

CINA Deluxe Data Quality Profile (DQP) and Fitness of Use

Variable examined: Race_1 (NAACCR data item#160)

Date: August 14, 2022

Filters: None

Diagnosis years covered: 2014-2018

Cancer sites: We presented the results for (1) all reportable cases combined; (2) invasive cases; (3) in situ cases; and (4) benign/borderline brain/CNS cases.

Database citation: SEER*Stat Database: NAACCR Incidence Data - CiNA Data Assessment Workgroup File, 1995-2018, for U.S. and Canada

Number of central cancer registries included: 50 States plus Washington DC Cancer Registry

Data dictionary: NAACCR Data Dictionary version 18

(<http://datadictionary.naaccr.org/default.aspx?Version=18>)

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Technical Notes:

1. The percentage of unknown race (NAACCR data item #160) value assessed includes two parts: (1) Unknown race (code 99) and blank values combined, and (2) Unknown RACE (CODE 99), blank values, and other race (code 98) combined.
2. Upper Whisker extends to the largest data point within the boundary of $Q3 + 1.5(Q3 - Q1)$, where Q3 indicates the third quartile (75th percentile) and Q1 indicates the first quartile (25th Percentile). Interquartile Range (IQR) = $Q3 - Q1$.
3. Diagnostic confirmation: Microscopic confirmation includes positive histology, positive cytology, positive microscopic confirmation, and method not specified.
4. Type of reporting source: Hospital inpatient, radiation treatment centers/medical oncology centers, clinic unit/surgical center, and laboratory/nursing home/hospice.
5. Metro status: We used Rural-Urban 2013 Continuum codes to distinguish metropolitan counties by the population size of their metro area, and nonmetropolitan counties by the degree of urbanization and adjacency to a metro area. The metropolitan area includes county metro area with a population \geq of 1million, county metro areas with a population between 25,000 and 1 million, and county metro areas with a population $<25,000$.

Figure 1a. Percentage of Known, Other, and Unknown Race for All Reportable Cases by Registry, Years 2014-2018

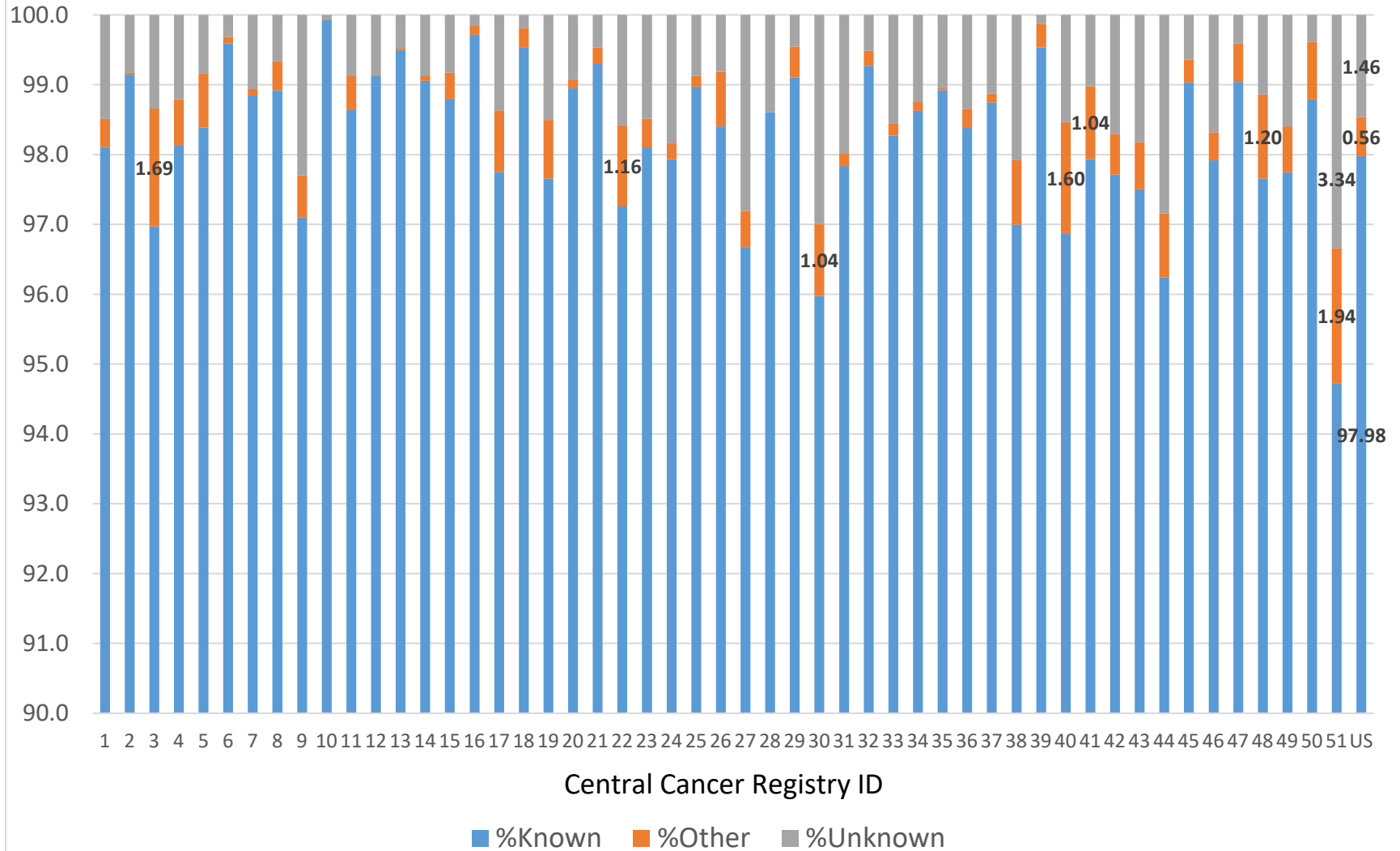


Table 1a. Unknown race¹ for all reportable cases combined by diagnosis year, 2014-2018

	2014		2015		2016		2017		2018	
Registry Level										
25-75% Percentile (IQR)	0.35%-1.32%		0.43%-1.38%		0.42%-1.65%		0.63%-2.10%		0.92%-2.22%	
Minimum	0.03%		0.00%		0.44%		0.08%		0.02%	
Mean	0.95%		1.01%		1.11%		1.40%		1.59%	
Median	0.81%		0.79%		0.84%		1.25%		1.47%	
Maximum	3.19%		3.51%		4.29%		4.57%		3.31%	
Upper Whisker ²	2.78%		2.80%		3.49%		4.32%		4.18%	
# outside of upper whisker	1		2		2		1		0	
All cases combined	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk
Sex										
Male	900,881	1.3	927,780	1.6	943,467	1.8	961,455	2.0	942,029	2.2
Female	954,342	0.9	976,606	1.0	984,575	1.1	992,522	1.2	985,816	1.4
Age										
00-49 years	251,228	1.6	253,792	1.7	252,835	1.8	249,701	1.9	245,651	2.2
50-64 years	602,291	1.2	613,182	1.4	614,362	1.5	613,525	1.8	598,015	2.0
65-79 years	711,552	1.0	744,038	1.2	765,948	1.4	796,265	1.6	798,124	1.7
80+ years	290,152	0.7	293,374	0.9	294,897	1.1	294,486	1.2	286,055	1.3
Dx Confirmation³										
Microscopic confirmed	1,704,456	1.2	1,747,889	1.3	1,773,160	1.4	1,800,269	1.6	1,778,607	1.8
Non-microscopic confirmed	101,115	0.6	104,871	0.6	105,393	0.5	107,791	0.6	101,231	0.7
Unknown	49,652	0.6	51,626	2.6	49,489	4.0	45,917	4.0	48,007	4.7
Type of reporting source⁴										
Hospital Inpatient	1,537,821	0.4	1,569,383	0.4	1,586,840	0.3	1,610,235	0.4	1,580,523	0.5
Radiation treatment/ medical oncology center	49,992	0.9	51,851	1.0	50,200	1.0	50,071	1.1	53,354	0.7
Clinic unit/surgical center	180,050	4.7	190,432	5.8	197,131	6.2	198,773	6.3	198,744	7.1
Lab/Nursing home/hospice	54,478	10.9	58,906	12.6	62,563	15.5	65,704	17.7	64,576	19.5
DCO/Autopsy	32,882	0.5	33,814	0.3	31,308	0.3	29,194	0.7	30,648	0.4
Metro status⁵										
Metro	1,552,274	1.2	1,594,821	1.4	1,614,425	1.5	1,637,818	1.7	1,618,322	1.9
Non-Metro	301,850	0.7	308,346	0.8	312,393	1.0	314,819	1.1	307,520	1.2
Unknown	1,099	18.9	1,219	35.9	1,224	37.1	1,340	38.5	2,003	26.6

Figure 1b.
 % Unknown Race¹ for All Reportable Cases by Registry, Years 2014-2018

