VERMONT
DEPARTMENT OF HEALTH

Melanoma in Vermont

Vermont Cancer Registry
Chronic Disease Epidemiology

August 2007

Vermont Facts, 2000-2004

- **Incidence:** Melanoma is the fifth most common cancer diagnosed in men and women. Each year, approximately 96 melanomas are diagnosed in men, and 84 melanomas are diagnosed in women.
- **Mortality:** Each year, approximately 24 men and 6 women die from melanoma.
- **Yearly Trends (1995-2004):** Incidence of melanoma has increased in Vermont and the U.S.
- **Age:** Melanoma affects people of all age groups and is one of the most common cancers among individuals age 20-49.
- **Vermont vs. U.S.:** The incidence of melanoma among males and females in Vermont is higher than the U.S. rate. Mortality rates among Vermont men and women are not different from the U.S.
- **Stage:** In Vermont, 83 percent of melanomas among men and 86 percent among women are diagnosed at the localized stage (the cancer is limited to the organ of origin). Among Vermonters with melanoma, 17 percent of men and 14 percent of women are diagnosed at the regional or distant stage (the cancer has extended beyond the local organ or has metastasized).
- **Prevention:** Melanoma is largely preventable when sun protection methods, such as sunscreen, are used. There are differences in practice of protective behaviors. For example, 79 percent of women report using sun protection measures compared to 68 percent of men.

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Background

In Vermont, cancer is the second leading cause of death, with approximately 1,200 people dying from cancer each year. For the past 40 years, the three leading causes of death in Vermont have been heart disease, cancer, and stroke. Unlike the death rates for heart disease and stroke, the death rate for cancer has risen steadily over the last few decades. Roughly one out of every two men and one out of every three women will develop cancer in their lifetime.

Any disease in which abnormal cells develop, divide, grow, and have the potential to spread throughout the body can be called cancer. If the spread of these cancer cells is not controlled, death may result. Cancer cells from a malignant tumor can invade nearby tissues either by direct growth into adjacent tissue or by migration through the bloodstream and lymphatic system to other parts of the body. This process is called metastasis. For example, cancer that started as a melanoma of the skin and spread to the brain is still skin cancer.

Melanoma is a form of skin cancer that occurs in the melanocytes, which are cells in the outer layer of skin that gives skin its tan coloring and typically protects deeper layers of the skin from harmful sun exposure. When the skin is exposed to sunlight, the melanocytes in the outer layer of skin make more pigment, which causes the skin to darken. Melanomas develop when melanocytes undergo malignant transformation, becoming abnormal, grow uncontrollably, and can aggressively invade surrounding tissues. Melanomas are the most serious form of skin cancer. Melanoma can be treated early, but if left untreated, it can spread to other parts of the body and become much more difficult to treat.

Incidence

Table 1. The five most commonly diagnosed cancers in males and females – Vermont, average number of cases per year, 2000-2004.

Male Cancer Site	Cases (per year)	Percent (per year)	Female Cancer Site	Cases (per year)	Percent (per year)
Prostate	493	29%	Breast	475	31%
Lung	242	14%	Lung	179	12%
Colon and Rectum	172	10%	Colon and Rectum	164	11%
Bladder	120	7%	Uterus	110	7%
Melanoma of Skin	96	6%	Melanoma of Skin	84	5%
All Sites	1,679	100%	All Sites	1,535	100%

New cases per year exclude basal cell and squamous cell skin cancers and in situ (malignant but non-invasive) carcinomas except urinary bladder.

- An average of 1,679 cancers in males and 1,535 cancers in females are diagnosed each year in Vermont. Of those, the average number of melanomas diagnosed in men and women is 96 and 84, respectively.

- Melanomas are the fifth most common cancer diagnosed in males and females and account for roughly six percent of all cancers diagnosed in Vermont.

Mortality

Defined as the number or rate of deaths due to cancer in a population during a specific period of time, mortality is often used to evaluate effectiveness of treatment.

Table 2. The five most common causes of cancer death in males and females – Vermont, yearly averages 2000-2004.

Male Cancer Site	Deaths (per year)	Percent (per year)	Female Cancer Site	Deaths (per year)	Percent (per year)
Lung	189	30%	Lung	140	24%
Prostate	69	11%	Breast	97	16%
Colon & Rectum	62	10%	Colon & Rectum	68	11%
Pancreas	31	5%	Ovary	31	5%
Non-Hodgkin's	30	5%	Pancreas	30	5%
•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•
Melanoma	**24**	**4%**	**Melanoma**	**6**	**1%**
All Sites	632	100%	All Sites	595	100%

- An average of 632 males and 595 females die each year from cancer in Vermont. Of these, an average of 24 men and 6 women die from melanoma.
- Melanoma is the twelfth leading cause of cancer death for males and the seventeenth leading cause among females in Vermont.
- In Vermont, melanoma accounts for roughly 4% of all cancer deaths in males, and 1% of all cancer deaths in females.

