Accessing Secondary Data

Rural Public Health Training Course: Research Module

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Secondary Data

- Data collected by someone else, often for another purpose

- Accessible

Some Types of Health Data

- Clinical data (paper records, EMR, EHR)
- Vital records data (birth cert, death cert, fetal death reports, induced termination of pregnancy, marriage, divorce)

STATE OF SOUTH CAROLINA
DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
CERTIFICATE OF LIVE BIRTH

139 -
BIRTH NUMBER

CHILD
1. CHILD'S NAME (First, Middle, Last, Suffix)
2. TIME OF BIRTH (24hR)
3. SEX
4. DATE OF BIRTH (Mo/Day/Yr)
5. FACILITY NAME (If not institution, give street and number)
6. CITY, TOWN, OR LOCATION OF BIRTH
7. COUNTY OF BIRTH

MOTHER
8a. MOTHER'S CURRENT LEGAL NAME (First, Middle, Last, Suffix)
8b. DATE OF BIRTH (Mo/Day/Yr)
8c. MOTHER'S NAME PRIOR TO FIRST MARRIAGE (First, Middle, Last, Suffix)
8d. BIRTHPLACE (State, Territory, or Foreign Country)
9a. RESIDENCE OF MOTHER - STATE
9b. COUNTY
9c. CITY, TOWN, OR LOCATION
9d. STREET AND NUMBER
9e. APT. NO.
9f. ZIP CODE
9g. INSIDE CITY LIMITS? ☐ Yes ☐ No

FATHER
10a. FATHER'S CURRENT LEGAL NAME (First, Middle, Last, Suffix)
10b. DATE OF BIRTH (Mo/Day/Yr)
10c. BIRTHPLACE (State, Territory, or Foreign Country)

CERTIFIER
11. CERTIFIER'S NAME
TITLE: ☐ MD ☐ DO ☐ HOSPITAL ADMIN. ☐ CNM/CM ☐ OTHER MIDWIFE
☐ OTHER (Specify) ____
12. DATE CERTIFIED ___/___/___ MM DD YYYY
13. DATE FILED BY REGISTRAR ___/___/___ MM DD YYYY

INFORMATION FOR ADMINISTRATIVE USE

MOTHER
14. MOTHER'S MAILING ADDRESS ☐ Same as residence, or: State: City, Town, or Location:
Street & Number: Apartment No.: Zip Code:
15. MOTHER MARRIED? (At birth, conception, or any time between) ☐ Yes ☐ No
IF NO, HAS PATERNITY ACKNOWLEDGMENT BEEN SIGNED IN THE HOSPITAL? ☐ Yes ☐ No
16. SOCIAL SECURITY NUMBER REQUESTED FOR CHILD? ☐ Yes ☐ No
17. FACILITY ID. (NPI)
18. MOTHER'S SOCIAL SECURITY NUMBER:
19. FATHER'S SOCIAL SECURITY NUMBER:

INFORMATION FOR MEDICAL AND HEALTH PURPOSES ONLY

MOTHER

MOTHER'S MEDICAL RECORD NO.
____

20. MOTHER'S EDUCATION (Check the box that best describes the highest degree or level of school completed at the time of delivery)
- ☐ 8th grade or less
- ☐ 9th - 12th grade, no diploma
- ☐ High school graduate or GED completed
- ☐ Some college credit, but no degree
- ☐ Associate degree (e.g., AA, AS)
- ☐ Bachelor's degree (e.g., BA, AB, BS)
- ☐ Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
- ☐ Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD)

21. MOTHER OF HISPANIC ORIGIN? (Check the box that best describes whether the mother is Spanish/Hispanic/Latina. Check the "No" box if mother is not Spanish/Hispanic/Latina)
- ☐ No, not Spanish/Hispanic/Latina
- ☐ Yes, Mexican, Mexican American, Chicana
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, other Spanish/Hispanic/Latina (Specify) ____

22. MOTHER'S RACE (Check one or more races to indicate what the mother considers herself to be)
- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native (Name of the enrolled or principal tribe) ____
- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Other Asian (Specify) ____
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Pacific Islander (Specify) ____
- ☐ Other (Specify) ____

FATHER

23. FATHER'S EDUCATION (Check the box that best describes the highest degree or level of school completed at the time of delivery)
- ☐ 8th grade or less
- ☐ 9th - 12th grade, no diploma
- ☐ High school graduate or GED completed
- ☐ Some college credit, but no degree
- ☐ Associate degree (e.g., AA, AS)
- ☐ Bachelor's degree (e.g., BA, AB, BS)
- ☐ Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
- ☐ Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD)

24. FATHER OF HISPANIC ORIGIN? (Check the box that best describes whether the father is Spanish/Hispanic/Latino. Check the "No" box if father is not Spanish/Hispanic/Latino)
- ☐ No, not Spanish/Hispanic/Latino
- ☐ Yes, Mexican, Mexican American, Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, other Spanish/Hispanic/Latino (Specify) ____

25. FATHER'S RACE (Check one or more races to indicate what the father considers himself to be)
- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native (Name of the enrolled or principal tribe) ____
- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Other Asian (Specify) ____
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Pacific Islander (Specify) ____
- ☐ Other (Specify) ____

