Measuring Healthy Life Expectancy for the U.S. Population in 2007-2009

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Outline

- Objectives
- Data and Methods
- Results
- Conclusions

CDC Reporting Population Summary Measures

- In 1982, Hahn et al. published YPLL-65 and suggested alternative measures (e.g., DALY,QALY,YHL,YAAL, and HLE)
- CDC published Years of Potential Life Lost before age 65 (YPLL-65) and leading causes of death in MMWR 1982-1993
- In 2000, a CDC Burden of Disease Workgroup recommended routinely reporting summary measures in MMWR
- In December 2010, the Epidemiology and Analysis Program Office (EAPO) began working on HLE to monitor trends and disparities
  - EAPO and NCHS collaborative effort
  - Regular reporting of summary measures
- Goals
  - To promote public awareness of ‘premature’, ‘preventable’, and ‘unnecessary’ mortality; and
  - To develop and implement effective interventions for good health and longevity

Objectives

- To estimate HLE for the U.S population and for smaller population subgroups
- To assess disparities in HLE between different segments of the U.S. population

Data Sources

- **Data: 2007-2009**
- **Mortality rates (NCHS Vital Statistics System)**
- **Self-reported health status rates**
  - NHIS (national, regional, divisional)
  - BRFSS (state-level)
- **Population segments**
  - Total population (national)
  - 4 regions
  - 9 divisions
  - 50 states and the District of Columbia
- **Demographic subgroups**
  - Age groups (5-year age intervals), sex, race (whites, blacks), and ethnicity (Hispanics, non-Hispanics)

Health Status Data

- **NHIS question on self-assessed health status:**

"Would you say your health in general is excellent, very good, good, fair, or poor?"

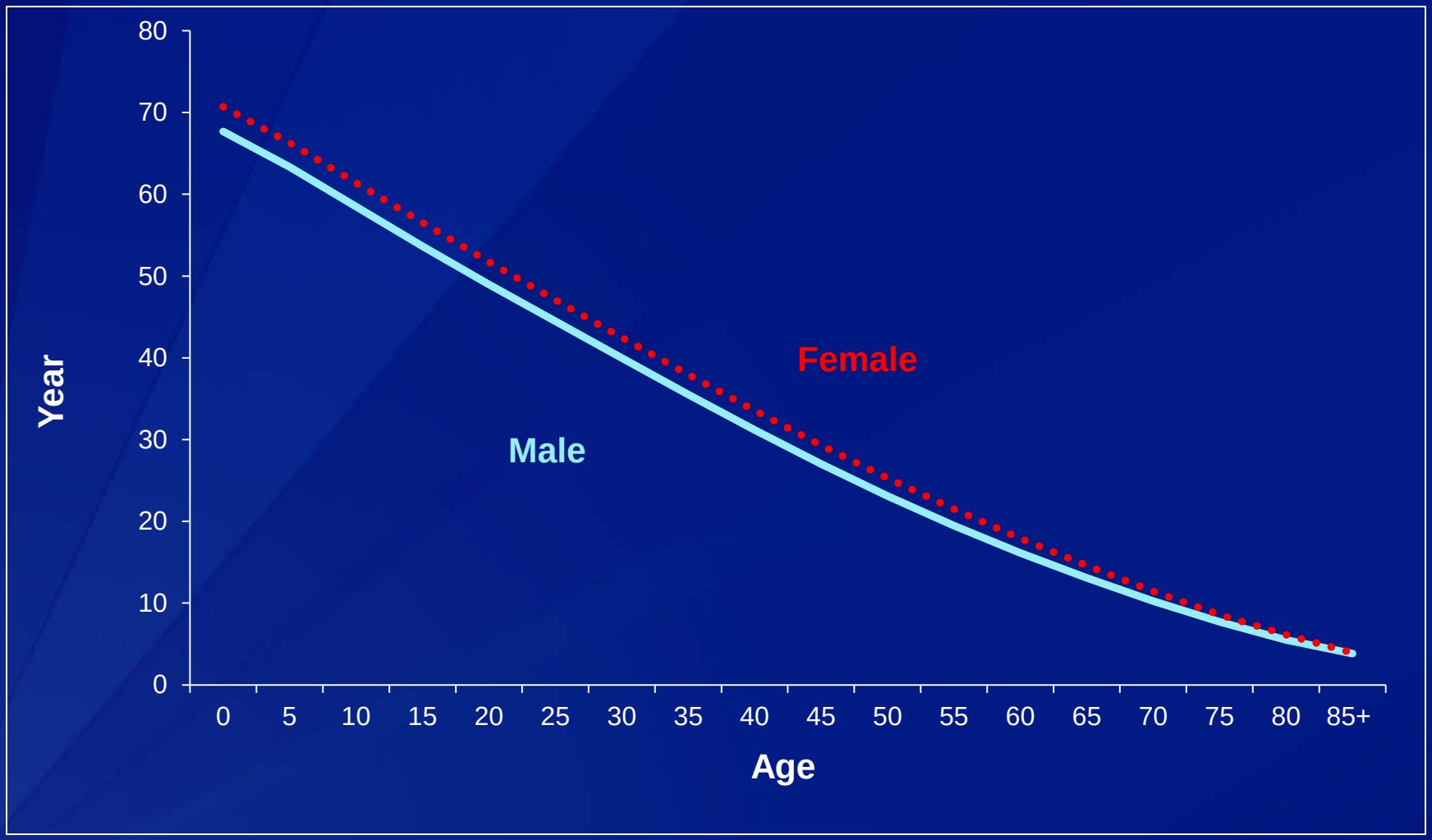
- 1 Excellent
- 2 Very good
- 3 Good
- 4 Fair
- 5 Poor
- 7 Refused
- 9 Don't know

