The year 2013 marks the 100th anniversary of Vital Statistics in the state of Missouri! This is quite the milestone and provides a unique opportunity to use historical data archived in Vital Statistics to look at how death rates in Missouri have changed over the past one hundred years. As medical knowledge, infrastructure, social changes, and other factors developed and disseminated across the state of Missouri, the death rates from many diseases and conditions changed dramatically. For example, the following trend line chart illustrates the changes in the heart disease and tuberculosis death rates between 1911 and 2011.
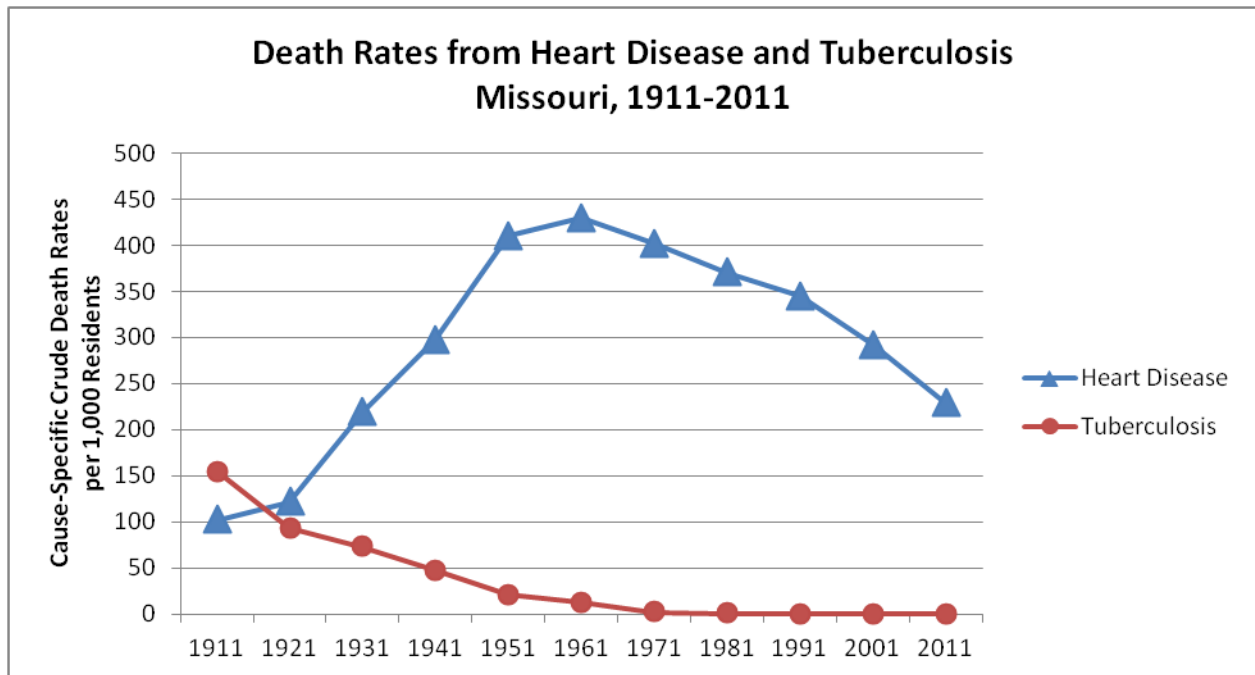
Sources: U.S. Vital Statistics Reports, 1911-1991
           MICA

A long range study of this sort introduces some of the hazards of working with archived data. Over time, the format and information in Vital Statistics reports has changed, so the same information may not be found on the same page in both the 1911 and 1951 reports. In fact, sometimes even the statistics are not consistent across all the years. For this reason, we calculated crude death rates (as opposed to age-adjusted death rates) for the purposes of this comparison. In addition, we suspect that some of the historical data are skewed because there was no widely-used methodology for assigning cause of death in the early decades of the last century. These coding differences would have especially impacted cardiovascular disease. As these examples illustrate, any historical information should be handled cautiously and with an eye for detail to ensure that fair comparisons are made.

