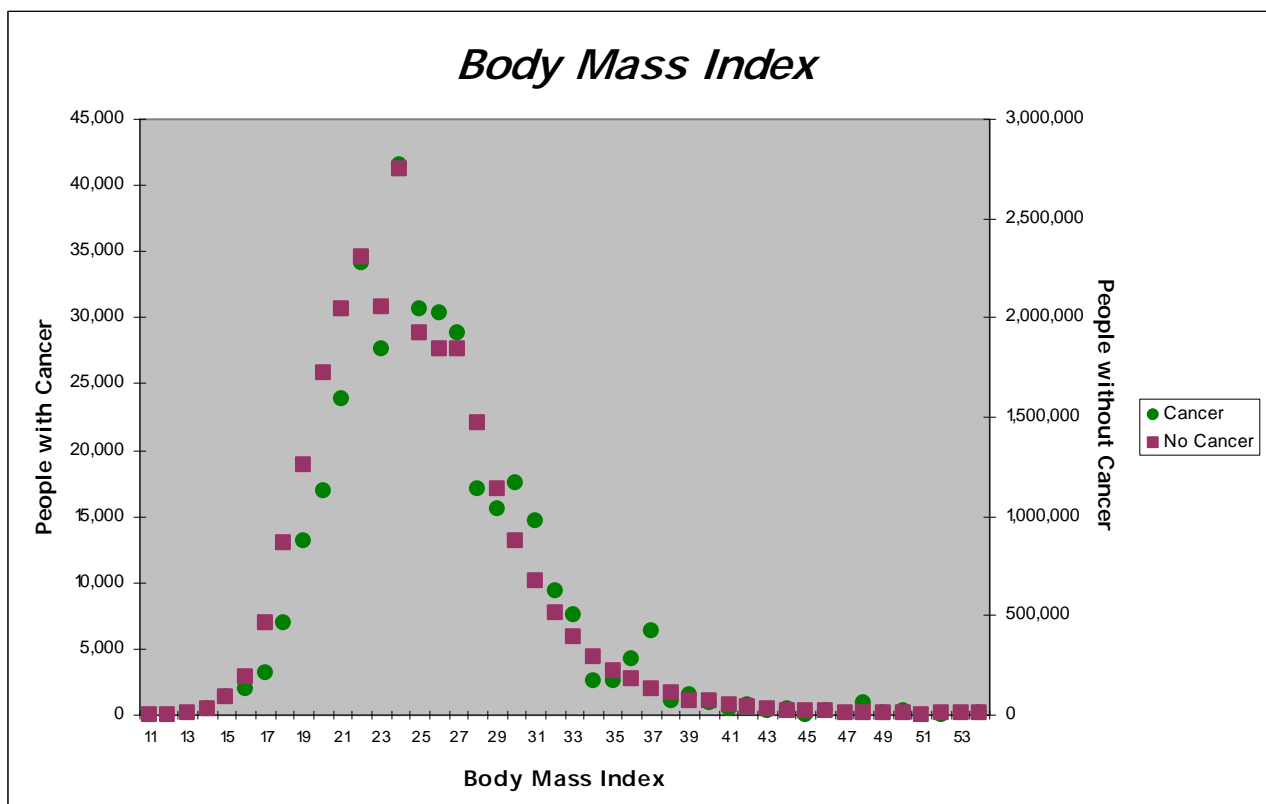


# Causes of Cancer

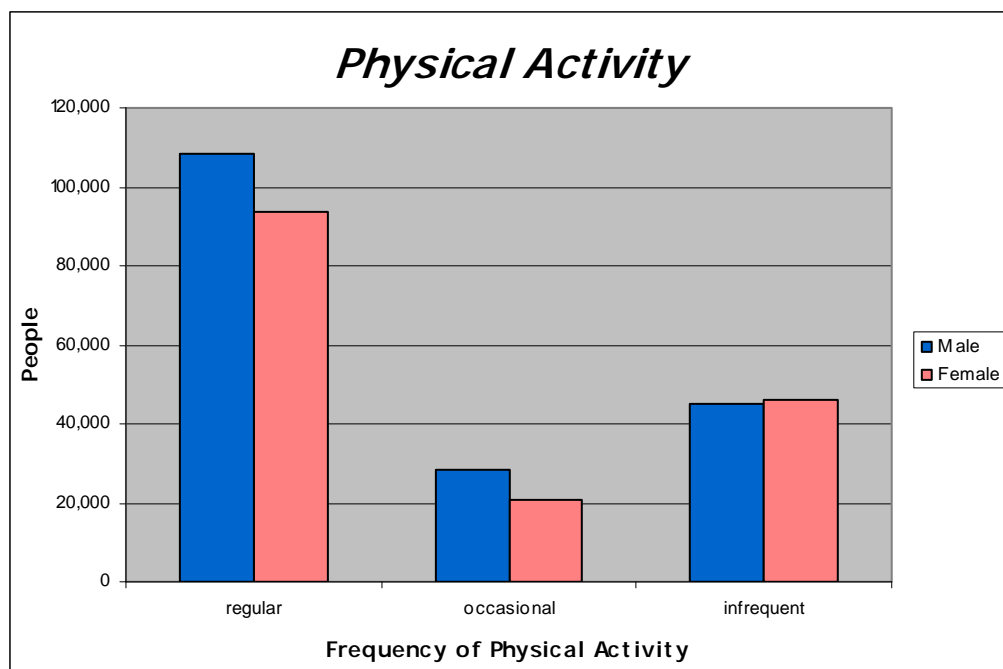
Cancer is the leading cause of early death in Canada (<http://www.cancer.ca/>), which makes it an important disease to study and understand. Furthering knowledge of this disease will help to prevent it, to treat it, and to cure it. To accomplish these goals, it is crucial to determine the factors that contribute to one's risk of developing cancer. Some possible factors are body mass index (BMI), rate of physical activity, and smoking frequency. Other factors that cannot be controlled but may also put people at risk of developing cancer are age and gender. Each of these factors will be examined to determine whether there is any correlation with these factors and one's risk of developing cancer.

