

Implementing cancer prevention to eliminate disparities

April 11, 2013

Department of Surgery
Division of Public Health Sciences



Washington University in St. Louis

SCHOOL OF MEDICINE

Goals of talk

- Review disparities research through Prevention and Control program @ Siteman Cancer Center, Washington University School of Medicine and Barnes-Jewish Hospital, St Louis
- Place in context
- Outline key issues in application of implementation science to improve population health.



Your Disease Risk
THE SOURCE ON PREVENTION
www.yourdiseaserisk.wustl.edu

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 Washington University

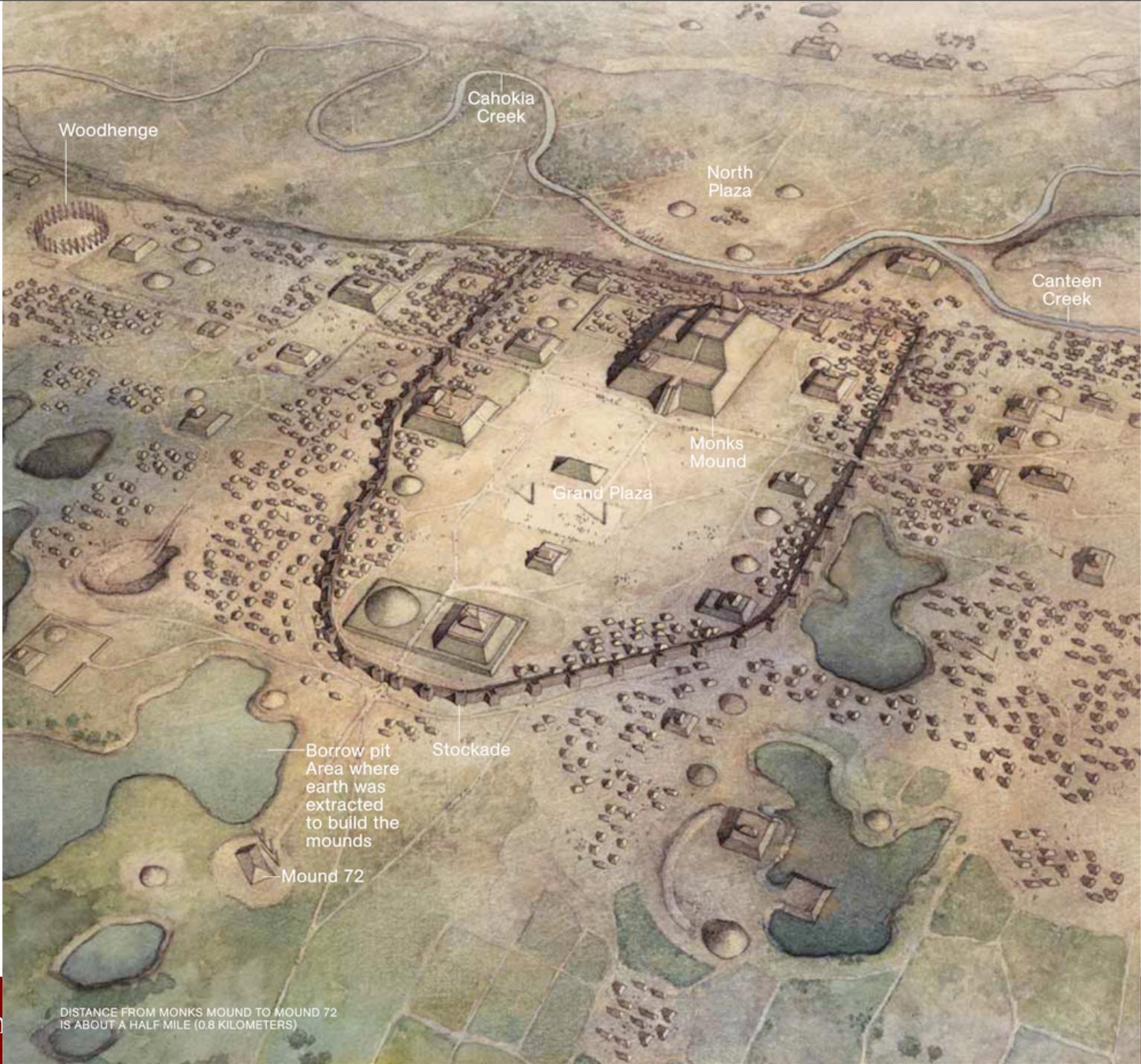
Monday, April 15, 2013





Cahokia Mounds State Historic Site



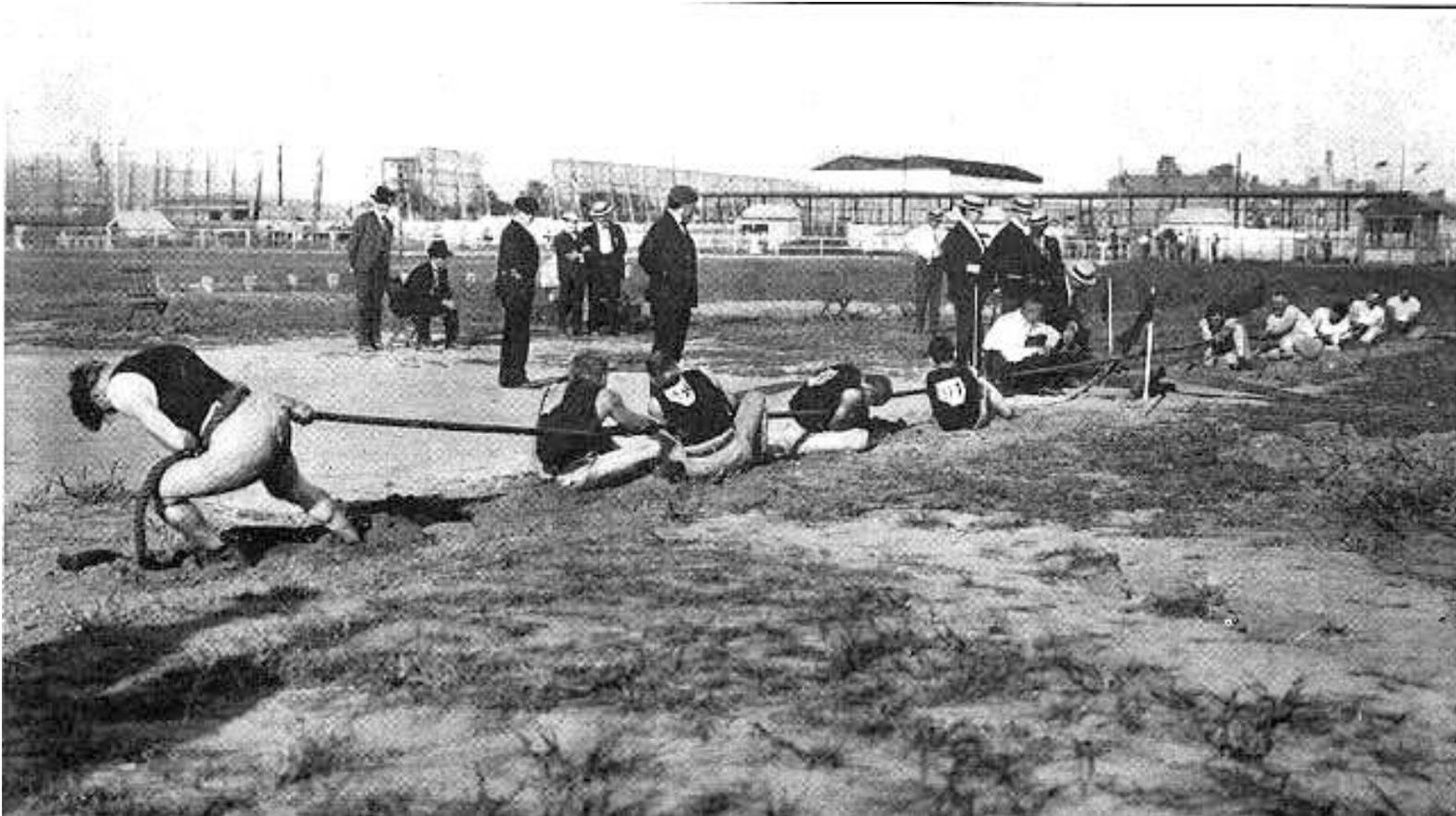


DISTANCE FROM MONKS MOUND TO MOUND 72 IS ABOUT A HALF MILE (0.8 KILOMETERS)

- Cahokia was the largest and most influential urban settlement in the Mississippi culture, 600-1400
- developed advanced societies across much of what is now the Southeastern United States, beginning more than 500 years before European contact
- Cahokia's population at its peak in the 1200s was as large as, or larger than, any European city of that time, and its ancient population would not be surpassed by any city in the United States until about the year 1800.

Where was this even held?

- What was the event?



Cancer Prevention and control: Program goals Siteman Cancer Center

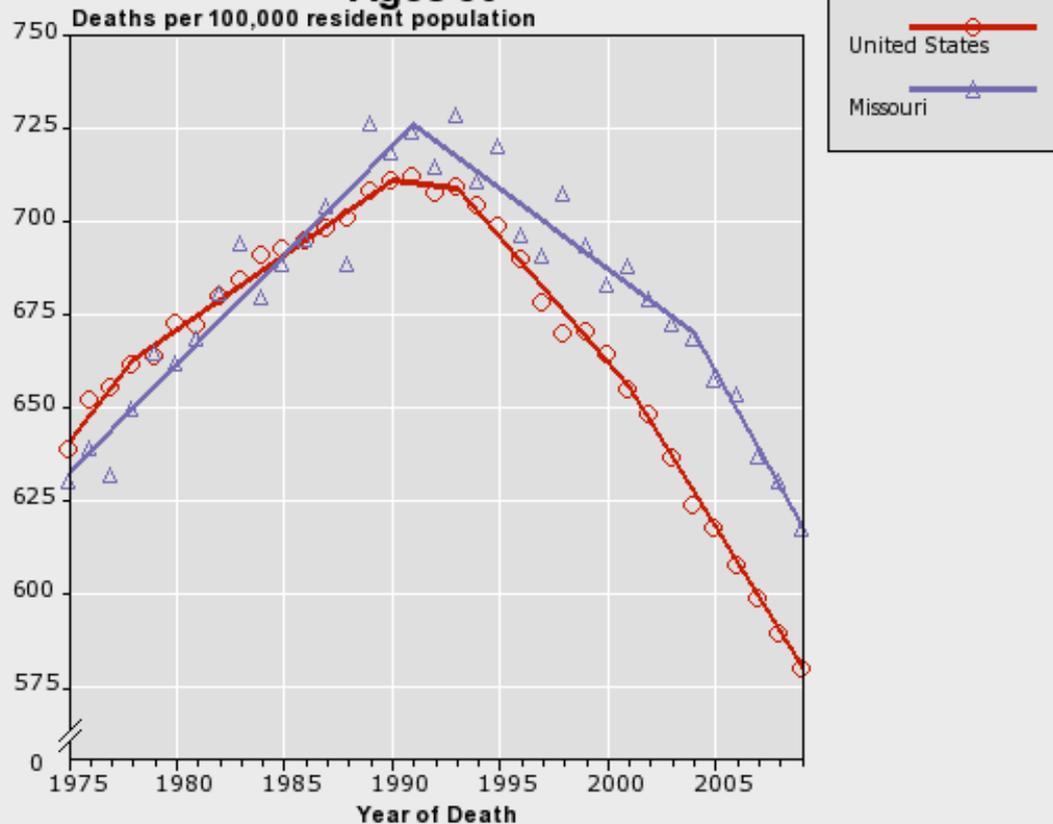
- To implement prevention strategies that engage clinicians, the community, and individuals.
- Create a pathway between discoveries in biological science and effective clinical and population level interventions.
- Build strategies to identify cancer risks for individuals and whole communities; to change behavior to lower risk and improve people's lives through interventions by health care providers, regulatory changes to help sustain healthy behaviors, and individual behavior changes

Eliminating Cancer Disparities

- NCI funding to develop and implement strategies to reduce cancer disparities (U54)
- Community based participatory research methods
- Focus on St. Louis/underserved
 - Breast, prostate, colon, and lung cancers
 - Largest visible component is mammography van
 - Range of community based activities to increase awareness and access
 - Komen funding to study delay in access to treatment among African American women, engaging women in understanding access and decisions

Historical Trends (1975-2009)

