HEALTH FOR A CHANGE

Kentucky Health: Making Data Count

September 28, 2016
Foundation for a Healthy Kentucky’s Mission:

To address the unmet health care needs of Kentuckians.
Investing in communities.
Informing health policy.

- Improving access to care
- Reducing health risks and disparities
- Promoting health equity
Building a Stronger Governance - A Toolkit for Education and Engagement for Boards of Health
Tuesday October 25, 2016
WEBINAR

Strategic Fund Raising: Effective Grant Development
Wednesday November 2, 2016
WORKSHOP in Louisville, KY
Kentucky Health: Making Data Count
Data Citations
Data Maps

Sarah Ehresman
Kentucky State Data Center at the University of Louisville
Data Citations

- Ensures data can be...
  - Discovered
  - Reused
  - Replicated for verification
  - Credited for recognition
  - Tracked to measure usage and impact
Data Citations

• Publishing agency
• Program or Author
• Date
• Title or description
  – Who is the data reflecting?
• URL

• Edition or version
• Date accessed online
• Processed by
## Data Citations


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Data Citations

What was Kentucky’s 2014 Uninsured Rate?

• 6.7%
  – Source: U.S. Census Bureau

• 8.5%
  – Source: U.S. Census Bureau

• 9.9%
  – Source: U.S. Census Bureau
Data Citations

Kentucky’s 2014 Uninsured Rate: 6.7%

Data Citations

Kentucky’s 2014 Uninsured Rate: 6.7%

- CPS has relatively small sample size
- Census does not recommend using for state-level estimates of uninsured
- CPS appropriate for national level estimates
- CPS only counts a person has uninsured if he/she did not have insurance for the entire calendar year
Data Citations

Kentucky’s 2014 Uninsured Rate: 8.5%

Data Citations

Kentucky’s 2014 Uninsured Rate: 8.5%


– ACS larger sample size than CPS so appropriate for state-level estimates of uninsured

– ACS sample size still too small for most county-level estimates

– ACS counts a person as uninsured if he/she does not have insurance at the time of the interview
Data Citations

Kentucky’s 2014 Uninsured Rate: 9.9%


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<th>Year</th>
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Data Citations

Kentucky’s 2014 Uninsured Rate: 9.9%

– SAHIE only reflects the population under age 65!
– Universe needs to be specified
– SAHIE uses combination of survey responses and mathematical models
Data Citations

• Covered three programs of the Census Bureau on health insurance coverage

• Other surveys out there!
  – CDC
  – Pew, Gallup
  – Independent researchers

• Complete citations crucial for verification of data
Maps

- Helpful for identifying spatial relationships
Maps

- **Deaths 2010-2014**
  - Approximately 43,000 deaths per year in Kentucky
  - Life expectancy at birth: Female – 78.8  Male – 73.7
Maps

• Helpful for identifying spatial relationships
• Can be misleading so have to interpret carefully

Ethics in Cartography

How to Lie with Maps

“The purpose of this book is to promote a healthy skepticism about maps, not to foster either cynicism or deliberate dishonesty. In showing how to lie with maps, I want to make readers aware that maps, like speeches and paintings, are authored collections of information and are also subject to distortions arising from ignorance, greed, ideological blindness, or malice.”

M. Monmonier
Maps

Drug Arrests in 2014

Total Drug Arrests
- 5 - 199
- 200 - 499
- 500 - 999
- 1,000 - 1,499
- 1,500 - 2,719

Source: Kentucky State Police, Crime in Kentucky 2014 Annual Report
Maps

Drug Arrests in 2014

Drug Arrests per 100,000 population:
- 196 - 599
- 600 - 1,299
- 1,300 - 1,899
- 1,900 - 2,499
- 2,500 - 9,716

Source: Kentucky State Police, Crime in Kentucky 2014 Annual Report
State-by-state: Counties rated highest and lowest in health

Researchers ranked counties by "health outcomes" and "health factors." This map represents "health outcomes," based on disease and death rates in each county.

Note: This map includes only continental U.S. states with at least 10 counties. Connecticut, Rhode Island and Delaware have fewer than 10 counties.

Sources: Robert Wood Johnson Foundation, University of Wisconsin
Kentucky Health: Making Data Count

Data Citations

Data Maps

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Kentucky State Data Center

http://ksdc.louisville.edu

sarah.ehresman@louisville.edu

502.852.7990
Data Sources and Data Visualization

Joseph Benitez, PhD
Department of Health Management and Systems Sciences
School of Public Health and Information Sciences
University of Louisville
FINDING DATA
Where do I find reliable data sources?