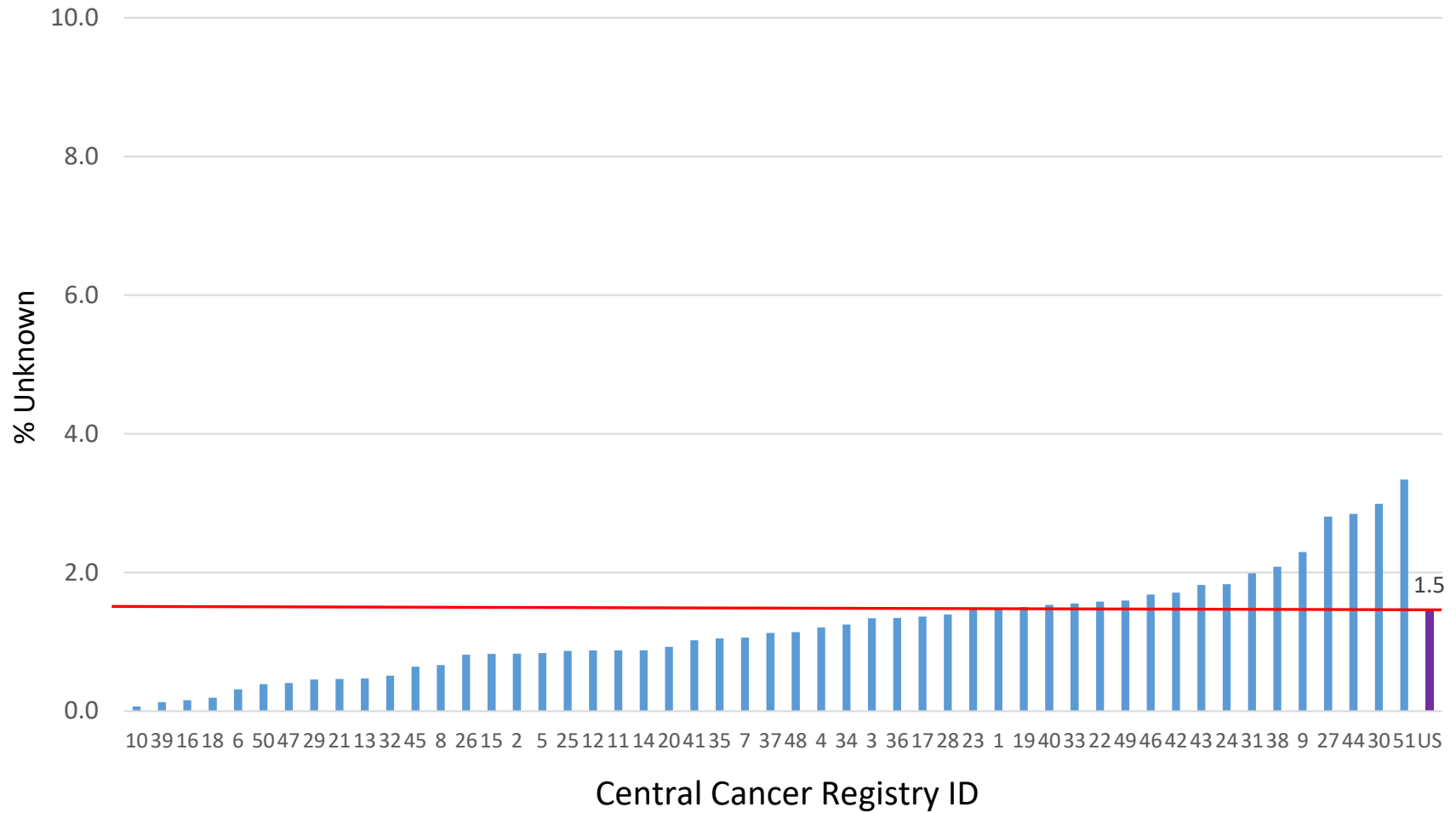


Table 1b. Unknown/other race¹ for all reportable cases by diagnosis year, 2014-2018

	2014		2015		2016		2017		2018	
Registry Level										
25-75% Percentile (IQR)	0.62%-1.74%		0.69%-1.92%		0.81%-2.05%		0.95%-2.68%		1.20%-3.06%	
Minimum	0.06%		0.04%		0.04%		0.08%		0.11%	
Mean	1.34%		1.40%		1.58%		1.95%		2.25%	
Median	1.24%		1.16%		1.23%		1.61%		2.13%	
Maximum	4.74%		4.62%		6.00%		6.60%		4.37%	
Upper Whisker ²	3.42%		3.77%		3.91%		5.28%		5.85%	
# outside of upper whisker	2		2		2		1		0	
All cases combined	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk
Sex										
Male	900,881	1.7	927,780	2.0	943,467	2.3	961,455	2.6	942,029	2.9
Female	954,342	1.4	976,606	1.5	984,575	1.6	992,522	1.9	985,816	2.2
Age										
00-49 years	251,228	2.5	253,792	2.7	252,835	3.0	249,701	3.3	245,651	3.8
50-64 years	602,291	1.7	613,182	1.9	614,362	2.1	613,525	2.4	598,015	2.8
65-79 years	711,552	1.3	744,038	1.5	765,948	1.8	796,265	2.0	798,124	2.3
80+ years	290,152	1.0	293,374	1.1	294,897	1.4	294,486	1.5	286,055	1.7
Dx Confirmation³										
Microscopic confirmed	1,704,456	1.6	1,747,889	1.7	1,773,160	1.9	1,800,269	2.2	1,778,607	2.5
Non-microscopic confirmed	101,115	1.0	104,871	1.1	105,393	1.2	107,791	1.3	101,231	1.5
Unknown	49,652	1.0	51,626	3.0	49,489	4.7	45,917	4.7	48,007	5.4
Type of reporting source⁴										
Hospital Inpatient	1,537,821	0.8	1,569,383	0.8	1,586,840	0.9	1,610,235	1.0	1,580,523	1.2
Radiation treatment/ medical oncology center	49,992	1.3	51,851	1.4	50,200	1.5	50,071	1.7	53,354	1.4
Clinic unit/surgical center	180,050	5.1	190,432	6.2	197,131	6.8	198,773	6.9	198,744	7.9
Lab/Nursing home/hospice	54,478	11.3	58,906	13.0	62,563	15.8	65,704	18.3	64,576	20.4
DCO/Autopsy	32,882	0.8	33,814	0.6	31,308	0.7	29,194	1.2	30,648	0.9
Metro status⁵										
Metro	1,552,274	1.7	1,594,821	1.9	1,614,425	2.1	1,637,818	2.4	1,618,322	2.7
Non-Metro	301,850	0.9	308,346	1.0	312,393	1.2	314,819	1.3	307,520	1.5
Unknown	1,099	19.7	1,219	36.8	1,224	37.7	1,340	38.8	2,003	27.4

Figure 1c.
 % Unknown/Other Race¹ for All Reportable Cases by Registry, Years
 2014-2018

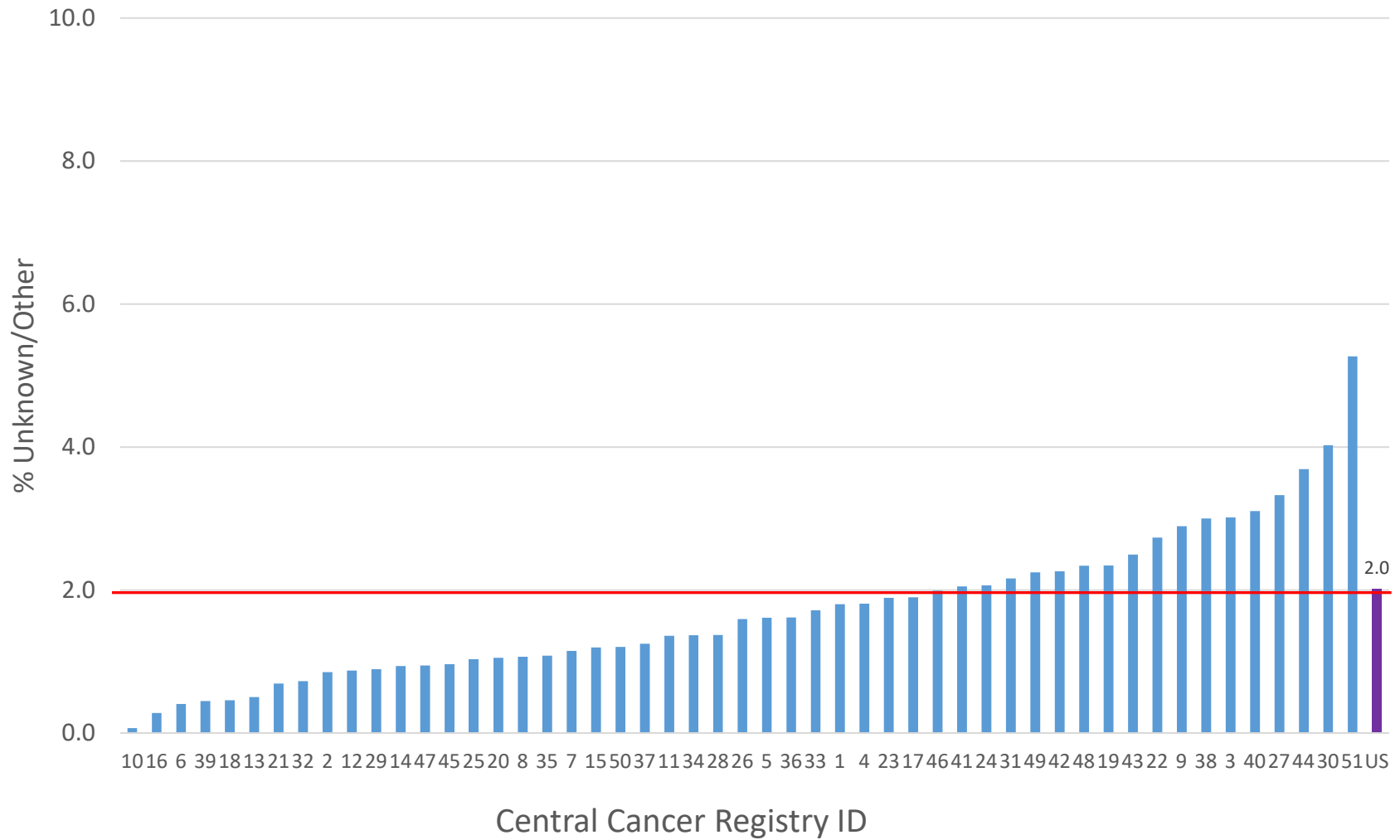


Figure 2a. Percentage of Known, Other, and Unknown Race for Invasive Cases by Registry, Years 2014-2018

