

# Tobacco Associated Cancers – Data Brief

## Vermont Cancer Registry

### Background

Tobacco use increases the risk for many types of cancer, particularly lung cancer. Lung cancer is the most common tobacco associated cancer in Vermont. Cancer is a leading cause of death in Vermont. Lung cancer is the leading cause of cancer death in Vermont and the United States and is the most preventable form of cancer death. Vermont women have significantly higher rates of lung mortality (deaths) compared to the U.S. rates (Vital Statistics, 2011-2015).

Deaths, Vermont and U.S., 2011 - 2015

	Male			Female		
	U.S. Rate	VT Rate	VT Deaths (per year)	U.S. Rate	VT Rate	VT Deaths (per year)
All Cancer Sites	196.8	198.9	715	139.6	146.1	648
Lung and Bronchus	53.8	51.9	192	35.4	40.1	↑ 176

Source: VCR

### Incidence of Tobacco Associated Cancers

Other than lung cancer, tobacco also increases the risk for cancers of the mouth, lips, nose and sinuses, larynx (voice box), pharynx (throat), esophagus, stomach, colon and rectum, liver, pancreas, cervix, kidney, bladder, and acute myeloid leukemia.

Tobacco associated sites, Vermont and U.S., 2011-2015

	Male			Female		
	U.S. Rate	VT Rate	VT Cases (per year)	U.S. Rate	VT Rate	VT Cases (per year)
All Tobacco Associated Sites	222.0	211.9	↓ 808	133.2	130.3	557
Oral Cavity and Pharynx	17.1	17.0	68	6.2	6.3	27
Esophagus	7.5	9.6	↑ 38	1.7	2.4	10
Stomach	8.7	7.0	↓ 26	4.4	2.6	↓ 11
Colon and Rectum	43.4	36.7	↓ 137	32.9	31.6	135
Liver	6.4	4.7	↓ 19	1.9	1.0	↓ 4
Pancreas	12.0	12.3	47	9.1	8.8	37
Larynx	5.6	6.2	24	1.3	1.4	6
Lung and Bronchus	61.8	59.9	232	46.3	50.5	↑ 221
Cervix	--	--	--	7.3	4.3	↓ 14
Kidney	19.8	16.7	↓ 63	10.2	7.8	↓ 32
Urinary Bladder	34.6	36.9	136	8.5	10.4	↑ 46
Acute Myeloid Leukemia	4.8	4.8	18	3.3	3.1	13

↑Significantly Higher ↓Significantly Lower

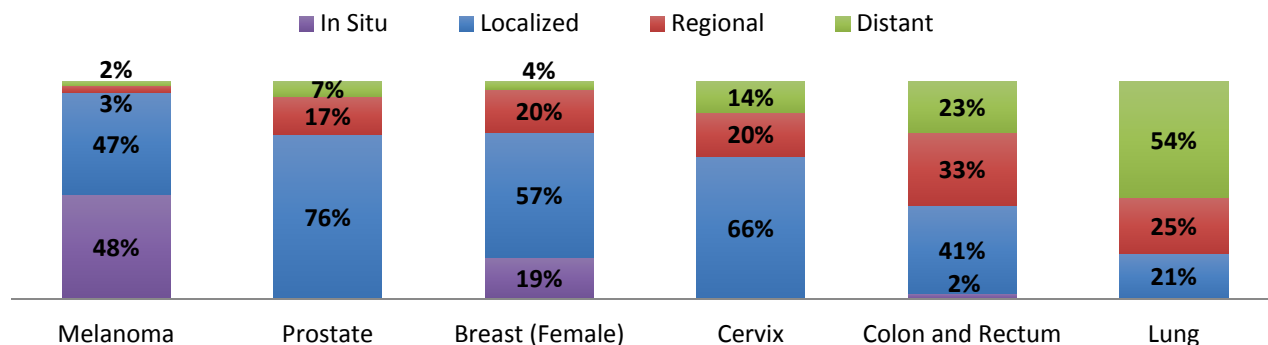
Source: VCR

Compared to the U.S. rates, Vermont men have significantly lower rates of stomach, colorectal, kidney, and liver cancers and higher rates of esophageal cancers. Vermont women have significantly lower rates of stomach, liver, cervical, and kidney cancers and higher rates of lung and bladder cancers compared to the U.S. rates.

