

Lecture 5

DD 324:
Data Visualisation

Convincing with Data

What can we do with data?

Convincing

Convincing



What can we do with data?

Exhibit

Show raw data

List, Table, Infographic

Explain

Answer Questions

Data journalism, report

Explore

Finding what to ask

Dashboards, simulations

Experience

Finding meaning in data

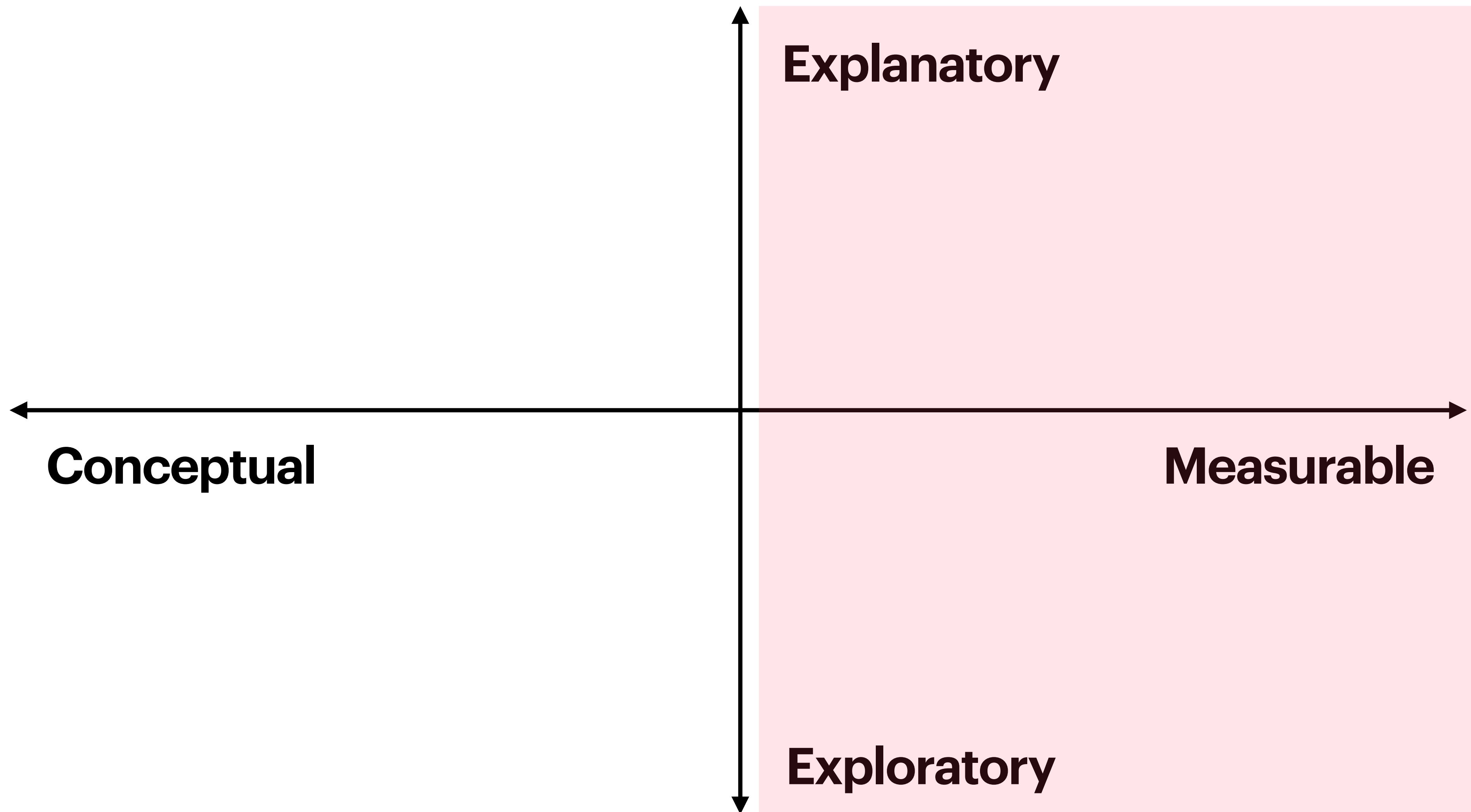
Data art piece, New media
installation

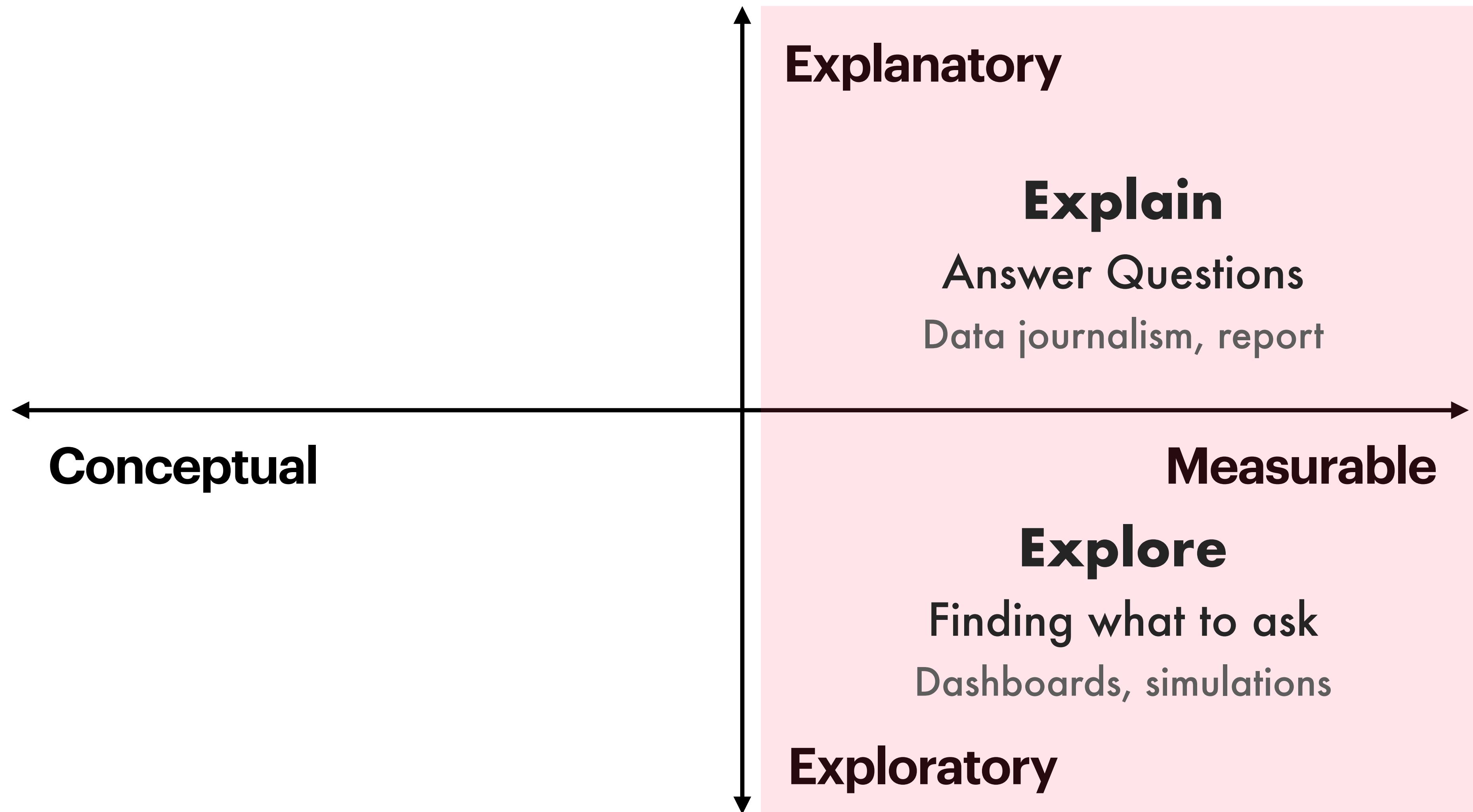
Enable

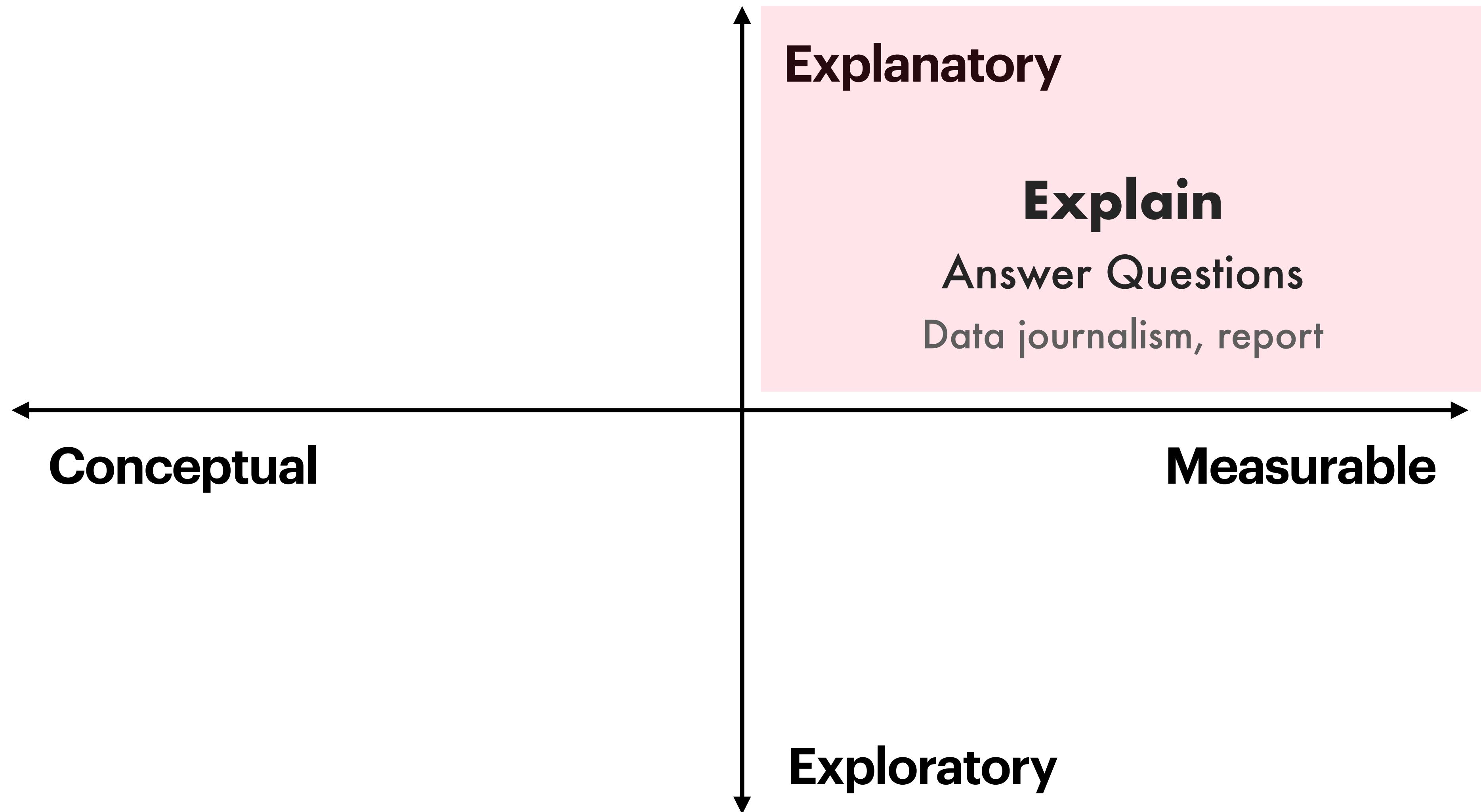
Building tools to visualise

specific use cases

Software for data viz







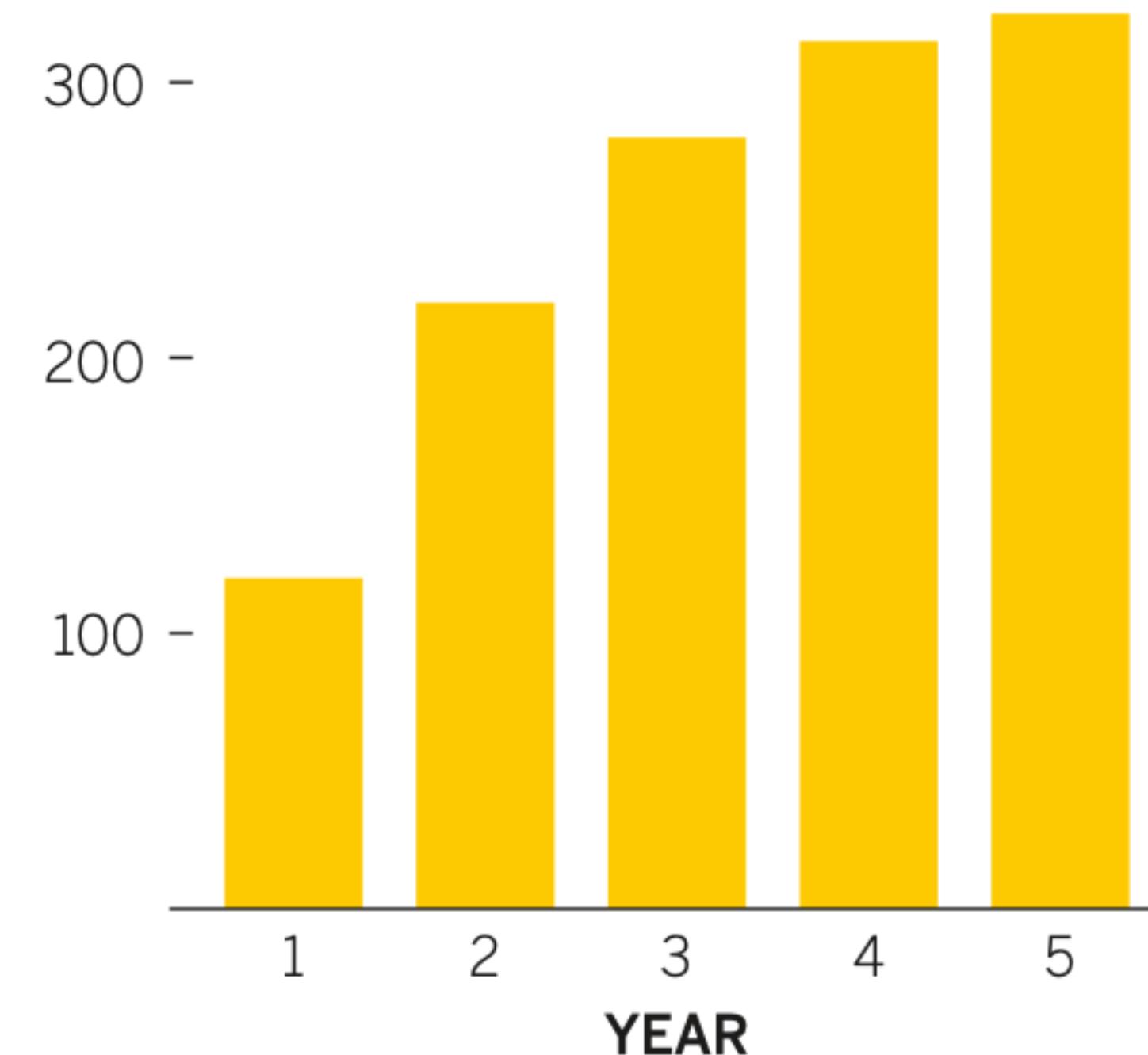
