



Key Messages

- New cancer cases occur among Silver Bow county residents at the same rate as other Montana residents for all cancers combined and for the most common types of cancer.
- The rate of deaths due to all cancers combined and due to liver cancer from 2012 to 2016 were significantly higher among Silver Bow county residents compared to other Montana residents.
- The number of new cases of cancer among residents of census tract 6 (the area of town south of Interstate 90 and west of Harrison Ave/HWY 2 stretching down toward the airport) was significantly higher than expected from 2009 to 2016.

Cancer in Silver Bow County

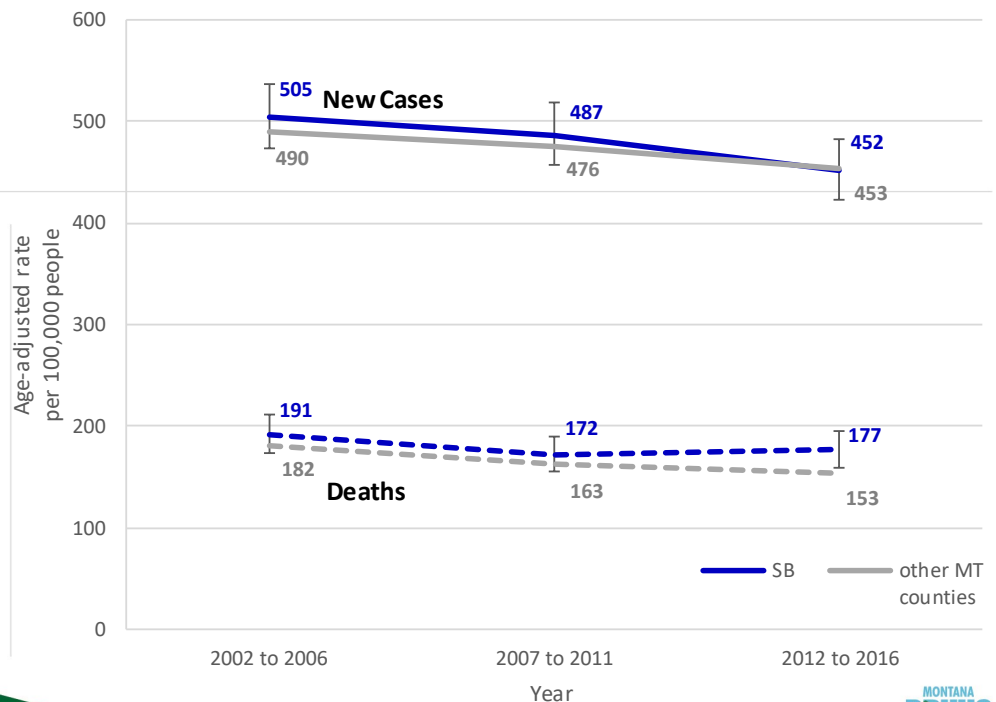
Cancer is a common disease. Approximately 5,700 Montanans are diagnosed with cancer each year. A person can develop cancer for many reasons: genetics, environmental exposures, life style behaviors (such as cigarette smoking, drinking alcohol, etc.), or a combination of these factors. Unfortunately, it is often difficult to determine the exact cause for an individual’s cancer.

The State of Montana has very complete data on cancer incidence. Cancer incidence is the number of newly diagnosed cancer cases each year. These data come from the Montana Central Tumor Registry (MCTR). State law requires every case of cancer that is diagnosed or treated in Montana be reported to the MCTR (Montana Code Annotated 50.15.7). The MCTR has been collecting cancer data since 1979. The MCTR is very complete, over 95% of all cancer cases are in the registry. Data on cancer mortality in this report is based on the underlying cause of death on the death certificate and was provided by the Montana Office of Vital Statistics. All incidence and mortality rates in this report are age-adjusted to the U.S. Standard Million Population.

How often is cancer diagnosed in Silver Bow County residents compared to other Montana residents?

There are about 200 new cases of cancer and 80 cancer deaths among Silver Bow

Figure 1: New cancer cases and cancer death rates among Silver Bow County residents compared to residents of other Montana counties from 2002–2016.



