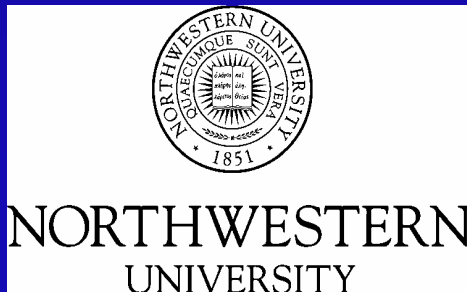


# Health Literacy and Mortality Among Elderly Persons

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ACP Foundation  
Promoting health literacy

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# Study Team

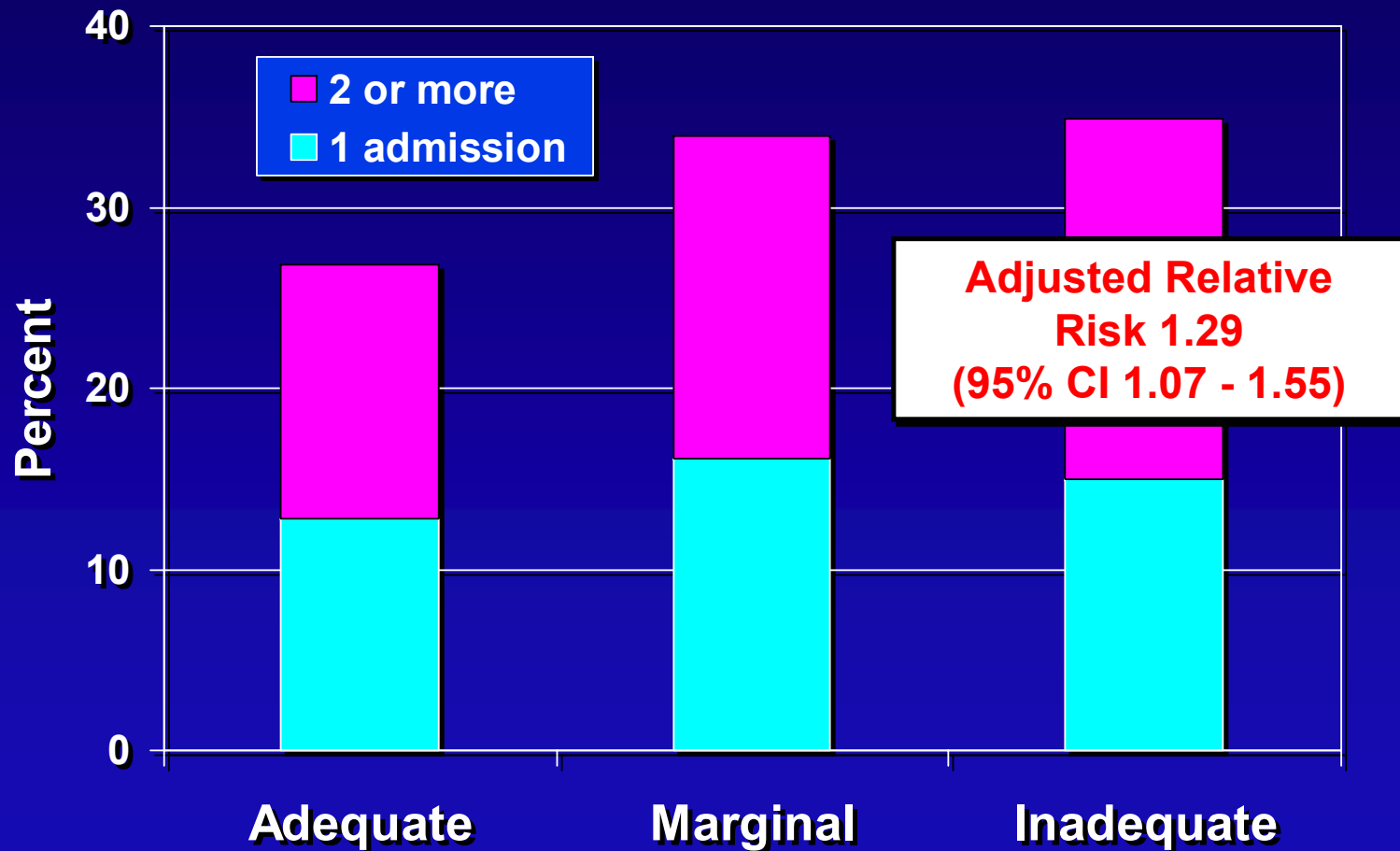
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**Supported by the National Institute on Aging**

