Connecting Data Literacy to Individual Performance

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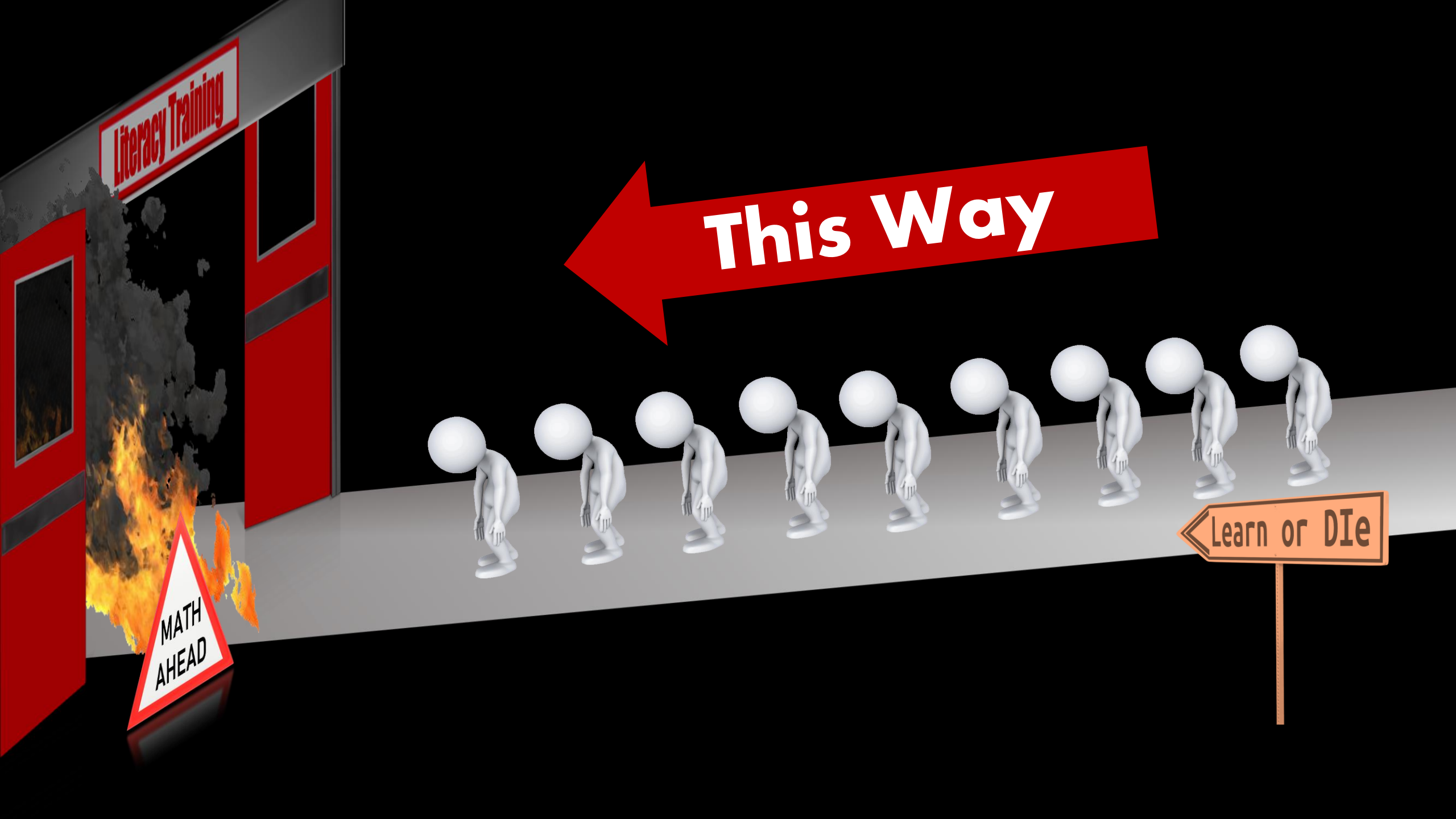
Wendy D. Lynch PhD.

How do we make data **meaningful?**

Or….. Why should I care?


Literacy Training
This Way
MATH AHEAD
Learn or DIe

WELCOME TO LITERACY TRAINING!!

More Math = More Fun !!

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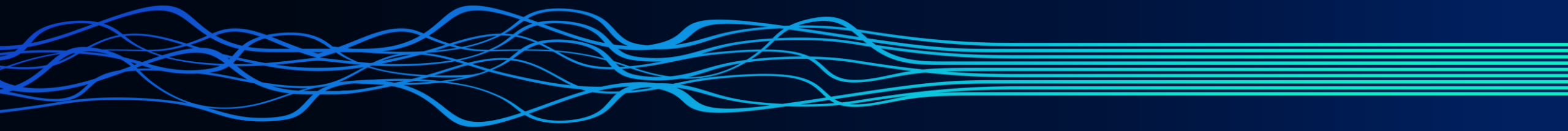
We need our people to have high data literacy

So, they can make reliable data-driven decisions



We need our people

high dat

Um... they already do

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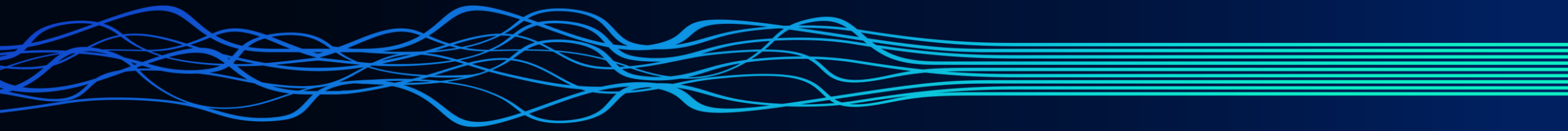
data-driven decisions



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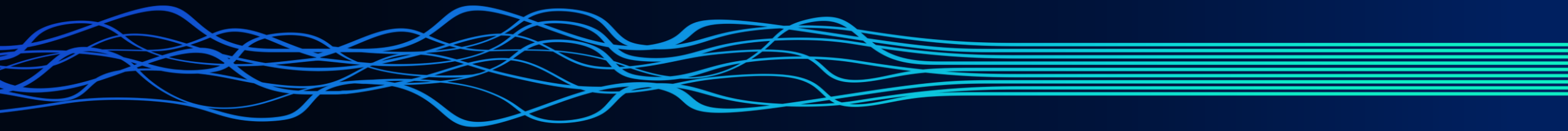
In modern society, we all

USE
DEPEND ON
COMPARE
DECIDE TO BELIEVE
REACT TO
DEBATE
CELEBRATE RESULTS OF

DATA

every day.



We rely on consistent standards and units

Because standards are agreed upon

We take for granted that we can depend on

What time it is

When Christmas will be

Who holds a world record

What 70 degrees feels like

The dollars in our bank statement

How far a mile is

How fast the speedometer says we're going

The weight of a 5lb dumbbell

We make confident comparisons

Because data are collected, and standards are applied consistently

Today was colder

My team scored more points

This job pays more

That stock price is higher than last week

I’ve lost weight!

