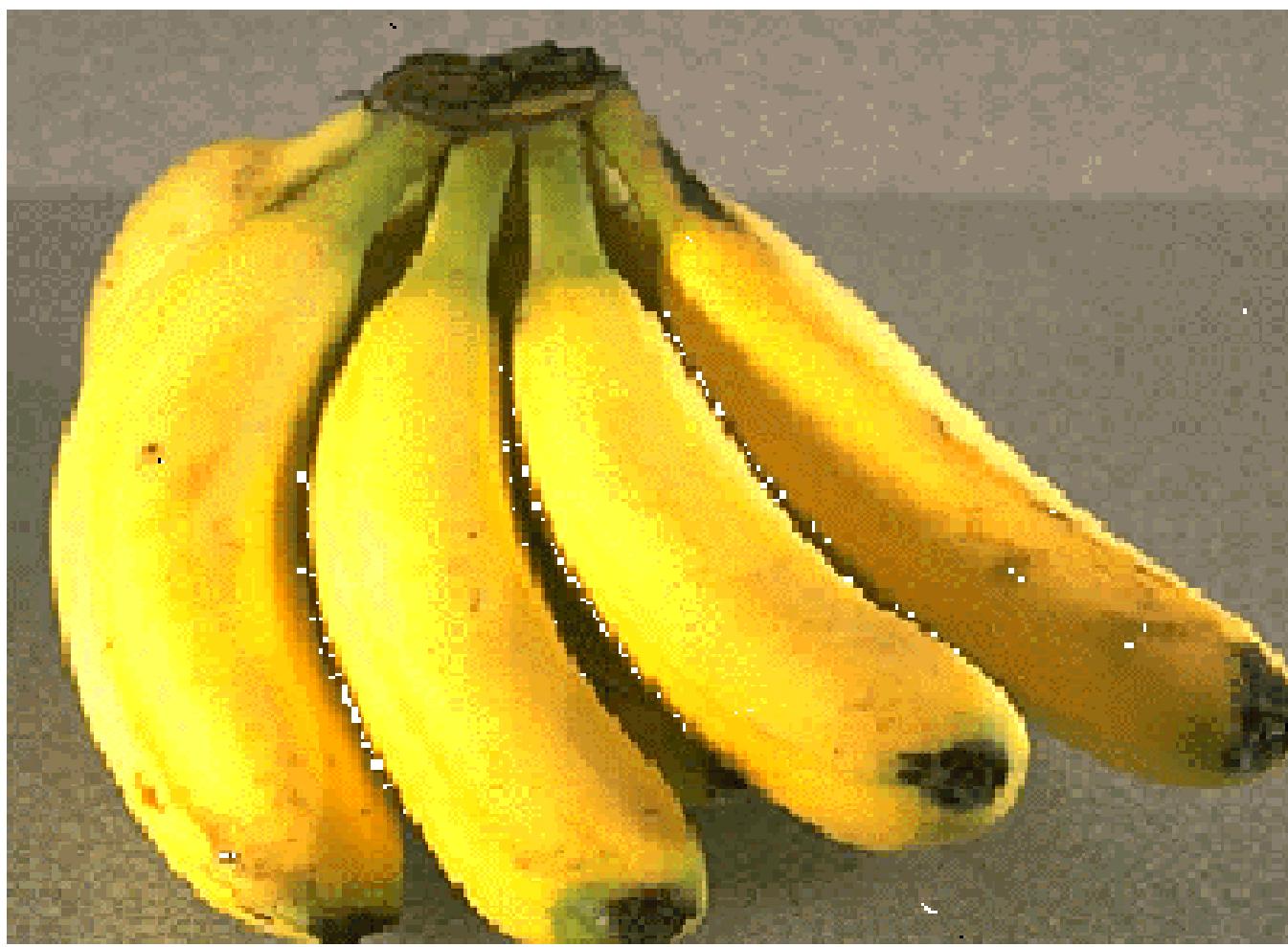


Importance of enhancing access to researchers to registry data for national studies

**Prepared by: Elizabeth Ward, PhD
Ahmedin Jemal, DVM, PhD**

Example studies

- Occupational bladder cancer
- Relationship between incidence of distant stage prostate cancer and prostate cancer mortality
- Sister Study of environment and breast cancer
- ACS Studies
 - CPS Studies
 - SCS Studies



