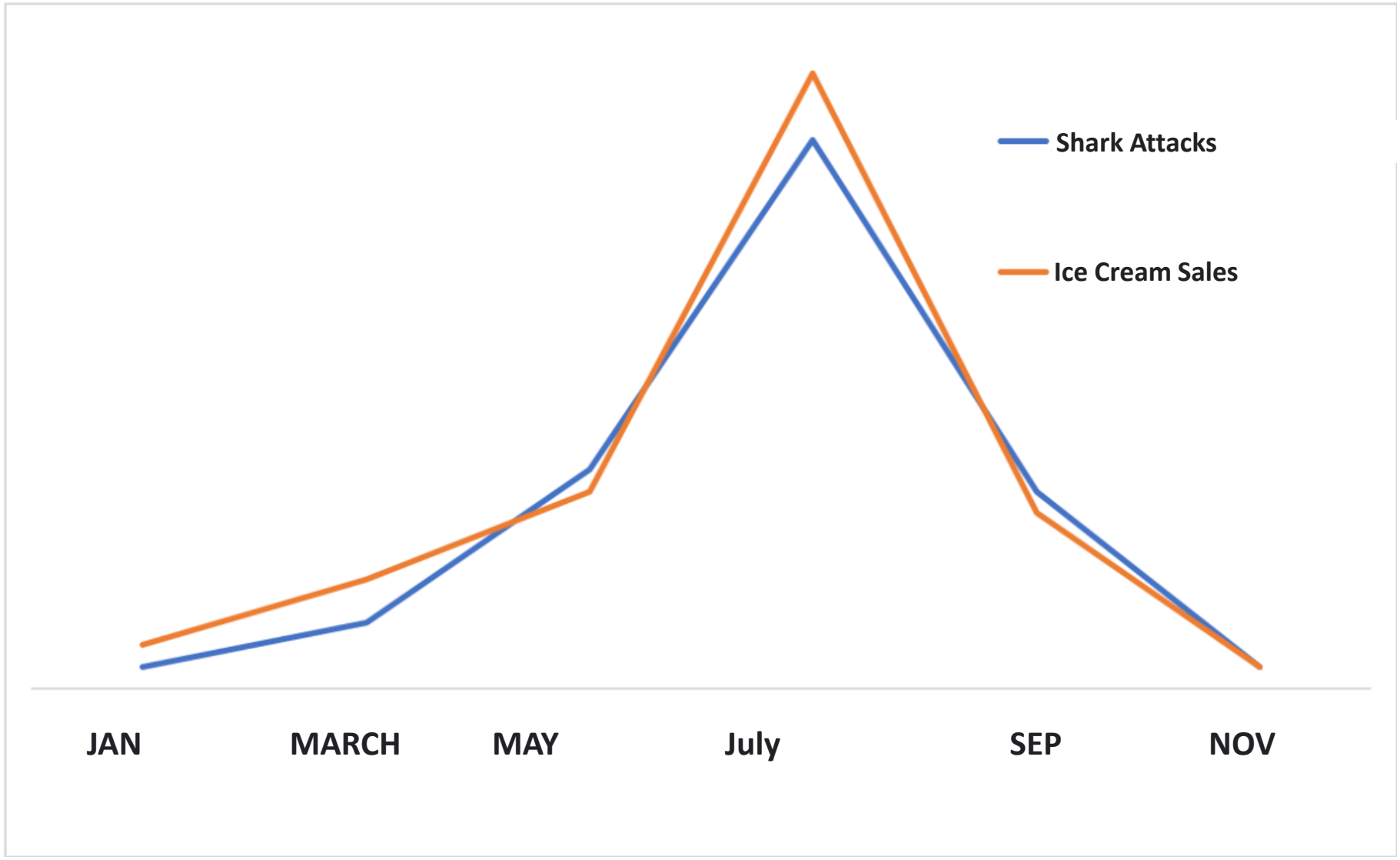
But same data

	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Product A	49.70%	49.65%	49.60%	49.55%	49.50%	49.45%	49.40%	49.35%	49.30%	49.25%	49.20%	49.15%
Product B	50.30%	50.35%	50.40%	50.45%	50.50%	50.55%	50.60%	50.65%	50.70%	50.75%	50.80%	50.85%



