

Melanoma of the Skin in Ohio, 2009-2013

Melanoma of the skin (melanoma) is the most deadly form of skin cancer. Melanoma is the fifth most common type of new cancer diagnosis in the United States.

Melanoma made up 4 percent of incident (newly diagnosed) cancers in Ohio reported to the Ohio Cancer Incidence Surveillance System (OCISS) from 2009 to 2013. An average of 2,541 cases of melanoma were diagnosed annually in Ohio during this time period (Table 1). The average annual age-adjusted incidence rate in Ohio was 19.7 cases per 100,000, compared to the national (SEER) incidence rate of 21.8 per 100,000. The melanoma incidence rate among Ohio males was 41 percent higher than the rate among females. The rate was about 23 times higher among whites compared to blacks in both Ohio and the United States during this time period. However, reporting of melanoma in Ohio was estimated to be only 81 percent complete in 2009-2013; therefore, the Ohio melanoma incidence rates presented in this report may underestimate the true burden of this disease in the state.

An average of 398 deaths from melanoma occurred each year in Ohio from 2009-2013 (Table 1). Ohio's average annual age-adjusted melanoma mortality rate (3.0 per 100,000) was 11 percent higher than the U.S. mortality rate (2.7 per 100,000). For Ohio males, the melanoma mortality rate (4.4 per 100,000) was more than two times higher than the rate for females (1.9 per 100,000) during this time period.

Key Findings and Populations at High Risk

- The melanoma mortality rate was 11 percent higher in Ohio than in the United States.
- In Ohio, melanoma incidence and mortality rates were greater for males and whites in 2009-2013.
- Melanoma incidence rates in Ohio increased with advancing age. About 76 percent of people who developed melanoma were 50 and older.
- From 1996 to 2013, melanoma incidence rates increased 40 percent, while melanoma mortality rates remained stable in Ohio.
- In Ohio, the majority of melanomas occurred on the skin of the trunk and the skin of the upper limb and shoulders.
- In Ohio, 86 percent of melanomas were diagnosed at an early (*in situ* or local) stage and about 9 percent were diagnosed at a late (regional or distant) stage.
- Nationally, the five-year survival probability for patients with melanoma is 92 percent. For local-stage melanoma, the five-year survival probability is 98 percent, whereas survival at the distant stage is only 18 percent.

Table 1. Melanoma: Average Annual Number of Invasive Cancer Cases and Deaths and Age-adjusted Incidence and Mortality Rates per 100,000 Persons by Sex, Race and Age Group in Ohio and the United States, 2009-2013

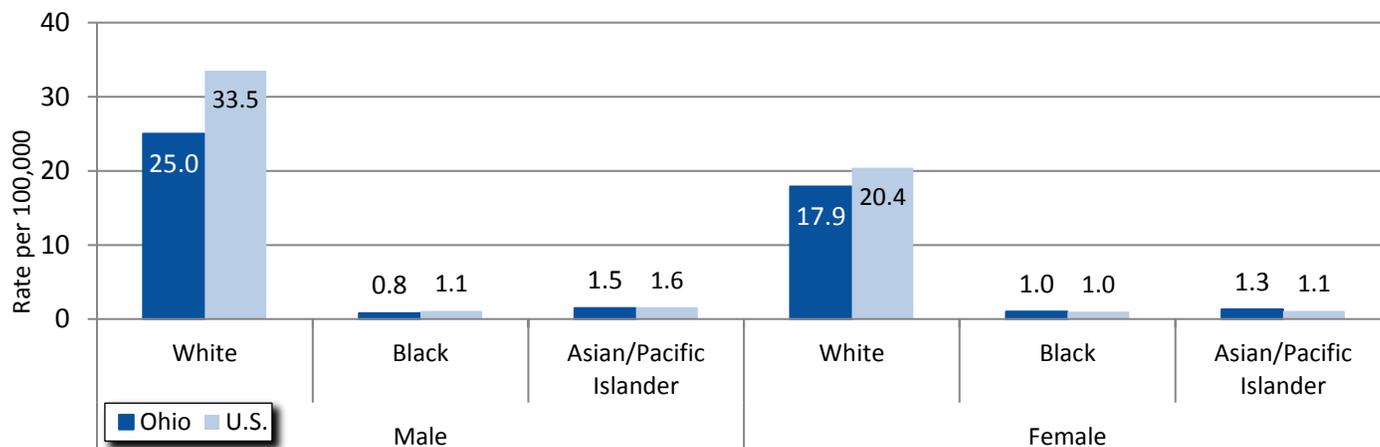
		Incidence			Mortality		
		Ohio Cases	Ohio Rate	U.S. Rate	Ohio Deaths	Ohio Rate	U.S. Rate
Total		2,541	19.7	21.8	398	3.0	2.7
Sex	Male	1,421	23.9	28.5	257	4.4	4.1
	Female	1,120	17.0	16.9	141	1.9	1.7
Race	White	2,346	20.7	25.9	391	3.3	3.1
	Black	11	0.9	1.1	5	0.4	0.4
	Asian/Pacific Islander	2	1.4	1.3	<1	*	0.3
Age Group	<65	1,422	12.7	12.4	166	1.4	1.1
	65+	1,119	67.8	86.5	231	13.9	13.6

Sources: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2016; Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute, 2016; Bureau of Vital Statistics, Ohio Department of Health, 2016; National Center for Health Statistics, 2016.

* Rate not presented when the count for 2009-2013 is less than five (i.e., the average annual count is less than one).

Incidence by Race and Sex

Figure 1. Melanoma: Average Annual Age-adjusted Incidence Rates per 100,000 Persons by Race and Sex in Ohio and the United States, 2009-2013