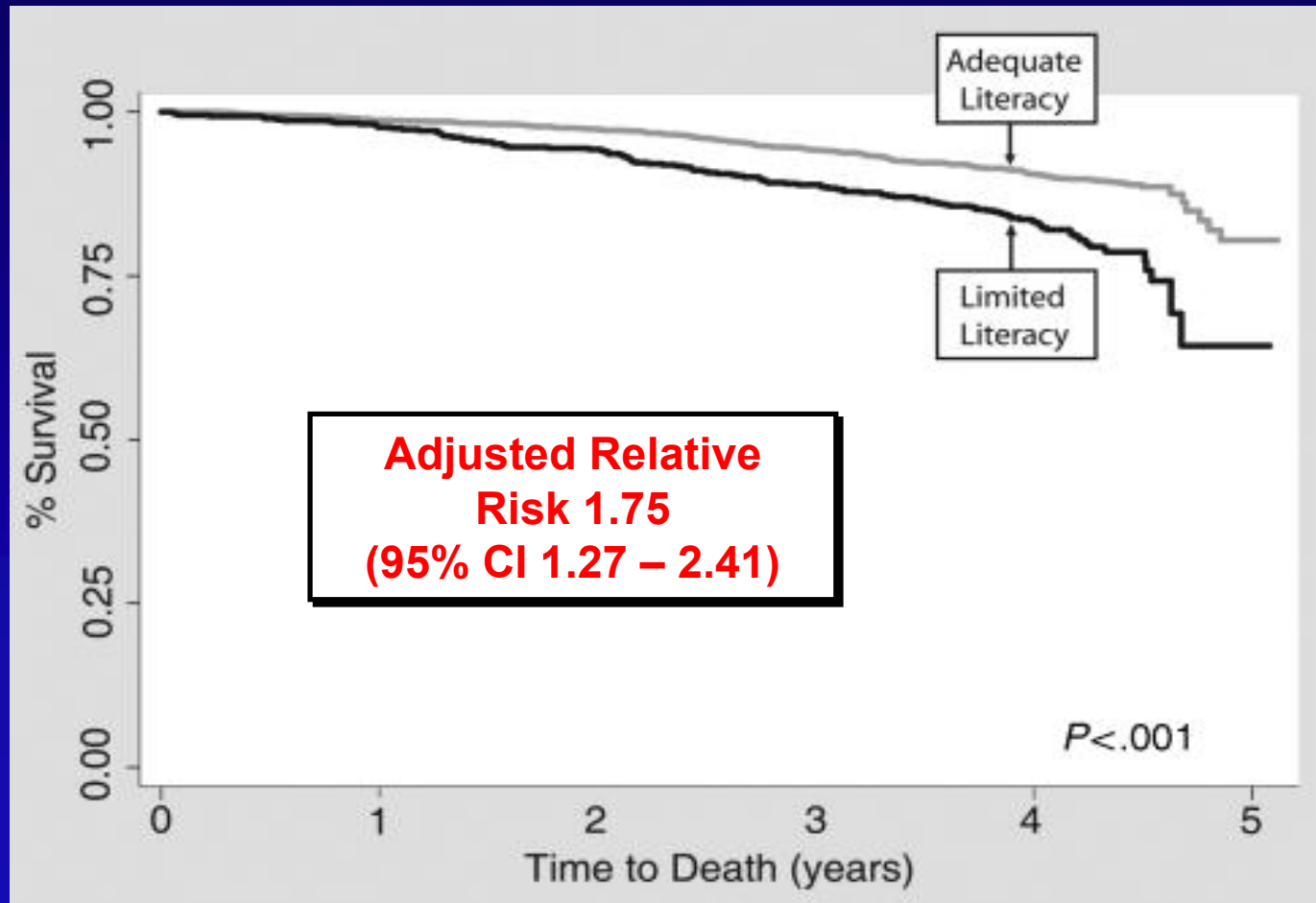
# **People with Low Health Literacy Have Worse Health Outcomes**

