

# *Cellphone Supplementation to the MiBRFS: 2008 & 2009*

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## *Completion Targets by Year and Component*

Number of Completes	2008	2009
A. Landline	8,750	8,750
Over-sample African Americans	17% (13%)	17% (13%)
B. Cellphone	250	250
Also Cell & Land	250	--

## *Specifications: 2008, 2009*

Feature	2008		2009	
	Landline	Cell	Landline	Cell
<b>Ave. Invw length</b>	22.7	15.2	23.9	23.5
<b>Call Limit</b>	15/25	12/20	15/25	12/20
<b>Advance Letters</b>	Yes	No	Yes	No
<b>Incentives</b>	No	\$10 gc	No	\$10 gc
		86% accept		93% accept
<b>Asthma Follow-Up Recruitment</b>	Yes	No	Yes	Yes

# Sample Design

	Landline Numbers					Cell Phone Numbers
	0-Blocks	1+ Blocks				
		High AA Density Stratum		Low AA Density Stratum		
		Listed	Not Listed	Listed	Not Listed	
<b>NRECSEL (2009)</b>	--	6,820	20,701	20,605	34,743	4,856
<b>NRECSTR (2009)</b>	#	244,104	1,121,826	2,55,383	6,610,374	15,772,000
<b>P(sel)</b>	0	.0279	.0185	.0081	.0053	.0003

## *Samples of Phone Numbers to Select to Produce Specified # Interviews (2009)*

	Landline	Cellphone
N to Complete	8,750	250
Est. Working Phone Rate	0.55	0.67
Est. Eligibility Rate	0.45	0.24
Est. Cooperation Rate	0.33	0.30
<b>Total Sample to Generate</b>	<b>107,132</b>	<b>5,182</b>
Sample Used To-Date (qtrs 1-3)	80,700	3,600
Numbers to call after screening (qtrs 1-3)	32,772	3,600
Total Call Attempts Required (qtrs 1-3)		
Invws= 6,989 and 208	288,548	18,530
Calls per complete (qtrs 1-3)	41.3	89.1

## *Cost Per Interview (2009, Qtrs 1-3)*

	Landline	Cell
Interviews Completed	6,989	208
Cost per Interview	\$ 39.02	\$ 64.16
<p>(includes: interviewer &amp; supervisor labor, telephone charges, incentives, mailings &amp; postage, and internal overhead for hardware/software license fees, network maintenance)</p> <p>(excludes: salaried staff time for programming, management, &amp; operations)</p>		
Hours per complete	2.07	2.90

## *Yield: 2008*

- **7,200 cell phone numbers used, statewide, no stratification**
  - 368 confirmed being cell phone only, completed interviews with 255+5
  - 577 identified as having both cell and landline phones, randomly selected 330 to attempt interview, completed interview with 251+7
- **Total 506 interviews completed + 12 partials**
  - Crude response rate for cellphone only = 38%
  - Response rate if identified as cellphone only = 69%
  - Response rate if identified (and selected) as cell/land = 76%
- **11 cases resided outside Michigan (4 cell/land, 7 cell-only): excluded**

Hembroff, L.A., D. Ruzs, A. Rafferty, S. Lyon-Callo, C. Fussman. "Telephone Survey Error and the Growing Cellphone-Only Population: Results of a Pilot Study Including Cellphone Samples in the Michigan Behavioral Risk Factor Survey." IPPSR: East Lansing, Mi. December, 2008.

# Impact of Cell Phone Supplementation:

## Demographic Profiles

### WEIGHT STATUS AND DIET

**OVERWEIGHT AND FRUITS AND VEGETABLES** - *Overweight*: Proportion of respondents with a high mass index  $\geq 27.3$  for men and  $\geq 27.1$  for women (pregnant women were excluded from this analysis). *Fruit & Veg*: Proportion of respondents who reported consuming fruits (including juice) and vegetables for at least three per day.

Obesity is a growing epidemic that is threatening the health of millions of Americans. Being overweight increases the risk of chronic diseases such as heart disease, diabetes, and high blood pressure. It also leads to a lower quality of life and higher health care costs.

It was estimated that nearly 65 percent of Michigan's adult population was overweight in 1998. This percentage of overweight Michigan adults has generally been increasing, mirroring a similar national trend. The proportion of Michigan adults who were overweight increased with age up until 75 years and older and then decreased. College graduates had the lowest proportion of overweight respondents among education categories.

Data from the 1998 BEHS indicated that only about 20 percent of Michigan adults in 1998 ate the recommended five or more servings of fruits and vegetables daily. Respondents aged 65 years and older and those who had obtained a college degree were more likely to eat fruits and vegetables at least five times daily.

