

**UNITED NATIONS STATISTICAL COMMISSION and  
ECONOMIC COMMISSION FOR EUROPE  
CONFERENCE OF EUROPEAN STATISTICIANS**

**UNECE Work Session on the Communication and Dissemination of Statistics**  
(30 June – 2 July 2010, Paris, France)

- (i) Getting the Numbers Across in Ways That External Audiences Understand

**A NEW WEB TOOL FOR USERS SEEKING U.S. STATE-BASED HEALTH DATA**

Submitted by U.S. National Center for Health Statistics<sup>1</sup>

*Abstract — Users of vital and health statistics interested in analyzing U.S. state and geographical data are often required to take several different roads that lead them to the information they seek – and sometimes this means a different road for each state. The U.S. National Center for Health Statistics (NCHS) routinely publishes national reports that include tables featuring state-by-state data, but for the user interested in conducting inter-state analysis by specific topics the task can be long and cumbersome. In response, the NCHS Public Affairs Office has developed a new tool on the agency’s web site, entitled “Stats of the States,” which easily directs the user to the most recently published key health indicators by state.*

**I. INTRODUCTION**

1. The National Center for Health Statistics (NCHS) is responsible for collecting, analyzing and disseminating vital and health statistics for the United States. The majority of data that are published by NCHS are national in scope, as the agency’s mission is to provide an accurate health portrait of the U.S. population as a whole. However, comprising that portrait are fifty separate “scenes,” as represented by the fifty states (the tally is actually fifty-one, when including the District of Columbia). Therefore, users of NCHS data in the U.S. as well as internationally have a keen interest in what is occurring at the state level, as these data help provide detail to this overall health portrait. Unfortunately, the act of navigating through the sea of published data, particularly in the internet age, presents great challenges for many users.

2. Through consistent interaction with the general public and its role in disseminating and communicating NCHS statistical products, the agency’s Public Affairs Office has undertaken an ambitious effort to present an on-line option for users who want to easily and efficiently access the most recently published NCHS state data. The interactivity of the web allows NCHS to present its data in a variety of new ways, each with the common goal of helping users of all levels of sophistication. The result is the web-based tool, “Stats of the States,” located at: [http://www.cdc.gov/nchs/pressroom/stats\\_states.htm](http://www.cdc.gov/nchs/pressroom/stats_states.htm).

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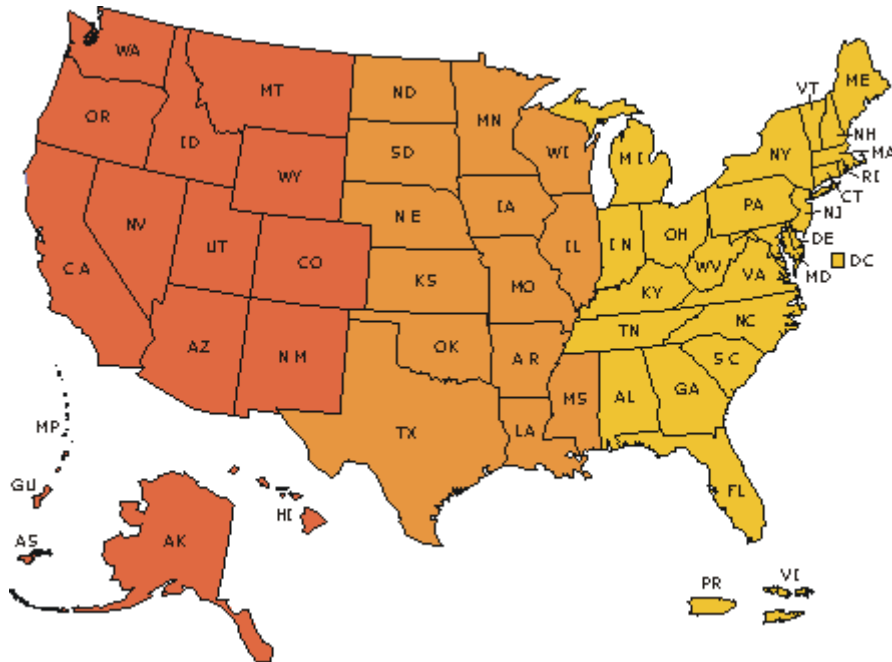
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# STATS of the STATES

