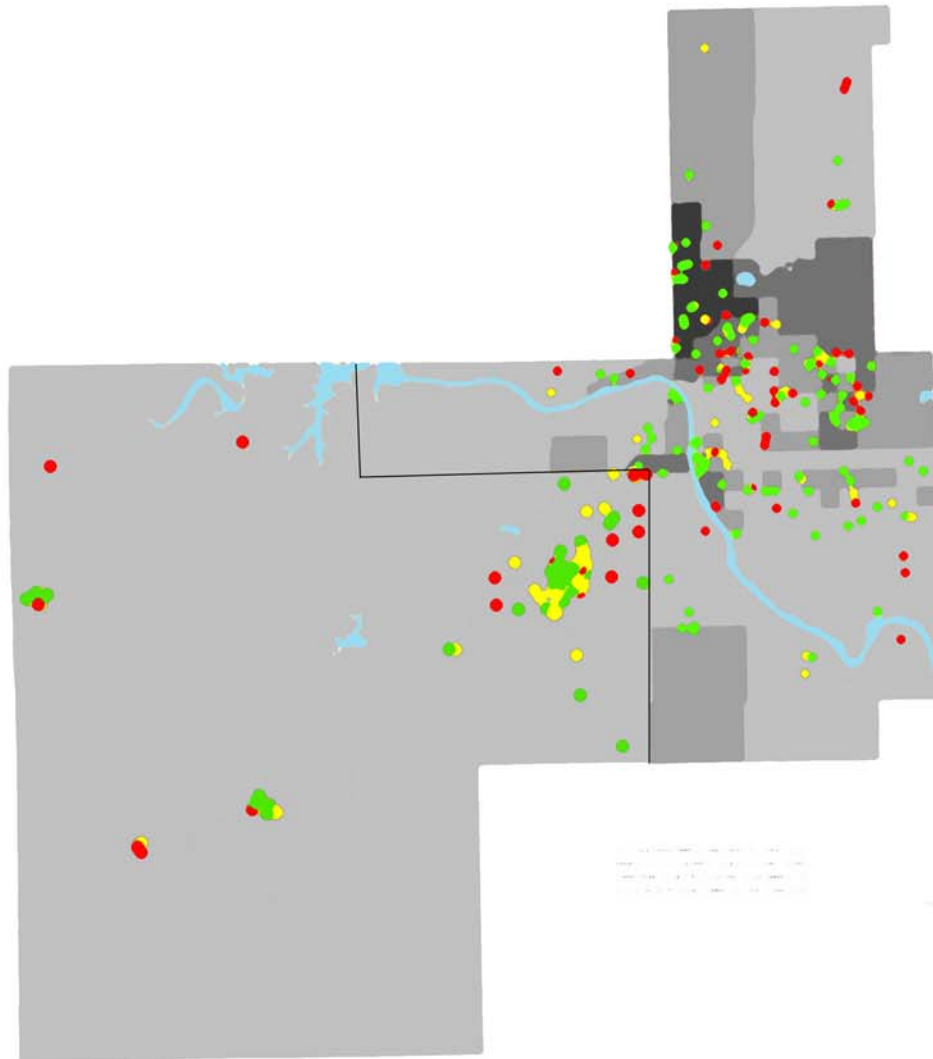# Geographical and Statistical Analysis of Protective Orders in Creek and Tulsa Counties: A Pilot Study

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In cooperation with:

Domestic Violence Intervention Services

Introduction

The purpose of this report is to present a geographical and statistical analysis of protective order in Creek and Tulsa counties. It is important to note that the information presented throughout this report represents a pilot study that simply describes various demographic information related to the plaintiffs and defendants of protective orders. Ultimately, what is presented is a descriptive analysis of protective orders and therefore is not an evaluation of the effectiveness of protective order services provided by DVIS.

