

# OSDH Maps

*OUHSC MIECHV External Evaluation Team*

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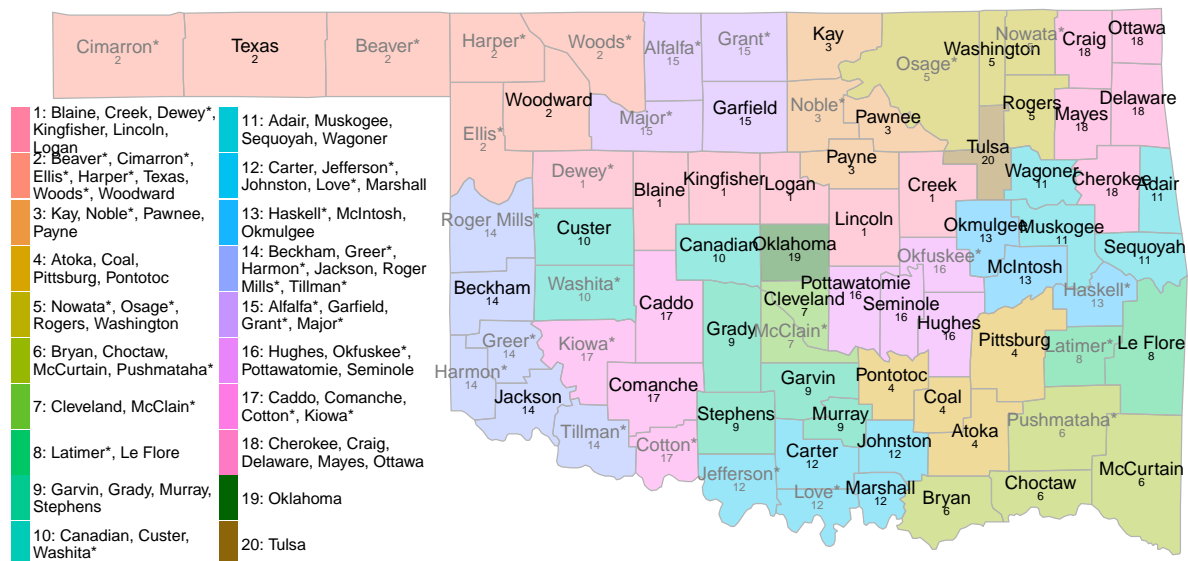
**Report Description:** Show the geographical relationships and patterns in administrative and demographic variables

## 1 C1 ‘Lead Nurse’ Regions

With the exception of the two large urban counties (ie, Tulsa and Oklahoma Counties), a “lead nurse” oversees nurses in several counties. The non-urban counties are managed by 18 lead nurses. We are calling these areas “Lead Nurse Regions”, and are numbering them 1 through 18. Oklahoma County is 19, and Tulsa County is 20. Note that multiple lead nurses operate in each urban county, but we are assigning a single region to each county.

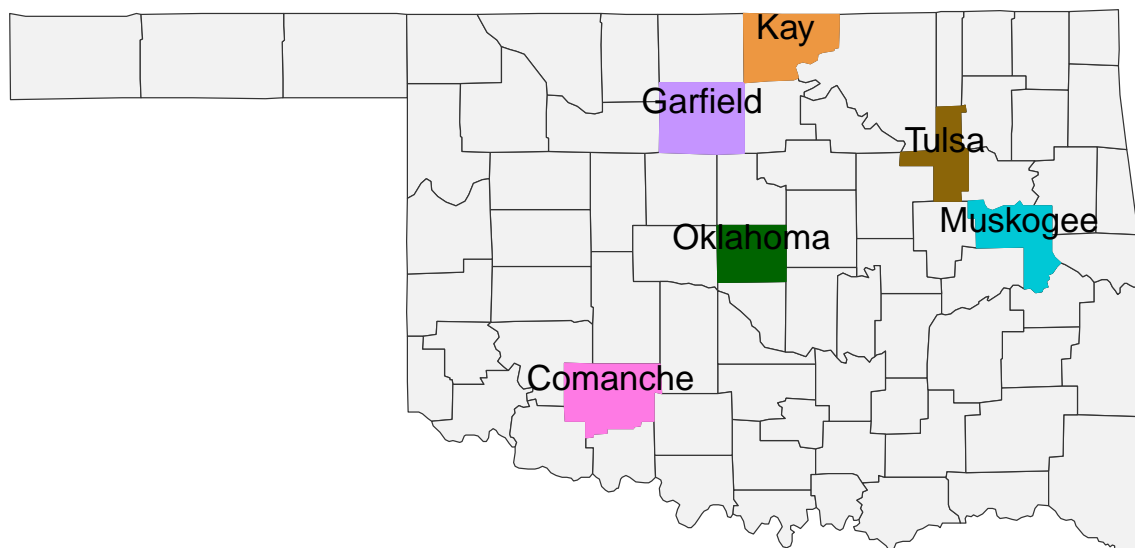
A county’s region assignment is listed in the legend, and below its name in the map. Each region has a unique color below; these color assignments are used for the lead nurse regions in other reports.