STATE OFFICE USE ONLY

26. PLACE WHERE BIRTH OCCURRED (Check one)
- ☐ Hospital
- ☐ Freestanding birthing center
- ☐ Home birth: Planned to deliver at home? ☐ Yes ☐ No
- ☐ Clinic/Doctor's office
- ☐ Other (Specify) ____

27. ATTENDANT'S NAME, TITLE, AND NPI
NAME ____
NPI ____
TITLE: ☐ MD ☐ DO ☐ CNM/CM ☐ OTHER MIDWIFE
☐ Other (Specify) ____

28. MOTHER TRANSFERRED FOR MATERNAL MEDICAL OR FETAL INDICATIONS FOR DELIVERY? ☐ Yes ☐ No
IF YES, ENTER NAME OF FACILITY MOTHER TRANSFERRED FROM:

DHEC 609 Rev. 7/2003

COMPLETE REVERSE SIDE

MOTHER
29a. DATE OF FIRST PRENATAL CARE VISIT ___/___/___ MM DD YYYY ☐ No Prenatal Care
29b. DATE OF LAST PRENATAL CARE VISIT ___/___/___ MM DD YYYY
30. TOTAL NUMBER OF PRENATAL VISITS FOR THIS PREGNANCY ____ (If none, enter "0".)
31. MOTHER'S HEIGHT ____ (feet/inches)
32. MOTHER'S PREPREGNANCY WEIGHT ____ (pounds)
33. MOTHER'S WEIGHT AT DELIVERY ____ (pounds)
34. DID MOTHER GET WIC FOOD FOR HERSELF DURING THIS PREGNANCY? ☐ Yes ☐ No
35. NUMBER OF PREVIOUS LIVE BIRTHS (Do not include this child)
35a. Now Living Number ____ ☐ None
35b. Now Dead Number ____ ☐ None
36. NUMBER OF OTHER PREGNANCY OUTCOMES (Spontaneous or induced losses or ectopic pregnancies)
Number ____ ☐ None
37. CIGARETTE SMOKING BEFORE AND DURING PREGNANCY
For each time period, enter either the number of cigarettes or the number of packs of cigarettes smoked. IF NONE, ENTER "0".
Average number of cigarettes or packs of cigarettes smoked per day.

	Number of cigarettes		Number of packs
Three months before pregnancy	____	OR	____
First three months of pregnancy	____	OR	____
Second three months of pregnancy	____	OR	____
Last three months of pregnancy	____	OR	____

38. PRINCIPAL SOURCE OF PAYMENT FOR THIS DELIVERY:
- ☐ Private Insurance
- ☐ Medicaid
- ☐ Self-pay
- ☐ Other (Specify) ____

35c. DATE OF LAST LIVE BIRTH ___/___ MM YYYY
36a. DATE OF LAST OTHER PREGNANCY OUTCOME ___/___ MM YYYY
39. DATE LAST NORMAL MENSES BEGAN ___/___/___ MM DD YYYY
40. MOTHER'S MEDICAL RECORD NUMBER

MEDICAL AND HEALTH INFORMATION

41. RISK FACTORS IN THIS PREGNANCY (Check all that apply)
Diabetes
- ☐ Prepregnancy (Diagnosis prior to this pregnancy)
- ☐ Gestational (Diagnosis in this pregnancy)

Hypertension
- ☐ Prepregnancy (Chronic)
- ☐ Gestational (PIH, preeclampsia, eclampsia)
- ☐ Previous preterm birth
- ☐ Other previous poor pregnancy outcome (Includes perinatal death, small-for-gestational age/intrauterine growth restricted birth)
- ☐ Vaginal bleeding during this pregnancy prior to the onset of labor
- ☐ Pregnancy resulted from infertility treatment
- ☐ Mother had a previous cesarean delivery If yes, how many ____
- ☐ None of the above

42. INFECTIONS PRESENT AND/OR TREATED DURING THIS PREGNANCY (Check all that apply)
- ☐ Gonorrhea
- ☐ Syphilis
- ☐ Herpes Simplex Virus (HSV)
- ☐ Chlamydia
- ☐ Hepatitis B
- ☐ Hepatitis C
- ☐ None of the above

43. OBSTETRIC PROCEDURES (Check all that apply)
- ☐ Cervical cerclage
- ☐ Tocolysis

External cephalic version:
- ☐ Successful
- ☐ Failed
- ☐ None of the above

44. ONSET OF LABOR (Check all that apply)
- ☐ Premature Rupture of the Membranes (prolonged, ≥12 hrs.)
- ☐ Precipitous Labor (<3 hrs.)
- ☐ Prolonged Labor (≥ 20 hrs.)
- ☐ None of the above

45. CHARACTERISTICS OF LABOR AND DELIVERY (Check all that apply)
- ☐ Induction of labor
- ☐ Augmentation of labor
- ☐ Non-vertex presentation
- ☐ Steroids (glucocorticoids) for fetal lung maturation received by the mother prior to delivery
- ☐ Antibiotics received by the mother during labor
- ☐ Clinical chorioamnionitis diagnosed during labor or maternal temperature ≥ 38°C (100.4°F)
- ☐ Moderate/heavy meconium staining of the amniotic fluid
- ☐ Fetal intolerance of labor such that one or more of the following actions was taken: in-utero resuscitative measures, further fetal assessment, or operative delivery
- ☐ Epidural or spinal anesthesia during labor
- ☐ None of the above

