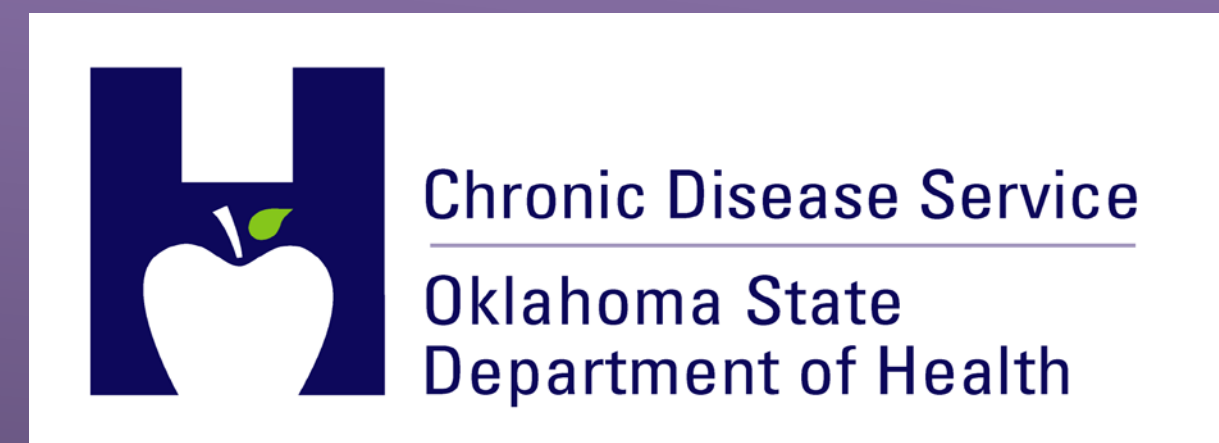# Descriptive Epidemiology of Breast Cancers among Take Charge! Screenings, Oklahoma, 2004-2013

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Abstract, Introduction and Background

This study showcases descriptive epidemiology of breast cancers diagnosed among women screened between 2004 and 2013 through the Oklahoma Breast and Cervical Cancer Early Detection Program, known as Take Charge! (TC!). Mammography has been identified as the primary source of secondary prevention of breast cancer among women. While the exact age at which this screening technique should be initiated is debated, there is clear evidence that women older than 50 years have benefited from regular screenings. Studies have identified that receiving a mammogram bi-annually among women 50 and older is directly tied to earlier stage at diagnosis. Earlier stage at diagnosis is associated with improved survival. One of the data fields collected for women screened through TC! is history of mammography. This data is either self-reported or included if the woman had received a mammogram previously through TC!

