A Look at Cancer in the United States

53 Hopefully Useful Plots

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1 Introduction

Cancer is an umbrella term for a collection of diseases that involve the uncontrolled division of abnormal cells and the subequent spread of these cells throughout the body. Cancers may vary by site or origin, histology, behavior and the impairment they bring to the lives of the afflicted.

This aim of this report is to provide an accessible survey of the state of cancer in the United States: looking at both the incidence of different cancers and the survival experiences of cancer patients. It is intended that this guide be highly-visual and that most information will be conveyed effectively via the graphs.

1.1 The SEER Program

The data underlying this guide was provided by the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute (NCI). SEER was initiated in 1973 and has been expanded over time. Currently, SEER aggregates and publishes data from 18 affiliated canceer registries throughout the United States that correspond to areas containing 28% of the US population[2].

Data is published with a three year lag - so in 2017, for example, the most recent release of data would contain data up to and including 2014. Data included in each annual release includes demographic information about the patient (including sex, race, ethnicity, age at diagnosis), classifications of the disease (including primary tumor site, tumor morphology and stage at diagnosis), and information on follow-up (survival time post diagnosis, current vital status)[3].

This report uses data from 17 of the SEER registries[1] for the period 2001 to 2014 inclusive.

1.2 Demography and Geography

We partition the registry population into 5 mutually exclusive race/ethnicity groups: *Asian*[2], *Black*, *Hispanic*, *Native*, and *White*. These classifications are derived from data provided by SEER: race and hispanic origin are indicated in independent data fields[3]; individuals that can be directly identified as being of Hispanic origin[3] were labeled as such; all other individuals were assigned to the group corresponding to their indicated race.

Note that the final classification for a subject may differ from that in another classification scheme using the same category names and underlying data. Specifically, we have not implemented SEER's recomended algorithm for indirectly identifying persons of hispanic origin.

[1]Data from the Louisiana SEER registry was omitted. In the aftermath of Hurricane Katrina, data collection was disrupted for this registry for several months in 2005. While data for the missing months is now available, it is not considered a part of the official data set. The decision has been taken to omit this registry until further notice as the missing months constitute a significant fraction of our study period of interest.

[2]Individuals were classified as *Asian* if they were recorded as any of the following: Chinese, Japanese, Filipino, Hawaiian, Korean, Vietnamese, Laotian, Hmong, Kampuchean, Thai, Asian Indian or Pakistani, Asian Indian, Pakistani, Micronesian, Chamorran, Guamanian, Polynesian, Tahitian, Samoan, Tongan, Melanesian, Fiji Islander, New Guinean, Other Asian, or Asian not otherwise specified.

[3]Individuals were classified as Hispanic if they were recorded as any of the following: Mexican, Puerto Rican, Cuban, South or Central American excluding Brazil, Other specified Spanish/Hispanic Origin including Europe, Spanish/Hispanic/Latino NOS, Dominican Republic.

	Population (%)												
Year	Asian		Black		Hispanic		Native		White		Total		
2001	19,486 (5.3)		31,820 (8.6)		23,132 (6.3)		1,594 (0.4)		293,091 (79.4)		369,123		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	10,476 (2.8)	9,010 (2.4)	14,877 (4)	16,943 (4.6)	11,509 (3.1)	11,623 (3.1)	836 (0.2)	758 (0.2)	146,962 (39.8)	146,129 (39.6)			
2002	20,493 (5.5)		32,595 (8.7)		25,094 (6.7)		1,582 (0.4)		293,964 (78.7)		373,728		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	11,105 (3)	9,388 (2.5)	15,538 (4.2)	17,057 (4.6)	12,573 (3.4)	12,521 (3.4)	830 (0.2)	752 (0.2)	146,772 (39.3)	147,192 (39.4)			
2003	20,661 (5.6)		32,979 (8.9)		25,916 (7)		1,669 (0.5)		288,371 (78)		369,596		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	11,044 (3)	9,617 (2.6)	15,910 (4.3)	17,069 (4.6)	13,186 (3.6)	12,730 (3.4)	890 (0.2)	779 (0.2)	144,340 (39.1)	144,031 (39)			
2004	22,669 (5.8)		34,889 (9)		28,933 (7.5)		1,877 (0.5)		299,411 (77.2)		387,779		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	12,344 (3.2)	10,325 (2.7)	17,203 (4.4)	17,686 (4.6)	14,646 (3.8)	14,287 (3.7)	1,031 (0.3)	846 (0.2)	150,421 (38.8)	148,990 (38.4)			
2005	23,363 (5.9)		35,401 (9)		30,980 (7.9)		1,901 (0.5)		302,231 (76.7)		393,876		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	12,946 (3.3)	10,417 (2.6)	17,584 (4.5)	17,817 (4.5)	15,883 (4)	15,097 (3.8)	1,017 (0.3)	884 (0.2)	152,472 (38.7)	149,759 (38)			
2006	24,145 (6)		36,260 (9)		31,435 (7.8)		2,003 (0.5)		309,073 (76.7)		402,916		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	13,341 (3.3)	10,804 (2.7)	18,060 (4.5)	18,200 (4.5)	16,117 (4)	15,318 (3.8)	1,129 (0.3)	874 (0.2)	154,287 (38.3)	154,786 (38.4)			
2007	25,980 (6.2)		38,148 (9.1)		33,057 (7.9)		2,012 (0.5)		318,427 (76.2)		417,624		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	14,397 (3.4)	11,583 (2.8)	18,799 (4.5)	19,349 (4.6)	17,073 (4.1)	15,984 (3.8)	1,071 (0.3)	941 (0.2)	157,850 (37.8)	160,577 (38.5)			
2008	27,018 (6.4)		38,853 (9.2)		34,927 (8.2)		2,139 (0.5)		320,659 (75.7)		423,596		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	15,291 (3.6)	11,727 (2.8)	19,115 (4.5)	19,738 (4.7)	18,176 (4.3)	16,751 (4)	1,144 (0.3)	995 (0.2)	161,336 (38.1)	159,323 (37.6)			
2009	27,716 (6.4)		40,564 (9.4)		36,101 (8.4)		2,266 (0.5)		325,013 (75.3)		431,660		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	15,743 (3.6)	11,973 (2.8)	20,344 (4.7)	20,220 (4.7)	18,715 (4.3)	17,386 (4)	1,209 (0.3)	1,057 (0.2)	164,233 (38)	160,780 (37.2)			
2010	28,762 (6.7)		40,342 (9.3)		37,532 (8.7)		2,384 (0.6)		322,449 (74.7)		431,469		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	16,423 (3.8)	12,339 (2.9)	20,174 (4.7)	20,168 (4.7)	19,536 (4.5)	17,996 (4.2)	1,265 (0.3)	1,119 (0.3)	161,734 (37.5)	160,715 (37.2)			
2011	29,623 (6.8)		41,140 (9.4)		39,591 (9.1)		2,426 (0.6)		323,834 (74.2)		436,614		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	16,858 (3.9)	12,765 (2.9)	20,923 (4.8)	20,217 (4.6)	20,758 (4.8)	18,833 (4.3)	1,335 (0.3)	1,091 (0.2)	162,564 (37.2)	161,270 (36.9)			
2012	30,111 (6.9)		41,628 (9.5)		40,714 (9.3)		2,451 (0.6)		323,094 (73.8)		437,998		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	17,563 (4)	12,548 (2.9)	21,622 (4.9)	20,006 (4.6)	22,021 (5)	18,693 (4.3)	1,408 (0.3)	1,043 (0.2)	165,171 (37.7)	157,923 (36.1)			
2013	31,368 (7.1)		41,619 (9.4)		41,839 (9.5)		2,603 (0.6)		323,330 (73.4)		440,759		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	18,318 (4.2)	13,050 (3)	21,680 (4.9)	19,939 (4.5)	22,806 (5.2)	19,033 (4.3)	1,445 (0.3)	1,158 (0.3)	165,679 (37.6)	157,651 (35.8)			
2014	31,588 (7.1)		41,196 (9.3)		43,206 (9.8)		2,613 (0.6)		324,452 (73.2)		443,055		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	18,647 (4.2)	12,941 (2.9)	21,974 (5)	19,222 (4.3)	23,753 (5.4)	19,453 (4.4)	1,445 (0.3)	1,168 (0.3)	167,509 (37.8)	156,943 (35.4)			
Total	362,983 (6.3)		527,434 (9.2)		472,457 (8.2)		29,520 (0.5)		4,367,399 (75.8)		5,759,793		
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male			
	204,496 (3.6)	158,487 (2.8)	263,803 (4.6)	263,631 (4.6)	246,752 (4.3)	225,705 (3.9)	16,055 (0.3)	13,465 (0.2)	2,201,330 (38.2)	2,166,069 (37.6)			

Table 1: **Demographic Characteristics of Study Population by Diagnosis Year**

Population counts by race/ethnicity, sex and diagnosis year are tabulated in Table 1. Our study population is more disproportionately white than the general population of the United States. The US Census estimates that all whites and non-hispanic whites respectively constitute 76.9% and 61.3% of the total population respectively[4] whereas non-hispanic whites are 75.8% of our study population.

While the sample may not be representative, the populations of minority groups may still be considered to be large in a meaningful sense and the data set contains a large fraction of diagnosed cases in the US. For these reasons, insight can still be gained into the relative incidence of different cancer types among demographic groups as well as differential survival experiences across subpopulations for a given cancer type.

Note that the current version of this report does not include per capita statistics[4].

[4]The primary reason for this is uncertainty on the part of the author about the correct way to derive population estimates for a given demographic group using our chosen assignment of race/ethnic classification.

1.3 Disease Classifications

SEER makes data available in 9 high-level categories corresponding to 8 relatively common cancer types/sites of origin and a catch-all 9th category for all other cancers. These categories, by the names they are given by SEER, are:

1. `BREAST`: Breast
2. `COLRECT`: Colon and Rectum
3. `DIGOTHR`: Other Digestive
4. `FEMGEN`: Female Genital
5. `LYMYLEUK`: Lymphoma of All Sites and Leukemia
6. `MALEGEN`: Male Genital
7. `RESPIR`: Respiratory
8. `URINARY`: Urinary
9. `OTHER`: All Other Sites

Figure 1 shows the total number of cases for each over the 2001-2014 period. We see that Breast, Male Genital and Respiratory cancers are the three most common of the non-Other categories.

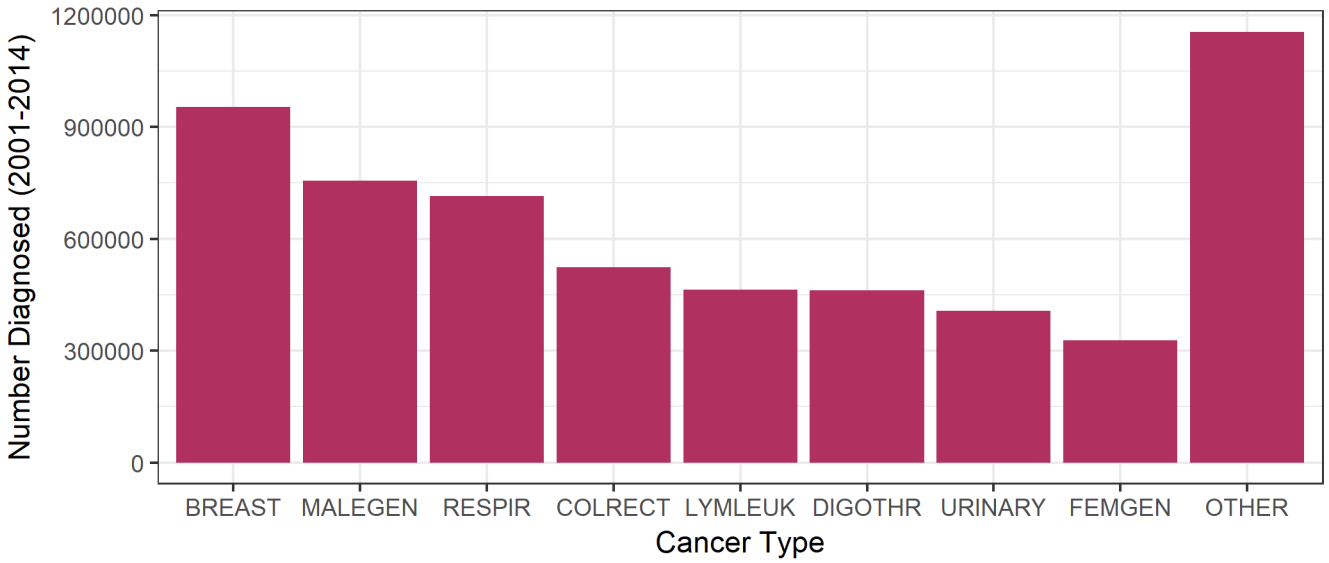


Figure 1: **Incidence of Different Types of Cancer in the Registry (2001-2014)**

More granular classification of cancer types is based on the International Classification of Diseases for Oncology (ICD-O) maintained by the World Health Organization (WHO) described below.

1.3.1 International Classification of Diseases for Oncology

The ICD-O was first codified in 1976 and is regarded as the definitive standard for neoplasm classification internationally[5].

The ICD-O scheme assigns each tumour two codes:

1. a topographical code[6], describing the anatomical site of origin (or organ system) of the tumour, and

2. a morphological code[7], describing the cell type (or histology) of the tumour, together with the behaviour (malignant or benign)

Data from SEER includes tumour classifications for both the second and third editions of the ICD-O. In this report we utilize the third edition (ICD-O-3) was first specified in 2000 and revised in 2011.

2 Cancer Incidence

Two of the categories — Female Genital and Male Genital — are exclusive to one sex. A third category, breast cancer, is found almost exclusively in women. We look at the the relative incidence of each of the other cancer categories among women and men in Figure 2.

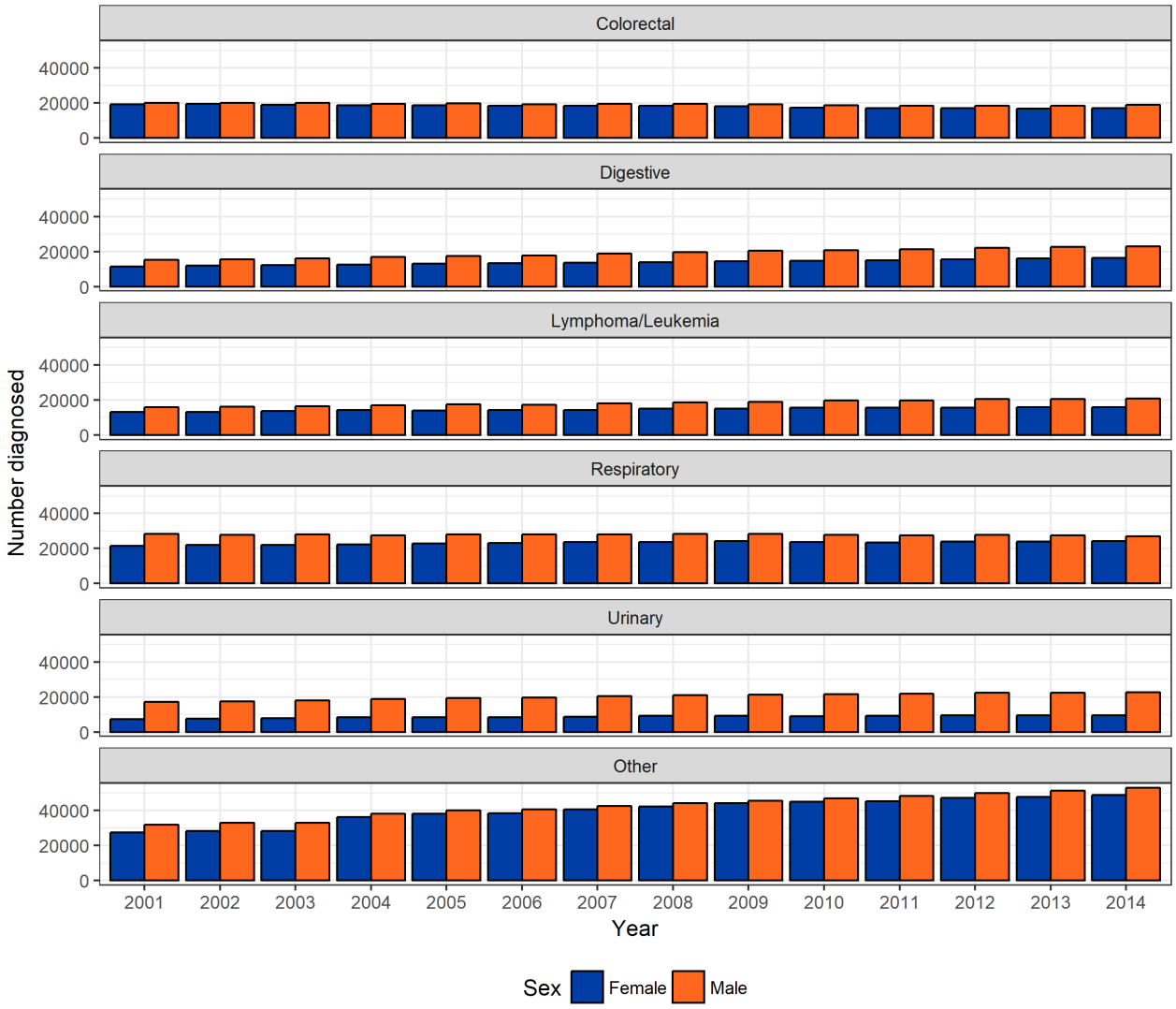


Figure 2: **Relative Incidence of Cancer Types By Sex (2001-2014)**

In each of these categories, the number of diagnosed cases among men exceeds that among women in each year in the time period of examination.

2.1 Most Common Primary Sites

We do, as mentioned before, have data available at higher levels of granularity. Figure 3 shows the 20 most common primary sites in the data set.

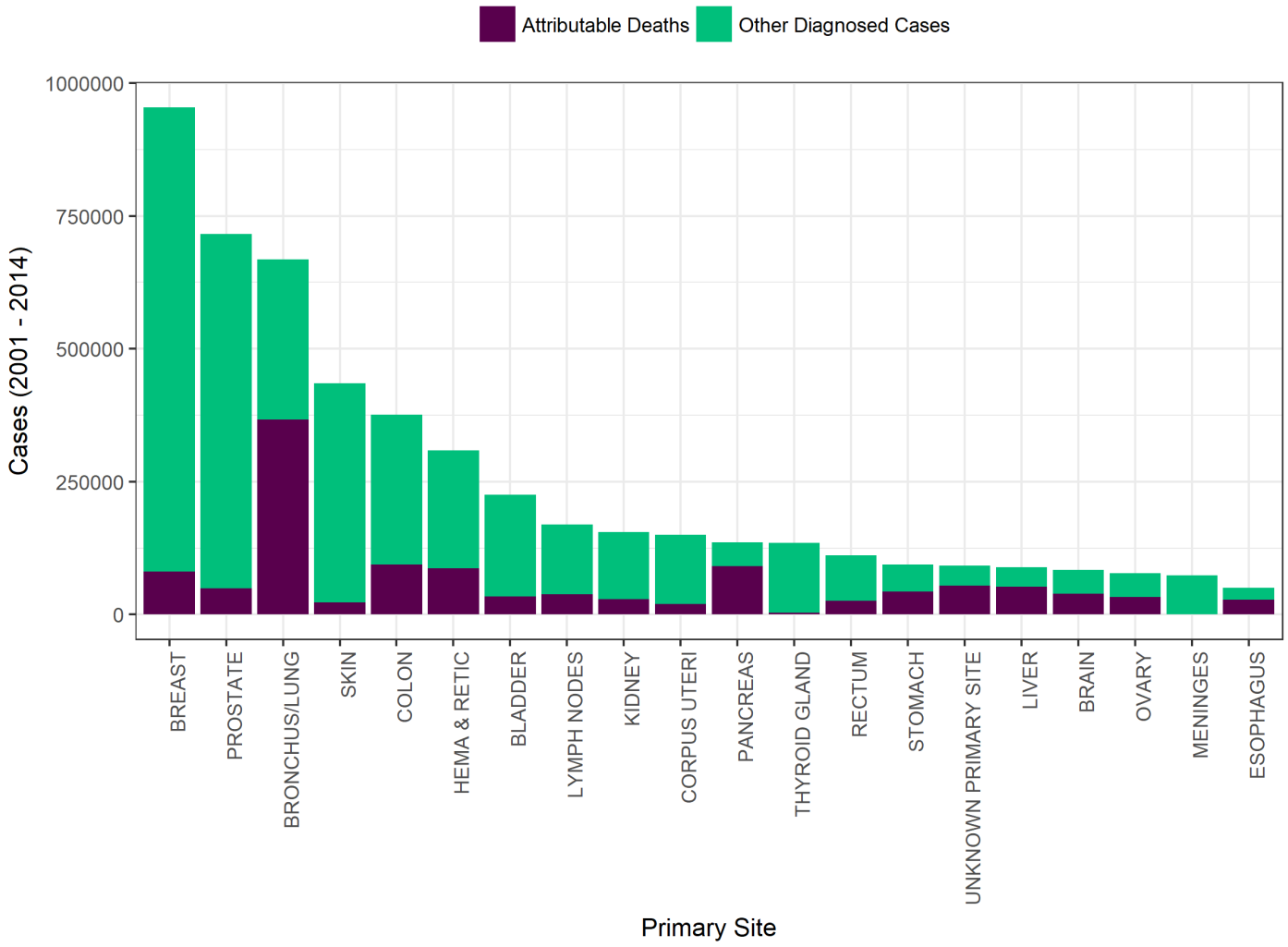


Figure 3: **20 Most Common Primary Sites**

We can also look at the 5 most common primary sites for Asian Females (Figure 4), Black Females(Figure 5), Hispanic Females(Figure 6), Native Females(Figure 7), White Females(Figure 8), Asian Males(Figure 9), Black Males(Figure 10), Hispanic Males(Figure 11), Native Males(Figure 12), and White Males(Figure 13).

Breast cancer is the most common cancer among women of all races/ethnicities by a clear margin. Also, among all groups the lungs, colon, and corpus uteri are among the top 5 most common primary sites in various permutations. Thyroid cancer is found to be the 5th and 3rd most common cancer among Asian and Hispanic females respectively; among Black and Native females the hematopoietic

and reticuloendothelial systems are the 4th and 5th most common primary sites; skin cancer is the 3rd most common cancer type among White females.

