
Stage of Disease at Diagnosis

Cancer staging is a method for grouping patients based on the extent of the spread of their cancer from its site of origin. Detecting cancers at an early, more treatable stage is a major goal of cancer control efforts, and knowledge of the stage of disease at the time of diagnosis is essential for determining the choice of therapy and in assessing prognosis. Numerous studies have documented the association of an early cancer stage at diagnosis with higher socioeconomic position (39–42,68).

The Summary Staging Classification

The localized-regional-distant summary staging scheme has been used for many years in descriptive and statistical analyses of tumor registry data (69) and is defined below:

Localized: An invasive malignant neoplasm confined entirely to the organ of origin with no lymph node involvement.

Regional: A malignant neoplasm that (1) has extended beyond the limits of the organ of origin directly into surrounding organs or tissues; or (2) involves regional lymph nodes by way of the lymphatic system; or (3) has both regional extension and involvement of regional lymph nodes.

Distant: A malignant neoplasm that has spread to parts of the body remote from the primary tumor either by direct extension or by discontinuous metastasis (e.g., implantation or seeding) to distant organs, tissues, or via the lymphatic system to distant lymph nodes.

The best available information on stage of disease, as it appears in the medical record within two months of diagnosis, was used to classify the cancers. Thus, staging is based on a combination of clinical and operative/pathological assessment. Since many surgically treated prostate cancer cases undergoing radical prostatectomy are reclassified from clinically localized- to regional-stage disease based on the more accurate information obtained from the operative or pathology report (70), localized- and regional-stage prostate cancers are combined for the analyses by stage in this report.

Area Socioeconomic and Racial/Ethnic Patterns in Early- and Late-Stage Cancer Diagnoses

During 1988–1999, for each of the cancers considered, men and women in high poverty census tracts had a higher percentage of late-stage cancer diagnoses than those in low

poverty census tracts (Figures 4.1–4.18, pages 72–85; Table 4.1, page 86). This was also generally true for each racial/ethnic group. The largest socioeconomic gradients occurred for patients diagnosed during 1995–1999 with distant-stage melanoma of the skin (ratio of percent diagnosed with distant-stage disease in highest:lowest poverty areas = $9.17:3.73 = 2.5$ for men and $5.42:2.52 = 2.2$ for women), distant-stage prostate cancer (highest:lowest poverty areas = $9.06:4.76 = 1.9$), and distant-stage female breast cancer (highest:lowest poverty areas = $8.59:5.04 = 1.7$). The socioeconomic gradients for distant-stage colorectal cancer in men and women and for cervical cancer were similar (highest:lowest poverty areas = $9.77:8.22 = 1.2$). The majority of lung cancer cases are diagnosed at distant stage, and a socioeconomic gradient, with persons in the highest poverty areas more likely to be diagnosed at distant stage, consistently appears for men and women in each racial/ethnic group with the exception of black women.

Patients in low poverty areas were generally more likely to be diagnosed with early-stage (localized) cancers. The largest socioeconomic gradient for localized diagnoses occurred for male patients with melanoma of the skin (lowest:highest poverty areas = 1.2 for men and 1.1 for women). Sixty-seven percent of female breast cancer patients in the lowest poverty areas were diagnosed with localized-stage disease, whereas only 59% of those in the high poverty areas were diagnosed at this stage.

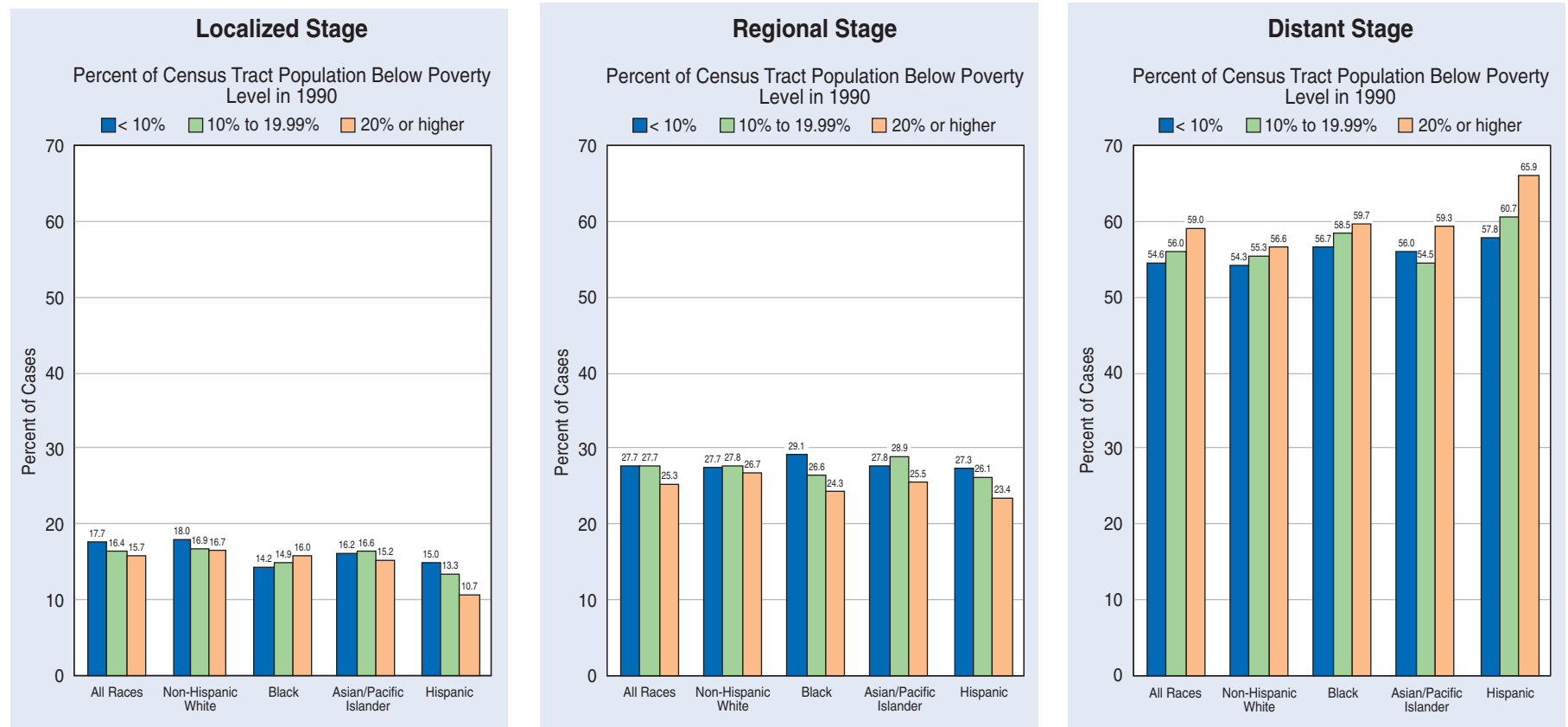
A similar difference was seen for cervical cancer, with nearly 60% of the diagnoses in low poverty areas being at the localized stage while only 52% of the diagnoses in high poverty areas were localized.

Trends in Area Socioeconomic Gradients in the Stage Distribution

Time trends in the stage of disease distribution for each of the specific cancers are included in Figures 4.10–4.18, pages 81–85. The socioeconomic gradients noted in the cross-sectional data above persisted throughout the 1988–1999 time period and, with the exception of prostate cancer, were generally stable. The percentage of prostate cancers diagnosed at local or regional stage increased from 1988 through 1999 in all socioeconomic groups. A socioeconomic gradient persisted over the time period, with the lowest poverty group having the largest percentage of local/regional-stage cancers. As expected, the rise in local/regional-stage cancers was accompanied by a decline in the percentage of distant-stage cancers over the time period. A socioeconomic gradient was also evident among the distant-stage prostate cancers; however, the association was reversed, with the highest poverty group having the highest percentage of distant-stage cancers. These patterns coincide with the rising utilization of the prostate-specific antigen (PSA) test for prostate cancer screening since the late 1980s (71). The stage distribution of female breast cancer cases remained stable from 1988 to 1999. A consistent socioeconomic

gradient was also apparent over this time period. Data are grouped into three-year moving average categories for cancers of the lung, colorectum, uterine cervix, and melanoma of the skin to help visualize patterns by stage of disease when the data are sparse. Trends in the stage distribution for cervical cancer diagnoses indicate persistent and substantial socio-economic differences in the percentage of localized- or regional/distant-stage cancers, with little or no change in the gradient in the 1990s. For melanoma of the skin, the percentage of cases diagnosed at regional or distant stage appeared to be increasing during 1995–1999 among men in the high poverty group. This is a disturbing finding that deserves further study.

