



Stacking survey
data loops in Protobi

A survey asks questions of each respondent

Q1.
Single choice



Q2.
Multiple choice



Q3.
Numeric



Q4.
Text



Q5.
Ratings



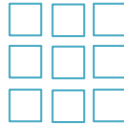
Q6.
Date



Q7.
Ratings grid



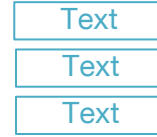
Q8.
Multiple grid



Q9.
Numeric grid



Q10.
Text grid



Q11.
Rankings



Q12.
Intervals



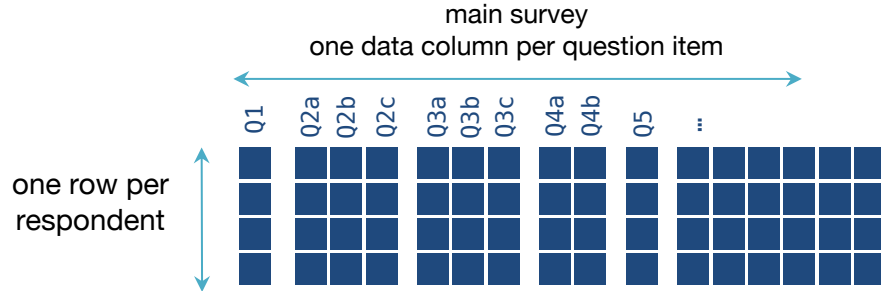
A typical survey exports a data file with one row per respondent, and one column per question

Main survey

Q1	Q2	Q3	Q4	Q5
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
			#	Text
			#	

In this example, each physician completes a main respondent-level survey...

Data file



The data is exported as a flat file with one row per respondent and one column per question item

Questions with common scales can be asked in grids, and be "flattened" as one column per question.

Q100Q101Grid

Of your early-stage melanoma patients in the past year, what proportion of patients progress to metastatic melanoma from each stage below, and what is their typical time to progression?

Q100

Proportion of your melanoma patients that progress to metastatic (of 100%)

(Compact to mean)



Q101

Average time between initial melanoma diagnosis and metastatic progression

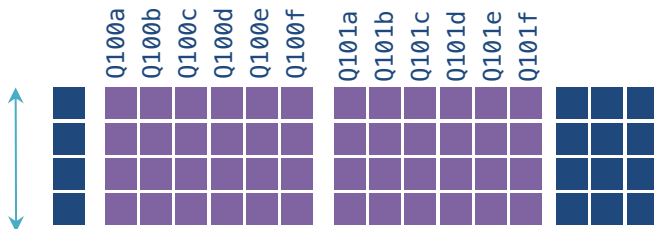
(Compact to mean)



Q100(a-f)

Q101(a-f)

one row per respondent



Some surveys also embed smaller surveys in a "loop", such as conjoint experiments or patient case reviews

In this example, each physician completes a main respondent-level survey...

Main survey

Q1	Q2	Q3	Q4	Q5
☐	☐	☐ ☐ ☐	#	Text
☐	☐	☐ ☐ ☐	#	
☐	☐	☐ ☐ ☐		

Analyzing and exporting data for loops requires a bit more nuance....

... plus a case report forms, providing data about patient cases. Each respondent completes more than one case form.

Patient report form (loop)

B1	B2	B3	B4
☐	☐	#	
☐	☐		
☐	☐		

Patient Case #1

B1	B2	B3	B4
☐	☐	#	
☐	☐		
☐	☐		

Patient Case #2

B1	B2	B3	B4
☐	☐	#	
☐	☐		
☐	☐		

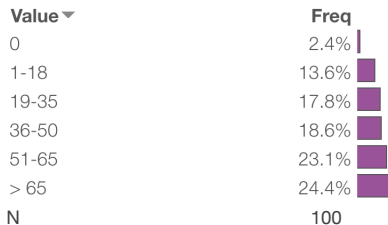
Patient Case #3

Sometimes each loop is different enough we want to see the results separately, "flattening" them into separate elements

In this example, each physician completes three patient cases, and we show results for each separately...

