Behavioral Risk Factor Surveillance System (BRFSS)

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Overview

- Background
- Current system
- Questionnaire
- Process
- Contributions and uses
- Recent developments
Behavioral Risk Factor Surveillance System (BRFSS)

- Is the largest continuously conducted telephone health survey in the world
- Enables CDC, State Health Departments, and other health and education agencies to monitor risk behaviors related to chronic diseases, injuries and death
- Is an effective tool in preventing disease and promoting health
BRFSS in the United States, Today

Guam
Puerto Rico
Virgin Islands
Behavioral Risk Factor Surveillance System (BRFSS)

- 413,000+ adult interviews every year
- From 2002 to 2007:
  - completed 1,950,000 interviews
  - Dialed 18,500,000 telephone numbers
Purposes of BRFSS Surveillance

- Assess public health status
- Define public health priorities
- Evaluate programs
- Stimulate research
- Monitor trends
Questionnaire Design

- Core
- Rotating Core
- Emerging Core
- Optional Modules
- State-Added Questions
- BRFSS Conference – Proposals & Voting
# Questionnaire Content: Types and Numbers of Questions

<table>
<thead>
<tr>
<th>Fixed Core</th>
<th>Rotating Core I (93, 95, 97, 99, 01, 03)</th>
<th>Rotating Core II (94, 96, 98, 2000, 02, 04)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Status</td>
<td>4</td>
<td>Hypertension</td>
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<tr>
<td>Health Insurance</td>
<td>6</td>
<td>Injury</td>
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<tr>
<td>Routine Checkup</td>
<td>1</td>
<td>Alcohol</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1</td>
<td>Flu/Pneumo Vac.</td>
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<tr>
<td>Smoking</td>
<td>5</td>
<td>Colorectal Screen</td>
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<tr>
<td>Pregnancy</td>
<td>1</td>
<td>Cholesterol</td>
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<tr>
<td>Women’s Health</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Total (Women)</td>
<td>(Women) 53</td>
<td>Total</td>
</tr>
<tr>
<td>(Men)</td>
<td>42</td>
<td></td>
</tr>
</tbody>
</table>

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## Optional Modules

<table>
<thead>
<tr>
<th>Diabetes</th>
<th>Child immunization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual impairment</td>
<td>Osteoporosis</td>
</tr>
<tr>
<td>Healthy days: symptoms</td>
<td>Arthritis Management</td>
</tr>
<tr>
<td>Cardiovascular health</td>
<td>Weight Control</td>
</tr>
<tr>
<td>Controlling high blood pressure</td>
<td>Indoor Air Quality</td>
</tr>
<tr>
<td>Heart attack &amp; stroke</td>
<td>Home Environment</td>
</tr>
<tr>
<td>Influenza</td>
<td>Smoking Cessation</td>
</tr>
<tr>
<td>Adult asthma history</td>
<td>Secondhand Smoke Policy</td>
</tr>
<tr>
<td>Random child selection</td>
<td>Reactions to Race</td>
</tr>
<tr>
<td>Childhood asthma prevalence</td>
<td>Sexual Violence</td>
</tr>
<tr>
<td></td>
<td>Intimate Partner Violence</td>
</tr>
<tr>
<td></td>
<td>Anxiety and Depression</td>
</tr>
<tr>
<td></td>
<td>General Preparedness</td>
</tr>
</tbody>
</table>
Versatility: State-Added Questions

- Earthquake emergency preparedness
- West Nile Virus
- Bioterrorism
- Environmental health
- Suicide
- Osteoporosis
- Food handling
(Emerging core)
Use of BRFSS to address major public health issue

- H1N1 vaccine monitoring, 2009-2010
- Psychological and emotional effects after September 11 attack.
- General preparedness module after hurricane Katrina.
BRFSS current activities on H1N1

- Questions were sent to BSB (7/20)
  - Cognitive testing completed on (8/5)
  - Released to states on (8/6)
  - First round of CATI programming completed (8/14)
  - States suggested modifications (8/26)
  - Updated version of CATI on (8/28)

- Modified are operations including:
  - programs to run reports
  - PC-edit
  - Edit-fix
  - Weighting programs