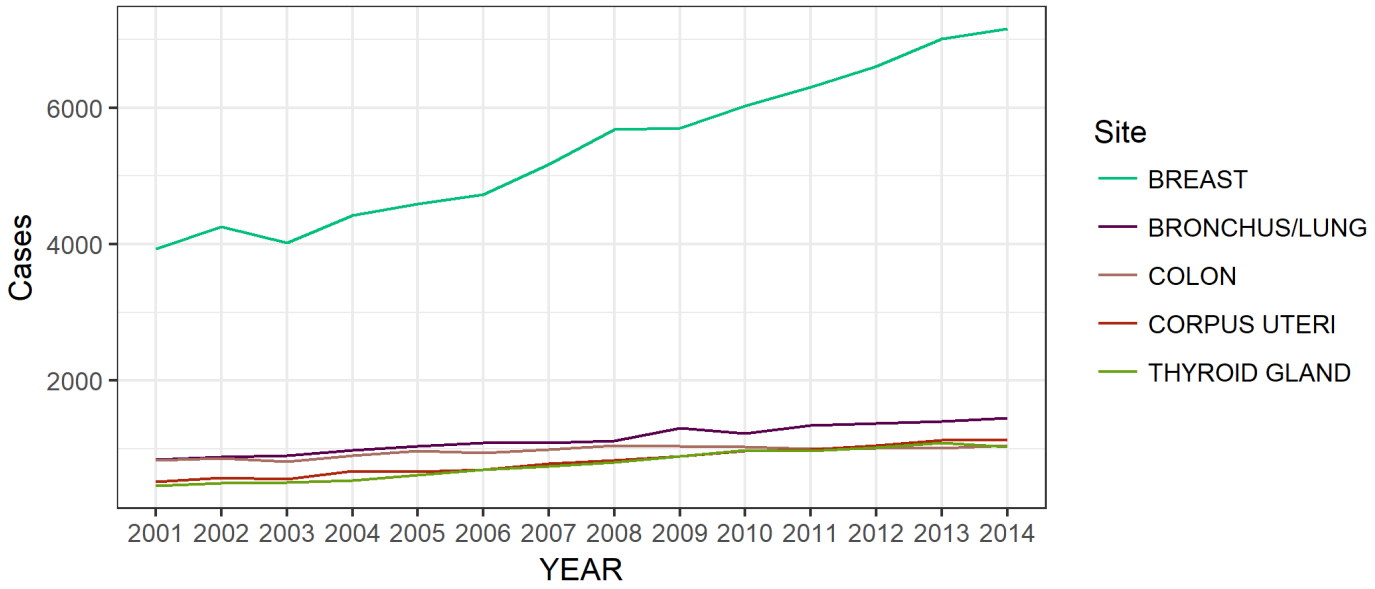


Figure 4: **5 Most Common Cancers among Asian Females**

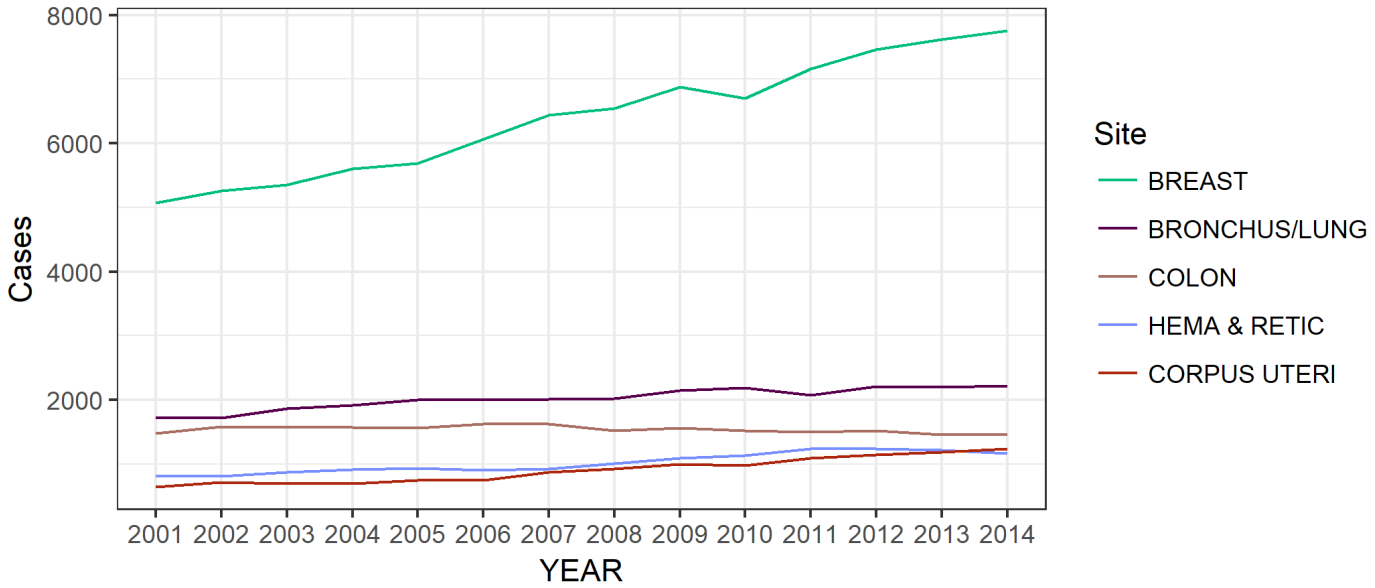


Figure 5: **5 Most Common Cancers among Black Females**

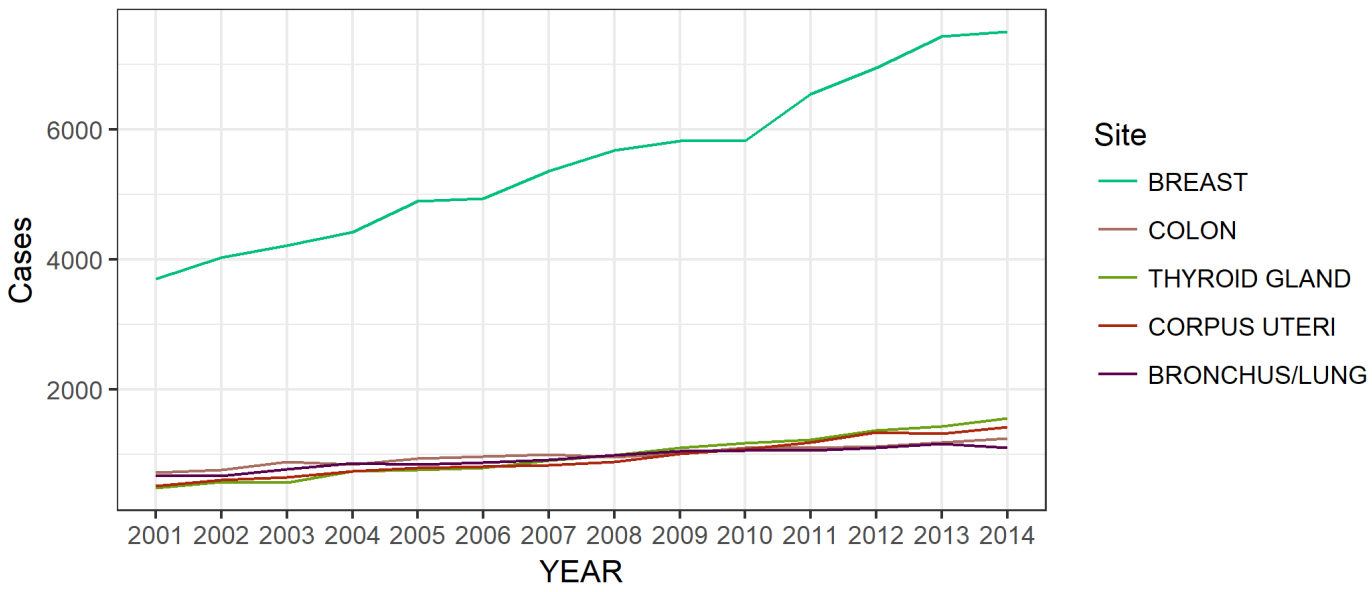


Figure 6: **5 Most Common Cancers among Hispanic Females**

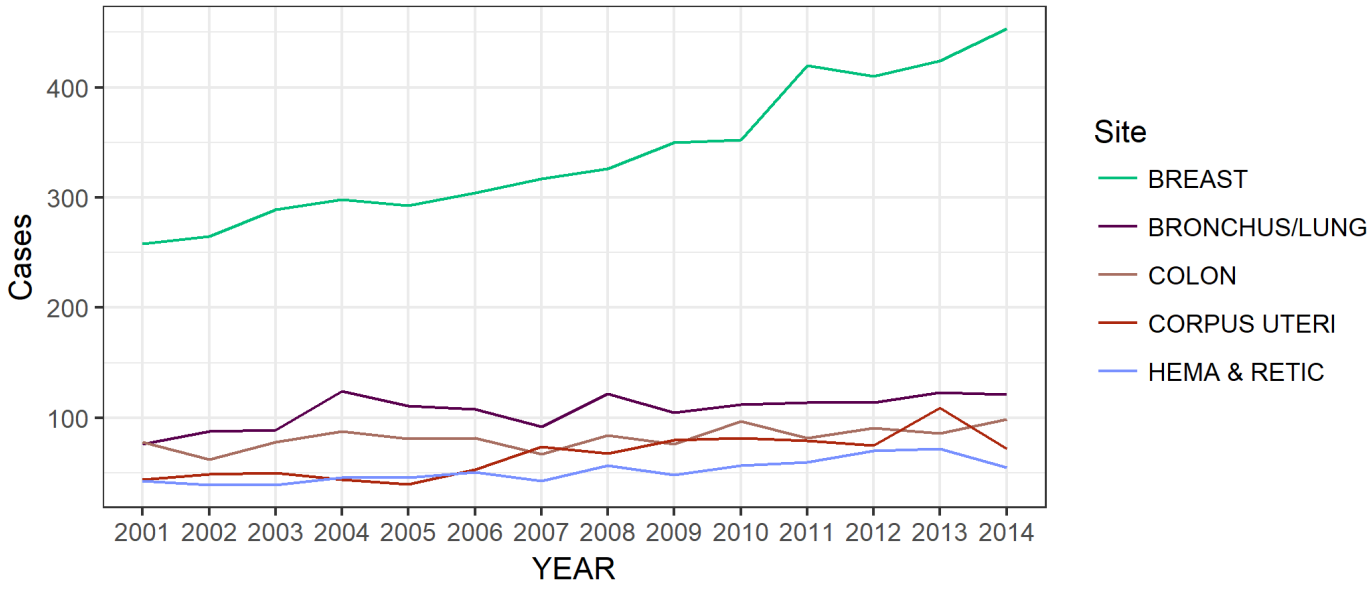


Figure 7: **5 Most Common Cancers among Native Females**

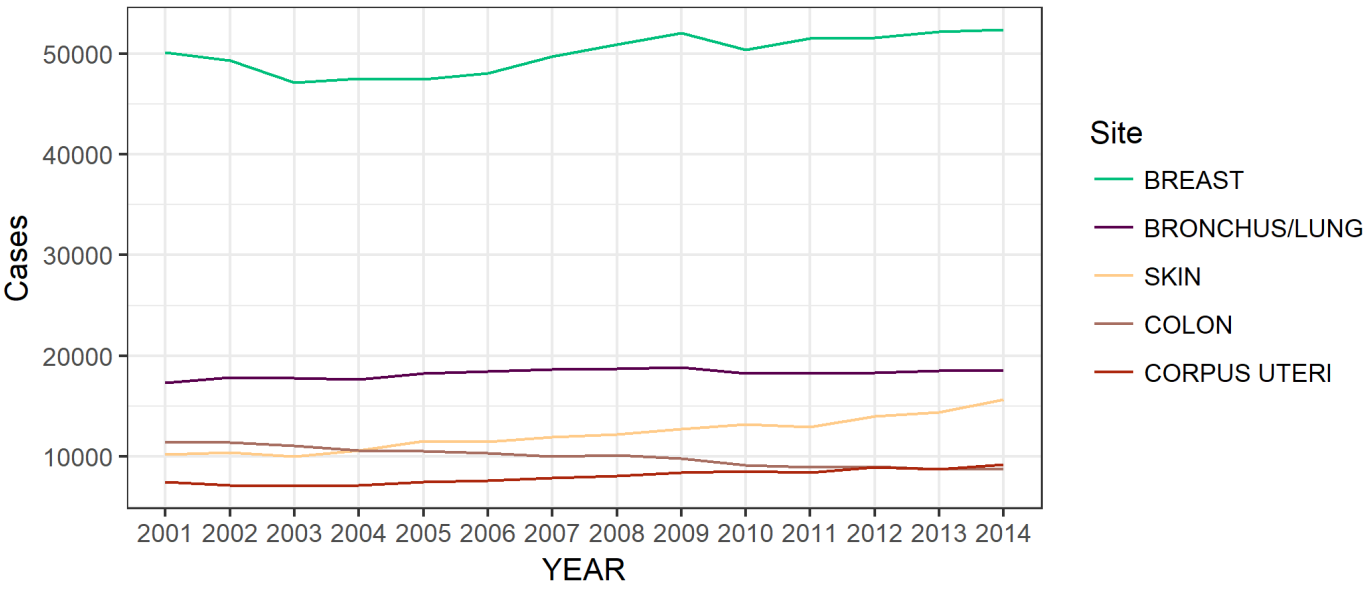


Figure 8: **5 Most Common Cancers Among White Females**

Among all subpopulations of males, prostate cancer is the most common cancer diagnosis. Over the entirety of the study period, lung cancer is the 2nd most common among all races/ethnicities however among whites, skin cancer diagnoses have been more common than lung cancer each year since 2011. Colon cancer is among the top 5 most frequent diagnoses for all groups of men: ranking 3rd among Asian, Black and Native males; 4th among Hispanic males; and 5th among White males. Cancer of the hematopoietic and reticuloendothelial systems are among the top 5 for all non-White subgroups in the data set.

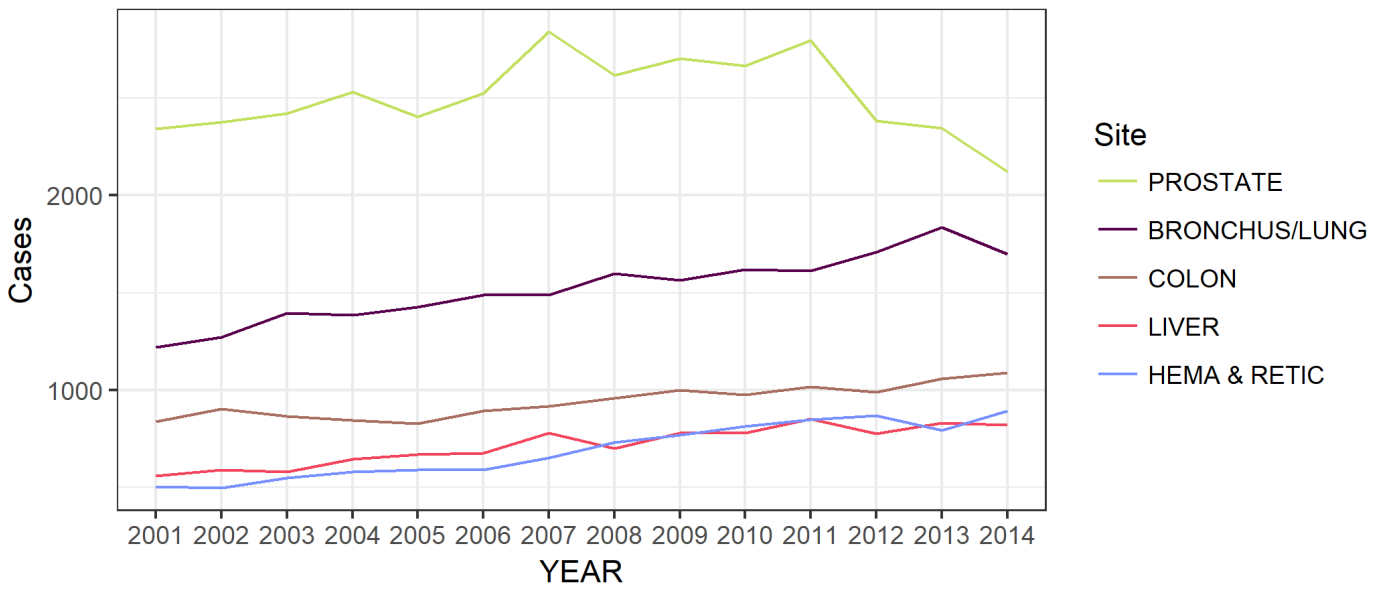


Figure 9: **5 Most Common Cancers among Asian Males**

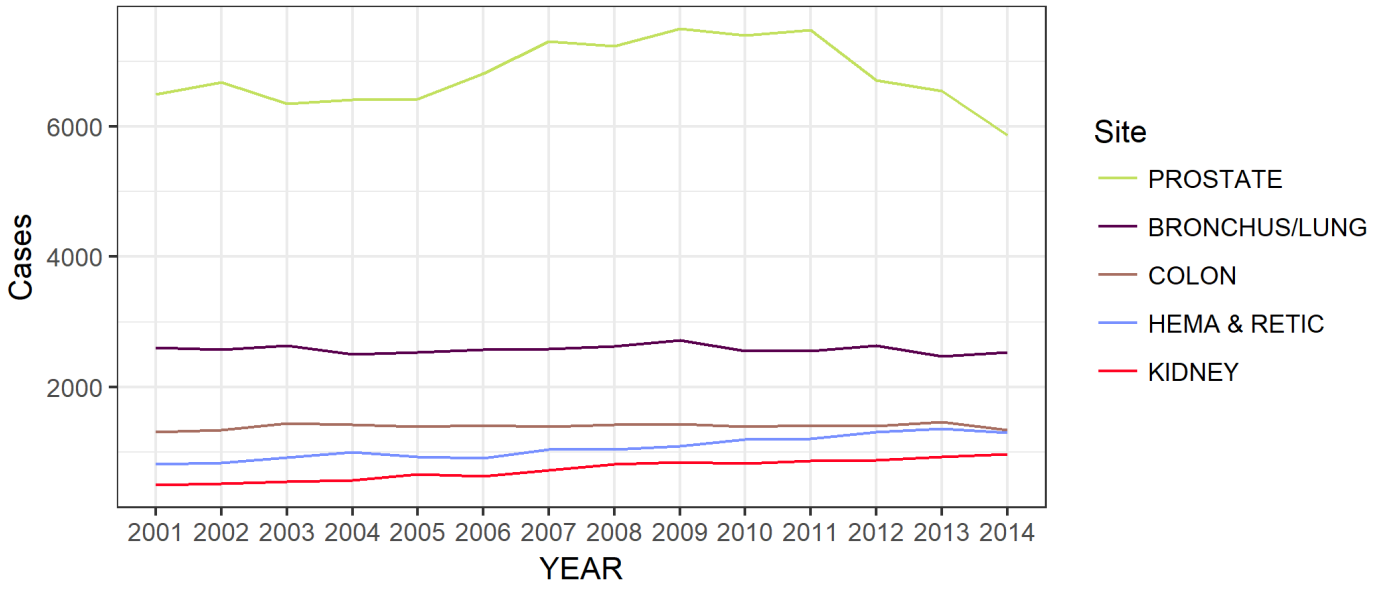


Figure 10: **5 Most Common Cancers among Black Males**

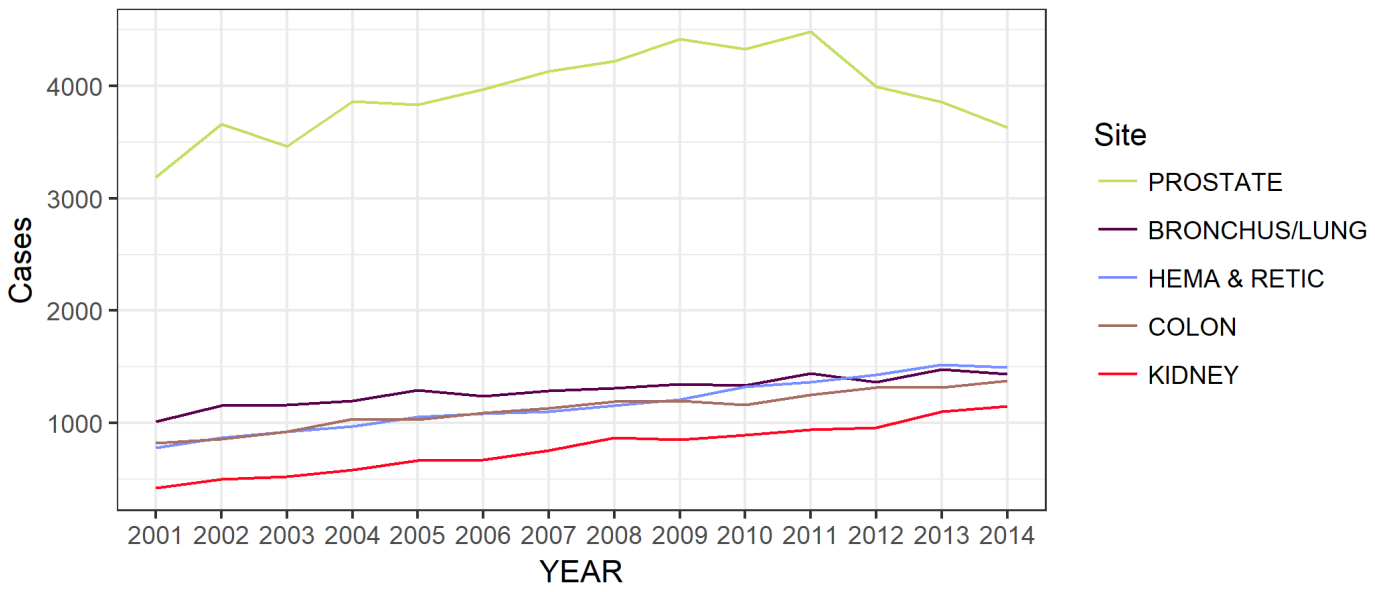


Figure 11: **5 Most Common Cancers among Hispanic Males**

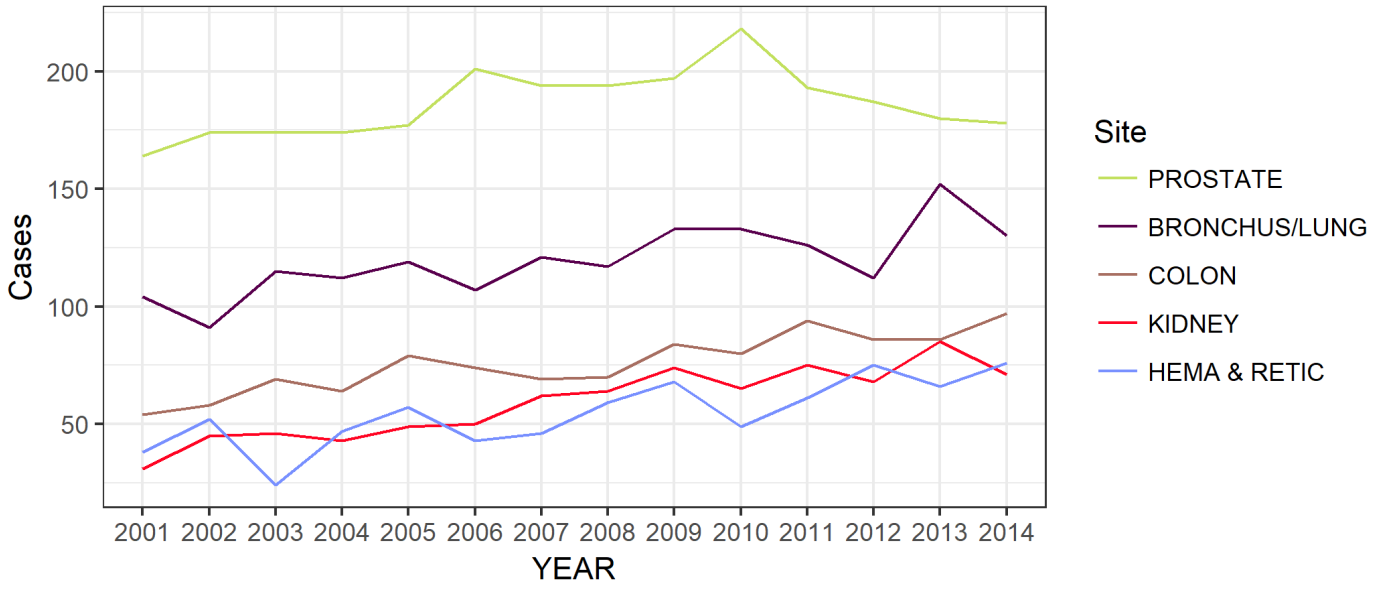


Figure 12: **5 Most Common Cancers among Native Males**

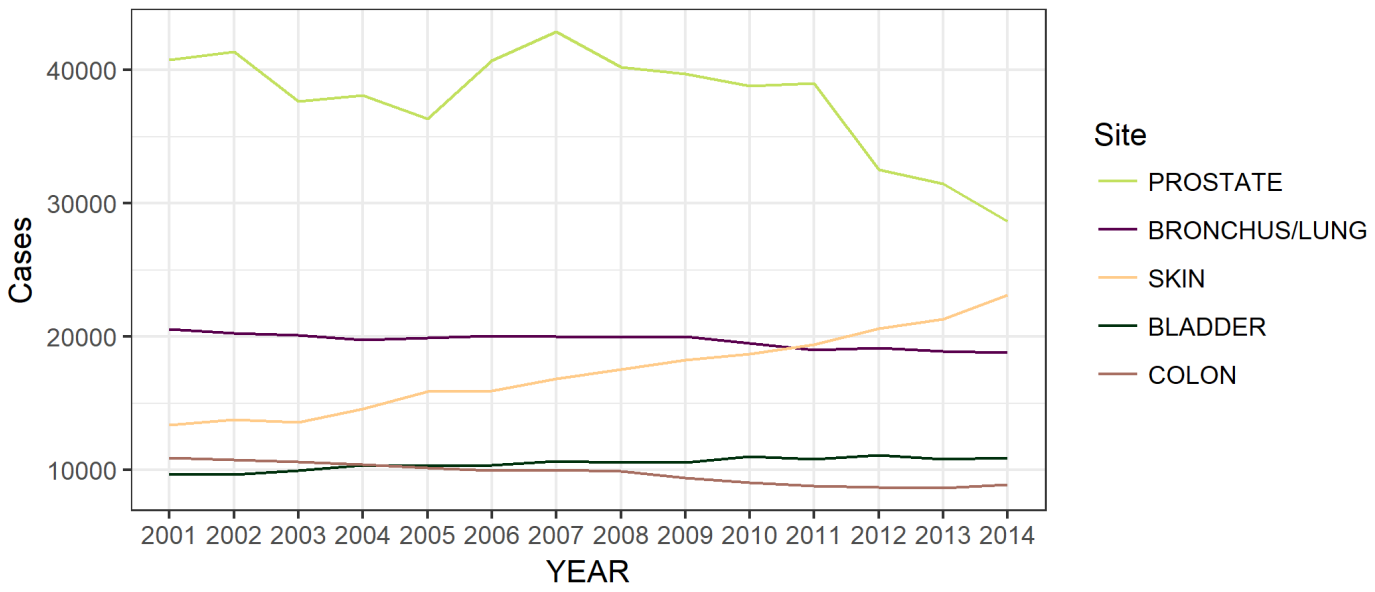


Figure 13: **5 Most Common Cancers among White Males**

2.2 Age Distribution of Diagnosed Cases

Across all demographc groups, the most common primary sites are (in descending order): breast, prostate, bronchus/lung, skin, colon, hematopoietic and reticuloendothelial systems, bladder, lymph nodes, kidney, corpus uteri, pancreas, thyroid gland, rectum, stomach, and liver.

The age distributions for these 15 sites are shown in Figure 14.