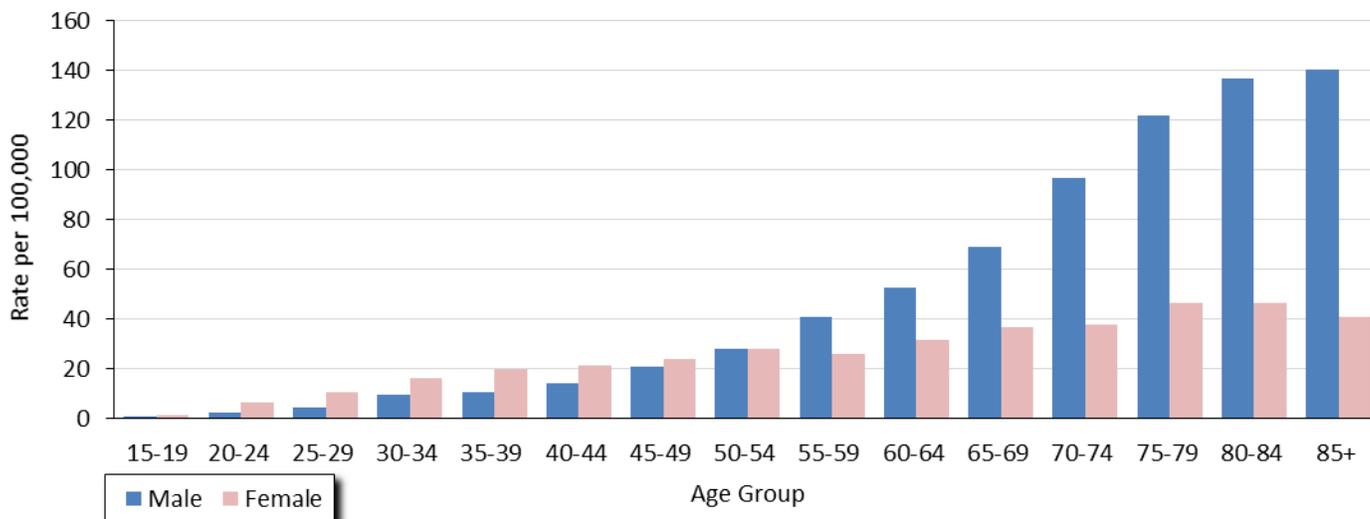
Sources: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2016; Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2016.

As shown in Figure 1, white males had the highest melanoma incidence rate in Ohio in 2009-2013, followed by white females. Incidence rates for most race-sex-specific groups were lower in Ohio compared to the United States, likely due to underreporting of this cancer type in Ohio.

Incidence by Age Group and Sex

As shown in Figure 2, melanoma incidence rates increased with advancing age group. Among males, melanoma incidence rates increased with advancing age group from ages 15-19 to 85 and older. Among females, incidence rates also increased with advancing age group, but the increase was much less compared to males. In Ohio, incidence rates were higher among females compared to males among younger age groups (15-19 to 45-49), whereas males had significantly higher rates than females among those 55-59 and older.

Figure 2. Melanoma: Average Annual Age-specific Incidence Rates per 100,000 Persons by Age Group and Sex in Ohio, 2009-2013



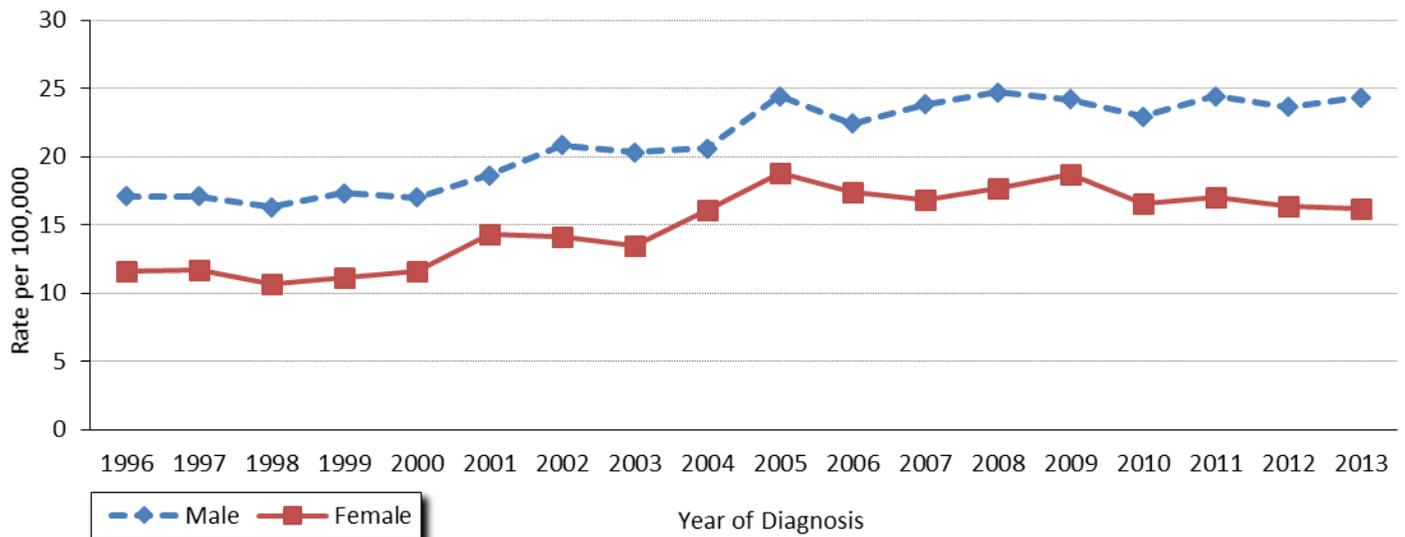
Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2016.

Trends in Incidence and Mortality

Figure 3 shows incidence rates of melanoma according to year of diagnosis (1996 through 2013) for males and females in Ohio. For each year, males had the highest incidence rate. Incidence rates increased 42 percent for males and 40 percent for females from 1996 to 2013.

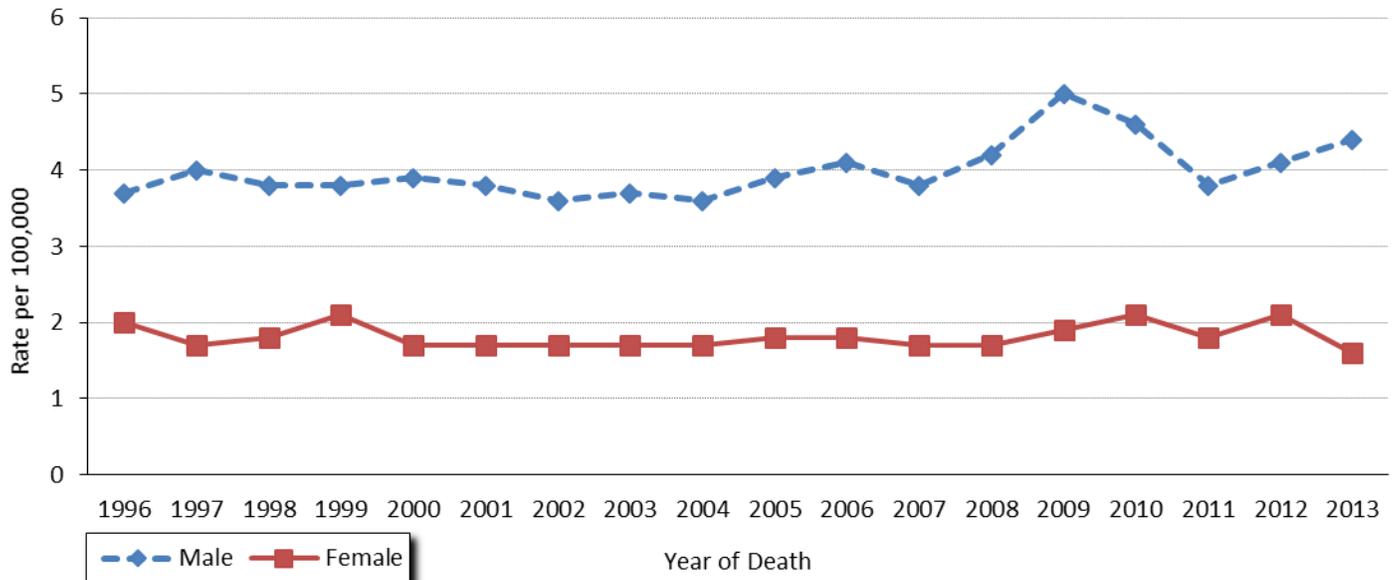
Figure 4 shows melanoma mortality rates in Ohio according to year of death (1996 through 2013) for males and females. For each year of comparison, males had about two times the mortality rate of females. Mortality rates increased 19 percent for males but were relatively stable among females from 1996 to 2013.