This car gets more miles per gallon

We make data-driven decisions

Because we (usually) trust the sources

We respond to real time data and predictions

It will rain Sunday.. Let's picnic on Saturday

Traffic is backed up on Google…. I will go another way

Interest rates are down…. Time to buy a house

Plane fares are usually lower in the fall… I'll go then

There will be an eclipse on May 3rd… let's go see

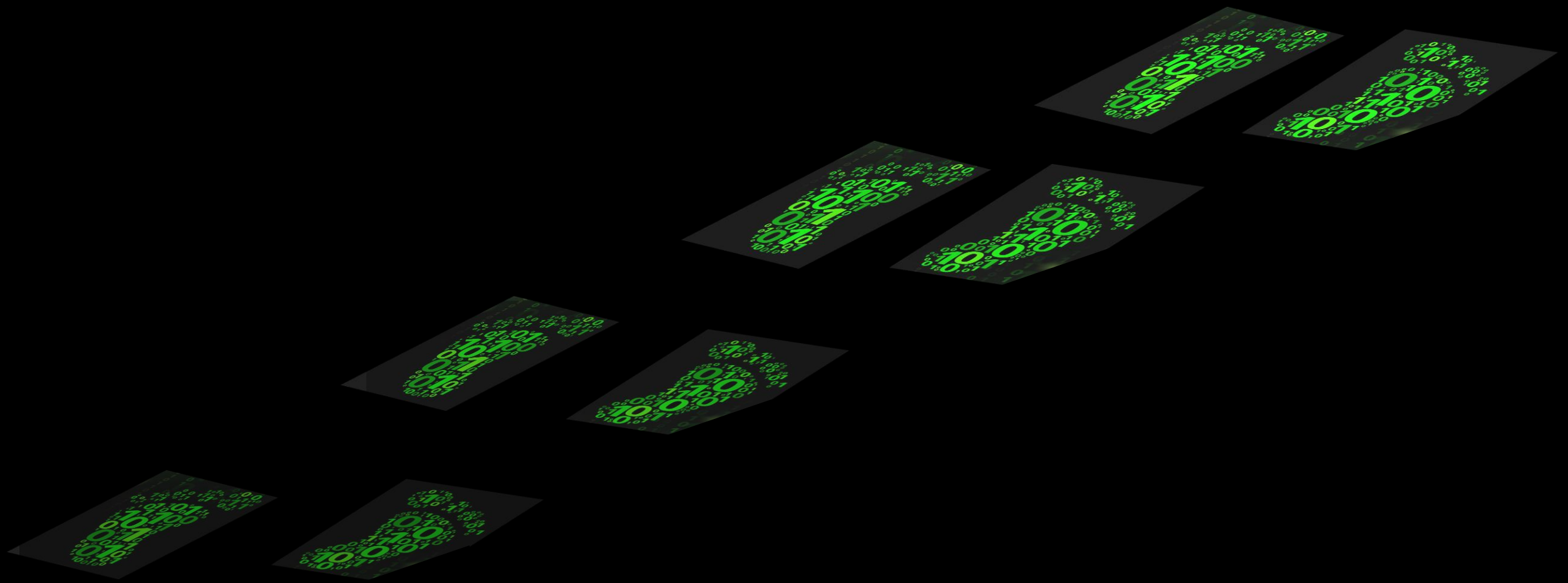
Today, **everyone** is a data creator

Every purchase on a credit card
Every amazon review
Every phone call
Every ATM withdrawal
Every email
Every text
Every Google search
Every Netflix movie viewed
Every story read
Every Like on Instagram
Every camera we pass by
Every report we download
Every prospect we list in Salesforce
Every click on a website
Every location our phone tracks
Every step on our fitbit
Every person we tag
Every score we enter
Every group we belong to
Every prescription we fill

Now we leave behind data like dust

Our digital footprints

Are only getting bigger and brighter

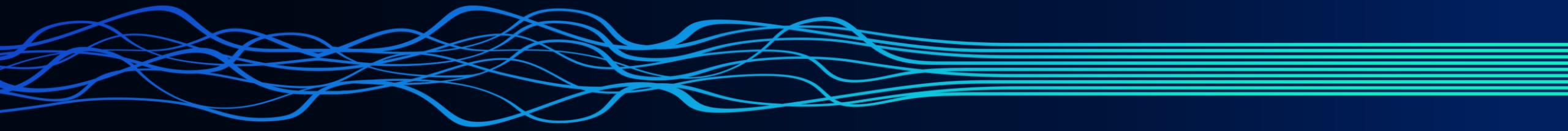


We interact with

AND INFLUENCE

data

constantly



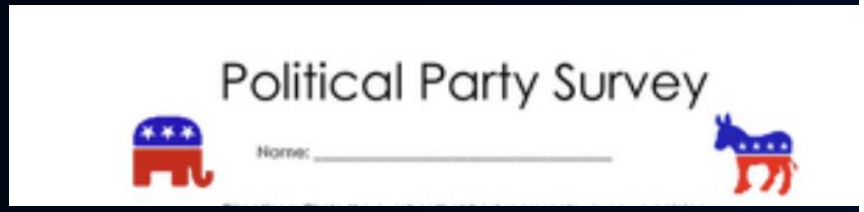
Choosing how honest to be

Let's assess health behaviors

A majority of respondents underreport unhealthy answers

Choosing whether to participate

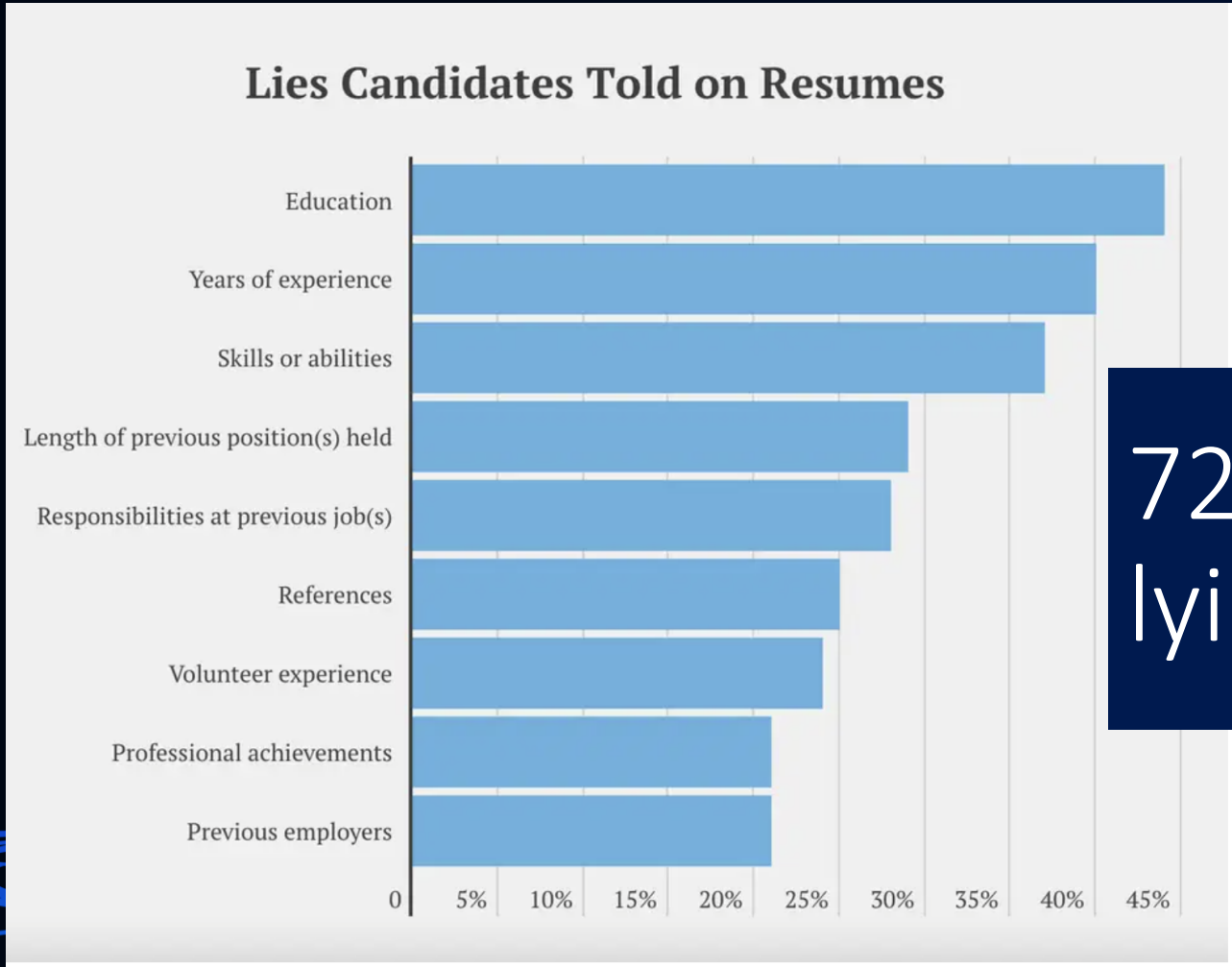
Will you answer a survey?