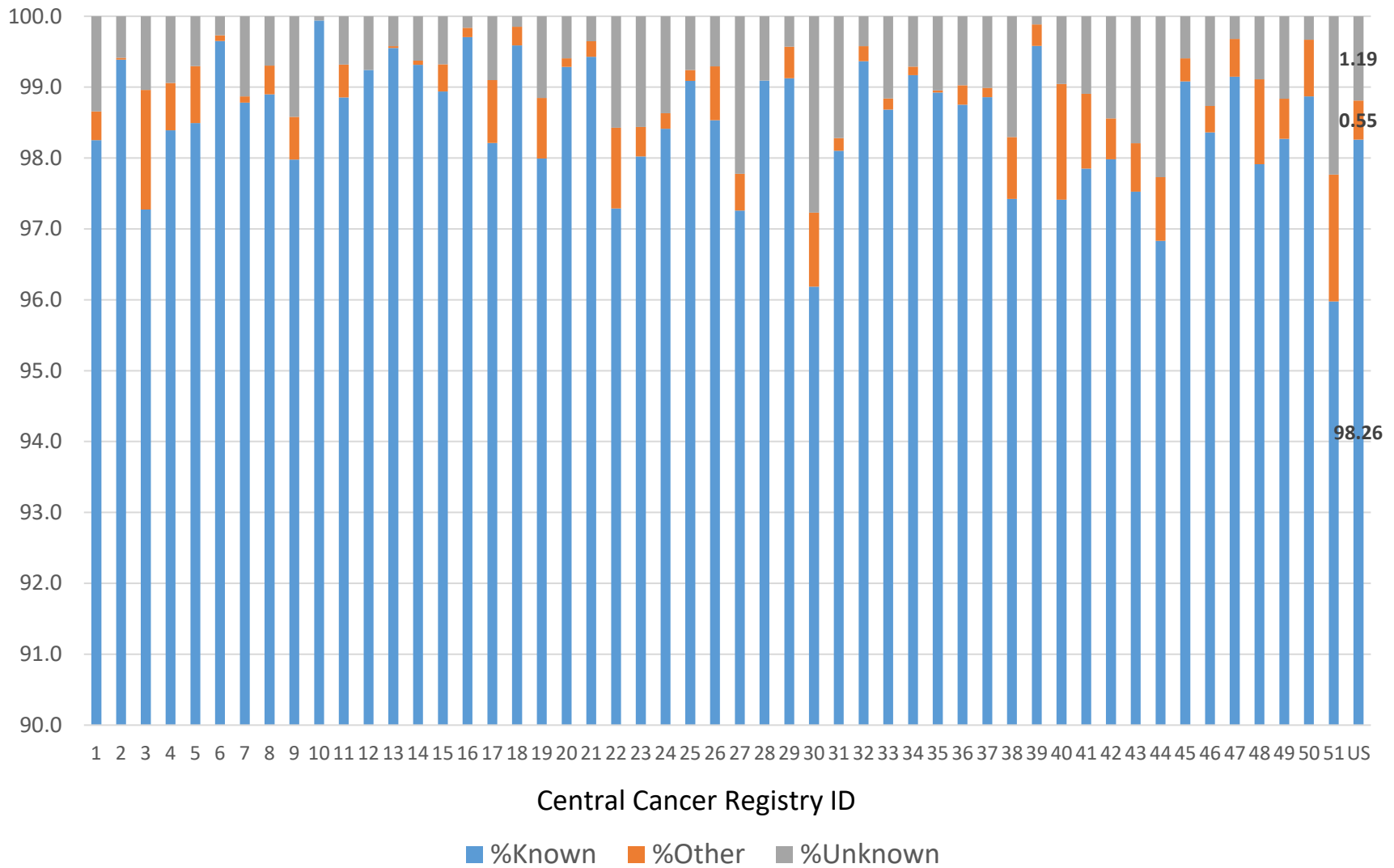
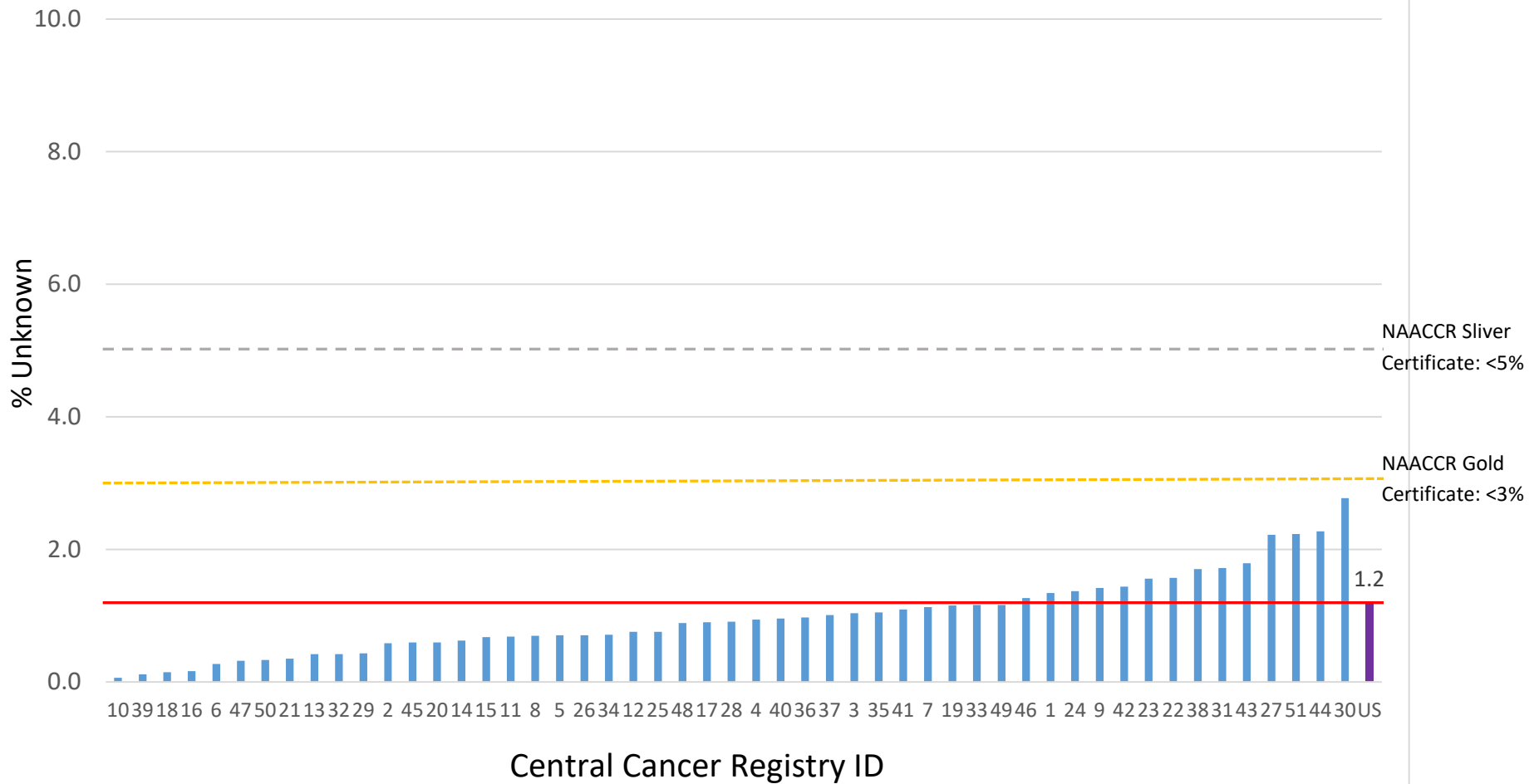