Figure 3. Melanoma: Trends in Age-adjusted Incidence Rates per 100,000 Persons by Sex in Ohio, 1996-2013



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2016.

Figure 4. Melanoma: Trends in Age-adjusted Mortality Rates per 100,000 Persons by Sex in Ohio, 1996-2013

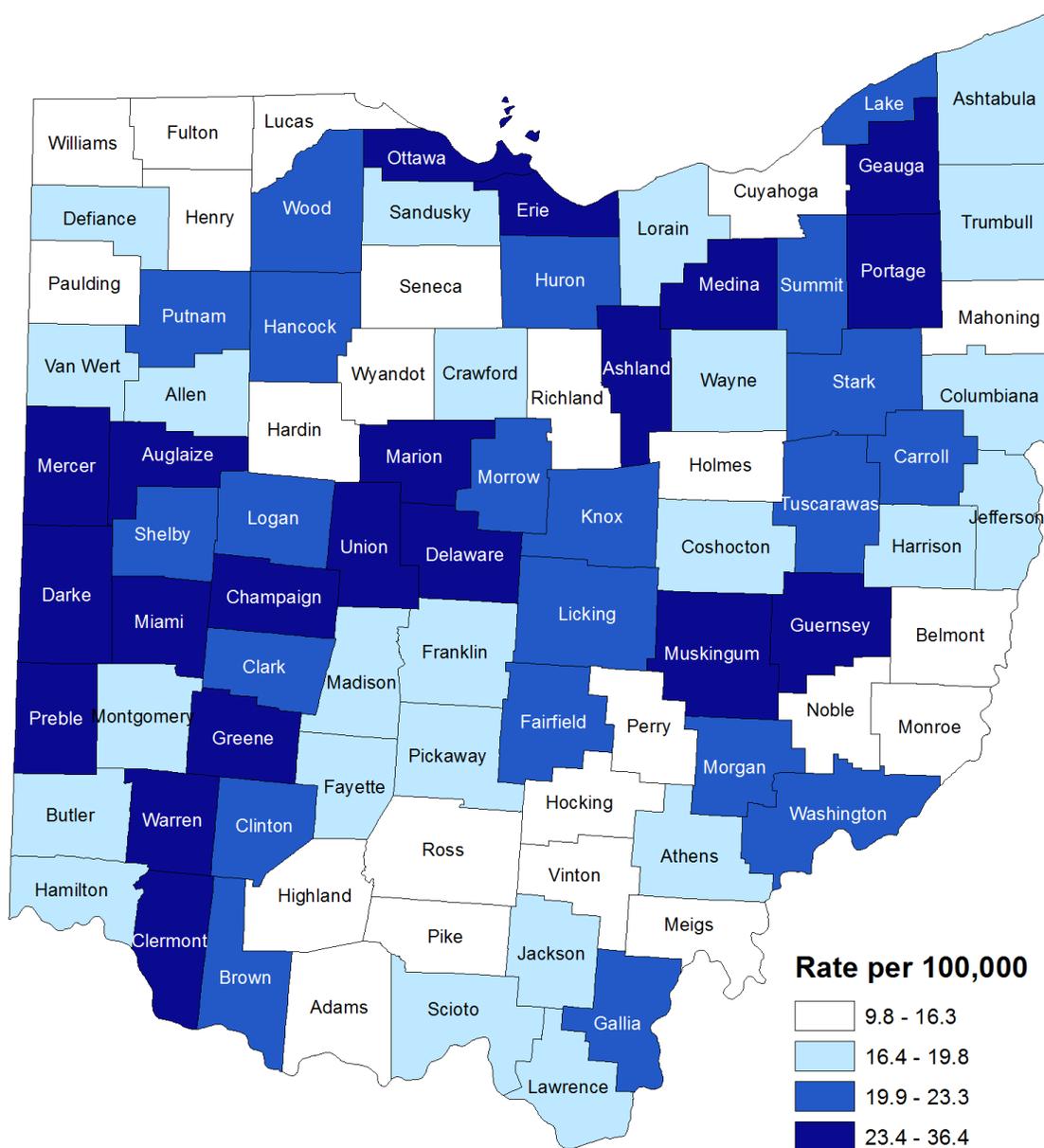


Source: Chronic Disease Epidemiology and Evaluation Section and the Bureau of Vital Statistics, Ohio Department of Health, 2016.

Incidence by County

Figure 5 shows 2009-2013 average annual age-adjusted melanoma incidence rates by county of residence. County-specific melanoma incidence rates in Ohio ranged from 9.8 to 36.4 per 100,000 persons. The geographic pattern of melanoma is relatively sporadic; however, there may be areas of higher incidence in the central and southwestern portions of the state. The following counties had the highest incidence rates for this time period: Ashland, Auglaize, Darke, Delaware, Greene, Guernsey, Marion, Miami, Union and Warren.

