Dying for [no] coverage: effects of lack of insurance on mortality among working age adults

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Disparities in life expectancy

- Minority populations have a higher risk of death:
  - The black/white ratio in all-cause, age adjusted mortality rates **increased** between 1979 and 1998, but **declined** between 1990 and 2004
  - Risk of death for blaks remained 31% higher than for whites.
- Deaths among **persons aged 45 to 64** years were the greatest contributor to black-white differences in life expectancy

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Health Insurance: Rural and minority disparities

- More than half of the uninsured population under age 65 is comprised of minority persons
- Rural residents are more likely than urban residents to lack health insurance
- Rural minority populations are doubly disadvantaged

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Conflicting new research

- Kronick, *Health Affairs* 2009:
  - Health Insurance has no effect on probability of death: Adjusted hazard ratio 1.03, CI 0.95 – 1.12
  - Used NHIS Linked Mortality File, 1986-2000
- Wilper et al, *Am J Public Health* 2009:
  - Health insurance is strongly associated with the probability of death: Adjusted hazard ratio 1.40, CI 1.06 – 1.84
  - Used NHANES Linked Mortality File, 1988-1994

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Our research questions

- Does health insurance affect the likelihood of death among persons aged 45 – 64?
- Does health insurance ameliorate race-based disparities in mortality among persons aged 45 – 64?

- Preliminary results from a larger research project

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Method

- Data source: National Health Interview Survey Linked Mortality File, 2004 release
  - Subset to 1990 – 1991 and
  - Persons aged 45 – 64 at interview (n = 44,711), with known vitality status
- Outcome: Death from any cause by 2002 (5,989 deaths)
- Independent variables:
  - Insurance status: private, public, none
  - Race/ethnicity

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Method, continued

- Control variables:
  - Demographics
  - Resources
  - Health status
- Analytic approach
  - Logistic regression (death yes/no) for this preliminary analysis
  - All estimates weighted to reflect the complex sampling design of NHIS
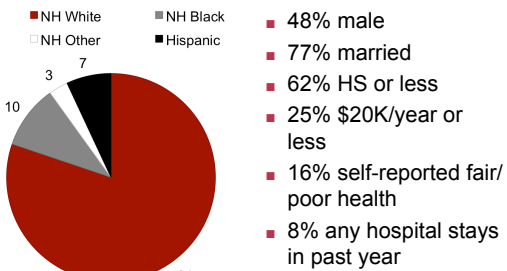
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Characteristics of respondents

Legend: NH White, NH Black, NH Other, Hispanic

Pie chart values: 81, 10, 3, 7

- 48% male
- 77% married
- 62% HS or less
- 25% $20K/year or less
- 16% self-reported fair/poor health
- 8% any hospital stays in past year

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Minorities more likely to be uninsured, publicly insured

Legend: Uninsured, Public insurance, Private insurance

	NH White	NH Black	Hispanic	NH Other
Uninsured	9	19	28	20
Public insurance	7	18	12	13
Private insurance	84	63	60	68
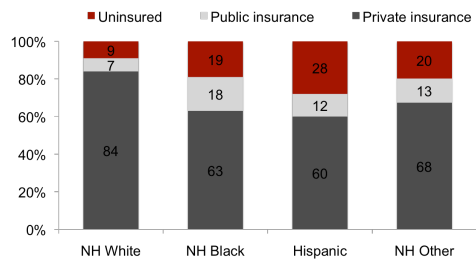
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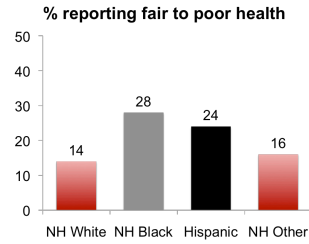
Disadvantage higher for minorities

- Lower education
- Lower income
- Poorer perceived health
- Slight differences in hospitalization:
  - NH White 8%
  - NH Black, 9%
  - Hispanic, 9%
  - NH Other 6.5%

% reporting fair to poor health
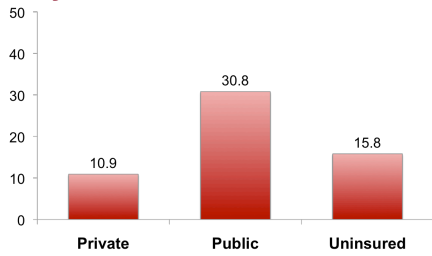
Category	Value
NH White	14
NH Black	28
Hispanic	24
NH Other	16

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Uninsured, Publicly Insured more likely to die

Category	Value
Private	10.9
Public	30.8
Uninsured	15.8

All percents weighted to reflect US population
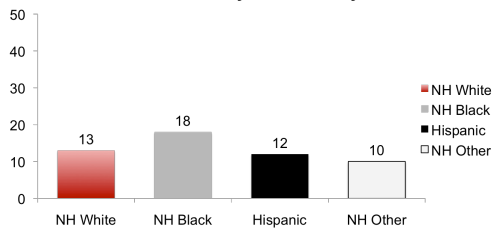
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NH Black adults more likely to die than NH white adults

Percent of respondents assumed deceased by 2002, by race/ethnicity

- NH White
- NH Black
- Hispanic
- NH Other

Category	Value
NH White	13
NH Black	18
Hispanic	12
NH Other	10

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Mortality risk by insurance

- Odds of death by 2002:

Compared to privately insured persons:	OR	95% CI
Publicly insured	3.19	2.91-2.50
Uninsured	1.62	1.49-1.77

Analysis adjusted for sex, age at interview and year of interview. Referent group is privately insured adults.