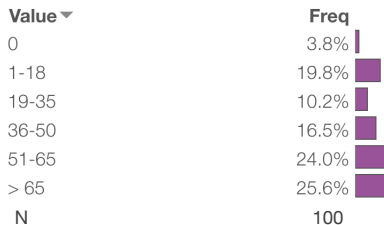
≡ Patient age.1

PATIENT AGE (case #1)
Knee injury



≡ Patient age.2

PATIENT AGE (case #2)
Back injury



≡ Patient age.3

PATIENT AGE (case #3)
Arm/wrist injury



Other times loops are similar and we want to "stack" them together into single elements

Here the cases are stacked, and we use the loop iteration value as a segmentation variable to describe each case

Loop

Injury site



Patient age

PATIENT AGE (all cases)



Proton automatically recognizes and "flattens" loops in SERMO surveys. Loops are organized into groups and you can flip through them.

Press arrow buttons
to step between
cases

The screenshot displays the Proton software interface for a survey loop. At the top, a navigation bar includes buttons for 'completes', 'N=400', 'Clear', 'Set base', '#/%', 'Format', '[NA]', 'Crosstab', 'Export', 'Save', and 'Scenario'. Below this, a tabbed interface shows 'MainLoop' selected. The main content area is titled 'MainLoop.1' and contains a description: 'This is a loop, a series of questions asked more than once per respondent. See <https://proton.com/tutorials/loops> for details.'

On the left side of the main content area, there are four arrow buttons (up, down, left, right) for navigating between cases. A blue arrow points from the text 'Press arrow buttons to step between cases' to these buttons.

The main content area displays the following information:

- Patient #1:** Moderate/severe synesthesia
- Q11.1:** What would be your **next step** for this patient?
- Q13.1:** To whom would you refer this patient?
- Q15.1:** Would you have taken different action for this patient in 2016?
- Q12.1:** Which medical treatment would you try next?

Below each question, there is a table of results:

Value	Freq
Further medical management ...	15.5%
Refer patient for consultation ...	11.5%
Refer patient for device	43.3%
Implant device myself	29.8%
N	400

Value	Freq
[NA]	--
Electrophysiologist	33.8%
Neurologist	26.9%
Psychologist	15.1%
Otolaryngologist	5.0%
Infectious disease	15.5%
Neuropathologist	2.7%
Other	0.9%
N	219

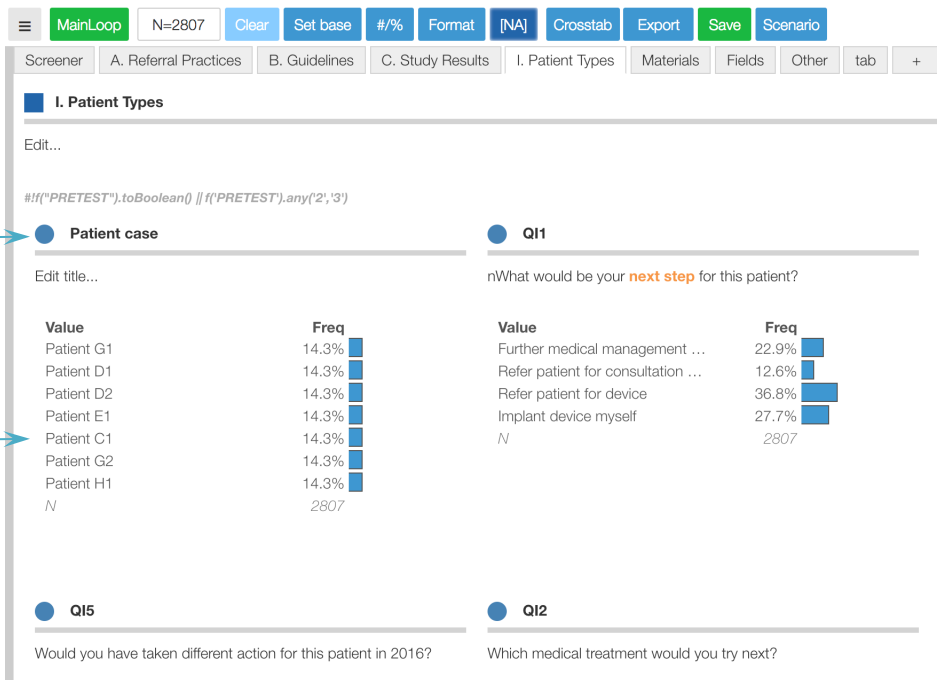
Below the second table, the text '#f("Q11").any("2","3")' is displayed.