Of the state’s 77 counties, 51 receive C1 funding; these are labeled in black. The remaining 26 unfunded counties have asteristics, and are labeled in gray.



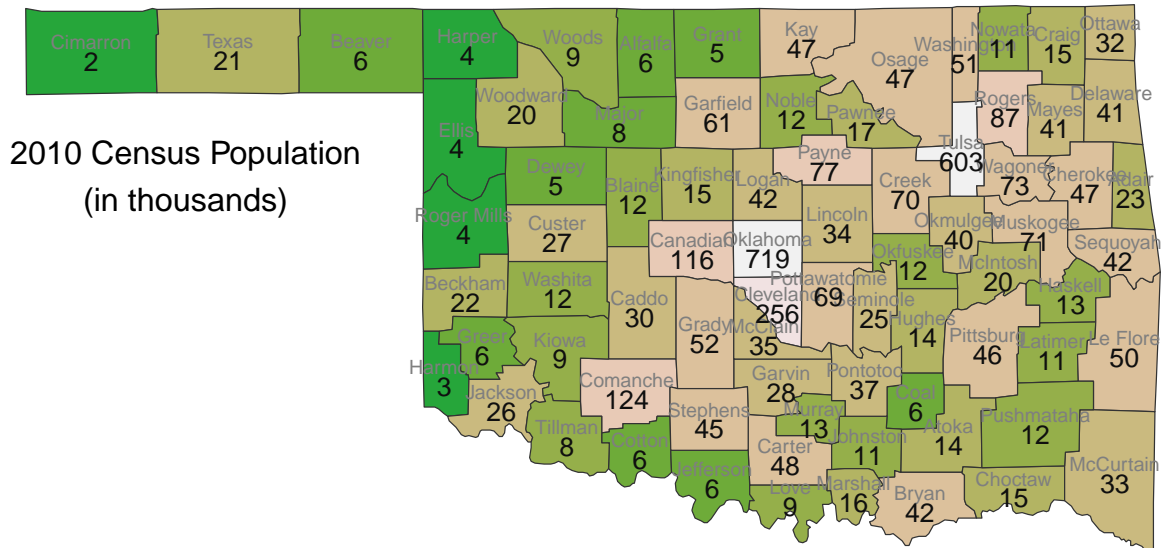
## 2 MEICHV Community Survey Counties

The Community Survey, administered by the MIECHV External Evaluation Team, samples from residents of the four counties below. The sampling frame is created creating a list from eligible WIC and Medicaid recipients. Kay and Garfield counties are funded through the formula MIECHV grant; the other four are funded through the competitive expansion MIECHV grant.