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[http://www.cdc.gov/nchs/pressroom/stats\\_states.htm](http://www.cdc.gov/nchs/pressroom/stats_states.htm)



## II. BACKGROUND

### A. A Need For Centralized Access to State Data

3. The U.S. has published annual vital statistical reports since the beginning of the 20<sup>th</sup> century, and these volumes have contained numerous tables with state-based information on births, marriages, divorces, and deaths. This information is provided to NCHS as part of a long-standing partnership with state vital statistics registries across the U.S., a partnership now formally known as the National Vital Statistics System. Beginning in 1960, when NCHS was officially established, the agency has developed numerous health surveys to track disease prevalence, health care utilization, nutritional assessments of the population, and other topics to help fill gaps in health data. Most of these surveys are national in scope and, due to methodological reasons, cannot provide state-based estimates. One exception is the National Health Interview Survey, which has a large sample size (over 100,000 households interviewed annually) and is conducted continuously so that state-based data are available on certain topics.

4. So, for over a century now, state-based data can be located in official NCHS publications. However, the process for accessing and using this information has traditionally been complicated for the general public, particularly when analyzing multiple topics that exist in multiple statistical reports. The more sophisticated users, such as academics or public health researchers, are well-versed in the use of CD-ROM or web-based public use files and have experience in handling many of the more technical issues related to analyzing the data. With the expansion of the internet as a research tool, however, the population of potential data users has grown exponentially, and is in fact almost limitless in its diversity and scope.

5. Often, the only option for the general public is to contact the individual states directly for data on these topics. Thus, “Stats of the States” was developed as an integrated data tool that can be easily accessed by the more general data users, while also serving as a useful tool for the more sophisticated research community as well.