- **Worse self-reported physical health and limitations in activities of daily living**
- **Higher emergency department use**
- **More hospitalizations**

# Medicare Patients with Low Literacy More Likely to be Hospitalized



# Limited Literacy Also Associated with Higher Crude and Risk-Adjusted Mortality



# Study Aim

**To determine whether inadequate or marginal functional health literacy independently predicts *overall* and *cause-specific mortality* among older adults.**

# **Study Methods:**

## **Baseline Data Collection**

- **In 1997, we identified 7471 new Medicare Managed Care enrollees age  $\geq 65$  in 4 cities. Enrollees were contacted 3 months later and asked to participate.**
- **3260 people interviewed to determine demographics, SES, health behaviors, self-reported physical and mental health, and chronic medical conditions.**
- **Reading fluency measured with the S-TOFHLA.**
- **Cognitive functioning assessed by the MMSE.**

# **Study Methods: Survival Analyses**

- **Identified date and cause of death for participants from '97-'03 using the National Death Index**
- **Used multivariate Cox proportional hazards model to examine the independent association between literacy and overall mortality after adjusting for age, gender, race/ethnicity, income, education, baseline physical and mental health, and the number of chronic medical conditions**
- **Repeated for cause-specific mortality:**
  - **Cardiovascular, cancer, and all other causes**

# Study Participants

	<b>Adequate (n=2094)</b>	<b>Marginal (n=366)</b>	<b>Inadequate (n=800)</b>
<b>Age (mean)*</b>	<b>72</b>	<b>74</b>	<b>76</b>
<b>Race/ethnicity (%)*</b>			
<b>White</b>	<b>84</b>	<b>68</b>	<b>58</b>
<b>African American</b>	<b>7</b>	<b>13</b>	<b>25</b>
<b>Hispanic</b>	<b>8</b>	<b>19</b>	<b>15</b>
<b>Income &lt; \$10,000 (%)*</b>	<b>12</b>	<b>26</b>	<b>35</b>
<b>Education &lt; HS (%)*</b>	<b>22</b>	<b>50</b>	<b>65</b>