Figure 5. Melanoma: Average Annual Age-adjusted Incidence Rates per 100,000 Persons by County of Residence in Ohio, 2009-2013

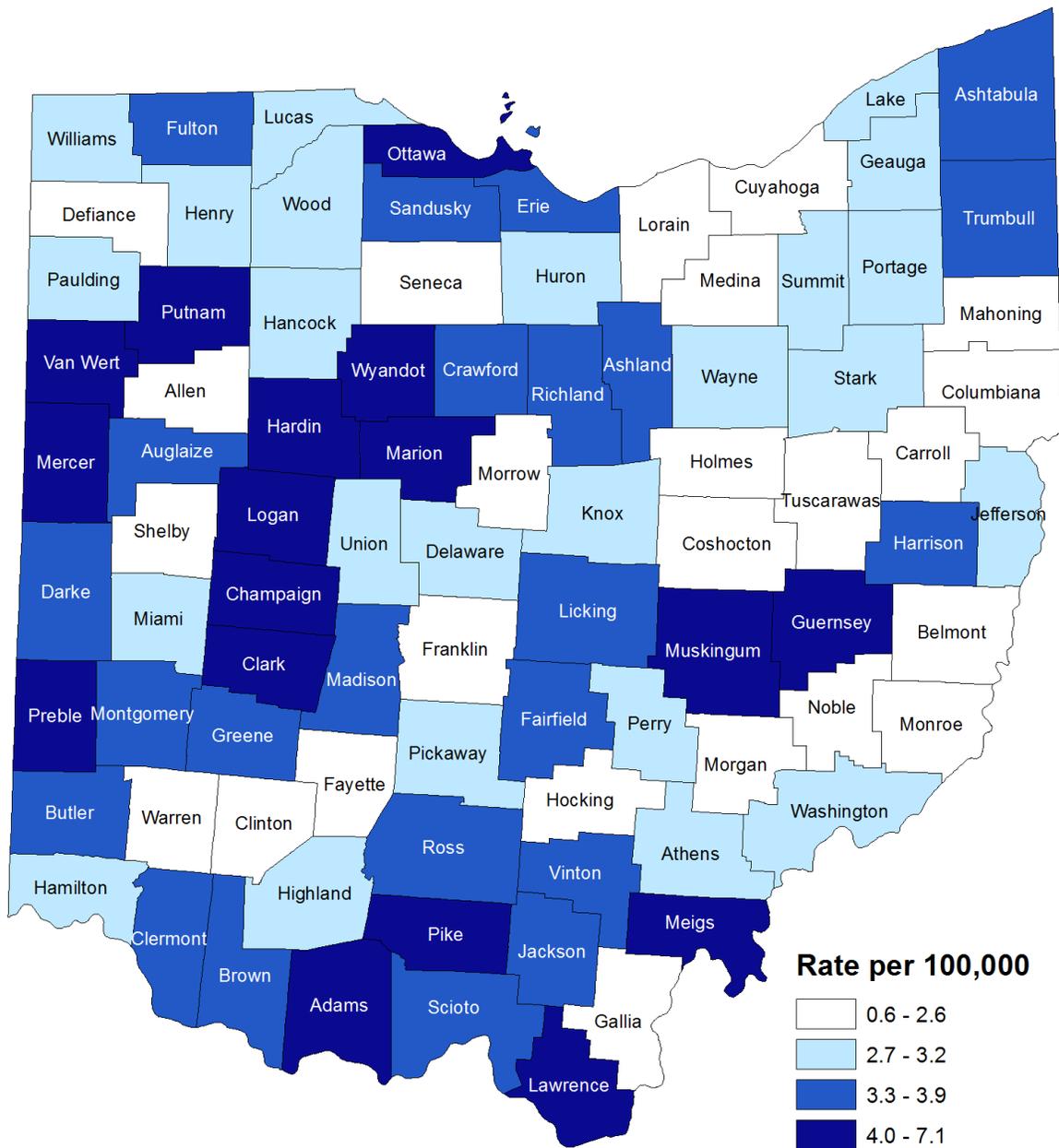


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2016.
 Each category represents approximately 25 percent of the 88 Ohio counties.

Mortality by County

Figure 6 shows 2009-2013 average annual age-adjusted melanoma mortality rates by county of residence. County-specific mortality rates ranged from 0.6 to 7.1 per 100,000 persons. The majority of the counties with the highest mortality rates were to the west of central Ohio. Adams, Hardin, Lawrence, Logan, Mercer, Muskingum, Ottawa, Pike, Preble and Van Wert Counties had the highest mortality rates in 2009-2013.

Figure 6. Melanoma: Average Annual Age-adjusted Mortality Rates per 100,000 Persons by County of Residence in Ohio, 2009-2013

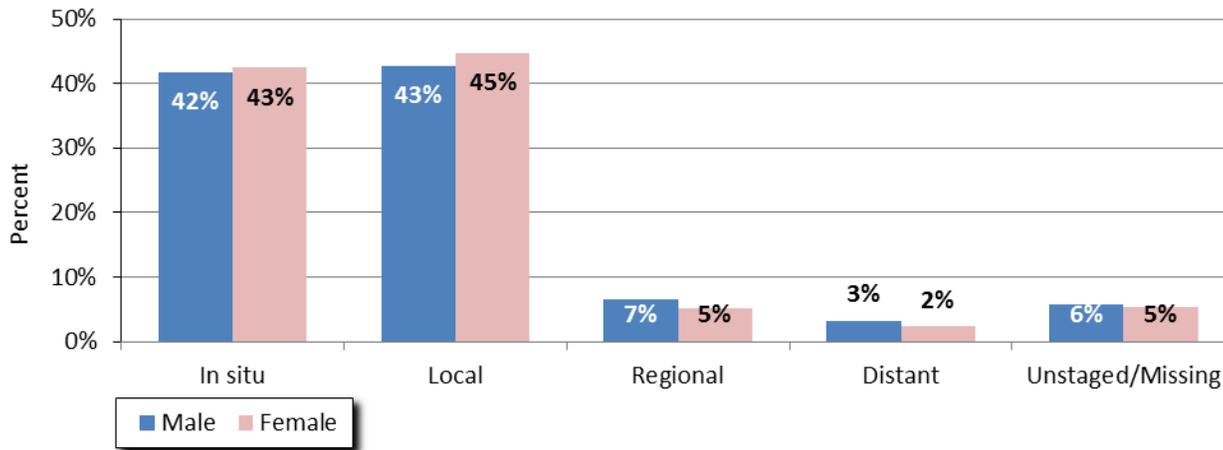


Source: Chronic Disease Epidemiology and Evaluation Section and the Bureau of Vital Statistics, Ohio Department of Health, 2016. Each category represents approximately 25 percent of the 88 Ohio counties.

Stage at Diagnosis

The stage at diagnosis of melanoma is an important determinant of survival. For *in situ* cancers, the tumor has not invaded or penetrated surrounding tissue. In the local stage, the tumor is confined to the organ in which it originated. In the regional stage, the tumor has spread to surrounding tissues. In the distant stage, the malignancy has spread, or metastasized, to other organs. In Ohio, 86 percent of melanomas were diagnosed at an early (i.e., *in situ* or local) stage. As shown in Figure 7, there was a slightly lower proportion of males diagnosed at an early stage in Ohio than females. About 9 percent of melanomas were diagnosed at a late (i.e., regional or distant) stage in Ohio. The percentage of melanomas reported unstaged/missing stage in Ohio was similar among males and females.