### III. SELECTING CONTENT

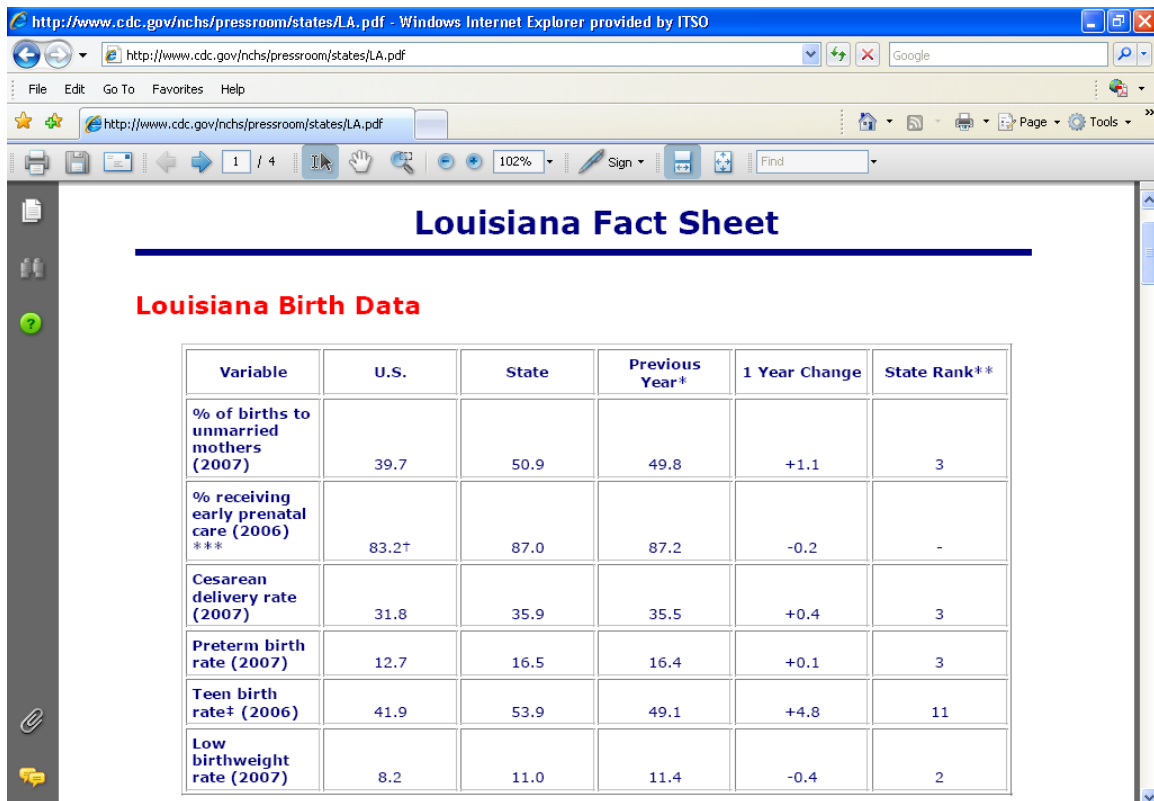
#### A. Management and Maintenance

6. On a content level, the idea was to present an easy-to-grasp and multi-faceted picture of the kind of impact that certain key health indicators have at the state level. Accordingly, the first major content decision was to identify the measures that would be featured in this new web portal. Since the majority of state data published by NCHS comes from the National Vital Statistics System, most topics were selected from key vital statistics publications. However, prior to making those selections, other decisions had to be made to determine just how voluminous “Stats of the States” would ultimately become.

7. The NCHS Public Affairs Office consists of a very small staff, whose primary responsibility is for the day-to-day communications operations of the agency. As a result, the management and maintenance of a single web feature can not be overly burdensome on the day-to-day operations of the office. It was immediately clear that along with more topics chosen for “Stats of the States,” there came more management and maintenance. So the topics were chosen very carefully, with priority placed on the highest profile indicators.

#### B. Prioritizing Topics

8. Ultimately, 19 of the 21 indicators chosen for “Stats of the States” were from the vital statistics family. From the most recently published annual births report, there were six indicators selected: percentage of births to unmarried mothers, percentage of mothers receiving early pre-natal care (care occurring in the first trimester of pregnancy), the percentage of babies delivered via cesarean delivery, the percentage of babies born pre-term (under 37 weeks of gestation), the rate of births born to teenage females ages 15 to 19, and the percentage of babies born at low birthweight (less than 2,500 grams). These six indicators represent some of the more important topics on the national public health agenda today.



Variable	U.S.	State	Previous Year <sup>†</sup>	1 Year Change	State Rank <sup>**</sup>
% of births to unmarried mothers (2007)	39.7	50.9	49.8	+1.1	3
% receiving early prenatal care (2006) ***	83.2 <sup>†</sup>	87.0	87.2	-0.2	-
Cesarean delivery rate (2007)	31.8	35.9	35.5	+0.4	3
Preterm birth rate (2007)	12.7	16.5	16.4	+0.1	3
Teen birth rate <sup>‡</sup> (2006)	41.9	53.9	49.1	+4.8	11
Low birthweight rate (2007)	8.2	11.0	11.4	-0.4	2

9. In selecting topics from the most recently published mortality report, the decision was made to focus on the ten leading causes of death in the U.S. However, the ten leading causes of death for the entire U.S. are not necessarily the same ten leading causes of death for a particular state, and the ranking of these causes for the U.S. is often not the same order of ranking by state either. Ultimately, the decision was made to focus on the overall ten leading causes of death, so users could make uniform comparisons among the states. A second decision was made to provide a link to a separate table that listed the leading causes of death in each state, so users could access that data as well.

