

Geo-spatial tools and data resources at National Cancer Institute

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GIS Workshop

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Background

- NCI has long history of collecting, sharing, analyzing and mapping of population-based cancer data and risk factors..
- NCI also supports a portfolio of intra and extramural research concerning geo-spatial topics

Surveillance Epidemiology and End Results

<http://seer.cancer.gov>

National Center for Infectious Diseases

Arctic Investigations Program



Cancer Statistics and other geographically- based data

- **Incidence** - how many people get cancer in a given period
- **Mortality** - how many people died from cancer in a given period
- **Prevalence** - how many people have ever had a cancer and are still alive
- **Survival** – how many people stay alive within a certain period after diagnosis

Screening
Risk factors
Demographics
Cancer Knowledge

Interactive Tools



National Cancer Institute

at the National Institutes of Health | www.cancer.gov



Surveillance, Epidemiology, and End Results Program
Turning Cancer Data Into Discovery

Search SEER:

Cancer Statistics

Statistical Summaries

Interactive Tools

Publications

For Researchers

Datasets and Software

For Cancer Registrars

Coding Rules, Training and Support

About SEER

Our Registries and Research

[Home](#) > [Interactive Tools](#)[+] **Fast Stats**[State Cancer Profiles](#)[Confidence Intervals for Ranks](#)[Know Your Chances](#)[Cancer Statistics Animator](#)[Geographic Information System Portal](#)[Prevalence and Cost of Care Projections](#)[Cancer Query Systems](#)[Glossary of Statistical Terms](#)**Tools** [Email](#) [Print Page](#)

Interactive Tools

The following Web-based systems provide access to statistical tables, graphs, and maps from various data sources.

Fast Stats

Build your own tables and graphs of key SEER and US cancer statistics.

State Cancer Profiles

Dynamic maps and graphs enabling the investigation of cancer trends at the county, state, and national levels.

Confidence Intervals for Ranks (CI*Rank)

Confidence intervals for ranks of age-adjusted US incidence and mortality rates by geographic region.

Know Your Chances

Interactive risk charts to put chances of dying from cancer and other diseases in context.

Cancer Statistics Animator

Animated graphs showing cancer trends over time.

NCI Geographic Information Systems (GIS) Portal

Interactive mapping and visualization of cancer related geo-spatial data.

Cancer Prevalence and Cost of Care Projections

Estimates and projects the national cost of cancer care through the year 2020.

Cancer Query Systems

Provides more flexibility and more cancer statistics than Fast Stats but requires more input from the user.

<http://statecancerprofiles.cancer.gov>

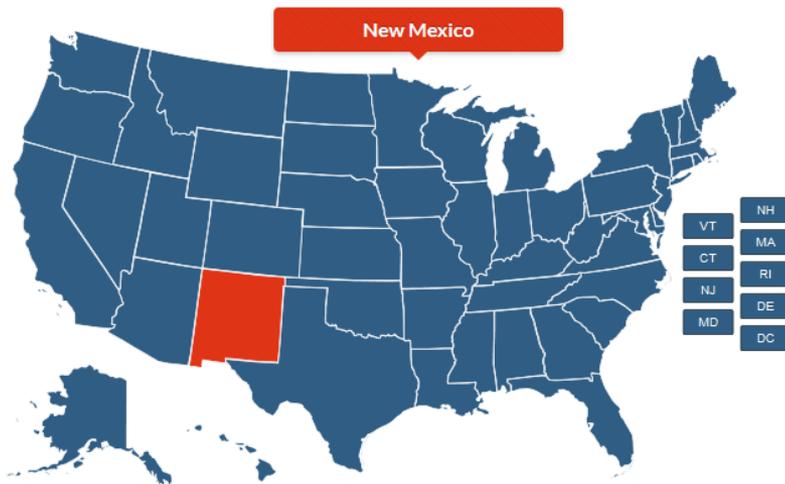
 **STATE CANCER PROFILES** 

Dynamic views of cancer statistics for prioritizing cancer control efforts in the nation, states, and counties

[Home](#) [About](#) [Help & Resources](#) [Contact](#)

Quick Profiles for States

Choose a state below to get a report of cancer statistics and other related topics.