Demographic Characteristics	Overweight	Fruit and Vegetables
<b>AGE</b>		
18-24 Years	22.0 ± 2.1	28.4 ± 1.9
25-34 Years	25.0 ± 1.8	27.5 ± 1.8
35-44 Years	27.0 ± 1.4	26.5 ± 1.7
45-54 Years	32.0 ± 1.0	25.0 ± 1.5
55-64 Years	35.0 ± 0.8	23.5 ± 1.3
65+ Years	28.0 ± 0.9	26.0 ± 1.4
<b>SEX</b>		
Male	26.1 ± 1.1	27.0 ± 1.6
Female	26.2 ± 1.2	26.5 ± 1.5
<b>EDUCATION</b>		
College Graduate	18.0 ± 0.8	30.0 ± 1.2
Some College	22.0 ± 1.0	27.0 ± 1.4
High School Graduate	28.0 ± 1.2	25.0 ± 1.6
Less than High School	32.0 ± 1.4	23.0 ± 1.8



### PHYSICAL ACTIVITY

**NO LEISURE-TIME PHYSICAL ACTIVITY** - Proportion of respondents who reported they did not participate in any physical activities, recreation, or exercises in their leisure time (such as running, jogging, or walking for exercise) within the past month.

A lifestyle characterized by physical inactivity and poor diet habits is a leading cause of preventable heart disease, diabetes, and other chronic diseases. By becoming more moderately active on a regular basis, you can reduce your risk of these diseases. People of all ages can obtain

Demographic Characteristics	No Leisure-Time Physical Activity
<b>TOTAL</b>	21.7 ± 1.7
<b>AGE</b>	
18-24 Years	12.8 ± 1.2
25-34 Years	18.5 ± 1.8
35-44 Years	21.2 ± 1.8
45-54 Years	24.0 ± 1.5
65+ Years	26.8 ± 2.1
<b>SEX</b>	
Male	19.3 ± 2.0
Female	23.8 ± 2.4
<b>EDUCATION</b>	
Less than H.S.	26.7 ± 1.6
H.S. Graduate	28.2 ± 1.4
Some College	18.1 ± 2.2
College Graduate	18.1 ± 2.2

No Leisure-Time Physical Activity by Sex-Gender (No adjustment for race or age)



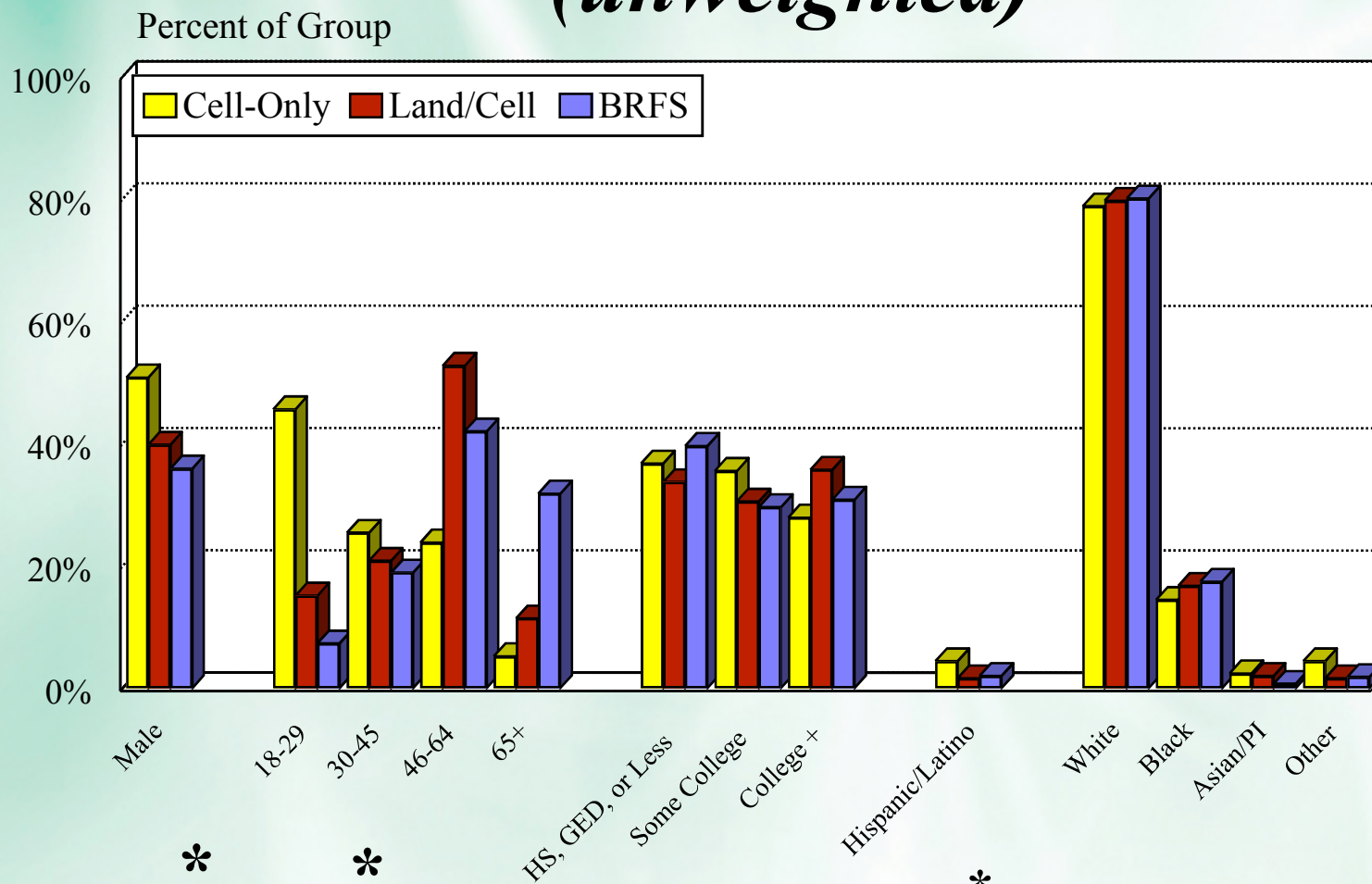
Black females were more likely to report no leisure-time physical activity compared to other groups. There was no significant difference between black males and white males.

