

# HINTS 2.0: Partnering to Move Knowledge into Action



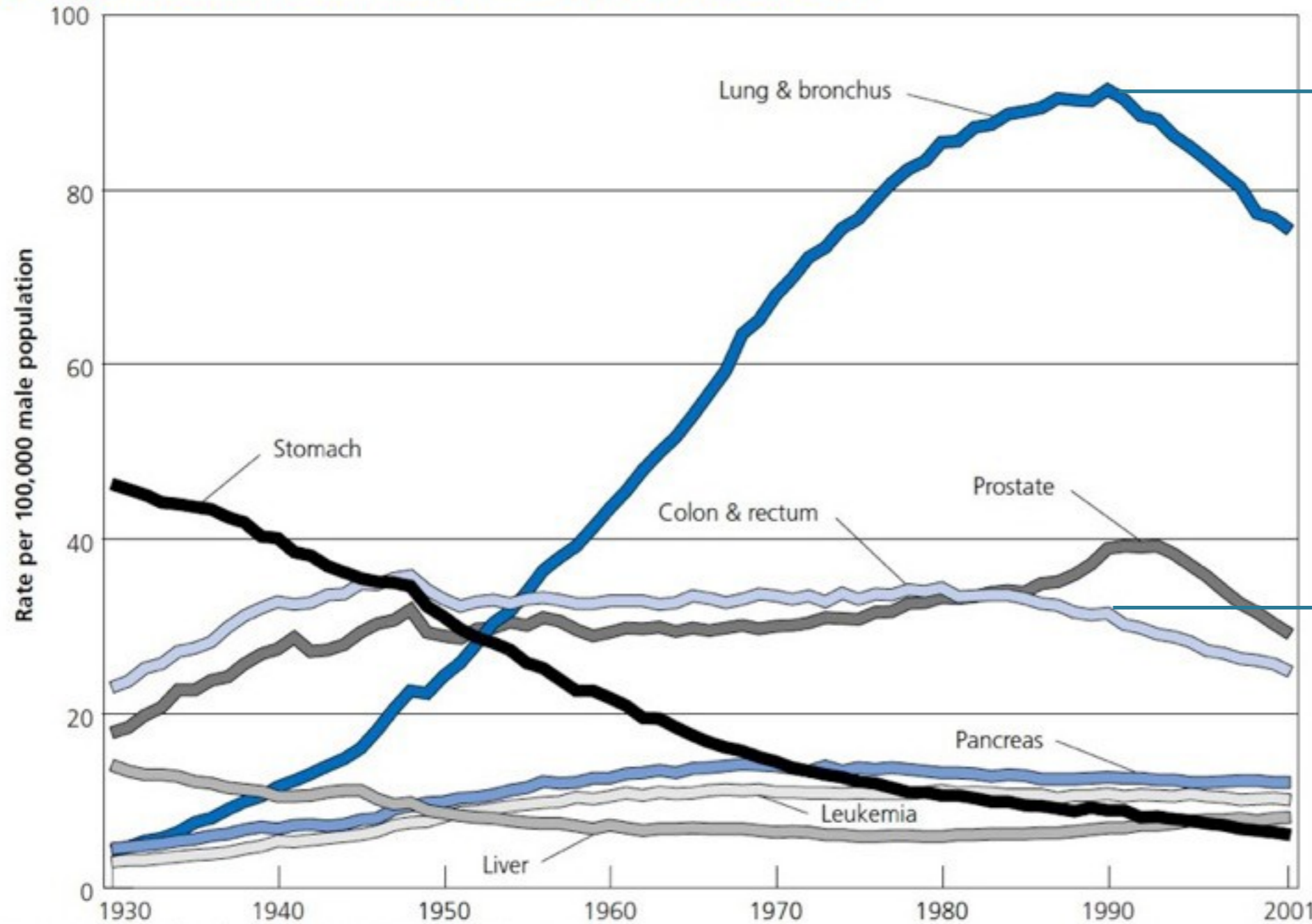
Bradford W. Hesse, PhD  
Chief, Health Communication and Informatics Research



**Act I:**  
**The Years Preceding**  
**HINTS**

# Public Health Victories Highlight Role of Communication

Age-Adjusted Cancer Death Rates,\* Males by Site, US, 1930-2001



- Controls on Cigarette Advertising
- Public Health Campaigns
- Smoking Cessation Programs
- Adherence to screening recommendations
- “Katie Couric” Effect
- Doctor communication important

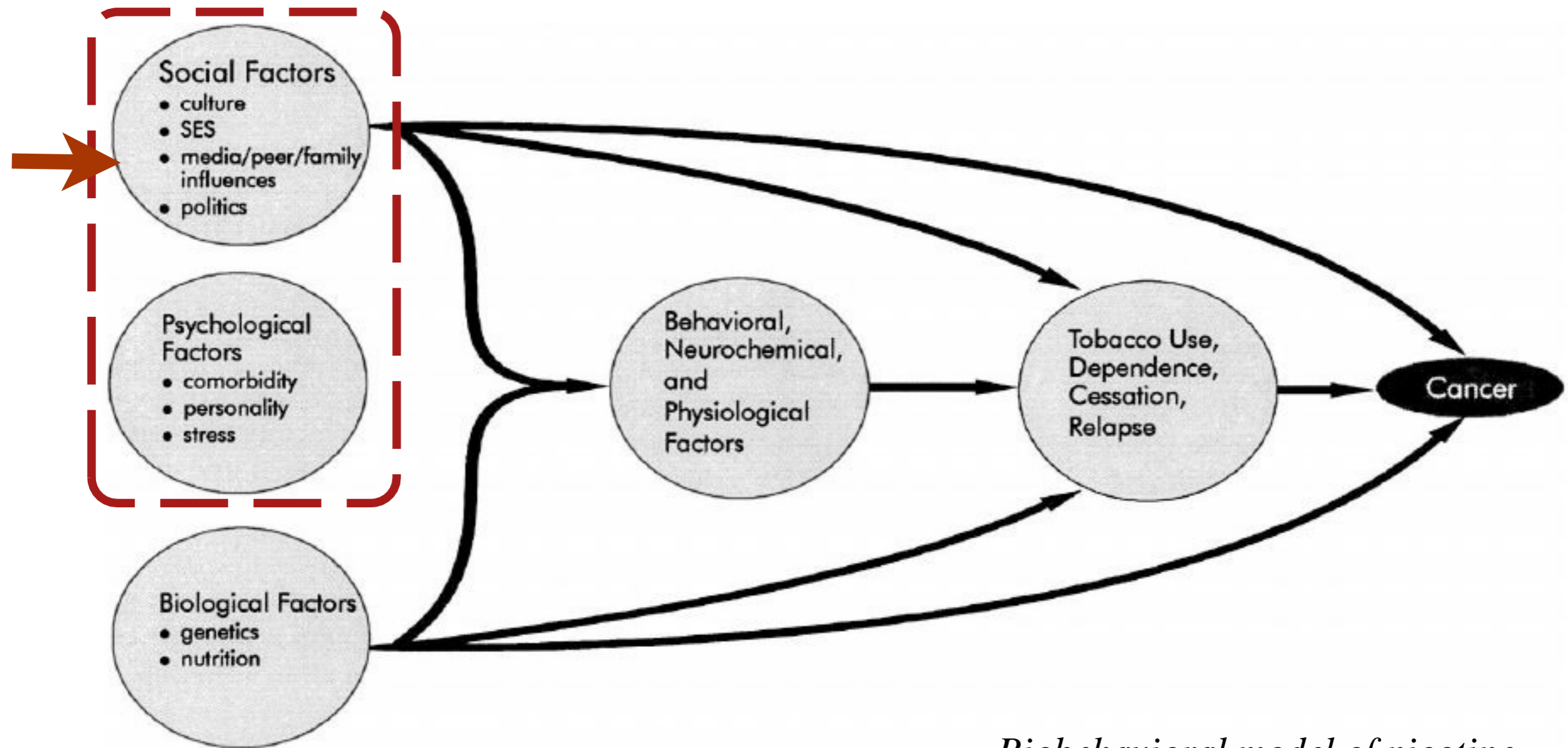
\*Per 100,000, age-adjusted to the 2000 US standard population.

Note: Due to changes in ICD coding, numerator information has changed over time. Rates for cancers of the liver, lung & bronchus, and colon & rectum are affected by these coding changes.

Source: US Mortality Public Use Data Tapes 1960-2001, US Mortality Volumes 1930-1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2004.

American Cancer Society, Surveillance Research, 2005

# Biobehavioral Models Gain Credibility

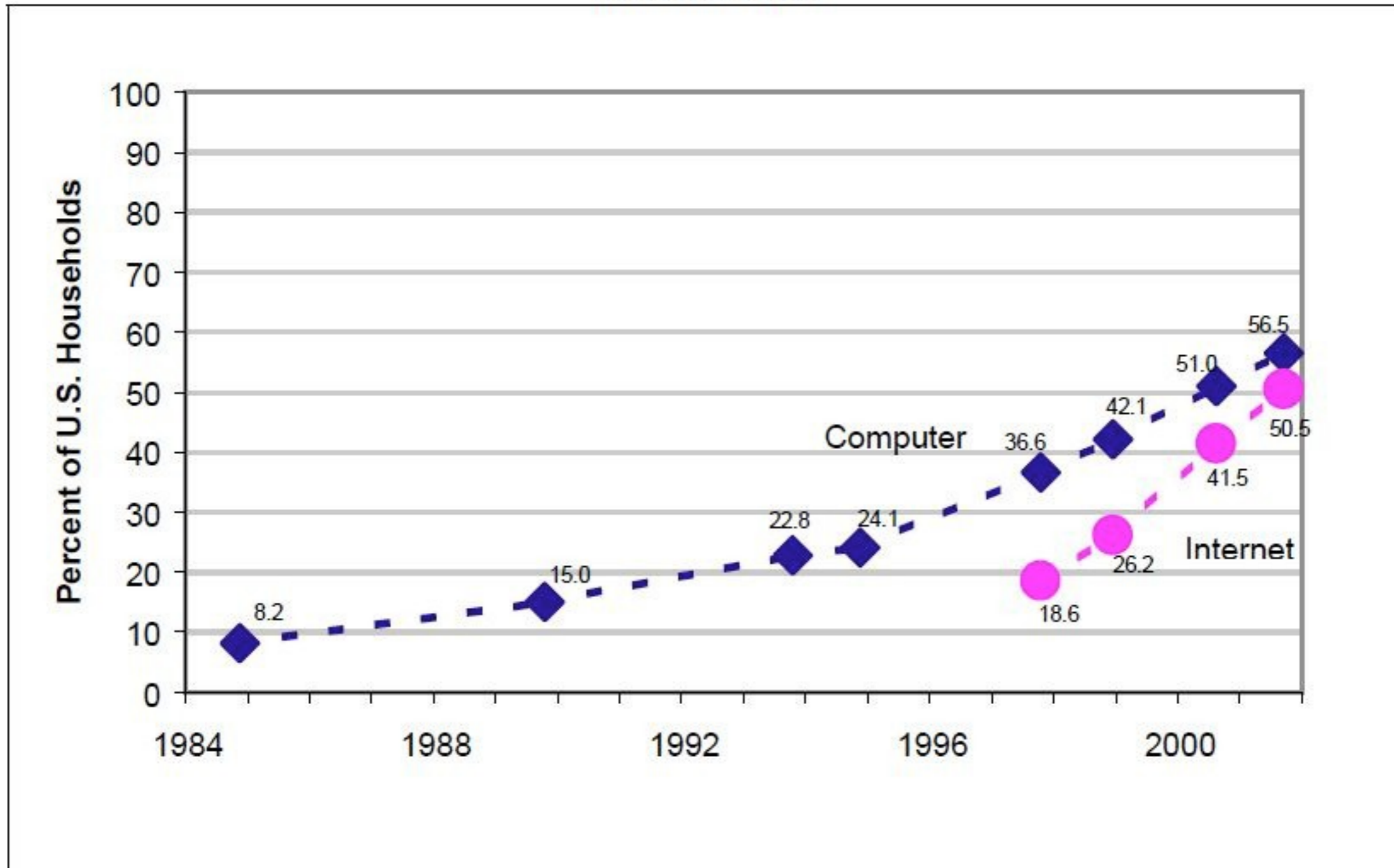


*Biobehavioral model of nicotine addiction and tobacco-related cancers.*

**Source:** Hiatt, R. A., & Rimer, B. K. (1999). A new strategy for cancer control research. *Cancer Epidemiol Biomarkers Prev*, 8(11), 957-964.

# Changes in the Communication Environment

Figure 1-1: Percent of U.S. Households with a Computer and Internet Connections, Selected Years



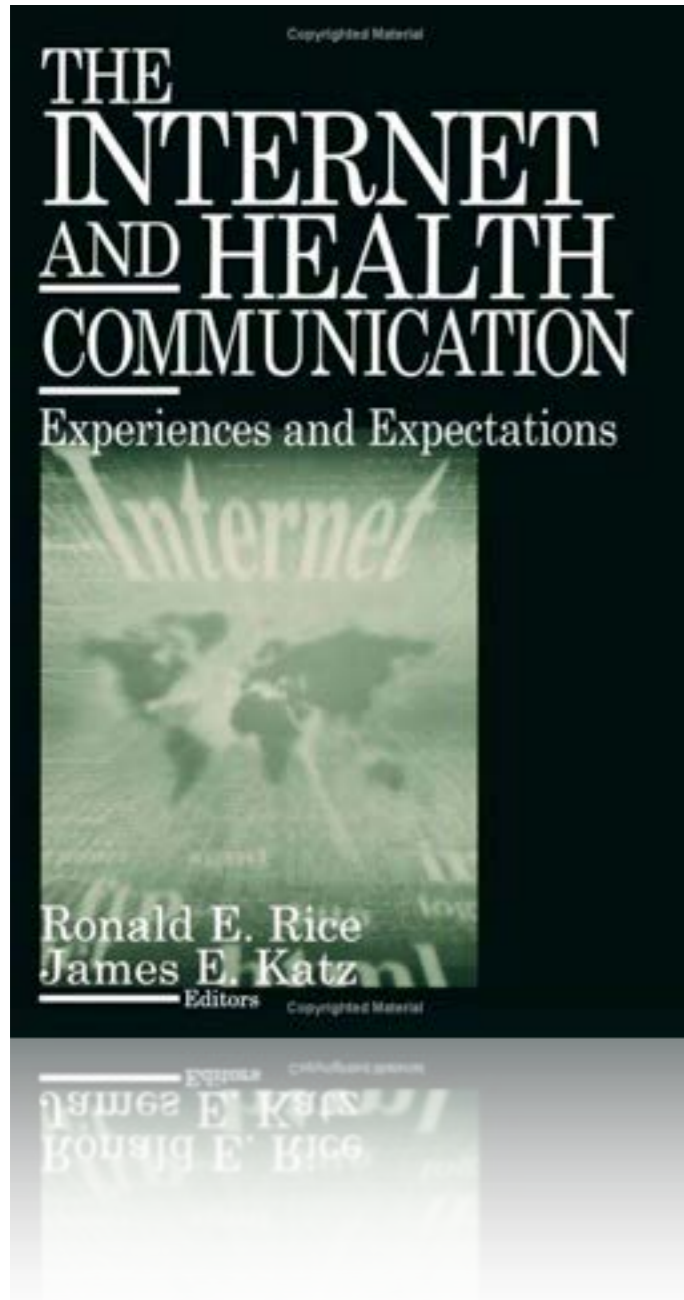
Source: NTLA and ESA, U.S. Department of Commerce, using U.S. Census Bureau Current Population Survey Supplements

# IBM's Flying Car Ad: Avery Brooks, 2000



**Source:** Youtube. IBM's Flying Cars. (<http://www.youtube.com/watch?v=vzm6pvHPSTGo>) Accessed January 7, 2014.

# Role of “New Media” in Health Communication



## Top Health-Related Search Terms (Harris Poll 1998)

Search Term	% Using Term
Depression	19%
Allergies/sinus	16%
Cancer	15%
Bipolar disorder	14%
Arthritis/rheumatism	10%
High blood pressure	10%
Migraine	9%
Anxiety disorder	9%
Heart disease	8%
Sleep disorders	8%

