

# Excess Mortality in the Aftermath of Hurricane Katrina: A Preliminary Report

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# Outline

- Historical perspective disaster mortality
- Barriers to current mortality statistics
- Novel methodology
- Current Mortality Statistics
- Study Conclusions
- Questions for the future

# Importance of Mortality Statistics

- critical insight into population health
- key information for public health research
- commonly the basis for health interventions
- facilitates long-term surveillance

Source: Steering Committee Report. Toward an electronic death registration system in the United States: report of the steering committee to reengineer the death registration process. *American Journal Forensic Medical Pathology*, 1998;19:234-41.

# Historical Perspective

- Post-tsunami medical care: health problems encountered in the International Committee of the Red Cross Hospital in Banda Aceh, Indonesia. Prehospital Disaster Med. 2006 Jan-Feb;21(1):s1-7
- Aspergillus Meningitis in Sri Lanka - A Post-Tsunami Effect? Gunaratne, Padma S.; Wijeyaratne, Chandrika N.; Seneviratne, Harshalal R. New England Journal of Medicine. 356(7):754-756, February 15, 2007.
- The public health consequences of disasters. Prehospital Disaster Med. 2000 Oct-Dec;15(4):147-57.

# Barriers to Obtaining Mortality Statistics

- Most recent Health Report from **2003**
- Louisiana Department of Health and Hospitals Office of Vital Statistics **flooded**
- Currently at nearly **half pre-Katrina capacity**
- **Relocated** twice – Baton Rouge, Metairie

## Sources:

Office of Public Health Director. State Registrar/Vital Records and Statistics.

<http://www.dhh.louisiana.gov/offices/?ID=252> Accessed April 3, 2007.

Shuler, M. Katrina Still Burdens State Registry. The Advocate-WBRZ ABC News 2 Louisiana. 2007 Feb 24.

<http://www.2theadvocate.com/news/neworleans/6053061.html> Accessed April 3, 2007.

Louisiana Department of Health and Hospitals. News Release: New Phone Numbers for Vital Records.

<http://www.dhh.louisiana.gov/news.asp?ID=1&Detail=784&Arch=2006> Accessed April 3, 2007.

# Objectives and Study Questions

- Develop alternative method for capturing mortality data that is ***rapid & reliable***
- Is current mortality rate same as pre-Katrina?
- If it changed, what accounts for the change?

# Novel Methodology

- **New Orleans Locals Think Katrina's Toll Is Still Rising: Surge in Deaths Blamed On Storm-Related Stress**

By Linton Weeks

Washington Post Staff Writer

Sunday, February 19, 2006; A03

- **After the Storm – Health Care Infrastructure in Post-Katrina New Orleans.** Beggren, RE, Curiel, TJ. New England Journal of Medicine

