

Supplementary material for *Time-varying survival effects for squamous cell carcinomas at oropharyngeal and non-oropharyngeal head and neck sites in the United States, 1973–2015*

In the supplementary material, we provide additional figures to demonstrate the time-dependent effects of covariates (age, sex, race, and year of diagnosis) on other death (Figures S1 and S2). The spline knots for other death were 16, 44, 82, and 140 months, with boundary knots of 1 and 512 months. Unlike for cancer death, not all effects were significantly time-varying; specifically, at level $\alpha = 0.001$, the effects of sex, diagnosis in 1985–99, and anatomical site were not significantly time-varying.

We also present the effect of these covariates for oropharyngeal cancer alone (Figure S3) and oral cavity and hypopharyngeal/laryngeal cancer alone (Figure S4).

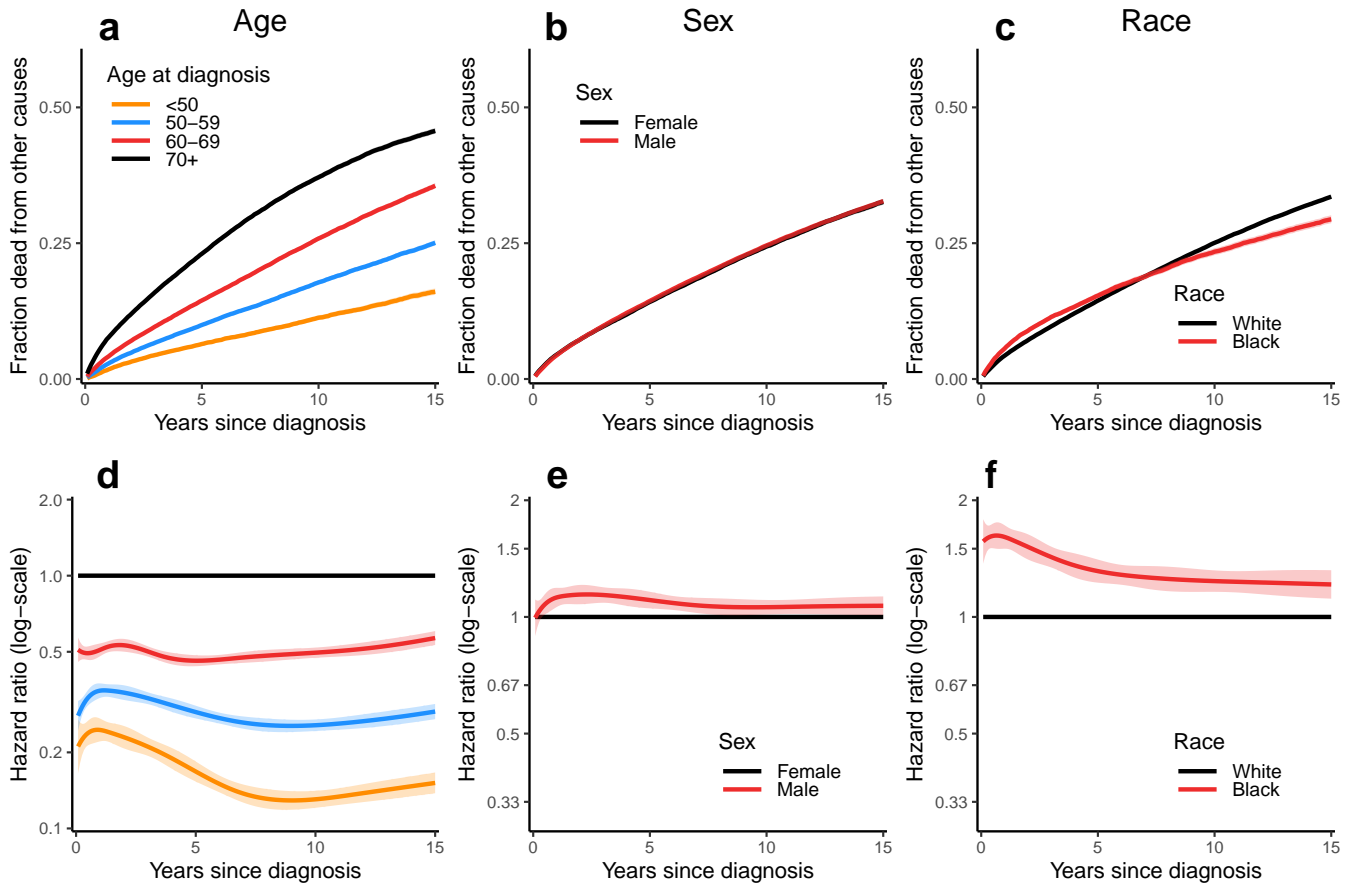