Table 2a. Unknown race¹ for invasive cases by diagnosis year, 2014-2018

	2014		2015		2016		2017		2018	
Registry Level										
25-75% Percentile (IQR)	0.61%-1.24%		0.33%-1.08%		0.38%-1.37%		0.51%-1.68%		0.66%-2.03%	
Minimum	0.04%		0.00%		0.04%		0.07%		0.02%	
Mean	0.75%		0.78%		0.88%		1.15%		1.34%	
Median	0.61%		0.59%		0.69%		0.92%		1.23%	
Maximum	2.36%		2.97%		3.43%		3.92%		2.93%	
Upper Whisker ²	2.57%		2.21%		2.85%		3.43%		4.08%	
# outside of upper whisker	0		1		1		1		0	
All cases combined	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk
Sex										
Male	831,437	1.1	854,251	1.3	868,042	1.5	883,241	1.7	868,822	1.9
Female	823,132	0.7	841,958	0.8	850,245	0.9	855,016	0.9	851,700	1.1
Age										
00-49 years	211,112	1.3	213,566	1.4	212,733	1.5	209,796	1.6	207,508	1.9
50-64 years	534,926	0.9	544,266	1.1	545,755	1.2	544,610	1.5	532,322	1.6
65-79 years	642,754	0.8	670,459	1.0	690,574	1.2	716,062	1.3	719,919	1.5
80+ years	265,777	0.6	267,918	0.7	269,225	0.9	267,789	1.0	260,773	1.1
Dx Confirmation³										
Microscopic confirmed	1,538,148	0.9	1,575,701	1.0	1,600,244	1.1	1,622,668	1.3	1,607,514	1.4
Non-microscopic confirmed	67,818	0.4	69,849	0.4	69,429	0.4	70,434	0.4	65,713	0.5
Unknown	48603	0.6	50659	2.7	48614	4.0	45155	4.0	47,295	4.8
Type of reporting source⁴										
Hospital Inpatient	1,399,564	0.3	1,428,413	0.3	1,445,417	0.3	1,464,777	0.4	1,440,576	0.5
Radiation treatment/ medical oncology center	46,962	0.9	48,954	1.0	47,568	1.0	47,345	1.1	50,515	0.7
Clinic unit/surgical center	136,398	3.8	143,883	5.1	149,559	5.8	150,034	5.9	152,829	6.4
Lab/Nursing home/hospice	39,222	10.6	41,593	11.9	44,787	14.5	47,196	17.3	46,291	19.2
DCO/Autopsy	32,423	0.5	33,366	0.3	30,956	0.3	28,905	0.7	30,311	0.4
Metro status⁵										
Metro	1,378,574	0.9	1,414,237	1.1	1,433,016	1.3	1,451,113	1.4	1,438,838	1.6
Non-Metro	275,053	0.6	281,010	0.6	284,301	0.8	286,007	0.9	279,910	1.0
Unknown	942	20.6	962	37.8	970	36.1	1,137	36.9	1,774	26.9

Figure 2b.
 % Unknown Race¹ for Invasive Cases by Registry, Years 2014-2018



2b. Unknown/other race¹ for invasive cases by diagnosis year 2014-2018

	2014		2015		2016		2017		2018	
Registry Level										
25-75% Percentile (IQR)	0.56%-1.56%		0.58%-1.43%		0.65%-1.83%		0.84%-2.32%		1.03%-2.71%	
Minimum	0.04%		0.04%		0.04%		0.08%		0.10%	
Mean	1.13%		1.17%		1.35%		1.68%		1.98%	
Median	1.18%		1.01%		1.01%		1.42%		1.69%	
Maximum	3.38%		3.91%		4.46%		5.81%		4.04%	
Upper Whisker ²	3.06%		2.70%		3.60%		4.54%		5.23%	
# outside of upper whisker	1		3		2		1		0	
All cases combined	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk
Sex										
Male	831,437	1.5	854,251	1.7	868,042	2.0	883,241	2.3	868,822	2.6
Female	823,132	1.1	841,958	1.2	850,245	1.4	855,016	1.6	851,700	1.9
Age										
00-49 years	211,112	2.2	213,566	2.4	212,733	2.7	209,796	2.9	207,508	3.4
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65-79 years	642,754	1.1	670,459	1.3	690,574	1.6	716,062	1.8	719,919	2.0
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Radiation treatment/ medical oncology center	46,962	1.3	48,954	1.4	47,568	1.5	47,345	1.7	50,515	1.4
Clinic unit/surgical center	136,398	4.2	143,883	5.5	149,559	6.4	150,034	6.5	152,829	7.3
Lab/Nursing home/hospice	39,222	11.1	41,593	12.4	44,787	14.9	47,196	17.8	46,291	19.9
DCO/Autopsy	32,423	0.8	33,366	0.6	30,956	0.8	28,905	1.2	30,311	0.9
Metro status⁵										
Metro	1,378,574	1.4	1,414,237	1.6	1,433,016	1.8	1,451,113	2.1	1,438,838	2.4
Non-Metro	275,053	0.8	281,010	0.8	284,301	1.0	286,007	1.2	279,910	1.3
Unknown	942	21.2	962	38.6	970	36.7	1,137	37.1	1,774	27.7

Figure 2c.
 % Unknown/Other Race¹ for Invasive Cases by Registry, Years 2014-2018

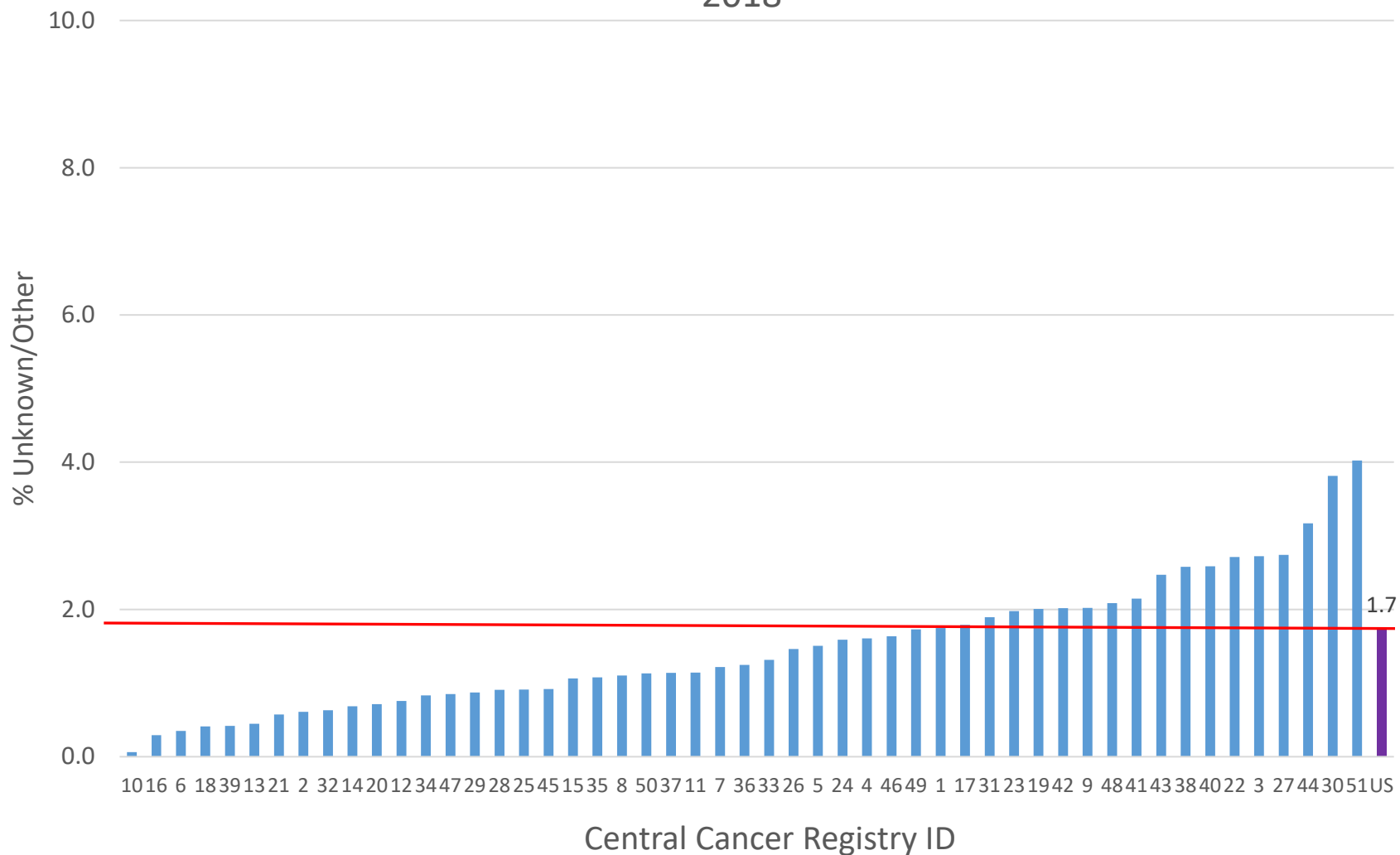


Figure 3a. Percentage of Known, Other, and Unknown Race for In Situ Cases by Registry, Years 2014-2018