# Healthy People 2010 Includes Health Communication as Objective

## Healthy People 2010 Focus Areas at a Glance

1. Access to Quality Health Services
2. Arthritis, Osteoporosis and Chronic Back Conditions
3. Cancer
4. Chronic Kidney Disease
5. Diabetes
6. Disability and Secondary Conditions
7. Educational and Community-Based Programs
8. Environmental Health
9. Family Planning
10. Food Safety
11. Health Communication
12. Heart Disease and Stroke
13. HIV
14. Immunizations and Infectious Diseases
15. Injury and Violence Prevention
16. Maternal, Infant, and Child Health
17. Medical Product Safety
18. Mental Health and Mental Disorders
19. Nutrition and Overweight
20. Occupational Safety and Health
21. Oral Health
22. Physical Activity and Fitness
23. Public Health Infrastructure
24. Respiratory Diseases
25. Sexually Transmitted Diseases
26. Substance Abuse



## Healthy People 2010—Summary of Objectives

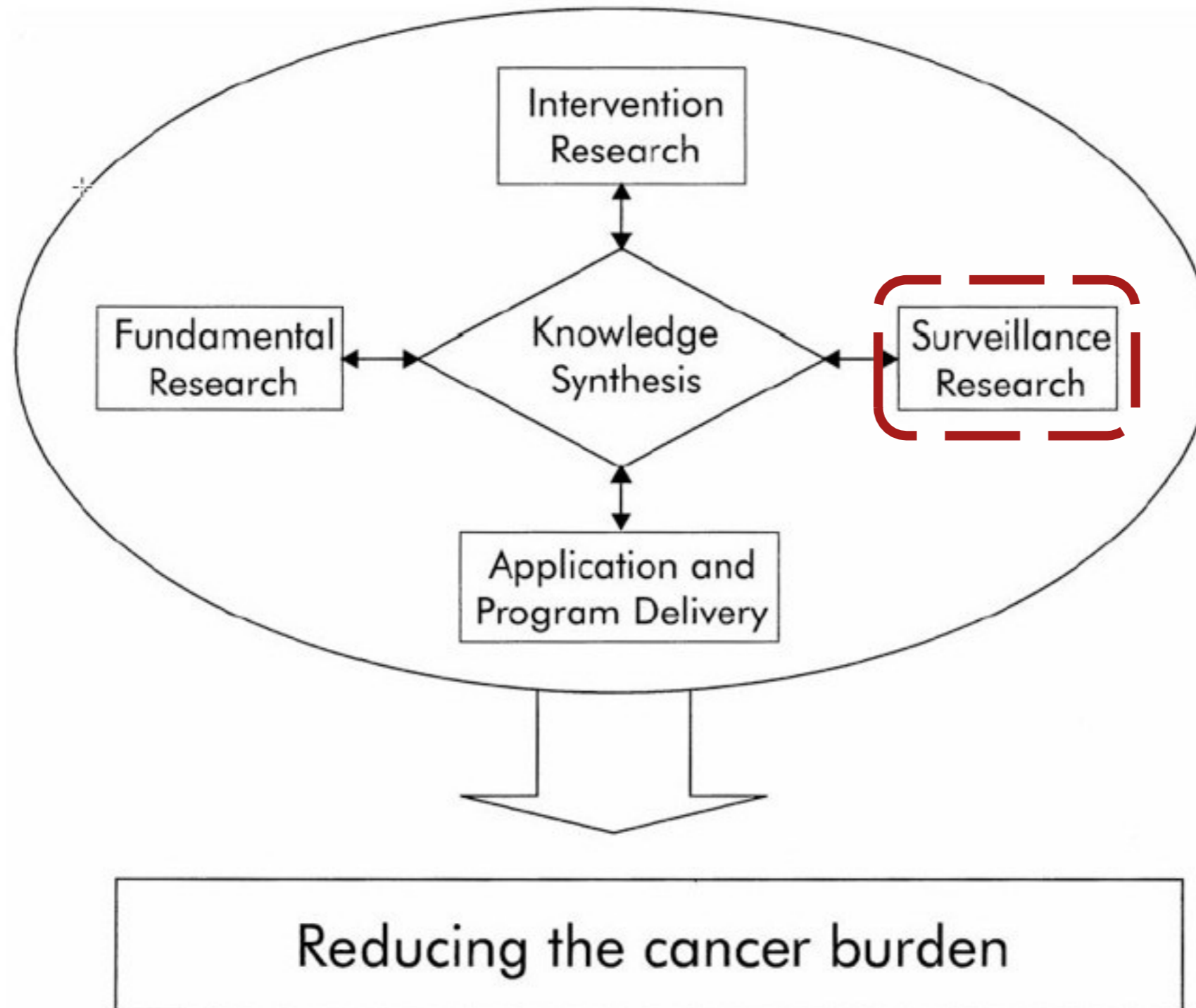
### Health Communication

**Goal:** Use communication strategically to improve health.

Number	Objective Short Title
11-1	Households with Internet access
11-2	Health literacy
11-3	Research and evaluation of communication programs
11-4	Quality of Internet health information sources
11-5	Centers for excellence
11-6	Satisfaction with health care providers' communication skills



# Framework for Cancer Control

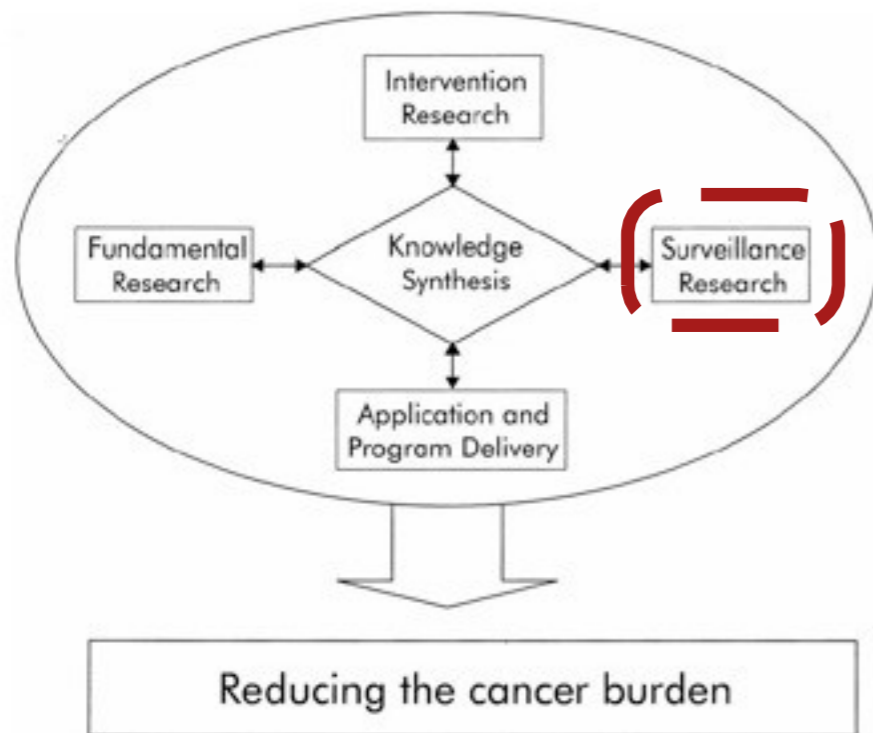


**Source:** Hiatt, R. A., & Rimer, B. K. (1999). A new strategy for cancer control research. *Cancer Epidemiol Biomarkers Prev*, 8(11), 957-964.

# Experts Recommend a Surveillance System for Communication



- To monitor changes in communication environment
- To monitor channel usage and sources preferred
- To explore knowledge, attitudes, and behaviors
- To complement fundamental & intervention research; and to be a resource in program delivery



**Source:** Hiatt, R. A., & Rimer, B. K. (1999). A new strategy for cancer control research. *Cancer Epidemiol Biomarkers Prev*, 8(11), 957-964.

# Act II:

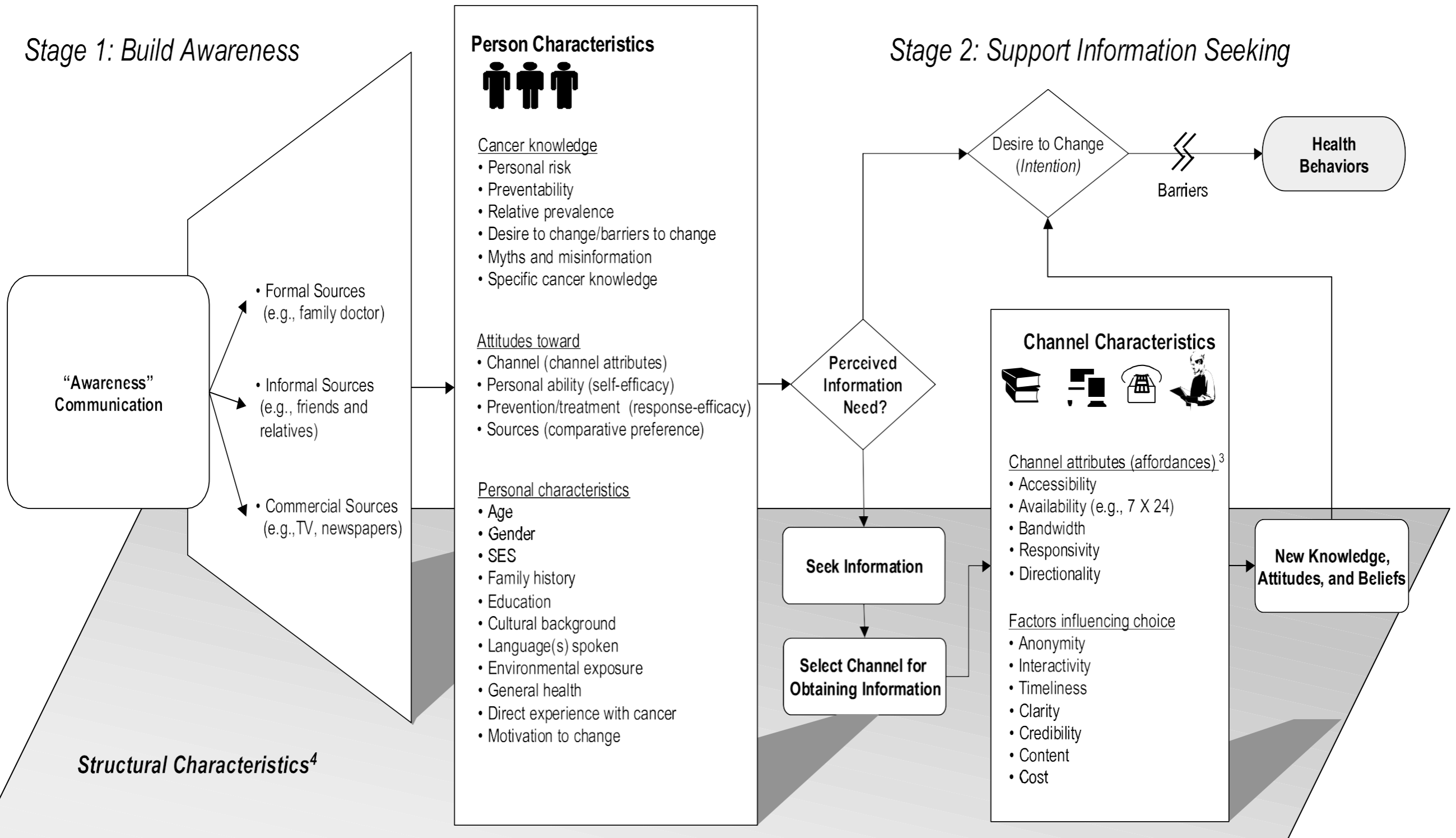
## A Decade of HINTS

# Information Utilization Framework

## Underlying HINTS

Stage 1: Build Awareness

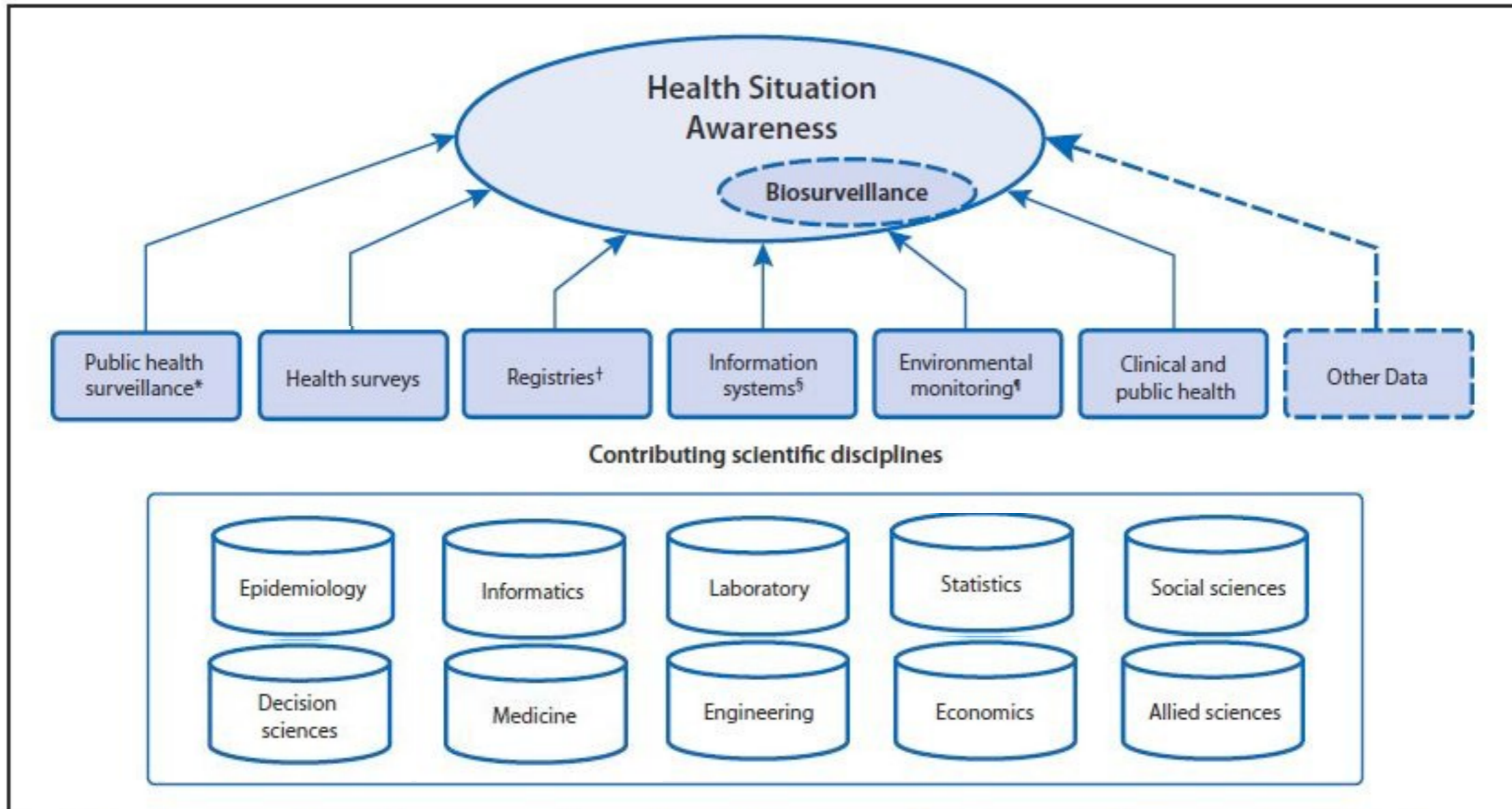
Stage 2: Support Information Seeking



**Source:** Nelson, D. E., Kreps, G. L., Hesse, B. W., Croyle, R. T., Willis, G., Arora, N. K., . . . Alden, S. (2004). The Health Information National Trends Survey (HINTS): development, design, and dissemination. *J Health Commun*, 9(5), 443-460; discussion 481-444.

# Health Situation Awareness

July 27, 2012



\* Systematic and continuous collection, analysis, and interpretation of data, closely integrated with the timely and coherent dissemination of the results and assessment to those who have the right to know so that action can be taken (Porta MA, Dictionary of Epidemiology, 5th Ed., Oxford University Press, 2008).