Surveys Face Growing Difficulty Reaching, Persuading Potential Respondents

	1997 %	2000 %	2003 %	2006 %	2009 %	2012 %
Contact rate (percent of households in which an adult was reached)	90	77	79	73	72	62
Cooperation rate (percent of households contacted that yielded an interview)	43	40	34	31	21	14
Response rate (percent of households sampled that yielded an interview)	36	28	25	21	15	9

Deciding what to reveal



"We hire only the best"

72% of respondents admit lying on their resume

Business Insider 2/2023

Today, **everyone** is a data creator **and** a data evaluator

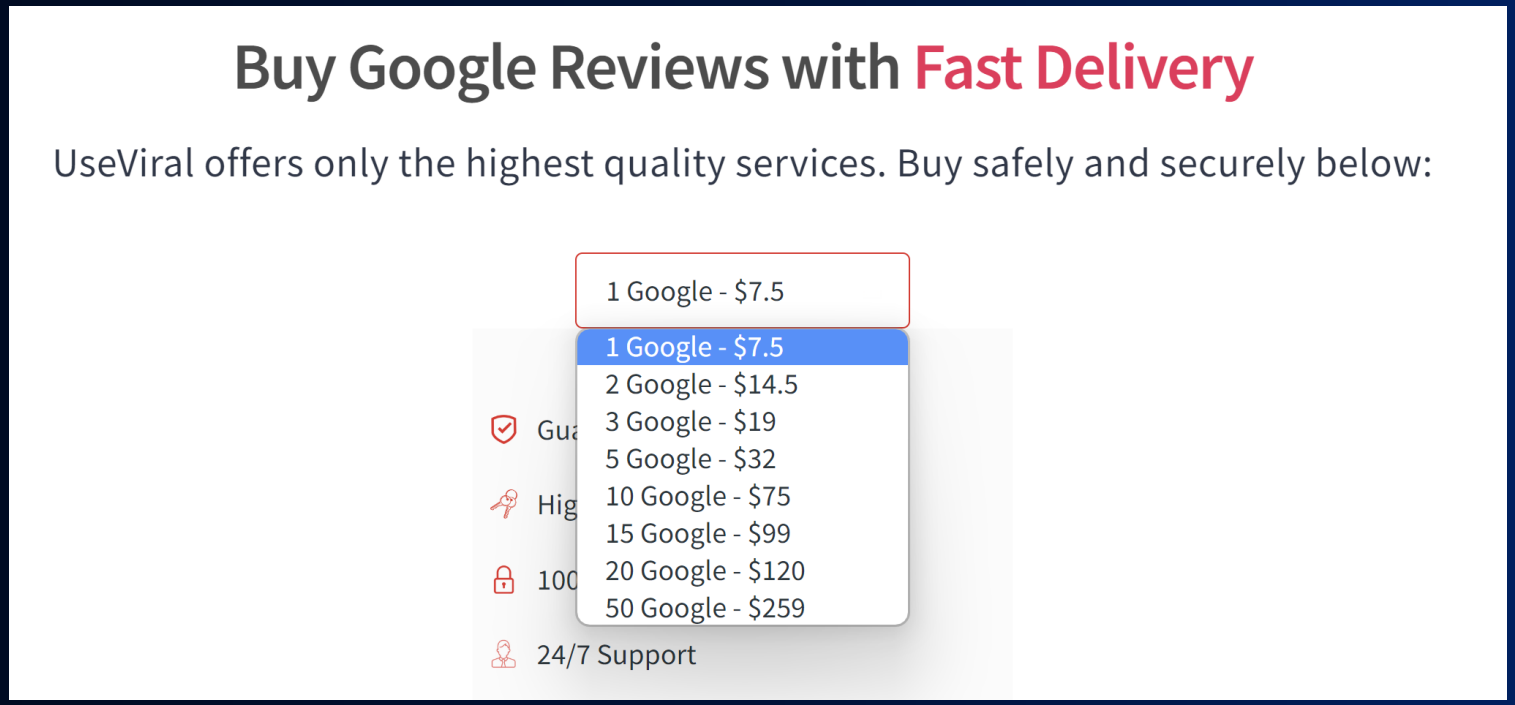
How do you decide if you believe it?

Which Product to Choose

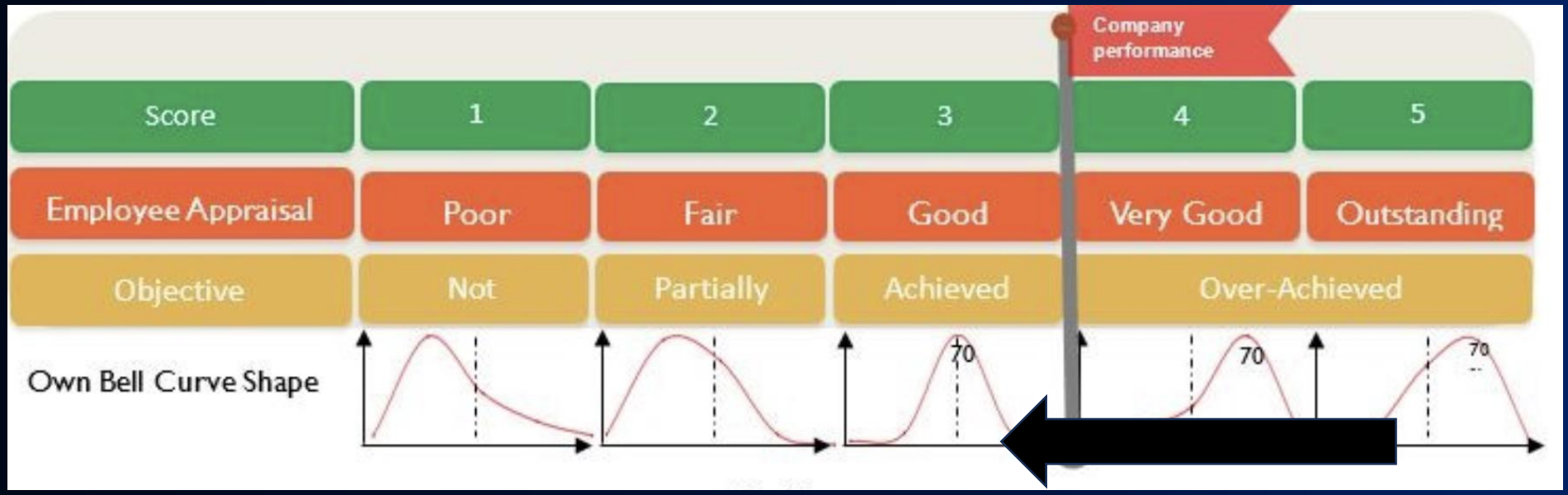
"I look at the reviews"

50 five-star reviews for $259

★★★★★



If My Performance Review is Fair



There are too many 5's. Make it a normal curve

"Your rating has gone down. But don't worry."

