

The Behavioral Risk Factor Surveillance System (BRFSS)

Past, Present, and Future

December 10th, 2014



Pre-BRFSS

▶ Early 1980s

- ▶ Link between personal health behaviors and premature morbidity and mortality
- ▶ Telephone surveys emerge as acceptable data collection method
- ▶ NCHS only collecting periodic data at the national level

▶ Need for state-based surveillance

- ▶ Surveys developed to collect data on major behavioral risks
- ▶ Original goal
 - ▶ To aid in planning, initiating, and evaluating health promotion and disease prevention programs at the state level

Early BRFSS

- ▶ Point-in-time surveys
 - ▶ To determine feasibility of behavioral surveillance
 - ▶ Conducted in 29 states from 1981-1983
 - ▶ Michigan conducted a standalone MiBRFS in 1982
- ▶ CDC BRFSS established in 1984
 - ▶ 15 states participated in monthly data collection
 - ▶ Michigan not involved in 1984 survey year
 - ▶ Initial topics included
 - ▶ Smoking, alcohol use, physical inactivity, diet, hypertension, and seatbelt use

National BRFSS

- ▶ Nationwide surveillance system in 1993
 - ▶ 1989 was the 1st full survey year for Michigan
- ▶ Questionnaire redesign
 - ▶ Fixed core
 - ▶ Rotating core
 - ▶ Emerging core
- ▶ Approx. 100,000 interviews completed in 1993
- ▶ > 500,000 interviews completed in 2011
 - ▶ World's largest telephone survey

BRFSS Sampling (Then and Now)

- ▶ All state samples developed by MSG

▶ Then

- ▶ Landline telephones only
- ▶ List assisted random-digit-dialed methodology
- ▶ Disproportionate stratification based on phone density bank

▶ Now

- ▶ Both landline and cell phone starting in 2011 (new baseline)
- ▶ Cell phone numbers
 - ▶ Randomly selected from dedicated cell phone banks that are sorted based on area code and exchange within each state

BRFSS Questionnaire (Then and Now)

Behavioral Risk Factor Surveillance System 1984 Questionnaire

Table of Contents

Table of Contents.....	
Interviewer's Script.....	
Questionnaire Sections.....	
Section A: Seatbelts.....	
Section B: Hypertension.....	
Section C: Exercise.....	
Section D: Diet.....	
Section E: Cigarette Smoking.....	
Section F: Alcohol Consumption.....	
Section G: Demographics.....	
Section H: Final Question and Closing Statement.....	
Coding Lists.....	
Coding List A: Activity codes.....	
Coding List B: Intensity factors for common leisure activities.....	

Then

- ▶ 8 core sections
 - ▶ 47 total core questions
- ▶ No optional modules
 - ▶ Started in 1988
- ▶ No rotating core items
 - ▶ Started in 1993

BRFSS Questionnaire (Then and Now)

Behavioral Risk Factor Surveillance System
2013 Questionnaire

Table of Contents

Table of Contents	
Core Sections	
Section 1: Health Status	
Section 2: Healthy Days — Health-Related Quality of Life	
Section 3: Health Care Access	
Section 4: Inadequate Sleep	
Section 5: Hypertension Awareness	
Section 6: Cholesterol Awareness	
Section 7: Chronic Health Conditions	
Section 8: Demographics	
Section 9: Tobacco Use	
Section 10: Alcohol Consumption	
Section 11: Fruits and Vegetables	
Section 12: Exercise (Physical Activity)	
Section 13: Arthritis Burden	
Section 14: Seatbelt Use	
Section 15: Immunization	
Section 16: HIV/AIDS	
Optional Modules	
Module 1: Pre-Diabetes	
Module 2: Diabetes	
Module 3: Healthy Days (Symptoms)	
Module 4: Health Care Access	
Module 5: Sugar Drinks	
Module 6: Sodium or Salt-Related Behavior	
Module 7: Adult Asthma History	
Module 8: Cardiovascular Health	
Module 9: Arthritis Management	
Module 10: Influenza	
Module 11: Adult Human Papilloma Virus (HPV)	
Module 12: Breast and Cervical Cancer Screening	
Module 13: Colorectal Cancer Screening	
Module 14: Prostate Cancer Screening	
Module 15: Prostate Cancer Screening Decision Making Module	
Module 16: Reactions to Race	
Module 17: Mental Illness and Stigma	
Module 18: Industry and Occupation	
Module 19: Social Context	
Module 20: Random Child Selection	
Module 21: Childhood Asthma Prevalence	
Module 22: Emotional Support and Life Satisfaction	
Activity List for Common Leisure Activities (To be used for Section 12: Physical Activity)	