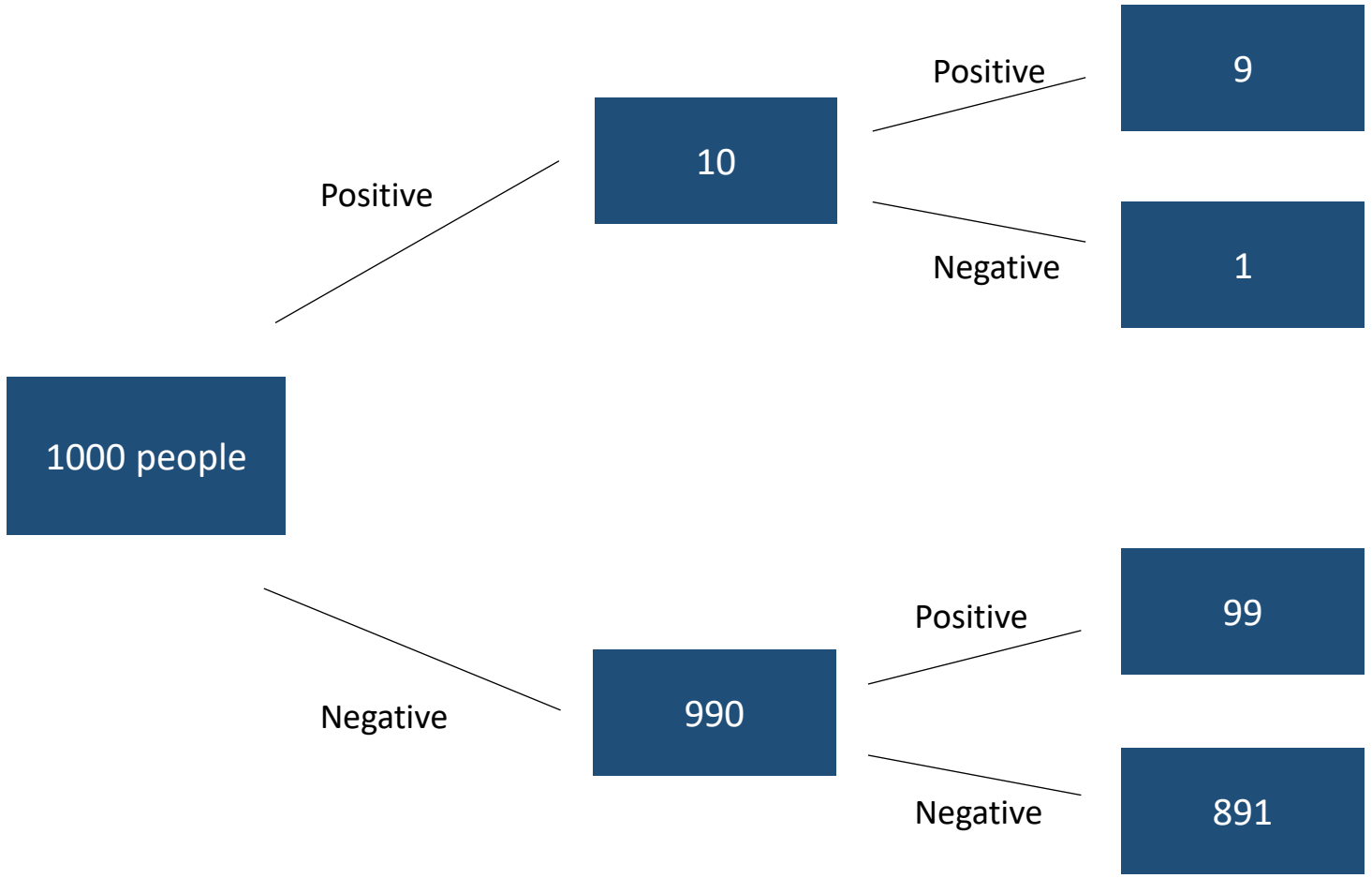


Sharks attacking ice cream eaters!