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Mortality risk by race/ethnicity

- Race matters – in some cases

	OR	95% CI
NH Black	**1.50**	**1.37-1.65**
Hispanic	1.01	0.87-1.16
NH Other	0.80	0.62-1.04

Analysis adjusted for sex, age at interview and year of interview. Referent group is NH white.

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Who was insured in 1990-1991?

Factor	Value	AOR Private Insurance	AOR Public Insurance
Race/ethnicity	NH Black	0.79	1.11
(Reference white)	NH Other	0.44	
	Hispanic	0.46	0.55
Sex (ref male)	Female	1.15	0.80
Residence (ref urban)	Rural	0.87	0.84
Income (ref over $20K)	< $20K	0.16	0.85
Health (ref good-ex)	Fair-Poor	0.59	2.44
Hospitalization (ref 0)	1+ stays	1.5	1.96
Doctor visits (ref 10+)	9 or less	0.81	0.39

Odds of being privately or publicly insured versus uninsured, estimated using multinomial regression. Model adjusts for age, education, marital status, family size, education, region and year of interview.

Race/ethnicity & insurance together, unadjusted

- Many disparities

Analysis controls for age, sex and year of interview. Values in bold are statistically different from referent group.

Compared to NH white privately insured adults	OR	95% CI
NH White, publicly insured	**3.46**	**3.11-3.84**
NH White, uninsured	**1.72**	**1.55-1.90**
NH Black, privately insured	**1.38**	**1.23-1.57**
NH Black, publicly insured	**3.35**	**2.77-4.05**
NH Black, uninsured	**2.01**	**1.70-2.39**
Hispanic, privately insured	0.88	0.70-1.10
Hispanic, publicly insured	**2.84**	**2.03-3.98**
Hispanic, uninsured	**1.35**	**1.03-1.78**
NH Other, privately insured	0.90	0.68-1.19
NH Other, publicly insured	1.53	0.86-2.74
NH Other, uninsured	0.84	0.55-1.28

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Holding characteristics equal:

- Insurance matters
- Insurance may trump race

Risk of death compared to NH white, privately insured:	AOR	95% CI
NH White, public	**1.80**	**1.61-2.01**
NH White, uninsured	**1.31**	**1.16-1.46**
NH Black, private	1.11	0.97-1.26
NH Black, public	**1.40**	**1.14-1.71**
NH Black, uninsured	**1.23**	**1.03-1.48**
Hispanic, private	**0.76**	**0.61-0.94**
Hispanic, public	1.19	0.84-1.68
Hispanic, uninsured	0.94	0.70-1.28
NH Other, private	0.94	0.69-1.29
NH Other, public	0.91	0.49-1.70
NH Other, uninsured	0.70	0.46-1.07

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Other contributors to death by 2002

Factor	OR	95% CI
Female	**0.54**	**0.51-0.85**
Age (each year)	**1.09**	**1.09-1.10**
Income (ref: >$20K) < $20K/year	**1.19**	**1.09-1.30**
Education (ref: HS) < High Sch.	**1.12**	**1.03-1.21**
College degree	**0.76**	**0.69-0.83**
Marital (ref: Married) Wid/Div/Sep	**1.26**	**1.15-1.38**
Never married	**1.46**	**1.27-1.67**
Region (ref: West) South	**1.11**	**1.01-1.22**
Health status (ref: Ex-good) fair-poor	**2.03**	**1.87-2.22**
Hospital stay in year (ref: none)	**1.87**	**1.70-2.06**
Low doctor visit (ref ≥ 10)	**0.72**	**0.65-0.79**

Model controls for survey year. Also in model, rural residence, not significant. NE, MW not different from West.

Limitations

- Single measurement of insurance status
- Relatively sparse personal information from NHIS
  - Not included: known disease states, occupation
- Use of $20K income versus Federal poverty level
- Use of logistic regression versus survival analysis

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Our continuing research plans

- Use the full Linked Mortality File (1986-2004 NHIS linked to Death File through 2006)
- Test the use of a propensity score to adjust for differential likelihood of being insured
- Consider survival time as well as simple mortality

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Conclusions

- Insurance matters
- Improved access to insurance may help alleviate race-based disparities in mortality among adults in the 45 – 64 age group
- Policy perversity?
  - Medicaid among older working age adults goes to those too disabled to work and more likely to die
  - Could earlier access to insurance prevent the disability?

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