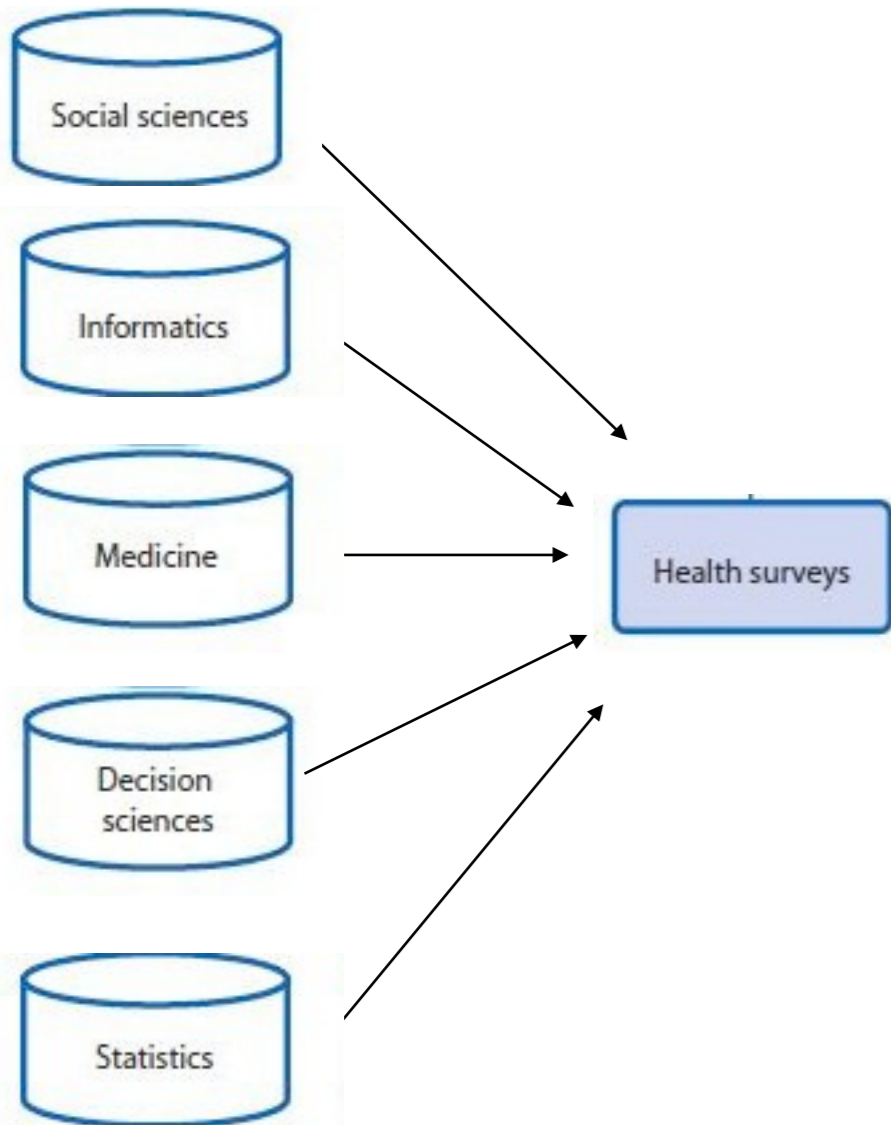
† Vital registration, cancer registries, and exposure registries.

‡ Medical and laboratory records, criminal justice information, and Lexis-Nexis.

¶ Weather, climate change, and pollution.

**See also:** Hesse BW, Nelson DE, Rutten LF, Moser RP, Beckjord EB, Chou W-YS. National Health Communication Surveillance Systems. In: D. K. Kim ASGLK, ed. Global Health Communication Strategies in the 21st Century: Design, Implementation, and Evaluation. New York, NY: Peter Lang; In Press.

# Health Situation Awareness



Data Briefs



Statistical Guides



Peer Reviewed Publications



**hints** Health Information National Trends Survey

You are here: [Home](#) > [HINTS Questions](#) > [Internet Use](#) > In the last 12 months, have you used the Internet for any of the following reasons? Used e-mail or the Internet to communicate with a doctor or doctor's office

**In the last 12 months, have you used the Internet for any of the following reasons? Used e-mail or the Internet to communicate with a doctor or doctor's office**

HINTS 4 (2003) Oct 2002 - Apr 2003 | HINTS 2 (2005) Feb - Aug 2005 | HINTS 3 (2007) Jan - May 2008 | HINTS 4 | All Years

[HC-26c] [In the past 12 months, have you done the following things while using the Internet?] Used e-mail or the Internet to communicate with a doctor or a doctor's office? [View Chart](#)

Response	Number	Percentage	Sample Responses	Sample Percentage
1 Yes	9,243,573	7.0%	304	7.6%
2 No	122,727,280	93.0%	3,676	92.3%
98 Refused	26,595	0.0%	1	0.0%
99 Don't know	11,094	0.0%	1	0.0%
Total	-	100%	3,982	100%

**Survey Notes:** HINTS 2003 Survey Instrument (English): [PDF](#)

Who was asked: People who use the internet  
 Data collection method: Phone  
 Question source: revised from: [Pew Internet & American Life Project](#) & American Life Project, Health Care and the Internet Survey, August 2000, Question 5d  
 Dataset: 2003

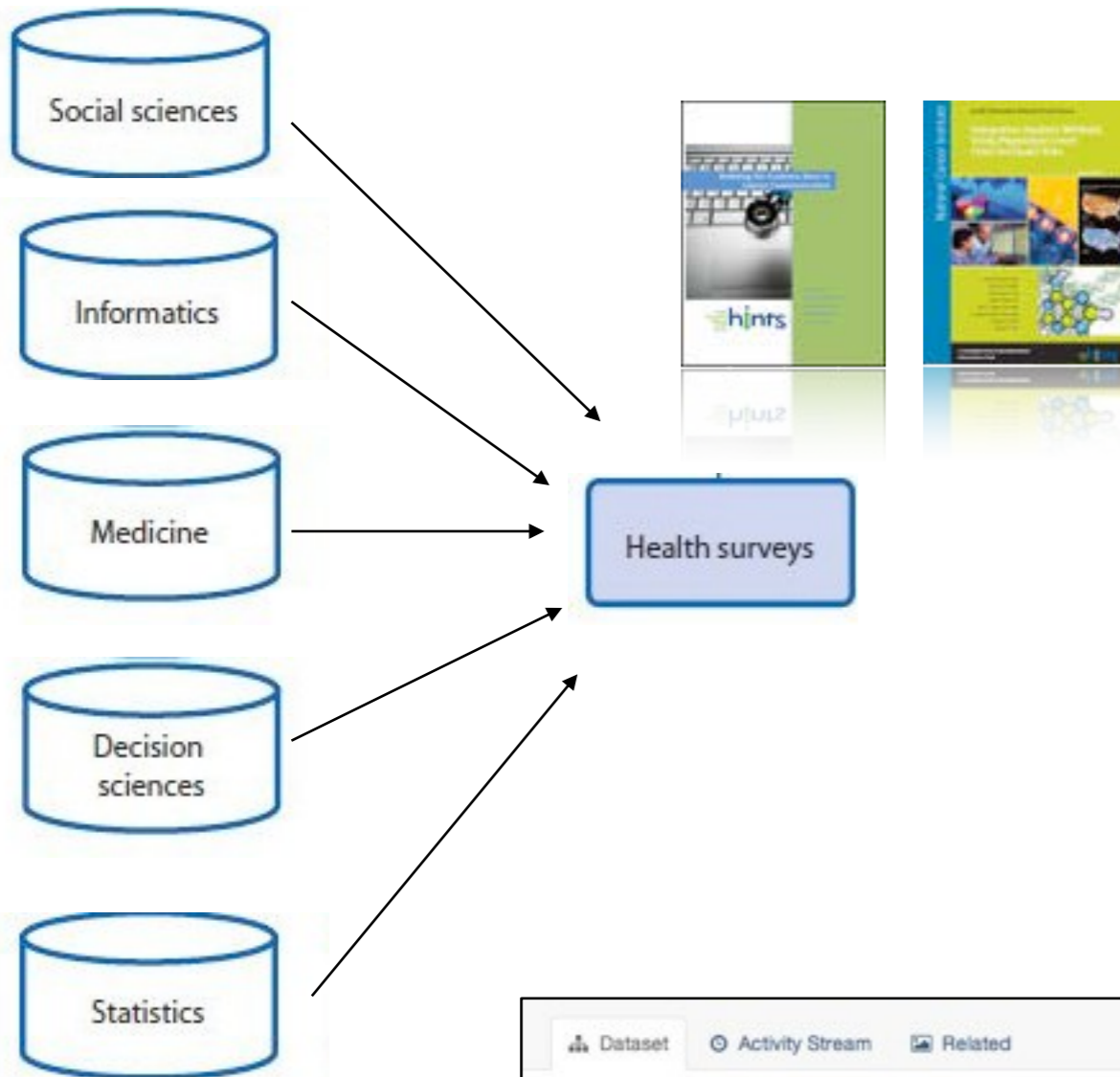
Briefs that use this question: [Brief 16: Trends in Cancer Information Seeking](#)  
[Brief 8: On-line Communication with Health Care Providers: eHealth behaviors and trends](#)

Web Platform for Participation\*

\*NIH Nominee to White House for "Open Science Champion," May 14 2013.



# Part of Health Data Ecosystem

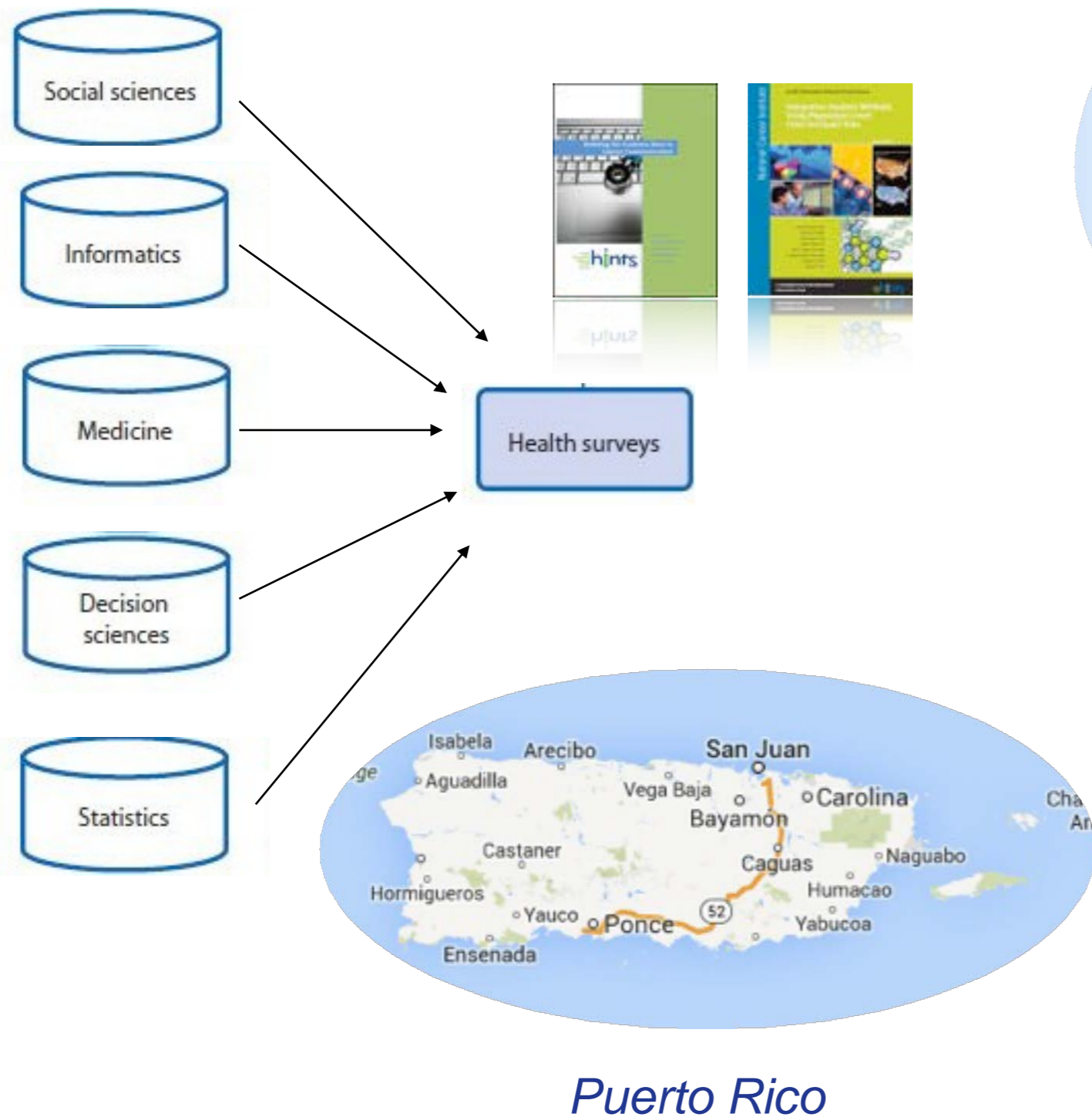


A screenshot of the HealthData.gov website. The top navigation bar includes "HOME", "ABOUT", "DATA", "METRICS", "OPEN GOVERNMENT", "BLOGS", and "COMMUNITIES". The main heading is "DATA CATALOG". Below this, the breadcrumb trail reads: "/ Organizations / U.S. Department of Health & ... / Health Information National ...". The page title is "HealthData.gov" and "U.S. Department of Health & Human Services". The dataset title is "Health Information National Trends Survey (HINTS)". The description states: "The Health Information National Trends Survey (HINTS) is a biennial, cross-sectional survey of a nationally-representative sample of American adults that is used to assess the impact of the health information environment. The survey provides updates on changing patterns, needs, and information opportunities in health; Identifies changing communications trends and practices; Assesses cancer information access and usage; Provides information about how cancer risks are perceived; and Offers a tested to researchers to test new theories in health communication." Under "Data and Resources", it says "This dataset has no data, why not add some?". Under "Metadata Source", it lists "ISO-19139 Metadata" with options to "Download Metadata" and "View Full Metadata". It is noted as "Harvested from Healthdata.gov".

A screenshot of the HealthData.gov website showing the "Cancer Incidence - Surveillance, Epidemiology, and End Results (SEER) Registries Limited-Use" dataset page. The title is "Cancer Incidence - Surveillance, Epidemiology, and End Results (SEER) Registries Limited-Use". The description reads: "SEER Limited-Use cancer incidence data with associated population data. Geographic areas available are county and SEER registry. The Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute collects and distributes high quality, comprehensive cancer data from a number of population-based cancer registries. Data include patient demographics, primary tumor site, morphology, stage at diagnosis, first course of treatment, and follow-up for vital status. The SEER Program is the only comprehensive source of population-based information in the United States that includes stage of cancer at the time of diagnosis and survival rates within each stage."

A screenshot of the HealthData.gov website showing the "CDC Behavioral Risk Factor Surveillance System (BRFSS)" dataset page. The title is "CDC Behavioral Risk Factor Surveillance System (BRFSS)". The description reads: "The Behavioral Risk Factor Surveillance System (BRFSS) is a state-based system of health surveys that collects information on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. For many states, the BRFSS is the only available source of timely, accurate data on health-related behaviors."