46. METHOD OF DELIVERY
A. Was delivery with forceps attempted but unsuccessful? ☐ Yes ☐ No
B. Was delivery with vacuum extraction attempted but unsuccessful? ☐ Yes ☐ No
C. Fetal presentation at birth
- ☐ Cephalic
- ☐ Breech
- ☐ Other

D. Final route and method of delivery (Check one)
- ☐ Vaginal/Spontaneous
- ☐ Vaginal/Forceps
- ☐ Vaginal/Vacuum
- ☐ Cesarean

If Cesarean, was a trial of labor attempted?
- ☐ Yes
- ☐ No

47. MATERNAL MORBIDITY (Check all that apply) (Complications associated with labor and delivery)
- ☐ Maternal transfusion
- ☐ Third or fourth degree perineal laceration
- ☐ Ruptured uterus
- ☐ Unplanned hysterectomy
- ☐ Admission to intensive care unit
- ☐ Unplanned operating room procedure following delivery
- ☐ None of the above

NEWBORN INFORMATION

NEWBORN
48. NEWBORN MEDICAL RECORD NUMBER:
49. BIRTHWEIGHT (grams preferred, specify unit) ____ ☐ grams ☐ lb/oz
50. OBSTETRIC ESTIMATE OF GESTATION: ____ (completed weeks)
51. APGAR SCORE:
Score at 5 minutes: ____
If 5 minute score is less than 6,
Score at 10 minutes: ____
52. PLURALITY - Single, Twin, Triplet, etc. (Specify) ____
53. IF NOT SINGLE BIRTH - Born First, Second, Third, etc. (Specify) ____

54. ABNORMAL CONDITIONS OF THE NEWBORN (Check all that apply)
- ☐ Assisted ventilation required immediately following delivery
- ☐ Assisted ventilation required for more than six hours
- ☐ NICU admission
- ☐ Newborn given surfactant replacement therapy
- ☐ Antibiotics received by the newborn for suspected neonatal sepsis
- ☐ Seizure or serious neurologic dysfunction
- ☐ Significant birth injury (skeletal fracture(s), peripheral nerve injury, and/or soft tissue/solid organ hemorrhage which requires intervention)
- ☐ None of the above

55. CONGENITAL ANOMALIES OF THE NEWBORN (Check all that apply)
- ☐ Anencephaly
- ☐ Meningomyelocele/Spina bifida
- ☐ Cyanotic congenital heart disease
- ☐ Congenital diaphragmatic hernia
- ☐ Omphalocele
- ☐ Gastroschisis
- ☐ Limb reduction defect (excluding congenital amputation and dwarfing syndromes)
- ☐ Cleft Lip with or without Cleft Palate
- ☐ Cleft Palate alone
- ☐ Down Syndrome
  - ☐ Karyotype confirmed
  - ☐ Karyotype pending
- ☐ Suspected chromosomal disorder
  - ☐ Karyotype confirmed
  - ☐ Karyotype pending
- ☐ Hypospadias
- ☐ None of the anomalies listed above

56. WAS INFANT TRANSFERRED WITHIN 24 HOURS OF DELIVERY? ☐ Yes ☐ No
IF YES, NAME OF FACILITY INFANT TRANSFERRED TO: ____
57. IS INFANT LIVING AT TIME OF REPORT? ☐ Yes ☐ No ☐ Infant transferred, status unknown
58. IS INFANT BEING BREASTFED? ☐ Yes ☐ No
59. WHAT PROPHYLACTIC USED IN EYES? (Specify)
TIME USED (24-hour clock)

Some Types of Health Data

- Billing/claims data (Medicaid, private insurance, hospital discharge)
- Census data
- Program data

Some Types of Health Data

- Registry data
  - TN registries: cancer, stroke, birth defects
- Population-based survey data
  - TN: BRFSS, PRAMS, YRBS
  - National: NSCH, NSDUH, TEDS, N-MHSS
- Derived data: County Health Rankings

Sources of Health Data

- US Federal and State data repositories:
  - [Data.gov]
  - [HealthData.gov]

- [Google Dataset Search]
  - Newly out of Beta testing

- Can also request [TN datasets]

Sources of Health Data

- What if you don't want a dataset? Just want to pull numbers?

- Health Information Systems – online data query modules designed to make data available and (sometimes) flexible
  - Federal: CDC WONDER
  - State: SC SCAN
  - Population of Interest: March of Dimes PeriStats

Analyzing Data

- Analyzing the data takes some statistical training and is outside the scope of this course

Analyzing Data

- Resources:
  - Graduate certificates: Biostatistics, Epidemiology, Health Data Analytics
    - https://www.etsu.edu/cph/academics/certificates.php
  - Supplemental Video Series
    - High level basics of data analysis
    - https://www.youtube.com/watch?v=cFdtZ4AE9Q8&list=PLKNTIQlajNsHq7GVswN_kM5-o0RXm4MMu

Questions and Discussion

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Counterfactuals

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Big Picture Concepts

- Counterfactuals
- Experiments

Counterfactuals

- Intervention of interest – want to see if really produces desired outcome.
  - Ex. Folic Acid → Neural Tube Defects

- Counterfactual – expose everyone to intervention, see result, rewind time, keep everything exactly the same except expose no one to intervention, see result, compare