Mortality, All Cancer Sites All Races (incl Hisp), Both Sexes Ages 50+

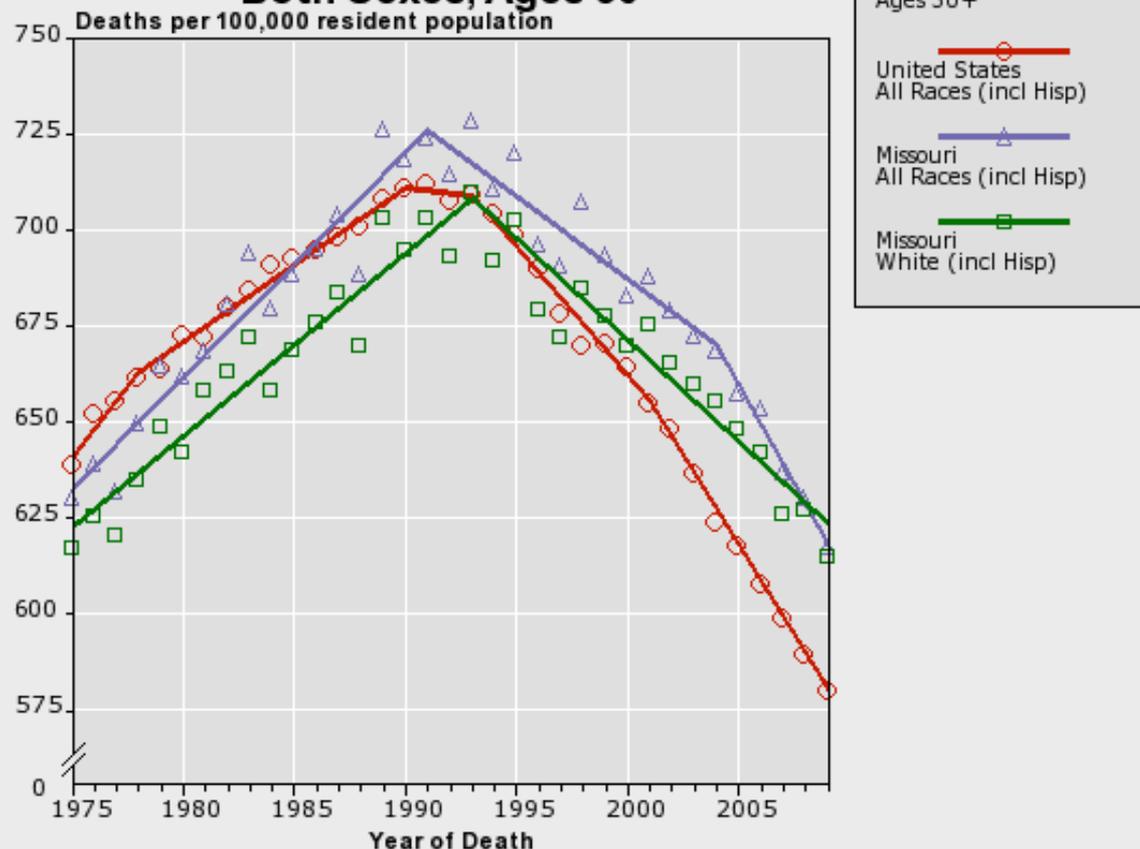


Created by statecancerprofiles.cancer.gov on 04/11/2013 5:25 am.
Regression lines calculated using the Joinpoint Regression Program.

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: (<1, 1-4, 5-9, ... , 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.

Historical Trends (1975-2009)

Mortality, All Cancer Sites Both Sexes, Ages 50+

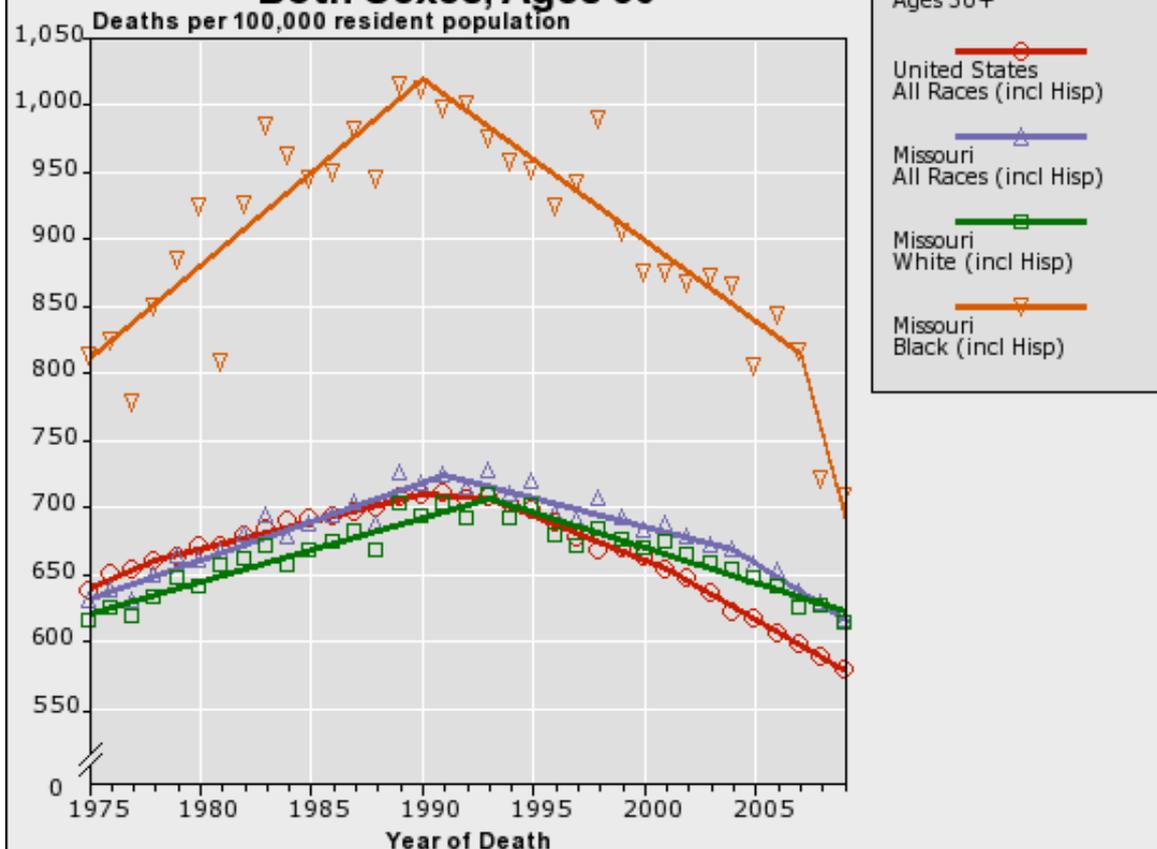


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Regression lines calculated using the Joinpoint Regression Program.

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: (<1, 1-4, 5-9, ..., 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.

Historical Trends (1975-2009)

Mortality, All Cancer Sites Both Sexes, Ages 50+

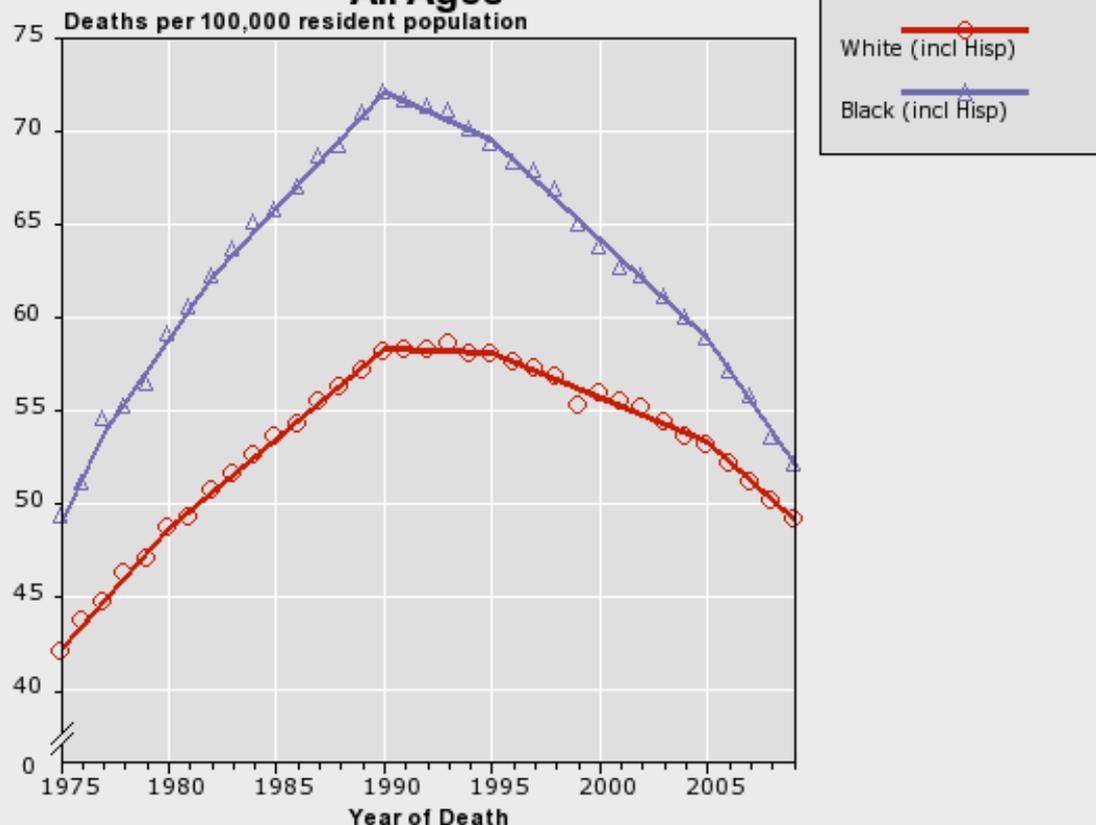


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Regression lines calculated using the Joinpoint Regression Program.

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: (<1, 1-4, 5-9, ..., 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.

Historical Trends (1975-2009)

Mortality, United States Lung & Bronchus, Both Sexes All Ages



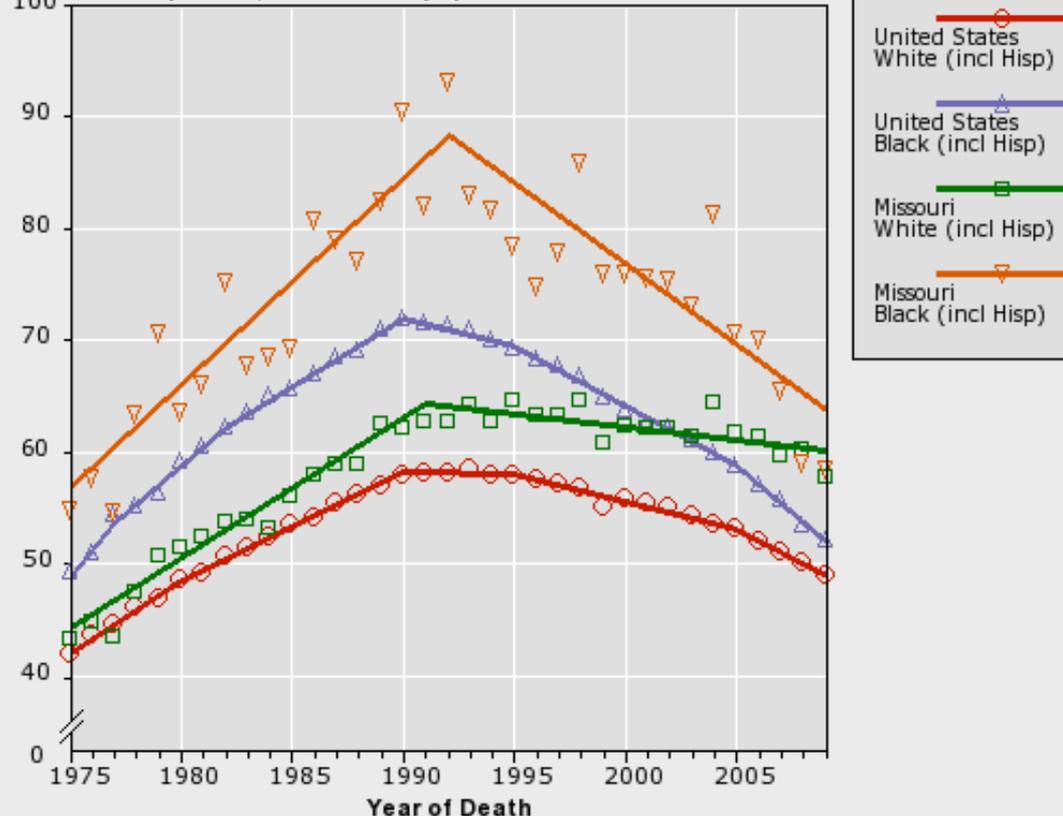
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Regression lines calculated using the Joinpoint Regression Program.

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: (<1, 1-4, 5-9, ... , 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.

Historical Trends (1975-2009)

Mortality, Lung & Bronchus Both Sexes, All Ages

Deaths per 100,000 resident population



Key

Mortality

Lung & Bronchus
Both Sexes
All Ages

United States
White (incl Hisp)

United States
Black (incl Hisp)

Missouri
White (incl Hisp)

Missouri
Black (incl Hisp)

Created by statecancerprofiles.cancer.gov on 04/11/2013 6:01 am.
Regression lines calculated using the Joinpoint Regression Program.

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: (<1, 1-4, 5-9, ..., 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.

