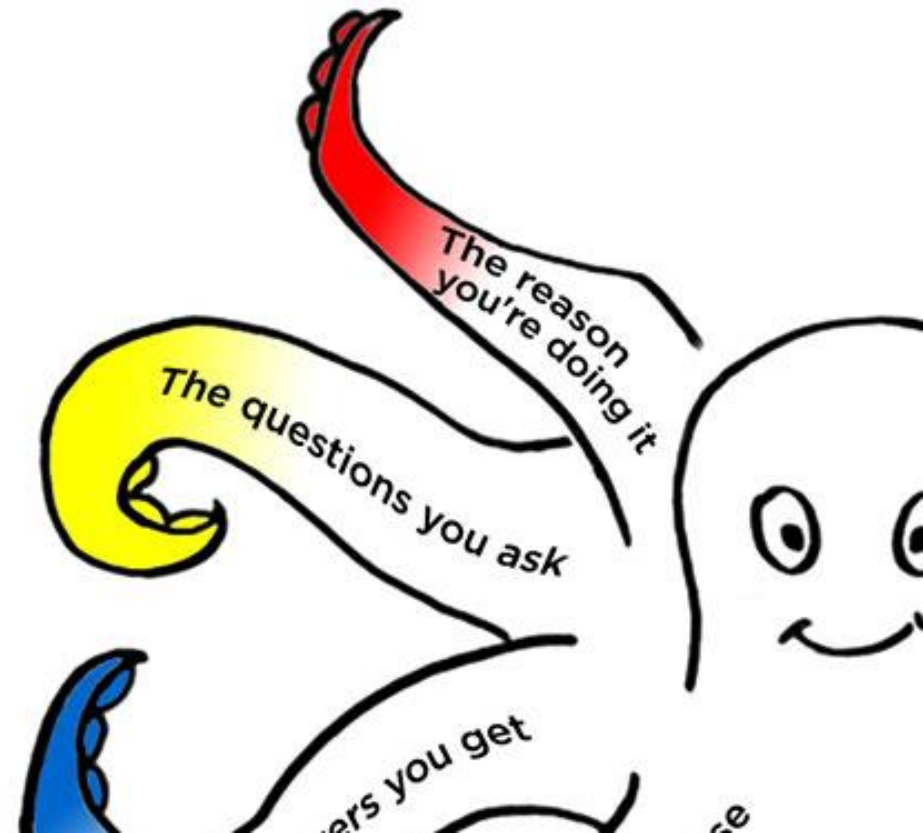


Surveys that work

Session 3 of 3

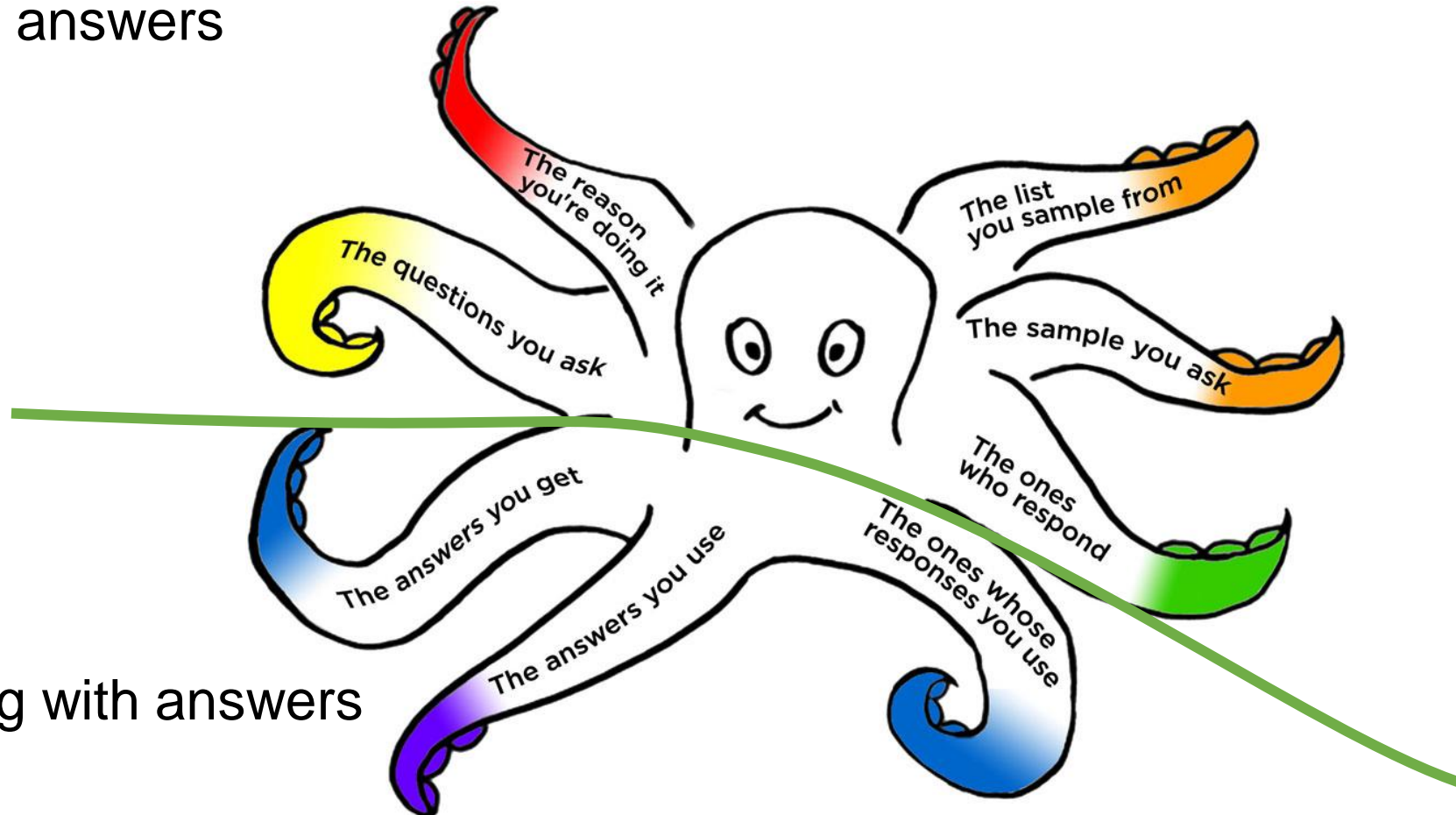
An introduction to
the Survey Octopus
and Total Survey Error

Caroline Jarrett
@cjforms
#surveysthatwork2022



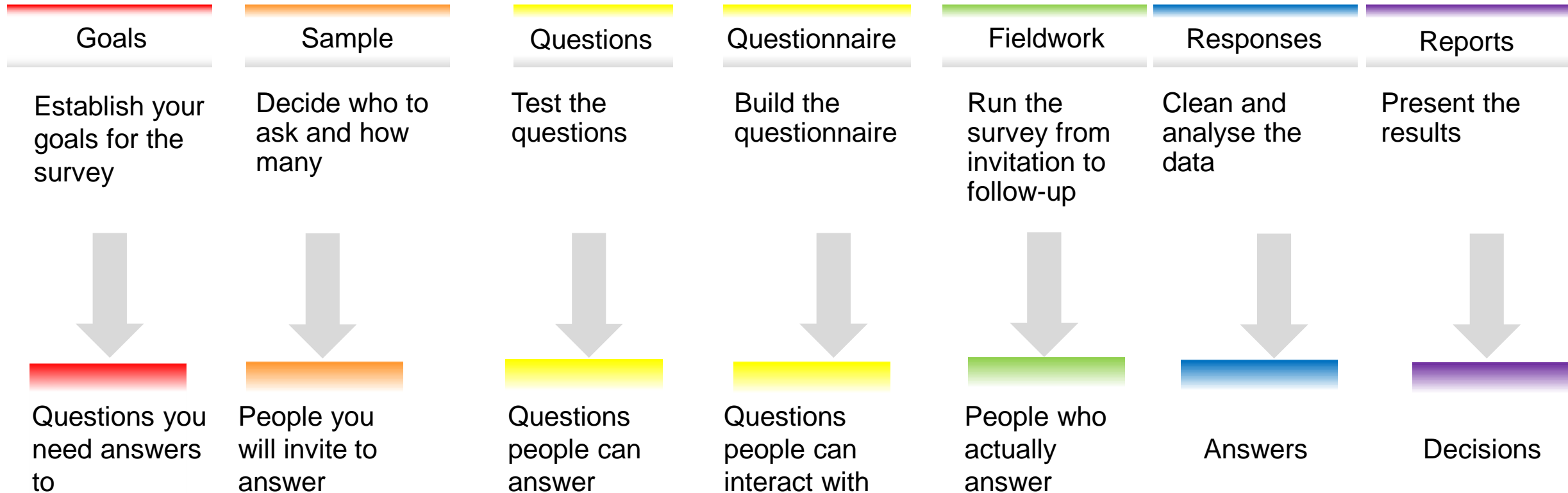
Let's have a quick reminder of the Survey Octopus

Getting answers



Working with answers

Here are the 7 steps as a linear process



Today we work with answers

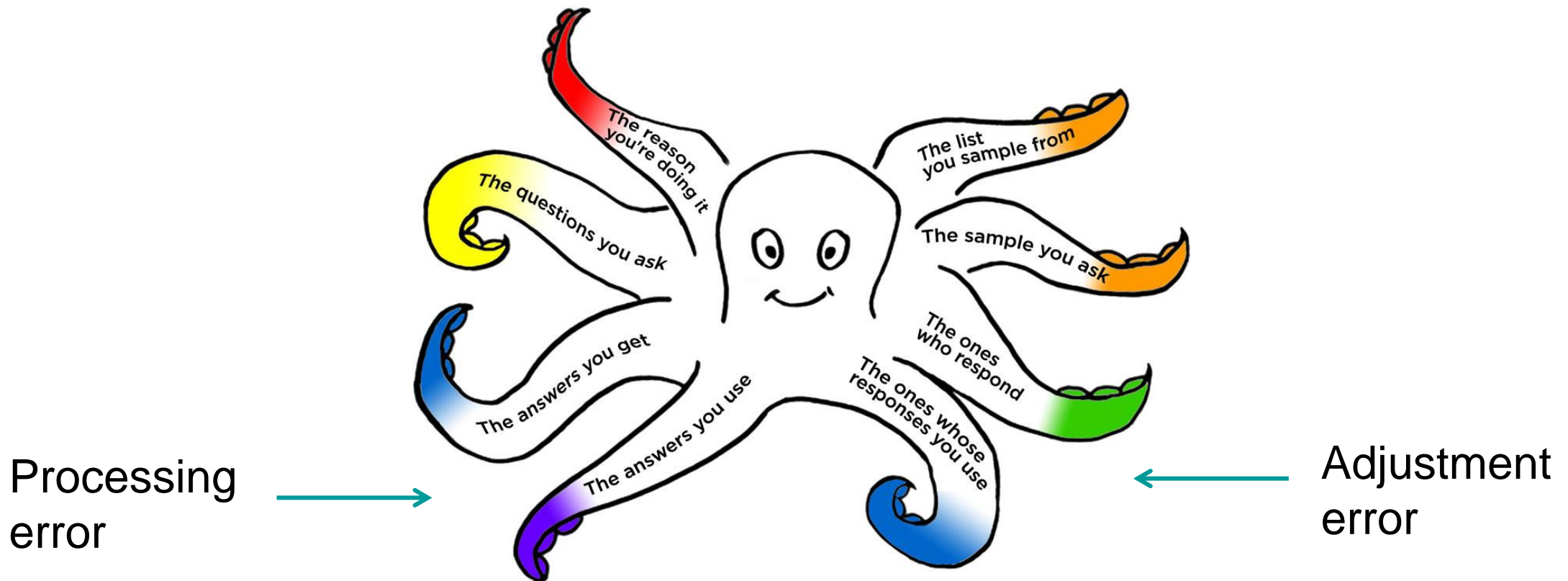
Goals	Sample	Questions	Questionnaire	Fieldwork	Responses	Reports
Establish your goals for the survey	Decide who to ask and how many	Test the questions	Build the questionnaire	Run the survey from invitation to follow-up	Clean and analyse the data	Present the results
Monday		Yesterday			Today	

Cleaning data

I use these terms (mostly)

A response	the entire set of answers from one person
An answer	the answer to a specific question
Adjustment error	happens when you make less than perfect choices about whose responses to include
Processing error	happens when you make less than perfect choices about which answers to include

Cleaning data is about deciding what to use



Clean your data

- Read the answers to make sure that they make sense compared to the questions
- Look for gaps and missing entries
- Remove any (unintended) duplicate responses



Image credit: Shutterstock

Datasets always need some cleaning

Examples of problems within answers

- Leftover test data that has not been removed
- Curly quote ' turned into %oÛ^s
- “Not safe for work” language
- Names and email addresses of individuals in open box answers
- Numeric answers outside of plausible ranges

Examples of problems with whole responses

- Incomplete responses where people broke off
- Duplicate or multiple responses from the same person
- Responses clearly from outside the hoped-for group of users