Improbabilities, miracles and one in a million events

How sure are we?



9 / (99+9) = 8.3% !!!

Doesn’t make sense!

	Woman			Men		
	Clicked	Bought	%	Clicked	Bought	%
Product 1	26	7	27%	228	58	25%
Product 2	240	63	26%	512	112	22%
Product 3	164	52	32%	972	252	26%
Product 4	416	99	24%	578	140	24%
Product 5	338	53	16%	180	22	12%
Total	**1184**	**274**	**23%**	**2470**	**584**	**24%**

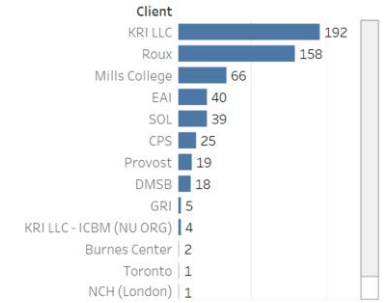
Doesn’t make sense!

Portfolio Management

Hub Activity Fiscal Year-to-Date

Client: All | Fiscal Year: FY 2024 | Status: Completed

Transactions FYTD by Client



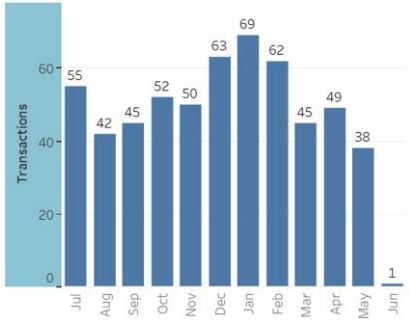
Transactions FYTD by Action Type

Action	Transactions	Amount
Proposal	221	$174,188,942
Subaward (Outgoing)	67	$25,494,243
Obligation	63	$20,624,640
Agreement	58	$18,099,499
Prior Approval	52	$12,805,109
Pre-Proposal	44	$16,560,636
Contract	35	$4,542,634
JIT Request	27	$3,639,196
Reports	4	$137,652

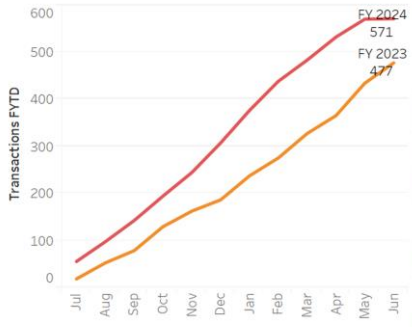
Workload

Hub Contact	
Moore, Kenzie	129
Fitzgerald, Olivia	98
McWhirk, Amelia	95
Magni, Nicole	56
Avery, Jacque	50
Schorr, Whitney	43
Bynoe, Nancy	31
Jones, Eric	23
Hill-Whilton, Brooks	20
Mazuzan, Tina	19
Woloszyn, Iryna	5
Pasadas, Eva	1
Renkas, Julie	1

Transactions by FY



Cumulative Transactions by FY



Transactions by Month

	FY 2023	FY 2024
Jul	18	55 205.6%
Aug	34	42 23.5%
Sep	26	45 73.1%
Oct	51	52 2.0%
Nov	33	50 51.5%
Dec	24	63 162.5%
Jan	51	69 35.3%
Feb		62