Occupational bladder cancer

- Historically, exposure to certain aromatic amines has been associated with very high risk of bladder cancer
- With improved treatment and survival, occupational bladder cancer can't be studied using mortality data only
- There are several examples of occupational studies where incidence data showed high risk and mortality data showed no risk

Health hazard evaluation

- Request to NIOSH to investigate possible excess risk of bladder cancer at a rubber chemicals manufacturing plant in New York State (1988)
- Union was aware of eight cases, suspected they resulted from exposure to the aromatic amines aniline and o-toluidine

Study design and methods

- Retrospective cohort study, 1,749 workers employed 1957-1988
- Study population was divided into three groups
 - Definitely exposed to o-toluidine and aniline
 - Possibly exposed to o-toluidine and aniline
 - Unlikely to be exposed

Study design and methods (cont'd)

- Identification and confirmation of cases
- Union/company (confirmed by review of medical records)
- Computer matching of personnel records with New York State cancer registry
- Comparison group – incidence rate of bladder cancer in New York (excluding New York City)

Observed and expected numbers of bladder cancers among chemical workers by exposure group

Probability of exposure to o-toluidine and	No. of persons	Bladder Cancer		SIR	90% CI
		Observed	Expected		
Definitely exposed	708	7	1.08	6.48	3.04 - 12.2
Possibly exposed	288	4	1.09	3.66	1.25 - 8.37
Probably unexposed	753	2	1.43	1.39	0.25 - 4.39
Total	1,749	13	3.61	3.6	2.13 - 5.73

Trends in bladder cancer risk by duration of employment in exposed department

Duration of exposure, y	No. of persons*	Bladder Cancer		SIR**	90% CI
		Observed	Expected		
< 5	584	0	0.75	-	-
5 - 9.99	51	1	0.11	8.8	0.45 - 41.7
10+	73	6	0.22	27.2	11.8 - 53.7

*No. of persons whose duration of employment (as of the study end date, the date of diagnosis, or date of death) was in the category stated.

**Directly standardized rate ratios were 1.00, 3.31, and 16.0 (with low exposure group as referent). Test for linear trend was highly significant ($P < .001$).

Interpretation/impact

- Large excess of bladder cancer most likely due to o-toluidine; role of aniline and low-level historical contaminants could not be completely ruled out
- Recommendations made to workplace to reduce exposure
- Hazard Alert issued by NIOSH
- o-toluidine upgraded by IARC from Group 2B (possible human carcinogen) to 2A (probable human carcinogen)

Importance of linking with multiple registries for study update

- None of the cases in the original study were identified from death certificates
- As of 1990, only 28% of former workers had left the state of New York; now estimated to be over 50%
- Matching with registries will allow more complete ascertainment of cases and avoid analytical problem of deciding when subjects whose most recent address is outside of New York should be considered lost to follow up

Relationship between incidence of
distant stage prostate cancer and
prostate cancer mortality
(ecologic study)

