Survey Methodology

for

Research Essentials JAX

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Cyndi Garvan, MA (Mathematics), PhD (Statistics)

Associate Director Research

Department of Anesthesiology, University of Florida

Co-Director of UF TRACTS (Training and Research Academy for Clinical and Translational Science)

cgarvan@ufl.edu

Learning Objectives

- There is a methodology behind conducting a survey
- Familiarity with the Survey Process
- Sources of Survey Bias
- Strategies for Conducting a Successful Survey
- Familiarity with Dillman's Principles for Writing Questionnaires
- Knowing that Qualtrics exists and where to find it

Outline

- Intro to Cyndi
- Learner Discussion
- Reasons for surveys
- Overview of survey process
- Survey Planning
- Sampling
- Survey design
- Sources of Bias
- Writing a good questionnaire (Dillman's principles)
- Qualtrics

Intro to Cyndi

I have designed, conducted, and analyzed the results for A LOT of surveys!

Some examples:

- Uninsurance Surveys for States of Florida, Indiana, Kansas
- National Marriage Survey
- Injured Workers Satisfaction with Care
- Surveys of doctors on many topics (education, treatment practices, etc.)
- Survey on attitudes toward Medical Maggots

Learner Discussion

- Let’s conduct a survey

What is the value of surveys?

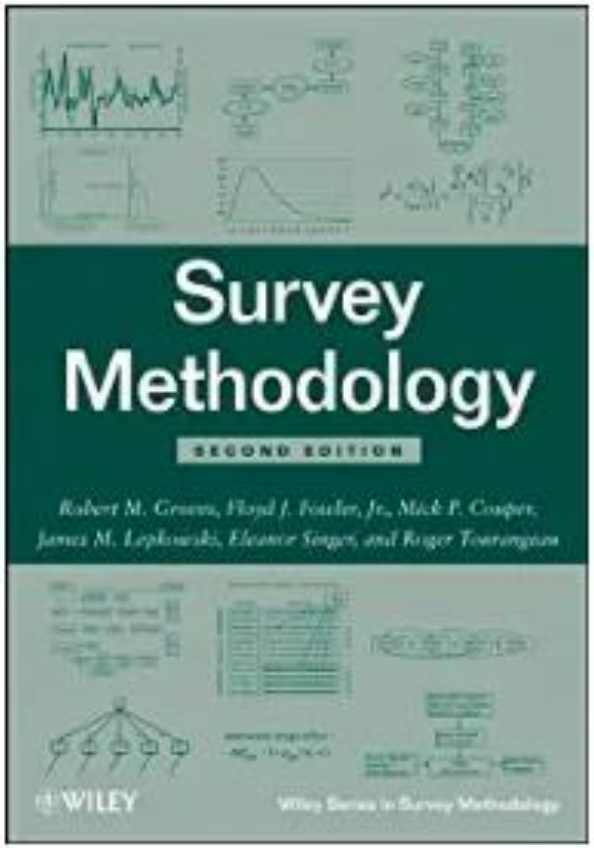
When do you participate in a survey?

When do you ignore a survey?

Survey Methodology is a thing

Books

Robert Groves



Don Dillman

Reasons for Surveys

- **Description :** Determine the proportion of anesthesiology residency programs that use simulation for instruction.
- **Hypothesis testing:** Clinicians who have an effective mentor are more engaged in research than clinicians who do not
- **Needs assessment:** What type of professional training is needed to increase clinician engagement in research?
- **Evaluation:** Does education about glucose monitoring during the perioperative period change glucose control?
- **Longitudinal assessment: NHANES** (The National Health and Nutrition Examination Survey)

Overview of Survey Process

1. Preliminary planning
2. Questionnaire design
3. Pretesting
4. Survey implementation
5. Data coding, data-file construction
6. Data analysis
7. Report