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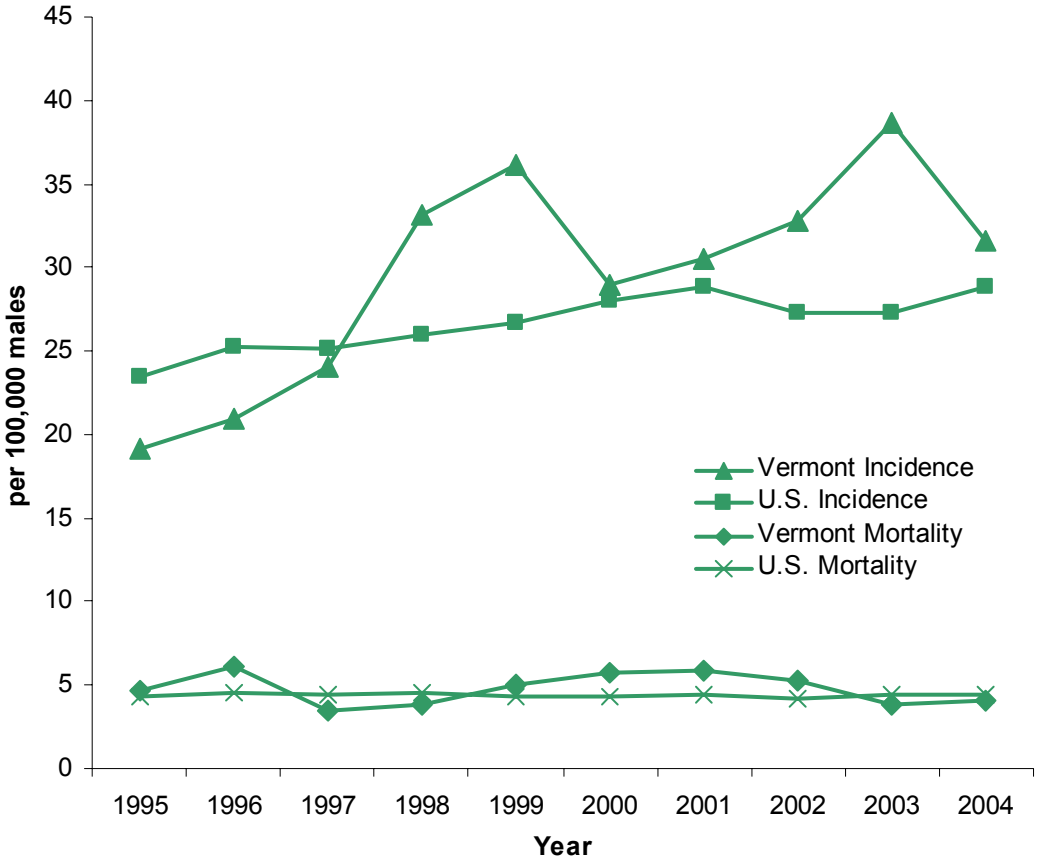
Trends

The number of new melanomas diagnosed in the United States has increased annually. In the United States, the percentage of people who develop melanoma has more than doubled in the past 30 years.

Figure 1. Incidence and mortality rates of male melanoma – Vermont and United States, 1995-2004.