This report reflects the outcome of a course (Geographical Analysis of Social Justice Issues) taught by OU-Tulsa Professors. Shawn Schaefer and Chan Hellman to graduate students from Architecture and Human Relations. The course was a pilot project to investigate the possibility of combining skills Architecture students have gained through courses in Urban Design and the skills Human Relations students gain in research methods and knowledge of social justice issues. Through a previously established memorandum of understanding between DVIS and OU-Tulsa's Applied Research Center to conduct program evaluation it was determined that mapping protective orders would be an asset to DVIS and provide an applied learning situation for the graduate students.

This report is based upon data provided by Domestic Violence Intervention Services (DVIS) of protective orders that were classified as "closed" for 2002. Additionally, much of this information is also in the public domain through www.oscn.net. Nevertheless, as part of the learning process for the graduate students, a proposal for the project was submitted and ultimately approved by the OU-Norman Institutional Review Board (IRB) to ensure ethical treatment of the data. The IRB approval documentation is provided at the end of this report.

A final note of importance is that in order to generate the geographical analysis, plaintiff and defendant addresses were converted to census tract codes and entered by hand into the data base. In 2002, there were 302 protective orders for Creek County. However, in Tulsa County this number was over 2,000. Therefore a random sample of 10% of the cases was selected for Tulsa County and all 302 cases of Creek County were used.

Finally, we want to express our sincere appreciation to Ms. Felicia Collins-Correia, Executive Director of DVIS and OU-Tulsa Graduate Dean Dr. Bill Ray. Ms. Correia has graciously provided data and expresses a tremendous commitment to social justice. Dean Ray's vision of interdisciplinary research and education has supported this project from its conception

Statistical Analysis of the Data

The primary focus on this section is to provide a descriptive review of the demographic information collected on Protective Orders (POs) for Creek County. More specifically, demographic information on both plaintiff and defendant are presented based upon the available data for cases closed from the year 2002. Additionally, a review of Judge decision by plaintiff reported risk score is presented. Risk scores were defined by the researchers as a total score based upon 20 yes or no questions as part of the protective order. In many cases, incomplete or missing data prevents a full descriptive evaluation.

Plaintiff Demographics:

Age: In 2002, there were 302 protective orders filed. Of this number, 298 plaintiffs provided information about their age. Specifically, the average age of the plaintiff was 34.54 years, ranging from a low of 10 years to a high of 75 years. The most frequently occurring age during this time was 19 years.

Gender: both male and female plaintiffs filed POs. During 2002, 66 (21.9%) of those filing were male with 234 (77.5%) of the plaintiffs indicating they are female. Only two (6%) did not report their gender on the PO forms.

Race: Plaintiff race was recorded by a single letter in the DVIS database. Due to a lack of consistency in reporting this data is not currently available for data analysis. Specifically, the letters used included: "A B D H I N S and W."

Marital Status: Similar to race, marital status was not available for statistical review due to a lack of consistency in data entry. Letter used to denote marital status included: "D E M N and S."

Number of Children: The number of children in the home reported by the plaintiff ranged from zero to six. The most frequent number of children was zero with 68.5% reported. 11.3% report having one child in the home with 14.2% reporting two children in the home.

Employment Status: 171 (56.6%) of the plaintiffs reported they were employed at the time of filing the PO with 81 (26.8%) reporting they were not employed. 50 (16.6%) of this information were not included in the database.

Defendant Demographics:

The data available for statistical review for the defendants of POs filed in Creek County during 2002 included age, race and relationship to victim. Due to data inconsistencies, race was not available for review. Nevertheless, in 2002, the average age of the defendant was 35.18 years with the most frequently occurring age of 34 years. The defendant ages ranged from a low of 15 years to a high of 82 years. There were 76 distinct entries on the reported relationship between the defendant and plaintiff. As a result, this data is not generally available for review. However, a content analysis of these entries suggests that approximately 130 can be categorized as spouse or ex-spouse. This is followed by approximately 43 categorized as boyfriend/girlfriend or ex-boyfriend/girlfriend and 36 categorized as extended relatives.