Aims

To describe the geographic patterns of cancers diagnosed, their stage at diagnosis and their proximity to screening and mammography sites among women screened through TC!
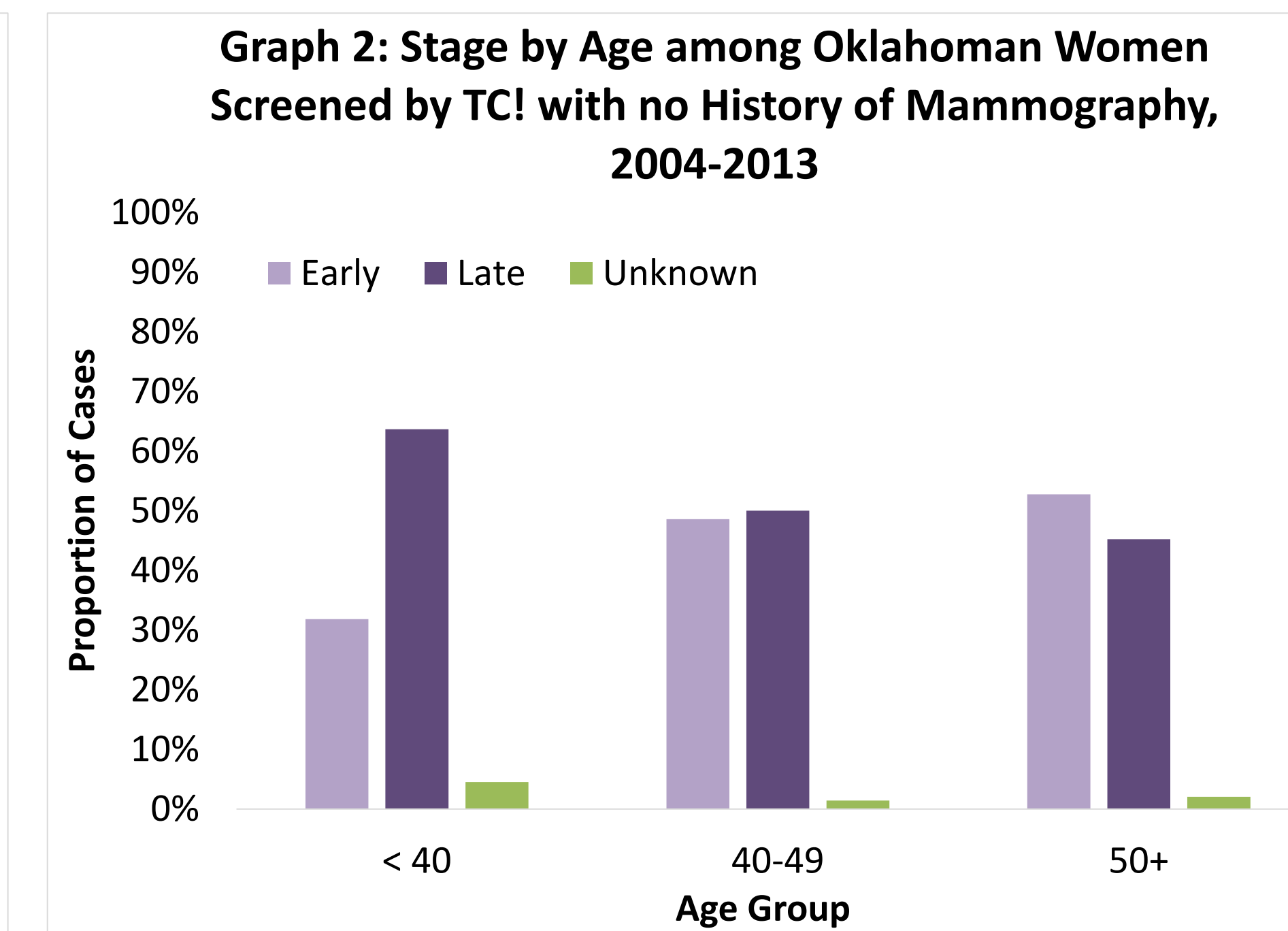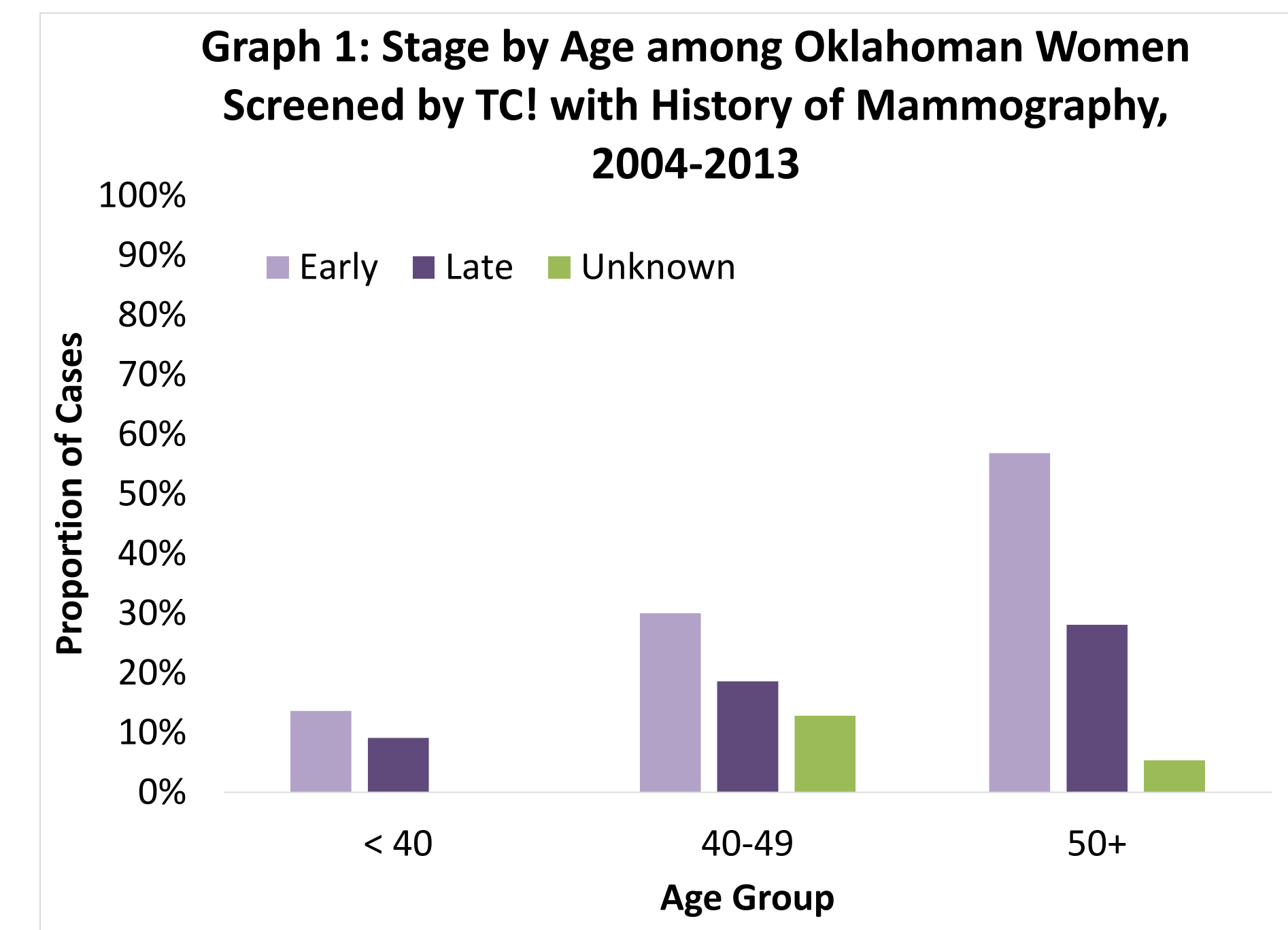
Methods