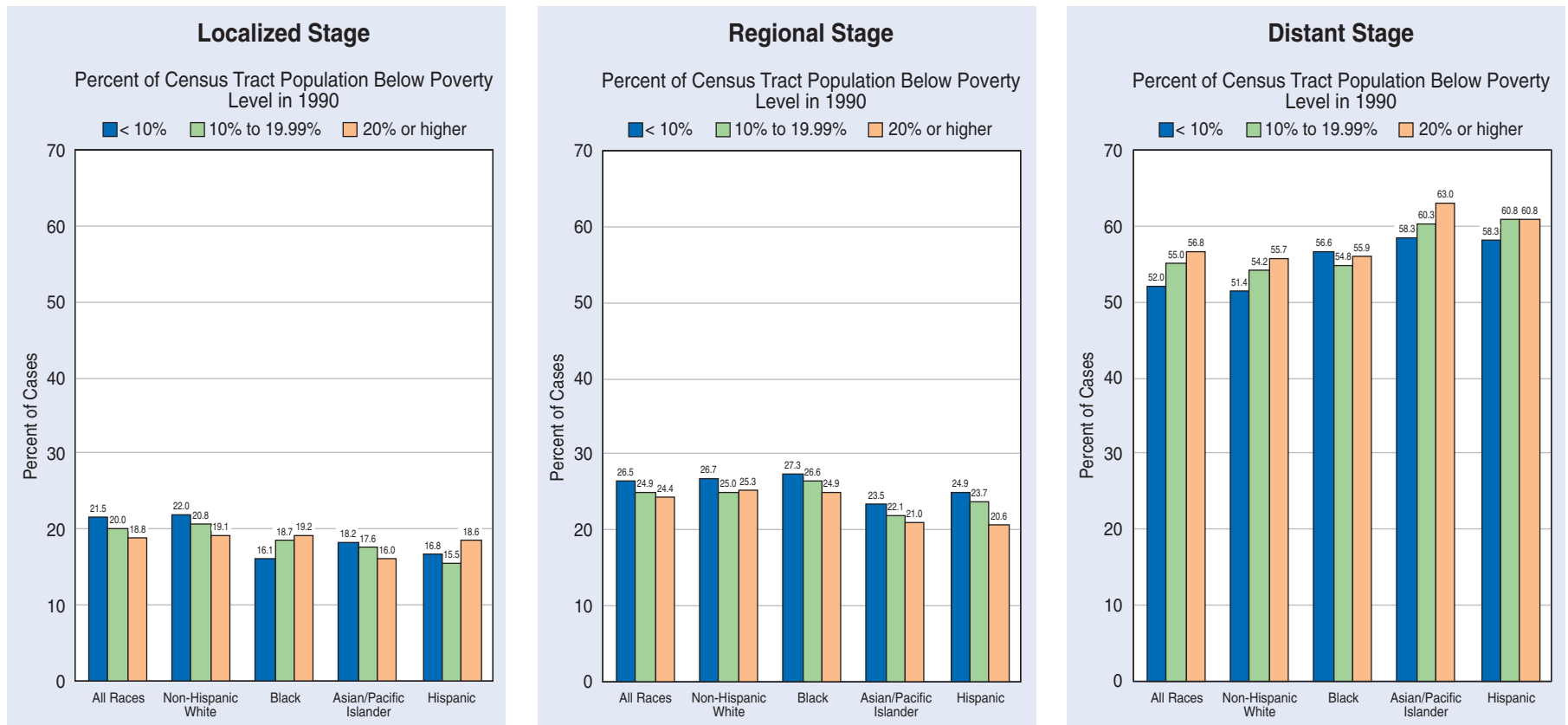
Figure 4.1. Distribution of SEER Lung Cancer Cases Among Men by Stage, Race/Ethnicity, and Census Tract Poverty Rate, 1995–1999



Note: Based on data from 11 SEER registries. See “Data and Methods” for a list of SEER registries.

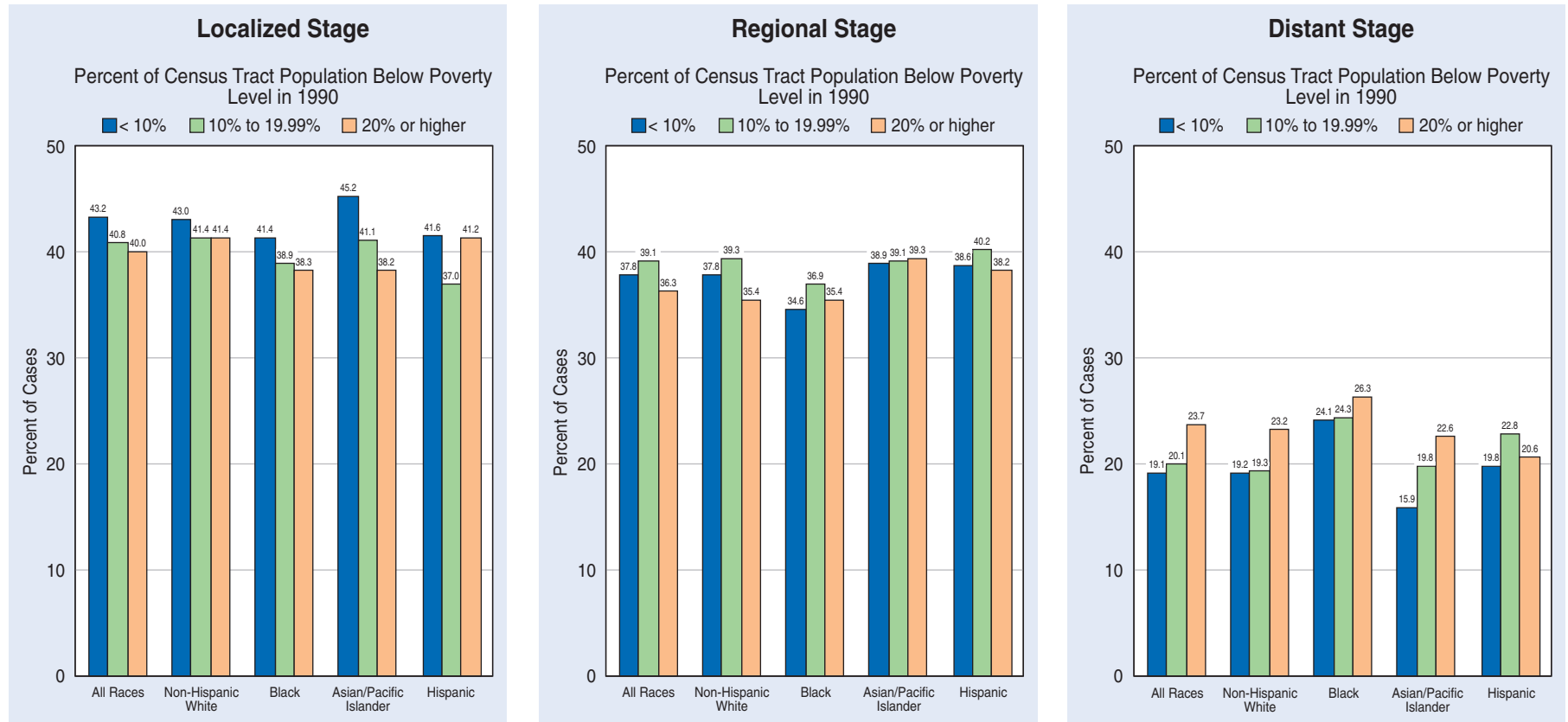
Figure 4.2. Distribution of SEER Lung Cancer Cases Among Women by Stage, Race/Ethnicity, and Census Tract Poverty Rate, 1995–1999

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Note: Based on data from 11 SEER registries. See “Data and Methods” for a list of SEER registries.

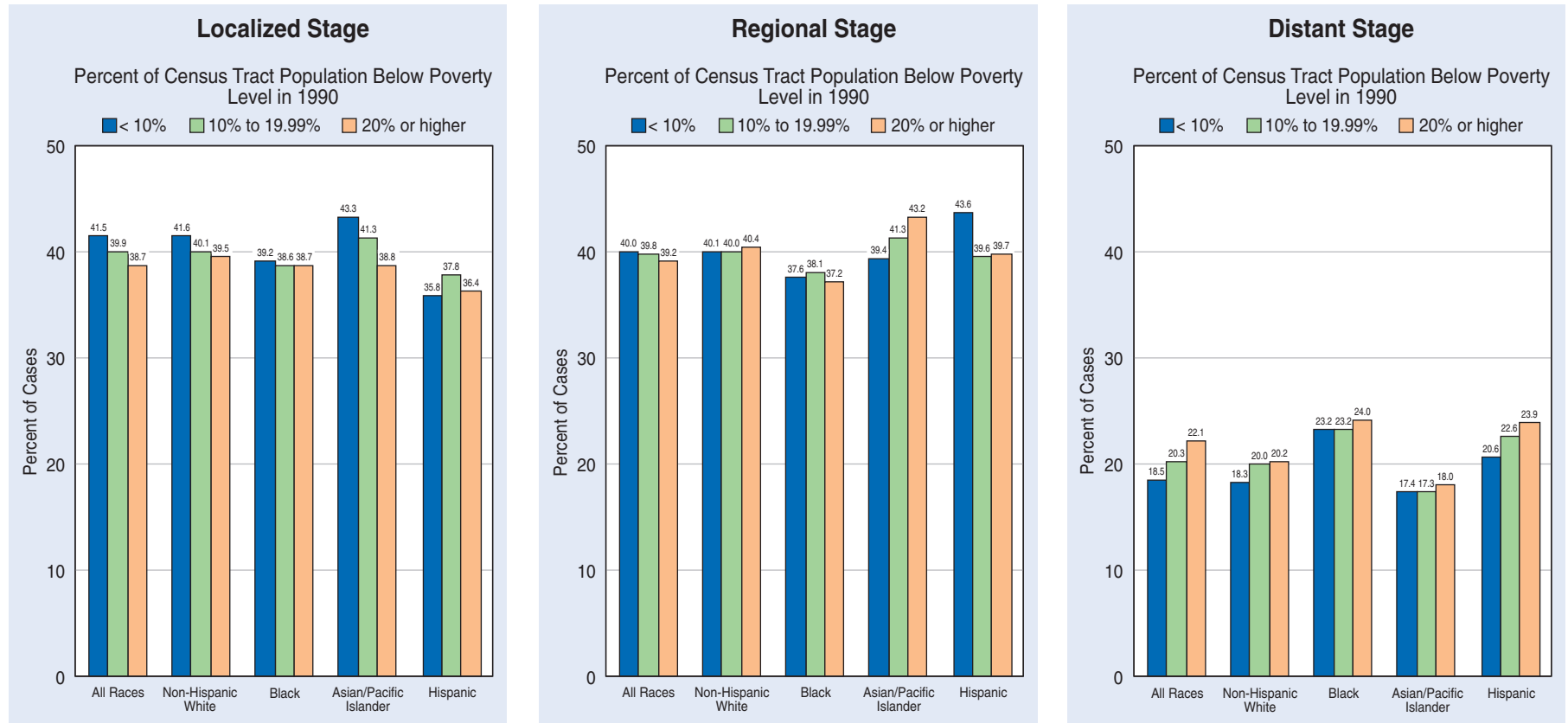
Figure 4.3. Distribution of SEER Colorectal Cancer Cases Among Men by Stage, Race/Ethnicity, and Census Tract Poverty Rate, 1995–1999



Note: Based on data from 11 SEER registries. See “Data and Methods” for a list of SEER registries.