State of Tobacco Control 2013

Missouri

Grades:

Tobacco Prevention & Control Spending F

Smokefree Air F

Cigarette Tax F

Youth Access F

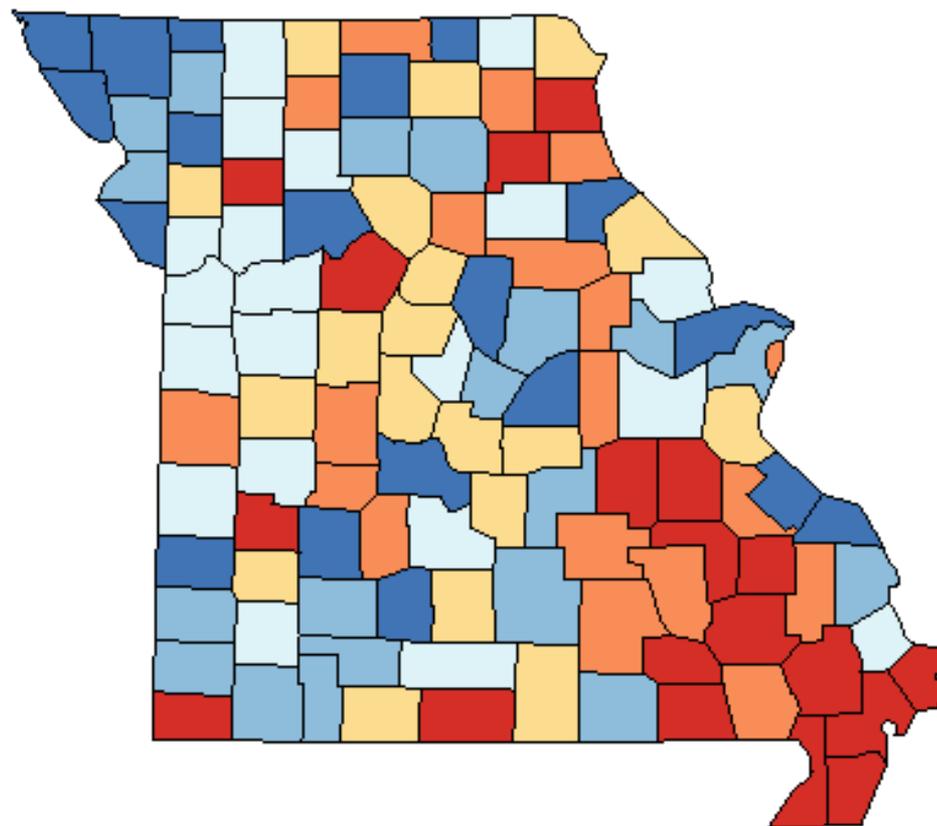
<http://www.stateoftobaccocontrol.org/state-grades/missouri/>



Age-Adjusted Death Rates for Missouri, 2005 - 2009

All Cancer Sites

All Races (includes Hispanic), Both Sexes, All Ages



Age-Adjusted Annual Death Rate (Deaths per 100,000)

[Quantile Interval](#)

- 221.2 to 275.4
- 209.3 to 221.1
- 196.7 to 209.2
- 189.0 to 196.6
- 177.7 to 188.9
- 149.6 to 177.6

United States Rate (95% C.I.)
178.7 (178.4 - 178.9)

Missouri Rate (95% C.I.)
191.4 (189.9 - 192.9)

Healthy People 2020 Goal C-1
160.6

Created by statecancerprofiles.cancer.gov on 04/11/2013 5:38 am.

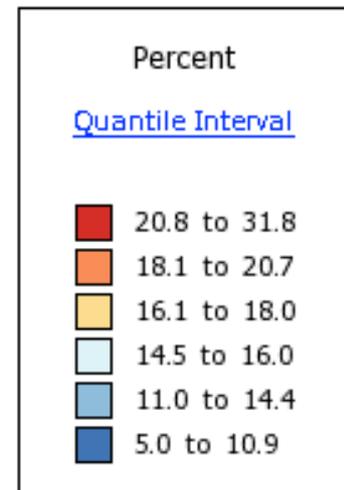
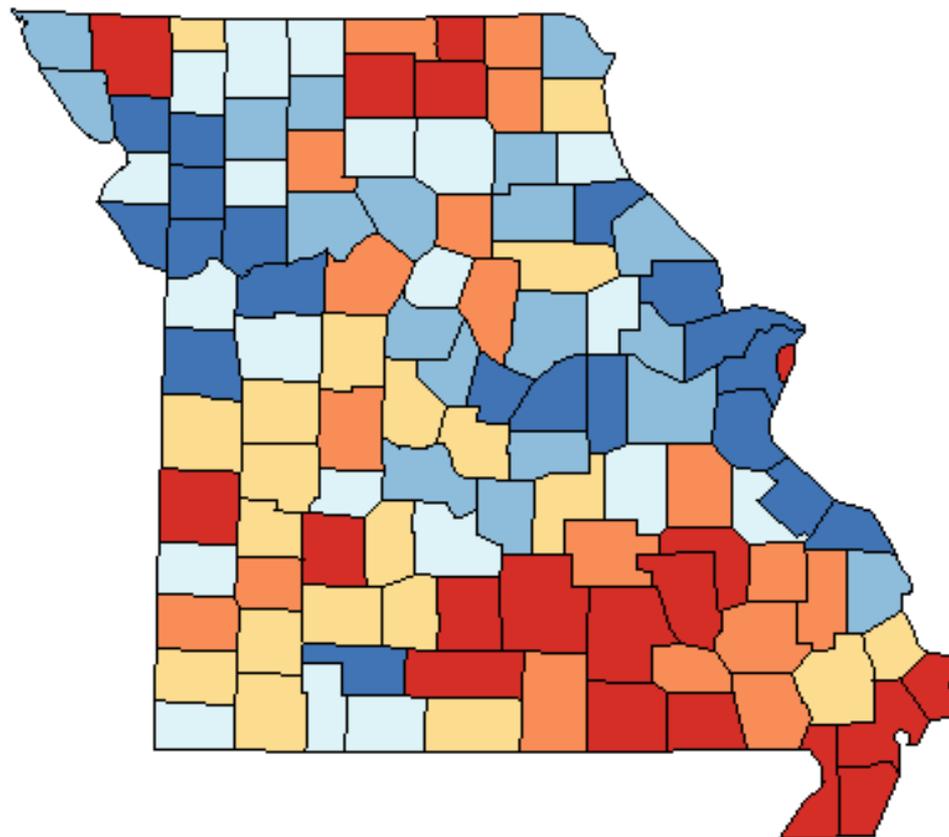
[State Cancer Registries](#) may provide more current or more local data.

Data presented on the State Cancer Profiles Web Site may differ from statistics reported by the State Cancer Registries ([for more information](#)).

Source: Death data provided by the [National Vital Statistics System](#) public use data file. Death rates calculated by the National Cancer Institute using [SEER*Stat](#). Death rates (deaths per 100,000 population per year) are



Demographic Data for Missouri
2006-2010 American Community Survey 5-Year Data
Poverty: Persons below poverty
All Races (includes Hispanic), Both Sexes, All Ages



Created by statecancerprofiles.cancer.gov on 04/11/2013 5:41 am.

Source: Demographic data provided by the [Census Bureau](#) and the [American Community Survey](#).
For more information about Poverty: Persons below poverty see the [dictionary](#).



urgery
iences

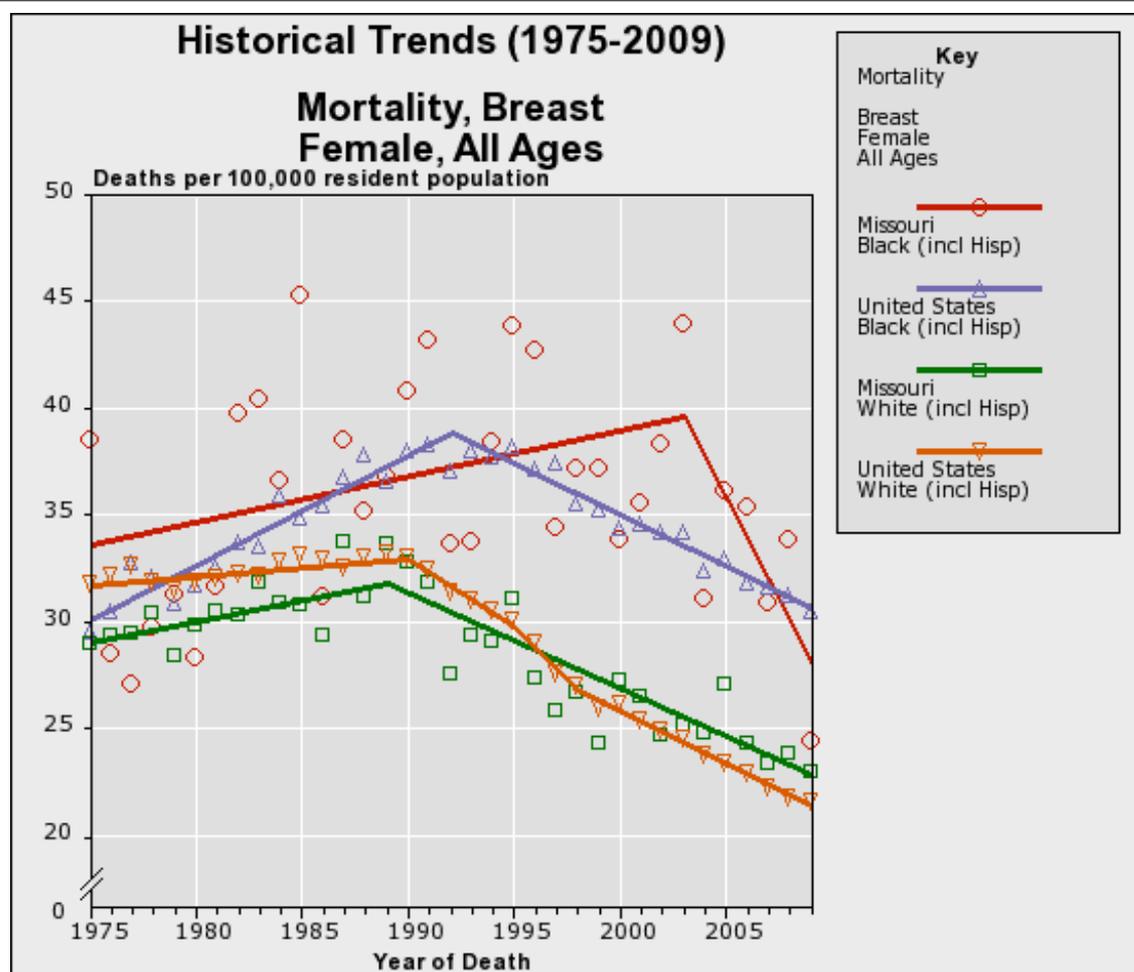
Technology vs. equity

- The US health care system spends more on ‘technology’ of care than on achieving equity in its delivery.
- From 1991 to 2000, medical advances averted 176,633 deaths, but equalizing the mortality rates of whites and Africa Americans would have averted 886,202 deaths.
- “Achieving equity may do more for health than perfecting technology”
 - Steven Woolf and David Satcher, AJPH 2004;94:2078-81

Disparities in mortality

- Satcher et al review black-white mortality gap from 1960 to 2000
- SMR for total mortality changed little (overall SMR 1.4) and worsened for men 35 and older
- 83,570 excess deaths each year could be prevented if the black white mortality gap could be eliminated
 - Satcher et al. Health Affairs 2005;24:459-64

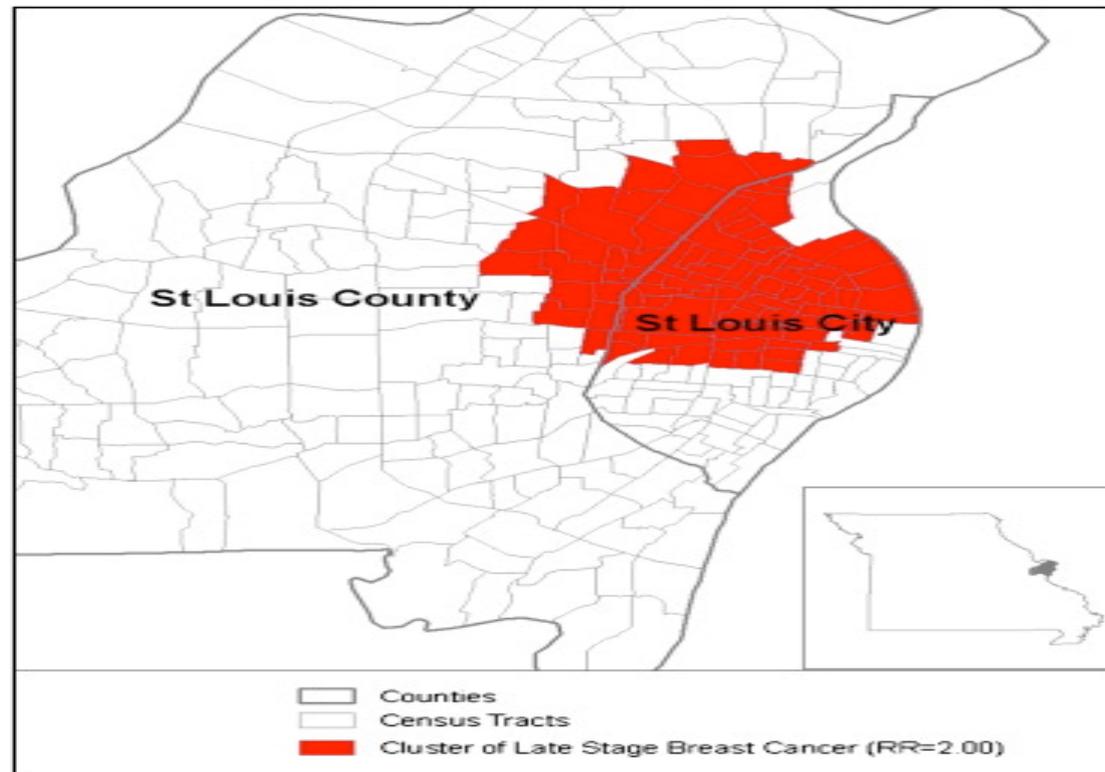
Breast Cancer



Created by statecancerprofiles.cancer.gov on 04/11/2013 5:20 am. Regression lines calculated using the Joinpoint Regression Program.