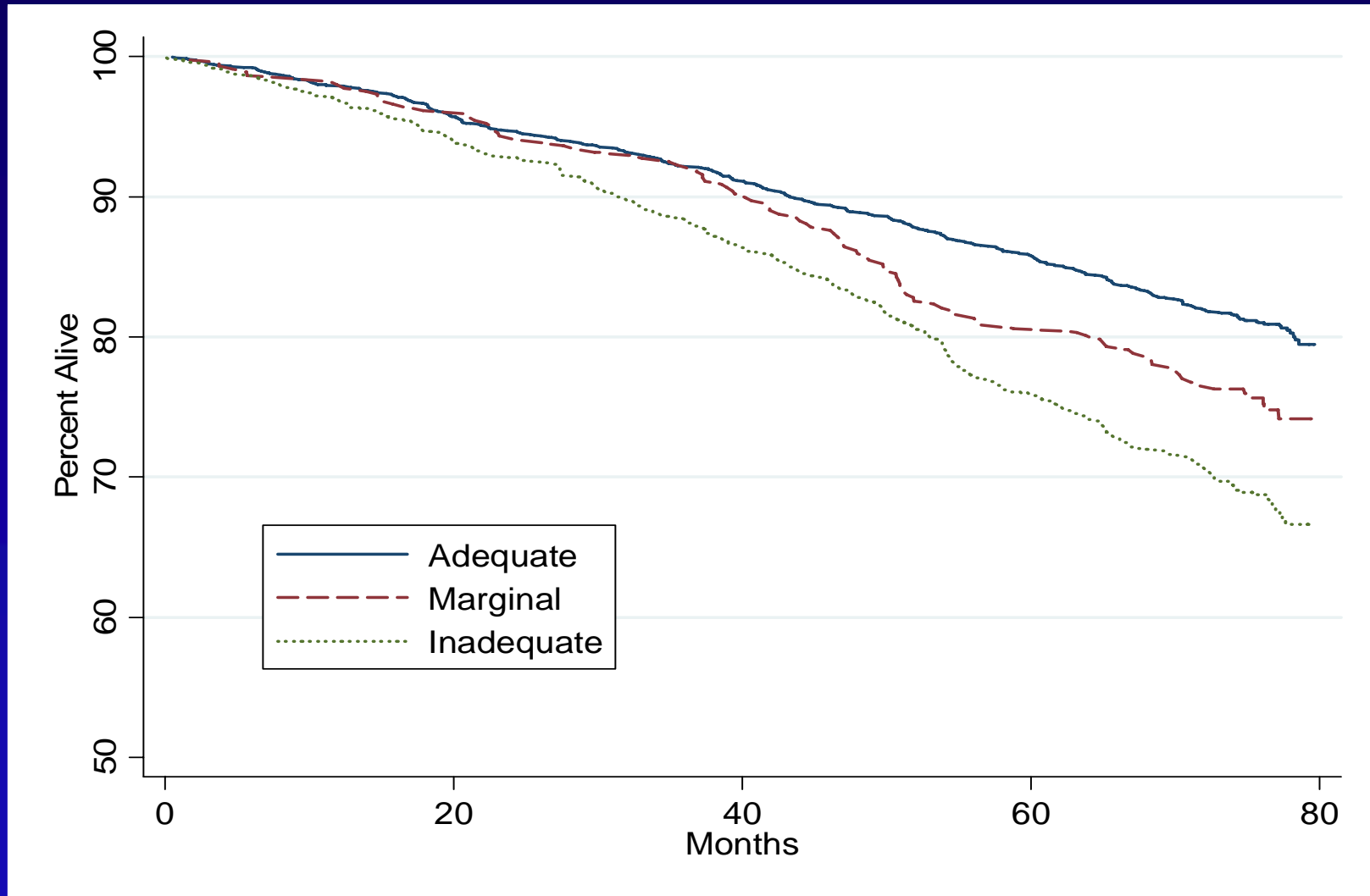
\* p < .001 across groups

# Participants with Inadequate Literacy Had Worse Baseline Health

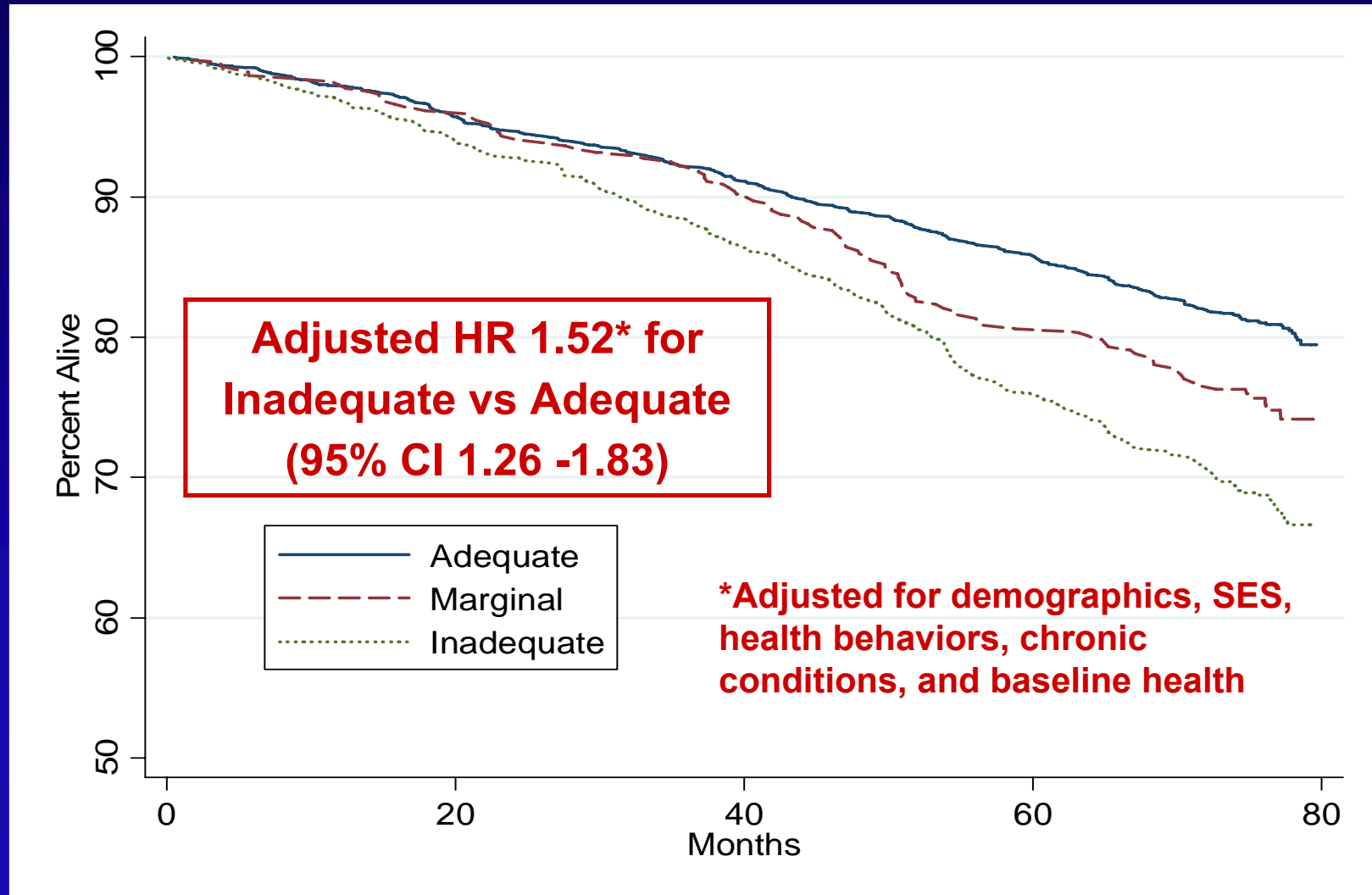
	Adequate (n=2094)	Marginal (n=366)	Inadequate (n=800)
SF-36 Physical (mean)*	46 (11)	44 (12)	42 (12)
SF-36 Mental (mean)*	56 (8)	55 (9)	52 (11)
IADL Limitation (%)*	24	38	46
ADL Limitation (%)*	3	6	9

