

Literacy, Numeracy, Income & Composite Health Risks

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Project funded by the Agency for Healthcare Research and Quality (AHRQ), Grant 1R01HS020919,
An Open-source Public Domain Health Risk Assessment for Use in Primary Care.

Objectives

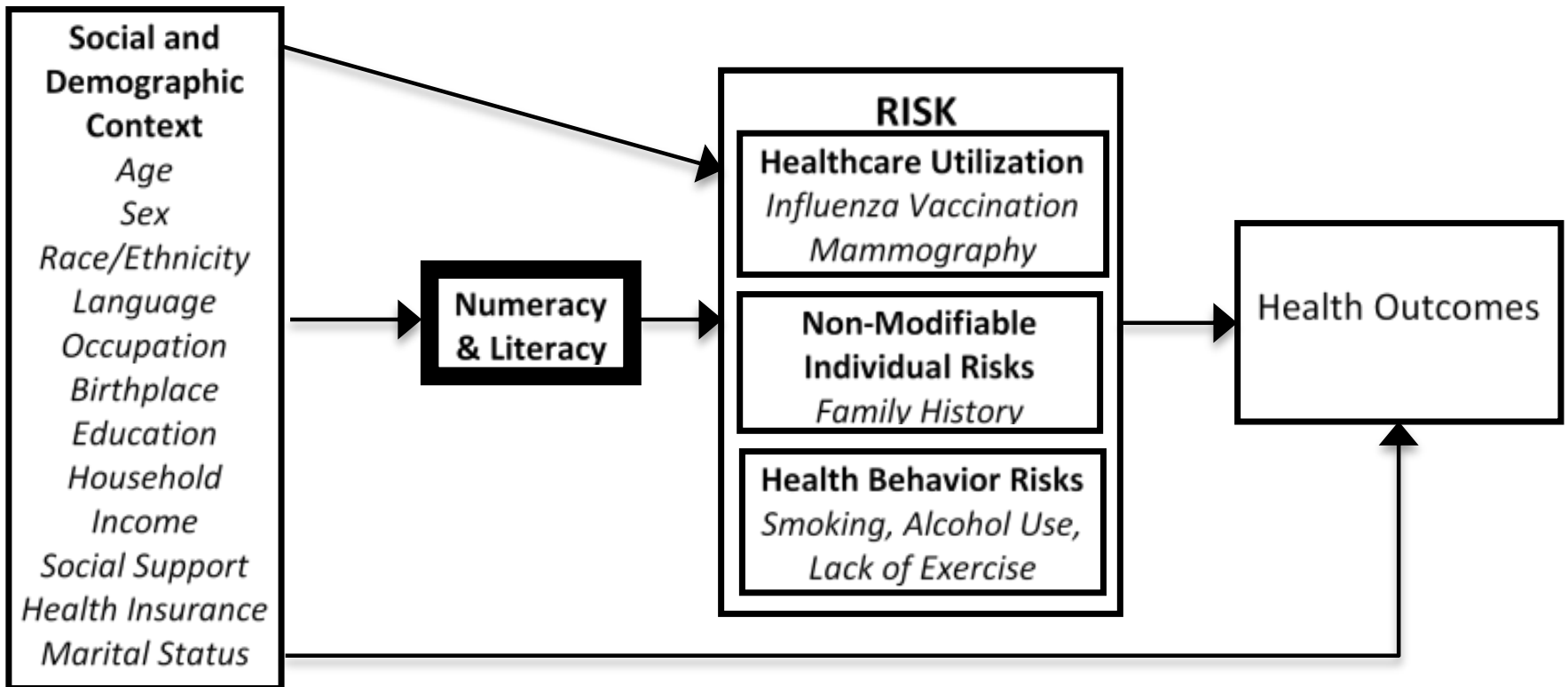
- Understand how numeracy and literacy may effect the risks that impact health outcomes
 - Present a conceptual model
 - Present results from the pilot study of a health risk assessment

Literacy, Numeracy & Health

- Low health literacy and numeracy are associated with poorer health outcomes and lower use of health care services.
 - Poorer Health Status and All Cause Mortality in Elderly
 - Emergency Care Use
 - Hospitalization
 - Medication Management
 - Home Blood Pressure Monitoring
 - Shared Decision Making
 - Interpreting Health Information
(labels and health messages)
 - Preventive Service Use
(mammography, colorectal cancer screenings and influenza)
 - Interpretation and Communication of Risks