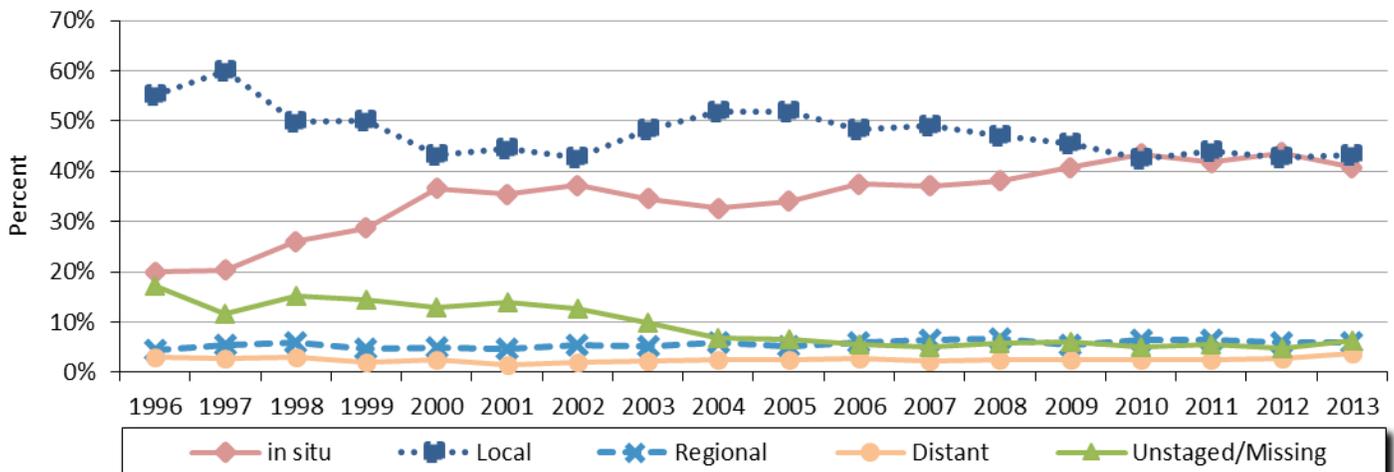
Figure 7. Melanoma: Proportion of Cases by Stage at Diagnosis and Sex in Ohio, 2009-2013



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2016.

Figure 8 shows the distribution of stage at diagnosis of melanoma according to year of diagnosis from 1996 to 2013. The proportion of cases diagnosed at the *in situ* stage increased considerably, from 20 percent in 1996 to 41 percent in 2013. This increase in the proportion of *in situ* melanomas corresponded to a decrease in the proportion diagnosed at the local stage (55 percent in 1996 to 43 percent in 2013) and a decline in the proportion with an unstaged/missing stage at diagnosis (17 percent in 1996 to 6 percent in 2013). The proportion diagnosed at the regional and distant stages remained relatively stable over the time period.

Figure 8. Melanoma: Trends in the Proportion of Cases (%) by Stage at Diagnosis in Ohio, 1996-2013



Source: Ohio Cancer Incidence Surveillance Program, Ohio Department of Health, 2016.

Anatomic Site

Table 2 shows the distribution of invasive melanoma cases in Ohio by anatomic site and sex during 2009-2013. In general, the majority of melanomas occurred on the skin of the trunk and the skin of the upper limb and shoulders. For males, a greater proportion of melanomas, as compared to females, occurred on the external ear, skin of other and unspecified parts of the face, skin of the scalp and neck, skin of the trunk and skin not otherwise specified (NOS). Females, as compared to males, had a greater proportion of melanomas on the skin of the upper limb and shoulder, and the skin of the lower limb and hip. Reasons for these sex differences are largely unknown but may be partially explained by the different areas of the body in men and women that are commonly exposed to ultraviolet radiation.

Table 2: Melanoma: Percent Distribution by Anatomic Site and Sex in Ohio, 2009-2013

Cancer Site (ICD-O-3 Code)	Male	Female	Total
Skin of the Lip, NOS (C44.0)	0.1%	0.1%	0.1%
Eyelid (C44.1)	0.3%	0.4%	0.3%
External ear (C44.2)	4.6%	0.8%	2.9%
Skin of other and unspecified parts of face (C44.3)	9.9%	7.0%	8.6%
Skin of scalp and neck (C44.4)	10.0%	3.5%	7.2%
Skin of trunk (C44.5)	37.7%	26.3%	32.7%
Skin of upper limb and shoulder (C44.6)	23.3%	28.1%	25.4%
Skin of lower limb and hip (C44.7)	8.1%	29.4%	17.5%
Overlapping lesion of skin (C44.8)	0.1%	0.0%	0.1%
Skin, NOS (C44.9)	5.9%	4.4%	5.2%

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2016.

NOS: Not Otherwise Specified.

Percents may not sum to 100 due to rounding.

Survival

Melanoma is more likely than nonmelanoma to spread to other parts of the body, but is highly curable when detected and treated at its earliest stages. Nationally, the five-year survival probability for patients with melanoma is 92 percent. For localized melanoma, the five-year survival probability is 98 percent; whereas, survival at the distant stage is only 18 percent (Table 3). The best way to detect melanoma at an earlier stage is to routinely perform self-examinations of the skin using the criteria described on page 8, and to have regular examinations by a healthcare provider who can conduct a thorough examination of the skin.

Table 3: Melanoma: Five-year Survival Probability (%) by Stage at Diagnosis and Sex in the United States, 2006-2012

	Male	Female	Total
All Stages	89.5%	94.0%	91.5%
Local	97.8%	99.0%	98.4%
Regional	59.6%	67.0%	62.4%
Distant	16.1%	21.7%	17.9%
Unstaged/Missing	78.9%	84.1%	81.2%

Source: Surveillance, Epidemiology and End Results (SEER) Program, *SEER Cancer Statistics Review 1975-2013*, National Cancer Institute, 2016.

Risk Factors and Populations at High Risk

A cancer risk factor is anything that increases a person's risk of developing cancer. However, having one or more risk factors does not mean that a person will develop cancer. The following have been identified as risk factors for melanoma:

Ultraviolet (UV) radiation: UV radiation from both the sun and artificial sources such as sunlamps and tanning booths is the most important risk factor for any type of skin cancer.

Severe, blistering sunburns: People who have had at least one severe, blistering sunburn as a child or teenager are at increased risk of melanoma. Sunburns in adulthood also increase risk.

Skin that burns easily: Melanoma occurs more frequently in people who have fair skin that burns or freckles easily, red or blond hair, or blue, green or other light-colored eyes.