\* p < .001 across groups

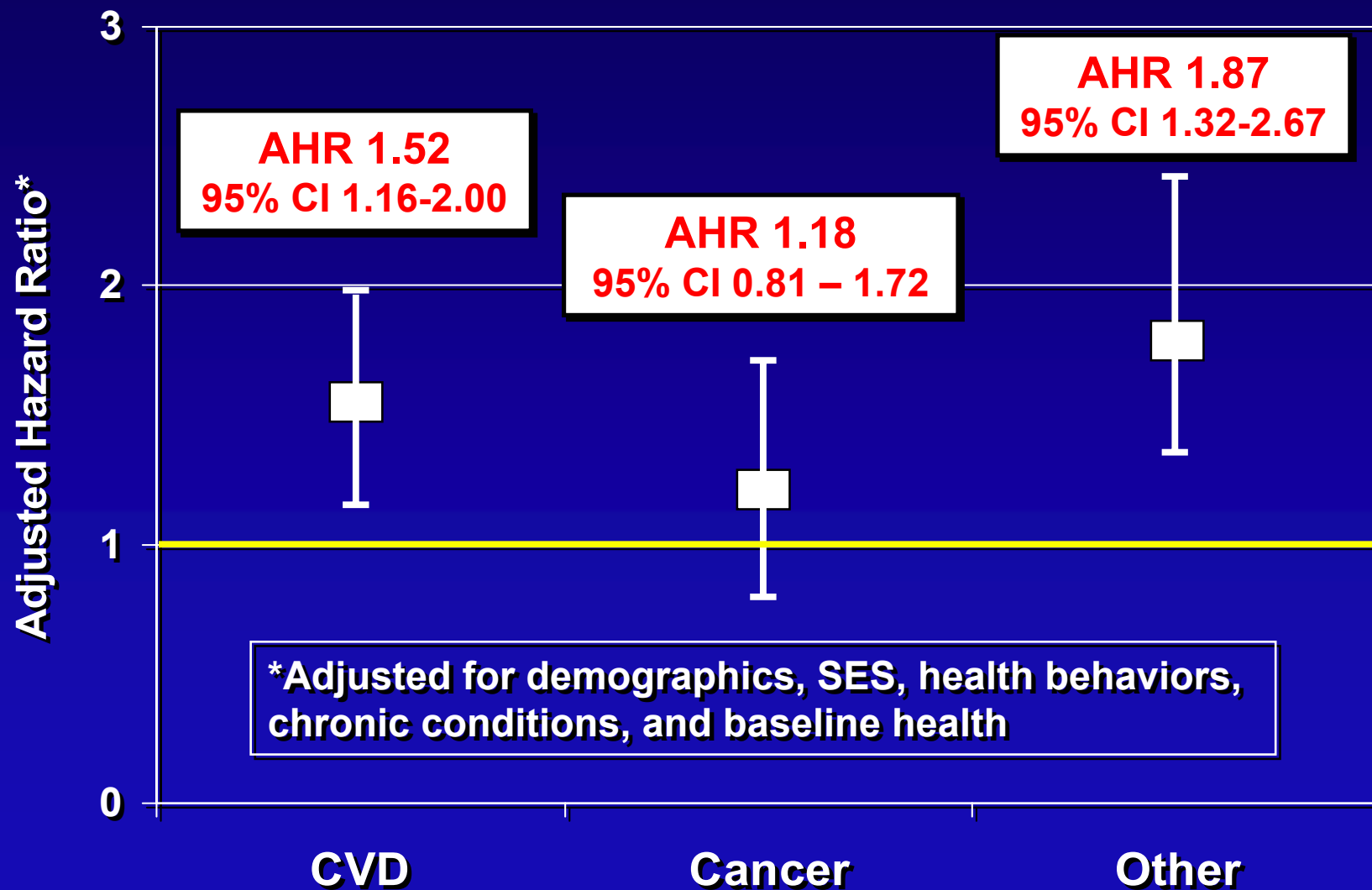
# Enrollees with Inadequate Literacy More Likely to Die During the Six Year Follow-Up