Source: Death data provided by the National Vital Statistics System public use data file. Death rates calculated by the National Cancer Institute using SEER*Stat. Death rates (deaths per 100,000 population per year) are age-adjusted to the 2000 US standard population (19 age groups: <1, 1-4, 5-9, ... , 80-84, 85+). Population counts for denominators are based on Census populations as modified by NCI. The US populations included with the data release have been adjusted for the population shifts due to hurricanes Katrina and Rita for 62 counties and parishes in Alabama, Mississippi, Louisiana, and Texas. The 1969-2009 US Population Data File is used with mortality data.

Breast CA mortality 1996-1998



Location of area where the unadjusted risk of late-stage (regional or distant) breast cancer is increased among women aged 50 years and older, 1996-1998.

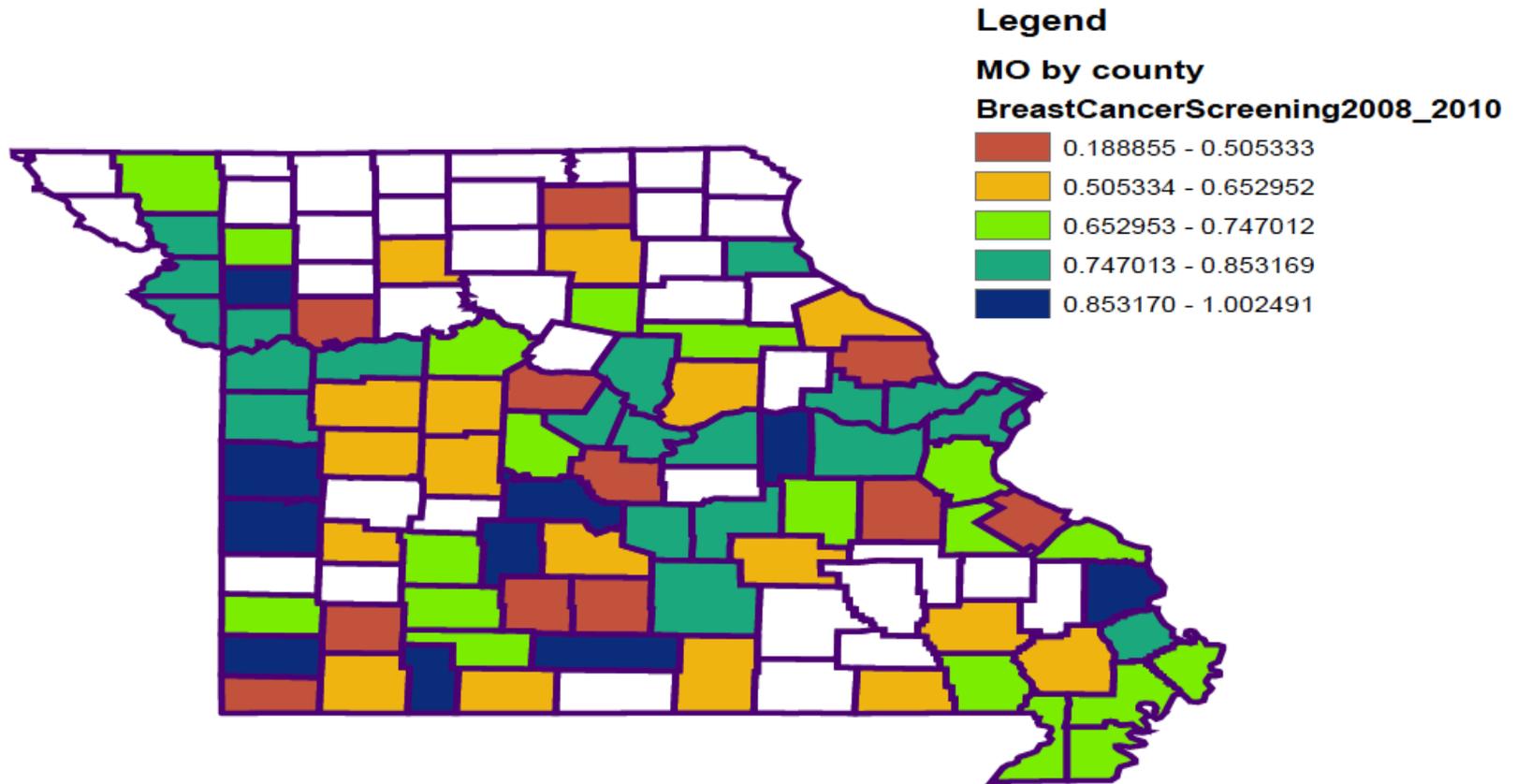
Mario Schootman , Donna B. Jeff , William E. Gillanders , Yan Yan , Bruce Jenkins , Rebecca Aft

Geographic Clustering of Adequate Diagnostic Follow-Up after Abnormal Screening Results for Breast Cancer among Low-income Women in Missouri

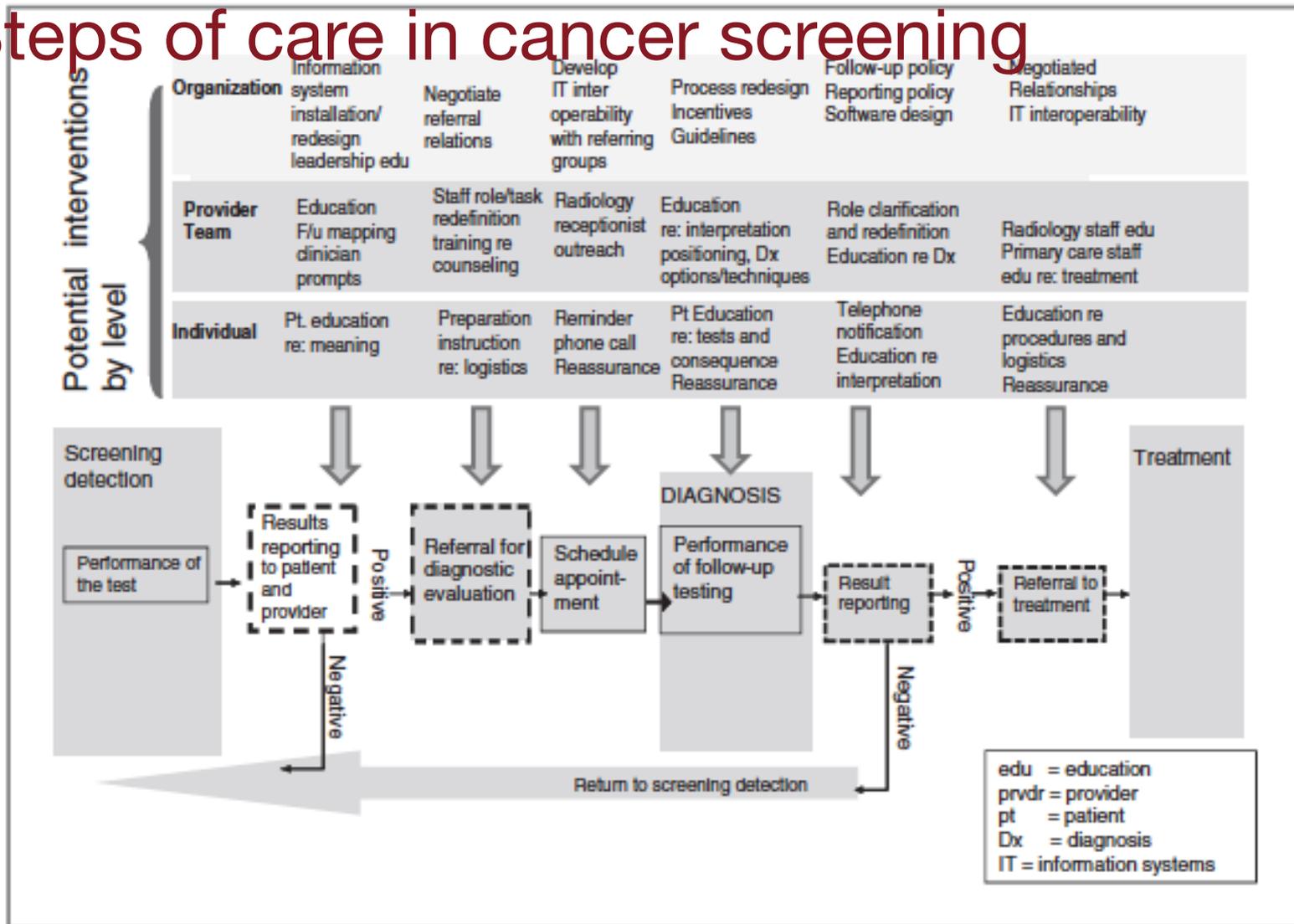
Annals of Epidemiology Volume 17, Issue 9 2007 704 - 712

<http://dx.doi.org/10.1016/j.annepidem.2007.03.017>

Breast cancer screening 2008-2010



Steps of care in cancer screening

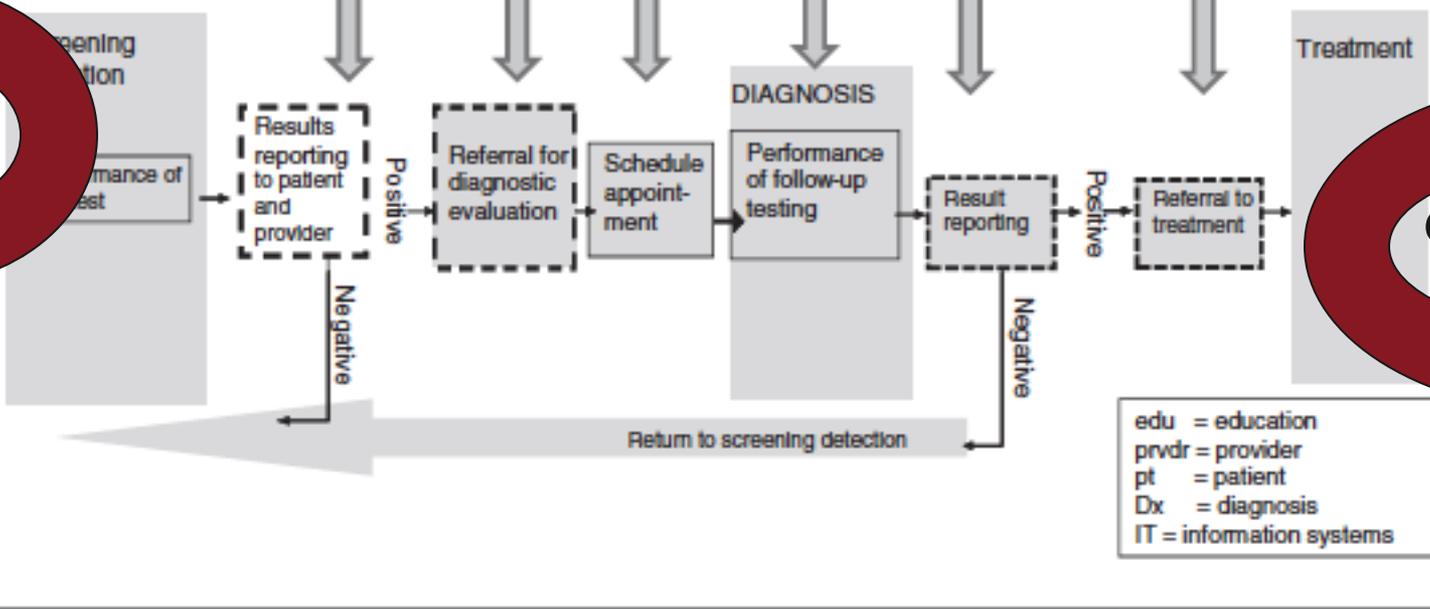


Zapka et al JNCI Monograph 2010

Steps of care in cancer screening

Potential interventions by level

Organization	Information system installation/redesign leadership edu	Negotiate referral relations	Develop IT inter operability with referring groups	Process redesign Incentives Guidelines	Follow-up policy Reporting policy Software design	Negotiated Relationships IT interoperability
Provider Team	Education F/u mapping clinician prompts	Staff role/task redefinition training re counseling	Radiology receptionist outreach	Education re: interpretation positioning, Dx options/techniques	Role clarification and redefinition Education re Dx	Radiology staff edu Primary care staff edu re: treatment
Individual	Pt. education re: meaning	Preparation instruction re: logistics	Reminder phone call Reassurance	Pt Education re: tests and consequence Reassurance	Telephone notification Education re interpretation	Education re procedures and logistics Reassurance