Counterfactuals

- Counterfactual – expose everyone to intervention, see result, rewind time, keep everything exactly the same except expose no one to intervention, see result, compare
  - Ex. All pregnant women take folic acid → observe rate of NTDs; Rewind; No pregnant women take folic acid → observe rate of NTDs
  - Obviously impossible

Counterfactuals

Exposure to Intervention	Outcome if Treated, Y^1	Outcome if not Treated, Y^0
Treatment		
Control		
Total Population		

Counterfactuals

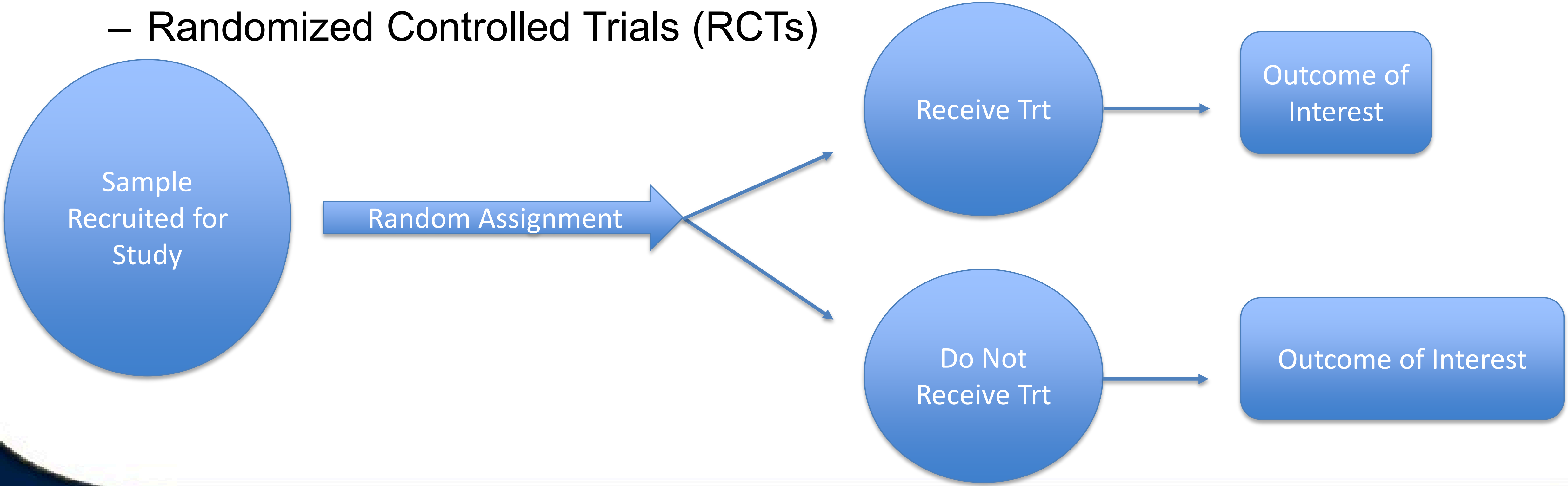
Exposure to Intervention	Outcome if Treated, Y^1	Outcome if not Treated, Y^0
Treatment	Observed	
Control		Observed
Total Population		

Counterfactuals

Exposure to Intervention	Outcome if Treated, Y^1	Outcome if not Treated, Y^0
Treatment	Observed	Unobservable Counterfactual
Control	Unobservable Counterfactual	Observed
Total Population	Unobservable Counterfactual	Unobservable Counterfactual