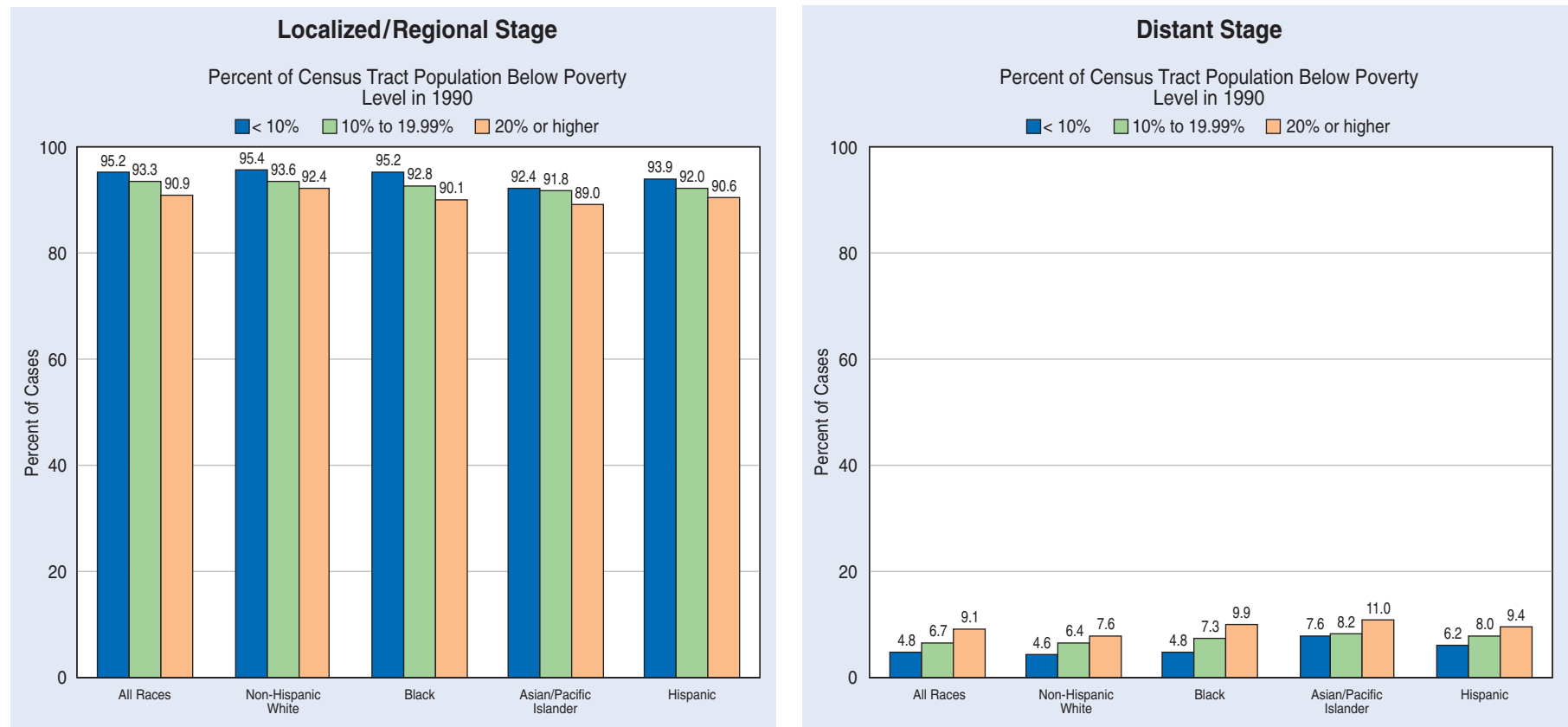
Figure 4.4. Distribution of SEER Colorectal Cancer Cases Among Women by Stage, Race/Ethnicity, and Census Tract Poverty Rate, 1995–1999

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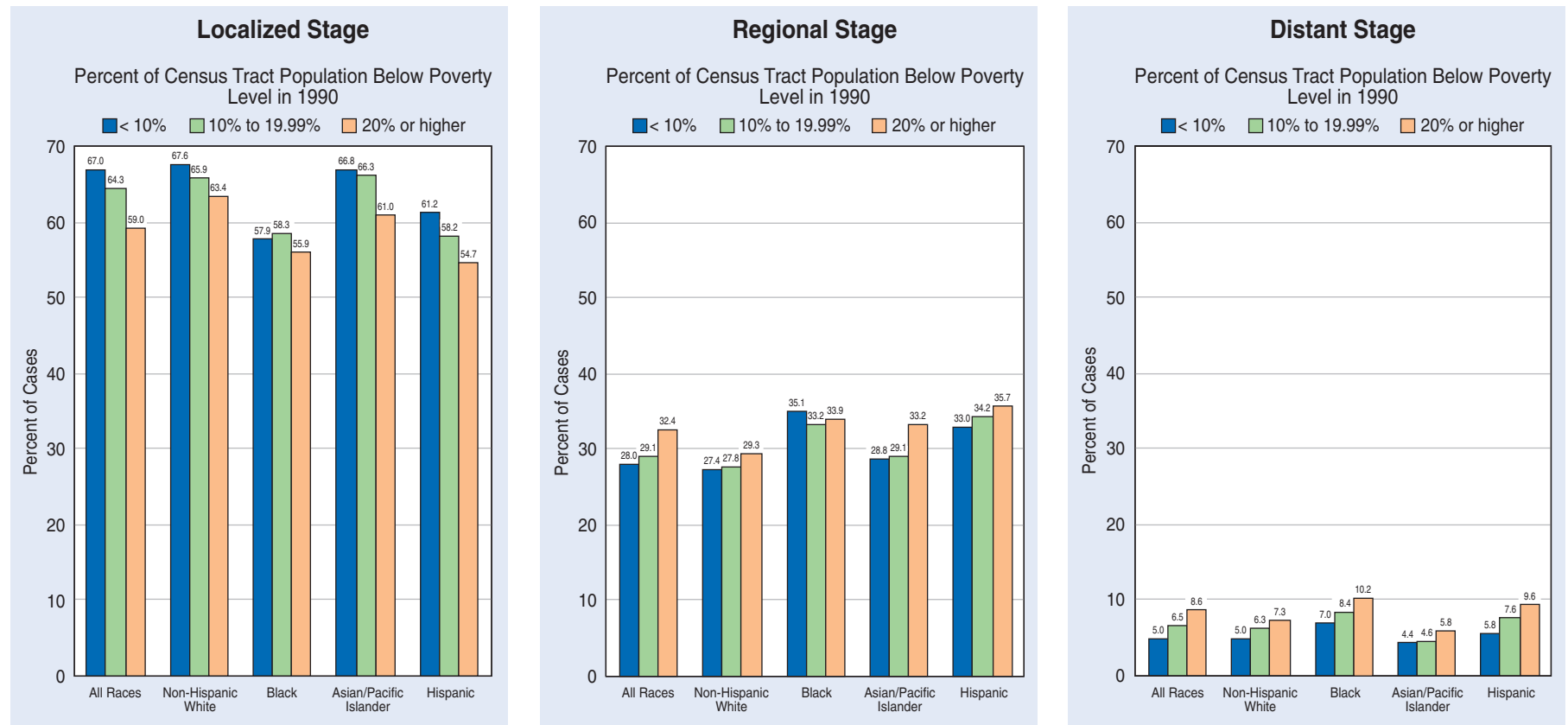
Note: Based on data from 11 SEER registries. See “Data and Methods” for a list of SEER registries.

Figure 4.5. Distribution of SEER Prostate Cancer Cases by Stage, Race/Ethnicity, and Census Tract Poverty Rate, 1995–1999



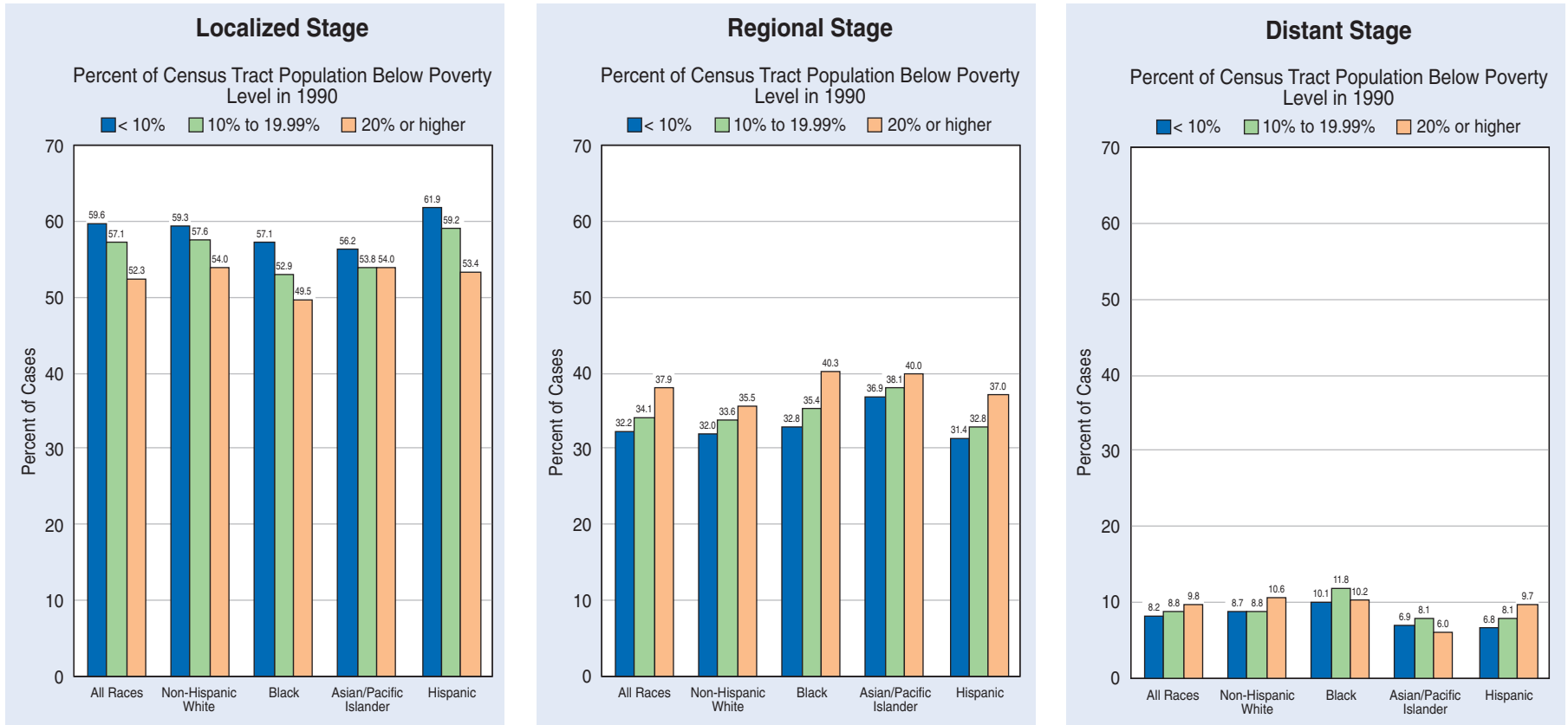
Note: Based on data from 11 SEER registries. See “Data and Methods” for a list of SEER registries.