California [View Quick Profile >](#)

Data Topics Across the Cancer Control Continuum

Cancer statistics, charts, and maps by data topic across the cancer control continuum.

-  Demographics
-  Screening & Risk Factors
-  Cancer Knowledge
-  Incidence
-  Prevalence
-  Mortality

Quick Profiles: New Mexico

▶ Choose a Different State:

State:

[View Profile](#)



Demographics



Screening & Risk Factors



Incidence



Prevalence

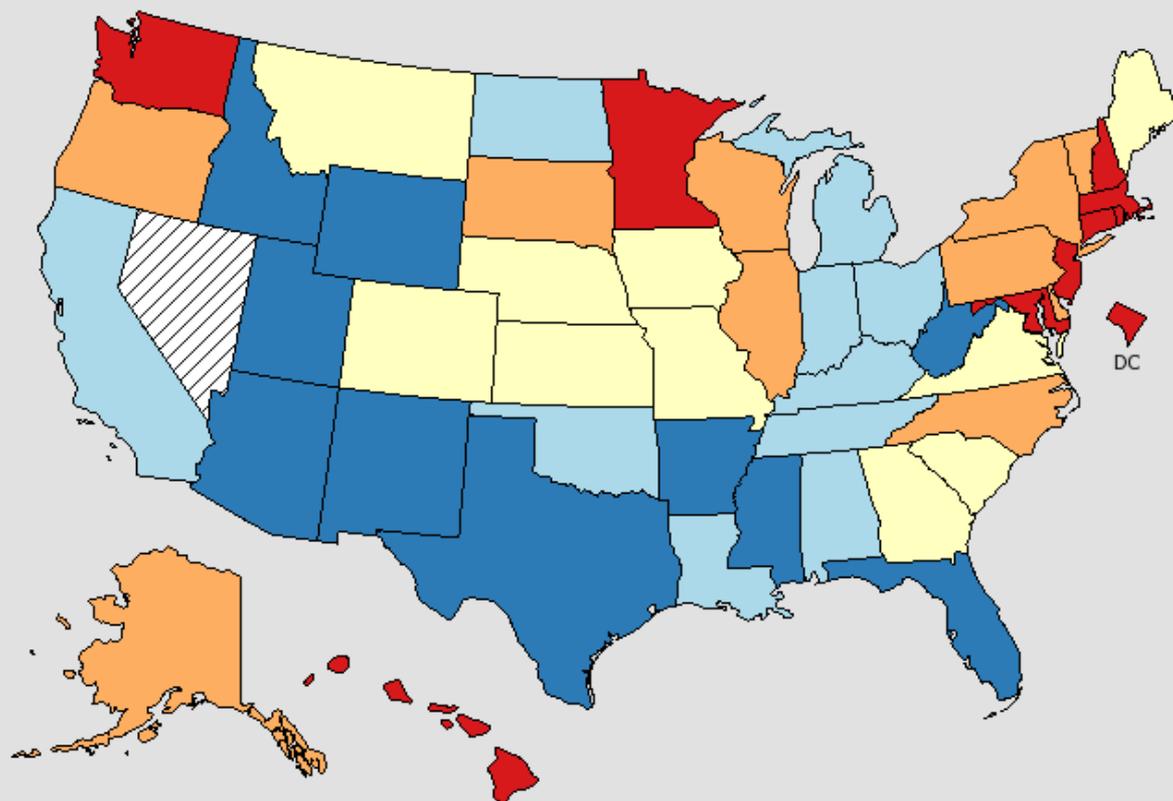


Mortality

Age-Adjusted Incidence Rates by Cancer Site (2008-2012)	New Mexico Rate	USA Rate	Map	Table	Historical Trends Graph	5-Year Rate Change Graph
All Cancer Sites	388.1	453.8				
Bladder	14.9	20.8				
Brain & ONS	5.5	6.6				
Breast	112.1	123.0				
Breast (in situ)	20.1	31.0				
Cervix	7.5	7.7				
Childhood (Ages <15, All Sites)	13.7	16.0				
Childhood (Ages <20, All Sites)	15.0	17.4				
Colon & Rectum	35.8	41.9				
Esophagus	3.8	4.7				
Kidney & Renal Pelvis	13.7	16.0				
Leukemia	12.6	13.2				