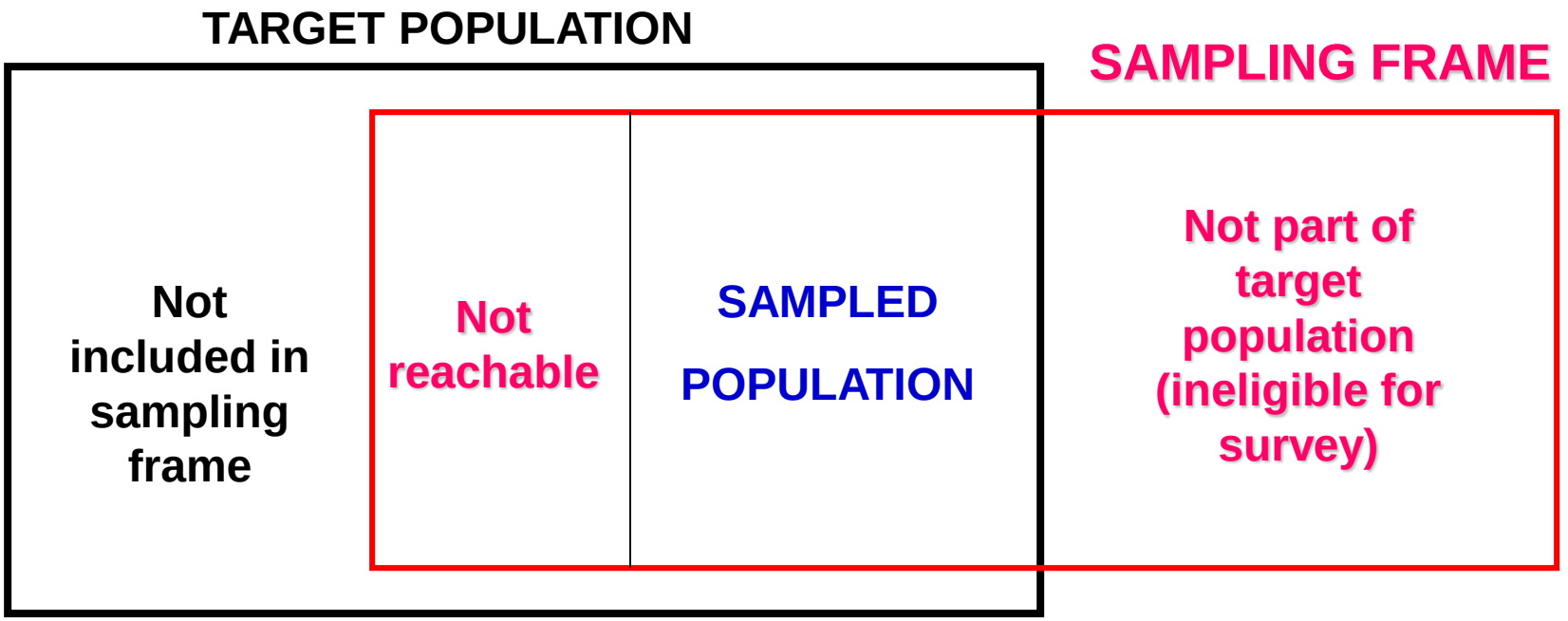
Considerations for Survey Planning

1. Goals *(why)*
2. Survey design *(who, what, when, where, how)*
   - Population and sample *(who)*
   - Sample design
   - Method *(what, where, how)*
   - Timeline *(when)* and budget *(how)*
3. Survey integrity (beware of sources of bias) 
4. Survey project team
5. Products

Definitions related to sampling

- Observation unit: An individual or object on which a measurement is taken.
- Target population: The complete collection of observations we want to study.
- Sample: A subset of the population.
- Sampled population: The collection of al possible observation units that might have been chosen in a sample.
- Sampling unit: The unit we actually sample.
- Sampling frame: The list of sampling units.
- Census: When all individuals in target population are measured.

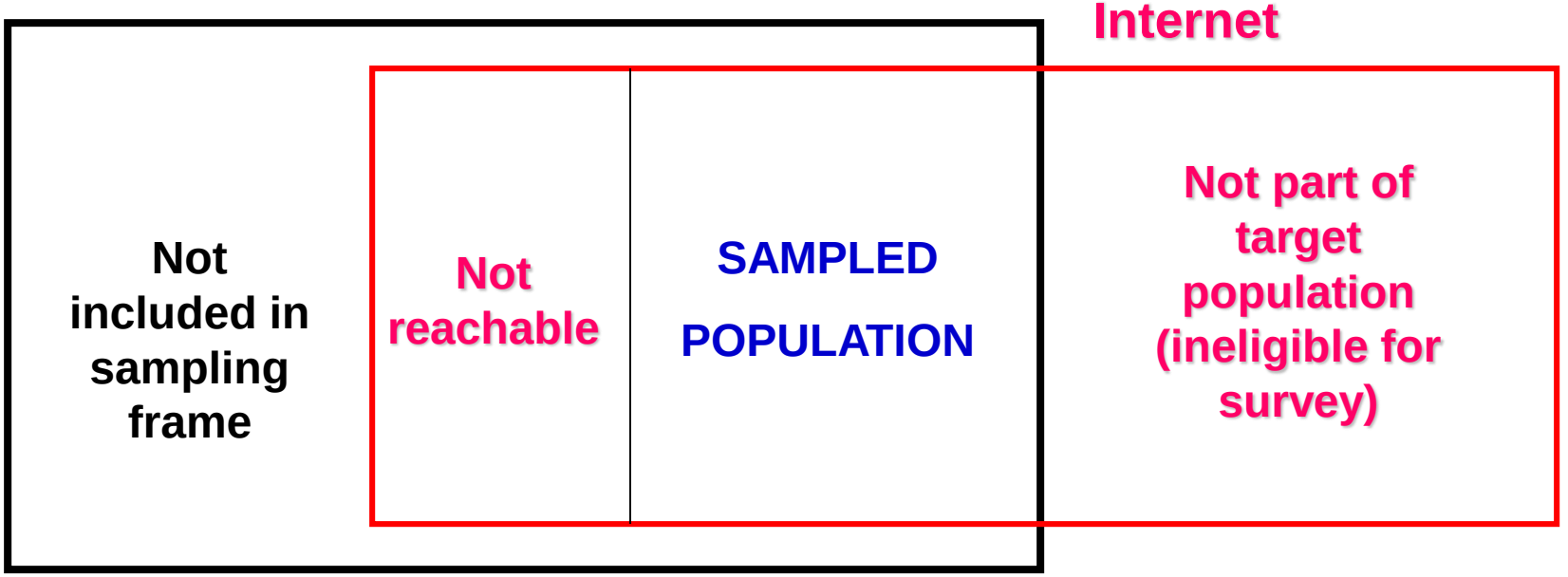
Relationship between target population, sampled population and sampling frame



