

# NHIS Screening Data

## **Estimating Pap Smear Rates Using NHIS Data**

Nancy Breen, PhD, NCI  
Vish Viswanath, PhD, NCI

# Why analyze NHIS in addition to BRFSS Pap data?

Earlier estimates are available (1987-1994)

NHIS is an in-person interview so not having a telephone doesn't exclude potential respondents from the survey

# Why analyze NHIS in addition to BRFSS screening data?

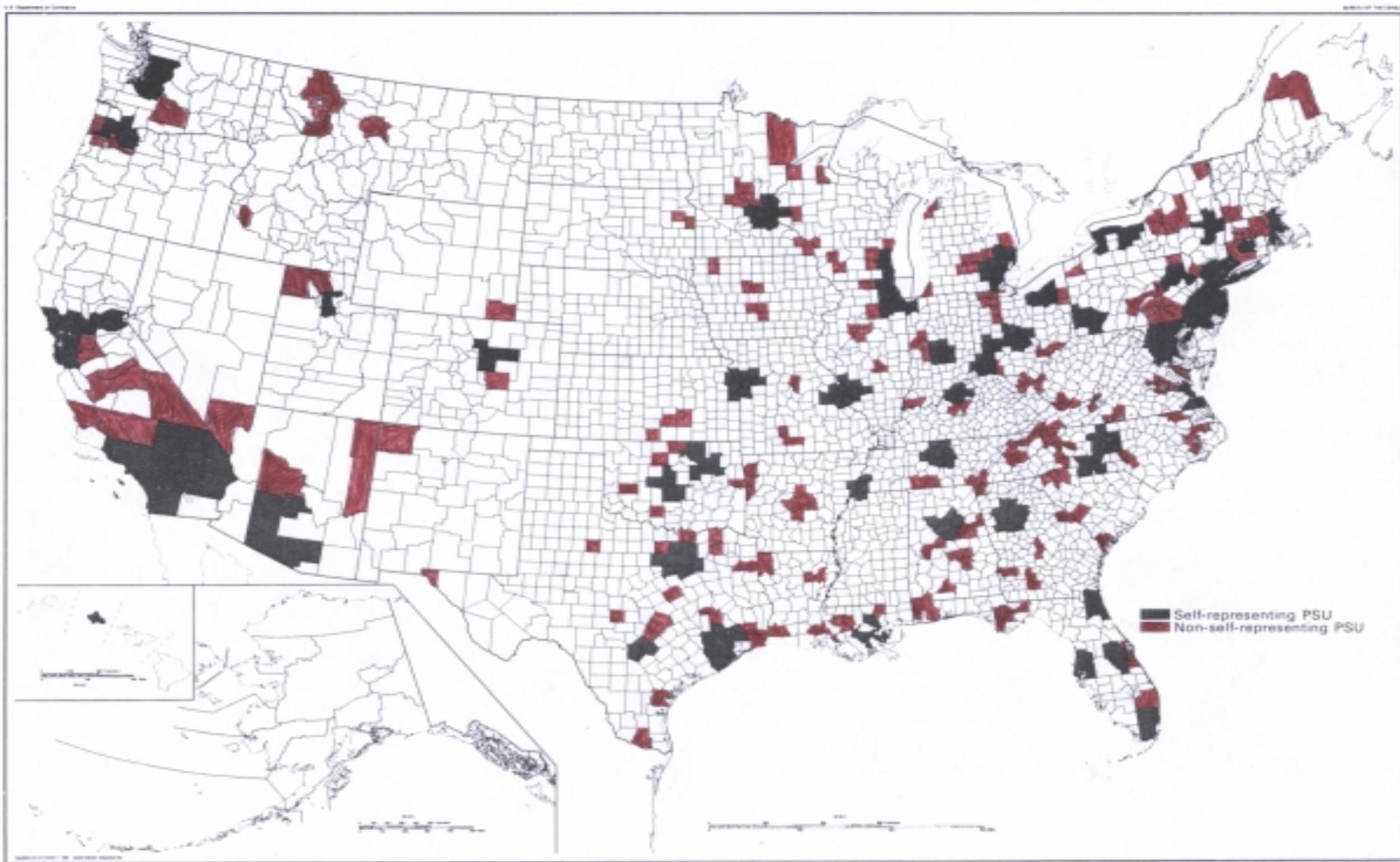
Pap smear use is lower among poor women and poor women are less likely to have telephones.