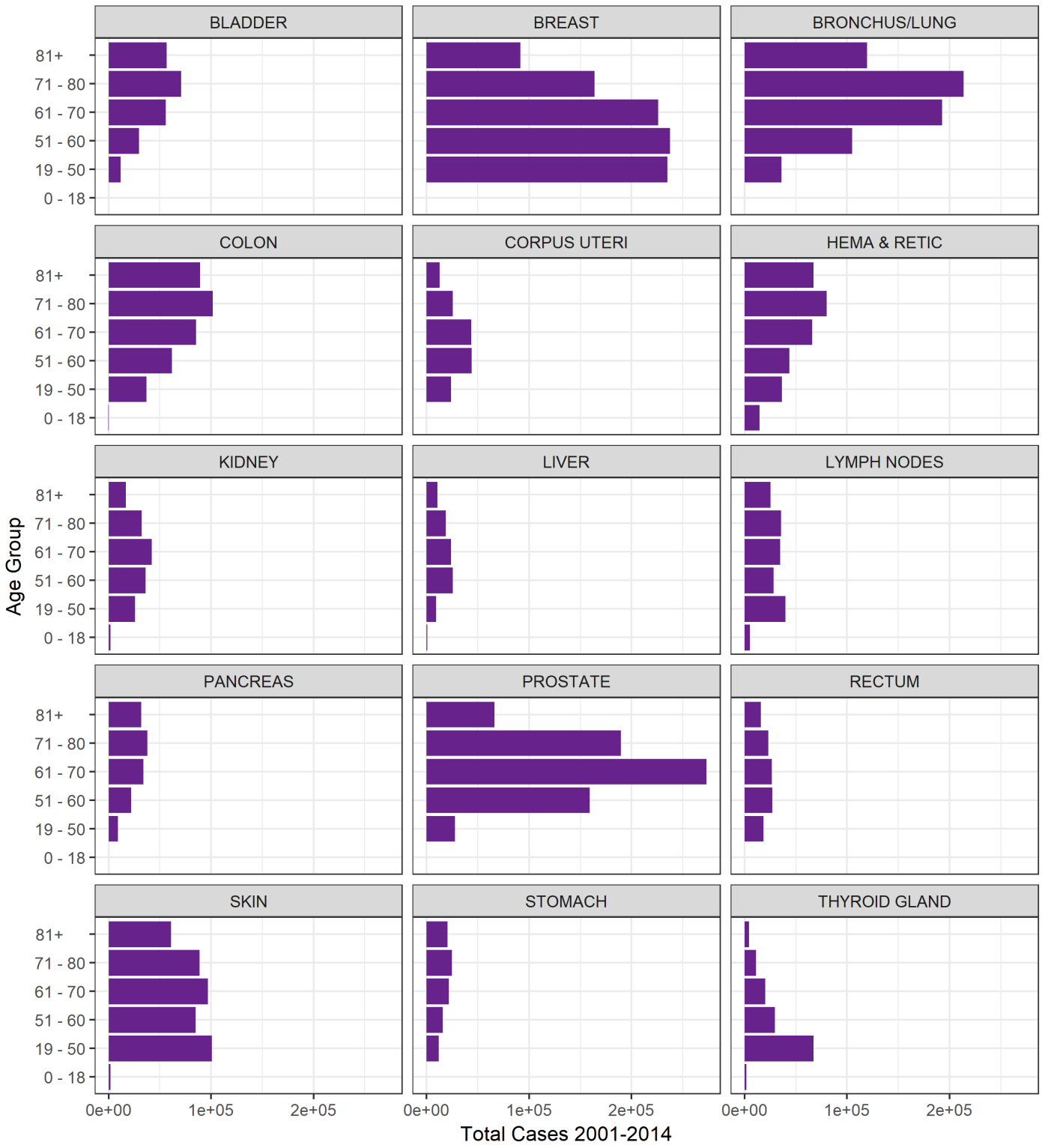


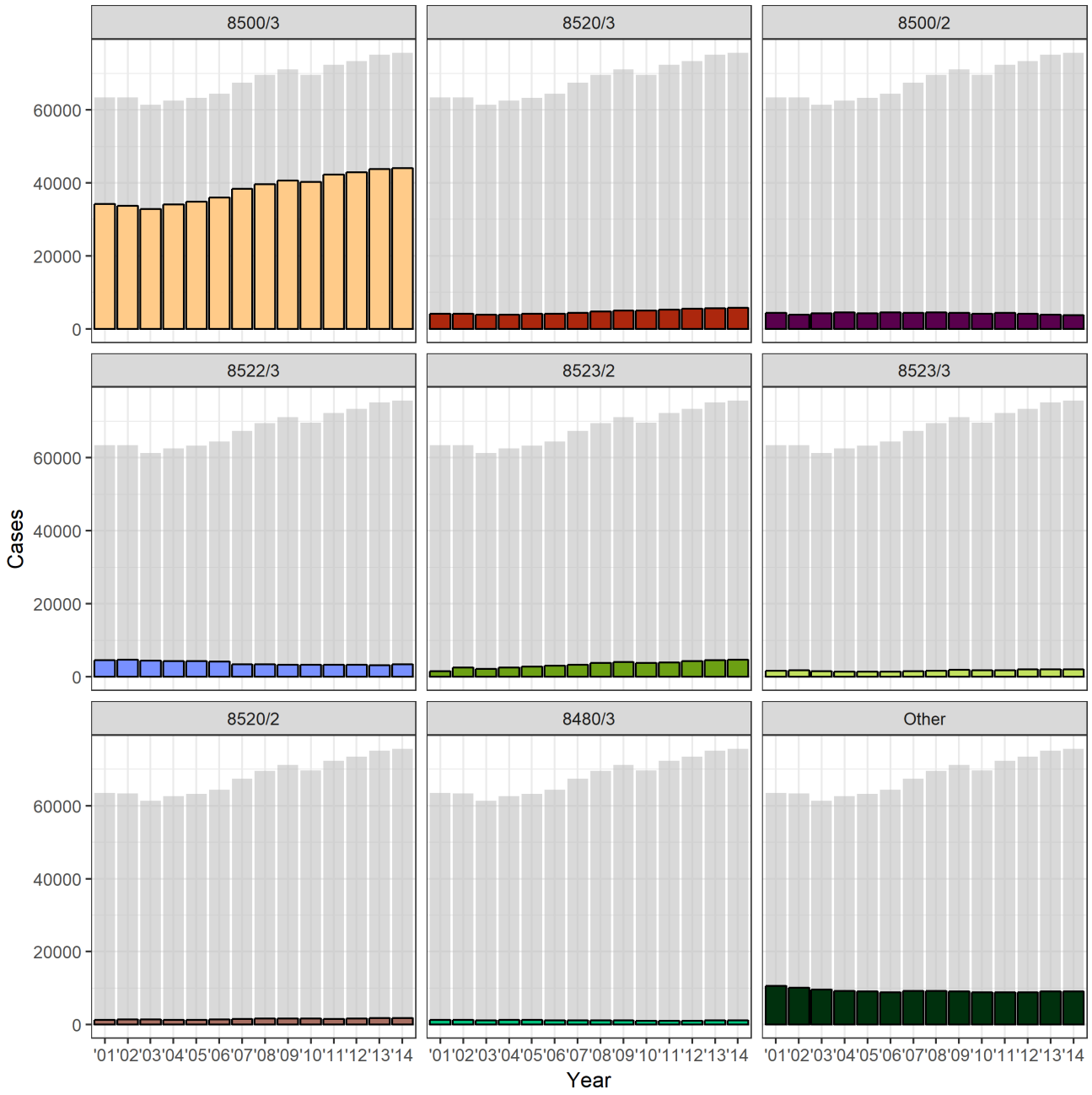
Figure 14: **Age Distribution of Diagnosed Individuals for the 15 most common cancer sites**

2.3 Common Morphologies

In this section, we look at the most common tumour morphologies for each cancer category: Breast (Figure 15), Colorectal (Figure 16), Other Digestive (Figure 17), Female Genital (Figure 18), Lymphoma and Leukemia (Figure 19), Male Genital (Figure 20), Respiratory (Figure 20), Urinary (Figure 22), and Other (Figure 23).

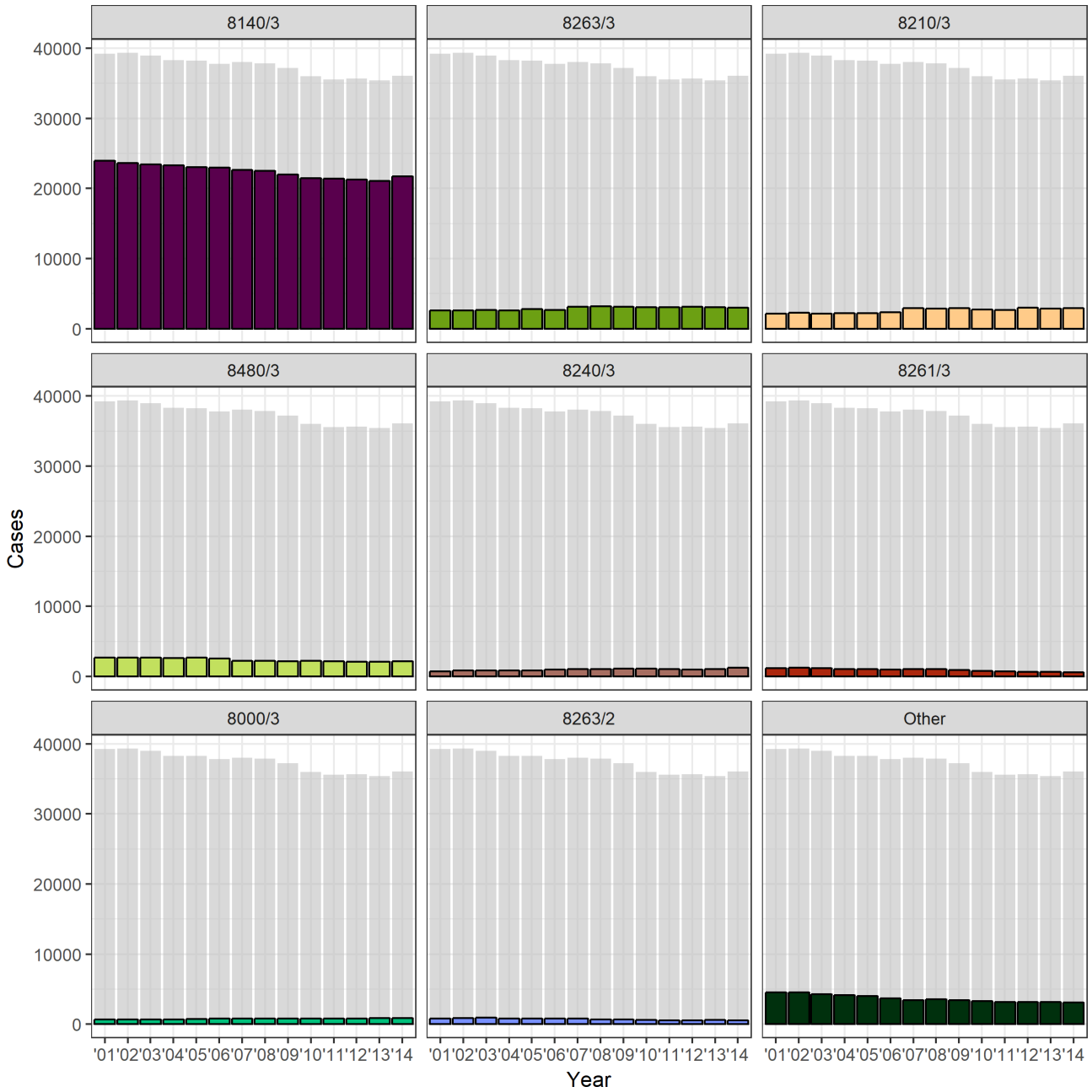
In each figure, the 8 most common morpholgy diagnoses in the category are shown against a backdrop of the total diagnoses in the category; a ninth category is added to encompass all other morphology diagnoses.

Note that many of the histology names include acronym, *NOS: Not Otherwise Specified.*



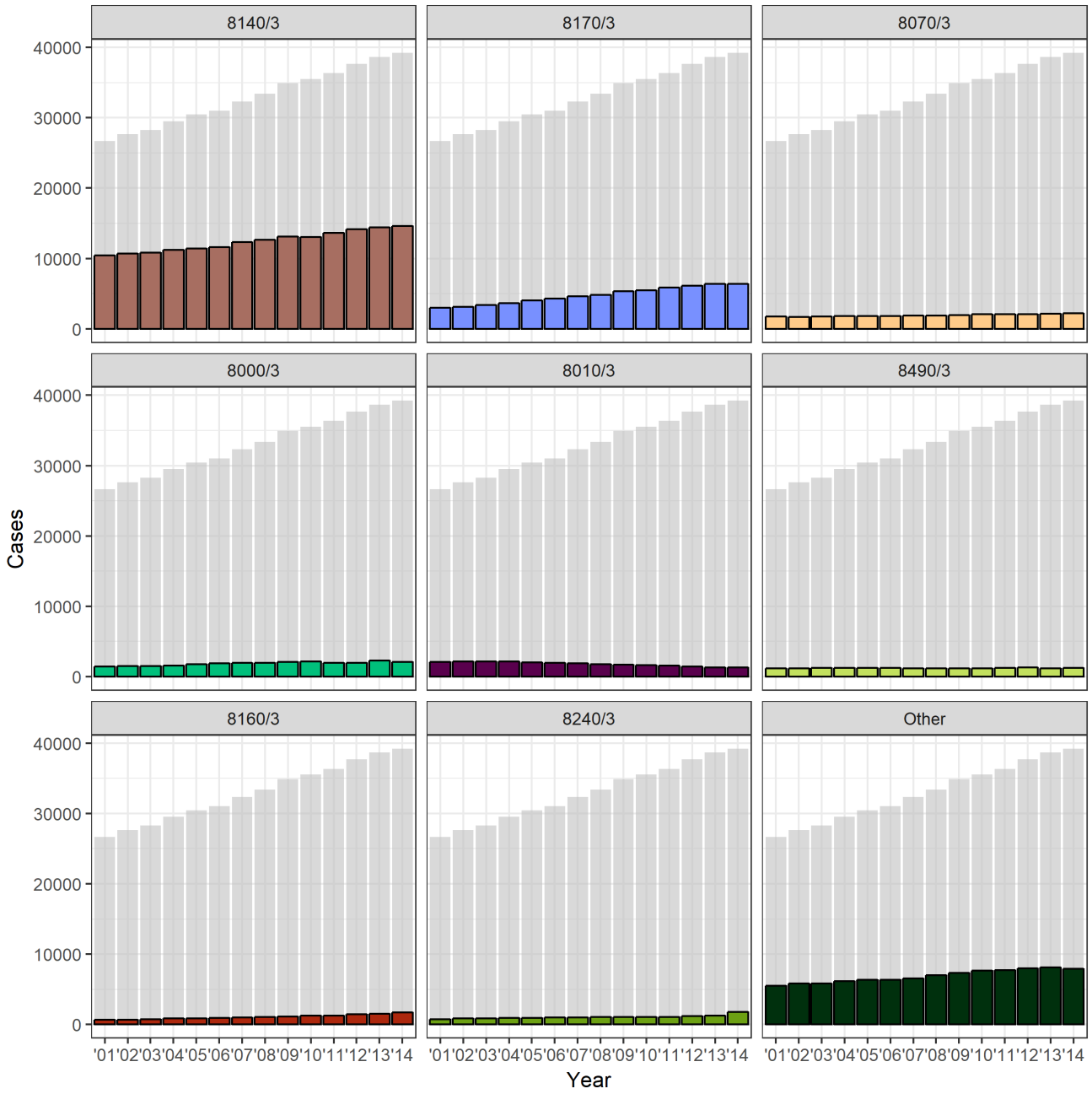
Morphology	Description	Morphology	Description
8480/3	Mucinous adenocarcinoma	8520/3	Lobular carcinoma NOS
8500/2	Noninfiltrating Intraductal carcinoma NOS	8522/3	Infiltrating duct and lobular carcinoma
8500/3	Infiltrating duct carcinoma NOS	8523/2	Intraductal carcinoma mixed w other in situ carcinoma
8520/2	Lobular carcinoma in situ NOS	8523/3	Infiltrating duct mixed w other carcinoma

Figure 15: **Breast Cancer: Most common morphologies**



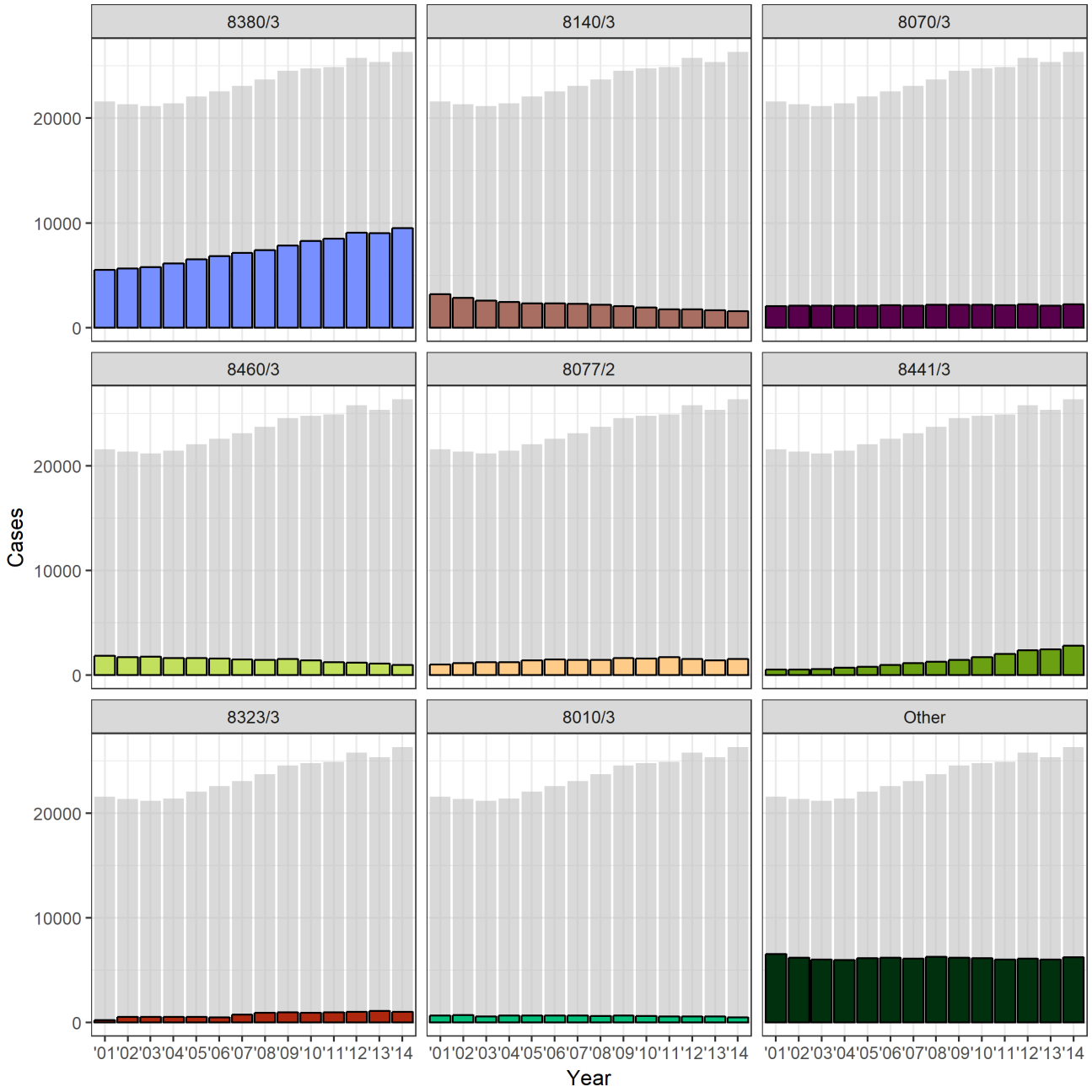
Morphology	Description	Morphology	Description
8000/3	Malignant neoplasm	8261/3	Adenocarcinoma in villous adenoma
8140/3	Adenocarcinoma NOS	8263/2	Adenocarcinoma in situ in tubulovillous adenoma
8210/3	Adenocarcinoma in adenomatous polyp	8263/3	Adenocarcinoma in tubolovillous adenoma
8240/3	Carcinoid tumor NOS	8480/3	Mucinous adenocarcinoma

Figure 16: **Colorectal Cancer: Most common morphologies**



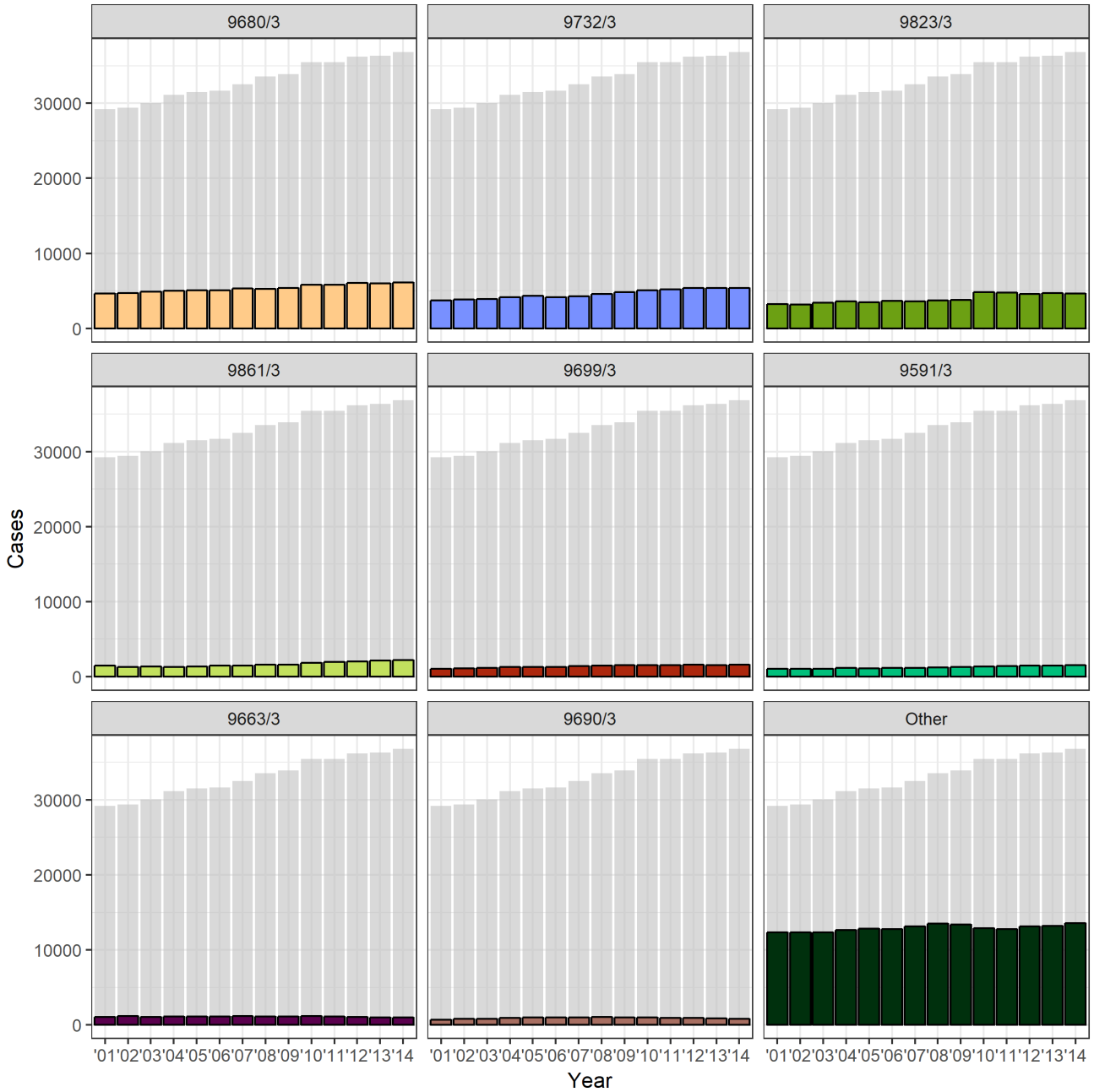
Morphology	Description	Morphology	Description
8000/3	Malignant neoplasm	8160/3	Cholangiocarcinoma (Intrahepatic Bile Duct, Biliary Tract)
8010/3	Carcinoma NOS	8170/3	NOS Hepatocellular carcinoma (Liver)
8070/3	Squamous cell carcinoma NOS	8240/3	Carcinoid tumor NOS
8140/3	Adenocarcinoma NOS	8490/3	Signet ring cell carcinoma

Figure 17: **Digestive Cancer: Most common morphologies**



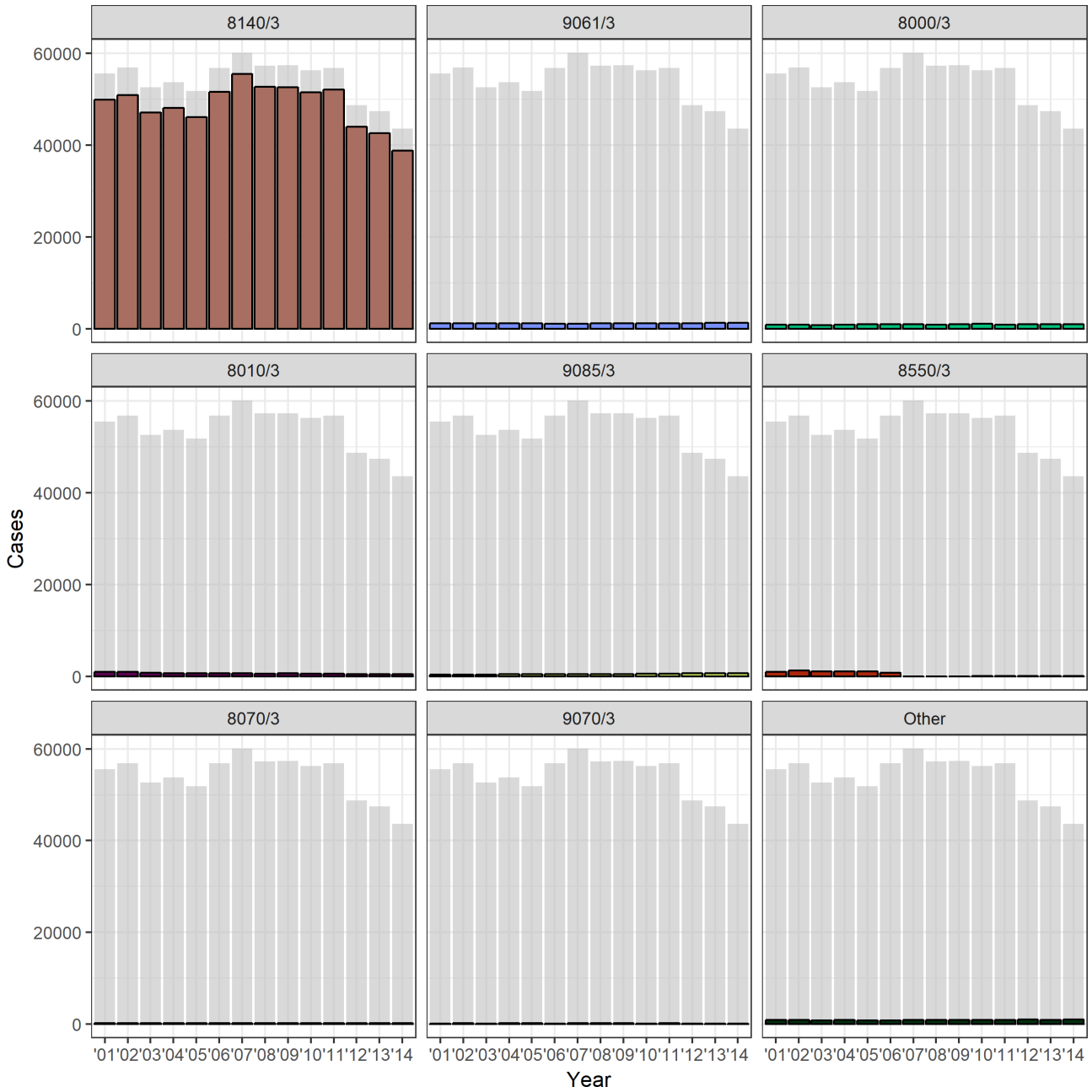
Morphology	Description	Morphology	Description
8010/3	Carcinoma NOS	8323/3	Mixed cell adenocarcinoma
8070/3	Squamous cell carcinoma NOS	8380/3	Endometrioid adenocarcinoma NOS
8077/2	High grade squamous intraepithelial neoplasia	8441/3	Serous cystadenocarcinoma NOS (Ovary)
8140/3	Adenocarcinoma NOS	8460/3	Papillary serous cystadenocarcinoma (Ovary)