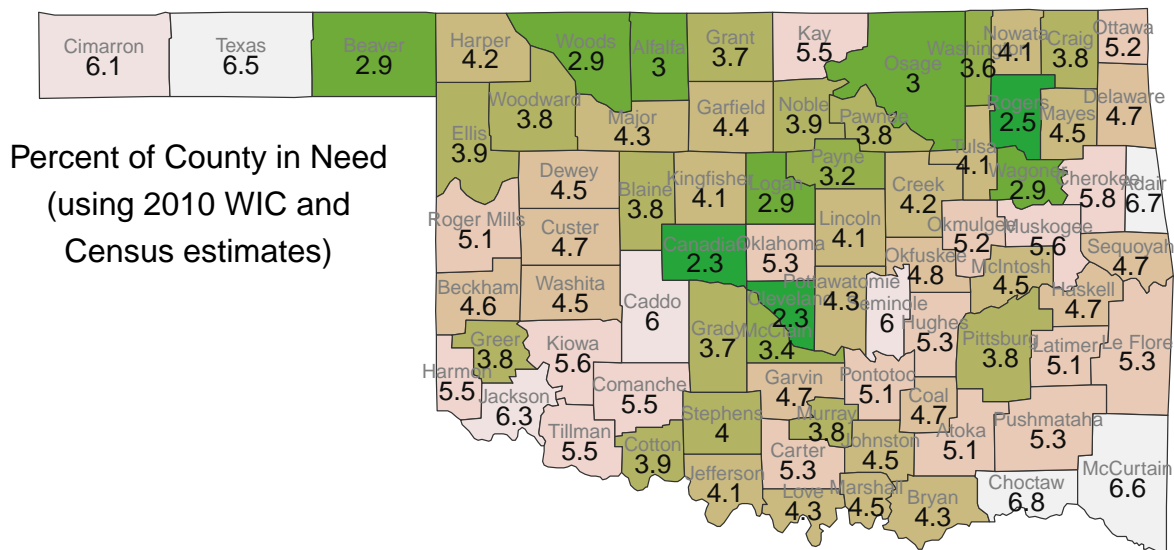
### 3 Population

For reference, here are the county populations as of 2010. A topographical color scheme represents the number of people; greener values represent a lower population/elevation. A county's population (in thousands) is labeled on the map.



## 4 WIC Need

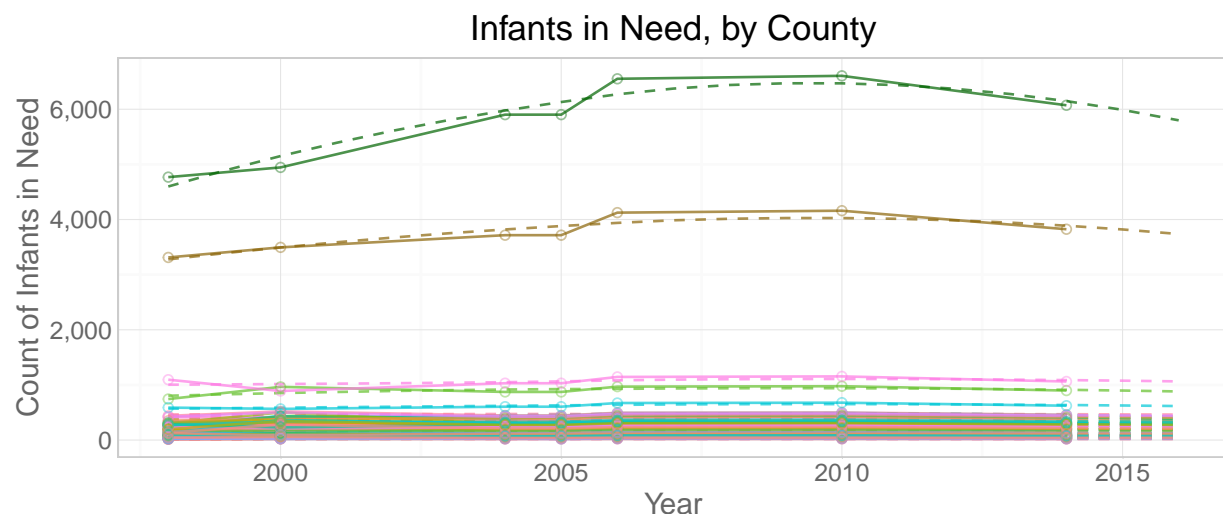
For reference, here are percentage of county residents in need. A 2010 WIC county estimate (that consider the number of women, children, and infants) is divided by the 2010 Census county population. A topographical color scheme represents the percent of of people; greener values represent a lower need/elevation. A county's percentage is labeled on the map.