### C. Methodological Issues and Rankings

10. There was another methodological issue to deal with as well. The cause of death rankings are based on total numbers of death, but at the state level that number is dependent upon the population of the state, regardless of the cause of death. For example, Septicemia is the tenth leading cause of death in the U.S. while Heart Disease is the number one killer. In California, the most populous state in the U.S., there were 1,058 deaths from Septicemia in 2006, which is more than the 994 Heart Disease deaths that occurred in the state of Wyoming, the least populous state. If numbers of deaths were the sole criteria used, the general public would potentially get a skewed perspective of the impact of Septicemia mortality and Heart Disease mortality in those states. This led us to another decision: to include the age-adjusted death rate by state for each leading cause of death. Age-adjusted rates are more precise than crude rates, and that enables us to present more accurately the impact of a particular cause of death on a particular state. So, for leading causes of death, the age-adjusted death rates, not the total numbers of death, are used for ranking states. Together, the ten leading causes of death, along with the six selected birth indicators, account for three-quarters of the information provided in “Stats of the States.”

The screenshot shows a web browser window displaying a table titled "Louisiana & The U.S. 10 Leading Causes of Death". The table compares Louisiana's death rates and total deaths to the national average for ten leading causes of death. The columns are: Cause of Death, U.S. Death Rate\*†, Total # of State Deaths\*, State Death Rate\*†, Previous Yr State Rate\*\* (2005), 1 Year Change, and State Rank\*.

Cause of Death	U.S. Death Rate*†	Total # of State Deaths*	State Death Rate*†	Previous Yr State Rate**	1 Year Change	State Rank*
1. Heart disease	200.2	10,026	232.3	255.7	-23.4	9
2. Cancer	180.7	8,853	203.5	209.3	-5.8	5
3. Stroke	43.6	2,195	51.5	57.6	-6.1	9
4. Chronic lower respiratory disease	40.5	1,687	39.6	44.5	-4.9	32
5. Accidents	39.8	2,422	56.6	68.8	-12.2	6
6. Diabetes	23.3	1,536	35.5	38.7	-3.2	1
7. Alzheimer's disease	22.6	1,282	30.5	34.2	-3.7	6
8. Influenza and pneumonia	17.8	833	19.6	23.7	-4.1	15 (tie)
9. Kidney disease	14.5	1,074	25.2	27.6	-2.4	1
10. Septicemia	11.0	771	18.0	19.9	-1.9	4

LCWK9. Deaths, percent of total deaths, and death rates for the 15 leading causes of death: United States and each State, 2006  
 [Rates per 100,000 population. The title for Essential hypertension and hypertensive renal disease was changed in 2006 to reflect the addition of Secondary hypertension (ICD code I15); see the "Technical Notes" of Deaths: Final Data for 2006]

Rank <sup>1</sup>	Cause of death (Based on the Tenth Revision, International Classification of Diseases, Second Edition, 2004) and State	Number	Percent of total deaths	Rate
Louisiana				
...	All causes	40,045	100.0	933.9
1	Diseases of heart (I00-I09,I11,I13,I20-I51)	10,026	25.0	233.8
2	Malignant neoplasms (C00-C97)	8,853	22.1	206.5
3	Accidents (unintentional injuries) (V01-X59,Y85-Y86)	2,422	6.0	56.5
4	Cerebrovascular diseases (I60-I69)	2,195	5.5	51.2
5	Chronic lower respiratory diseases (J40-J47)	1,687	4.2	39.3
6	Diabetes mellitus (E10-E14)	1,536	3.8	35.8
7	Alzheimer's disease (G30)	1,282	3.2	29.9
8	Nephritis, nephrotic syndrome and nephrosis (N00-N07,N17-N19,N25-N27)	1,074	2.7	25.0
9	Influenza and pneumonia (J10-J18)	833	2.1	19.4
10	Septicemia (A40-A41)	771	1.9	18.0
11	Assault (homicide) (*U01-*U02,X85-Y09,Y87.1)	554	1.4	12.9
12	Intentional self-harm (suicide) (*U03,X60-X84,Y87.0)	492	1.2	11.5
13	Essential hypertension and hypertensive renal disease (I10,I12,I15)	382	1.0	8.9
14	Chronic liver disease and cirrhosis (K70,K73-K74)	342	0.9	8.0
15	Human immunodeficiency virus (HIV) disease (B20-B24)	338	0.8	7.9
...	All other causes (Residual)	7,258	18.1	169.3