People don't need
to see data in
charts, they need
to see *ideas*.

Year	Cumulative Revenue (Million \$)
1	120
2	210
3	280
4	310
5	320

People don't need
to see data in
charts, they need
to see *ideas*.

REVENUE GROWTH

CUMULATIVE REVENUE
\$400 million



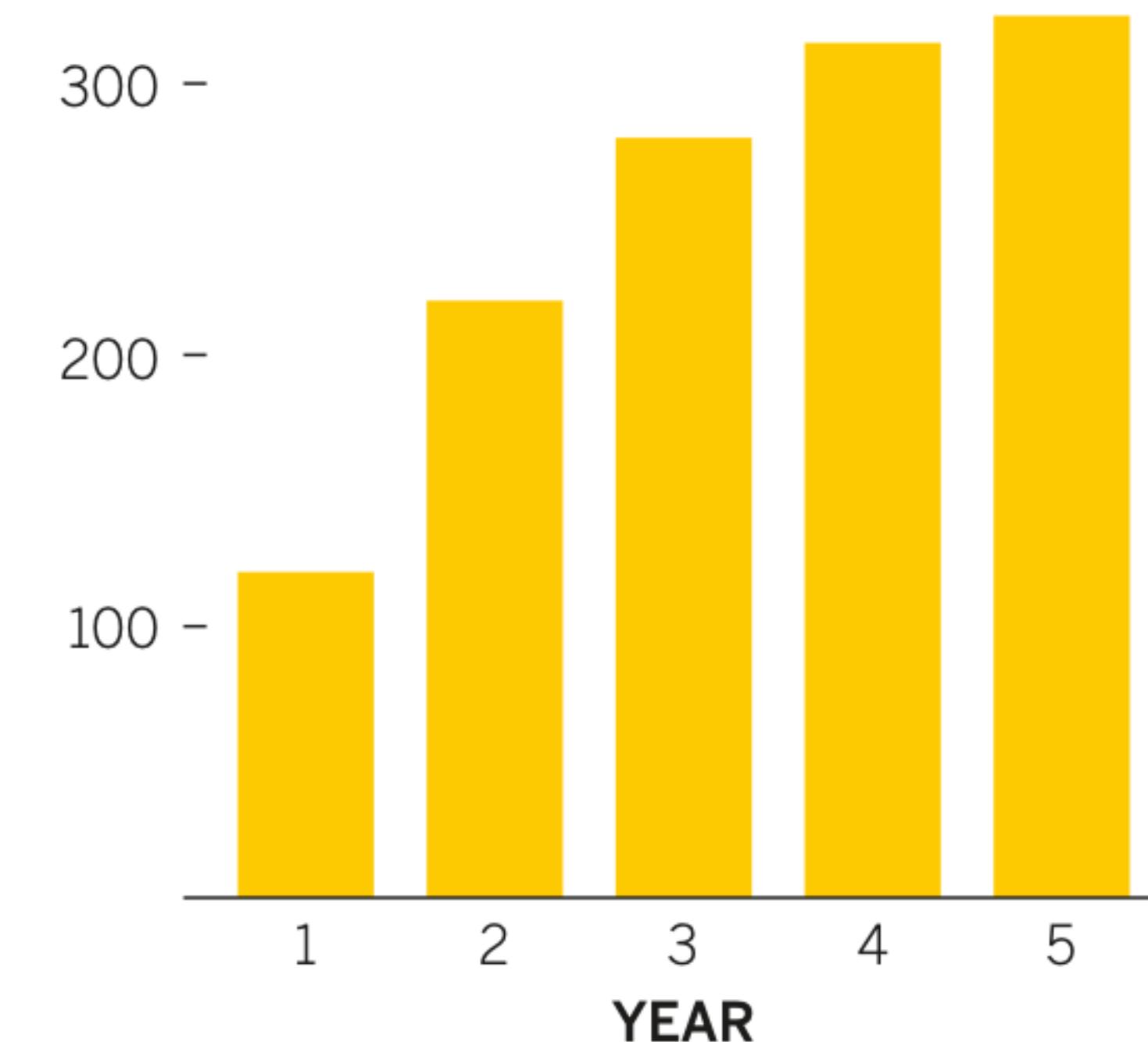
SOURCE: COMPANY RESEARCH

People don't need
to see data in
charts, they need
to see *ideas*.

What is this chart
saying to you?

REVENUE GROWTH

CUMULATIVE REVENUE
\$400 million



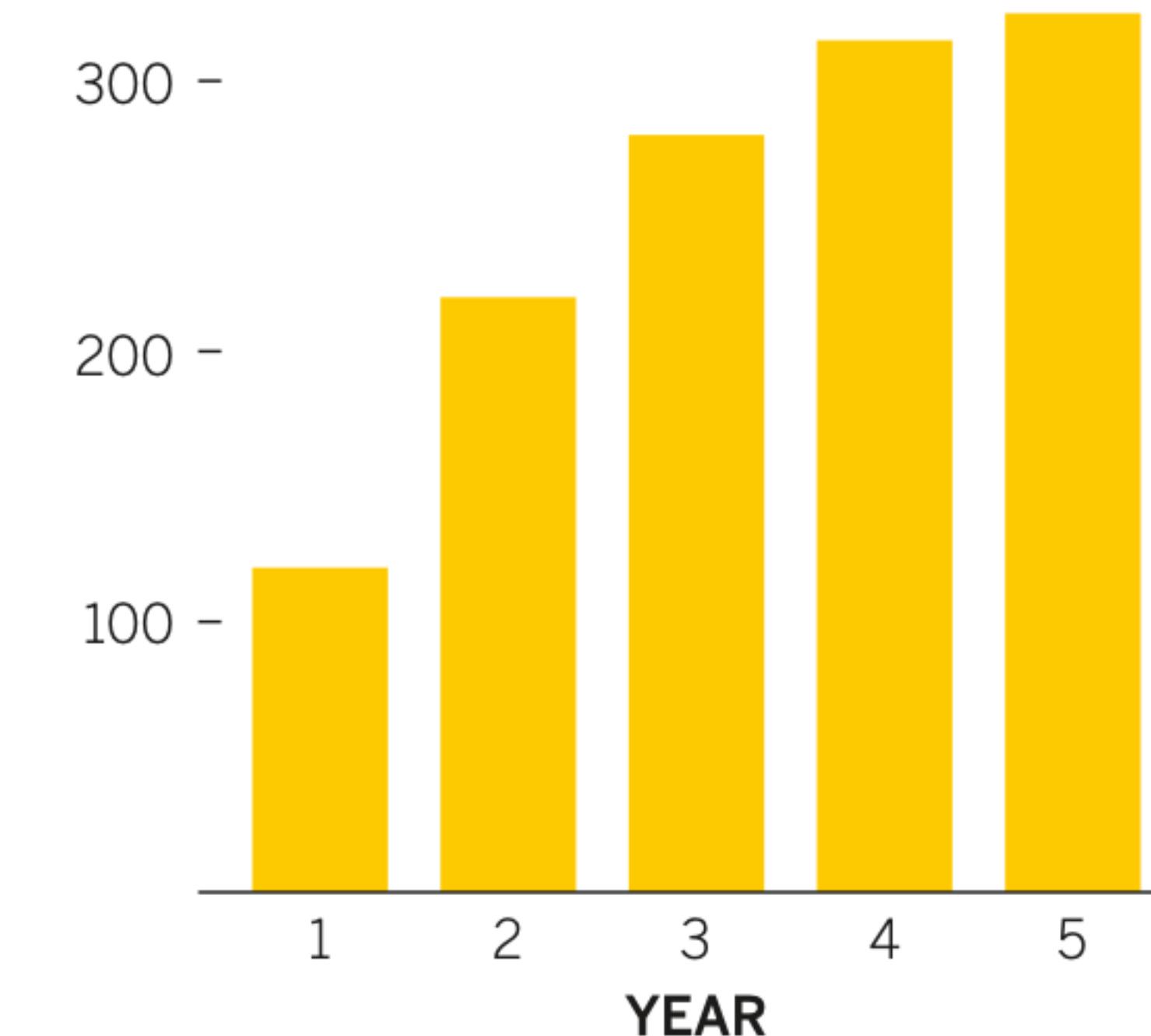
SOURCE: COMPANY RESEARCH

People don't need
to see data in
charts, they need
to see *ideas*.