Incidence Rates[†] for United States, 2008 - 2012
Breast
All Races (includes Hispanic), Female, All Ages



Age-Adjusted
 Annual Incidence Rate
 (Cases per 100,000)

[Quantile Interval](#)

- 128.6 to 141.7
- 125.3 to 128.6
- 122.2 to 125.3
- 118.9 to 122.2
- 107.9 to 118.9
- Data Not Available ◇

US (SEER + NPCR)
 Rate (95% C.I.)
 123.0 (122.8 - 123.2)

Notes:

Created by statecancerprofiles.cancer.gov on 10/15/2015 9:46 am.

Data for the United States does not include data from Nevada.

[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](#)).

[†] Incidence rates (cases 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+). Rates are for invasive cancer only (except for bladder which is invasive and in situ) or unless otherwise specified. Rates calculated using SEER*Stat. Population counts for denominators are based on Census populations as modified by NCI. The [1969-2013 US Population Data](#) File is used for SEER and NPCR incidence rates.

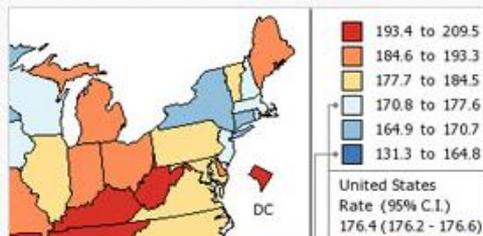
◇ [Data not available](#) for this combination of geography, statistic, age and race/ethnicity.



STATE CANCER PROFILES



Dynamic views of cancer statistics for prioritizing cancer control efforts in the nation, states, and counties



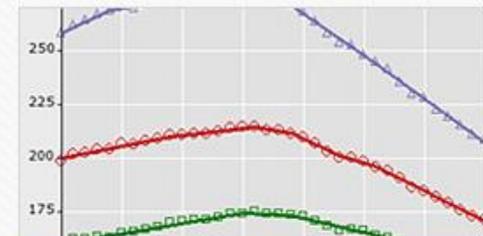
Interactive Maps

Maps of mortality data can be created at the state and county level.

California	272,100	277,800
Florida	217,200	224,600
Texas	175,100	180,100
New York	155,200	156,000
Pennsylvania	122,000	124,200
Illinois	97,600	99,000
Ohio	96,000	97,500
Michigan	88,800	90,200
New Jersey	76,800	77,200
North Carolina	72,100	74,000

Tables

Tables of mortality data can be created at the state and county level.



Historical Trends

Compare trends in cancer mortality and incidence by user selectable criteria.



5-Year Rate Changes

Rate changes in cancer mortality or incidence for all major cancer sites.

	Above State Rate	Similar to State Rate	Below State Rate
Rising Trend	Priority 1: rising ↑ and above ↑ [none]	Priority 2: rising ↑ and similar ■ [none]	Priority 3: rising ↑ and below ↓ [none]
Stable Trend	Priority 4: stable → and above ↑ Kent County	Priority 6: stable → and similar ■ Garrett County St. Marys County	Priority 7: stable → and below ↓ [none]
Falling Trend	Priority 5: falling ↓ and above ↑ Baltimore City Caroline County Cecil County Somerset County Wicomico County	Priority 8: falling ↓ and similar ■ United States Allegheny County Anne Arundel County Baltimore County Calvert County Carroll County Phelan County	Priority 9: falling ↓ and below ↓ Howard County Montgomery County