Figure 4.6. Distribution of SEER Female Breast Cancer Cases by Stage, Race/Ethnicity, and Census Tract Poverty Rate, 1995–1999



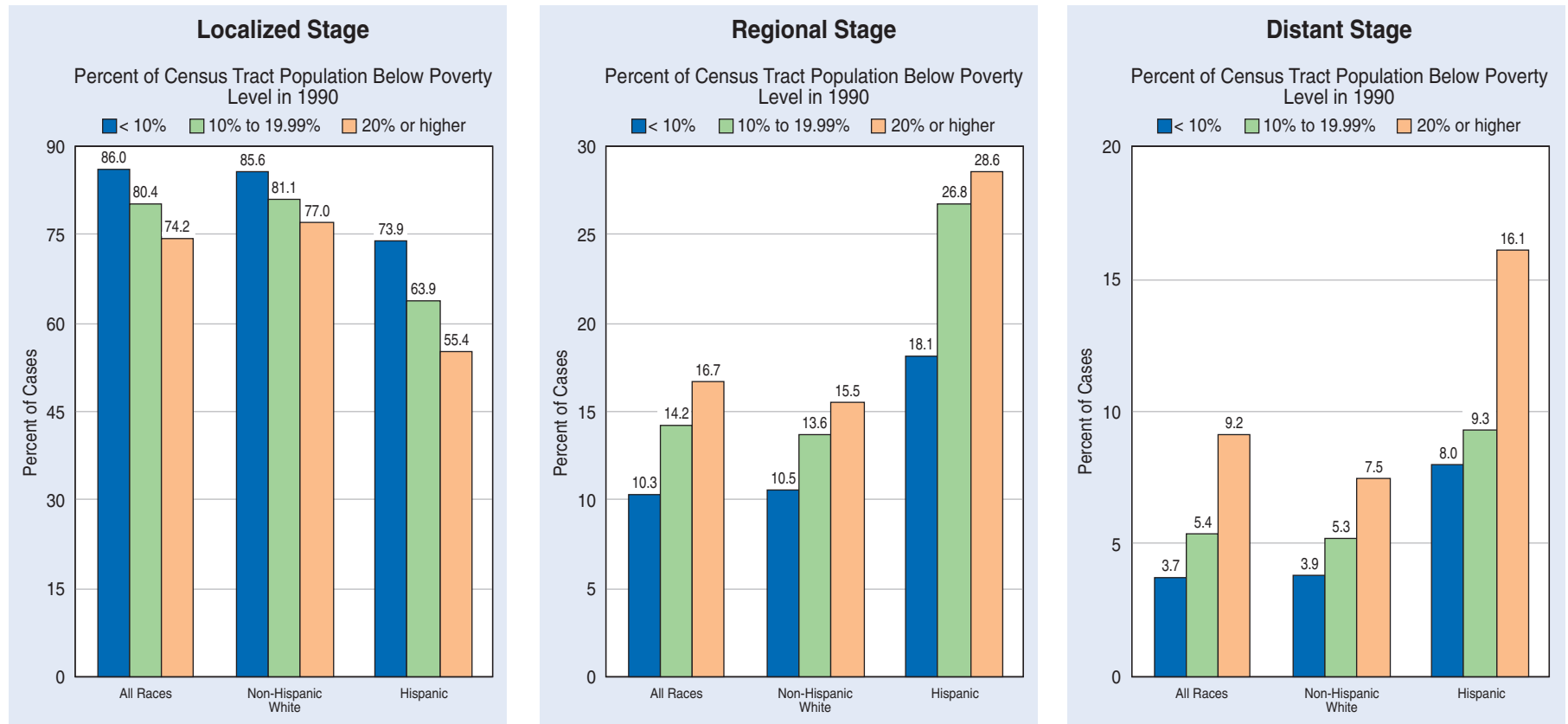
Note: Based on data from 11 SEER registries. See “Data and Methods” for a list of SEER registries.

Figure 4.7. Distribution of SEER Cervical Cancer Cases by Stage, Race/Ethnicity, and Census Tract Poverty Rate, 1995–1999



Note: Based on data from 11 SEER registries. See “Data and Methods” for a list of SEER registries.

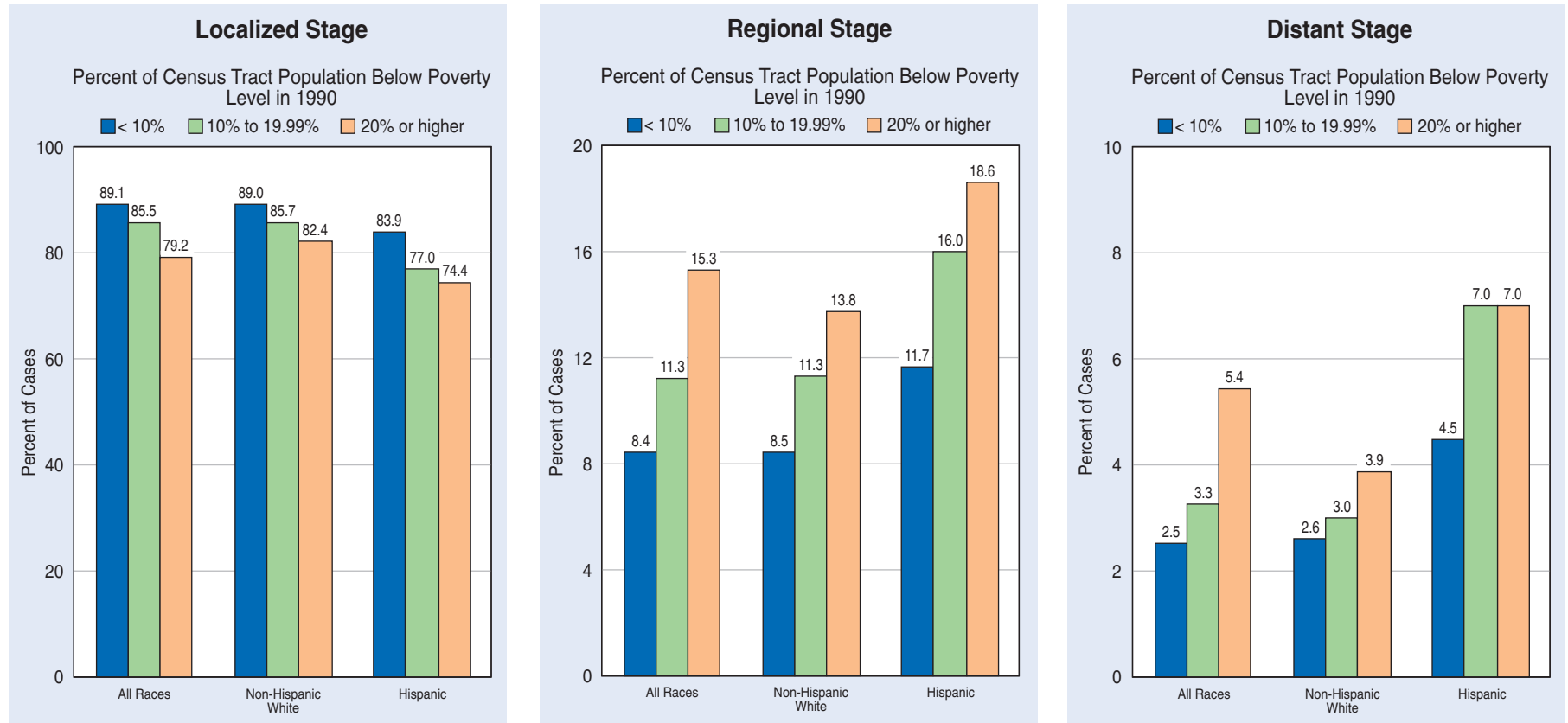
Figure 4.8. Distribution of SEER Skin Melanoma Cases Among Men by Stage, Race/Ethnicity, and Census Tract Poverty Rate, 1995–1999



Note: Based on data from 11 SEER registries. See “Data and Methods” for a list of SEER registries.

Figure 4.9. Distribution of SEER Skin Melanoma Cases Among Women by Stage, Race/Ethnicity, and Census Tract Poverty Rate, 1995–1999

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Note: Based on data from 11 SEER registries. See “Data and Methods” for a list of SEER registries.