During the early years of the 20th century, the top two leading causes of death in Missouri were organic heart disease and tuberculosis. While heart disease is now the leading cause of death in the state, tuberculosis cases have all but disappeared. The trend line above shows the fluctuations in the death rates for these two diseases over the past one hundred years. Death rates

from heart disease climbed steeply until they peaked in the 1960s and then began to steadily decrease through 2011. Tuberculosis death rates had an even more dramatic pattern. Although this disease was the leading cause of death in 1911, tuberculosis death rates dipped below heart disease during the 1920s and continued to decrease.

How did the state try to combat tuberculosis 100 years ago? In 1908 the following policy was instituted by the State Board of Health:

> *"These rules embody the manner in which steam railway coaches and railway stations shall be cleaned, disinfected and kept in sanitary conditions, with anti-spitting placards in each coach, and also in the station. The railway companies have kindly obeyed this order of the Board. While we are not able to enforce a penalty for the violation of these rules, yet we are sure great good is being accomplished by this effort, in at least, an educational way."* [1]

It is unclear if this policy actually decreased the rates of tuberculosis in Missouri, but by 1921 it was on its way out. In 1921 a tuberculosis vaccine was first approved for use in humans. It was originally administered only to infants. As its effectiveness was proven, it was distributed more widely and tuberculosis death rates began to drop dramatically.[2] Today, tuberculosis is extremely rare in Missouri, with less than five deaths due to the disease each year. However, drug-resistant strains of the disease are becoming a concern, and public health officials worldwide are brainstorming ways to decrease the impact of all tuberculosis strains.[3]

The introduction of a vaccine can explain the decreased tuberculosis death rate in Missouri, but explaining the heart disease death rate trend is a bit more complicated. As far back as 1913, researchers in Vital Statistics bemoaned the reporting issues related to heart disease deaths. "It is probable that there is some degree of inexactness in the assignment of heart disease . . . although the terms most questionable – such as heart failure, cardiac paralysis, and the like, are not included under this [heading] at all, but are classed among the ill-defined causes."[4] More exact reporting methods and an increase in the causes of death grouped under the heart disease category are probable contributors to the 1960 peak in heart disease deaths in Missouri. The decline that followed was due to a combination of factors. In the 1960s, researchers and doctors discovered a set of risk factors that dramatically increased one's chances of dying from heart disease (i.e., smoking, high blood pressure, high cholesterol levels, poor diet, and lack of medical care). Prevention campaigns related to these risk factors are credited with helping to decrease the overall death rate.[5]

Deciphering trends in mortality rates is like assembling a puzzle. Once you have some numbers (whether they be frequencies, rates, or some other types of statistics) you can start to see trends. For example, here we saw heart disease peak in 1961 but then begin to decrease. Then it's a matter of putting together the rest of the pieces to discover what caused the trends. Was it a single factor or a combination, or was there a flaw in your research? Working with historical data can equal parts fun and frustrating. With the 100th anniversary of Missouri Vital Statistics upon us, we encourage you to do a little historical digging of your own. You may be surprised what you find!

References:

[1] State Board of Health of Missouri. (1908). *Annual Report of the State Board of Health of Missouri for 1908* (26th ed.). Warrensburg, MO: Press of the Star Printing Co.

[2] World Health Organization (WHO). (2013). BCG – The current vaccine for tuberculosis. In *Initiative for Vaccine Research (IVR)*. Retrieved 2013, December 2, from http://www.who.int/vaccine_research/diseases/tb/vaccine_development/bcg/en/.
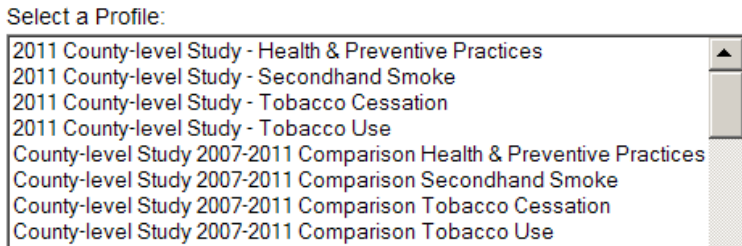
[3] World Health Organization (WHO). (2013). Tuberculosis. *Saudi Medical Journal, 34*(11), 1205-1207. Retrieved 2013, December 2, from http://smj.psmmc.med.sa/index.php/smj/article/view/8064.