If there is evidence to convict?

One in 10 Billion

“But, how can they know?”

A lack of Scientific Literacy

DNA Match

So, we already use/evaluate data.

How do we translate that into literacy?

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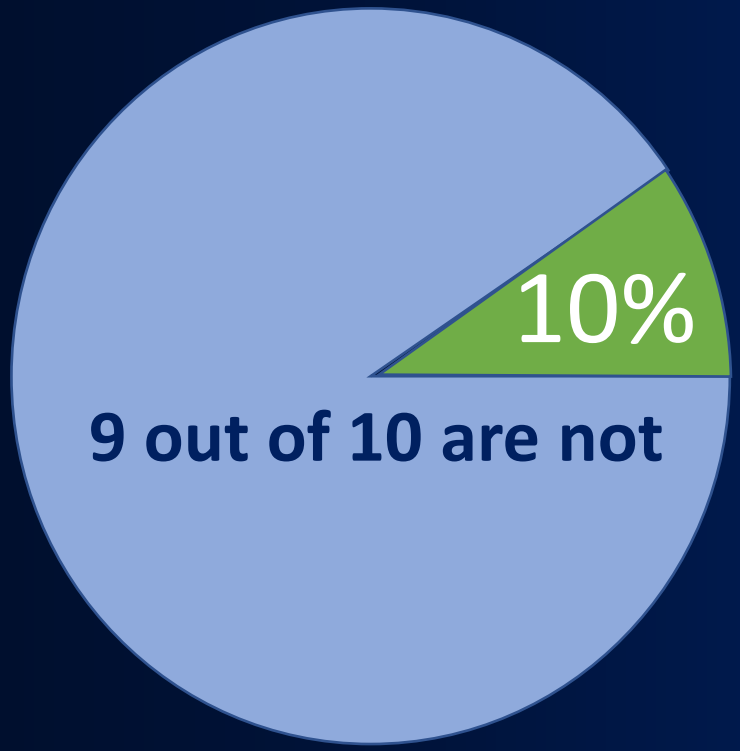
"The ability to read, write and communicate data"



Confident they have these skills

Dataversity, June 2022

Accenture

What is Literacy?

“The ability to read, write and communicate data…..

…in context, including an understanding of data sources and constructs, analytical methods and techniques applied – and the ability to describe the use case, application and resulting value.”

Dataversity, June 2022

Many definitions

In order to be data literate in the workplace, one must:

- Know **which data are appropriate** to use for answering a particular business question.
- Have the ability to **read charts and graphs** in order to interpret the data.
- Understand the **path of data** from its source to the data visualization.
- Know how to **represent data** based on the type of analysis you are performing.
- Recognize **improperly used** data, **biased** analysis, and **misleading** data representations.
- Have the **ability to communicate** about data with others who may not be as data literate.

Michael D. Larson. 2022. Data Literacy for the Workplace.

Even more components

Data literacy continuum

	Fifteen Databilities®	Level 1 Basic Awareness With help	Level 2 Follow instruction given to me	Level 3 Work on limited tasks on my own	Level 4 I can apply skills more broadly	Level 5 Assist others in doing tasks	Level 6 Teach others
Reading	Data Discovery						
	Evaluating and Ensuring Quality of Data						
Writing	Data Collection						
	Data Management and Organisation						
	Data Manipulation						
	Data Curation and Reuse						
	Metadata Creation and Use						
	Data Conversion (Format to Format)						
Comprehension	Data Analysis						
	Data Interpretation (Understanding Data)						
	Identifying Problems Using Data						
	Data Visualisation						
	Presenting Data (Verbally)						
	Data Driven Decision Making						
	Evaluating Decisions / Conclusions Based on Data						

So ……how long does it take?

Let me ask you

How long did it take you to learn?

The things you wish everyone knew about data?

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On ourses

Ongoing.
30 min lunch
Once/week

5 hours
One Exam
Full Certification!

One & Done?

12 lessons &
12 group
discussions

50 hours
One project
= mastery

16 hours

Executive course
7 wks/28 hrs
$6000

80 minutes and 8 quizzes!

Over & Over?

3 free YouTube
videos!

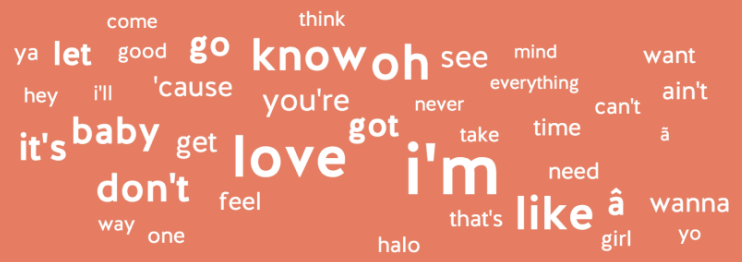
Focus on effects of
COVID on policy

How do we make it interesting?

Words used in Beyonce's lyrics

Here is a picture of the words used most often in your document. Words used more often are bigger, and ones used less often are smaller. This picture, called a "word cloud", is helpful to get a sense of the most used words in a document.

What do I do next?



WordCounter WTFcsv SameDiff about blog help

TOP WORDS

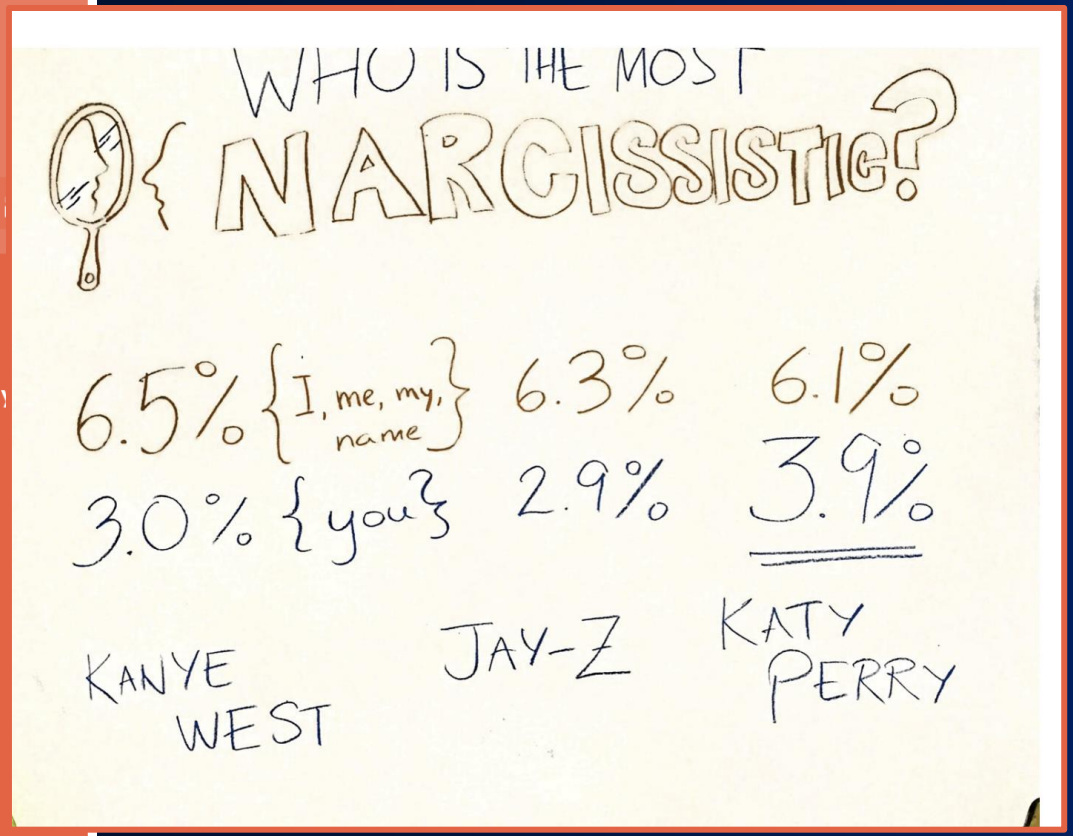
Word	Frequency
i'm	805
love	641
oh	537
like	497
know	480
don't	415
baby	389
it's	380
go	354
â	339
let	330
got	325