Rate/Trend Comparison by Cancer

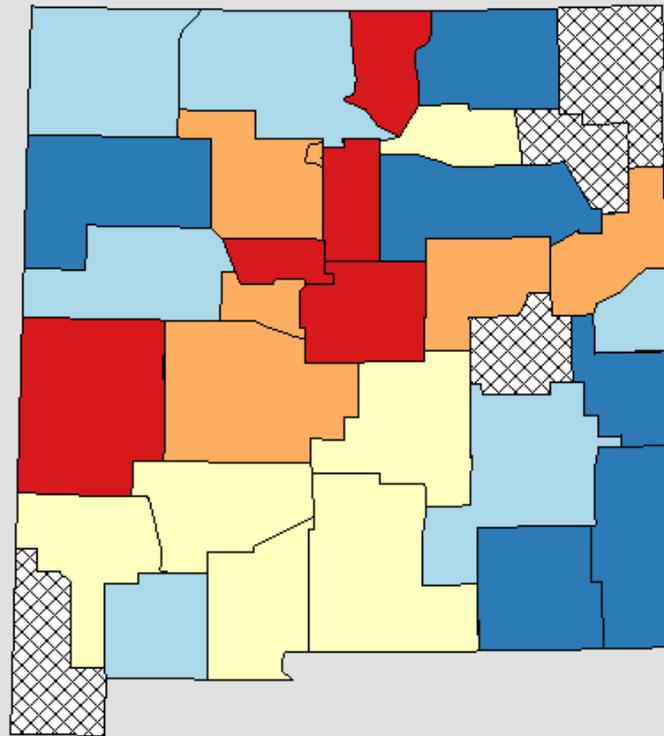
Set higher priority for cancer control when rates are high or rising.

	Above US Rate	Similar to US Rate	Below US Rate
Rising Trend	Priority 1: rising ↑ and above ↑ [none]	Priority 2: rising ↑ and similar ■ Liver & Bile Duct (Males)	Priority 3: rising ↑ and below ↓ [none]
Stable Trend	Priority 4: stable → and above ↑ Bladder (Males)	Priority 6: stable → and similar ■ Kidney & Renal Pelvis (Males) Liver & Bile Duct (Females) Melanoma of the Skin (Males) Pancreas (Females) Pancreas (Males) Stomach (Males) Uterus (Females)	Priority 7: stable → and below ↓ Melanoma of the Skin (Females)
Falling Trend	Priority 5: falling ↓ and above ↑ Breast (Females)	Priority 8: falling ↓ and similar ■ Bladder (Females) Ovary & ONS (Females)	Priority 9: falling ↓ and below ↓ Non-Hodgkin Lymphoma (Females)

Rate/Trend Comparison by Area

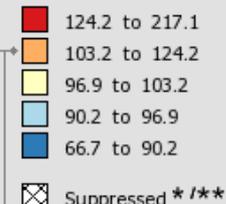
Set higher priority for cancer control when rates are high or rising.

Incidence Rates[†] for New Mexico, 2008 - 2012
Breast
All Races (includes Hispanic), Female, All Ages



Age-Adjusted
 Annual Incidence Rate
 (Cases per 100,000)

Quantile Interval



US (SEER + NPCR) Rate (95% C.I.) 123.0 (122.8 - 123.2)
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New Mexico Rate (95% C.I.) 112.1 (109.3 - 114.9)
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Notes:

Created by statecancerprofiles.cancer.gov on 10/08/2015 3:17 pm.

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* Data have been [suppressed](#) to ensure confidentiality and stability of rate estimates. Counts are suppressed if fewer than 16 cases were reported in a specific area-sex-race category.

** Data have been [suppressed](#) for states with a population below 50,000 per sex combination for American Indian/Alaska Native or Asian/Pacific Islanders because of concerns regarding the relatively small size of these populations in some states.

**Geographic Information Systems
for Cancer Control and Population Based Cancer Research**

<http://gis.cancer.gov>

(<http://gis.cancer.gov>)



National Cancer Institute

at the National Institutes of Health | www.cancer.gov



GIS GEOGRAPHIC INFORMATION SYSTEMS & SCIENCE
CANCER CONTROL AND POPULATION BASED CANCER RESEARCH



HOME

OVERVIEW ▾

NCI GIS PORTAL ▾

TOOLS & DATA ▾

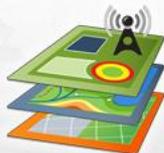
GIS RESEARCH ▾

The Geographic Information Systems and Science website is supported by the National Cancer Institute as a central source of information about GIS and related resources for use by the public, cancer researchers, and the GIS Special Interest Group.