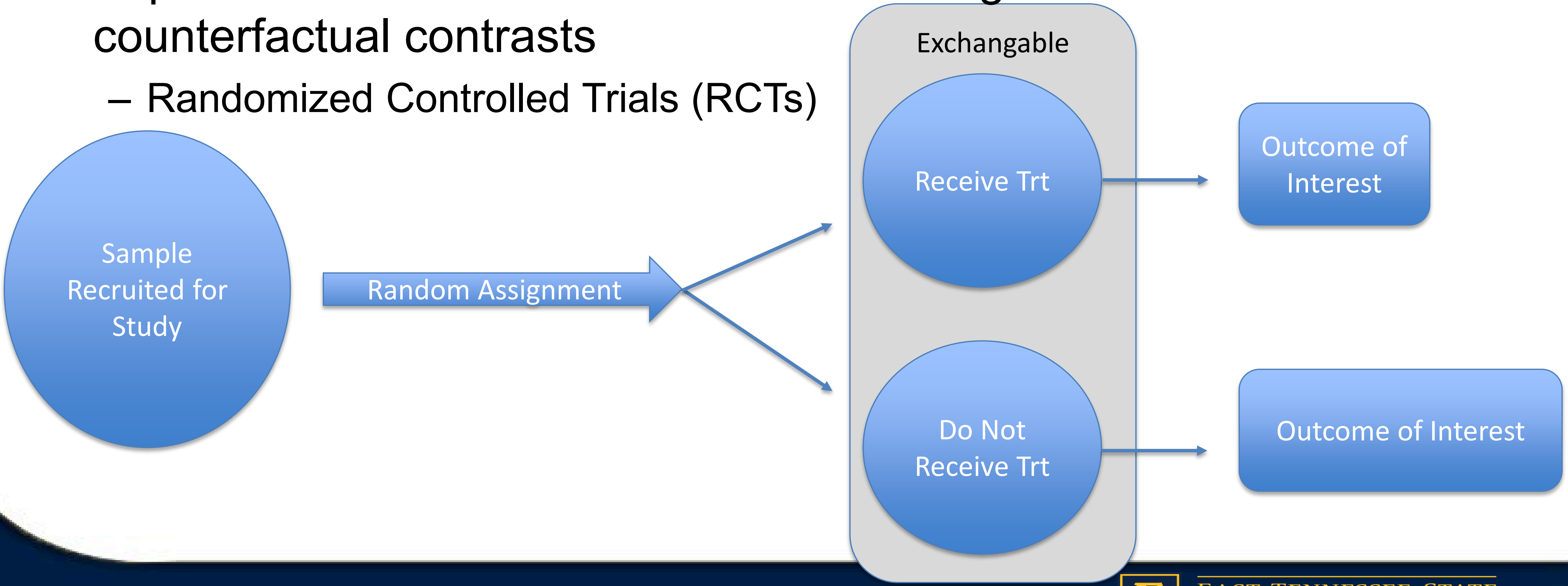
Role of Experiments

- Experiments are the easiest research designs to estimate counterfactual contrasts
  - Randomized Controlled Trials (RCTs)



Role of Experiments

- Experiments are the easiest research designs to estimate counterfactual contrasts
  - Randomized Controlled Trials (RCTs)



Role of Experiments

- Experiments are the easiest research designs to estimate counterfactual contrasts
  - Randomized Controlled Trials (RCTs)
  - Not always ethical to conduct
  - Not always possible to conduct
- Much of PH research and program evaluation is quasi-experimental or observational

Estimating Counterfactuals with Non-Experimental Data

- Seeking to estimate **EXCHANGABILITY**
  - Matching
  - Regression models – adjusting for confounders
  - Weighting

Up Next…

- Internal and External Validity

- Hierarchy of Evidence

Questions and Discussion

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Evaluation Design

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Recall Big Picture Concepts

- Counterfactuals and Experiments
- Internal and External Validity

Internal and External Validity

- Internal Validity – Does it really work?

- External Validity – Do we have good reason to think it would work in other populations?

- Must establish internal validity first

Some Types of Program Evaluation

- Process evaluation
  - Are we sticking to the planned model faithfully?
  - Measures such as: number of meetings held, number of attendees, number of clients served, etc.

- Outcome evaluation
  - Have we impacted the outcome of interest?
  - Measures such as: knowledge gained, low birth weight deliveries, contraceptive use
  - Often requires rigorous evaluation study designs

Some Types of Program Evaluation

- Process evaluation
  - Are we sticking to the planned model faithfully?
  - Measures such as: number of meetings held, number of attendees, number of clients served, etc.

- **Outcome evaluation**
  - **Have we impacted the outcome of interest?**
  - **Measures such as: knowledge gained, low birth weight deliveries, contraceptive use**
  - **Often requires rigorous evaluation study designs**

Basics of Outcome Evaluation

- You have an intervention that you want to impact an outcome, so you implement the intervention (X) and observe (O) the outcome

X O

- Interventions and observations are the key elements to outcome evaluation

Threats to Internal Validity

- **Ambiguous Temporal Precedence**: Could the change in outcome have occurred before the intervention?

- **Selection**: Could those receiving the intervention be more or less likely to have the outcome than a random person (e.g. volunteering)?

Threats to Internal Validity

- **Testing**: Could the change in outcome be due to participants learning the test or guessing what the investigators are looking for in observation?

Threats to Internal Validity

- **History**: Could another event or program have caused the difference in outcome?

- **Maturation**: Could natural changes (e.g. growth, fatigue, experience) have resulted in the outcome?

Threats to Internal Validity

- **Regression Artifacts**: If participants are selected because they scored lower or higher than average, many will naturally regress back toward the average (e.g. periods of stress).

- **Attrition**: Are participants that drop out more or less likely to have a different outcome?

- Threats to internal validity can come in multiples.

Threats to Internal Validity

- **Ambiguous Temporal Precedence**: Could the change in outcome have occurred before the intervention?
  - Possible Evaluation Design: add a pre-test

$$O_1 \qquad X \qquad O_2$$

- **Selection**: Could those receiving the intervention be more or less likely to have the outcome than a random person (e.g. volunteering)?
  - Possible Evaluation Design: Add a comparison group that does not get the intervention

$$\begin{array}{ccc} O_1 & X & O_2 \\ O_1 & & O_2 \end{array}$$

Threats to Internal Validity

- **Ambiguous Temporal Precedence**: Could the change in outcome have occurred before the intervention?
  - Possible Evaluation Design: add a pre-test

$$O_1 \qquad X \qquad O_2$$

- **Selection**: Could those receiving the intervention be more or less likely to have the outcome than a random person (e.g. volunteering)?
  - Possible Evaluation Design: Add a comparison group that does not get the intervention

$$\begin{array}{llll} O_1 & X & O_2 & \\ O_1 & & O_2 & X \end{array}$$

Threats to Internal Validity

- **Testing**: Could the change in outcome be due to participants learning the test or guessing what the investigators are looking for in observation?
  - Possible Evaluation Design: add a series of tests and a control group or have a long time between tests

$$\begin{array}{cccc} O_1 & O_2 & X & O_3 \\ O_1 & O_2 & & O_3 \end{array}$$

Threats to Internal Validity

- **History**: Could another event or program have caused the difference in outcome?

