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## Introduction/Objective

- 30 million Americans lack access to health insurance today<sup>1</sup>
- Cancer rates are increasing in the United States, approaching two million in 2023<sup>2, 3</sup>
- No clear link between health insurance and cancer diagnosis/survival rates<sup>4, 5</sup>
- Well established link between cancer and having poor quality of life<sup>6, 7</sup>
- Objective:** Determine an association between health insurance type and health-related quality of life (HRQOL) in cancer survivors

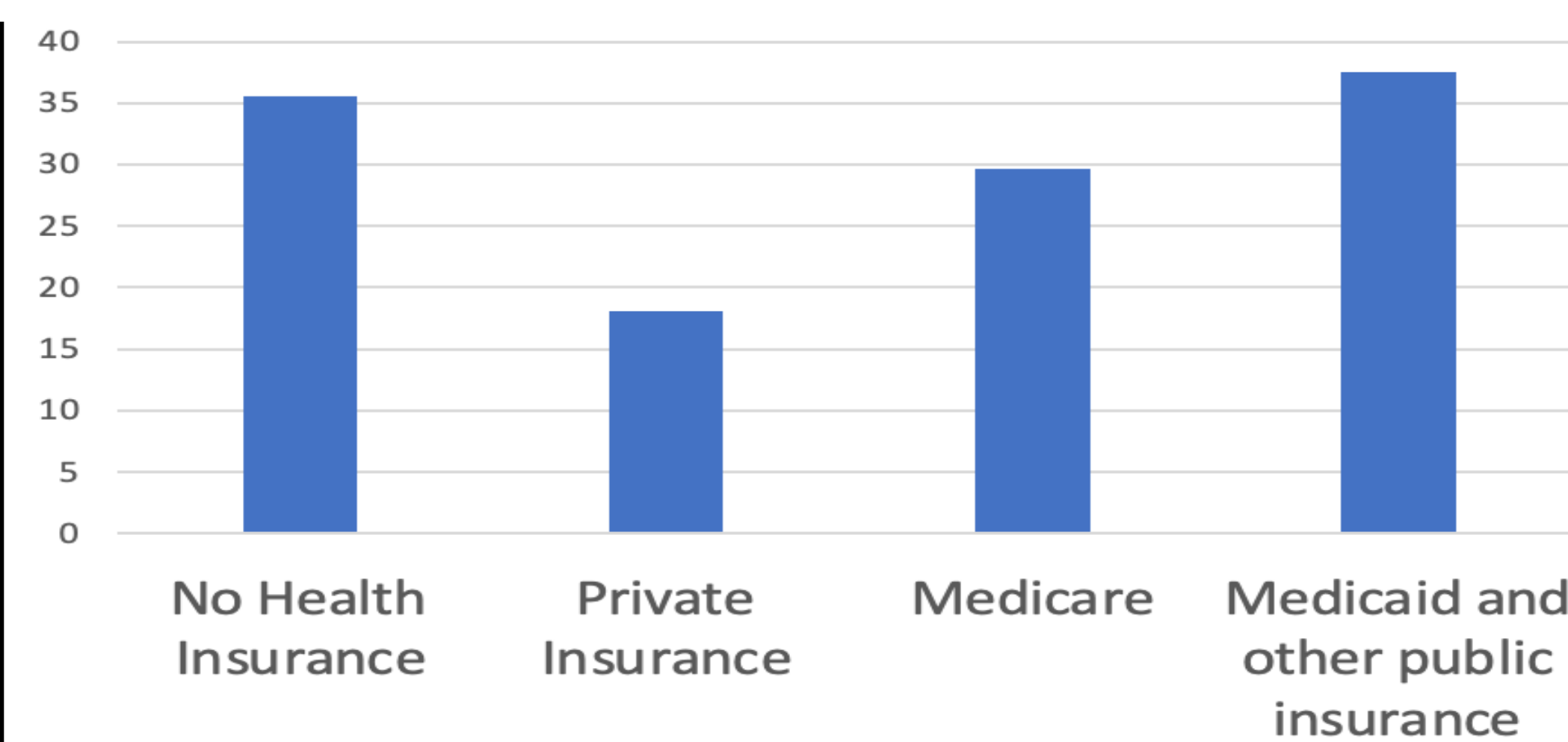
## Materials/Methods

- Materials:** Survey data from the National Health and Nutrition Examination Survey (NHANES) from 2009-2012
- Participants:** Cancer survivors who were at least 20 years old, had health insurance information, and at least one of four quality of life variables
- Sample Size:** 974
- Primary Predictor:** health insurance
- Outcome:** HRQOL-4<sup>8</sup> – general health condition, no. days physical health not good, no. days mental health was not good, no. days inactive due to physical/mental health