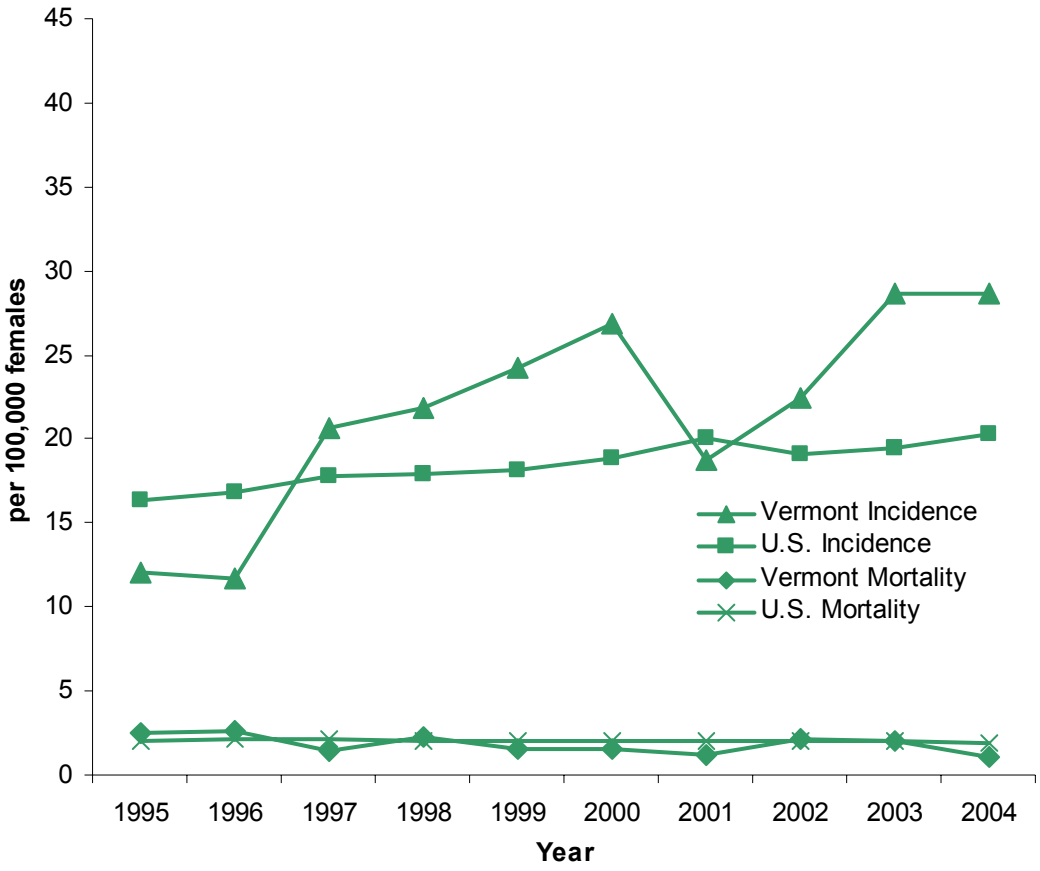


	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Vermont Incidence	19.2	21.0	24.1	33.1	36.2	29.0	30.5	32.8	38.6	31.6
U.S. Incidence	23.4	25.2	25.1	26.0	26.7	28.0	28.8	27.3	27.3	28.9
Vermont Mortality	4.7	6.1	3.5	3.8	5.0	5.7	5.9	5.3	3.8	4.0
U.S. Mortality	4.3	4.5	4.4	4.6	4.3	4.3	4.4	4.2	4.4	4.4

Incidence excludes in situ (malignant but non-invasive) carcinomas.

- From 1995 to 2004, trend analysis shows that the male melanoma incidence rates increased in Vermont and the U.S.
- From 1995 to 2004, trend analysis shows that there was no change in male melanoma mortality in Vermont or in the U.S.

Figure 2. Incidence and mortality rates of female melanoma – Vermont and United States, 1995-2004.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Vermont Incidence	12.1	11.7	20.7	21.9	24.2	26.9	18.7	22.4	28.6	28.6
U.S. Incidence	16.3	16.8	17.8	17.9	18.1	18.8	20.0	19.1	19.5	20.3
Vermont Mortality	2.5	2.6	1.5	2.3	1.5	1.6	1.3	2.1	2.1	1.1
U.S. Mortality	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9

Incidence excludes in situ (malignant but non-invasive) carcinomas.

- From 1995 to 2004, trend analysis shows that the female melanoma incidence rates increased in Vermont and the U.S.
- In Vermont female melanoma incidence has more than doubled in Vermont over the past decade, whereas the U.S. female rate has increased by only 20 percent.
- From 1995 to 2004, trend analysis shows that the female melanoma mortality rates have declined in the U.S. but have not changed in Vermont. While Vermont's mortality rate appears to have declined, this difference could be due to chance alone. Rates based on a small number of events can have variability and, therefore, not actually be different.

U.S. Comparisons

Table 3. Incidence and mortality rates of melanoma – Vermont and United States, per 100,000, yearly averages, 2000-2004.

	Incidence	Mortality
Vermont Males	32.5	4.9
U.S. Males	28.1	4.3
Vermont Females	25.2	1.6
U.S. Females	19.5	2.0

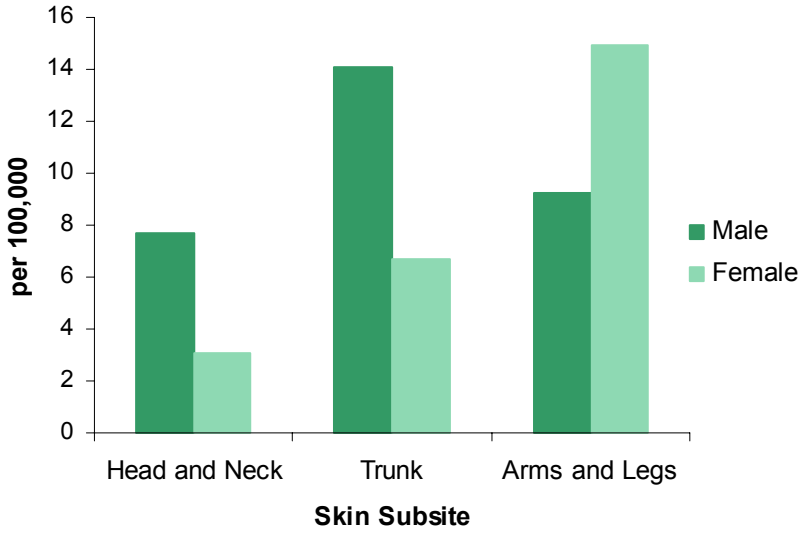
Incidence excludes in situ (malignant but non-invasive) carcinomas.

- In Vermont, both incidence and mortality are higher among men than women.
- Incidence rates for melanoma are higher among Vermont males and females compared to the U.S.
- The melanoma mortality rate among Vermont males and females is not different from the U.S.

Gender

There are considerable differences between men and women in the anatomic distribution of melanoma among Vermonters. Melanoma is more likely to occur on the head, neck, or trunk in men, while melanoma is more likely to be found on the arms or legs of women.

Figure 3. Incidence rates of melanoma by subsite, males and females – Vermont, 2000-2004 .