Conceptual Model

Conceptual Model



HEALTHY LIFE

HEALTH RISK ASSESSMENT



Sex: female
Your Current Age: 64

DATE: 2015-01-28 15:39:12.0
Report Number: 1614

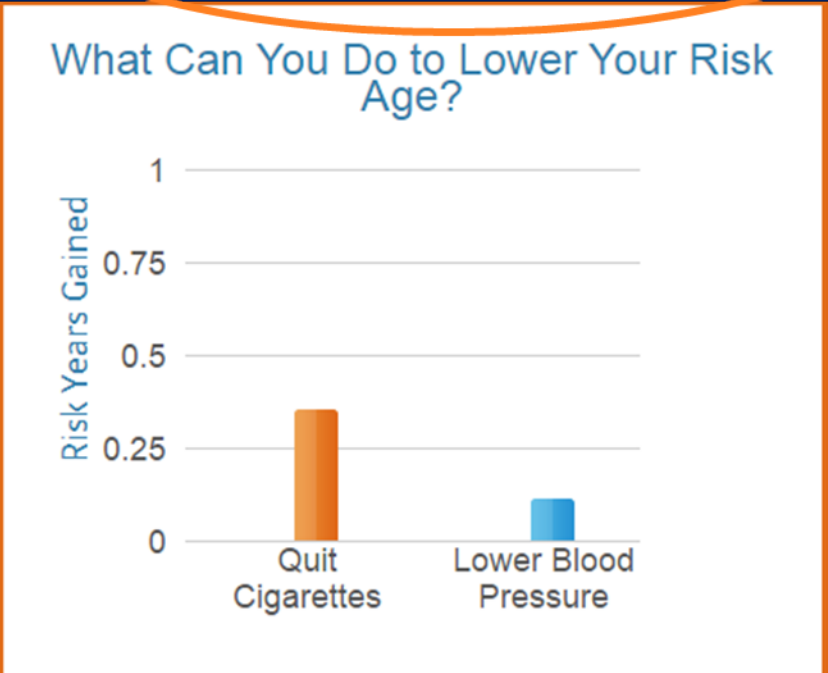
Your Risk Age

Now: **72.3**

Risk Age Now compares you to other people your age and sex for all causes of death.

Target: **71.9**

Target Risk Age tells you what your Risk Age would be if you lived healthier.



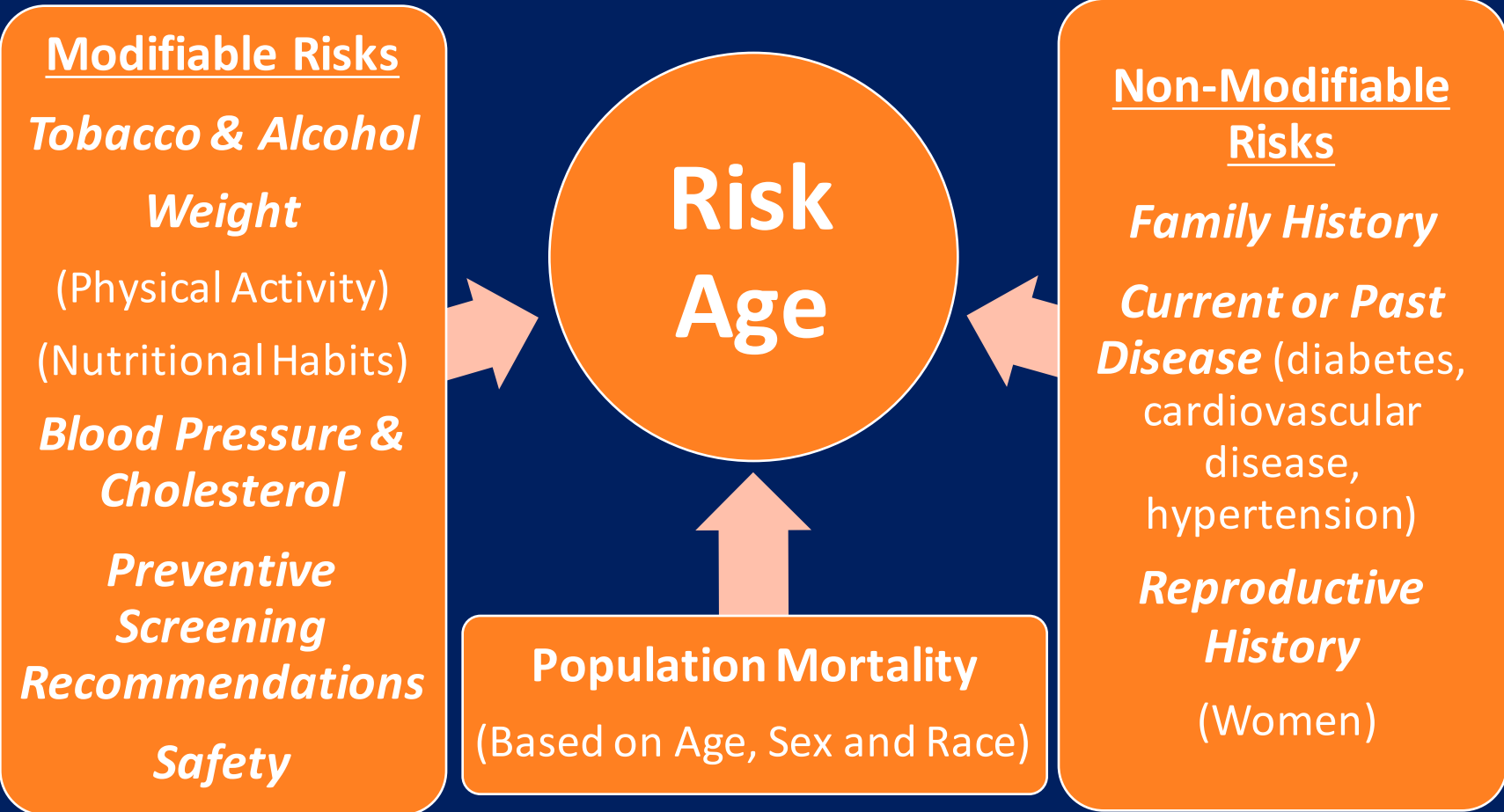
Not smoking is the single best thing you can do for your health.

A good systolic blood pressure is less than 130.

Getting a regular pap smear can detect problems early.

How We Measure Risk

A Composite Index of Risk of Mortality



Measures

Health Literacy

1. How confident are you filling out medical or hospital forms by yourself?

5-point Likert Scale: Not at all to Extremely Confident

Income

Education

Age

Risk Age

Numeracy

1. Imagine that you flip a coin 100 times. About how many times will the coin come up heads in 100 flips?
2. 100 people have entered the Spring City Run. 70% of the runners will finish the race. Of the 100 people who enter the race, how many will finish?
3. In the Washington School raffle 5 people out of 100 who enter will win a prize. What percentage (%) of the people who enter the raffle will win a prize?