# Contributing Common Measures to Surveys Outside of Original Frame



*Guam*



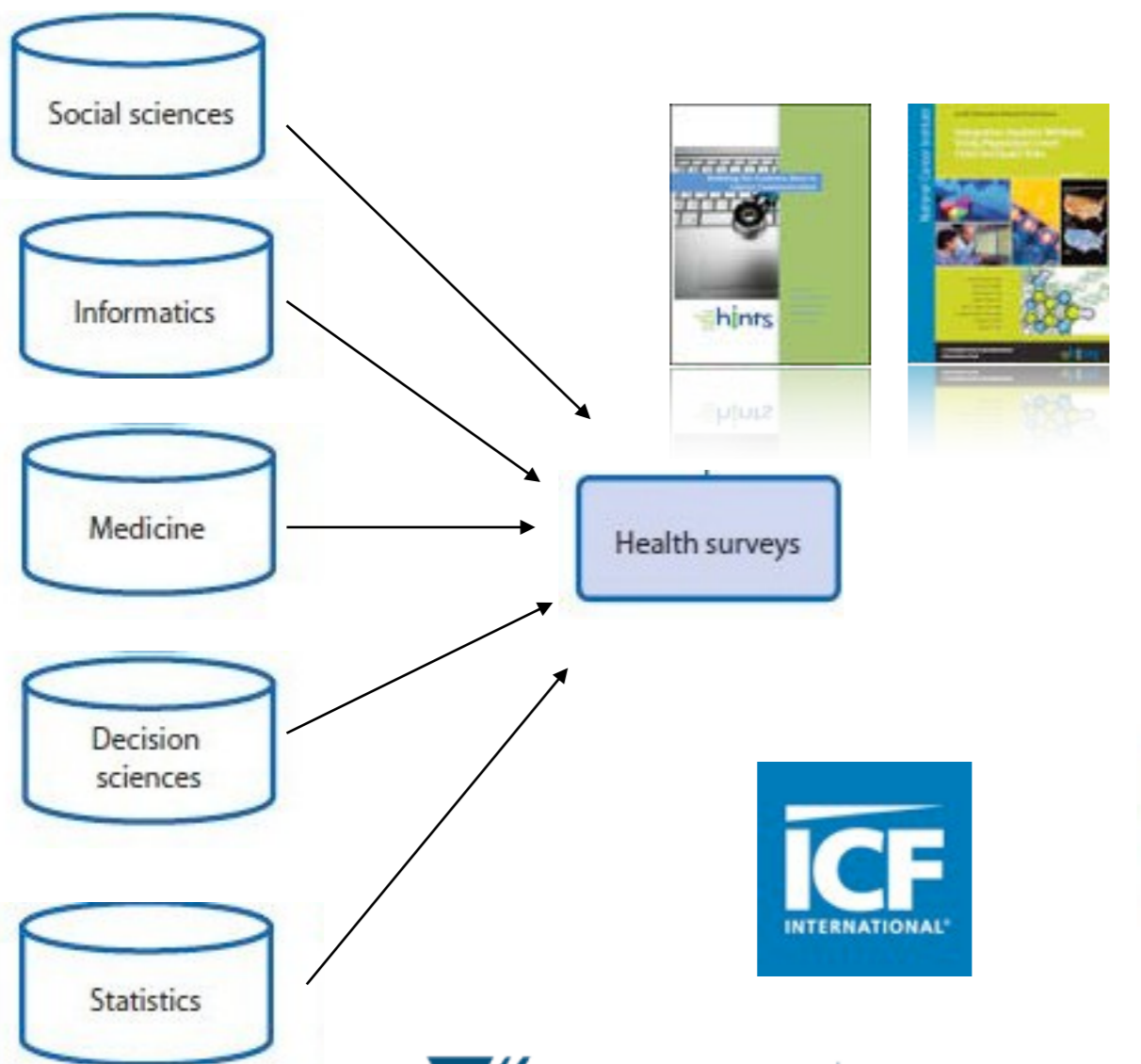
*Appalachia*



*Peoples' Republic of China*

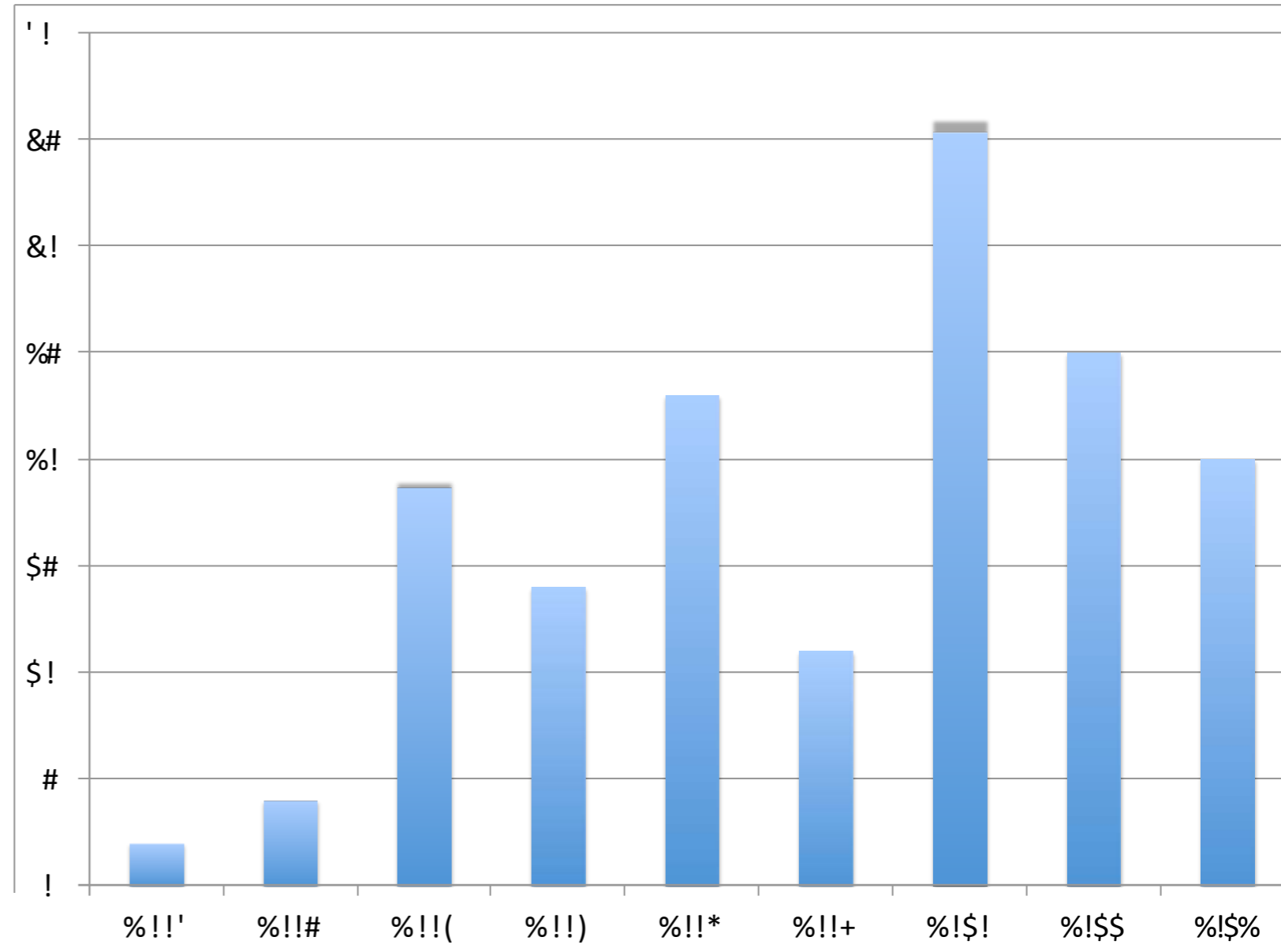
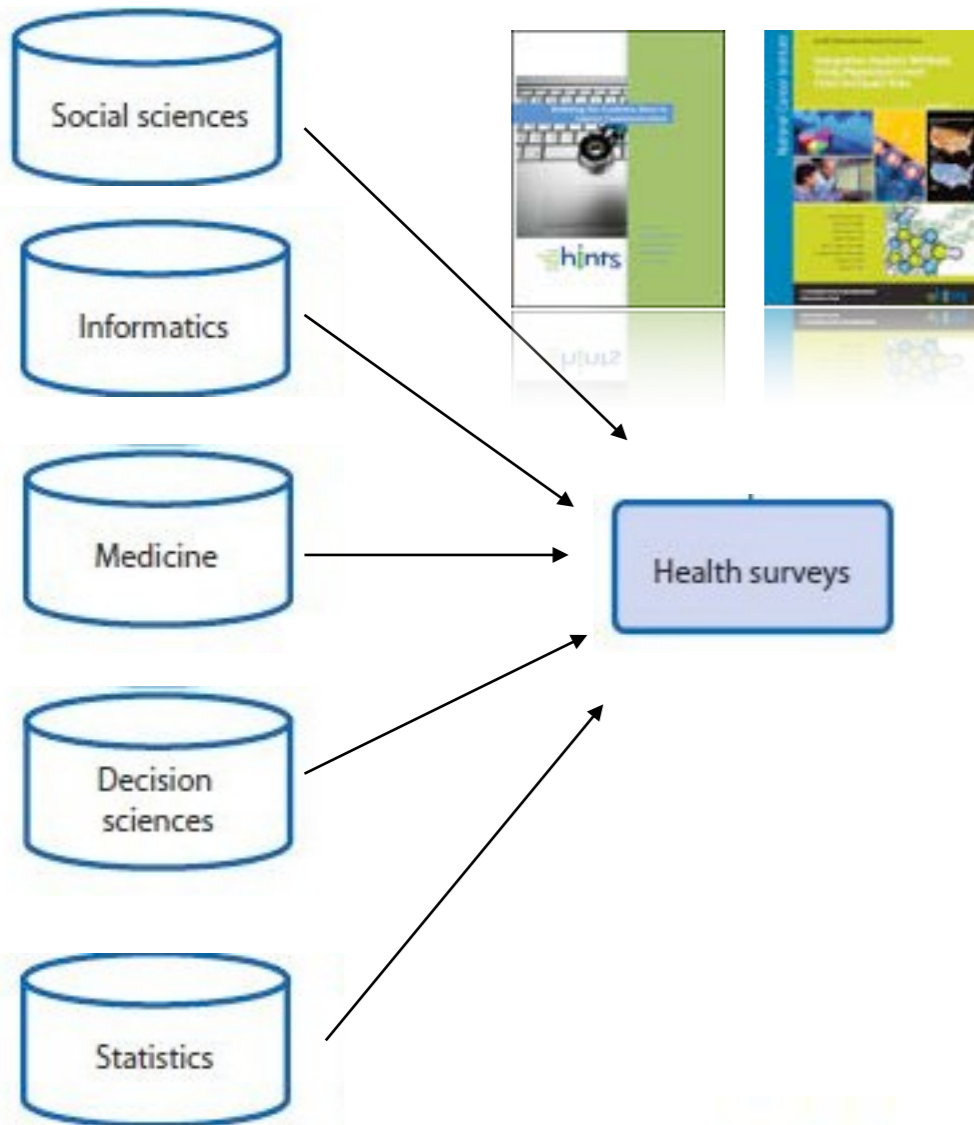


# Vehicle for Collaboration across Organizations

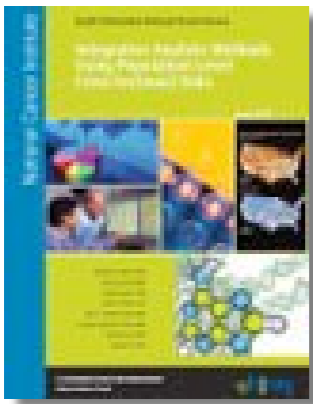


# Open Science: Increased Productivity

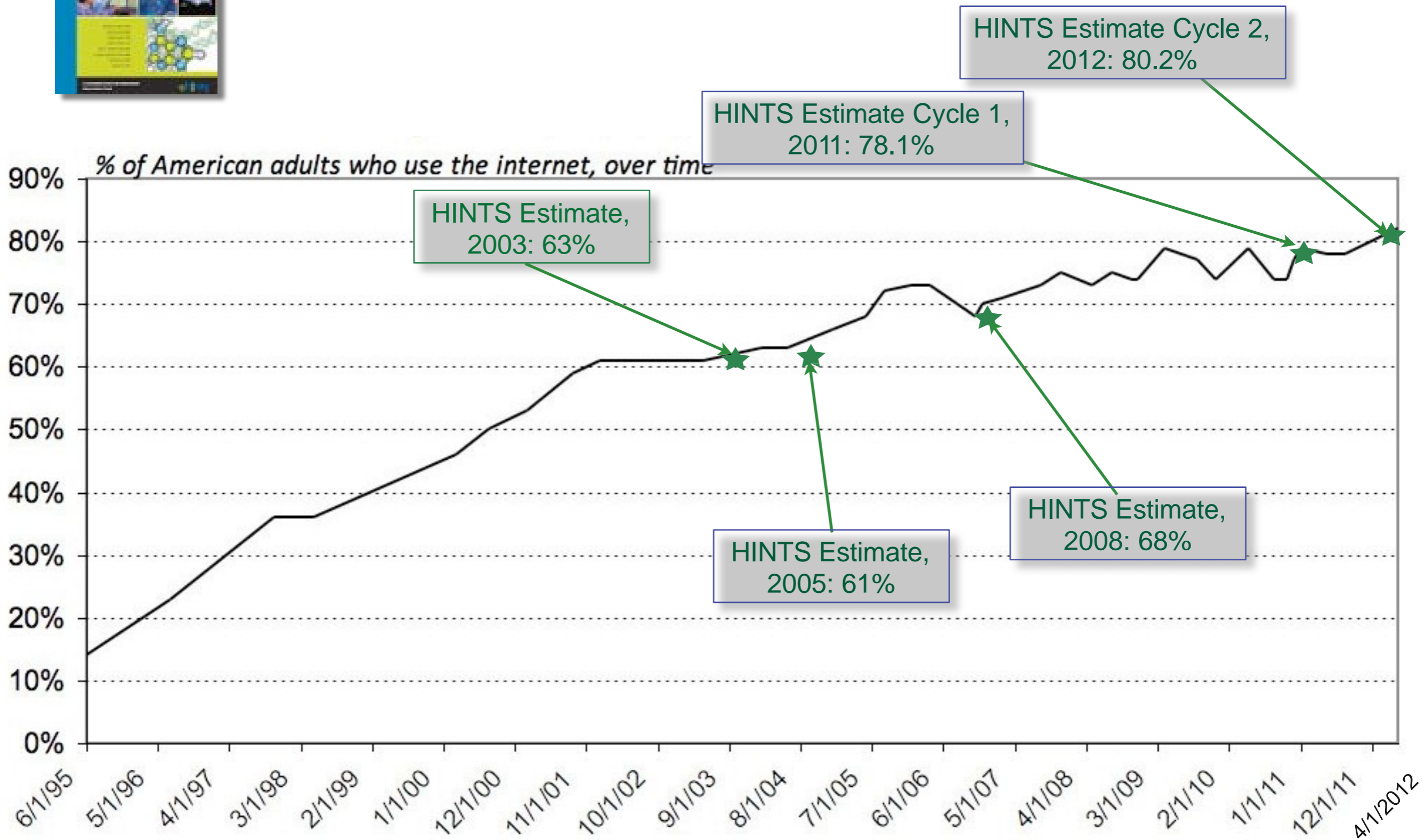
*Papers Published on HINTS Data*



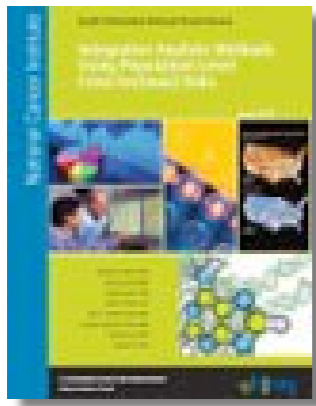
**Crowds Contribute to Content & Analyses**



# Calibrating Trends Over Time



**Source:** [http://www.pewinternet.org/Trend-Data-\(Adults\)/Internet-Adoption.aspx](http://www.pewinternet.org/Trend-Data-(Adults)/Internet-Adoption.aspx)