Healthy

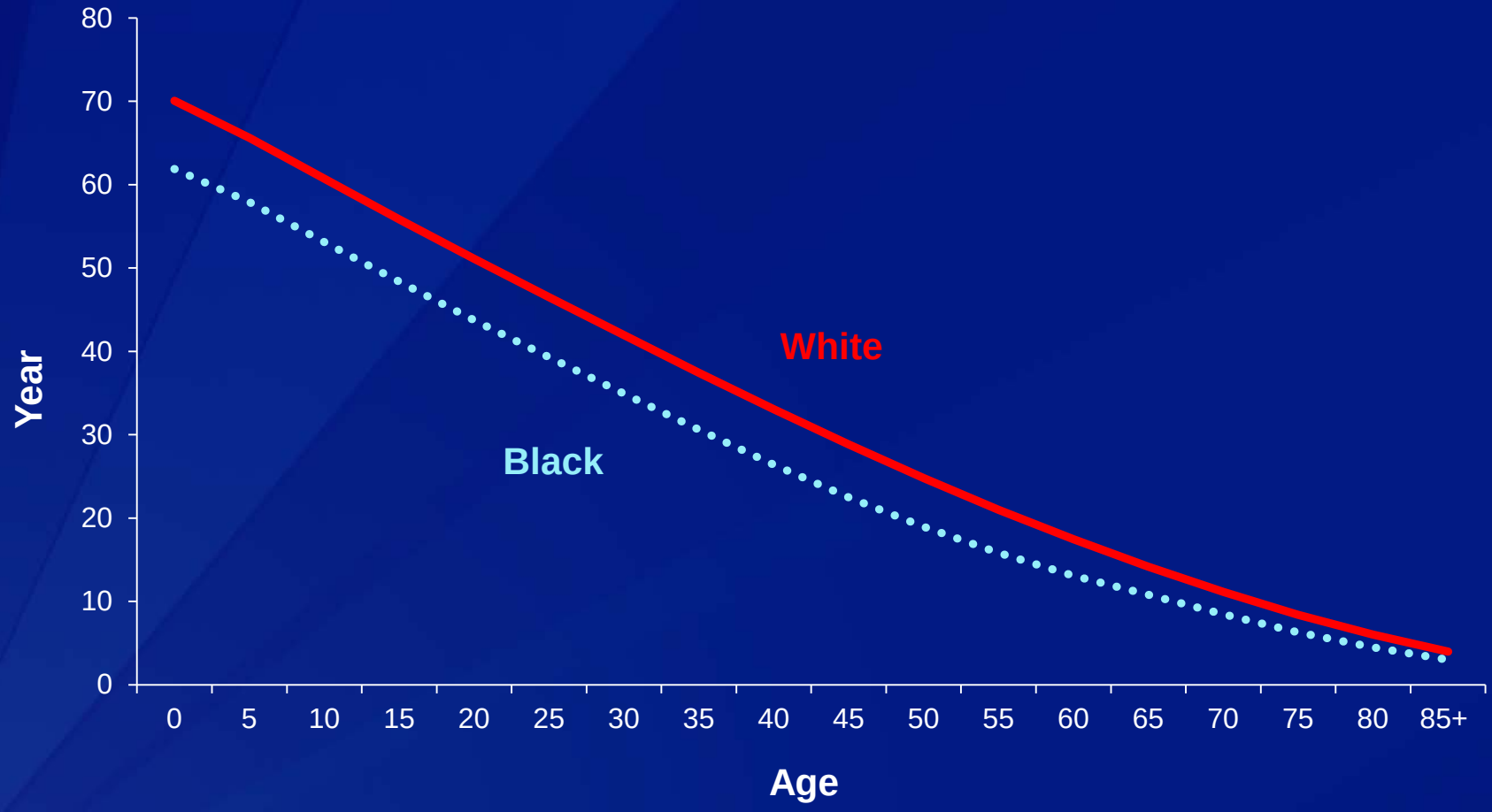
Unhealthy

- **BRFSS question is the same as NHIS**

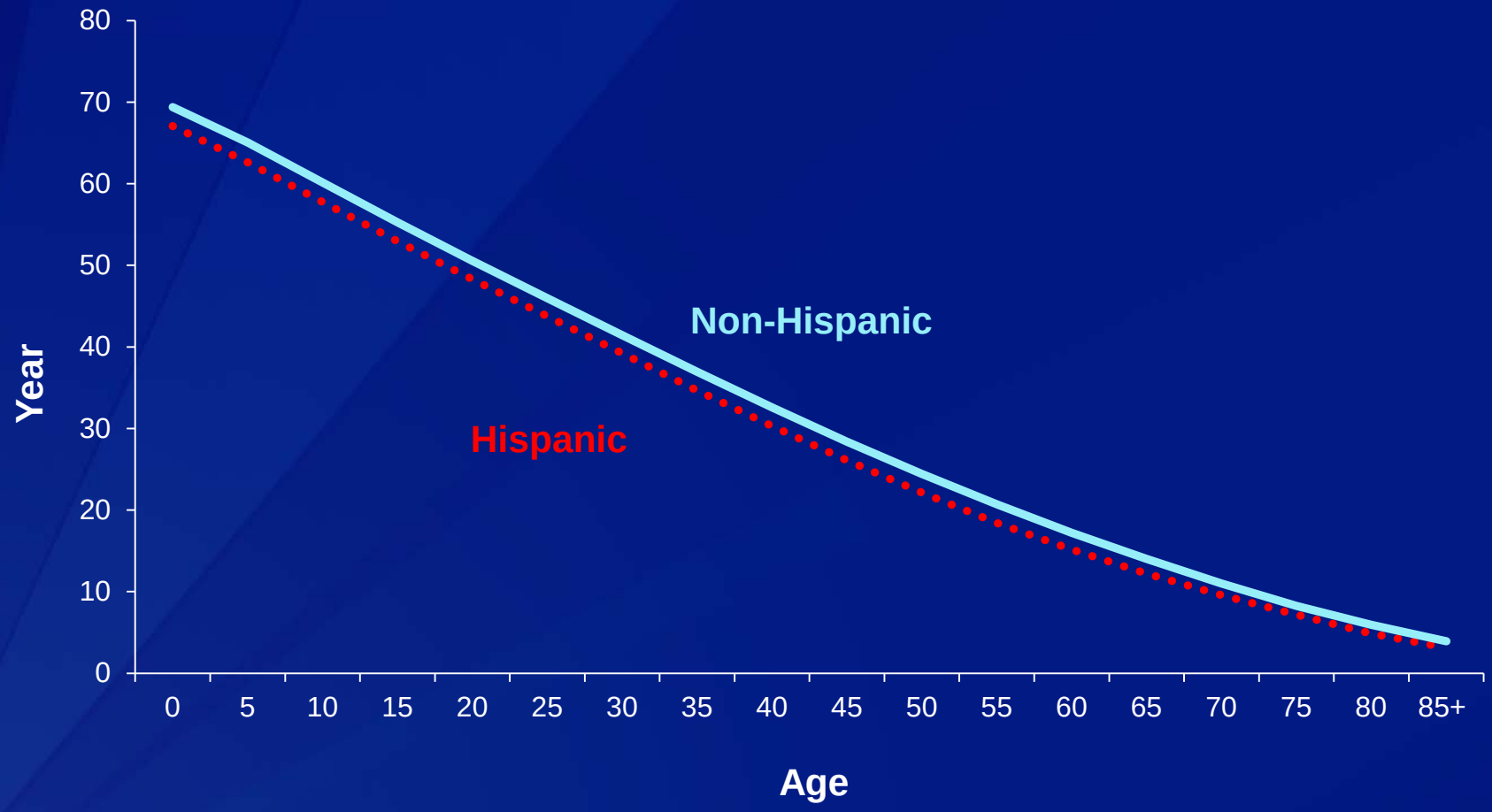
HLE by Age and Sex – U.S. 2007-2009