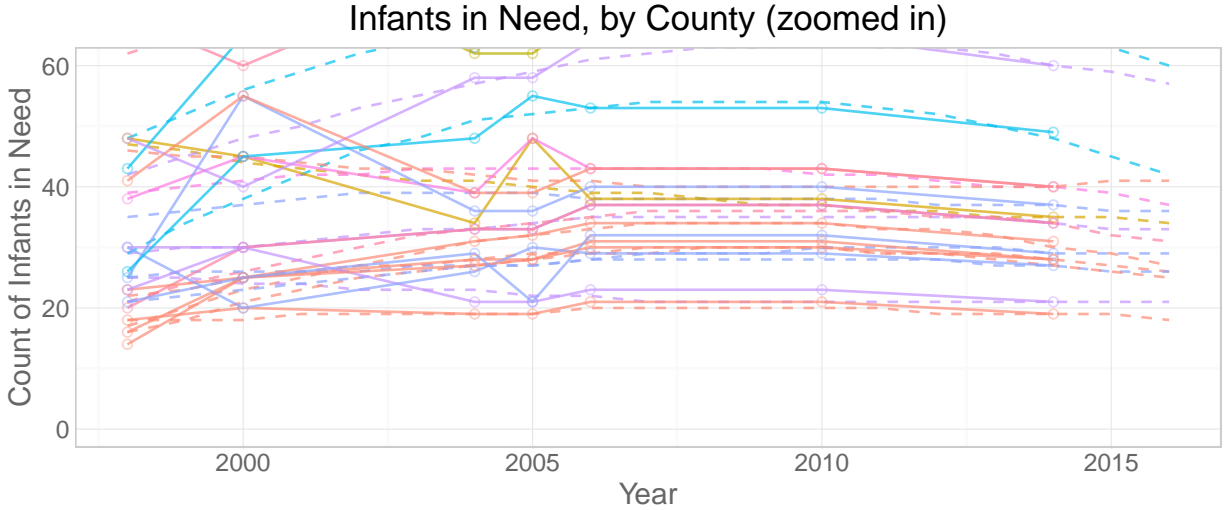


WIC Estimates of Need are available periodically (*i.e.*, 1998, 2000, 2004, 2005, 2006, 2010, 2014). [Loess regression](#) (with a [span of 2](#)) was used to provide smooth and continuous county estimates for the years through 2016 for many of our longitudinal models. Furthermore, loess provides stable extrapolations, which is necessary for the years following the last official estimate (*i.e.*, 2014).

In the graph below, each county has two lines. A county's survey estimate is represented a solid line with sharp corners. The smoother dashed line represents the loess regression. County lines are colored according to their C1 Region (described in the appendix's first map).

The first graph has all 77 counties; Oklahoma and Tulsa counties are distinguishable above the other 75. The second graph is similar, but focuses on the counties with less than 60 infants in need (for a given year). The purpose of these graphs is to provide a feel for our smoothed WIC estimates (which are relied on by several of our later statistical models). If you would like the exact values, please download them from our project website's collection of [public county-level datasets](#).





## 5 Demographics across Lead Nurse Regions and Counties

Here are some demographics for the C1 Lead Nurse Regions, using WIC's 2010 estimates of the total population need. Notice that some reports use the more selective 'Infants in Need' instead (both variables are contained in the [WIC Estimates of Need](#) dataset, available online). The final column is the percentage of the population in need. Counties with an asterisk do not receive C1 funding.