Obesity is a possible cause of cancer and other diseases. As shown in the graph below, the points for people without cancer have a continuous pattern, with a peak at 24 BMI. The body mass index for those with cancer also peaks at 24 BMI, but the points are slightly shifted to the right, which shows that those with cancer are more likely to have a higher body mass index. There is also a spike at 37 BMI for people with cancer, whereas the body mass index for those with cancer is 25.6 and the average body mass index for those

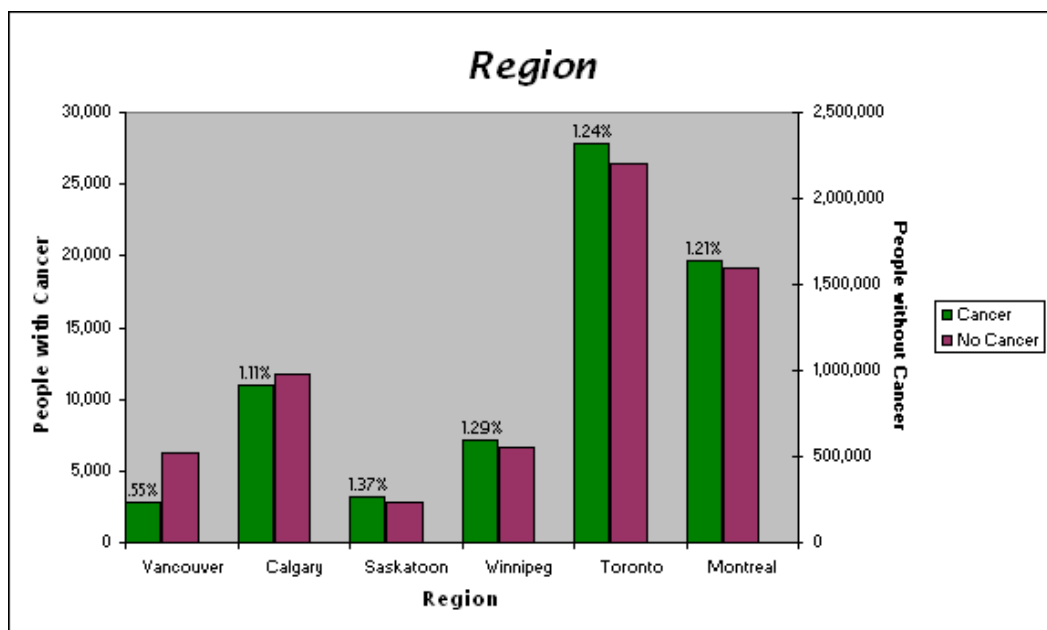


without cancer is 24.8; this would indicate that obesity could indeed be a cause of cancer, and that the higher one's body mass index, the more likely that they could get cancer. Alternatively, there were no reported cancer patients with a body mass index less than 14, while 16,445 people without cancer fell into this range; this would signify that people with low BMIs are not at a high risk for developing cancer.