Montana Cancer Control

Programs

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County residents each year. The incidence of all cancer sites combined was the same among residents of Silver Bow County compared to the residents of other MT counties (Figure 1). The rate of cancer deaths was also the same among Silver Bow county residents as other MT residents from 2002 to 2011. However, from 2012 to 2016 there was a significantly higher rate of cancer deaths among Silver Bow county residents than residents of other Montana counties.

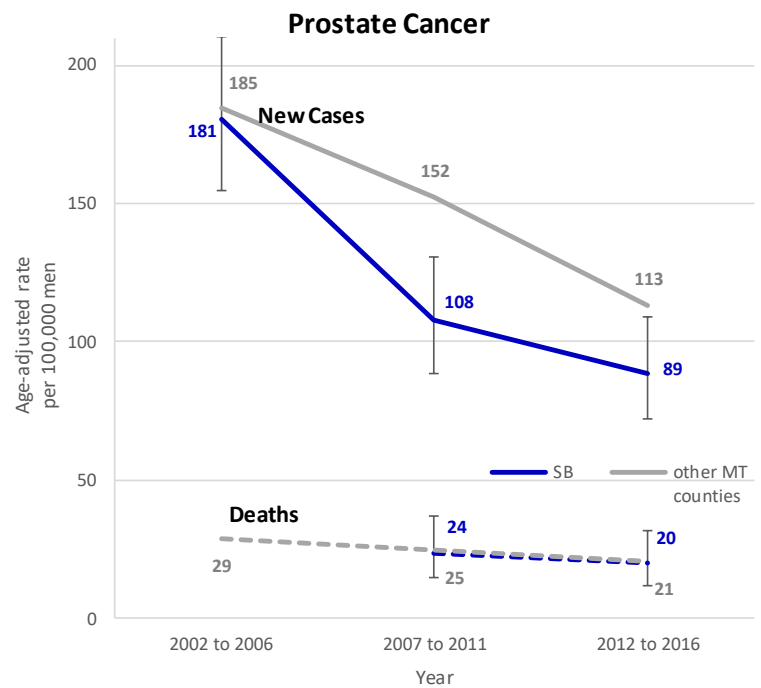
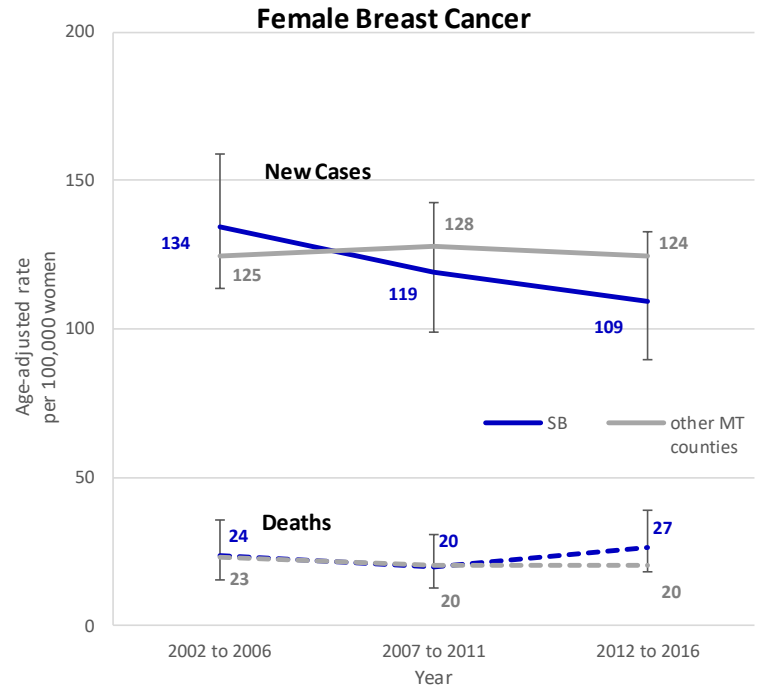
What cancers are most common?

The most common types of cancer in Silver Bow County were also the most common in MT and the U.S.

Female Breast cancer was the most common type of cancer among women in Silver Bow county with about 26 new cases and 6 deaths per year on average. The rate of new female breast cancer cases among residents of Silver Bow County was statistically the same as residents of other counties from 2002-2016 (Figure 2). The rate of breast cancer deaths was also statistically the same for Silver Bow county residents compared to other MT counties. The most significant risk factors for female breast cancer are: older age, late or no pregnancies, a family history, not being physically active, being overweight or obese after menopause, and using combination hormone therapy.