Example

SAMPLING FRAME = US Physicians with information on the Internet

TARGET POPULATION = US Physicians currently in practice

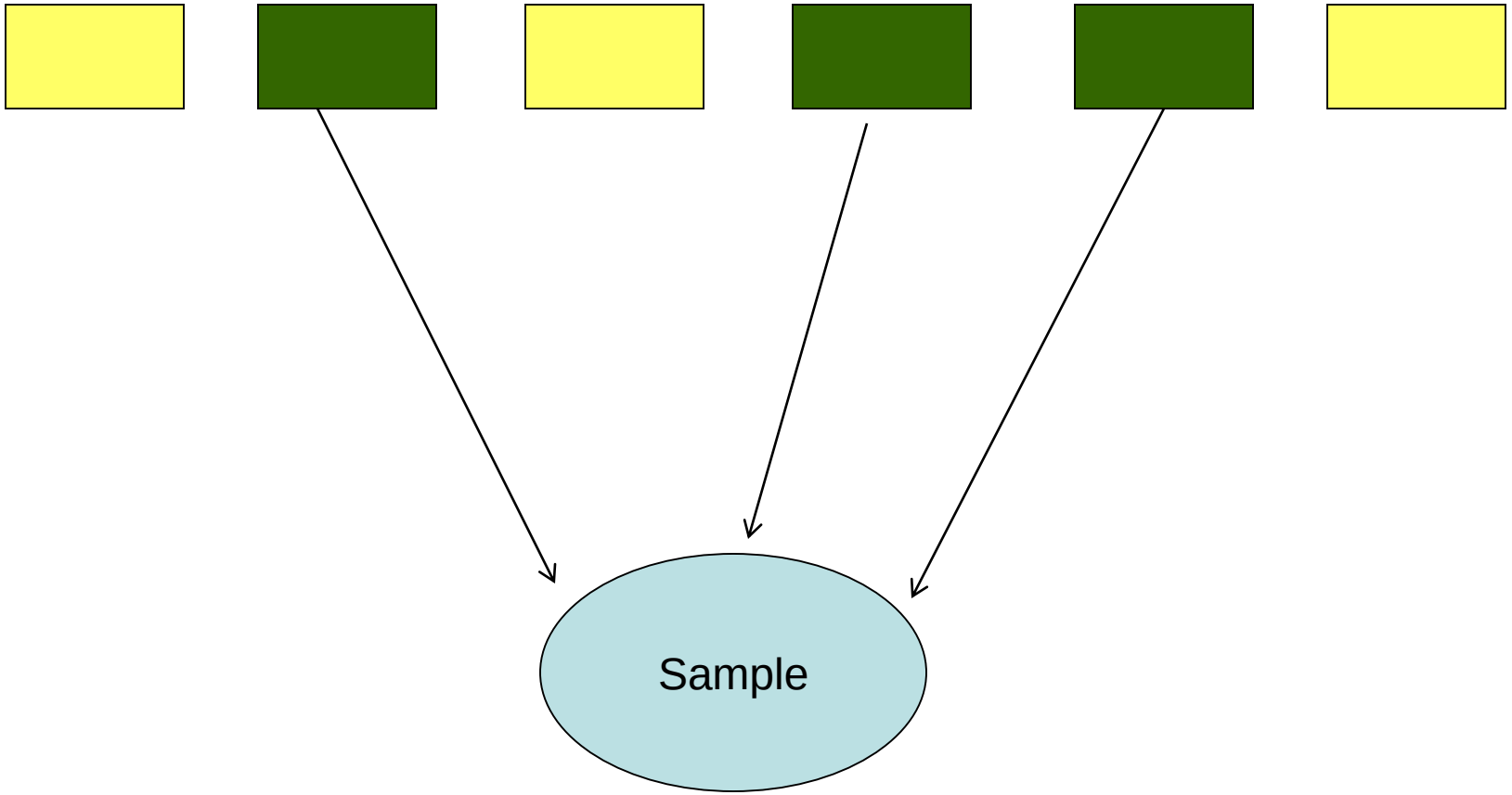