HLE by Age and Race – U.S. 2007-2009

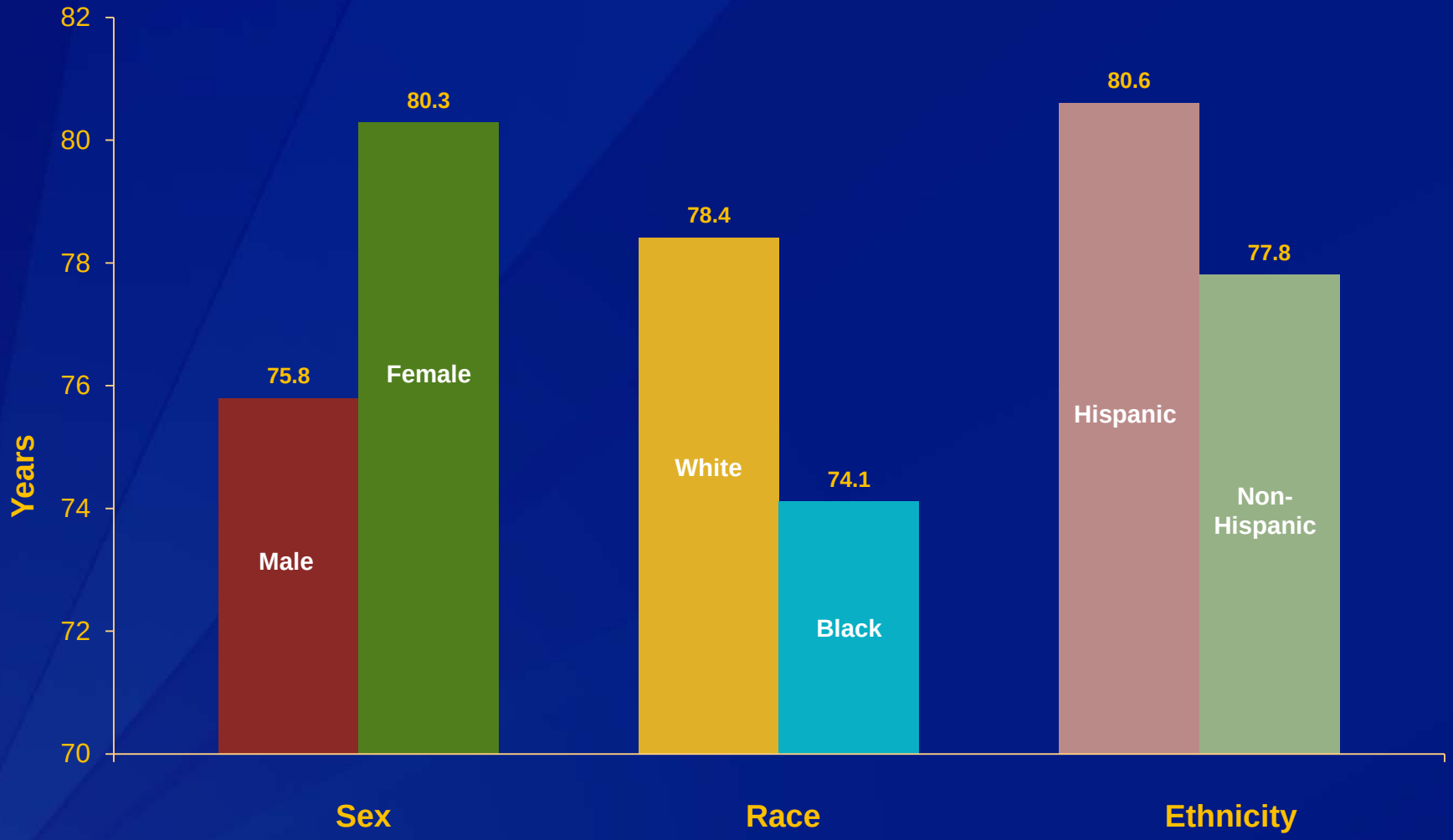


HLE by Age and Ethnicity - U.S. 2007-2009



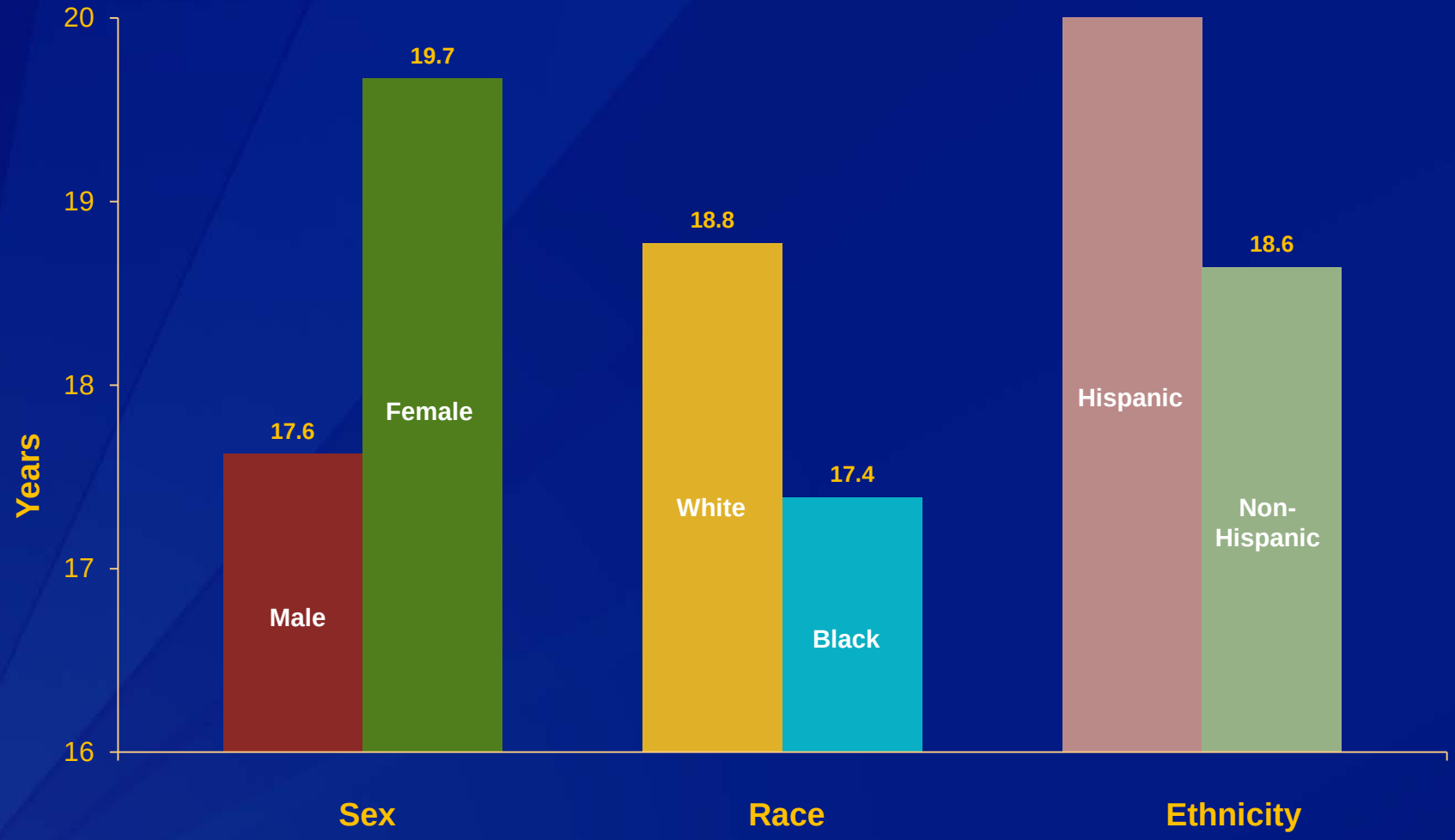
LE by Selected Demographics - U.S. 2007-2009