Figure 4.10. Trends in Lung Cancer Diagnoses Among Men by Stage (Three-Year Moving Averages), 1988–1999

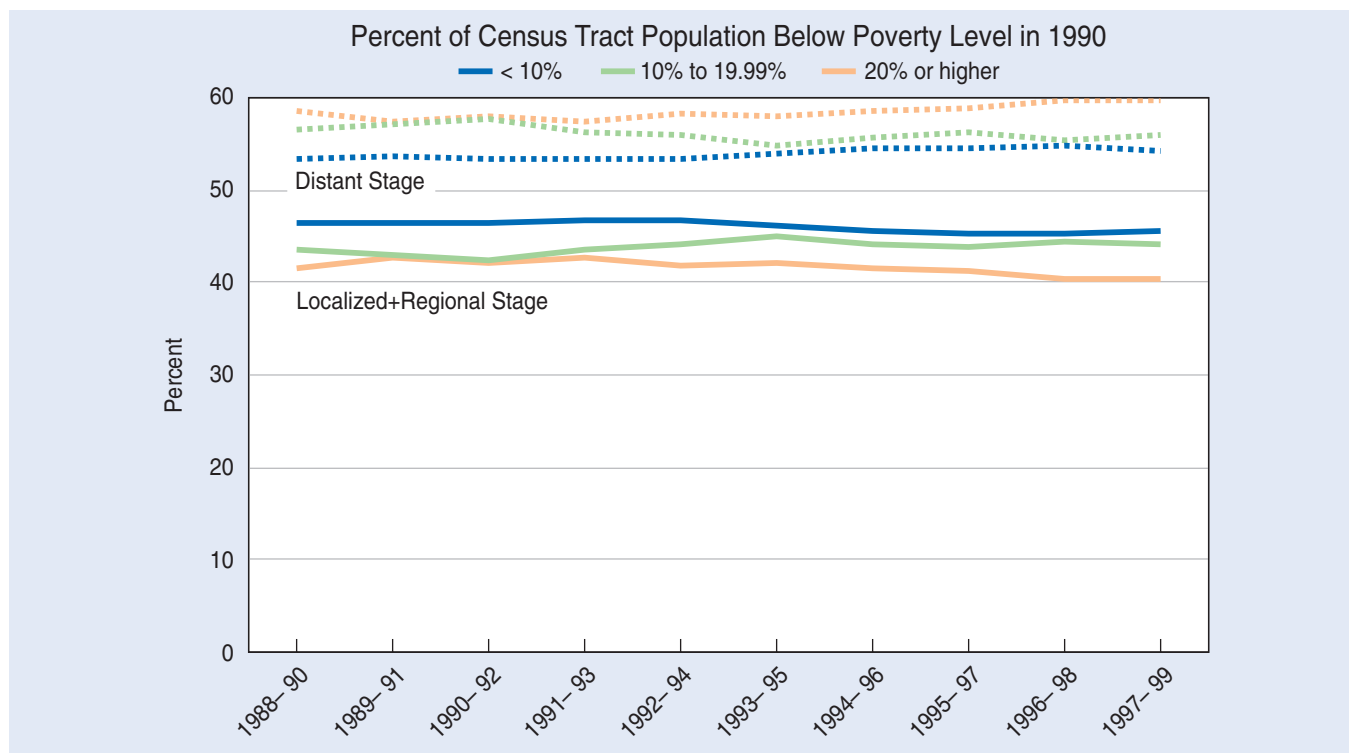
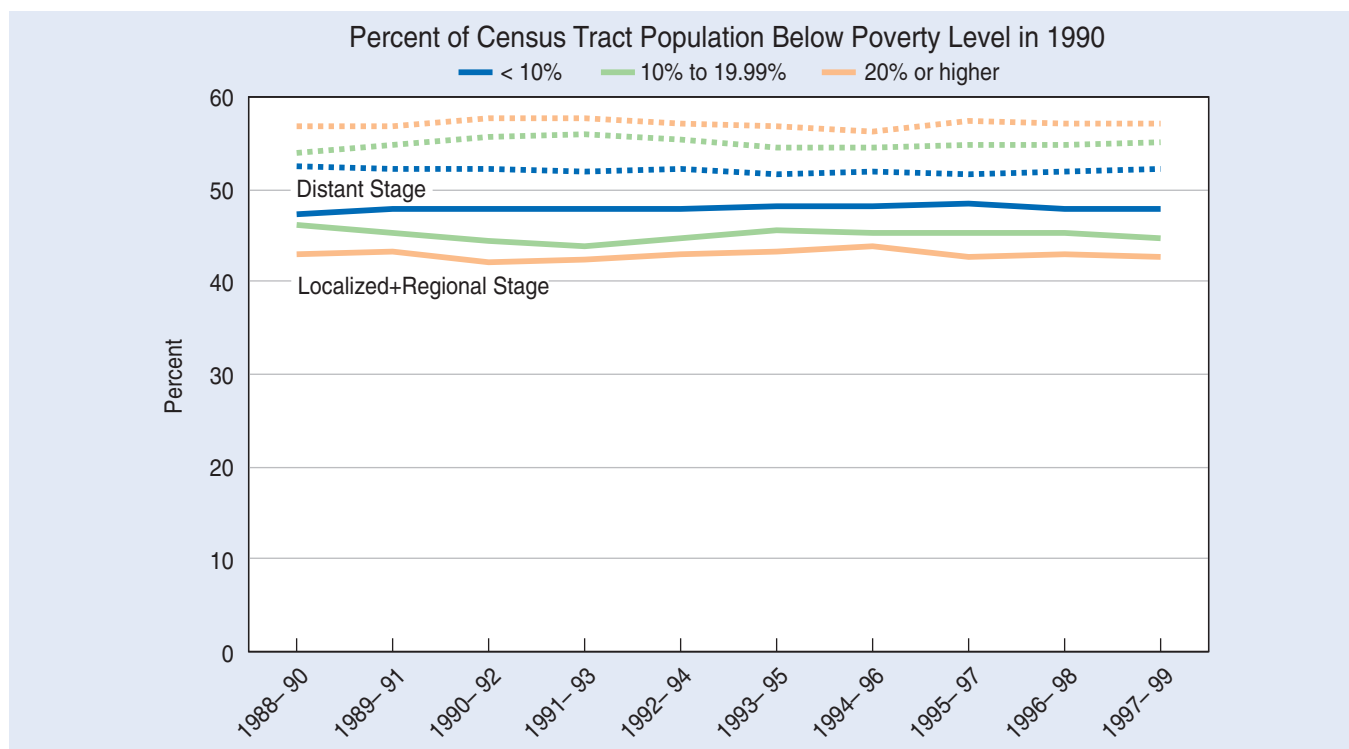


Figure 4.11. Trends in Lung Cancer Diagnoses Among Women by Stage (Three-Year Moving Averages), 1988–1999



Note: Based on data from 11 SEER registries. Los Angeles registry data from 1988 to 1991 were not available. See “Data and Methods” for a list of SEER registries.

Figure 4.12. Trends in Colorectal Cancer Diagnoses Among Men by Stage (Three-Year Moving Averages), 1988–1999