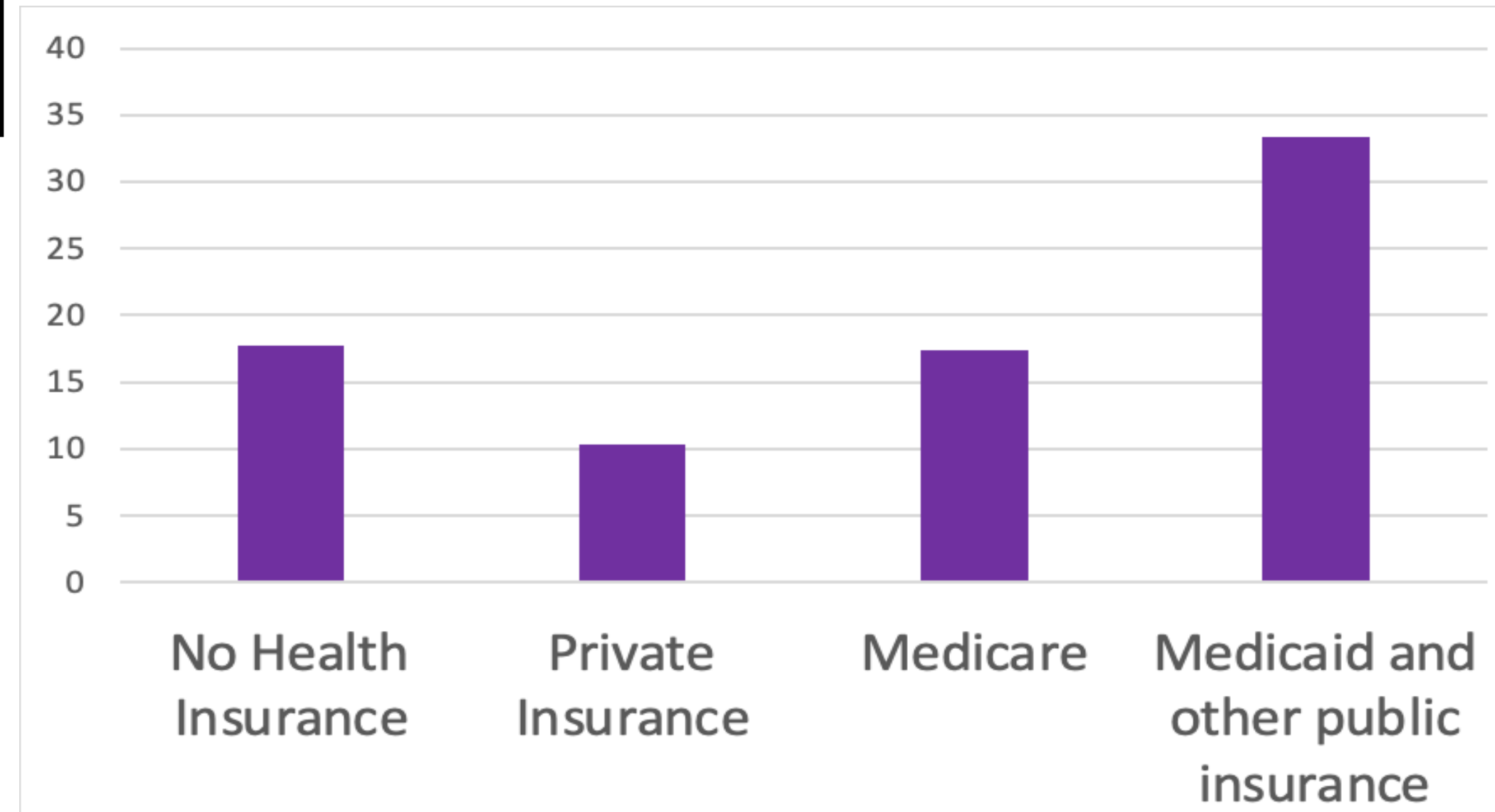
## Data Analysis

- Bivariate Analysis: chi-square test
- Logistic regression models: univariate and multivariable models
- Regression models were adjusted for age, race, ratio of family income to poverty, marital status, and gender
- For general health condition, “poor health” = 4-5
- “Poor physical health”: physical health being reported negatively for  $\geq 14$  days in one month
- “Poor mental health”: mental health being reported negatively for  $\geq 14$  days in one month
- “High inactivity”: inactivity due to physical or mental health  $\geq 14$  days in one month
- The reference group in logistic modeling was private insurance