All estimates for race have been age-adjusted to the projected year 2000 population.



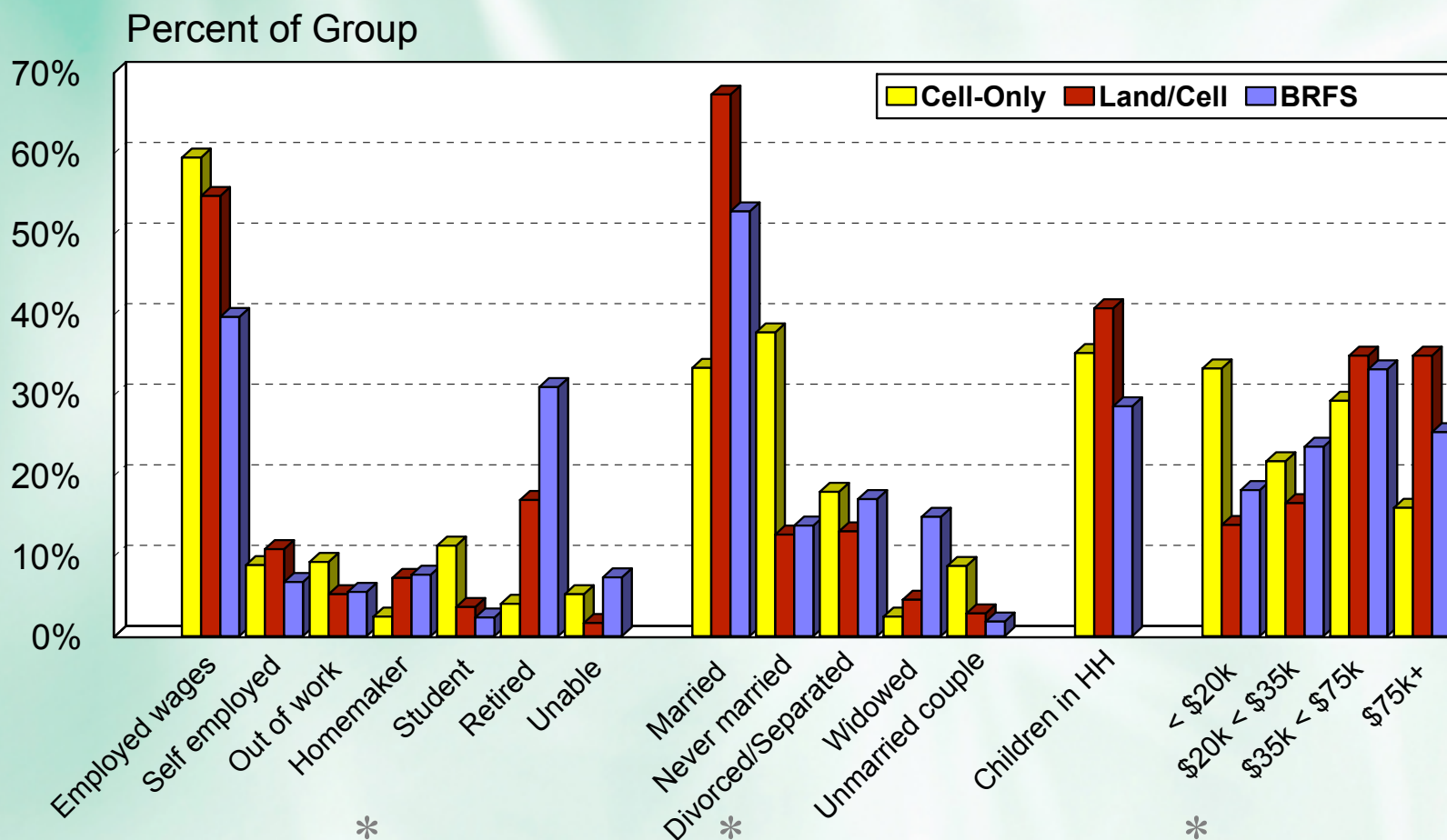


# Demographic Comparison (unweighted)



\* Differ significantly,  $p < .05$

# Demographic Comparison



\* Differ significantly, P < .05

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97 OF RESULTS  
MICHIGAN  
RISK FACTOR SURVEY

## WEIGHT STATUS AND DIET

**OVERWEIGHT AND FRUITS AND VEGETABLES** - *Overweight*: Proportion of respondents with a high mass index  $\geq 27.3$  for men and  $\geq 27.1$  for women (pregnant women were excluded from this analysis). *Five a Day*: Proportion of respondents who reported consuming fruits (including juice) and vegetables for at least three per day.

Obesity is a growing epidemic that is threatening the lives of millions of Americans. Being overweight increases the risk for many chronic diseases such as heart disease, stroke, diabetes, and certain types of cancer. This is because of excess body fat.

It was estimated that nearly 55 percent of Michigan's adult population was overweight in 1998. This percentage of overweight Michigan adults has generally been increasing, mirroring a similar national trend. The proportion of Michigan adults who were overweight increased with age up until 75 years and older and then decreased. College graduates had the lowest proportion of overweight respondents among education categories.

Data from the 1998 BEHS indicated that only about 20 percent of Michigan adults in 1998 ate the recommended five or more servings of fruits and vegetables daily. Respondents aged 65 years and older and those who had obtained a college degree were more likely to eat fruits and vegetables at least five times daily.



