



RadoNorm
Managing risks from radon and NORM

Public opinion survey: from idea to results

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WP6.1

**On-line, interactive training course “The art of public opinion survey analysis
Surveying the public on Radon & NORM”, 26-30 April 2021**



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Define objective(s)

Examples:

- *Investigate public awareness on radon*
- *Define risk perception of radon*
- *Identify driving factors of radon testing and radon mitigation*
- *Recognise determinants of trust in radon risk management*

What (exactly) do you want to measure by public opinion survey?

Involved: user of the study, principal investigators

Investigate the main concepts

Examples:

- *Awareness*
- *Risk perception*
- *Behavioural change: radon testing and radon mitigation*

- **Trust (*in what?*)**

The components of trust are multidimensional: perceived competence, objectivity, fairness, consistency, sincerity, faith, and empathy, the credibility of the spokesperson or authority delivering the message ...

Do you understand socio-psychological components of the main concepts?
What is the concept?

Refresh your understanding,
clarify

Involved: principal investigator, researchers,

Define theoretical background

Example: **Radon risk perception**

*Potential theoretical perspectives:
Cultural (Drake, 1992), Sociological
(Beck, 2006), psychological (Fischhoff,
1978).*

Psychometric risk characteristics:

*unfamiliarity, disaster potential (dread),
the number of people exposed,
controllability, unnatural, immoral,
tampering with nature...*

**What theoretical
background you will use?**

Involved: principal investigators,
researchers, **consulted SSH
experts**

Define theoretical background

Example: **Awareness**

"the greater a person's level of cognitive engagement (awareness) with an issue, the more likely she or he is to be exposed to and comprehend (i.e. "receive") messages concerning that issue" (Zaller 2006:42). The impact of awareness depends on the characteristics of the message. The weaker the intensity of the message and the person's familiarity with it, the stronger is the effect of awareness. If a message is intense and familiar, even the people who are least aware of it will receive it and be able to make the appropriate connections with their basic values (Zaller 2006, pp. 154-55)."

What theoretical background you will use?

Involved: principal investigators, researchers, consulted SSH experts

Example: **Awareness**

Kennedy, Probart, and Dorman (1991) measured radon knowledge with the following index (highest score = 9):

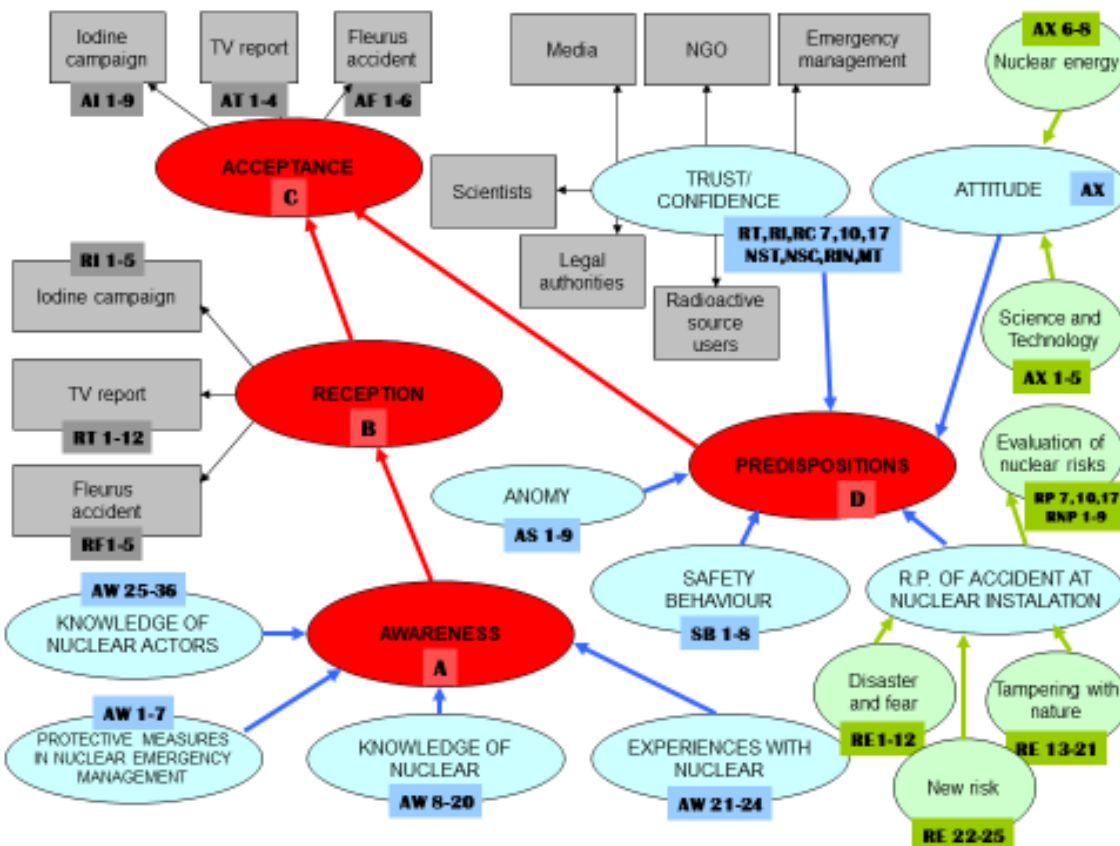
- heard of radon
- knew radon did not increase risk of skin cancer
- knew it increased risks of lung cancer
- knew the health risks were cumulative
- knew radon was a gas
- realized radon has no distinctive odor
- knew could enter through cracks in foundations
- knew it was caused by decay of a radioactive element