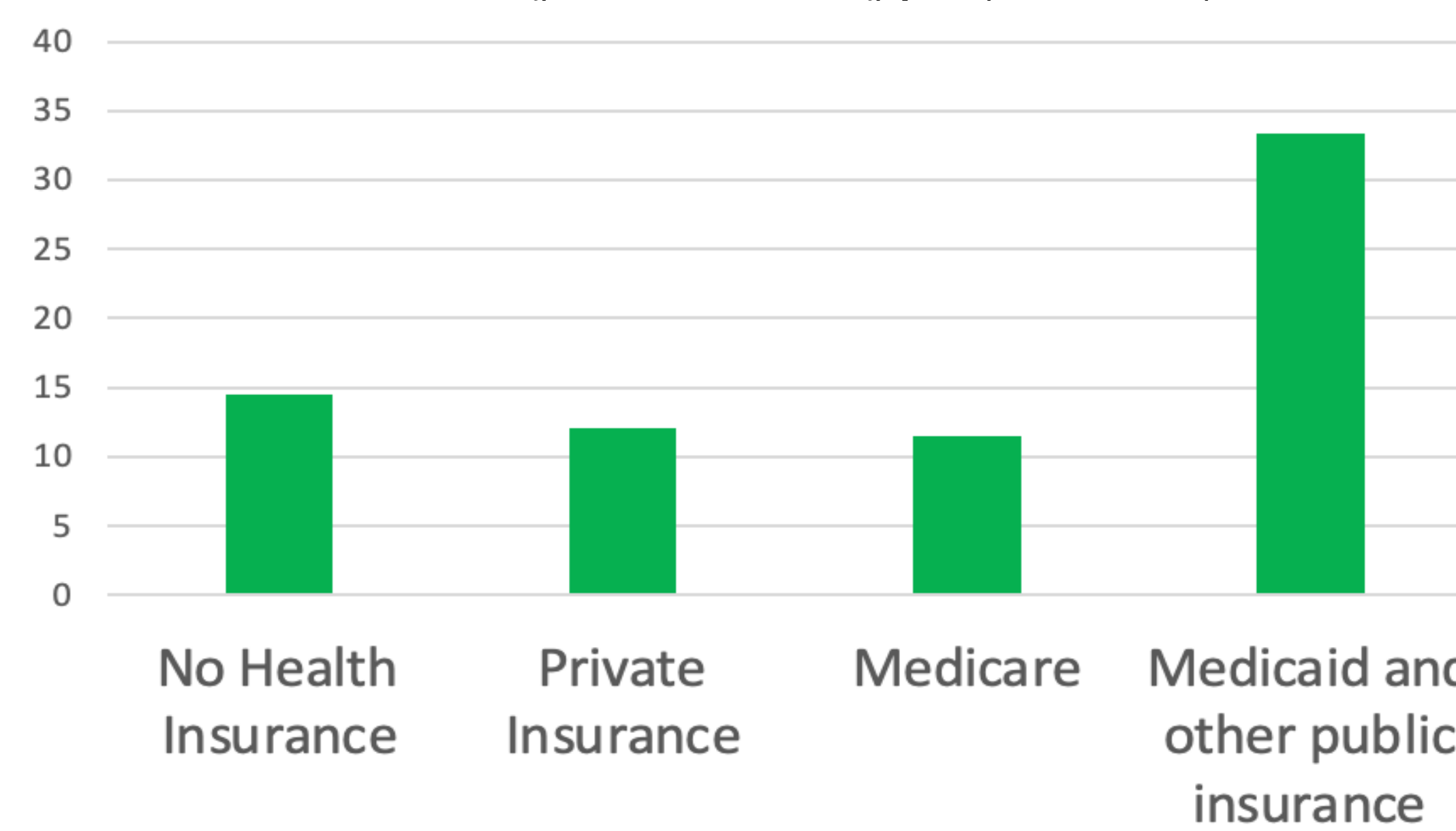
## Results



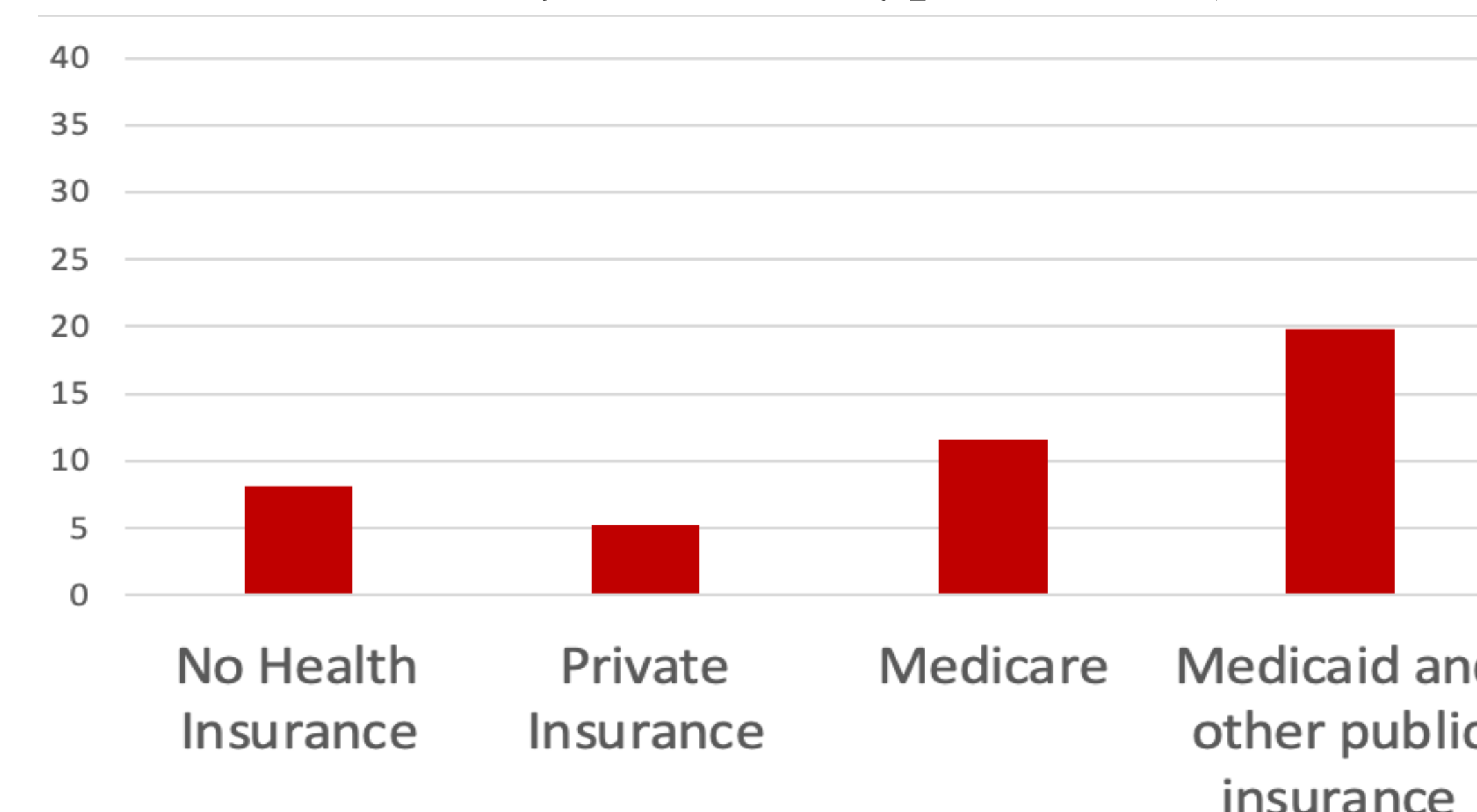
**Figure 1.** Proportion of poor health among cancer survivors by insurance type (n = 974)