Get to testing

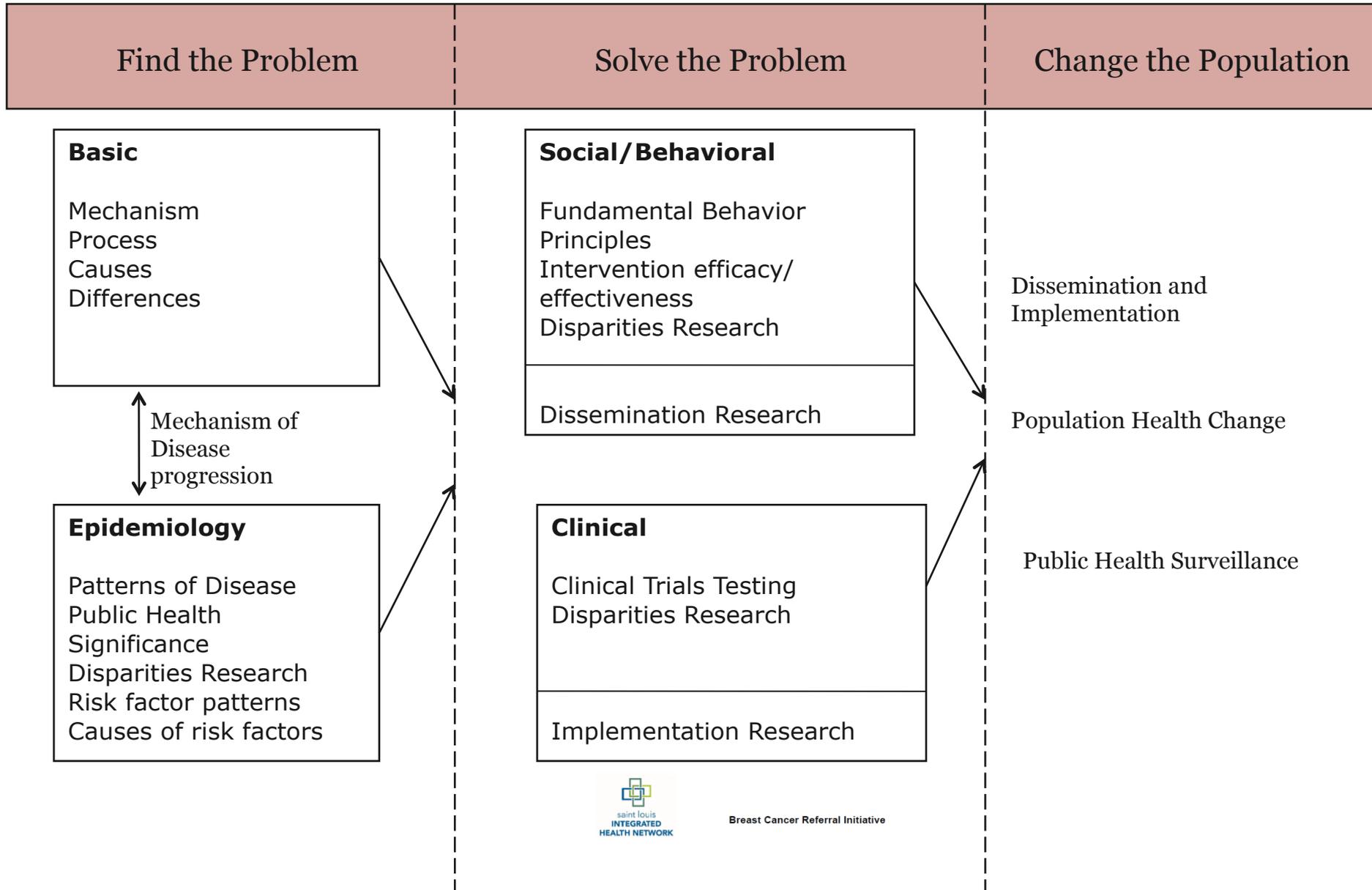
Outcomes

edu = education
 prvdr = provider
 pt = patient
 Dx = diagnosis
 IT = information systems

Zapka et al JNCI Monograph 2010

What does all this have to do with
implementing prevention to eliminate
disparities?

Community Input



Breast Cancer Referral Initiative

PECaD at WUSTL- Breast Cancer

FIND

Research
Fayanju, et al. *Breast cancer presentation in an urban health care safety net system.*

Research
Fayanju, et al. *Patient and process factors associated with late-stage breast cancer diagnosis in safety-net patients: A pilot prospective study*

SOLVE

Research and Outreach
Gehlert, et al. *Community-based participatory approach to improving breast cancer services for women living in St. Louis*

Research and Outreach
Colditz, et al. *Patient navigation for breast cancer screening*

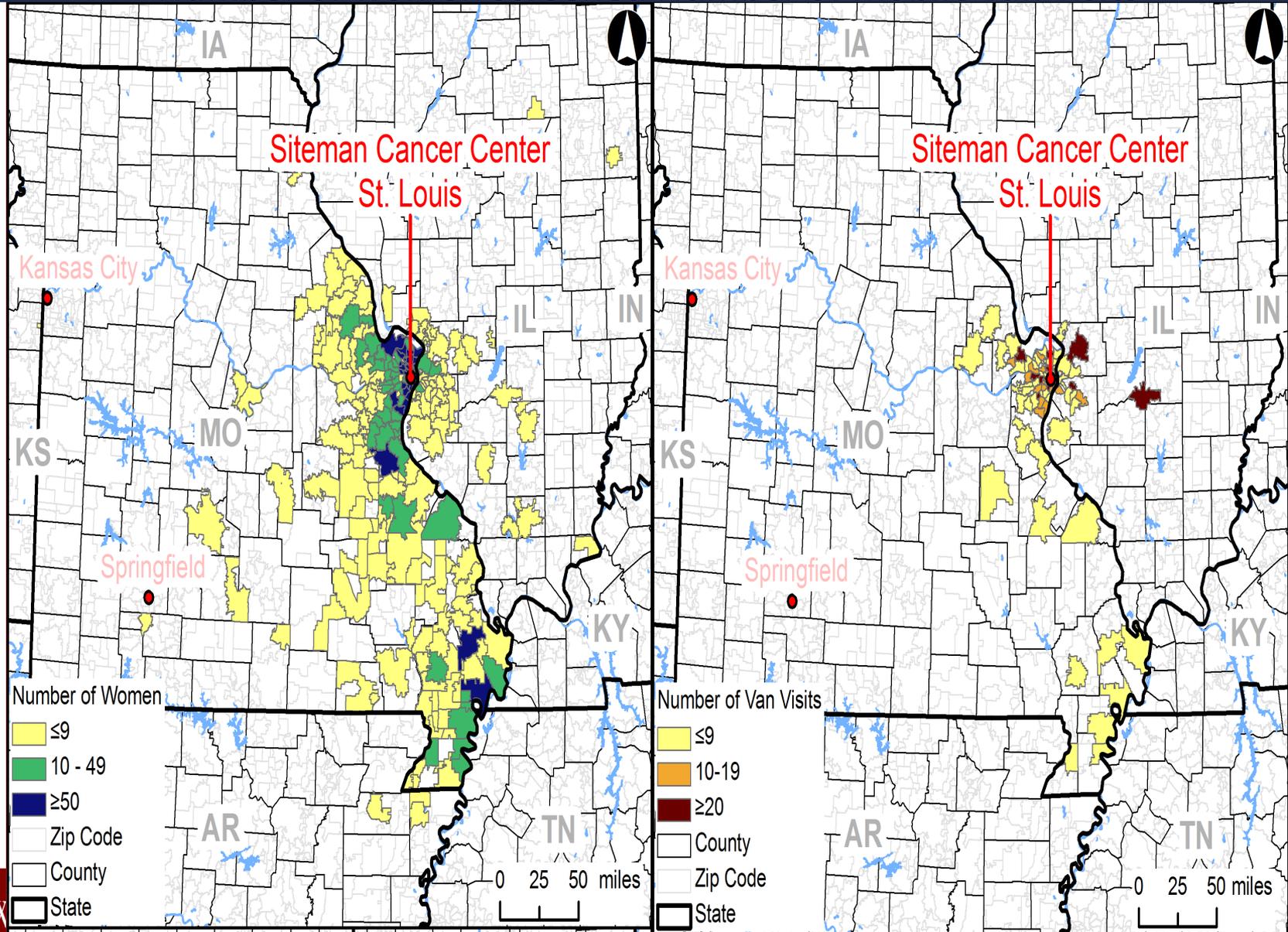
CHANGE

Outreach/QI
Quality improvement: Breast cancer regional navigation workgroup

Active surveillance
of breast cancer screening and diagnosis rates at BHC and on van



Figure 2: GIS Maps of Service Area
Number of women screened Number of mobile van visits





Success Story: Breast Health Navigation



Success Story: Breast Health Navigation

- ARRA findings for breast cancer navigation at north county health center site

Need for navigation	Reach/Impact
N=792 needed nav. <i>(i.e. due/overdue for mmg)</i>	n=751 navigated (94.8%) n=710 navigated women that received mmg (94.5%)
90.8% minority 80.3% income \leq \$25,000 69.4%* uninsured or medicaid	Nearly the same as ←--- Nearly the same as ←--- Nearly the same as ←---
*n=842, per episode of navigation	



Success Story: Breast Health Navigation

- ARRA findings for breast cancer navigation at north county health center site

Health center's breast cancer screening utilization among age-eligible women (baseline to follow up)

	Baseline <i>n (%)</i>	Year 1 <i>n (%)</i>	Year 2 <i>n (%)</i>
<u>All sites</u>			
women received mmg	627 (11.8)	931 (13.5)	1093 (15.4)
<u>North county site</u>			
women received mmg	--	235 (17.7)	420 (27.6)



Success Story: Breast Health Navigation

- ARRA findings for breast cancer navigation at north county health center site

Post study (6 months of data)

On track to exceed year 2 mmg receipt percent by 10% or larger



Success Story: Breast Health Navigation

- ARRA findings for breast cancer navigation at north county health center site
- Reinforcing navigation infrastructure in the entire St. Louis metropolitan region, AND
 - Breast navigator group model will be replicated in the State through *Show Me Healthy Women* (CDC-funded NBCCEDP)

**St. Louis Regional Breast
Navigator Workgroup**

PECaD at WUSTL- Colon Cancer

★ = community engaged
 ★ = community informed

FIND

Needs Assessment
 Needs & capacity assessments through stakeholders to identify community priorities

★

Research ★
 James, et al. *Perceptions of CRC Screening in Low-Income Populations (ACS)*

Research ★
 James, et al. *Using Photovoice to engage community members about colorectal cancer screening (NIH)*

SOLVE

Research ★
 James, et al. *Peer Outreach for Promoting CRC Screening (NIH)*

CHANGE

Research ★
 James, Colditz, et al. *Systems Intervention to Increase CRC Screening (NIH)*

Outreach
 James, Colditz, et al. *Provider Education to Increase CRC Screening (ACS)*

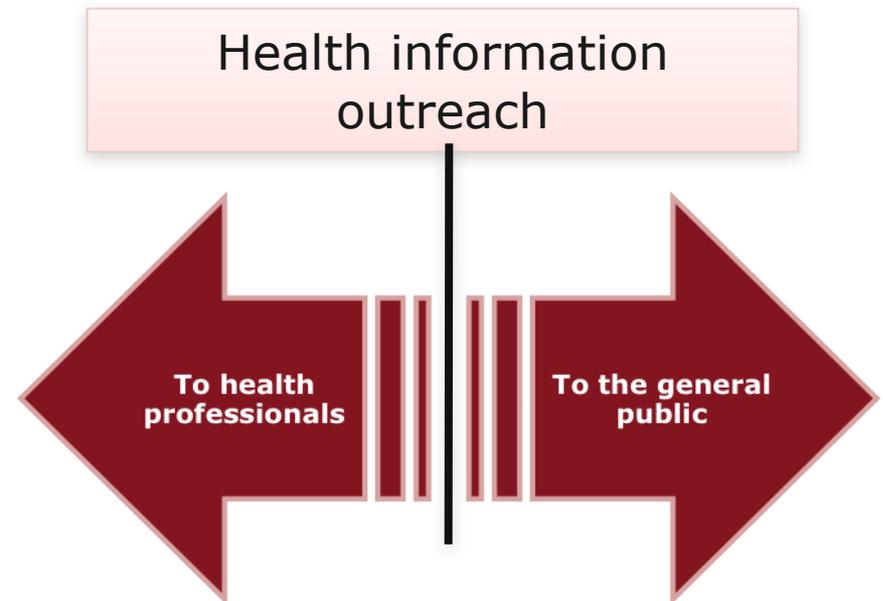


Success Story: Public Library Network

- Cancer health information kiosks at St. Louis City Public Libraries (n=4)
- In conjunction with the medical center library funded by the National Library of Medicine (NLM)

Win-Win

1999 NLM Resolution



Success Story: Media Outreach & Education

- Newspaper – Cancer educational ads and related editorials
- Transit (bus/metro) campaign – cancer education and resources
- Radio – live and recorded interviews with cancer prevention experts
- TV – “8 Ways to Prevent Cancer” campaign
- Clinical Trials Video/DVD – minority recruitment



Cancer screening SAVED MY LIFE.