Data Source: NU-RES Hub Tracker, refreshed nightly

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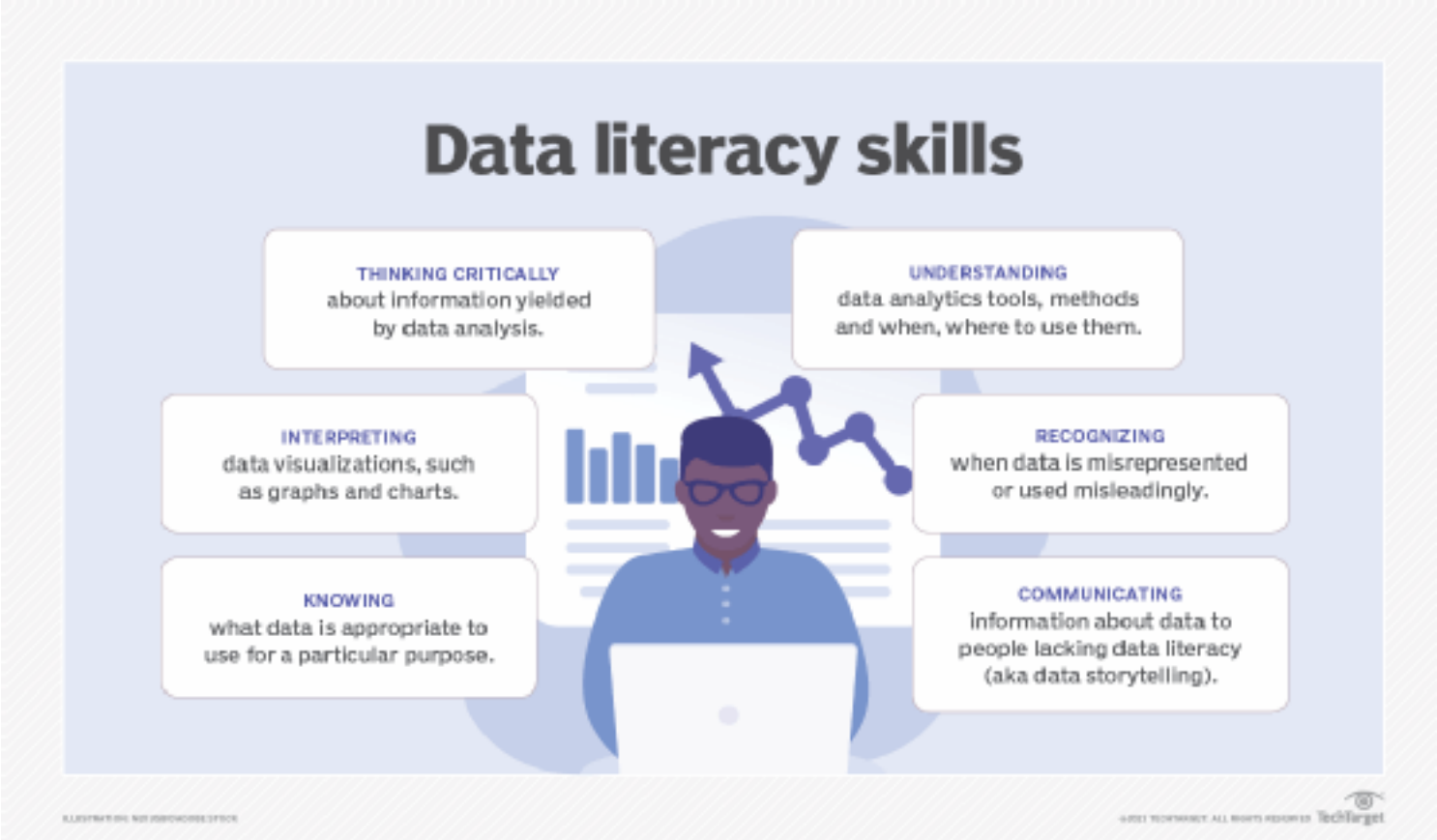
Data Literacy



Data Management

Data Management - the governance of information through the:

- Collection
- Organization
- Storage
- Administration/Security
- Sharing of Data

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Principles:

- Data is an Asset
- Data is Unique
- **Data is Defined Consistently**
- Data is Accessible
- Data is Shared
- Data is Secure
- Data is Compliant with Laws & Regulations