Or, what is the
question it is
answering?

REVENUE GROWTH

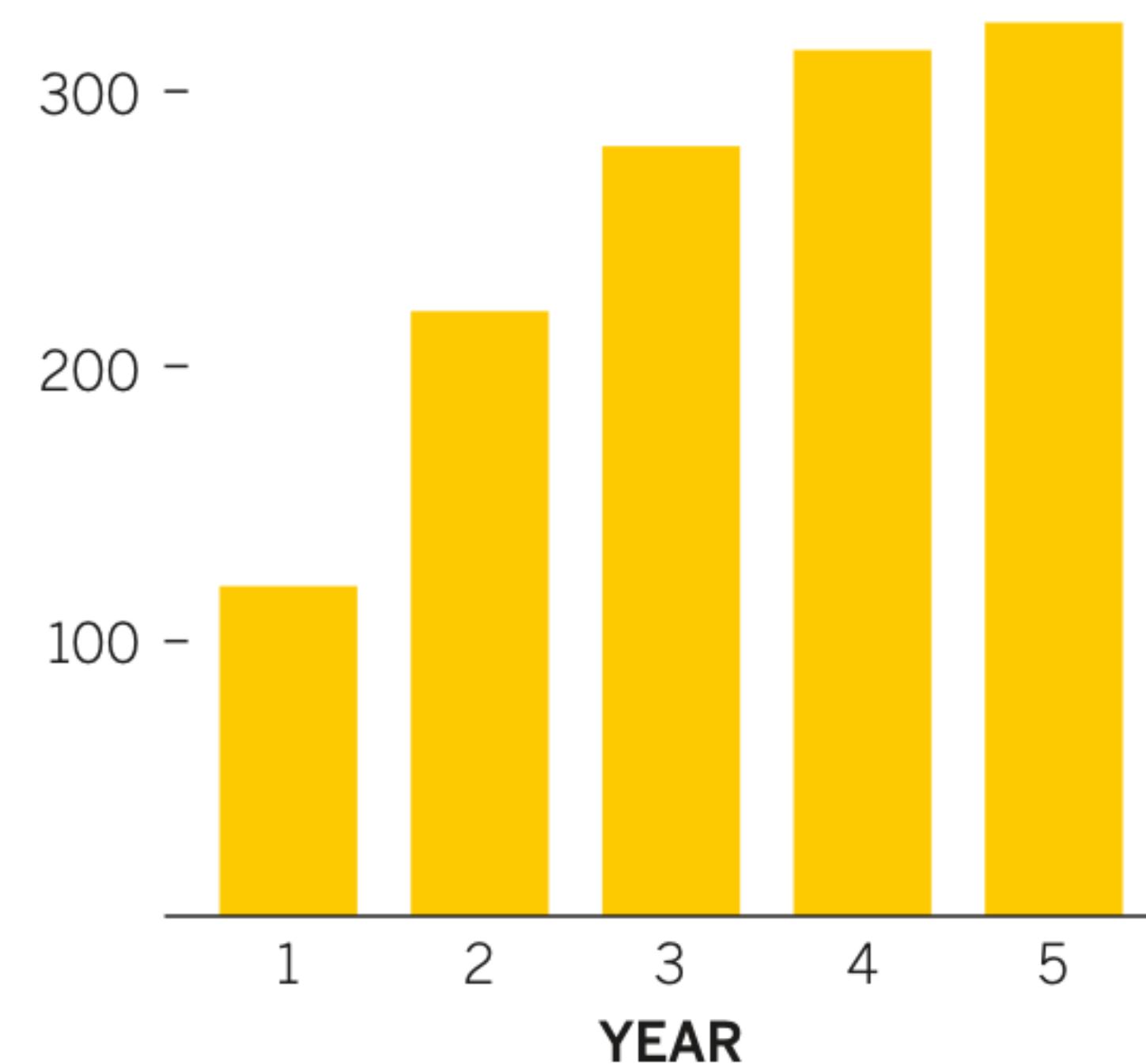
CUMULATIVE REVENUE
\$400 million



SOURCE: COMPANY RESEARCH

REVENUE GROWTH

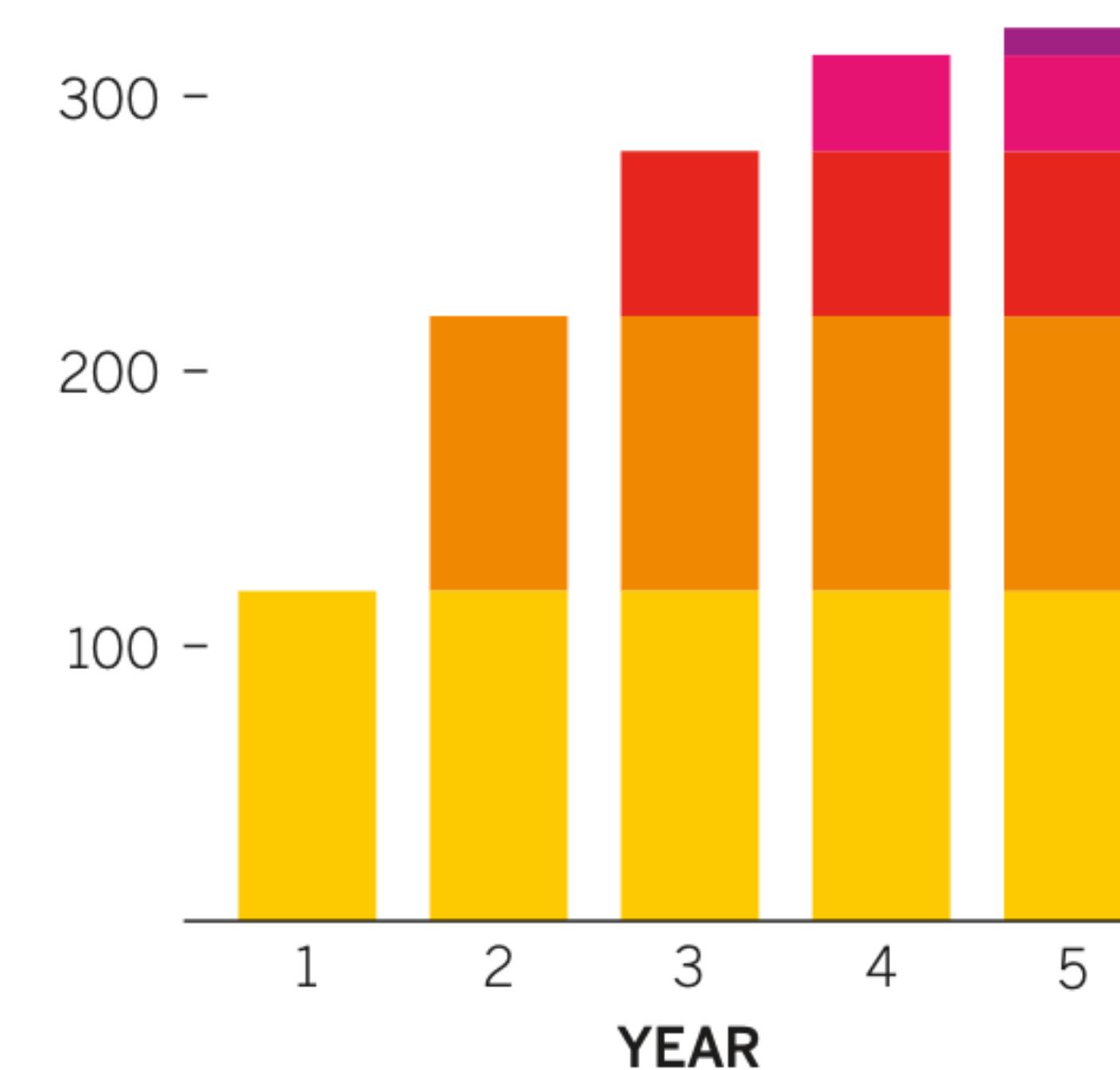
CUMULATIVE REVENUE
\$400 million



SOURCE: COMPANY RESEARCH

REVENUE GROWTH

CUMULATIVE REVENUE
\$400 million

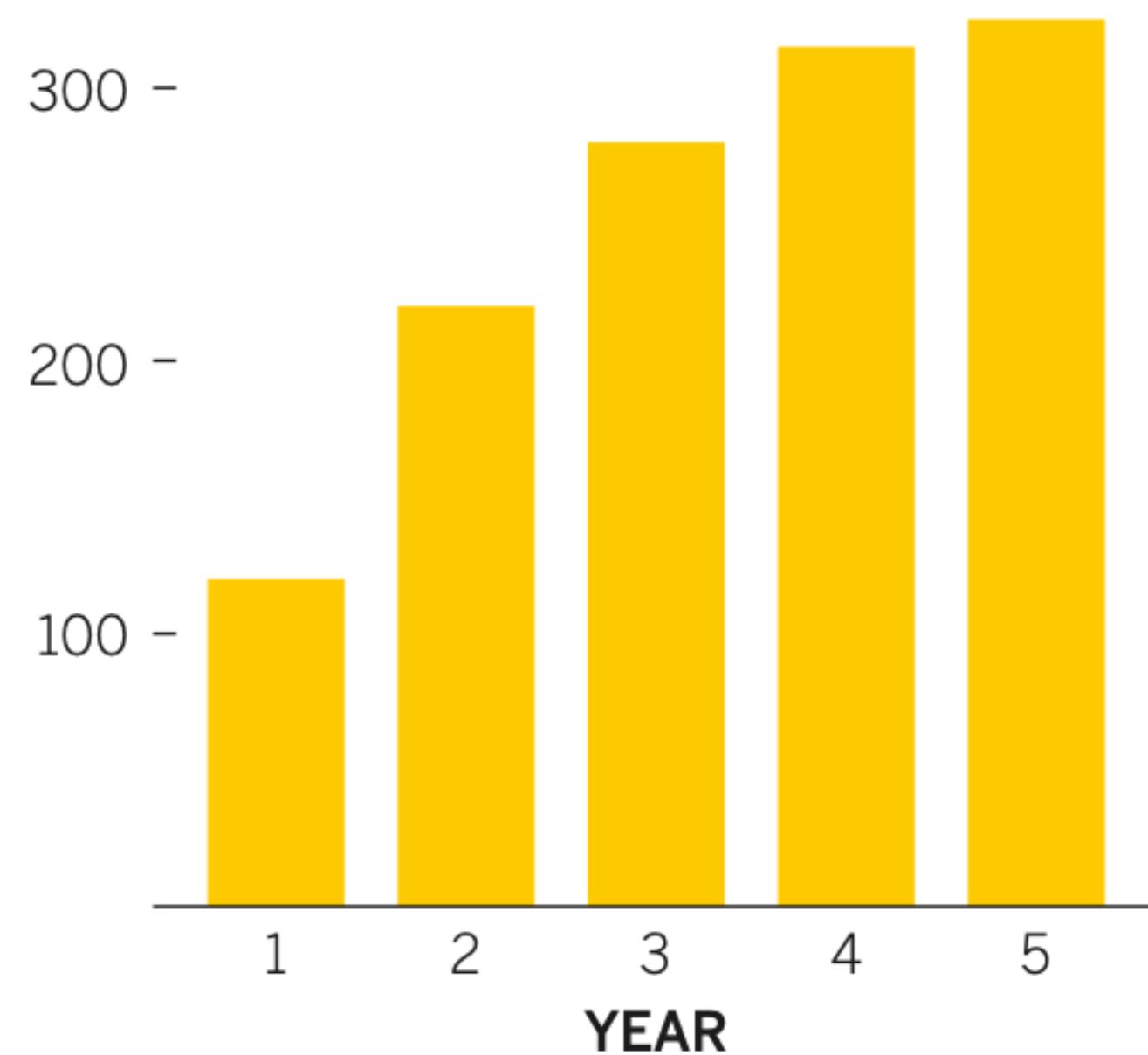


SOURCE: COMPANY RESEARCH