1552

**The Times-Picayune**

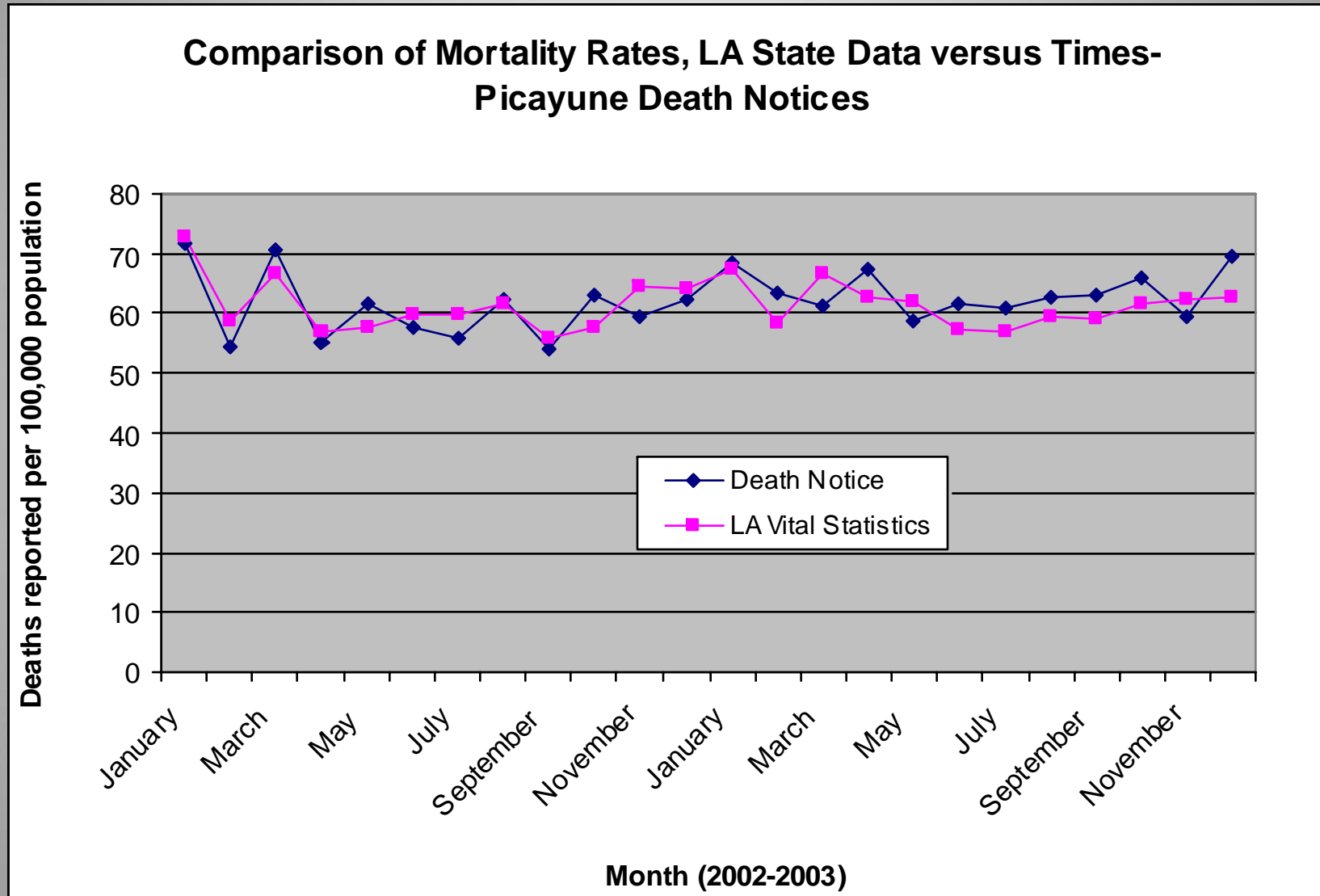


# Validation of Methodology

- Compare mortality rates from two data sources in pre-Katrina years:
  - *Times-Picayune* death notices
  - State Vital Statistics