At the bottom of the interface, there is a blue button labeled 'Questions?' and a copyright notice '© 2018 Proton'.

Protobi can optionally automatically stack and instead, and even merge respondent-level data

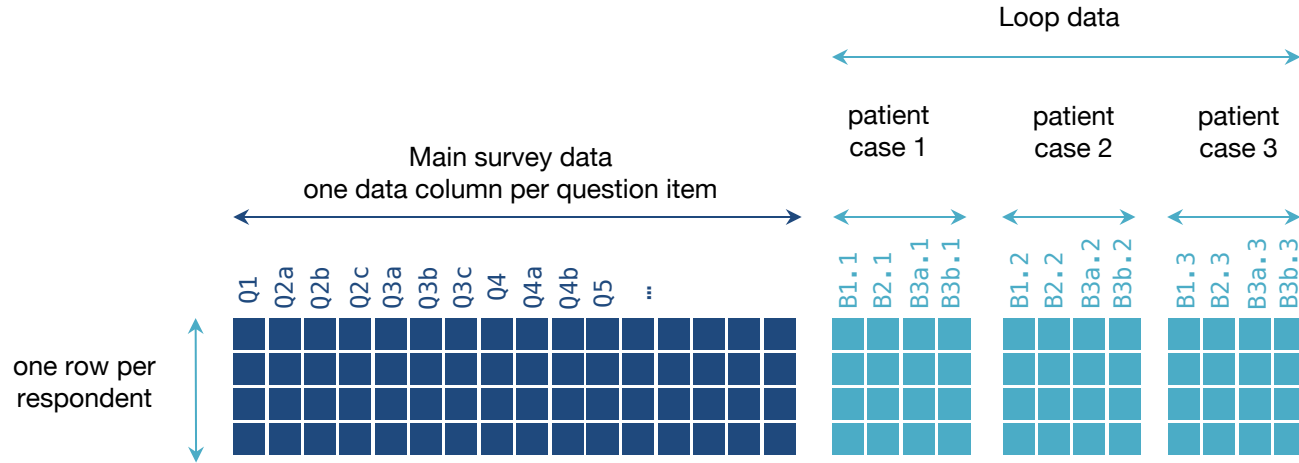
Loop iterator becomes a profile variable

Click on any value to select a single case



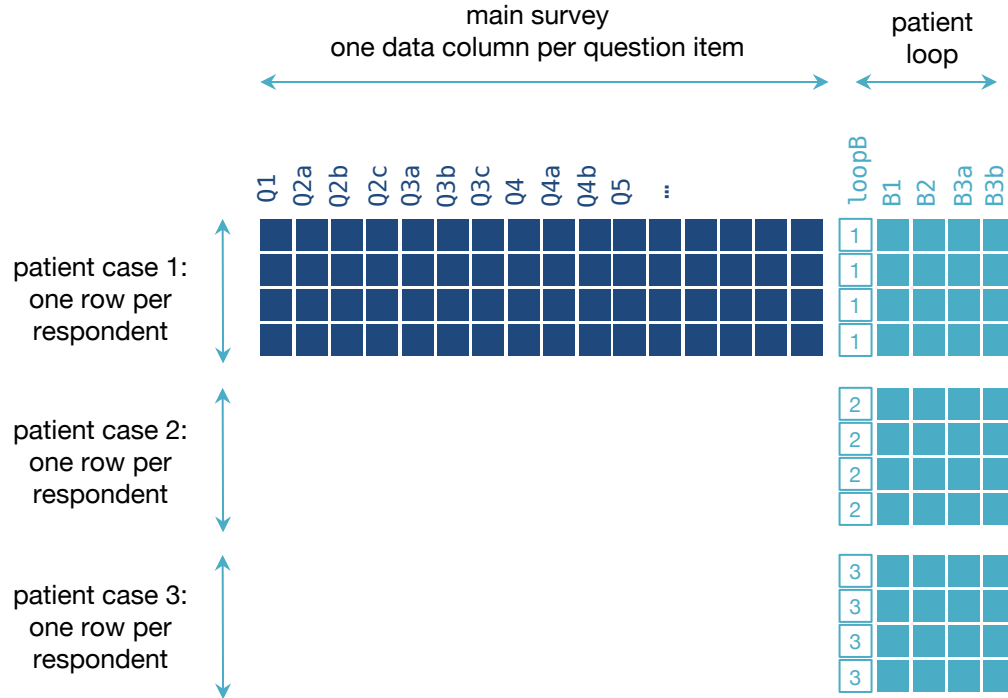
"Flattened" vs "Stacked" data

Survey engines typically "flatten" loops by creating data columns for each loop, appending the loop as a suffix.



