Type of Insurance and Stage of Testicular Cancer
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Introduction and Background
Testicular cancer is one of the more rare cancers in the United States, and it is also unique in that it is one of the few cancers whose rates peak at mid-age rather than old-age. The vast majority of testicular cancers are diagnosed between the ages of 20 and 55. Testicular cancer rates are significantly lower before and after this time frame (CDCE, 2015). The survival rate of testicular cancer is remarkably higher than most cancers (NCI, 2015), and public awareness has steadily increased in the recent past. Self-examination has become a key tool for early diagnosis of this cancer in men (Livestrong, 2015). From 1998-2012 testicular cancer rates have been relatively constant in both Oklahoma and the entire United States (ACS, 2015).

Upon conducting research on testicular cancer in Oklahoma, we found a large disparity in the primary payer. We also found a large difference in the proportion of people with testicular cancer living in rural versus urban areas, and we wanted to further investigate these trends. We hoped to find whether or not your primary payer and where you live help to determine what stage of testicular cancer you are likely to have (OK2Share, 2015).

Hypothesis
Testicular cancer cases can be narrowed down to a very specific demographic. Based on the data presented, we were able to determine that the group of individuals most at risk for testicular cancer are younger-aged males. In order to further draw conclusions from our data we tested the following hypothesis: Testicular cancer patients in which the primary payer for treatment is private insurance, are more likely to be diagnosed with early-stage, localized cancer. The idea behind this hypothesis being that since testicular cancer is typically found in younger men, the typical patient will not be on Medicare (uncommon in most cancer patients) and since patients typically visit the doctor more frequently with regular insurance, the testicular cancer has a greater chance of being caught at an earlier stage.

Methods
We statistically analyzed and recorded data received from the Oklahoma Cancer Registry at the Oklahoma State Department of Health. We worked with 1,298 confirmed cases of testicular cancer in men diagnosed between 1998 through 2012 in the state of Oklahoma. We looked at multiple variables between these cases including age of diagnosis, stage of diagnosis, race, metro-urban-rural status, and primary payer. The provided data sets were coded according to the North American Association of Central Cancer Registries (NAACCR) data dictionary: A tool we used to decode and interpret our data into a useable information source. After our data was cleaned and we were able to work with the data set, we performed a series of odds ratios tests to test for significance between various combinations of the following variables: Metro vs Non-Metro status, Primary Payer, White vs Non-White, and Early vs Late stage diagnosis. This data was analyzed with Microsoft Excel software.

Results
We found that people who have insurance are 7% more likely to have early stage testicular cancer. Non-white males are 5% more likely to have late stage testicular cancer. White males having testicular cancer are 14% more likely to have regular insurance than non-white males that have testicular cancer. Those with testicular cancer and holding regular insurance are 8% more likely to live in a Metro area than a Non-Metro area. White males with testicular cancer are 1% more likely to live in a Metro area than a Non-Metro area. Men with this cancer are 2% more likely to be diagnosed with early stage testicular cancer if they live in a Metro area. The odds of men with Medicare having late stage testicular cancer is 29% higher than that of men with regular insurance. This data shows that having private insurance for late stage testicular cancer is 52% higher than if they have regular insurance. After calculating our 95% Confidence Intervals for each of our Odds Ratios described above, only the last one mentioned turned out to be statistically significant, and this one was marginally significant at that.

Conclusion
As it says in our results most of our data is categorical, and when it came down to all of our data some of the research turned out to be statistically significant and some not statistically significant. The majority of people who were diagnosed with testicular cancer ended up using private insurance as the primary payer for treatment. Since the average person diagnosed with testicular cancer from the years 1998 to 2012 was 34 years of age, private insurance was used more than Medicare due to the age requirements of Medicare. Ultimately, there was only one set of odds ratios that ended up being statistically significant. This told us that men using Medicaid as their primary insurance payer are nearly twice as likely as men using private insurance to be diagnosed with late stage testicular cancer. Even though the rest of our Odds Ratios were not statistically significant, they showed us a lot about our results. When it came to comparing people who live in a metro area and people who live in a non-metro area, versus people with insurance and people without insurance, it turned out that there was no significant difference in having private insurance based on whether these cancer cases lived in a metro area or a non-metro area. Another example includes the comparison between people who live in a metro area and people who live in a non-metro area versus people diagnosed with early stage and late stage testicular cancer. The results showed that there is no statistical significance between metro status and early/late stage diagnosis. It showed us that the diagnosis of testicular cancer is getting caught at an earlier stage regardless of where the person lives.

References