| Region | Counties   | Pop Total | Pop in Need | Need % |
|--------|--|-----------|-------------|--------|
| 1      | Blaine, Creek, Dewey*, Kingfisher, Lincoln, Logan            | 177,875   | 6,847       | 3.8%   |
| 2      | Beaver*, Cimarron*, Ellis*, Harper*, Texas, Woods*, Woodward | 65,546    | 2,996       | 4.6%   |
| 3      | Kay, Noble*, Pawnee, Payne                                   | 152,050   | 6,110       | 4.0%   |
| 4      | Atoka, Coal, Pittsburg, Pontotoc                             | 103,436   | 4,649       | 4.5%   |
| 5      | Nowata*, Osage*, Rogers, Washington                          | 195,889   | 5,896       | 3.0%   |
| 6      | Bryan, Choctaw, McCurtain, Pushmataha*                       | 102,344   | 5,662       | 5.5%   |
| 7      | Cleveland, McClain*  | 290,261   | 6,929       | 2.4%   |
| 8      | Latimer*, Le Flore   | 61,538    | 3,253       | 5.3%   |
| 9      | Garvin, Grady, Murray, Stephens                              | 138,543   | 5,508       | 4.0%   |
| 10     | Canadian, Custer, Washita*                                   | 154,639   | 4,510       | 2.9%   |
| 11     | Adair, Muskogee, Sequoyah, Wagoner                           | 209,149   | 9,617       | 4.6%   |
| 12     | Carter, Jefferson*, Johnston, Love*, Marshall                | 90,249    | 4,381       | 4.9%   |
| 13     | Haskell*, McIntosh, Okmulgee                                 | 73,090    | 3,607       | 4.9%   |
| 14     | Beckham, Greer*, Harmon*, Jackson, Roger Mills*, Tillman*    | 69,365    | 3,707       | 5.3%   |
| 15     | Alfalfa*, Garfield, Grant*, Major*                           | 78,276    | 3,315       | 4.2%   |
| 16     | Hughes, Okfuskee*, Pottawatomie, Seminole                    | 121,118   | 5,829       | 4.8%   |
| 17     | Caddo, Comanche, Cotton*, Kiowa*                             | 169,337   | 9,439       | 5.6%   |
| 18     | Cherokee, Craig, Delaware, Mayes, Ottawa                     | 176,610   | 8,741       | 4.9%   |
| 19     | Oklahoma   | 718,633   | 37,921      | 5.3%   |
| 20     | Tulsa  | 603,403   | 24,746      | 4.1%   |

Here are some demographics for Oklahoma's funded and unfunded counties, using WIC's estimates of need in 2010.