at Birth

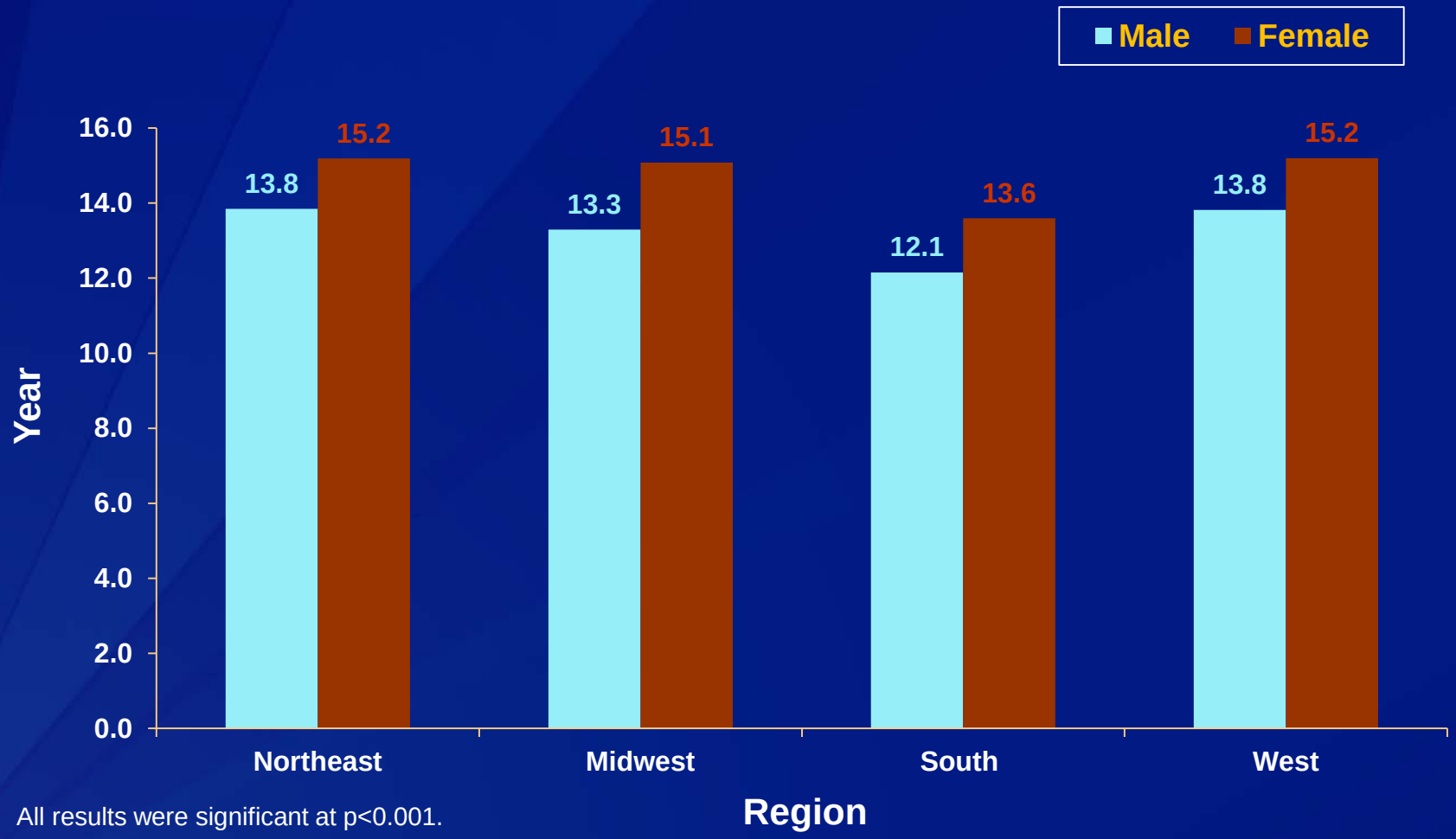


LE by Selected Demographics - U.S. 2007-2009

at Age 65

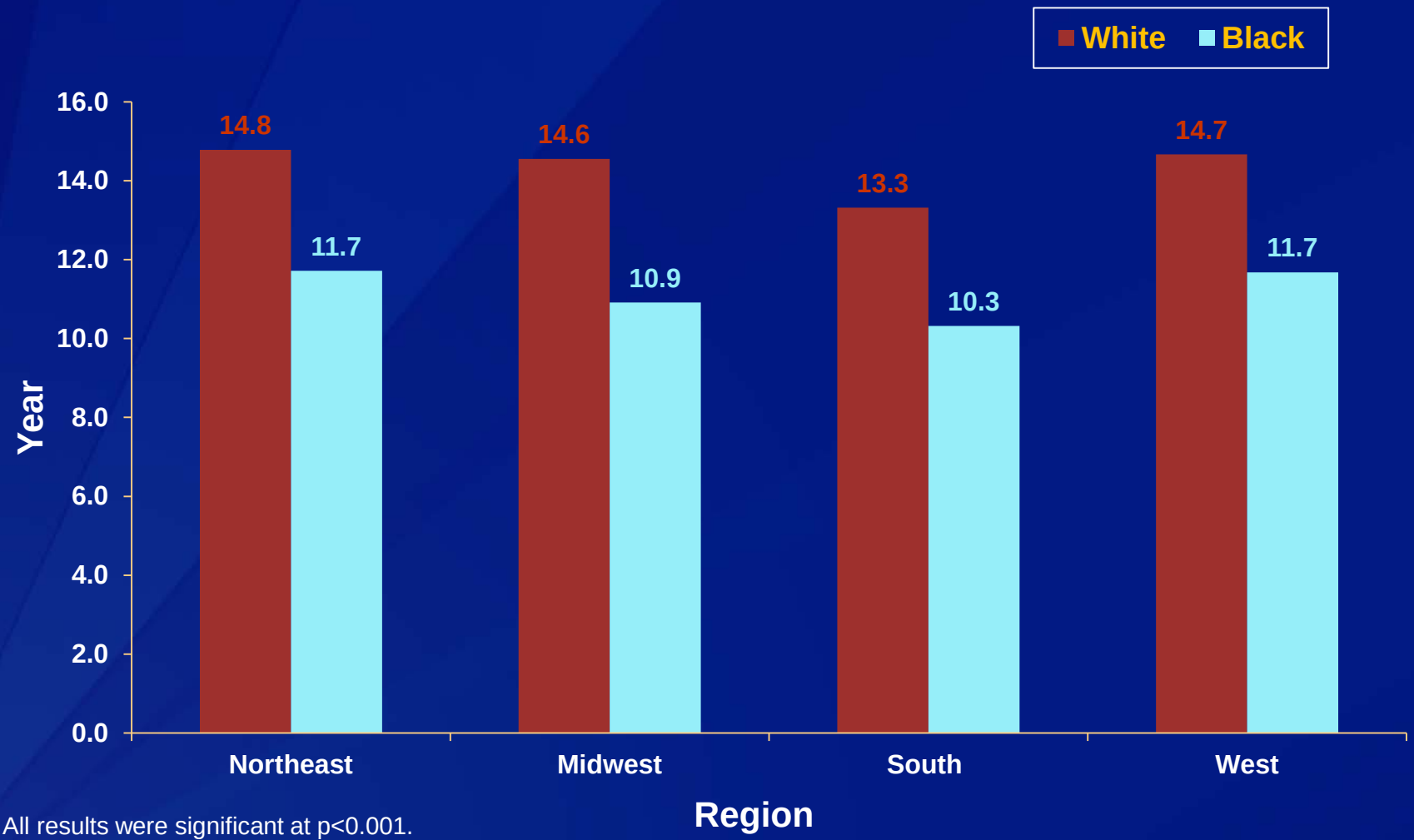