Creek County Judge Analysis

Number of Cases per Judge

Judge	Total Cases	Percent of Total
Miller	78	32.4%
Vasser	4	1.7%
White	78	32.4%
Woolery	81	33.6%

As the table above indicates, the cases are essentially evenly distributed across judges, with the explainable outlier of Judge Vasser. Judge Vasser is located in Bristow and as a result usually deals with divorce related protective orders involved with Creek County; therefore his caseload is proportionally smaller. Next, we examined the judgment result of the petition for protective order. As the graph below illustrates, the largest majority of protective orders are dismissed.
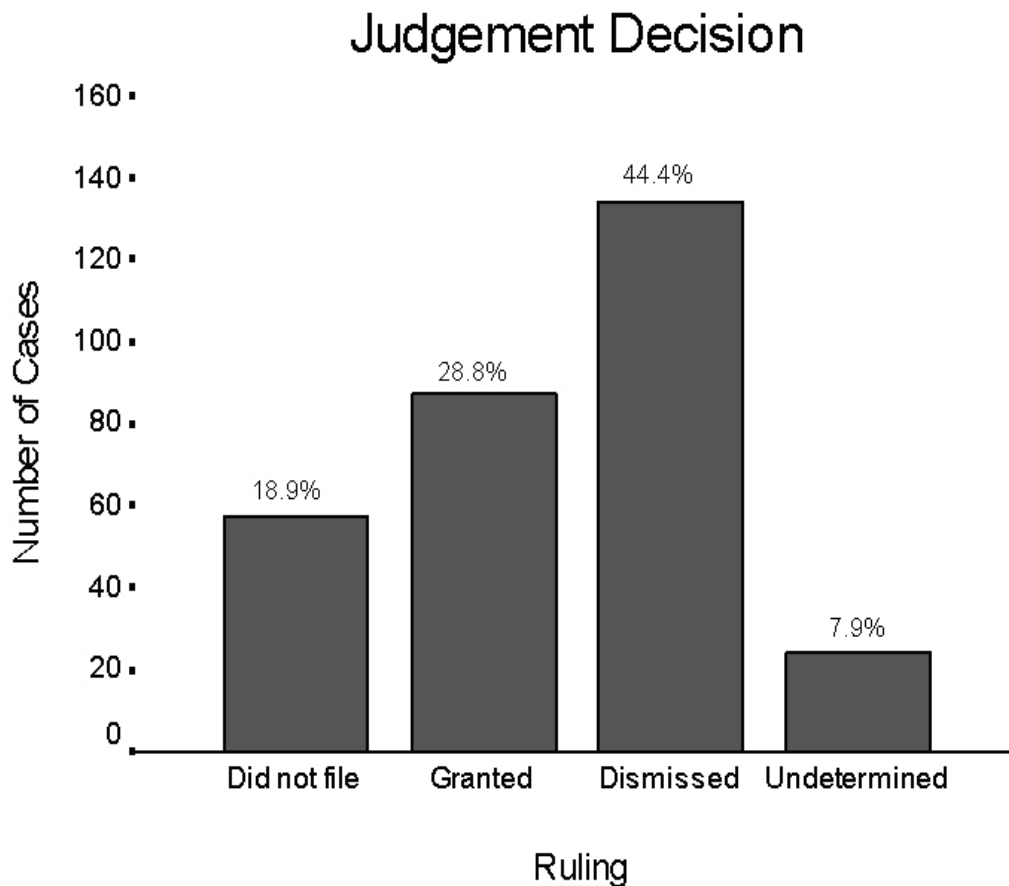

PO Judgment by Risk Score:

As mentioned earlier, each protective order contained a risk assessment comprised of 20 yes or no questions (e.g., threatened to kill you). For each case, the researchers coded yes as a "1" and no as a "0." Then, all 20 items were added to generate a total risk score ranging from a low of zero to a high of 20. Given that a vast majority of protective orders were dismissed, we subsequently compared total risk score by judge.