Abnormal moles (dysplastic nevi): A dysplastic nevus is a type of mole that looks different from a common mole. It is often bigger and has an abnormal shape or color. Having these atypical moles increases the risk of melanoma.

More than 50 common moles: Usually, a common mole is smaller than a pea, has an even color (pink, tan, or brown), and is round or oval with a smooth surface. Having many common moles increases the risk of developing melanoma.

Family history: Having two or more close relatives who have had melanoma increases risk.

Personal history: People who have had melanoma have an increased risk of developing other melanomas.

Sex: Men are more likely to develop this cancer than women.

Race: Melanoma is more than 20 times more common in whites than in blacks.

Weakened immune system: People whose immune systems are weakened by certain cancers, by drugs given following organ transplantation or by HIV are at increased risk.

Early Detection

Recognition of changes in skin growths or the appearance of new growths is the best way to find skin cancer early. All major areas of the skin should be examined regularly. Any new or suspicious lesions or a sudden or progressive change in a lesion's appearance should be evaluated promptly by a healthcare provider.

Did You Know?

A Simple ABCDE rule outlines the warning signs of the most common type of melanoma:

A is for **Asymmetry** — one half does not match the other half.

B is for **Border** — borders are ragged, notched, blurred or irregular.

C is for **Color** — uneven color and multiple colors, including black, tan, brown, red, pink, blue and white.

D is for **Diameter** — change in the size of the mole and/or the mole is larger than the size of the eraser of a pencil (1/4 of an inch or 5 millimeters).

E is for **Evolving** — change in size, shape or color.

If you have a mole with any of these characteristics, you should talk to your healthcare provider.

Signs and Symptoms

Key warning signs of melanoma include the following:

- Sore that does not heal
- Spread of pigment from the border into surrounding skin
- Redness or a new swelling beyond the border
- Change in sensation (itchiness, tenderness, pain)
- Change in surface of a mole (scaliness, oozing, bleeding, appearance of bump or nodule)

If you have any of these signs or symptoms, see your healthcare provider.

Protective Factors

The American Cancer Society recommends the following for the prevention of melanoma and skin cancer:

- Minimize skin exposure to intense UV radiation by seeking shade.
- When outdoors, wear protective clothing, e.g., long sleeves, long pants or skirts, tightly woven fabrics and a wide-brimmed hat.
- Wear sunglasses that block UV rays.
- Apply a broad-spectrum sunscreen with a sun protection factor (SPF) of 30 or higher.
- Avoid indoor tanning booths and sun lamps, which are additional sources of UV radiation.

Did You Know?

Using a tanning bed, booth or sunlamp to get a tan is called indoor tanning. Indoor tanning can cause skin cancers including melanoma, basal cell carcinoma and squamous cell carcinoma. Exposure to UV radiation also can cause cataracts and cancers of the eye (ocular melanoma). Indoor tanning exposes users to two types of UV rays, UVA and UVB, which damage the skin and can lead to cancer. Studies have shown consistently that indoor tanning increases a person's risk of getting skin cancer, including melanoma.

Technical Notes

Age-Adjusted Rate: A summary rate that is a weighted average of age-specific rates, where the weights represent the age distribution of a standard population (direct adjustment). The incidence and mortality rates presented in this report were standardized to the age distribution of the 2000 U.S. Standard Population. Under the direct method, the population was first divided into 19 five-year age groups, i.e., <1, 1-4, 5-9, 10-14, 15-19...85+, and the age-specific rate was calculated for each age group. Each age-specific rate was then multiplied by the standard population proportion for the respective age group.

Average Annual Number: The number of cases or deaths diagnosed per year, on average, for the time period of interest (e.g., 2009-2013). Average annual numbers are calculated by summing the number of cases or deaths for a given time period, dividing by the number of years that comprise the time period and rounding to the nearest whole number.

Census Data: The 1996-2013 rates were calculated using population estimates from the U.S. Census Bureau and National Center for Health Statistics. Population data were compiled from bridged-race intercensal population estimates for July 1, 1990-July 1, 1999; revised bridged-race intercensal population estimates for July 1, 2000-July 1, 2004 (released 10/26/2012); revised bridged-race intercensal population estimates for July 1, 2005-July 1, 2009 (released 6/26/2014) and vintage 2014 bridged-race postcensal population estimates for July 1, 2010-July 1, 2013 (released 6/30/2015).

Incidence: The number of cases diagnosed during a specified time period (e.g., 2009-2013). Melanoma of the skin cases were defined as follows: International Classification of Diseases for Oncology, Third Edition (ICD-O-3), codes C44.0-C44.9 and histology types 8720-8790.

Invasive Cancer: A malignant tumor that has infiltrated the organ in which the tumor originated. Invasive cancers consist of those diagnosed at the localized, regional, distant and unstaged/missing stages. Only invasive cancers were included in the calculation of incidence rates in this document.

Mortality: The number of deaths during a specified time period (e.g., 2009-2013). Melanoma cancer deaths were defined as follows: International Statistical Classification of Diseases and Related Health Problems, Ninth Edition (ICD-9), codes 172 for 1996-1998 and International Statistical Classification of Diseases and Related Health Problems, Tenth Edition (ICD-10), codes C43.0-C43.9 for 1999-2013.

Rate: The number of cases or deaths per unit of population (e.g., per 100,000 persons) during a specified time period (e.g., 2009-2013). Rates may be unstable and are not presented when the count is less than five.

Stage at Diagnosis: The degree to which a tumor has spread from its site of origin at the time of diagnosis. Cancer stage is often related to survival and is used to select appropriate treatment. Patients with early stage disease often have better long-term survival, and detecting cancers at an early stage may lead to a reduction in mortality. The stages presented in this report, in the order of increasing spread, are *in situ*, local, regional and distant. *In situ* and localized tumors are referred to as early stage tumors, and regional and distant tumors are termed late stage. Cancers diagnosed at the local, regional, distant and unstaged/missing stages are categorized as invasive.

in situ—Noninvasive cancer that has not penetrated surrounding tissue.

Local—A malignant tumor confined entirely to the organ of origin.

Regional—A malignant tumor that has extended beyond the organ of origin directly into surrounding organs or tissues or into regional lymph nodes.

Distant—A malignant tumor that has spread to parts of the body (distant organs, tissues and/or lymph nodes) remote from the primary tumor.

Unstaged/Missing—Insufficient information is available to determine the stage or extent of the disease at diagnosis.

Survival Probability: The probability that an individual will survive a given number of years after diagnosis. Five-year relative survival probabilities are from the SEER Program 18 areas for diagnosis years 2006-2012.