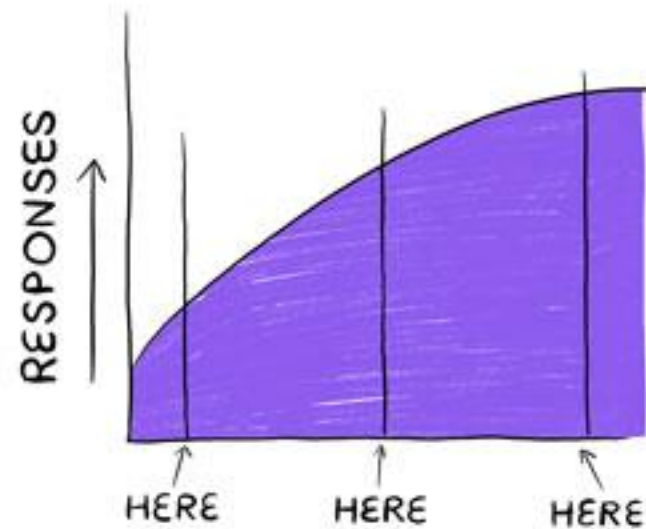


Think about – and maybe redact – personal data

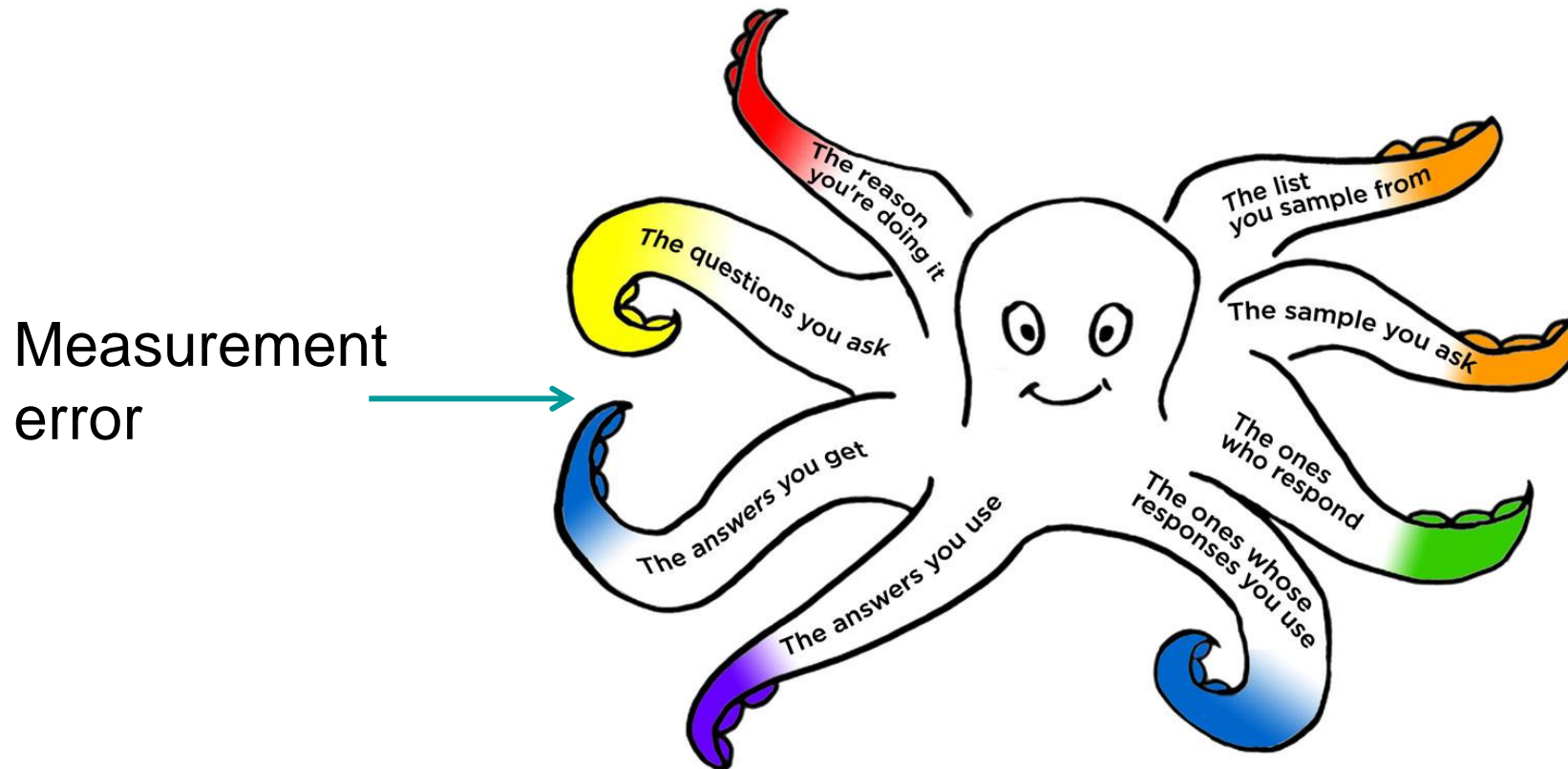
- Names, addresses, and IP addresses
- Rarer responses that create potential anonymity problems
 - Ethnic origins that are uncommon in your area
 - Countries that are infrequent in your dataset
 - Areas with smaller populations such as Alaska or Hawaii
 - Genders that are less often seen in your dataset
 - Unusual occupations
 - “alpaca breeder” outside the Andes
 - “forms specialist” is likely to be me



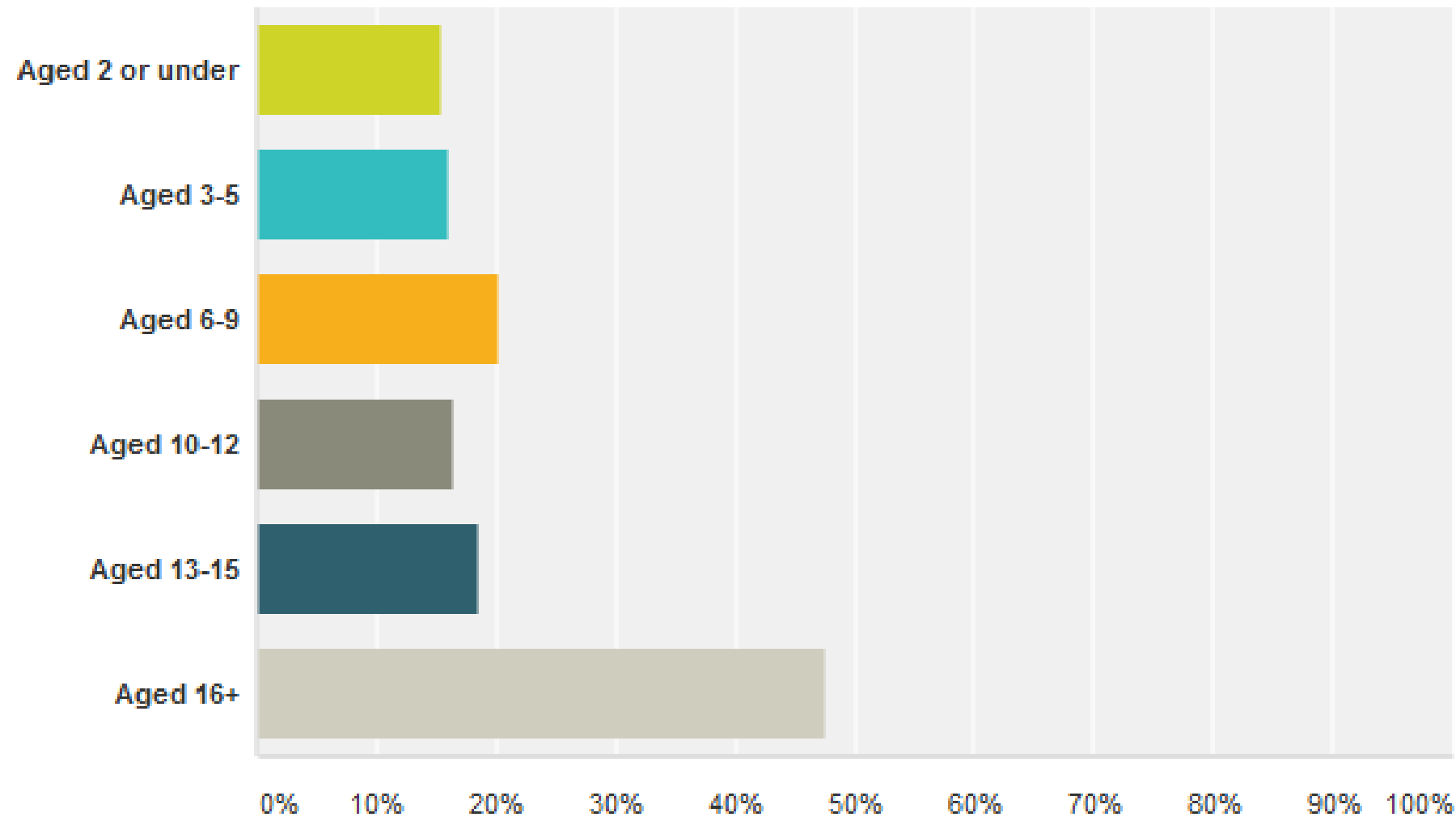
Start analysing when you have any responses



Answers can also reveal problems with questions



Are you a parent or guardian of a child in any of the following age bands (please tick all that apply)?



Look after your data

- Data analysis can take a long time; you won't want to repeat it
 - Make copies of your data, especially before any drastic change
 - 'Undo' doesn't always work on large files
- Make notes of what you did
 - It helps if you have to defend your conclusions
 - It's hard to remember the details a year later



My logs have dates, activity, worksheet

	A	B	C
1	Date	Observation/note/activity	Relevant worksheet
2	22-Jul	Remembered to set up a log page for this dataset; catching up with some things I've already done	
3	22-Jul	Data sent by client around two weeks ago. Redacted personal data.	Private data
4	22-Jul	Set up a 'Columns' sheet that describes the columns currently in use	Columns
5	22-Jul	Renamed several columns to shorter names for analysis purposes	Columns
6	22-Jul	Set up a 'Pivot' sheet to hold all the pivot data	Pivot
7	22-Jul	calculated time to complete in minutes	Time to complete
8	22-Jul	set up a column that topped out time to complete at 'over 1hr'	Columns
9	22-Jul	found a couple of entries that had unrealistic time to complete	
10	22-Jul	changed the IP address column to exclude those unrealistic entries	Columns/use of 'exclude' in former IP address column
11	22-Jul	Added in client's research questions	Research questions

Dealing with missing data

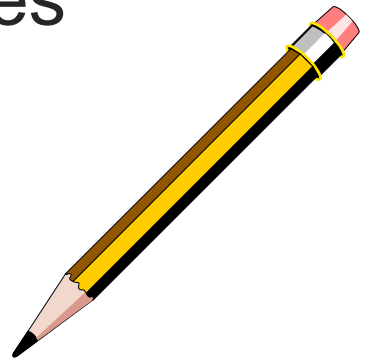
Here is a dataset

- It's the first 30 responses to a survey
- I've already redacted all personal information
- I also added a column 'Refno' to help keep track of each entry

Refno	StartDate	EndDate	IPAddress
1	7/2021 03:31	7/2021 03:53	138.239.90.1
2	7/2021 03:43	7/2021 03:57	31.108.178.2
3	7/2021 01:58	7/2021 02:18	164.172.134
4	7/2021 04:04	7/2021 04:18	181.172.119
5	7/2021 03:55	7/2021 04:19	126.207.154
6	7/2021 06:58	7/2021 07:07	104.205.240

Have a go at data cleaning

- You're going to try the next stage of data cleaning
- Your next decisions are about responses
 - Which columns would you remove? Why?
 - Would you rename any columns? To what?
 - Which entries would you remove? Why?
- Someone in each group be ready to tell us all your choices
- 10 minutes

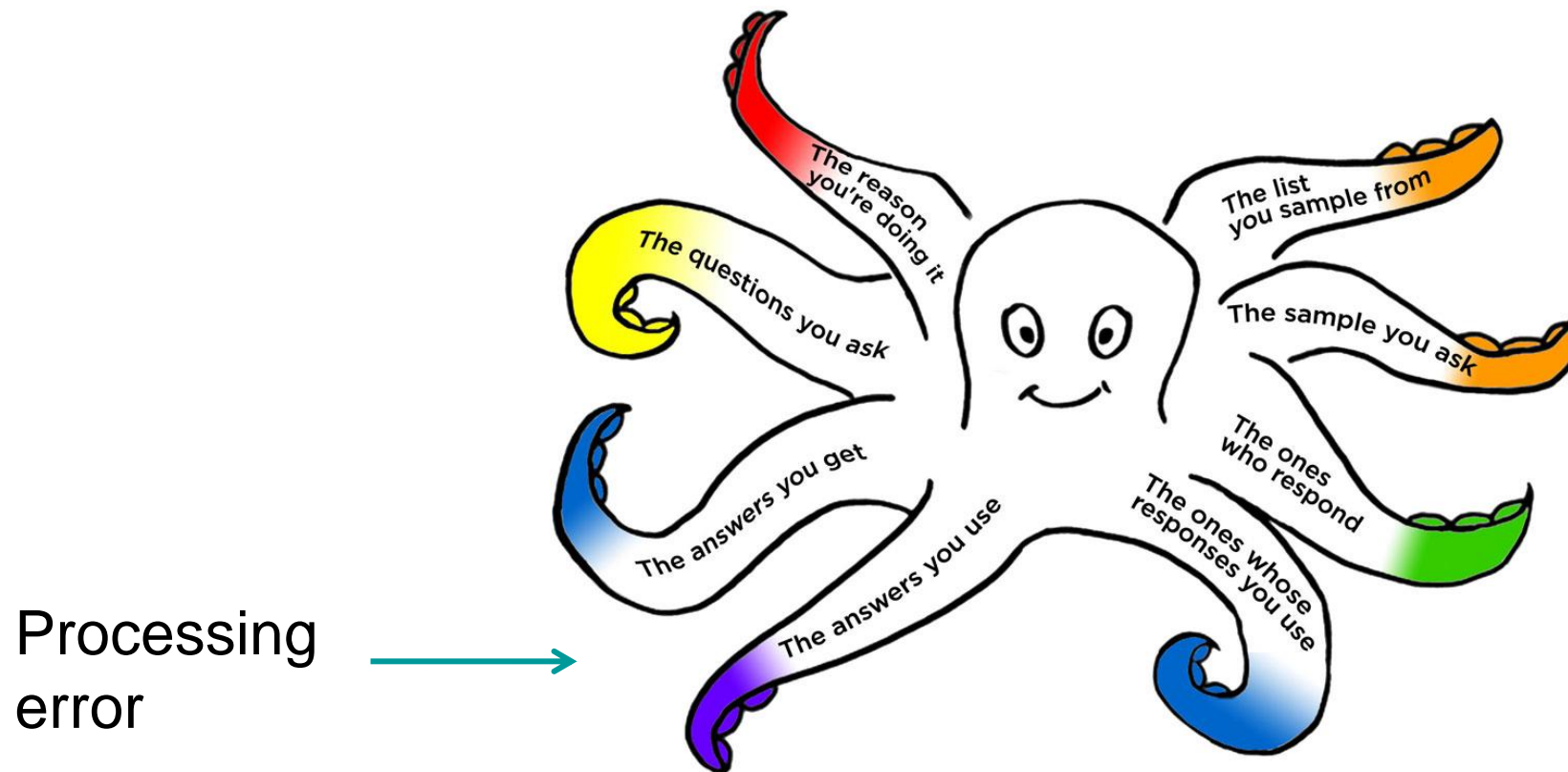


Decide what to do when people have skipped questions or dropped out

- Remove the whole of that person's response
- Use the partial responses, and accept that your number of responses is lower for some questions
- Calculate an “imputed value”
 - Include a flag showing that the value is calculated
 - Estimate the most likely value using the other data