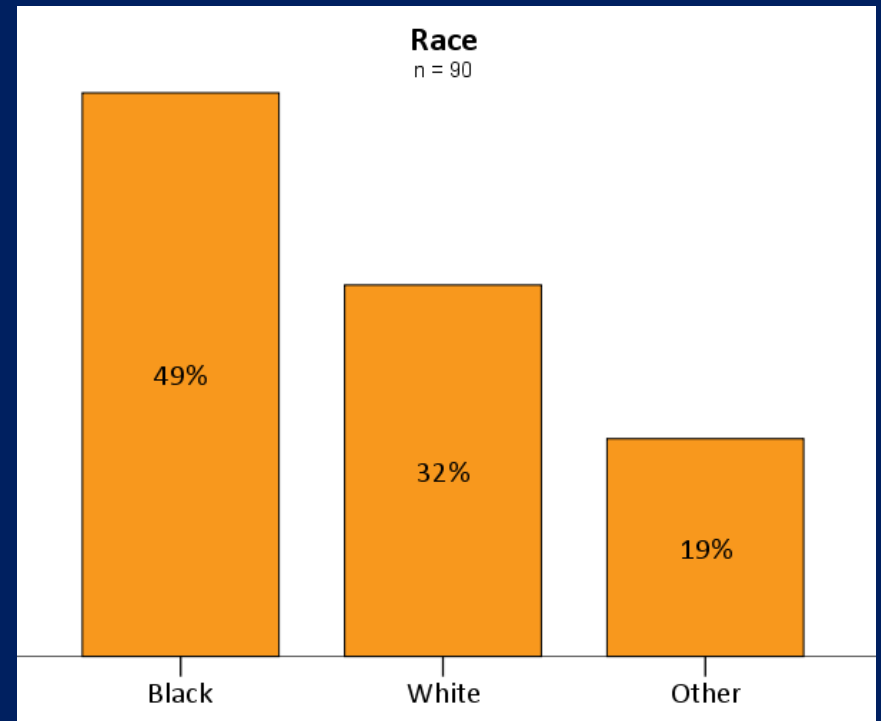
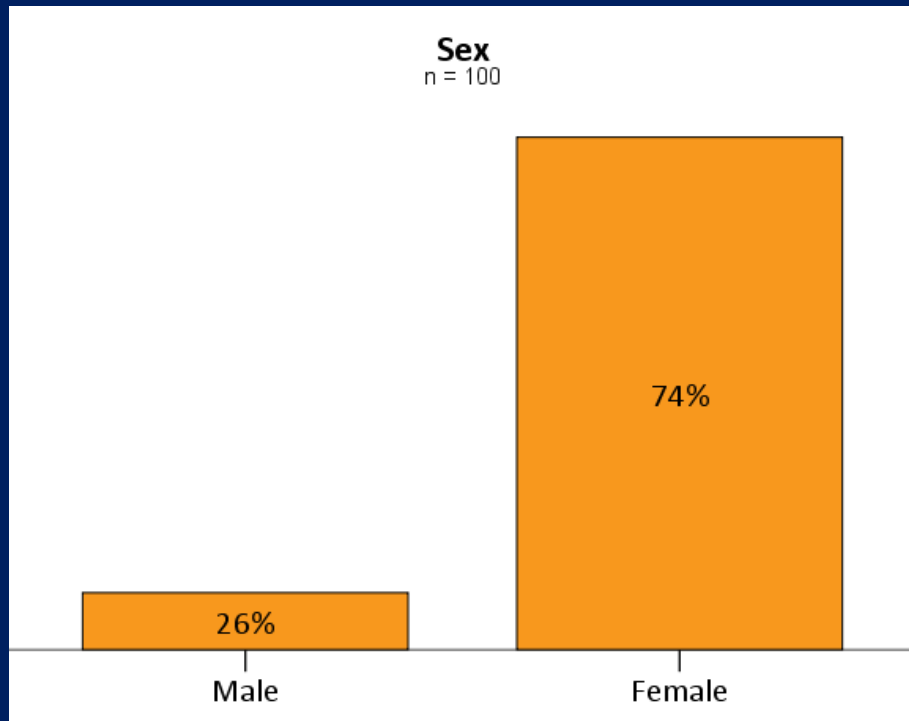
Chew, L. D., J. M. Griffin, M. R. Partin, S. Noorbaloochi, J. P. Grill, A. Snyder, K. A. Bradley, S. M. Nugent, A. D. Baines, and M. Vanryn. 2008. "Validation of screening questions for limited health literacy in a large VA outpatient population." J Gen Intern Med 23(5):561-6.

Schapira MM, Davids SL, McAuliffe TL, Nattinger AB. Agreement between scales in the measurement of breast cancer risk perceptions. Risk Anal. 2004;24(3):665-673.