Overview

An introduction to Geographic Information Systems at NCI.



NCI GIS Portal

Interactive web-based mapping tools and services.



GIS Research

View publications and see how institutions use GIS technology.



Tools & Data

Tools and data services to assist in analysis and visualization.

Why Spatial Context Matters



1 2 3 4 5 6 7 8 9

Photo Credits

Popular Resources

- [Tools and Data](#)
- [Animated Historical Cancer Atlas](#)
- [Map Stories](#)
- [Geographic Information Systems Special Interest Group \(GISSIG\)](#)

Recent Updates

- ▶ [County Level UV Exposure Data Released](#) - 4/30/14
- ▶ [Updated County Level Urban Sprawl Indices based on 2000 and 2010 data](#) - 4/2/14

NCI GIS Portal



NCI GIS Portal

Interactive web-based mapping tools and services.

NCI GIS Portal is a web-based station for interactive mapping and visualization of cancer related geographically based data

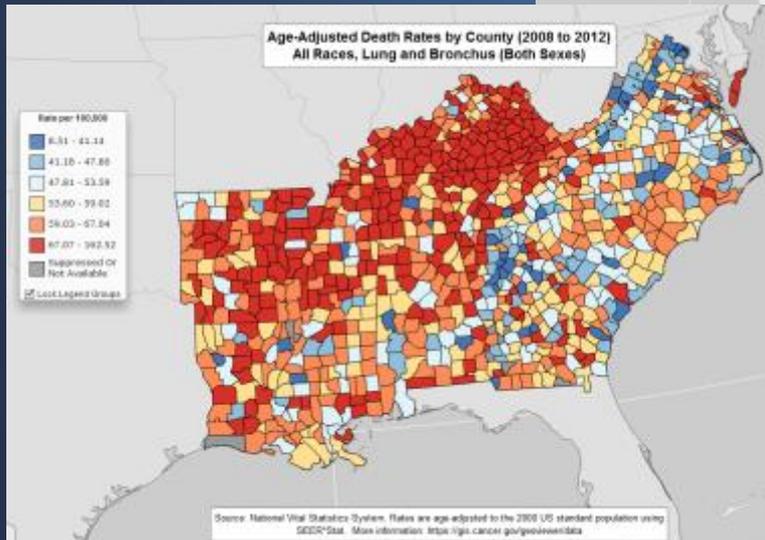
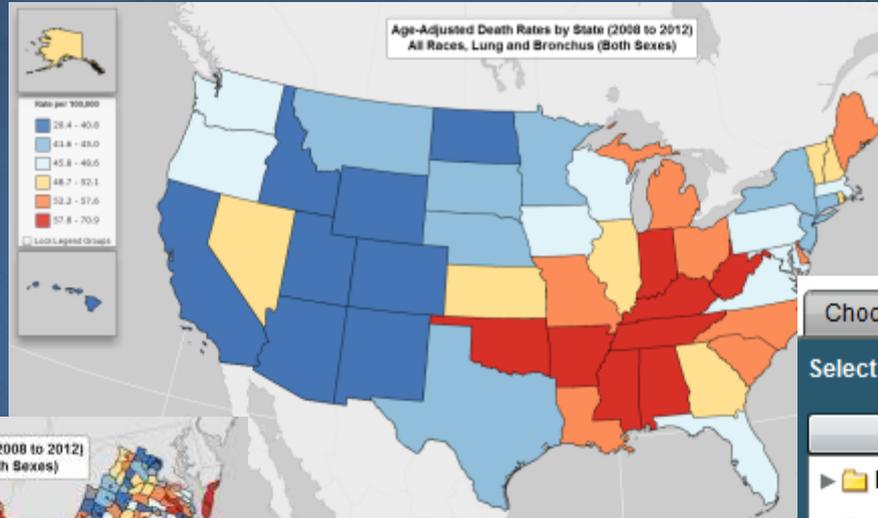
The Portal combines *Geographic Information Systems (GIS) and Science* principles and tools to harmonize relatively large and multi-dimensional datasets including population-based cancer statistics as well as behavioral, environmental, clinical, socioeconomic, and policy data at state and county levels.

