

# Health Disparities associated with *Salmonella* Infections

## Harris County (excluding Houston), TX 2000, 2005 and 2010

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### Background

*Salmonella* infections are reportable in Texas and burden significantly the Harris County population. Harris County Public Health (HCPH) is a local health department serving approximately two million people, residents of Harris County outside the City of Houston. Salmonellosis cases reported to HCPH in 2000, 2005 and 2010 were used for this analysis of socioeconomic disparities in incidence of disease.

### Objective

To study the effect of socioeconomic health disparities at the neighborhood level in *Salmonella* incidence using GIS and census tract level socioeconomic data.

### Methods

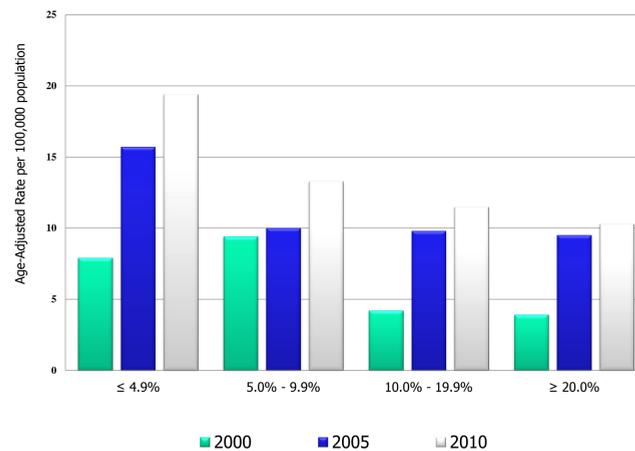
- A total of 726 of 748 (97%) *Salmonella* cases reported to HCPH in 2000, 2005 and 2010 were geocoded using ArcGIS version 10.0.
- Cases were linked to census tracts and arranged into 4 categories based on percent of the census tract population living below the federal poverty as follows: 0 – 4.9%, 5 – 9.9%, 10 – 19.9%, and 20%\*.
- Age-adjusted incidence rates (per 100,000 population) and confidence intervals (CI) were calculated for each category\*\*. STATA/SE version 11.1 was used for analysis.
- Poisson regression was used to test statistical significance.

\* Using the methodology recommended by the Harvard's Public Health Disparities Geocoding Project. <http://www.hsph.harvard.edu/thegeocodingproject/>

\*\*2000 decennial census population data and 2010 American Community Survey (ACS) population data were used

### Results

Age-Adjusted Rate of Salmonella Infections by Percent of Population under Federal Poverty Level Harris County, (excluding Houston), TX 2000, 2005 and 2010