This may inflate Pap smear screening rates in telephone-based surveys like BRFSS

# Why not rely exclusively on NHIS screening data?

NHIS is designed for national estimates and regional coverage is spotty so regional estimates may be unreliable or impossible

# Primary sampling units (PSU's) selected for the National Health Interview Survey, 1984 - 94



# Analysis Plan for NHIS

**Pool data from various years of same design (1990-1994) to obtain more observations and more statistical power for small areas**

**Since PSUs are sparse in counties with high cervical cancer mortality rates, initially examine the largest group (white women) to see whether analysis is feasible**

**Examine Hispanics and non-Hispanics separately**

# Frequencies of Areas Represented Within Primary Sampling Units Pooled 1990,1992-1994 NHIS

		County Mortality Ranking		
		All Areas	Top 20%	Remaining 80%
Beale Area	Lev of Distress			
All Areas	All Areas	360	51	304
	Bottom 40%	70	17	53
	Remaining 60%	285	34	251
Urban	All Areas	116	12	104
	Bottom 40%	8	*	*
	Remaining 60%	108	8	100
Suburban	All Areas	165	24	141
	Bottom 40%	25	7	18
	Remaining 60%	140	17	123
Rural	All Areas	74	15	59
	Bottom 40%	37	6	31
	Remaining 60%	37	9	28

\*Count is less than 5

# NHIS Screening Data

**When NHIS Pap rates were analyzed in the same fashion as BRFSS rates shown earlier....**

**Only one variable, Hispanic, was associated with statistically significantly lower rates of Pap smear screening in the areas with high mortality.**

**No other variable was statistically significant.**

# NHIS Data

## **Additional variables & values that are not available in BRFSS**

- **More detailed Insurance categories  
(public, private, none, Medicare supplemental, etc.)**
- **Information on usual source of care  
(yes, no, where)**

# NHIS Pap Test Analysis

**Pap test rates for women living in distressed rural areas where cervical cancer mortality rates are in the top 20% were not statistically significantly lower than rates for women not living in these areas**

# NHIS Pap Data Analysis

**Pap use among Hispanic white women in distressed areas with high cervical cancer mortality was statistically significantly lower than in other areas when data on education were grouped by insurance**

**This type of “nested” analysis seems promising – if there were enough observations.**

# Hispanic White Women who Reported Recent Pap Smear Test Pooled 1990, 1992-1994 NHIS Ages 18+

	<u>Distressed Counties*</u>		<u>Remaining Counties</u>	
	<b>Insurance:</b>		<b>Insurance:</b>	
	<b>Private/Medicare(65+)</b>		<b>Private/Medicare(65+)</b>	
<b>Education</b>	<b>N</b>	<b>% Tested</b>	<b>N</b>	<b>% Tested</b>
LT High School	.	. ( . - . )	375	80 ( 75 - 86 )
High School +	14	74 ( 74 - 74 )	1048	85 ( 83 - 88 )
	<b>Insurance:</b>		<b>Insurance:</b>	
	<b>Public/Other + Medicare(65+)</b>		<b>Public/Other + Medicare(65+)</b>	
<b>Education</b>	<b>N</b>	<b>% Tested</b>	<b>N</b>	<b>% Tested</b>
LT High School	10	42 ( 42 - 42 )	327	73 ( 68 - 77 )
High School +	.	. ( . - . )	164	90 ( 85 - 95 )
	<b>Insurance:</b>		<b>Insurance:</b>	
	<b>Medicare Only(65+),None(&lt;65)</b>		<b>Medicare Only(65+),None(&lt;65)</b>	
<b>Education</b>	<b>N</b>	<b>% Tested</b>	<b>N</b>	<b>% Tested</b>
LT High School	39	53 ( 48 - 59 )	427	66 ( 61 - 72 )
High School +	13	58 ( 58 - 58 )	320	80 ( 74 - 85 )

**\*Distressed Counties=Rural and Suburban Counties Within Top 20% of Cervix Cancer Mortality Rates and Bottom 40% of Distressed Areas**

# NHIS & BRFSS Data

## Findings

- **BRFSS rates are higher than NHIS as expected**
  - **NHIS data are earlier**
  - **NHIS includes respondents with no telephones**
  - **NHIS includes women with and without Hysterectomy**