Figure 18: **Female Genital Cancer: Most common morphologies**



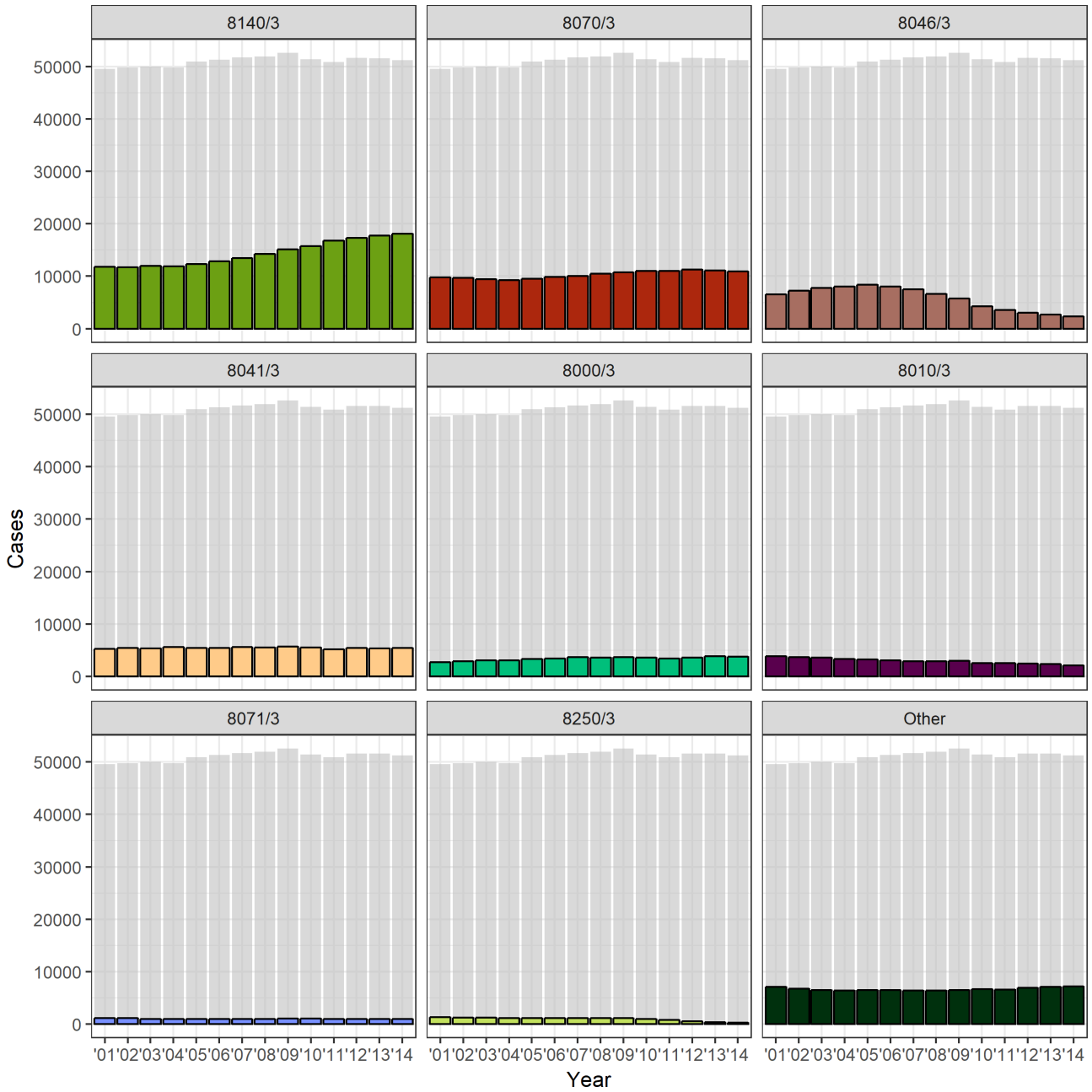
Morphology	Description	Morphology	Description
9591/3	non-Hodgkin Malignant lymphoma NOS	9699/3	Marginal zone B-cell lymphoma NOS
9663/3	Nodular sclerosis Hodgkin lymphoma NOS	9732/3	Multiple myeloma (Bone Marrow)
9680/3	Diffuse large B-cell Malignant lymphoma NOS	9823/3	B-cell lymphocytic leukemia/small lymphocytic lymphoma
9690/3	Follicular lymphoma NOS	9861/3	Acute myeloid leukemia NOS

Figure 19: **Lymphoma/Leukemia: Most common morphologies**



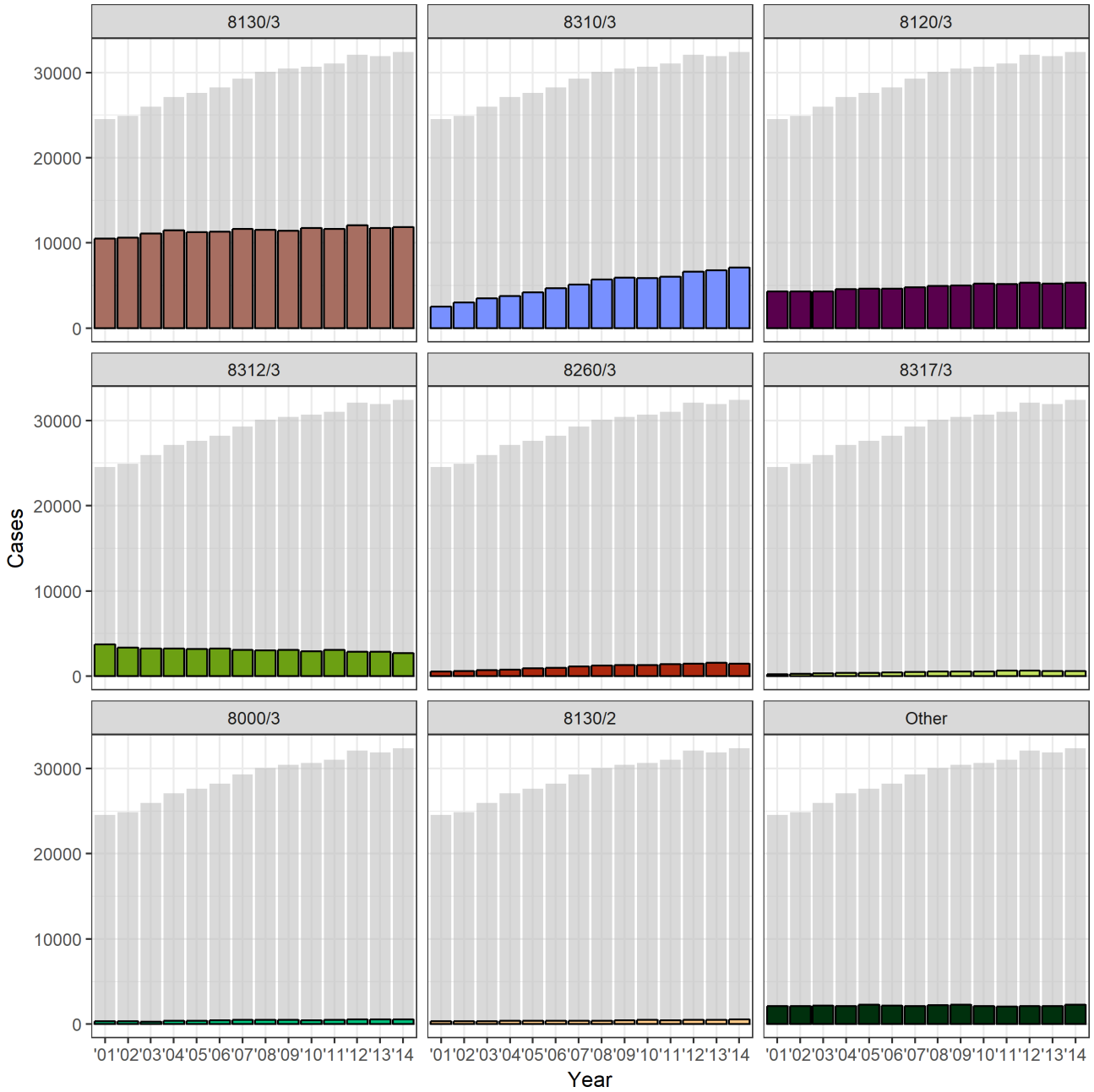
Morphology	Description	Morphology	Description
8000/3	Malignant neoplasm	8550/3	Acinar cell carcinoma
8010/3	Carcinoma NOS	9061/3	Seminoma NOS (Testis)
8070/3	Squamous cell carcinoma NOS	9070/3	Embryonal carcinoma NOS
8140/3	Adenocarcinoma NOS	9085/3	Mixed germ cell tumor

Figure 20: **Male Genital Cancer: Most common morphologies**



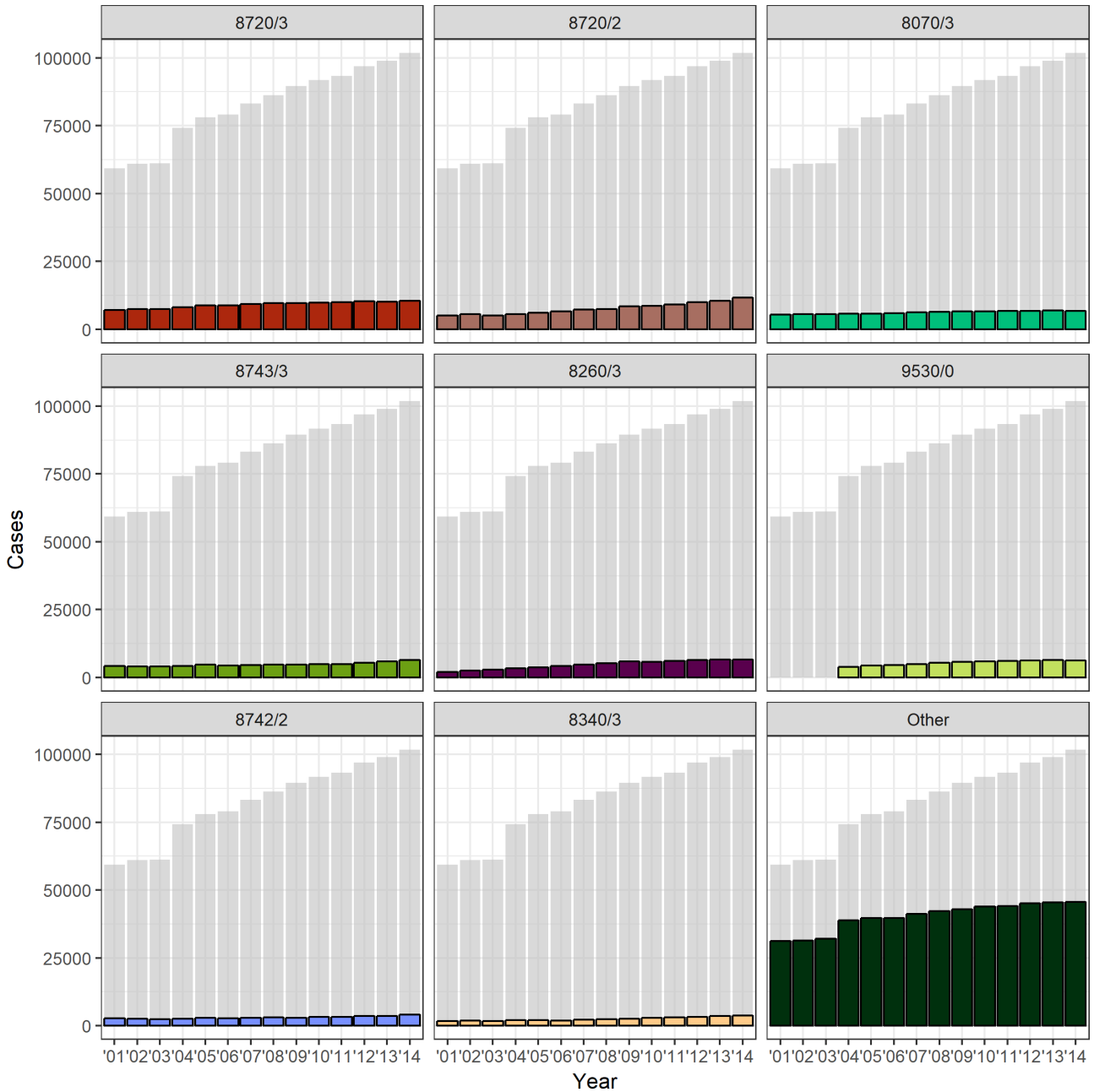
Morphology	Description	Morphology	Description
8000/3	Malignant neoplasm	8070/3	Squamous cell carcinoma NOS
8010/3	Carcinoma NOS	8071/3	Keratinizing squamous cell carcinoma NOS
8041/3	Small cell carcinoma NOS	8140/3	Adenocarcinoma NOS
8046/3	Non-small cell carcinoma	8250/3	Bronchiolo-alveolar adenocarcinoma NOS

Figure 21: **Respiratory Cancer: Most common morphologies**



Morphology	Description	Morphology	Description
8000/3	Malignant neoplasm	8260/3	NOS Papillary adenocarcinoma
8120/3	Transitional cell carcinoma	8310/3	Clear cell adenocarcinoma NOS
8130/2	Non-invasive Papillary transitional cell carcinoma (Bladder)	8312/3	Renal cell carcinoma NOS
8130/3	Papillary transitional cell carcinoma (Bladder)	8317/3	Chromophobe type Renal cell carcinoma

Figure 22: **Urinary Cancer: Most common morphologies**



Morphology	Description	Morphology	Description
8070/3	Squamous cell carcinoma NOS	8720/3	Malignant melanoma NOS (except juvenile melanoma)
8260/3	Papillary adenocarcinoma NOS	8742/2	Lentigo maligna (Skin)
8340/3	Follicular variant Papillary carcinoma (Thyroid)	8743/3	Superficial spreading melanoma (Skin)
8720/2	Melanoma in situ	9530/0	Meningioma NOS

Figure 23: **Other Cancer types: Most common morphologies**

3 Cancer Mortality and Survival

As a first look at cancer mortality/survival Figure 24 displays the 20 primary sites that are associated with the most cause-specific deaths in our data.

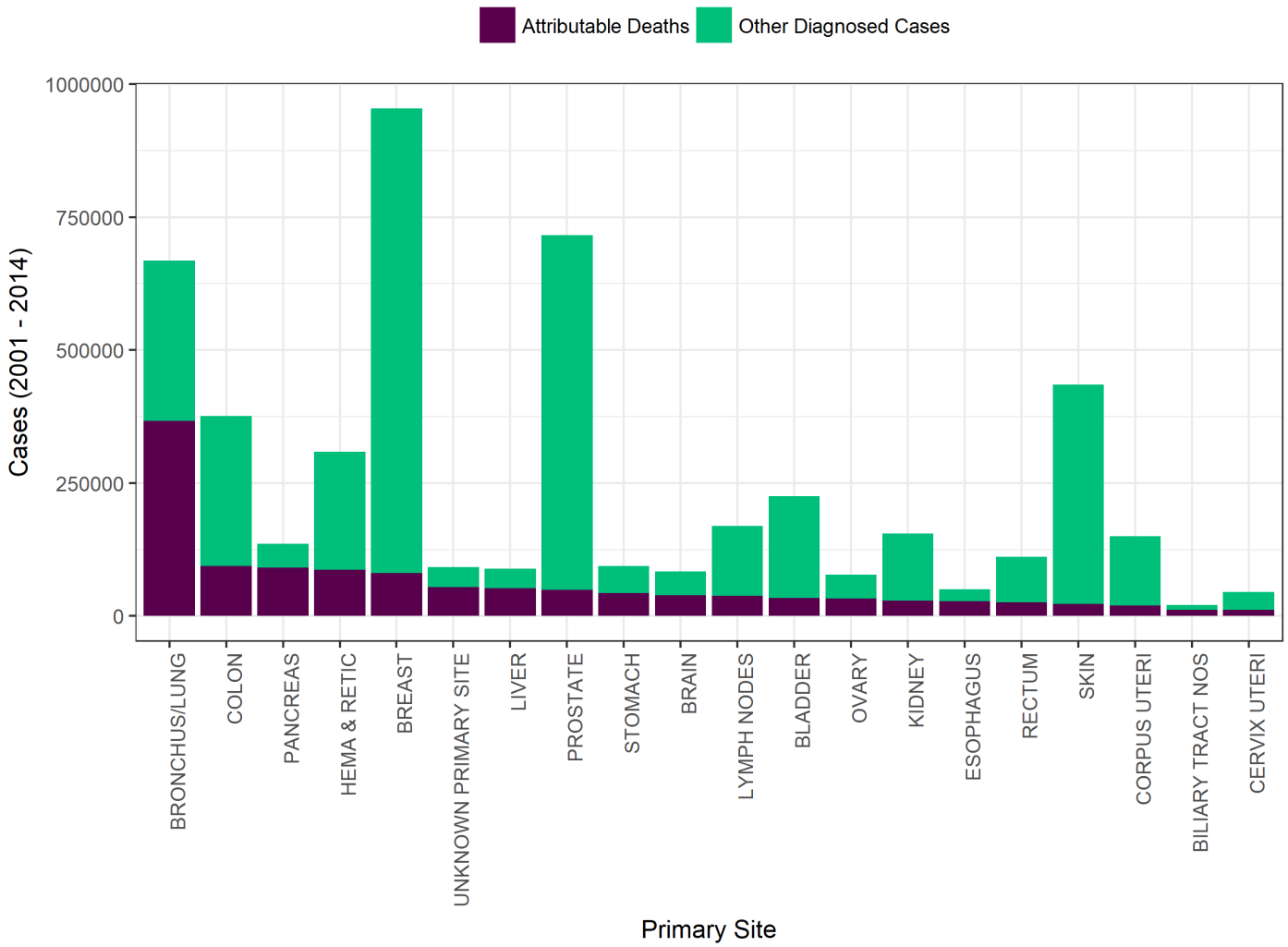


Figure 24: **20 Primary Sites with Most Attributable Deaths**

We see that these 20 sites overlap heavily with the 20 most common sites for diagnosis. Among the top 20 sites for incidence, (Figure 3) only the thyroid gland and meninges are not included: they are replaced by cancers of the biliary tract NOS[5] and the cervix uteri.

A commonly-used — if limited — metric for appraising prognoses is the 5 year survival rate: the fraction of diagnosed individuals that are still alive 5 years after diagnosis. Figure 25 shows the survival rates for each of 10 demographic groups for all cancer diagnoses.

[5]Not Otherwise Specified

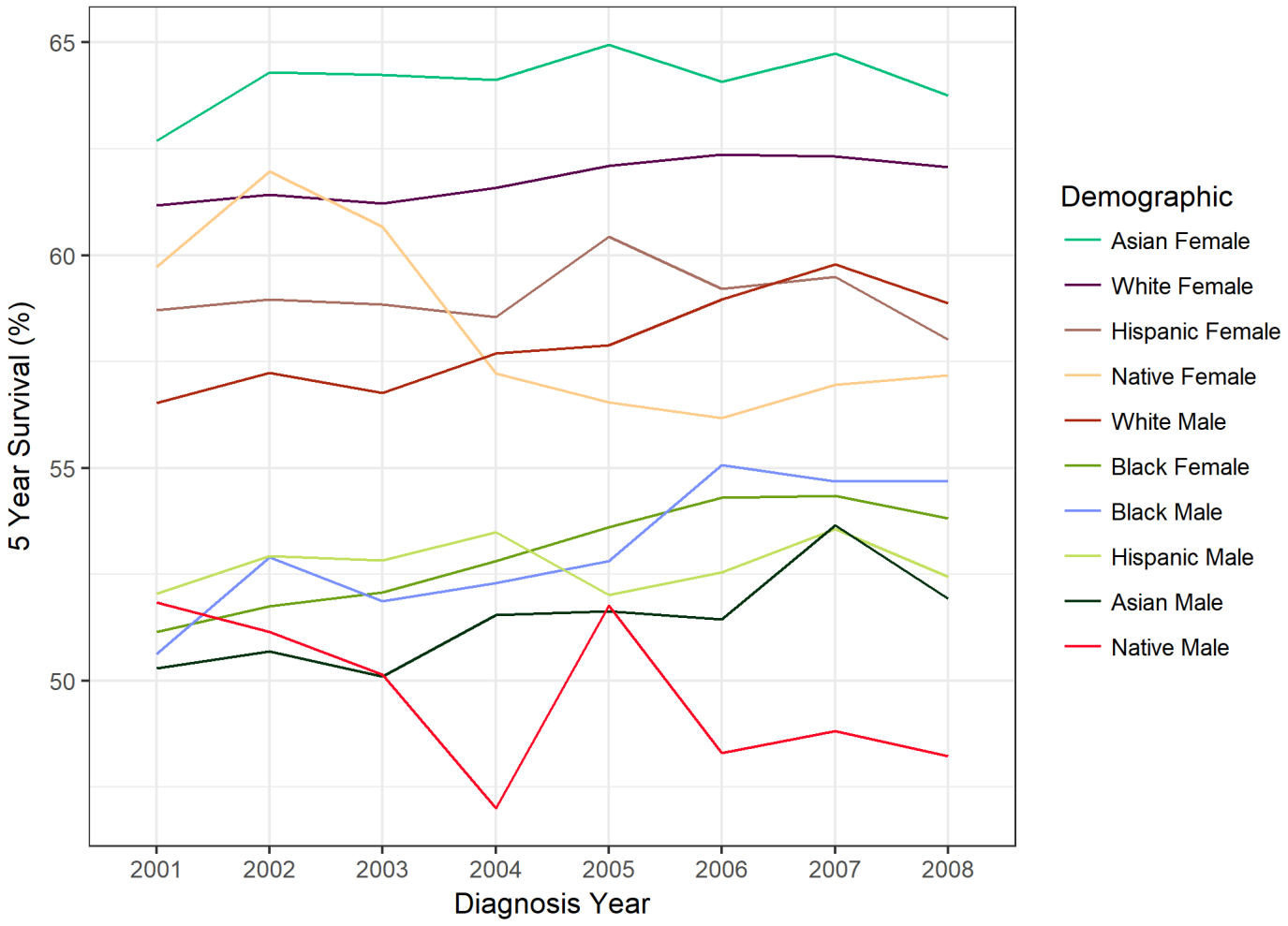


Figure 25: **Trends in 5 Year Survival (All Cancer Types)**

We can see that females tend to have higher survival rates: among all races/ethnicities females did better their male counterparts and — with the exception of white males having superior survival to black females — female subgroups did better than male subgroups in general. Also, post-2005, Native males are the only group that have a 5 year survival rate below 50%.

However, as we've seen previously, the relative incidence of different cancers varies across subpopulations. As such, we can still look further into the relative survival experiences of different groups for specific cancer types. The sections that follow aim to illustrate the disparities — where they arise — in the survival experience of cancer patients of different demographic groups with the same diagnoses.

3.1 Using and Interpreting (Kaplan-Meier) Survival Curves

Another approach to comparing survival experiences of different groups is the use of survival curves. The plots in the ensuing sections each have values along the x-axis corresponding to months since diagnosis while the y-axis represents the fraction of the population still alive. So, for example, a point of (40,0.25)

on a survival curve indicates that 25% of patients were still alive 40 months after diagnosis.

The steepness of the survival curves give an indication of how deadly different cancers are. For example we can see that pancreatic cancer (Figure 35 and Figure 48) has much more severe mortality rates than thyroid cancer (Figure 36 and Figure 49).

As the data set is very large, we've taken only those patients with complete follow-up information. Survival rates were calculated using the product-limit method introduced by Kaplan and Meier[8].

3.2 Brief Summary of Survival Analysis Results

We illustrate the survival experiences for different races/ethnicities for each of the 15 most common primary cancer sites: breast (Figure 26), prostate (Figure 27), lung (Figure 28), colon (Figure 29), hematopoetic and reticuloendothelial (Figure 30), bladder (Figure 31), lymph node (Figure 32), corpus uteri (Figure 33), kidney (Figure 34), pancreas (Figure 35), thyroid (Figure 36), rectum (Figure 37), skin (Figure 38), stomach (Figure 39),and liver (Figure 40).

For most cancer types, the worst survival experiences are experienced by Black and Native Americans.

We also look at comparative survival experiences by sex for these most common sites: breast (Figure 41), lung (Figure 42), colon (Figure 43), hematopoetic and reticuloendothelial (Figure 44), bladder (Figure 45), lymph node (Figure 46), kidney (Figure 47), pancreas (Figure 48), thyroid (Figure 49), rectum (Figure 50), skin (Figure 51), stomach (Figure 52), and liver (Figure 53).

In most instances females typically survive longer post-diagnosis[6]. Primary sites for which the survival curve for females is distinguishably above that for males include breast, lung, hematopoetic and reticuloendothelial systems, lymph nodes, kidney, thyroid gland, stomach and skin.

In what appears to be the major exception, males appear to have superior survival after diagnoses of bladder cancer: the gap between the survival curves is easily discerned and persists for the entire length of time for which we have survival estimates. For colon cancer, the survival curve for females also appears to be lower than that for males initially before the gap between the two becomes difficult to discern around the 100 month mark.

For cancers of the pancreas and liver it is difficult to discern the differences in survival curves for the sexes. For rectal cancer the survival curves cross and generally appear to be at similar levels.

[6]We could use confidence intervals or other tools to make this claim more rigorous. While this may be done in future iterations of the report, current emphasis is on keeping the pictures simple.