Clinical Trials Information

Clinical trials test many types of treatments including new drugs, surgical procedures, radiation therapy and combinations of these. The goal of conducting clinical trials is to find better ways to treat cancer. To obtain information concerning clinical trials for melanoma of the skin, please talk with your healthcare provider or visit one of the following websites:

National Cancer Institute:

<http://www.cancer.gov/about-cancer/treatment/clinical-trials>

American Cancer Society:

http://www.cancer.org/docroot/ETO/ETO_6.asp?sitearea=ETO

The Ohio State University Comprehensive Cancer Center-Arthur G. James Cancer Hospital and Richard J. Solove Research Institute:

http://cancer.osu.edu/patientsandvisitors/cancerinfo/clinical_trials/Pages/index.aspx

The Cleveland Clinic:

http://my.clevelandclinic.org/cancer/clinical_trials/default.aspx

Case Western Reserve University Comprehensive Cancer Center:

<http://cancer.case.edu/patientinfo/clinical-trials/>

University of Cincinnati:

<http://cancer.uc.edu/patientcare/ClinicalTrials/Overview.aspx>

Toledo Community Hospital Oncology Program:

<http://trials.tcop.info/clinical-trials/>

Dayton Clinical Oncology Program:

<http://www.med.wright.edu/dcop/Clinical%20Trials.htm>

Columbus Community Clinical Oncology Program:

<http://columbusccop.org/>

Sources of Data and Additional Information

Ohio Cancer Incidence Surveillance System:

http://www.healthy.ohio.gov/cancer/ocisshs/ci_surv1.aspx

National Cancer Institute:

<http://www.cancer.gov/types/skin>

<http://www.cancer.gov/types/skin/hp>

American Cancer Society:

<http://www.cancer.org/cancer/skincancer-melanoma/detailedguide/index>

Table 4. Melanoma: Average Annual Number of Invasive Cancer Cases and Age-adjusted Incidence Rates per 100,000 Persons by County of Residence and Sex in Ohio, 2009-2013

	Male		Female		Total			Male		Female		Total	
	Cases	Rate	Cases	Rate	Cases	Rate		Cases	Rate	Cases	Rate	Cases	Rate
Ohio	1,421	23.9	1,120	17.0	2,541	19.7	Lawrence	8	25.7	4	11.6	13	17.9
U.S.	28.5	16.9	21.8	16.9	21.8	21.8	Licking	23	26.7	18	19.2	41	22.2
Adams	2	15.1	2	13.6	5	14.3	Logan	6	22.7	5	18.6	10	20.0
Allen	12	21.8	8	14.2	20	17.2	Lorain	34	21.8	30	16.9	64	18.5
Ashland	9	30.7	7	23.6	16	26.4	Lucas	44	20.4	33	13.2	77	16.0
Ashtabula	11	18.9	13	21.9	24	19.8	Madison	5	23.5	4	16.0	9	18.7
Athens	6	23.5	4	13.8	9	17.5	Mahoning	19	13.4	14	8.9	33	10.7
Auglaize	7	27.3	7	28.6	14	27.7	Marion	13	34.4	6	20.1	19	25.7
Belmont	7	16.1	5	12.7	11	13.4	Medina	26	28.6	20	21.3	46	24.5
Brown	9	35.9	3	11.9	12	23.2	Meigs	2	14.0	2	10.3	4	12.7
Butler	39	23.4	33	16.5	72	19.2	Mercer	7	31.1	4	20.1	11	25.2
Carroll	5	25.5	4	17.4	9	21.1	Miami	19	32.9	16	27.4	35	29.4
Champaign	6	29.5	5	22.0	11	24.3	Monroe	1	*	2	15.8	2	12.5
Clark	17	22.8	15	19.8	33	20.9	Montgomery	72	25.0	53	16.0	124	19.7
Clermont	30	31.2	21	19.3	52	24.5	Morgan	4	32.3	1	13.2	5	22.3
Clinton	5	21.3	5	21.9	10	21.3	Morrow	5	27.6	4	19.2	9	22.6
Columbiana	15	24.3	7	10.3	22	16.5	Muskingum	11	23.2	13	25.4	23	24.2
Coshocton	7	30.4	2	11.1	9	19.8	Noble	1	11.8	1	15.2	2	12.6
Crawford	5	19.1	6	20.9	11	19.6	Ottawa	10	37.4	3	12.3	13	23.5
Cuyahoga	135	20.3	108	13.4	244	16.2	Paulding	2	17.8	1	8.6	3	12.8
Darke	11	35.4	7	23.3	18	28.5	Perry	2	10.7	2	8.7	4	9.8
Defiance	4	19.4	3	16.2	7	16.9	Pickaway	7	24.9	4	15.0	12	19.1
Delaware	26	33.1	21	23.4	47	27.3	Pike	3	15.8	3	16.1	5	16.1
Erie	13	27.5	11	24.4	24	25.5	Portage	20	25.4	21	23.2	42	23.7
Fairfield	20	28.2	12	14.7	32	20.4	Preble	7	30.4	5	19.7	12	24.4
Fayette	2	10.9	4	25.2	6	18.0	Putnam	4	22.9	4	23.2	8	22.7
Franklin	121	24.8	103	16.8	224	19.8	Richland	15	20.6	9	12.2	23	15.9
Fulton	4	18.0	3	15.9	7	16.3	Ross	7	15.5	6	15.6	13	15.0
Gallia	4	21.8	4	25.1	8	23.3	Sandusky	7	21.6	6	19.6	13	19.3
Geauga	15	29.8	11	22.7	26	25.5	Scioto	8	18.0	8	17.3	16	16.9
Greene	29	34.4	23	24.6	52	28.7	Seneca	5	15.0	5	14.3	10	14.2
Guernsey	7	28.1	6	26.8	12	27.3	Shelby	6	25.8	5	19.7	11	22.1
Hamilton	93	23.9	73	15.6	166	18.7	Stark	60	27.9	42	18.5	102	22.4
Hancock	12	30.6	7	17.4	19	23.0	Summit	72	24.9	56	17.6	128	20.5
Hardin	3	16.8	2	13.3	5	15.0	Trumbull	25	19.7	18	14.4	43	16.4
Harrison	2	21.5	1	14.2	4	17.9	Tuscarawas	13	26.3	9	15.8	22	20.3
Henry	2	14.3	2	13.4	4	12.9	Union	10	46.3	8	29.0	18	36.4
Highland	3	14.2	4	16.1	7	14.8	Van Wert	4	24.8	3	15.5	7	19.3
Hocking	4	21.1	2	9.6	5	15.5	Vinton	1	*	1	12.3	2	10.6
Holmes	3	16.6	3	15.8	6	15.8	Warren	34	35.2	26	22.8	59	27.7
Huron	8	24.3	7	20.4	15	21.8	Washington	10	27.5	6	18.2	16	22.0
Jackson	3	18.7	3	18.3	7	18.6	Wayne	15	24.2	11	16.1	26	19.6
Jefferson	7	18.8	7	15.6	14	16.9	Williams	4	19.2	3	15.2	7	16.3
Knox	7	22.3	6	18.4	13	19.9	Wood	16	26.4	13	19.2	29	21.9
Lake	27	21.4	28	20.9	55	20.4	Wyandot	2	11.5	2	17.7	4	14.5

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2016; Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2016.