- National Data Sources
- State/Local Governments
- University-Based Resources
National Data Sources

- U.S. Centers for Disease Control & Prevention (CDC)
  - Behavioral Risk Factor Survey (BRFS)
  - National Health and Nutrition Examination Survey (NHANES)
  - National Health Interview Survey (NHIS)

- U.S. Census Bureau
  - American Community Survey (ACS)
  - Current Population Survey (CPS)
  - Small Area Health Insurance Estimates
  - Small Area Income & Poverty Estimates

- Health Resources and Services Administration
  - Area Health Resource File (AHRF)
  - Health Professional Shortage Area (HPSA) Designations
  - Medically Underserved Area/Population (MUA/P) Designations
Kentucky Data Sources

- Cabinet for Health and Family Services
  - Kentucky Behavioral Risk Factor Survey (KyBRFS)

- Kentucky State Health Data Center
  - Housed at the University of Louisville
  - Serves as Kentucky’s primary warehouse of Census data as well as other valuable sources of data (e.g. environment, health)

- Center for Poverty Research at the University of Kentucky
  - Located within the University of Kentucky’s Gatton College of Business and Economics
  - Primary mission is to provide research to inform evidence-based policy making on the matters of poverty and income inequality in the U.S.

- Kentucky Health Issues Poll
  - Supported by the Foundation for a Healthy Kentucky to provide a snapshot on Kentucky views about health and other topics.
University/Non-Governmental Resources

- **ICPSR at the University of Michigan**
  - Large data archive of more than 250,000 files of research data

- **County Health Rankings**
  - Collaboration between RWJF and University of Wisconsin to provide a reliable source of local data to assist communities in helping them identify opportunities to improve their health.
  - [*Kentucky Health Rankings by County*](#)

- **America’s Health Rankings**
  - Provides “an analysis of national health on a state-by-state basis by evaluating a historical and comprehensive set of health, environmental and socioeconomic data to determine national health benchmarks and state rankings.”
DEVELOPING VALID VISUAL AIDS FROM DATA
Developing Valid Visual Aids from Data

- Visual representations of data
  - E.g. Graphics, charts, tables to summarize data
  - Some can often provide *misleading* or even *inaccurate* results
    - Sometimes misleading or inaccurate representations of data go unnoticed and can be used to bias opinions
Developing Valid Visual Aids from Data

• Ways Data Can Mislead Readers
  – Data omitted
  – Graphics improperly labeled
  – Scale of the graph:
    • Not the right size (i.e. too big/small)
    • Skips numbers
    • Does not start at zero or baseline value
Developing Valid Visual Aids from Data

- What’s wrong with this pie chart?

Developing Valid Visual Aids from Data

• What’s wrong with this pie chart?

41% + 31% + 50% = 122

Developing Valid Visual Aids from Data

• What’s wrong with this pie chart?

41% + 31% + 50% = 122 ≠ 100

Developing Valid Visual Aids from Data

• What’s wrong with this graphic?

Source: http://www.statisticshowto.com/misleading-graphs/
Developing Valid Visual Aids from Data

- What’s wrong with this graphic?
  - Article misrepresented average annual incomes as lifetime earnings
    - Adjustment would show that earnings and costs of college trending in same direction
  - Only shows earnings for college grads, and not those with a only a high school diploma
    - Average annual incomes for those with less education tend to be lower than for those with more education

Source: http://www.statisticshowto.com/misleading-graphs/
Developing Valid Visual Aids from Data

- What’s wrong with this graphic?

Source: [https://en.wikipedia.org/wiki/Misleading_graph](https://en.wikipedia.org/wiki/Misleading_graph)
Developing Valid Visual Aids from Data

• What's wrong with this graphic?

• How about this one?

Source: https://en.wikipedia.org/wiki/Misleading_graph
Developing Valid Visual Aids from Data

- Two graphical representations of the **same** data.
- **A** incorrectly presents the data, while **B** presents data correctly

Source: [https://en.wikipedia.org/wiki/Misleading_graph](https://en.wikipedia.org/wiki/Misleading_graph)
Developing Valid Visual Aids

• Major Points in Developing Useful and Valid Visual Aids
  – Graphic designs should be appropriate given the data they represent

  – Graphics and any other visual tools should not overstate:
    • the complexity of the data they represent,
    • the analysis used,
    • or the results of the study

  – Graphics should be able to tell the key findings on their own
    • Graphics should be able to be read independently without much accompanying text
Developing Valid Visual Aids

• What makes a “good” graphic?
  – Simple
  – Convey message well
  – Provide a good representation of the data

• What are the characteristics of “bad” graphs/data?
  – Misleading
  – Overly Complex
  – Distort the data
    • Add unnecessary decorations
    • 3-Dimentional Effects
    • Too much Color/Text
    • Truncation/Improper Scaling of Data
    • Emphasis
Conclusions on Data Visualization

• Graphical presentations should be simplified—even if the data or analyses are complex
  – Simple graphs/tables are frequently the most informative

• Avoid distorting the data in anyway

• Be wary of graphics that distort or misrepresent data
Books!