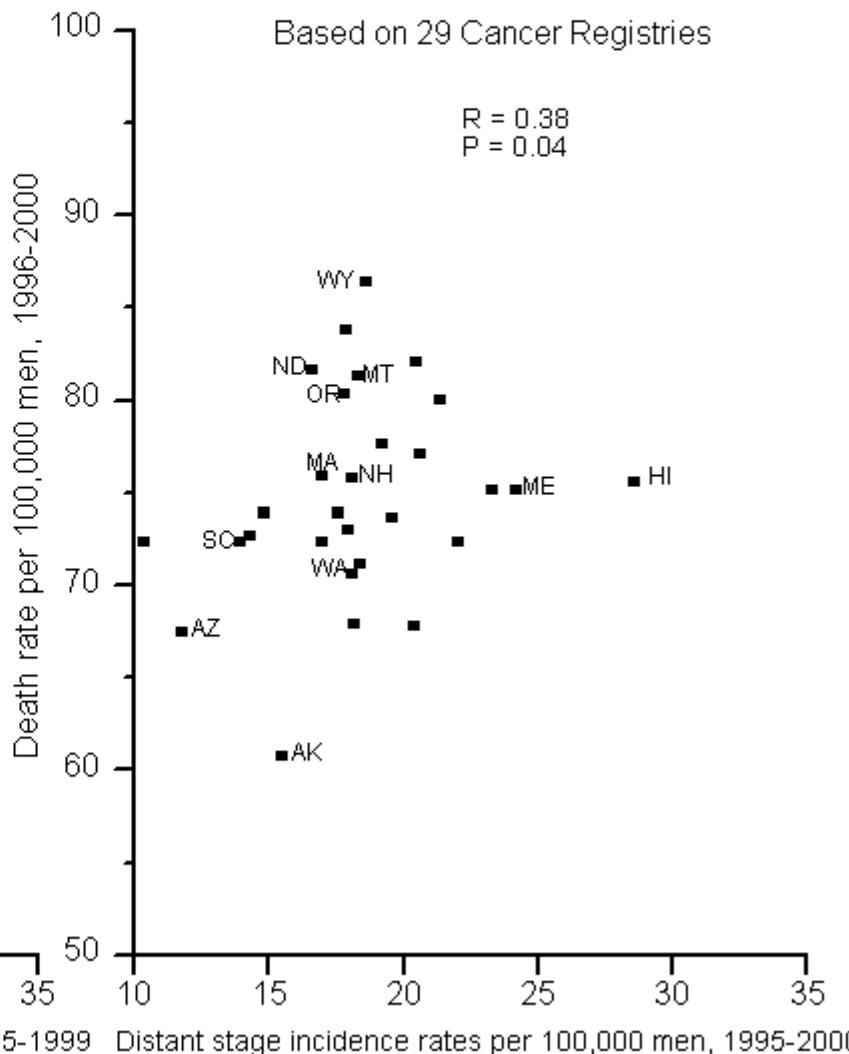
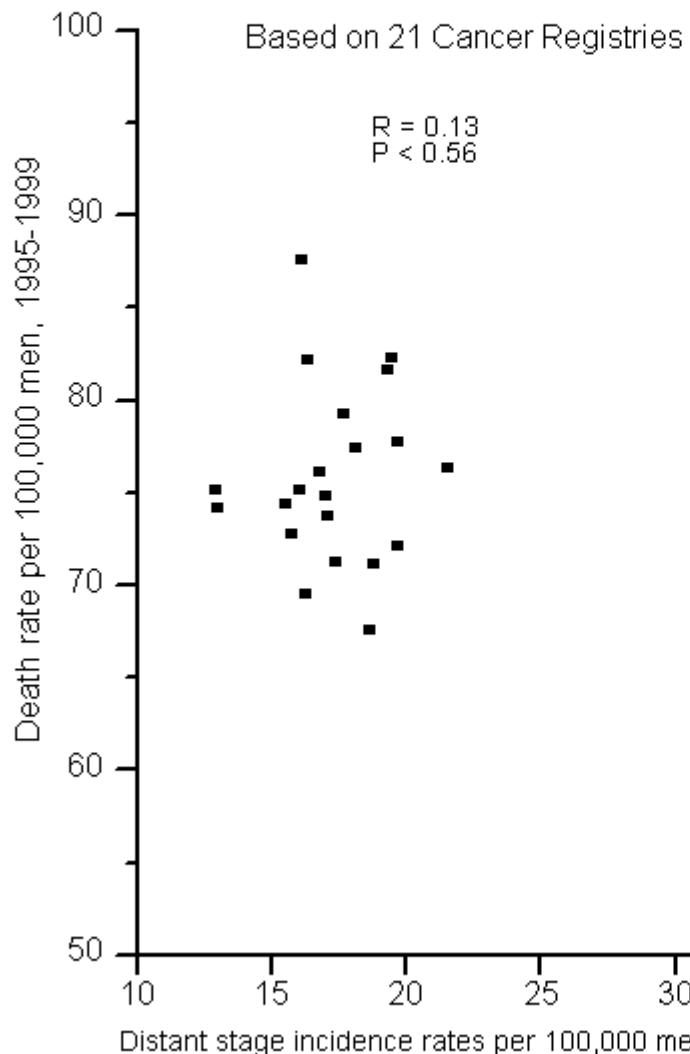
First analysis

- 1995-1999 NAACCR data file; participation from 21 cancer registries
- Request made to NAACCR for updated 1996-2000 file because significant corrections had been made to population denominators; new requests sent to registries