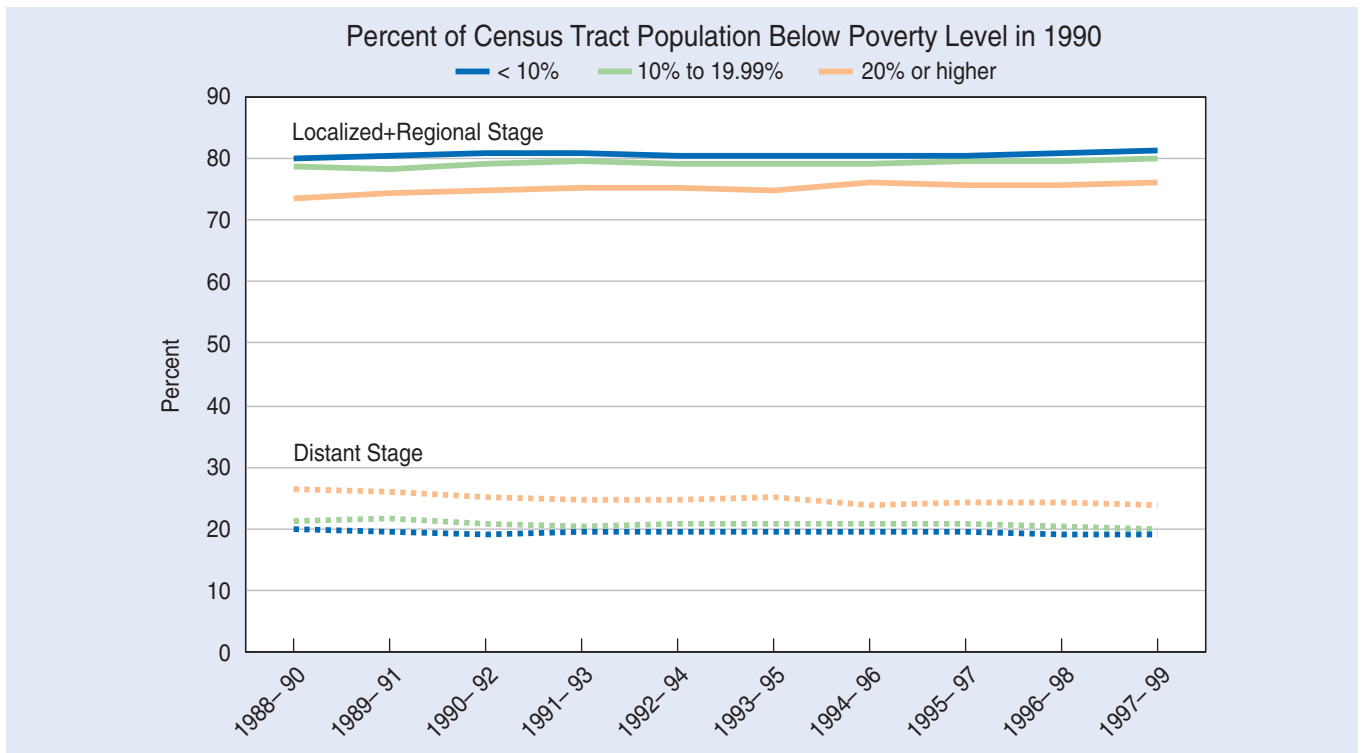
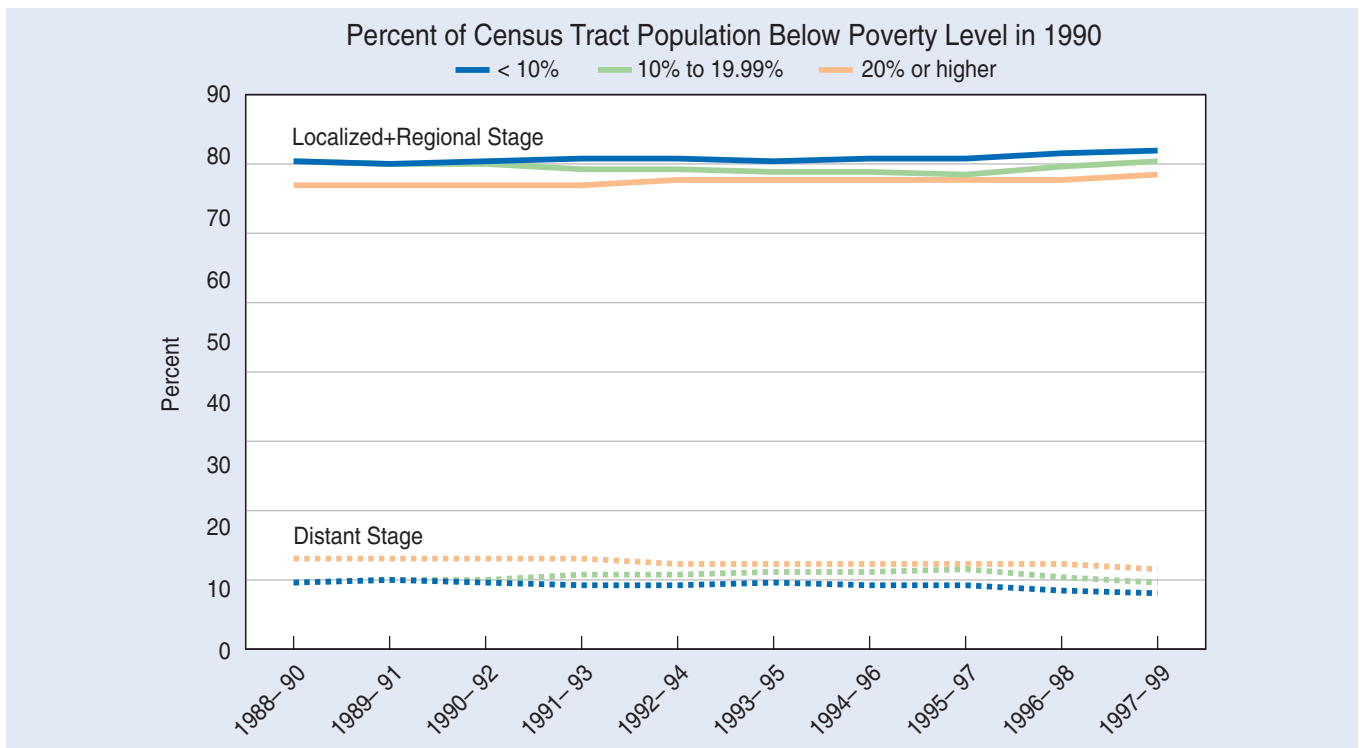


Figure 4.13. Trends in Colorectal Cancer Diagnoses Among Women by Stage (Three-Year Moving Averages), 1988–1999



Note: Based on data from 11 SEER registries. Los Angeles registry data from 1988 to 1991 were not available. See “Data and Methods” for a list of SEER registries.

Figure 4.14. Trends in Prostate Cancer Diagnoses by Stage, 1988–1999

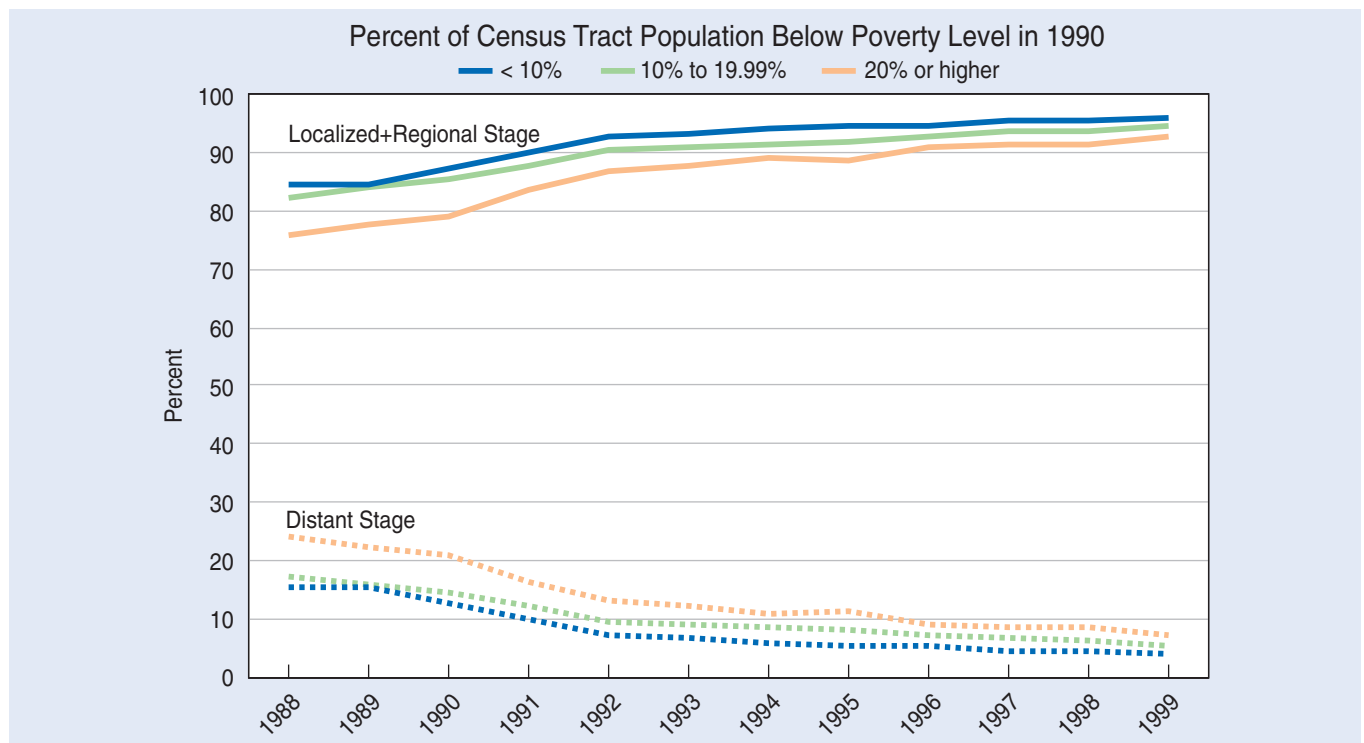
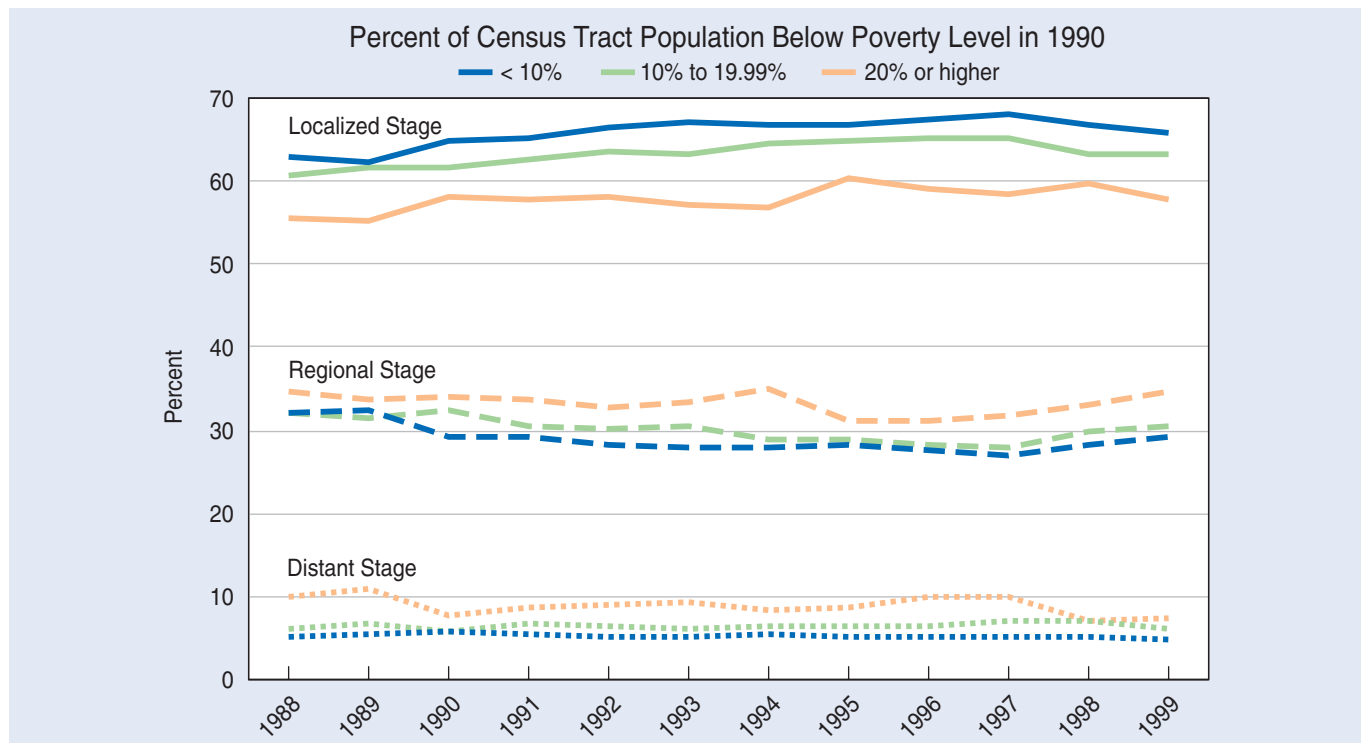
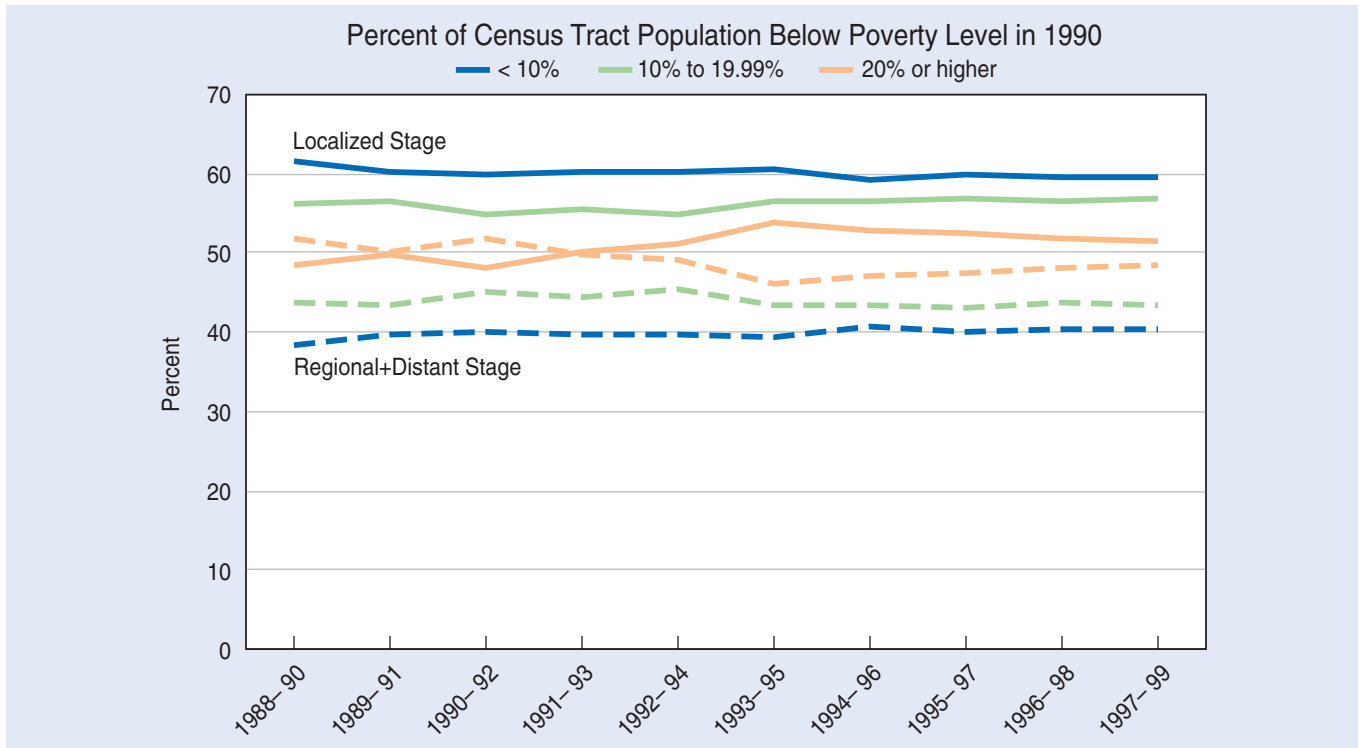