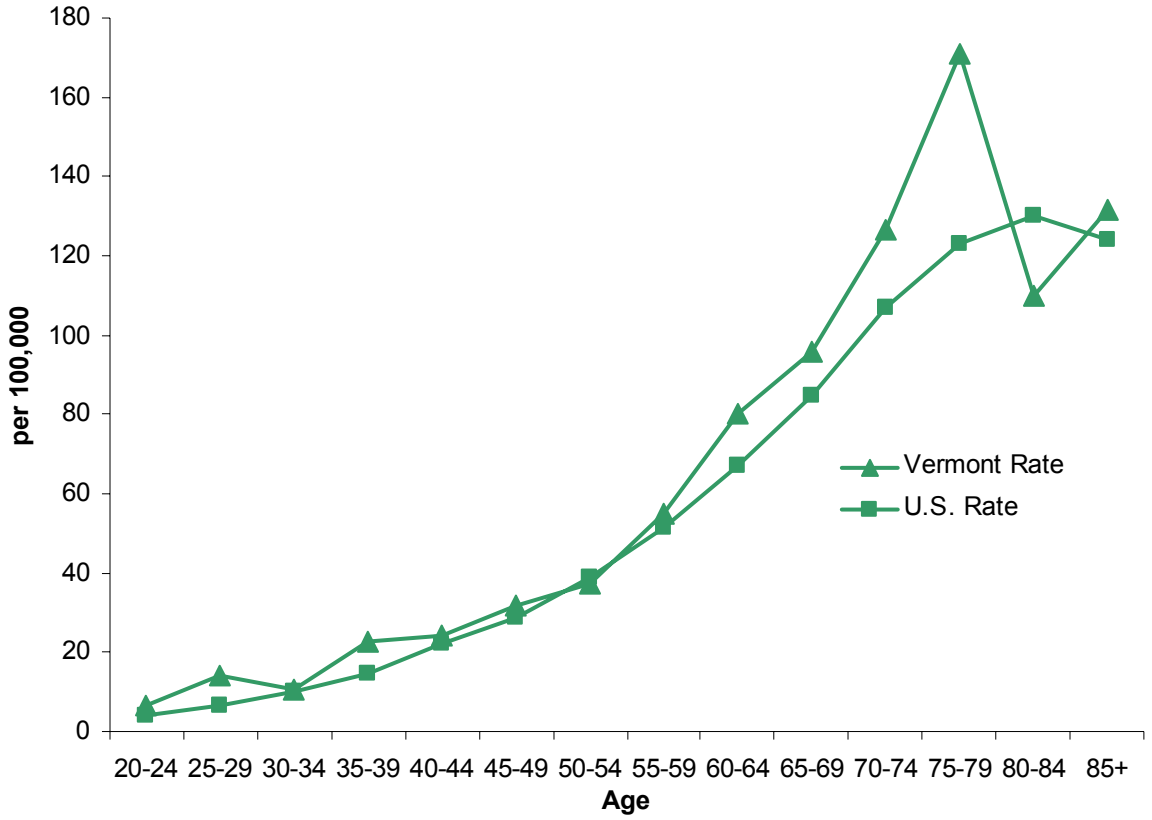


- The explanation most commonly given for this gender difference are the variations in sunlight exposure of body subsites due to gender differences in clothing styles and recreational activities.

Age

Incidence is defined as the number of new cases occurring in a population during a defined time interval, and it is a useful measure of the risk of disease. The incidence rates of melanoma, as with many cancers, increase with age and are highest among those in their 80s. However, the condition affects individuals of all age groups and is one of the most common cancers in adults aged 20 to 49.

Figure 4. Incidence rates of male melanoma, by age – Vermont and United States, 2000-2004.