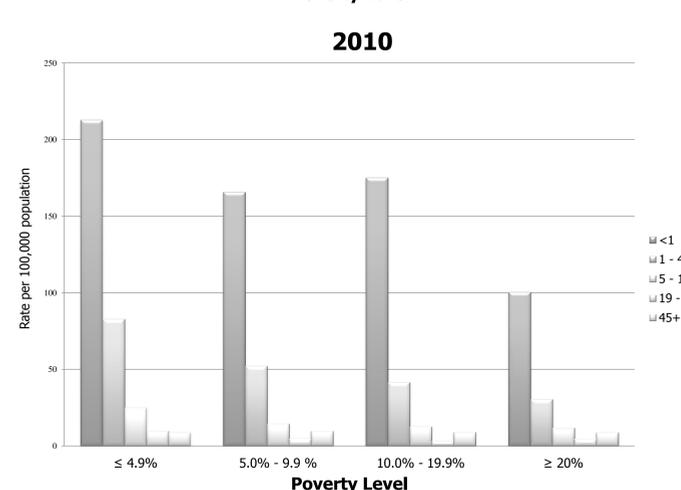
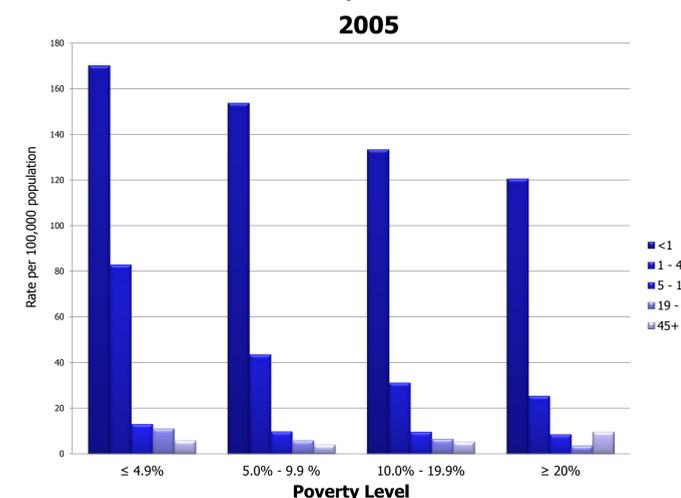
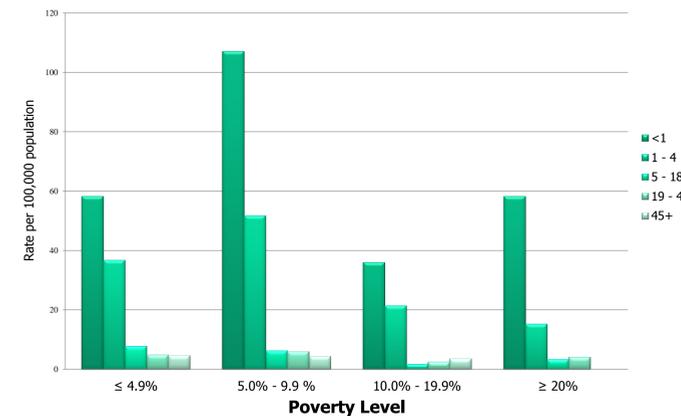
Age-Adjusted Salmonellosis Rate (per 100,000 population) and Confidence Intervals (CIs)				
Year	Poverty Level (≤4.9%)	Poverty Level (5.0% - 9.9%)	Poverty Level (10.0% - 19.9%)	Poverty Level (≥20.0%)
2000	7.9 (5.6, 10.1)	9.4 (6.7, 12.0)	4.2 (2.3, 6.1)	3.9 (1.7, 6.1)
2005	15.7 (12.3, 19.1)	10.0 (7.5, 12.6)	9.8 (7.5, 12.0)	9.5 (6.7, 12.2)
2010	19.4 (15.6, 23.1)	13.3 (10.3, 16.2)	11.5 (9.1, 14.0)	10.3 (7.5, 13.1)

Number of cases, Crude and Age-Adjusted Salmonellosis Rate (per 100,000 population) and Confidence Intervals				
Year	N	Crude Rate	Adjusted Rate	Confidence Interval (CI)
2000	129	7.3	6.7	5.6 - 7.9
2005	269	11.8	10.9	9.5 - 12.2
2010	328	14.4	13.2	11.8 - 14.7

Poisson coefficient, incidence rate ratio (IRR) and p value for Salmonellosis incidence rate (IR) in 2000, 2005 and 2010 Harris County (excluding Houston) TX			
	Poisson Coefficient	IRR Per 5-year period	p-value
<b>Trend of Salmonellosis rates 2000, 2005 and 2010</b>	0.0699516	1.418724176	0.000

Rates in this table are crude only internally adjusted for poverty group and age group as they would be in a regression model

Age-Specific Rate of Salmonella Infections by Percent of Population under Federal Poverty Level Harris County, (excluding Houston), TX 2000



### Summary

- The number of Salmonellosis cases reported and the age-adjusted incidence rate for 2000, 2005 and 2010 was 129 (6.7/100,000), 269 (rate: 10.9/100,000) and 328 (rate: 13.2/100,000), respectively.
- The incidence difference between the wealthiest and poorest groups increased from 4.0 in 2000 to 9.1 in 2010.
- The association of higher Salmonellosis incidence rate with lower census tract-level poverty was found for all age groups.
- A Poisson regression model also demonstrated the following trend: individuals living in CTs with poverty rate of ≥20% had a 45% reduction in Salmonellosis rate compared to individuals living in CTs with <5% poverty rate (result not presented).

### Conclusions

- The Salmonellosis incidence rate was consistently inversely associated with census-tract level poverty for the studied surveillance years (2000, 2005, 2010)
- For each time period studied, the rate for the wealthiest census-tracts was about twice that of the lowest census-tract poverty level
- The incidence of Salmonellosis significantly increased at a rate of about 42% every 5-year period
- Education regarding risk of Salmonellosis should be given to all Harris County residents with an emphasis on those in the highest socio-economic strata
- Risk factors most common among individuals with the highest socio-economic strata should be understood better