Data Management = Information Management = Knowledge Management

Tools used

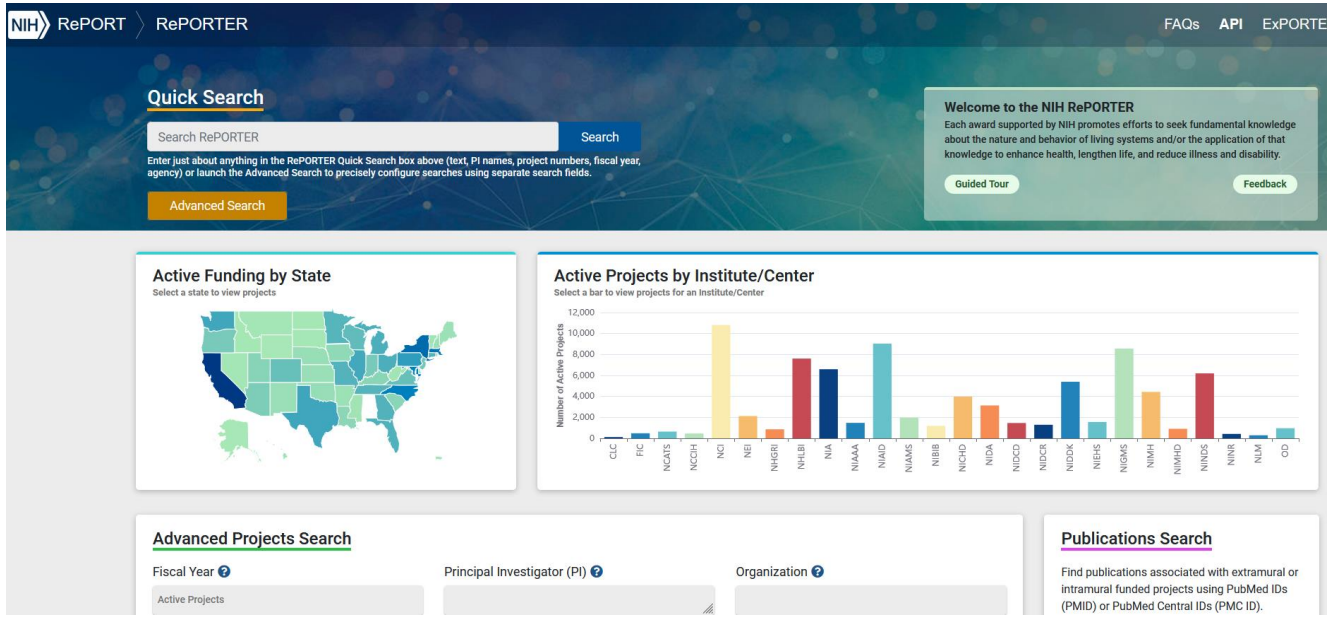
- https://reporter.nih.gov/

- Tableau

- Cognos

- Power BI

- Microsoft List, Excel



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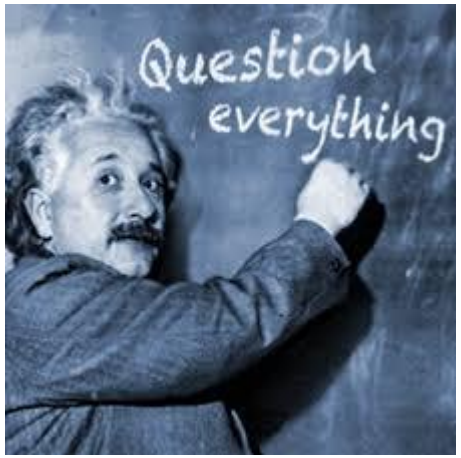
Data Analysis

- Descriptive/diagnostic (what happened)
- Prescriptive (what should be done)
- Predictive (what may happen)

Understanding the Question

The data reported is only as good as the person asking the question...