“Early detection is the key. It is the difference between life and death.”
— Josephine, breast cancer survivor

There are Screening tests for men and women that can find and prevent cancer. Talk with your doctor about which screening tests are right for you. You might qualify for a free screening. Find out more, get your FREE Cancer Prevention Kit from the Program for the Elimination of Cancer Disparities.

Visit www.preventcancer.wustl.edu or call **800-600-3606**.

SITEMAN CANCER CENTER
A National Cancer Institute Designated Cancer Center

BARNES-JEWISH
HOSPITAL

Washington University
SCHOOL OF MEDICINE

Cancer screening saved my life.

SITEMAN CANCER CENTER
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Your Disease Risk
THE SOURCE ON PREVENTION



MY STORY
TAMIKA MATTHEWS' CERVICAL CANCER JOURNEY

When Tamika Matthews went in for a pelvic exam and PAP test in February 2009, she was expecting the same normal results she always got. This time, however, the results were shocking. Not only did Tamika learn that she was expecting her third child, but she also learned her PAP results were abnormal. After several months of additional testing, Tamika was diagnosed with cervical cancer.

On November 11, 2009, Tamika had both a Caesarian section to deliver her baby and a hysterectomy to remove the cancer. Unfortunately, some of the cancer remained. She worked two jobs and had a newborn at home when she started chemotherapy and radiation treatments. Thankfully, Tamika is in remission and remains under the watchful eye of her physician at the Siteman Cancer Center.

Cancer, a growing family, multiple jobs – Tamika's life was full, to say the least. Through it all, she kept a positive

as possible for her daughters. She credits her family and friends with providing the emotional support that was much needed during her unexpected journey.

A PAP test is the only way to diagnose cervical cancer early when it is most treatable. Talk with your doctor about when to get this important test.

Even though she didn't have an appetite during radiation treatments, cooking for her family gave Tamika a sense of peace. She still loves to cook and continues to prepare for meals for her loved ones.

To find out what you can do to lower your risk of cervical cancer and other diseases, visit www.thewordcervix.wustl.edu.

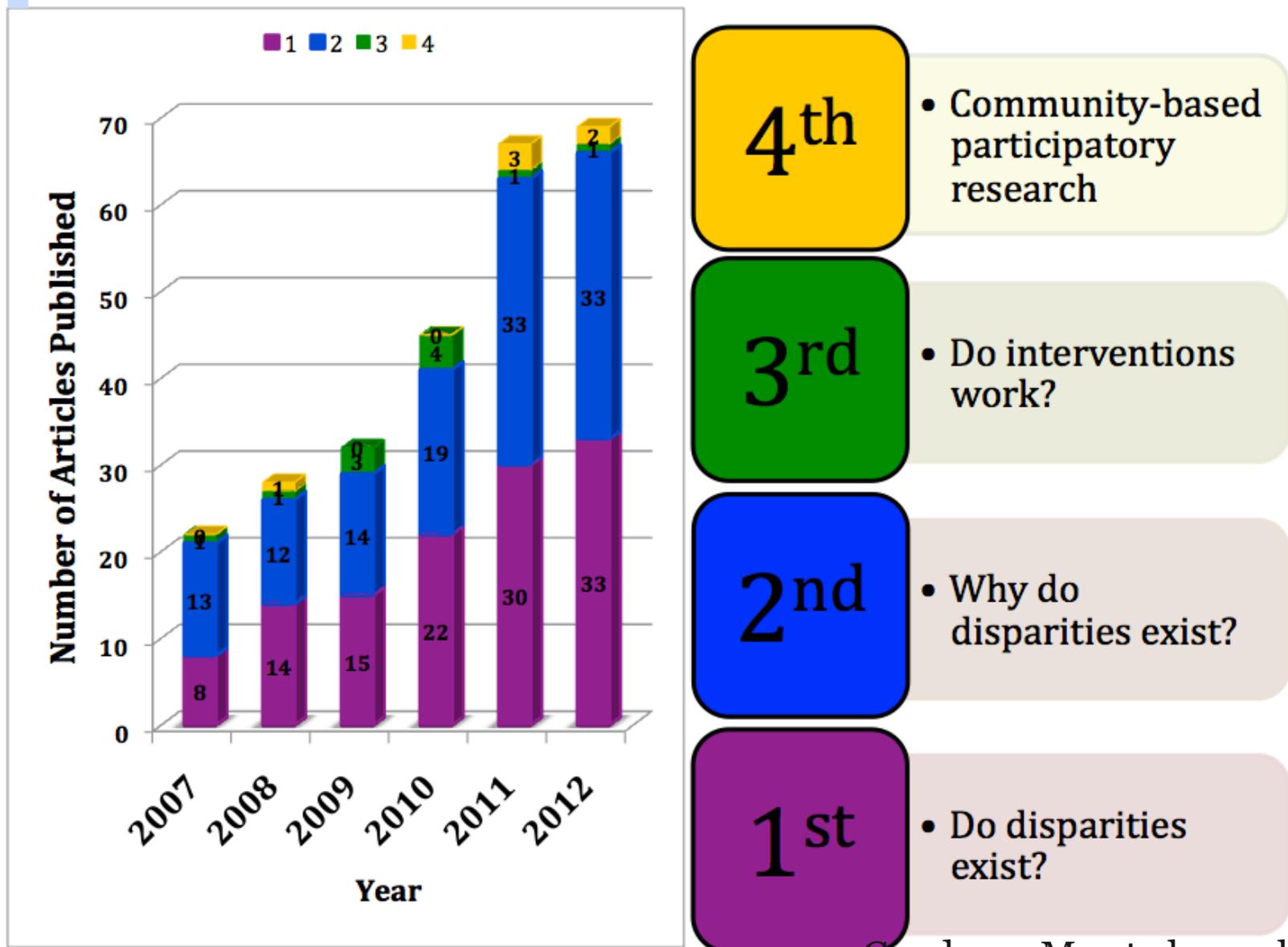
PECCED at the Siteman Cancer Center is a cancer education, prevention, research and training.

Visit www.siteman.wustl.edu.

BARNES-JEWISH
HOSPITAL

Washington University
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Figure 2: Generations of health disparities research in the published literature by year

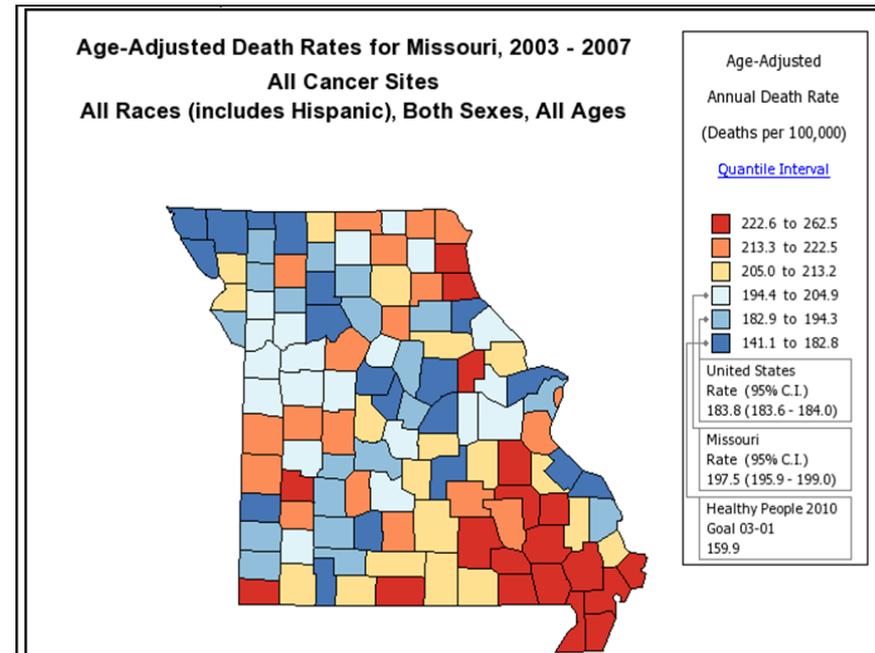


Goodman M., et al unpublished

Looking Ahead: More Work To Be Done in Missouri

- Half of all cancer could be prevented
- Major challenge of high cancer mortality in MO rural counties
- Moving lessons learned in St. Louis to broader application in the Bootheel and other rural areas

Then to Southern Illinois, and perhaps down river to the rest of the delta





**Epidemiologic
Evidence**

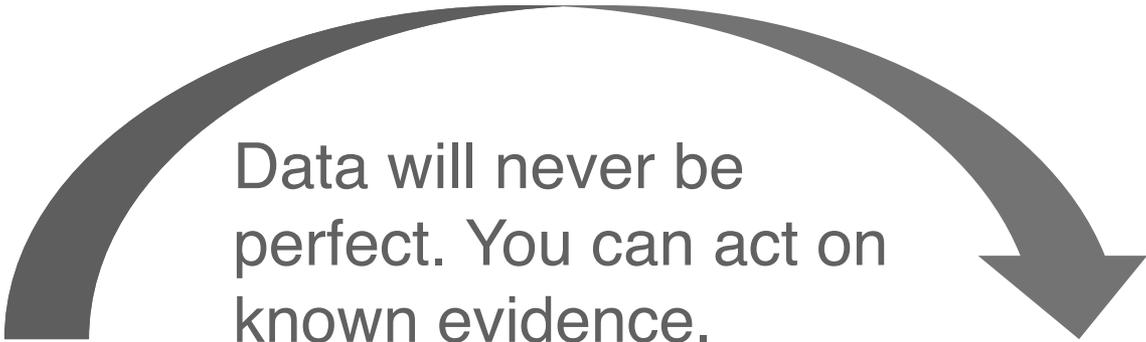
**Real World
Application**

When and How
Do We Bridge the
Gap
Between Data and
Application?



**Epidemiologic
Evidence**

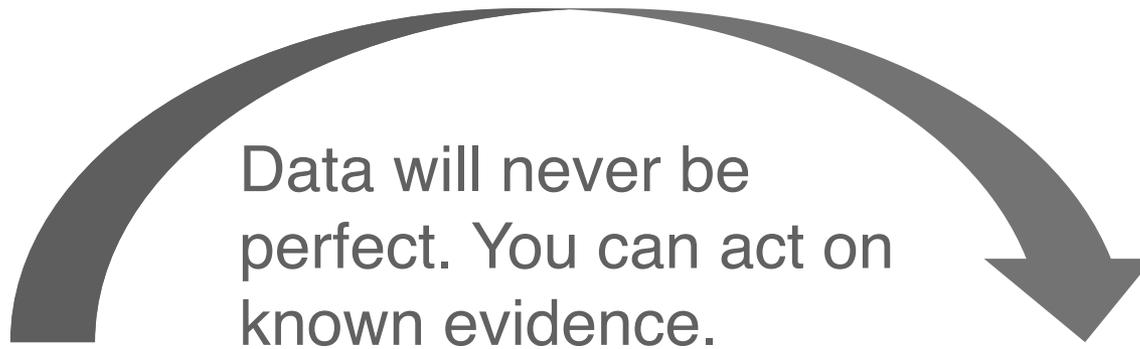
**Real World
Application**



Data will never be perfect. You can act on known evidence.

**Epidemiologic
Evidence**

**Real World
Application**

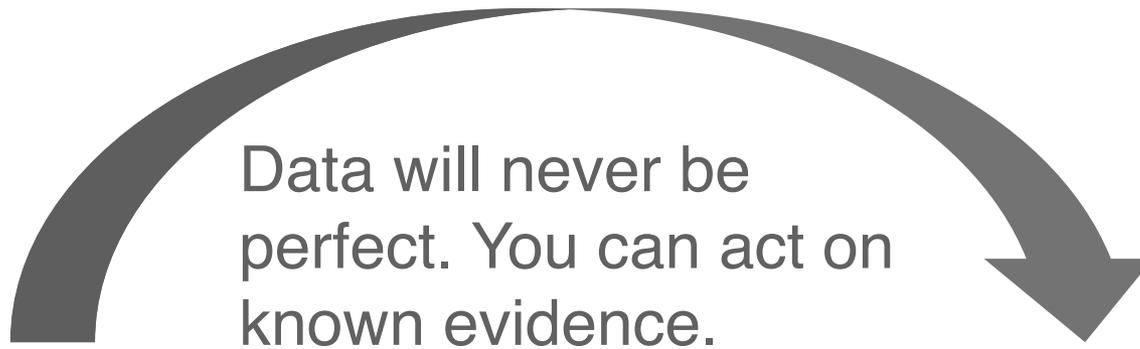


Data will never be perfect. You can act on known evidence.