Demographic Characteristics	Overweight	Five a Day
<b>SEX</b>		
Male	56.9 ± 2.1	19.8 ± 1.2
Female	54.2 ± 2.5	20.5 ± 1.5
<b>AGE</b>		
18-24 Years	47.0 ± 4.4	26.4 ± 3.7
25-34 Years	52.9 ± 4.7	23.8 ± 3.1
35-44 Years	55.1 ± 5.4	21.2 ± 3.0
45-54 Years	57.1 ± 5.8	19.8 ± 2.1
55-64 Years	58.1 ± 6.2	18.5 ± 2.5
65-74 Years	59.1 ± 6.6	17.2 ± 2.2
75+ Years	55.9 ± 6.9	20.5 ± 2.8
<b>EDUCATION</b>		
Less than HS	58.1 ± 5.1	18.5 ± 2.2
HS Graduate	56.2 ± 4.8	19.8 ± 1.5
Some College	54.5 ± 4.5	21.2 ± 1.8
College Graduate	51.8 ± 4.2	23.5 ± 2.1

## PHYSICAL ACTIVITY

**NO LEISURE-TIME PHYSICAL ACTIVITY** - Proportion of respondents who reported they did not participate in any physical activities, recreation, or exercises in their leisure time such as running, cycling, or walking for exercise within the past month.

Physical inactivity is a leading cause of premature death in the United States, second only to tobacco use. People who are usually inactive can improve their health and reduce their risk of dying from heart disease, stroke, and other chronic diseases by becoming more active.

Demographic Characteristics	No Leisure-Time Physical Activity
<b>TOTAL</b>	21.7 ± 1.7
<b>SEX</b>	
Male	22.8 ± 2.1
Female	20.5 ± 1.8
<b>AGE</b>	
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<b>EDUCATION</b>	
Less than HS	24.7 ± 2.4
HS Graduate	23.2 ± 1.9
Some College	21.5 ± 1.7
College Graduate	19.1 ± 1.5

No Leisure-Time Physical Activity by Sex-Gender  
No adjustment for race/ethnicity was made.