3.3 Survival for Common Cancer Types by Race/Ethnicity

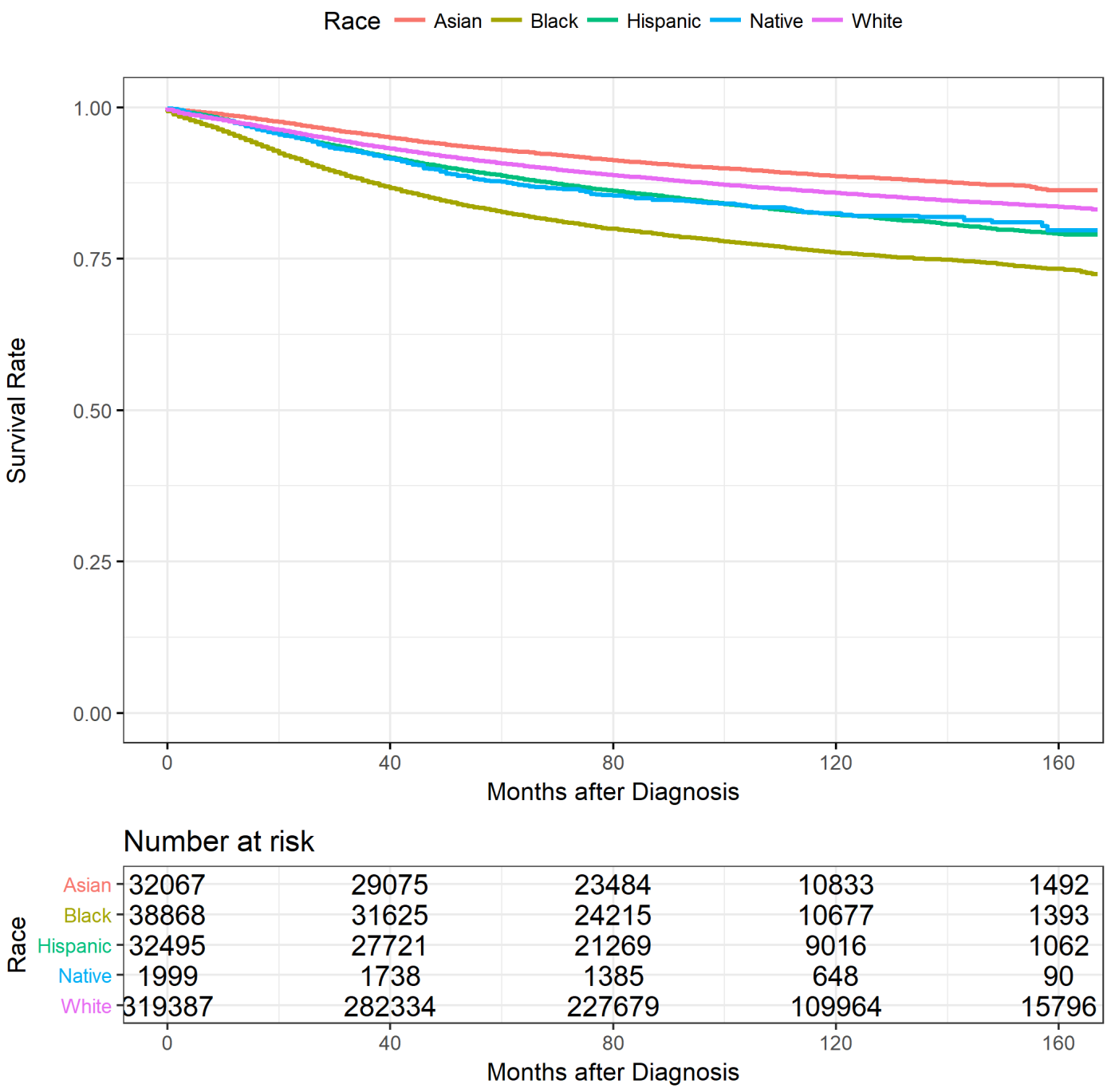


Figure 26: **Breast Cancer Survival by Race**

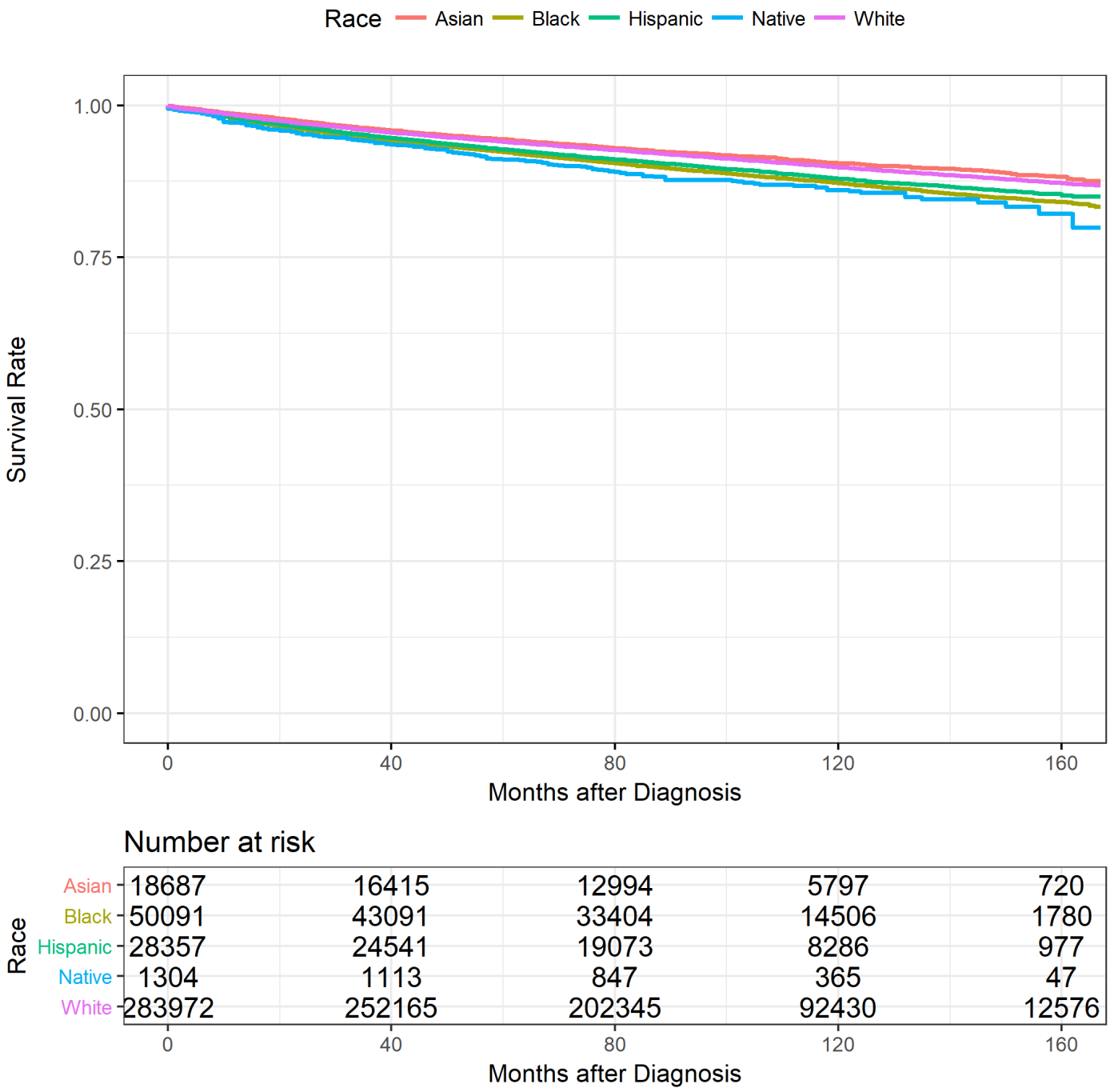


Figure 27: **Prostate Cancer Survival by Race**

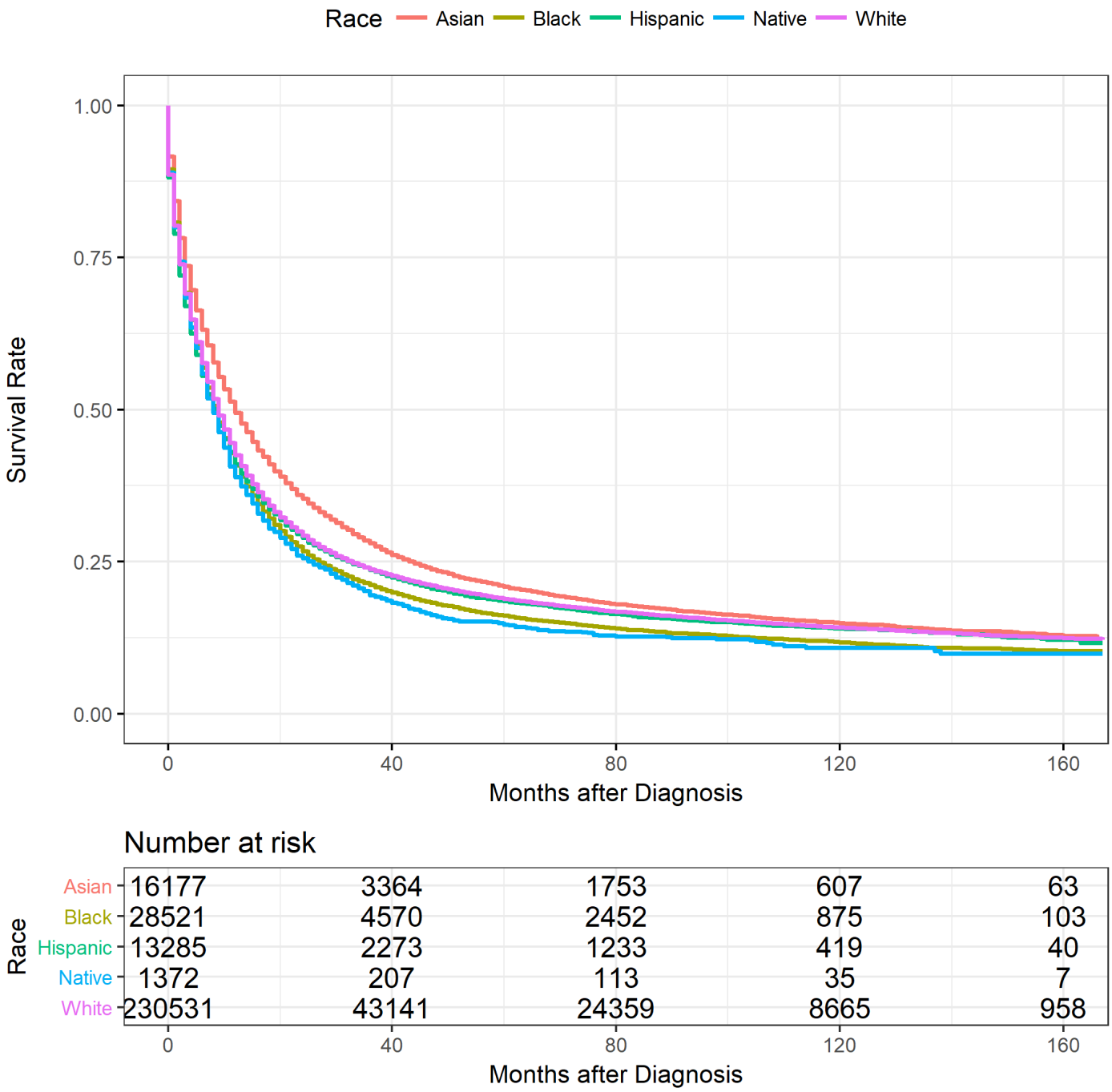


Figure 28: **Bronchus/Lung Cancer Survival by Race**

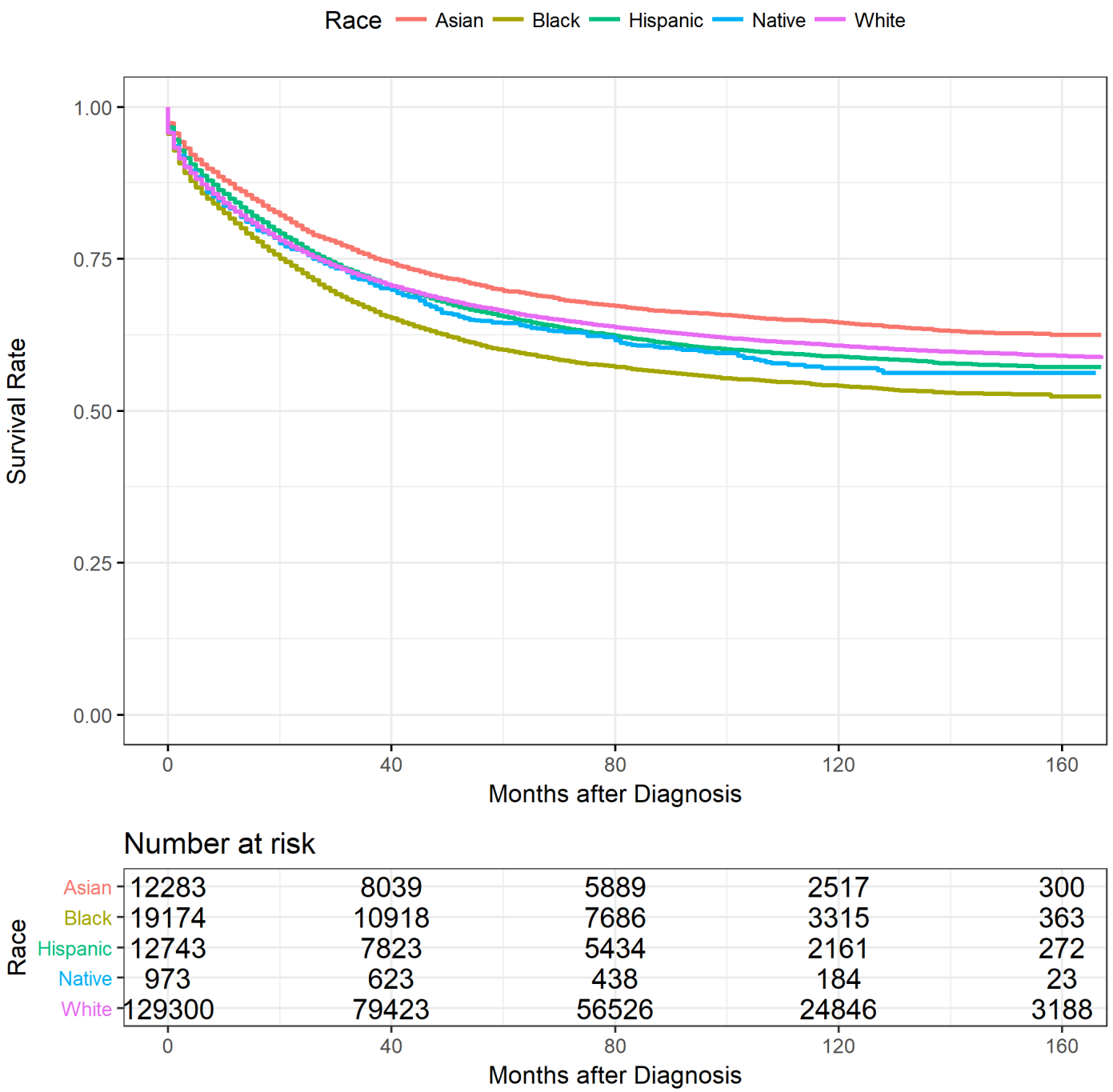


Figure 29: **Colon Cancer Survival by Race**

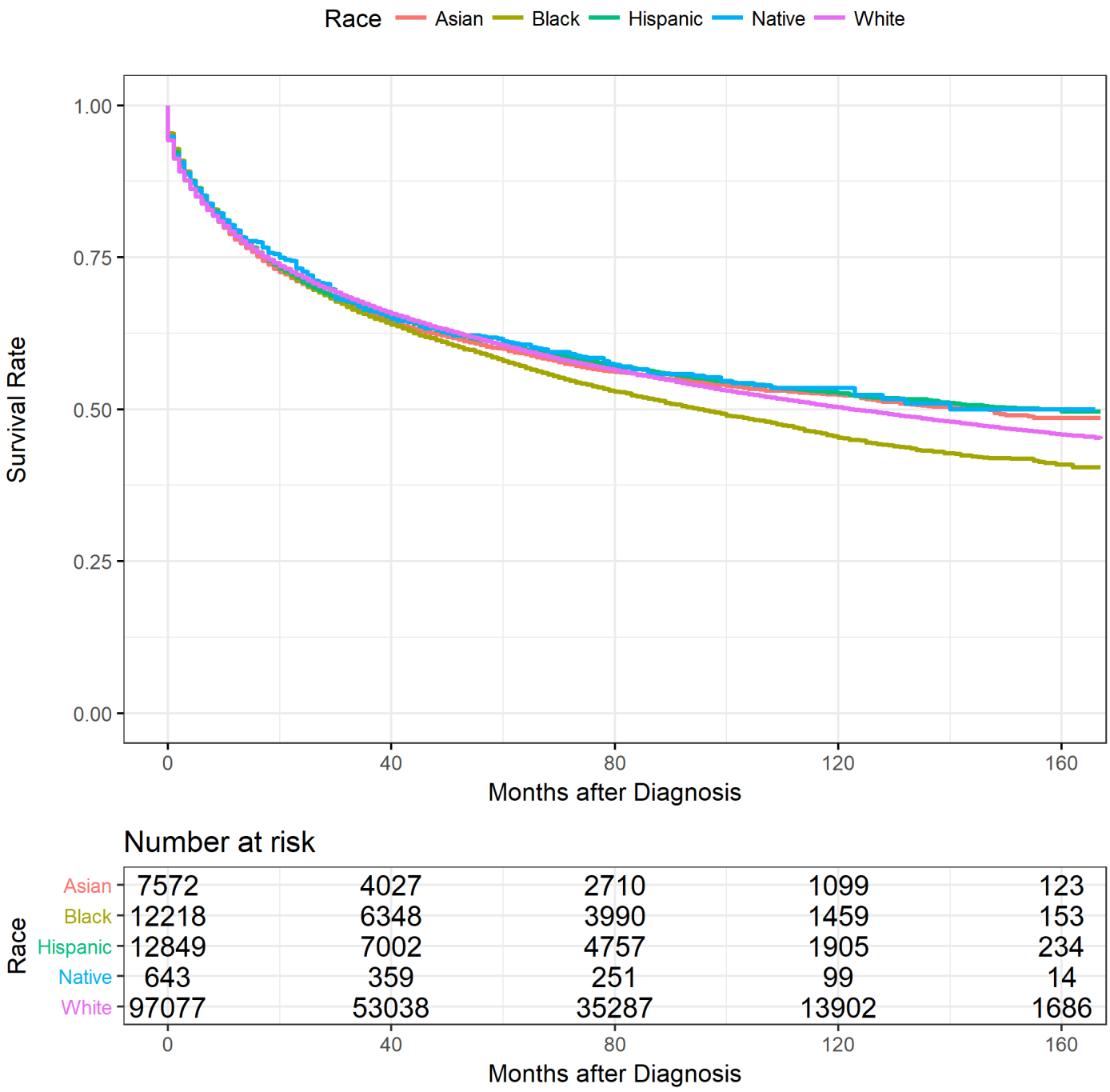


Figure 30: **Hematopoietic and Reticuloendothelial Cancer Survival by Race**

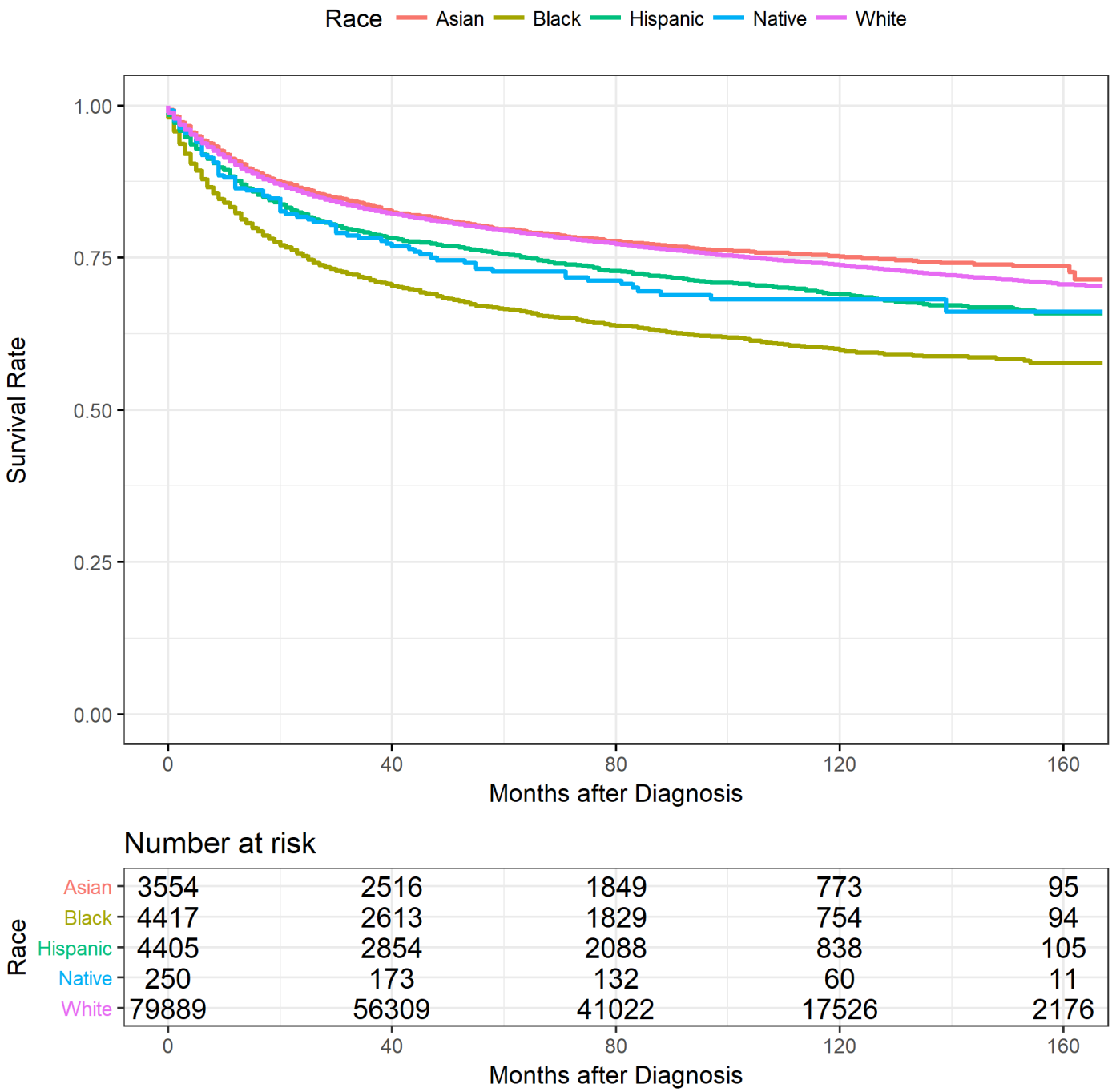


Figure 31: **Bladder Cancer Survival by Race**

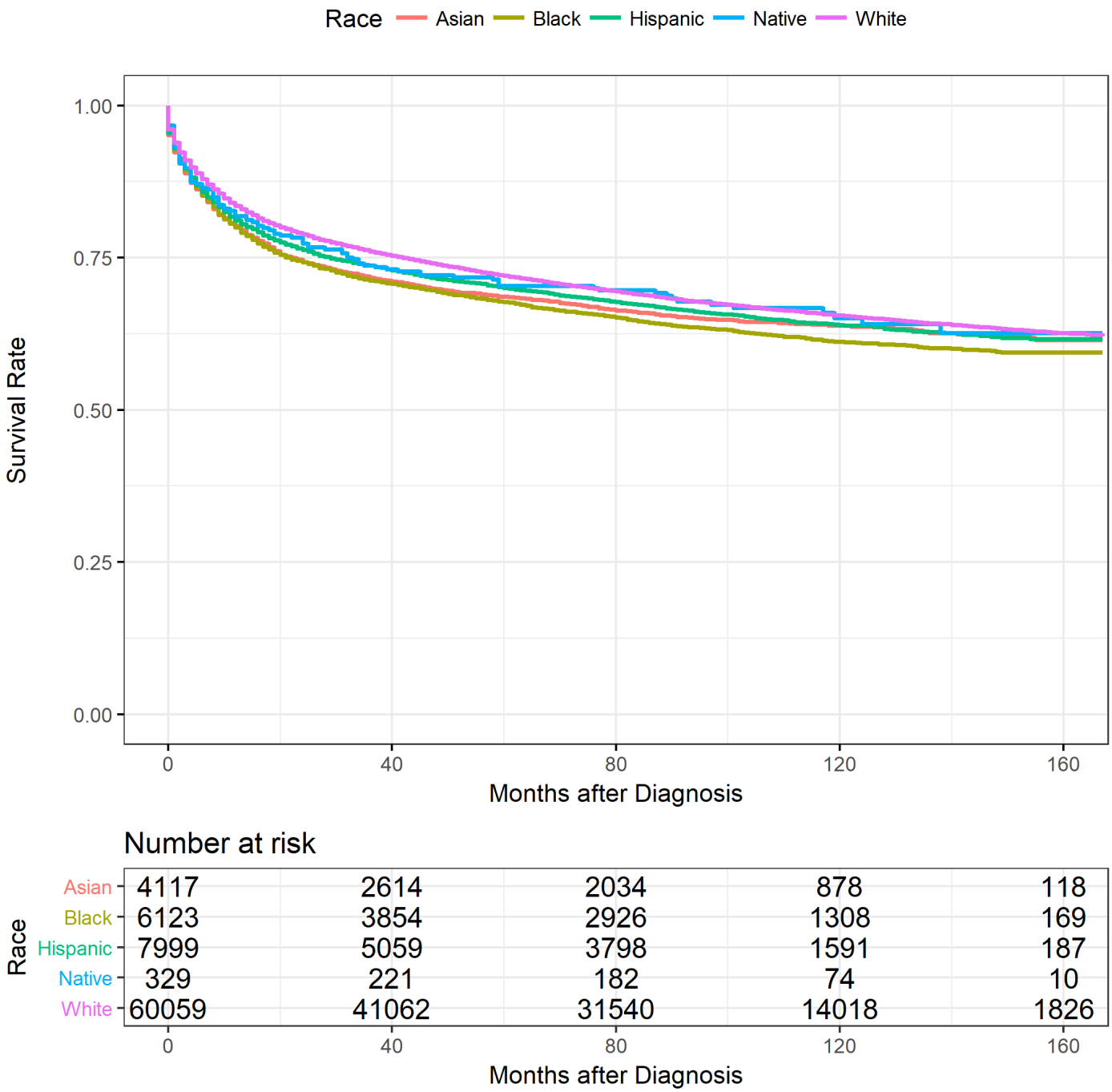


Figure 32: **Lymph Node Cancer Survival by Race**

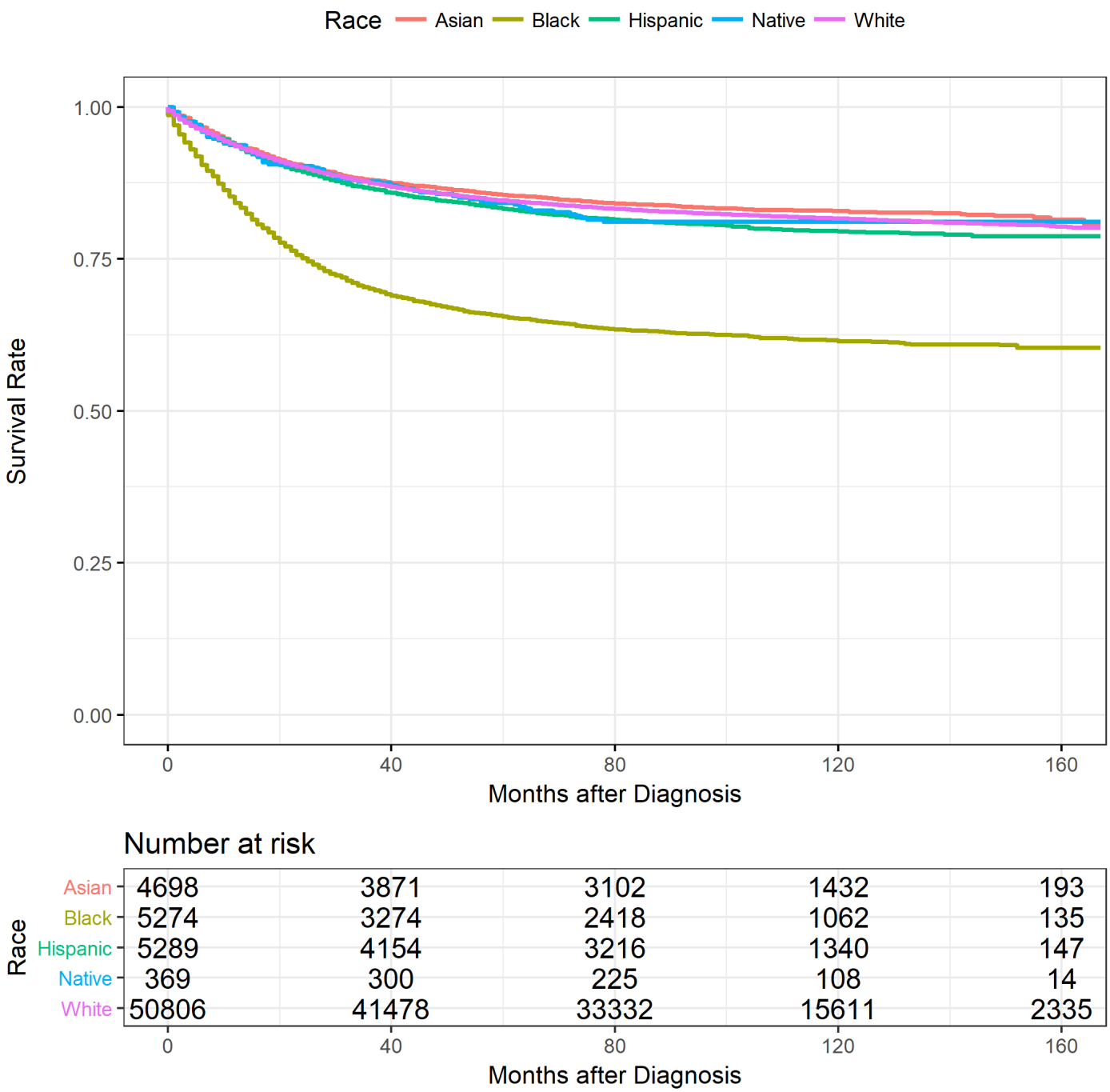


Figure 33: **Corpus Uteri Cancer Survival by Race**

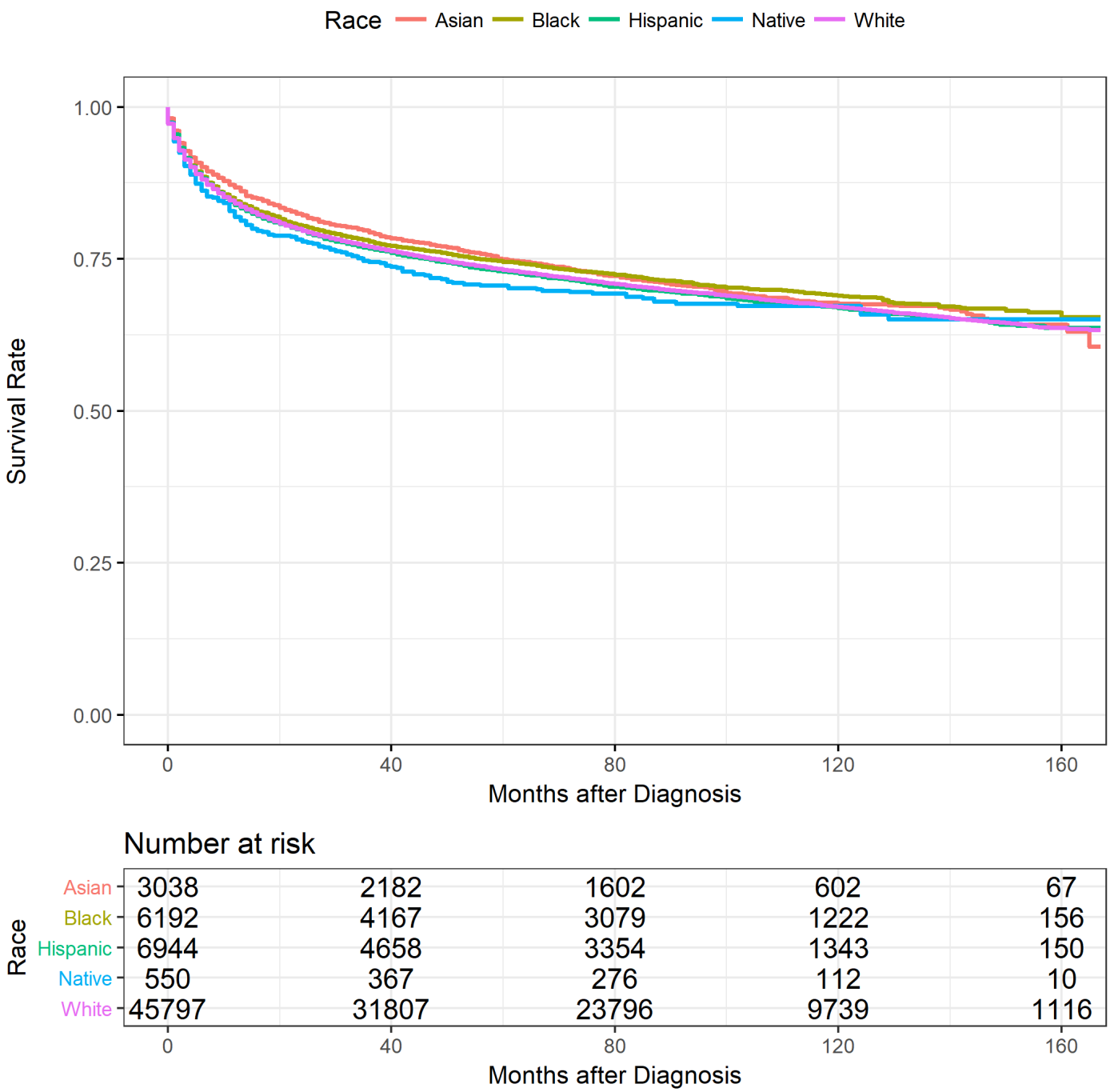


