

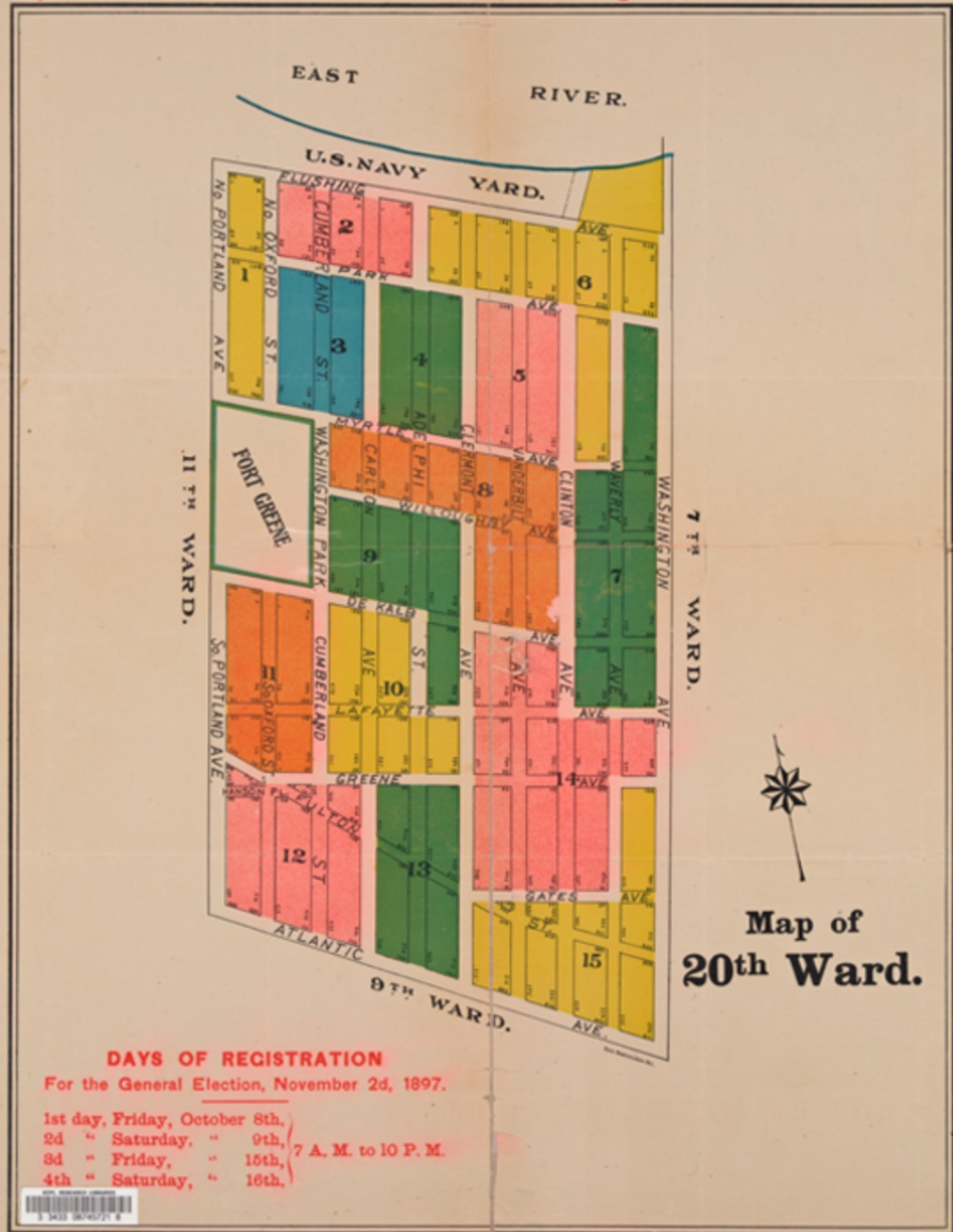


Fundamentals of Weibull Analysis

Fred Schenkelberg

A pile of
data

Map of 20th Ward of the City of Brooklyn, showing Election Districts for 1897.



