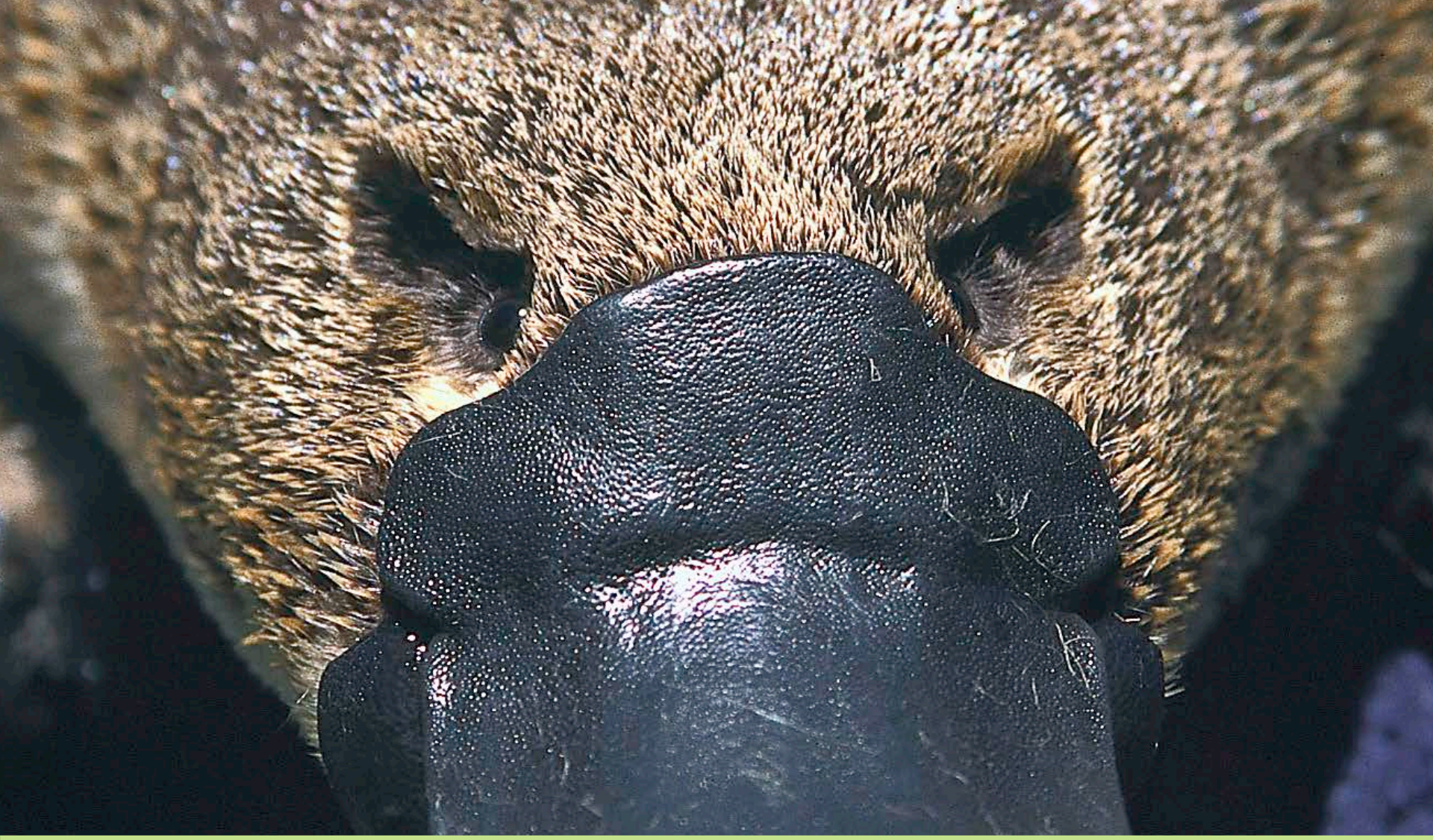


Avoiding Questionnaires

Jon Kolko
Professor, Austin Center for Design

ac4d

Questionnaires

The attempt to predict the behavior of a large group based on the self-reported behavior of a small group.

Questionnaires

The attempt to predict the behavior of a large group based on the self-reported behavior of a small group.

QUESTIONNAIRES ARE...