Flattening loops is good for analysis when each loop should be considered independently.

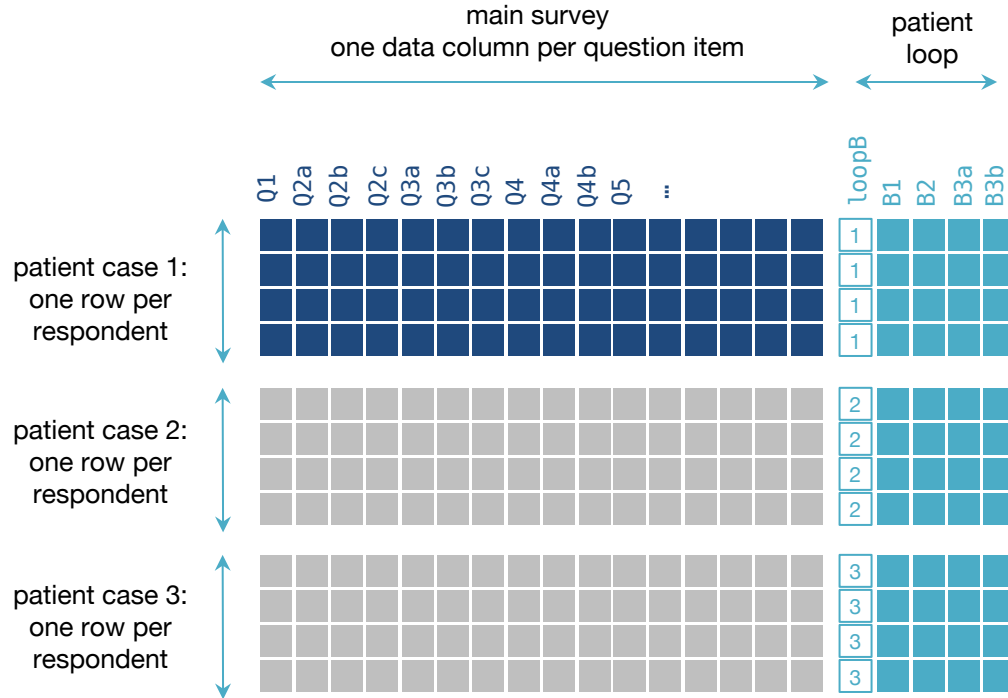
Another approach is to "stack" the loops so that each case is a new row. and merge with the main survey days



This approach enables analysis across patient cases and also allows loop data to be correlated with the main survey data.

Each loop is appended as a new set of rows. It's helpful to create a new variable that identifies the loop iteration for each row.