MAP
of SEWER DISTRICT of
BATH BEACH
AND
BENSONHURST-BY-THE-SEA,
KINGS COUNTY, N.Y.

Scale.
Copyrighted by
Kings County Journal.

A question to answer

Weibull Analysis is

Life Data Analysis

What is Life Data?



Time to Failure



Censored Data



Sources of Data

Time to Failure Data



birth to death
installation till
decommissioning

time zero

Censored Data



Sometimes we do not
know everything

time zero

Sources of Life Data



Where can we find or create life data?

Some data is better than others

Let's take a look
at the data

The Weibull Analysis Basics



CDF Plot



Fitted Curves



Parameter Meanings

The Weibull CDF Plot



Your First Look at the Data

Probability of Failure

Time

Fitted Curves



Regression Analysis

Probability of Failure

Time

Weibull Parameter Meanings



Part of why Weibull is so popular

Probability of Failure

Time

Can wear out occur
quickly?

CDF Plots and Patterns



Hockey Stick



Low Early Tail



Curved

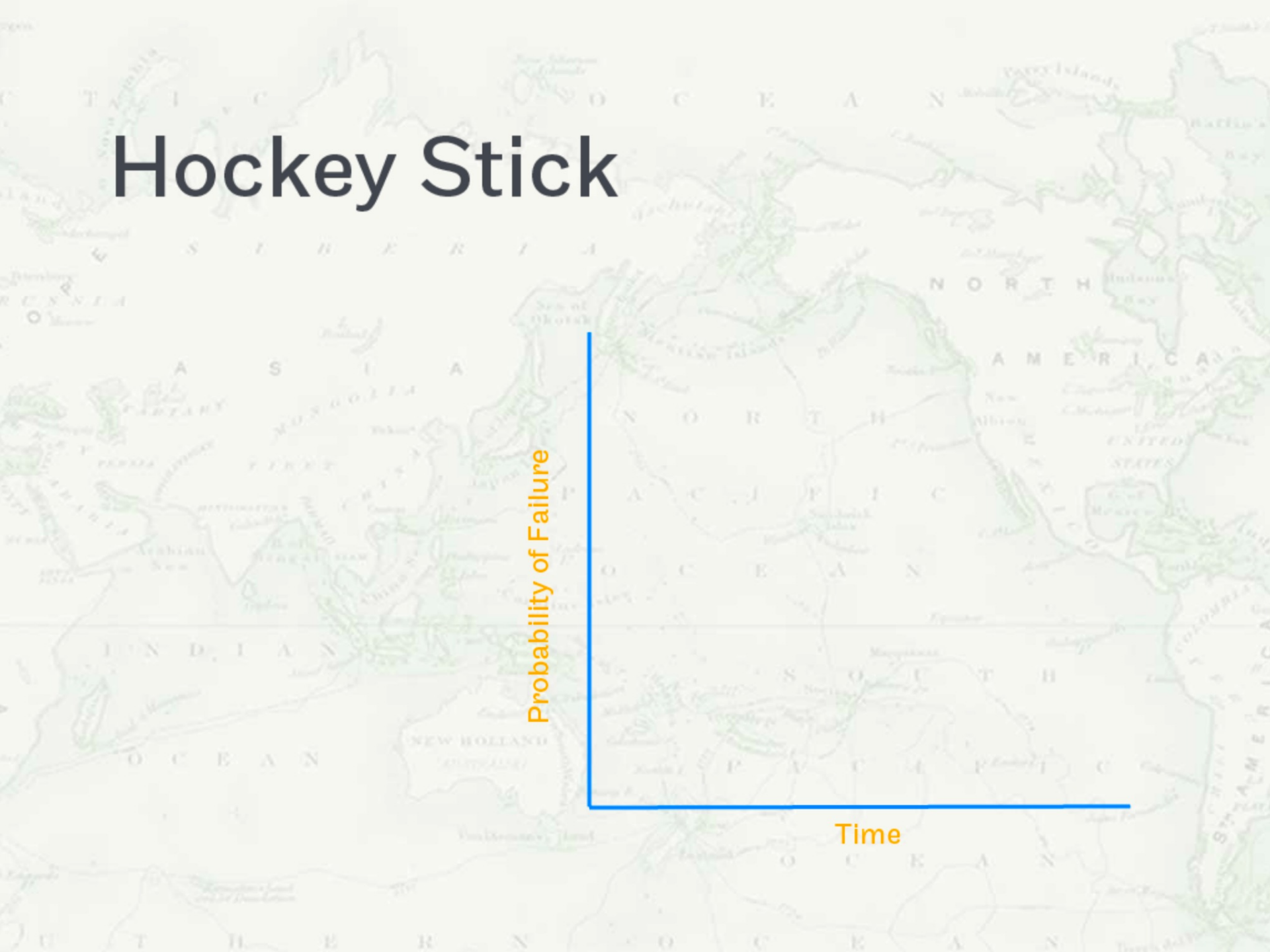


Straight

Hockey Stick

Probability of Failure

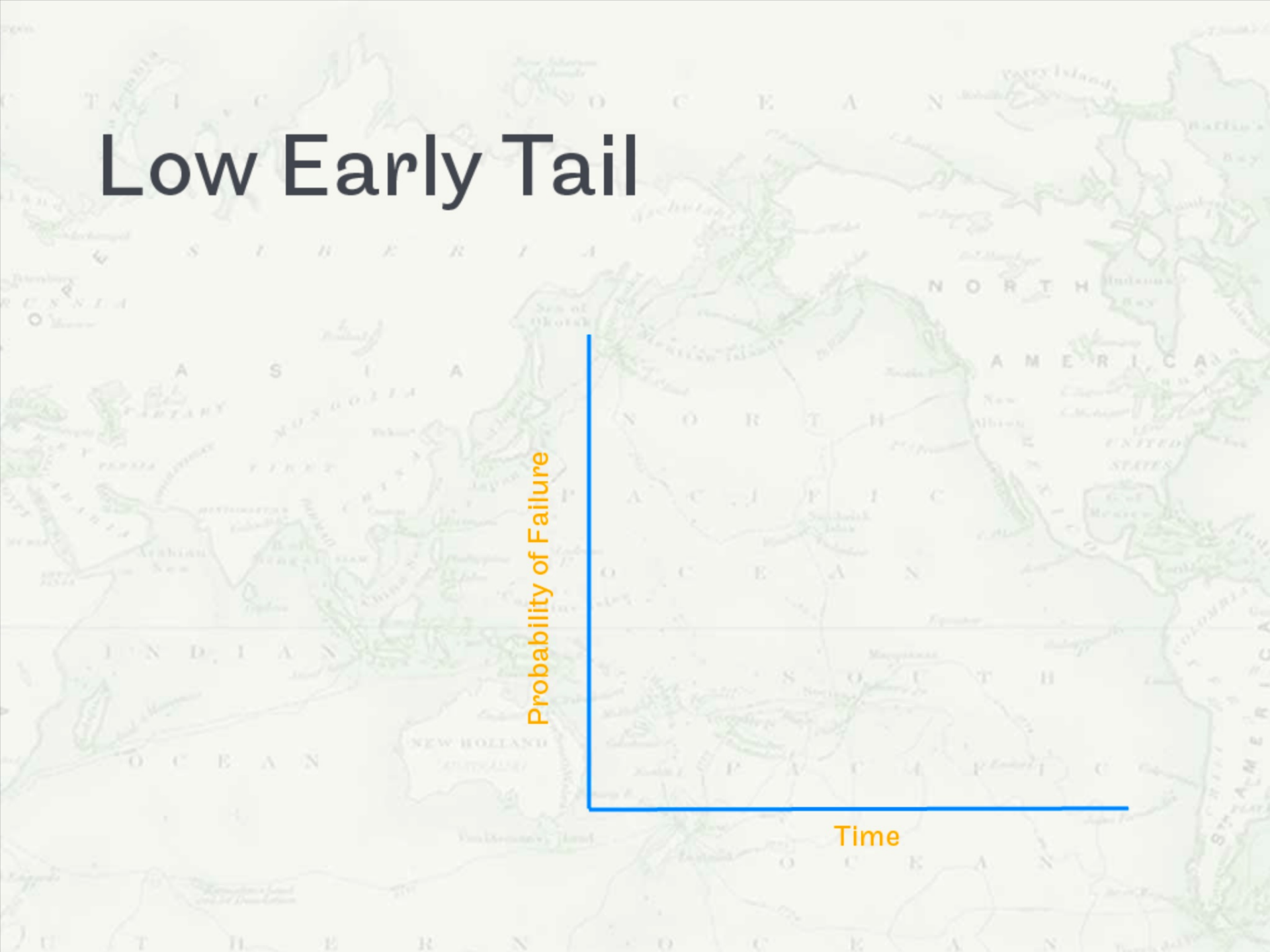
Time



Low Early Tail