1. Hard to do correctly
2. Prone to bias
3. Expensive
4. Based on self-reported data

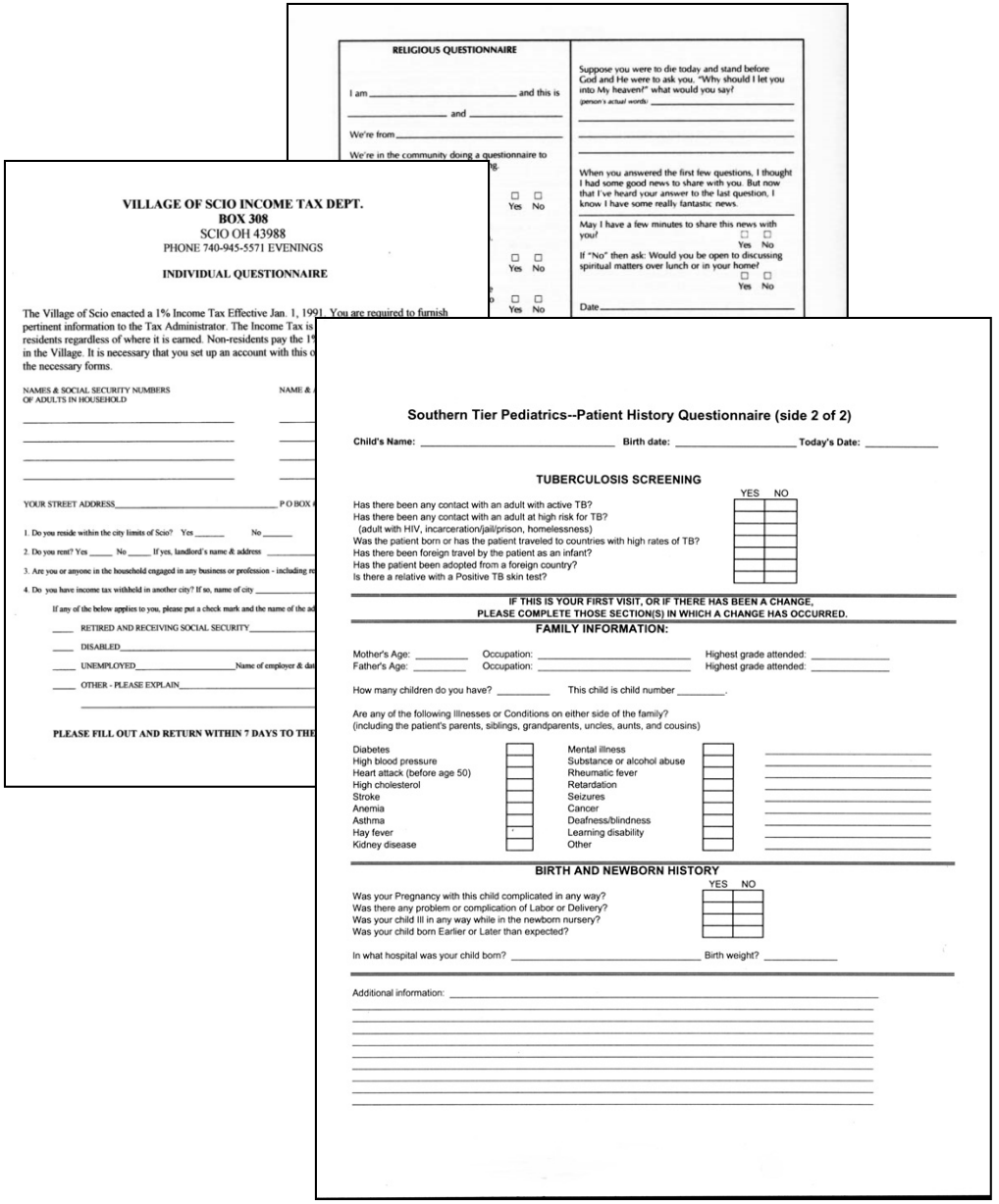
ac4d

What Is It?

Generally, a printed form with questions is distributed to a large quantity of people (our sample population)

The individuals respond to the questions, and the forms are collected

The data is accumulated, and can then be plotted to visualize the various responses



RELIGIOUS QUESTIONNAIRE

I am _____ and this is _____ and _____

We're from _____

We're in the community doing a questionnaire to

Suppose you were to die today and stand before God and He were to ask you, "Why should I let you into My heaven?" what would you say?

(person's actual words) _____

When you answered the first few questions, I thought I had some good news to share with you. But now that I've heard your answer to the last question, I know I have some really fantastic news.