Cases with documentation of breast cancer diagnosis between 2004 and 2013 were identified in the TC! database, Cancer Screening and Tracking System (CaST). These cases were probabilistically linked with cancer cases exported from the Oklahoma Central Cancer Registry (OCCR). Cases were excluded from analysis if they had primary site other than breast cancer or were determined to be a duplicate. Stage at diagnosis was obtained from the OCCR and categorized into early (*in situ* and local), late (regional and distant), and unknown stages. Percent of early stage diagnosis from all breast cancers diagnosed by county of residence was calculated for geographical pattern along with a 15 mile and a 30 mile buffer around TC! mammography sites. Current TC! sites in CY 2016 were used for geographic mapping since overall TC! sites have remained constant with a few sites discontinued in current year. Historic administrative data for site location was unavailable for further analysis. Odds ratio and spatial analysis was not done due to time constraints and will be explored further.

Results

There were 472 breast cancer cases exported from CaST. Of these, 455 matched with cases from the OCCR. After exclusion, 423 cases were included in the analysis. A total of 177 (41.8%) women did not have a

Table 1: Demographics of Breast Cancers Diagnosed among Oklahoman Women Screened by TC! , 2004-2013

Age Group (Years)	n	%	History of Mammogram	%	No History of Mammogram	%
< 40	27	6.4%	*	2.8%	22	9.2%
40-49	112	26.5%	39	22.1%	70	29.4%
50+	284	67.1%	133	75.1%	146	61.4%
Race						
White	350	82.8%	150	84.7%	194	81.6%
Black	59	14.0%	21	11.9%	37	15.7%
American Indian/Alaska Native	*	1.4%	*	1.7%	*	0.9%
Asian/Pacific Islander	*	0.9%	*	0.6%	*	0.9%
Other/Unknown	*	0.9%	*	1.1%	*	0.9%

Graph 1: Stage by Age among Oklahoman Women Screened by TC! with History of Mammography, 2004-2013

Graph 2: Stage by Age among Oklahoman Women Screened by TC! with no History of Mammography, 2004-2013

Map 1: Percent of Early Stage Breast Cancers Diagnosed by County and Driving Distance from TC! Mammography Sites, Oklahoma, 2004-2013

Data Source: Oklahoma State Department of Health Geodatabase, TC! Administrative Database, and OCCR Database.
Projection/Coordinate System: USGS Albers Equal Area Conic

Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and is in a constant state of maintenance.