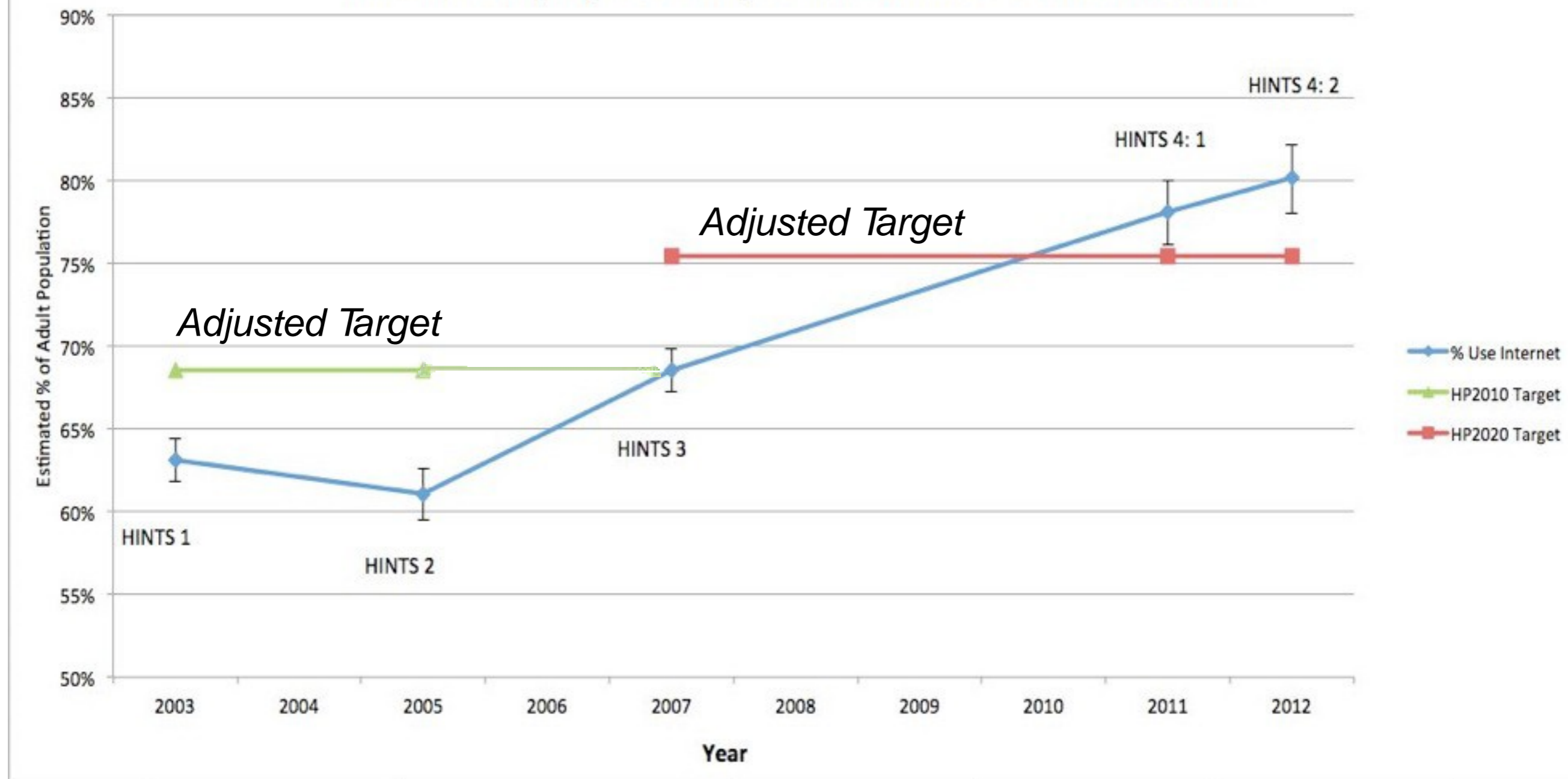
# Evaluating National Goals Over Time

Number  
11-1

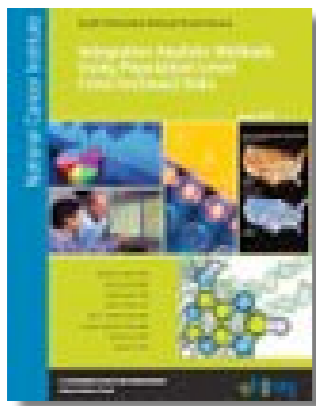
Objective Short Title  
Households with Internet access



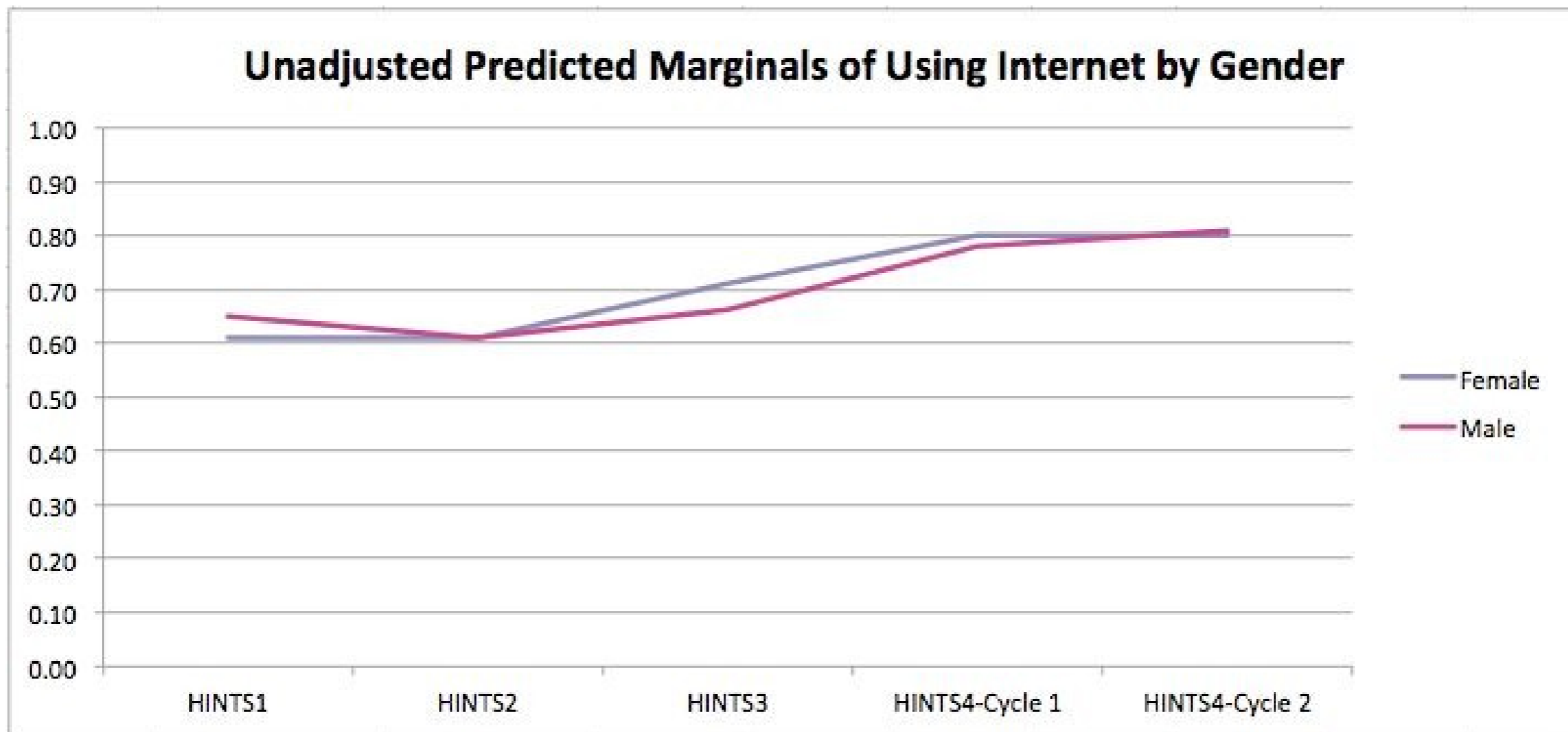
Increase the proportion of persons with access to the Internet



# Exploring Population Issues



**Research Question:** Will there be gender differences over time?



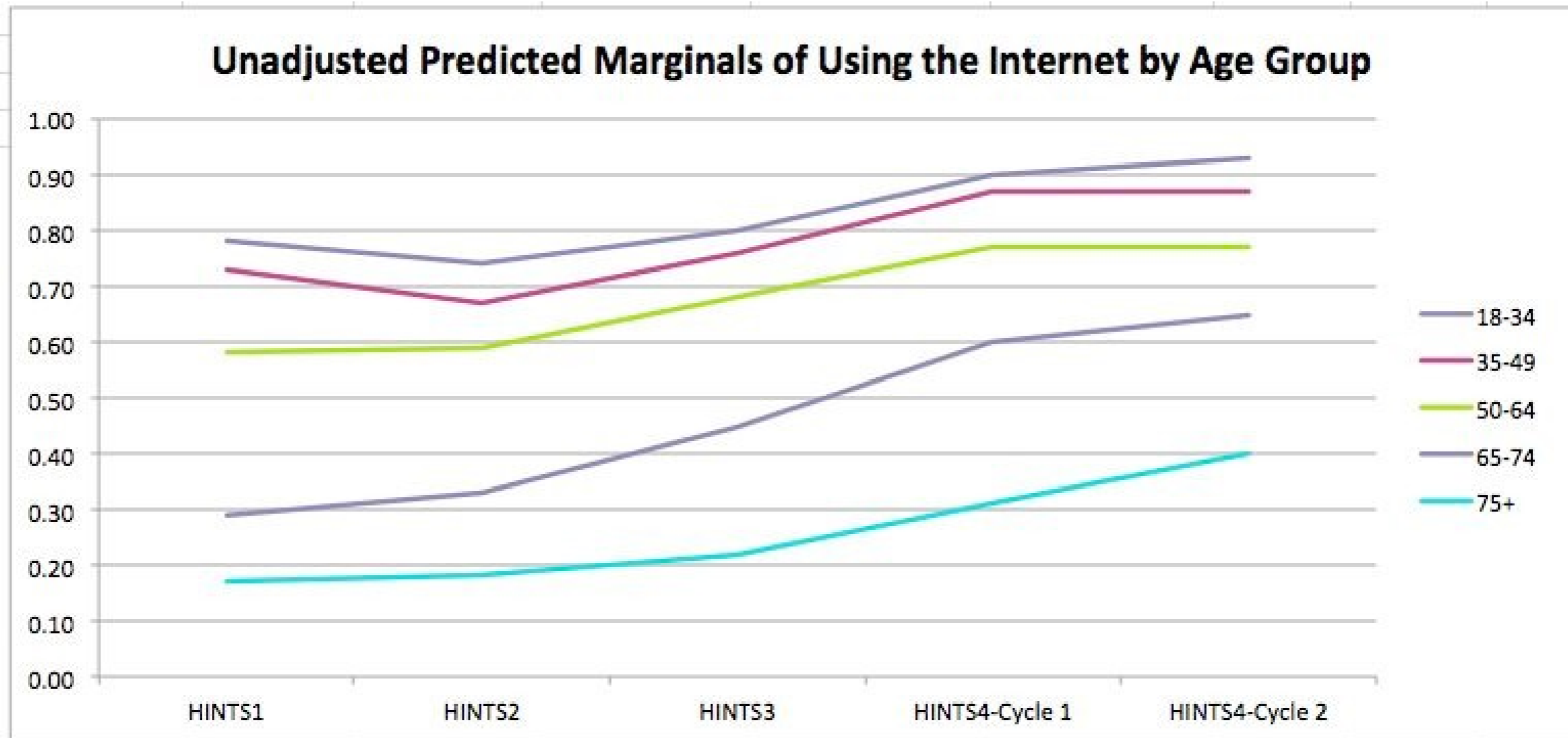
Stratified by gender		
Adjusted Predicted Marginals		
Gender	Male	Female
HINTS 1	0.69	0.67
HINTS 2	0.65	0.65
HINTS 3	0.69	0.74
HINTS 4 (1)	0.80	0.81
HINTS 4 (2)	0.82	0.83

Model adjusted by race, occupation, income, population density, education, and age

# Exploring Population Issues



**Research Question:** Will there be age differences over time?



Stratified by gender

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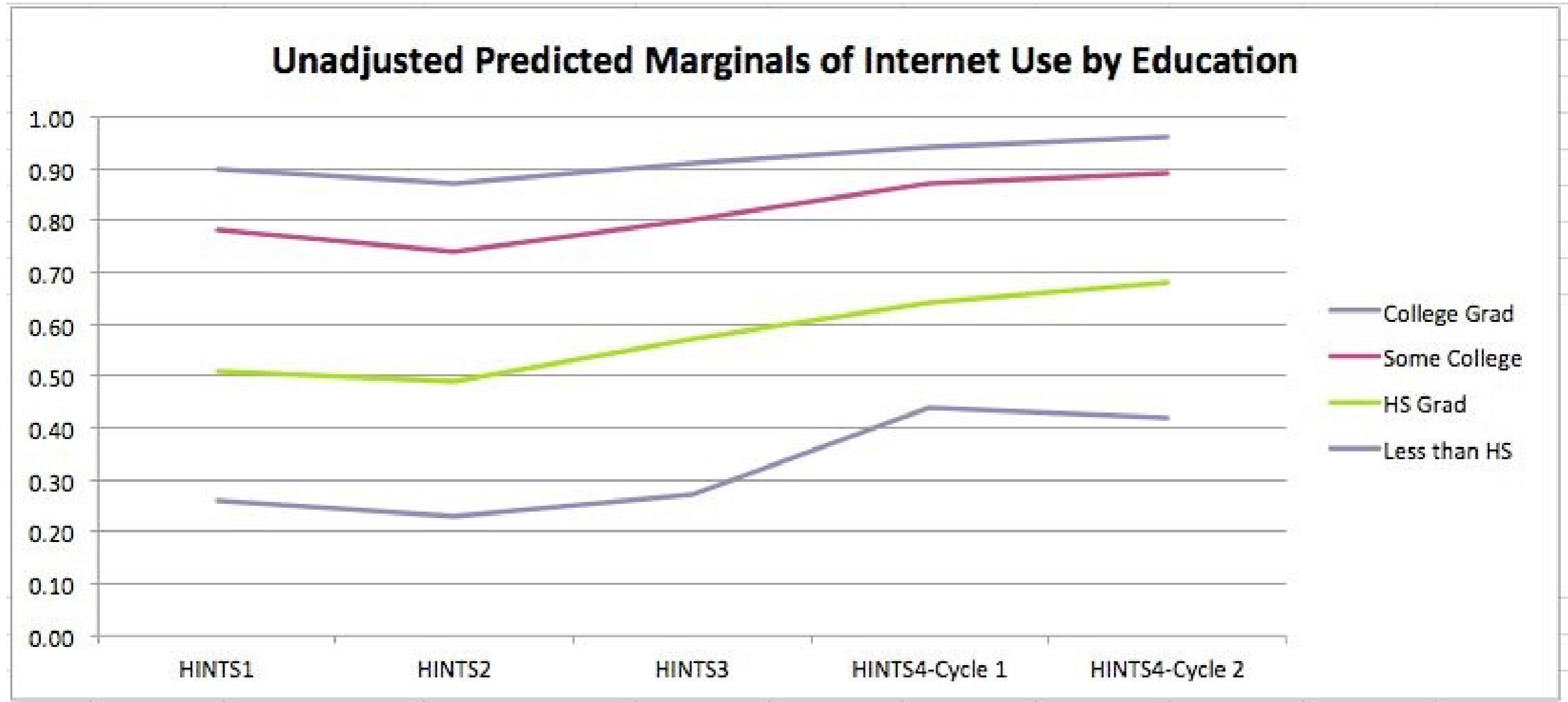
Model adjusted by gender, race, occupation, income, population density, and education



# Exploring Population Issues

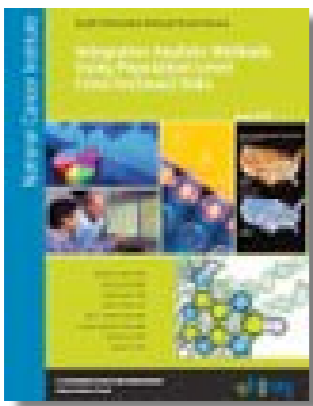


**Research Question:** Will there be education differences over time?



Adjusted Predicted Marginals					
Education	HINTS1	HINTS2	HINTS3	HINTS4-Cycle 1	HINTS4-Cycle 2
College Grad	0.85	0.81	0.86	0.92	0.95
Some College	0.74	0.69	0.78	0.87	0.89
HS Grad	0.57	0.56	0.64	0.74	0.76
Less than HS	0.46	0.41	0.47	0.66	0.70