Now

- ▶ 16-18 core sections
 - ▶ 90-92 total core questions
- ▶ Optional modules
 - ▶ MI uses 3-5 per year
- ▶ Rotating core items
 - ▶ Even years
 - ▶ Cancer screenings, oral health, drinking and driving
 - ▶ Odd years
 - ▶ HBP, cholesterol, fruits & vegetables, physical activity, arthritis burden

BRFSS Weighting (Then and Now)

- ▶ Weighted to represent state adult population (CDC)
- ▶ Then
 - ▶ Post stratification (landline data only)
 - ▶ Simultaneously adjusts data to known proportions of age, gender, and race/ethnicity within a population
- ▶ Now
 - ▶ Raking (landline and cell phone data)
 - ▶ Iterative process that adjusts data based on telephone source, detailed race/ethnicity, education, marital status, age by gender, gender by race/ethnicity, age by race/ethnicity, and renter/owner status

Michigan BRFSS (MiBRFSS)

- ▶ Only source of state-specific, population-based health estimates among Michigan adults
- ▶ Prevalence of various...
 - ▶ Health behaviors
 - ▶ Medical conditions
 - ▶ Preventive health care practices
- ▶ Respondent source for the Michigan Asthma Call Back Survey (since 2005)
 - ▶ Follow-up survey for respondents that reported ever being diagnosed with asthma

History of the MiBRFSS

- ▶ June-July 1982: standalone MiBRFS
- ▶ 1983-1985: No MiBRFS
- ▶ Oct. 1986-Sept. 1987: the “1987” MiBRFS
- ▶ June-Dec. 1988: the 1988 MiBRFS
- ▶ Jan. 1989-Present: MiBRFS conducted on an annual basis

MiBRFSS Data Collection

- ▶ Since 1996: MiBRFS data collection conducted through a contract with the Michigan State University, Office for Survey Research
 - ▶ State of the art CATI facility
 - ▶ Full time staff: over 100 years experience
 - ▶ 80-100 full/part-time interviewers
 - ▶ Over 40 dedicated interviewing workstations

MiBRFSS Funding

- ▶ MiBRFS Coordinator/Epidemiologist
 - ▶ State funds
- ▶ MiBRFS data collection
 - ▶ Cooperative agreement with the Centers for Disease Control and Prevention
 - ▶ ~ 50% of data collection costs
 - ▶ Other state programs and health organizations
 - ▶ ~ 50% of data collection costs
 - ▶ To support state-added questions and CDC optional modules

MiBRFSS Questionnaire

2014 Michigan Behavioral Risk Factor Survey

Section 1:	Health Status
Section 2:	Healthy Days - Health-Related Quality of Life
Section 3:	Health Care Access
Section 4:	Exercise
Section 5:	Inadequate Sleep
Section 6:	Chronic Health Conditions
Section 6a:	CDC Prediabetes Module
Section 7:	Oral Health
Section 8:	Demographics
Section 9:	Tobacco Use
Section 10:	Alcohol Consumption
Section 11:	Immunization
Section 12:	Falls
Section 13:	Seatbelt Use
Section 14:	Drinking and Driving
Section 15:	Breast and Cervical Cancer Screening
Section 16:	Prostate Cancer Screening
Section 17:	Colorectal Cancer Screening
Section 18:	HIV/AIDS
<u>Version A (CDC split 1)</u>	
Section 19:	Random Child Selection
Section 20:	Childhood Asthma Prevalence
Section 21:	Infertility
Section 22:	Other Tobacco Questions
Section 23:	Oral Health Care
<u>Version B (CDC split 2)</u>	
Section 24:	Random Child Selection (repeat of Section 19)
Section 25:	Childhood Asthma Prevalence (repeat of Section 20)
Section 26:	Infertility (repeat of Section 21)
Section 27:	Other Tobacco Questions (repeat of Section 22)
Section 28:	Drug Use
Section 29:	Gambling
<u>Version C (CDC split 3)</u>	
Section 30:	Random Child Selection (repeat of Section 19)
Section 31:	Childhood Asthma Prevalence (repeat of Section 20)
Section 32:	Infertility (repeat of Section 21)
Section 33:	Other Tobacco Questions (partial repeat of Section 22)
Section 34:	Alcohol Screening
Section 35:	Cancer Survivorship