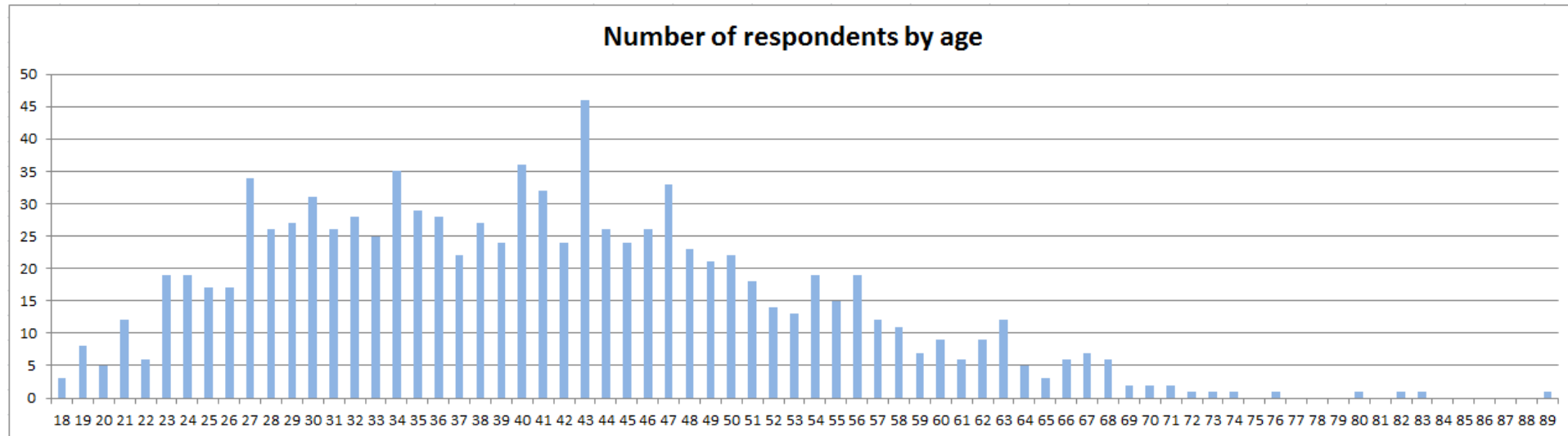


You can interpret data well – or poorly

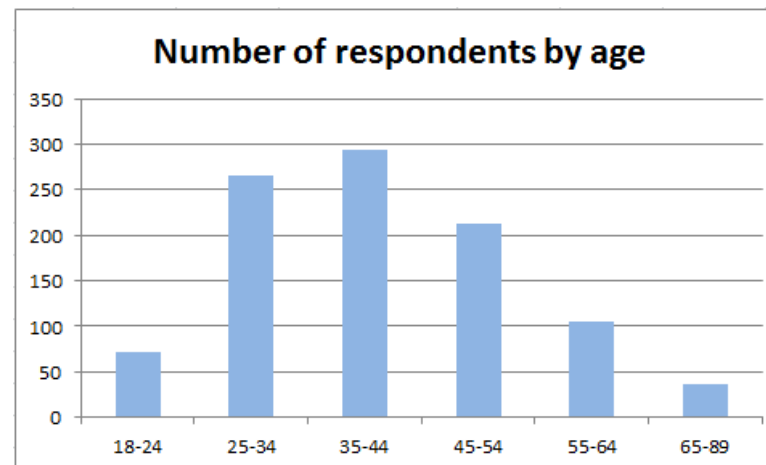
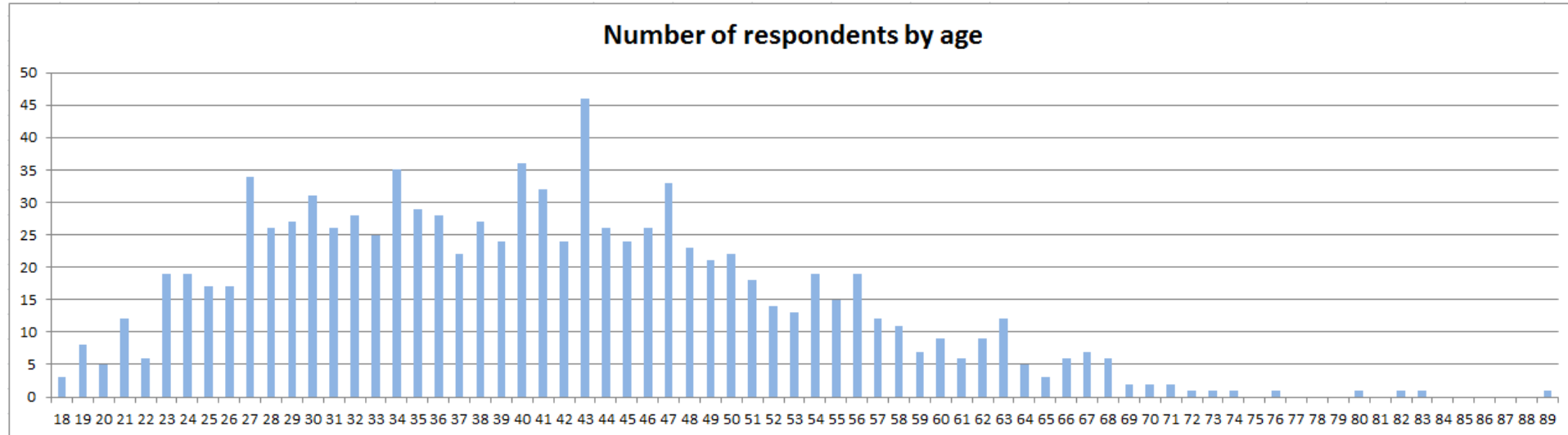


Dealing with numeric answers

Explore your data and ask questions

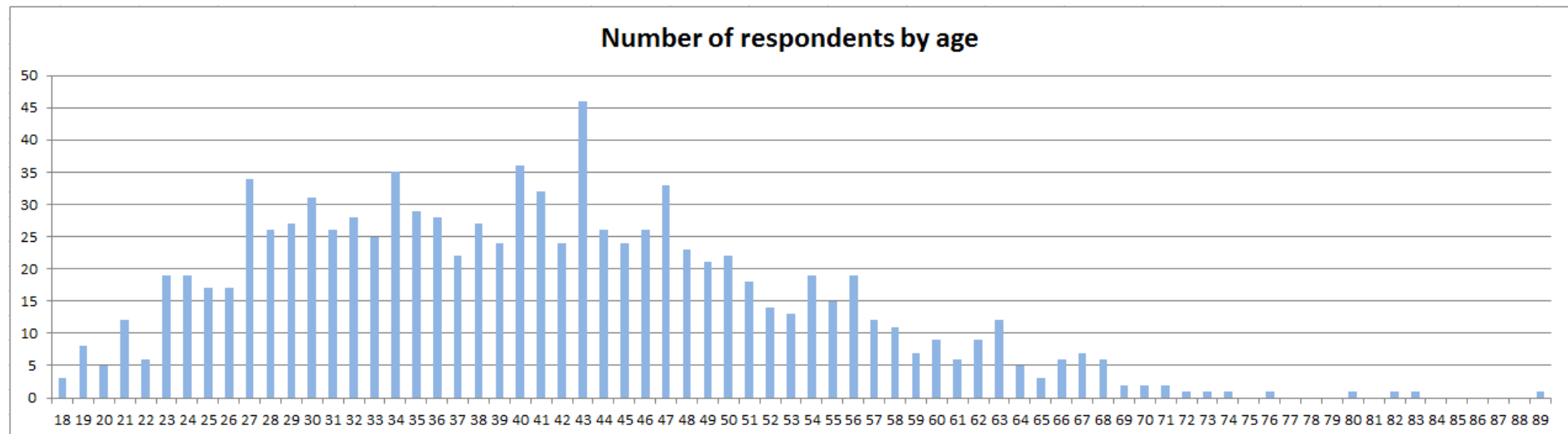


Explore your data and ask questions



Use descriptive statistics to explore numerical data

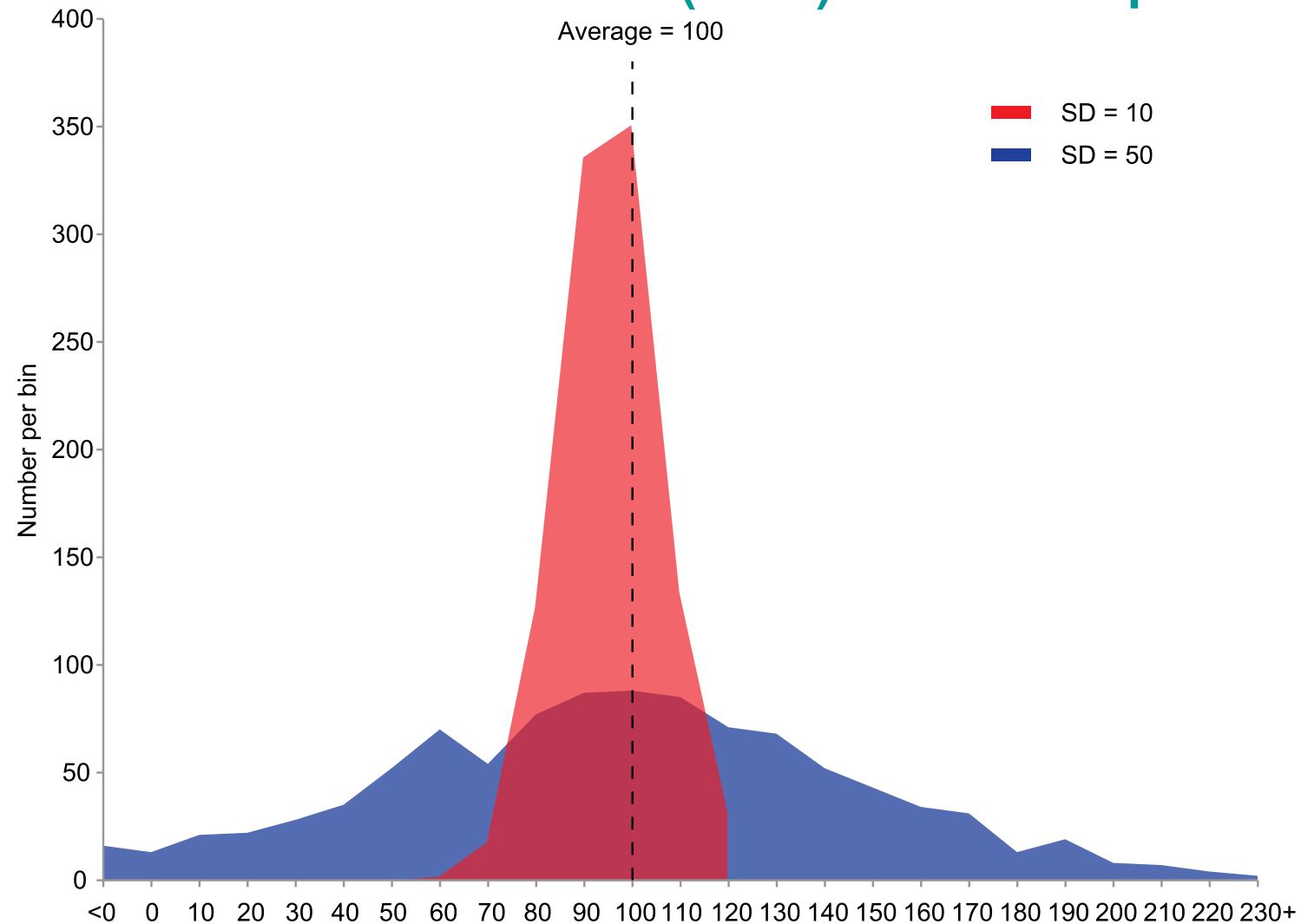
- Useful for thinking about the data
 - Range (lowest to highest) 18 to 89
 - Mode (most common answer) 43
 - Median (middle answer) 39



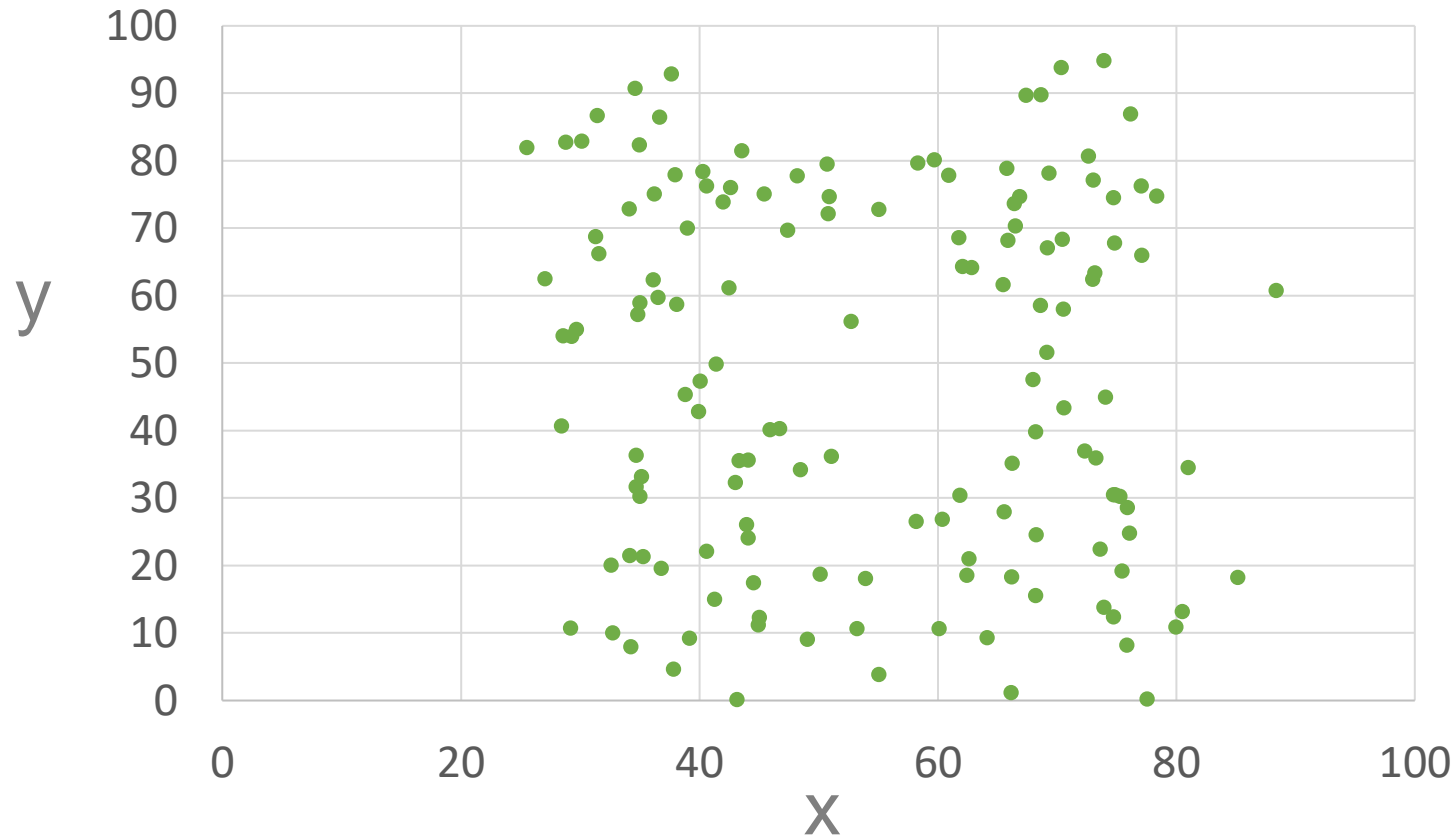
Use descriptive statistics to explore numerical data

- Useful for thinking about the data
 - Range (lowest to highest)
 - Mode (most common answer)
 - Median (middle answer)
- Most seen for statistics
 - Mean (arithmetic average)
 - Standard deviation (spread of answers)