- What is the Question?
- What is the Purpose or Objective?
- Will the information provide the answer?
- Who is the Audience?
- So What? … And (Value Added)

Data Interpretation/Analysis/Limitations

- Know your Data
- Baselines & Trends
- Benchmarks
- Indicators
- Correlation is not Causation

- Caveat: the Politics of Data

Types of Reports

- Operational
- Informational
- Marketing

- Tracking Proposal Success Rates
- Proposal & Award Dashboards
- Projecting Revenue & Expenditures
- Measures of Research Productivity

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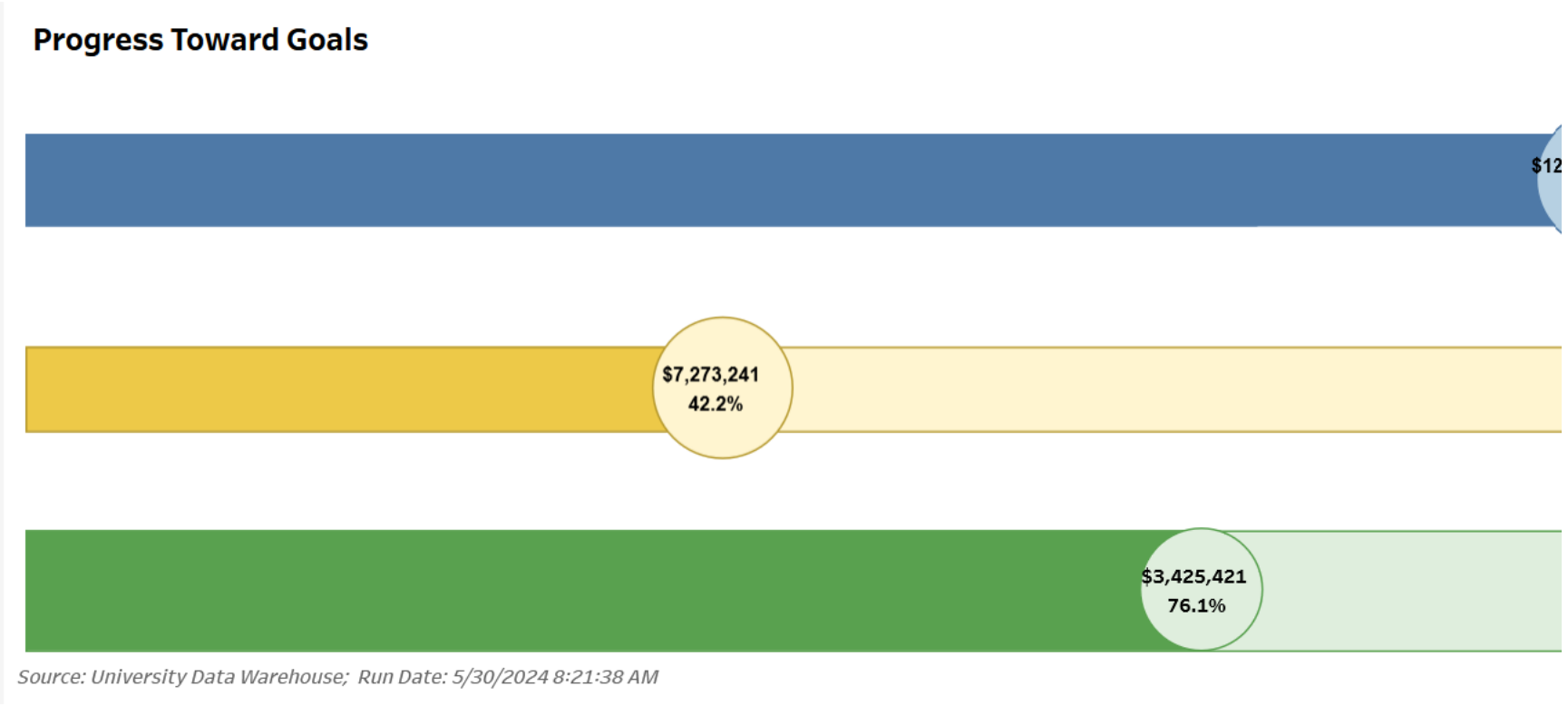
The Goal