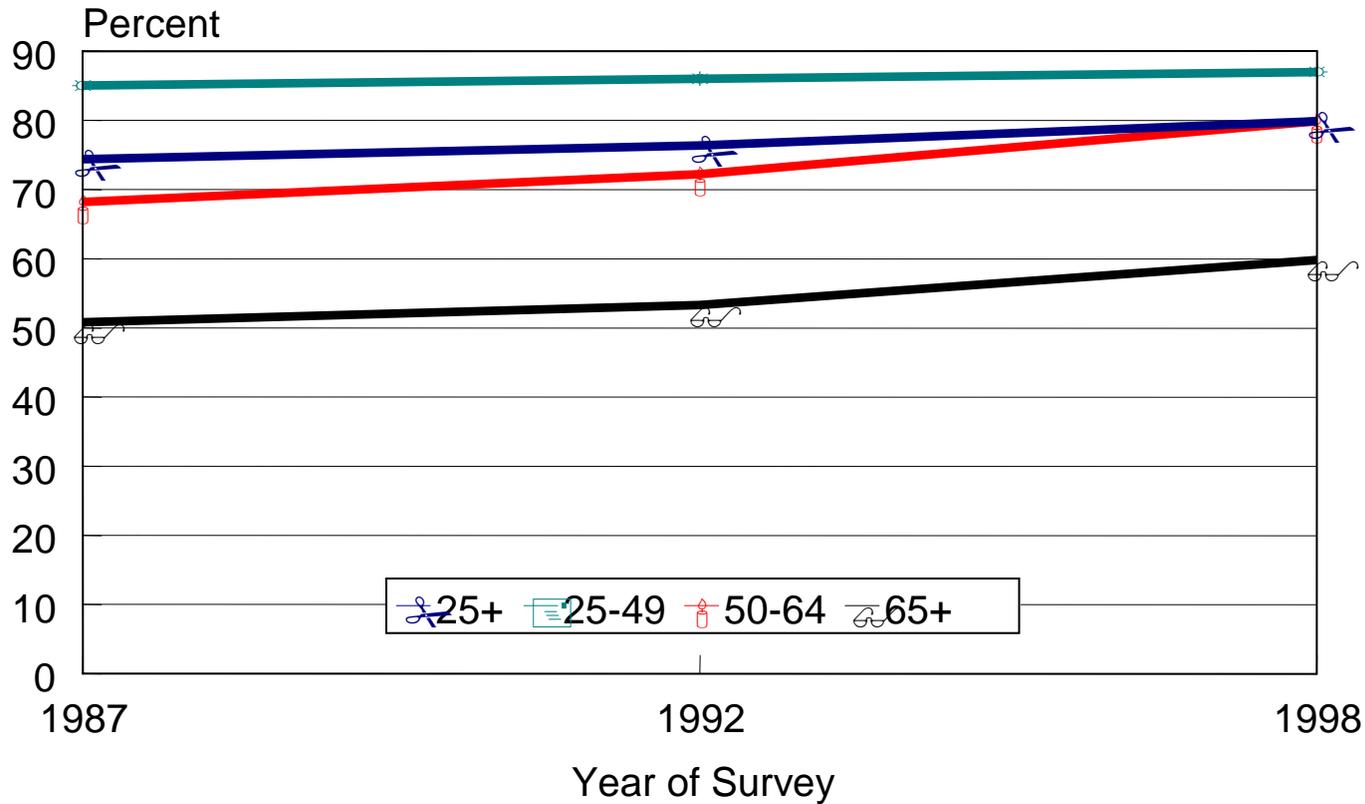
# NHIS Estimates

**Nationally Pap smear use remained high  
between 1987 and 1998**

**by Age**

**by Race & Ethnicity**

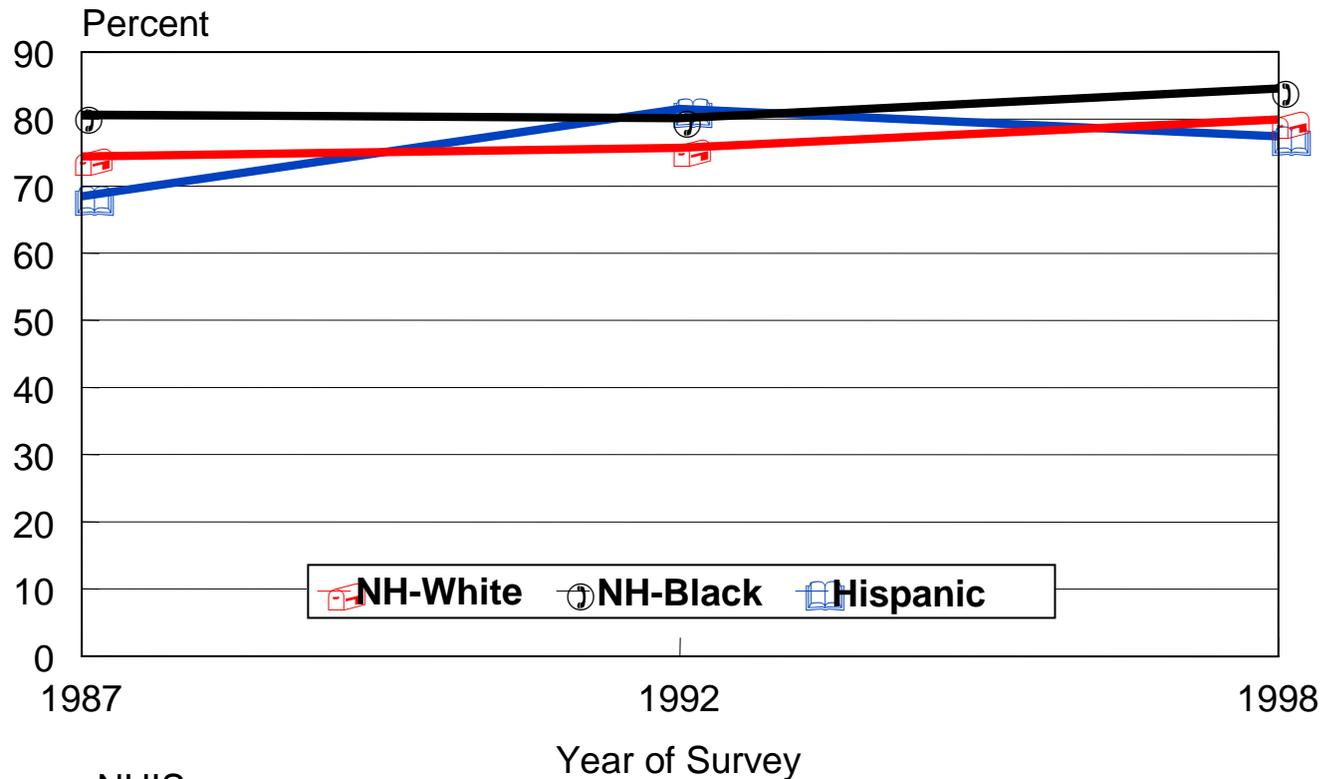
# Proportion who Reported Recent\* Pap Test by Age; 1987, 1992, 1998



Source: NHIS

\* "Recent" is defined as during the 3 years preceding the interview.

# Proportion who Reported Recent\* Pap Test by Race\*\*; 1987, 1992, 1998



Source: NHIS

\* "Recent" is defined as during the 3 years preceding the interview.

\*\* Respondent racial-ethnic groups are: Hispanic/Latino, Non-Hispanic Black/African American, Non-Hispanic White.

Note: Percents not shown are either based on fewer than 20 respondents, have a relative standard error greater than 30 percent, or not applicable.

# NHIS Estimates

**Nationally, in 1998, there were large differences in Pap smear use**  
**by Age**  
**by Income**  
**by Insurance**  
**and especially, by Usual Source of Care**

# Recent Pap Test by Socio-Economic Factors and Age, 1998

	Age			
	25-39	40-49	50-64	65+
<b>Education</b>				
Less than high school	77.2	76.2	66.8	52.4
High school	85.8	80.7	80.2	60.7
Some college	92.1	88.4	84.8	67.9
<b>Income</b>				
Poor	79.5	74.1	64.1	47.9
Near poor	84.0	70.4	72.0	55.0
Middle or high income	91.3	88.6	84.5	66.7
<b>Metropolitan Statistical Area (MSA)</b>				