[4] Harris, W. J. (1913). *Mortality Statistics 1911: Twelfth Annual Report*. Washington, D.C.: Government Printing Office. Retrieved 2013, December 18, from http://www.cdc.gov/nchs/data/vsushistorical/mortstatsh_1911.pdf.

[5] MMWR. (1999, August 6). *Achievements in Public Health, 1900-1999: Decline in Deaths from Heart Disease and Stroke -- United States, 1900-1999* (48th ed., Vol. 30, pp. 649-656). Atlanta, GA: Centers for Disease Control and Prevention. Retrieved 2013, December 2, from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4830a1.htm.

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County-Level Study 2007-2011 Comparison Profiles Now Available

County-Level Study (CLS) 2007-2011 Comparison Profiles are now available from the Community Data Profiles website. The 2011 CLS Profiles series was posted several months ago, but the 2007 CLS data required reweighting due to changes in the CLS methodology. Both the 2011 and the 2007-2011 Comparisons series contain four Profiles: Health and Preventative Practices, Secondhand Smoke, Tobacco Cessation, and Tobacco Use.

Select a Profile:

    2011 County-level Study - Health & Preventive Practices
    2011 County-level Study - Secondhand Smoke
    2011 County-level Study - Tobacco Cessation
    2011 County-level Study - Tobacco Use
    County-level Study 2007-2011 Comparison Health & Preventive Practices
    County-level Study 2007-2011 Comparison Secondhand Smoke
    County-level Study 2007-2011 Comparison Tobacco Cessation
    County-level Study 2007-2011 Comparison Tobacco Use

The Comparison Profiles look very similar to the 2011 CLS Profiles; however, their purpose is to show differences between the 2007 and 2011 surveys. As shown in the example below, Comparison Profiles not only include data on the numbers of respondents and prevalence percentages for both 2007 and 2011 but also provide the percentage difference in prevalence between the two studies. In addition, the Comparison Profiles indicate whether the prevalence change between the two surveys is statistically significant. In the example below, which shows the indicator "Fair or Poor General Health Status" for the state of Missouri, the "H" signifies that the 1.1 percentage increase in prevalence from 19.0 to 20.1 is statistically significant. An "L" would signify that the 2011 CLS prevalence is statistically significantly lower, while an "N/S" would indicate that there is no statistically significant change between the two surveys

2007 Number of Respondents	2007 Prevalence (%)	2011 Number of Respondents	2011 Prevalence (%)	Prevalence difference 2007-2011 (%)	Significant change 2007 to 2011 H/L/NS
49,368	19.0	50,529	20.1	1.1	H

CLS Comparison Profiles are available for the same geographic areas as the 2011 CLS Profiles. These include the state, all 115 counties, all 7 BRFSS regions, and Kansas City. However, several features available on the 2011 CLS Profiles *are not* currently available on the 2007-2011 Comparison Profiles. These include the additional data tabs on Race, Gender, Age, Income, Rural-Urban, Education Level, and Health Insurance status, as well as the Download Indicator Data column, which provides the ability to generate maps of or download the 2011 data. However, the Print Profile option, located in the upper right corner of the screen, provides a printer-friendly version of the Profile as a PDF, which can be saved as an electronic file. More information about the CLS can be found on the CLS website at http://health.mo.gov/data/cls/index.php. This resource was also covered in a previous issue of this newsletter, which is available at http://health.mo.gov/data/mica/MICA/pdf/newsletter5.pdf.