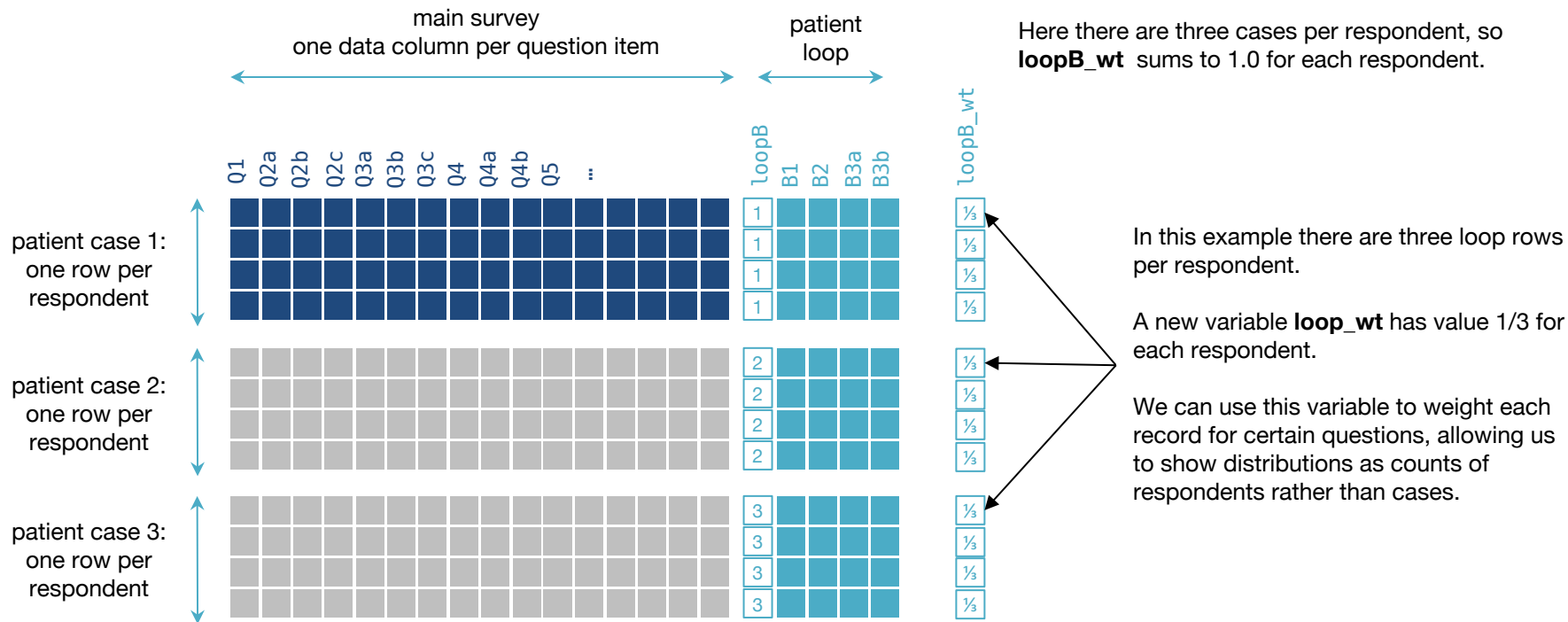
Merging respondent data with each loop lets you correlate physician- and patient- level data



Rows from the main survey are included again, with one row per respondent per loop value.

Data from the main survey is merged with the loop data. This enables correlation and crosstabs between the main survey and the loop.

Creating a weight column that sums to 1 for each respondent lets you count respondents or loop values



Parallel loops

Surveys can have more than one loop...

In this example the first loop is a patient case report form to collection details, history and current status...

...later in the survey a second loop elicits product choices for each patient case