Standard deviations (SD) show spread

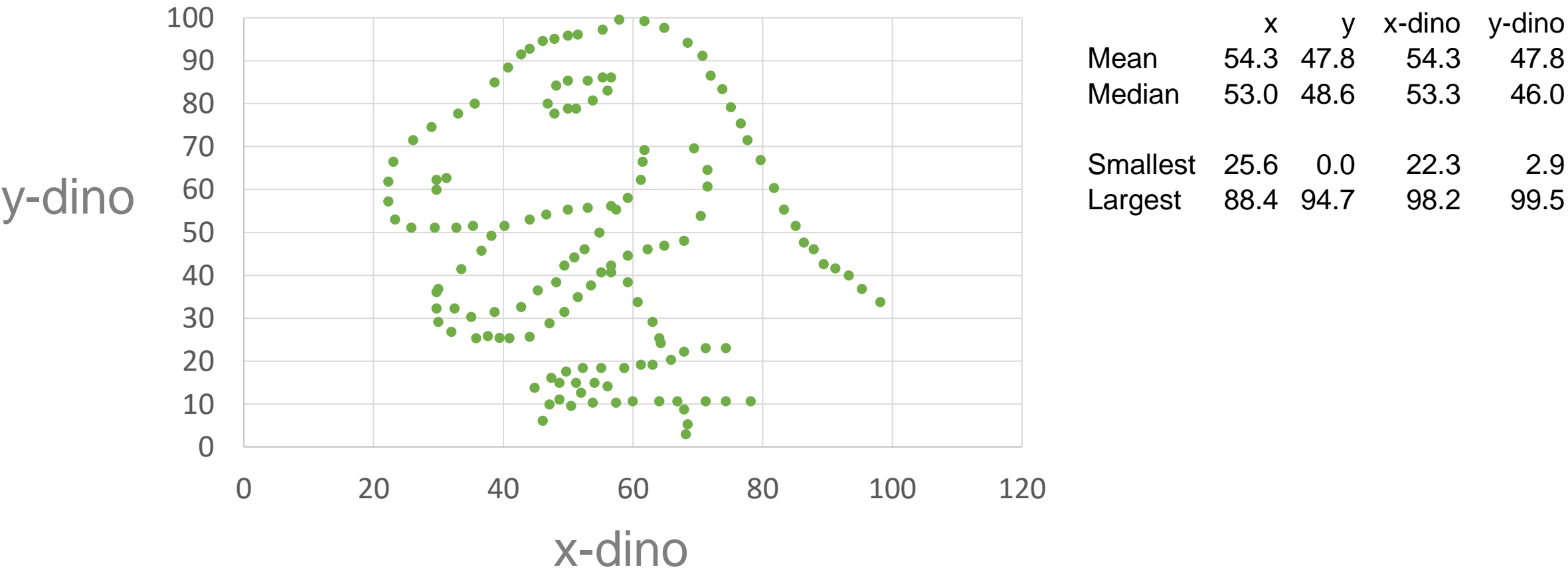


Justin Matejka has a set of images, like this one

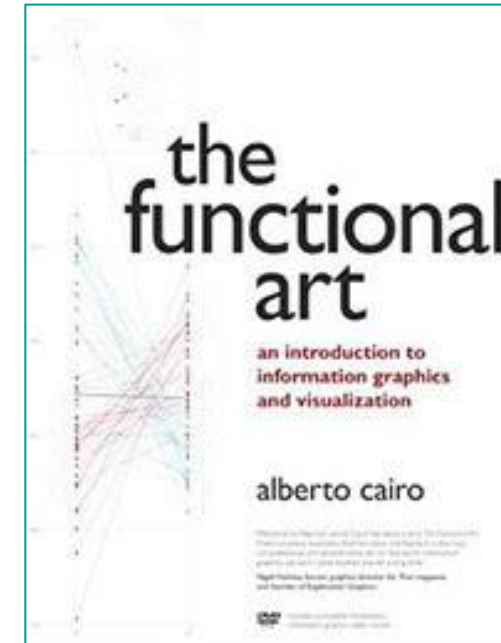
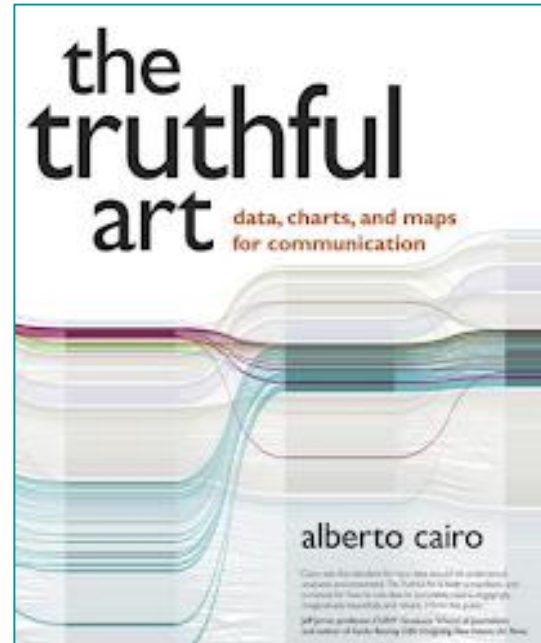
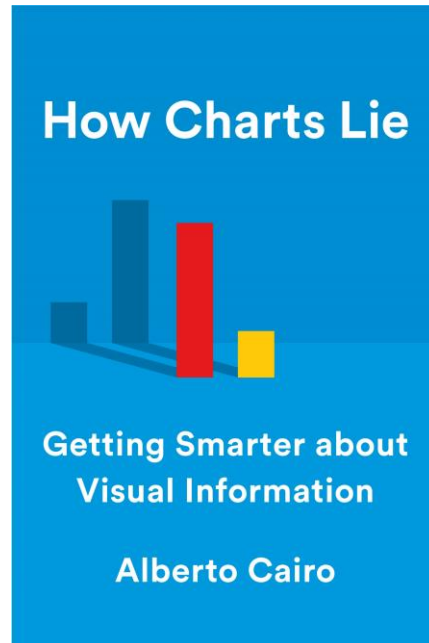


	x	y	x-dino	y-dino
Mean	54.3	47.8	54.3	47.8
Median	53.0	48.6	53.3	46.0
Smallest	25.6	0.0	22.3	2.9
Largest	88.4	94.7	98.2	99.5

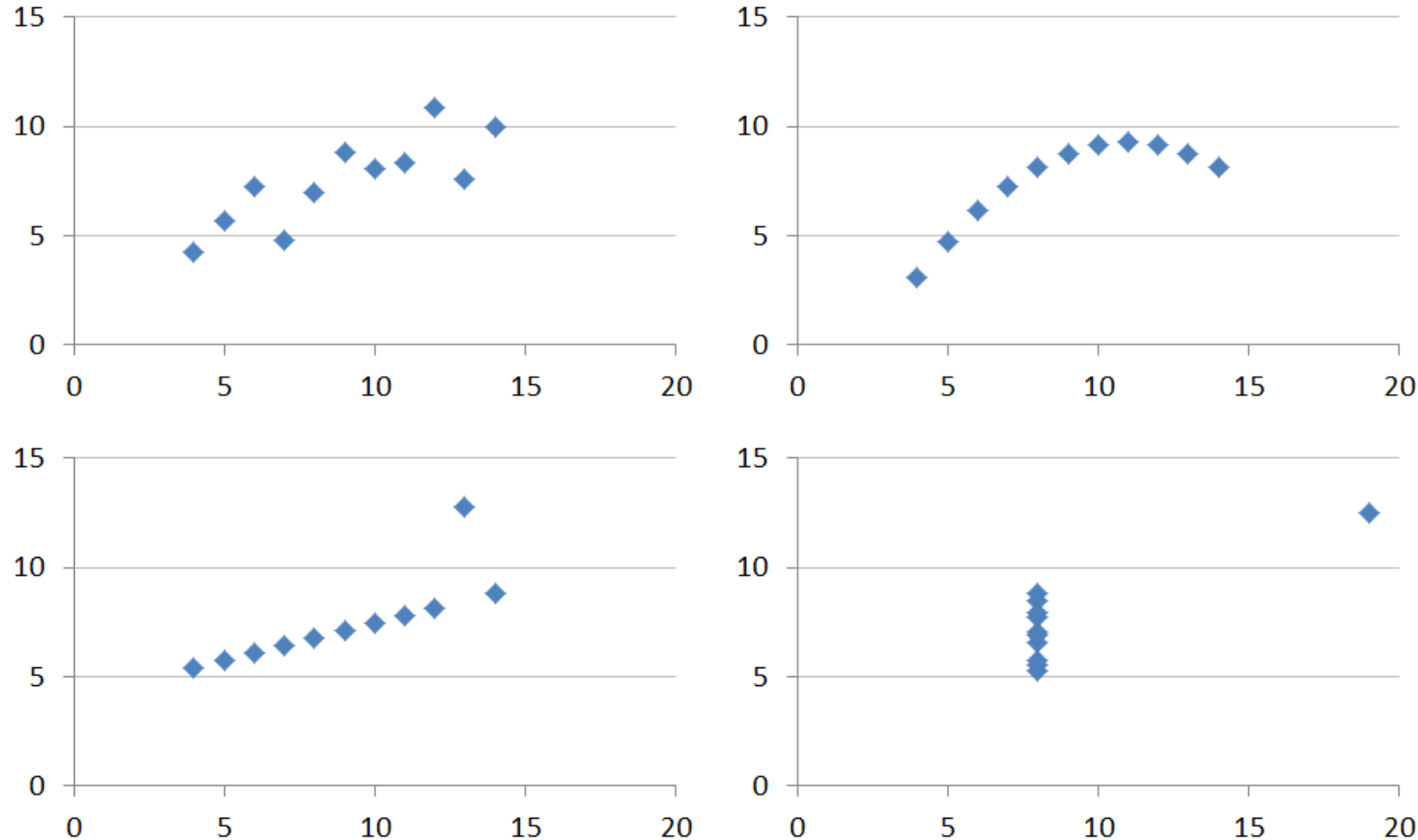
He was inspired by Alberto Cairo's dataset



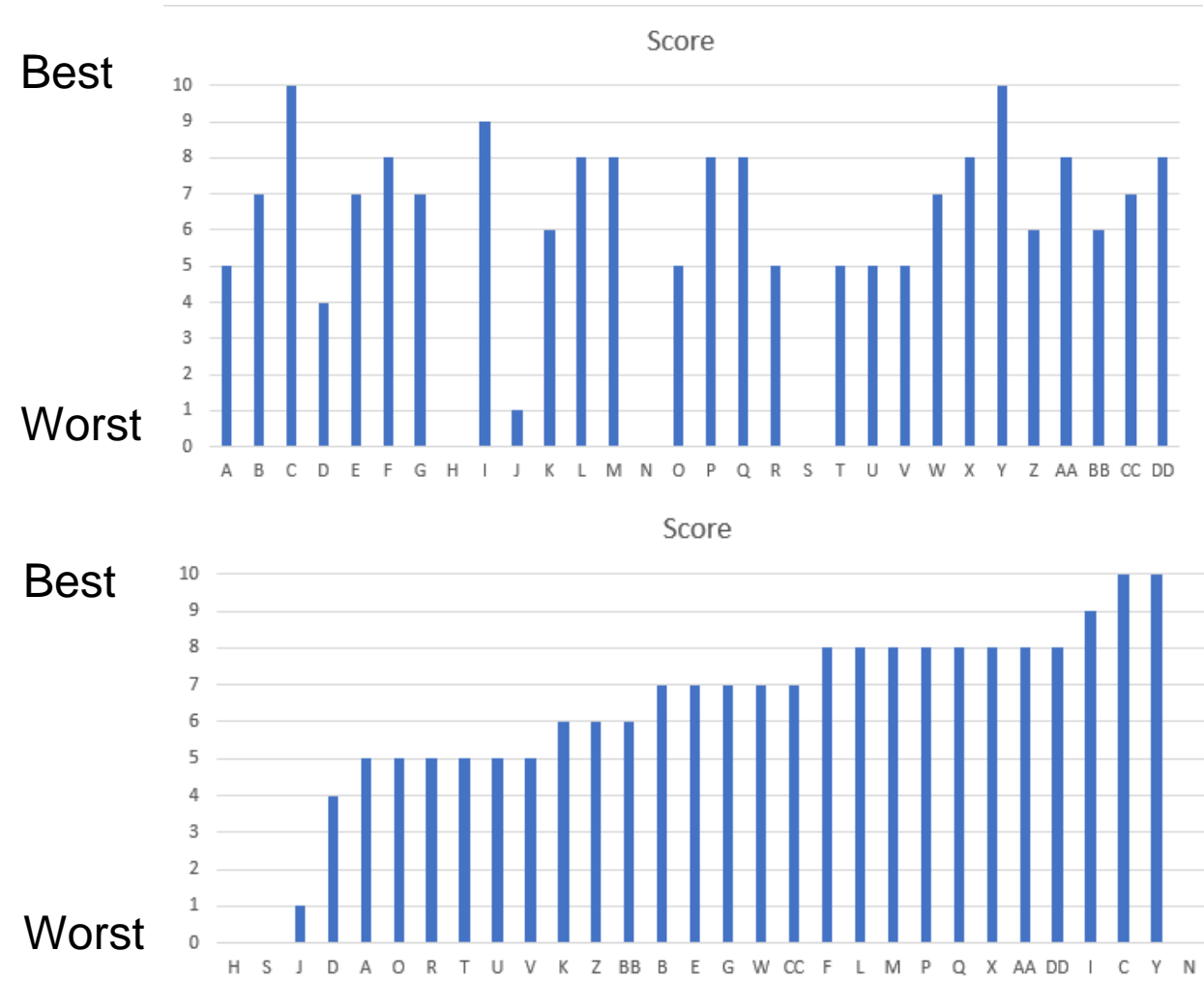
Aside: I highly recommend Cairo's books



Use graphs and charts to understand relationships in the data



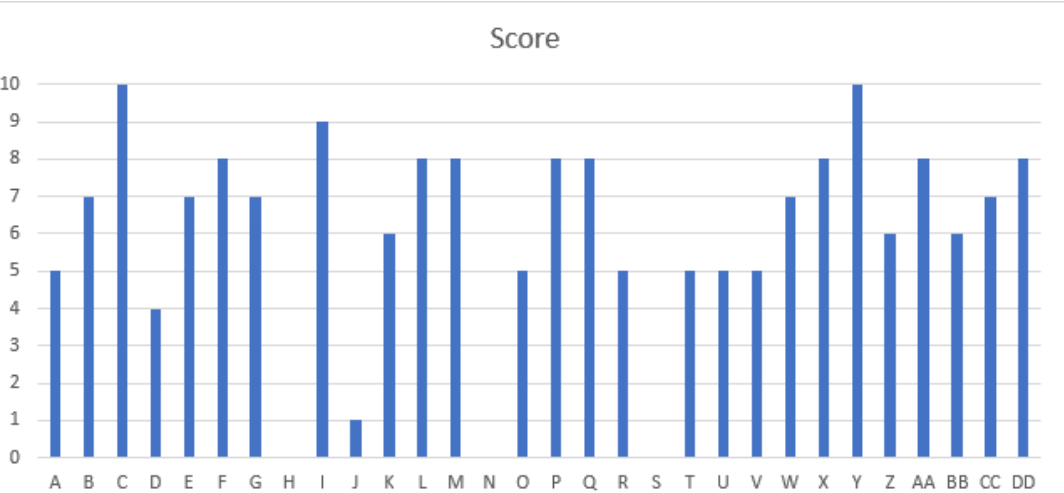
Our dataset has this distribution of scores



Mean: 6.2
Median: 7
Mode: 8
Min: 0
Max: 10

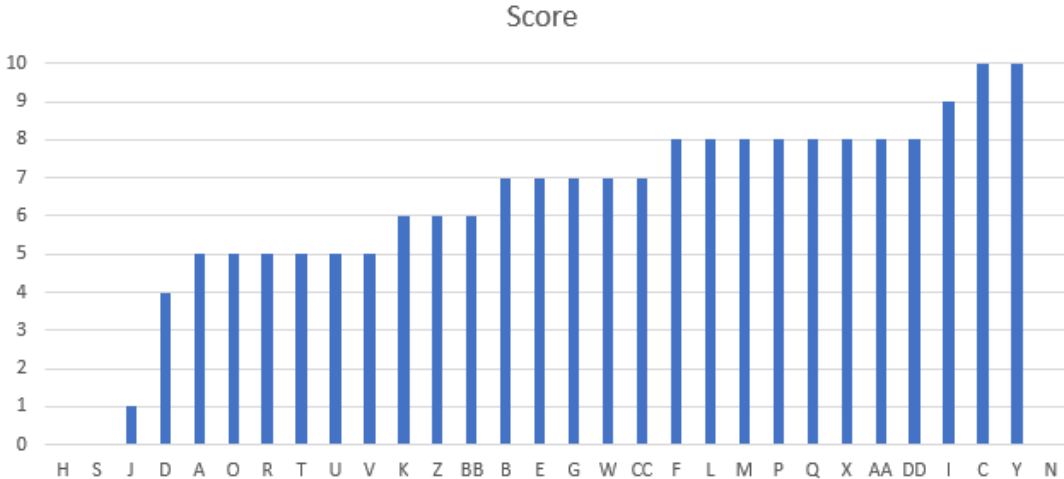
Grouping them a bit may help

Best

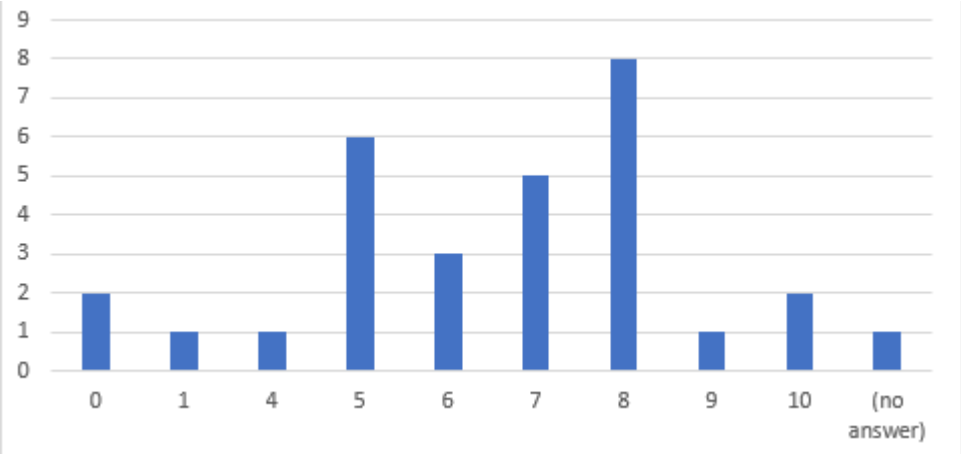


Worst

Best



Worst



Score	Respondents
0	2
1	1
4	1
5	6
6	3
7	5
8	8
9	1
10	2
(no answer)	1
Grand Total	30

Mean: 6.2
Median: 7
Mode: 8
Min: 0
Max: 10

Break

Scoring Likert items

We get a lot of analysis challenges like this

Q4 How much did you like or dislike the application process?