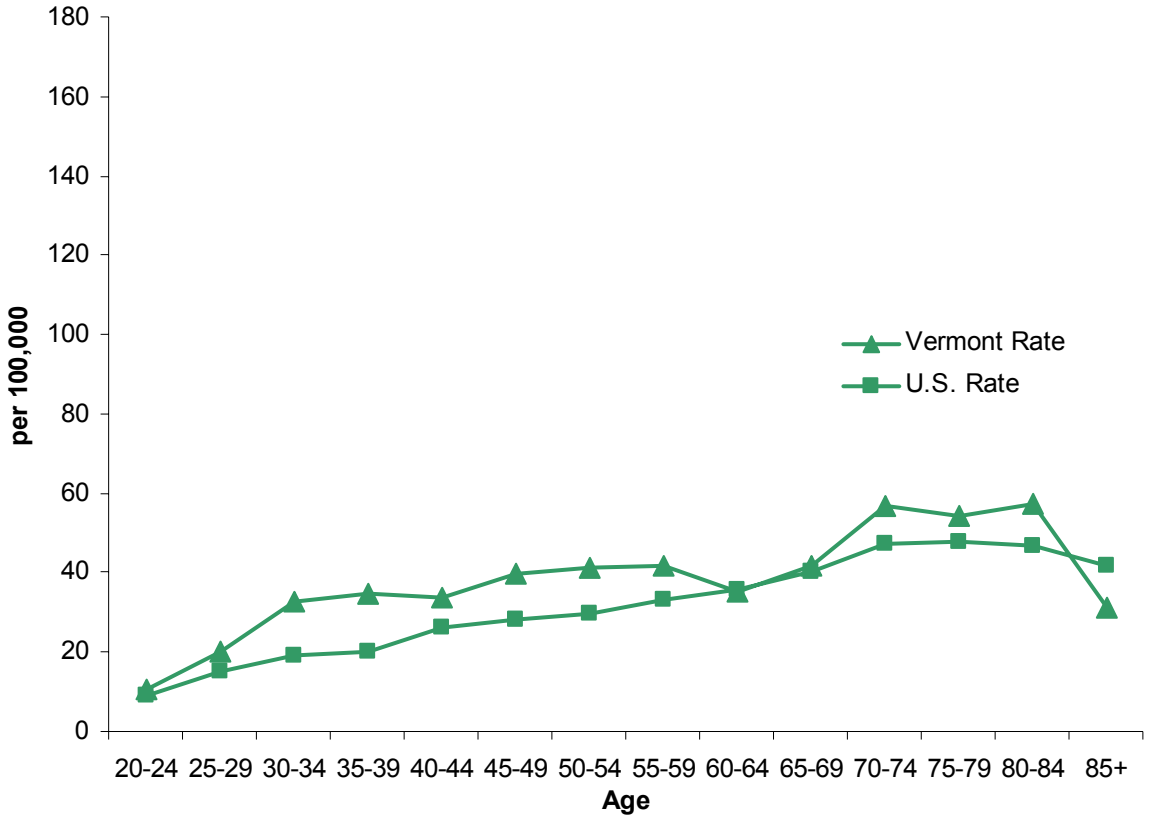


Age Group	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Vermont Rate	6.5	13.9	10.5	22.5	24.2	31.8	37.5	55.2	80.2	96.0	126.4	171.0	110.0	131.8
U.S. Rate	4.1	6.7	10.2	14.6	22.3	28.6	38.8	51.6	67.1	84.8	106.8	122.9	130.3	124.2

- Vermont men age 75 to 79 have the highest age-specific incidence of melanoma, at a rate of 171.0 per 100,000.
- Incidence rates for melanoma are higher among Vermont males age 25 to 29 and 75 to 79 compared to the U.S.[1]

[1] The U.S. rates represented in this publication are for whites. See Technical Notes for more information.

Figure 5. Incidence rates of female melanoma, by age – Vermont and United States, 2000-2004.



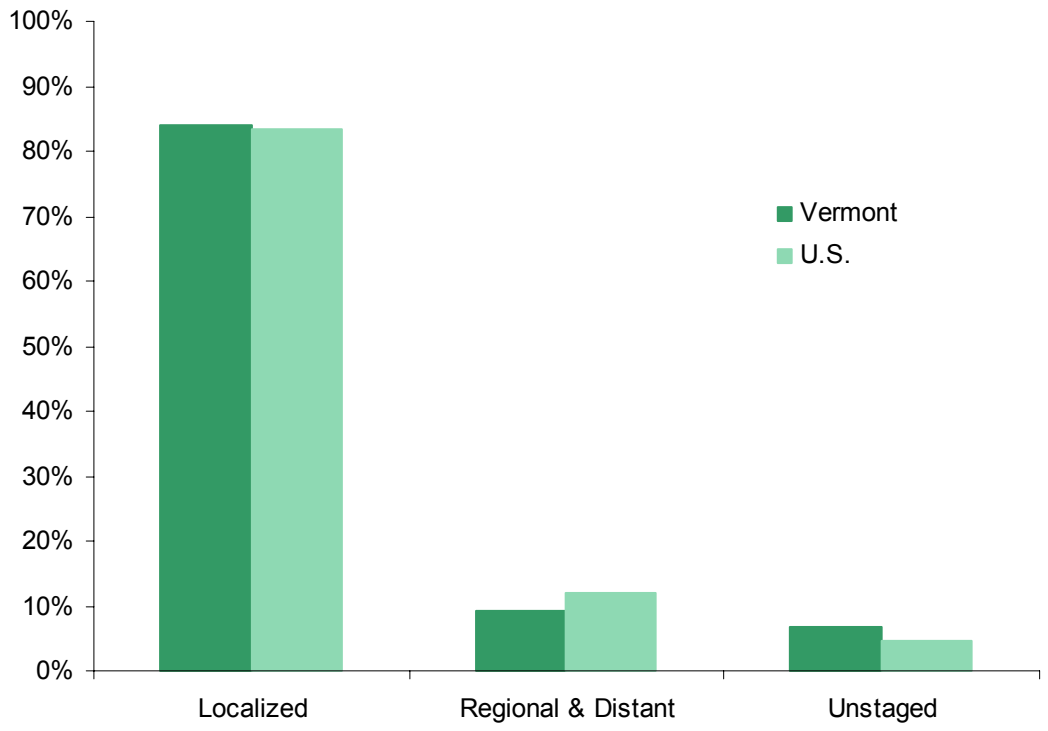
Age Group	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Vermont Rate	10.8	20.0	32.7	34.9	33.8	39.9	41.3	41.5	35.0	41.6	56.9	54.4	57.1	31.4
U.S. Rate	9.3	15.3	19.2	20.0	26.0	28.1	29.6	33.3	35.8	40.0	47.3	47.7	46.7	41.9

- Vermont women age 80 to 84 have the highest age-specific incidence of melanoma, at a rate of 57.1 per 100,000.
- Incidence rates for melanoma are higher among Vermont females age 30 to 39 and 45 to 54 compared to the U.S.

Stage at Diagnosis

Stage describes the extent to which the cancerous cells have spread from the original site to another part of the body. Stage can be grouped into the following categories: in situ, localized, regional, distant, and unknown. If melanoma is diagnosed at an earlier stage, the chances for survival are greater. Nationally, 98% of men and women whose cancer is diagnosed in a localized stage survive their melanoma for at least five years. Only 15% of men and women diagnosed with distant stage melanoma survive for at least five years.

Figure 6. Distribution of melanoma by stage at diagnosis – male and female, Vermont and the United States, 2000-2004.