BIGRAMS

bigram	Frequency
if you	187
i can	187
i know	171
i love	169
and i	168
i don't	153
oh oh	153
that i	151
to the	146
love you	139
let me	139
in the	137

TRIGRAMS

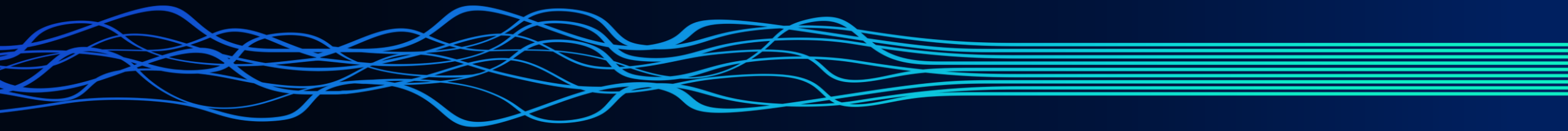
trigram	Frequency
oh oh oh	94
i love you	83
go go go	81
you must not	80
not know 'bout	80
know 'bout me	80
must not know	80
to the left	80
eh eh eh	68
lost yo mind	66
i know that	66
left to the	60



So ……what makes us care?

What made you interested in data?

Why should other people care?



What if…. ……..

We make it personal?

(In the right way)

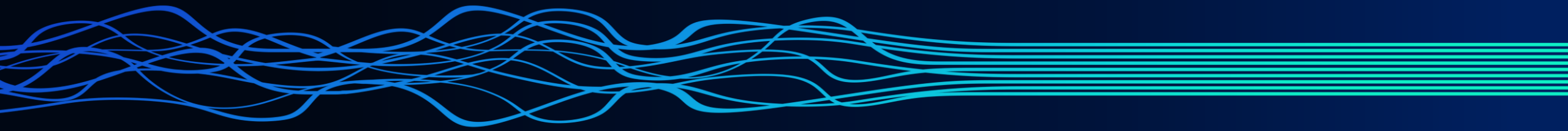
Your total sales revenue was next to last among the sales team

You saw fewer patients in the past week than anyone in the practice

You completed fewer projects than other team members

Customer satisfaction was down this month, compared to last month

Turnover is higher at your facility than others



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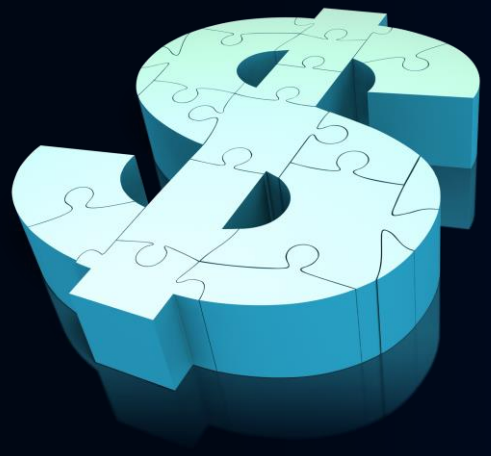
How do we make data relevant?

1. Something of value at stake



Money

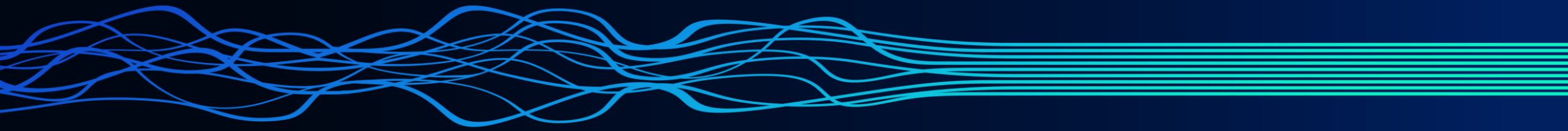
Recognition

Opportunity

Choice

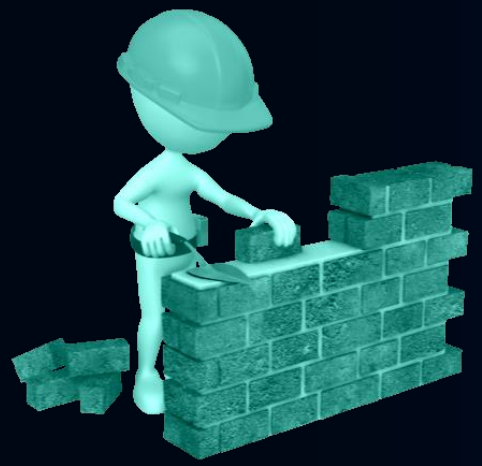
Value

- Bonuses
- Awards
- Recognition
- Time off
- Bragging rights
- Safety (my job is secure)



How do we make data relevant?

2. Something I can influence



How Much

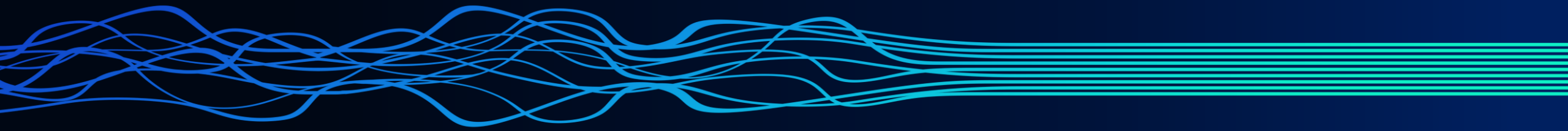
How well

How Fast

How long

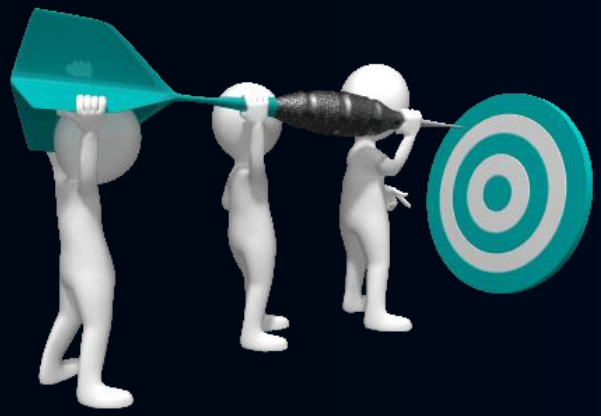
Influence

- Time
- Effort
- Attention
- Experience
- Learning

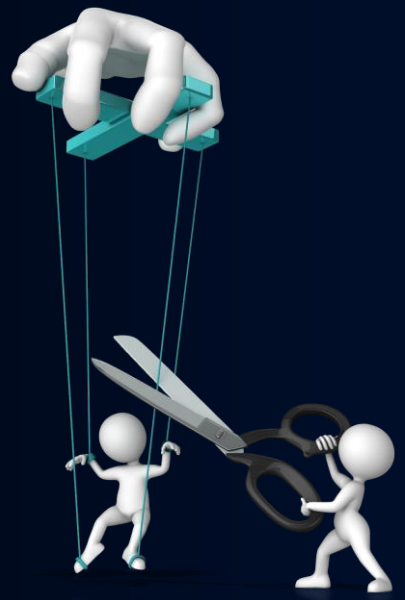


How do we make data relevant?