Create cross-discipline teams

Epidemiologic Evidence

Real World Application



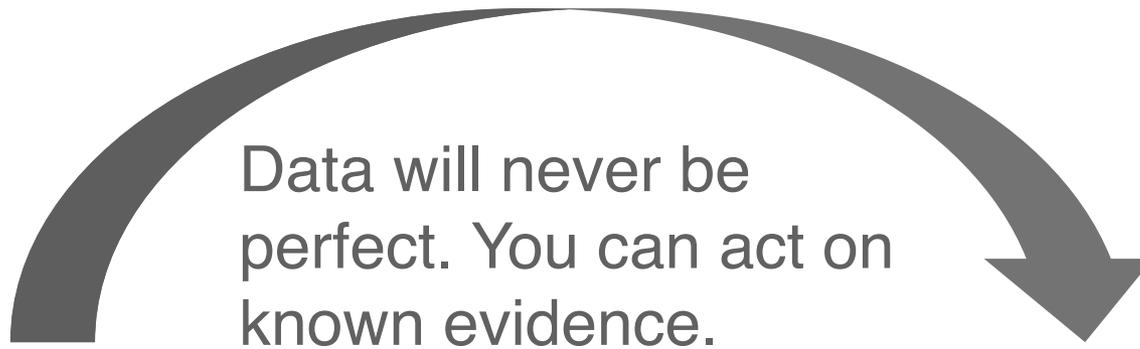
Data will never be perfect. You can act on known evidence.

Epidemiologic Evidence

Create cross-discipline teams

Real World Application

Think about end user, even during manuscript development



Data will never be perfect. You can act on known evidence.

Epidemiologic Evidence

Create cross-discipline teams

Real World Application

Think about end user, even during manuscript development

Use varied modalities

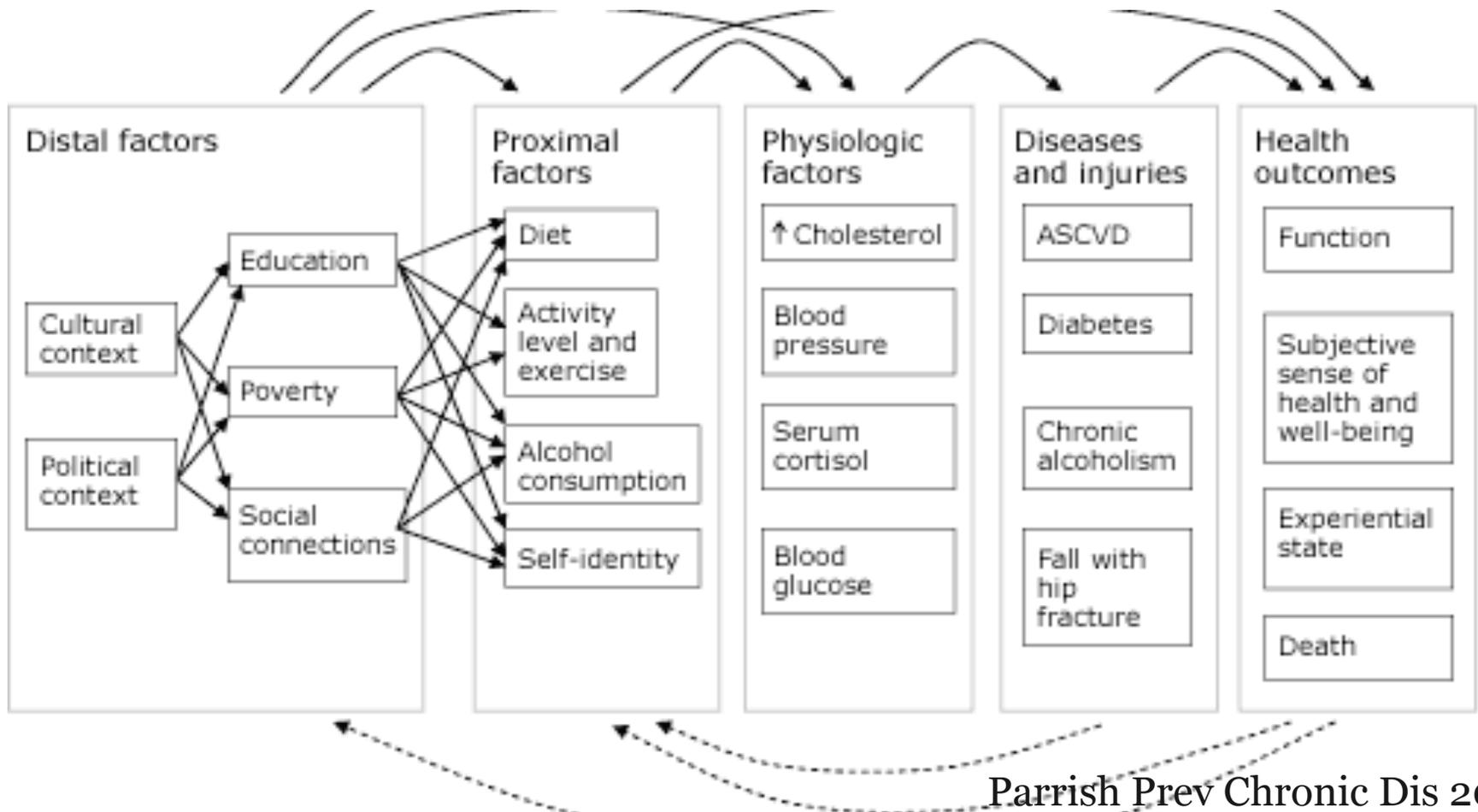
Implementation science

A goal of implementation science for health is to identify the factors, processes, and methods that can successfully embed evidence based interventions in policy and practice to achieve population health.

Population health = “the health outcomes of a group of individuals, including the distributions of such outcomes within the groups”

- Kindig D, Stoddart G. 2003. AJPH

Measuring outcomes for population health



Parrish Prev Chronic Dis 2010

Measures?

Summary measures of population health

Health-adjusted life expectancy at birth
(y)

Quality-adjusted life expectancy

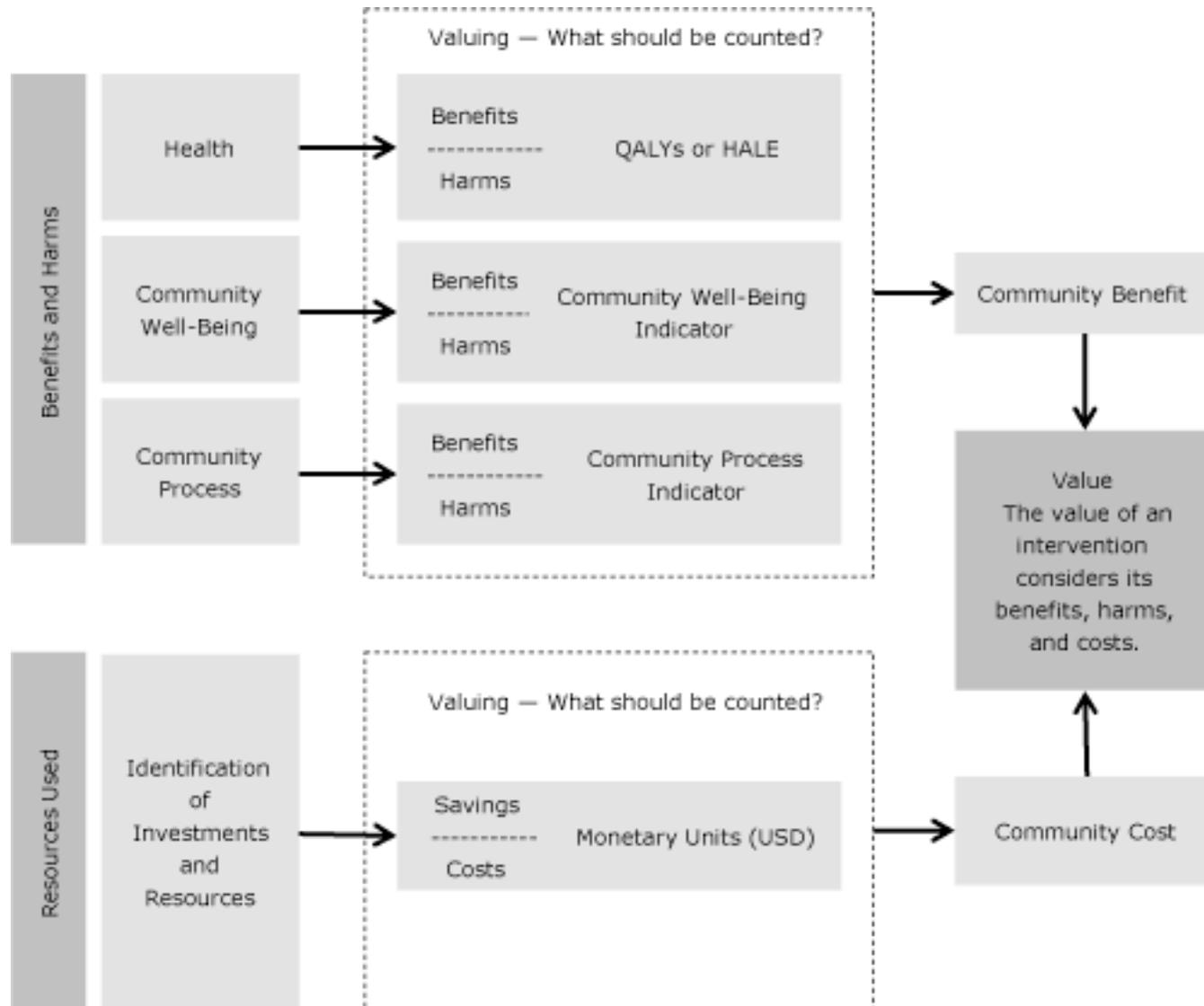
Years of healthy life

Healthy life years

Disability-adjusted life years

Quality-adjusted life years

IOM report on value of community based prevention 2013



Using epidemiologic data to guide and sustaining social change

- Common agenda
- Shared measurement system
- Mutually reinforcing activities
- Continuous communication and
- A backbone support organization

Kania et al 2011 Stanford Social Innovation Review

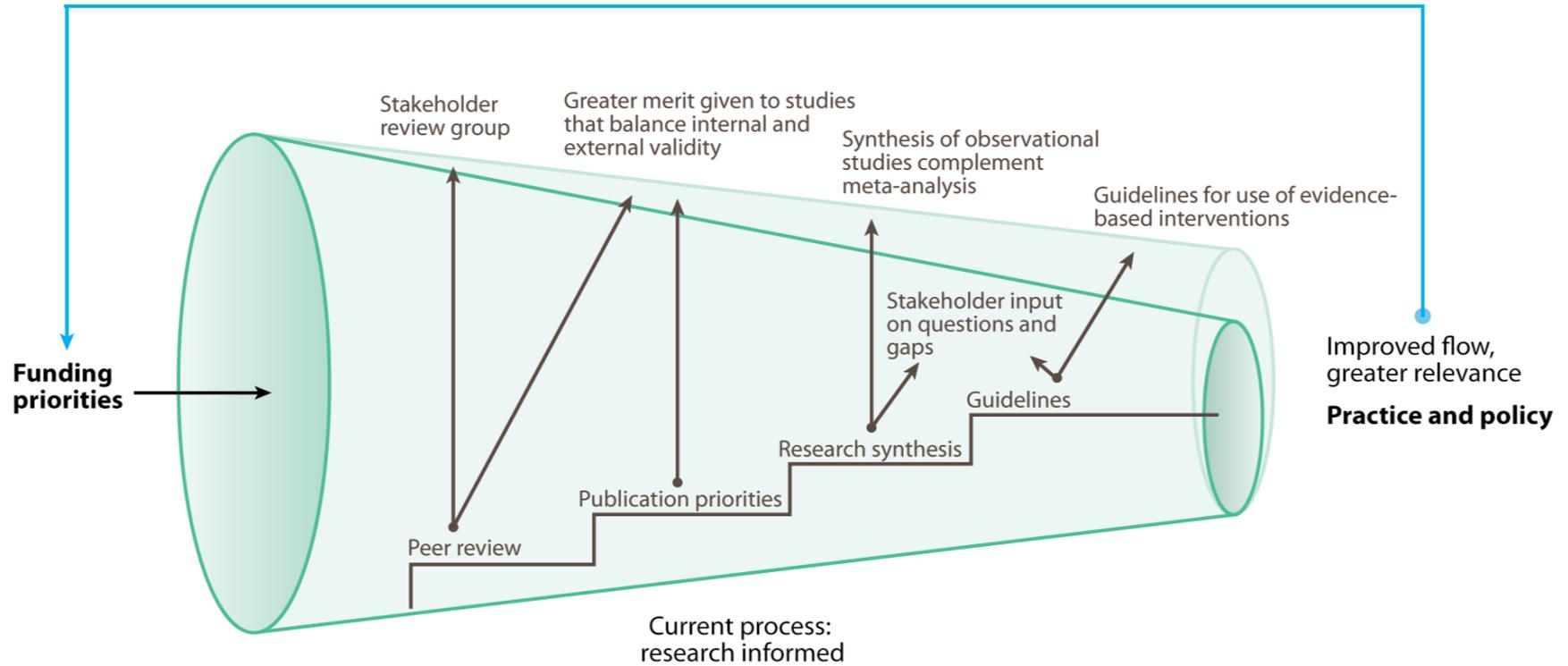
Why are we not preventing cancer now?