| ID | County     | Lead Nurse Region | C1 | Pop Total | Pop in Need | Need % |
|----|------------|-------------------|----|-----------|-------------|--------|
| 1  | Adair      | 11                | Y  | 22,683    | 1,526       | 6.7%   |
| 2  | Alfalfa    | 15                | -  | 5,642     | 172         | 3.0%   |
| 3  | Atoka      | 4                 | Y  | 14,182    | 730         | 5.1%   |
| 4  | Beaver     | 2                 | -  | 5,636     | 166         | 2.9%   |
| 5  | Beckham    | 14                | Y  | 22,119    | 1,007       | 4.6%   |
| 6  | Blaine     | 1                 | Y  | 11,943    | 457         | 3.8%   |
| 7  | Bryan      | 6                 | Y  | 42,416    | 1,830       | 4.3%   |
| 8  | Caddo      | 17                | Y  | 29,600    | 1,778       | 6.0%   |
| 9  | Canadian   | 10                | Y  | 115,541   | 2,704       | 2.3%   |
| 10 | Carter     | 12                | Y  | 47,557    | 2,508       | 5.3%   |
| 11 | Cherokee   | 18                | Y  | 46,987    | 2,705       | 5.8%   |
| 12 | Choctaw    | 6                 | Y  | 15,205    | 1,032       | 6.8%   |
| 13 | Cimarron   | 2                 | -  | 2,475     | 152         | 6.1%   |
| 14 | Cleveland  | 7                 | Y  | 255,755   | 5,760       | 2.3%   |
| 15 | Coal       | 4                 | Y  | 5,925     | 277         | 4.7%   |
| 16 | Comanche   | 17                | Y  | 124,098   | 6,886       | 5.5%   |
| 17 | Cotton     | 17                | -  | 6,193     | 242         | 3.9%   |
| 18 | Craig      | 18                | Y  | 15,029    | 566         | 3.8%   |
| 19 | Creek      | 1                 | Y  | 69,967    | 2,919       | 4.2%   |
| 20 | Custer     | 10                | Y  | 27,469    | 1,279       | 4.7%   |
| 21 | Delaware   | 18                | Y  | 41,487    | 1,946       | 4.7%   |
| 22 | Dewey      | 1                 | -  | 4,810     | 218         | 4.5%   |
| 23 | Ellis      | 2                 | -  | 4,151     | 163         | 3.9%   |
| 24 | Garfield   | 15                | Y  | 60,580    | 2,653       | 4.4%   |
| 25 | Garvin     | 9                 | Y  | 27,576    | 1,287       | 4.7%   |
| 26 | Grady      | 9                 | Y  | 52,431    | 1,922       | 3.7%   |
| 27 | Grant      | 15                | -  | 4,527     | 169         | 3.7%   |
| 28 | Greer      | 14                | -  | 6,239     | 238         | 3.8%   |
| 29 | Harmon     | 14                | -  | 2,922     | 162         | 5.5%   |
| 30 | Harper     | 2                 | -  | 3,685     | 155         | 4.2%   |
| 31 | Haskell    | 13                | -  | 12,769    | 602         | 4.7%   |
| 32 | Hughes     | 16                | Y  | 14,003    | 740         | 5.3%   |
| 33 | Jackson    | 14                | Y  | 26,446    | 1,674       | 6.3%   |
| 34 | Jefferson  | 12                | -  | 6,472     | 267         | 4.1%   |
| 35 | Johnston   | 12                | Y  | 10,957    | 491         | 4.5%   |
| 36 | Kay        | 3                 | Y  | 46,562    | 2,548       | 5.5%   |
| 37 | Kingfisher | 1                 | Y  | 15,034    | 623         | 4.1%   |
| 38 | Kiowa      | 17                | -  | 9,446     | 533         | 5.6%   |
| 39 | Latimer    | 8                 | -  | 11,154    | 564         | 5.1%   |
| 40 | Le Flore   | 8                 | Y  | 50,384    | 2,689       | 5.3%   |
| 41 | Lincoln    | 1                 | Y  | 34,273    | 1,412       | 4.1%   |
| 42 | Logan      | 1                 | Y  | 41,848    | 1,218       | 2.9%   |
| 43 | Love       | 12                | -  | 9,423     | 407         | 4.3%   |
| 44 | McClain    | 7                 | -  | 34,506    | 1,169       | 3.4%   |
| 45 | McCurtain  | 6                 | Y  | 33,151    | 2,189       | 6.6%   |
| 46 | McIntosh   | 13                | Y  | 20,252    | 913         | 4.5%   |
| 47 | Major      | 15                | -  | 7,527     | 321         | 4.3%   |
| 48 | Marshall   | 12                | Y  | 15,840    | 708         | 4.5%   |
| 49 | Mayes      | 18                | Y  | 41,259    | 1,859       | 4.5%   |
| 50 | Murray     | 9                 | Y  | 13,488    | 516         | 3.8%   |
| 51 | Muskogee   | 11                | Y  | 70,990    | 3,983       | 5.6%   |
| 52 | Noble      | 3                 | -  | 11,561    | 447         | 3.9%   |