Incidence excludes in situ (malignant but non-invasive) carcinomas.

- Approximately 84 percent of melanomas were diagnosed among Vermonters at the early stage (localized) and 9 percent were diagnosed at a regional or distant stage. In the U.S., 83 percent of melanomas were diagnosed at the early stage, and 12 percent were diagnosed at a regional or distant stage among males.

- There is no difference between Vermont and the U.S. for localized stage at diagnosis but Vermonters are diagnosed less at a regional or distant stage compared to the U.S. However, Vermont has a higher number of unstaged cancers that may explain this difference.

Risk Factors

A risk factor is a condition, an activity or an exposure that increases a person's chance of developing cancer. Cancer develops gradually as a result of a complex mix of factors related to lifestyle choices, environment and genetics. Each type of cancer is caused by a different set of factors, some well established, some uncertain, and some unknown. The exact causes of melanoma are unknown, but some of the factors associated with an increased risk of developing melanoma are:

- **UV Radiation:** Experts believe that much of the worldwide increase in melanoma is related to an increase in the amount of time people spend in the sun. Sources of ultraviolet (UV) radiation are both natural and

artificial sunlight, such as tanning booths and sunlamps, and both can cause skin damage and increase the risk of melanoma. Gaining in popularity, artificial tanning equipment emits UV radiation and is considered carcinogenic and may expose individuals to 10 to 15 times as much UV radiation as the sun. The effects of exposure accumulate over time. In addition, exposure to tanning salon rays increases damage caused by sunlight because ultraviolet light actually thins the skin, making it less able to heal. Women who use tanning beds more than once a month are 55 percent more likely to develop malignant melanoma.

- **Age:** The occurrence of melanoma in childhood is rare but possible. Like many cancer rates, the incidence of melanoma increases with age, but melanoma is not uncommon even among those younger than 30. In fact, it is one of the more common cancers in adolescents and young adults. Although typically diagnosed in a person's 20s to 40s, melanoma can occur at any age. Parents should be aware of, and monitor with their child's physician, any skin changes. Both exposure to artificial and natural UV radiation and sunburns during childhood increase the risk of developing melanoma later in life.

- **Fair Skin:** People who have fair skin that burns or freckles easily (red or blond hair and blue eyes) are at greater risk for melanoma than individuals with dark skin. In the U.S., rates are more than 10 times higher in whites than in African Americans.

- **Severe 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 are also a risk factor for melanoma.

- **Unusual Moles:** Having an atypical mole increases a person's risk for melanoma. Most people have moles, and almost all moles are harmless. Atypical moles' appearance is different from common moles. They are generally larger than ordinary moles and have irregular and indistinct borders. Their color is frequently not uniform and the texture is usually flat but may be raised above the skin surface. It is important to watch for changes in a mole – such as its size, shape, color, or texture – that suggest a melanoma may be developing. Be sure to show your doctor any area that concerns you. Having many ordinary moles (greater than 50) can increase a person's risk for melanoma.

- **Family or Personal History:** Approximately 10 percent of people with melanoma have a mother, father, brother, sister, or child with melanoma. This could be due to shared lifestyles of family members or a shared genetic susceptibility. Being treated for a previous melanoma puts a person at a greater risk of developing a second melanoma.

Prevention and Screening

Experts do not agree whether to recommend routine screening for skin cancer by total skin examination. Generally, it is recommended that people with risk factors talk with their physician about skin cancer, the symptoms to watch for, and a schedule for checkups. Self-examination of your skin once-a-month is the best way to detect the early signs of basal cell carcinoma, squamous cell carcinoma, and melanoma, which are the three main types of skin cancer. Look for a new growth or any skin change. ABCDE (Asymmetry, Border, Color, Diameter, Evolving) represents an acronym that is a guide for the detection of early skin cancers.

Asymmetry: the mole is not round.
Border: the mole's border is not well-defined.
Color: the mole is dark or varied in color.
Diameter: the mole is greater than 1/4 inch in size (around the size of a pencil eraser).
Evolving: the lesion changes over time (size, shape, surface or shades of color).

If any of the above conditions are present, a visit to your physician is recommended. Additionally, reducing exposure to ultraviolet (UV) radiation, such as from the sun and tanning booths, can decrease an individual's risk of developing skin cancer. The use of sunscreen is only a part of a sun-safety strategy, which includes a number of protective behaviors against UV exposure. Health experts recommend that people take a number of steps to help prevent and reduce the risk of melanoma caused by UV radiation. These include:

- Avoid exposure to the midday sun (from 10 a.m. to 4 p.m.) whenever possible. When your shadow is shorter than you are, remember to protect yourself from the sun.

- If you must be outside, wear long sleeves, long pants, and a hat with a wide brim. A hat with at least a 2- to 3-inch brim all around is ideal.

- Protect yourself from UV radiation that can penetrate light clothing, windshields, and windows.

- Protect yourself from UV radiation reflected by sand, water, snow, and ice.