In Creek County, the average total risk score was 7.87 (SD = 6.10) with a median score of 8.00. These scores ranged from 0 to 20 with higher scores reflecting higher self-reported risk. One important characteristic of protective orders is the judges and their decisions. The graph below provides an indication that the judges in Creek County did not differ significantly with respect to the average risk score among the cases they reviewed [$F(3, 235) = 0.013$; $p = .998$]. It is important to remember that Judge Vasser reviewed only four cases within the current data.
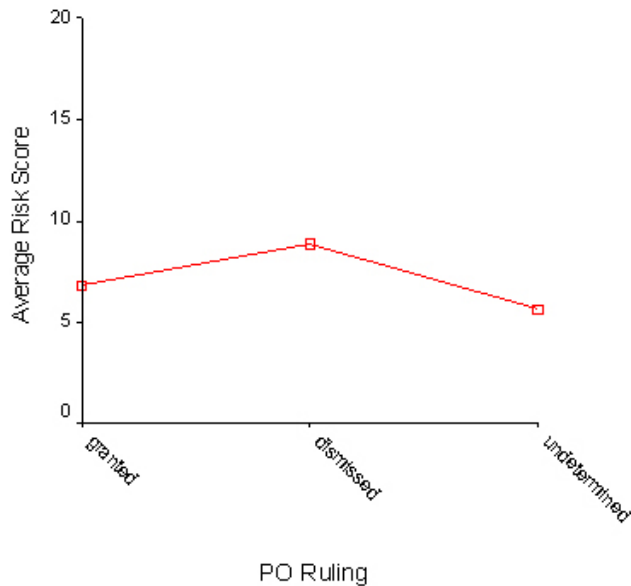
Average Risk Score By Judge
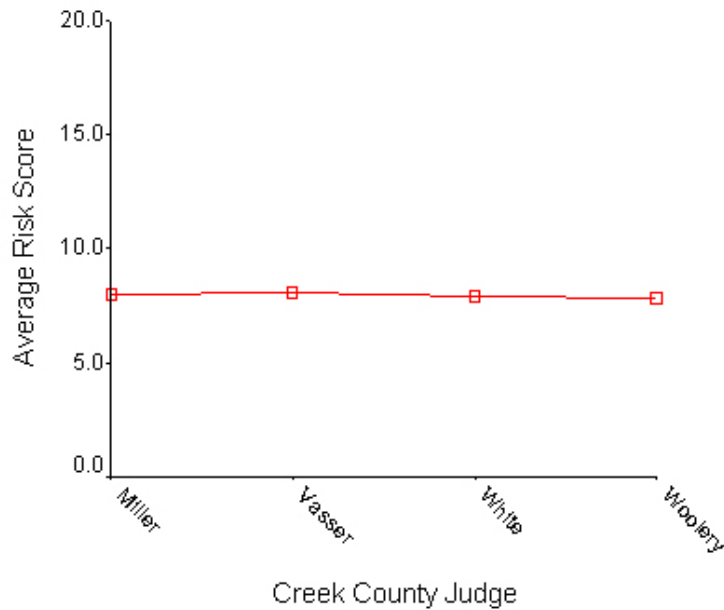
Average Risk By Court Decision

Given that the Judges did not differ with regards to the total risk level of cases they observed, we then considered the influence of plaintiff self-reported risk relative to the court's ruling on the petition for a protective order. As seen in the graph below, it appears that the level of risk was a factor in the judgment to grant protective orders in Creek County [$F(2, 238) = 4.66$; $p = .01$]. Results of this analysis suggest that those cases that are dismissed have the highest plaintiff self-reported risk score ($M = 8.89$, $SD = 5.84$) when compared to those that were granted ($M = 6.84$, $SD = 6.01$) and those that are undetermined (e.g., no ruling evident from the records; $M = 5.62$, $SD = 7.06$).