Sample Design

- Simple random sample
- Stratified sample
- Cluster sample
- Multistage sample

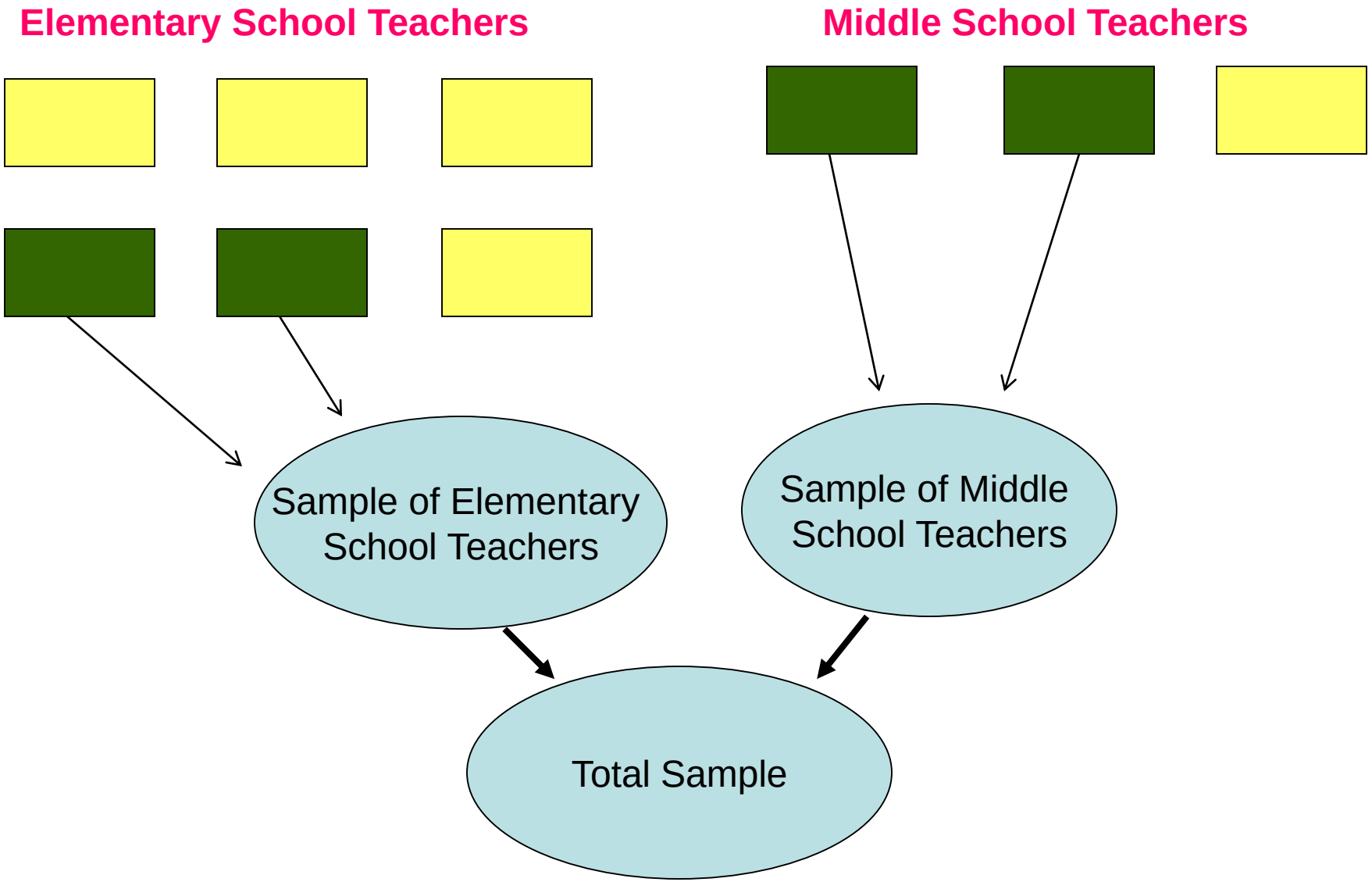
Simple Random Sample

Sampling Frame:

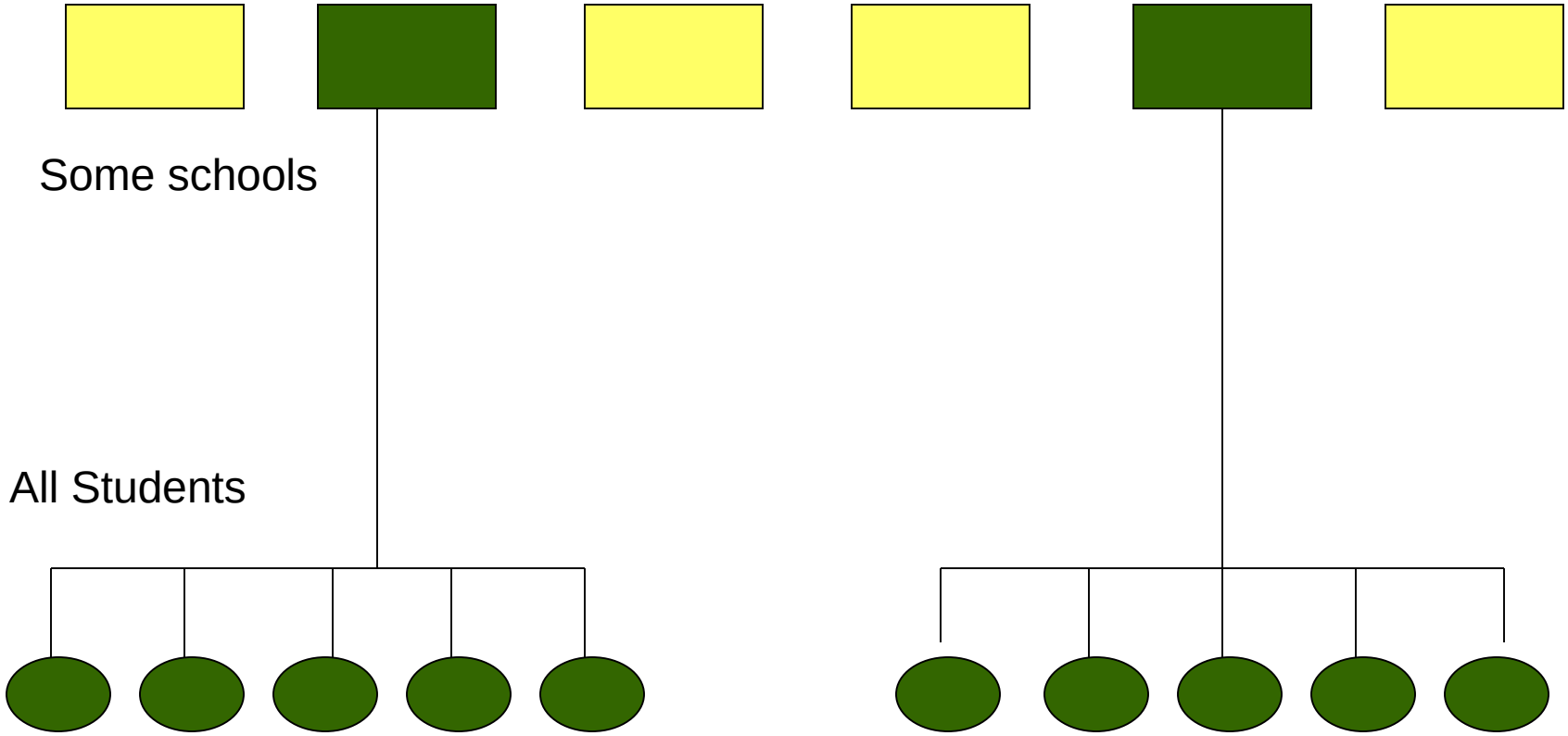


Sampling Frame:

Stratified Sample

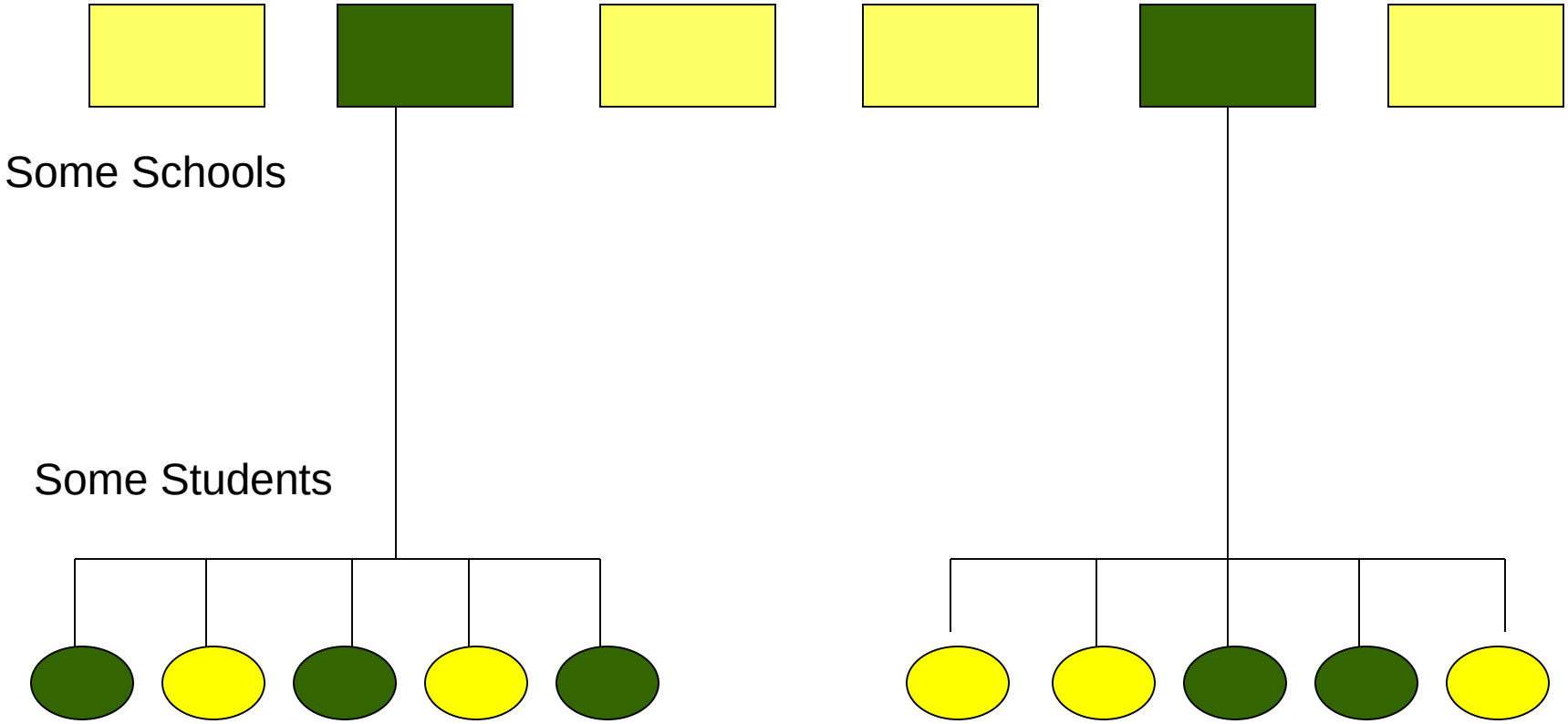


Cluster Sampling



e.g.) City blocks in census data, clusters of housing units in state and local governments.

Multistage Sampling



Weighting

- Ideally, a selected sample is a miniature of the population it came from. One of the problems is non-response. It may cause some groups to be over- or under-represented.
- A commonly applied correction technique is **weighting adjustment**. It assigns an adjustment weight to each survey respondent. Persons in under-represented get a weight larger than 1, and those in over-represented groups get a weight smaller than 1.

Weighting

- In the computation of means, totals and percentages, not just the values of the variables are used, but the weighted values.

Survey Methods

- Self-administered:
  - Mail
  - Internet
  - Group
- Interviewer-administered:
  - Phone
  - Face-to-face
- Mixed-mode

Population considerations

- Reading and writing skills:
  - Good => mail, internet, group
  - Poor => phone, face-to-face interview
- Computer use and experience
- Motivation:
  - High: self-report surveys
  - Low: Interviewer-administered surveys
- Geographic location