The tools that comprise GIS Portal combine intelligent web maps with graphs, charts, tables, and text to inform, educate, and inspire users to generate research hypotheses.

NCI GeoViewer

<http://gis.cancer.gov/geoviewer>

The NCI GeoViewer is a web mapping tool that allows users to dynamically create maps of cancer statistics, demographics, and risk factors.



Choose Data | Map Options | Data Table

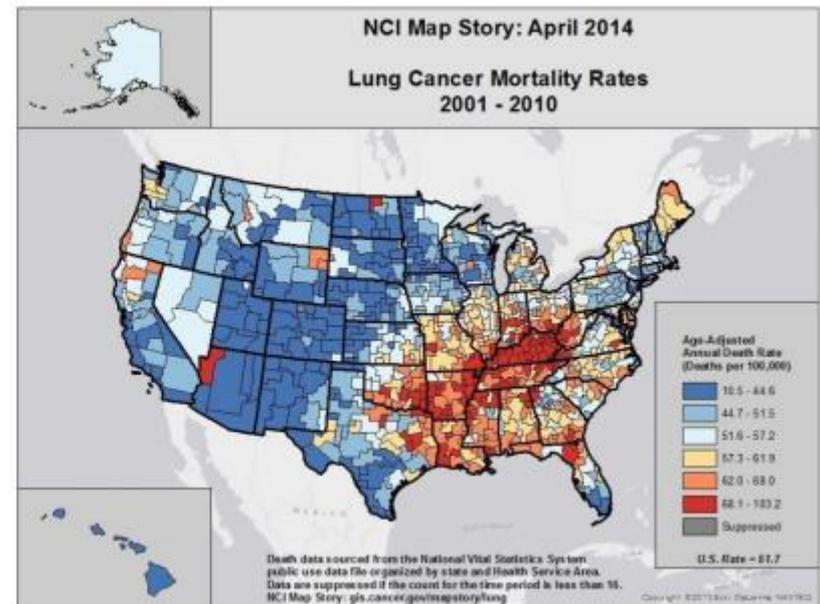
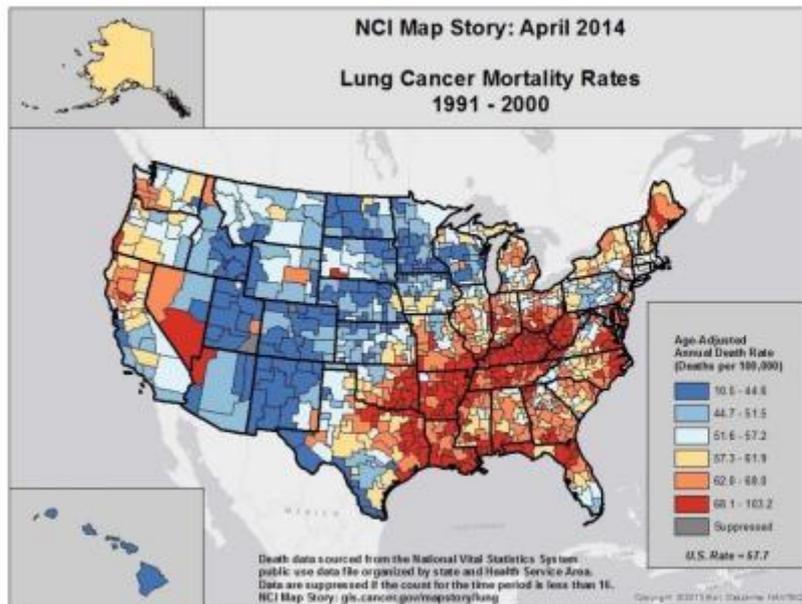
Select a Data Category: ?

