Mapping with cancer, demographic, and behavioral risk data

Chester Schmaltz, PhD
Dept. of Health Management & Informatics, School of Medicine
Missouri Cancer Registry and Research Center (MCR-ARC)
University of Missouri – Columbia
Coauthors

- Jeannette Jackson-Thompson, MSPH, PhD
  - Director, MCR-ARC
  - Research Associate Professor, HMI

- Iris Zachary, PhD, MSIT, CTR
  - Research Assistant Professor, HMI
The capability of showing where the burden of cancer is high, and especially to put it into context with:

- demographic
- socioeconomic
- behavioral risks

can provide an important part of disseminating data to the public.
MCR-ARC previously disseminated data to the public as:

- Tables via the Missouri Department of Health and Senior Services' (DHSS) interactive MICA website
- Interactive maps of selected cancers types (without additional contextual indicators).
To produce a better means of disseminating cancer data to the public, an interactive map incorporating data on a small number of cancer types and possibly-related indicators from other data sources was produced.
Background

Correlation coefficient (r) = 0.51  >>  r-squared = 0.26  >>  Regression Equation: y = 1.46x + 134.37
Background
The interactive maps created in 2014 were improved

- More types of cancer
- Percent early-stage ➔ late-stage
- Stat. tests comparing to statewide
- National data for comparison
- Usability issues
Cancer incidence & survival:
- MCR

Mortality (cancer & other):
- NCHS

Behavior Risk Factor Data:
- MO-DHSS County-Level Study 2011

SES & Demographics: Census

RUCC & Topology: USDA
The cancer types of interest were:

- All cancers
- (Female) breast
  - 3 age groups
- Lung & bronchus
- Colorectal
  - 2 age groups
- Urinary System
- Prostate
- Lymphoma
- Leukemia
- Pancreas
Inci. & Mort. Indicators

- Cancer incidence from MCR
- Cancer (& other) mortality from NCHS

Indicators:
- Age-adjusted rates
- Crude rates
- Percent late stage
- Ratio of observed-to-expected cases based on age, race, & sex
  - Expected from SEER (inci.), National (mort.)
3 time-periods for incidence & mortality

Incidence:
- 5 most recent years (2008-2012)
- 10 most recent years (2003-2012)
- 15 most recent years (1998-2012)

Mortality:
- 5 most recent (2008-2012)
- 11 most recent (2002-2012)
- 14 most recent (1999-2012)
Breast cancer survival indicator:
- 5-year cause-specific survival rates
  - Percentage who survived breast cancer 5 years after diagnosis
- SEER rates shown for reference
Suppression

- Suppression thresholds:
  - 5 for incidence
  - 10 for mortality
  - 25 for survival
- Year-indicator combinations with 6+ counties suppressed are not mapped
Behavioral Risks

- Behavioral risk indicators:
  - Cancer screening
  - Smoking
  - Obesity
  - Lack of healthcare coverage
- Prevalence & Observed-to-Expected Ratios
- Missouri’s County-Level Study
  - Similar to BRFSS, but larger
Behavioral Risks

- Expected counts from national BRFSS
- Some BRFSS questions on a rotating basis, some worded differently
  - 2011 when available,
  - 2012 as the 2\textsuperscript{nd} choice
- Some risks lack O/E’s if
  - Not available nationally either year
  - Question is incomparable
Demographic/socioeconomic indicators:
- Age
- Education
- Employment
- Poverty
- Income
- Crowding
- Race/ethnicity
- Mobility
- Foreign born / language isolation
Miscellaneous indicators:
- Rural-Urban Continuum Code,
- County Topology
  - Farming-dependent, mining-dependent, etc.
- Health Service Areas
Additionally, the locations of general acute hospitals and incorporated cities are shown.
Indicators

- Cancer Incidence, Age-Adjusted Rates
- Cancer Incidence, Crude Rates
- Cancer Incidence, SIR from national
- Cancer Incidence, Percent Late Stage
- Cancer Survival, 5-Year Cause-Specific Survival (2004-2010)
- Cancer Mortality, Age-Adjusted Rates
- Cancer Mortality, Crude Rates
- Cancer Mortality, SMR from national
- All & Other Mortality, Age-Adjusted Rates
- All & Other Mortality, Crude Rates
- All & Other Mortality, SMR from national
- Risks & Behaviors, Age-Adjusted Prevalences (2011)
- Risks & Behaviors, Crude Prevalences (2011)
- Risks & Behaviors, O/E from national (2011)
- SES (2008-2012)
- Demographics (2008-2012)
- Miscellaneous County Attributes
Area Health Profile
Rates, %-late, survival
- Compared to state for statistical significance testing
- National/SEER data shown for comparison
SIR, SMR, O/E
- Compared to 1 for statistical significance testing
- Missouri statewide shown for comparison
Cancer, Risks & Demographics Maps

- **Double Map**
  - [https://goo.gl/c1I62c](https://goo.gl/c1I62c)

- **Area Health Profile**
  - [https://goo.gl/ISs8i0](https://goo.gl/ISs8i0)

- **MCR-ARC homepage:**
  - [http://mcr.umh.edu](http://mcr.umh.edu)
Cancer, Risks & Demographics Maps

The Missouri Cancer Registry and Research Center (MCR-ARC) is located on the fourth floor of Clem Hill on the campus of the University of Missouri-Columbia and is housed within the Department of Health Management and Informatics in the School of Medicine. The MCR-ARC is a collaborative partnership between the Missouri Department of Health and Senior Services (DHSS) and the University of Missouri. Since 1995, the MCR-ARC has received financial support from the National Program of Cancer Registries (NPCR) of the Centers for Disease Control and Prevention (CDC).