What has already been measured and how?

Involved: principal investigators, researchers, **radon management authorities, organisations**

Make a hypothetical model

Example: Application on the RAS theory in information processing model



Why do you need to measure this particular concept? Why do you expect that this is important?

Involved: principal investigators, researchers, consulted SSH experts

Example: **Knowledge**

Specific knowledge is operationalized as the number of correct answers given to a set of 19 exam-style questions about the the radon, radiation protection and ionizing radiation in general. The items measuring specific knowledge refer to issues that were not mentioned during the intro. or Q in the questionnaire. Since the purpose of the "specific knowledge" variable is to comprise different levels of knowledge, it is not necessary for the items to measure the same latent construct. Responses are indexed and the resulting absolute scale range from 0 to a maximum of 19 correct answers.

How will you measure the main concepts?

Involved: principal investigators, researchers, consulted SSH experts, **radon experts**

Example: **Awareness**

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Example: Risk perception

(Hampson, Andrews, Lee, et al., 2000)

5 items, 9 point scale, $\alpha = .90$

- Q 1: *"How likely is it that radon in your home will seriously damage your health?"*
- Q2: *"How likely is it that radon in your home will seriously damage the health of other household members?"*
- Q 3: *"How likely is it that radon in their homes seriously damages the health of people in general?"*
- Q 4: *"Compared to all the other things that can damage your health, are the risks of radon something that you can think about calmly or is it one [sic] that you find frightening?"*
- Q 5: *"Compared to all the other things that can damage your health,*
to what extent do you feel you know about the risks of radon?"

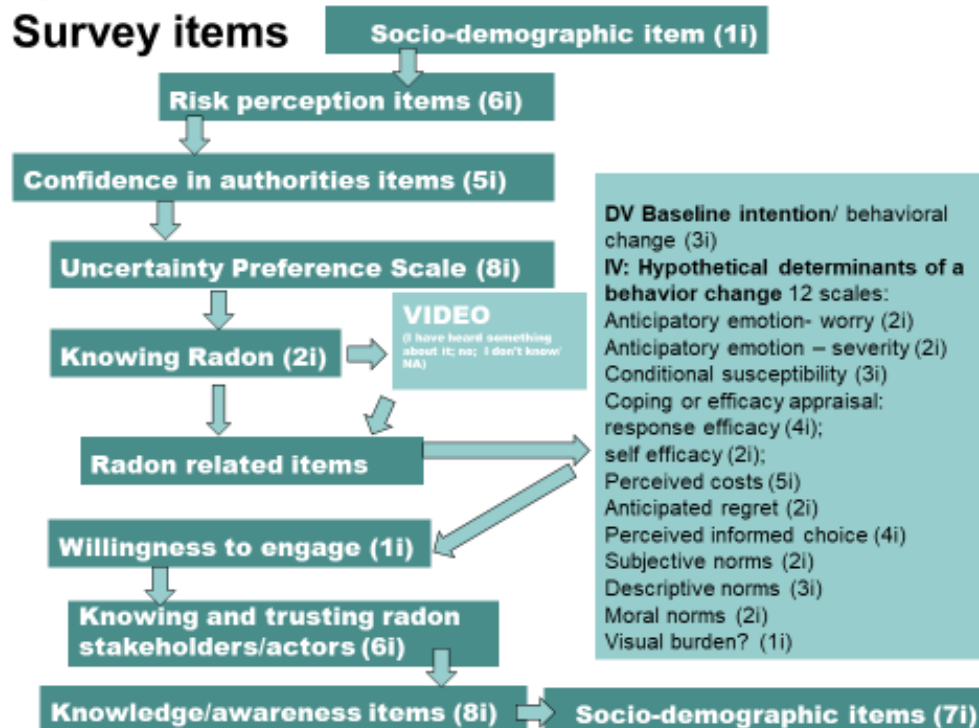
How will you measure the main concepts?