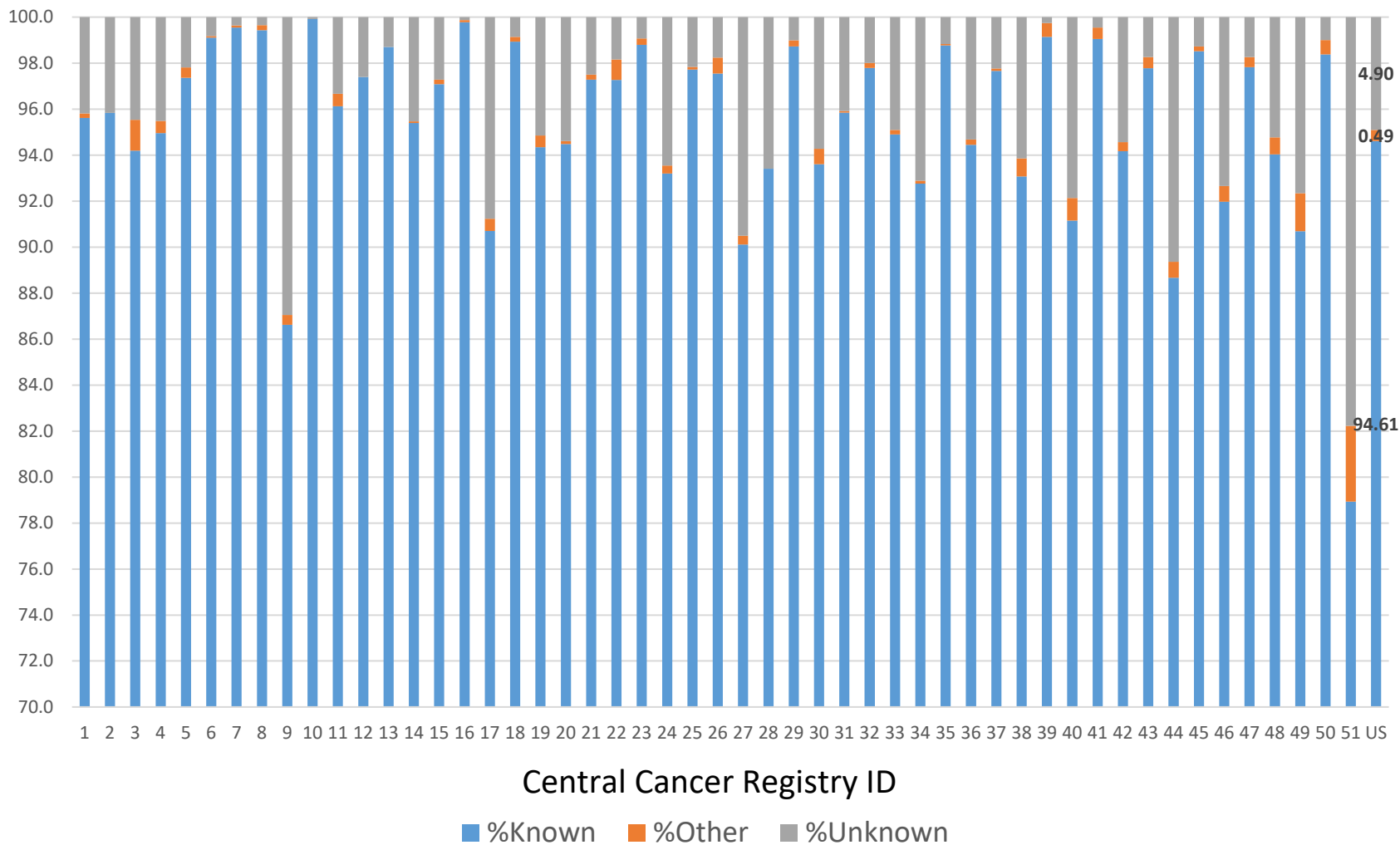


Table 3a. Unknown race¹ for in situ cases by diagnosis year 2014-2018

	2014		2015		2016		2017		2018	
Registry Level										
25-75% Percentile (IQR)	0.72%-4.83%		0.84%-4.88%		0.81%-6.14%		0.96%-7.68%		1.62%-8.76%	
Minimum	0.00%		0.00%		0.00%		0.00%		0.00%	
Mean	3.31%		3.72%		3.81%		4.52%		4.87%	
Median	2.31%		2.10%		2.50%		3.24%		3.70%	
Maximum	19.03%		19.22%		22.00%		15.79%		13.74%	
Upper Whisker ²	10.99%		10.94%		14.80%		17.74%		19.46%	
# outside of upper whisker	3		4		2		0		0	
All cases combined	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk
Sex										
Male	47,882	6.0	51,234	6.5	52,910	7.1	55,215	7.4	51,306	8.7
Female	92,543	3.1	94,592	3.4	93,837	3.6	96,448	3.8	94,770	4.4
Age										
00-49 years	22,026	4.9	21,826	5.2	21,668	5.3	21,583	5.9	21,100	6.6
50-64 years	49,793	4.2	50,721	4.8	50,513	4.9	51,165	5.4	48,736	6.2
65-79 years	52,109	3.8	55,927	4.2	57,122	4.8	60,835	4.7	59,355	5.6
80+ years	16,497	3.4	17,352	3.7	17,444	4.4	18,080	4.5	16,885	5.7
Dx Confirmation³										
Microscopic confirmed	140,393	4.1	145,772	4.5	146,688	4.8	151,574	5.1	145,986	6.0
Non-microscopic confirmed	29	0.0	43	2.3	47	0.0	76	0.0	79	0.0
Unknown	3	0.0	11	0.0	12	0.0	13	0.0	11	9.1
Type of reporting source⁴										
Hospital Inpatient	83,200	0.7	83,903	0.6	83,481	0.5	86,481	0.8	83,559	0.9
Radiation treatment/ medical oncology center	2,455	0.6	2,288	0.6	2,109	0.6	2,164	0.6	2,351	0.6
Clinic unit/surgical center	39,720	8.4	42,542	8.4	43,587	8.0	44,780	8.2	42,220	10.2
Lab/Nursing home/hospice	15,044	11.8	17,082	14.3	17,561	18.1	18,229	19.0	17,940	20.3
DCO/Autopsy	6	0.0	11	0.0	9	0.0	9	0.0	6	0.0
Metro status⁵										
Metro	121,800	4.3	126,728	4.6	127,163	4.9	131,450	5.2	126,541	6.0
Non-Metro	18,490	2.7	18,860	3.3	19,343	3.8	20,029	4.3	19,334	5.1
Unknown	135	10.4	238	29.0	241	42.7	184	52.7	201	25.4