- Help protect your skin by using and reapplying sunscreen; even those labeled as waterproof, sweat proof, or all day should be reapplied frequently. Many doctors believe sunscreens may help prevent melanoma, especially sunscreens that reflect, absorb, and/or scatter ultraviolet radiation. These sunscreen products will be labeled with "broad-spectrum coverage." Sunscreens are rated in strength according to a sun protection factor (SPF). The higher the SPF, the more sunburn protection is provided. Sunscreens with an SPF value of 2 to 11 provide minimal protection against sunburns. Sunscreens with an SPF of 12 to 29 provide moderate protection. Those with an SPF of 30 or higher provide the most protection against sunburn. In the lab, the specific SPF of a product is determined by dividing how many minutes it takes someone to burn wearing a thick layer of the product by the minutes they take to burn without the product. However, most people use sunscreen far too sparingly, obtaining a level of SPF far less than the amount they perceive they are using. When applying sunscreen, use **four tablespoons** (1/4 cup) of sunscreen to the body and **one teaspoon** to the face.

- Protect your eyes by wearing sunglasses that have UV-absorbing lenses. The label should specify that the lenses block at least 99 percent of UVA and UVB radiation. Sunglasses can protect both the eyes and the skin around the eyes.

- Avoid the sun when taking drugs which make your skin more sensitive to light (photosensitive drugs), including antibiotics such as tetracycline, tretinoin (Retin A), sleeping pills and diuretics (water pills).

- **Never** use tanning booths, tanning parlors or sunlamps where exposure can be 10 to 15 times greater than natural UV radiation.

Melanoma is largely preventable when sun protective practices and behaviors are consistently used. As part of the Vermont State Cancer Plan 2006-2010 and Healthy Vermonters 2010 objectives, Vermont set a goal to increase the percentage of all Vermont adults reporting using at least one sun-protection method when out in the sun.

Goal:	85 percent
VT 2006:	74 percent

However, certain populations report lower rates of protective behaviors:

- **Lack of a personal doctor:** 75 percent of Vermonters with a personal doctor report using sun protection measures compared to 63 percent of those without a personal doctor.
- **Health insurance:** 75 percent of Vermonters with health insurance report using sun protection measures compared to 65 percent of those without insurance.
- **Race:** 74 percent of white Vermonters report using sun protection measures compared to 53 percent of non-white Vermonters.
- **Gender:** 79 percent of women report using sun protection measures compared to 68 percent of men.
- **Educational status:** Rates of protective behaviors increase with education. 79 percent of Vermonters who have completed college report using sun protection measures compared to only 53 percent of those who did not finish high school.

Treatment

The four types of standard treatment used to care for people with melanoma are surgery, chemotherapy, radiation therapy, and biologic therapy. The type and extent of treatment depends on the stage of the cancer, the patient's age and general health, and other factors. Choosing the most appropriate cancer treatment is a decision that ideally involves the patient, family, and health care team. Before starting treatment, patients may also want to think about taking part in a clinical trial.

Surgery to remove the tumor is the primary treatment of all stages of melanoma. The doctor may remove the tumor using local excision (taking out the melanoma and some of the normal tissue around it) or wide local excision (with or without removal of lymph nodes).

Chemotherapy may be offered to some patients following surgery, even if the doctor removes all of the visible melanoma, to kill any remaining cancer cells. Chemotherapy given after surgery, to increase the chances of a cure, is called adjuvant therapy. The way the chemotherapy is given depends on the type and stage of the cancer being treated.

Radiation therapy is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells or keep them from growing. There are two types of radiation therapy, external radiation therapy and internal radiation therapy. The way the radiation therapy is given depends on the type and stage of the cancer being treated.

Biologic therapy is a treatment that uses the patient's immune system to fight cancer. Substances made by the body or made in a laboratory are used to boost, direct, or restore the body's natural defenses against cancer. This type of cancer treatment is also called "biotherapy" or "immunotherapy."

Clinical trials are generally designed to compare potentially better therapy with therapy that is currently accepted as standard and can be an important option for many individuals when considering treatment of this disease. Much of the progress made in identifying curative therapies for cancers has been achieved through clinical trials. Information about ongoing clinical trials is available from: http://www.cancer.gov/clinicaltrials

Intervention, Policy, and Recommendations

The Vermont State Cancer Plan[2], published by the Vermont Department of Health and **Vermonters Taking Action Against Cancer (VTAAC)**[3], provides a strategic roadmap to reduce the burden of all cancers by 2010. The Plan identifies strategic priorities in the following areas: preventing future cancers, detecting new cancers early, increasing access to optimal treatment and follow up, improving the quality of life for cancer survivors, and improving pain management and end-of-life care.

The burden of melanoma in Vermont can be reduced by achieving the following objectives, as identified in the State Cancer Plan:

Prevent future cancers by reducing exposure to known risk factors including:

- Increase use of sun protection methods by Vermont adults and youth.
- Decrease the percentage of Vermont adults who have used a tanning booth or sun lamp in the past 12 months.
- Decrease the percentage of Vermont adults reporting sunburns in the past 12 months.

[2] Vermont State Cancer Plan, 2006-2010: http://healthvermont.gov/pubs/cancerpubs/state_cancer_plan.aspx.

[3] A network of groups and individuals that speaks with one voice about reducing cancer risk, detecting cancers earlier, creating better access to quality cancer treatment, and improving the quality of life for cancer survivors. Visit: http://vtaac.org/ or call (802) 872-6303.

Increase access to optimal cancer treatment and follow-up care:

- Reduce financial, geographic and cultural barriers to appropriate cancer treatments.
- Increase referrals for multi-modality treatment assessment.
- Increase availability and use of transportation services to access cancer treatment.
- Increase participation in therapeutic clinical trials.
- Increase the percentage of Vermonters covered by health insurance.