Figure S1: Fraction of patients (i.e., cumulative incidence) diagnosed with head and neck cancer who have died from other causes as a function of time since diagnosis for a) age at diagnosis, b) sex, and c) race. Time-dependent hazard ratios ($e^{\beta(t)x}$) for other death for d) age at diagnosis, e) sex, and f) race in multivariable models (adjusting for sex, race, year of diagnosis, and anatomical site) stratified by tumor stage. The ribbons in all plots represent 95% confidence intervals for the estimate; confidence intervals for the cumulative incidence plots may be obscured by line thickness.

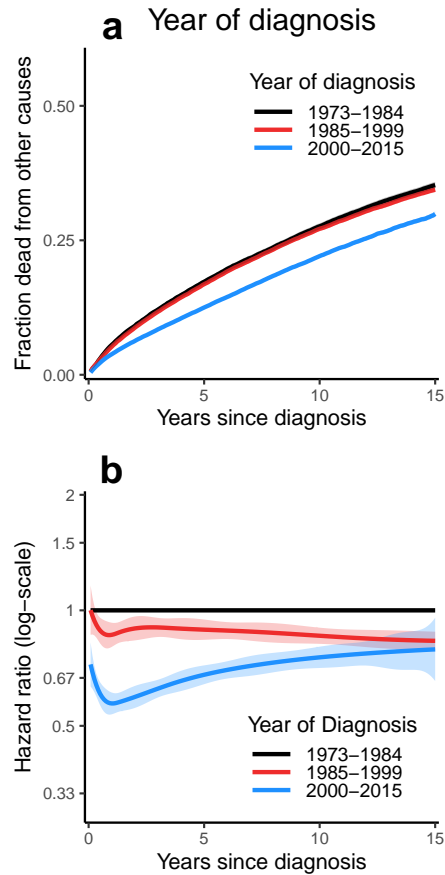


Figure S2: a) Fraction of patients (i.e., cumulative incidence) diagnosed with head and neck cancer who have died from other causes as a function of time since diagnosis. b) Time-dependent hazard ratios ($e^{\beta(t)x}$) for other death for year of diagnosis in multivariable models (adjusting for sex, race, year of diagnosis, and anatomical site) stratified by tumor stage. The ribbons in all plots represent 95% confidence intervals for the estimate; confidence intervals for the cumulative incidence plots may be obscured by line thickness.