Study Population

- 102 Diverse Participants
 - Community Computer Centers in Cleveland (n = 27)
 - Hospital Patients, Visitors and Staff (n = 30)
 - Annual Professional Conferences (n = 45)
 - Gerontological Society of America
 - American Public Health Association

Study Population

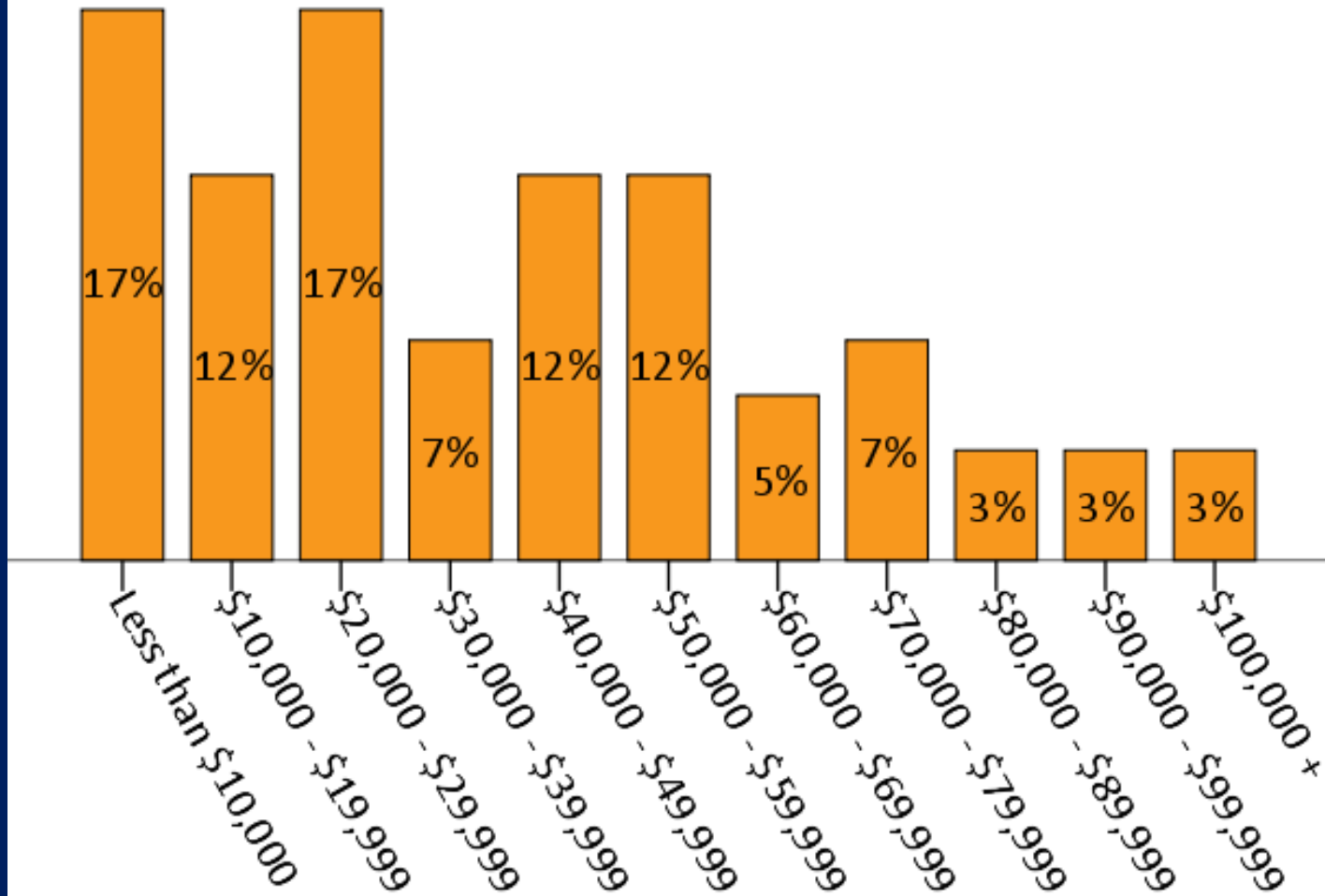


Analysis