Figure 3b.
 % Unknown Race¹ for In Situ Cases by Registry, Years 2014-2018

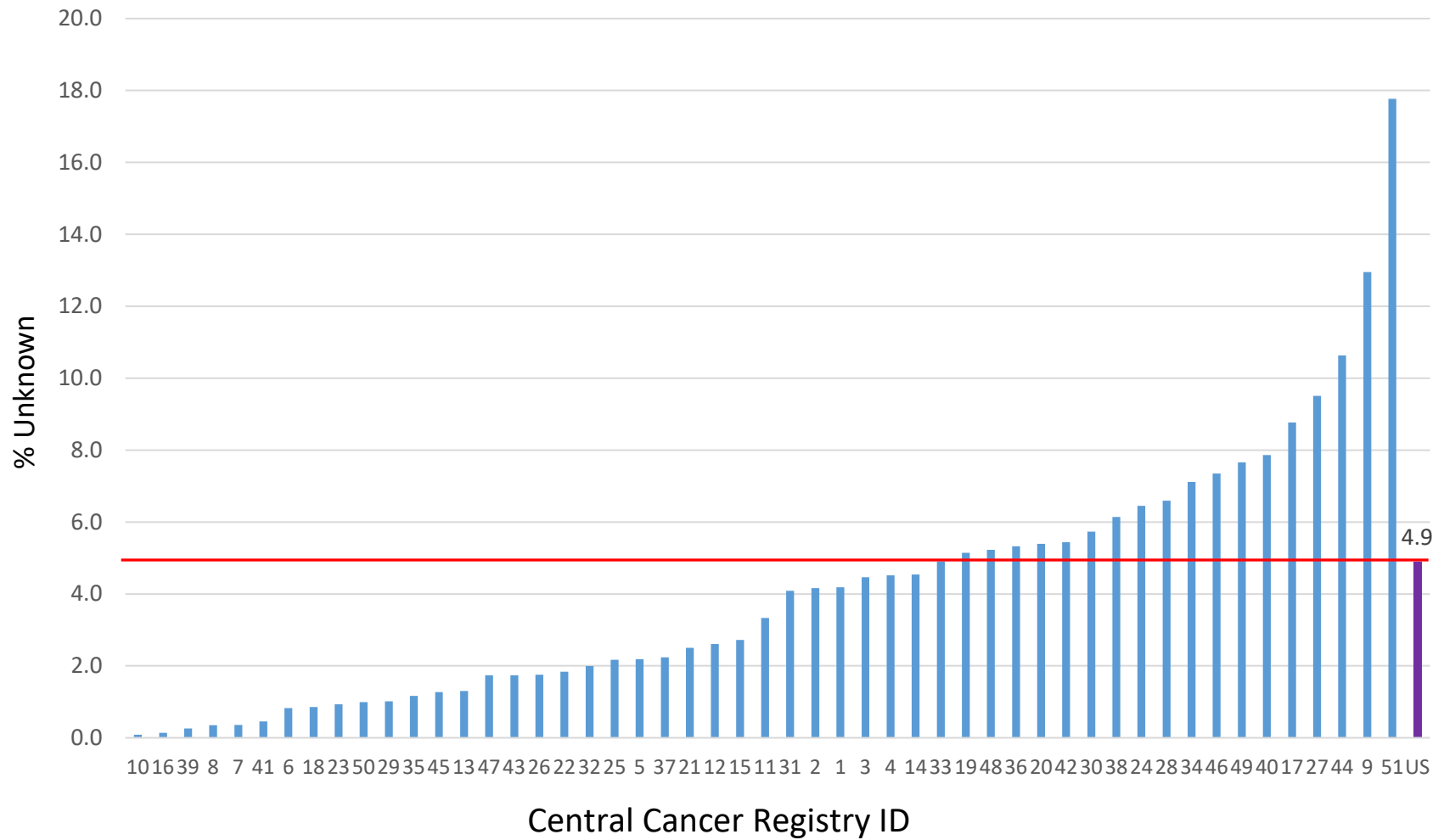


Table 3b. Unknown/other race¹ for in situ cases by diagnosis year 2014-2018

	2014		2015		2016		2017		2018	
Registry Level										
25-75% Percentile (IQR)	0.99%-5.22%		1.19%-5.48%		1.08%-6.56%		1.74%-8.06%		1.75%-9.71%	
Minimum	0.00%		0.00%		0.00%		0.00%		0.00%	
Mean	3.66%		4.03%		4.20%		5.01%		5.46%	
Median	2.69%		2.48%		2.97%		3.44%		3.93%	
Maximum	22.67%		20.78%		24.00%		19.30%		18.70%	
Upper Whisker ²	11.57%		11.92%		14.78%		17.54%		21.65%	
# outside of upper whisker	3		4		2		1		0	
All cases combined	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk
Sex										
Male	47,882	6.2	51,234	6.7	52,910	7.4	55,215	7.8	51,306	9.2
Female	92,543	3.5	94,592	3.8	93,837	4.0	96,448	4.5	94,770	5.2
Age										
00-49 years	22,026	5.6	21,826	5.8	21,668	5.9	21,583	7.0	21,100	7.7
50-64 years	49,793	4.6	50,721	5.1	50,513	5.4	51,165	6.1	48,736	7.0
65-79 years	52,109	4.0	55,927	4.5	57,122	5.1	60,835	5.1	59,355	6.1
80+ years	16,497	3.6	17,352	3.9	17,444	4.6	18,080	4.8	16,885	6.1
Dx Confirmation³										
Microscopic confirmed	140,393	4.4	145,772	4.8	146,688	5.3	151,574	5.7	145,986	6.6
Non-microscopic confirmed	29	0.0	43	2.3	47	4.3	76	1.3	79	1.3
Unknown	3	0.0	11	0.0	12	0.0	13	0.0	11	18.2
Type of reporting source⁴										
Hospital Inpatient	83,200	1.1	83,903	1.0	83,481	1.0	86,481	1.3	83,559	1.5
Radiation treatment/ medical oncology center	2,455	0.9	2,288	1.0	2,109	1.2	2,164	1.0	2,351	1.4
Clinic unit/surgical center	39,720	8.7	42,542	8.7	43,587	8.3	44,780	8.6	42,220	10.7
Lab/Nursing home/hospice	15,044	12.0	17,082	14.6	17,561	18.5	18,229	19.8	17,940	21.8
DCO/Autopsy	6	0.0	11	0.0	9	0.0	9	0.0	6	0.0
Metro status⁵										
Metro	121,800	4.7	126,728	5.0	127,163	5.4	131,450	5.8	126,541	6.8
Non-Metro	18,490	2.8	18,860	3.4	19,343	4.0	20,029	4.6	19,334	5.4
Unknown	135	11.9	238	29.8	241	43.6	184	53.3	201	25.4

Figure 3c.
 % Unknown/Other Race¹ for In Situ Cases by Registry, Years 2014-2018

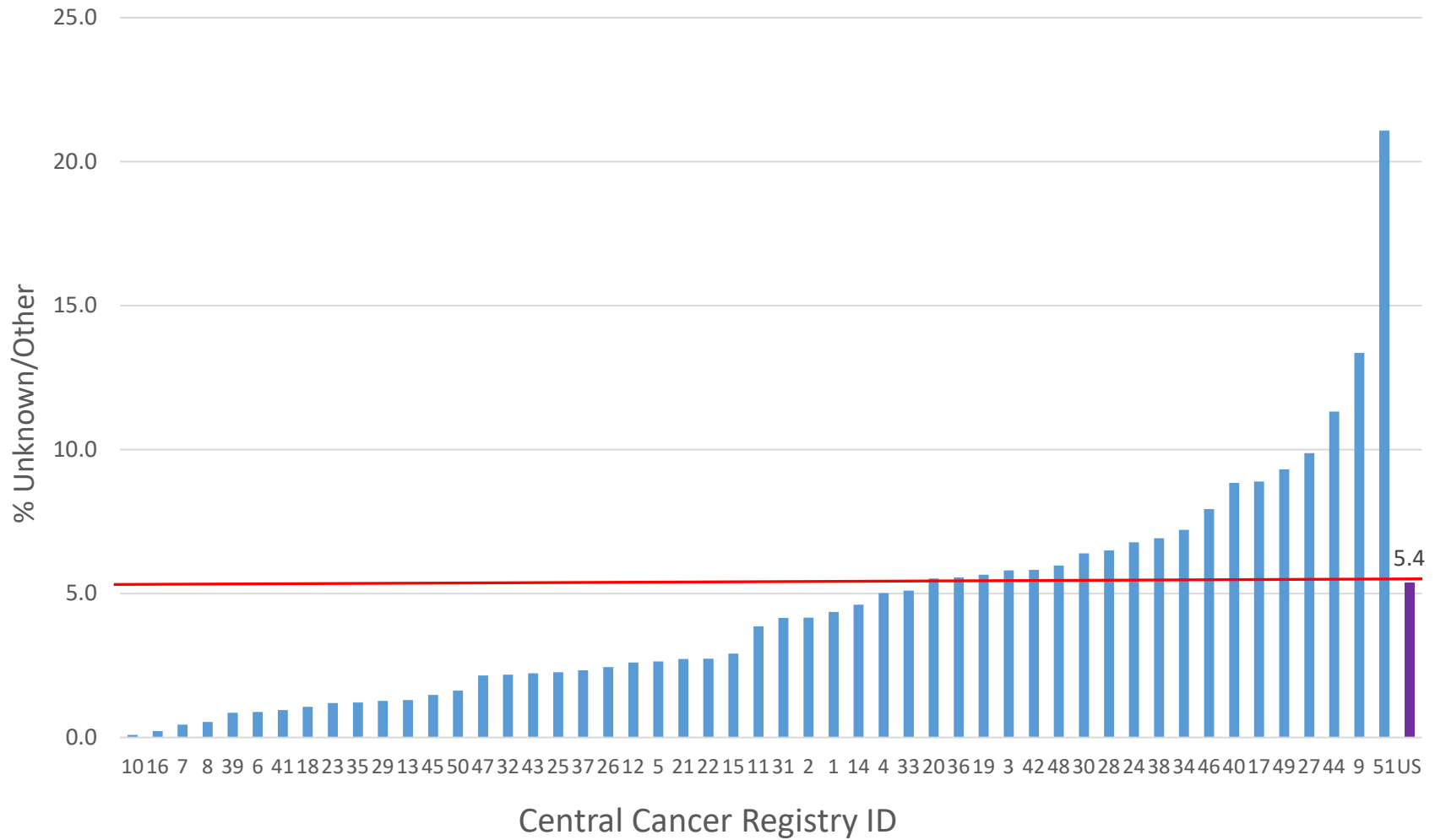


Figure 4a. Percentage of Known, Other, and Unknown Race for Benign/Borderline Brain/CNS Cases by Registry, Years 2014-2018