Multiple barriers:

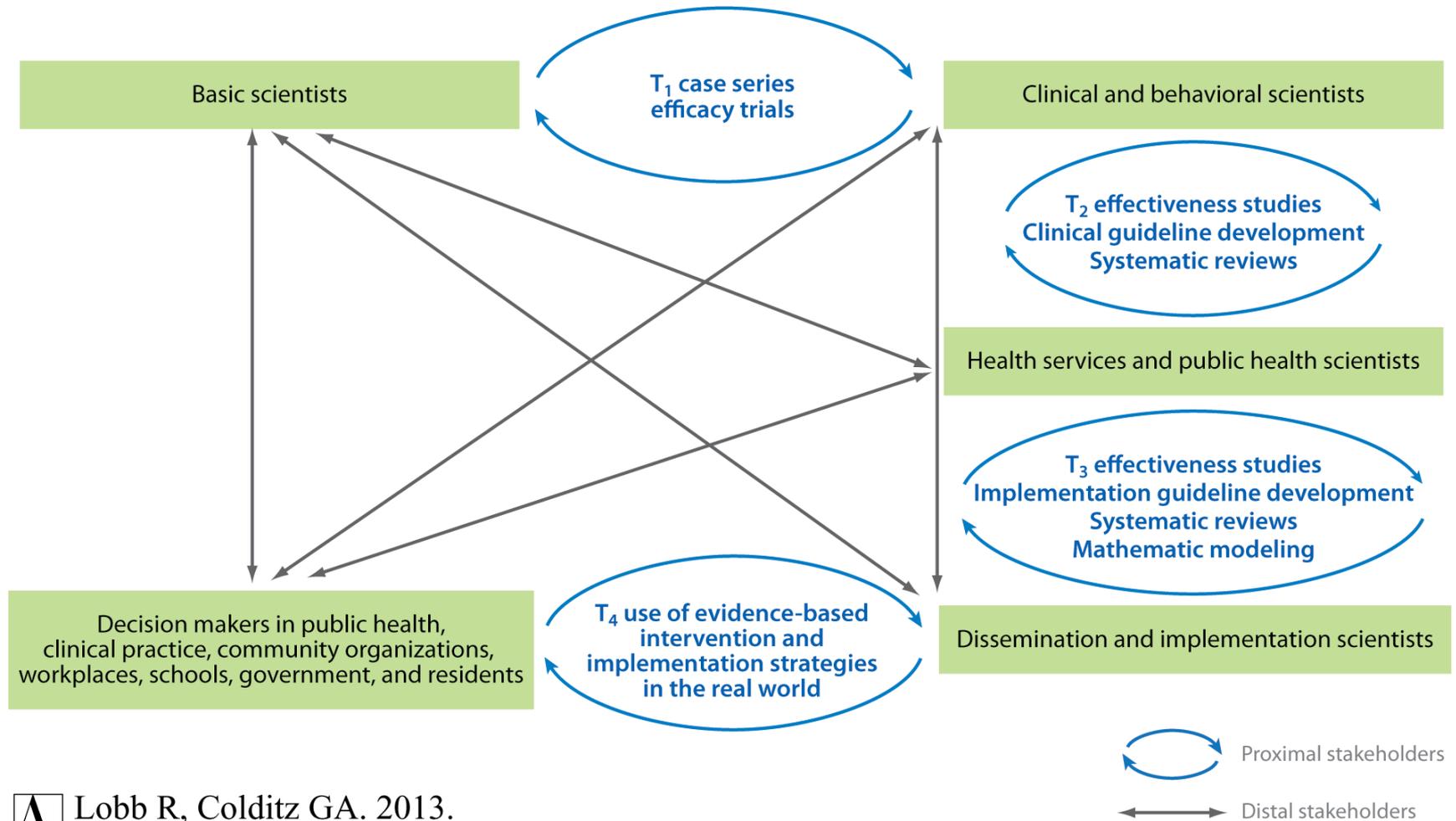
- Skepticism that cancer can be prevented
- Short term focus of cancer research
- Interventions deployed too late in life
- Research focused on treatment not prevention
- Debates among scientists
- Societal factors ignored
- Lack of transdisciplinary training
- Complexity of implementation

Colditz et al Sci Transl Med 2012: March 28

Proposed process:
increase stakeholder input and reporting on external validity



AR Lobb R, Colditz GA. 2013.
Annu. Rev. Public Health. 34:235–51

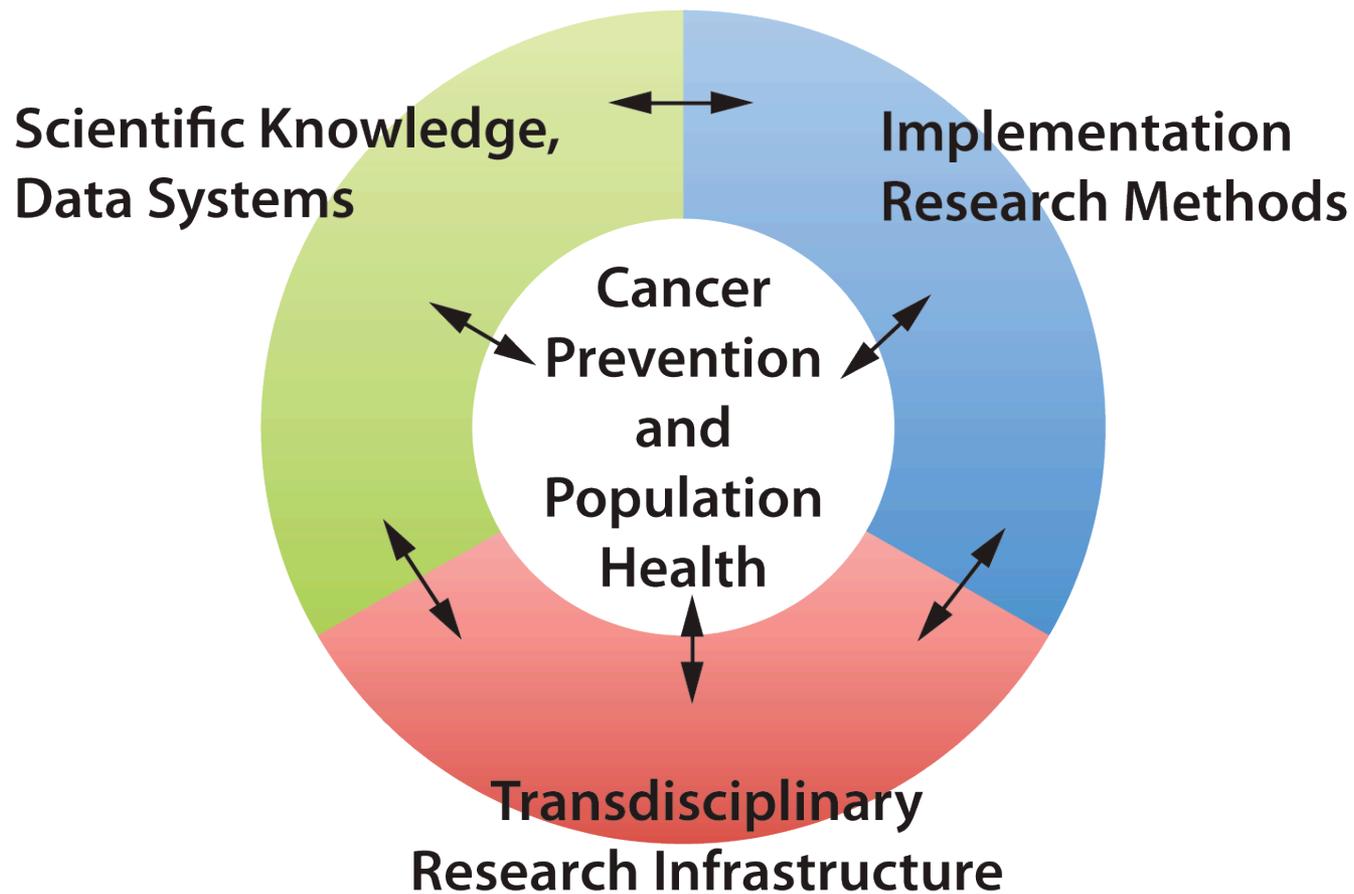


AR Lobb R, Colditz GA. 2013.
 Annu. Rev. Public Health. 34:235–51

Very long term prevention action:

“In the beginning of every enterprise we should know, as distinctly as possible, what we propose to do, and the means of doing it... We desire to lay the foundation and to mature some parts of the plan. Those who come after us must finish the work.”

William Greenleaf Eliot, co-founder
Washington University in St Louis
1854



Graham Colditz, MD, DrPH
Niess-Gain Professor of Surgery
Chief, Division of Public Health Sciences, Dept. of Surgery
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660 South Euclid
St. Louis, MO 63110
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The innovation

Relative advantage
 Compatibility
 Low complexity
 Triability
 Observability
 Potential for reinvention
 Fuzzy boundaries
 Risk
 Task issues
 Nature of knowledge required (tacit/explicit)
 Technical support

Communication and influence

Diffusion (informal, unplanned)
 ↑ Social networks
 Homophily
 Peer opinion
 Marketing
 Expert opinion
 Champions
 Boundary spanners
 Change agents
 ↓
 Dissemination (formal, planned)

Outer context

Sociopolitical climate
 Incentives and mandates
 Interorganizational norm-setting and networks
 Environmental stability

System antecedents for innovation

Structure	Absorptive capacity for new knowledge	Receptive context for change
Size/maturity	Preexisting knowledge/skills base	Leadership and vision
Formalization	Ability to find, interpret, recodify, and integrate new knowledge	Good managerial relations
Differentiation	Enablement of knowledge sharing via internal and external networks	Risk-taking climate
Decentralization		Clear goals and priorities
Stack resources		High-quality data capture

System readiness

Tension for change
 Innovation-system fit
 Power balances (supporters vs. opponents)
 Assessment of implications
 Dedicated time/resources
 Monitoring and feedback

Adopter

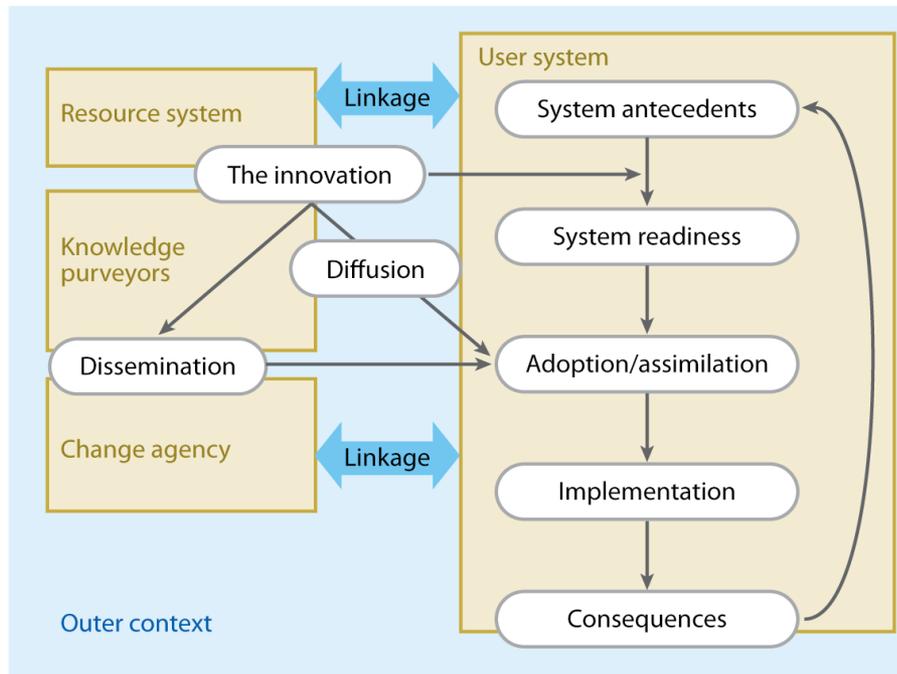
Needs
 Motivation
 Values and goals
 Skills
 Learning style
 Social networks

Assimilation

Complex, nonlinear process
 "Soft periphery" elements

Implementation process

Decision making devolved to frontline teams
 Hands-on approach by leaders and managers
 Human resource issues, especially training
 Dedicated resources
 Internal communication
 External collaboration
 Reinvention/development
 Feedback on progress



Linkage

Design stage	Implementation stage
Size/maturity	Communication and information
Formalization	User orientation
Differentiation	Product augmentation, e.g., technical help
Decentralization	Project management support
Stack resources	

AR Lobb R, Colditz GA. 2013. Annu. Rev. Public Health. 34:235–51