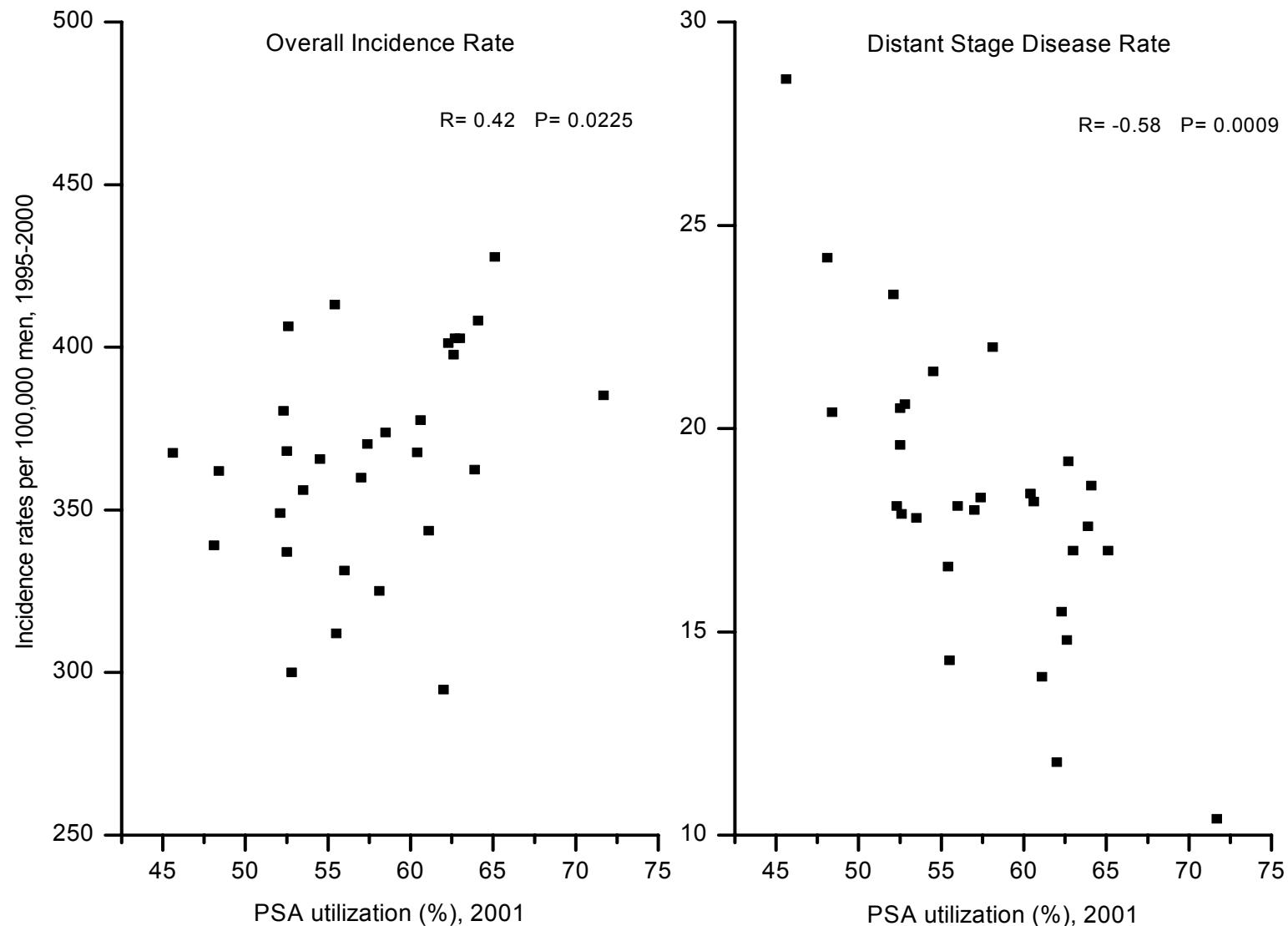
Second analysis:

- 1996-2000 NAACCR data file; participation from 29 geographical areas (28 states and one metropolitan area)

The Influence of number of cancer registries on the relationship between distant stage incidence and death rates from prostate cancer among white men age 40 years and older



Relationship of PSA utilization and overall and distant stage incidence of prostate cancer among white men in selected states



Summary: Importance of including as many registries as possible in ecologic analyses

- Inclusion of a larger number of registries, with a wider range of incidence and mortality, revealed important relationships that could not be detected in the more limited dataset
- As coverage of the US population with high-quality cancer registries becomes more complete, analysis of cancer risk factors and incidence at the state and county level will become a powerful tool to investigate cancer etiology and medical care factors