3. Concerns: measurable factors that interfere?



Moving targets



Lack of Control

Unequal

Measurement Ambiguity

How do we make data relevant?

At stake

Money

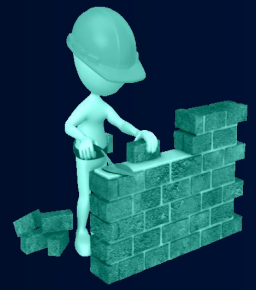
Recognition

Opportunity

Choice

I can Influence

How well

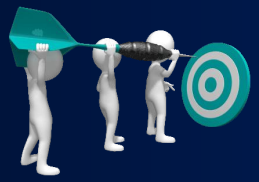


How Much

How Fast

How long

Concerns



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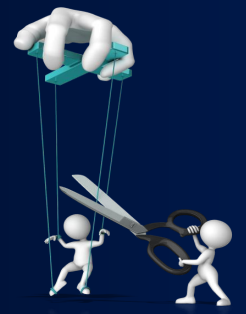

Lack of Control

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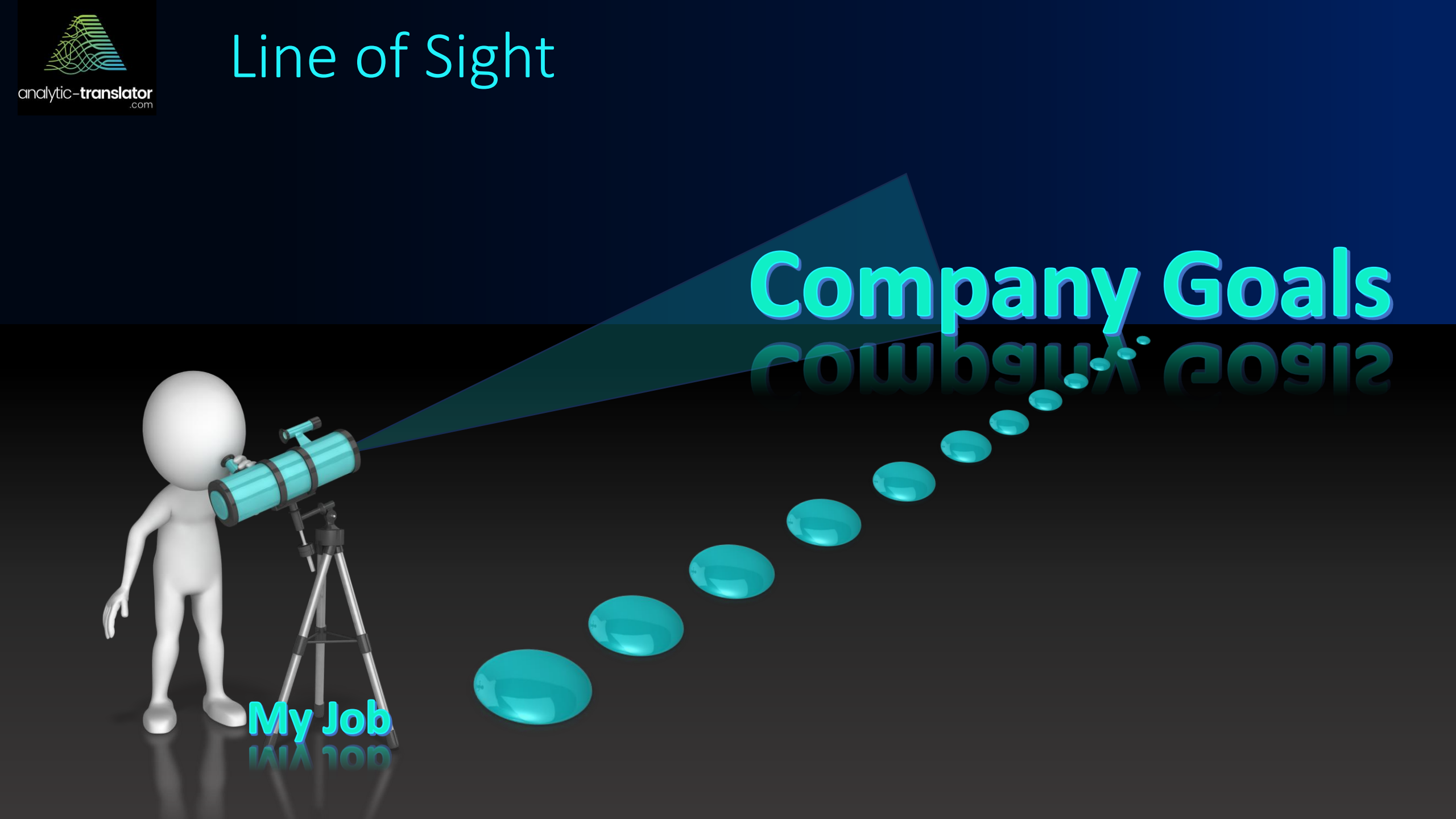
Line of Sight



Line of Sight: Windshield Replacement

Sustained Growth

Lower cost per replacement

Replace more

Efficient teamwork

Avoid Rework

Replace windshields

Data Connecting Jobs to Business Goals

Hourly Wage → **Pay method** → **Pay per install**

Productivity → **+ 44%**

Worker Earnings → **+ 10-28%**

Lazear 2000

What makes data relevant?

At stake

Money

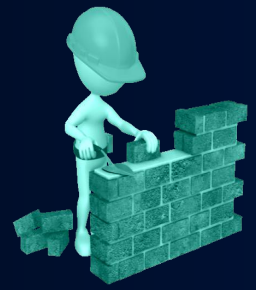
Recognition

Opportunity

Choice

I can Influence

How well



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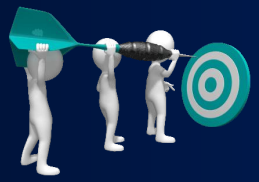

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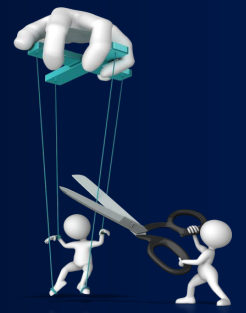

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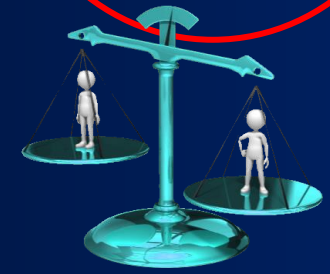

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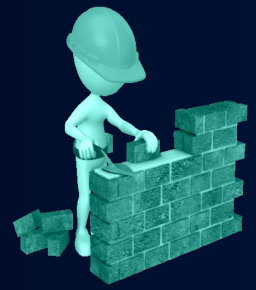

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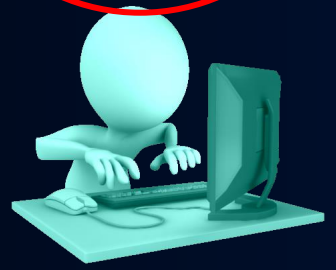