- Univariate Descriptives
- Bivariate Correlations

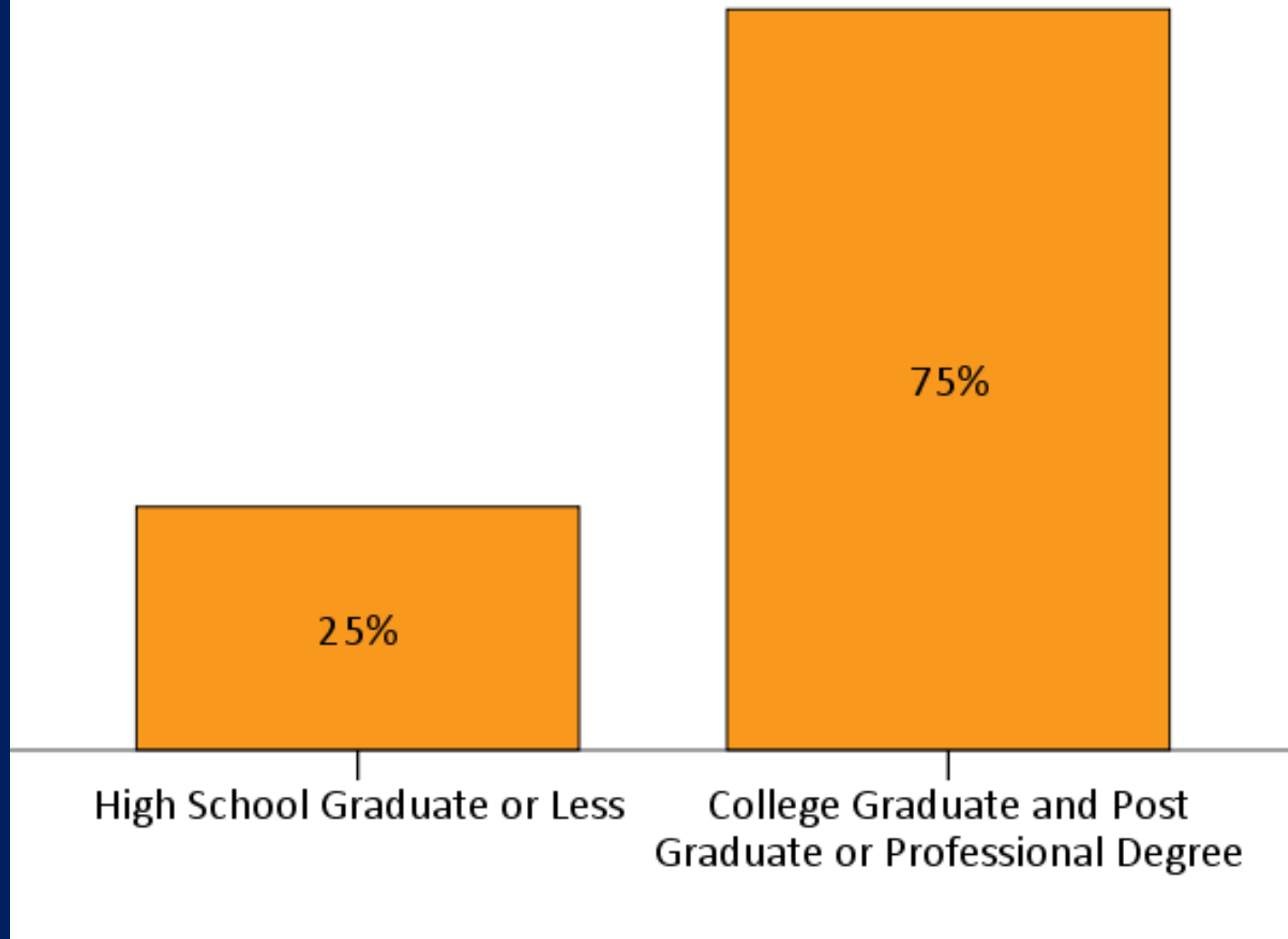
Income

n = 58



Education

n = 89



Health Literacy n = 90

How confident are you
filling out medical or
hospital forms by yourself?

Quite and
Extremely
Confident

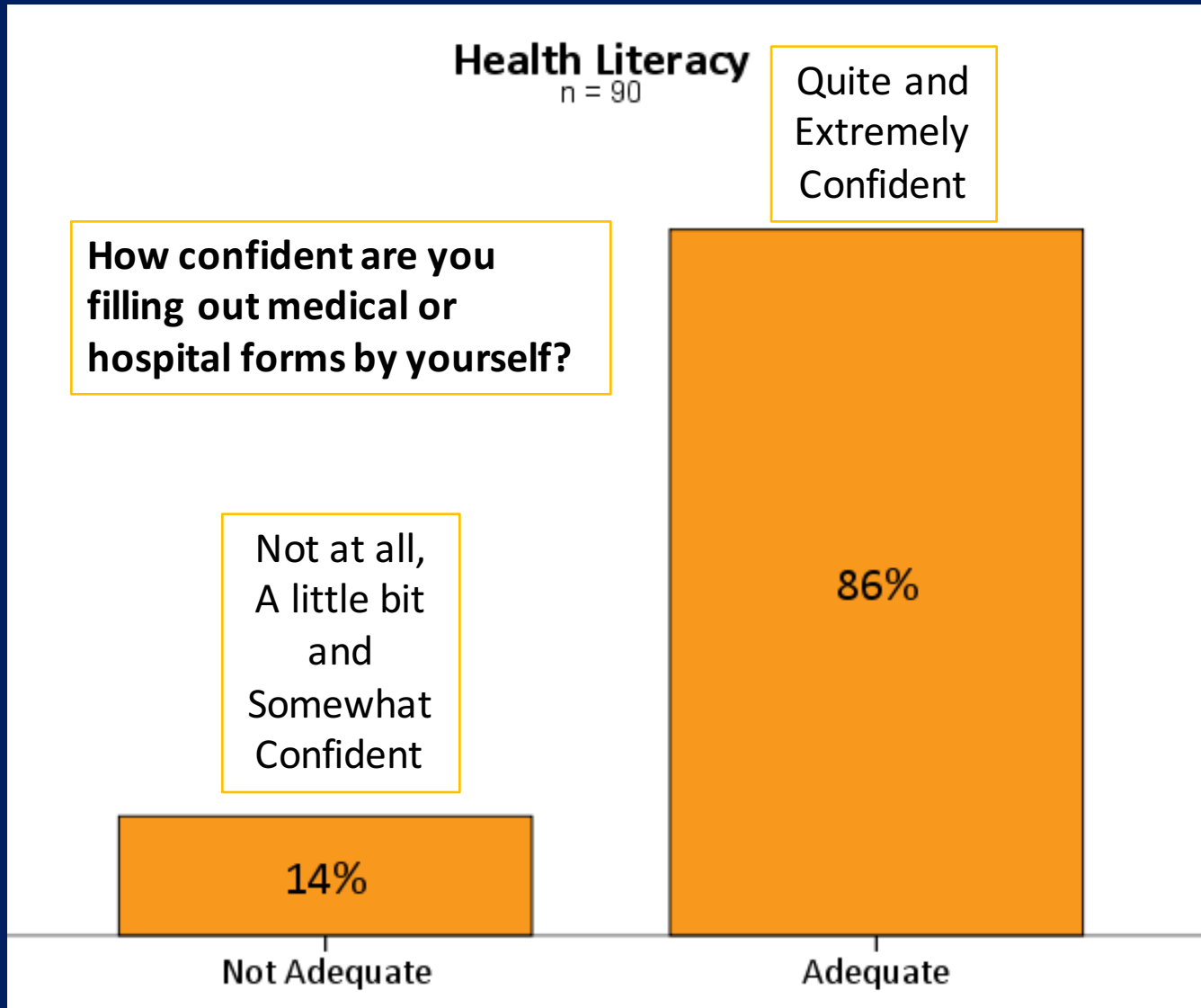
Not at all,
A little bit
and
Somewhat
Confident