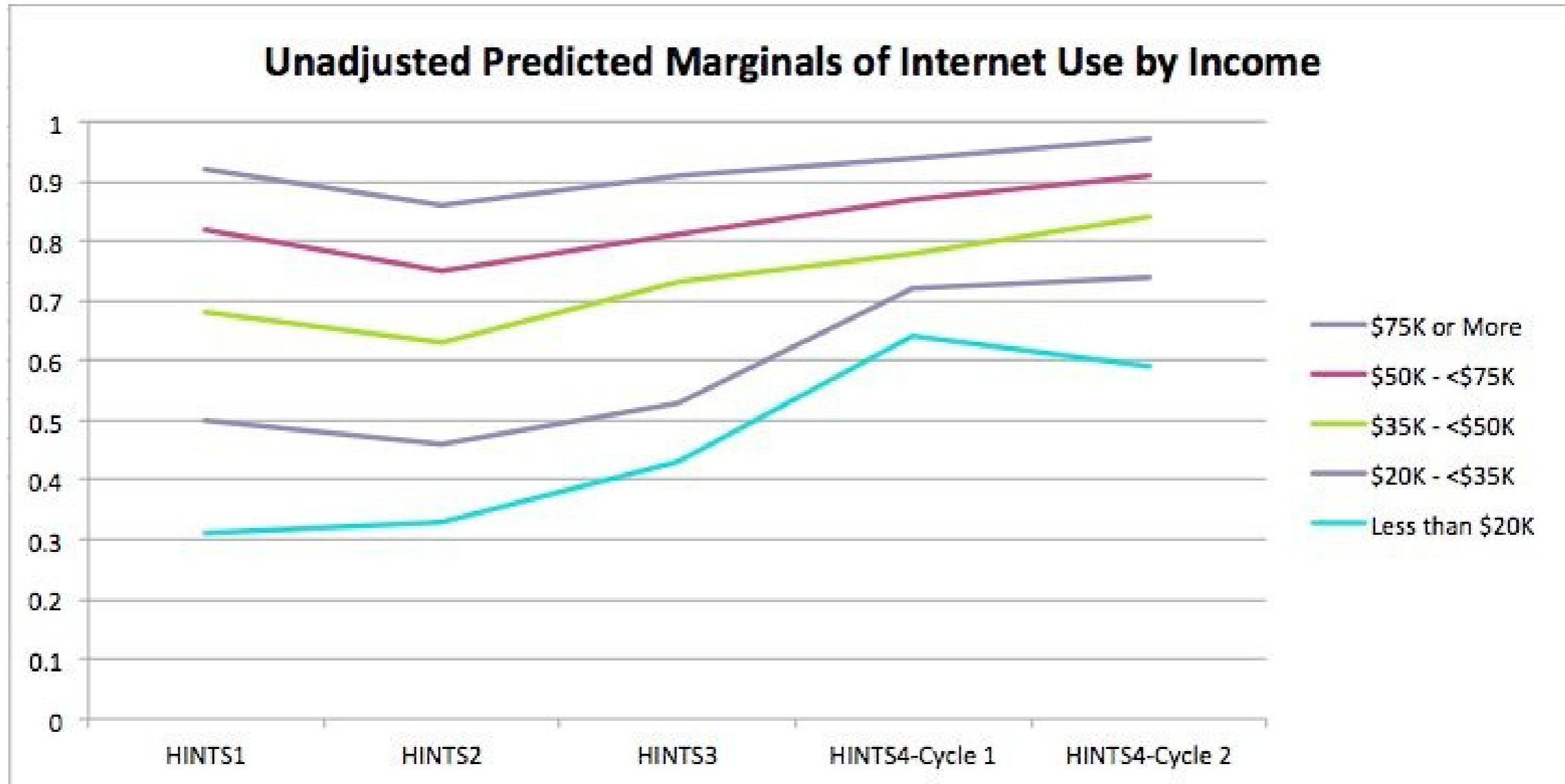
Model adjusted by gender, race, occupation, income, population density, and age



# Exploring Population Issues



**Research Question:** Will there be income differences over time?

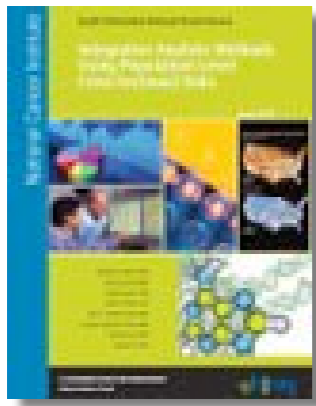


Adjusted Predicted Marginals					
Income	HINTS1	HINTS2	HINTS3	HINTS4-Cycle 1	HINTS4-Cycle 2
\$75K or More	0.82	0.75	0.83	0.89	0.93
\$50K - <\$75K	0.75	0.71	0.78	0.85	0.86
\$35K - <\$50K	0.68	0.65	0.74	0.80	0.86
\$20K - <\$35K	0.61	0.60	0.64	0.78	0.82
Less than \$20K	0.51	0.50	0.58	0.72	0.72

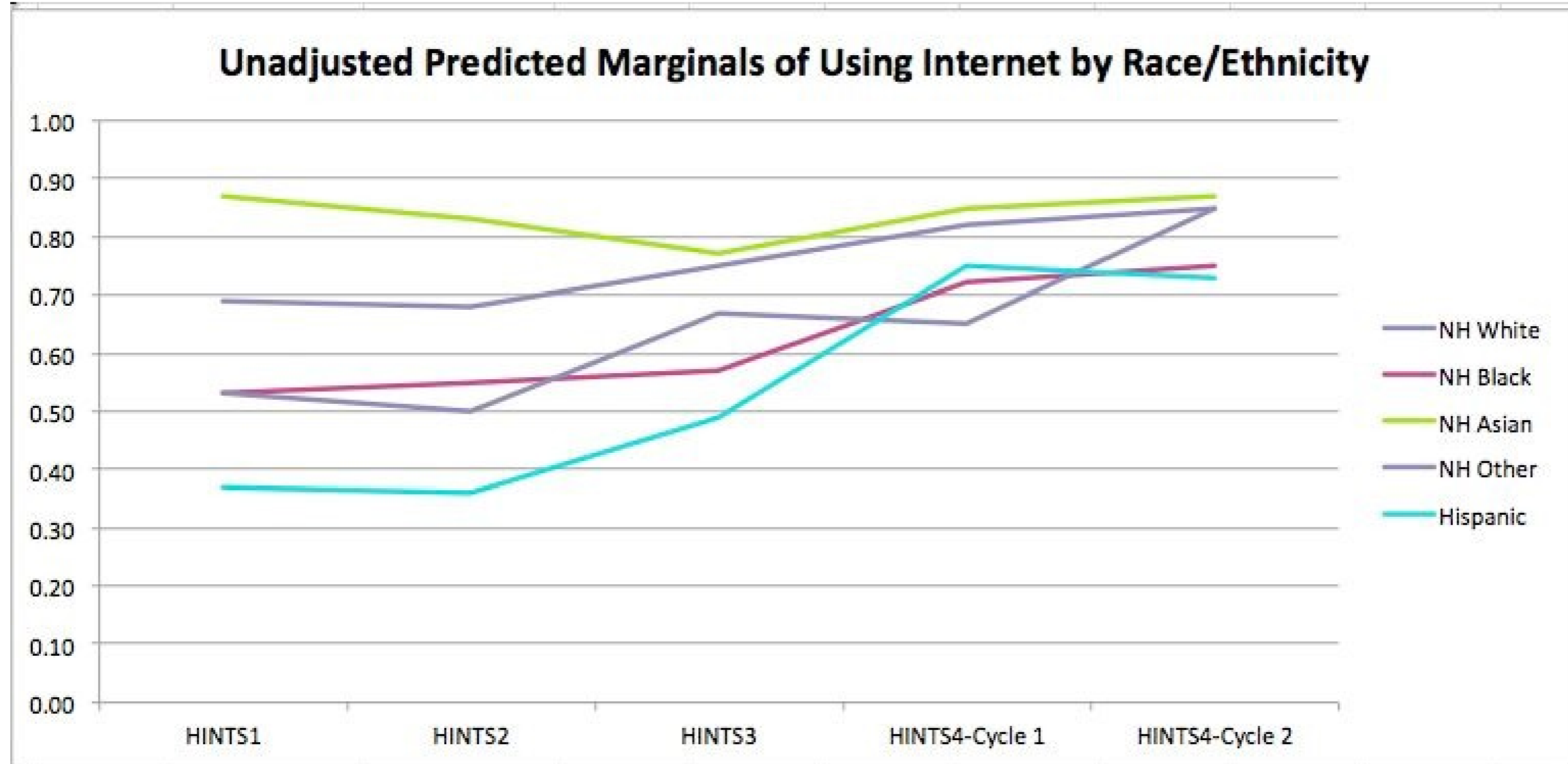
Model adjusted by gender, race, occupation, education, population density, and age



# Exploring Population Issues



**Research Question:** Will there be racial ethnic differences over time?

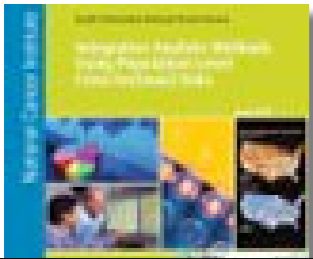


Stratified by race/ethnicity

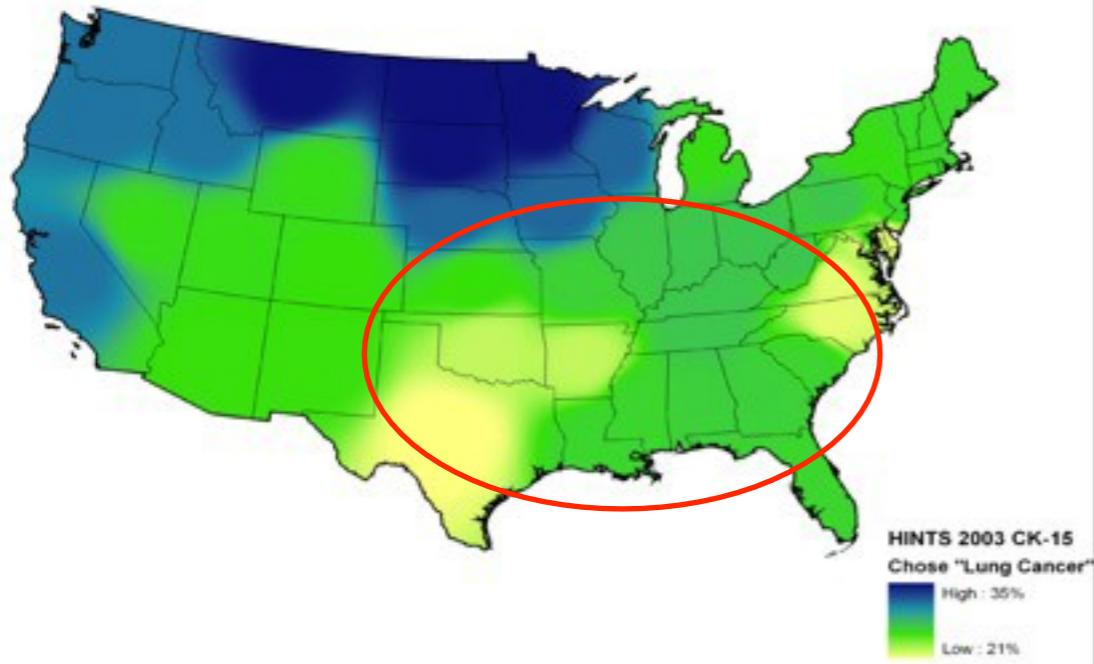
Adjusted Predicted Marginals					
	NH White	NH Black	NH Asian	NH Other	Hispanic
HINTS 1	0.73	0.59	0.51	0.82	0.48
HINTS 2	0.71	0.54	0.29	0.81	0.43
HINTS 3	0.77	0.59	0.59	0.80	0.51
HINTS 4 (1)	0.83	0.75	0.47	0.84	0.74
HINTS 4 (2)	0.86	0.74	0.63	0.90	0.72

Model adjusted by gender, income, occupation, education, population density, and age

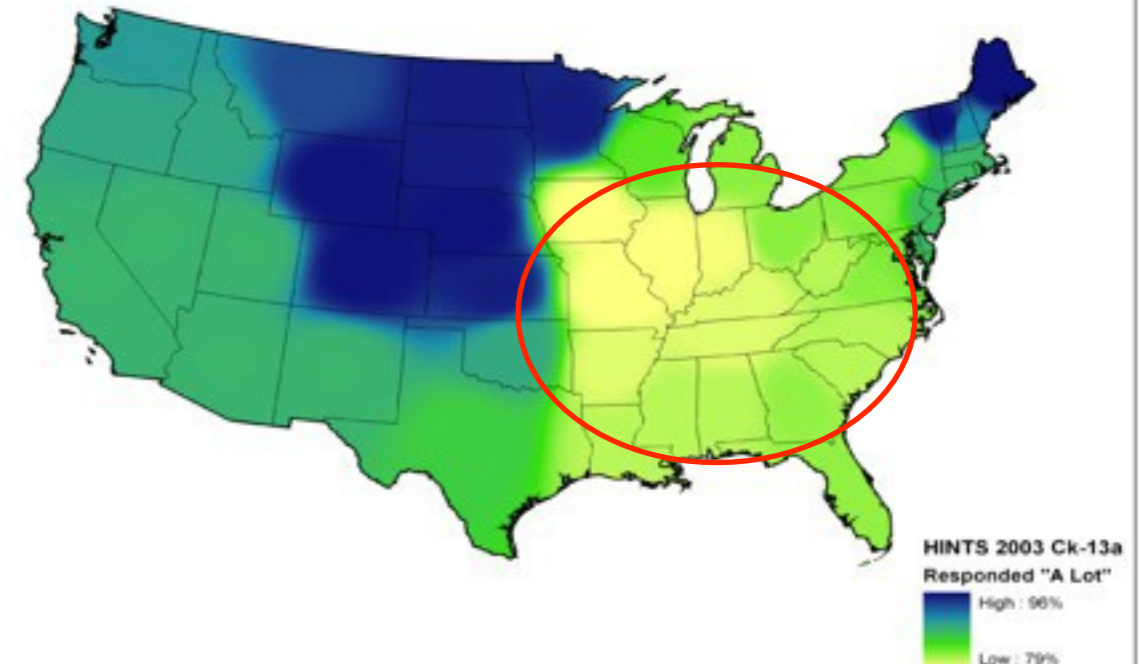
# Mapping Knowledge / Belief Gaps



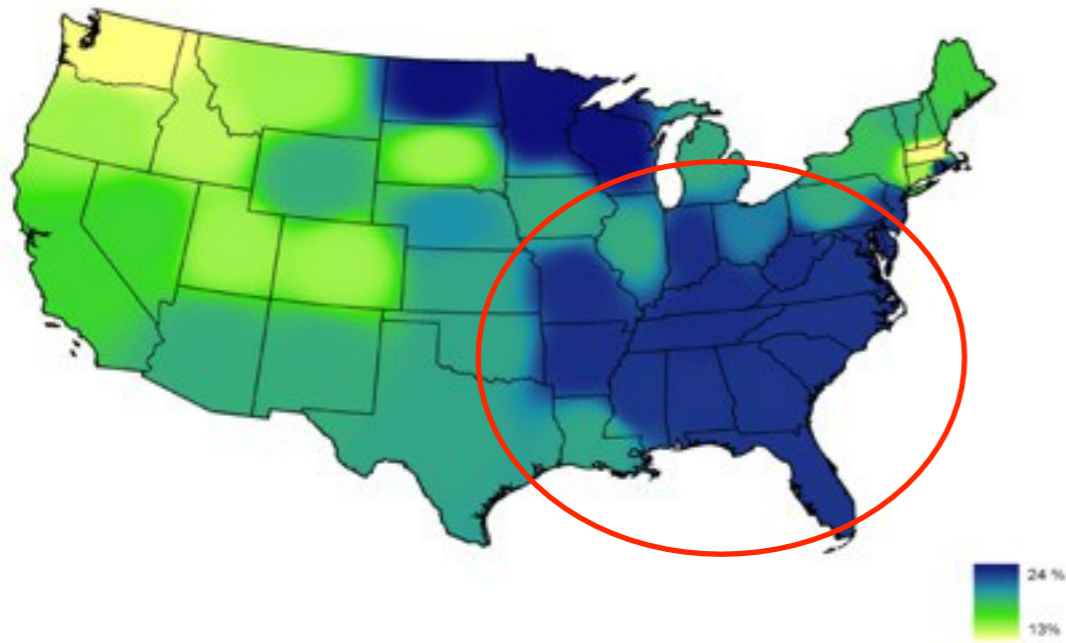
Which type of cancer do you think will cause the most deaths this year in the US?