Probability of Failure

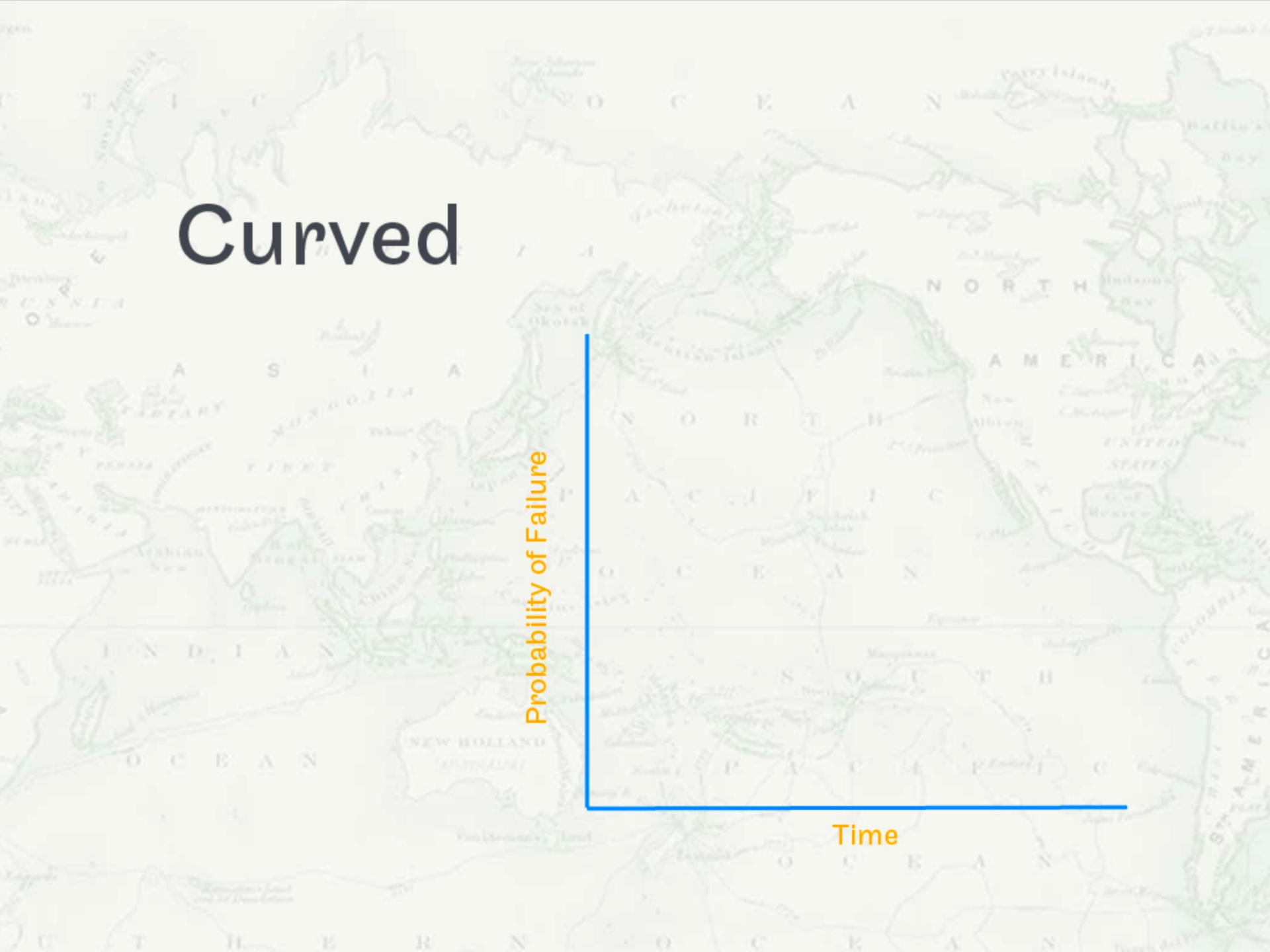
Time



Curved

Probability of Failure

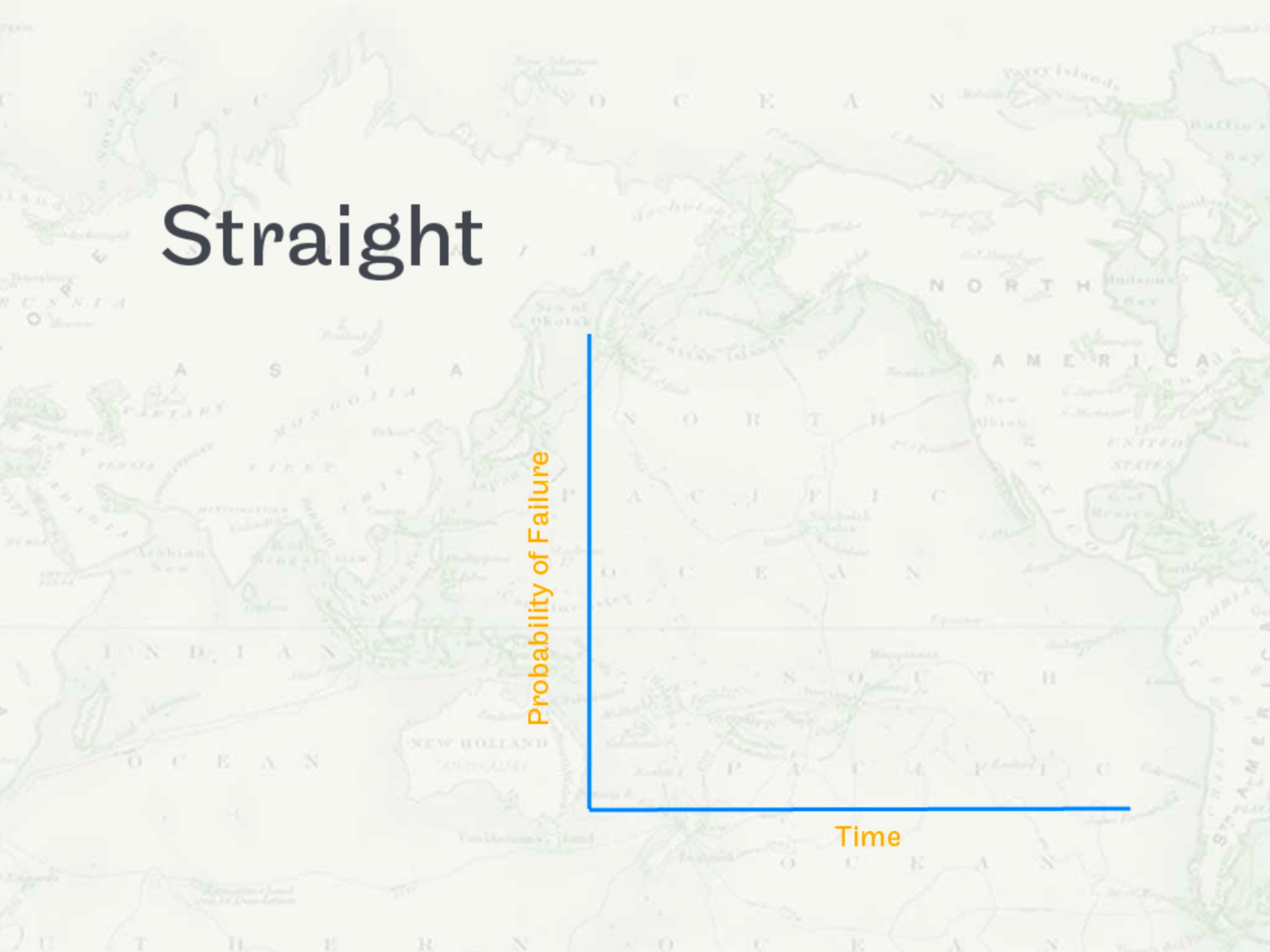
Time



Straight

Probability of Failure

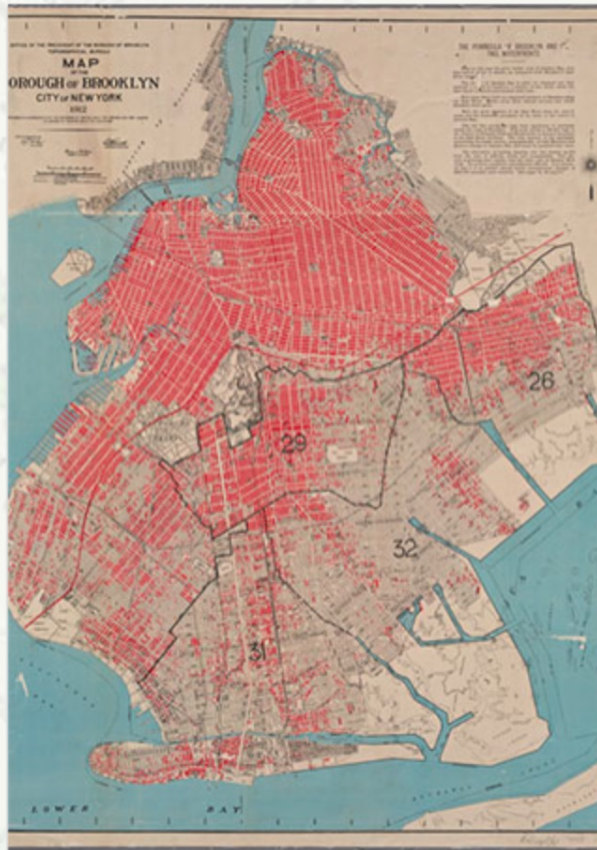
Time



How do you select
the distribution to

fit?