Physical activity is a factor that contributes to body mass index, and may therefore contribute to one's likeliness of having cancer. 59% of those having cancer regularly take part in physical activity, while 26.7% infrequently take part, and only 14.3% occasionally take part in physical activity. Since the statistics did not indicate whether or not the frequency of physical activity were from before or after the subject found out that they have cancer, it is hard to draw conclusions from this information. While it may be suggested from the information in this graph that high amounts of physical activity would cause cancer, this could only be true if one does not take into account the fact that the people who take part in physical activity regularly may have increased their participation after finding out that they had cancer.

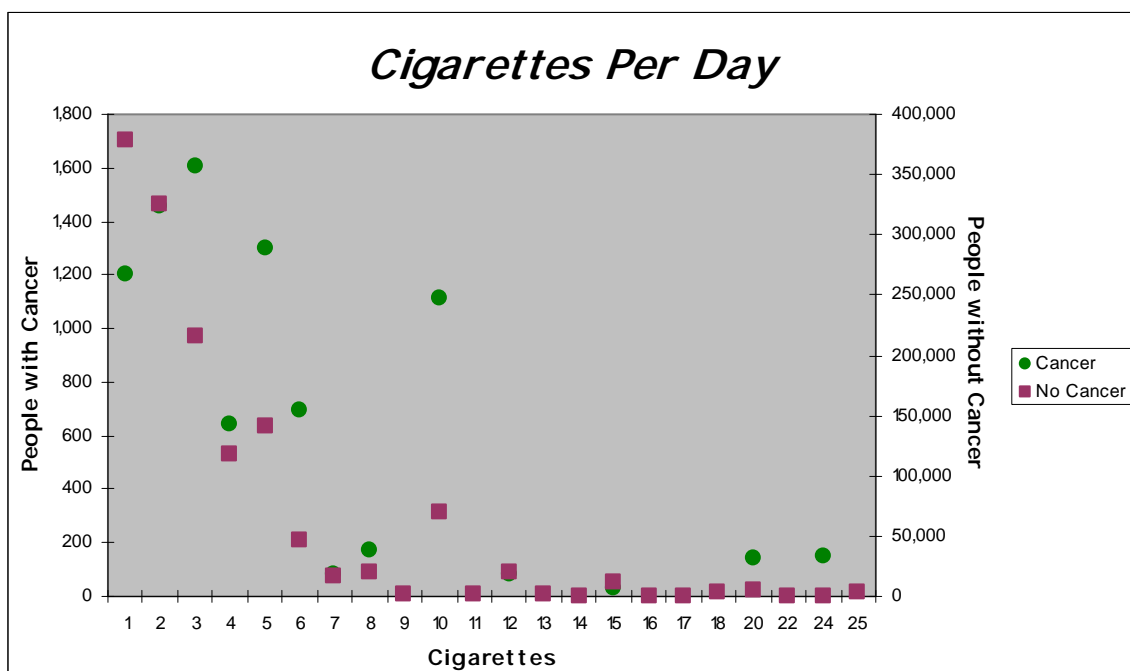


Another factor that may affect one's chance of developing cancer is the region where one lives. Examined in the graph below is the number of people with and without cancer in six different health regions in Canada, one from one of the most populous cities in each of the six largest provinces. They are arranged in order from west to east, but there appears to be no strong correlation in that respect; the numbers of those with cancer do not increase or decrease significantly heading in either direction. The number of people without cancer greatly outnumbers the number of people with cancer in each of the six regions. As shown by the numbers above the green bars, approximately 1% of the residents of each region have cancer. However, in Vancouver, British Columbia, only 0.5% of the population has cancer. This would suggest that it is slightly less likely that one would develop cancer if one lived in Vancouver. It would also be slightly more likely that one would develop cancer if one lived in Saskatoon, which had the highest rate of residents with cancer at 1.37%. However, since the proportion of the population with cancer fell within the range of 0.5% to 1.5% in all regions, it is unlikely that area would have a large impact on the risk of developing cancer.