Court Ruling by Level of Risk

Given that those request for protective orders with the highest average risk scores were dismissed, we next examined the reason for dismissal. More specifically, we investigated the average self-reported risk scores as a function of dismissal. The graph below provides clarity to this issue.

Average Risk Score By Reason For Court Dismissal
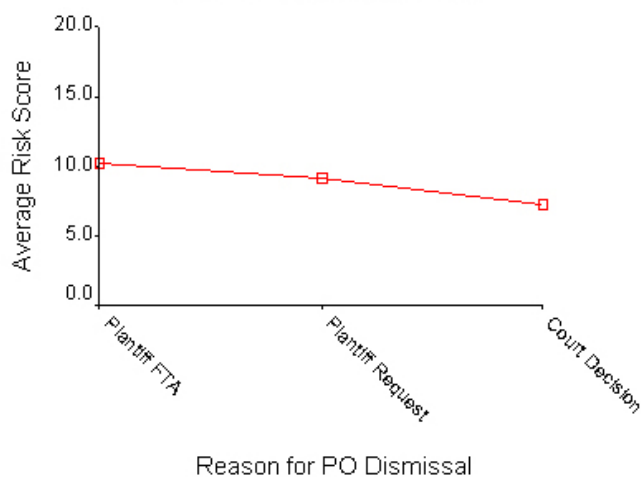
As seen in the graph above, while the ruling of dismissal had the highest self-reported risk score, this appears to be a function of the reason for dismissal [$F_{(2, 131)} = 2.99$; $p = .054$]. More specifically, higher average risk scores are observed for those plaintiffs who fail to appear ($M = 10.21$; $SD = 6.20$), followed by dismissal due to plaintiff request ($M = 9.21$; $SD = 6.30$) with dismissal due to court decision ($M = 7.25$; $SD = 4.58$) having the lowest self-reported risk score.

Tulsa County Data Analysis

With regard to Tulsa County, fewer data characteristics are available for subsequent statistical analyses. Specifically, information about the plaintiff includes, city of residence, employment, number living in household, income level, if the plaintiff and defendant currently live together, and total risk score is all that is available for summation.

The data for Tulsa County reflects a simple random sample of 211 (e.g., 10%) cases during the 2002 calendar year. As a result, to the extent that the following descriptive statistics are not representative of the total number of protective orders reflects sampling error.

According to the 211 protective orders evaluated, 62.1% of the plaintiffs report they were currently employed. Additionally, 77.7% report their city of residence as Tulsa. This was followed in rank order by Broken Arrow (9.0%), Sand Springs (2.4%), Owasso (1.9%), Glenpool (1.9%), and Bixby (1.9%) respectively. 50.9% of the plaintiffs report that two or fewer people currently live in the household. With regard to the total risk score, only 100 protective orders provide completed information available for analyses. Of these 100 cases, the average score was 11.10 ($SD = 4.50$) with a median score of 12.00 and the most frequently occurring score of 16.00. Total risk scores ranged from 0 to 18 with higher scores reflecting a higher risk.

Defendant data is only available for city of residence with 57.8% residing in Tulsa followed by Broken Arrow (4.3%). Several other cities were also specified but all fell below 1.5% and are therefore not reported.

Geographic Analysis and Mapping

This section describes the geographic analysis and mapping of the 2002 protective order data sets for Creek County, Oklahoma and Tulsa County, Oklahoma collected by the Domestic Violence Intervention Service (DVIS). Geographic analysis and mapping was accomplished using the ARCINFO Geographic Information System (GIS) designed and licensed by ESRI, Inc. Data from the United States Census was downloaded via the Internet from the ESRI, Inc. website (http://arcdata.esri.com/data/tiger2000/tiger_download.cfm) in the TigerLine format. Base maps of both counties were created using these files, specifically vector graphic shapefiles including the county boundaries, census tract boundaries, bodies of water, streets and street addresses. United States Census Summary File 1 was used to provide demographic and household data in the form of dBASE tables for all census tracts. The DVIS data was also translated to dBASE tables to be joined to the GIS.