The Sister Study

Environmental and Genetic Risk Factors for
Breast Cancer

Dale P. Sandler, Clarice R. Weinberg

National Institute of Environmental Health Sciences,
National Institutes of Health, DHHS



Environmental Factors and Breast Cancer

- 180,000 to 200,000 new invasive cases a year; ~40,000 deaths
- Public interest in environmental risk factors
 - evidence not strong, but limited research
- Epidemiologic support from ecologic, case-control, and cohort studies
 - suggestive but inconsistent
- Laboratory studies - risk from chemicals
 - not studied in women



The Sister Study

. . . to study genetic, biologic and environmental risk factors for breast cancer in an at risk, motivated cohort.



The Basic Idea

- Prospective is better
- Need a large cohort and many years of follow-up
- Sisters of women with breast cancer at higher risk
 - more will develop breast cancer
 - more will have genes associated with breast cancer
 - more will have relevant exposures
 - cohort could be smaller
- Sisters motivated



The Cohort

- 50,000 sisters of women who have had breast cancer
- Follow participants for development of breast cancer and other health changes

Steps in Study

Enrollment

Home Visit

Telephone Interview

Follow up questionnaires

Banking of specimens

How collaboration with registries could enhance Sister Study

- Mail information about study to women with breast cancer
- Identifying cancers in women lost to follow-up
- Confirming completeness of cancer reporting
- Diagnostic confirmation/detail for reported cases

ACS: CPS Studies

- CPS-II, launched in 1982, enrolled about 1.2 million volunteers, who answered a one-time, four-page questionnaire. Mortality is followed through linkage with the National Death Index
- Over 100 publications have resulted from this study, addressing a broad range of factors that may increase or reduce cancer risk

CPS-II Nutrition Cohort

- Established in 1992-1993 as a subgroup of the larger CPS-II cohort
- Primary objectives:
 - Obtain detailed information on dietary and other exposures and periodically update this information
 - Identify incident cancers as well as deaths

Nutrition Cohort selection

- Volunteers solicited from CPS-II study participants who resided in 21 states with population-based cancer registries reported to ascertain at least 90% of incident cancer cases
- At the conclusion of recruitment efforts, usable baseline questionnaires had been received from 86,406 men and 97,788 women

Cancer incidence follow-up

- Request information about incident cancers in periodic questionnaires
- Identify cancer on death certificates
- Written release for medical records
- Attempt to match all identified cancer cases with state registry to confirm

Limitations of registry collaborations in CPS-II Nutrition Cohort

- Requests to registries for matching of results from 1999 survey were not answered by five of the 21 registries
- Would like to be able to link records of all cohort members to state registries in order to identify cancers not reported and cancers among subjects lost to follow-up, but concern about algorithms used for matching and variability in matching algorithms between registries

ACS studies of cancer survivors

SCS-I

- Nationwide survey focusing on quality of life of those diagnosed with common cancers
- Longitudinal study with questionnaires at two, five, and 10 years after diagnosis
- First wave: participation by 10 state registries, approximately 5,000 survivors
- Second wave: additional states being recruited

Barriers to research

- In states requiring active physician consent, consent levels have only been about 60%
- Some registries could not identify patients quickly enough for the two-year interview; therefore rapid case ascertainment had to be implemented, requiring IRB review in each hospital

SCS-II

- Nationwide cross-sectional survey, focusing on quality of life of those diagnosed with six common cancers
- Survivors sampled two, five, and 10 years after diagnosis
- SCS-II piloted in two states (New Jersey and Iowa)
- The full study is being conducted in 16 states nationwide, and will include over 10,000 cancer survivors

Unleashing the power of national studies using cancer incidence data: possible roles for NAACCR

- Coordination of IRB reviews to assist researchers in navigating the IRB processes of multiple registries
- For states whose legal requirements for research are similar, perhaps coordinate development of a common application

Unleashing the power of national studies using cancer incidence data: possible roles for NAACCR (cont'd)

- Perhaps develop guidance documents for state IRBs on criteria for evaluating different types of studies using registry data (i.e., ecologic analysis, data linkage, patient contact)
- Development of a standardized file format for registries to use when linking with research files
- Development and testing of matching algorithms for registries to use when linking with research files

Thank you