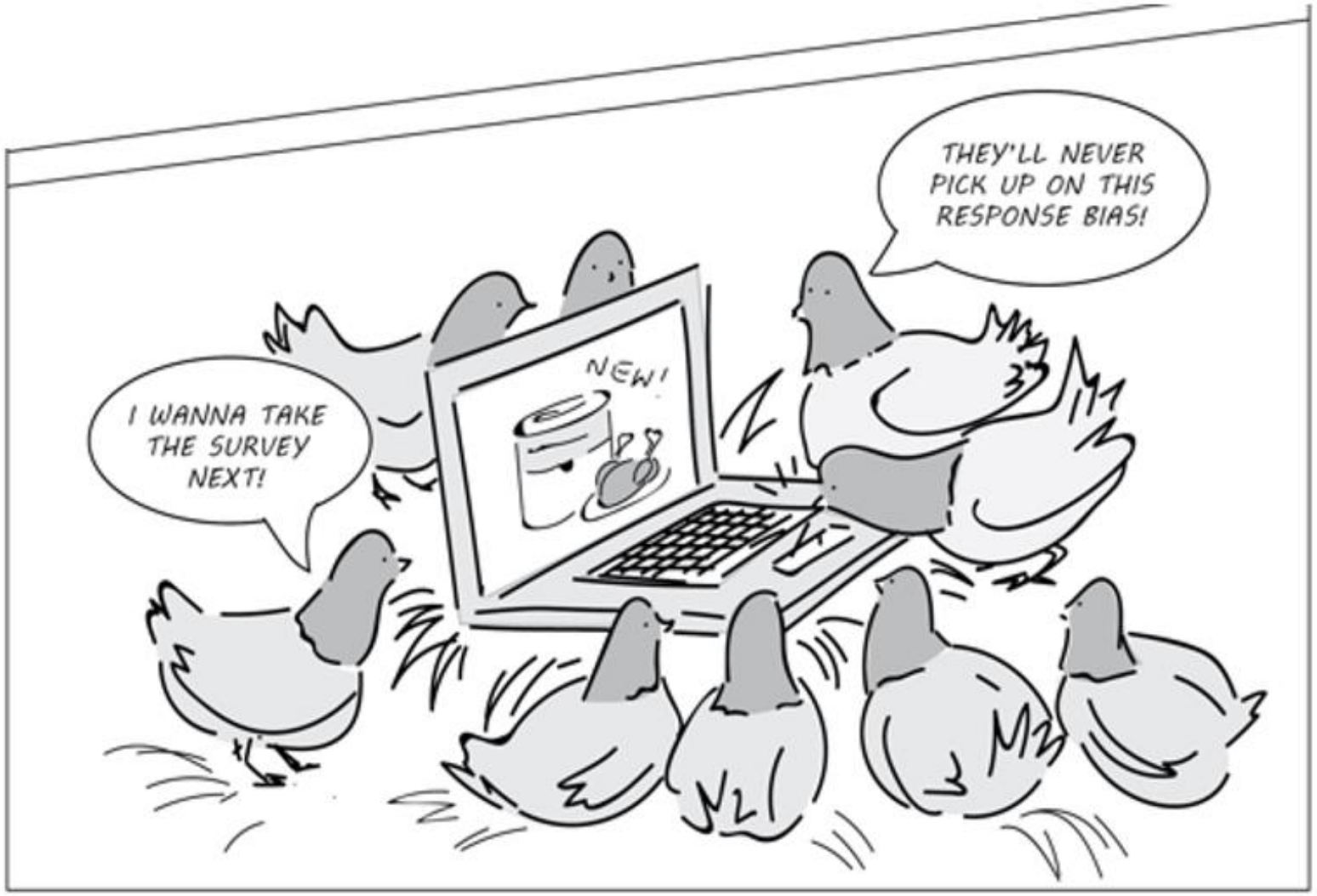
Sampling frame considerations

- There is a sampling frame with contact information for individuals:
  - Phone numbers
  - Addresses
  - E-mails
- There is no sampling frame of individuals, but of groups of individuals: use cluster or multi-stage sampling to obtain lists of individuals.
- There is no sampling frame:
  - Random digit dialing (RDD)

Sources of Bias

- Sample is not representative of population
  - Non-coverage (some persons of interest have no chance of being interviewed)
  - Non-response (segment of sample does not participate due to no contact or refusal)
- Poorly worded questions
- Social desirability bias
- Interviewer bias
- Item non-response (missing data)
- Poor analysis

After conducting an online survey, the Campbell's Soup Company is baffled at the negative ratings for their new extra-chickeny chicken noodle soup...



Little did they know, voluntary surveying had made their sample anything but representative of the population...

A really bad question

What is your race?

- ○ Black/African American
- ○ Hispanic/Latino and other, including Cuban, Puerto Rican, Mexican
- ○ Asian except for Chinese, Japanese, Indian, or Korean
- ○ Native Hawaiian/Pacific Islander
- ○ White
- ○ American Indian or Native Hawaiian
- ○ Other, please specify:

_____

Assembling the survey team

- Principal investigator(s)
- Study Coordinator
- Analyst (Statistician)
- Database Manager
- Research assistants
- Advisory Group – includes Champion

Ethical Issues in Survey Research

- Informing respondents – IRB always a good idea! (IRB2 for education projects)

- Protecting respondents
  - Data safety
  - Respondent safety

- Protecting interviewers

Strategies for Conducting a Successful Survey

- Write a good survey
- Make it short and professional looking
- Have a champion – someone who will inspire your target sample to responds
- PILOT TEST, PILOT TEST, PILOT TEST
- Send out the survey multiple times
  - Email
  - US Mail
  - Phone call

Dillman's principles

Dr. Dillman is recognized internationally as a major contributor to the development of modern mail, telephone and Internet survey methods. In 1970, he was founding coordinator of the SESRC's Public Opinion Laboratory (1970-1973), one of the first university-based telephone survey laboratories in the United States. His book, *Mail and Telephone Surveys: The Total Design Method* (1978), was the first to provide detailed procedures for conducting surveys by these methods, and was recognized in 1990 by the Institute for Scientific Information as a *"Citation Classic."* It has been cited in more than 3,600 scientific publications.

Dillman's Principles to Create Survey Items

Question writing principle 1

Choose simple over specialized words.

Poor example: Please indicate how many occupants of this household operate a vehicle on a daily basis:

Improvement: From the people who live in this house, how many drive a car every day?

Question writing principle 2

Choose as few words as possible to pose the question.

Poor example: Do you strongly agree, agree, disagree or strongly disagree with standardized testing being required for all elementary school grades in the state of Florida?

Improvement: To what extent do you agree or disagree with requiring standardized testing for all elementary school grades?

Question writing principle 3

Use complete sentences to ask questions.

Poor example:

Years teaching science : _____

Improvement:

For how many years have you taught science?

Number of years _____

Question writing principle 4

Avoid vague quantifiers when more precise estimates can be obtained.

How often did you attend religious services during the past year?

Poor example:

- ☐ Never
- ☐ Rarely
- ☐ Occasionally
- ☐ Regularly

Improvement:

- ☐ Not at all
- ☐ A few times
- ☐ About once a month
- ☐ Two to three times a month
- ☐ About once a week
- ☐ More than once a week

Question writing principle 5

Avoid specificity that exceeds the respondent's potential for having an accurate, ready-made answer

Poor example:

Please indicate the number of times you visited a park during the spring semester:

_____ Number of visits to a park

Question writing principle 6

Use equal numbers of positive and negative categories for scalar questions.