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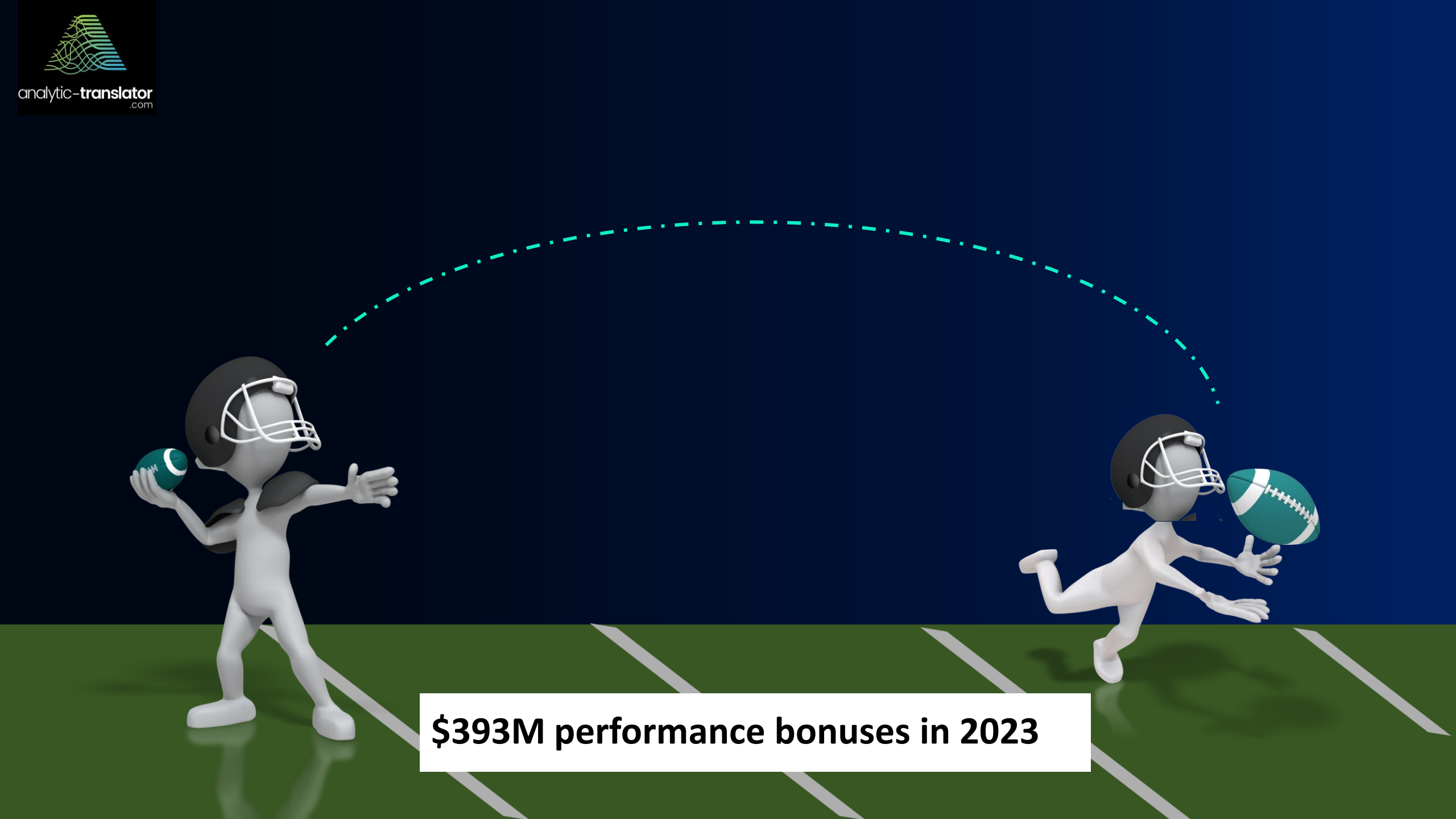

$393M performance bonuses in 2023

Line of Sight: NFL

Win Superbowl

Make Playoffs

Win games

Score touchdowns

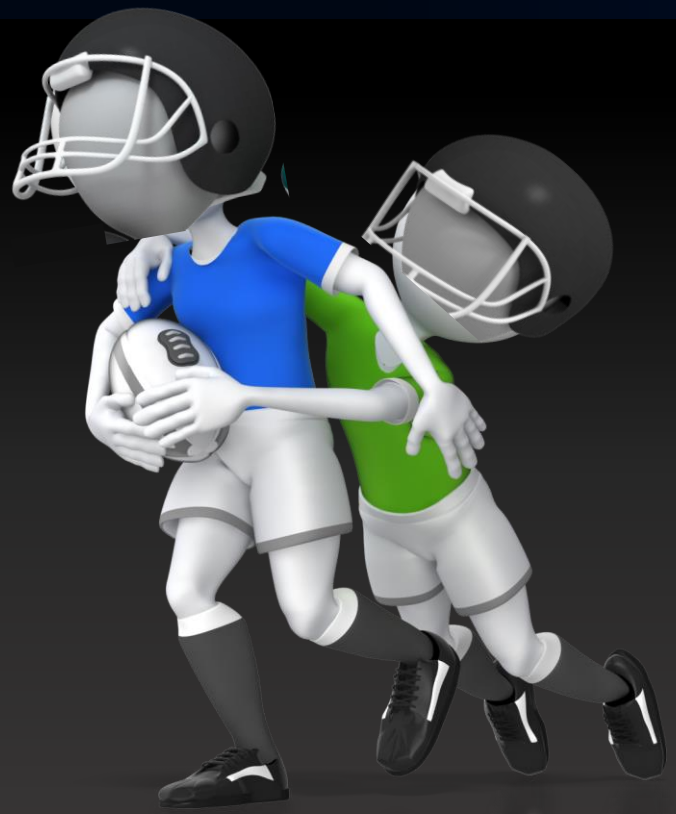
Gain yards: total yards

Receptions

100K for reaching each 250, 350, 450 yards

100K for reaching each 30, 40, 50, 60 catches

Line of Sight: NFL



Win Superbowl

Make Playoffs

Win games

Stop touchdowns

Reduce yards: total opponent yds

Sacks and tackles

$500,000 for seven sacks
$700,000 for eight sacks
$900,000 for nine sacks
$1 million for 10 sacks.

What makes data relevant?

At stake

Money

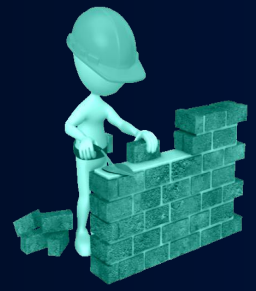
Recognition

Opportunity

Choice

I can Influence

How well



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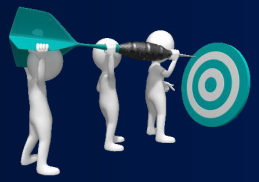

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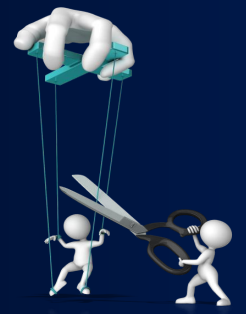