Which existing validated and reliable scales can you use?

Involved: principal investigators, researchers, consulted SSH experts, **radon experts**

Decide on a sequence of questions

Example: Behavioural change



What do you ask first, what last?

How can you avoid questionnaire contamination?

Involved: principal investigators, researchers, consulted SSH experts

Develop introduction to sections include motivational sentences

Example: Behavioral change

“To summarize, a building can be tested for radon; it can be remediated if there is radon detected; or there can be preliminary protective measures installed when the building is built. For instance, the new building has a special ventilation system from the beginning.”

“To what extent do you agree or disagree with the following statements?”

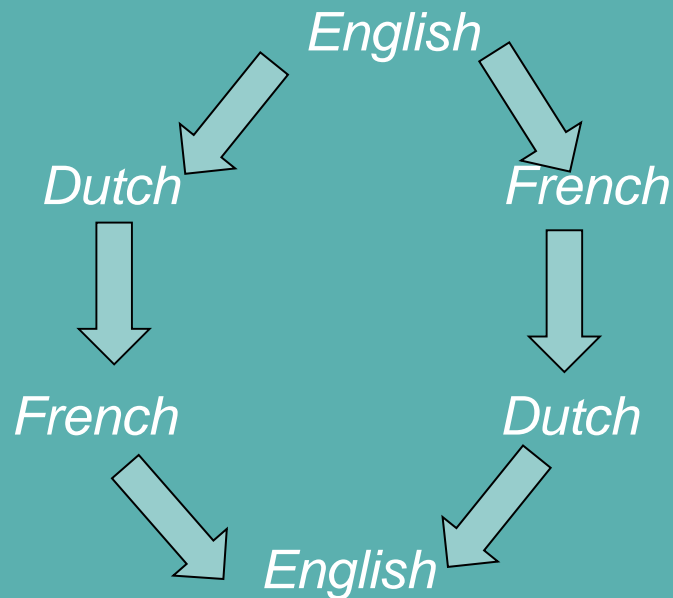
“ You answered 75% of the questionnaire. Thank you. In the last part of this questionnaire ...”

**How will you make
questionnaire
“interesting”?**

**How will you keep
respondents answering it?**

Involved: principal investigators,
researchers, consulted SSH
experts, radon experts

Example: Belgium



Are questions, words understood and interpreted in the same way in all languages applied and reported?

Involved: principal investigators, researchers, radon experts, **translating company, native speakers with radon knowledge**

1. Technical part of the questionnaire (filled by interviewer):

Code of the interview: letter +number (write the same code on the questionnaire)

Q1	Date	
Q2	Beginning of the interview?	
Q3	End of the interview?	
Q4	Language	
Q5	Place of the interview	
Q6	To which pilot study group does the recipient belong to?	1. SCK•CEN 2. (PhD) Student 3. University personal 4. Relatives of colleagues 5. Friends 6. Neighbours 7. Other (name it)
Q7	Did the respondent complain about the duration of the interview?	1. Yes 2. No What exactly:
Q8	Were there any problems with understanding of the questions?	1. Yes 2. No Which question(s)?
Q9	Other remarks?	
Q10	Name of interviewer	

What do you wish to test?