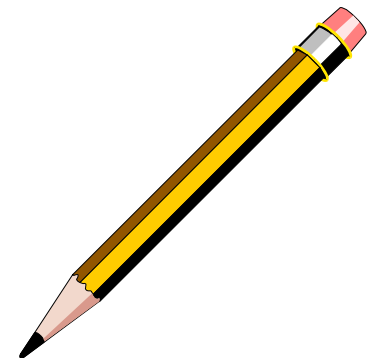
- Strongly dislike
- Dislike
- Neither dislike nor like
- Like
- Strongly Like

Dealing with rating questions

- A 'Like / Dislike' question got these responses

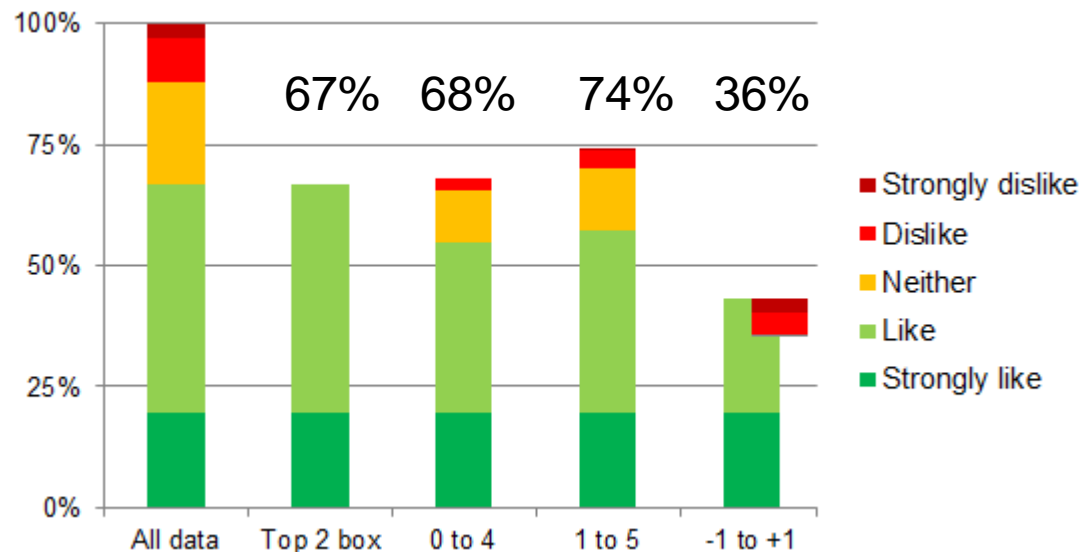
Strongly dislike	2
Dislike	6
Neither dislike nor like	14
Like	31
Strongly like	13
Total responses	66

- Please work out the percentage of respondents who are positive about the application process

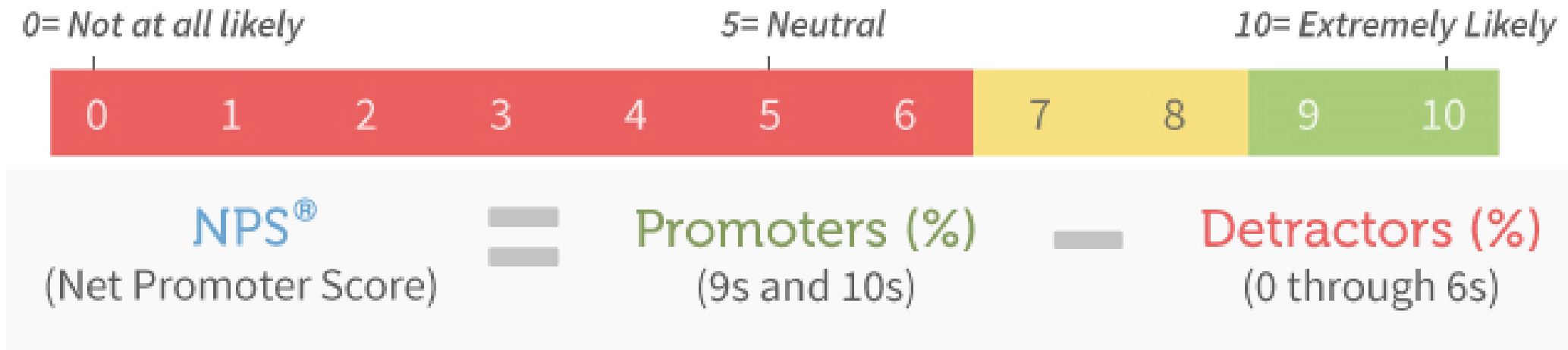


There are many ways to combine ratings into means and percentages

- 47% 31 ticked 'like' so $31/66 = 47\%$
- 67% 'Top box' / 'top 2 box' uses the positive responses $(31+13) / 66 = 66.6\%$
- 68% '0 to 4' weights responses: 0%, 25%, 50%, 75%, 100%
- 74% Likert's method '1 to 5' weights responses: 1, 2, 3, 4, 5 (then divide by 5)
- 36% '-1 to 1' weights responses: -100%, -50%, 0, 50%, 100%



Net Promoter Score® has a special analysis method

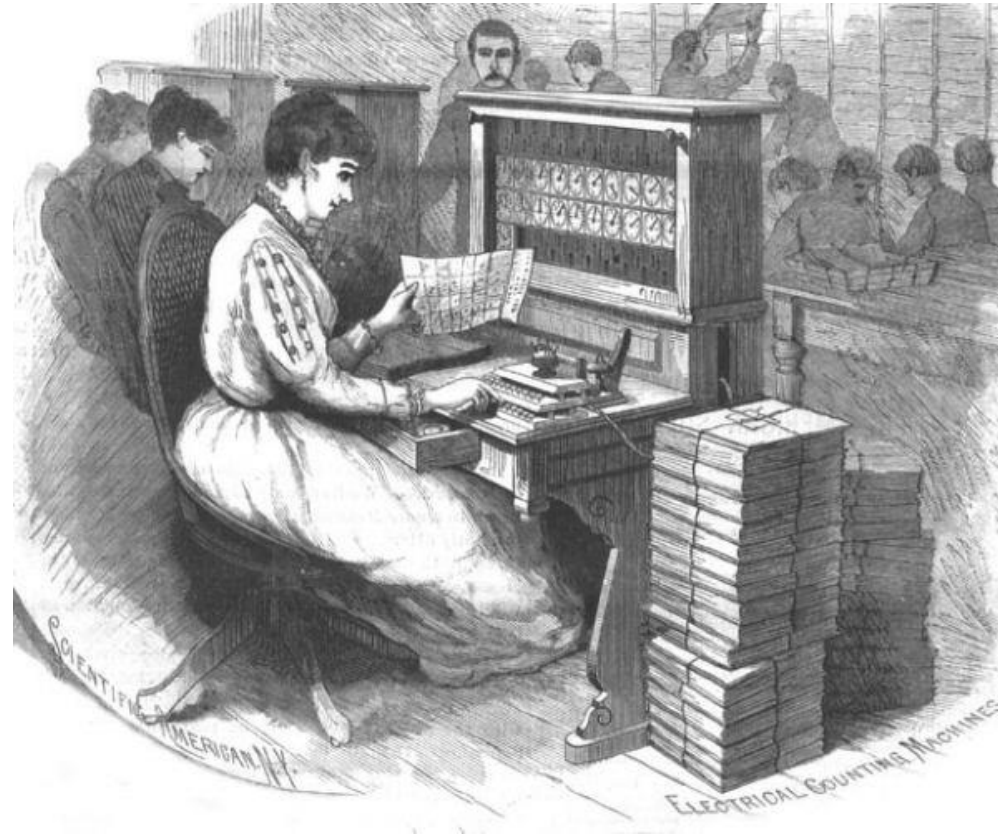


Takeaway

Decide on how you will calculate the number(s) in the result **BEFORE** you collect the data

Dealing with open answers

Typing in the answers is “coding”



If you ask for answers,
plan to read them and think about them

The screenshot shows the Suttons Seeds website. The header includes the Suttons Seeds logo (Est. 1806), contact numbers (0844 922 2899 for customer services, 0844 922 0606 for orders), a search bar, and links for sign in/register, my account, and a shopping basket (1 item £1.45). The main navigation bar lists categories: Home, Vegetables, Flowers, Garden Equipment, Fruit, Perennial Plants, Special Offers, and Garden Advice and Help. The breadcrumb trail reads: Home » Gardening » Vegetables » New Vegetables for 2012 » Brussels Sprout Continuity Collection. The product page features a large image of Brussels sprouts, the title 'Brussels Sprout Continuity Collection', code 216121, and a harvest period of October-February. A description states the collection contains 18 plants (6 of each variety): Nautic (a vigorous, high-yielding early variety with good standing). A pack of 18 plug plants (6 of each variety) is shown with a quantity selector set to 1 and an 'Add to Basket' button for £6.99. A feedback pop-up titled 'Help us improve' is overlaid, asking for user opinion and featuring a text input field and a 'SUBMIT' button.

SUTTONS SEEDS
Est. 1806

0844 922 2899
(Customer Services)
8.30am to 5pm, Mon to Fri

0844 922 0606
(Orders only)
24hrs a day, 7 days a week

Plant Despatch Schedule

Sign In / Register | My Account

1 item £1.45
View Basket

Enter Search Here Go

Home | Vegetables | Flowers | Garden Equipment | Fruit | Perennial Plants | Special Offers | Garden Advice and Help

Home » Gardening » Vegetables » New Vegetables for 2012 » Brussels Sprout Continuity Collection

Brussels Sprout Continuity Collection

Code: 216121

Harvest October-February

Collection contains 18 plants (6 of each variety): **Nautic** (a vigorous, high-yielding early variety with good standing)

Pack of 18 Plug Plants (6 of each variety)

Quantity: 1

Add to Basket £6.99

Add to wish list

to grow your own. Even the smallest patio or
at will give you a bumper crop of delicious fresh

Help us improve

We value your opinion.
What do you like about our site and what can we improve on?

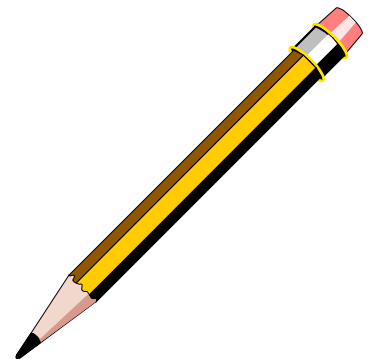
Click here to type...

SUBMIT

Name four things that appear in this picture



René Magritte "L'Histoire centrale" ("The heart of the matter"), Dexia Collection



This is from a case study on inter-coder reliability

Case Study: Six untrained coders were invited to describe the picture below ('The Heart of the Matter', by Rene Magritte). Each coder was allowed 15 minutes in which to select appropriate codes from the **Art and Architecture Thesaurus (AAT)** from the **Getty Museum**. The resulting codings are shown below.



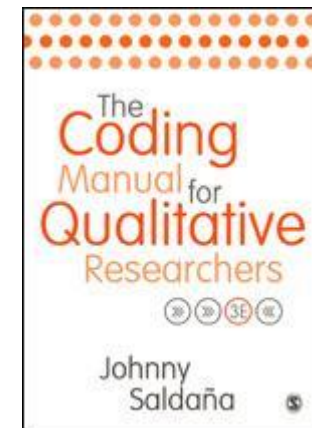
Rene Magritte: 'The Heart of the Matter'

CODER 1	CODER 2	CODER 3	CODER 4	CODER 5	CODER 6
Suitcases 46224	Suitcases 46224	Suitcases 46224 Leather 11845	Case 45659	Luggage 225937	Suitcases 46224
Brass instrument 42276	Trombones 42335	Musical instruments 41620	Trombones 42335	Trombones 42335	Trumpets 42339
Tables (support furniture) 39548		Tables (support furniture) 39548	Tables (support furniture) 39548		Tables (support furniture) 39548
Women 25943	Models (people) 25848 Arms 40237		Women 25943 Dress 46159	Women 25943	Adult 154397
	Standing 239500	Standing 239500	Standing 239500	Still lifes 15638	Standing 239500
Cloth 62391	Cloth 62391	Scarves (costume accessories) 46123	Face masks 262834 Cloth 62391	Covers (overlying objects) 246275 Head-cloths (headgear) 213003	Cloth 62391
		Brown 127490			Blue 129361

You can choose from many different coding frames

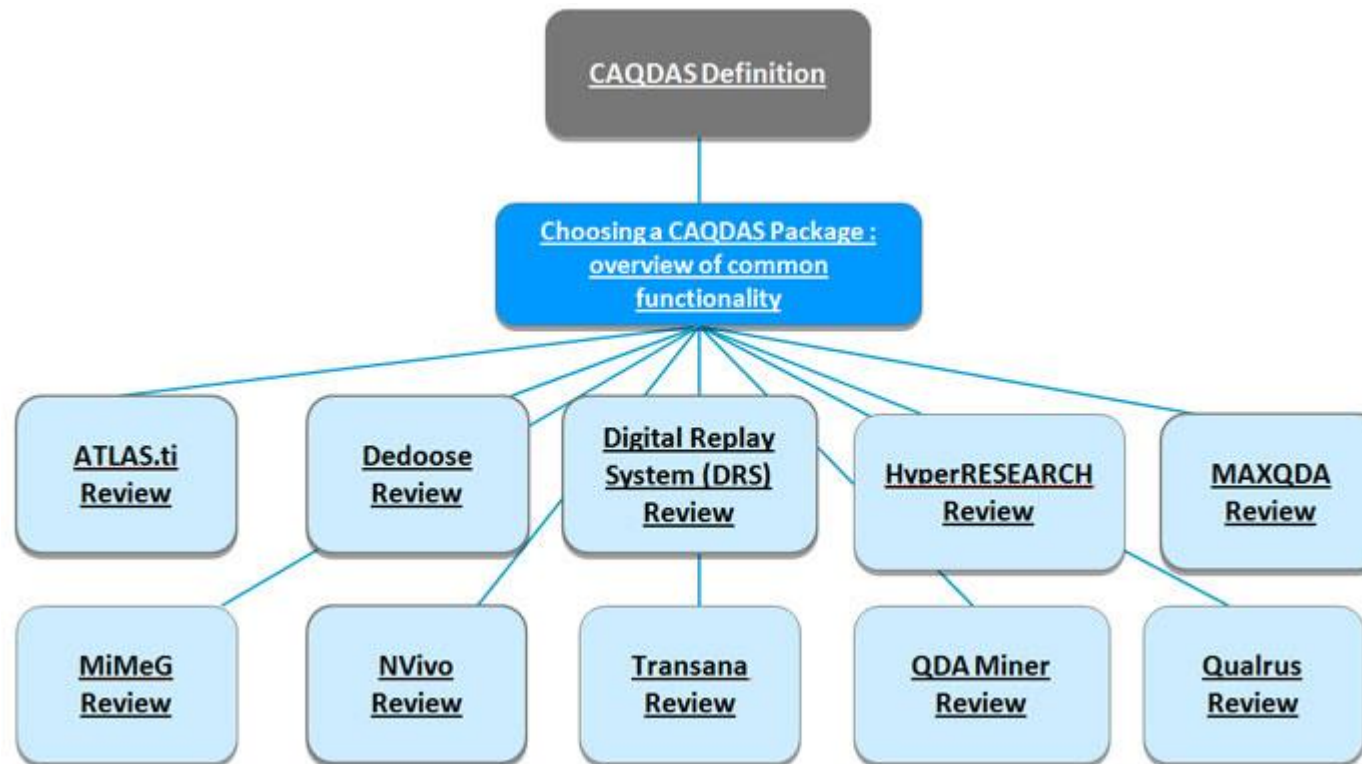
- Topic (as in the museum example)
- Positive or negative about something (sentiment)
- Who is responsible for doing something (department)
- Nuggets for the report (cherry-picking)

Johnny Saldaña lists many more in his book



CAQDAS tools can have hefty learning curves

Before buying one, look at this: [Choosing a CAQDAS package | University of Surrey](#)



Word clouds can be rather uninteresting



from a survey on usability certification

Or they can be handy to get a flavour of answers



From a survey about using
Facebook in connection with
university study
Responses coded 'positive'

I do coding for each question in five steps

- Step 1: Read a sample of the open answers
- Step 2: Decide on a coding frame
- Step 3: Apply the coding frame (phase 1 coding)
- Step 4: Think about it
- Step 5: Revise the coding frame and repeat (phase 2 coding)

What I ought to do is different

- Goals: Decide on a coding frame.
- Fieldwork: Apply the coding frame to the first few responses.
Think about it. Revise.
- Responses: Apply the better coding frame (phase 1 coding).
Think about it.
- Reports: Revise the coding frame and tweak it all again
(phase 2 coding).