**Figure 2.** Proportion of poor physical health among cancer survivors by insurance type (n = 967)



**Figure 3.** Proportion of poor mental health among cancer survivors by insurance type (n = 963)



**Figure 4.** Proportion of high inactivity due to physical/mental health among cancer survivors by insurance type (n = 968)

**This research project was supported through the LSU Health Sciences Center, School of Medicine.**

**Table 1.** Insurance type associated with 4 quality of life variables using logistic models.

	General Health (n=974)	n=849	Physical Health (n=967)	n=846	Mental Health (n=963)	n=842	Inactivity (n=968)	n=847
	Unadjusted OR of Poor Health (95% CI)	Adjusted OR of Poor Health (95% CI)	Unadjusted OR of Poor Physical Health (95% CI)	Adjusted OR of Poor Physical Health (95% CI)	Unadjusted OR of Poor Mental Health (95% CI)	Adjusted OR of Poor Mental Health (95% CI)	Unadjusted OR of High Inactivity (95% CI)	Adjusted OR of High Inactivity (95% CI)
Private insurance	1	1	1	1	1	1	1	1
Medicaid and other public insurance	2.7** (1.6, 4.5)	1.6 (0.8, 2.9)	4.3*** (2.4, 7.7)	3.6** (1.8, 7.1)	3.6*** (2.1, 6.4)	2.6** (1.3, 5.0)	4.5 *** (2.2, 9.5)	4.1** (1.7, 9.7)
Medicare	1.9** (1.3, 2.8)	2.0* (1.0, 3.8)	1.8* (1.1, 2.9)	3.8** (1.8, 8.1)	0.9 (0.6, 1.5)	2.7* (1.2, 6.1)	2.4** (1.3, 4.5)	8.2*** (3.2, 21.2)
No health insurance	2.5** (1.3, 4.6)	1.0 (0.5, 2.2)	1.9 (0.9, 4.1)	1.6 (0.6, 4.0)	1.2 (0.6, 2.8)	1.1 (0.4, 2.7)	1.6 (0.5, 4.8)	1.2 (0.3, 4.3)

Adjusted age, race, income, marital status, and gender.

\*: p<0.05 \*\*: p<0.01 \*\*\*: p<0.0001

### Demographics:

- Mean age:** 65.19 years
- Gender:** 52.2% female
- Race:** 68.9% non-Hispanic White, 15.6% non-Hispanic Black, 15.5% Hispanic or other
- Marital Status:** 61.5% were married or living with a partner
- Income:** 40.1% had a poverty income ratio  $\leq 2$

### Health Insurance:

- 58.2% were covered by Medicare
- 23.9% had private insurance
- 11.5% were covered under Medicaid and other public insurance
- 6.4% had no health insurance

### HRQOL-4:

- 28.1% had poor general health (274/974)
- 17.6% had poor physical health (170/967)
- 14.3% had poor mental health (138/963)
- 10.7% had high inactivity (104/968)

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## Conclusions/Discussion

- Based on bivariate analysis**, health insurance type is significantly associated with all four quality of life variables: general health condition (p=0.0003), physical health (p<0.0001), mental health (p<0.0001), and inactivity due to physical/mental health (p=0.0009).
- Before adjusting for demographic factors**, cancer survivors who had Medicaid/other public insurance and Medicare were more likely to have poor health compared to those with private insurance. Only mental health was not significantly associated for Medicare.
- After adjusting for age, race, income, marital status, and gender**, Medicaid/other public insurance and Medicare were significantly associated with physical health, mental health, and inactivity, but only Medicare was significantly associated with general health as well.
- The adjusted odds ratios indicate** that cancer survivors with private insurance tend to have a better quality of life than those with other insurance, supporting previous research on diagnosis/survival rates for cancer patients. None of the adjusted odds ratios for those with no health insurance compared to those with private insurance were significant.
- Income** had the largest effect on general health of cancer survivors. Race, gender, and age also played a role in the other quality of life variables.
- Large confidence intervals** were likely a result of small sample sizes.
- HRQOL** can help determine the burden of cancer and disabilities and can provide valuable new insights into the relationships between HRQOL and risk factors. In the future, more research should be conducted to understand the specific implications of health insurance on quality of life in cancer patients.