## Stage at Diagnosis

With the majority of individuals diagnosed at a late stage (regional and distant), lung cancer has a very poor prognosis. Nationally, 56 percent of men and women whose lung cancer is diagnosed at a localized stage survive their cancer for at least five years, compared to 5 percent of those diagnosed at a distant stage (Source: SEER Cancer Statistics Review, 1975-2015).

**Cancer stage at diagnosis - % of total cases of cancer, by type, according to stage at diagnosis, Vermont, 2011-2015**

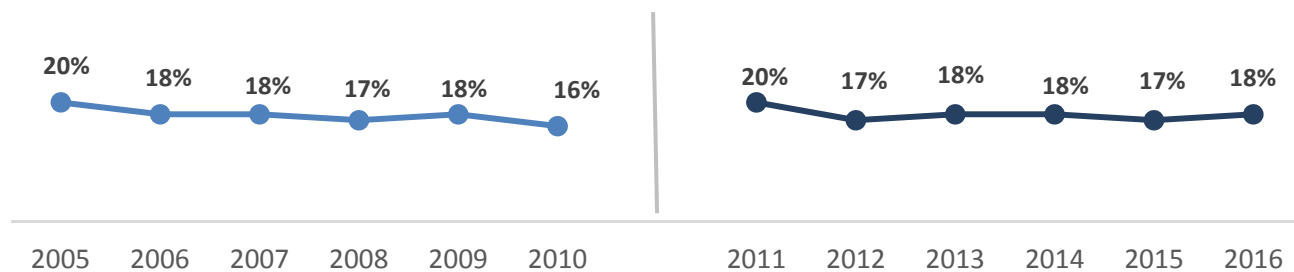


Source: VCR

## Prevention and Screening

Cancers linked to tobacco use account for 40 percent of all cancers diagnosed and 30 percent of cancer deaths in the U.S.<sup>1</sup> Tobacco use is the leading *preventable* cause of cancer and cancer deaths. In 2016, 18 percent of Vermont adults reported being cigarette smokers, similar to the U.S. proportion of 17 percent. Between 2011 and 2016<sup>2</sup> the smoking rate among Vermont adults did not change (BRFSS, 2016).

**Current smoking, Vermont adult residents, 2005 – 2016<sup>2</sup>**



Source: BRFSS

The best way to reduce your risk for developing lung and other tobacco associated cancers is to not smoke, quit smoking, and avoid breathing secondhand smoke. [Quitting](#) reduces the risk for developing cancer and other illnesses regardless of age or how long someone has smoked. In the past year, 49 percent of Vermont adult smokers has made an attempt to quit smoking. This is lower than the 59 percent seen among all U.S. adult smokers (BRFSS, 2016). Of Vermonters who used a tobacco product within the last year ([Vermont Adult Tobacco Survey, 2016](#)), 66 percent were advised to quit by their healthcare provider and only 32 percent were offered a specific cessation program or medication.

[Radon](#) is a naturally occurring radioactive gas that is present in soil, air, and water. Over time, breathing air with too much radon does increase a person's risk of developing lung cancer. Currently, this is the only cancer proven to be associated with inhaling radon. Unless you [test for it](#), there is no way of knowing if radon is present in your home. If you [smoke and your home has high levels of radon](#) your risk of getting lung cancer is especially high. The EPA estimates that 86% of radon-related lung cancer deaths occur among current or former smokers. Radon test kits are offered by the Department of Health and can be ordered free by e-mail ([Radon@vermont.gov](mailto:Radon@vermont.gov)) or phone (1-800-439-8550).

The goal of cancer screening is to detect a cancer at an early stage when it is most treatable and more likely to be cured. By the time lung cancer symptoms develop, the cancer has advanced to a distant stage. In 2010

initial results of the NCI funded Lung Cancer Screening Trial demonstrated that screening reduced the risk of dying from lung cancer by about 20 percent among a group of current and former heavy smokers who participated in the study<sup>3</sup>.