May I have a few minutes to share this news with you? ☐ Yes ☐ No

If "No" then ask: Would you be open to discussing spiritual matters over lunch or in your home? ☐ Yes ☐ No

Date _____

VILLAGE OF SCIO INCOME TAX DEPT.
BOX 308
SCIO OH 43988
PHONE 740-945-5571 EVENINGS

INDIVIDUAL QUESTIONNAIRE

The Village of Scio enacted a 1% Income Tax Effective Jan. 1, 1991. You are required to furnish pertinent information to the Tax Administrator. The Income Tax is residents regardless of where it is earned. Non-residents pay the 1% in the Village. It is necessary that you set up an account with this o the necessary forms.

NAMES & SOCIAL SECURITY NUMBERS OF ADULTS IN HOUSEHOLD

NAME &

YOUR STREET ADDRESS _____ P O BOX

1. Do you reside within the city limits of Scio? Yes _____ No _____
2. Do you rent? Yes _____ No _____ If yes, landlord's name & address _____
3. Are you or anyone in the household engaged in any business or profession - including re
4. Do you have income tax withheld in another city? If so, name of city _____

If any of the below applies to you, please put a check mark and the name of the ad

____ RETIRED AND RECEIVING SOCIAL SECURITY _____
____ DISABLED _____
____ UNEMPLOYED _____ Name of employer & dat
____ OTHER - PLEASE EXPLAIN _____

PLEASE FILL OUT AND RETURN WITHIN 7 DAYS TO THE

Southern Tier Pediatrics--Patient History Questionnaire (side 2 of 2)

Child's Name: _____ Birth date: _____ Today's Date: _____

TUBERCULOSIS SCREENING

	YES	NO
Has there been any contact with an adult with active TB?		
Has there been any contact with an adult at high risk for TB? (adult with HIV, incarceration/jail/prison, homelessness)		
Was the patient born or has the patient traveled to countries with high rates of TB?		
Has there been foreign travel by the patient as an infant?		
Has the patient been adopted from a foreign country?		
Is there a relative with a Positive TB skin test?		

IF THIS IS YOUR FIRST VISIT, OR IF THERE HAS BEEN A CHANGE, PLEASE COMPLETE THOSE SECTION(S) IN WHICH A CHANGE HAS OCCURRED.

FAMILY INFORMATION:

Mother's Age: _____ Occupation: _____ Highest grade attended: _____
Father's Age: _____ Occupation: _____ Highest grade attended: _____

How many children do you have? _____ This child is child number _____.

Are any of the following Illnesses or Conditions on either side of the family? (including the patient's parents, siblings, grandparents, uncles, aunts, and cousins)

Diabetes	☐	Mental illness	☐
High blood pressure	☐	Substance or alcohol abuse	☐
Heart attack (before age 50)	☐	Rheumatic fever	☐
High cholesterol	☐	Retardation	☐
Stroke	☐	Seizures	☐
Anemia	☐	Cancer	☐
Asthma	☐	Deafness/blindness	☐
Hay fever	☐	Learning disability	☐
Kidney disease	☐	Other	☐

BIRTH AND NEWBORN HISTORY

	YES	NO
Was your Pregnancy with this child complicated in any way?		
Was there any problem or complication of Labor or Delivery?		
Was your child III in any way while in the newborn nursery?		
Was your child born Earlier or Later than expected?		

In what hospital was your child born? _____ Birth weight? _____

Additional information: _____

What Is It For?

Ethnography (specifically, Contextual Inquiry) showed us what people do and why they do it. We use it to generate provocations and to build empathy.

Questionnaires and Surveys will show us what people think they do and why the think they do it. People use it to predict behavior of the large group, based on the small group.

ac4d

Problems with Questionnaires

Perhaps the most overused research technique available. Consider how often you experience a “questionnaire”:

Standardized testing
Gallup (voting) polling
At the mall
On the internet
In magazines
At the movies
On the telephone
In college
At the bank
While paying your bills
At the dentist
At the grocery store

Why is this problematic?

ac4d

Pros and Cons of Questionnaires

Pros/
We can understand the population through a small sample.
We can gather more data in a shorter period of time
We can create statistical evidence to prove our findings to a skeptical audience.

Cons/
They are typically done wrong.
They are expensive and time consuming to do right.
When they are done right, the data is fairly superficial.
They have little to no bearing on innovation.

Understanding Sampling | An Example

You are creating a new backpack for college students in the US, and are in the initial design phases. You conduct a questionnaire to determine what people generally carry around with them, and their backpack preferences.

Some questions we care about:

Whom do we give the questionnaire to?
How sure will we be that the results of our questionnaire are valid?
How many people should we give the questionnaire to?

ac4d

Understanding Sampling | An Example

Whom do we give the questionnaire to?