| ID | County       | Lead Nurse Region | C1 | Pop Total | Pop in Need | Need % |
|----|--------------|-------------------|----|-----------|-------------|--------|
| 53 | Nowata       | 5                 | -  | 10,536    | 434         | 4.1%   |
| 54 | Okfuskee     | 16                | -  | 12,191    | 589         | 4.8%   |
| 55 | Oklahoma     | 19                | Y  | 718,633   | 37,921      | 5.3%   |
| 56 | Okmulgee     | 13                | Y  | 40,069    | 2,092       | 5.2%   |
| 57 | Osage        | 5                 | -  | 47,472    | 1,436       | 3.0%   |
| 58 | Ottawa       | 18                | Y  | 31,848    | 1,665       | 5.2%   |
| 59 | Pawnee       | 3                 | Y  | 16,577    | 635         | 3.8%   |
| 60 | Payne        | 3                 | Y  | 77,350    | 2,480       | 3.2%   |
| 61 | Pittsburg    | 4                 | Y  | 45,837    | 1,725       | 3.8%   |
| 62 | Pontotoc     | 4                 | Y  | 37,492    | 1,917       | 5.1%   |
| 63 | Pottawatomie | 16                | Y  | 69,442    | 2,983       | 4.3%   |
| 64 | Pushmataha   | 6                 | -  | 11,572    | 611         | 5.3%   |
| 65 | Roger Mills  | 14                | -  | 3,647     | 185         | 5.1%   |
| 66 | Rogers       | 5                 | Y  | 86,905    | 2,185       | 2.5%   |
| 67 | Seminole     | 16                | Y  | 25,482    | 1,517       | 6.0%   |
| 68 | Sequoyah     | 11                | Y  | 42,391    | 1,989       | 4.7%   |
| 69 | Stephens     | 9                 | Y  | 45,048    | 1,783       | 4.0%   |
| 70 | Texas        | 2                 | Y  | 20,640    | 1,350       | 6.5%   |
| 71 | Tillman      | 14                | -  | 7,992     | 441         | 5.5%   |
| 72 | Tulsa        | 20                | Y  | 603,403   | 24,746      | 4.1%   |
| 73 | Wagoner      | 11                | Y  | 73,085    | 2,119       | 2.9%   |
| 74 | Washington   | 5                 | Y  | 50,976    | 1,841       | 3.6%   |
| 75 | Washita      | 10                | -  | 11,629    | 527         | 4.5%   |
| 76 | Woods        | 2                 | -  | 8,878     | 256         | 2.9%   |
| 77 | Woodward     | 2                 | Y  | 20,081    | 754         | 3.8%   |

## 6 Session Information

We would like to address any questions or suggestions during any stage of the evaluation. Please contact David Bard, Will Beasley, or Thomas Wilson in the [BBMC](#) (Biomedical and Behavioral Methodology Core) of OUHSC's [Pediatrics Department](#).

For the sake of documentation and reproducibility, the current report was build on a system using the following software.

```
## Report rendered by Will at Tue Jan 19 15:17:10 2016
```

```
## R version 3.2.3 Patched (2015-12-12 r69765)
## Platform: x86_64-w64-mingw32/x64 (64-bit)
## Running under: Windows >= 8 x64 (build 9200)
##
## locale:
## [1] LC_COLLATE=English_United States.1252
## [2] LC_CTYPE=English_United States.1252
## [3] LC_MONETARY=English_United States.1252
## [4] LC_NUMERIC=C
## [5] LC_TIME=English_United States.1252
##
## attached base packages:
## [1] grid      stats      graphics  grDevices  utils      datasets  methods
```

```
## [8] base
##
## other attached packages:
## [1] classInt_0.1-23 maps_3.0.2      xtable_1.8-0      stringr_1.0.0
## [5] colorspace_1.2-6 ggplot2_2.0.0    plyr_1.8.3        scales_0.3.0
## [9] knitr_1.12
##
## loaded via a namespace (and not attached):
## [1] Rcpp_0.12.3      magrittr_1.5      munsell_0.4.2     R6_2.1.1
## [5] highr_0.5.1      dplyr_0.4.3       tools_3.2.3       parallel_3.2.3
## [9] gtable_0.1.2     e1071_1.6-7       DBI_0.3.1.9008    htmltools_0.3
## [13] class_7.3-14     yaml_2.1.13       digest_0.6.9      assertthat_0.1
## [17] mapproj_1.2-4    readr_0.2.2       formatR_1.2.1     evaluate_0.8
## [21] rmarkdown_0.9.2 labeling_0.3       stringi_1.0-1
```