Data collection started September 1.
Questionnaire Development

- Question(s) received from program
- Cognitive testing
- Field Test
- Computer Assisted Telephone Interviewing (CATI) Questionnaire
Interviewers are Trained
Standardized

- All states use core questionnaire
- Standardized methodology for collection and analysis
- Allows for state-to-state comparisons
- Now allows for local-to-local comparisons (SMART BRFSS)
BRFSS Process

- Annual Questionnaire Construction and Distribution
- Sample Selection and Screening
- Monthly Data Collection
- Data Management and Reporting
Disproportionate Stratified Sample

Purchase lists of randomly generated phone numbers from which known business and non-working numbers have been eliminated.

Dial one number:

- If no answer, redial up to 15 times.
- If residence, determine eligibility of household (at least one adult 18 or older).
- If eligible, randomly select one adult 18 or older for the interview.
- If non-residence or non-working, stop.

If not eligible, stop.
Process: New Features

- Submit data on upload/download Internet site
- Instant data quality reports
- Data processed in 48 hours and back to the state
- States receive quarterly data reports
- Receive preliminary yearly report within a week of final year data
- All states had final reports by March 14, 2009
- Data available to public on Web site by end of April
Data analysis

- Statistical package that accounts for complex design
- Estimates weighted to reflect age, race, education, marital status and sex distribution of adult population in each state
- State specific estimates
- City estimates
Who Uses BRFSS Data?

- State and local government
- CDC programs
- Government agencies
- Universities – faculty & students
- Research organizations
- Health professionals in nonprofits
- Insurance companies
- Managed care organizations
- Businesses
- Public
State Action

- Identify emerging health problems
- Program development
- Policy development
- Tracking health risk trends
- Program evaluation
Detecting Emerging Issues

Prevalence of Obesity* Among U.S. Adults

(*BMI ≥30, or about 30 lbs overweight for 5’4” person)

Prevalence of Diabetes* Among U.S. Adults

(*Includes gestational diabetes)

Source: Behavioral Risk Factor Surveillance System, CDC.
Mandatory Insurance Coverage for Screening Mammography


No mandatory insurance coverage for screening mammography.

Mandatory insurance coverage for screening mammography.
Prevalence of Women Who Never Had a Mammogram, Ages 40 and Older
BRFSS 1990–2004

Source: Behavioral Risk Factor Surveillance System, CDC.
Tracking Public Health Objectives,

Cholesterol Screening in last 5 years

Current Status: 73%

Goal: 80%
Hispanic and Non-Hispanic Adults Unable to See a Doctor During Preceding Year Because of the Cost, by Sex

- **Females**
  - Hispanic: 24.9%
  - Non-Hispanic: 14%

- **Males**
  - Hispanic: 17%
  - Non-Hispanic: 9.3%
Included 38 states, the District of Columbia, Puerto Rico, and the Virgin Islands.
Prevalence of Depression Severity and Lifetime Diagnosis of Depression and Anxiety by Diabetes Status

- Depression severity score GE 10: 14.5%
- Lifetime diagnosis of depression: 22.4%
- Lifetime diagnosis of anxiety: 15.3%

Includes 38 states, the District of Columbia, Puerto Rico, and the Virgin Islands.
Relationship between Depression History, Health Behaviors and Obesity

- **Smoking**
  - Never depressed: 16.5%
  - Previously depressed: 25.5%
  - Currently depressed: 37.9%

- **Obesity**
  - Never depressed: 22.8%
  - Previously depressed: 29.7%
  - Currently depressed: 35.4%

- **Physical inactivity**
  - Never depressed: 20.9%
  - Previously depressed: 23.4%
  - Currently depressed: 43.2%

- **Binge drinking**
  - Never depressed: 14.9%
  - Previously depressed: 15.5%
  - Currently depressed: 16.8%

- **Heavy drinking**
  - Never depressed: 4.7%
  - Previously depressed: 5.9%
  - Currently depressed: 7.7%

Legend:
- Green: Never depressed
- Blue: Previously depressed
- Yellow: Currently depressed
Scientific Publications


A multilevel analysis of income inequality and cardiovascular disease risk factors

HIV Testing Behaviors and Attitudes Regarding HIV/AIDS of Adults Aged 50-64
Genesis of Project

- Demand for local data
- Increased sample size
- Analysis of smaller areas possible
  - Metropolitan/micropolitan statistical areas (MMSAs)
  - Counties
SMART BRFSS was born!!