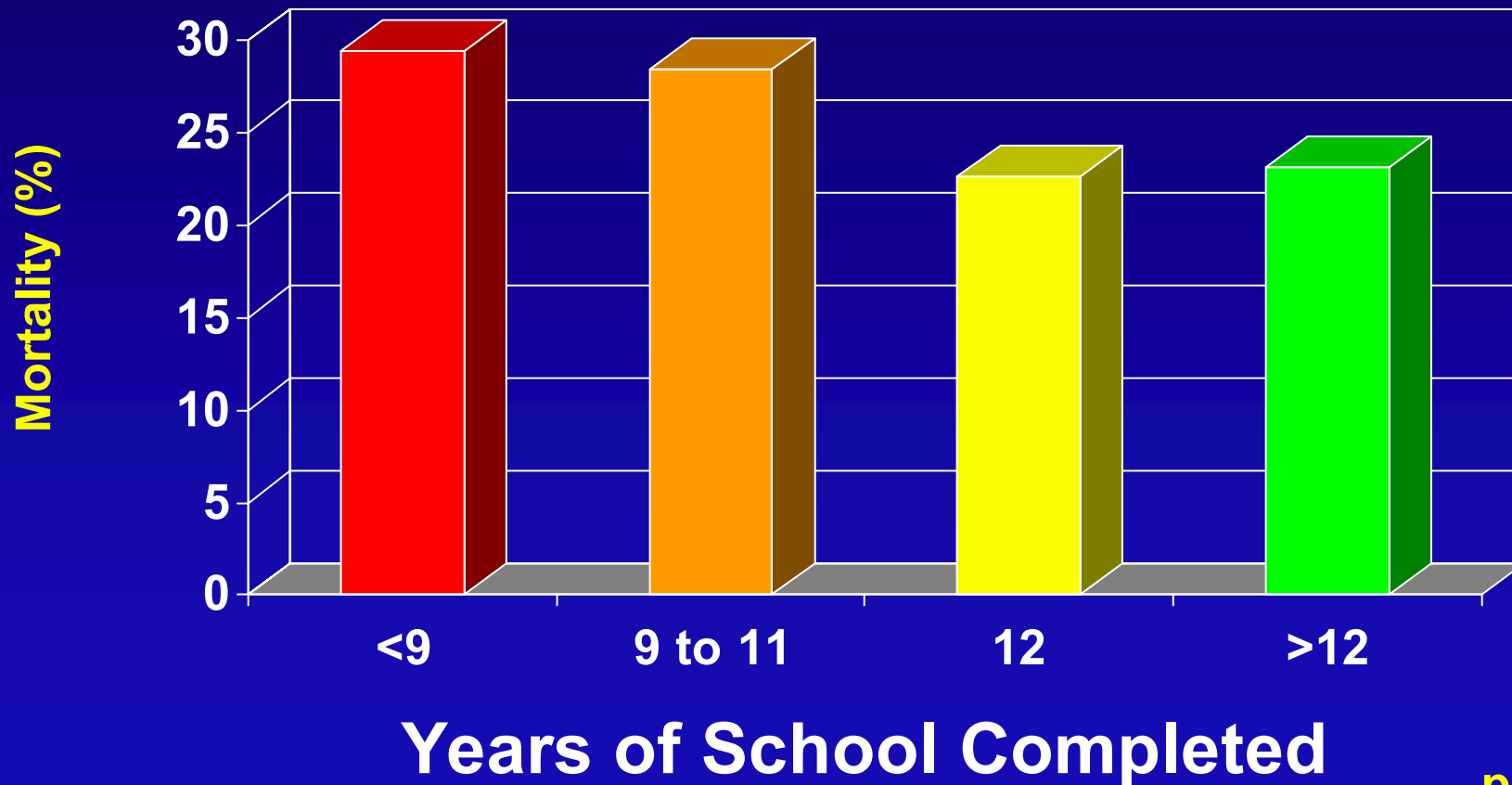
# Enrollees with Inadequate Literacy More Likely to Die During the Six Year Follow-Up