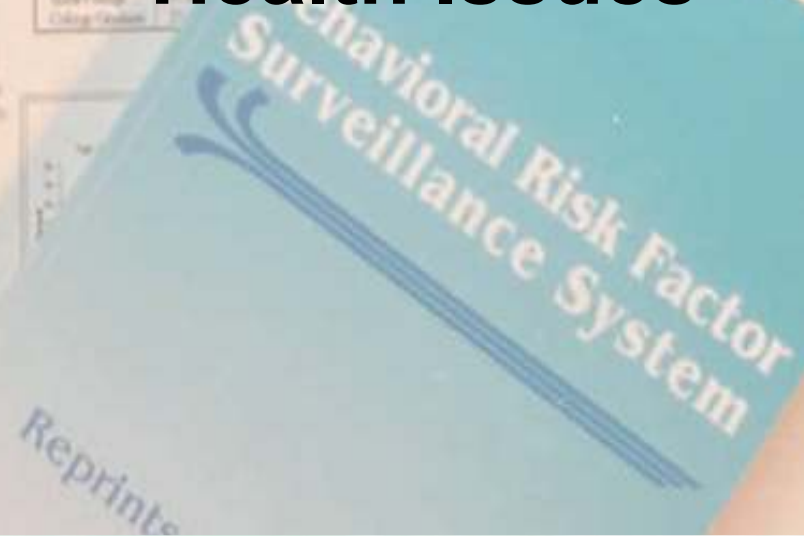


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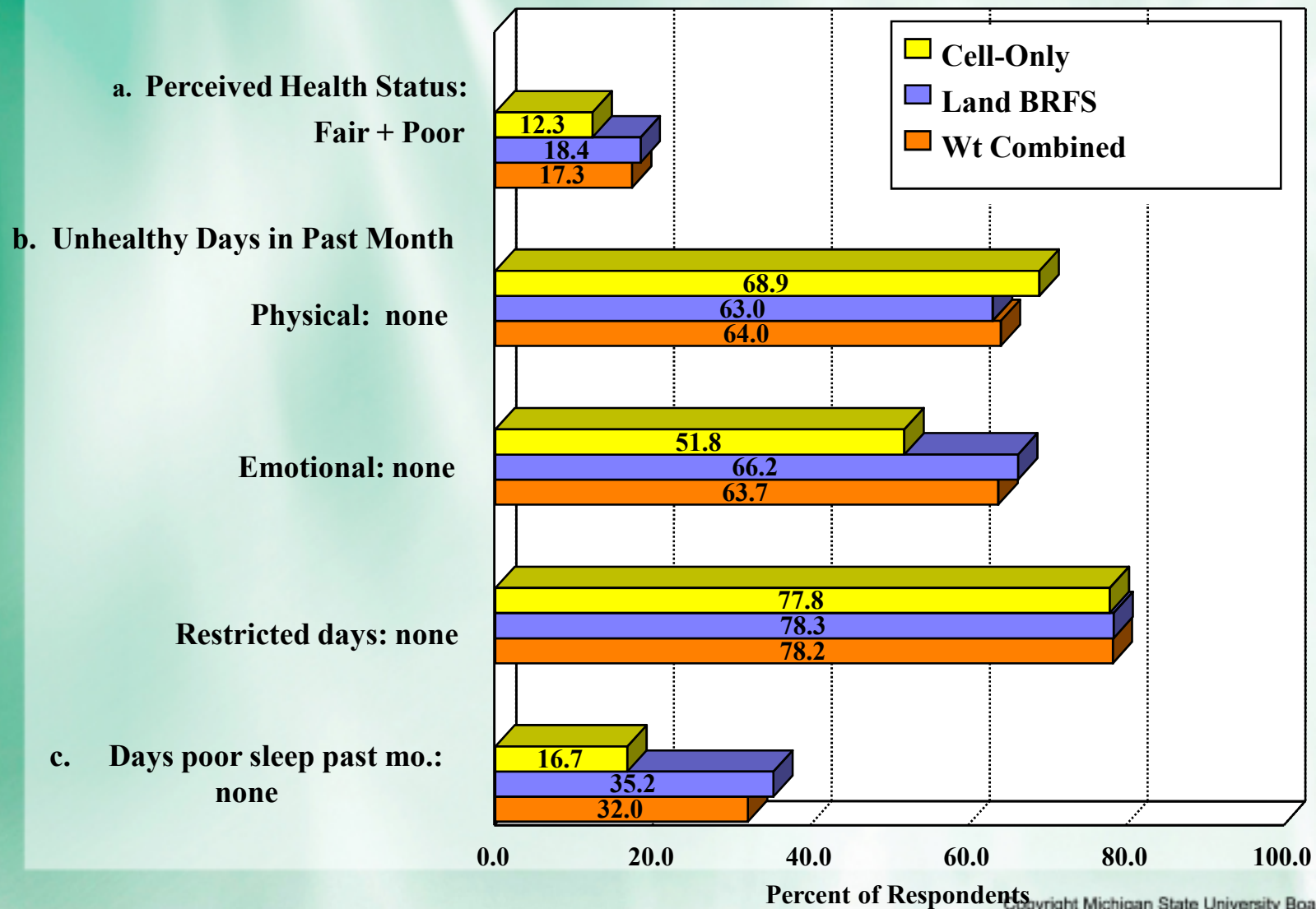
All estimates for race have been age-adjusted to the projected year 2000 population.