You're going to try my real-life method of coding

Step 1: Read a sample of the comments

Step 2: Decide on a coding frame

Hint – I mentioned four types of coding frame

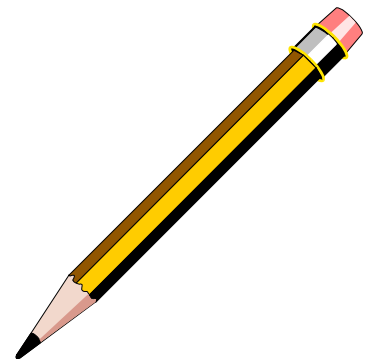
- Topic (as in the museum example)
- Positive or negative about something (sentiment)
- Who is responsible for doing something (department)
- Nuggets for the report (cherry-picking)

5 minutes



Let's see how that works on all the comments

Step 3: Apply the coding frame (phase 1 coding)
Then we'll come back and think about it together
10 minutes



We've got to the final step

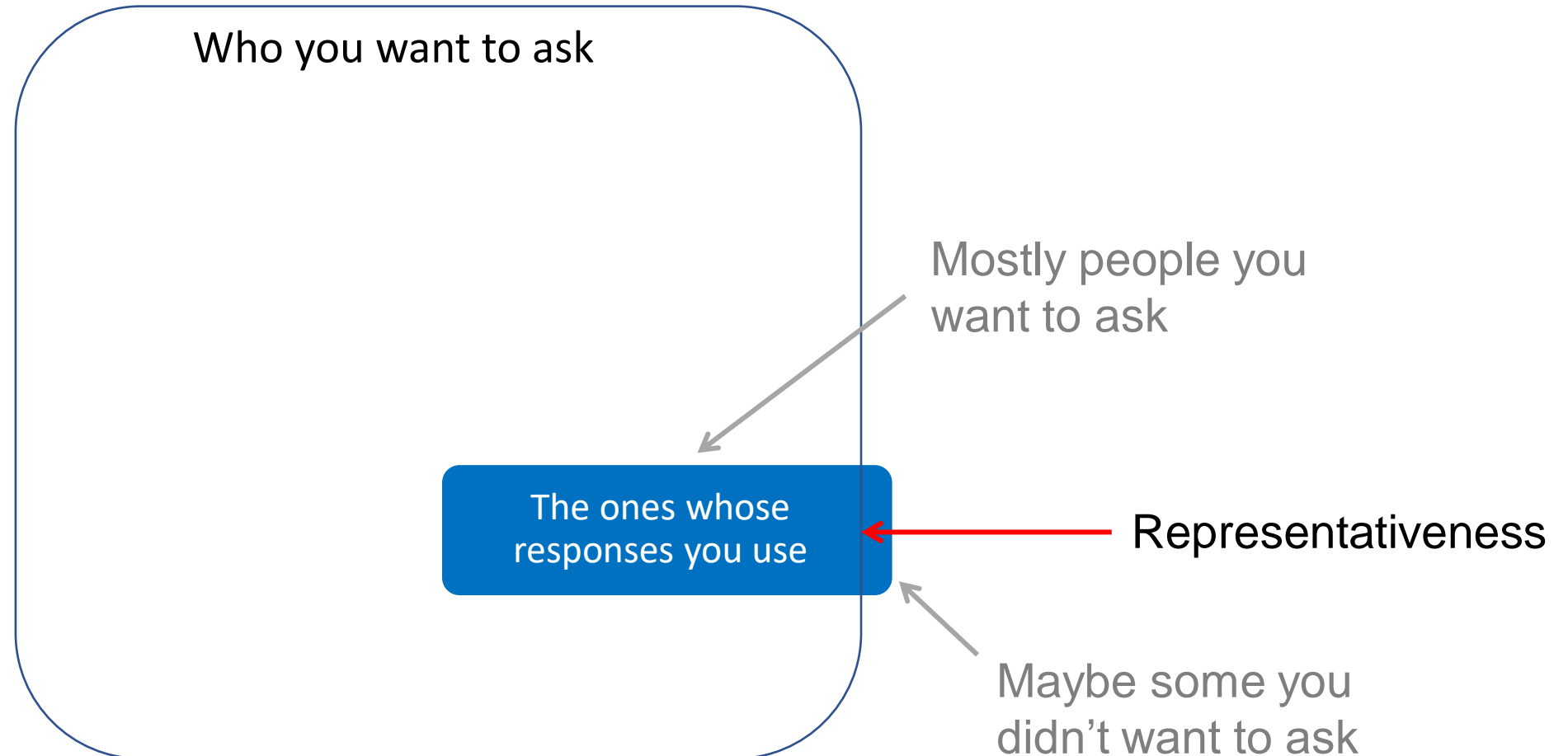
Goals	Sample	Questions	Questionnaire	Fieldwork	Responses	Reports
Establish your goals for the survey	Decide who to ask and how many	Test the questions	Build the questionnaire	Run the survey from invitation to follow-up	Clean and analyse the data	Present the results
Monday		Yesterday			Today	

What goes into your report: representativeness

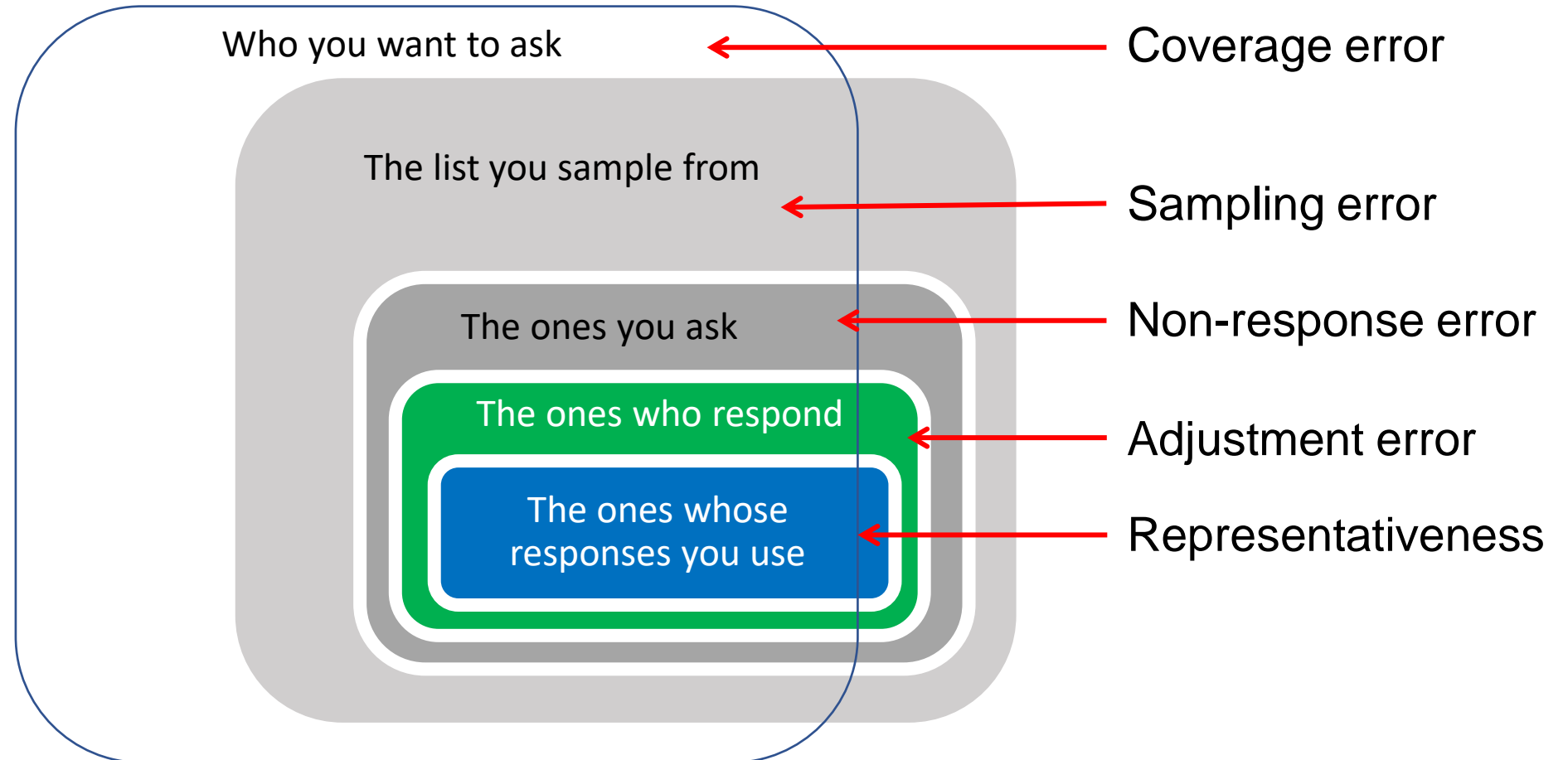
If you're losing people, have you still got representativeness?



We want the final group to be representative



Representativeness is the result of many choices



Assess representativeness using something that matters

For the Open University students, I used:

- Age
- Current module
- Length of time with the Open University

Assertion/evidence reports

Slides with a single title sentence work better

About us

- Best known for our great product range
- Founded in 1995
- Consistently achieve 95% customer satisfaction or better every year since 2005
- Our value proposition is customer service

We focus on great customer service

- Best known for our great product range
- Founded in 1995
- Consistently achieve 95% customer satisfaction or better every year since 2005
- Our value proposition is customer service

We see a lot of topic/subtopic slides



Topic

- Subtopic first subtopic
- Subtopic second subtopic
- Subtopic third subtopic
- Yet another subtopic

About us

- Best known for our great product range
- Founded in 1995
- Consistently achieve 95% customer satisfaction or better every year since 2005
- Our value proposition is customer service

Use assertion/evidence instead

This sentence is the assertion

- The content that goes here is the evidence
- The evidence supports or amplifies the assertion
- This slide has four bullets
- It could have an image, table, chart or video instead

We focus on great customer service

- Best known for our great product range
- Founded in 1995
- Consistently achieve 95% customer satisfaction or better every year since 2005
- Our value proposition is customer service

Example: we are reporting on survey results

- The goal for this survey was to do a baseline measurement before deciding whether to do a 'Share your magazine' campaign.
- The overall aim is to get at least half the magazine's subscribers to share

Write a better headline for this slide

Optional: decide whether to report the answers differently

Including yourself, how many adults usually read or look through your copy of the magazine?