REVENUE GROWTH

CUMULATIVE REVENUE

\$400 million

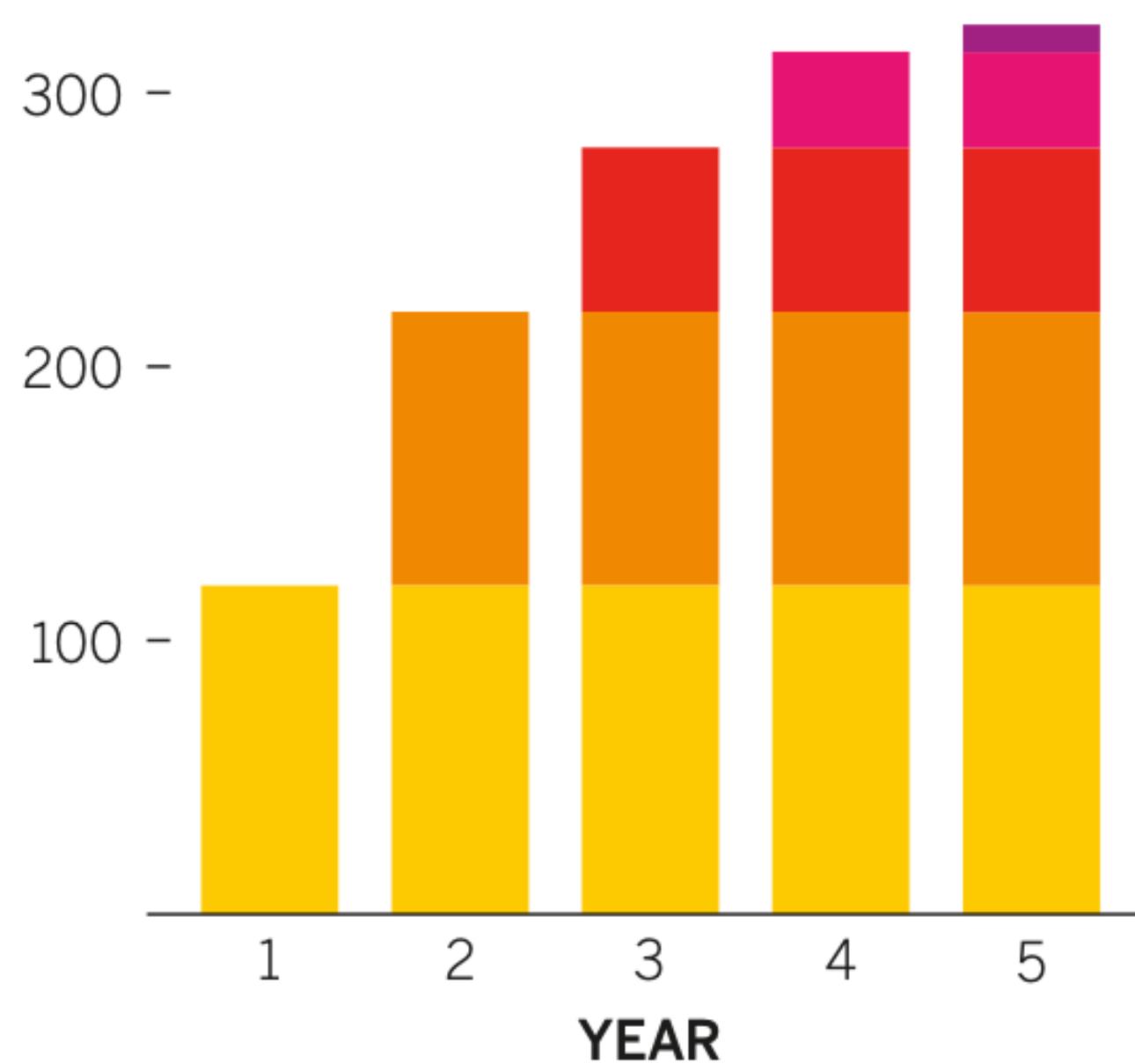


SOURCE: COMPANY RESEARCH

REVENUE GROWTH

CUMULATIVE REVENUE

\$400 million

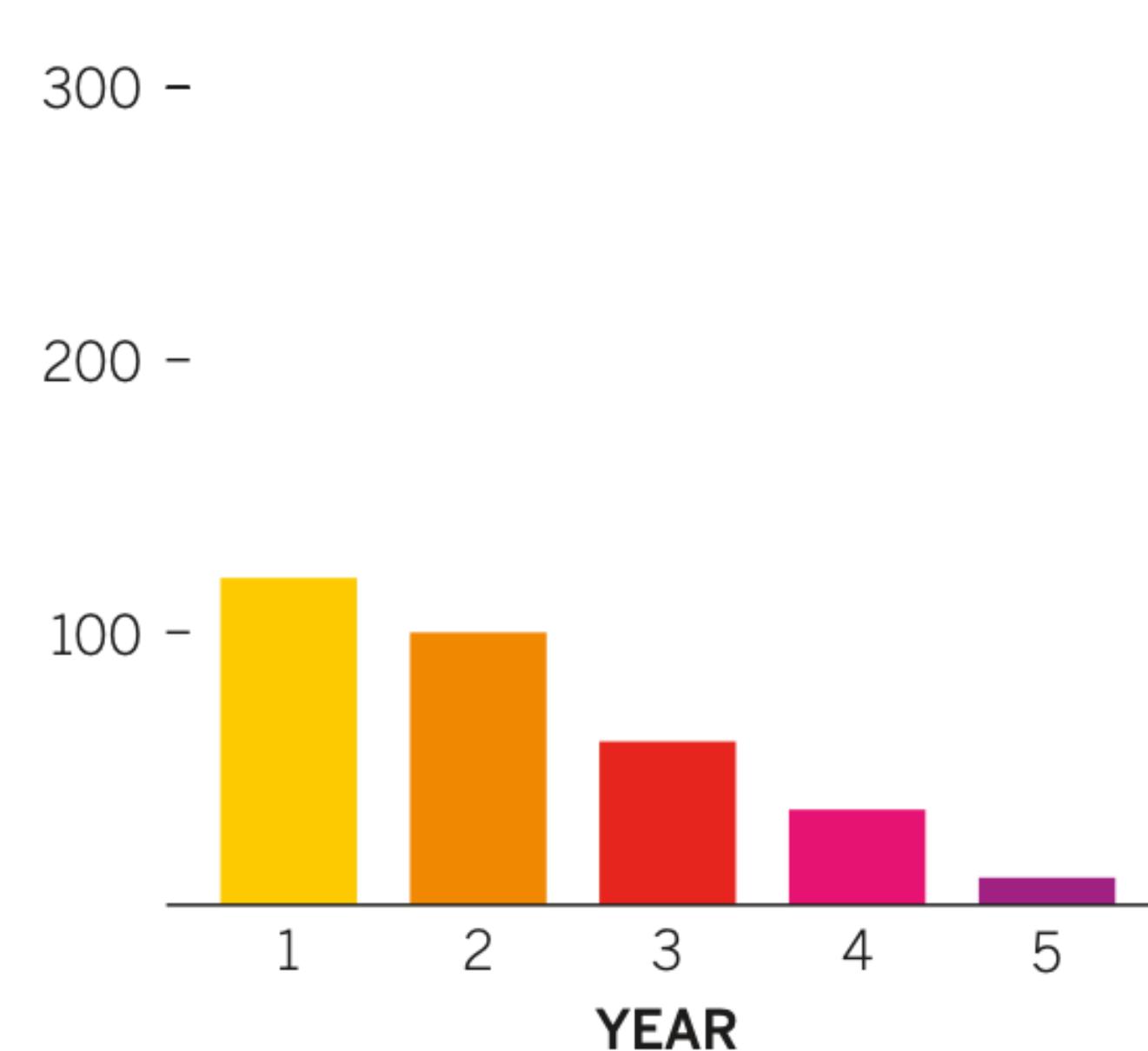


SOURCE: COMPANY RESEARCH

FIVE-YEAR REVENUE TREND

ANNUAL REVENUE EARNED

\$400 million

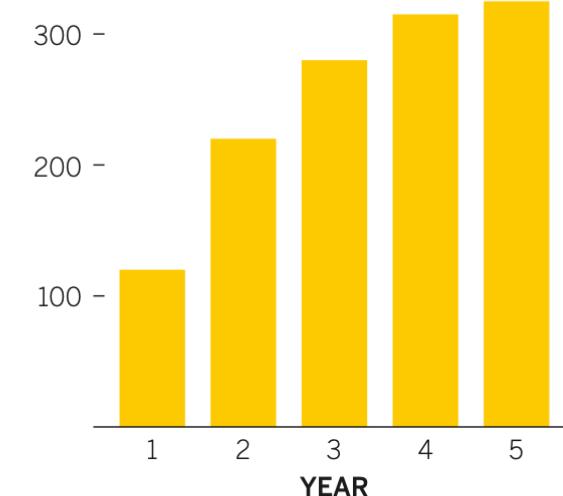


Are any of these charts inaccurate?