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Public Health Spotlight

Three new Research Analysts in BHCADD/BVS proudly display their MICA Training certificates. Two of them completed the course on their very first day on the job!
Left to right: Evan Mobley, Katie Steckel, and Whitney Coffey

Katie Steckel is a new Research Analyst I in the Bureau of Vital Statistics (BVS). She will be working with birth statistics and completing data requests. Katie graduated from the University of Missouri – Columbia in 2012 with a BS in Economics and a Minor in Geography and has previous experience with DHSS as a temporary summer intern with WIC. For the past three years, Katie worked for the Columbia Humane Society, where she was in charge of the pit bull adoption program and helped rescue dogs in Joplin after the tornado of 2011. She likes working for DHSS and says that the pace is very different and the job is much cleaner than working with her four legged friends at the shelter. She feels that her experience with BVS will equip her with skills to understand and manage data, particularly in developing policy for Maternal and Child Health programs. She says in order to make policies you have to understand the data.

Katie was born and raised in Washington, Missouri. However, her great-grandfather hailed from South Africa and at age 16 she had the opportunity to spend eight months as a foreign exchange

student there. Katie just got married in October and plans to visit Cape Town for her honeymoon early next year. During her free time, Katie likes to hang out with her new husband Marcus, a descendent of the famous James/Younger gang and an ex-marine who is studying Mechanical Engineering at MU. She also enjoys the company of her four-legged family members, Havana (a foster dog that she adopted) and two rescued stray cats, Mickey and Murphy. She loves cooking, baking, knitting, hiking, and running and completed her first half-marathon when she was 16 years old. In the future she hopes to combine her love of animals and interest in public health by volunteering for the Red Cross disaster relief program. She hopes to eventually attend graduate school and work in development economics to rebuild post-conflict and post-catastrophe communities. Katie attributes her parents with encouraging her to explore the world.

Evan Mobley occupies an interesting Research Analyst II position in the Section for Epidemiology in Public Health Practice – he works with both the Bureau of Vital Statistics and the Bureau of Health Care Analysis and Data Dissemination. Though his unique arrangement may at times be challenging, this recent grad will no doubt handle any bumps in the road in fine style.

Evan received his Bachelor's Degree from the Missouri University of Science and Technology in Rolla, where he majored in History. While there he took a historiography class (basically a history of history) that reinforced ideas of objectivity and levels of subjectivity in history. This knowledge will no doubt be useful in all research-related endeavors. Evan thought about attending law school but ultimately decided that a Master's Degree in Criminal Justice from the University of Central Missouri was a better fit.

After graduating in May, Evan applied for a research analysis position in part because of his enjoyment of research both at the undergraduate and graduate levels. Thus far, his favorite projects at DHSS are data requests, though he also enjoys the challenge of deciphering data analysis programs like SAS and MySQL. He says the biggest surprise about working at DHSS is the sheer number of acronyms used. (He's right – there are dozens.) We welcome Evan Mobley to the Department of Health and Senior Services and have no doubt that he'll excel (and maybe one day learn all of those acronyms)!

Whitney Coffey, a new Research Analyst II in the Bureau of Health Care Analysis and Data Dissemination, is originally from Tunas, in southwest Missouri. She completed her undergraduate degree in anthropology at Missouri State University in Springfield. Before becoming a new employee at DHSS, Whitney completed her Master's Degree in Anthropology at the University of Missouri – Columbia, where she also taught introductory biology courses and conducted research. Whitney's favorite aspects of the anthropology department were the faculty's and students' wide variety of areas of study and the freedom to choose research endeavors that were intriguing. Her own master's thesis focused on the 1918 Spanish Flu outbreak in St. Louis and explored the different outbreak experiences of subpopulations in the city.

So far, Whitney's favorite part of her job in the BHCADD is getting to work with numbers on a daily basis. When asked about her plans for the next five years, Whitney replied that she sees herself still working at DHSS and possibly pursuing a Master's in Public Health degree. With her extensive educational background and personal interest in health data research, Whitney has proven that she has solid research and writing skills, a strong work ethic, and will prove to be an essential member of the Bureau.