- ▶ CDC core questions
 - ▶ Sections 1-18
- ▶ Split questionnaire
- ▶ CDC optional modules
 - ▶ Prediabetes
 - ▶ Random Child Selection
 - ▶ Childhood Asthma
 - ▶ Alcohol Screening
- ▶ State-added questions
 - ▶ All remaining questions

MiBRFSS State-Added Questions

- ▶ MiBRFSS Data Users Meeting
 - ▶ MiBRFS updates
 - ▶ MiBRFS state-added question discussion
- ▶ State-added question proposal form
 - ▶ For state programs and other health organizations that are interested in adding questions to the next MiBRFS
 - ▶ Includes questions on...
 - ▶ Population of interest
 - ▶ Current data availability
 - ▶ How collected data will be used from a program/policy perspective

MiBRFSS State-Added Costs

- ▶ Costs determined on a per split basis
 - ▶ Minimum of 2,500 respondents per split required in order to be weighted by the CDC
- ▶ Per split question costs (2,500-3,000 respondents)
 - ▶ $< 20\%$ of respondents = \$2,000 per question
 - ▶ $\geq 20\%$ of respondents = \$2,500 per question
 - ▶ # of splits dependent on total sample size

MiBRFSS Target Sample Sizes

- ▶ **Minimum**
 - ▶ 6,000 respondents per year
 - ▶ Two splits of state-added questions
- ▶ **Target**
 - ▶ 9,000 respondents per year
 - ▶ Three splits of state-added questions
- ▶ **Landline/cell phone proportion**
 - ▶ Close to annual NHIS wireless substitution estimates
 - ▶ 2014 MiBRFSS: 60% landline / 40% cell phone
 - ▶ 2015 MiBRFSS: 50% landline / 50% cell phone