What if we give our questionnaire to students at AC4D?

What if we give our questionnaire to everyone who walks by AC4D?

What if we give our questionnaire to anyone we find?

ac4d

Understanding Sampling | An Example

Whom do we give the questionnaire to? (continued)

We give our questionnaire to randomly selected members of our target population (people who match our end target of design).

The people we give our questionnaire to become our sample population, or n value.

What does “randomly selected” mean?

ac4d

Understanding Sampling | An Example

We need to select a confidence interval and a confidence level.

Confidence Interval (CI): The range of values around our target percentage, describing a range of assurance (or confidence)

If 47% of our sample population desires a blue backpack, and our CI is 4, then we can be "sure" that between 43% (47%-4) and 51% (47%+4) of all of the target population would have selected this.

If 47% of our sample population desires a blue backpack, and our CI is 1, then we can be "sure" that between 46% (47%-1) and 48% (47%+1) of all of the target population would have selected this.

Generally, A lower CI is better, but more expensive.

ac4d

Understanding Sampling | An Example

We need to select a confidence interval and a confidence level.

Confidence Level: How sure we are that the answers from our sample can be generalized to the entire target population.

If our confidence level is 95%, we are 95% certain that our questionnaire results can be generalized to the entire target population (or, 95 out of 100 times, our results will generalize correctly).

If our confidence level is 99%, we are 99% certain that our questionnaire results can be generalized to the entire target population (or, 99 out of 100 times, our results will generalize correctly).

Generally, a higher level of confidence is better, but more expensive.

ac4d

Understanding Sampling | An Example

First, we need to know how large the entire target population of end users is – in this case, how many college students are there in the United States.

US Census tells us 21 million.

What if we give our questionnaire to all of them (ie, our sample population is the same as our target population; n=21 million)?

ac4d

Understanding Sampling | An Example

How many people should we give the questionnaire to? (continued)

Using the sample size calculator available at http://www.surveysystem.com/sscalc.htm we find out that:

A Confidence Level of 99% and a Confidence Interval of plus or minus 1 requires n=16,623 people.

A Confidence Level of 95% and a Confidence Interval of plus or minus 2 requires n=2401 people.

A Confidence Level of 95% and a Confidence Interval of plus or minus 4 requires n=600 people.

ac4d

Understanding Sampling | An Example

How many people should we give the questionnaire to? (continued)

A Confidence Level of 95% and a Confidence Interval of plus or minus 4 requires n=600 people.

If we perform this survey, and find out that 80% of all of our respondents prefer a blue backpack over all other colors, we can now say:

"We are 95% sure that between 76% and 84% of all 21 million college students say they will prefer a blue backpack over all other colors".

ac4d

Understanding Sampling | An Example

How many people should we give the questionnaire to? (continued)

It works the other way, too. If we send out our 600 questionnaires, but only get 20 back, and 16 of them prefer a blue backpack over all other colors (80%), we get a confidence interval of plus or minus 23. We can now say:

"We are 95% sure that between 57% and 100% of all 21 million college students say they will prefer a blue backpack over all other colors".

ac4d

So do you believe it?

“We are 95% sure that between 57% and 100% of all 21 million college students say they will prefer a blue backpack over all other colors”.

What action do you take, now that you have this information?

ac4d

Understanding Sampling | An Example

Key takeaways:

- You need to sample only from within the target population (if designing for college students, only sample college students)
- You don't need to sample the entire target population to get valid results
- A larger sample yields more accurate results, but with diminishing returns
- You need to know the size of the target population, a confidence interval (CI) and a confidence level in order to determine your sample size (n)
- You need to randomly select your sample out of the entire target population

ac4d

Understanding Bias

When you select convenient people – when you don't select randomly from a population – you introduce bias:

You can't generalize to the larger population successfully
None of the statistics just described work
Your work will be discredited by someone who identifies the bias.

ac4d

The Biggest Problem of All

Assuming you actually do the work correctly, the questionnaires are based on self-reported behavioral data.

Self-reported behavioral data does not often translate to actual behavior, particularly in purchasing or usage contexts.

“How likely would you be to quit smoking with this new quit-smoking patch?”

ac4d

Questionnaires

The attempt to predict the behavior of a large group based on the self-reported behavior of a small group.

QUESTIONNAIRES ARE...

1. Hard to do correctly
2. Prone to bias
3. Expensive
4. Based on self-reported data

TAKEAWAY:

Don't do them, and be skeptical of all results when you hear about them.

ac4d


ac4d