Source: CDC/NCHS, National Vital Statistics System  
<sup>1</sup> Rank based on number of deaths  
 Category not applicable

11. Ranking the leading causes of death is one issue, but there is also a broader interest among various audiences in how individual U.S. states rank according to a variety of indicators. While making those kinds of comparisons is not a primary focus of NCHS analyses, it is certainly information that is frequently sought out by users. Many are interested in seeing how their state ranks by specific topic compared to the state next door to them, or to states in their same geographical region. There have also been significant scientific studies in the past using mapping to identify geographical areas where certain health problems are greater, such as the research in the early 1960's that coined the term "The Stroke Belt," a region primarily in the southeastern U.S. which was identified as having a greater prevalence of stroke mortality than the rest of the country. As a result, for each topic "Stats of the States" ranks the states by highest rate to lowest rate and identifies "ties" in the rankings where appropriate.

#### D. The DC Issue

12. Another complex issue was the decision to omit the District of Columbia from the tables because of the misleading impact it would have on rankings and in comparing rates between the states. As D.C. is more comparable to large U.S. cities in terms of geographical size and population, the idea of including it in these tables would potentially skewer the rankings and result in misleading comparisons between the states. However, when tallying totals and calculating rates for the entire U.S., the figures from D.C. are included.

## **E. Other Topics**

13. In addition to the sixteen birth and death measures, there are three other vital statistics categories included in “Stats of the States.” One of these topics is a major concern to the public health community: infant mortality. NCHS calculates infant mortality rates using a linked file matching death certificates with birth certificates, in order to produce more solid data by race and ethnicity, and also by geographic detail. The infant mortality rates listed in “Stats of the States” come from this linked birth and death data file.

14. The other two vital statistics categories, marriages and divorces, are no longer tracked in great detail either at the state or federal level in the U.S. However, there are still annual estimates of the overall rates of marriage and divorce per 1,000 population, though it is important to note that several states – California, Georgia, Hawaii, Indiana, Louisiana, and Minnesota – no longer record divorce statistics, and so the national rate does not reflect divorce patterns in those states. The topic of marriage and divorce is still of great interest to social scientists, the news media, and the general public, and as a result the decision was made to include the marriage and divorce rates by state – despite these limitations.

15. There are two other topics featured in “Stats of the States” that do not come from the National Vital Statistics System, but instead from the National Health Interview Survey: the percentage of U.S. adults without health insurance coverage and the percentage of U.S. households that use only wireless telephones. Health insurance coverage, of course, is the one measure that has dominated the health debate in the U.S. for the past year and a half, and having data on the range of coverage by state is an important measure in that debate. However, in order to get solid information at the state level using survey data, a minimum of three years of data are needed so that an adequate sample size can be used. Data for 2004-2006 are used in “Stats of the States” because that was the most recent analysis using three years of data, and that also allowed for estimates to be published for 41 states. Preliminary figures on health insurance coverage are available annually through 2009, but the smaller sample size only allows estimates for approximately 20 states.

16. The other measure from the National Health Interview Survey, the percentage of wireless-only households, is obviously not a direct health indicator, but it is an important methodological issue that relates to the future of health data collection itself. With more people going to wireless-only phones, traditional methods of conducting phone-based health surveys are potentially becoming less effective, and so indirectly this is potentially a great public health challenge, since it may be harder to collect solid health data in the future.