HLE at Age 65 by Sex and Region - U.S. 2007-2009



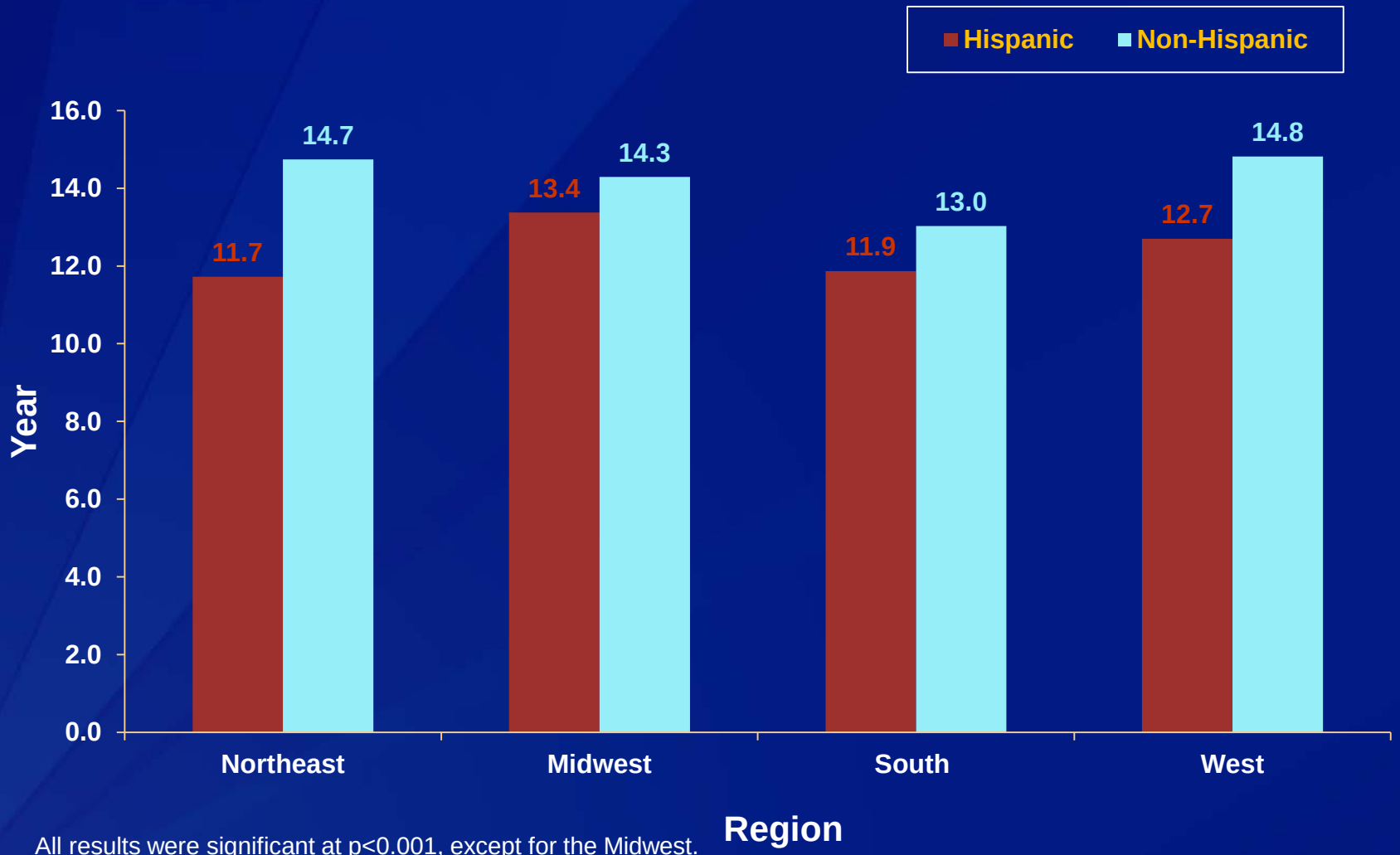
All results were significant at p<0.001.