Communicate simply and clearly so that the reader can easily and quickly understand the information presented

Visualizing Data



Source: University Data Warehouse; Run Date: 5/30/2024 8:21:38 AM

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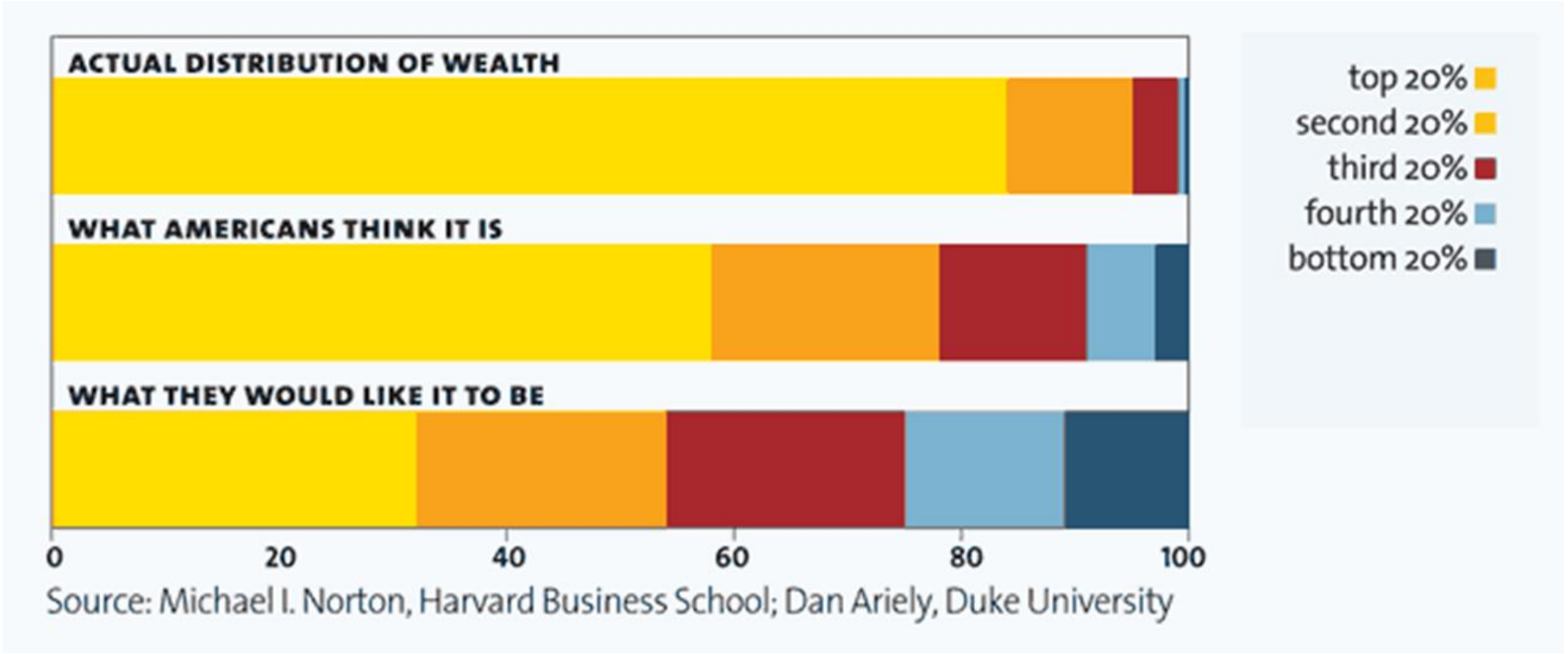
Reports – Communication Tips

- Communicate in language that lay people can understand
- Seek feedback – does the data displayed say what you want?
- Need to Know vs. Nice to Know (Clutter – TMI)
- Narrative Reports – A compelling story is aided by wide margins and healthy white space.

Data tells a story… Context Matters!