- Selected
- Metropolitan/Micropolitan
- Area
- Risk
- Trends
MMSAs???

- Metropolitan Statistical Area
  - Group of counties with 50,000 or more
- Micropolitan Statistical Area
  - Group of counties between 10,000 and 50,000
Plan of Action

- Develop a plan of dissemination
- Develop a Web site
- Contact local health officials
- Contact national partner organizations
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SMART: Selected Metropolitan/Micropolitan Area Risk Trends

View Health Risk Data

2004 - Norfolk County, MA

Asthma: Adults who have ever been told they have asthma

<table>
<thead>
<tr>
<th></th>
<th>Yes (%)</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>13.5</td>
<td>86.5</td>
</tr>
<tr>
<td>CI</td>
<td>(10.2-16.6)</td>
<td>(83.3-89.6)</td>
</tr>
<tr>
<td>n</td>
<td>443</td>
<td>443</td>
</tr>
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</table>

Percentages are weighted to population characteristics.
N/A = not available if the unweighted sample size for the denominator was < 50 or the CI half width was > 10 for any cell.

Lifetime Asthma Prevalence
Norfolk County, MA - 2004
SMART BRFSS
(Selected Metropolitan/Micropolitan Area Risk Trends from the Behavioral Risk Factor Surveillance System)
Boston-Quincy, MA Metropolitan Division

Percentage of Adults Reporting Selected Health Risks: Boston-Quincy, MA Metropolitan Division, BRFSS 2005

- Health Status
- Exercise
- Diabetes
- Flu Vaccination
- Current Smoking
- Single Drinking
- Casualty

**Survey Definitions**

Health Status - Percentage of adults reporting general health as fair or poor
Exercise - Percentage of adults reporting losing no leisure time because of physical activity in the past 30 days
Diabetes - Percentage of adults reporting being told by doctor they have diabetes
Flu Vaccination - Percentage of adults aged 65 or older reporting not having had a flu shot within the past 17 months
Current Smoking - Percentage of adults reporting having smoked at least 100 cigarettes in their lifetime and currently smoking
Single Drinking - Percentage of adults reporting having five or more drinks on an occasion one or more times in the past month
Casualty - Percentage of adults reporting Body Mass Index greater than or equal to 30.3

**Metropolitan Statistical Area -** Group of counties that combine at least 2,500,000 residents. Metropolitan Division - Smaller group of counties within a metropolitan statistical area which contains 2,5 million or more inhabitants. United States: Office of Management and Budget
Local BRFSS Data Impact

- Williamson County, Texas — 56% no physical activity, 34% overweight, and 21% obese
- Local public health officials took notice — and ACTION
- Created bicycle maps with routes, roadway ratings, safety tips
- Developed Web-based application for customized maps:
Develop Local Programs and Policies: SMART BRFSS in Fargo

- Fargo, ND – 24.9% binge drinking vs. 16.4% nationwide
- Formed community coalition: AMP (Alcohol Misuse Prevention)
- Mission: Reduce alcohol use among those under 21 in the Fargo-Moorhead area.
- Anti-binge drinking campaign
- Policy change sanctioning facilities
Asthma follow up survey

- To focus effort in areas of greatest need
- To contribute to the evaluation of asthma control efforts
- State level summary data
  - SES/Race effects in prevalence and control
- Grantee states analyze their data to measure progress and evaluate interventions
Strengths

- Flexible
- Timely
- Standardized
  - allows state-to-state comparisons
Limitations and Challenges

- Increasing number of questions being added to survey
- Self-reported information only
- Telephone coverage
- Increase in cell phone usage
- Competition from telemarketers
- Rising demand for data at the state and local levels
Incorporating a multi-mode design into a random-digit-dialing survey