Year	Cumulative Revenue (Million \$)
1	120
2	210
3	280
4	310
5	320

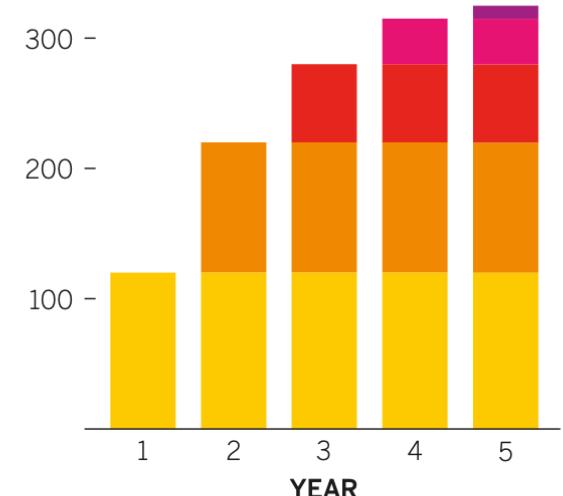
REVENUE GROWTH

CUMULATIVE REVENUE
\$400 million



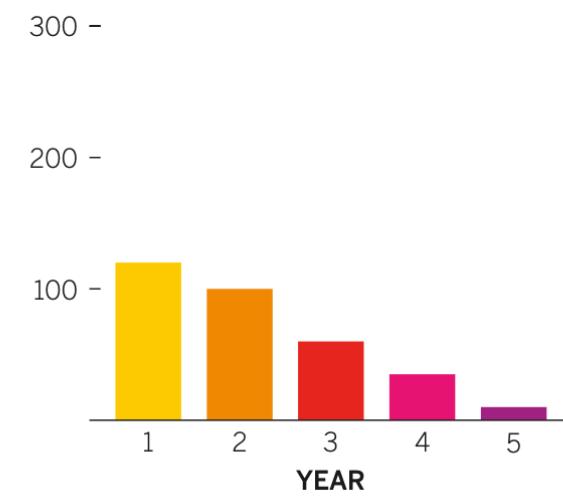
REVENUE GROWTH

CUMULATIVE REVENUE
\$400 million



FIVE-YEAR REVENUE TREND

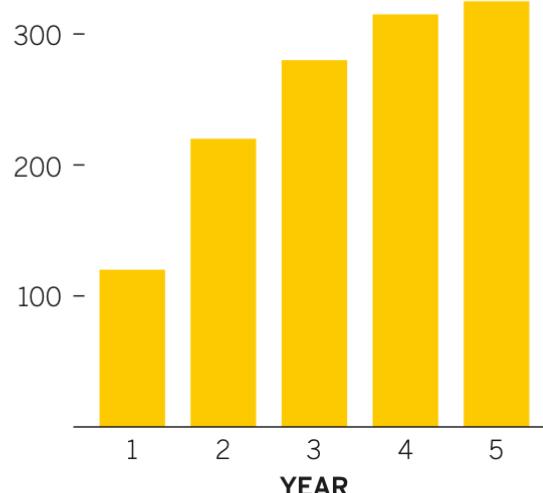
ANNUAL REVENUE EARNED
\$400 million



We can easily convert cumulative revenue to yearly revenue

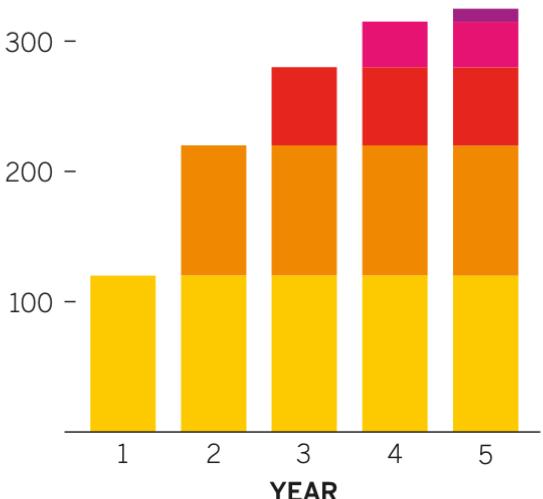
Year	Revenue	Cumulative Revenue (Million \$)
1	120	120
2	90	210
3	70	280
4	30	310
5	10	320

REVENUE GROWTH
CUMULATIVE REVENUE
\$400 million



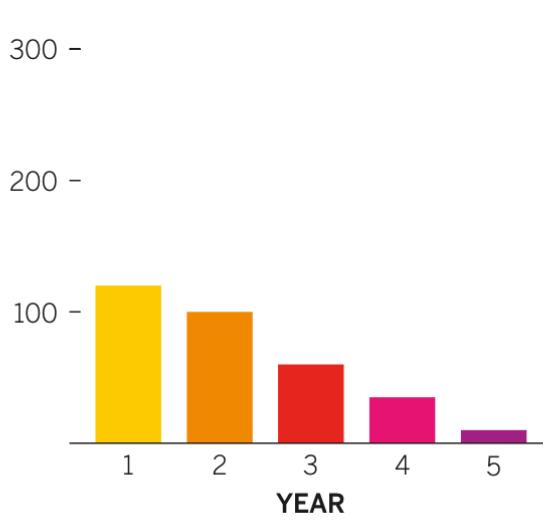
SOURCE: COMPANY RESEARCH

REVENUE GROWTH
CUMULATIVE REVENUE
\$400 million



SOURCE: COMPANY RESEARCH

FIVE-YEAR REVENUE TREND
ANNUAL REVENUE EARNED
\$400 million



How to decide

What should the visualisation say?

- What objective are we trying to achieve?
- Who's the audience?
- What delights and frustrates this audience?
- What data is available to us? What else could we bring in?

I am trying to convince



About



So that they



I am trying to convince

WHO

About

WHAT

So that they

WHY

I am trying to convince

AUDIENCE

About

STATEMENT/ARGUMENT

So that they

DO AN ACTION



<https://viz.wtf/post/667583513306005504/the-drying-time-could-be-literally-anything-and>