HLE at Age 65 by Race and Region - U.S. 2007-2009



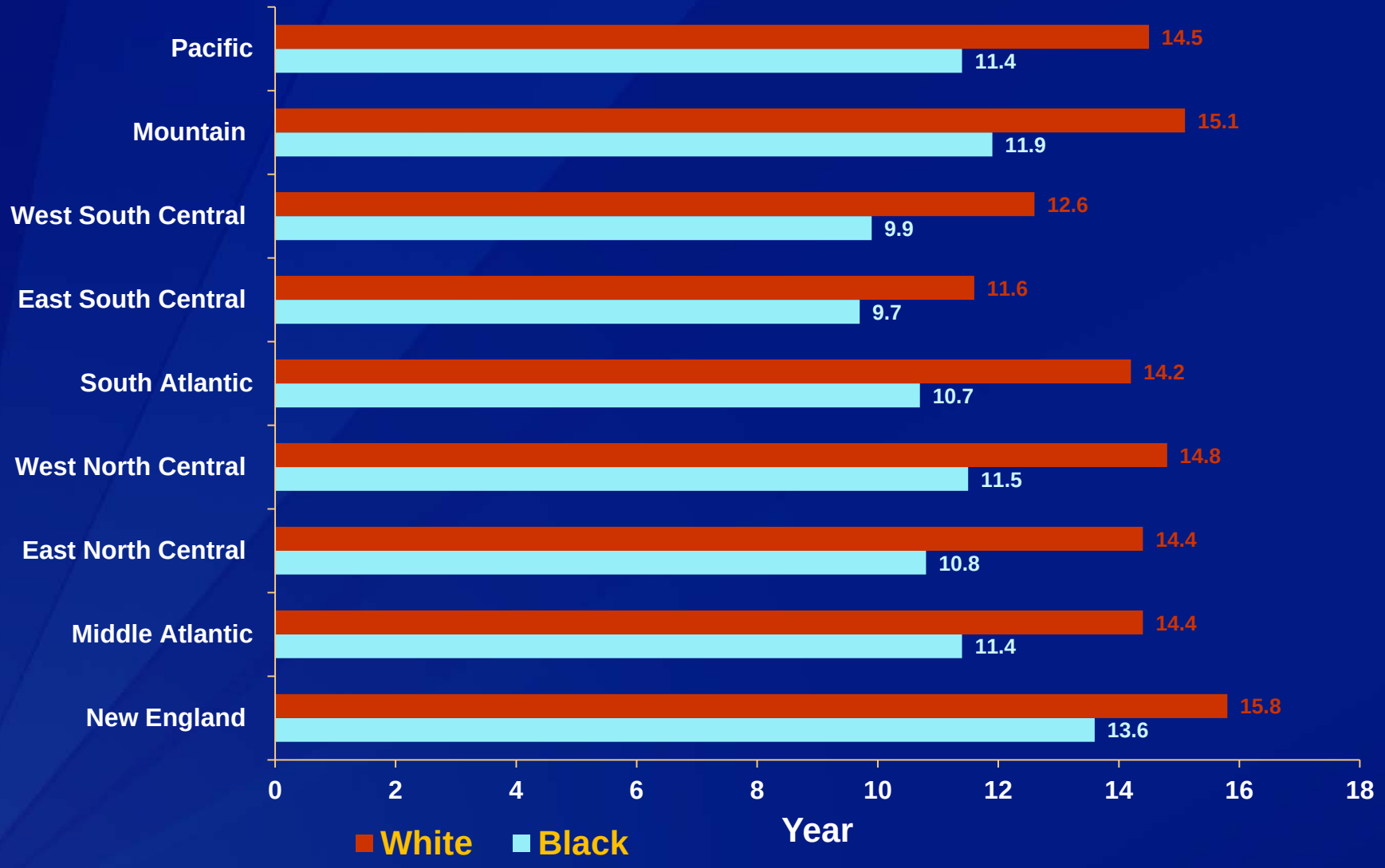
All results were significant at p<0.001.

HLE at Age 65 by Ethnicity and Region - U.S. 2007-2009



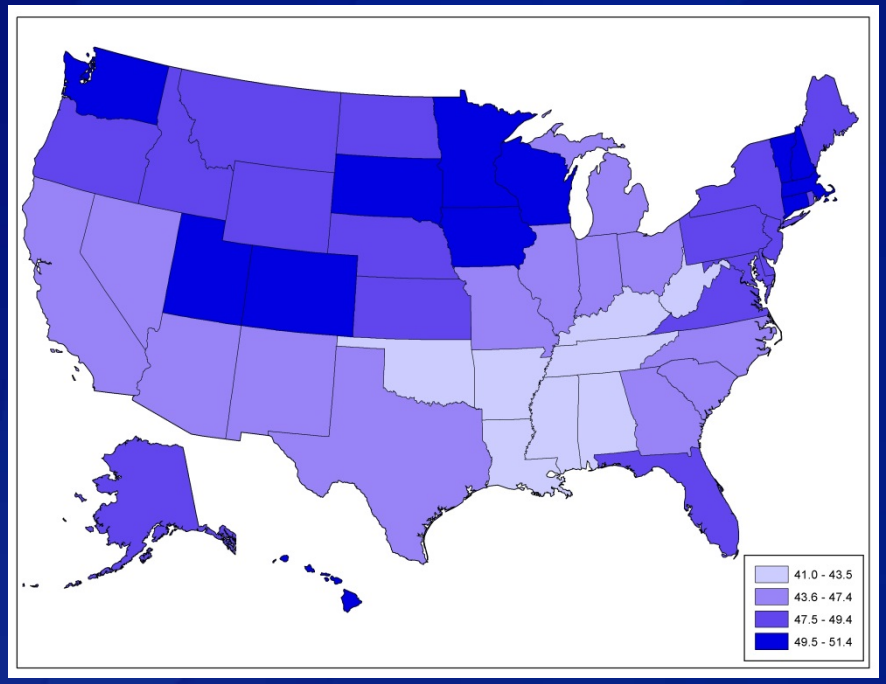
All results were significant at p<0.001, except for the Midwest.