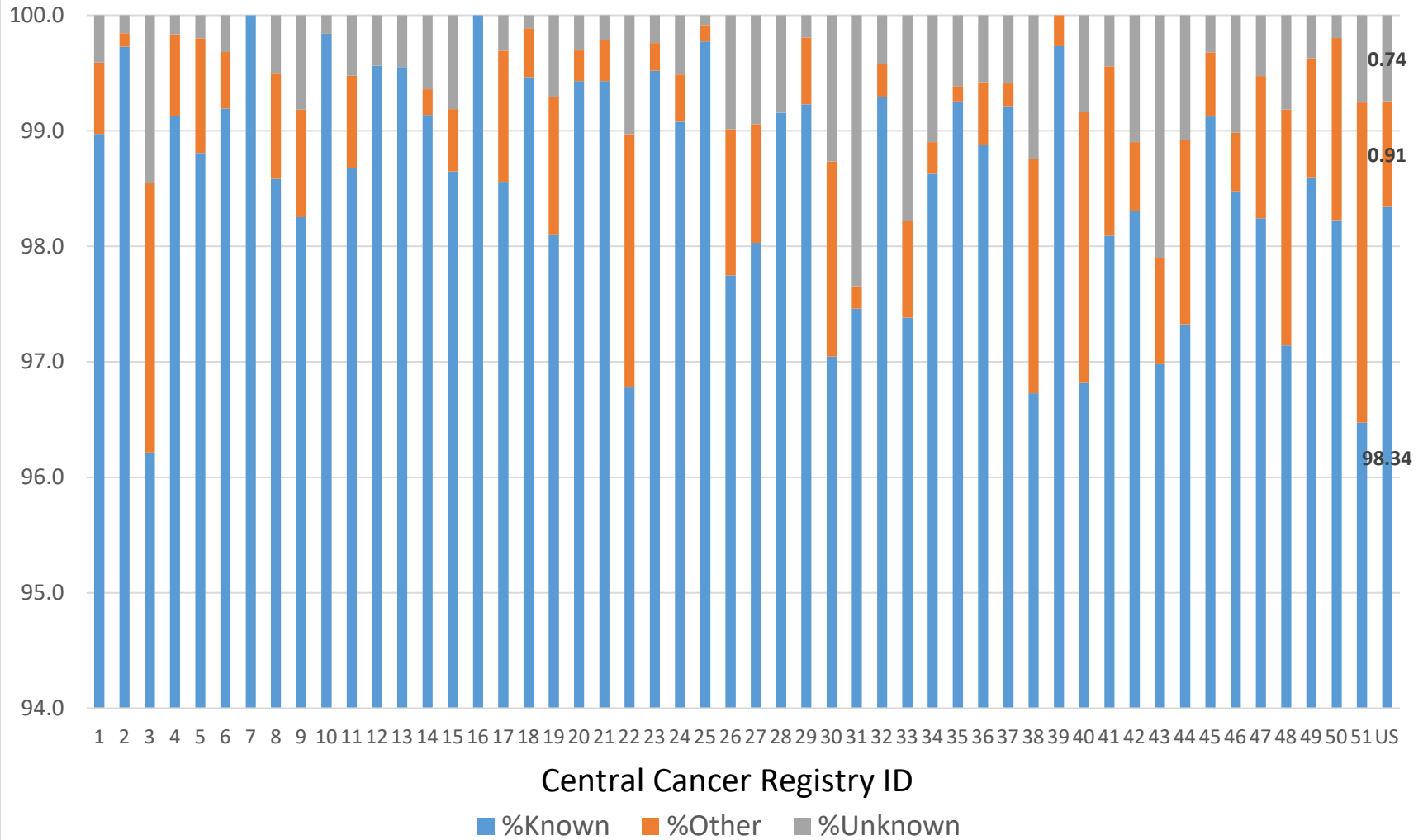


Table 4a. Unknown race¹ for benign/borderline brain/CNS cases by diagnosis year 2014-2018

	2014		2015		2016		2017		2018	
Registry Level										
25-75% Percentile (IQR)	0.00%-0.98%		0.13%-0.88%		0.14%-1.03%		0.19%-0.99%		0.25%-1.00%	
Minimum	0.00%		0.00%		0.00%		0.00%		0.00%	
Mean	0.66%		0.61%		0.61%		0.63%		0.72%	
Median	0.36%		0.51%		0.43%		0.45%		0.55%	
Maximum	5.32%		2.90%		2.16%		2.77%		3.53%	
Upper Whisker ²	2.44%		2.00%		2.37%		2.19%		2.13%	
# outside of upper whisker	3		3		0		1		2	
All cases combined	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk
Sex										
Male	14,724	0.9	15,276	0.9	15,395	0.8	15,691	0.9	15,062	0.8
Female	30,230	0.7	31,277	0.7	31,700	0.6	32,003	0.7	30,944	0.8
Age										
00-49 years	10,641	1.1	10,778	1.1	10,918	1.2	10,575	1.1	9,922	1.3
50-64 years	13,608	0.8	14,035	0.7	13,784	0.7	13,540	0.9	13,079	0.9
65-79 years	13,631	0.6	14,455	0.6	15,016	0.5	15,870	0.5	15,470	0.5
80+ years	7,074	0.3	7,285	0.5	7,377	0.3	7,709	0.4	7,535	0.4
Dx Confirmation³										
Microscopic confirmed	18,744	0.7	19,279	0.6	19,134	0.8	18,990	0.8	18,302	0.8
Non-microscopic confirmed	25,429	0.8	26,567	0.8	27,313	0.6	28,164	0.7	27,152	0.8
Unknown	781	0.9	707	1.7	648	0.8	540	1.3	552	0.4
Type of reporting source⁴										
Hospital Inpatient	41,203	0.6	42,692	0.7	43,427	0.6	44,055	0.6	42,351	0.7
Radiation treatment/ medical oncology center	513	2.3	535	1.3	468	1.9	497	2.6	434	1.4
Clinic unit/surgical center	2,693	1.3	2,765	1.4	2,752	0.9	2,696	1.5	2,662	1.7
Lab/Nursing home/hospice	161	11.2	185	7.0	156	7.7	208	6.7	259	7.3
DCO/Autopsy	384	0.8	376	0.8	292	0.0	238	0.8	300	0.3
Urban/Rural 2013⁵										
Metro	38,637	0.8	40,055	0.8	40,455	0.7	40,954	0.8	39,596	0.9
Non-Metro	6,300	0.7	6,485	0.5	6,629	0.4	6,727	0.4	6,388	0.4
Unknown	17	0.0	13	23.1	11	9.1	13	0.0	22	18.2

Figure 4b
 % Unknown Race¹ for Benign/Borderline Brain/CNS Cases by Registry,
 Years 2014-2018

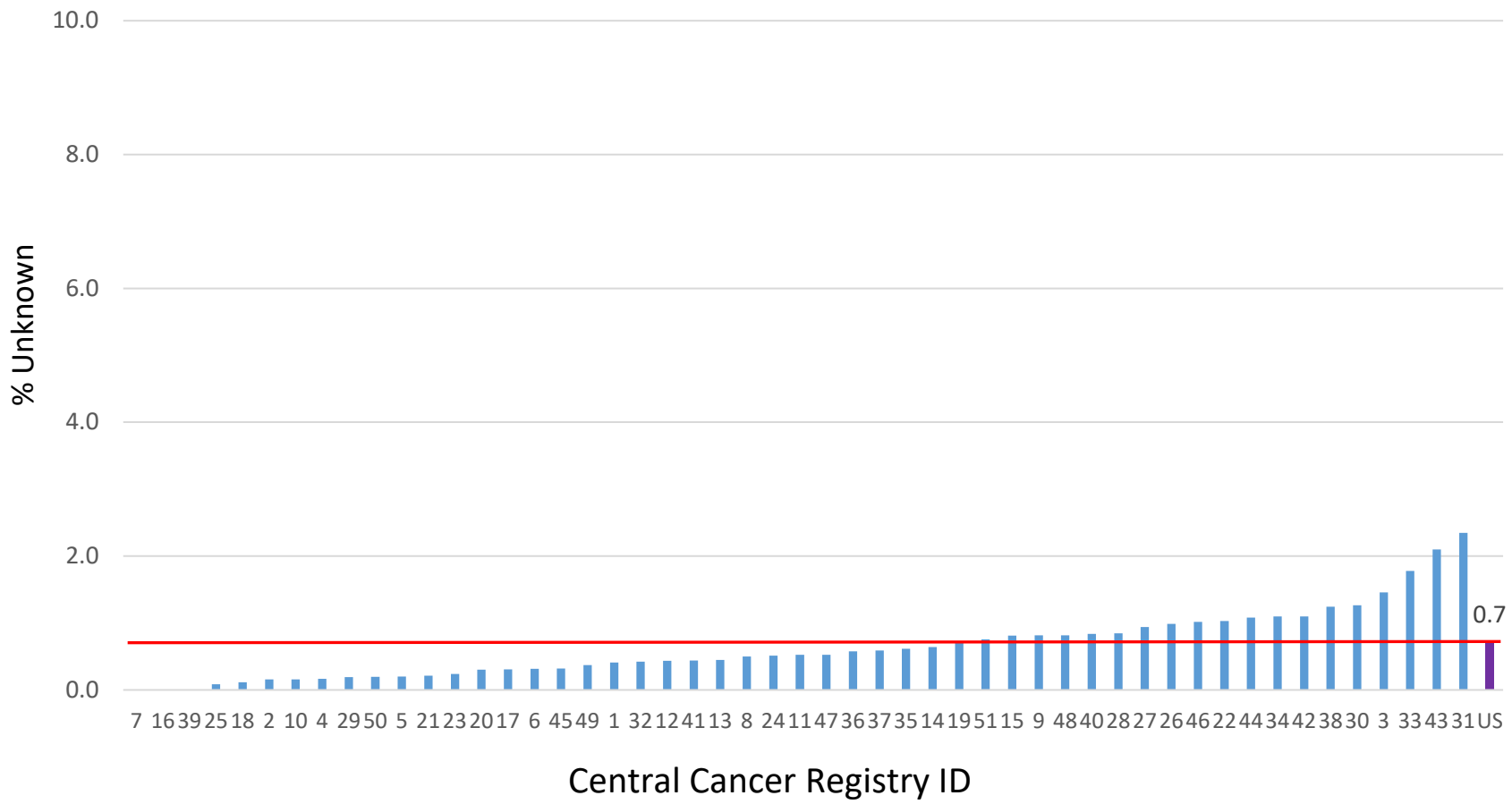
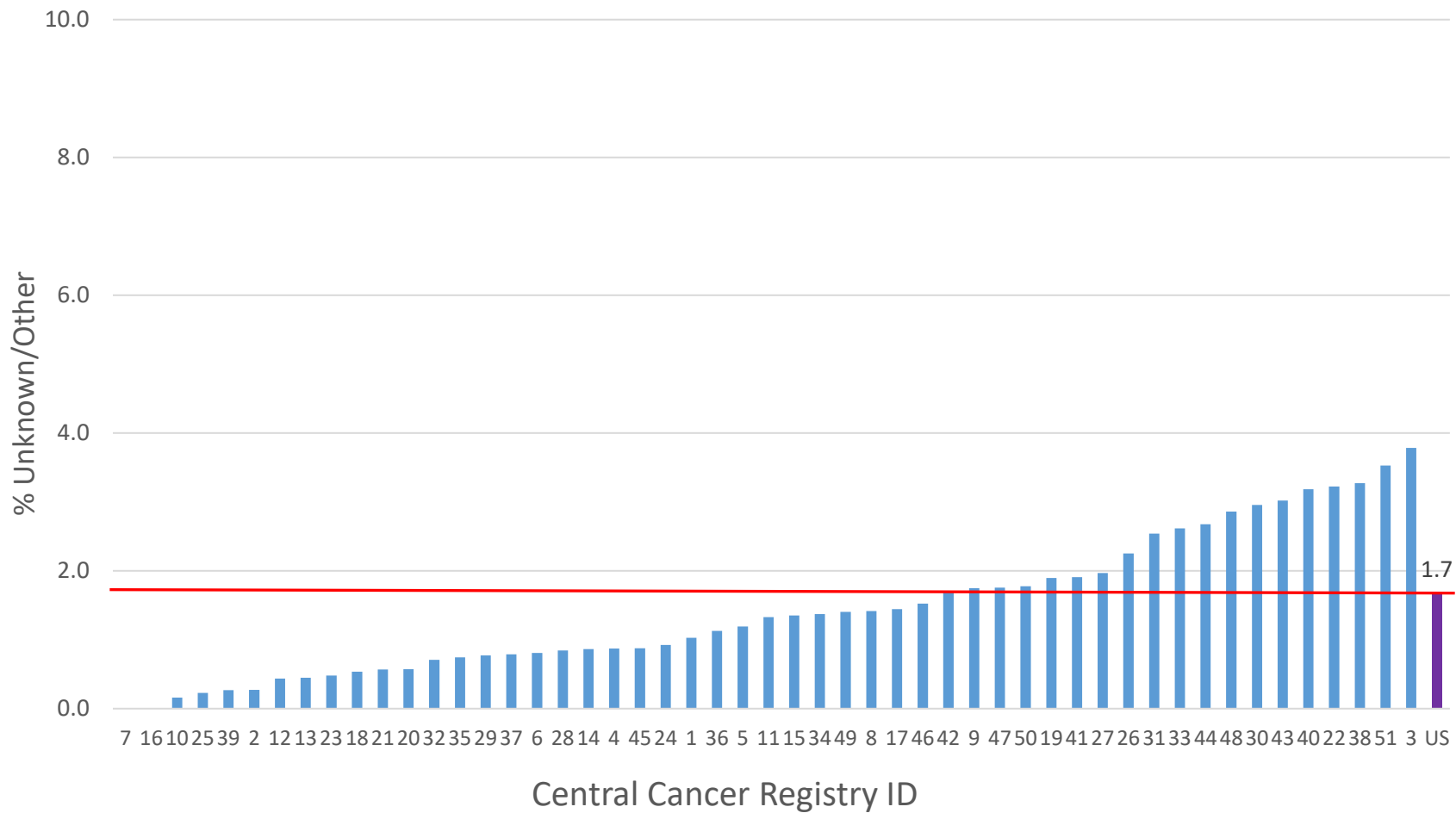