- **Maturation**: Could natural changes (e.g. growth, fatigue, experience) have resulted in the outcome?

  – Possible Evaluation Design: select intervention and comparison groups from the same geographic location and observing outcomes at about the same time so that groups are equally impacted by history and/or maturation.

Threats to Internal Validity

- **Regression Artifacts**: If participants are selected because they scored lower or higher than average, many will naturally regress back toward the average (e.g. periods of stress).

- **Attrition**: Are participants that drop out more or less likely to have a different outcome?

  – Evaluation Considerations: Be thoughtful in selecting participants and assigning them to treatment groups. Consider ability to use random assignment, matching, blinding. Retention activities are important and often overlooked.

Basics of Outcome Evaluation

- Can modify several aspects about evaluation designs to reduce threats to validity in a variety of ways:
  - **Assignment** (e.g., random, matched, blinded)
  - **Measurement** (e.g., multiple pre/post-tests, measuring threats to validity)
  - **Comparison groups** (e.g., single, multiple, cohorts, similar or different populations)
  - **Treatment** (e.g., switching, removing, reversing, repeating)

Up Next…

Stephanie Mathis, DrPH, will discuss primary data collection in the next content block.

Questions and Discussion

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Literature Searches

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Optional Videos

- Video 1: Importance of Literature Searches
- Video 2: Planning Literature Searches
- Video 3: Executing Literature Searches

- https://www.youtube.com/watch?v=uCYFD8_j0JI&list=PLKNTIQlajNsGG2MVd5Us0oIAX8hDnw8dm&index=1

Questions and Discussion

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Primary Data

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Overview

- Primary (and Secondary) Data Sources
- Qualitative Methods
- Quantitative Methods
- Mixed Methods Research
- Summary

Research Data

- Various definitions[1]
- "[I]nformation used in scientific, engineering, and medical research as inputs to generate research conclusions"[1(p22)]

Types of Data

- Qualitative data[2]
- Quantitative data[2]

Primary Data Source

- Data are collected by a researcher/team for a given goal/project[3,4]

Secondary Data Source

- Data are used for a different goal/project[3,4]
- Data are used by a different researcher/team[3]

Primary Data Sources

- Advantages[3,4]
- Disadvantages[3,4]

Research Methods

- Qualitative methods[2,5]
- Quantitative methods[2,5]

Qualitative and Quantitative

- Characteristics[5-7]:
  - Goal/Aim
  - Logic and philosophical assumptions
  - Sample
  - Data collection
  - Data analysis

Points to Consider

- Strengths and limitations of both methods
- Different, yet both have relevance to public health

Mixed Methods Research

- Qualitative and quantitative approaches[8,9]
  - "[P]ower of stories" + "[P]ower of numbers"[10(p30)]
- Leverage strengths of qualitative and quantitative methods[8,10]

Mixed Methods Research

- Multiple research designs/typologies[6,8,9]
  - Various considerations in designing a study

Basic Notation[8,9]

- Examples:
  - QUAN → qual
  - QUAL + QUAN

- Components:
  - QUAL (or qual) = Qualitative
  - QUAN (or quan) = Quantitative
- Signs: + or →

Mixed Methods Research

- Multiple reasons to combine[8,10], such as:
  - Use qualitative methods to understand quantitative results
  - Use quantitative methods to test or generalize qualitative findings
  - Use qualitative methods to understand and quantitative methods to assess

Summary

- Primary data sources have advantages and disadvantages
- Different methods to consider for primary data collection

Up Next…

Michael Smith, DrPH, will discuss secondary data in the next content block.

Supplemental Reading

- Peersman, G. (2014). Overview: Data Collection and Analysis Methods in Impact Evaluation, Methodological Briefs: Impact Evaluation 10, UNICEF Office of Research, Florence.
  - Available online
  - https://www.unicef-irc.org/publications/755-overview-data-collection-and-analysis-methods-in-impact-evaluation-methodological.html

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Questions and Discussion

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Research and Practice in Public Health

Rural Public Health Training Course: Research Module

COLLEGE *of* PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY

Overview

- Classifying Public Health Activities
- Conceptualizing Research and Practice
- Potential Challenges
- Summary

Classifying Public Health Activities

- Common, yet potentially challenging[1,2]
- Various guidelines for distinguishing between research and practice[1]
- Classification can have implications[1,2]

Classifying Public Health Activities

- Oversight mechanisms, laws/regulations, or ethical principles[1,2]
- Authorization or funding[1]
- Potential impact of misclassification[1,2]

Public Health Research

- Source of public health data[3]
- Guide public health decision-making and action[3]