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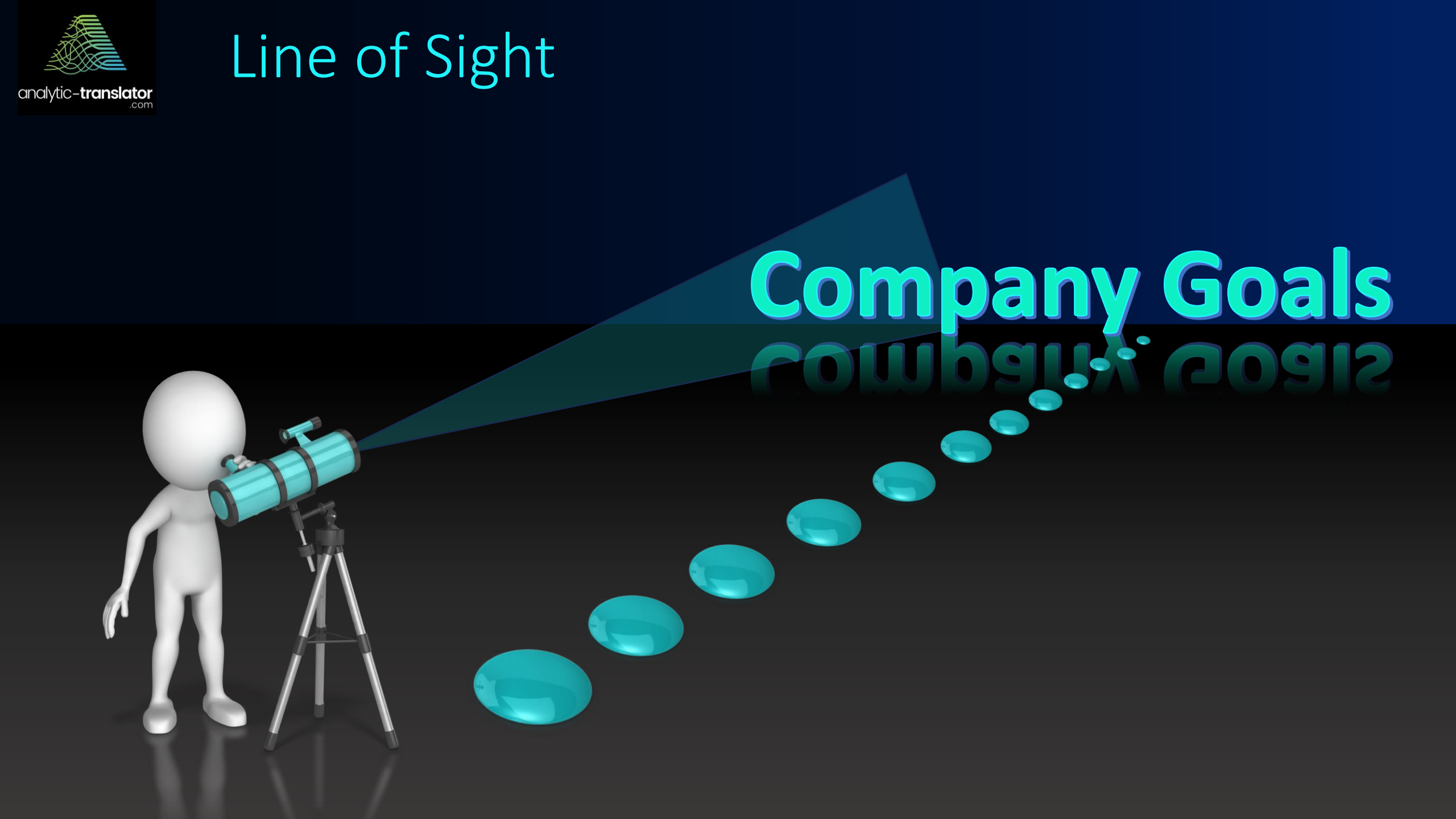
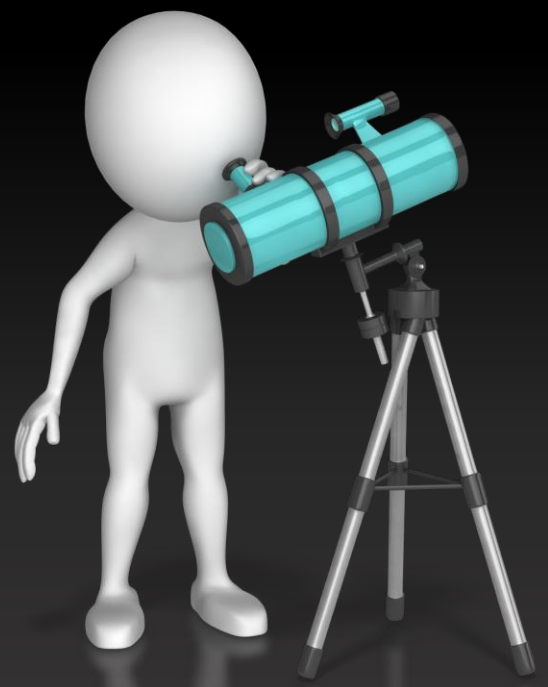
Line of Sight



Line of Sight: Analytics



Team Goals

Earn more from analytics

Increase turnaround

Speed and quality

Quick assignment

Accept and complete

What makes data relevant?

At stake

Money

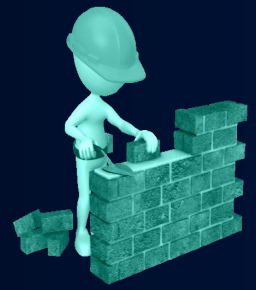
Recognition

Opportunity

Choice

I can Influence

How well

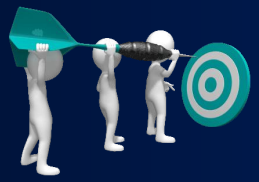


How Much

How Fast

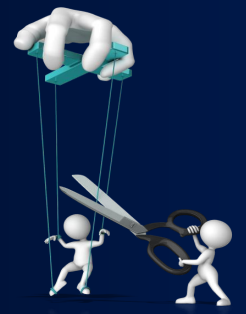
How long

Concerns



Moving targets

Measurement Ambiguity



Lack of Control

Unequal

Make it personal

At stake

Money

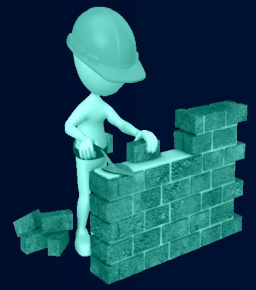
Recognition

Opportunity

Choice

I can Influence

How well



How Much

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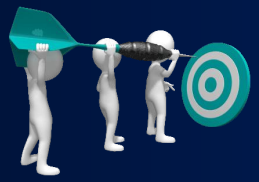

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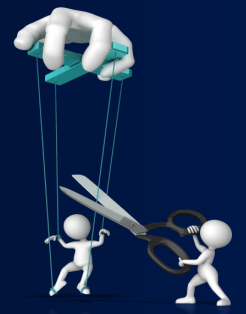


Lack of Control

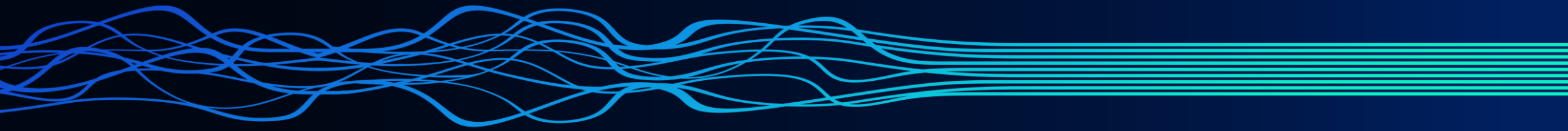
Unequal

Your total sales revenue was next to last among the sales team

You saw fewer patients in the past week than anyone in the practice

You completed fewer projects than other team members

Customer satisfaction was down this month, compared to last month



Make it personal

Meaningful Outcome

Specific Metrics (they can influence)

Qualifiers & Covariates (fairness)

Line of Sight

analytic-translator.com

WELCOME TO LITERACY TRAINING!!

More data = More success