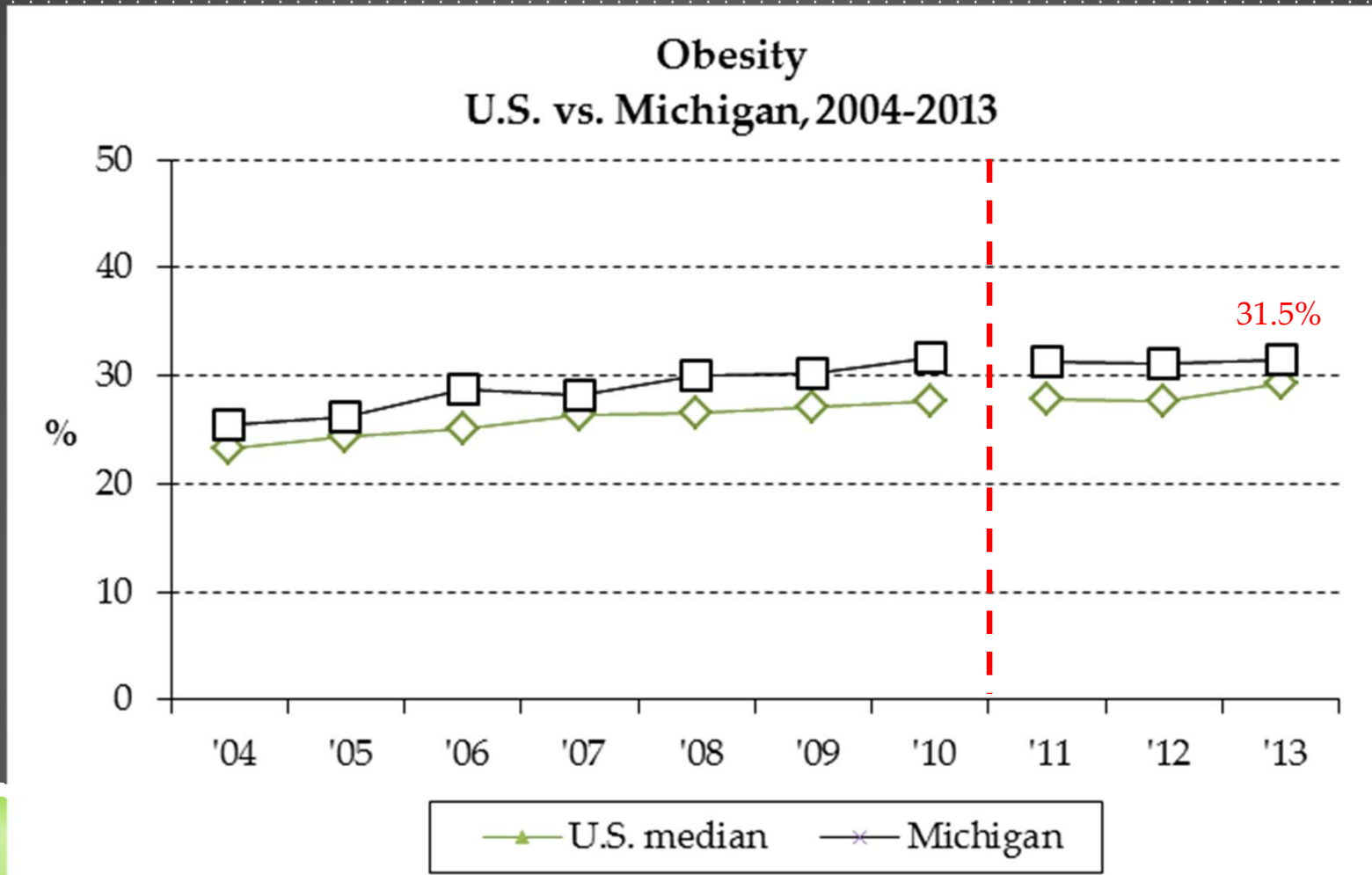
MiBRFSS Annual Analysis

- ▶ Weighted data received from CDC (July-Aug)
- ▶ SAS-Callable SUDAAN
 - ▶ Statistical program for data from complex sample surveys
 - ▶ Could also use SAS, SPSS, STATA, etc.
 - ▶ Weighted prevalence estimates and asymmetric 95% CIs
- ▶ Data suppression rules
 - ▶ New for 2013 MiBRFS data
 - ▶ Prevalence estimates are suppressed if they are...
 - ▶ Based on a denominator of less than 50 respondents
 - ▶ Have a relative standard error of greater than 30%
 - ▶ $RSE = (SE / \text{Point estimate}) * 100$

MiBRFSS Results

- ▶ Sent out via MiBRFSS email distribution list
- ▶ Available on MiBRFSS website
 - ▶ www.michigan.gov/brfs
- ▶ Standard tables
 - ▶ Annual estimates by various demographics
 - ▶ Multi-year estimates by expanded race/ethnicity
 - ▶ Annual estimates by Emergency Preparedness Region
 - ▶ Annual estimates by Michigan Economic Development Collaborative Region
 - ▶ Multi-year estimates by Region and Local Health Department