HLE at Age 65 by Race and Division - U.S. 2007-2009



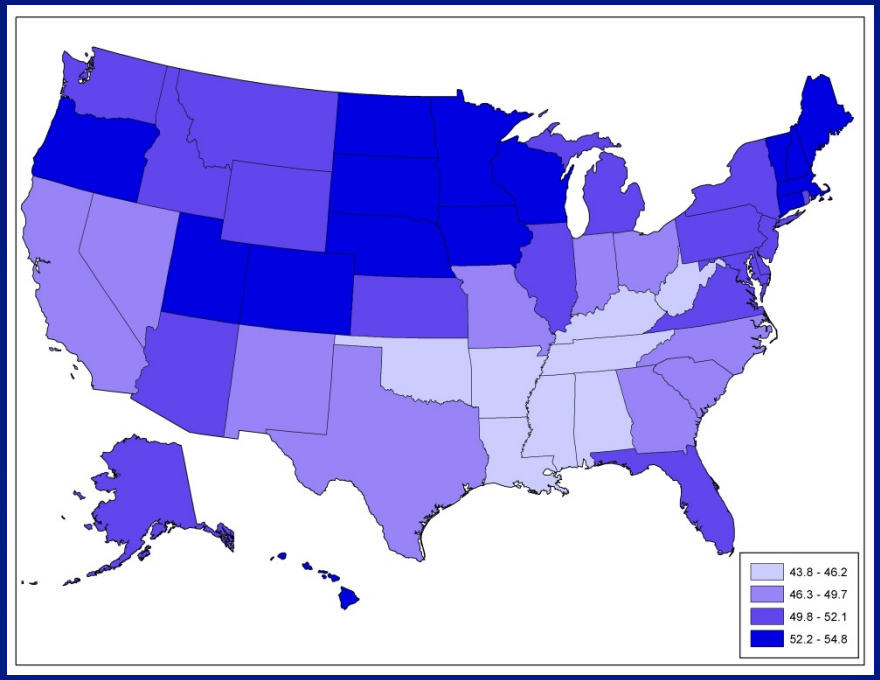
State-Specific HLE at Age 20 U.S. Adults, 2007-2009

Male



US average: 49.0

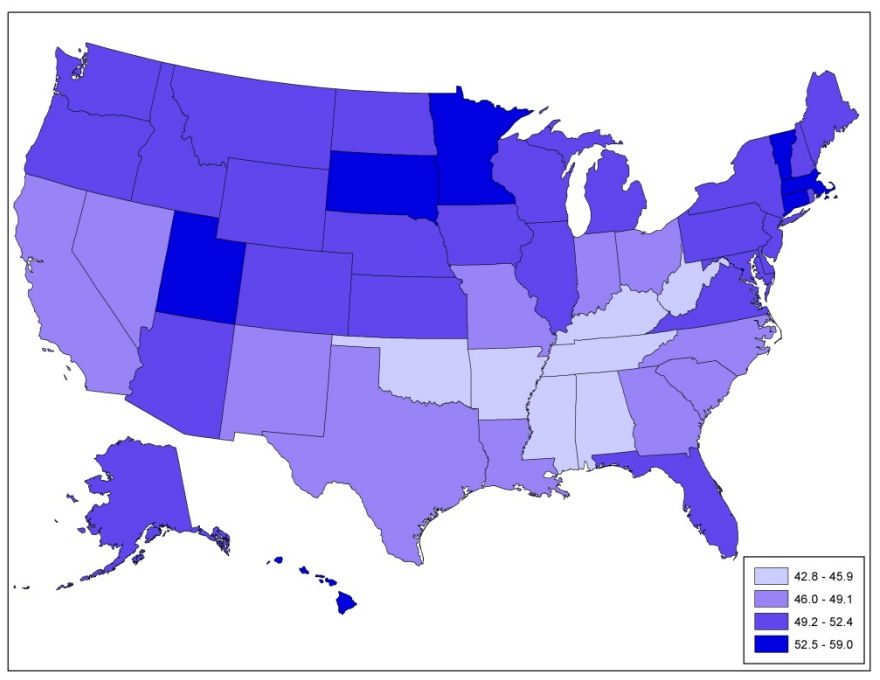
Female



US average: 51.8

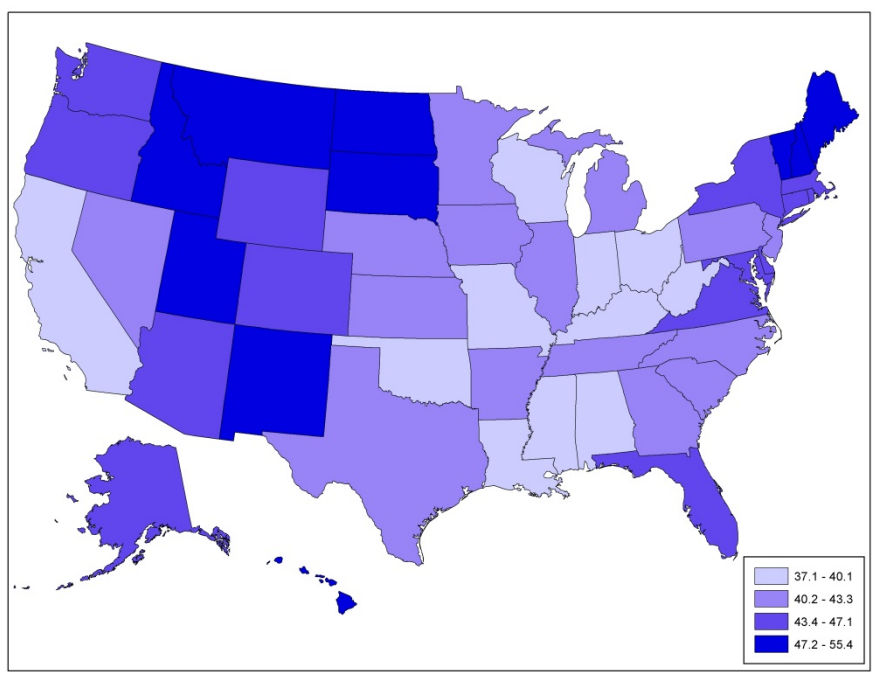
State-Specific HLE at Age 20 U.S. Adults, 2007-2009