Prostate cancer was the most common type of cancer among men in Silver Bow county with about 21 new cases and 4 deaths per year on average. The rate of new prostate cancer cases was statistically the same in Silver Bow county as in other MT counties from 2002 to 2006 (Figure 2). However there were significantly less new cases of prostate cancer in Silver Bow county from 2007 to 2016. The rate of prostate cancer deaths in Silver Bow county was statistically the same as Montana from 2007 to 2016. There were too few prostate cancer deaths from 2002 to 2006 in Silver Bow county to calculate a stable rate. The most significant risk factors for prostate cancer are: older age, being African-American, and a family history.

Figure 2: Incidence and mortality rates for Female Breast and Prostate cancer in **Silver Bow County** compared to residents of other **Montana** counties, 2002–2016.





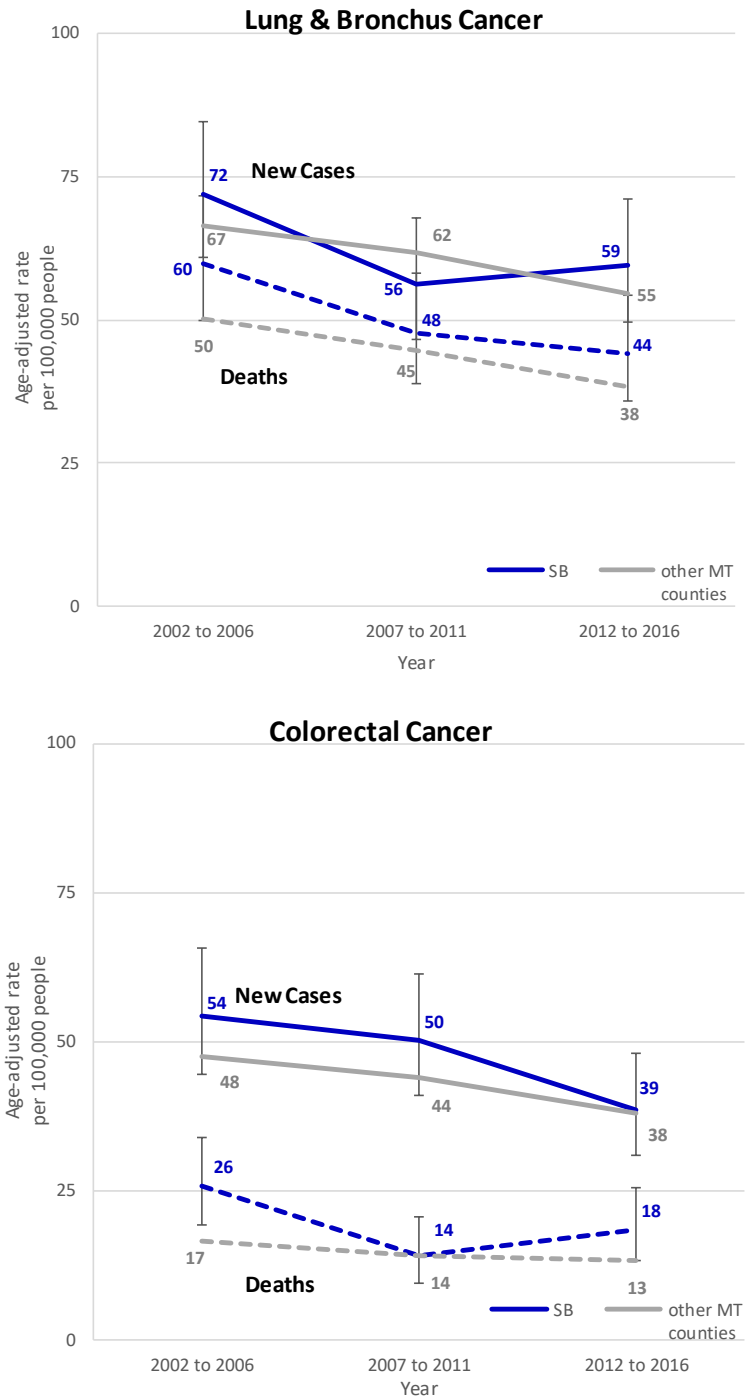
Lung & Bronchus cancer was the second most common cancer among both men and women in Silver Bow county with 26 new cases and 21 deaths per year on average. The rate of new lung cancer cases was statistically the same in Silver Bow county as other MT counties (Figure 3). The rate of lung cancer deaths was also statistically the same in Silver Bow county. Smoking and exposure to second hand smoke are the most significant risk factors for lung cancer. It is estimated that 87% of lung cancer cases among men and 74% of cases among women are caused by smoking. Other risk factors for lung cancer include: exposure to radon or asbestos, workplace exposures (uranium, inhaled chemicals or minerals including arsenic and diesel exhaust), arsenic in drinking water, history of radiation therapy, and family history.