Table 4b. Unknown/Other race¹ for benign/borderline brain/CNS cases by diagnosis year 2014-2018

	2014		2015		2016		2017		2018	
Registry Level										
25-75% Percentile (IQR)	0.42%-1.69%		0.48%-1.91%		0.60%-1.74%		0.50%-2.25%		0.53%-2.60%	
Minimum	0.00%		0.00%		0.00%		0.00%		0.00%	
Mean	1.23%		1.35%		1.37%		1.40%		1.79%	
Median	1.04%		1.10%		1.16%		1.14%		1.46%	
Maximum	6.38%		5.81%		5.71%		4.34%		7.22%	
Upper Whisker ²	3.60%		4.06%		3.45%		4.87%		5.70%	
# outside of upper whisker	1		3		3		0		1	
All cases combined	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk	Total Count	% Unk
Sex										
Male	14,724	1.7	15,276	1.8	15,395	1.6	15,691	1.8	15,062	2.0
Female	30,230	1.4	31,277	1.4	31,700	1.5	32,003	1.7	30,944	2.0
Age										
00-49 years	10,641	2.4	10,778	2.6	10,918	2.9	10,575	2.7	9,922	3.5
50-64 years	13,608	1.6	14,035	1.5	13,784	1.5	13,540	2.0	13,079	2.1
65-79 years	13,631	1.1	14,455	1.2	15,016	1.0	15,870	1.1	15,470	1.4
80+ years	7,074	0.6	7,285	0.7	7,377	0.6	7,709	0.9	7,535	1.1
Dx Confirmation³										
Microscopic confirmed	18,744	1.7	19,279	1.6	19,134	1.7	18,990	1.9	18,302	2.2
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Unknown	781	1.5	707	3.0	648	2.0	540	3.3	552	0.7
Type of reporting source⁴										
Hospital Inpatient	41,203	1.4	42,692	1.4	43,427	1.5	44,055	1.6	42,351	1.9
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Clinic unit/surgical center	2,693	2.1	2,765	2.4	2,752	2.0	2,696	2.3	2,662	2.9
Lab/Nursing home/hospice	161	13.7	185	9.2	156	8.3	208	6.7	259	15.1
DCO/Autopsy	384	1.3	376	2.1	292	0.7	238	1.3	300	0.7
Metro status⁵										
Metro	38,637	1.6	40,055	1.7	40,455	1.6	40,954	1.9	39,596	2.2
Non-Metro	6,300	0.9	6,485	0.7	6,629	0.7	6,727	0.7	6,388	0.8
Unknown	17	0.0	13	46.2	11	9.1	13	0.0	22	22.7

Figure 4c.
 % Unknown/Other Race¹ for Benign/Borderline Brain/CNS Cases by
 Registry, Year 2014-2018



Fitness for the Use of CiNA Race Data for Diagnosis Years 2014 to 2018 Assessment Based on the Unknown Rate of Race

Race_1 (NAACCR data item #160) is one of the data quality indicators for NAACCR certificate. To meet the NAACCR certificate requirement, Central Cancer Registries (CCRs) are only allowed to have unknown race <3.0% for the Gold certificate and <5.0% for the Silver certificate for invasive cases. For this evaluation, we presented the percentage of (1) unknown race including code 99 and blank value and (2) unknown and other race combined including codes 98 (other, unspecified), 99, and blank values by central cancer registry for all reportable cases combined, invasive cases, in situ cases, and benign/borderline brain/CNS cases for 2014-2018 diagnosis years. We also assessed the rate of unknown and unknown/other race by sex, age at diagnosis, diagnostic confirmation, type of reporting sources, and metropolitan status at the county level. Overall, for all reportable cases combined, all CCRs had unknown race <5.0% and 49 CCRs had unknown race <3.0%; however, there were seven CCRs had other race $\geq 1.0\%$ (Figure 1a). The unknown race was higher for in situ cases, 17 CCRs with unknown rate >5.0% and over half (26) of CCRs with unknown rate $\geq 3.0\%$ (Figure 3a). Benign/borderline brain/CNS cases had the highest percentage of race coded to other with 16 CCRs having other race $\geq 1.0\%$. According to SEER Program Coding and Staging Manual (2014-2018) Appendix D: Race and Nationality Descriptions from the 2000 Census and Bureau of Vital Statistics. (<https://seer.cancer.gov/tools/codingmanuals/historical.html>), code 98 for other race is very rare. Also, the race recode in the CiNA data categorizes other race to the unknown race group.

Additionally, male and younger patients generally had a higher percentage of unknown race or unknown/other race than their counterparts. Cancer cases reported by labs, nursing homes, or hospice facilities had the highest unknown rates than other type of reporting facilities from 10.9% in 2014 to 19.5% in 2018 for unknown race and from 11.3% in 2014 to 20.4% in 2018 for unknown/other race for all reportable cases combined. Cases with unknown diagnostic confirmation or unknown metropolitan status also had a higher percentage of unknown and unknown/other race. Since other races are rare, NAACCR certificate committee may consider to include a benchmark for the percentage of other race to certification evaluation for CCR's data submission.

The issues of high unknown race for some CCRs could be attributed to multiple factorials, such as 1) reporting facilities not providing race information; 2) not using external resources to enhance race data; 3) documented as multiracial without follow-back to reporting facility; 4) not performing thorough consolidation; and 5) reportable cases abstracted directly from lab's reports (e.g., pathology report, hematopoietic lab report) or radiology report. The main issue for CCRs with a high percentage of other race could be that reporting facility's medical record

only have white, black, and other race options for race data field and abstractors take the code directly from medical records without further investigation. The NAACCR Certificate Workgroup may consider including the percentage of other races as one of quality indicators.

Based on the evaluation of the percentage of unknown race, the DA workgroup has the following recommendations of using race data for users. Our recommendations are for reference only. How to use these recommendations depends on the study objectives.

1. Based on the SEER race coding guidelines, code 98 (other race) is extremely rare. Most of the conditions were directed to code 99 (unknown race). For example, when race is described as Aruba Islander, Bermudan, Guyanese, etc. in the medical record, code race to 99. Therefore, other race should be coded as unknown for data analysis purposes.
2. Cancer cases abstracted based only on reports from lab, nursing home, or hospice medical records had higher unknown race. Users should examine the percentage of unknown/other race by type of reporting sources and decide what data should be included before data analysis.
3. If researchers are interested in using in situ cancer data, they should examine the unknown/other race by CCR first and consider excluding CCR with very high unknown/other race (e.g., >5.0%).