Figure 34: **Kidney Cancer Survival by Race**

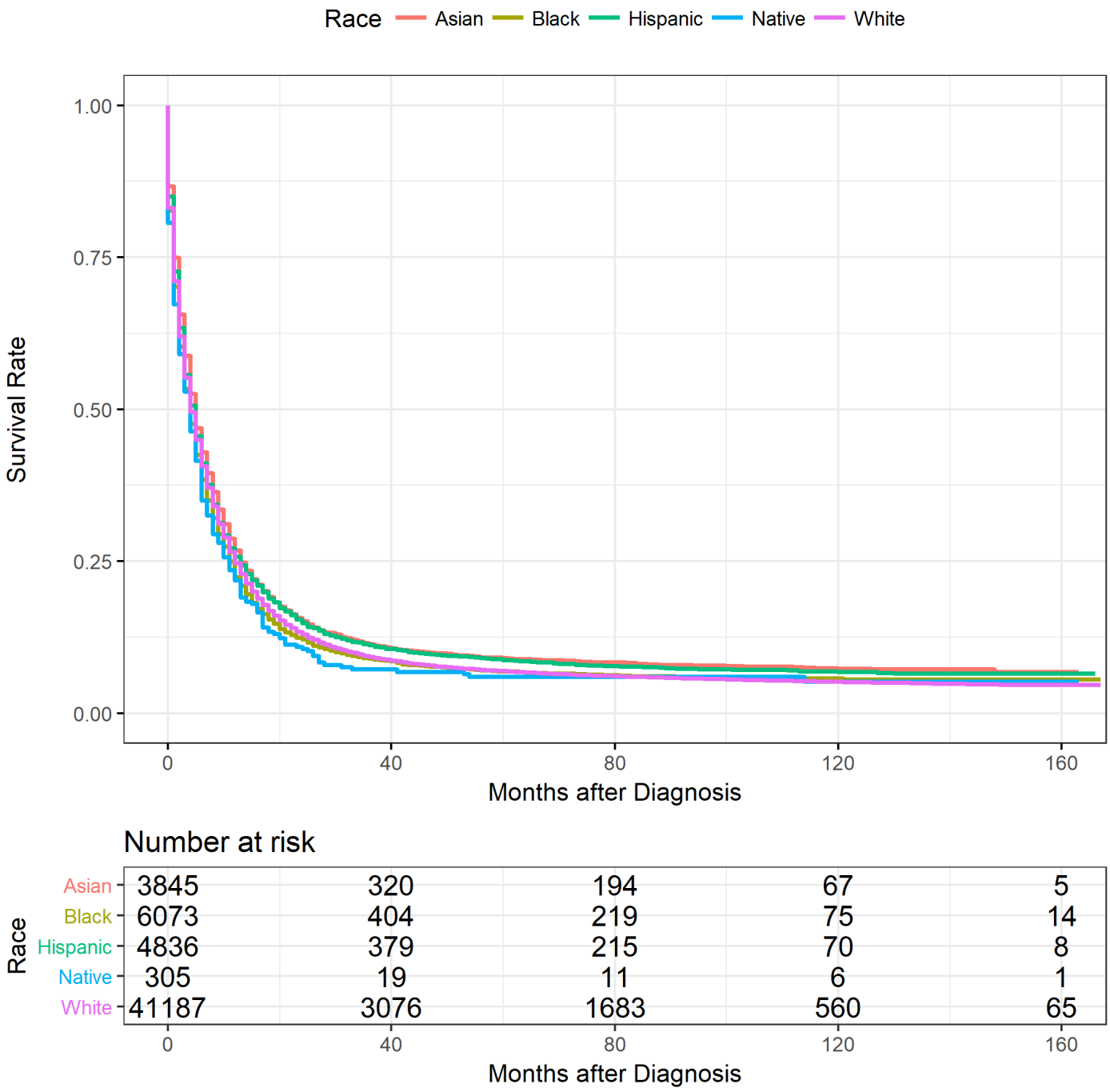


Figure 35: **Pancreatic Cancer Survival by Race**

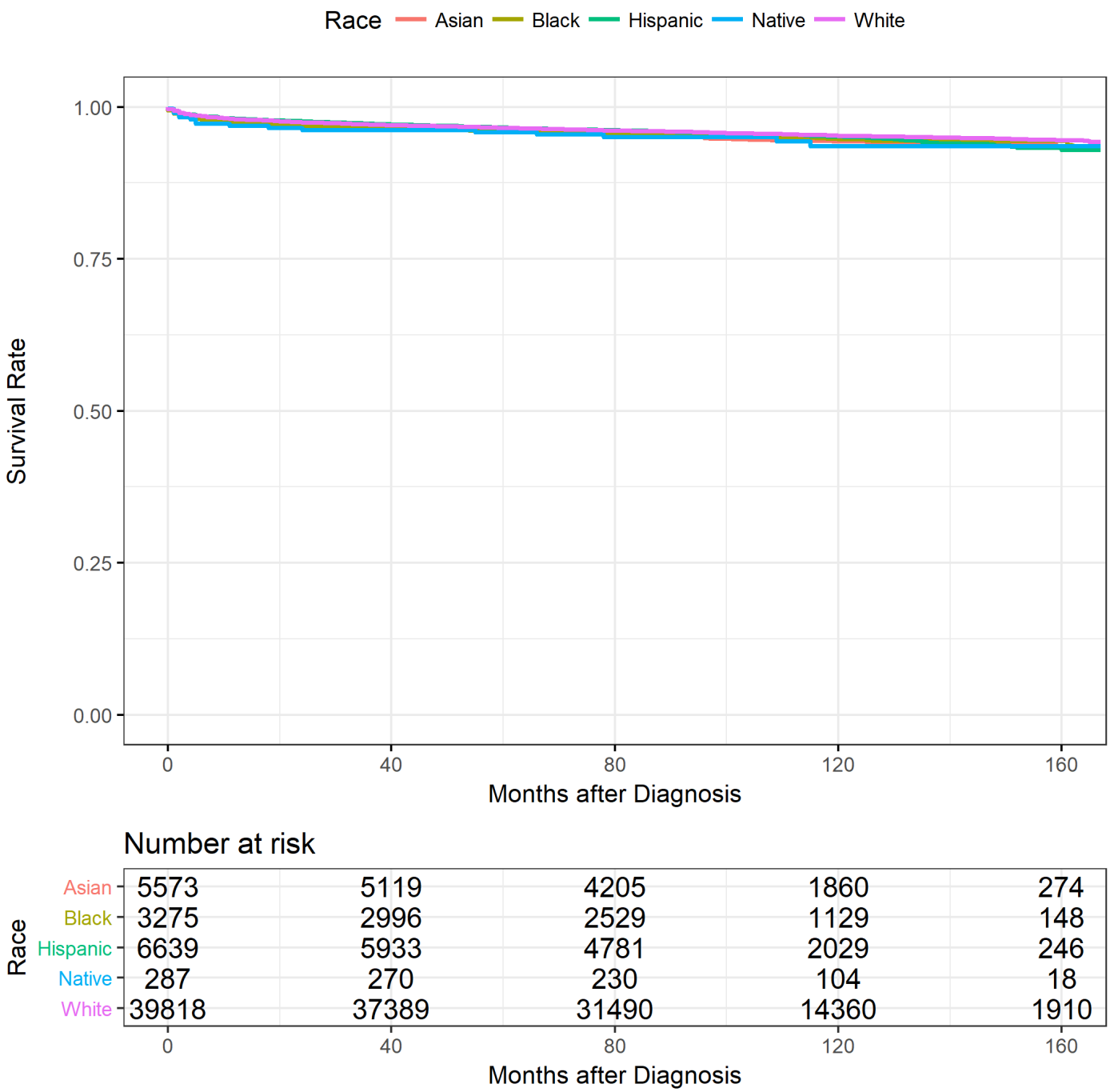


Figure 36: **Thyroid Cancer Survival by Race**

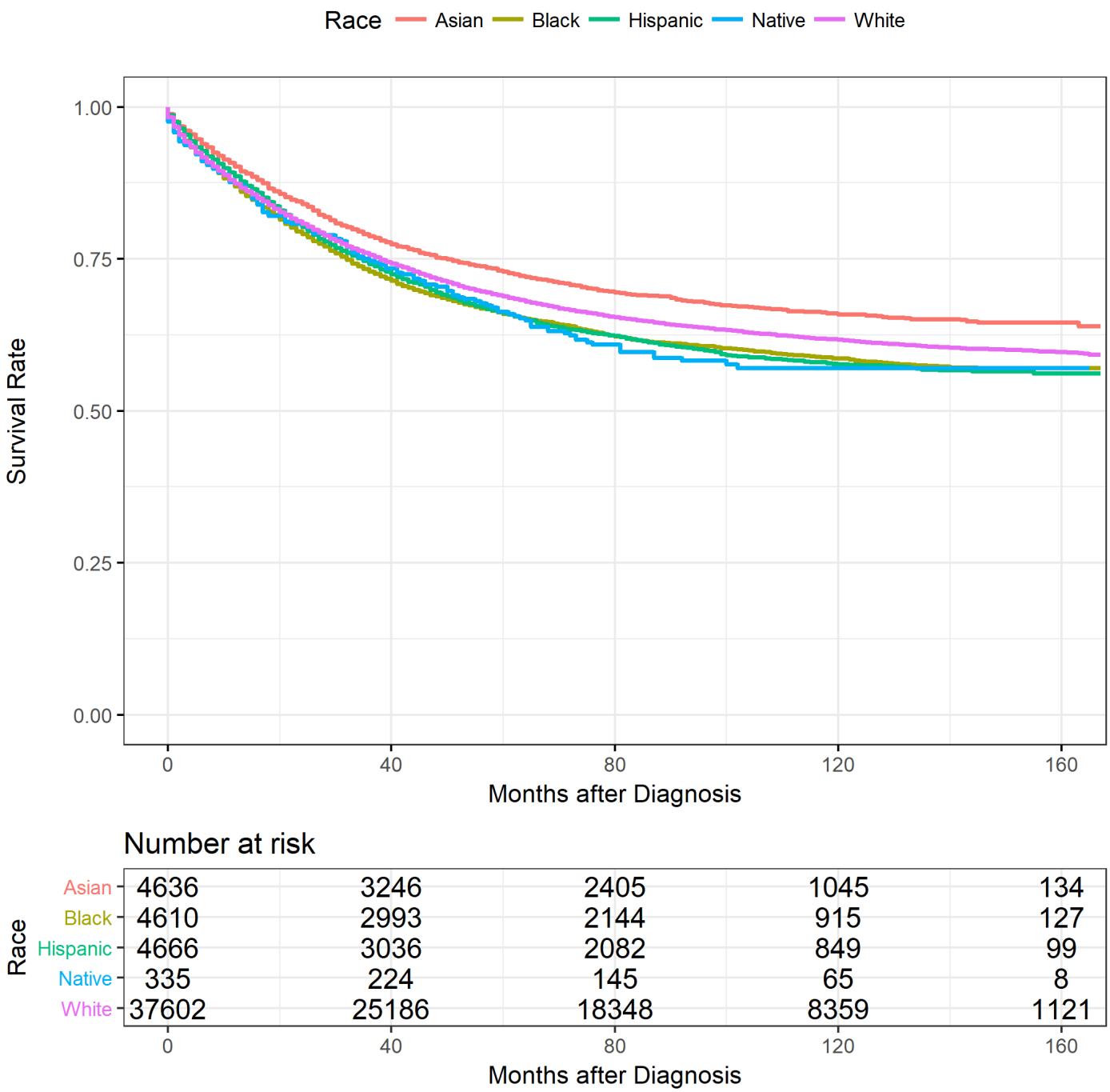


Figure 37: **Rectal Cancer Survival by Race**

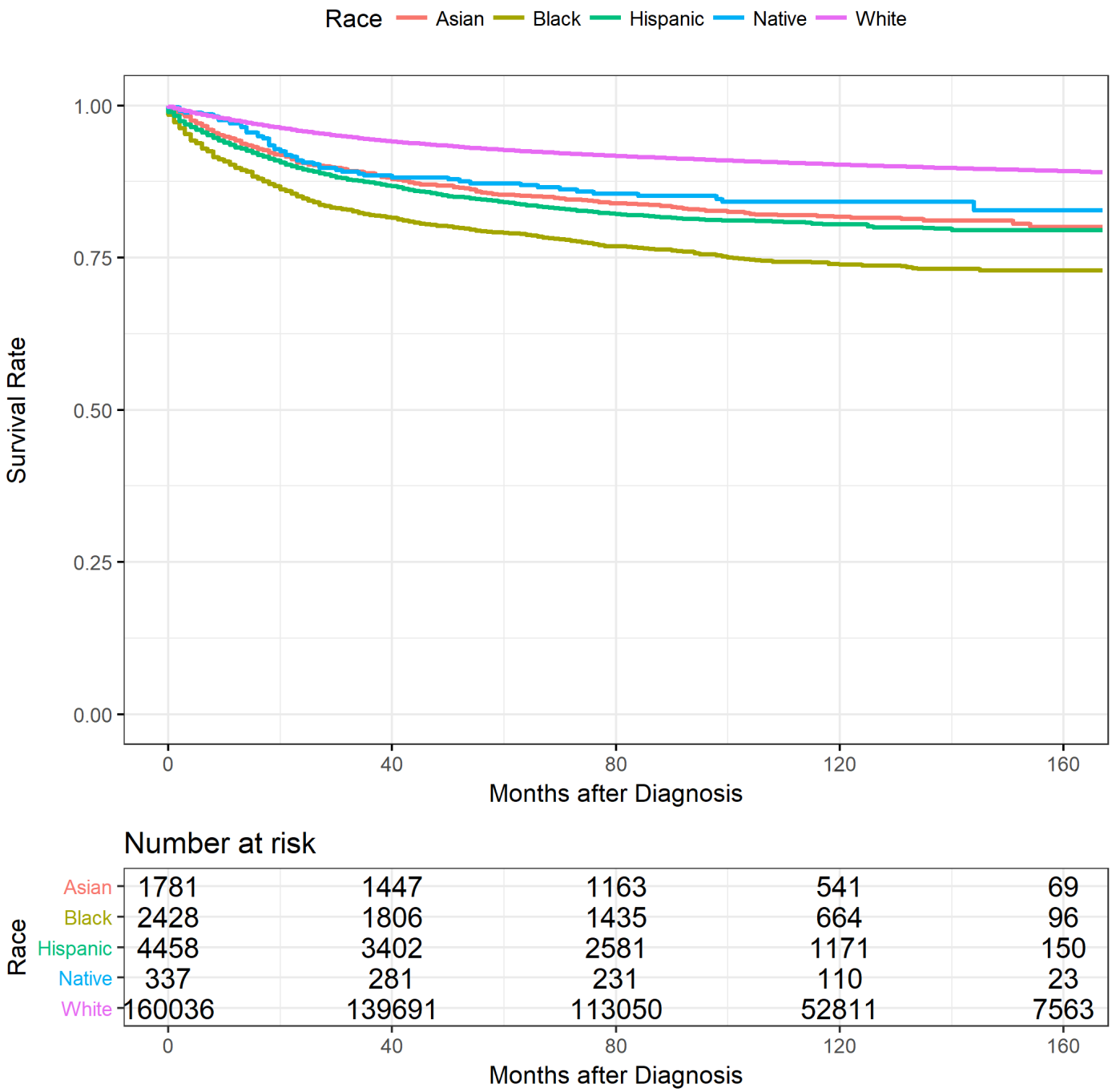


Figure 38: **Skin Cancer Survival by Race**

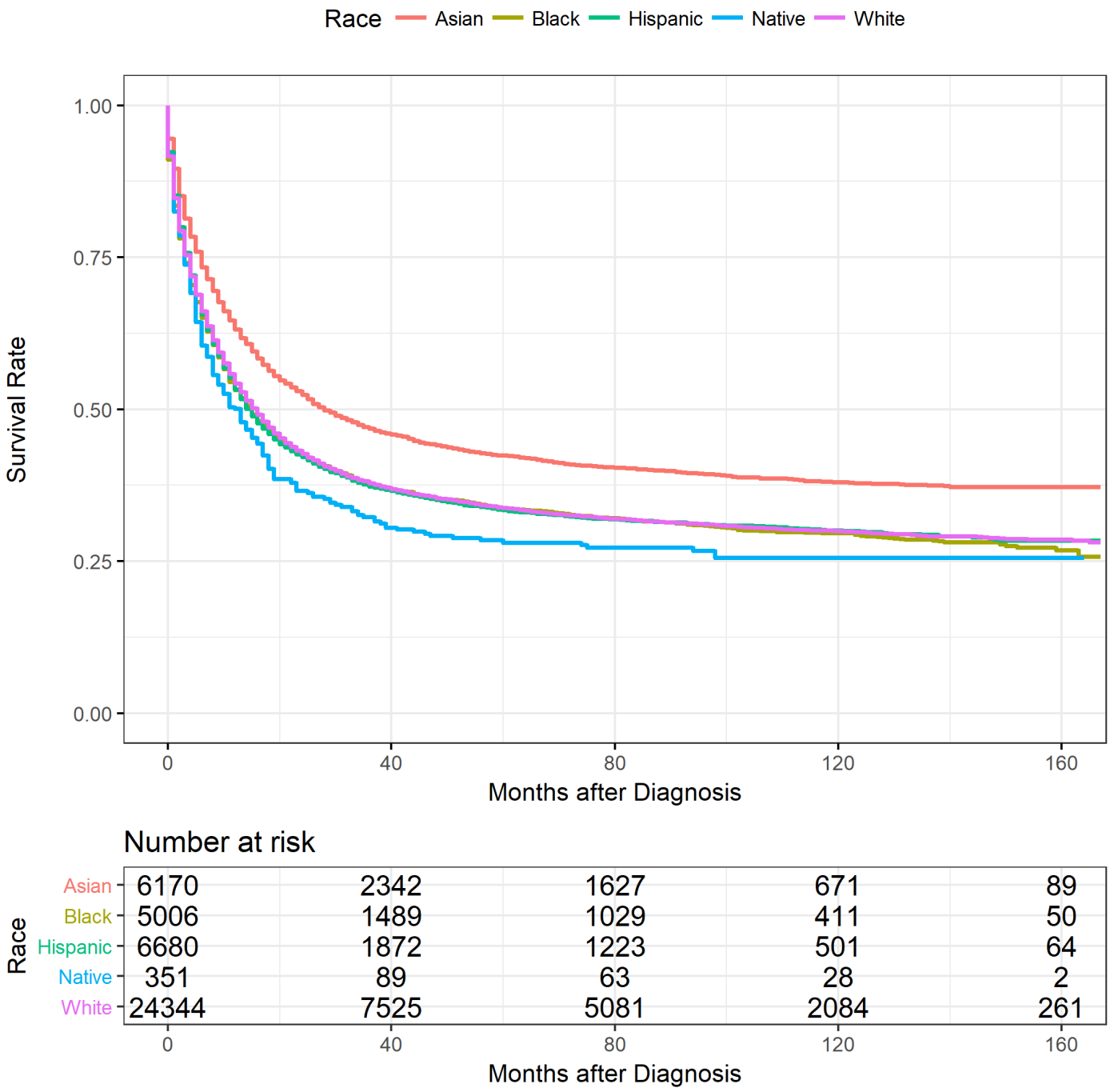


Figure 39: **Stomach Cancer Survival by Race**

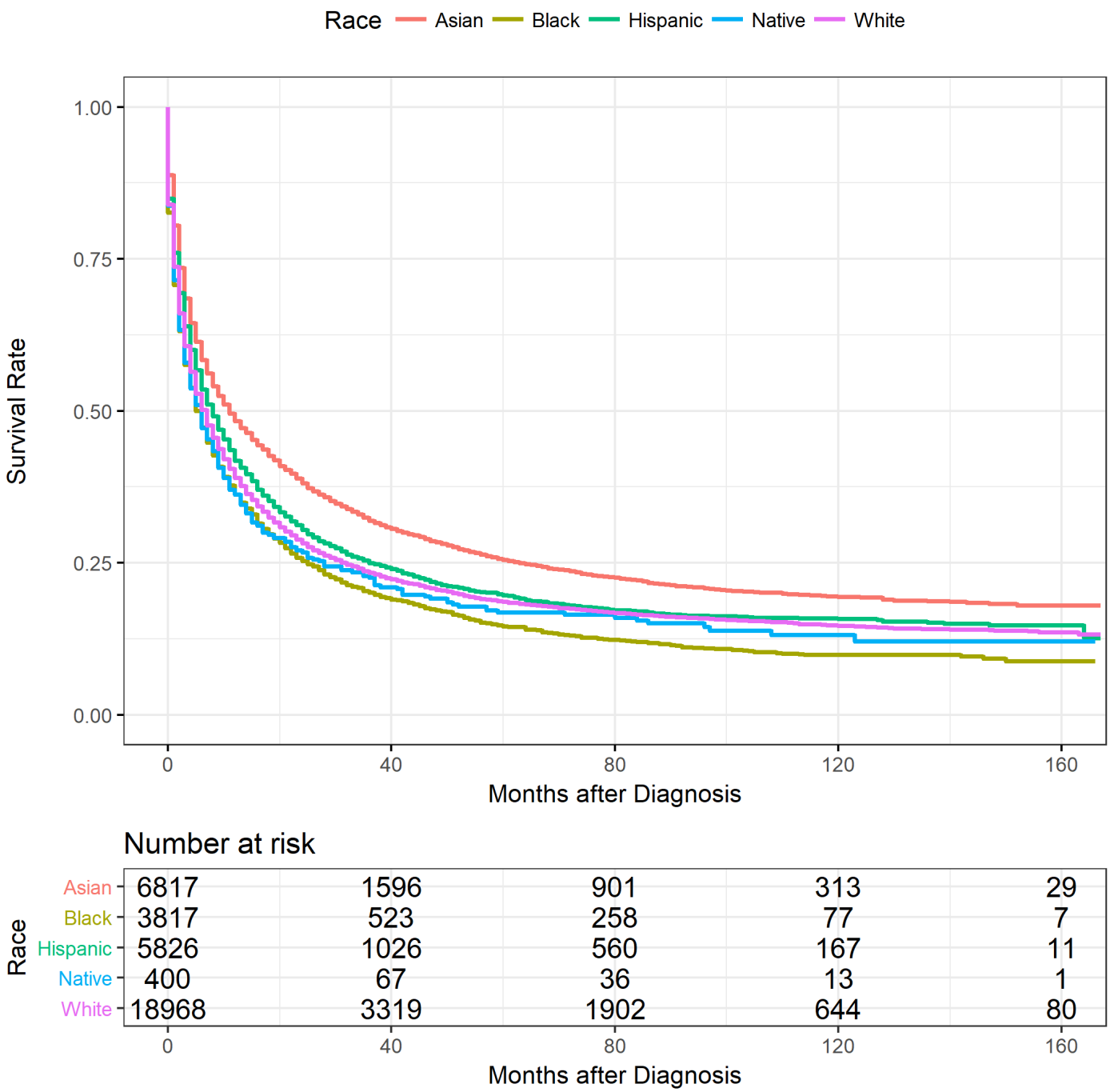


Figure 40: **Liver Cancer Survival by Race**

3.4 Survival for Common Cancer Types by Sex

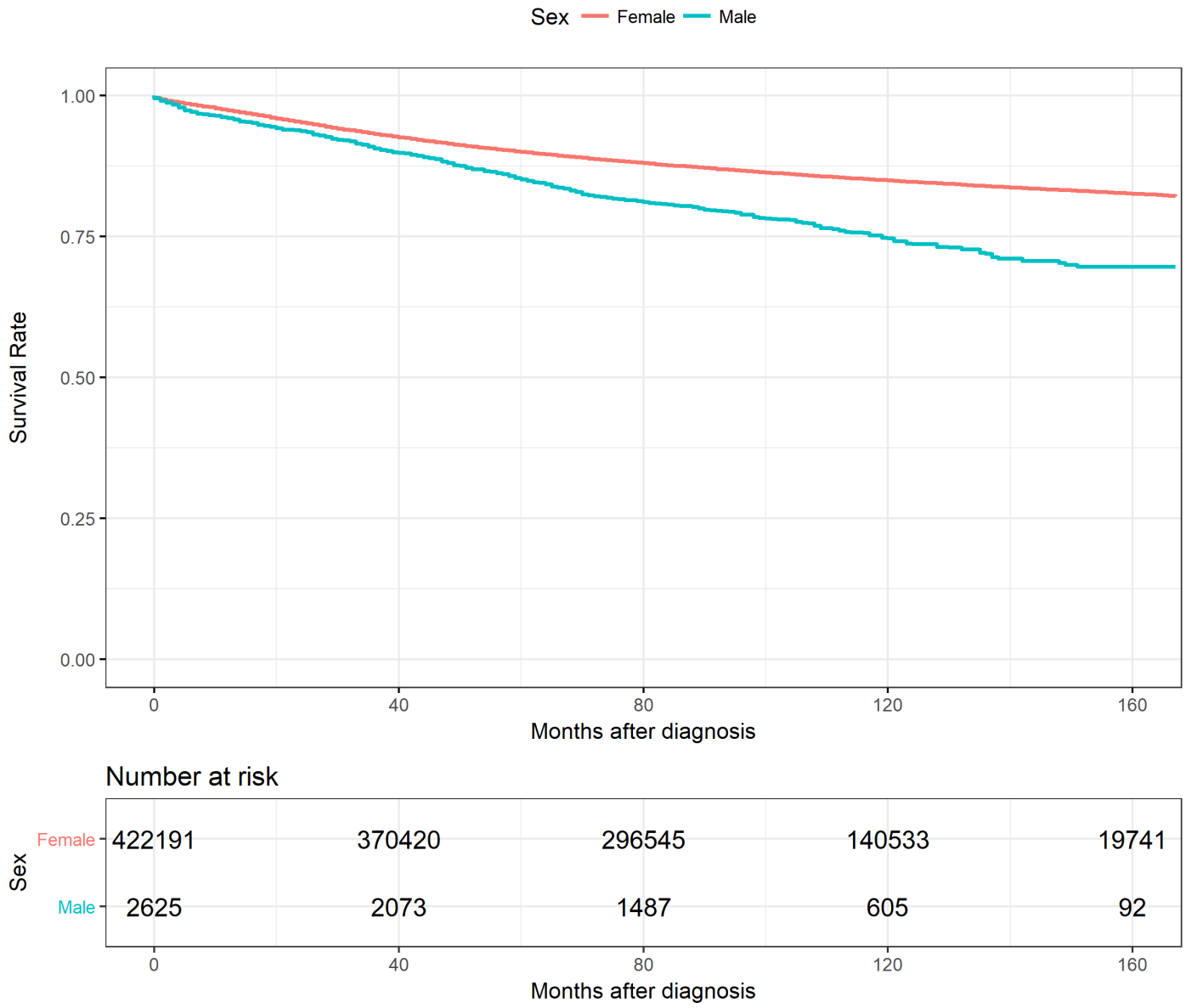


Figure 41: **Breast Cancer Survival by Sex**

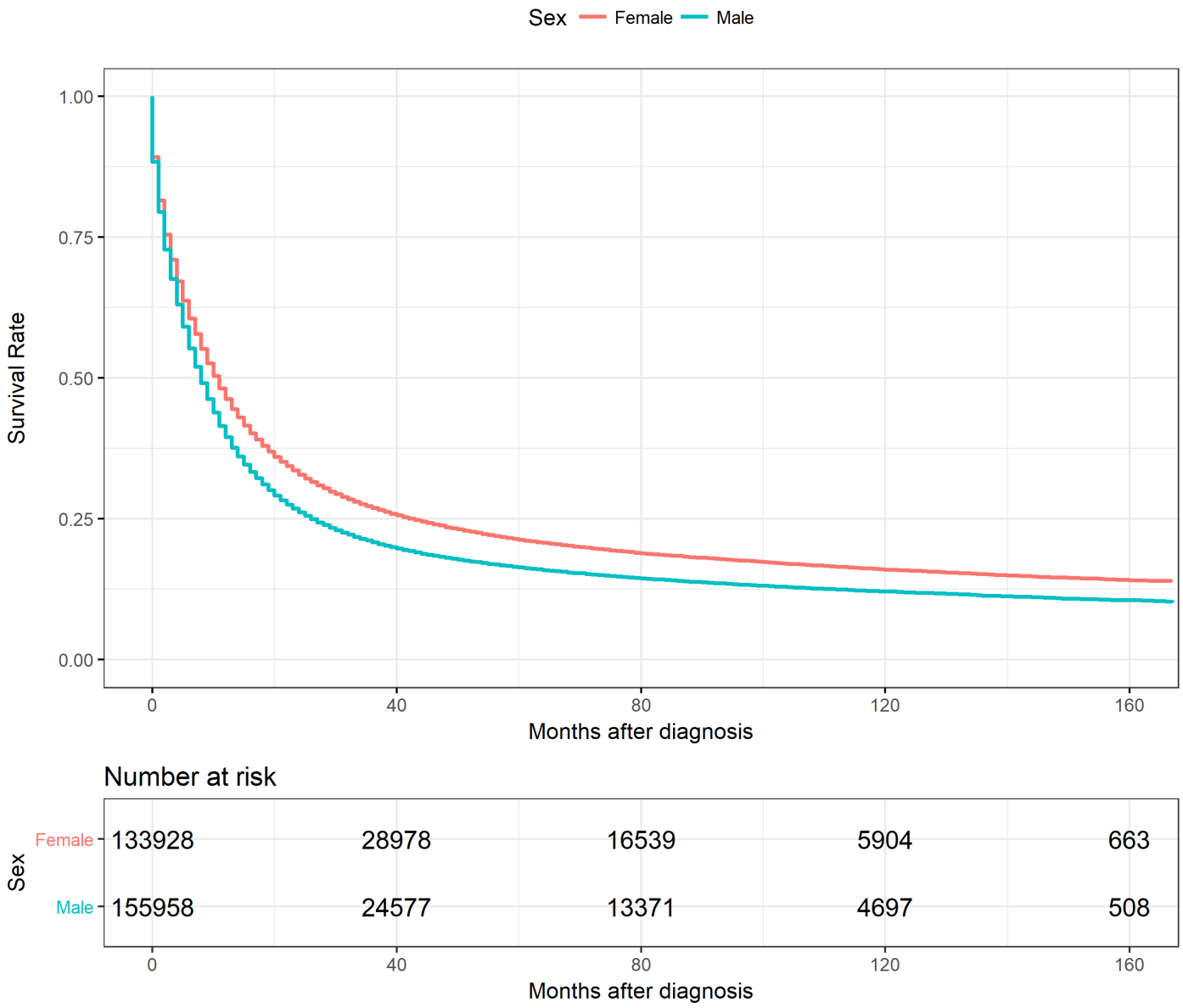


Figure 42: **Bronchus/Lung Cancer Survival by Sex**

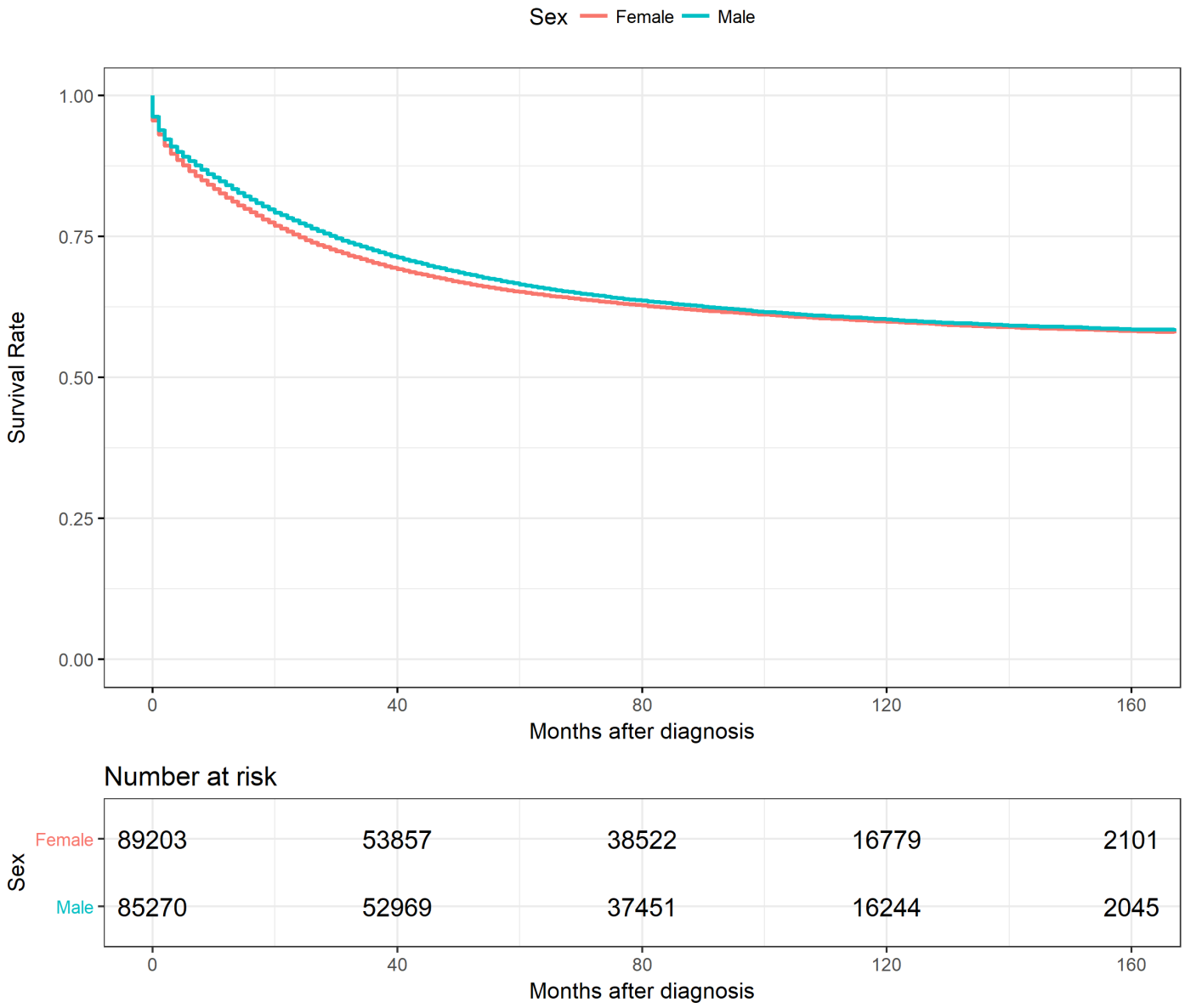


Figure 43: **Colon Cancer Survival by Sex**