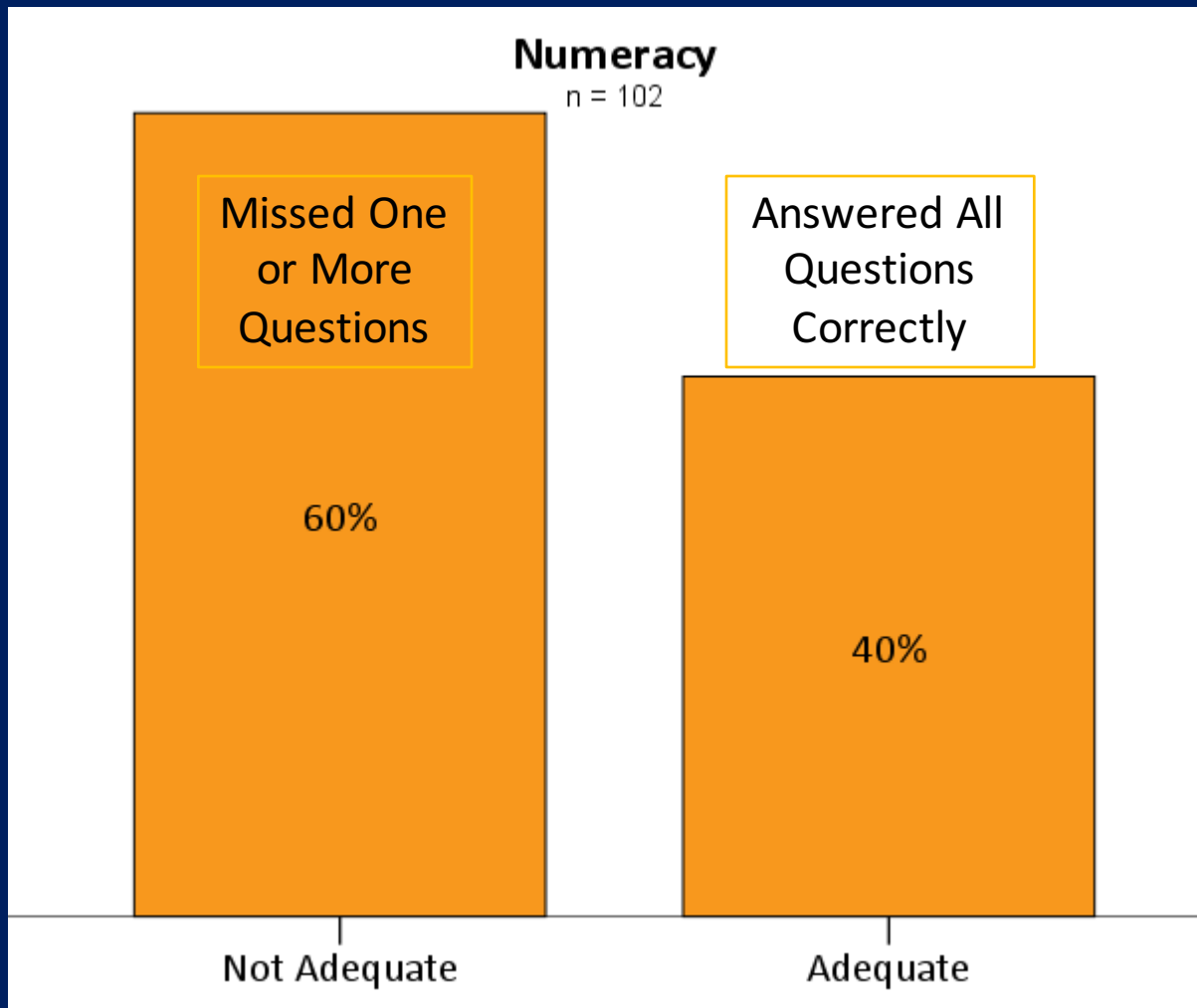
14%

86%

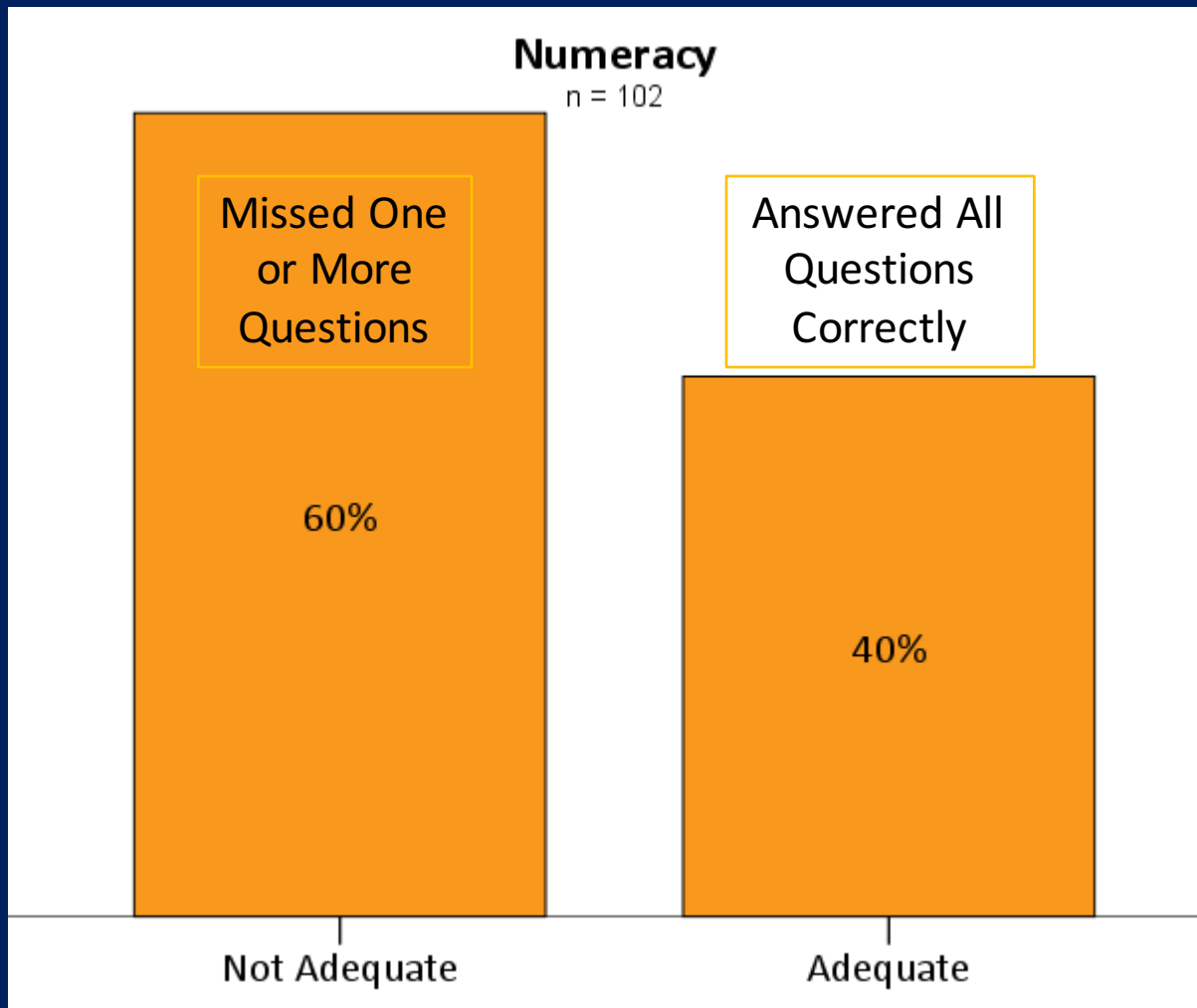
Not Adequate

Adequate



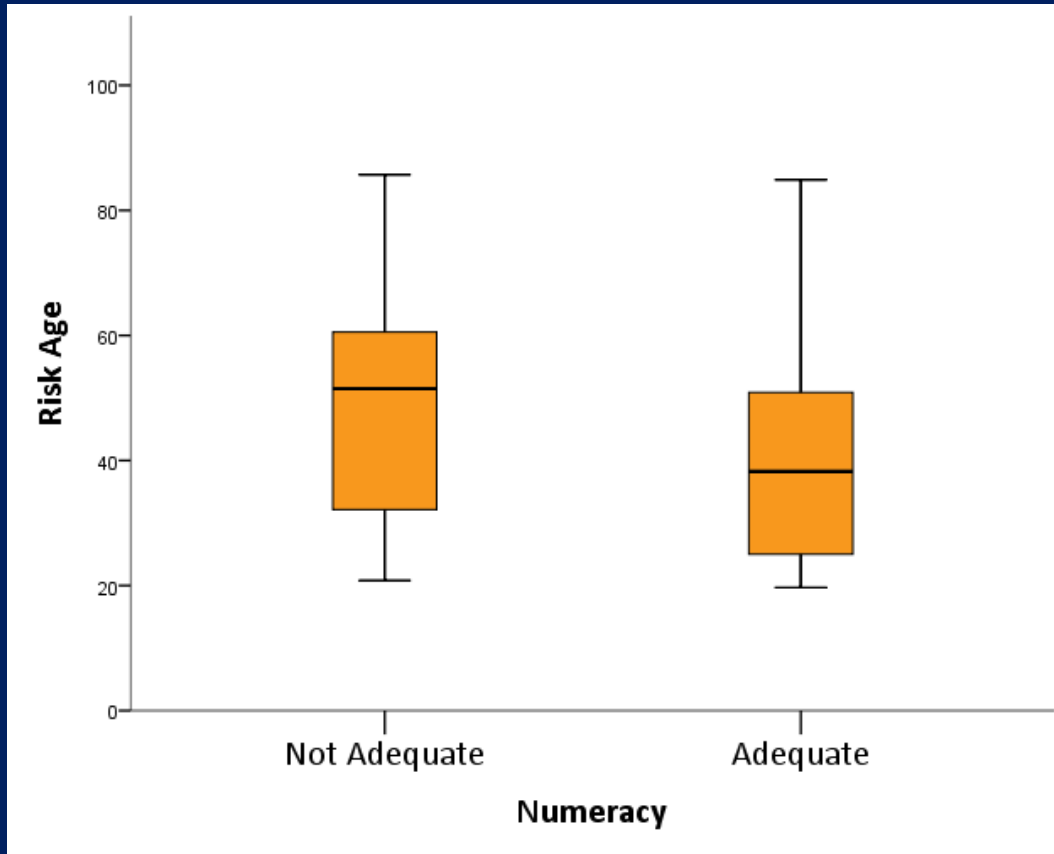


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	Numeracy	N	Mean	Std. Deviation	Std. Error Mean
Risk Age	Not Adequate	60	48.10	17.958	2.318
	Adequate	38	40.73	17.521	2.842