About our website

The Missouri Cancer Registry and Research Center’s website was created to aid various entities who are required by statute and regulations (POMs 158 060; 158 090; 158 110; 158 092; and 19 CR 71 04.110) to submit cancer information to the state central cancer registry.

Some of the contents include:

- The MCR-ARC Biomedical Code Manual for hospital abstraction resources for hospital registrars, such as required surgery codes, Missouri county codes, etc. Reporting form for long-term care facilities and other non-hospital facilities links to sites frequently utilized by cancer registrars information about and links to the Missouri state cancer-reporting legislation
- HIPAA information

For persons less familiar with MCR-ARC or new to cancer reporting, we’ve included a web site search tool located on the upper left corner of all pages. This search (by detailed) is linked to the contents of the MCR-ARC website.

This project was supported in part by a cooperative agreement between the Centers for Disease Control and Prevention (CDC) and the Missouri Department of Health and Senior Services (DHSS) (U300D100324:402) and a memorandum of understanding between DHSS and the University of Missouri.
Cancer, Risks & Demographics Maps

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For questions or information not found on this website, please call 573-882-7775
Cancer, Risks & Demographics Maps

Missouri Cancer Registry and Research Center

WebPlus Login
File Uploader/Video
Cancer Reporting
Hospital
Hosp-Hospital WebPlus
Abstracting Resources
Audits
Educations/Training
Cancer Incidence
Data
Links
Meaningful Use
Presentations
Publications
Security
Show Me Healthy Woman
Research
Access to data
Projects
InstantAtlas

MC-R ARC InstantAtlas Data

What is InstantAtlas?

InstantAtlas is an interactive, web-based mapping tool, licensed to and supported by the Missouri Cancer Registry and Research Center, which allows users to visually display data gathered from registry data.

InstantAtlas was designed to present statistics in a more user-friendly way. By using InstantAtlas, information and data are always displayed in a variety of formats (e.g., charts, tables, maps) and allows easy comparison of different areas (e.g., counties, regions, measures, years).

What Are The Benefits?

By providing easy-to-view, customizable graphics and charts, InstantAtlas allows users to
- Visually explore not only the data of a selected county or central office program, but also its trends, rankings, and other data relationships;
- Save time creating maps, charts, and graphs;
- Make the data much more interesting and easier to understand for presentation;
- Better communicate health trends and issues;
- Use visual data displays to identify public health priorities in a specific county or geographic region;
- Compare performance over time, and
- Compare performance among counties or geographic regions.

Links

As an interactive, web-based mapping tool, InstantAtlas has five versions:

- Basic/Download version for use in designing, populating and publishing Dynamic Reports
- InstantAtlas desktop has four parts:
  - Template - pre-defined views of maps, tables and charts to meet your needs "out-of-the-box";
  - Publisher - enables you to publish reports with the geographies of your choice;
  - Designer and Site Editor - enables you to create a custom look and feel for your reports;
  - Data Manager - enables you to store, manage and publish your data from Excel or Access.

InstantAtlas Desktop Overview

Cancer Incidence, Demographic, and Behavioral Risks

Data are presented both as a double map showing correlations between indicators and as an area-specific showing comprehensive overviews for user-selected counties.

- County Cancer Profiles Crosswalk with Age-adjusted Invasive Incidence Rates
- This dashboard shows the rates for age-adjusted cancer incidence by location and age.

- Age-Adjusted Invasive Cancer Incidence Rates, Over Time

- Advanced Customization series
- provides extensive range of options to include databases from local information systems, data assemblies and mapping applications that allow you to share customized statistics and indicators. InstantAtlas server enables information analysts, researchers, and data professionals to create highly interactive web solutions that combine statistics and GIS data to improve data visualization, enhance communication, and improve results in more informed decision making.
Cancer, Risks & Demographics Maps

MCR-ARC InstantAtlas Data

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- Better communicate health trends and issues;
- Use visual data displays to identify public health priorities in a specific county or geographic region;
- Gauge performance over time, and;
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- Data Manager - enables you to store, manage, and publish your data from your InstantAtlas.

Cancer Incidence, Mortality & Behavioral Risks

Data are presented both as a "bubble map" showing correlations between indicators and as an "area profile" showing comprehensive overviews for user-selected counties.

Cancer Incidence Rates by Site:
The database shows the rates for eight types of cancer for each county along with an "area profile," comparing the rates to other Missouri counties and to the 2010 US rate.

Age-Adjusted Rates of Cancer Incidence Rates: Over Time


AdvancedAnalysis server enables users and experts to explore the maps, and adds to the maps and profiles the ability to provide additional data and information to improve data visualization, enhance communication, and engage people in more informed decisions.
Conclusions

- A system capable of mapping the data interactively may provide a better means for members of the public to access cancer data since it allows them to see the data in a more intuitive means than a table.
MCR-ARC data collection activities are supported by a Cooperative Agreement between the Missouri Department of Health and Senior Services (DHSS) and the CDC and a Surveillance Contract between DHSS and the University of Missouri (#U58/DP003924–03).

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Contact Info.

Chester Schmaltz, PhD
Senior Statistician
Missouri Cancer Registry and Research Center
Health Management & Informatics
SchmaltzC@Missouri.edu

401 Clark Hall
University of Missouri, School of Medicine
Columbia MO  65211–4380

573–882–7775
http://mcr.umh.edu