Improve the quality of life for people living with, through and beyond cancer, as well as **improve end-of-life** care for cancer patients.

Vermonters Taking Action Against Cancer (VTAAC) is a statewide collaborative partnership of more than 200 organizations, healthcare providers and individuals working together to reduce the burden of cancer among **all** Vermonters. VTAAC workgroups and affiliate organizations develop and implement specific strategies and activities to achieve the objectives of the Vermont State Cancer Plan. Activities and progress towards these objectives are routinely assessed and reported annually[4].

For more information about VTAAC, the State Cancer Plan or current activities and progress, visit: http://healthvermont.gov/cancer.

National Efforts

The Centers for Disease Control and Prevention (CDC) engages in numerous skin cancer prevention and control efforts, all with the primary aim of reducing the number of people who are diagnosed with and die from skin cancer. The CDC prevention and education efforts include:

- Funding skin cancer activities in three states through the National Comprehensive Cancer Control Program.
- Funding three demonstration projects between state departments of health and education to implement the "Guidelines for School Programs to Prevent Skin Cancer."
- Supporting epidemiologic, behavioral science, and surveillance research efforts.

For more information, visit http://www.cdc.gov/cancer/skin/what_cdc_is_doing/.

[4] Vermont Cancer Plan Status Report, 2006: http://healthvermont.gov/prevent/cancer/documents/102606Progresssheet.pdf.

Data Sources

Vermont Cancer Registry: The Vermont Cancer Registry is a central bank of information on all cancer cases diagnosed or treated in Vermont since January 1, 1994. The registry enables the state to collect information on new cases (incidence) of cancer. Previously, the state only kept records on deaths from cancer. The information maintained by the registry allows the Health Department to study cancer trends and improve cancer education and prevention efforts. Suggested Citation: Vermont Department of Health Cancer Registry, 1995-2004. The Vermont Cancer Registry can be contacted at 802-865-7749.

Vermont Vital Statistics: In Vermont, towns are required to file certified copies of death certificates with the Department of Health for all deaths occurring in their jurisdictions. The Health Department is responsible for maintaining the vital statistics system. Suggested Citation: VT Department of Health Vital Statistics System, 1995-2004.

Behavioral Risk Factor Surveillance System: Since 1990, Vermont and 49 other states and three territories track risk behaviors using a telephone survey of adults called the Behavioral Risk Factor Survey. Suggested Citation: Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2006.

Surveillance, Epidemiology, and End Results: The National Cancer Institute funds a network of Surveillance, Epidemiology and End Results (SEER) registries. The SEER Program currently collects and publishes cancer incidence and survival data from 14 population-based cancer registries and three supplemental registries covering approximately 26 percent of the U.S. population. These rates are used to estimate the U.S. cancer incidence rates. U.S. incidence is based on the SEER 9 Registries white rates. Suggested Citation: Ries LAG, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg L, Mariotto A, Feuer EJ, Edwards BK (eds). SEER Cancer Statistics Review, 1975-2004, National Cancer Institute. Bethesda, MD, 2007. http://www.seer.cancer.gov/csr/1975_2004

U.S. Vital Statistics: The U.S. Public Use Database Vital Statistical System maintains the U.S. mortality rates. Rates presented in this report are for the U.S. white population and were obtained using CDC Wonder. Suggested Citation: United States Department of Health and Human Services (U.S. DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Office of Analysis, Epidemiology, and Health Promotion (OAEHP), Compressed Mortality File (CMF) compiled from CMF 1995-2004, Series 20 No. 2J, 2007 on CDC WONDER On-line Database.

Technical Notes and Definitions

Age Adjustment: All rates in this document are age-adjusted to the 2000 U.S. standard population. This allows the comparison of rates among populations having different age distributions by standardizing the age-specific rates in each population to one standard population.

Incidence: Incidence refers to the number or rate of newly diagnosed cases of cancer. The incidence rate is calculated as the number of new melanomas diagnosed in the state during one year divided by the number of residents in the state during the same year. The incidence data presented in this report were coded using the International Classification of Disease for Oncology (ICD-O) coding system. Melanoma cancer cases were defined as invasive neoplasms with ICD-O-3 codes of C44.0-C44.9 with the histology codes 8720-8790 (or equivalent for older data).

Mortality: Mortality refers to the number or rate of deaths from cancer. The mortality data presented here were coded using the International Classification of Diseases (ICD). Cause of death was coded according to ICD-10.

Race: U.S. incidence and mortality rates for whites, rather than those for all races, are used for comparison because racial minority groups were estimated to make up 3.1 percent of the total Vermont population, compared with the total U.S. non-white population of 19.6 percent in 2004. Nationwide, whites have a higher risk compared to people of other races for female breast, melanoma, and bladder cancer incidence. Whites have a lower risk compared to other races for prostate, colorectal, and cervical cancer. The much smaller populations of Vermont residents of other races may have very different risks of these cancers. Combining data over many years will be required to determine cancer rates.

Statistical Significance: The use of the terms “higher” and “lower” in this document refer to a “statistically significant” difference. A statistically significant difference indicates that there is statistical evidence that there is a difference that is unlikely to have occurred by chance alone.

Small Numbers: Rates are not presented in this report if they are based on fewer than 6 cases.

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