**Results:**  
*CPO vs. Landline vs. Wt Combined*

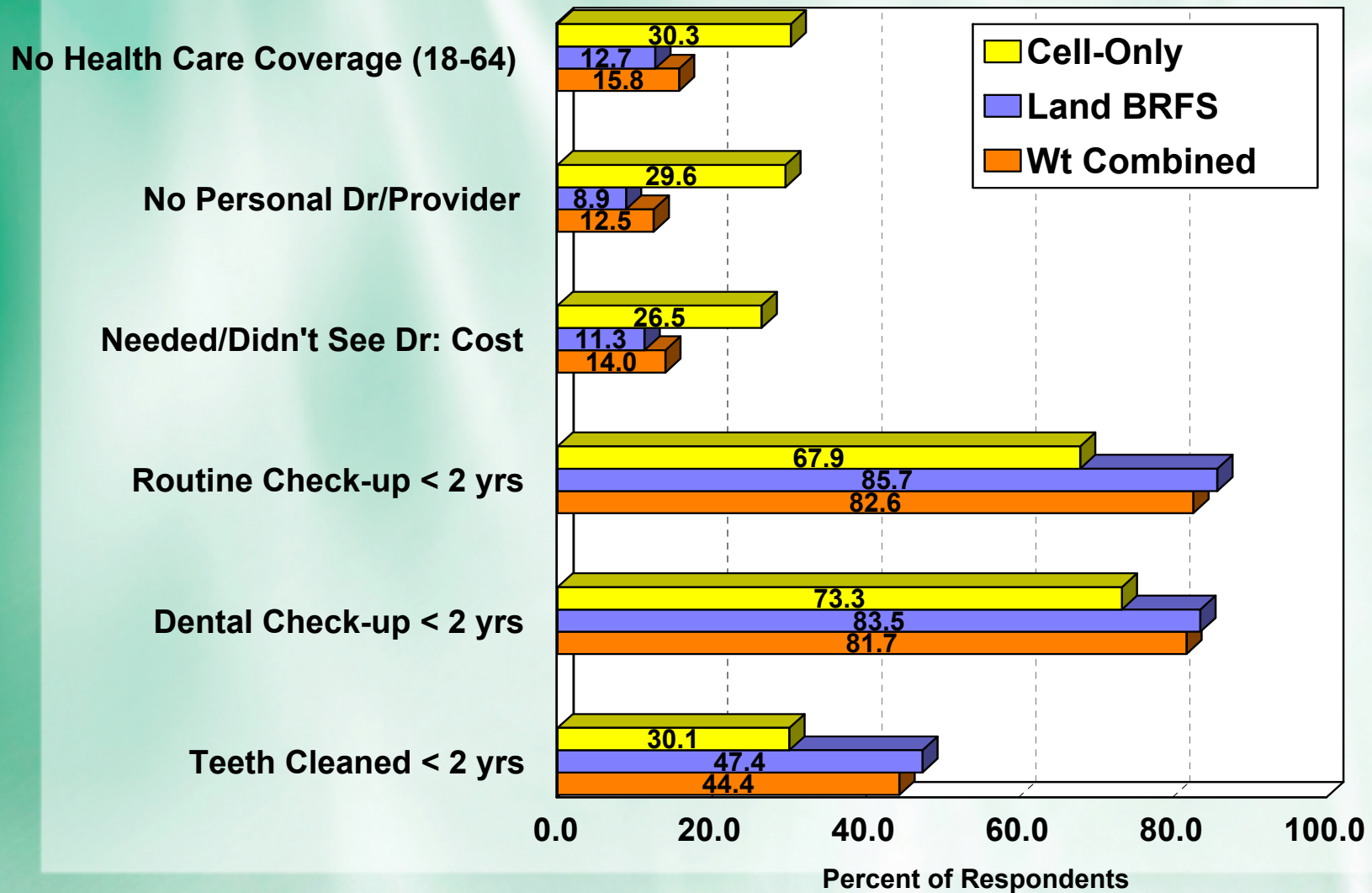
**Health Issues**



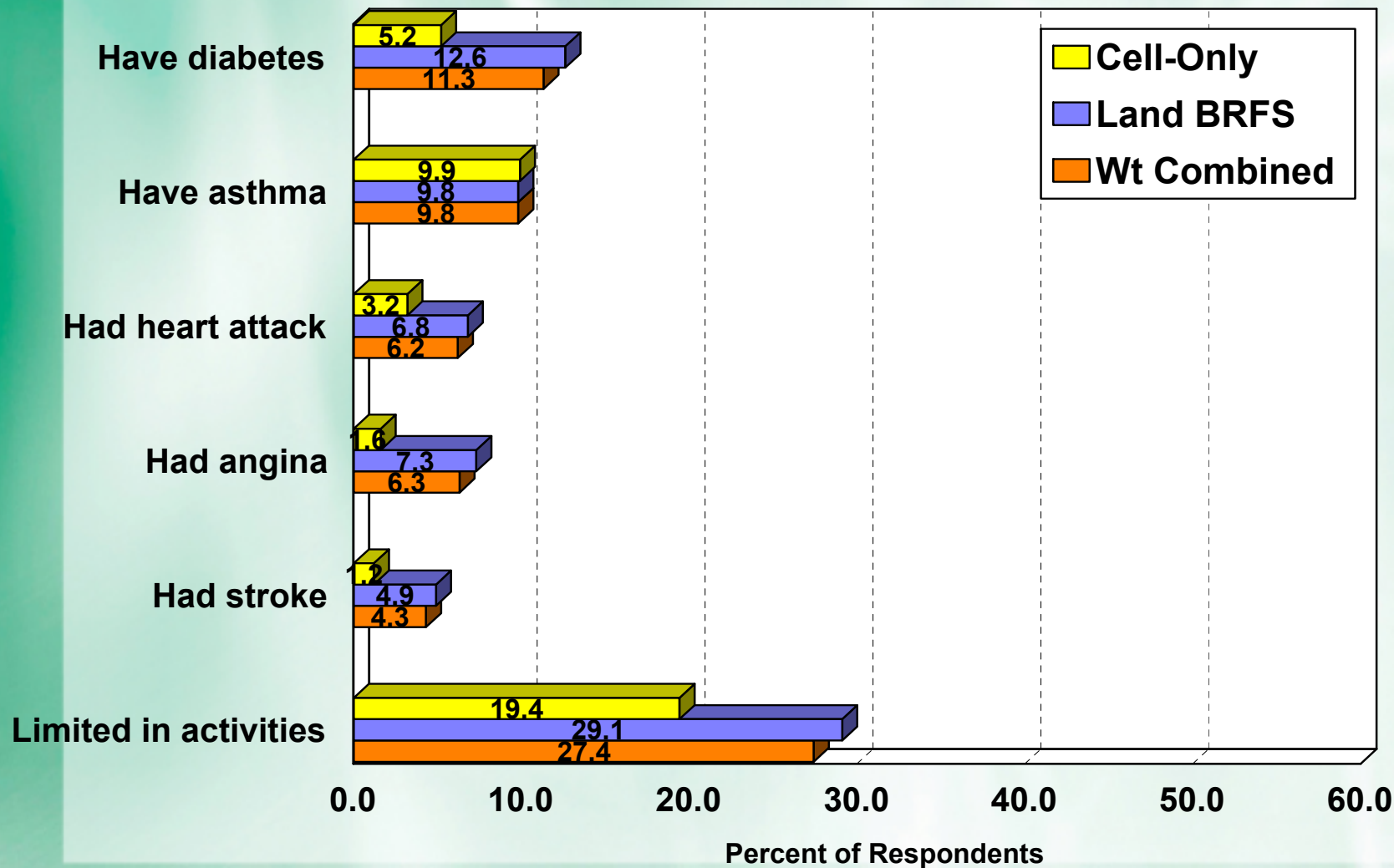
# Health Indicators: Health Status



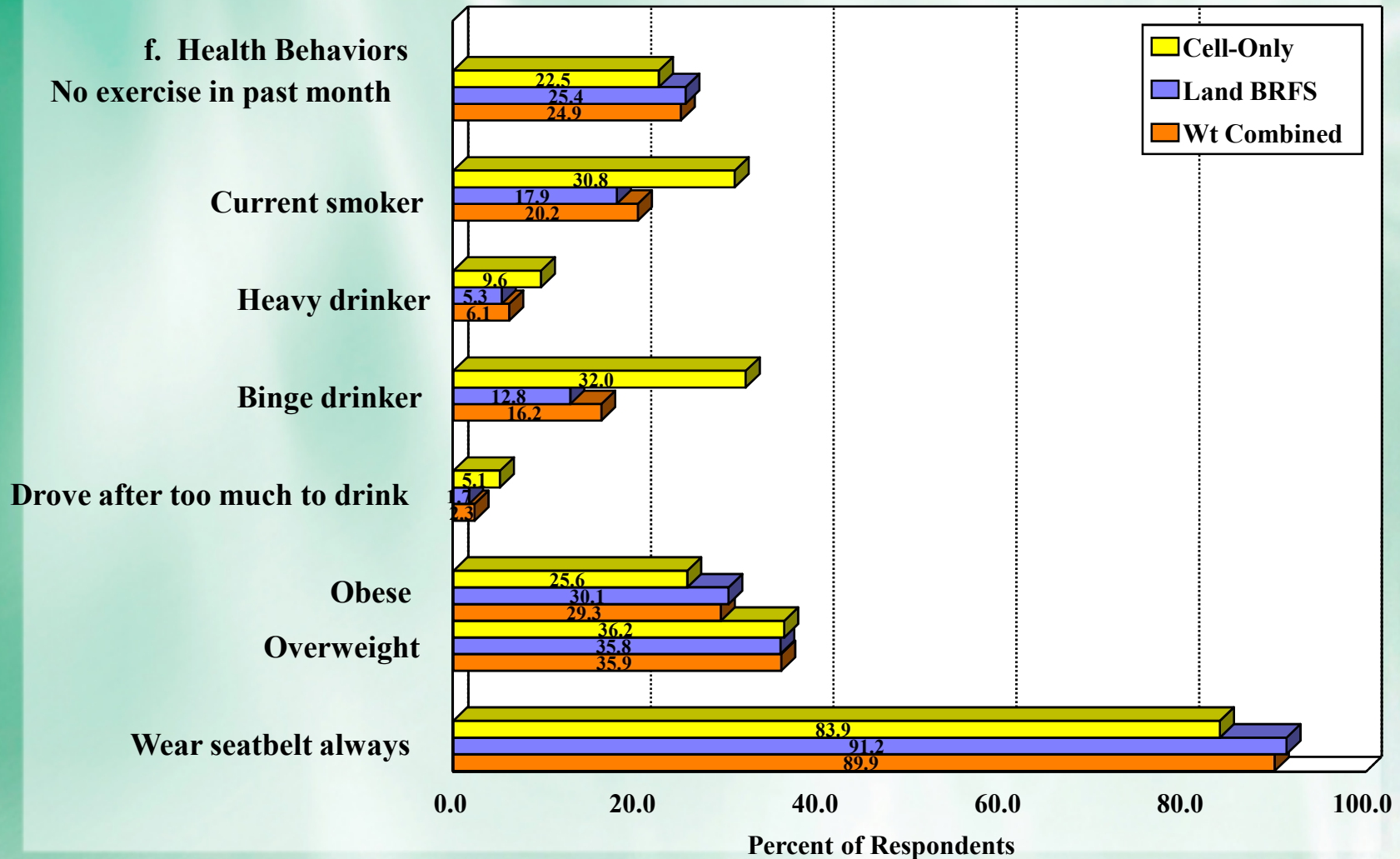
# Health Indicators: Health Care Access



# Health Indicators: Health Conditions



# Health Indicators: Health Behaviors



## *Key Findings*

### **Significant differences between CPO and Landline:**

- **Regarding demographics**
  - **Gender, age, income, marital status, employment status, ethnicity, race, children in household**
- **Regarding substantive health issues**
  - **Differ on 31 of 39 health indicators**
  - **Estimated BIAS by not including cell phone sample:**
    - **2/3 of items < 1.3%**
    - **1/3 of items 1-5%**
    - **Blumberg and Luke, 2009, AJPH August**
- **Bias is similar to the margin of sampling error on the landline sample**
- **Recommendations for smaller geographic units**



# *Questions and Discussion*