Figure 4.15. Trends in Female Breast Cancer Diagnoses by Stage, 1988–1999



Note: Based on data from 11 SEER registries. Los Angeles registry data from 1988 to 1991 were not available. See “Data and Methods” for a list of SEER registries.

Figure 4.16. Trends in Cervical Cancer Diagnoses by Stage (Three-Year Moving Averages), 1988–1999



Note: Based on data from 11 SEER registries. Los Angeles registry data from 1988 to 1991 were not available. See “Data and Methods” for a list of SEER registries.

Figure 4.17. Trends in Melanoma of the Skin Diagnoses Among Men by Stage (Three-Year Moving Averages), 1988–1999

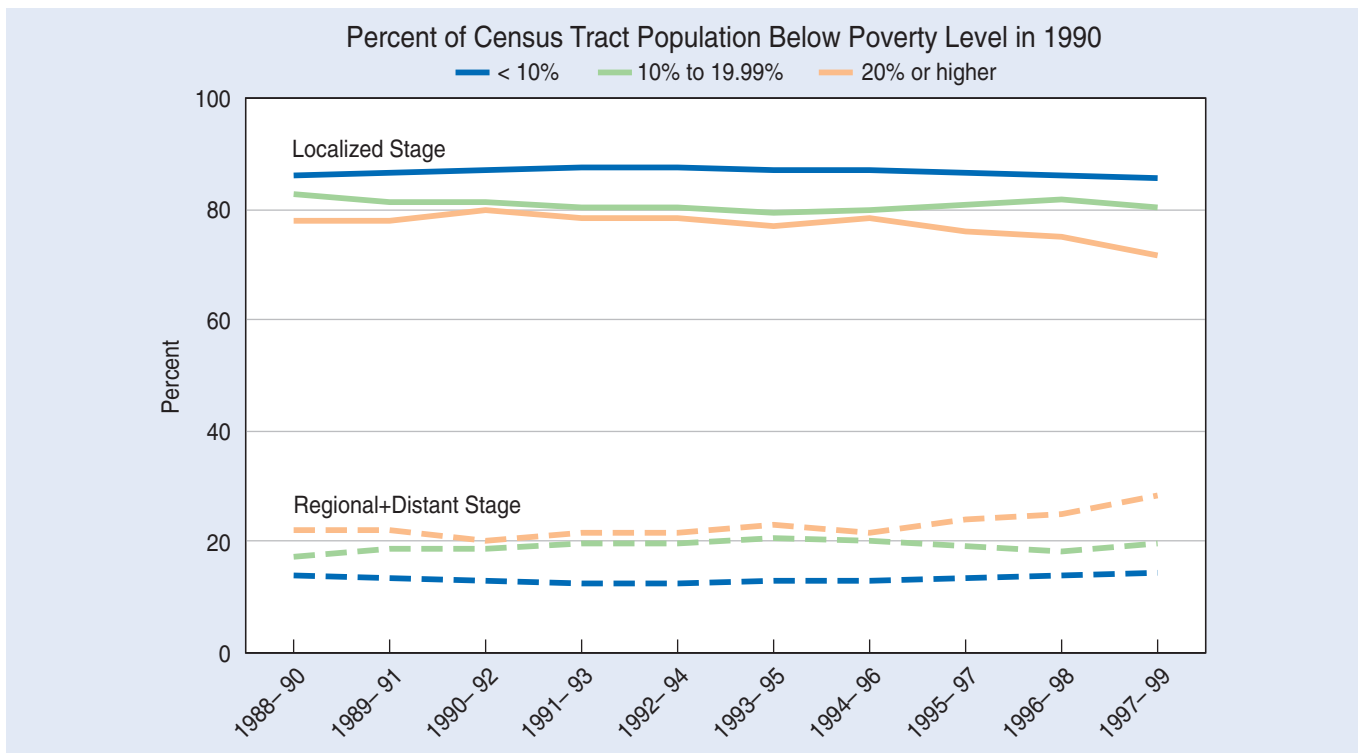
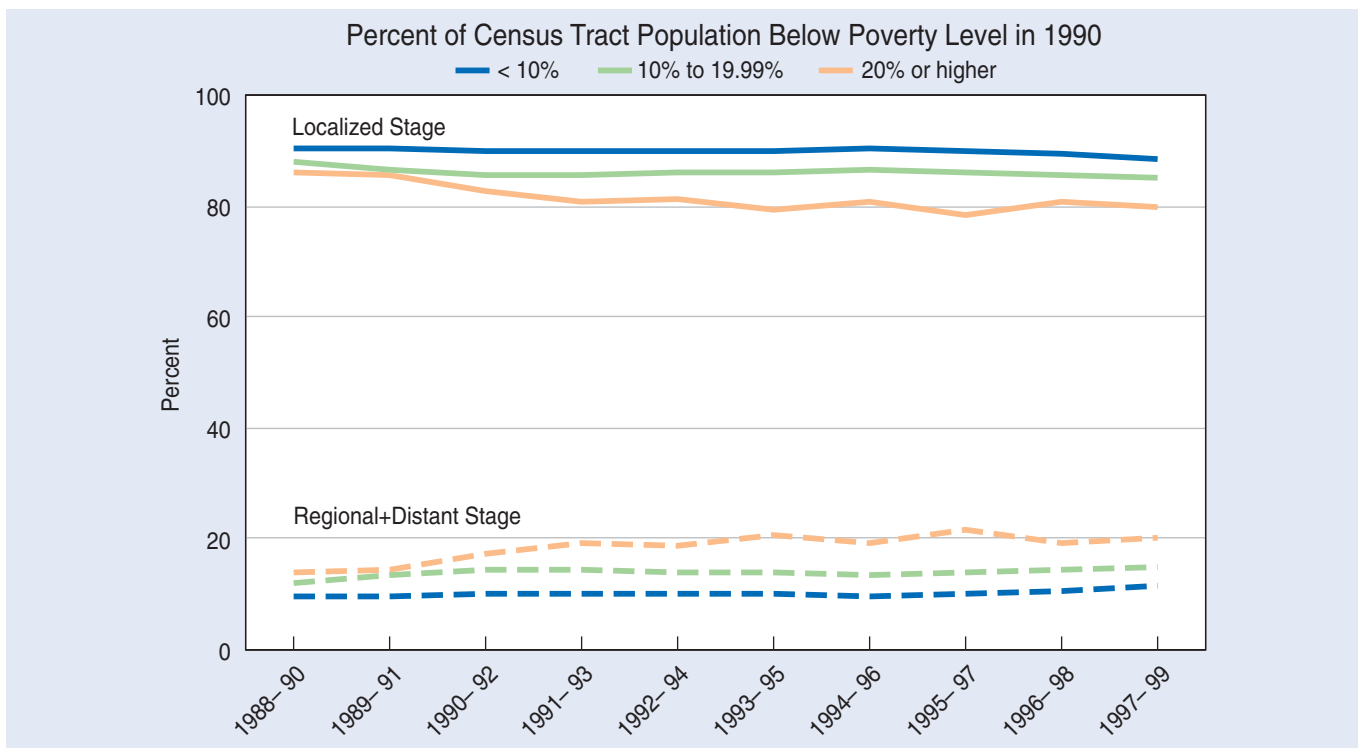