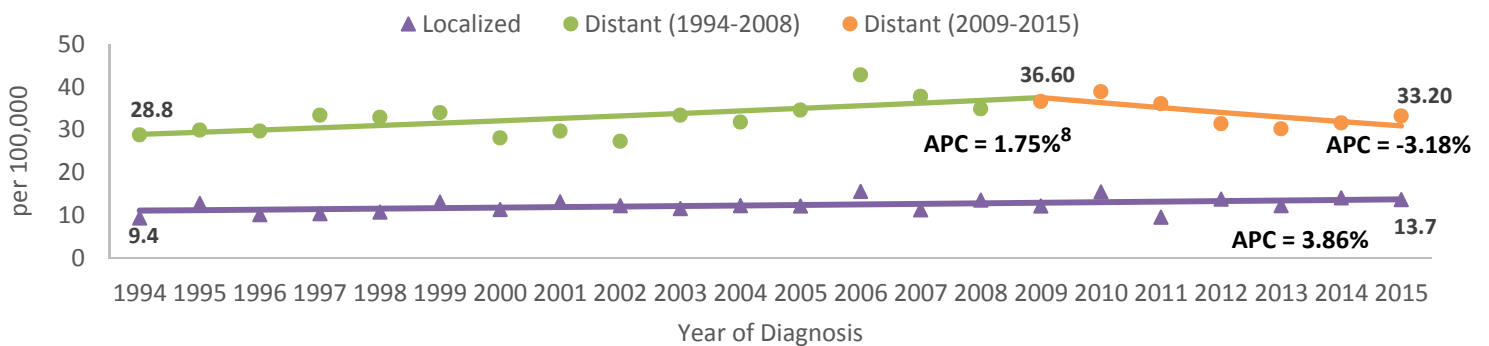
In 2013 the [United States Preventive Services Task Force \(USPSTF\)](#) issued an update<sup>4,5</sup> to guidelines for lung cancer screening recommending screening using low-dose computerized tomography (LDCT) to detect lung cancer at an earlier stage among individuals:

- Age 55 to 80 who are currently in good health, *and*
- Are current smokers *or* former smokers who have quit in the past 15 years, *and*
- Have a 30 pack-year<sup>6</sup> smoking history.

Patients should thoroughly discuss the benefits and risks of lung cancer screening using LDCT with their health care provider. Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery. Screening is not without some drawbacks and risks<sup>3</sup>.

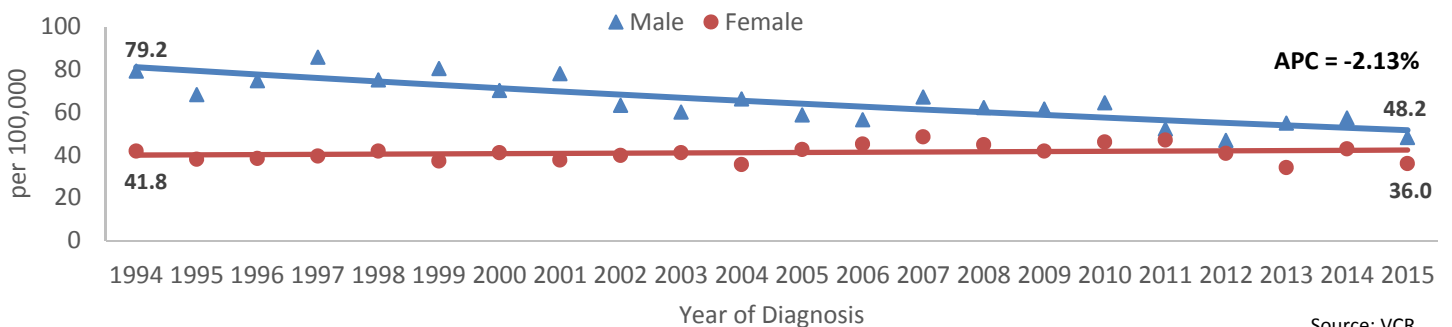
Screening for cervical, colorectal, and lung cancer can reduce tobacco associated cancer deaths.

**Age-adjusted lung cancer incidence rates by stage<sup>7</sup>, Vermont, 1994-2015**



Between 1994 and 2008 the incidence of lung cancer diagnosed at a distant stage increased annually<sup>8</sup> by almost 2 percent before decreasing annually by three percent between 2009 and 2015. Between 1994 and 2015 the incidence of lung cancer diagnosed at a localized stage increased annually by almost four percent (VCR, 1994-2015).

**Age-adjusted lung cancer mortality by sex, Vermont, 1994-2015**



Source: VCR

Between 1994 and 2015 deaths from lung cancer among Vermont males decreased approximately two percent each year while deaths among females between 1994 and 2015 were not different (Vital Statistics, 1994-2015).