Colorectal cancer was the third most common cancer among both men and women in Silver Bow county with 20 new cases and 8 deaths per year on average. The rate of new colorectal cancer cases was statistically the same in Silver Bow county as in other MT counties (Figure 3). The rate of colorectal cancer deaths from 2007 to 2016 was also the same in Silver Bow county. However the rate of colorectal cancer deaths was significantly higher in Silver Bow county than in other MT counties from 2002 to 2006. Risk factors for colorectal cancer include: lack of physical activity, low-fiber and high-fat diet, tobacco use, excessive alcohol consumption, and family history.

What cancers are associated with potential heavy metal exposures at the Silver Bow Creek Superfund Site?

Assessing cancer risk of humans due to exposure to environmental compounds requires the review of multiple scientific studies. These studies assess cancer risk in humans, animals, and in the laboratory. National and international agencies use the results of these studies to classify environmental compounds as to their cancer-causing potential. The International Agency for Research on

Figure 3: Incidence and mortality rates for Lung & Bronchus and Colorectal cancers in **Silver Bow County** compared to residents of other **Montana** counties, 2002–2016





Cancer (IARC) and the Environmental Protection Agency (EPA) have classified the carcinogenicity of the following heavy metals and chemical of concern in Butte Priority Soils Operable Unit of the Silver Bow Creek Superfund Site:

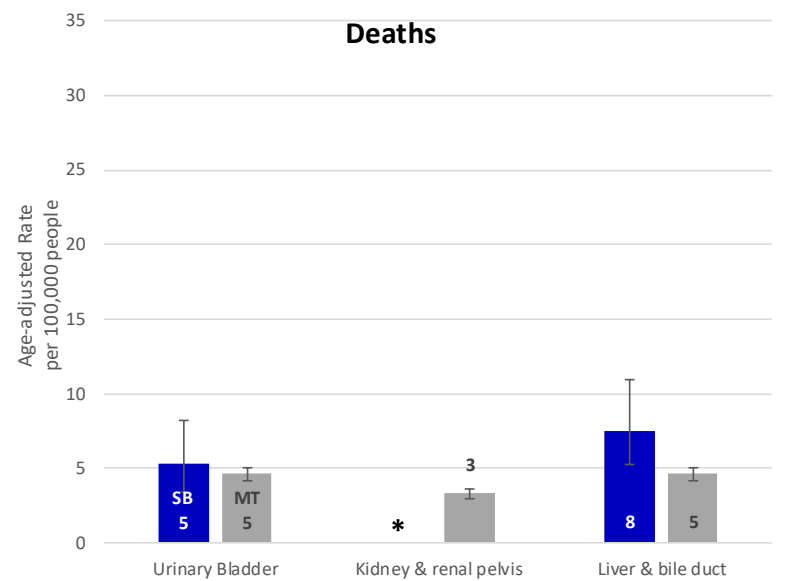
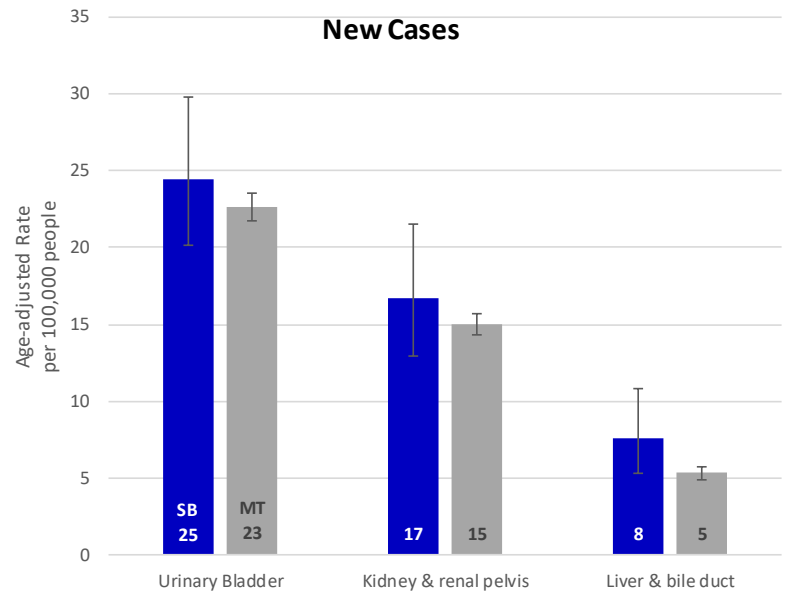
- Arsenic:** *Carcinogenic to humans (Group 1)*
- Cadmium:** *Carcinogenic to humans (Group 1)*
- Inorganic Lead:** *Probably carcinogenic to humans (Group 2A)*
- Organic mercury compounds:** *Possibly carcinogenic to humans (Group 2B)*
- Metallic Mercury, Aluminum, Copper, Iron, Silver, and Zinc:** *Not classified, there isn't sufficient evidence to determine carcinogenicity to humans (Group 3).*