Description of Maps:

Creek County Protective Orders – This map shows the location of plaintiffs and defendants by address. The plaintiff and defendant addresses from the DVIS data was compared to the Tigerline data using GIS Address Geocoding, a process that compares street numbers, street names and zip codes in the database tables to the address delimiters and street names in the vector graphic shapefiles. Only addresses matching with a confidence score of 60 or above are shown on the map. From the 302 total cases, 135 plaintiff addresses (45%) and 42 defendant addresses (14%) are shown on the map. Most of the addresses are clustered in more densely populated areas of the county, particularly Sapulpa and the fringes of Tulsa in the northeast panhandle of the county. Several smaller clusters appear in the towns of Bristow, Drumright, and Depew. While this clustering is predictable and expected, the map may also be biased against the depiction of rural addresses because post office box and rural route addresses are not included in Tigerline data and many rural roads do not have address delimiters. The fact that the DVIS data is based on information provided by plaintiffs may also explain why there are fewer defendant addresses, since plaintiffs may not know the full or current address of the defendants.

Creek County Protective Orders by Census Tract – This map shows the total number of protective orders in each of the county's census tracts. Again, the tracts with the most numerous cases correspond to the more densely populated areas with the tracts 206.02 and 214 representing the mode.

Creek County Protective Orders by Racial and Ethnic Group – This series of four maps shows the location of plaintiffs by racial and ethnic group. The DVIS data contains 302 cases: 242 White plaintiffs (80.2%), 41 African-American plaintiffs (13.6%), 7 Native American plaintiffs (2.3%), 6 Hispanic plaintiffs (1.9%) and 1 Asian plaintiff (0.3%). The map also shows percentages of White, African-American, Native American and Hispanic population by census tract. Census data indicates that the total Creek County population in 2000 was 67,367 persons: 55,425 Whites (82.2%), 1,724 African-Americans (2.6%), 6,120 Native Americans (9.1%), 1,283 Hispanics (1.9%) and 179 Asians (0.2%). The DVIS data indicates a higher percentage of African-American plaintiffs than the corresponding percentage of county African-American population and a lower percentage of Native American plaintiffs than the corresponding percentage of county Native American population.

Creek County Risk Assessment Scores – This map plots the 135 mapped plaintiff locations by the risk assessment score developed by DVIS. The plot categorizes risk assessment score as low (below 4.0), medium (4.1 – 11.0) and high (11.1 – 20.0) as determined by the Jenks Natural Break Analysis incorporated into the GIS. No discernable geographic relationship of risk assessment scores is apparent.

Creek County Judicial Assignment – This map plots the 135 mapped plaintiff locations by judge. Analysis of the 302 total cases indicates that three judges heard the majority of cases: Miller, 78 cases (25.8%), Woolery, 81 cases (26.8%), and White, 78 cases (25.8%) in roughly equal proportion. Judge Vasser, sitting in Bristow, heard a handful of cases, 4 (1.3%) and 56 cases (18.5%) did not make it to court. The map indicates a relatively equal geographic distribution of cases as well, with all three judges hearing cases from around the county.

Creek County Dispositions – This map plots the 135 mapped plaintiff locations by disposition of case. Analysis of the 302 total cases gives the following breakdown of dispositions: 56 cases were not filed (18.5%) and another 25 cases did not proceed or were stricken from the court record (8.3%), 87 cases resulted in a protective order being granted (28.8%), and 134 cases resulted in dismissal (44.3%). Cases resulting in dismissal included 43 cases were the plaintiff failed to appear, 44 cases settled by agreement of the parties, and 47 cases dismissed by judgement. The map indicates a relatively equal geographic distribution of case distributions.