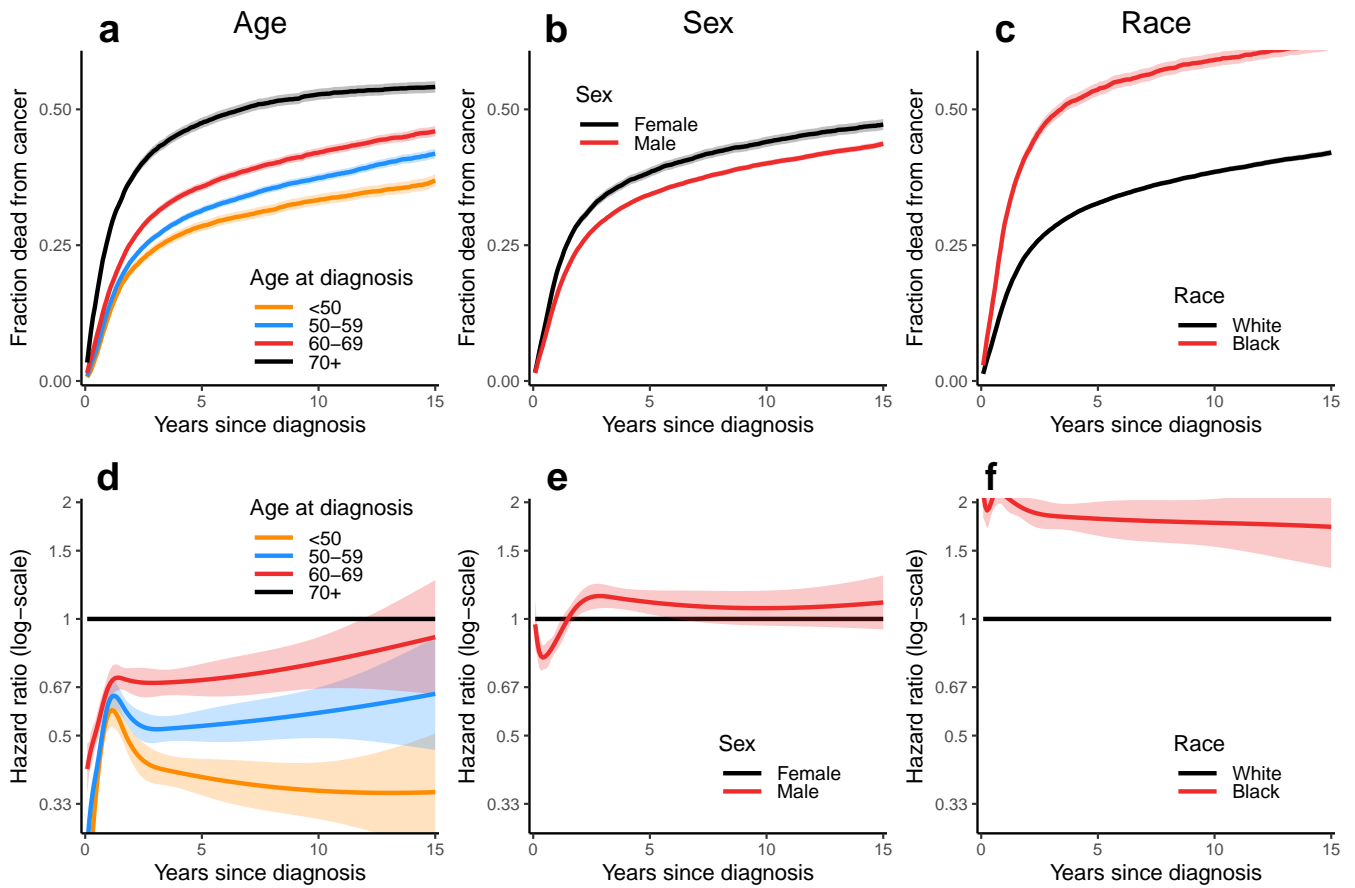


Figure S3: Fraction of patients (i.e., cumulative incidence) diagnosed with oropharyngeal cancer who have died from cancer as a function of time since diagnosis for a) age at diagnosis, b) sex, and c) race. Time-dependent hazard ratios ($e^{\beta(t)x}$) for cancer death for d) age at diagnosis, e) sex, and f) race in multivariable models (adjusting for sex, race, year of diagnosis, and anatomical site) stratified by tumor stage. The ribbons in all plots represent 95% confidence intervals for the estimate; confidence intervals for the cumulative incidence plots may be obscured by line thickness.