CDF Plots and Patterns



Life Data v Goals



Vendor Comparison

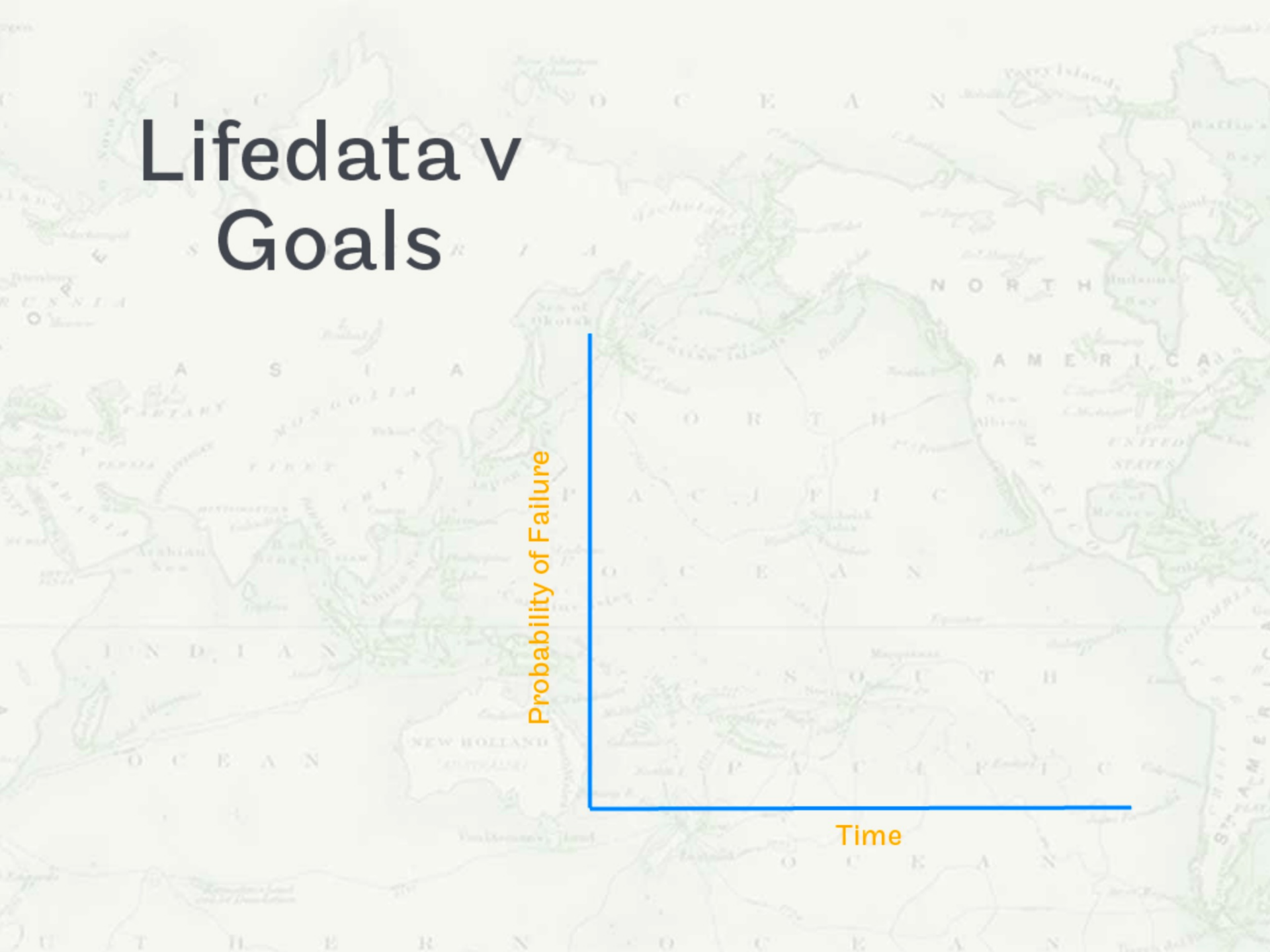


Time Based Pareto

Lifedata v Goals

Probability of Failure

Time



Vendor Comparison

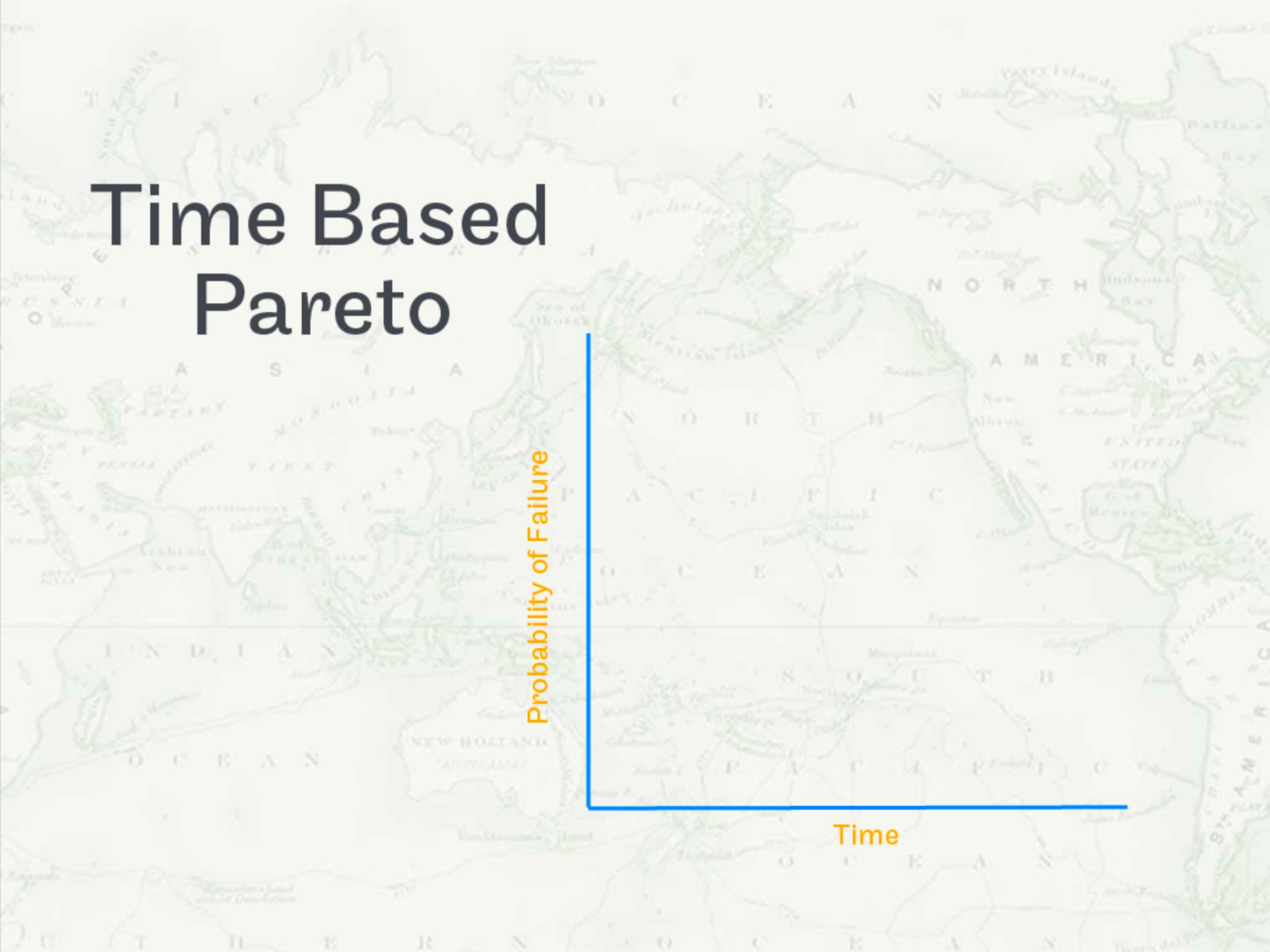
Probability of Failure

Time

Time Based Pareto

Probability of Failure

Time



What kind of better
Questions arise?

In Summary

Questions & Life Data

Ask better questions



Fit and Plot



Analysis



More Information

Visit [AccendoReliability.com](https://www.AccendoReliability.com)

Let me know if you have any questions.

Check out the reliability engineering podcast network at [Reliability.FM](https://www.Reliability.FM)

Continue to explore your reliability performance measures and make improvements.