I am trying to convince

PEN USERS

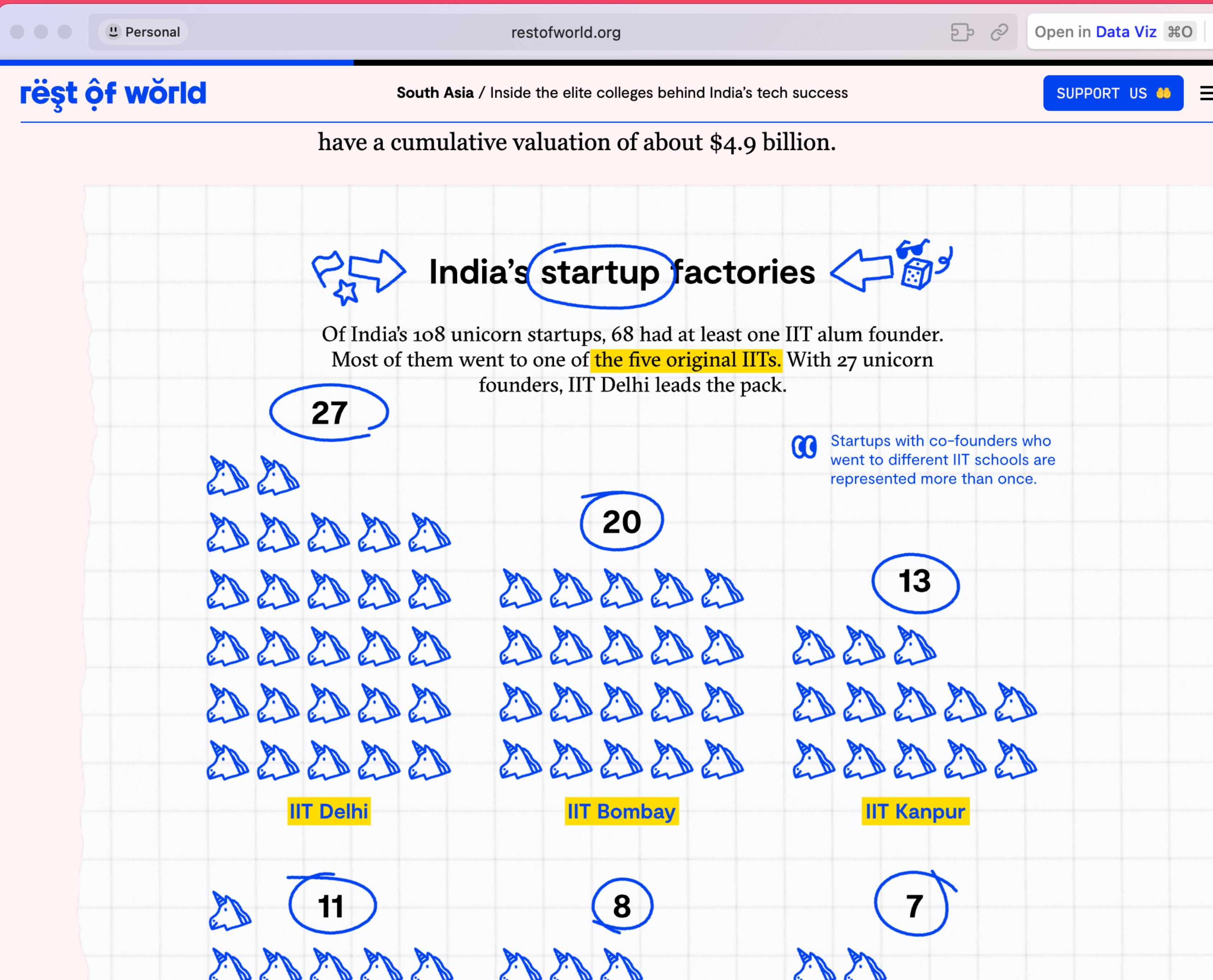
About

SARASA DRY DRIES MUCH FASTER THAN OTHER PENS

So that they

BUY SARASA DRY

Inside the elite colleges behind India's tech success - Rest of World



I am trying to convince



About



So that they



I am trying to convince READERS

About GOING TO IIT REALLY MAKES A DIFFERENCE FOR TECH CAREERS

So that they ARE CONVINCED ABOUT THE POINT OF THE ARTICLE

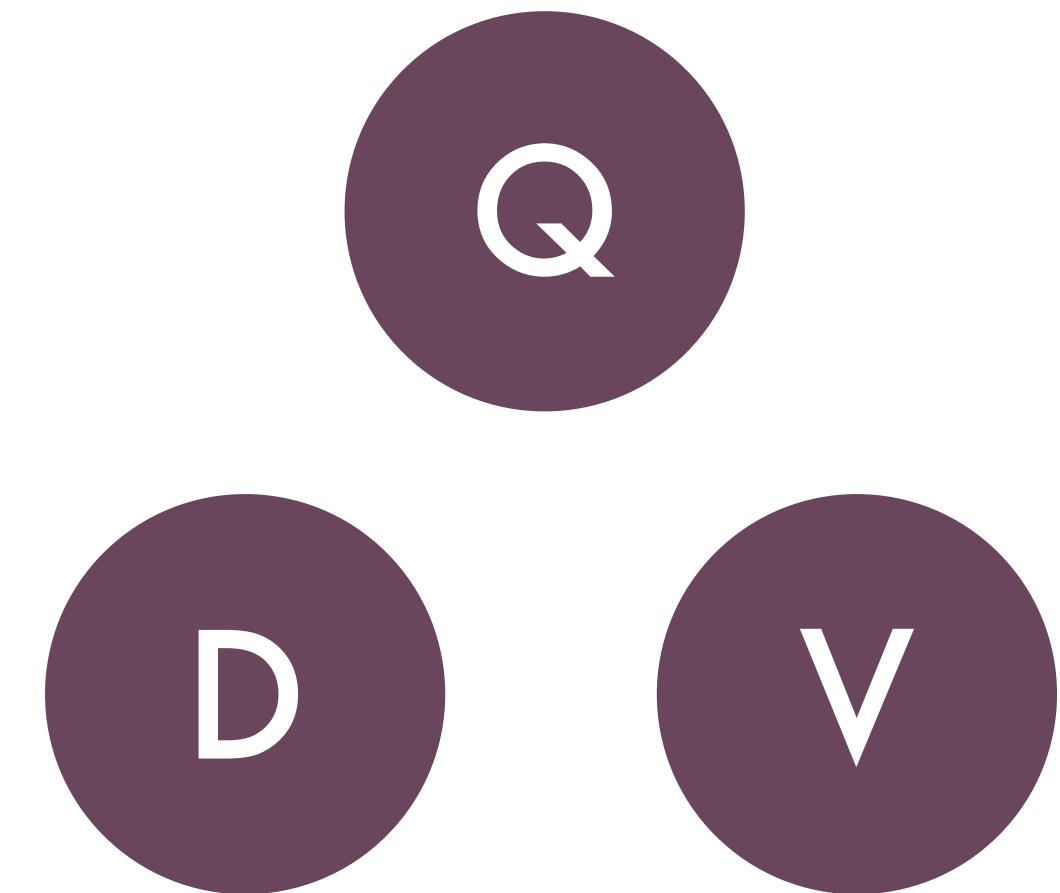


**Another way to think about
Is a data visualisation effective?**

Critiquing Data Visualisations

The Trifecta Check

- What is the **QUESTION**?
- What does the **DATA** say?
- What does the **VISUAL** say?



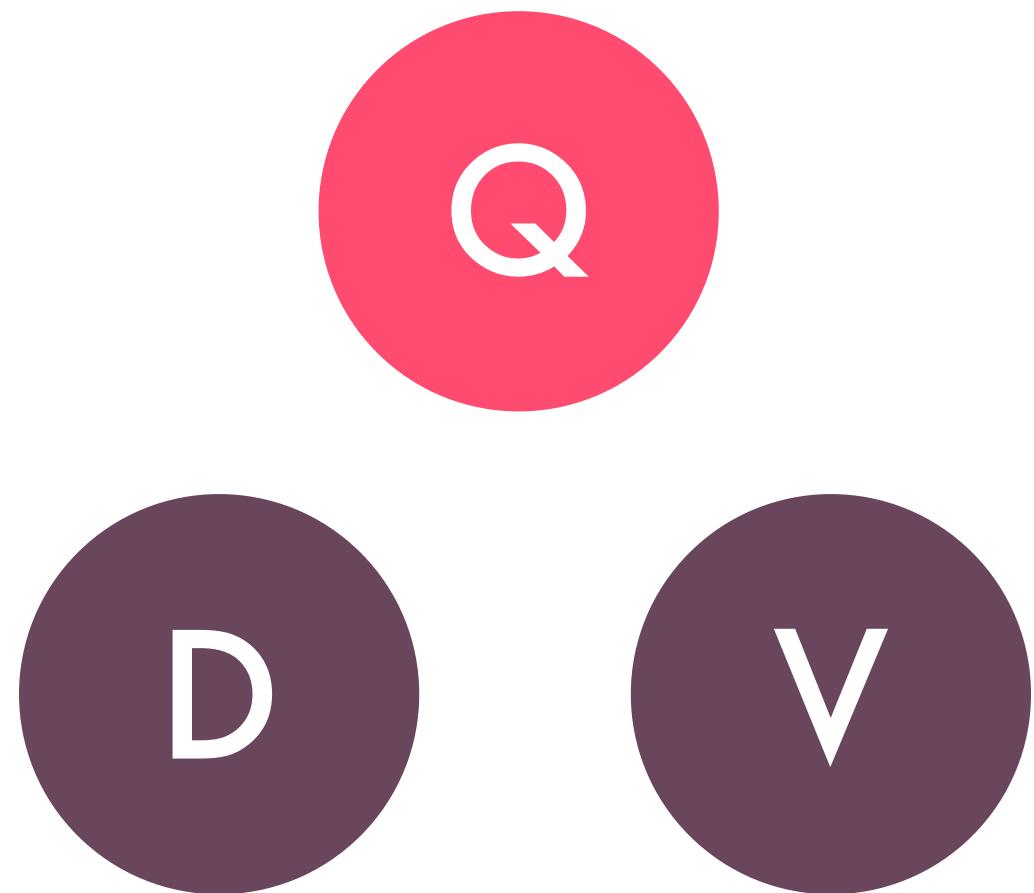
Ideally, all three are the same.

Source: [Chart Junk Trifecta Checkup](#)

The Trifecta Check

The Question

- Any data visualization project needs a worthy cause.
- The Question should be **well-posed** to focus the search for appropriate data.
- The Question should be **interesting** to ensure an engaged audience.



Q
D V

South Koreans drink twice
as much liquor as Russians
and more than four times
as much as Americans

Quartz ↗

qz.com

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BUSINESS NEWS

South Koreans drink twice as much liquor as Russians and more than four times as much as Americans

By Roberto A. Ferdman

Published February 2, 2014

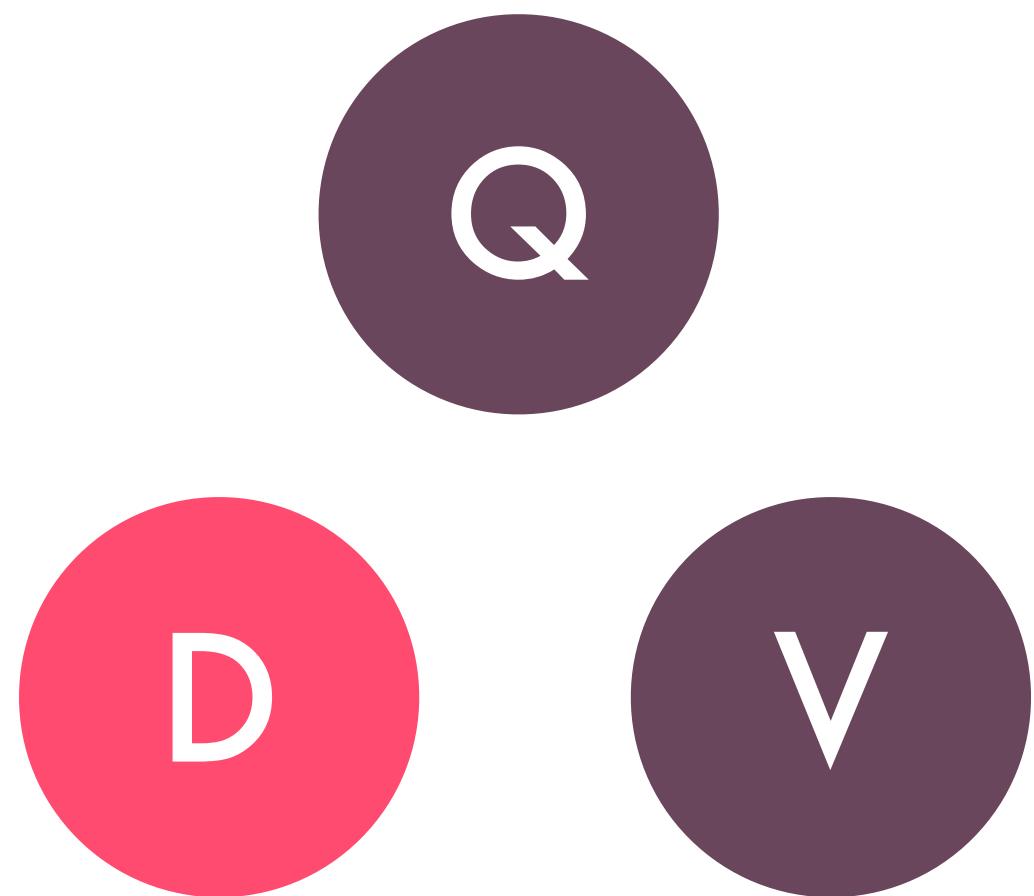
The average amount of liquor consumed by a person of drinking age
Shots per week of any spirit

Country	Average Shots per Week
S. Korea	13.7
Russia	5.4
Philippines	4.5
Thailand	4.4
Japan	3.9
Bulgaria	3.9
Ukraine	3.8
Slovakia	3.8
Brazil	3.

The Trifecta Check

The Data

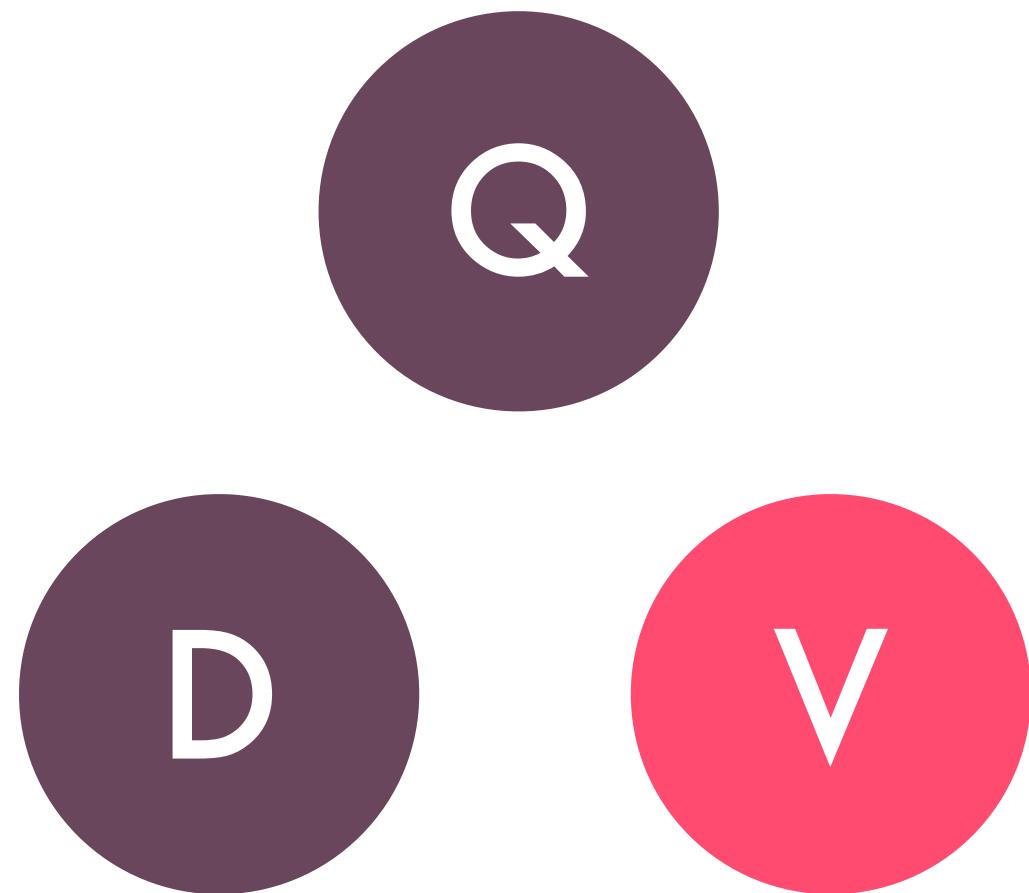
- The Data should be relevant to the Question being addressed.
- Relevance can often be augmented by reducing noise, removing errors or transformations.