- Demographics
- Historical Mortality
- Incidence
- Mortality
 - US by County 2008 to 2012
 - US by HSA 2008 to 2012
 - US by SEA 2008 to 2012
 - US by State 2008 to 2012**
- Prevalence
- Screening and Risk Factors



NCI Map Stories <http://gis.cancer.gov/mapstory>

- This web site contains topical map stories developed monthly by the National Cancer Institute to discuss a cancer topic for a map-based explanation.
- Map stories are currently available for breast cancer, lung cancer, colorectal cancer, prostate cancer, and cervical cancer.



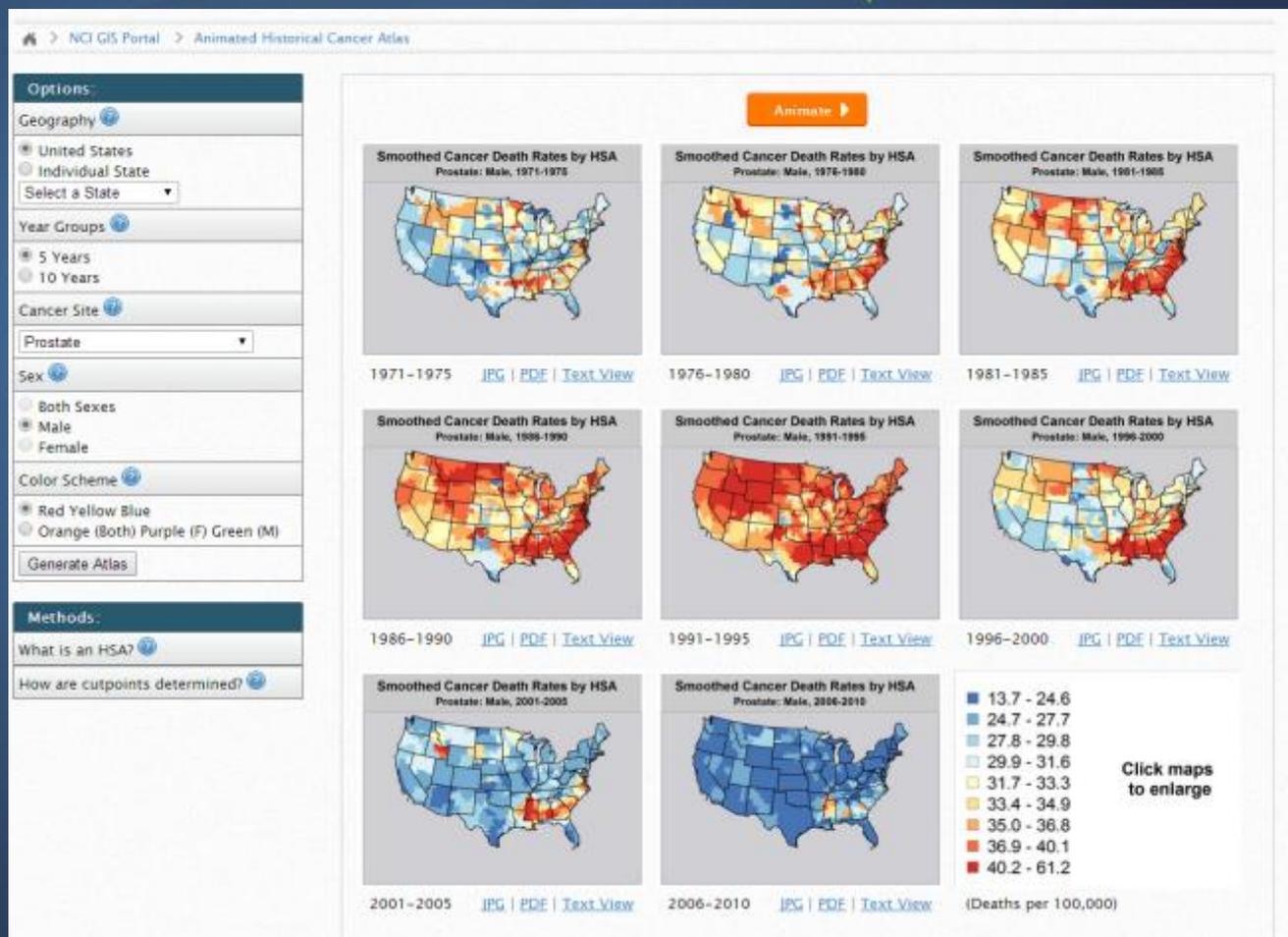


Animated Historical Cancer Atlas