Poor example:

How satisfied are you with your residency program?

- ☐ Completely satisfied
- ☐ Mostly satisfied
- ☐ Somewhat satisfied
- ☐ Neither satisfied nor dissatisfied
- ☐ Dissatisfied

Question writing principle 7

Distinguish undecided from neutral by placement of the Undecided or No opinion at the end of the scale

Example of adequate placement:

- ❑ Strongly agree
- ❑ Somewhat agree
- ❑ Neither agree nor disagree
- ❑ Somewhat disagree
- ❑ Strongly disagree
- ❑ Undecided

Question writing principle 8

Avoid bias from unequal comparison

Poor example:

Which group plays a major role on resident success on Board Exams?

- ❑School
- ❑Family
- ❑Community
- ❑Well-trained attendings

Question writing principle 9

State both sides of attitude scales in the question items.

Poor example:

- To what extent do you agree with requiring residents to learn statistics?

Improvement:

- To what extent do you agree or disagree with requiring residents to learn statistics?

Question writing principle 10

Eliminate check-all-that apply question formats to reduce primacy effects.

Poor example:

Please indicate which type of music you prefer to listen at work (mark all that apply):

- ❑Blues
- ❑Rock
- ❑Jazz
- ❑Salsa
- ❑Hip hop
- ❑Country

Question writing principle 11

Develop response categories that are mutually exclusive.

<u>Poor example:</u>

From which one of these sources did you first learn about the wild fires?

- ❑Radio
- ❑Television
- ❑Someone at work
- ❑While at home
- ❑While traveling to work

Question writing principle 12

Use cognitive design techniques to improve recall

<u>Good example:</u>

When was the last time you had an accident?

How serious was it?

How long did the emergency response system take to send a person to assist you?

The researcher is most interested in the last question, but uses the others to improve recall.

Question writing principle 13

Provide appropriate time referents.

Can people accurately recall and report past behaviors? Problems happen with events that are either too far in the past or too regular.

Poor example:

How many times have you visited the library during the Spring semester?

_____ Number of visits to the library

Question writing principle 14

Be sure questions are technically accurate.

Poor example: Please indicate whether you agree or disagree with the UF requirement that students own cats.

- ❒ strongly agree
- ❒ agree
- ❒ disagree
- ❒ strongly disagree

Question writing principle 15

Choose question words that allows comparison with previously collected data.

<u>Poor example:</u>

Time 1:

- How often do you read to your child?

Time 2:

- How often do you read stories to your child?

Question writing principle 16

Avoid asking respondents to say yes in order to mean no.

Poor example:

Do you favor or oppose not allowing the state to raise taxes without approval of 60% of the voters?

- ❒ Favor
- ❒ Oppose

Question writing principle 17

Avoid double barreled questions.

<u>Poor example:</u>

Do you agree or disagree with creating a Survey Development Support office at UF and charging a fee to use it?

- ❒ Agree
- ❒ Disagree

Question writing principle 18

Soften the impact of potentially objectionable questions. Individuals may not be willing to reveal the requested information.

Poor example:

Please indicate how frequently you have thoughts about leaving your job at UF?

- ☐ Daily
- ☐ At least once a week
- ☐ At least once a month
- ☐ At least once a semester
- ☐ Never

Question writing principle 19

Avoid asking respondents to make unnecessary calculations.

Poor example:

During the last academic year, what percentage of your income was spent with mortgage payments?

Percentage: _____ %

Question writing principle 20

Make sure the question requires an answer.

Poor example:

When feeding your cat, do you also pet them?

- ☐ Yes
- ☐ No

Open ended questions

A GOOD IDEA!

Qualtrics

Use Qualtrics – easy to learn and free

https://elearning.ufl.edu/supported-services/qualtrics/

Don’t use Survey Monkey! (Not allowed by IRB)

QUALTRICS

OVERVIEW

Qualtrics is a robust, sophisticated service for creating and delivering web-based surveys. With over 100 question types available and the ability to create interactive questions and engage survey-takers with rich media, it becomes possible to increase response rates. Users can pull questions from professionally designed surveys as well as create their own library of questions, surveys, messages, and media.

Quantitative survey data can be analyzed as it is collected and researchers can pre-create reports with graphs, charts, and tables that populate in real time. Data can be exported into SPSS, Excel, or a variety of other formats for additional analysis. Furthermore, Qualtrics reports can be exported to PowerPoint, Word, or as a PDF file to use in presentations, reports, and research writing.

To login you will need your GatorLink username and password. Once you are logged in, you will be able to create, deliver, collect, and analyze online surveys in support of your teaching, research, and studies with expected adherence to codes and ethics for survey research.

Questions?

THANK YOU!

Liam, age 3

Claire, age 5

Sydney, age 12