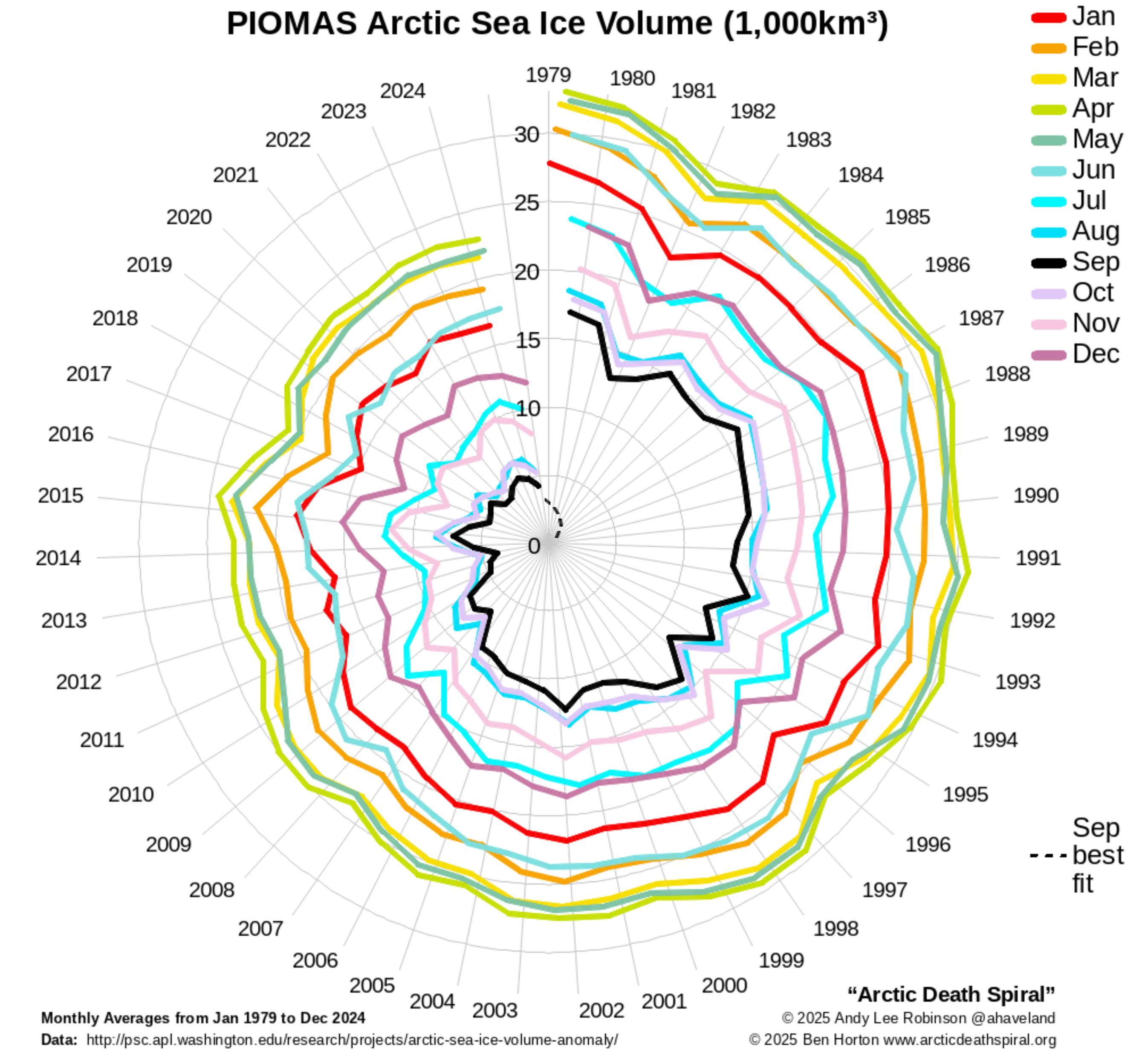
The Trifecta Check

The Visuals

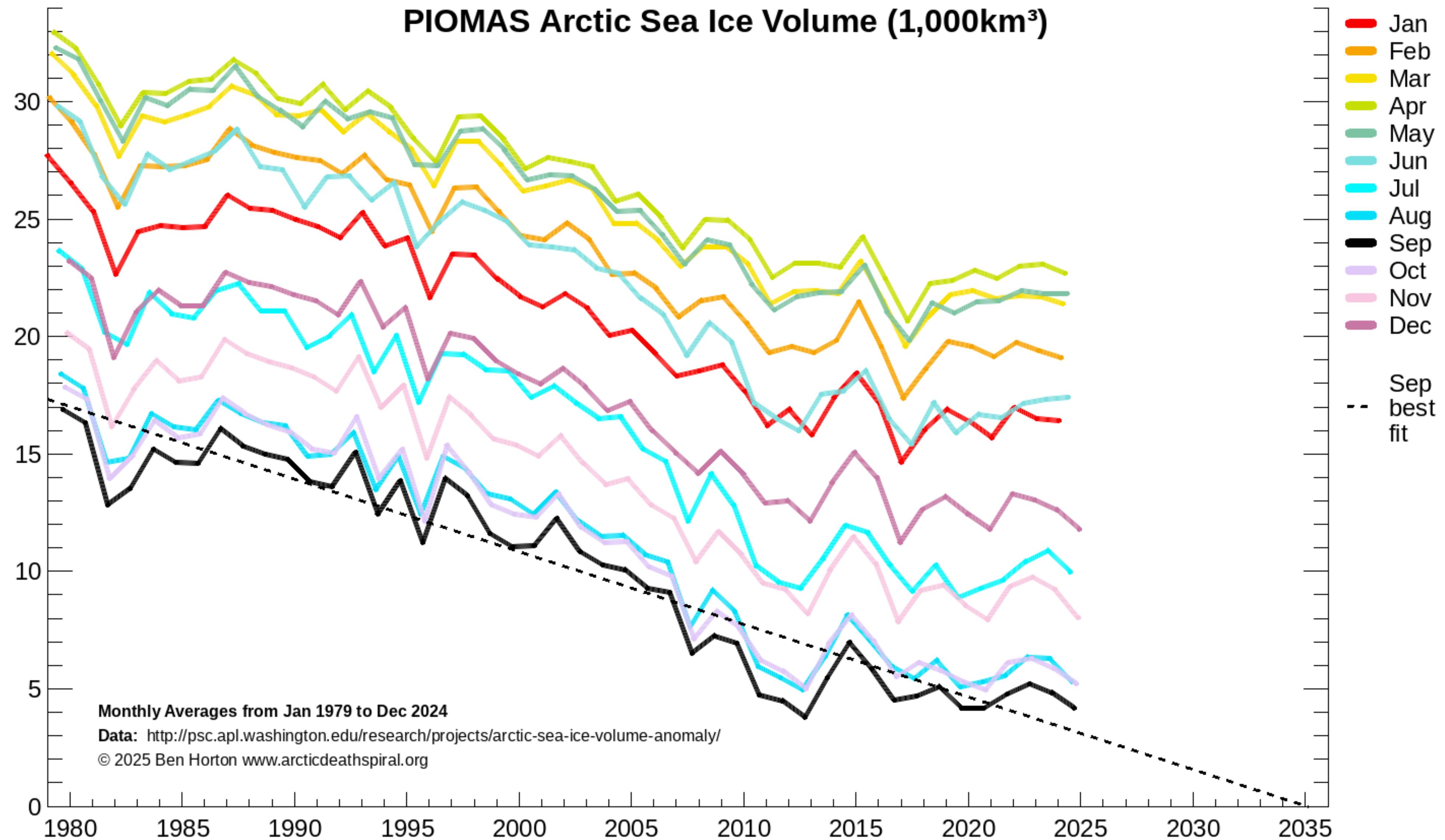
- The Visual elements should represent the Data in a clear, concise manner.
- The visuals should address the Question directly.



What's The Arctic Death Spiral? Spider Chart Arctic Death Spiral ↗



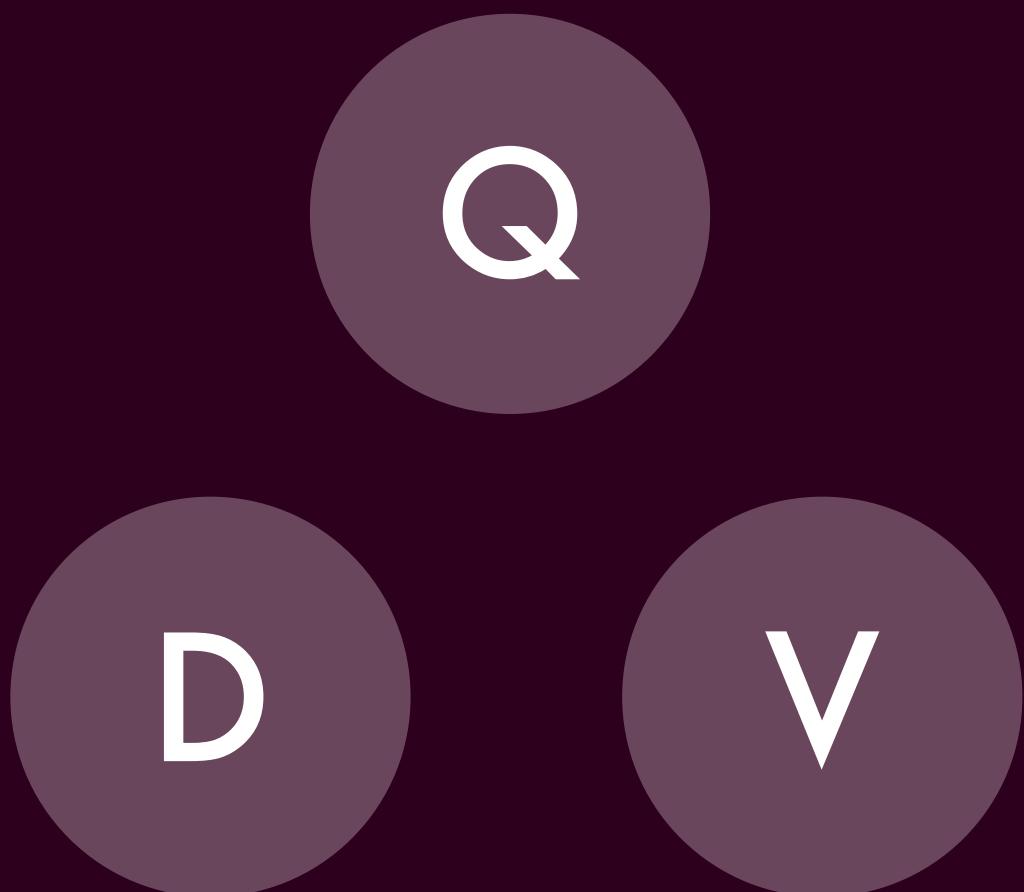
PIOMAS Arctic Sea Ice Volume (1,000km³)



Recap

2 ways of evaluating data viz

I am trying to convince WHO
About WHAT
So that they WHY



Who-What-Why

Question-Data-Visuals

Classroom Crits

Some Rules

- Keep feedback respectful and focused on the work, not the person. We're all here to learn.
- If you liked something, call it out! If you don't, try and explain why.
- You can use "I wonder..." or "Have you considered...?" to open discussions.
- You can and should build on each other's ideas, but let people finish their thought and avoid interruptions.
- Understand that choices are made based on available data, audience, and format limitations. What were the tradeoffs involved?