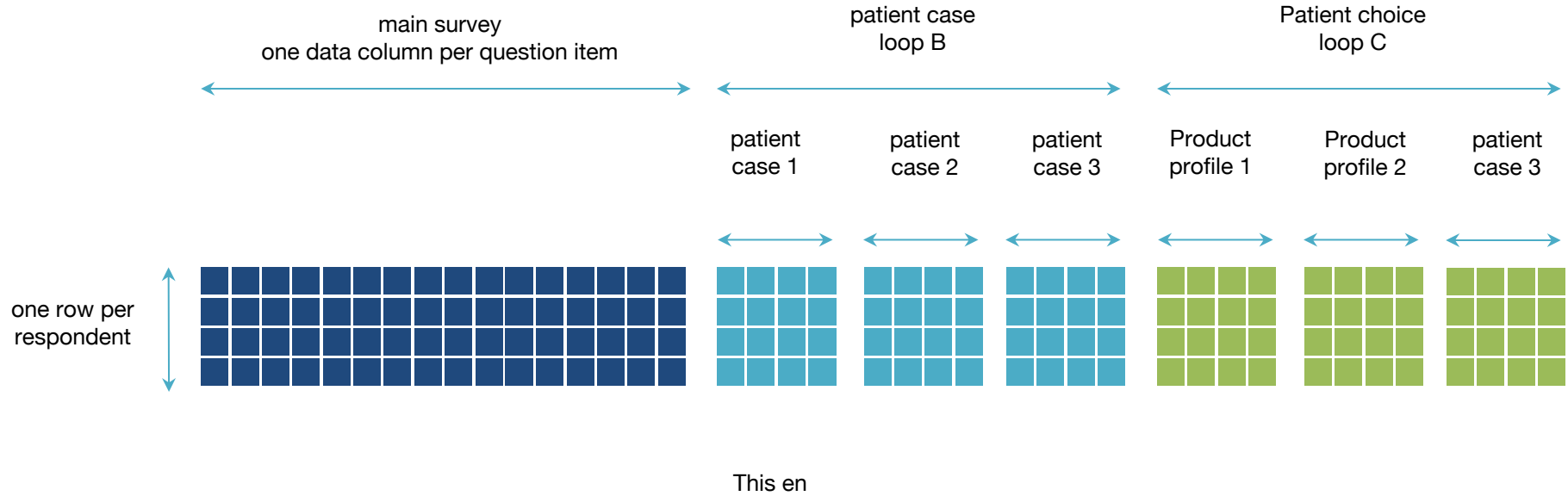
Patient case report form

Patient Case #1	☐ ☐ ☐ ☐ ☐	# ▲▼	
Patient Case #2	☐ ☐ ☐ ☐ ☐	# ▲▼	
Patient Case #3	☐ ☐ ☐ ☐ ☐	# ▲▼	

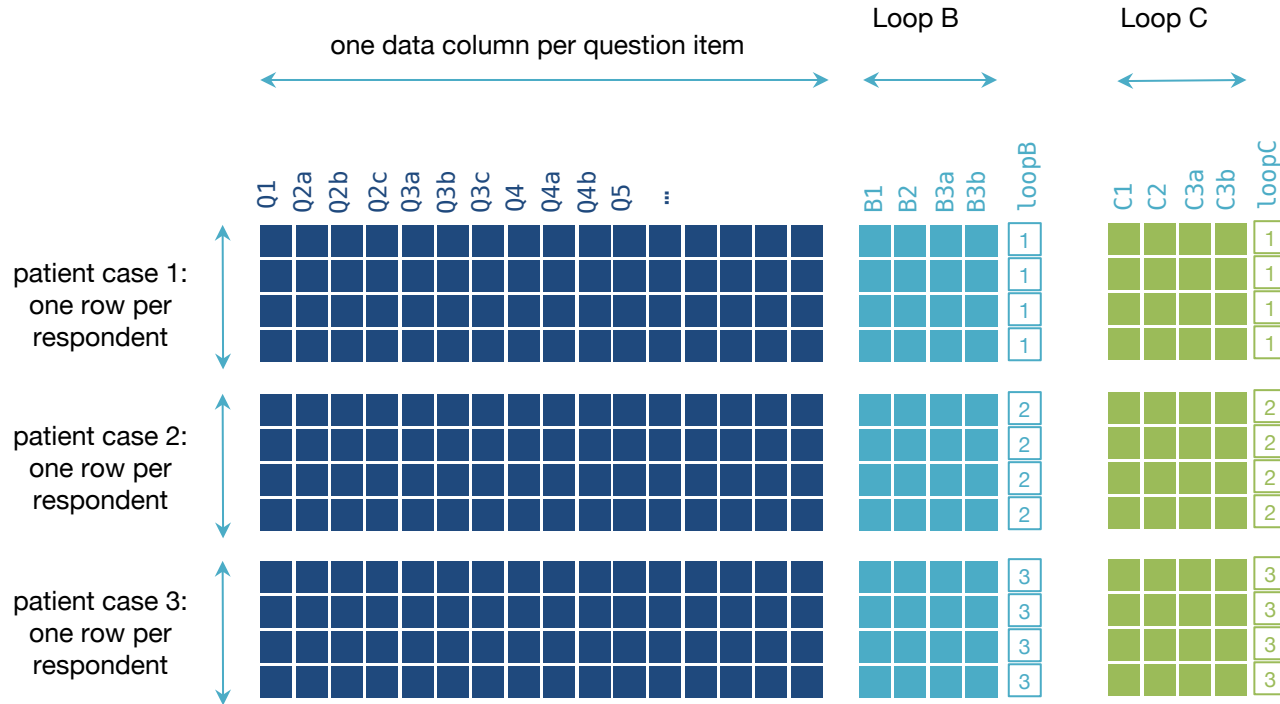
Patient case choice

Patient Case #1	☐ ☐ ☐ # ▲▼
Patient Case #2	☐ ☐ ☐ # ▲▼
Patient Case #3	☐ ☐ ☐ # ▲▼

Multiple loops can be flattened together



Multiple loops can be stacked and merged together



Independent loops

Multiple loops may not always be parallel

In this example the **first** loop is a patient case report form to collection details, history and current status...