Arsenic, Cadmium, and Lead exposures are known to be associated with cancers of the lung & bronchus, bladder, kidney, liver, prostate, and skin (squamous and basal cell carcinoma). Squamous and basal cell carcinoma of the skin is not a reportable cancer by Montana State Law. The MCTR does not have complete data on the incidence of these types of skin cancer, therefore it is not reported here.

Bladder cancer: Over the past ten years (2007—2016) the rate of new bladder cancer cases was statistically the same in Silver Bow County as in other MT counties (Figure 4). The rate of bladder cancer deaths was also statistically the same in Silver Bow county compared to other MT counties. From 2007-2016, there were about 12 new cases per year and 3 deaths per year on average. Smoking is a significant risk factor for bladder cancer. The risk is three times higher among smokers compared to non-smokers. Other risk factors for bladder cancer include: workplace exposures (certain industrial chemicals such as benzidine and beta-naphthylamine), certain medicines or herbal supplements, arsenic in drinking water, not drinking enough fluids, chronic bladder infections, prior chemotherapy or radiation therapy, White race, older age, being male, and a family history.

Kidney cancer: Over the past ten years (2007—2016) the

Figure 4: Incidence and mortality rates of selected cancer sites in **Silver Bow county** compared to residents of other **Montana** counties, 2007—2016.



* too few deaths to calculate a stable rate.

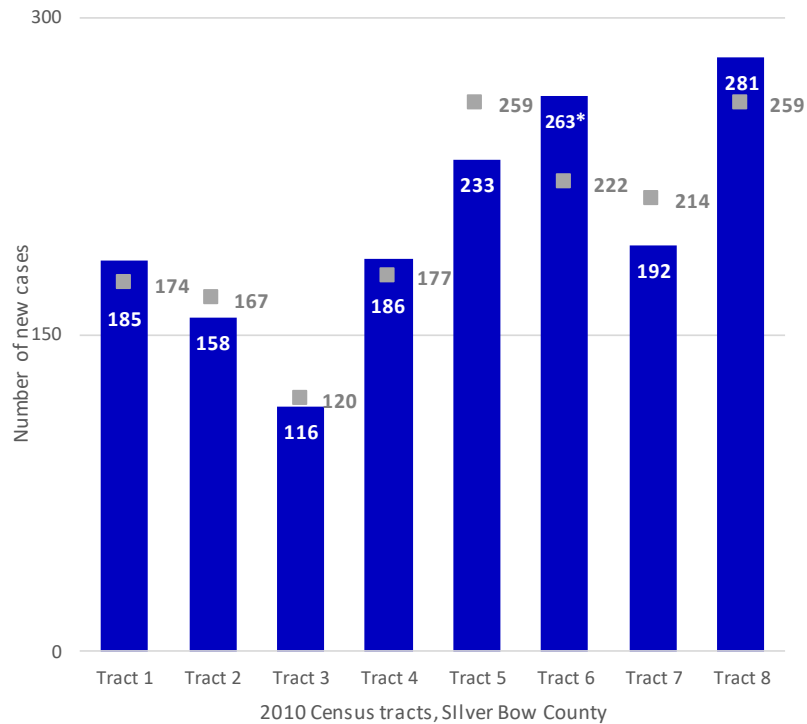
rate of new kidney cancer cases in Silver Bow county was statistically the same as other MT counties (Figure 4). There were too few kidney cancer deaths in Silver Bow county to calculate a stable rate. From 2007-2016, there were about 7 new cases per year and less than 2 deaths per year on average. Risk factors for kidney cancer include: smoking, obesity, workplace exposures (such as cadmium, some herbicides, organic solvents like trichloroethylene), and hereditary risk factors.