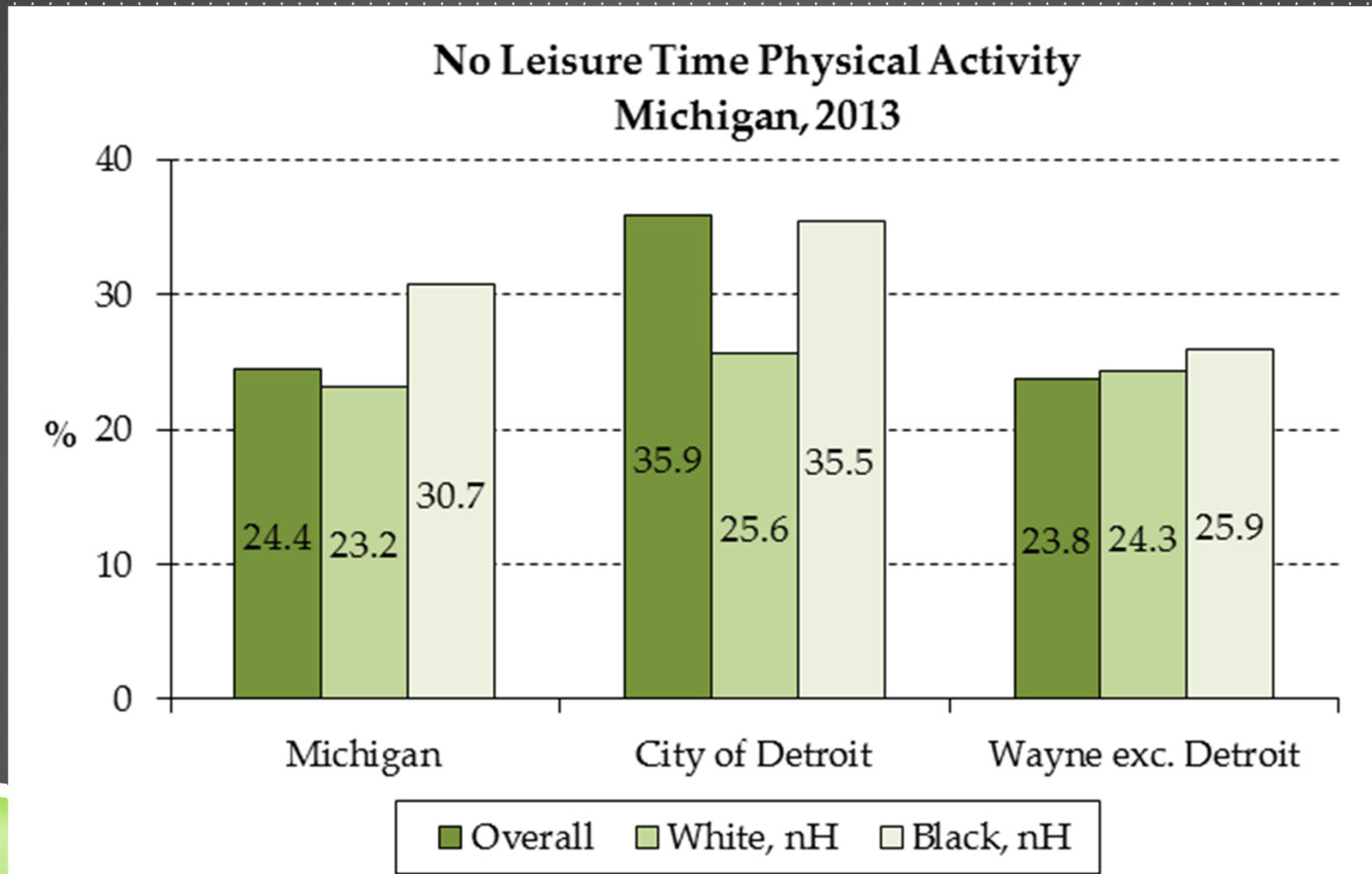
2013 MiBRFS Highlights



City of Detroit: 37.3%

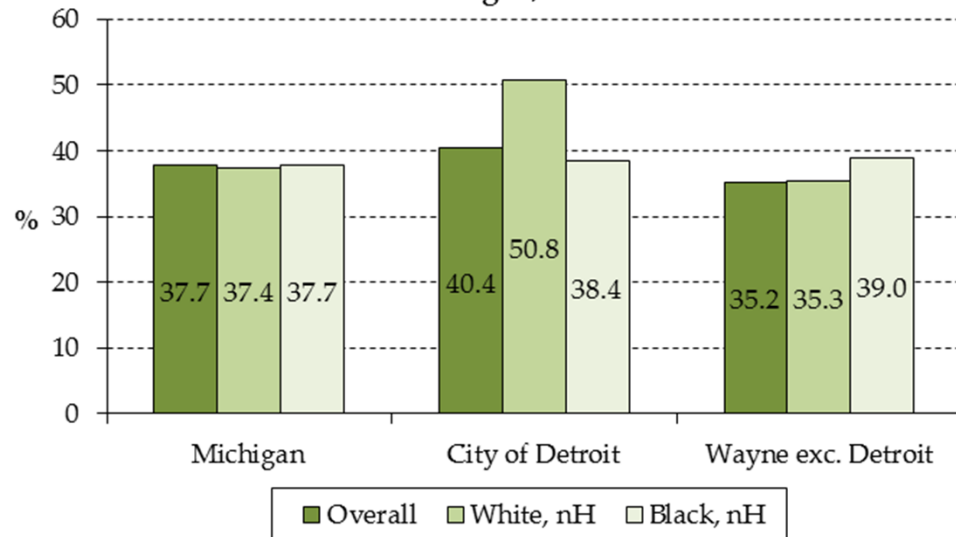
Wayne exc. Detroit: 29.2%