...a **second** parallel loop elicits product choices for each patient

... and a **third** unrelated loop reviews two new product scenarios

Patient case report form

Patient Case #1	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	#	
Patient Case #2	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	#	
Patient Case #3	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	#	

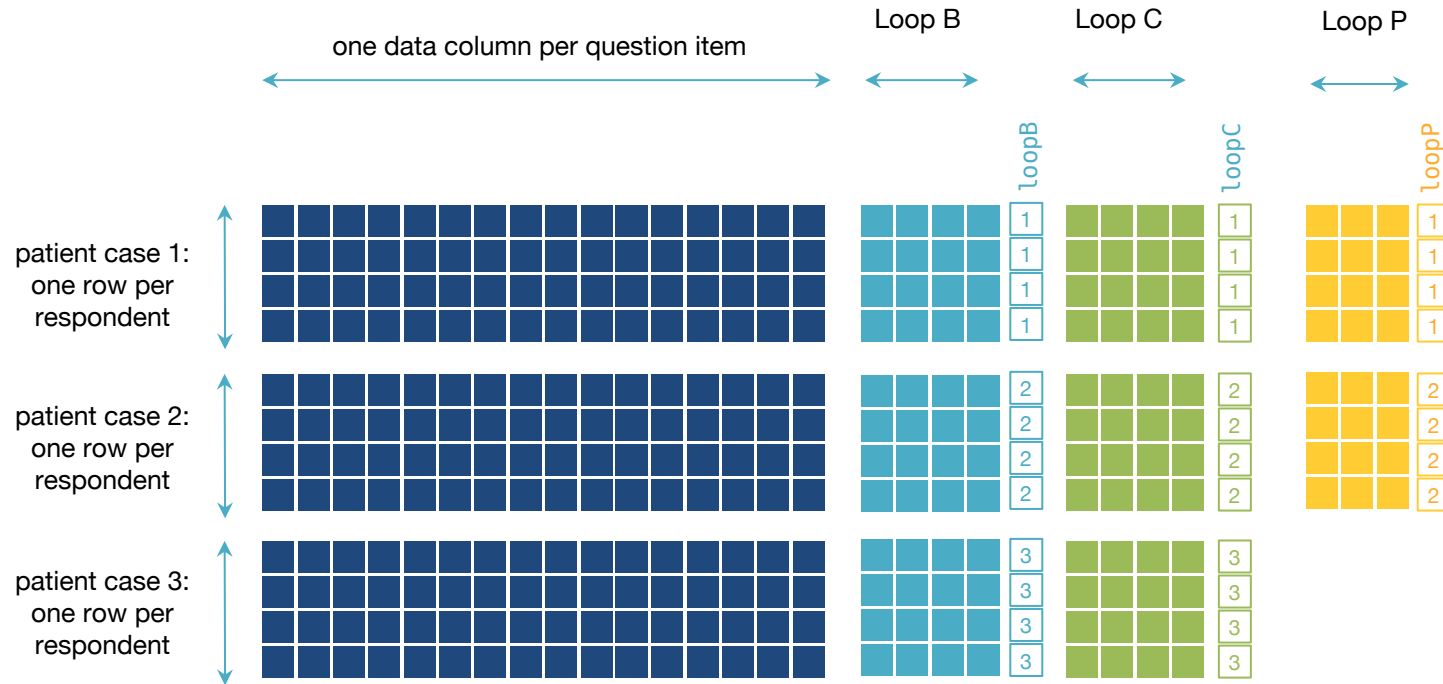
Patient case choice

☐ ☐ ☐ ☐ ☐	#
☐ ☐ ☐ ☐ ☐	#
☐ ☐ ☐ ☐ ☐	#

New product assessment

Product Profile #1	☐ ☐ ☐ ☐ ☐
Product Profile #2	☐ ☐ ☐ ☐ ☐

Even loops that are not parallel can still be stacked and merged together.



Here it's up to the analyst to avoid comparisons between patient cases and product scenarios, as they are not related.