## Technical Notes and Sources:

These data were collected by the Vermont Cancer Registry participating in the National Program of Cancer Registries (NPCR) of the Centers for Disease Control and Prevention (CDC). Incidence rates are per 100,000 and are age adjusted to the 2000 U.S. standard population. Incidence rates exclude in situ carcinomas except urinary bladder. Incidence was coded using the International Classification of Disease (ICD) for Oncology (ICD-O). Vermont cases include Vermont residents only. A reporting delay by Department of Veterans Affairs (VA) has resulted in incomplete reporting of Vermont VA incident cases in 2011-2014.

In December 2017, the methodology for computing risk factor-associated cancers changed to be consistent with CDC methodology, updated October 2017. The CDC [documentation](#) defines cancers associated with certain risk factors, including tobacco, alcohol, human papillomavirus (HPV), obesity, and physical-inactivity. Rates for risk factor-associated cancers published prior to December 2017 should not be compared to rates for risk factor-associated cancers published December 2017 or later. In addition, rates published later than May 2018 should not be compared to rates for risk factor-associated cancers published earlier due to additional methodological changes (excluding non-microscopically confirmed cases). Differences between rates in older versus current publications are likely due to methodological changes rather than changes in the rates or underlying risks for developing risk factor-associated cancers.

The Vermont and U.S. incidence rates are based on the Vermont Cancer Registry, Vermont Department of Health (1994-2015) and the NPCR and SEER Incidence - U.S. Cancer Statistics Public Use Database, Nov 2017 submission (2001-2015). The Vermont and the U.S. mortality rates are based on the Vermont Vital Statistics System, Vermont Department of Health (1994-2015) and the SEER Program Mortality - Aggregated Total U.S. (1990-2015).

Noone AM, Howlander N, Krapcho M, Miller D, Brest A, Yu M, Ruhl J, Tatalovich Z, Mariotto A, Lewis DR, Chen HS, Feuer EJ, Cronin KA (eds). [SEER Cancer Statistics Review, 1975-2015](#), National Cancer Institute. Bethesda, MD, [https://seer.cancer.gov/csr/1975\\_2015/](https://seer.cancer.gov/csr/1975_2015/), based on November 2017 SEER data submission, posted to the SEER web site, April 2018.

[United States](#) and [Vermont](#) Behavioral Risk Factor Surveillance System (BRFSS), 2005-2016.

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For more information please visit <http://healthvermont.gov/cancer> or contact Jennifer Kachajian, MA, MPH at [Jennifer.Kachajian@vermont.gov](mailto:Jennifer.Kachajian@vermont.gov).

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1 Henley SJ, Thomas CC, Sharapova SR, et al. [Vital Signs: Disparities in Tobacco-Related Cancer Incidence and Mortality — United States, 2004–2013](#). MMWR Morb Mortal Wkly Rep 2016; 65:1212–1218.

2 The Behavioral Risk Factor Surveillance System (BRFSS) survey methodology changed in 2011. As a result, caution must be used when comparing data from 2011 and later to prior years.

3 [The National Lung Screening Trial \(NLST\)](#) was a large [clinical trial](#) that looked at using low-dose computerized tomography (LDCT) scan of the chest to screen for lung cancer. Both LDCT and CT scans of the chest provide more detailed imaging than chest x-rays and are better at identifying small abnormalities in the lungs that may be early indications of lung cancer. Individuals who received LDCT had a 20% lower chance of dying from lung cancer and were 7% less likely to die overall (from any cause). However, the detection of abnormalities may require additional invasive tests that turn out not to be including additional imaging with CT scans, needle biopsies, or surgery to remove a portion of the lung.

4 Moyer VA, on behalf of the U.S. Preventive Services Task Force. [Screening for Lung Cancer: U.S. Preventive Services Task Force Recommendation Statement](#). Ann Intern Med. 2014; 160:330–338.

5 Humphrey LL, Deffebach M, Pappas M, Baumann C, Artis K, Mitchell JP, et al. [Screening for Lung Cancer With Low-Dose Computed Tomography: A Systematic Review to Update the U.S. Preventive Services Task Force Recommendation](#). Ann Intern Med. 2013; 159:411–420.

6 Pack-years are calculated as the number of years smoked multiplied by the number of packs of cigarettes per day. An individual who smoked 2 packs per day for 15 years (2 x 15 = 30) has 30 pack-years of smoking. A person who smoked 1 pack per day for 30 years also has 30 pack-years of smoking.

7 Stage of disease at diagnosis is SEER Summary Stage.

8 Annual Percent Change (APC) is reported when it is significantly different from zero (alpha = 0.05). APC is used to measure trends in cancer rates over time where cancer rates are assumed to change at a constant percentage of the rate of the previous year.