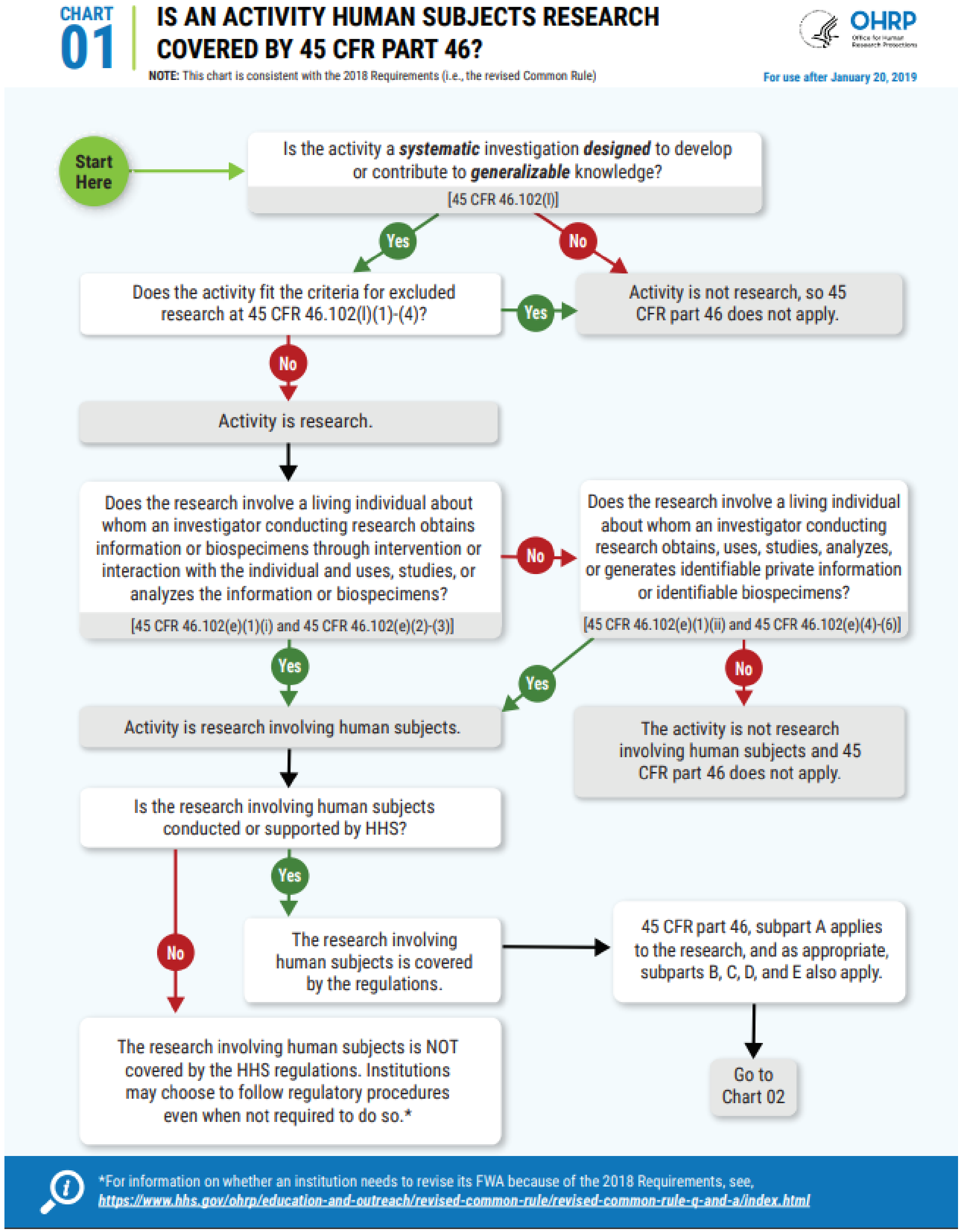
Human Subjects Research

- According to Title 45, Code of Federal Regulations, Part 46 (“Common Rule”), research is defined as:
- “a systematic investigation, including research development, testing, and evaluation, *designed* to develop or contribute to *generalizable knowledge*”[4]

Human Subjects Research

- According to Title 45, Code of Federal Regulations, Part 46 (“Common Rule”), human subject is defined as:

- "a *living individual* about whom an investigator (whether professional or student) conducting research:
    1. Obtains information or biospecimens through intervention or interaction with the individual, and uses, studies, or analyzes the information or biospecimens; or
    2. Obtains, uses, studies, analyzes, or generates identifiable private information or identifiable biospecimens”[4]



Source: Office for Human Research Protections. Human subject regulations decision charts: 2018 requirements. June 23, 2020. Accessed December 13, 2021. https://www.hhs.gov/ohrp/regulations-and-policy/decision-charts-2018/index.html

Public Health Practice

- Practice focuses on[2,5]:
  - Preventing disease/injury and improving health
  - Enhancing a program or service
- Encompasses a range of activities

Research *and* Practice

- Potential for shared characteristics, such as[1,2,5]:
  - Designs
  - Participants
  - Data collection/analysis
  - Publication of findings

Research *versus* Nonresearch

- Purpose
  - Generalizable knowledge[5]
- Benefits
  - Not limited to participants[5]
- Data
  - Not limited to participant care or activity scope[5]

Research *versus* Nonresearch

- Purpose
  - Identify/control a problem[5]
  - Enhance a program/service[5]
- Benefits
  - Participants or participants' community[5]
- Data
  - Assess/improve program/service, participant health, or participants' community[5]

"The ultimate decision regarding classification lies in the **purpose** of the project. If the purpose is to develop or contribute to generalizable knowledge, the project is research. If the purpose is to prevent or control disease or injury or to improve a public health program, and no research is intended at the present time, the project is nonresearch."[5(p3)]

Potential Challenges

- Limitations of a single set of guidance[1]
- Activities may not fully align with research or practice[1]
- Activities may involve both research and practice[1,2,5]
- Purpose may change over time[1,2,5]
- Determination may differ across settings[1]

Guidance

- Belmont Report (1979)
  - "if there is any element of research in an activity, that activity should undergo review for the protection of human subjects"[6]
- Institutional Review Boards[7]

Summary

- Classifying activities as research and practice is important, but the distinction is not always clear
- Keep in mind the <u>purpose</u>

Up Next…

Michael Smith, DrPH, will discuss counterfactuals in the next content block.