Tulsa County Protective Orders - This map shows the location of plaintiffs and defendants by address. The plaintiff and defendant addresses from the DVIS data was compared to the Tigerline data using GIS Address Geocoding, a process that compares street numbers, street names and zip codes in the database tables to the address delimiters and street names in the vector graphic shapefiles. Only addresses matching with a confidence score of 60 or above are shown on the map. The DVIS database for Tulsa County was sampled using simple random sampling to provide a selective sample of 211 cases (10% of the total). From the 211 cases in the sample, 184 plaintiff addresses (87%) and 106 defendant addresses (50%) are shown on the map. Most of the addresses are clustered in more densely populated areas of the county, particularly the City of Tulsa. Several smaller clusters appear in the suburbs of Broken Arrow and Owasso with smaller numbers in Bixby, Sand Springs, Jenks, Collinsville and other smaller communities. While this clustering is predictable and expected, the map may also be biased against the depiction of rural addresses because post office box and rural route addresses are not included in Tigerline data and many rural roads do not have address delimiters. Because Tulsa County is more urbanized than Creek County better mapping results were obtained. The fact that the DVIS data is based on information provided by plaintiffs may also explain why there are fewer defendant addresses, since plaintiffs may not know the full or current address of the defendants.

Tulsa County Protective Orders by Census Tract – This map shows the number of protective orders from the sample in each of the county's census tracts. Census tract 79 had an extremely high number of cases and may be an outlier. Interpretation of the map may weakly indicate fewer cases in the midtown and southeastern portions of the City of Tulsa and Tulsa County. The sampling process may have skewed this map and until a more complete mapping of the entire database is made this interpretation must remain qualified.

Tulsa County Risk Assessment Scores – This map plots the 184 mapped plaintiff locations by the risk assessment score developed by DVIS. The plot categorizes risk assessment score as low (below 4.0), medium (4.1 – 11.0) and high (11.1 – 20.0) as determined by the Jenks Natural Break Analysis incorporated into the GIS. It appears that the higher risk assessment scores are clustered in areas of higher percentage of minority population, primarily on the north side and east side of the City of Tulsa.

Tulsa County Distance Analysis – This map attempts to show the distance from plaintiff address to defendant address. From the 211 case samples, 71 cases were missing one or both addresses and 50 cases had one or both addresses that could not be matched with a confidence score of 60 or above, leaving 90 cases for separation distance analysis. From the remaining 90 mapped cases, 33 cases had identical plaintiff and defendant addresses and 57 cases had different addresses. The mean straight line distance from plaintiff to defendant address for cases with different addresses was 6.2 miles. The mean straight line distance for all 90 mapped cases was 3.9 miles. The longest distance was 16.1 miles. No discernable pattern of paths is evident from the map.

Discussion:

The mapping process demonstrates the capability to map a variety of data in several ways to look for geographic patterns that may yield fruitful statistical analysis and further study.

The maps could be improved by better data collection techniques. Specifically, since mapping is dependent on addresses to create reliable and valid maps, every effort should be made to obtain good address information. Plaintiffs should be asked for physical addresses, not post office box addresses. Addresses should be formatted to match census tract format with appropriate modifiers and abbreviations. Zip codes should be included in all data. An effort should be made to find defendants' addresses from means other than relying on the plaintiff, perhaps from court or defendant DVIS records.

The maps could also be more meaningful if specific parameters are defined for investigation, such as outcomes for plaintiffs, defendants, the DVIS organization or the public. Collecting this data in an organized fashion perhaps by establishing a computer database integrating information collection, storage and reporting would simplify this process and give researchers a complete data set without having to use sampling techniques. Finally, standardizing data collection and building records over the long-term will allow comparative analysis and time-series studies to look at rates of change and trends for evaluation.