<https://gis.cancer.gov/atlas>

The Animated Historical Cancer Atlas is a tool that animates smoothed, age-adjusted death rates over time at state or national level.

There are PDF and JPG maps available for download.



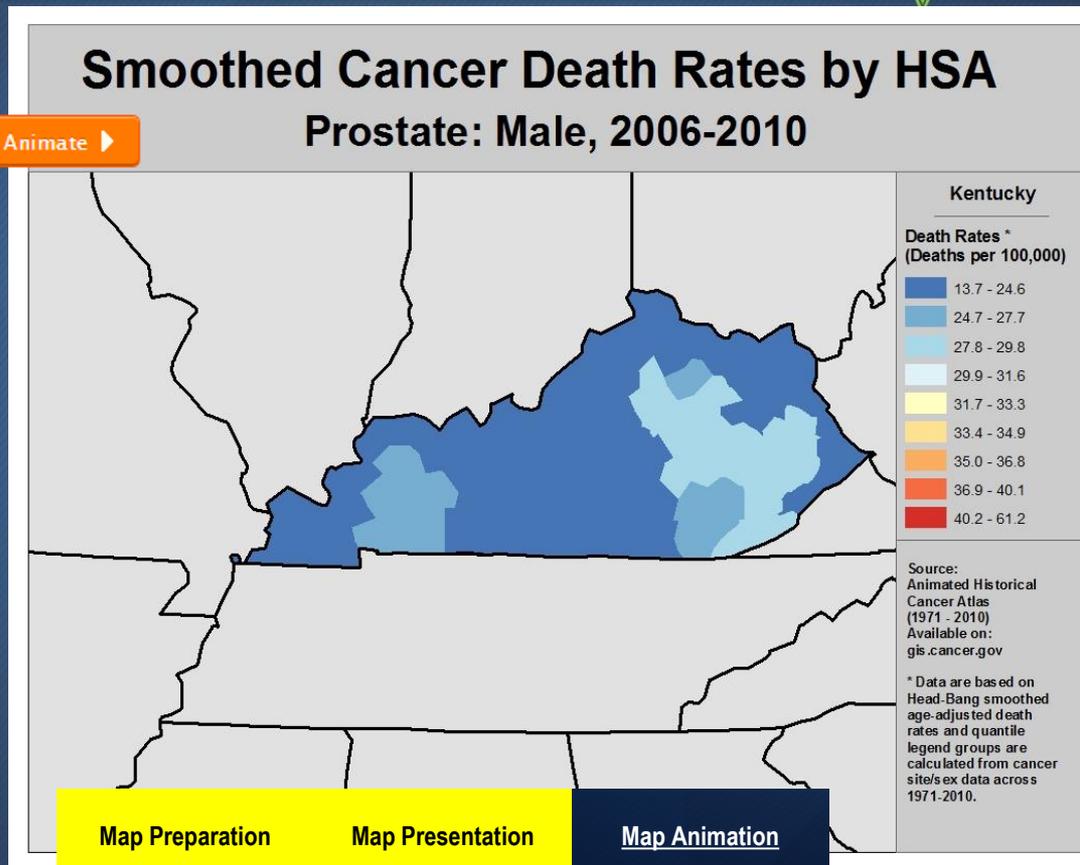


Animated Historical Cancer Atlas

Watch as the map fades through eight different year ranges, starting with 1971-1975 and ending in 2006-2010.

Animate ▶

Notice how most of the red areas are in the 1991-1995 map.



Coming Soon: Who is Leading the Way in Smoke Free laws



Questions?

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