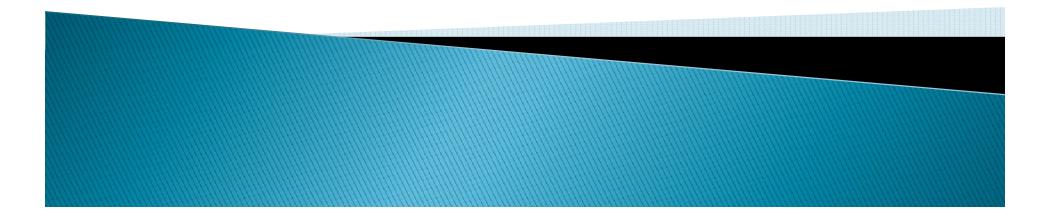# BRFSS

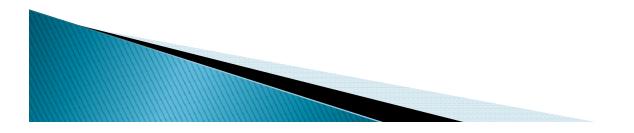## Behavioral Risk Factor Surveillance System

North Dakota BRFSS

ND Department of Health
October 20, 2010

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BRFSS

- Behavioral Risk Factor Surveillance System
  - Conducted annually by NDDoH and CDC
  - Telephone survey
    - Clearwater Research Inc.
  - Strict scientific protocols
    - Statistically accurate results
  - Randomly selected respondents 18 years and older
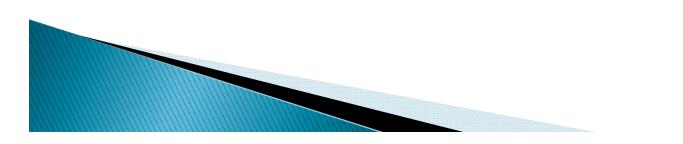
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Survey sampling

- Anonymous data collections
  - Names not collected
  - All responses anonymous
- Computer dials phone number
  - Approx. the same number of people is called each month
  - Three calling periods (daytime, evening, and weekends)
  - 15 attempts before number is replaced
- Interviews from every county
  - Number proportionate to population
- Length varies (age, sex, responses)
  - Approximately 20 minutes

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BRFSS Methodology

- Disproportionate Stratified Random Sampling methodology (protocol provided by CDC)
  - Sets of 100 numbers with same area code, prefix, and first two digits of suffix and all possible combinations of last two digits of suffix into two strata based on the likelihood that the number represents an actual household
    - Different strata are sampled at different rates to improve calling efficiency

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Data Weighting

- Process by which the survey data are adjusted to account for unequal selection probability and response bias and to represent more accurately the population from which the sample was drawn.
  - Post-stratification serves as a blanket adjustment for noncoverage and nonresponse, and forces the total number of cases to equal population estimates for each geographic region, which is the state in ND
    - Responses of each person are assigned a weight that accounts for the density stratum, # of telephone numbers in the household, number of adults in the household and the demographic distribution of the sample (i.e., age and sex)
    - New method beginning 2010 – "Raking"

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Data Reliability

- Telephone interviewing has been demonstrated to be a reliable method for collecting behavioral risk data
  - Cost less than other methods
- Current methodology has been utilized and evaluated by CDC and participating states since 1984
  - Thorough evaluation of survey questions, questionnaire design, data collection procedures, surveying techniques and editing procedures conducted to maintain overall data quality and to lessen potential bias within the population sample

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Data Limitations

- **Sampling**
  - Results are an estimate of true answer for entire population
    - More people interviewed, the greater the precision of the estimate will be
    - When data are subdivided estimates are less precise and may become too uncertain to be of value
      - CDC Data suppression rule (N<50 or CI half width > 10)
  - Households with no telephone are not reached
    - Phone ownership related to income
    - Phone ownership high in ND (greater than 95%)
    - Some racial or ethnic subgroups have lower phone ownership
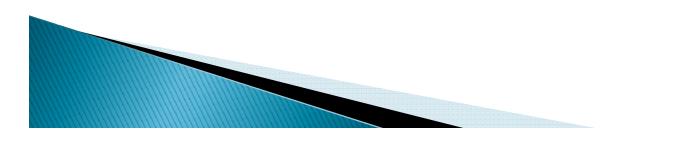
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BRFSS Limitations Cont.

- Sampling cont.
  - Telephone technology changing – Potential for bias
    - Increasing number of cellular-telephone-only homes with no traditional land line in the home
      - Studies regarding impact on survey response and the feasibility of various methods (i.e., multi-mode survey) for data collection to complement current methods are ongoing
      - Cell phone survey component initiated in 2009
  - Questionnaire design and administration
    - Question wording and preceding question can influence response
    - Not all questions have been pre-tested to ensure the intended meaning is understood

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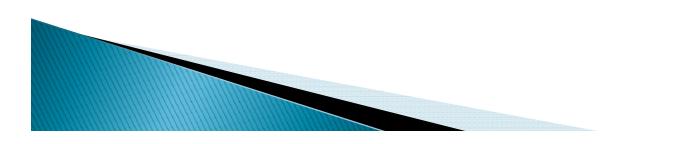
BRFSS Limitations Cont.