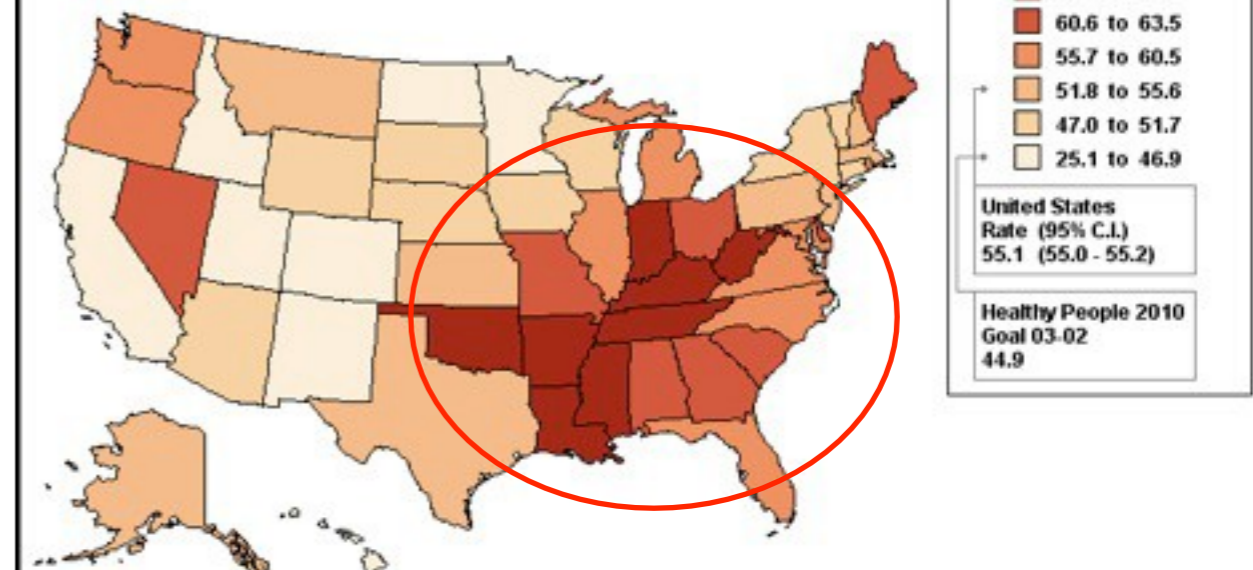
Does Smoking Increase Chances of Cancer?



Percentage of People Who Currently Smoke (HINTS 2003)



Age-Adjusted Death Rates for United States, 1999 - 2003  
Lung & Bronchus  
All Races (includes Hispanic), Both Sexes, All Ages



# Coming Together to Move Data into Knowledge, Knowledge into Action

**A decade of hjnts**

*Quantifying the Health Information Revolution through Data Innovation and Collaboration*

October 2-3, 2013 | Bethesda, MD  
Natcher Auditorium (Building 45), NIH Campus

1 



*Richard Moser* *Ellen Beckjord*

Richard Moser, PhD  
Conference Co-Chair  
National Cancer Institute

Ellen Beckjord, PhD, MPH  
Conference Co-Chair  
University of Pittsburgh



# End of Act II?



Guam Delegation



**A decade of hints**

*Quantifying the Health Information Revolution through Data Innovation and Collaboration*

October 2-3, 2013 | Bethesda, MD  
National Auditorium (Building 45), NIH Campus

**CANCELLED**

  
*Richard Moser*  
Richard Moser, PhD  
Conference Co-Chair  
National Cancer Institute

  
*Ellen Beckjord*  
Ellen Beckjord, PhD, MPH  
Conference Co-Chair  
University of Pittsburgh

# Act III: The Legend Continues



# Picking Up the Pace: HINTS 4



*Lila Rutten*  
Mayo Clinic



*Rick Moser*  
NCI



*Ellen Beckjord*  
UPMC



*Kelly Blake*  
NCI

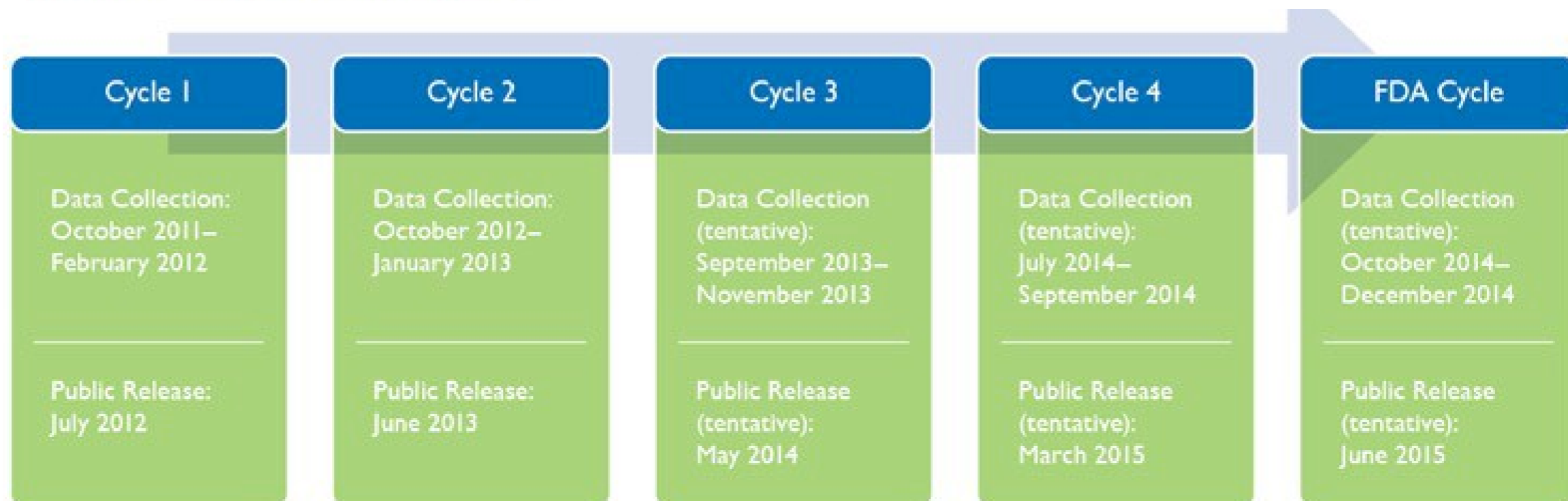


*Brad Hesse*  
NCI

## HINTS 4 Management Team

### HINTS 4 Overview and Schedule

To address emerging issues in the field of health communication more quickly while still maintaining the ongoing measurement of trends, HINTS 4 will include five data collection cycles over the course of 3 years. The instrument for each data collection cycle will include a core module of common items for trending in addition to special topic modules to be implemented only in some of the cycles, increasing capacity of the HINTS instruments to include a broader array of topics and measures. The combined sample size for all five cycles of HINTS 4 will be greater than 17,000 respondents, more than twice the size of previous rounds of HINTS data collections.



# Monitoring Change in the Health Communication Landscape



**Fitness apps eclipse 3D TVs as digital health rates among new hottest technologies**



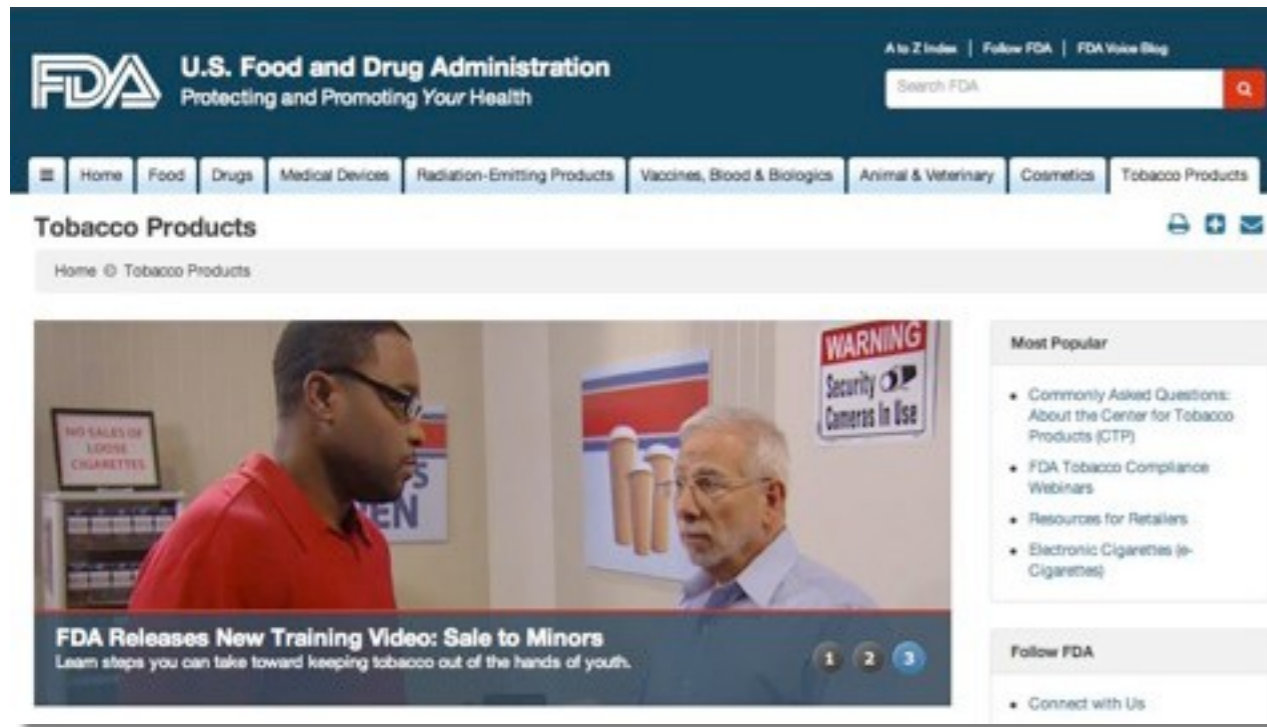
Jawbone's Up bracelet has gained traction in the digital health market by letting consumers monitor their physical activities.

By Olga Kharif and Cliff Edwards, Bloomberg News  
Posted Jan. 06, 2014, at 10:39 a.m.

- Diffusion of mobile and smartphone tech
- Rise in Participative Media
- Innovation in consumer health applications
- Proliferation of Sensor technologies
- Solutions needed within the interoperability space
- “Big Data,” new data visualizations, “data smog”

# Monitoring Implications of Policy for the Health Communication Landscape

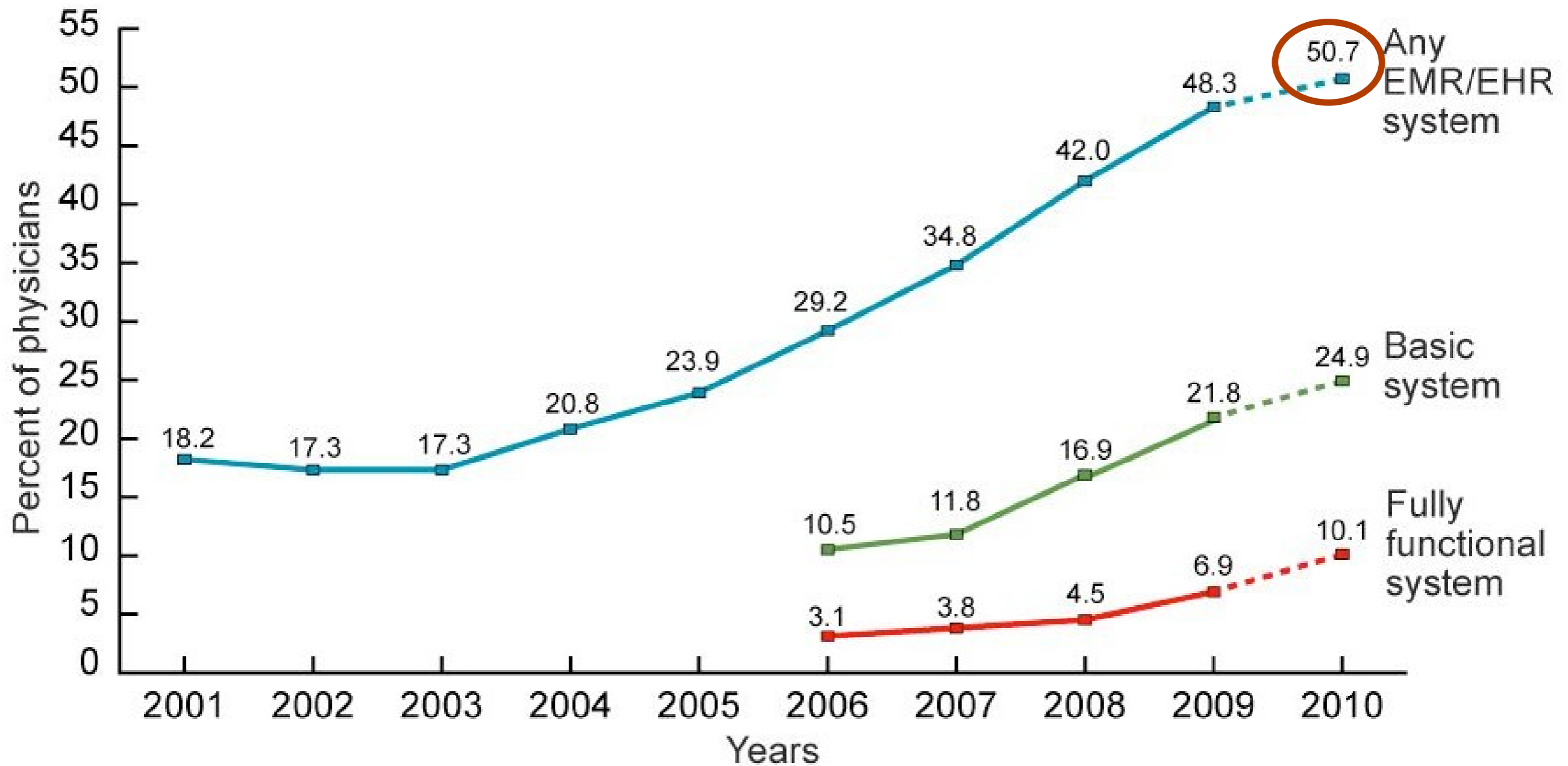
- FDA authority expands to tobacco products, mobile devices, DTC advertising
- NSF & NIH collaborate on “Smart & Connected Health”
- ONC emphasizes patient engagement, continuity of care
- PCORI funds network for patient research
- Affordable Care Act adds new provisions for prevention and care





# Example: Situational Awareness for ONC

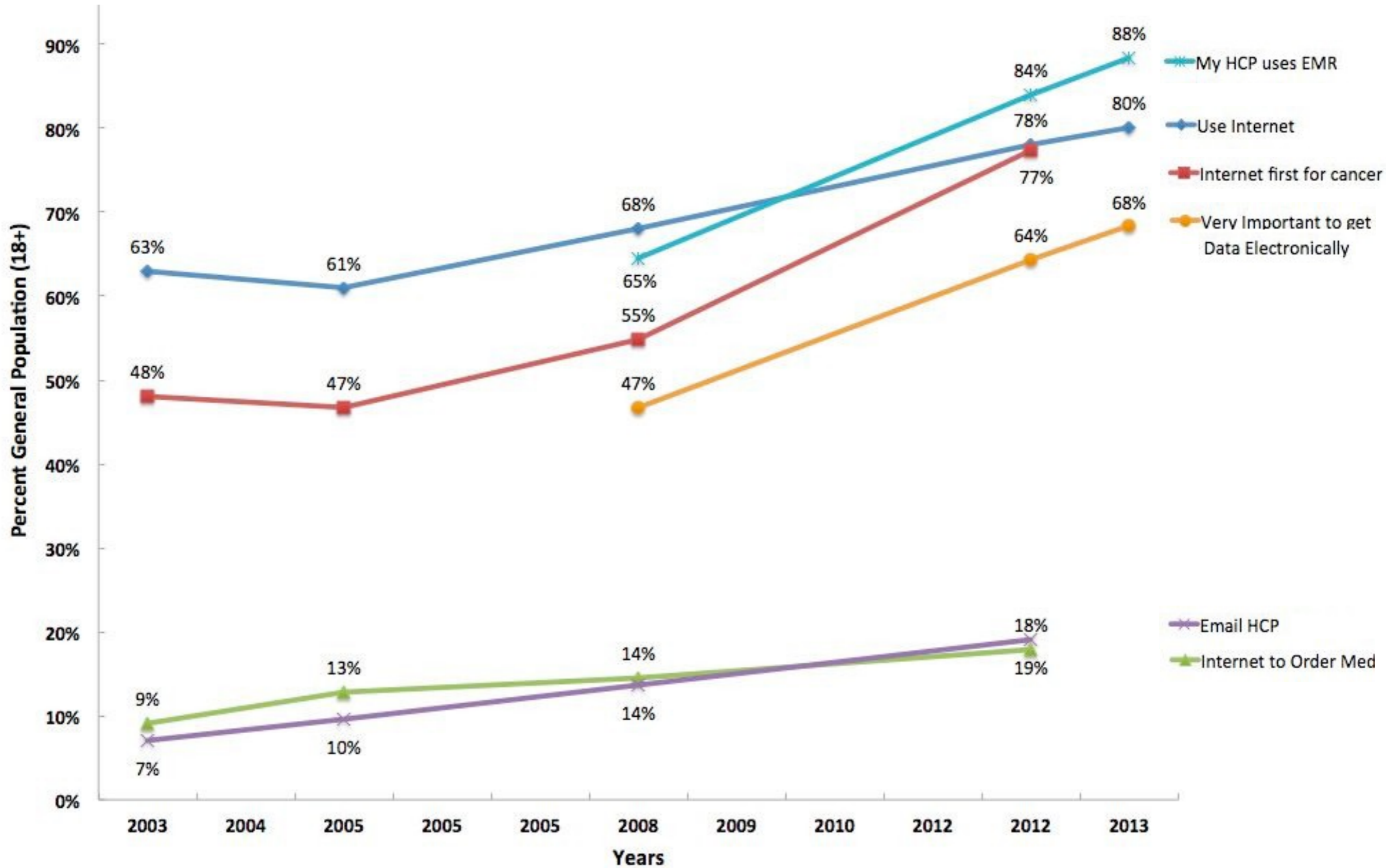
**Supply Side:** National Ambulatory Medical Care Survey



**Source:** Jamoom E, Beatty P, Bercovitz A, Woodwell D, Palso K, Rechtsteiner E. Physician adoption of electronic health record systems: United States, 2011. *NCHS data brief*. Jul 2012(98):1-8.