MSA	88.7	85.8	81.2	60.3
Non-MSA	87.5	81.2	75.7	58.1
<b>Usual Source of Care</b>				
Yes	90.7	88.2	83.0	61.4
No	71.7	49.8	46.4	20.9
<b>Insurance Status</b>				
Covered	91.2	87.6	82.8	~
Not covered	75.7	63.9	59.1	~

# Recommendations

## Methods

- To obtain robust estimates of different sub-groups similar to mortality data, we need to over-sample
  - Distressed areas, rural areas, and especially distressed rural areas
  - Native Americans and Asians
- This implies increasing sample size and costs

# Recommendations

## **Policy Interventions Are Needed to Ensure**

- Usual Source of Care, and**
- Health Insurance coverage**
- Communication**
- Increase availability of medical services**
- Improve data collection systems in distressed areas**

# Future Analysis Plans

## Extension of Analytical Model

Larger sample size of White women allowed us to develop our analytical model

- Smaller sample size of Black women limited our analyses to White women
- Analytical models developed using White women can now be extended to other ethnic minorities including Black women

# Future Analysis Plans

**Compare NHIS and BRFSS data for black women**

**Examine Census Regions**

**Conduct new analysis excluding counties with sparse data**

**Conduct multiple regression analyses for black and white women using both NHIS and BRFSS data.**