2013 MiBRFS Highlights

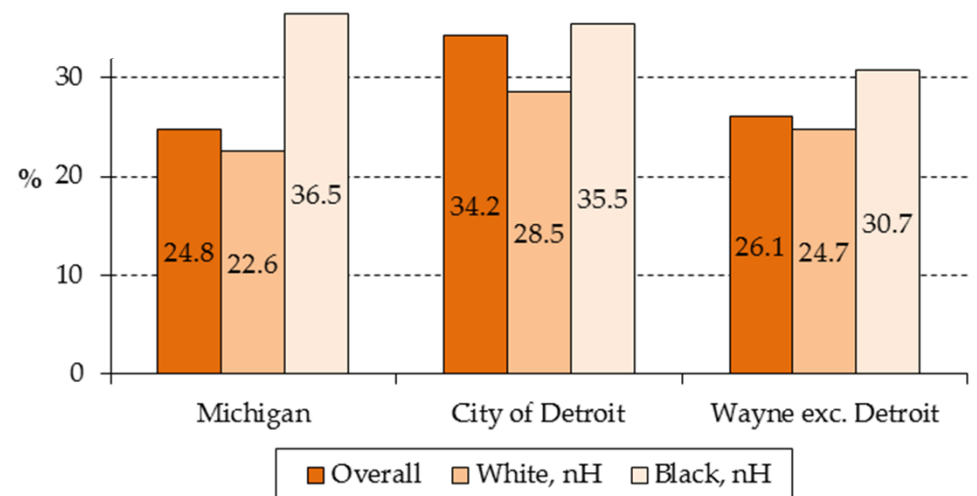


2013 MiBRFS Highlights

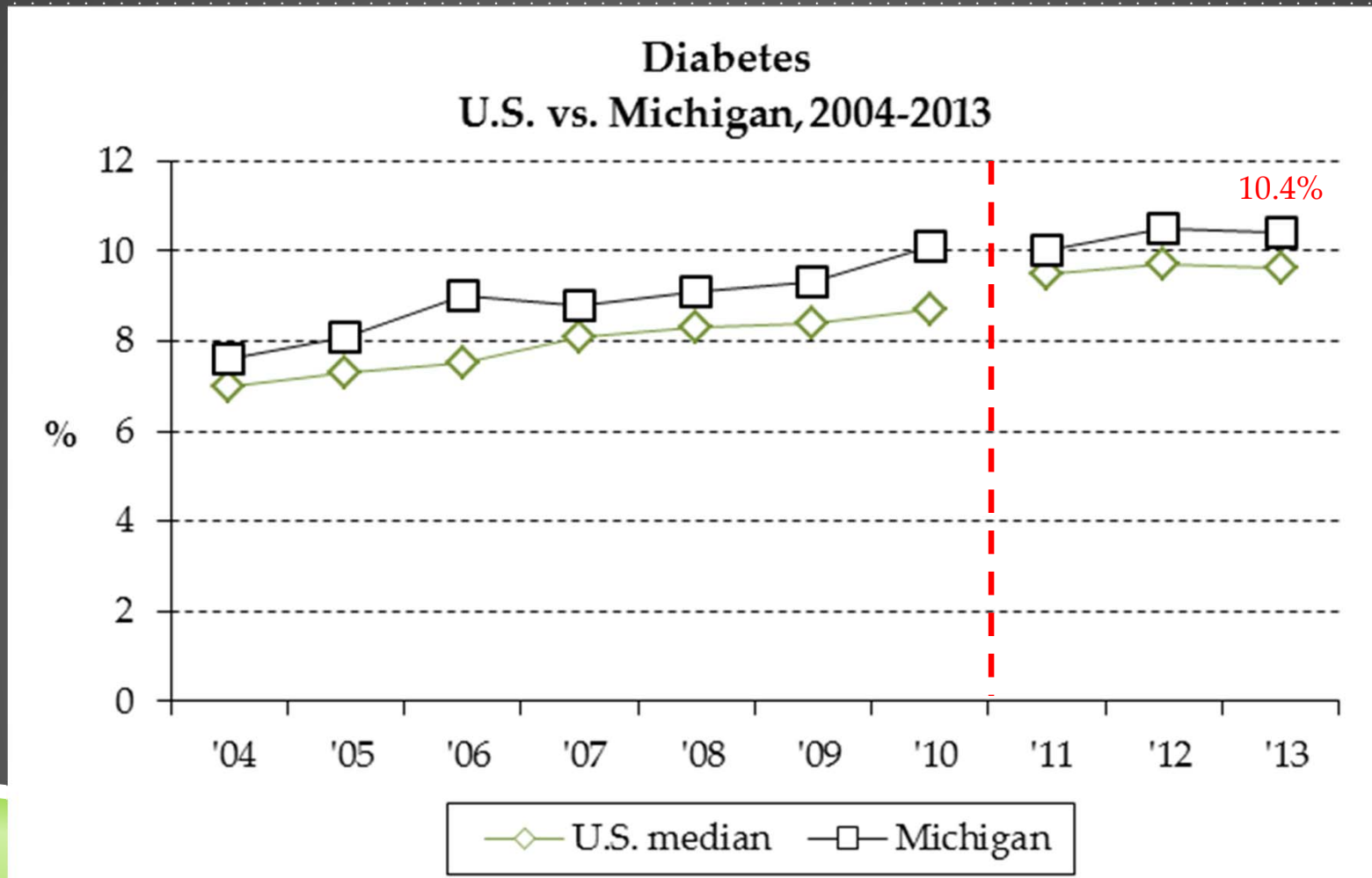
**Fruit Consumption (<1 / day)
Michigan, 2013**