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Upcoming MICA Trainings

The BHCADD recently received some good news – we have funding to provide MICA trainings around the state during summer 2014! We will begin planning these sessions over the next few months and will publicize the schedule in the MICA newsletter once all the details are finalized. If you think there is a need for these trainings to be offered in your area of the state or if you would be willing to host a training session at your location, please contact Andy Hunter or Becca Mickels. This will help us with our planning efforts.

In the short term, we have sessions of *Introduction to Profiles and MICA* and *Health Data Analysis* scheduled at DHSS on January 15-16 and February 25-26. Both sessions are full, but if you would like to be placed on the waitlist in case of cancellations, please e-mail Andrew.Hunter@health.mo.gov and Becca.Mickels@health.mo.gov.

Additional information about the trainings is available on our training website (http://health.mo.gov/data/mica/MICA/healthdatatraining.html).

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Data Updates

A few of the Profiles and Data MICAs have been updated since the publication of the last newsletter. They include:

Medicaid Records MICA – through October 2013
Pregnancy MICA – through 2011
TANF (Temporary Assistance for Needy Families) MICA – through October 2013

2007-2011 County-Level Studies Comparison Profiles

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Recent/Upcoming Events

The Data Dissemination team did not travel much during the past couple of months, but we managed to share health data from the comfort of the DHSS campus. Organizations from several different parts of the state sent staff to Jefferson City sessions of *Introduction to Profiles and MICA* and *Health Data Analysis* on October 16-17. Participants included DHSS employees, local public health agency staff, and representatives from other community partners. On November 26, Andy and Becca joined a conference call of the Southwest Regional Minority Health Alliance to provide a brief overview of several DHSS data resources.

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Q&A

I need data on injury deaths. Should I use the Injury MICA or the Death MICA?

This is a question we receive frequently, and the answer depends on your specific needs. The data in the Injury MICA is collected from hospital inpatient and emergency room records. Data for patients who died from their injuries can be selected by choosing Disposition: Died (shown below). The Injury MICA provides a variety of variables including the mechanism (injury type), the primary injury location, and the intention behind the injury (e.g., assault, self-injury, unintentional). If your primary need is to determine these aspects of injury deaths, the Injury MICA would likely be your best data source.

However, since these data come from hospital records, the Injury MICA does **not** include **all** injury-related deaths. For example, if a person dies from an injury but is not treated in a hospital, that record would not be included. If your primary need is a complete count of all injury-related deaths, you would need to use the Death MICA, which is based on death certificates instead of hospital and emergency room records.

State of Missouri
DEPARTMENT OF HEALTH AND SENIOR SERVICES

Injury MICA

The following *step-by-step* process will allow you to customize a data table by county(ies) or city(ies).

Step One

Select a row variable (default value: Mechanism).

○ Year   ○ Race   ○ Ethnicity   ○ Sex   ○ Age
○ Patient Type   ○ County/City*   ○ Mechanism*   ◉ Intention   ○ Disposition   ○ Injury Location

Step Two

Select a column variable (default value: Year).

◉ Year   ○ Race   ○ Ethnicity   ○ Sex   ○ Age
○ Patient Type   ○ County/City   ○ Mechanism   ○ Intention   ○ Disposition   ○ Injury Location

Step Three (Optional)

If you want to choose a specific category (example: Ages 25 to 44) <u>do not</u> select that variable (example: Age) above. Instead, select it from the pull-down box below.

Race: | All Races ▼ | Ethnicity: | All Ethnicities ▼ | Sex: | All ▼ | Age: | All Ages ▼ |
Patient Type: | All Patients ▼ | Intention: | All ▼ | Disposition: | All Dispositions ▼ |

Step Four

Select year(s) of interest (default: 2011)

☐ 1994   ☐ 1995   ☐ 1996   ☐ 1997   ☐ 1998   ☐ 1999   ☐ 2000   ☐ 2001   ☐
☐ 2003   ☐ 2004   ☐ 2005   ☐ 2006   ☐ 2007   ☐ 2008   ☐ 2009   ☐ 2010   ☑

[Select All]   [Default]

Home
Transferred to Acute Care
Transferred to SNF/ICF/Hospice
Transferred - other
Left Hospital AMA
Died
Other
Unknown
All Dispositions

Step Five

Select statewide and/or county(ies) or city(ies) of interest (default: State of Missouri).
Statewide &/or County   Citi

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Practice Exercise

Many of you have asked for additional exercises such as the one below so that you can practice the skills you learned at the MICA trainings. If you would like to check your work, a link to the answer key is provided at the bottom of this section.

