CSX415
Data Science Principals and Practice
Project Measurement

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What is a measurement?

A measure is

A **quantity**
related to a **phenomena**
that is ***directly*** observable.

For **our** purposes:
A **numeric** value captured in the data
often a count of something:

- customers,
- items,
- Dollars

Often of little (business) value by itself

What is a metric?

A metric is

A **quantity**

related to a **phenomena**

calculated from one or more measurements

that is related to the (perceived) **value** of that phenomena

For **our** purposes:

A metric can also be a measure

A metric **(not measure)** is important to the business and outcome of our model.

How do we decide what our metrics is?

Aside ...

You may have heard this …

You can have it **cheap, good, fast**

…

pick any two


GOOD
FAST
CHEAP
THIS
DOESNT
EXIST

Cheap
Good
Fast

It is not simply an adage:

It tells us the potential measures of

a project

Or …

process …

Cheap
Good
Fast

It is not simply an adage:

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a project

Or …

process …

Cheap

Good

Fast

Cheap relates to any of

- **Cost**
- **Return / Revenue**
- **Profit** (Revenue – Cost)

This is usually about counting dollars or effort.

Cheap

Good

Fast

Good relates to **quality**

Number of good parts produced

Number of complaints

Number of failures

Usually pertains to counting successes or failures.

Cheap

Good

Fast

Fast relates to **speed/volume**

Quantity produce

Time spent

Usually pertains to through-put of a process.

These are the (type of) measures we can have

Cost

Quality

Volume

They are related

$$cost \sim quality + volume$$

etc.

That is if someone pulls a **lever** to decrease cost

At least one of the following is expected to happen:

- Quality suffers or,
- Volume decreases

Unless there is a new technology

How do we ***decide*** what our metrics is?

Usually the desire is to **improve one of the measures**

… but because of the relationship cannot (generally) often consider just one.

How do we ***decide*** what our metrics is?

Usually we are interested in improving one of the **measures**

… but because of the relationship we generally cannot use just one.

Consider ratio metrics …

Management Ratio
Have one type of measure in the numerator and another in the denominator

Example(s)

These are very often given special names

Cost / Quality

Cost / Volume

Quality / Cost

Quality / Volume

Volume / Cost

Volume / Quality