  – www.tufte.com
Contact

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Department of Health Management & System Sciences
School of Public Health & Information Sciences
University of Louisville
joseph.benitez@louisville.edu
Research and Polling

• Who funded the poll?
• How was the poll conducted?
• What questions were asked?

Who funded the poll?
How was the poll conducted?
What questions were asked?

Would you favor or oppose a state law in Kentucky that would prohibit smoking in most public places, including workplaces, public buildings, offices, restaurants and bars? (Percentages do not add to 100% because the response “don’t know” is not included.)

http://www.healthy-ky.org/sites/default/files/KHIP%20Smoke-free%20FINAL%20121515.pdf
QUESTION ON RISK FACTORS
### Patient Medical History

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<th>Office Phone</th>
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</table>

**Are you allergic to or have you had any reactions to the following?**

- [ ] Local Anesthetics (e.g., Novocaine)
- [ ] Barbiturates
- [ ] Aspirin
- [ ] Penicillin or Other Antibiotics
- [ ] Sulfa Drugs
- [ ] Iodine

**Have you ever been hospitalized for any surgical operation or serious illness?**

- [ ] Yes
- [ ] No

**Are you taking any medication(s) including non-prescription medicine?**

- [ ] Yes
- [ ] No

**If yes, what medication(s) are you taking?**

**Do you use tobacco?**

- [ ] Yes
- [ ] No

**Do you use alcohol, cocaine or other drugs?**

- [ ] Yes
- [ ] No

**Do you have or have you had any of the following?**

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<th>No</th>
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<td>Swollen Ankles</td>
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<td>Fainting / Seizures</td>
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<td>Asthma</td>
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<tr>
<td>Low Blood Pressure</td>
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<tr>
<td>Epilepsy / Convulsions</td>
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<td>Leukemia</td>
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<tr>
<td>Diabetes</td>
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<tr>
<td>Kidney Diseases</td>
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<td>AIDS or HIV Infection</td>
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<td>Thyroid Problem</td>
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<td>Heart Disease</td>
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<td>Cardiac Pacemaker</td>
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<td>Sexually Transmitted Disease</td>
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<td>Stroke</td>
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**Women only:**

- [ ] Are you pregnant or think you may be pregnant?
- [ ] Are you nursing?
- [ ] Are you taking birth control pills?

**Do you have or have you had any of the following?**

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**Signature**

[Signature]

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**Healthy Kentucky Foundation**
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<td>ARE YOU UNDER MEDICAL TREATMENT NOW?</td>
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<td>HAVE YOU EVER BEEN HOSPITALIZED FOR ANY SURGICAL OPERATION OR SERIOUS ILLNESS?</td>
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<td>ARE YOU TAKING ANY MEDICATION(S) INCLUDING NON-PRESCRIPTION MEDICINE?</td>
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<tr>
<td>IF YES, WHAT MEDICATION(S) ARE YOU TAKING?</td>
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<td>DO YOU USE TOBACCO?</td>
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<tr>
<td>DO YOU USE ALCOHOL, COCAINE OR OTHER DRUGS?</td>
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<td>DO YOU HAVE OR HAVE YOU HAD ANY OF THE FOLLOWING?</td>
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<td>EASILY WINDED</td>
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<td>STROKE</td>
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<tr>
<td>HAY FEVER / ALLERGIES</td>
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<tr>
<td>TUBERCULOSIS</td>
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<td>RADIATION THERAPY</td>
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<td>GLAUCOMA</td>
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<tr>
<td>RECENT WEIGHT LOSS</td>
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<td>LIVER DISEASE</td>
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<tr>
<td>HEART TROUBLE</td>
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<tr>
<td>RESPIRATORY PROBLEMS</td>
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<tr>
<td>OTHER</td>
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</tbody>
</table>

WOMEN ONLY:
A) ARE YOU PREGNANT OR THINK YOU MAY BE PREGNANT?                      |     |    |
B) ARE YOU NURSING?                                                    |     |    |
C) ARE YOU TAKING BIRTH CONTROL PILLS?                                 |     |    |

SIGNATURE

X
Pew Research Center 2003 survey

• Casualties

Citations

Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Questionnaire*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, [appropriate year or years].


Notes on this indicator: Years of Potential Life Lost prior to age 75 is a measure of premature mortality that is calculated over the age range from birth to 75 years of age. Description: Kentucky State Data Center analysis of records from the Kentucky Department for Public Health Office of Vital Statistics.

RESOURCES
Thank you!

Contact

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Foundation for a Healthy Kentucky

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