Liver cancer: Over the past ten years (2007—2016) the rate of new liver cancer cases was statistically the same in Silver Bow County residents as residents of other MT counties (Figure 4). However, the rate of liver cancer deaths was significantly higher in Silver Bow county compared to the rest of MT. From 2007-2016, there were about 4 new cases per year and 4 deaths per year on average. Risk factors for liver cancer include: heavy alcohol use, cirrhosis (which can be caused by hepatitis or alcohol use), obesity, diabetes, smoking, and long term exposure to arsenic in drinking water.

How often is cancer diagnosed within different areas of Silver Bow County ?

To determine if there is more cancer than expected within different regions of the county we compared the number of observed cancer cases within each census tract (see map on page 6) to the number of cases we would expect. This expected number is how many cases there would be if the incidence rate in each Silver Bow county census tract were the same as the rate in the whole state of Montana. The expected number of cases was calculated by multiplying the statewide incidence rate within each age group and each year to the number of people living in each census tract in Silver Bow county. Then the expected numbers for each year and age group were added together to get the total expected number from 2009 to 2016. The observed number of cases is simply a count of new cancer diagnoses among Silver Bow county residents

Figure 5: Number of new cancer cases **Observed** vs. **Expected** by 2010 Census Tract[†], Silver Bow County MT, 2009-2016.



[†] Census tracts are areas within a county defined by the US Census Bureau for the purpose of assisting with the decennial census. Each Census tract is defined so that it has a population between 1,200 and 8,000 with an optimal population size of 4,000.

*in tract 6 the number of observed cases was significantly higher than the number of expected cases. Standard incidence ratio of 1.19, 95% CI 1.04—1.33.

reported to the MCTR during the same time period.

The number of observed cancer cases was statistically the same as the expected number for all census tracts except census tract 6 (Figure 5). The number of new cases of cancer among residents of census tract 6 (the area of town south of Interstate 90 and west of Harrison Ave/HWY 2 stretching down past the airport) was 19% higher than expected from 2009 to 2016.

Limitations

Cases were assigned to census tracts based on the reported address at diagnosis. If the address could not be matched to

existing address files and placed in an exact location on the map the case was located at the center of the zip code area. Likewise, if the address at diagnosis was a PO Box the case was located at the center of the zip code area. For the Butte zip code area the center is located in census tract 6. Thirty-nine cases were placed in census tract 6 because the exact location of their address could not be determined. As such the true number of cases observed in census tract 6 may be as low as 224 which is not significantly more than expected.

How can I reduce my risk of cancer?

While there are many cancer risks that cannot be changed there are also many things people can do to reduce their risk of cancer. The most important way to reduce cancer risk is through a healthy life style.

Do not use tobacco products:

including cigarettes, cigars, pipes, smokeless tobacco, or e-cigarettes, and avoid exposure to second-hand smoke.