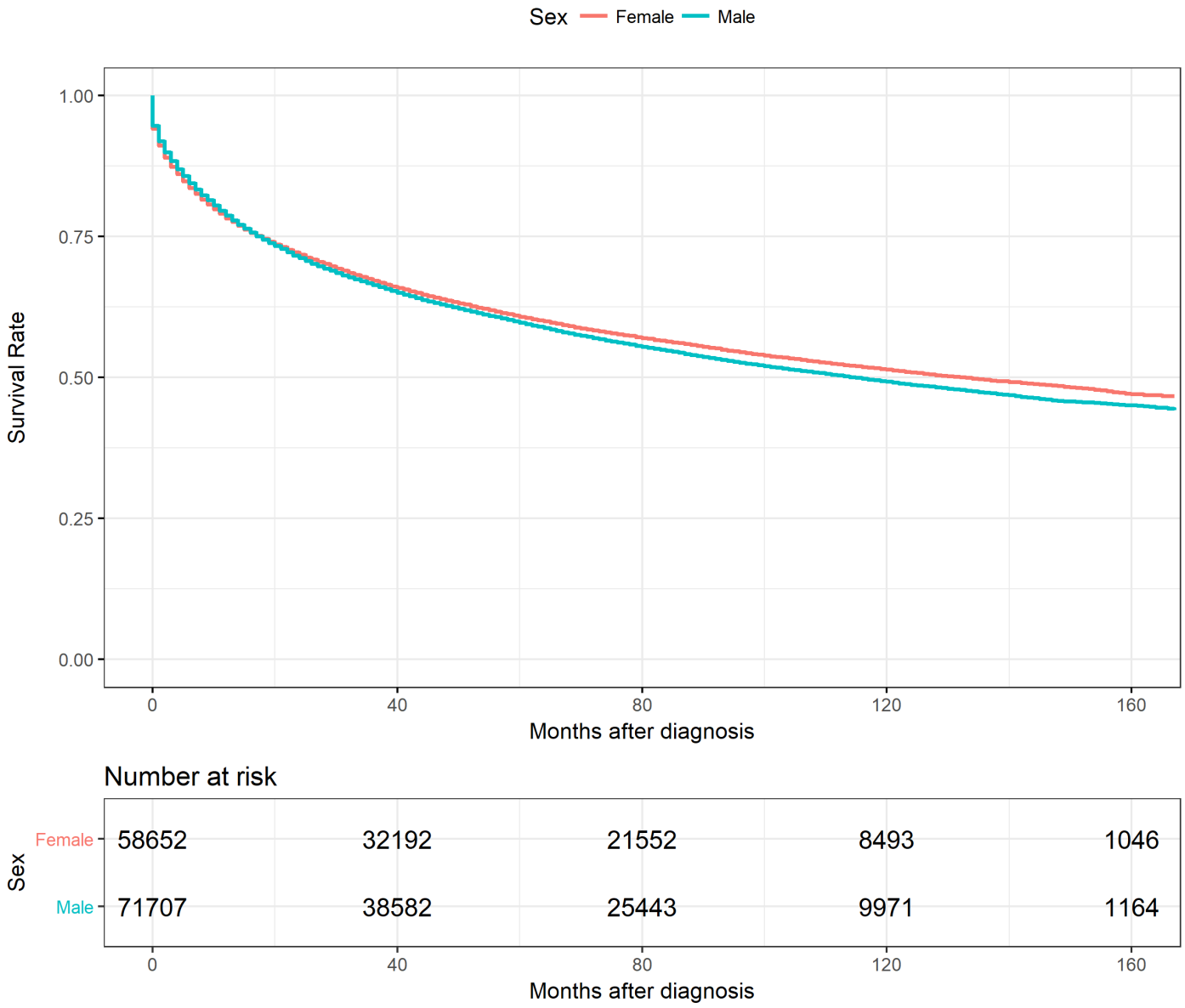


Figure 44: **Hematopoietic and Reticuloendothelial Cancer Survival by Sex**

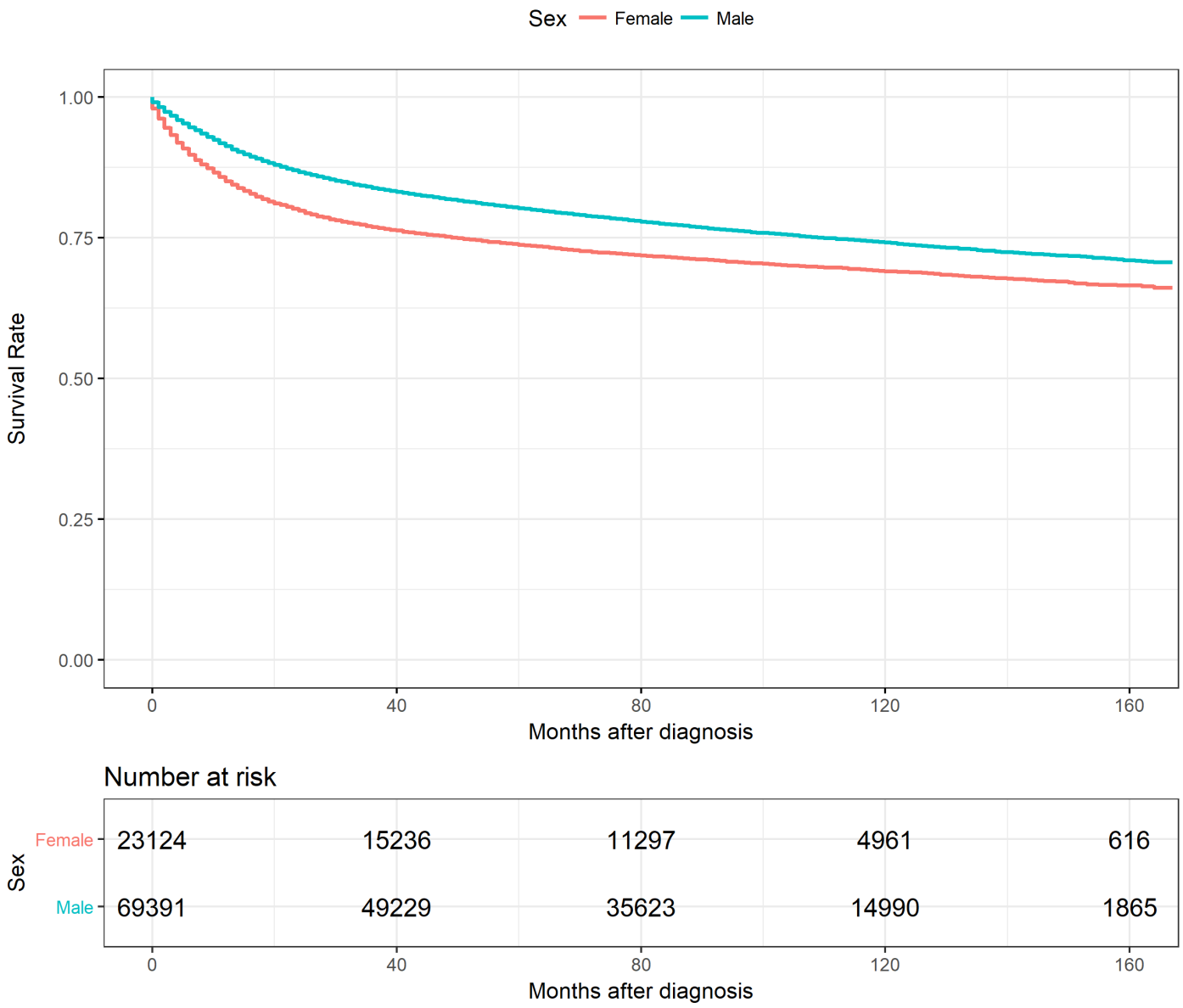


Figure 45: **Bladder Cancer Survival by Sex**

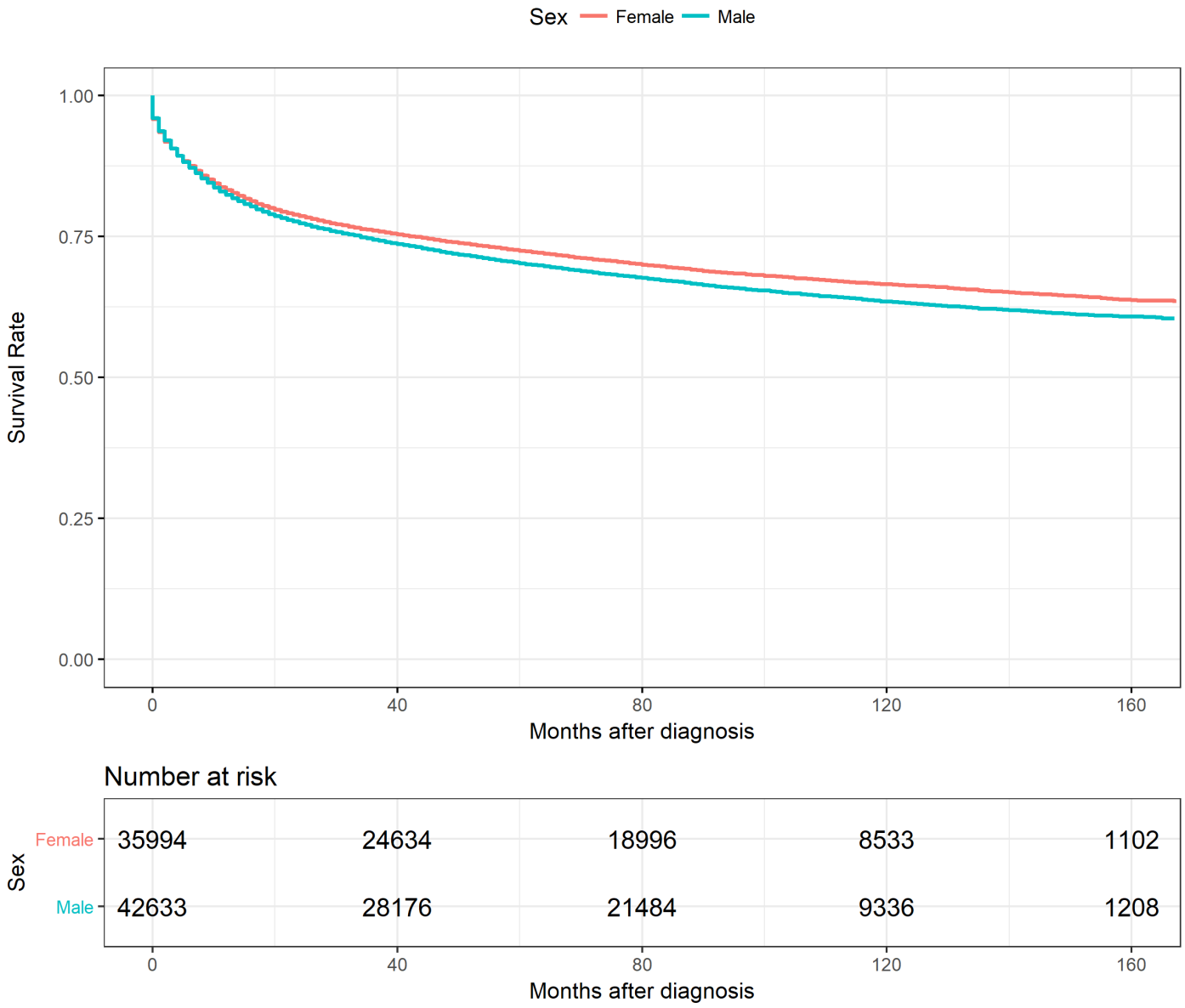


Figure 46: **Lymph Node Cancer Survival by Sex**

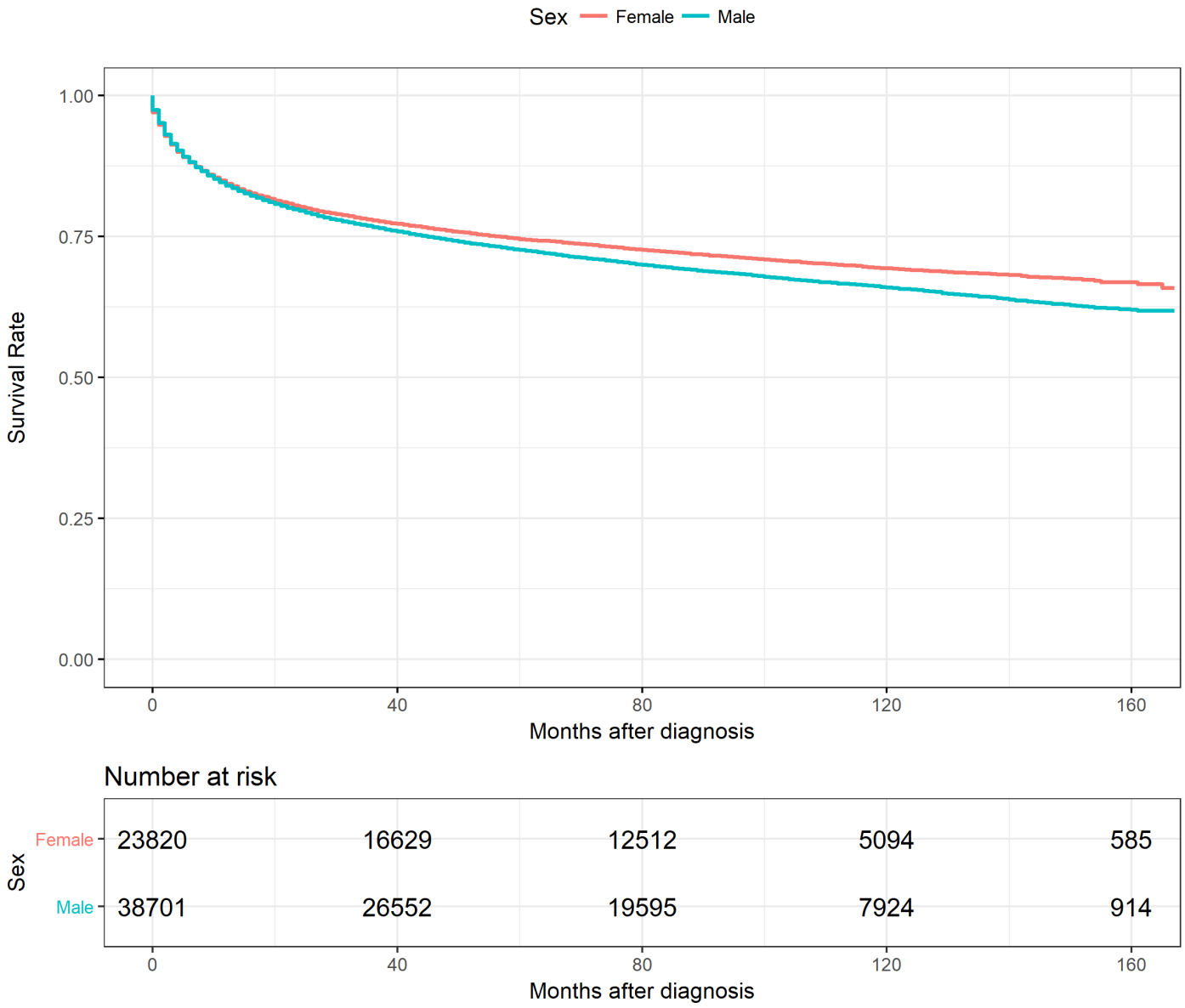


Figure 47: **Kidney Cancer Survival by Sex**

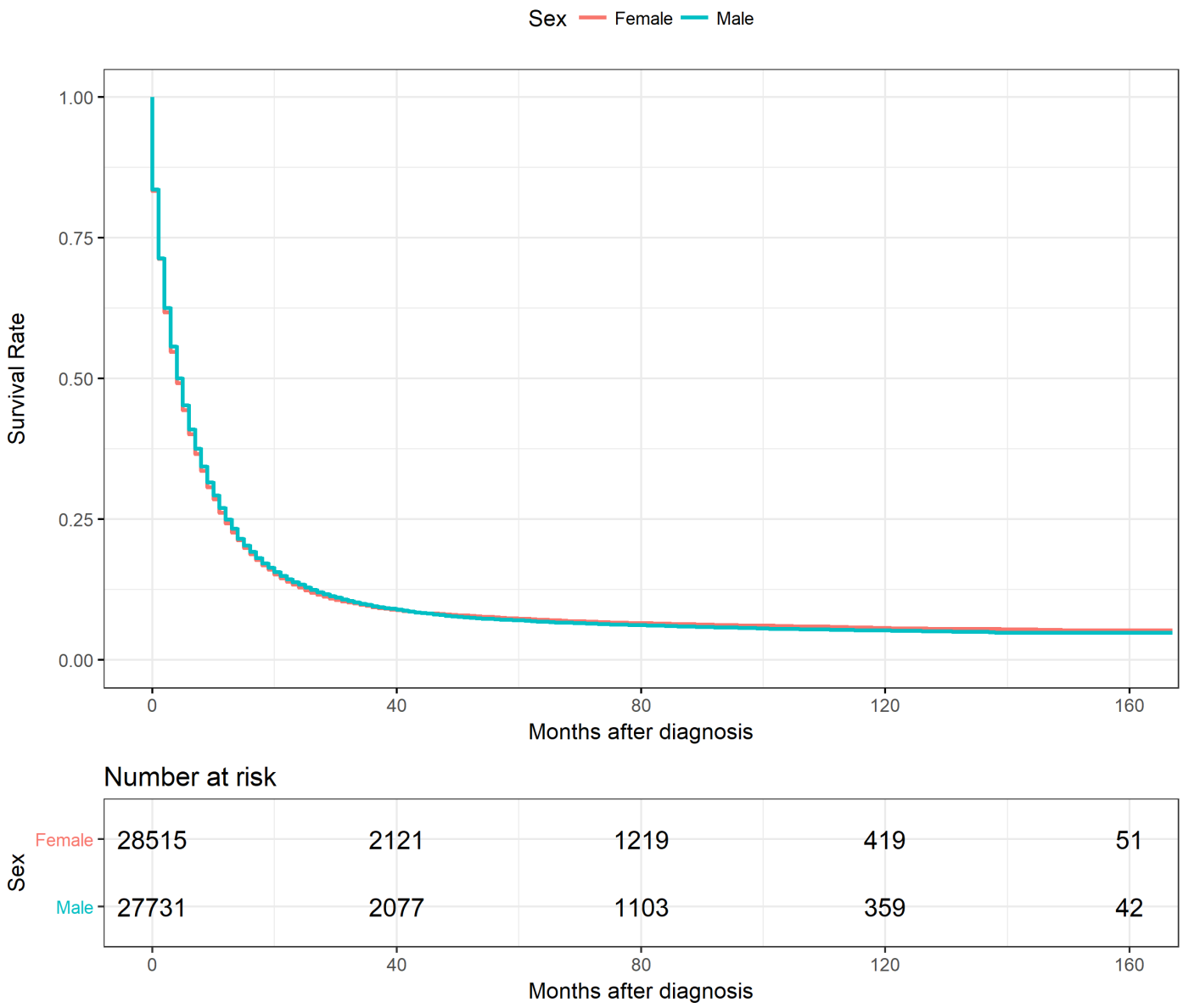


Figure 48: **Pancreatic Cancer Survival by Sex**

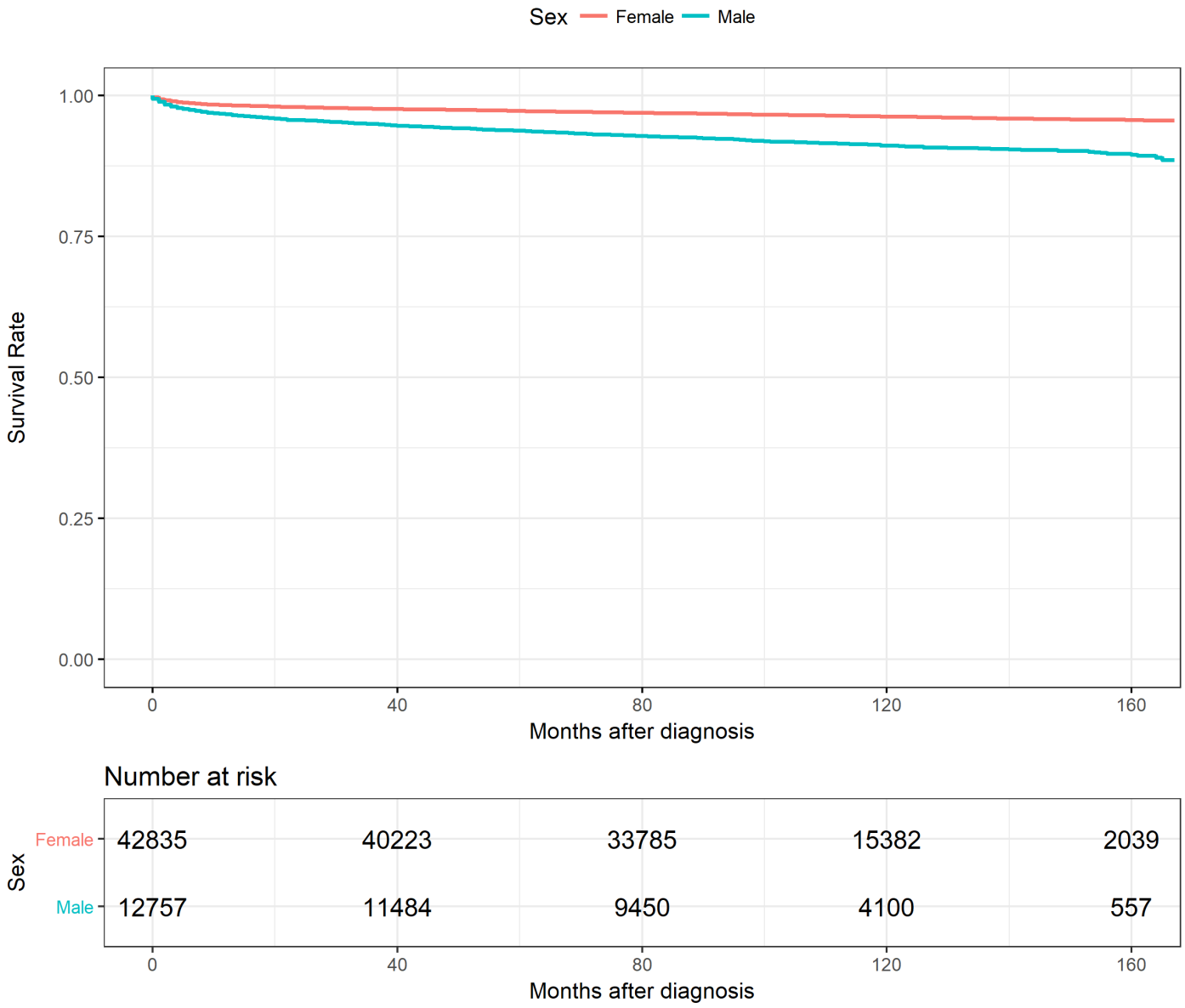


Figure 49: **Thyroid Cancer Survival by Sex**

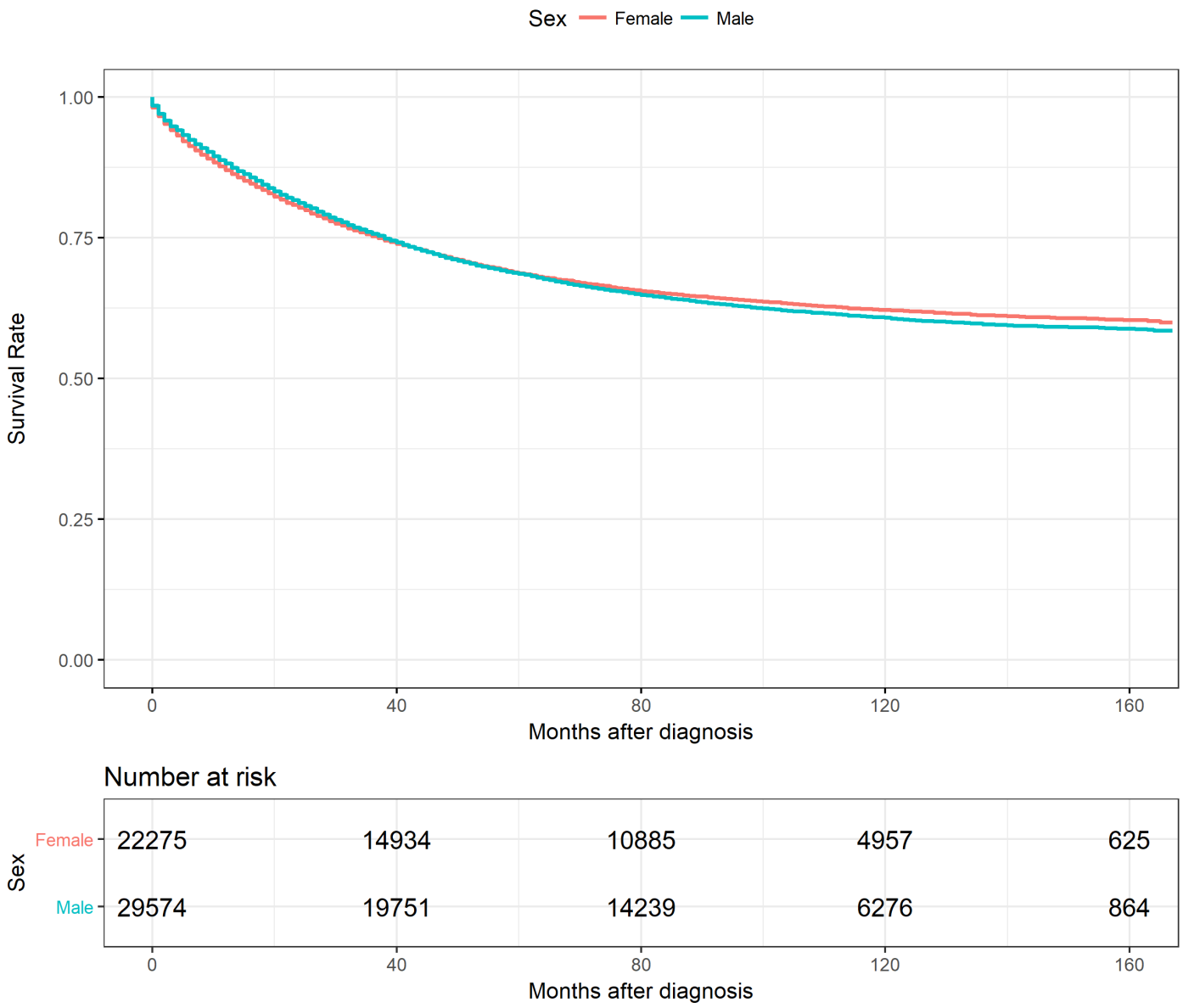


Figure 50: **Rectal Cancer Survival by Sex**

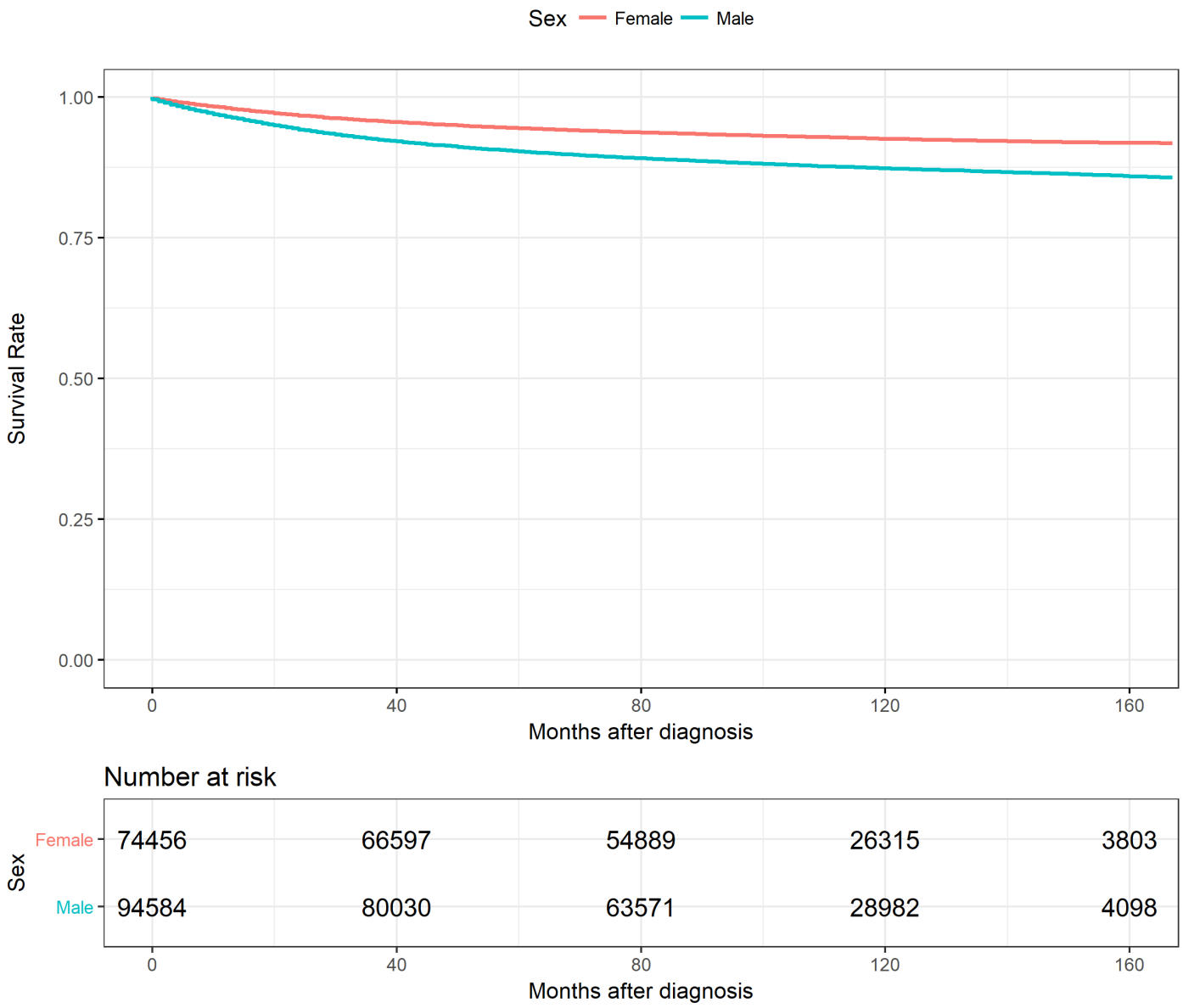


Figure 51: **Skin Cancer Survival by Sex**

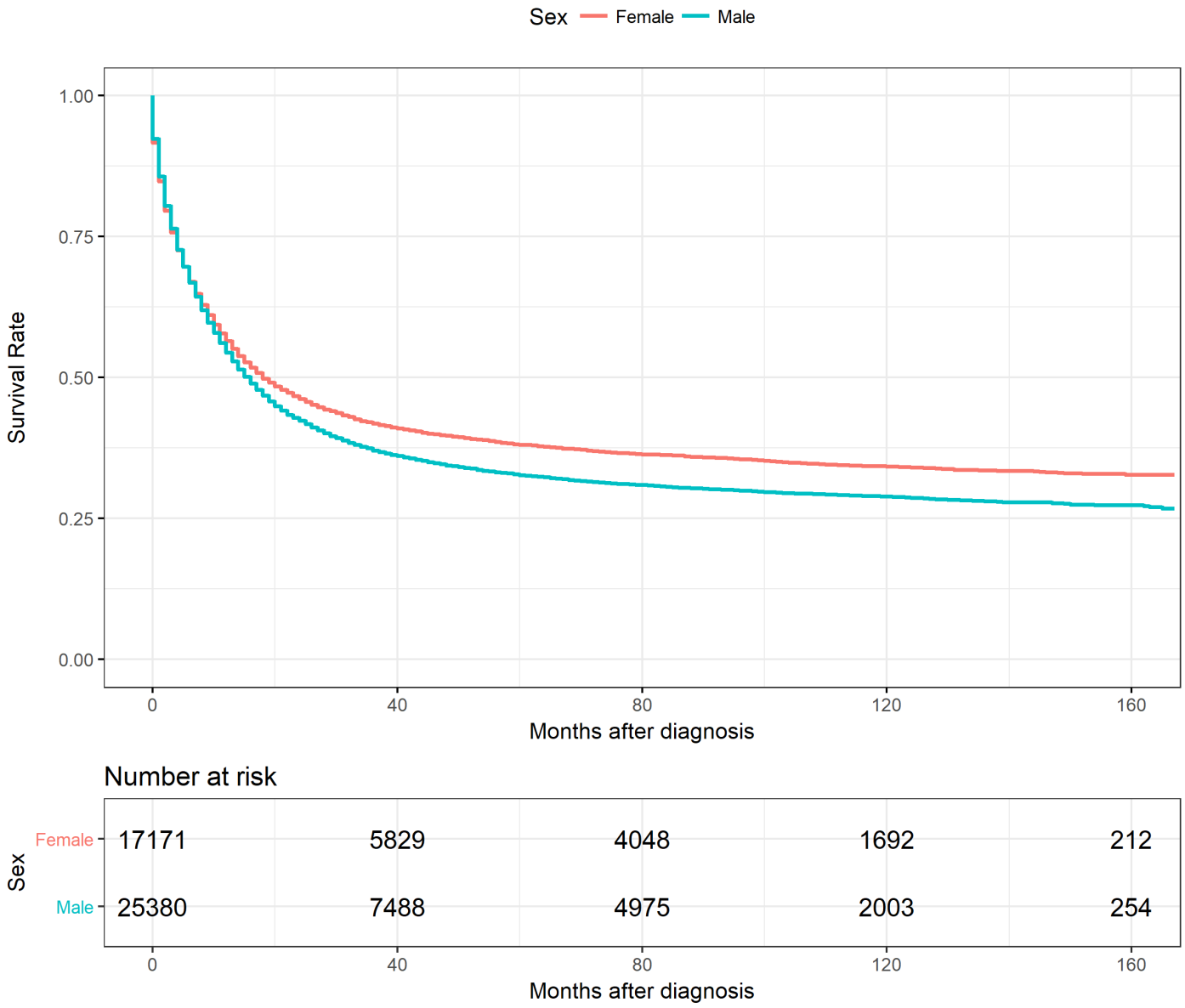


Figure 52: **Stomach Cancer Survival by Sex**

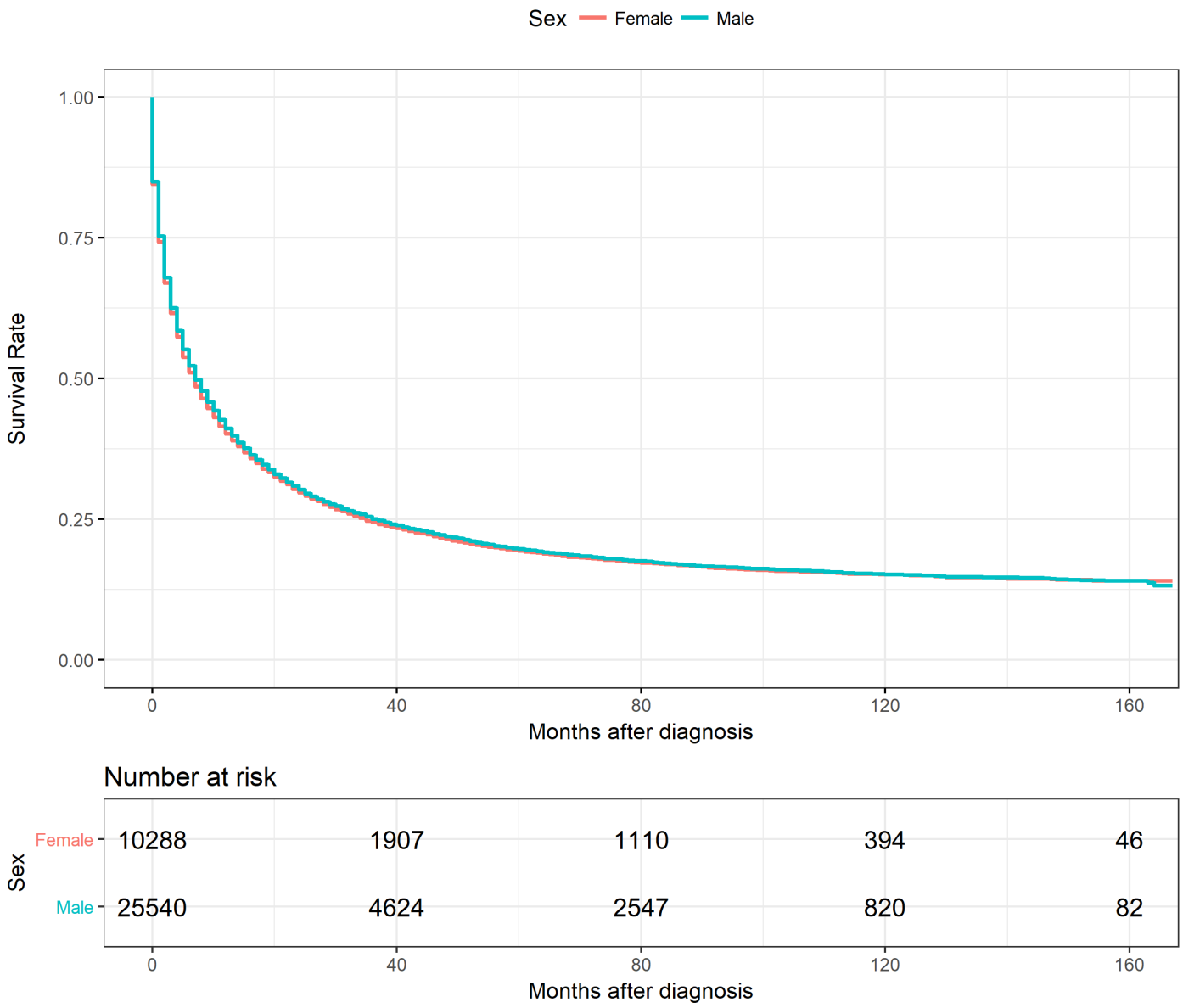


Figure 53: **Liver Cancer Survival by Sex**

4 End Note

Prior to doing this, I didn't have a particularly firm grasp of what the most common or deadly cancers were. So this exercise has been useful for me. I hope that others may find it informative as well. There are certainly many other questions I would like to look into more using the data set but I thought this was a reasonable place to stop and write things up.

I would appreciate any constructive feedback and you can get onto me using any of the contact information provided on the first page of this document.

I did most of this analysis and plotting using the *R* programming language and software application[9]. I would be happy to make my code available. If one wants to acquire the underlying data one would have to request it from SEER[10].

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