Choice	Responses
1	434
2	190
3	39
4	8
5	0
6 or more	5



I chose to create percentages and a summary

About two-thirds of our 676 respondents do not share their magazine

Adults

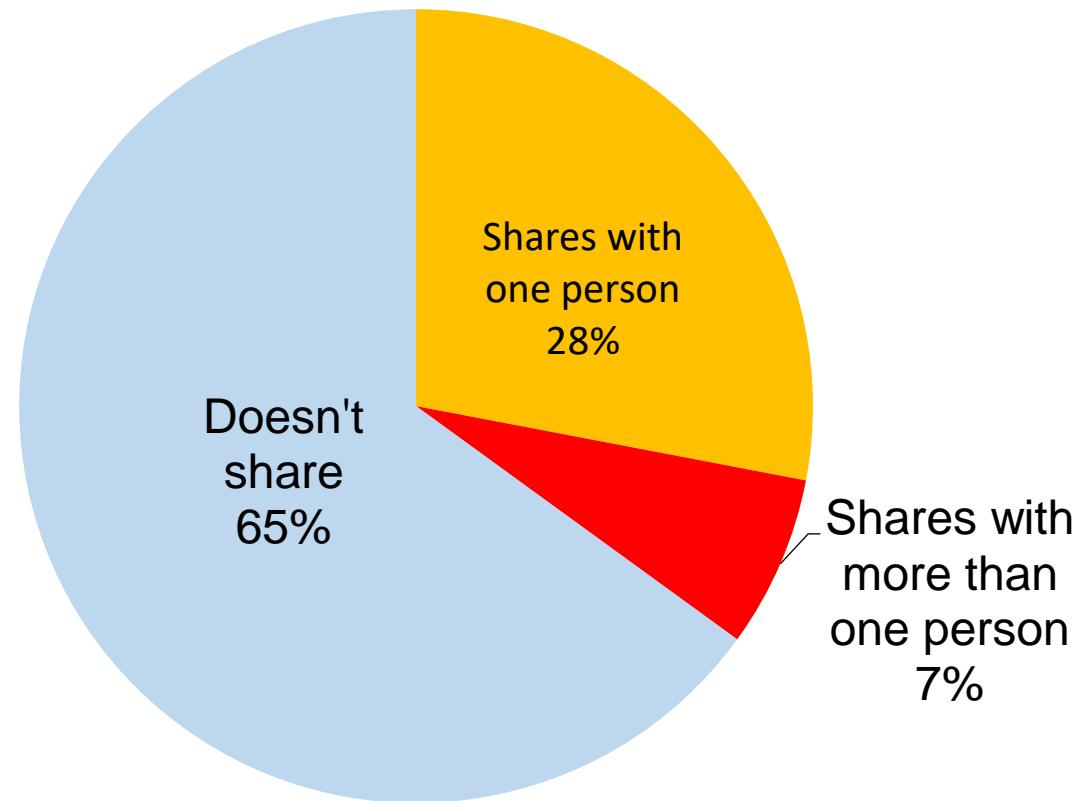
Don't share	65%
-------------	-----

Share with 1 other	28%
--------------------	-----

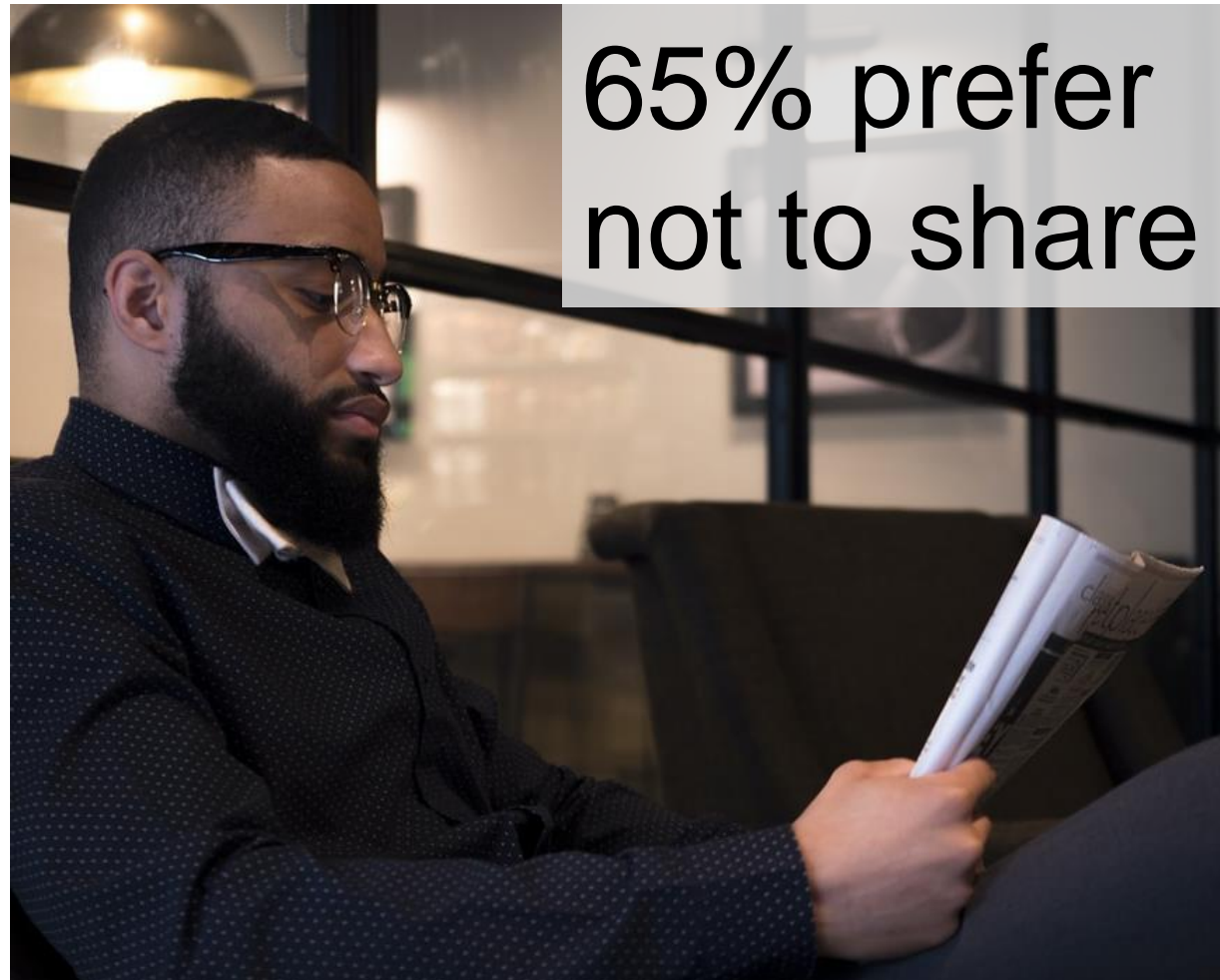
Share with 2 or more others	7%
-----------------------------	----

You might choose a chart

About a third of our respondents share their magazine



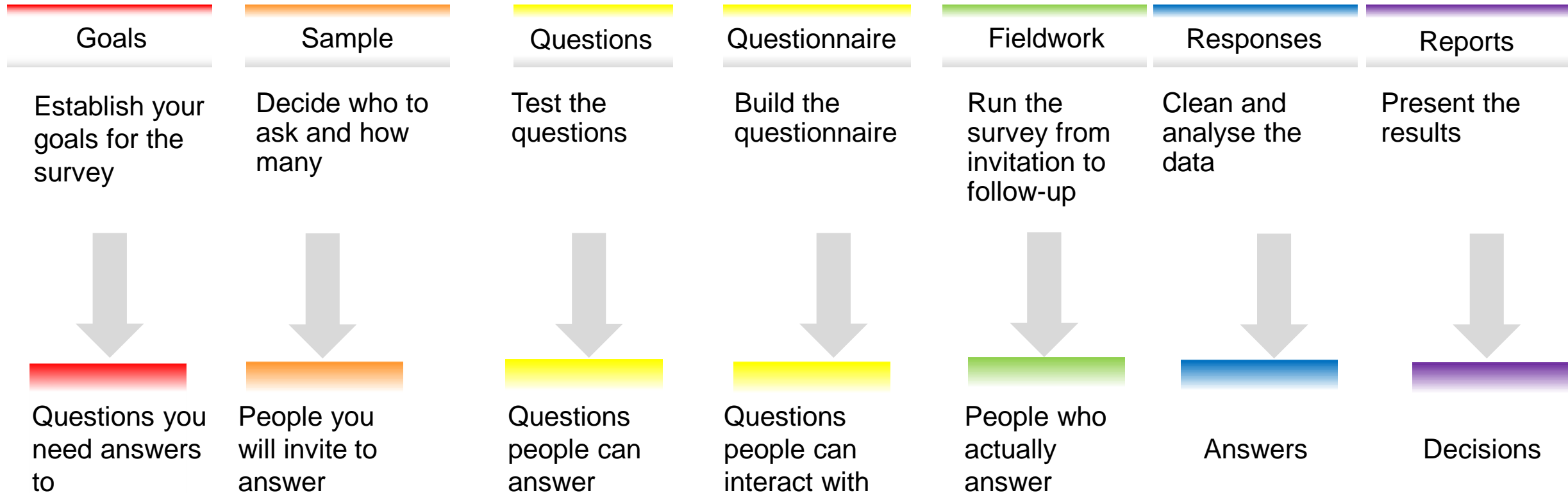
Another approach: a strong image with a headline



Break

What's the Least You Can Do™?

Here are the 7 steps as a linear process



The least you can do is about doing a little

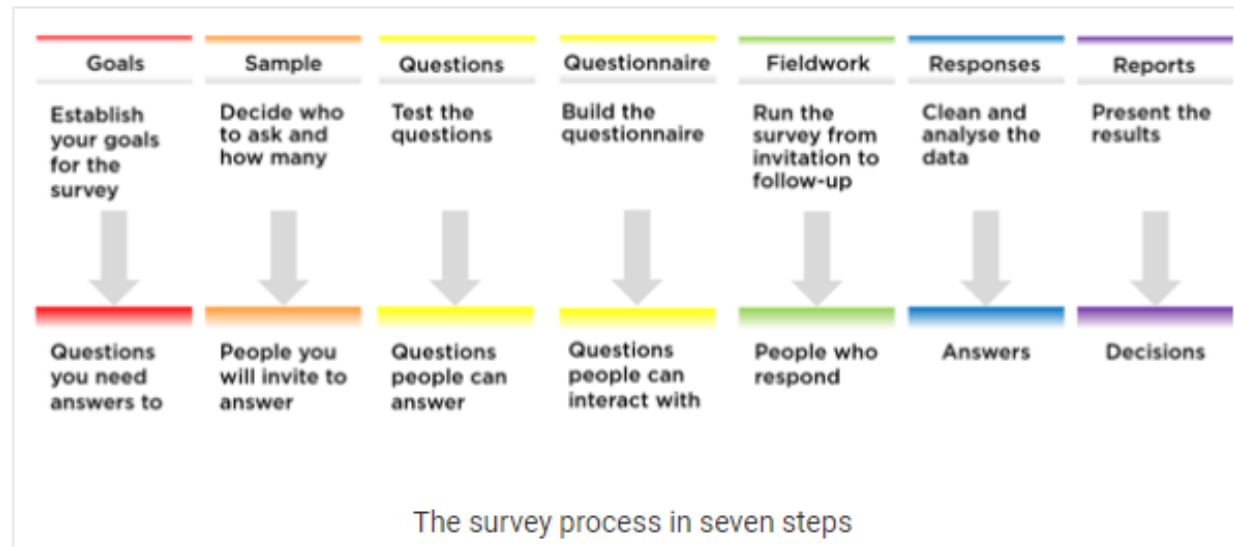
- Make every thing really, really small
- Go for a Light Touch questionnaire
 - One MCQ
 - One Burning issue
 - Minimal representativeness questions
- Make it into a Light Touch survey by turning it around in a day!
(ok, maybe a week)

There are downloadable timetables

Here are downloadable versions of the timetables and checklists in this chapter:

- [A timetable for doing a survey in a day \(.docx\)](#)
- [A timetable for doing a survey in a week \(.docx\)](#)
- [An editable checklist for all of the seven steps in the survey process \(.docx\)](#)

Here is the survey process as an image.



Let's have a look at the timetable: the morning



9 a.m. Goals and sample

Decide on your Most Crucial Question.

Define your group of people and decide on your representativeness question.



10 a.m. Questionnaire

Build your questionnaire, including writing your invitation and thank-you page.

Get someone to do a quick usability test. Ask them to “think aloud” so that you get a little bit of cognitive interviewing at the same time.



11 a.m. Fieldwork part 1

Do your pilot test: Send invitations to 10 people, with the request that they respond by 1p.m.

Let's have a look at the timetable: the afternoon



1 p.m. Fieldwork part 2

Iterate your questionnaire based on your pilot.

Send out the questionnaire to the larger sample, with the request that they respond by 3 p.m.



2 p.m. Responses part 1

Some responses will be back. Start your data cleaning.



3 p.m. Responses part 2

Decide what descriptive statistics you want to use.

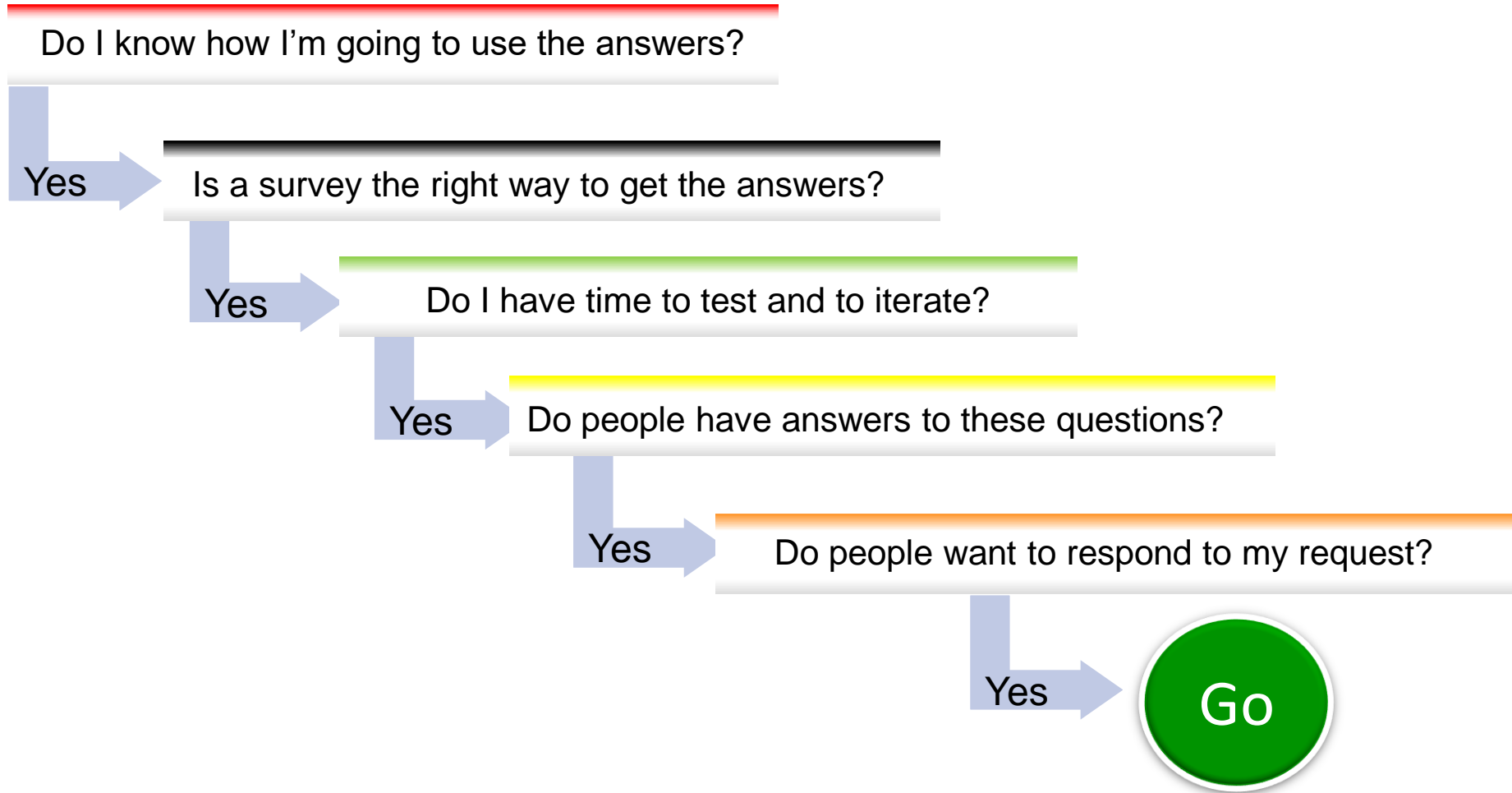
Read all open box responses, possibly sorting them according to one of the other answers.



4 p.m. Reports

Create the report you want to deliver.

Should I do this survey?