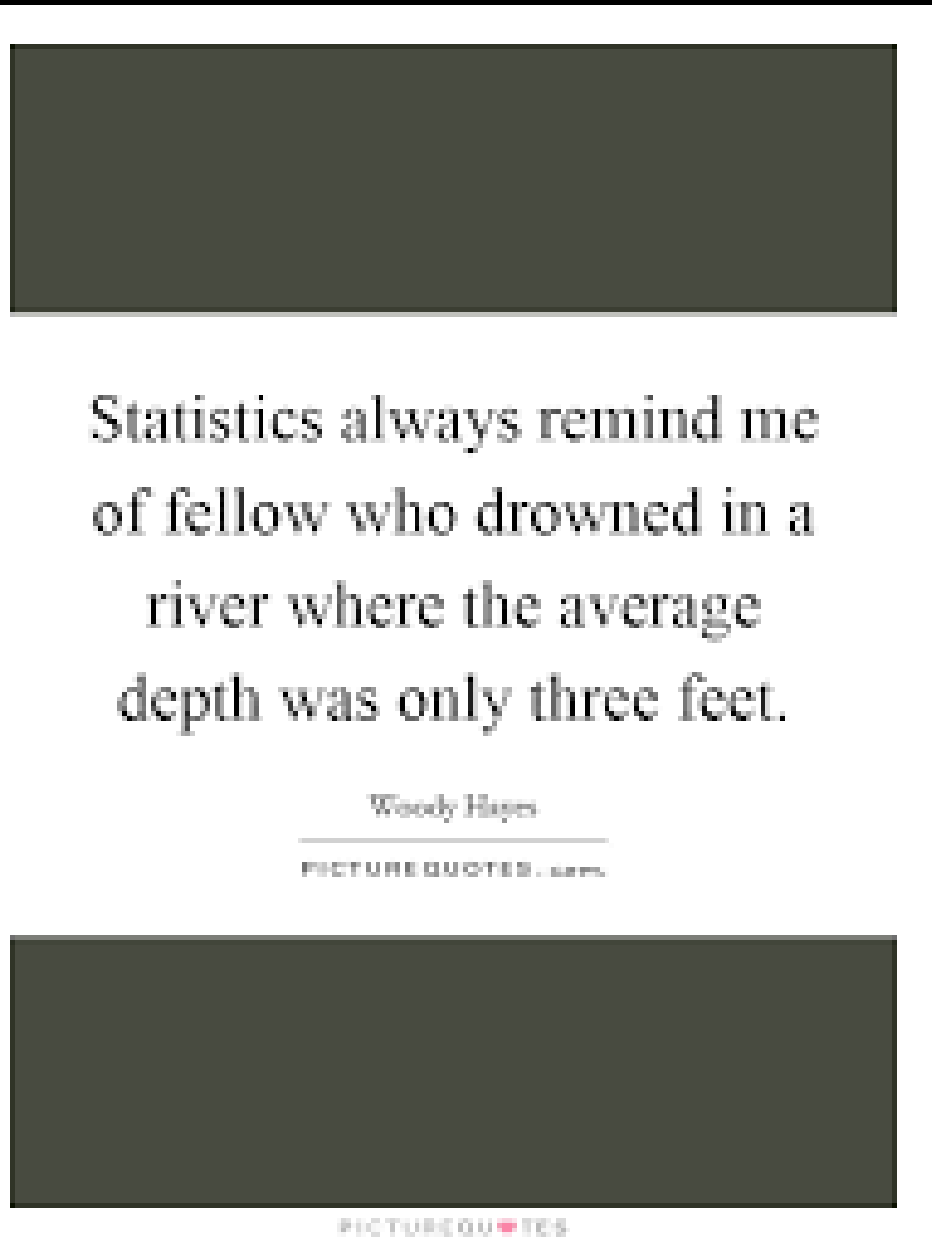


Reports – The Last Word

Footnotes:

- Source
- Source Limitations
- Location
- Version Control
- Run Date

Thank you!



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