Presentations

Critique and Redesign

The screenshot shows a web browser window with the URL gyanl.com in the address bar. The page content is as follows:

Data Visualization [About](#) [Syllabus](#)

Exercise - Critique and Redesign

Reference Material

See [Which Chart to Use](#) for a list of reference material that show the different types of data and the types of charts that can be used to represent them.

Instructions

Create teams of 2. If you are comfortable with a visualisation tool, try pairing up with someone who is struggling.

**How can
data tell
stories?**





It has been
0 day(s)
since I smacked
someone for
no reason.

**A manager wants to make the case
that the tech team should automate
two menial processes.**

Each task takes only a few seconds, but both must be done constantly. He wants to show that performing the task dozens of times a day adds up over time. So he simply adds up all the time and plots it.

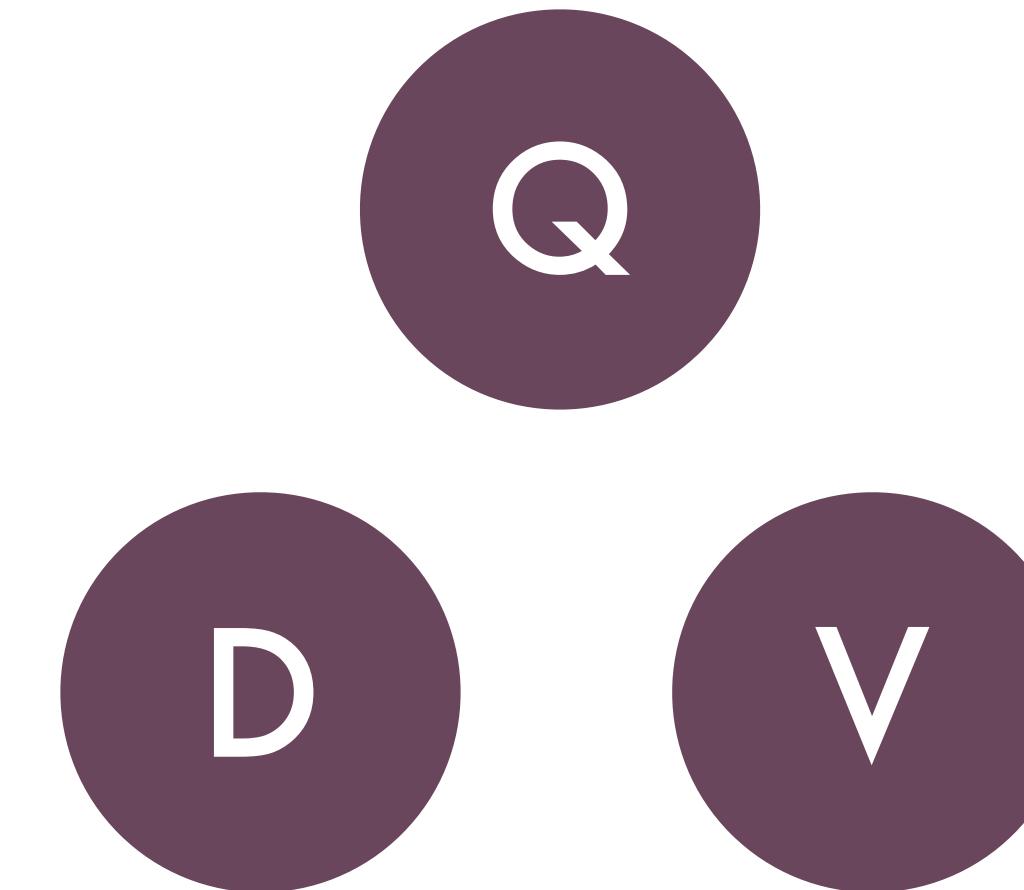
A manager wants to make the case that the tech team should automate two menial processes.

Each task takes only a few seconds, but both must be done constantly. He wants to show that performing the task dozens of times a day adds up over time. So he simply adds up all the time and plots it.

I am trying to convince _____
WHO

About _____
WHAT

So that they _____
WHY



A manager wants to make the case that the tech team should automate two menial processes.

Each task takes only a few seconds, but both must be done constantly. He wants to show that performing the task dozens of times a day adds up over time. So he simply adds up all the time and plots it.

TASK 1 AND TASK 2

HOURS LOST PER YEAR

120 -

80 -

40 -

70

110

Task 1

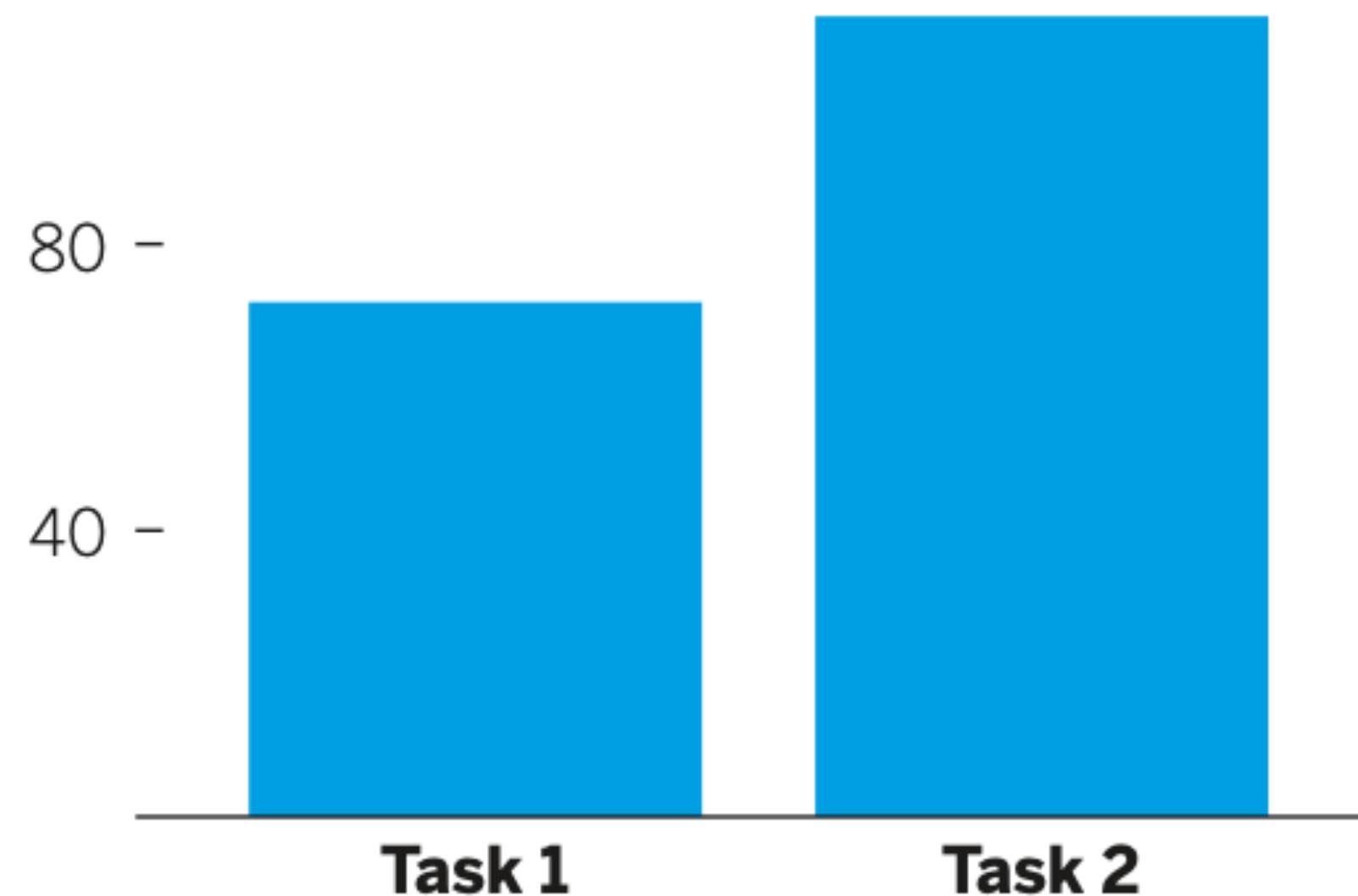
Task 2

SOURCE: COMPANY RESEARCH

TASK 1 AND TASK 2

HOURS LOST PER YEAR

120 -



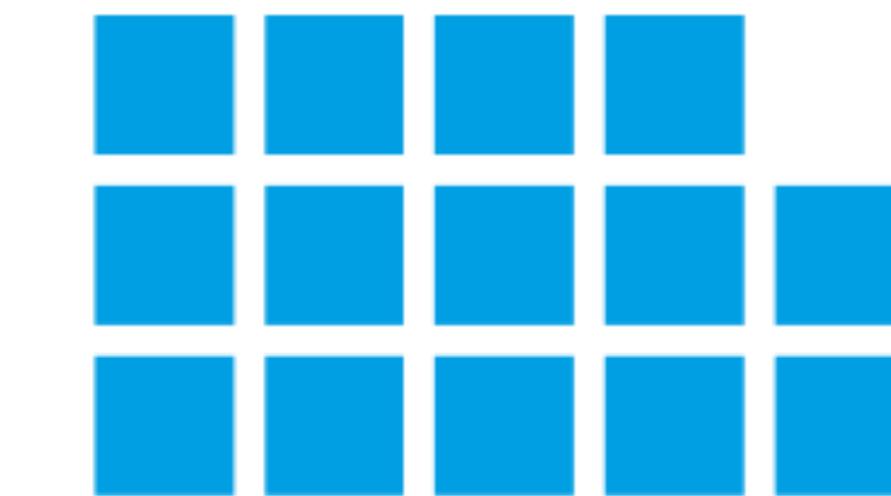
SOURCE: COMPANY RESEARCH

DAYS LOST TO TASK 1 AND TASK 2: TIME SINK

WORK DAYS LOST PER YEAR



Tim
9 work days



Susan
14 work days

SOURCE: COMPANY RESEARCH

**Stories can
humanise data.**