You have been asked to compile data for a stroke intervention grant in Boone County. Complete the following table, which lists different sources of stroke data within the MICA system, by filling in the most recent rate and the time period covered by the rate.

Health Indicator	Data Source	Most Recent Rate	Time Period	Type of Rate/Constant
Stroke Mortality	Death MICA			1-Year/100,000
	Leading Causes of Death Profile			11-Year/100,000
	Stroke Profile			11-Year/100,000
	Women's Health Profile			11-Year/100,000
	Chronic Disease Comparisons Profile			11-Year/100,000
Stroke Prevalence (Adults 18 years and older)	Stroke Profile			1-Year/100
Stroke Hospitalizations	Inpatient Hospitalization MICA			1-Year/10,000
	Inpatient Hospitalization Profile			1-Year/10,000
	Chronic Disease Comparisons Profile			5-Year/10,000
	Stroke Profile			5-Year/10,000
Stroke Emergency Room Visits	Emergency Room MICA			1-Year/1,000
	Emergency Room Profile			1-Year/1,000
	Chronic Disease Comparisons Profile			5-Year/1,000
	Stroke Profile			5-Year/1,000
Stroke Hospital Charges (in $)	Hospital Discharges, Charges & Days of Care MICA			1-Year
Stroke Risk Factors:				
Current Smoking	Stroke Profile			1-Year/100
High Blood Pressure	Stroke Profile			1-Year/100
High Cholesterol	Stroke Profile			1-Year/100

Visit http://health.mo.gov/data/mica/MICA/solutions.html to check the solution.

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Final Thoughts

Can you guess our Halloween costumes? (Answers posted on the Practice Exercise Solutions website at http://health.mo.gov/data/mica/MICA/solutions.html.)

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About the MICA User Group Newsletter

The MICA User Group Newsletter was created in response to user requests for communication on updates to the MICA system, descriptions of new features, additional practice exercises, announcements of training opportunities, and any other new information about data that might help them perform their jobs more efficiently.

Newsletters will be published on a quarterly basis. If you have ideas for content, please send them to Andrew.Hunter@health.mo.gov or Becca.Mickels@health.mo.gov. We would especially like to feature stories describing your success at completing projects or obtaining grants using the MICA tools as well as interviews with public health professionals about your duties and how you use MICA to accomplish them.

Past issues are available at http://health.mo.gov/data/mica/MICA/newsletters.html.

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How to Sign Up or Opt Out

If you have enjoyed this newsletter, please feel free to share it with your colleagues and community partners. We encourage them to sign up for the MICA User Group by sending an e-mail to Andrew.Hunter@health.mo.gov or Becca.Mickels@health.mo.gov with the subject line MICA User Group. This will let us know to send newsletters to them directly so they do not miss any information. Also, we may occasionally distribute time-sensitive information on topics such as training opportunities via e-mail if the newsletter is not scheduled for publication prior to a registration deadline. Finally, the MICA User Group list helps us track the types of organizations using the tools, which is one of our performance measures.

If you would like to opt out of the MICA User Group, please send an e-mail with Unsubscribe in the subject line to Becca.Mickels@health.mo.gov. PLEASE NOTE: Depending on your position title, you may still receive other types of e-mail messages from us. For example, we are requested to send training information to all LPHA Administrators, even if they have unsubscribed from the MICA User Group.

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Contact Information

Andrew Hunter   Becca Mickels
Andrew.Hunter@health.mo.gov   Becca.Mickels@health.mo.gov
573-526-0444   573-751-6285