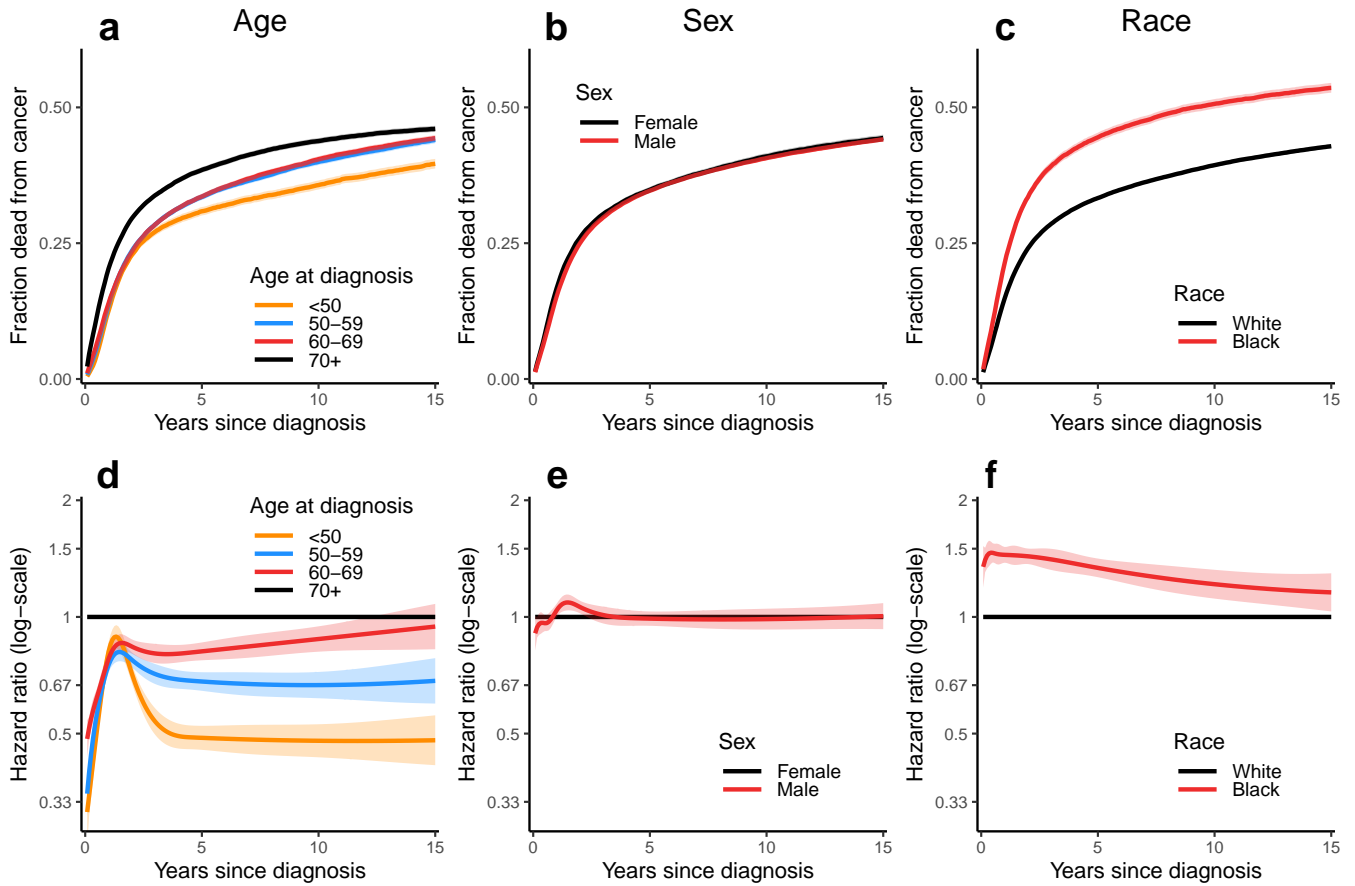


Figure S4: Fraction of patients (i.e., cumulative incidence) diagnosed with oral cavity or hypopharyngeal/laryngeal cancer who have died from cancer as a function of time since diagnosis for a) age at diagnosis, b) sex, and c) race. Time-dependent hazard ratios ($e^{\beta(t)x}$) for cancer death for d) age at diagnosis, e) sex, and f) race in multivariable models (adjusting for sex, race, year of diagnosis, and anatomical site) stratified by tumor stage. The ribbons in all plots represent 95% confidence intervals for the estimate; confidence intervals for the cumulative incidence plots may be obscured by line thickness.