# Example: Situational Awareness for ONC

## Demand Side Health Information National Trends Survey



# Example: Monitoring HP 2020 Goals

HealthyPeople.gov Search HealthyPeople.gov:  [Go](#) Find us on: [Twitter](#) [LinkedIn](#) [YouTube](#) [Log In](#) [Get E-mail Updates](#)

[Home](#) [About Healthy People](#) [2020 Topics & Objectives](#) [Data](#) [Learn](#) [Implement](#) [Get Involved](#) [Leading Health Indicators](#)

[Home](#) > [2020 Topics & Objectives](#) > Health Communication and Health Information Technology

## Health Communication and Health Information Technology

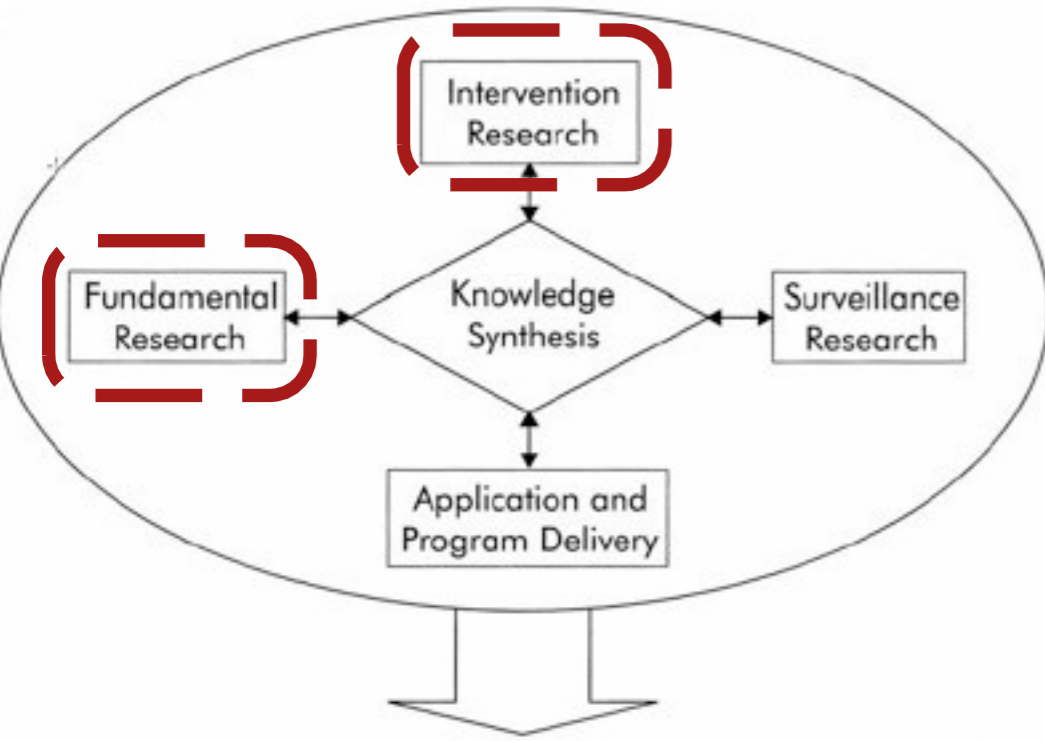
[Print](#) [E-mail](#) [Share](#)

[Overview](#) [Objectives](#) [Interventions & Resources](#) [National Snapshot](#) [National Data](#)

- Supporting shared decision-making
- Providing personalized self-management tools
- Building social support networks.
- Facilitating the meaningful use of health IT
- Enabling quick and informed action to health risks
- Increasing health literacy skills.
- Provide new connections to hard-to-reach populations
- Provide sound principles for design of interventions
- Increasing Internet and mobile access.
- Delivering accurate, accessible, and actionable health information



# Informing New Research



Reducing the cancer burden

Communication Science Applications by Funding Mechanism



NCI / HCIRB Funding Trends

Original Research



Stack of research papers:

- Improving Symptom Communication Through Personal Digital Assistants: The CHAT (Communicating Health Assisted by Technology) Project**  
Douglas M. Post, Charles L. Shapiro, Donald J. Cegala, Prabu David, Mira L. Katz, Jessica L. Kirk, Gary S. Phillips, Ann Sheik Mullerney, Jennifer S. Lehman, William Hicks, Electra D. Paskett  
Correspondence to: Douglas M. Post, PhD, 100 North High St, Ste 101, Columbus, OH 43210 (e-mail: doug.post@osu.edu)
- Partnering Efforts Th...**
- Advancing Cancer Control Research in an Emerging News Media Environment**  
Katherine C. Smith, Jeff Niederdeppe, Kelly D. Blake, Joseph N. Cappella  
Correspondence to: Katherine C. Smith, PhD, Department of Health, Behavior and Society, Johns Hopkins Bloomberg School of Public Health, Johns Hopkins University, 615 N Broadway, Rm 736, Baltimore, MD 21205 (e-mail: ksmith@jhsph.edu)

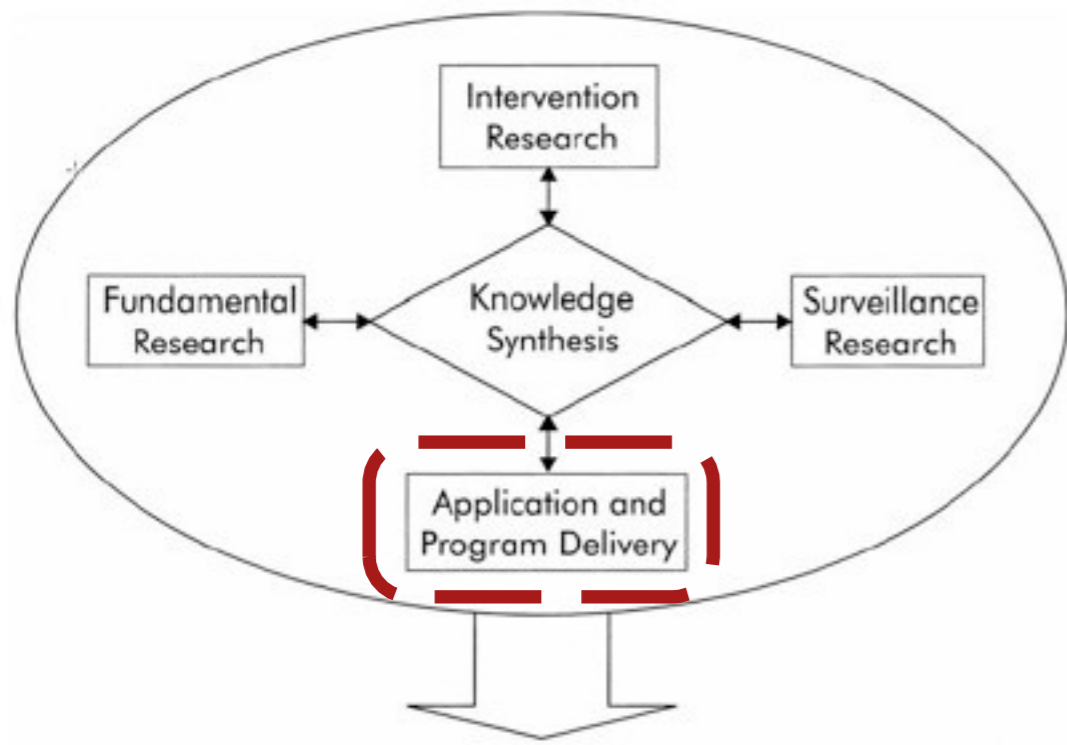
Reviews, Blueprints

# Informing Application

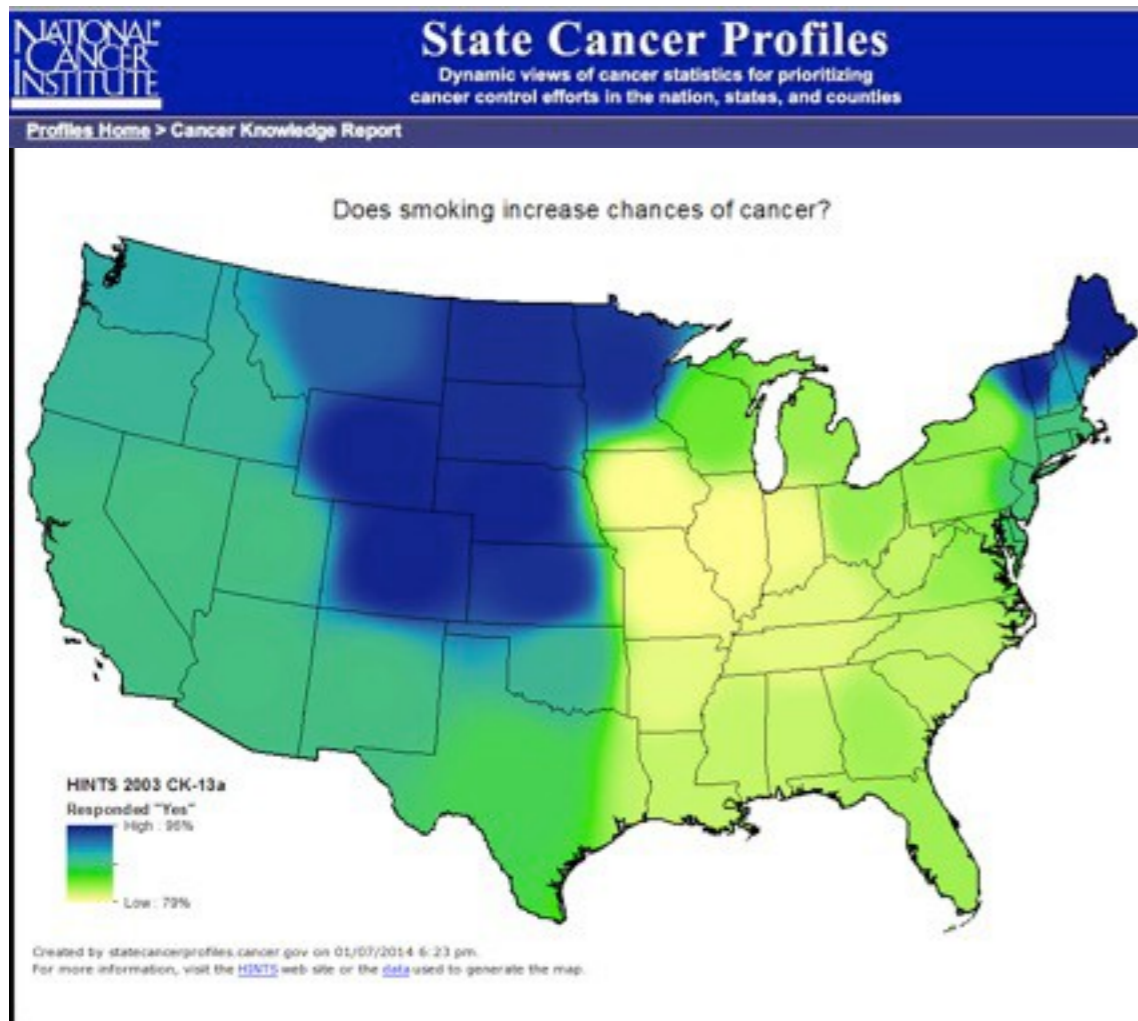


## How Can This Inform Your Work?

- When genetic tests are performed in a clinical setting, a health care professional provides information about the risks and benefits of the tests and discusses the potential emotional and social consequences of testing, as well as any necessary follow-up care; this is not the case when individuals independently pursue genetic testing through direct-to-consumer means.
- As public awareness of direct-to-consumer genetic tests increases, efforts to educate the population about the positive and negative aspects of genetic testing will be increasingly needed.
- The National Human Genome Research Institute has developed a number of online and print educational resources to address frequently asked questions about genetic testing (<http://www.genome.gov/19516567>).



Reducing the cancer burden



# A decade of hints

Quantifying the Health Information Revolution  
through Data Innovation and Collaboration



January 9-10, 2014 | Rockville, MD  
NCI Shady Grove, 9609 Medical Center Drive



Thursday, January 9, 2014

## PRE-CONFERENCE WORKSHOP: INTEGRATIVE DATA ANALYSIS USING HINTS

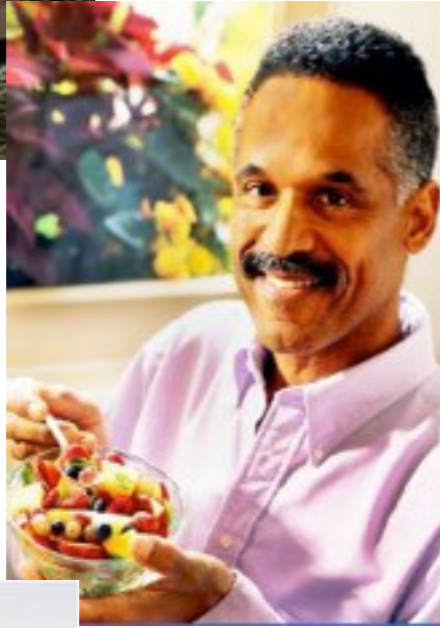
8:30–9:00 a.m.	<b>Check-in/Registration</b>
9:00–9:15 a.m.	<b>Workshop Overview</b> Richard P. Moser, PhD, <i>National Cancer Institute</i>
9:15–9:50 a.m.	<b>Bridging Across Multiple Iterations of HINTS Data</b> David Cantor, PhD, <i>Westat</i>
9:50–10:40 a.m.	<b>Interactive Workshop: Merging Multiple Iterations of HINTS</b> Richard P. Moser, PhD, for Sana Vieux, MPH
10:40–10:55 a.m.	<b>BREAK</b>
10:55–11:35 a.m.	<b>Creating Model-Based State Level Estimates for Cancer-Related Knowledge Variables Using HINTS Data</b> Benmei Liu, PhD, <i>National Cancer Institute</i>
11:35 a.m.– 12:15 p.m.	<b>Using Imputation to Augment Multiple Iterations of HINTS Data</b> Mandi Yu, PhD, <i>National Cancer Institute</i>
12:15–12:30 p.m.	<b>Closing Remarks/Q&amp;A</b>

## MAIN CONFERENCE

2:00–3:00 p.m.	<b>On-Site Registration</b>
3:00–4:00 p.m.	<b>Welcome/Opening Remarks</b> Ellen Beckjord, PhD, MPH <i>University of Pittsburgh Cancer Institute</i> William Klein, PhD, <i>National Cancer Institute</i>
	<b>Keynote Address: "HINTS 2.0: Partnering to Move Knowledge into Action"</b> Bradford Hesse, PhD, <i>National Cancer Institute</i>

## Meeting Objectives

- Learn
- Share
- Collaborate
- Make a difference



*On behalf of all  
Americans who have  
participated in  
HINTS ...*

*Thank You!*