Involved: researchers, principal investigators, **interviewers**

Protocol used for the interview

1	<ul style="list-style-type: none"> Ask the recipient to participate in a pilot study for public opinion survey conducted for scientific purposes. The <u>anonymity</u> is guaranteed, i.e. it will not be possible to identify the respondent.
2	<ul style="list-style-type: none"> Explain that the purpose of the pilot study is to improve the questionnaire and to find the pitfalls of the existing questions wordings. Make clear that you will write all comments and interaction during the interview and they will be taken into account by people working on questionnaire after pilot study.
3	<ul style="list-style-type: none"> Ensure him/her that it will take less than 35 minutes.
4	<ul style="list-style-type: none"> Let recipient decide about the language of the interview.
5	<ul style="list-style-type: none"> Give the questionnaire to the respondent and write the code of the interview on the questionnaire and on the technical part of the questionnaire.
6	<ul style="list-style-type: none"> Help with reading and filling the background variables (from S1 to S13). The answers to all questions can be put in the first columns next to the code of the question.
7	<ul style="list-style-type: none"> Give the questionnaire to the recipient and ask him/her to fill it.
8	<ul style="list-style-type: none"> Ask the respondent to contact you, whenever he/she has a question or problem with understanding the questions.
9	<ul style="list-style-type: none"> Write down the possible questions of recipients during filling the questionnaire.
10	<ul style="list-style-type: none"> Fill the technical part of the questionnaire (<i>BY INTERVIEWER</i>) .

Do you have a protocol for testing?
Did you train interviewers?

Involved: researchers, principal investigators, interviewers

Respondent 13TP: *Overall very clear. Most questions were very clear. Not too long, and not too repetitive. Not tiring. It felt good, I've participated in shorter surveys that felt much longer. Scheikundig avfal not clear.*

Radon- doesn't know what it is.

NC3: maybe add "at this time..."

Ioniseerde straaling not very clear. Maybe explain it a bit what it is.

Respondent 19FH: *Overall quite good, but very long, so I needed my time. It would be better to be provided in qualtrics.*

Q2.1 I really liked. Very clear

UPS he misunderstood the question.

The figure helped a lot. It made me realize that I want to be at 2nd category, not the 1st.

PUD1 delete the question mark

Radon was new to me.

Around RA25 onwards, I would quit the survey. It became too much.

The video was quite good. But ideally you should have some video from the Belgian government.

Pilot study

How will you analyse the results of the pilot study?

How will you anonymise?

Who will take the final decision?

Involved:
researchers,
principal
investigators, **radon experts, translators**

A pilot study with **20 respondents** was carried out as a pre-test of the survey in the period of June - July, 2020 with an online version of the questionnaire. The pilot study was conducted with employees of the Belgian Nuclear Research Centre (SCK CEN) as well as with doctoral and postdoctoral researchers from University of Antwerp. Prior to respondents starting to fill in the questionnaire, the interviewers made an **introduction** that briefly explained the purpose of the study and also included messages that are known to encourage people to respond: (a) assure the respondents that data will remain anonymous; (b) explain the purpose of the pilot study; (c) explain the selection of the respondents (if requested); (d) communicate the estimated time needed to fill in the questionnaire (initial estimation: 35 min); (e) emphasize that all the respondents' comments will be analysed together with the interviewer in individual discussions.

The questionnaire of the pilot study was offered in 3 **languages** (i.e. English, Dutch and French). 12 of the respondents chose for the Dutch version, 8 of them chose the English version, and 2 of them chose the French version of the questionnaire.

When filling-in the questionnaire, respondents were also asked to **write comments** next to the questions, if necessary. Online individual discussions with the interviewer were held with each respondent and this helped identifying any problems, e.g. terms or phrases that were confusing or questions that were deemed too difficult to answer. In addition, this allowed verifying that the questions were interpreted in the same way by different respondents.

A **qualitative analysis of the comments** obtained was used to produce an improved version of the questionnaire. Every comment of the pilot study respondents was **discussed and considered** by the principal investigators for the final version of the improved questionnaire.

Pilot study

What is important for your pilot study report?

Involved:
researchers,
principal
investigators

Improve questionnaire Back in translation



How can you improve it?
Where can you clarify it?
Is it too long or have you still place for few Q?
Did you synchronise changes through languages?