Independent Samples t-test
p = .049
CI = 0.48 - 14.69

Bivariate Correlations

	Risk Age	Numeracy	Health Literacy	Income	Race	Education
Risk Age	1	--	--	--	--	--
Numeracy	-.200*	1	--	--	--	--
Health Literacy	-.190	.116	1	--	--	--
Income	-.192	.069	.195	1	--	--
Race	-.297**	.208*	.210*	.109	1	--
Education	-.452**	.278**	.206	.474**	.189	1

** . Correlation is significant at the 0.01 level (2-tailed).

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Health Numeracy

“Health numeracy is the degree to which individuals have the capacity to access, process, interpret, communicate, and act on numerical, quantitative, graphical, biostatistical, and probabilistic health information needed to make effective health decisions.”

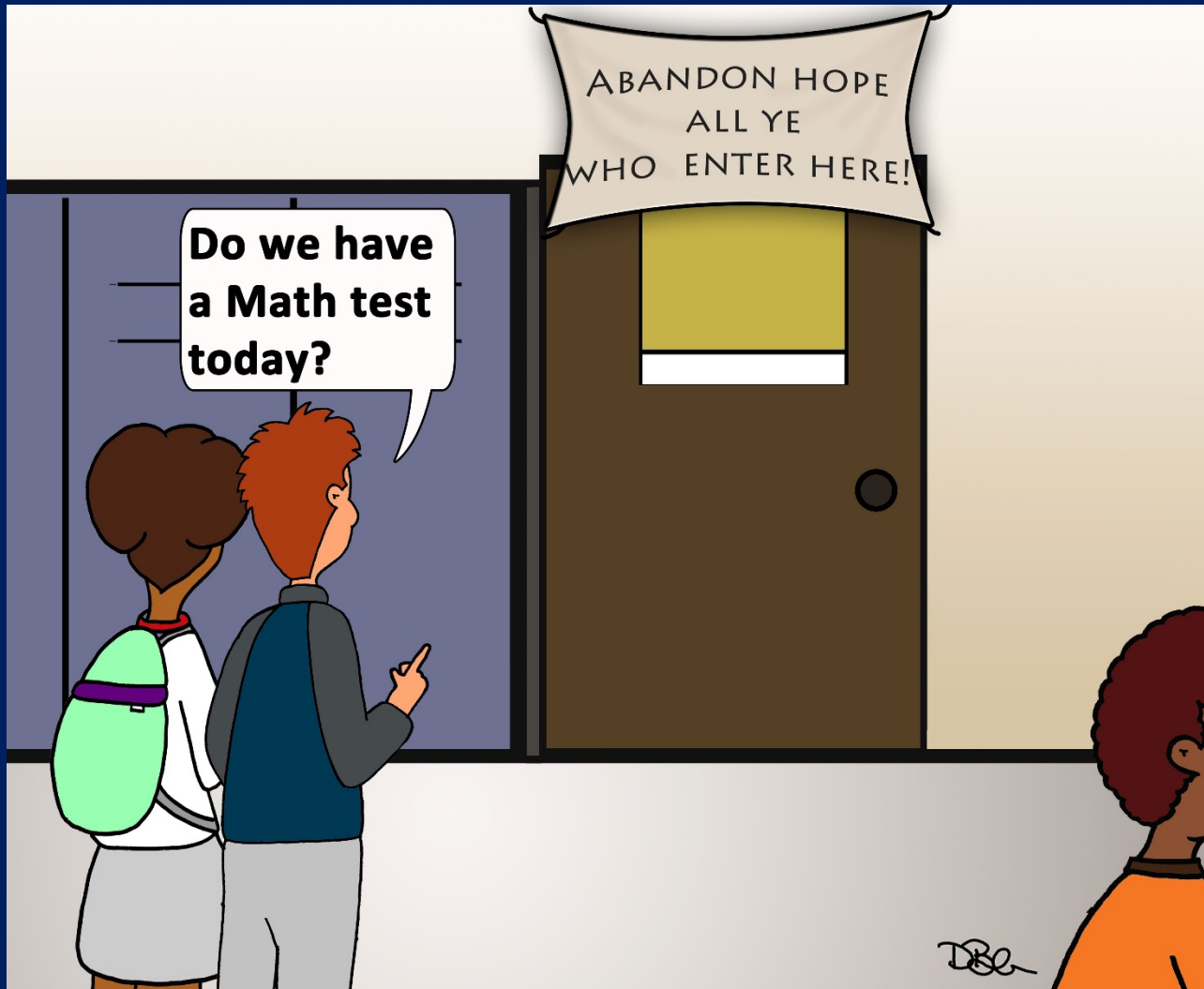
Golbeck, A. L., C. R. Ahlers-Schmidt, A. M. Paschal, and S. E. Dismuke. 2005. "A definition and operational framework for health numeracy." Am J Prev Med 29(4):375-6.

Significance & Future Research

- Risk Age could be considered a simple composite index of accumulated disadvantage over the life course
- Larger Sample
- Additional measures of literacy and numeracy
- Multivariate Structural Equation Model

Limitations

- Small sample size
- Brief measures of Literacy and Numeracy



Thank you!