State Profiles

### Other Louisiana Data

Variable	State	U.S.
Infant mortality rate (2005) (deaths per 1,000 live births)	9.79	6.83
Percentage of persons under age 65 without health insurance (2004-2006)	18.9	16.6
Marriage rate (2007) (per 1,000 population)	7.6	7.3
Divorce rate (2007) (per 1,000 population)	-	3.6*
Percentage of households with only wireless phones (2007)	15.0	14.7

- **Infant Mortality Rates by State, 2005:**  
[http://www.cdc.gov/nchs/pressroom/data/INFANT\\_MORTALITY\\_STATE\\_07.pdf](http://www.cdc.gov/nchs/pressroom/data/INFANT_MORTALITY_STATE_07.pdf)
- **Percentage of People Under 65 Without Health Insurance by State, 2004-2006:**  
<http://www.cdc.gov/nchs/pressroom/data/healthinsurance06.pdf>
- **Marriage Rates by State, 2007:**  
<http://www.cdc.gov/nchs/data/nvss/Marriage%20Rates%2090%2095%20and%2099-07.pdf>
- **Divorce Rates by State, 2007:**  
<http://www.cdc.gov/nchs/data/nvss/Divorce%20Rates%2090%2095%20and%2099-07.pdf>
- **Percentage of Households with Only Wireless Phones by State, 2007:**  
<http://www.cdc.gov/nchs/pressroom/data/wireless07.pdf>

## F. Timeliness of Data and Updates

17. One limitation of “Stats of the States” relates to the important issue of data timeliness. In the case of vital statistics, the system is built around reporting from fifty different sources (plus the District of Columbia and outlying territories). Therefore, the most recent data that NCHS can publish for all fifty states is only as recent as when the last state reports their figures. As a result, some states already have more recent data available on many of these topics by the time NCHS publishes its tables for all fifty states. For some types of analyses, it may not matter whether different data years by state are used. However, to truly conduct a uniform analysis of all fifty states it is important to use the same data year across the board. In addition, because of the management and maintenance challenges outlined earlier, the task of updating data based on a state-by-state schedule would be near impossible.

18. Sixteen of the topics featured in “Stats of the States” are pulled from three annual NCHS publications – two birth reports and one death report. The data for infant mortality, health insurance coverage, and wireless phones come from semi-regular publications, and the state marriage and divorce rates are from unpublished tables that can only be accessed on the NCHS web site. The schedule for updating the numbers in “Stats of the States” is driven by the release schedule of all these reports. Newer versions of the two birth reports, the annual death report, and the infant mortality report have recently been published, and NCHS staff is now working to incorporate those new numbers into the “Stats of the States” portal.

## **G. Quality Control and Future Plans**

19. Since the data are keyed in manually by NCHS staff, quality control steps have been taken to cross-check these numbers to verify their accuracy and make sure no typographical errors have occurred.

20. Modifications to “Stats of the States” will be made as necessary, drawing on recommendations from the Division of Vital Statistics and other expert sources at NCHS, as well as from the users directly. It does not appear that “Stats of the States” will be expanding by adding a large number of new topics in the immediate future.

## **IV. CONCLUSION**

21. The development of “Stats of the States” has successfully addressed a long-standing need for the general data user community. A centralized tool for accessing key state-by-state vital and health indicators is now available on the web site of the National Centers for Health Statistics, which is the main source the U.S. public turns to for credible health statistics. This kind of tool also has the potential for other purposes, and the “Stats of the States” blueprint could be adapted for use at other geographic levels. For example, an individual state could build their own web feature patterned after “Stats of the States” by focusing on the individual counties within that state, for the purpose of intra-state comparisons. At the international level, a similar tool could be developed by geographic region, such as for comparisons among the European countries or among the Scandinavian countries.