- Sampling cont.
  - Interviewer bias possible through tone of voice or administration technique
    - Trained to read questions verbatim in neutral voice without comment
  - Coding errors
    - Interviewer types in wrong response
    - Respondent may alter response to the most socially acceptable answer
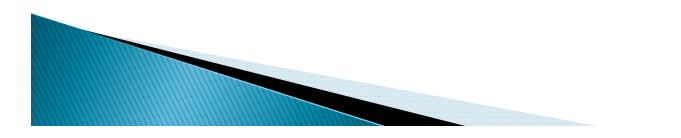   - Self reporting = underreporting

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BRFSS Limitations Cont.

▶ Sampling cont.
  ◦ CASRO response rate
    • Based on the number of interviews completed, the number of households reached and the number of households with unknown eligibility status (i.e., those called 15 times where no one was reached)
      • ND CASRO rate ~60%
    • Bias from non-response cannot be removed; not possible to know if those who refused to answer would have responded similarly to those who answered the questions

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BRFSS Limitations Cont.

- Sampling cont.
  - Confounding and causation
    - Personal characteristics of survey response are univariate
      - Complexity of health associations are not fully represented by examining single relationships
    - Causes of the health effects examined are not explained/addressed with this survey
    - Responses are a "snapshot" of disease, risk factors and population characteristics for adult residents of ND at a point in time

Survey Content & Results

Content:

- CDC Core Questions
- CDC Optional Modules
- State Added Questions
  - Rotating years for several modules

Results:

- Survey Description
- Survey Questions
- Data Results
- County Level Summaries
- Publications

http://ndhealth.gov/brfss/

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Data Archive Purpose & Content

▸ Created for the sole purpose of preserving history over time and creating an institutional memory for the data/surveys completed in the health department. It is not intended for public use data or for data that is continually being updated or changed.

◦ Annual data sets,10 year merged data set
◦ Data dictionaries, Technical documents
◦ SAS Programs
◦ CDC data tables
◦ Additional data beyond BRFSS (i.e. oral health data)
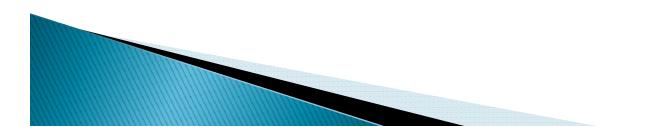
10-year Merged File

- Uses:
  - Time series analysis
  - Categorical sub-analysis (i.e., race)
  - Geographic sub-analysis (i.e., county)

- Limitations:
  - Difficult to create-no 100% error free merging
  - Discontinuity issues with combined variables across years (i.e., limitation of precision related to variability in question wording)
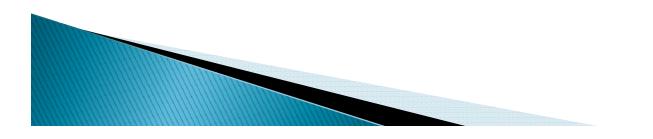 - Weighting not 100% accurate using _finalwt

Accessing Data

▸ Protected Health Information (PHI) collected and maintained NDDoH is subject to compliance with federal and state laws regarding use and disclosure

  ◦ Includes any data derived from files containing PHI
  ◦ NDDoH Privacy Officer will assist you in complying with the federal requirement so that you can legally receive the data
    • Requires a limited use data agreement

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Accessing Data

▸ Public Use data
  ◦ Aggregate or record level data with no identifiers
  ◦ Ages over 85 are collapsed into 85+ age group

▸ Limited release data
  ◦ No personal identifiers but includes sub-geographic or other identifiers
  ◦ Limited Use Data Agreement required (binding confidentiality agreements to use data only as specified in the agreement) through Privacy Officer

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Accessing Data

- Assistant Privacy Officer
  Bridget Weidner
  North Dakota Department of Health
  Division of Health Facilities
  600 East Boulevard Avenue, Dept. 301
  Bismarck, ND 58505-0200
  bweidner@nd.gov

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Statistics

- Small Numbers & Confidence Intervals (CI)
  - Numbers less than 20 & CI > 15 relatively unstable
  - Numbers less than 10 & CI > 20 highly unstable
- SAS has limitations on producing CI's for measures of effect (i.e., odds ratio, risk ratio)
- ND aggregate data vs. CDC aggregate data
  - Variability
  - Standard risk summary definitions
    - CDC codebook
- Scales
  - Mental Health module (PQH8)

Any Questions?

▸ Contact Information:

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