# Validation of Methodology



- $r = 0.6563$ , significant positive correlation

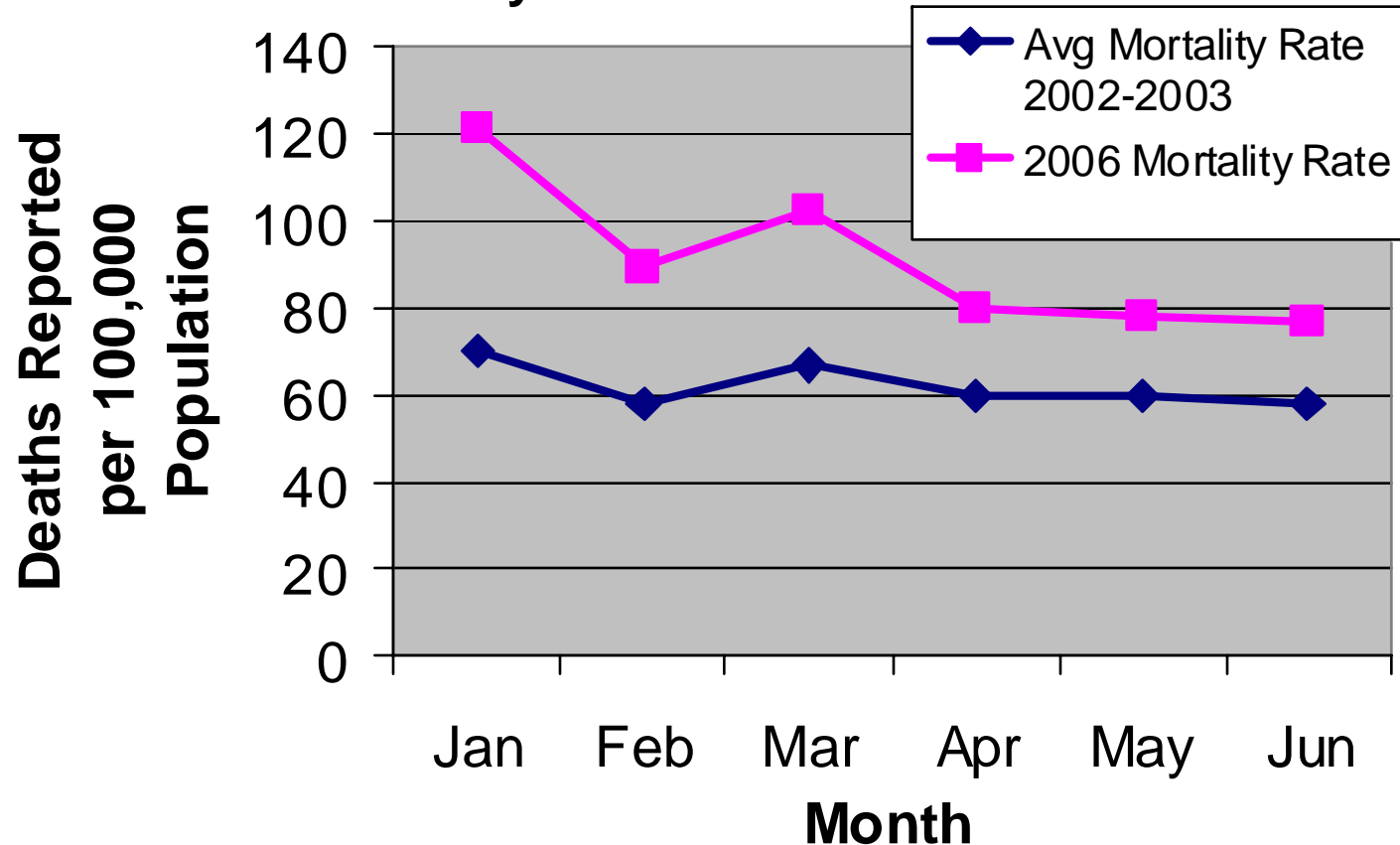
# Adjustments for Confounders, 2006

Table 1. Frequency of death notices by inclusion and exclusion criteria, 2006

	<b>January</b>	<b>February</b>	<b>March</b>	<b>April</b>	<b>May</b>	<b>June</b>
<b>Total Death Notices</b>	<b>1589</b>	<b>1301</b>	<b>1418</b>	<b>1214</b>	<b>1194</b>	<b>1185</b>
<b>Excluding Katrina Deaths</b>	<b>1558</b>	<b>1270</b>	<b>1387</b>	<b>1183</b>	<b>1163</b>	<b>1154</b>
<b>Excluding Out of LA Deaths</b>	<b>1427</b>	<b>1139</b>	<b>1256</b>	<b>1052</b>	<b>1032</b>	<b>1023</b>
<b>Excluding Duplicate Entries</b>	<b>1206</b>	<b>918</b>	<b>1035</b>	<b>831</b>	<b>811</b>	<b>802</b>
<b>Excluding Out of 10 Parish Deaths</b>	<b>1108</b>	<b>820</b>	<b>937</b>	<b>733</b>	<b>713</b>	<b>704</b>