# Inadequate Health Literacy Associated With Cardiovascular Death but Not Cancer Death

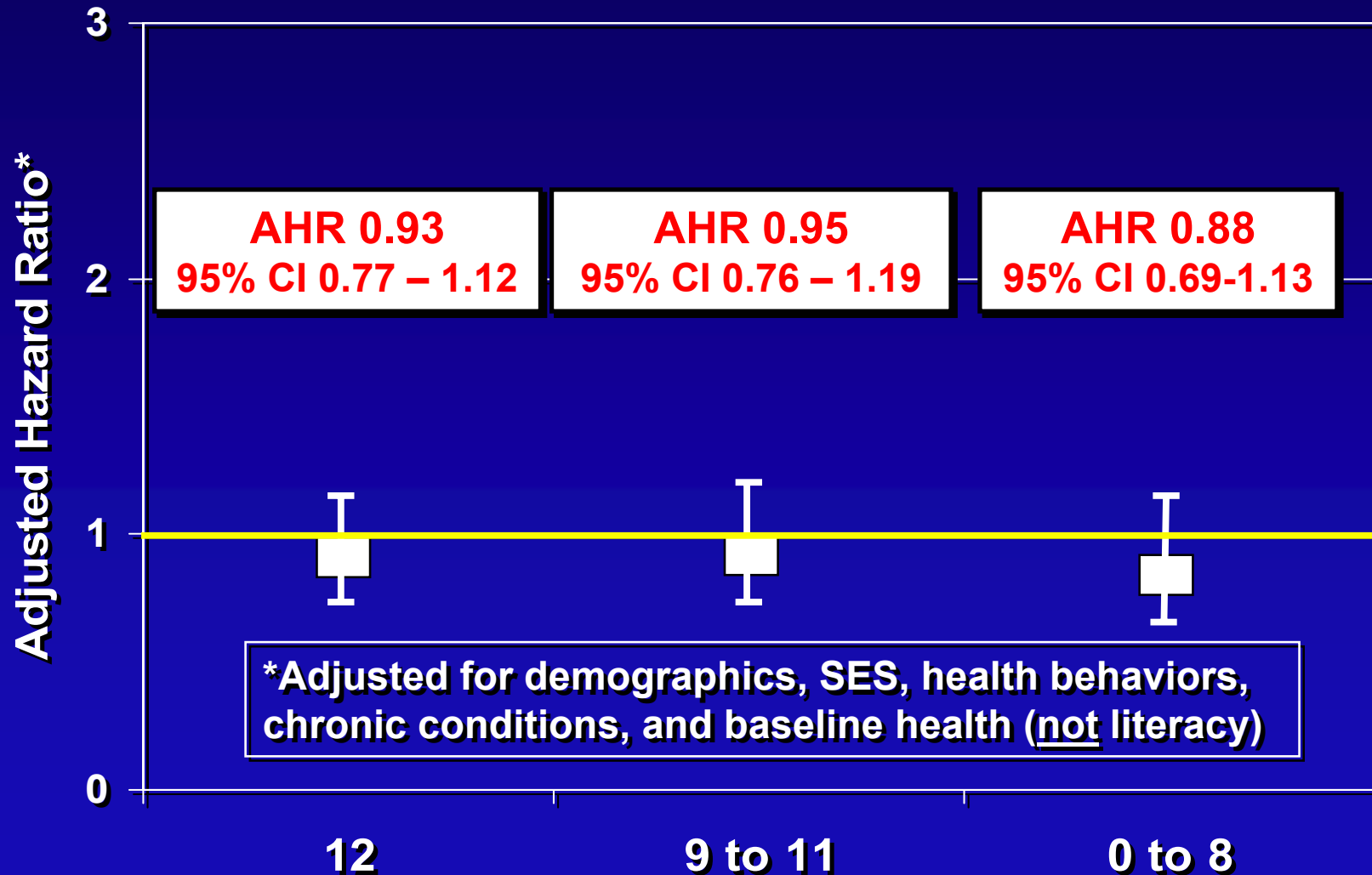


# Years of School Completed Weakly Associated with Overall Mortality



$p = 0.002$

# Years of School Completed Not Independently Associated With Mortality



# Conclusions

- Inadequate health literacy, as measured by the S-TOFHLA, is an independent risk factor for all-cause and cardiovascular mortality among older, community-dwelling adults.
  - Consistent with previous study
  - Association stronger than for hospitalization
  - Causal pathways still unclear
- Literacy was not associated with cancer deaths
- Education not predictive of death
  - Shows need for studies to measure literacy

# Implications

- **Individuals with inadequate health literacy should be recognized as a vulnerable population that may require special services to prevent premature disability or death**
  - **Intensive education**
  - **Chronic disease management**
  - **Medication planning and management**
- **Widespread improvements in health and healthcare communication are needed to reduce the excess deaths among this group**