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Results Continued

history of receiving a mammogram, 238 (56.3%) women had a history of receiving a mammogram, and fewer than 10 (1.9%) women had an unknown history of mammography. Basic demographics of the cases reported by age group, race, and history of mammography can be seen in Table 1.
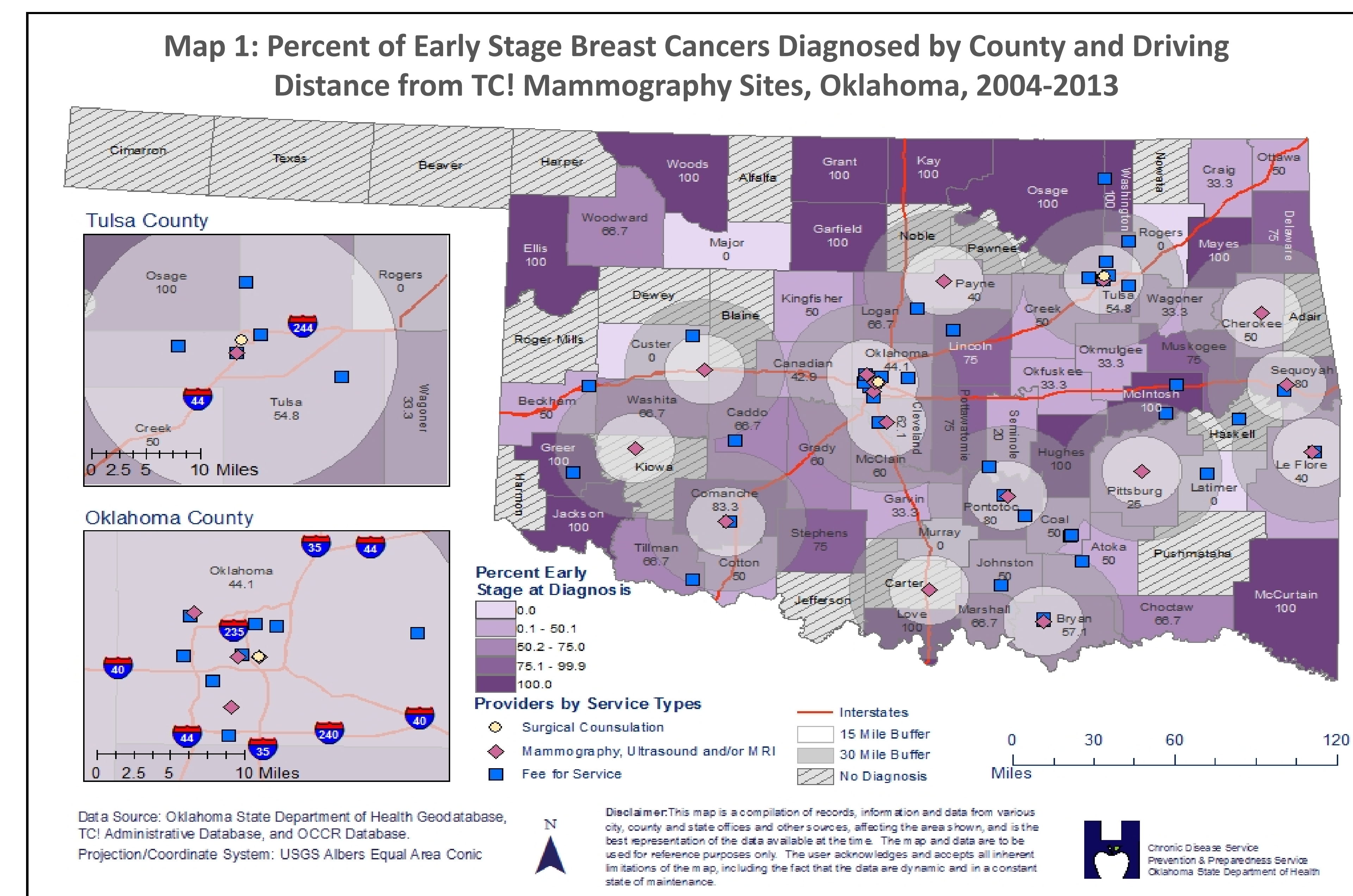
When stage at diagnosis was analyzed by history of mammography, the findings show better chance of receiving early stage diagnosis with prior history of mammography and the proportion of cases diagnosed at earlier stages increased with age. Among women with a history of mammography, the greatest proportion of women within each age group were diagnosed at earlier stages (Graph 1).

Among women with no history of mammography, there were no clear trends related to stage at diagnosis. Although approximately the proportion of women diagnosed at early and late stages among the 40-49 and 50 and above age groups were nearly the same. Among the youngest women (< 40 years) with no history of mammography, majority of women were diagnosed at later stages. All the women in the oldest age group were diagnosed at late stage (Graph 2).

Geographical display in Map 1 highlights 100% diagnosis at early stage in counties farther than 30 miles from a TC! site. Majority of counties showed early stage diagnosis for more than 50% of the cases within each county.

Conclusion

Study findings show the locations for TC! sites are geographically appropriate to screen priority population. Women with no prior mammography history had more late stage cancers diagnosed. Additional research is required in detail to ascertain what factors may increase regular mammography. Based on BRFSS results, 66% of women in Oklahoma have received a mammogram. However, among the population served by the TC!, and as recorded among those diagnosed with cancer the proportion of those with a history of mammography use is lower than the state average. There is clearly still a need to increase awareness among the uninsured and low-income population about the importance and availability of mammography. Through active referrals, TC! is able to diagnose cancers at early stage in counties where no TC! mammography site exists. TC! needs to advance the program outreach through vigorous communication and referral system with community partners to implement statewide reach to enroll eligible patients for regular mammography.