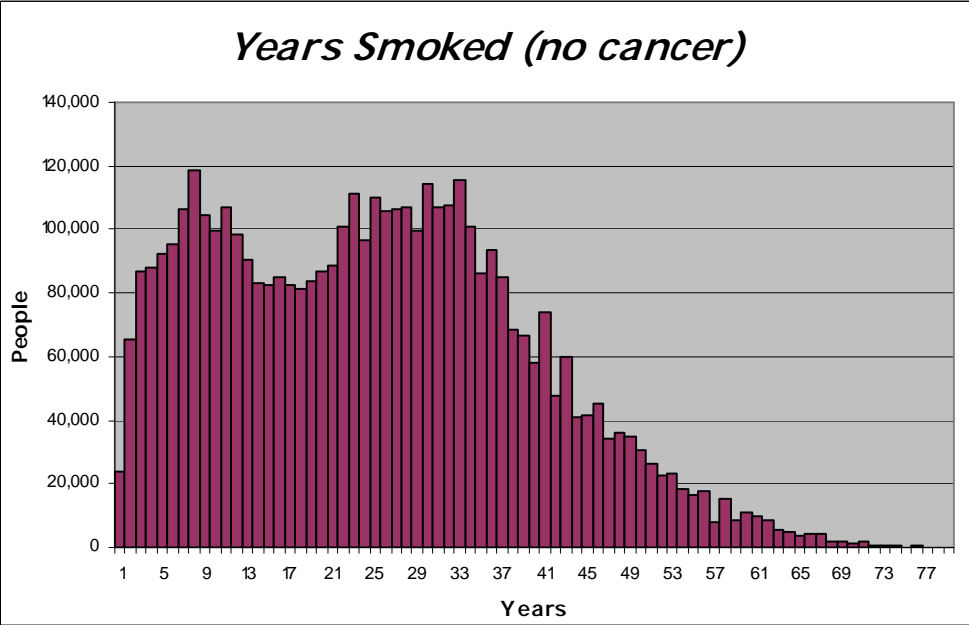
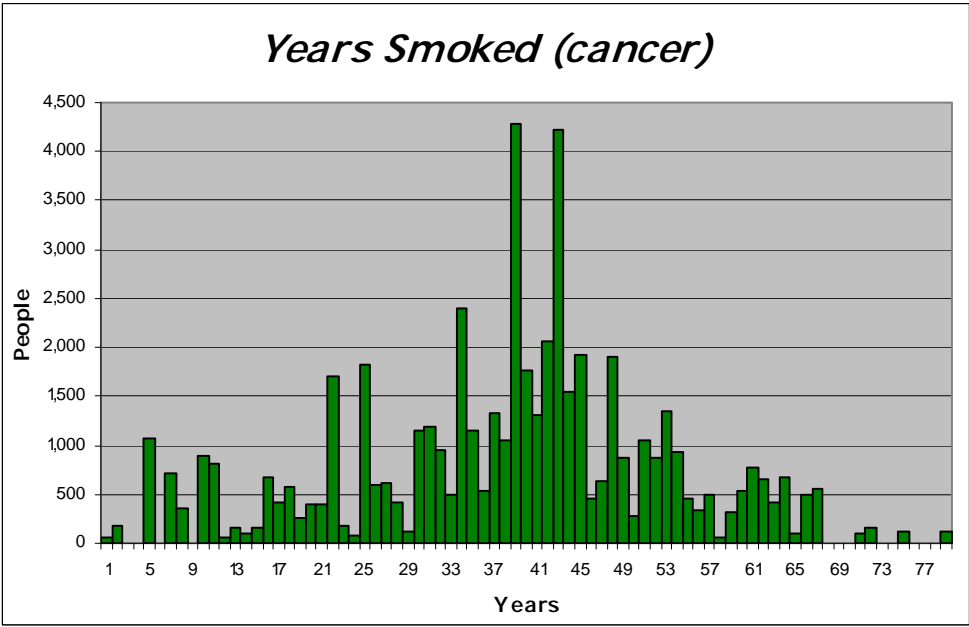


Smokers may be at a higher risk of developing cancer. This graph presents the number of cigarettes that people with cancer and people without cancer smoke per day. For

both people with and without cancer, the numbers are skewed to the left, indicating that most people smoke only a few cigarettes each day. However, the average number of cigarettes per day for people with cancer is 5.0, while the average number of cigarettes per day for people without cancer is only 3.5. There is also a major increase of people with cancer at 10 cigarettes per day, while there is only a slight spike for those without cancer. There is also a slight increase at 20 and 24 cigarettes per day for people with cancer, but no increase for people without cancer. Overall, points are scattered for people with cancer, whereas there is a more continuous decreasing pattern for people without cancer.