Figure 4.18. Trends in Melanoma of the Skin Diagnoses Among Women by Stage (Three-Year Moving Averages), 1988–1999



Note: Based on data from 11 SEER registries. Los Angeles registry data from 1988 to 1991 were not available. See “Data and Methods” for a list of SEER registries.

Table 4.1. Distribution of SEER Site-Specific Cancer (Invasive) Cases by Stage, Sex, Race/Ethnicity, and Census Tract Poverty Rate, 1995–1999: 11 SEER Registration Areas

	Percent of Census Tract Population Below Poverty Level in 1990																	
	< 10%						10% to 19.99%						20% or higher					
	Localized Stage		Regional Stage		Distant Stage		Localized Stage		Regional Stage		Distant Stage		Localized Stage		Regional Stage		Distant Stage	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Lung, Male																		
All Races	5,350	17.69	8,383	27.71	16,518	54.60	1,851	16.35	3,136	27.70	6,336	55.96	1,230	15.68	1,984	25.29	4,630	59.03
Non-Hispanic White	4,708	18.04	7,225	27.68	14,168	54.28	1,412	16.89	2,328	27.84	4,621	55.27	507	16.67	813	26.73	1,721	56.59
Black	169	14.21	346	29.10	674	56.69	201	14.89	359	26.59	790	58.52	545	15.97	830	24.32	2,038	59.71
American Indian	~	~	~	~	26	70.27	~	~	~	~	24	72.73	~	~	~	~	26	61.90
Asian/Pacific Islander	336	16.16	578	27.80	1,165	56.04	141	16.57	246	28.91	464	54.52	93	15.22	156	25.53	362	59.25
Hispanic	118	14.96	215	27.25	456	57.79	94	13.26	185	26.09	430	60.65	79	10.73	172	23.37	485	65.90
Lung, Female																		
All Races	5,498	21.53	6,753	26.45	13,283	52.02	1,691	20.09	2,099	24.94	4,627	54.97	909	18.83	1,178	24.40	2,740	56.76
Non-Hispanic White	4,979	21.97	6,045	26.67	11,641	51.36	1,351	20.79	1,624	24.99	3,524	54.22	395	19.07	523	25.25	1,153	55.67
Black	122	16.14	206	27.25	428	56.61	169	18.69	240	26.55	495	54.76	380	19.24	491	24.86	1,104	55.90
American Indian	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Asian/Pacific Islander	240	18.17	311	23.54	770	58.29	87	17.61	109	22.06	298	60.32	48	16.00	63	21.00	189	63.00
Hispanic	115	16.84	170	24.89	398	58.27	77	15.46	118	23.69	303	60.84	84	18.58	93	20.58	275	60.84
Colorectal, Male																		
All Races	11,661	43.19	10,197	37.76	5,144	19.05	3,706	40.79	3,554	39.12	1,826	20.10	1,983	39.95	1,803	36.32	1,178	23.73
Non-Hispanic White	9,669	42.95	8,520	37.84	4,325	19.21	2,709	41.38	2,574	39.32	1,263	19.29	797	41.36	683	35.44	447	23.20
Black	359	41.36	300	34.56	209	24.08	353	38.83	335	36.85	221	24.31	665	38.26	616	35.44	457	26.29
American Indian	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Asian/Pacific Islander	1,055	45.22	908	38.92	370	15.86	306	41.13	291	39.11	147	19.76	176	38.18	181	39.26	104	22.56
Hispanic	458	41.60	425	38.60	218	19.80	314	37.03	341	40.21	193	22.76	316	41.20	293	38.20	158	20.60
Colorectal, Female																		
All Races	10,835	41.51	10,441	40.00	4,824	18.48	3,699	39.92	3,686	39.78	1,882	20.31	1,977	38.69	2,003	39.20	1,130	22.11
Non-Hispanic White	9,146	41.60	8,810	40.08	4,027	18.32	2,744	40.07	2,738	39.98	1,366	19.95	803	39.48	821	40.36	410	20.16
Black	374	39.20	359	37.63	221	23.17	384	38.63	379	38.13	231	23.24	769	38.74	739	37.23	477	24.03
American Indian	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Asian/Pacific Islander	855	43.25	778	39.35	344	17.40	260	41.34	260	41.34	109	17.33	149	38.80	166	43.23	69	17.97
Hispanic	359	35.83	437	43.61	206	20.56	281	37.82	294	39.57	168	22.61	240	36.36	262	39.70	158	23.94
Prostate																		
All Races	67,773	95.24	~	~	3,388	4.76	20,125	93.27	~	~	1,452	6.73	12,053	90.94	~	~	1,201	9.06
Non-Hispanic White	56,467	95.44	~	~	2,698	4.56	13,734	93.59	~	~	940	6.41	4,011	92.38	~	~	331	7.62
Black	3,457	95.18	~	~	175	4.82	3,070	92.75	~	~	240	7.25	5,450	90.13	~	~	597	9.87
American Indian	39	92.86	~	~	~	~	40	93.02	~	~	~	~	90	84.91	~	~	16	15.09
Asian/Pacific Islander	3,488	92.37	~	~	288	7.63	1,097	91.80	~	~	98	8.20	566	88.99	~	~	70	11.01
Hispanic	2,596	93.85	~	~	170	6.15	1,839	92.00	~	~	160	8.00	1,736	90.61	~	~	180	9.39
Breast, Female																		
All Races	54,058	66.95	22,619	28.01	4,072	5.04	15,051	64.33	6,817	29.14	1,527	6.53	7,189	59.01	3,946	32.39	1,047	8.59
Non-Hispanic White	45,891	67.60	18,613	27.42	3,380	4.98	10,995	65.94	4,632	27.78	1,046	6.27	2,967	63.40	1,372	29.32	341	7.29
Black	1,682	57.92	1,020	35.12	202	6.96	1,493	58.32	851	33.24	216	8.44	2,386	55.92	1,448	33.93	433	10.15
American Indian	42	51.85	30	37.04	~	~	32	49.23	27	41.54	~	~	62	54.87	41	36.28	~	~
Asian/Pacific Islander	3,902	66.82	1,681	28.78	257	4.40	1,099	66.28	483	29.13	76	4.58	544	60.99	296	33.18	52	5.83
Hispanic	2,093	61.20	1,130	33.04	197	5.76	1,360	58.24	798	34.18	177	7.58	1,206	54.72	787	35.71	211	9.57
Cervix																		
All Races	2,560	59.59	1,383	32.19	353	8.22	1,162	57.07	695	34.14	179	8.79	1,055	52.31	765	37.93	197	9.77
Non-Hispanic White	1,756	59.32	946	31.96	258	8.72	572	57.60	334	33.64	87	8.76	228	53.90	150	35.46	45	10.64
Black	136	57.14	78	32.77	24	10.08	130	52.85	87	35.37	29	11.79	291	49.49	237	40.31	60	10.20
American Indian	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Asian/Pacific Islander	318	56.18	209	36.93	39	6.89	127	53.81	90	38.14	19	8.05	81	54.00	60	40.00	9	6.00
Hispanic	284	61.87	144	31.37	31	6.75	323	59.16	179	32.78	44	8.06	437	53.36	303	37.00	79	9.65
Melanoma of the Skin, Male																		
All Races	9,625	85.98	1,152	10.29	417	3.73	1,900	80.41	335	14.18	128	5.42	534	74.17	120	16.67	66	9.17
Non-Hispanic White	8,907	85.61	1,096	10.53	401	3.85	1,742	81.10	293	13.64	113	5.26	472	77.00	95	15.50	46	7.50
Black	32	76.19	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
American Indian	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Asian/Pacific Islander	62	83.78	11	14.86	1	1.35	~	~	~	~	~	~	~	~	~	~	~	~
Hispanic	102	73.91	25	18.12	11	7.97	62	63.92	26	26.80	~	~	31	55.36	16	28.57	~	~
Melanoma of the Skin, Female																		
All Races	7,890	89.07	745	8.41	223	2.52	1,678	85.48	221	11.26	64	3.26	439	79.24	85	15.34	30	5.42
Non-Hispanic White	7,185	88.95	683	8.46	210	2.60	1,510	85.70	199	11.29	53	3.01	341	82.37	57	13.77	16	3.86
Black	26	86.67	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
American Indian	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Asian/Pacific Islander	55	79.71	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~
Hispanic	187	83.86	26	11.66	10	4.48	77	77.00	16	16.00	~	~	64	74.42	16	18.60	~	~

Notes: Stage distribution data for prostate cancer cases are presented for distant stage and the combined category of localized/regional stage. ~ Counts or percentages are suppressed if based on fewer than 16 cases.