White



US average: 51.1

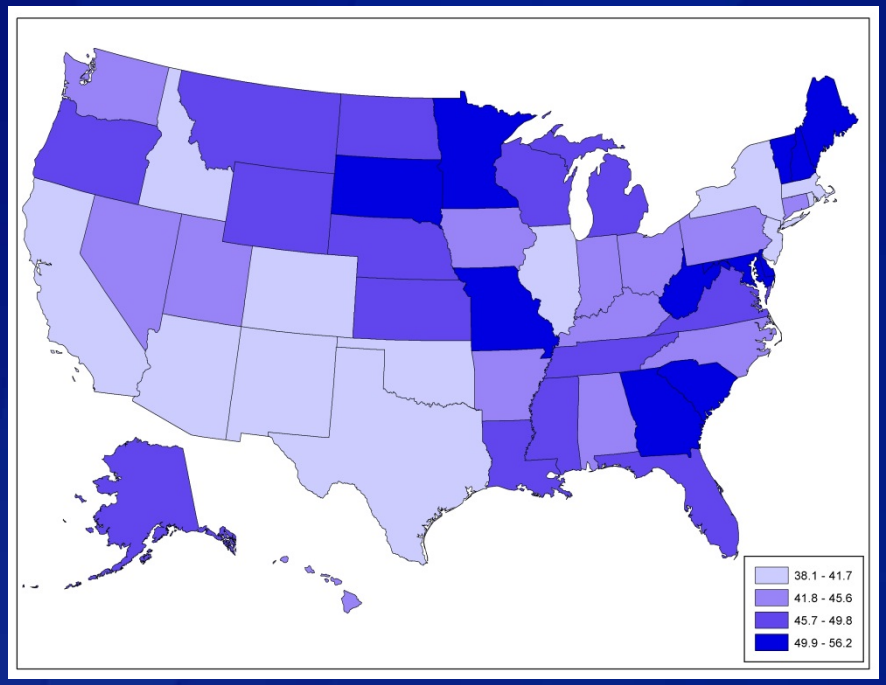
Black



US average: 43.7

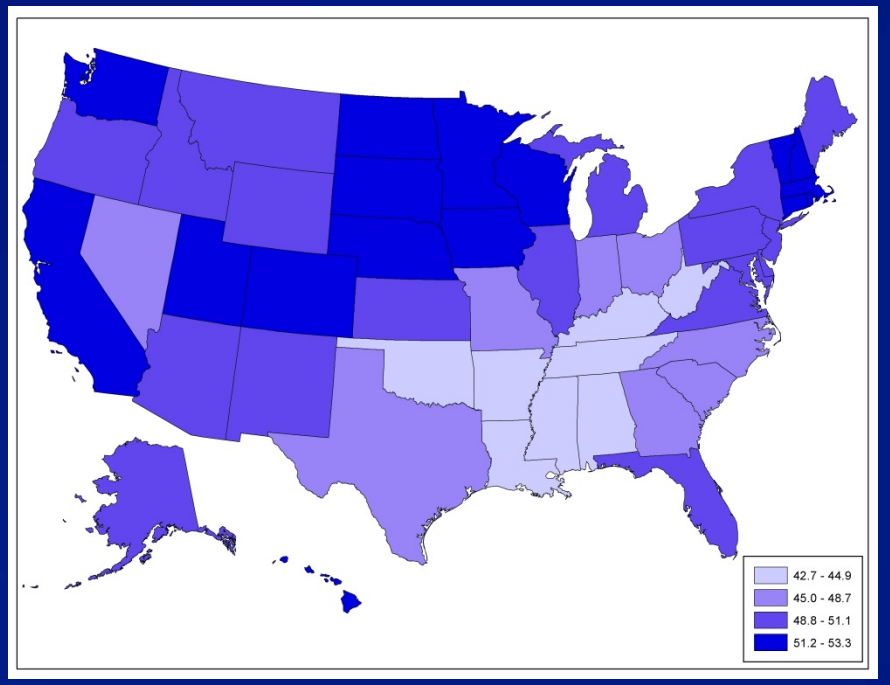
State-Specific HLE at Age 20 U.S. Adults, 2007-2009

Hispanic



US average: 48.3

Non-Hispanic



US average: 50.6

Significant Disparities in HLE

Age	All Races				Race				Ethnicity			
	Male	Female	Disparities		White	Black	Disparities		Hispanic	Non-Hispanic	Disparities	
			Δ in HLE	p-value			Δ in HLE	p-value			Δ in HLE	p-value
0-4	67.7	70.7	3.0	<0.001	70.1	61.9	8.2	<0.001	67.1	69.4	2.3	<0.001
5-9	63.3	66.3	2.9	<0.001	65.6	57.9	7.7	<0.001	62.6	65.0	2.4	<0.001
10-14	58.5	61.4	2.9	<0.001	60.7	53.1	7.6	<0.001	57.8	60.1	2.4	<0.001
15-19	53.6	56.5	2.9	<0.001	55.8	48.4	7.5	<0.001	53.0	55.3	2.3	<0.001
20-24	49.0	51.8	2.8	<0.001	51.1	43.7	7.4	<0.001	48.3	50.6	2.3	<0.001
25-29	44.5	47.1	2.6	<0.001	46.5	39.3	7.2	<0.001	43.7	46.0	2.2	<0.001
30-34	40.0	42.5	2.5	<0.001	41.9	34.9	7.0	<0.001	39.2	41.4	2.2	<0.001
35-39	35.5	38.0	2.4	<0.001	37.4	30.6	6.8	<0.001	34.7	37.0	2.3	<0.001
40-44	31.2	33.6	2.4	<0.001	33.0	26.4	6.7	<0.001	30.3	32.6	2.3	<0.001
45-49	27.0	29.3	2.3	<0.001	28.8	22.5	6.3	<0.001	26.1	28.4	2.3	<0.001
50-54	23.1	25.3	2.2	<0.001	24.8	19.0	5.8	<0.001	22.1	24.4	2.3	<0.001
55-59	19.5	21.5	2.0	<0.001	21.0	15.8	5.2	<0.001	18.4	20.7	2.3	<0.001
60-64	16.1	17.9	1.8	<0.001	17.5	13.1	4.4	<0.001	15.2	17.2	2.1	<0.001
65-69	13.1	14.6	1.5	<0.001	14.2	10.8	3.4	<0.001	12.2	14.0	1.8	<0.001
70-74	10.2	11.4	1.2	<0.001	11.1	8.4	2.7	<0.001	9.6	11.0	1.4	<0.001
75-79	7.7	8.6	0.9	<0.001	8.4	6.3	2.1	<0.001	7.2	8.3	1.1	<0.001
80-84	5.5	6.1	0.6	<0.001	6.0	4.5	1.5	<0.001	4.9	5.9	1.1	<0.001
85+	3.8	3.9	0.1	0.144	4.0	3.0	1.0	<0.001	3.1	3.9	0.8	<0.001

SOURCES: CDC/NCHS, National Vital Statistics System, National Health Interview Survey, and the U.S. Census Bureau.

Summary

- Disparities in HLE and LE observed among population segments and geographical locations
- Differences in HLE among subpopulations result from the combined effects of mortality and morbidity (impacted by demographic, socioeconomic, and environmental factors)
- Use HLE to compare the health of populations, monitor trends in the health of a population, and identify health inequalities within populations

Conclusions

- HLE can be readily used by public health officials, healthcare providers, and policy makers to understand the health status of populations
- These results can be used as baseline to routinely monitor the health of the U.S. population and to identify health disparities in populations

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Disclaimer: The findings and conclusions in this presentation are those of the author, and do not necessarily represent the official position of the U.S. Centers for Disease Control and Prevention.