Involved: researchers, principal investigators, radon experts, SSH experts, native speakers, translators

Apply for the ethical approval

Example, debriefing form:

DEBRIEFING FORM

Dear participant,

Thank you for taking part in this survey. Please read the material on this form carefully to learn important information about your experience in this study, and ask me any questions that you have. After this debriefing, you may choose to have information we collected about you removed from this research study. For this study, it was important that we provide you with incorrect information about one aspect of the study. Now that your participation is completed, we will describe what information was incorrect and why.

What You Should Know About This Study While you were answering the questions related to decommissioning of nuclear power plants, you were told that:

“Currently, there is an initiative to involve citizens in the decision-making process concerning the final state of nuclear power plants in Belgium (offered in flexible dates and hours), and anybody can participate. Would you like to write your name in the list so that you can be involved in the decision-making process? (Indicate your preference here and we will provide you more information after the survey)”.

However, there is no such initiative at the moment. The actual purpose of this question was to see the extent to which you would like to participate in such an initiative if there would be one and it was important to make the event seem more realistic so that we have a more accurate answer.

Your Right to Withdraw Data Now that you know the true purpose of this question, you may decide whether you want to have your data removed from the study or not. If you choose to have your data removed, only your answer related to the item where deception was used will be removed. There will be no penalties or negative consequences for you if you withdraw from the study. Before making your decision, please ask me any questions you have.

Confidentiality Although the purpose of this one question was different from what was originally explained to you, everything else on the consent form, information sheet and on the survey is correct. We will keep all information I have about you completely confidential, including your decision about whether to withdraw from the study.

If You Have Any Questions or Concerns Please keep a copy of this Debriefing Form for future reference. If you have any questions or concerns about this study and the research procedures used, you may contact

Dr. Tanja Perko: tperko@sckcen.be

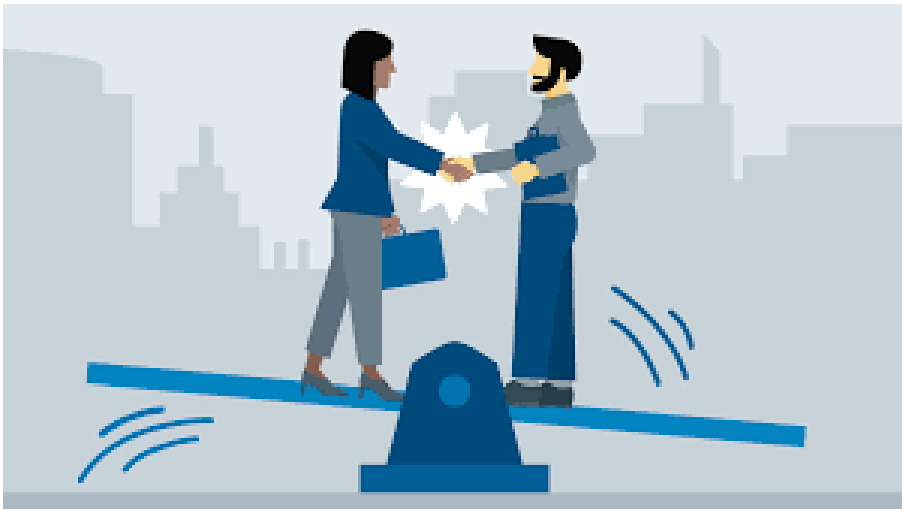
Do you have the following documents ready?

- Translated questionnaire
- Objectives of the research
- Justification for all questions
- Informed consent
- Information sheet
- Methodology (sample, data collection, formulation of items,
- Debriefing form

Involved: principal investigators,, ethical committee chair and members

Open a call and contract a field work company

**Who can collect data for
you?**



**Detailed process
in Catrinel's presentation**

**Involved: principal investigators,,
legal department, financial
department, marketing
companies**

Example: Improving programming

Just so you know, we asked him (and he probably told you) to put codes which were missing in the full questionnaire as follows:

DE11: pointless – worthwhile;

DE12: Uninteresting – interesting;

DE13: Disappointing – rewarding.

These codes do not need to appear in the online survey, but we need them for the final deliverables in order to couple the codes with the data as with all other codes.

Example: Tuning intro

“One remark considering the letter: I don’t think we should take out the part where we say that it is important to get a representative part of the population.