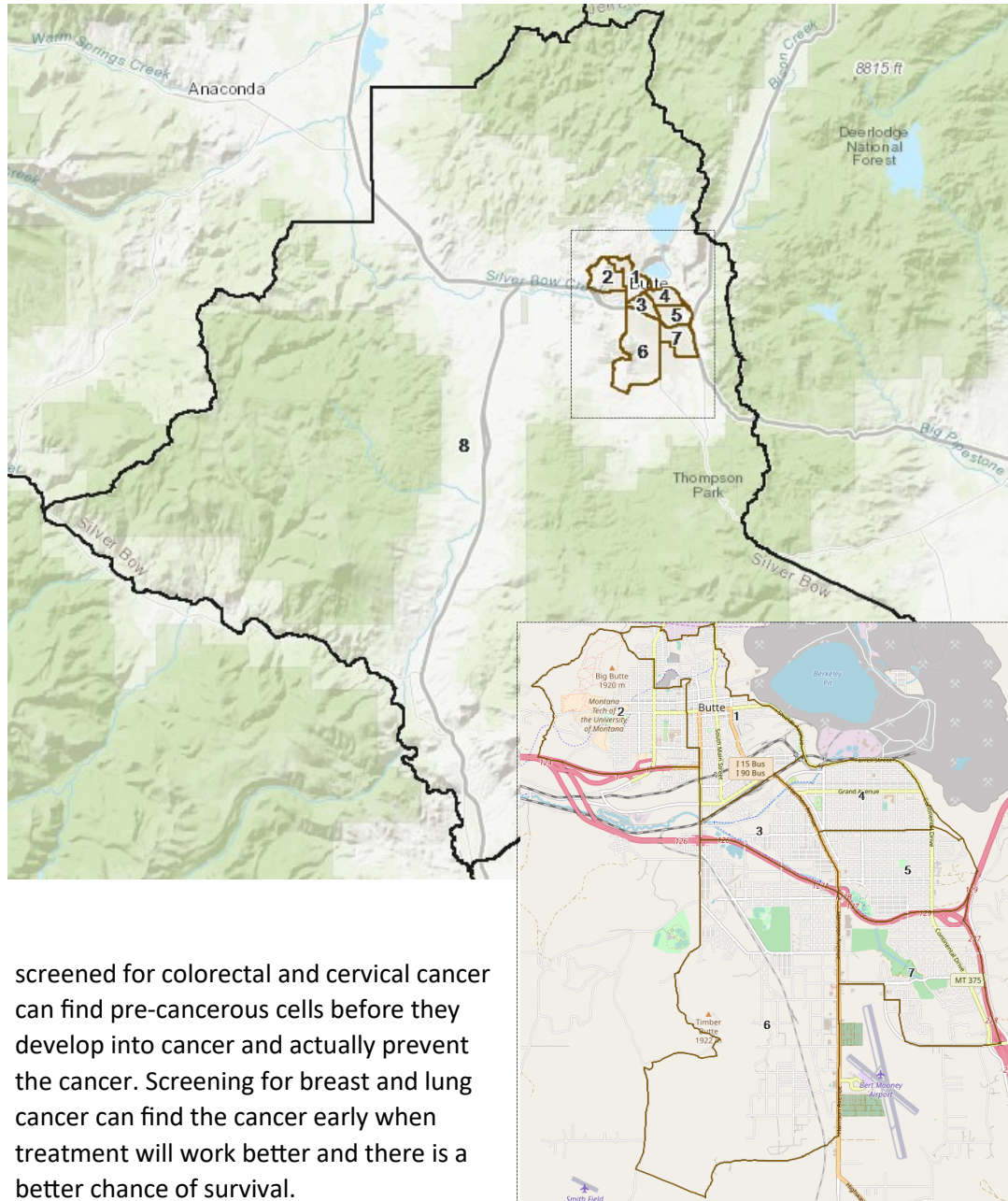
Limit alcohol consumption

Eat a healthy diet: rich in fruits and vegetables, whole grains, and lean meats, fish, beans, and nuts.

Stay Active: get at least 30 minutes of exercise 5 days a week.

The next most important way to reduce cancer risk is by talking to your doctor about what cancer screening tests you should have. Getting

Figure 6: Map of 2010 Census Tracts in Silver Bow County Montana.



screened for colorectal and cervical cancer can find pre-cancerous cells before they develop into cancer and actually prevent the cancer. Screening for breast and lung cancer can find the cancer early when treatment will work better and there is a better chance of survival.

Finally, you can reduce your risk of exposure to environmental contaminants by having private well water tested once a year and contacting the **Residential Metals Abatement Program at 406-497-6278** to have your house and yard tested.