# Current Mortality Statistics

Comparison of Mortality Rates Between Jan-June 2006 and Jan-June 2002-2003 Average, Times-Picayune Death Notices



- $p < 0.005$

# Current Mortality Statistics Contd.

Table 2. Frequency of death per population and mortality rates, pre- and post-Katrina, *Times-Picayune* death notices

	2002 -- 2003				2006			
	Avg # deaths	Total NO Metropolitan population	%	Mortality rate (deaths/100,000)	# deaths	Total NO Metropolitan population	%	Mortality rate (deaths/100,000)
<b>Jan</b>	1037.5	1,481,393	0.070	70.04	1108	914,745	0.121	121.13
<b>Feb</b>	864.5	1,481,393	0.058	58.36	820	914,745	0.090	89.64
<b>Mar</b>	986.5	1,481,393	0.067	66.59	937	914,745	0.102	102.43
<b>Apr</b>	887	1,481,393	0.060	59.88	733	914,745	0.080	80.13
<b>May</b>	885	1,481,393	0.060	59.74	713	914,745	0.078	77.95
<b>Jun</b>	865	1,481,393	0.058	58.39	704	914,745	0.077	76.96
<b>Mean with 95% CI</b>				<b>62.17</b> (95% CI 52.31 - 72.02)				<b>91.37</b> (95% CI 56.44 - 126.30)

# Limitations

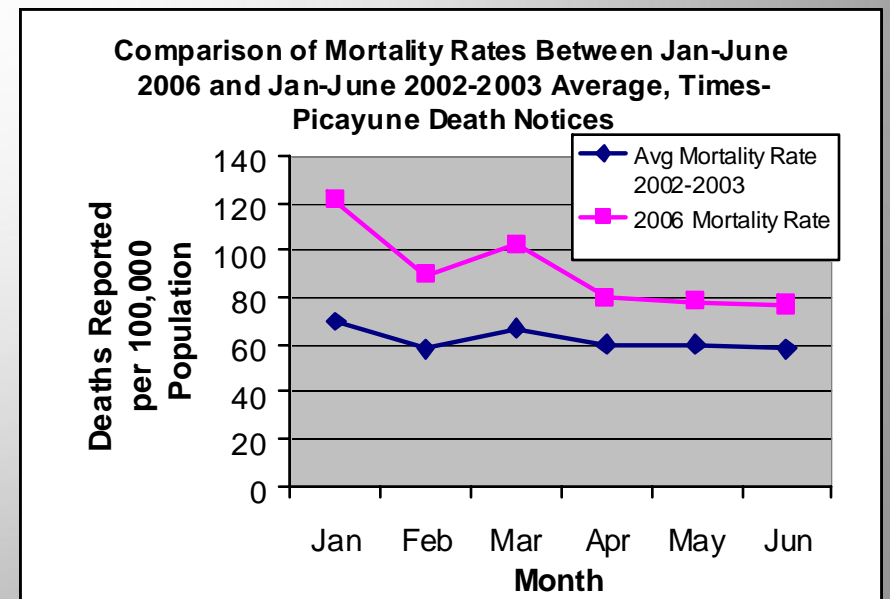
- Passive data collection system, under-reporting
- Population estimate from Jan, 2006 used throughout
- Demographic differences, age-distribution

# Conclusions

- Death notices serve as a ***rapid, reliable*** source of mortality data
- Significant increase in mortality rates, Jan-June, 2006
- Reinforce need for electronic records
- Call to action for state, federal agencies
- Need for further research

# New Questions

- Cause of Death
- Etiology
- Identify vulnerable populations
- Demographics, age-distribution



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