**Vegetable Consumption (<1 / day)
Michigan, 2013**



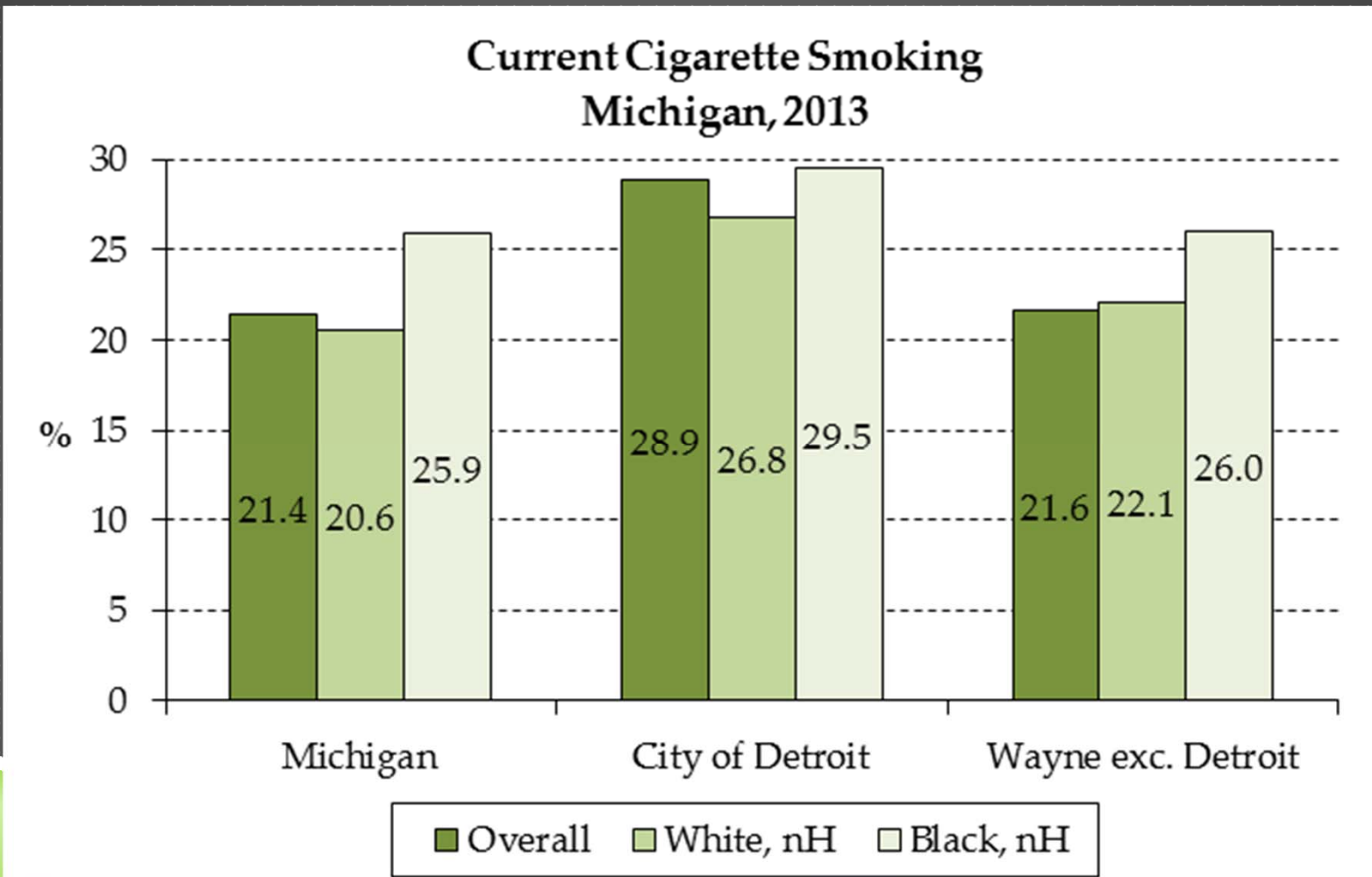
2013 MiBRFS Highlights



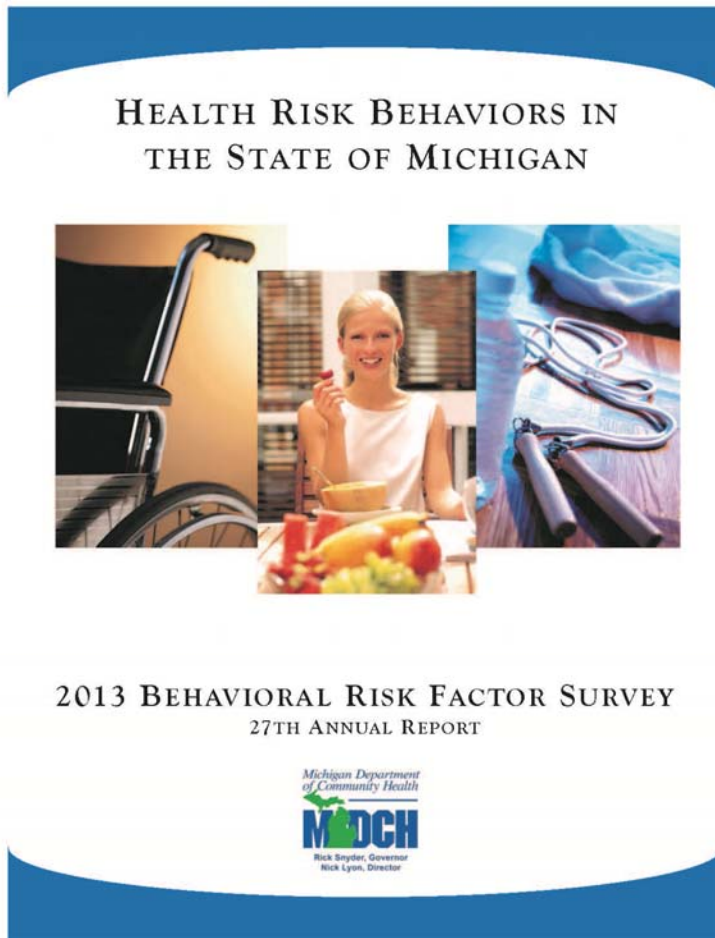
City of Detroit: 12.9%

Wayne exc. Detroit: 10.6%

2013 MiBRFS Highlights



Other MiBRFSS Results



- ▶ MiBRFSS Annual Report
 - ▶ In print (limited)
 - ▶ On MiBRFSS website
- ▶ Surveillance Briefs
 - ▶ Data highlights
 - ▶ Optional modules
 - ▶ State-added questions
- ▶ Other MiBRFSS presentations

MiBRFSS Data Requests

- ▶ Estimates not included in the standard tables
 - ▶ Email coordinator with details of request
 - ▶ Turnaround time: 3-5 business days
- ▶ Raw Data requests
 - ▶ MiBRFSS data from CDC core questions
 - ▶ CDC BRFSS public use data file (data for all states & territories)
 - ▶ www.cdc.gov/brfss/
 - ▶ MiBRFSS data from MI state-added questions
 - ▶ Email coordinator with request summary
 - ▶ MiBRFSS data use agreement process

CDC BRFSS Local Area Data

▶ SMART BRFSS

- ▶ Selected Metropolitan/Micropolitan Area Risk Trends
- ▶ CDC project that uses BRFSS data to produce some local estimates
- ▶ Includes counties and MMSAs with 500 respondents or more
- ▶ 2011 SMART BRFSS included
 - ▶ 198 MMSAs
 - ▶ 224 counties

Future of the CDC BRFSS

- ▶ Pilot testing new modes of data collection
 - ▶ Web surveys
 - ▶ Mail surveys
 - ▶ Internet panel surveys
- ▶ Small area estimation
 - ▶ Working to endorse a weighted logistic random effects model
 - ▶ Goal of producing county-level estimates for selected BRFSS indicators on an annual basis for all U.S. counties
- ▶ Exploring new methods of interviewing hard to reach population in order to increase representativeness of survey

MiBRFSS Staff Information

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