I also think we should mention explicitly Food Bank, not ‘an association’.”

Are all Q correctly programmed?

Are answering categories matching?

Are graphical cards OK?

Are languages correct?

Are sequences of Q and filter questions correctly programmed?

Are intros, informed consents, debriefings still the same?

Involved: principal investigators, researchers, **testing personnel, marketing company**

Participate at the interviewer's training

In case of CAPI

How many interviewers?

Do they understand questions?

How they will introduce themselves?



Involved: principal investigators,
marketing company,
**interviewers, field work
manager**

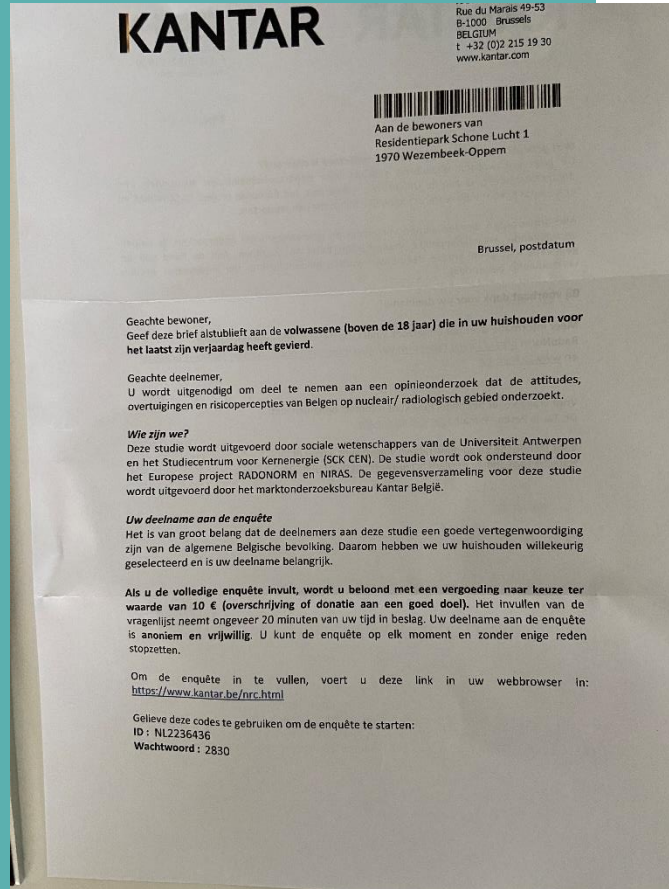
Be available and responsive during the field work

Example: correspondance with a respondent

Bonjour

Pourrais-je avoir le document en français svp.

Bien à vous, ...



Did you inform authorities about your field work?

Who is following societal discourse which may influence responses?

Who is responding to respondents enquiries?

Involved: principal investigators, researchers, authorities, marketing company

Check data, check technical report

Example: clarifications on the method

- *How many invitations did they send out?*
- *What was response rate?*
- *Were there technical issues?*
- *Report on correspondance with a company?*
- *How many interviewers?*
- *Interviewer effect?*

Did you inspect data?

**Did you get all
information needed in the
technical report?**

Involved: principal
investigators, researchers,
authorities, marketing company

Example: Structure of the report

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First explorative analysis, report

Do you have at least 3 people to analyse and interpret results?

Will you report models?

Who will proof-read it?

Do you have some graphical help?

Involved: principal investigators, researchers, graphical designer

Example:

**Give feedback
on the results**

**Did you disseminate the
report to all involved
people?**

Did you publicise it?

**Can you make it publicly
available?**

**Did you acknowledge the
sponsor?**

**Involved: principal investigators,
researchers, communication
department, WP8 of RadoNorm**





Start your research make models, write articles

SCIENTIFIC ARTICLES:

- *Investigate public awareness on radon*
- *Define risk perception of radon*
- *Identify driving factors of radon testing and radon mitigation*
- *Recognise determinants of trust in radon risk management*

**Who will use which
variables for which RQ in
which journal?**

Who is co-author?

Involved: researchers



RadoNorm

Managing risks from radon and NORM

Public opinion survey From idea to results

**MANY STEPS,
all of them equally important**

“The art of public opinion survey analysis”



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