All these errors add up to Total Survey Error

Why you want ask

(Lack of)
validity

Measurement
error

Processing
error

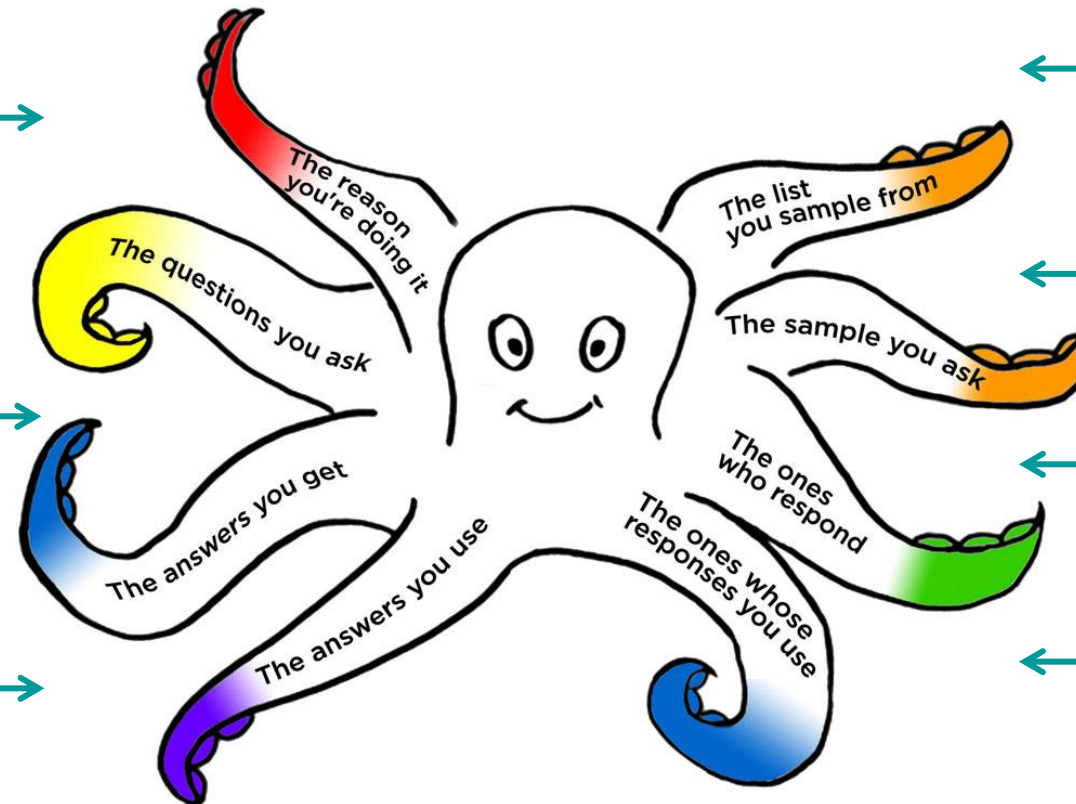
Who you want to ask

Coverage error

Sampling error

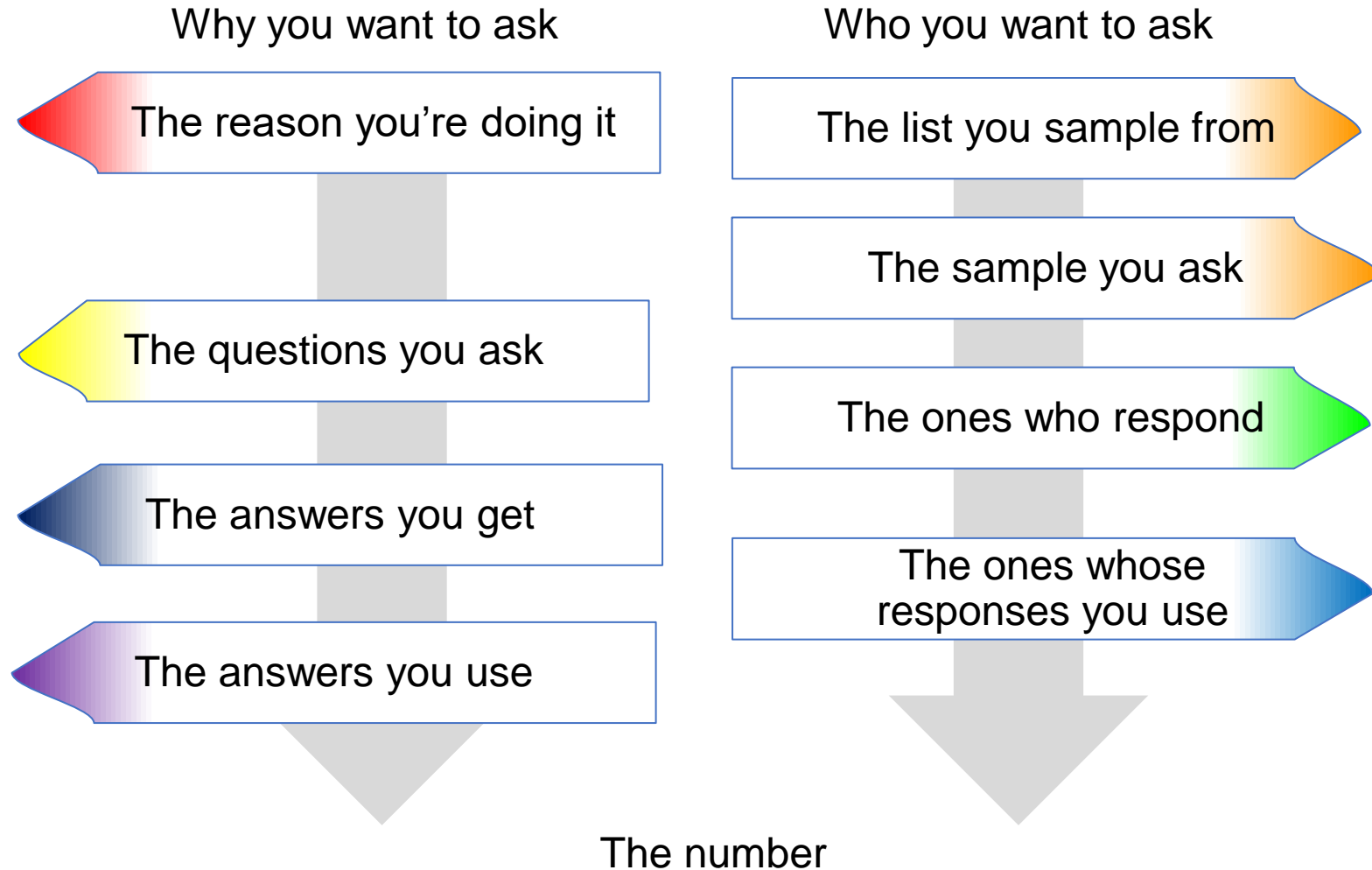
Non-response
error

Adjustment
error

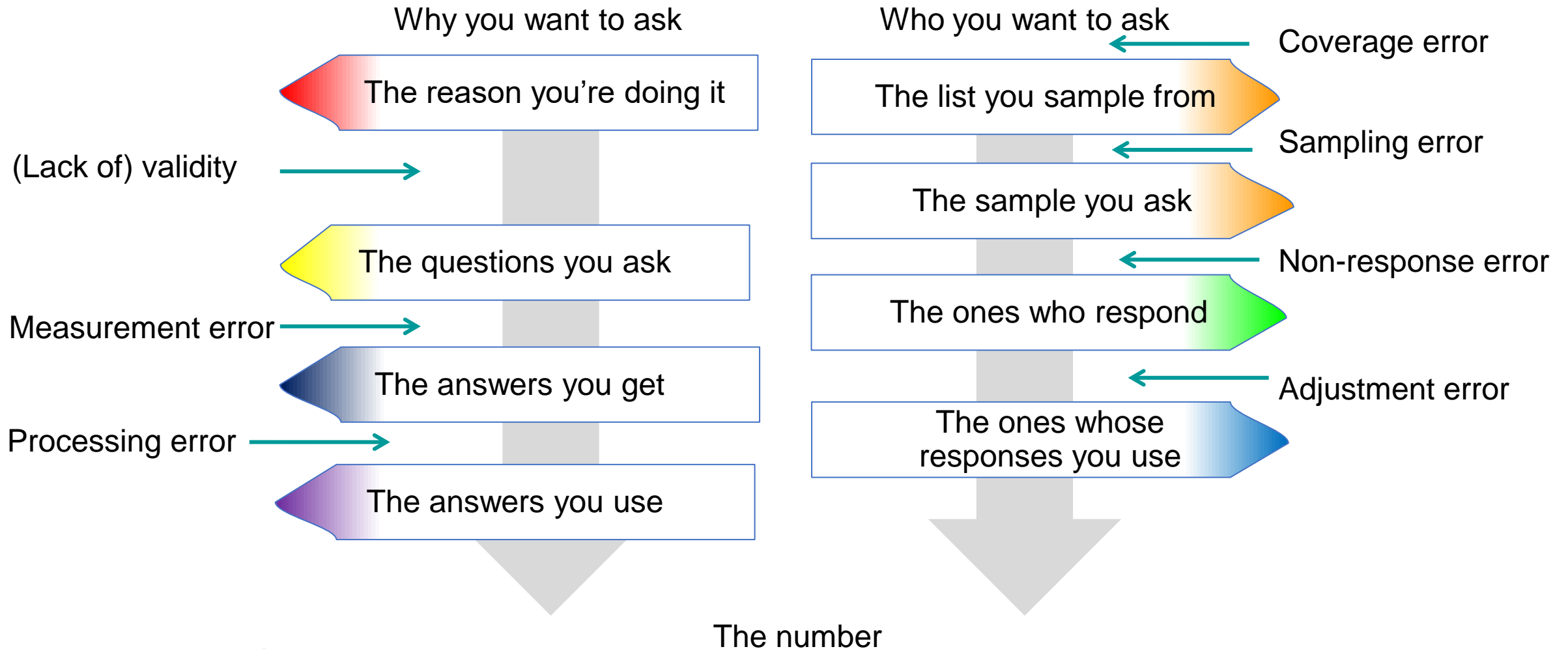


The number

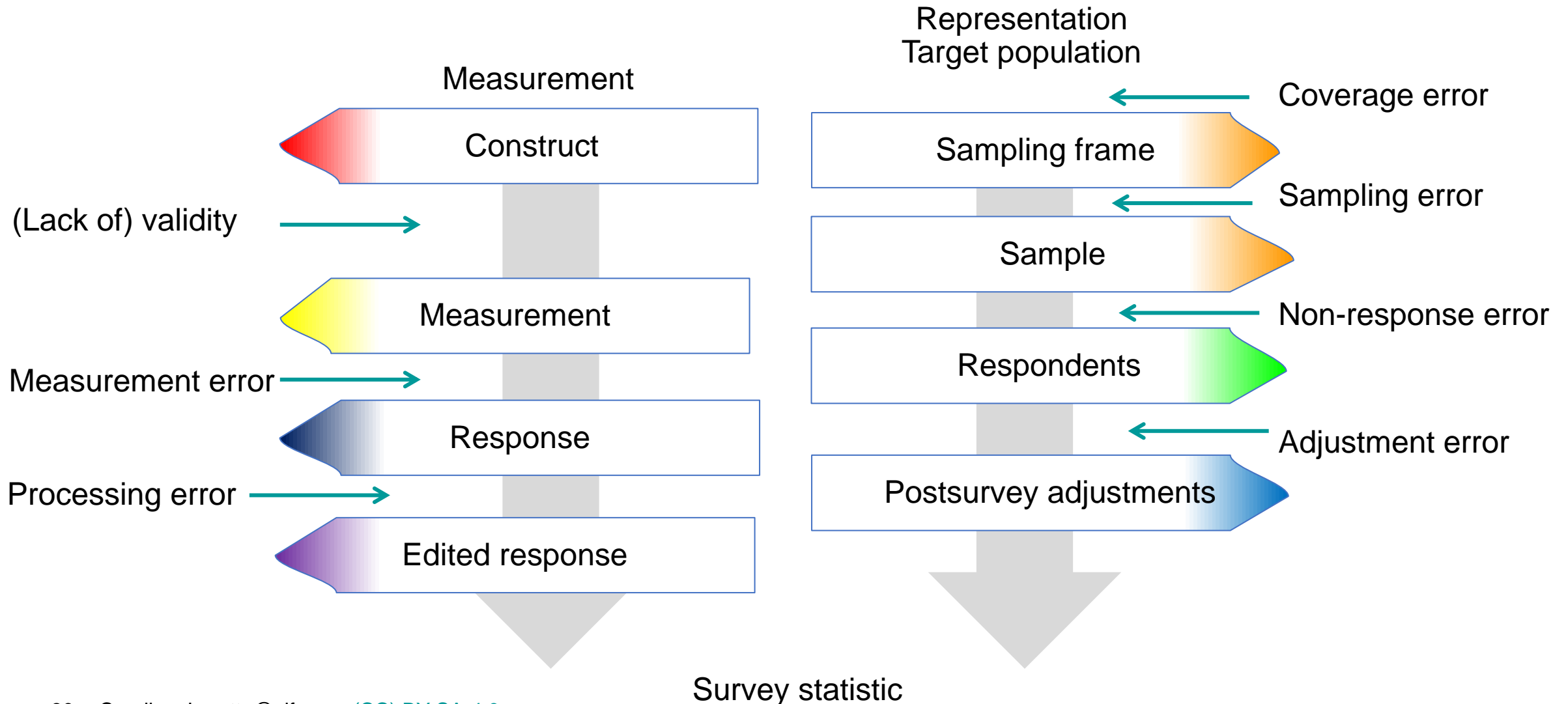
The aim is to get the best number you can, within the resources you have



The aim is to minimise Total Survey Error



Survey methodologists use more searchable terms



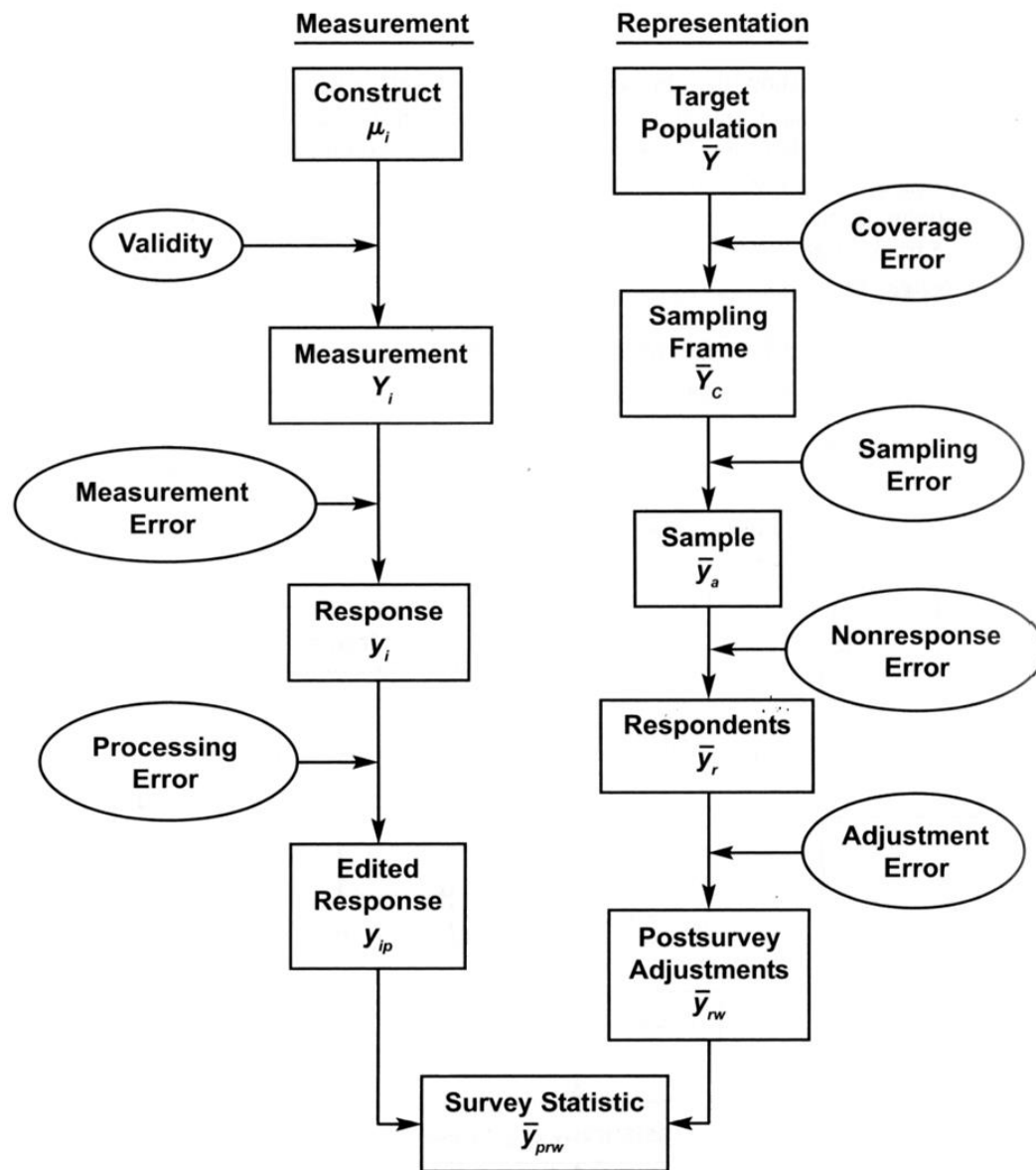


Figure 2.5 Survey life cycle from a quality perspective.

Total Survey Error diagram as presented in Groves, R. M., F. J. Fowler, M. P. Couper, J. M. Lepkowski, E. Singer and R. Tourangeau (2009). Survey methodology. Hoboken, N.J., Wiley.

Wrap

Please do my final EasyRetro

The EasyRetro has the columns we used previously:

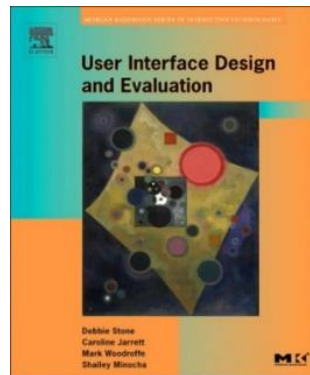
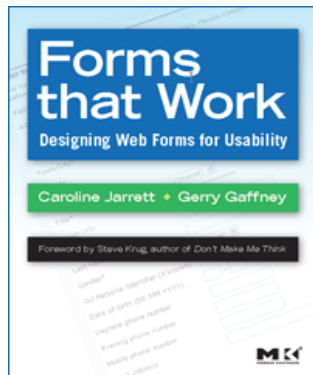
- Anything useful from today
- Not useful / confusing / could have skipped
- Want to know but hasn't yet come up
- Has come up but want more
- Extra for today
 - Comments on the entire three days

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SURVEYS THAT WORK

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by **CAROLINE JARRETT**

Foreword by Steve Krug

 Rosenfeld