Reading

- Otto JL, Holodniy M, DeFraites RF. Public health practice is not research. *Am J Public Health.* 2014;104(4):596-602.
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Questions and Discussion

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Internal and External Validity and the Hierarchy of Evidence

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Big Picture Concepts

- Counterfactuals and Experiments
- Internal and External Validity

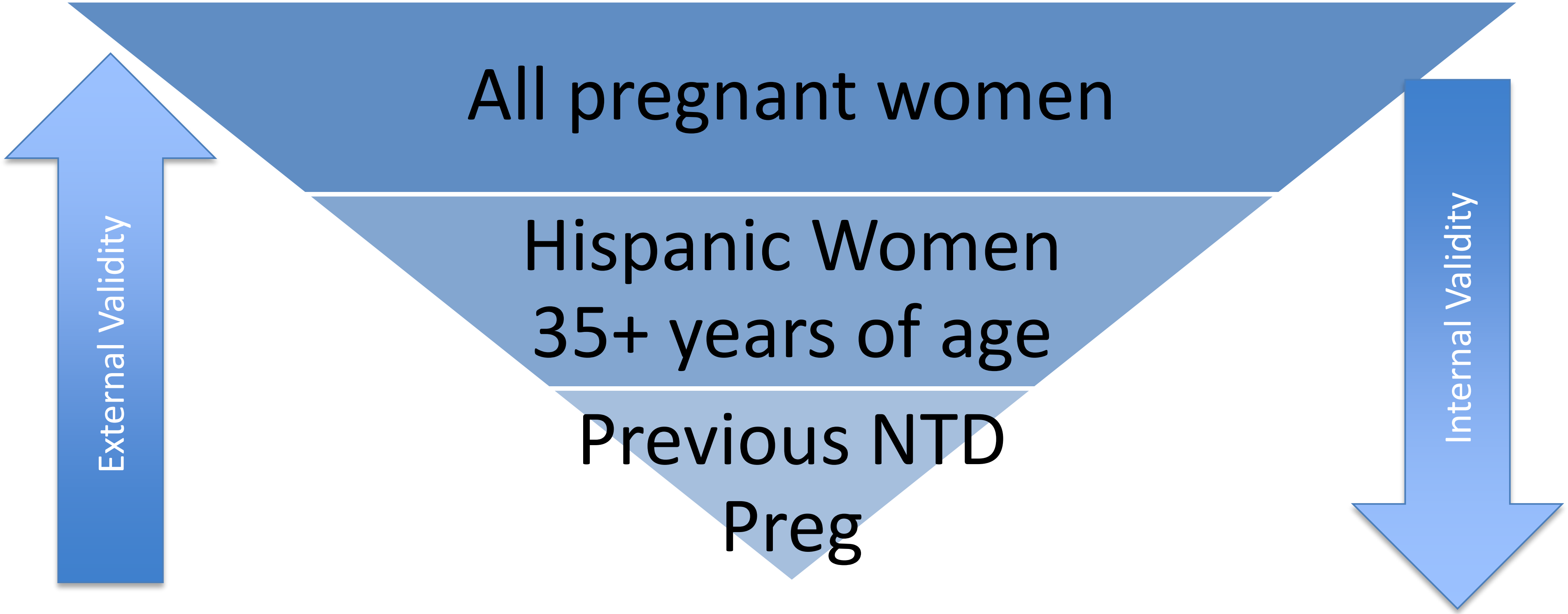
Internal and External Validity

- Internal Validity – Does it really work?
  – Ex. Does a folic acid supplementation program really result in fewer NTDs?
  – Experiments, especially RCTs, often best

Internal and External Validity

- External Validity – Do we have good reason to think it would work in other populations?
  - Generalizability
  - Would the folic acid supplementation and education program work in real-world settings with diverse groups?
  - Quasi-experimental studies often better

Internal and External Validity



Hierarchy of Evidence

Determine your hierarchy of evidence

- Consider:
  - Research question(s)
  - Counterfactual concept
  - Internal/external validity

Hierarchy of Evidence

Determine your hierarchy of evidence

- Randomized Controlled Trials (RCTs)
- Meta Analyses
- Quasi-Experimental/Observational studies using causal inference methods
- Cohort studies
- Case-control studies
- Cross-sectional studies
- Etc.

Hierarchy of Evidence

Determine your hierarchy of evidence

- Consider:
  - Research question(s)
  - Counterfactual concept
  - Internal/external validity

Up Next…

- Threats to internal validity

- Evaluation designs to minimize threats to internal validity

Questions and Discussion

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