



Sometimes it's not right or wrong:

Using split ballot testing to evaluate how to best measure health knowledge questions

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Measuring knowledge

- Find out what R knows
- Objective criteria
- There is a correct answer
- Not feelings or beliefs
- Rs will answer



Response choice options make a difference



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Open-ended response

In what year was the United Nations founded?

_____ (please write in)



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Ranges

In what year was the United Nations founded?

- in the 1920's
- in the 1930's
- in the 1940's
- in the 1950's



Closed-ended

In what year was the United Nations founded?

1850

1900

1945

1969

1942

1945

1947

1949

1919

1945

1951

1957



Are health knowledge questions different?

- Often complex topics
- Benefits and risks
- Numeracy issues



Some health questions simple

What type of cancer does mammography screen for?

- Colon cancer
- Cervical cancer
- Lung cancer
- Breast cancer

How do most colon cancers start?

- As a tear in the colon
- As a polyp in the colon
- As a result of constipation
- As a hemorrhoid



Some are a little harder

If 100 women with early stage breast cancer are treated with lumpectomy and radiation, about how many will have breast cancer come back in the treated breast in the 10 years after treatment?

THE ANSWER IS...

ABOUT 10



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Response option choices

OPEN-ENDED

_____ (write in answer)

RANGES

- Fewer than 5
- 5-15
- 16-30
- More than 30

CLOSED-ENDED

Please mark the number that you think is closest to the correct answer.

- 3
- 10
- 21
- 34



The Experiment



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Purpose

- Will people answer open-ended questions?
- How will using “pick the closest answer” work?
- How will the open-ended responses compare to the closed-ended ones?



Study Design

- Split Ballot design (Spring 2009)
- Recruited from a web ad
- ½ web survey & ½ paper survey
- ½ open-ended questions & ½ closed-ended
- Pre-paid incentive (\$10/\$20)
- Questions about screening for colon cancer, preferences, facts, experiences



Results

- 338 respondents (89% response rate)
- 32% male
- 57% completed college
- 39% over age 50 (mean=49.3 years)

	OPEN-ENDED	CLOSED-ENDED
Web	83	85
Paper	84	86
TOTAL	167	171



The Questions



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Question 1: Closed

You may not know the exact number, but please take your best guess. Out of every 100 people, about how many will **get** colon cancer some time in their lives? Please mark the number that you think is closest to the correct answer.

- 2
- 6
- 14
- 24
- 43



Question 1: Open

You may not know the exact number, but please take your best guess. Out of every 100 people, about how many will **get** colon cancer some time in their lives?

_____ Write in number of people



Question 1

Out of every 100 people, about how many will **get** colon cancer some time in their lives?

Closed ended: 86 people choice correct option (50.3%)

Open-ended: 41 people wrote in exact number (25.3%)

BUT WE ASKED FOR THEM TO:

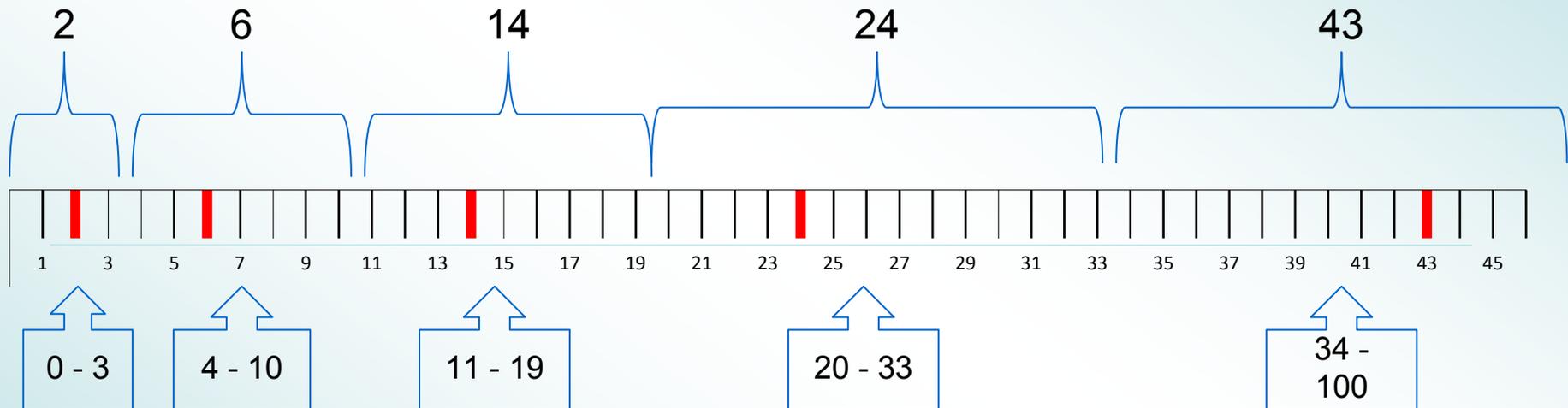
Please mark the number that you think is closest to the correct answer.



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Please mark the number that you think is closest to the correct answer.

2 6 14 24 43



Question 1

Out of every 100 people, about how many will **get** colon cancer some time in their lives?

	Closed-ended	Open-ended
Correct Answer*	50.3% (n=86)	52.5% (n=85)

- Correct Answer = 6 (range of 4 – 10)
- no difference in mode of administration
- difference between educational levels but not within them
- missing data: closed-ended – none
open-ended - 4 (out of 166)



Question 2

Out of 100 people over the age of 50, about how many have never been tested even once for colon cancer?

- 18
- 32
- 48
- 58
- 75

You may not know the exact number, but please take your best guess....
Please mark the number that you think is closest to the correct answer.



Question 2

Out of 100 people over the age of 50, about how many have never been tested even once for colon cancer?

	Closed-ended	Open-ended
Correct Answer*	26.9% (n=46)	19.3% (n=32)

- Correct Answer = 32 (range of 26 – 40)
- $p=.063$

f6



Lysbilde 23

f6

indicate in footnote what the range was for open question that was considered correct. Could the tendency toward the closed response be the result of chance?

fjfowler; 13.05.2009

Question 3

Out of every 100 people, about how many will **die** of colon cancer?

- 3
- 8
- 15
- 24
- 30



Question 3

Out of every 100 people, about how many will **die** of colon cancer?

	Closed-ended	Open-ended
Correct Answer*	57.3% (n=98)	53.0% (n=88)

- Correct Answer = 3 (range of 0 – 5)
- $p=.25$



Conclusions

- In the health knowledge context, sometimes there are magnitudes of order in being “wrong”
- The open approach is the best way to find out if a respondent knows the answer, without the contamination of enabling respondents to rule out implausible wrong answers and little chance of guesses being right
- The list of numbers (without ranges) seems to produce very similar results (perhaps with slightly higher scores due to guesses)
- Respondents were willing to answer open-ended question in both paper and web version



Thank you



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