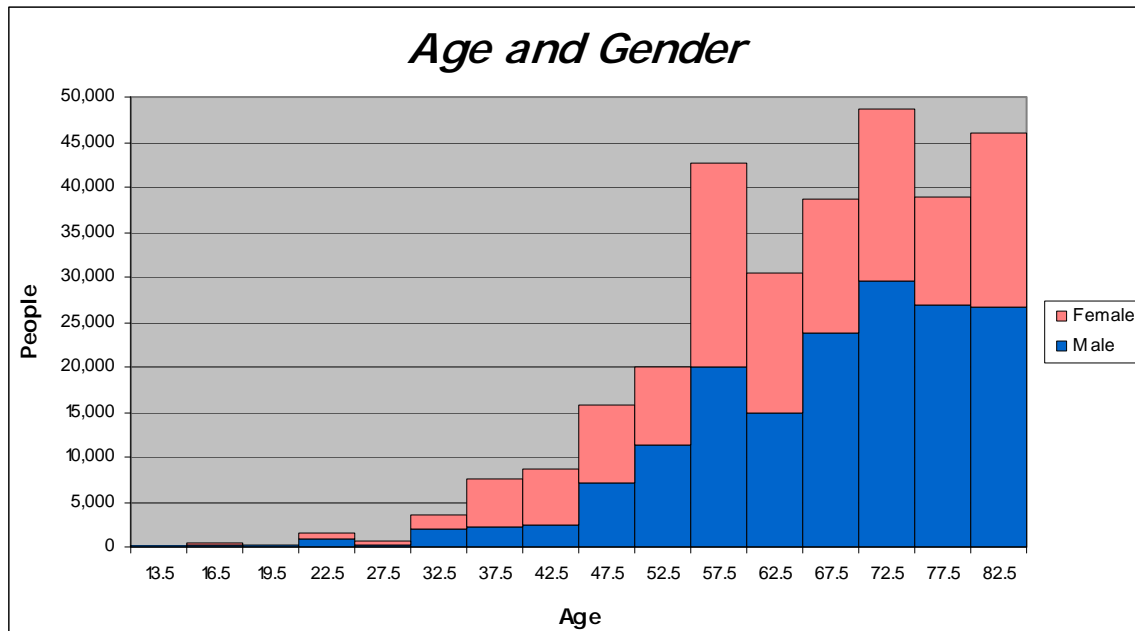


Further proof that smoking could contribute to cancer is a comparison of the number of years that one was a smoker and whether they have cancer. As seen in the first graph below, the most common number of years smoked for people with cancer is approximately 38 years, while in the second graph, the most common number of years smoked for those without cancer is only 7 years. Again, on average, the number of years smoked for people with cancer is also higher: 37.3 years for people with cancer and 24.0 years for people without cancer. Combined with the statistics on number of cigarettes per day, it is fair to conclude that smoking is a definite contributor to the risk of developing cancer.



The last point to be determined is whether age or gender puts one at a higher risk of getting cancer. In the graph below, males and females of various ages with cancer are examined to determine if there is a correlation. The graph is strongly skewed to the right, which confirms that older people are more likely to get cancer than younger people are. The average age of people with cancer is 65.6 years, while the most frequent age overall and for males is approximately 72.5 years. However, females are at a higher risk for cancer at around age 57.5. In total, there are 33,700 more males with cancer than there are females, which would indicate that males are more likely to have cancer, although this margin of 11%

is not very overwhelming. Therefore, the risk of getting cancer is only slightly increased for males, but significantly increased for older people, with 87% of people with cancer being over the age of 50.



From the information in these graphs, it appears that people who smoke, people with a high body mass index, and people over the age of 50 have a high risk of getting cancer, while males also have a slightly higher risk of getting cancer than females. Rate of physical activity and region do not appear to have a large impact on the chance of getting cancer. Therefore, young females have the lowest risk of developing cancer, and the best methods for anyone to prevent getting cancer is to keep one's body mass index at a normal rate and to avoid smoking.

## Works Cited

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