*Rate not presented when the count for 2009-2013 is less than five (i.e., the average annual count is less than one).

Table 5. Melanoma: Average Annual Number of Cancer Deaths and Age-adjusted Mortality Rates per 100,000 Persons by County of Residence and Sex in Ohio, 2009-2013

	Male		Female		Total			Male		Female		Total	
	Deaths	Rate	Deaths	Rate	Deaths	Rate		Deaths	Rate	Deaths	Rate	Deaths	Rate
Ohio	257	4.4	141	1.9	398	3.0	Lawrence	3	8.6	1	3.0	4	5.7
U.S.		4.1		1.7		2.7	Licking	4	5.8	2	1.7	6	3.3
Adams	1	7.0	<1	*	2	5.0	Logan	3	12.0	<1	*	4	7.1
Allen	2	3.6	<1	*	3	2.3	Lorain	5	3.1	4	1.9	9	2.4
Ashland	1	5.1	<1	*	2	3.4	Lucas	9	4.7	4	1.8	14	2.8
Ashtabula	3	5.8	<1	*	4	3.3	Madison	2	8.1	<1	*	2	3.7
Athens	<1	*	1	2.9	2	2.7	Mahoning	5	3.0	3	1.4	7	2.0
Auglaize	1	5.2	<1	*	2	3.8	Marion	2	6.1	1	3.0	3	4.3
Belmont	1	2.6	1	2.6	2	2.5	Medina	3	3.0	<1	*	4	1.8
Brown	1	4.8	<1	*	2	3.3	Meigs	<1	*	<1	*	1	4.3
Butler	9	5.3	4	1.9	13	3.4	Mercer	2	10.0	<1	*	3	6.5
Carroll	<1	*	<1	*	1	2.5	Miami	2	2.5	2	2.7	3	2.7
Champaign	1	5.5	<1	*	2	4.2	Monroe	<1	*	<1	*	<1	*
Clark	5	6.3	2	2.8	7	4.3	Montgomery	15	5.3	7	1.8	22	3.3
Clermont	5	5.6	2	1.8	7	3.3	Morgan	<1	*	<1	*	<1	*
Clinton	<1	*	<1	*	1	2.0	Morrow	<1	*	<1	*	<1	*
Columbiana	2	3.6	<1	*	3	2.3	Muskingum	3	6.7	2	2.7	5	4.5
Coshocton	<1	*	<1	*	1	2.3	Noble	<1	*	<1	*	<1	*
Crawford	1	4.7	1	3.2	2	3.7	Ottawa	3	10.0	<1	*	3	6.8
Cuyahoga	21	3.1	13	1.4	34	2.1	Paulding	<1	*	<1	*	<1	*
Darke	2	5.7	<1	*	2	3.3	Perry	<1	*	<1	*	1	3.0
Defiance	<1	*	<1	*	<1	*	Pickaway	1	4.5	<1	*	2	3.2
Delaware	3	4.1	2	2.1	5	3.0	Pike	1	5.9	<1	*	2	5.2
Erie	1	2.6	2	4.0	3	3.3	Portage	3	4.5	2	2.3	5	3.2
Fairfield	4	6.1	1	1.1	5	3.3	Preble	2	7.4	1	4.6	3	6.0
Fayette	<1	*	<1	*	<1	*	Putnam	1	7.4	<1	*	2	4.4
Franklin	17	3.9	11	1.8	29	2.6	Richland	4	6.2	1	1.3	5	3.5
Fulton	<1	*	1	3.9	2	3.9	Ross	2	4.3	1	2.7	3	3.4
Gallia	<1	*	<1	*	1	2.6	Sandusky	2	7.1	<1	*	3	3.5
Geauga	2	4.0	1	2.2	4	3.0	Scioto	1	3.9	2	3.2	3	3.4
Greene	5	6.1	2	2.1	7	3.8	Seneca	1	3.7	<1	*	2	2.0
Guernsey	<1	*	1	5.0	2	4.3	Shelby	<1	*	1	2.9	2	2.5
Hamilton	16	4.2	10	1.9	26	2.9	Stark	8	4.0	5	1.9	13	2.8
Hancock	2	4.3	1	2.3	3	3.2	Summit	12	4.0	7	2.0	19	3.0
Hardin	2	10.1	<1	*	2	7.0	Trumbull	7	5.4	3	1.8	9	3.4
Harrison	<1	*	<1	*	<1	*	Tuscarawas	2	3.3	1	1.8	3	2.4
Henry	<1	*	<1	*	<1	*	Union	<1	*	<1	*	2	3.2
Highland	1	4.6	<1	*	1	2.7	Van Wert	1	7.6	1	5.1	2	5.8
Hocking	<1	*	<1	*	<1	*	Vinton	<1	*	<1	*	<1	*
Holmes	0	0.0	<1	*	<1	*	Warren	4	3.7	2	1.5	6	2.6
Huron	2	6.6	<1	*	2	3.0	Washington	2	5.0	<1	*	3	3.2
Jackson	<1	*	<1	*	2	3.9	Wayne	2	3.3	2	2.9	4	3.1
Jefferson	2	4.7	1	2.2	3	3.2	Williams	1	5.4	<1	*	2	3.1
Knox	2	4.5	<1	*	2	2.8	Wood	2	3.0	2	2.8	4	2.9
Lake	7	5.1	3	1.8	10	3.2	Wyandot	1	8.3	<1	*	1	4.3

Source: Bureau of Vital Statistics, Ohio Department of Health, 2016; Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2016.

*Rate not presented when the count for 2009-2013 is less than five (i.e., the average annual count is less than one).

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Acknowledgements

The following individuals contributed to this report:

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Sincere appreciation to the OCISS, cancer registrars, medical records technicians and other health professionals who improve the collection and quality of cancer data in Ohio.

Suggested Citation

Melanoma of the Skin in Ohio, 2009-2013. Ohio Cancer Incidence Surveillance System, Ohio Department of Health, July 2016.

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The OCISS is supported in part by the State of Ohio and the Centers for Disease Control and Prevention (CDC), National Program of Cancer Registries, cooperative agreement number 6NU58DP003936. The contents are the sole responsibility of the authors and do not necessarily represent the official views of the CDC.