Creek County Protective Orders

Plaintiffs
Defendants
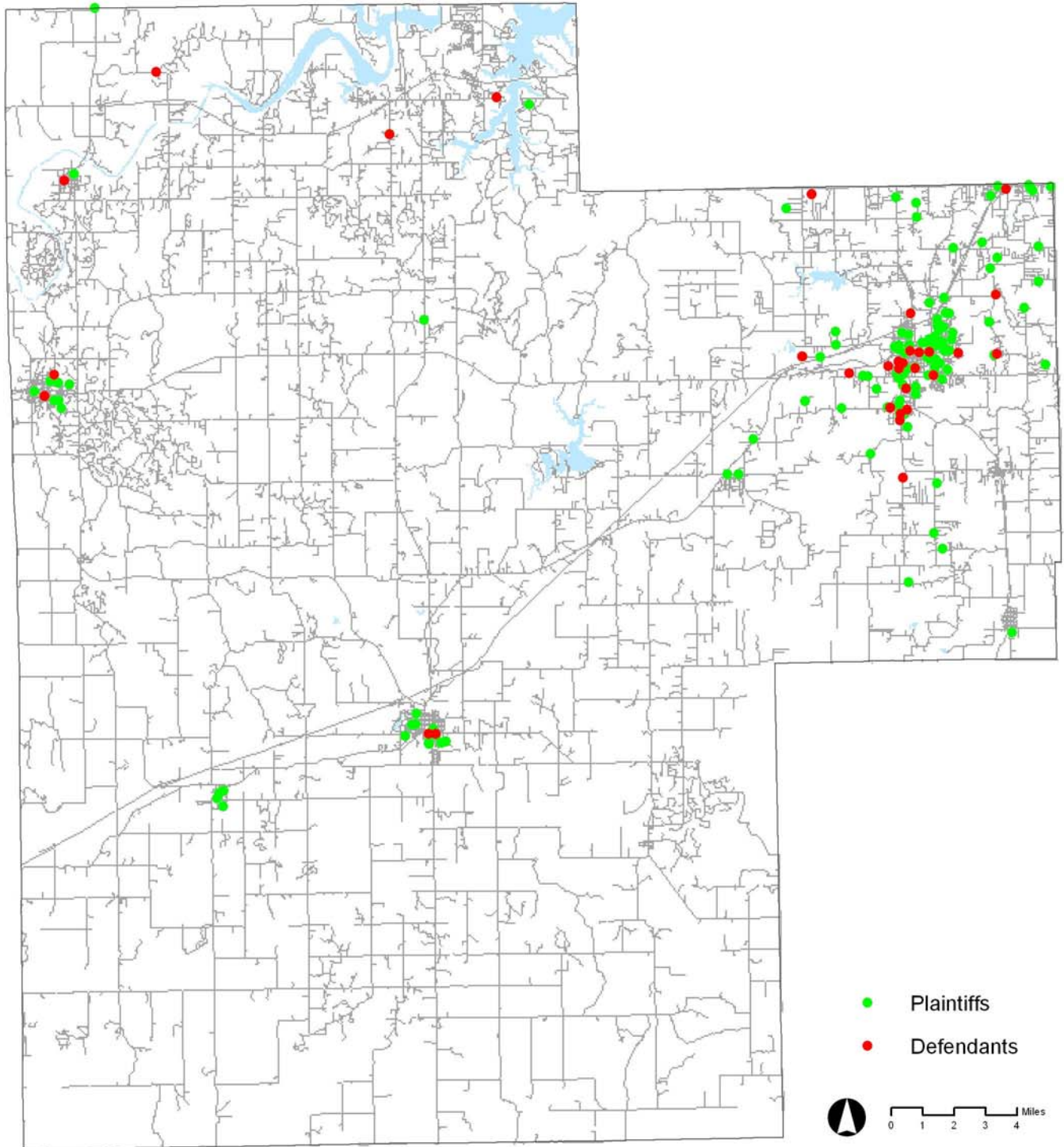
Location of Creek County protective order plaintiffs and defendants based on Domestic Violence Intervention Service data for the 2002 calendar year. Map shows 135 of 302 plaintiffs and 42 of 302 defendants with addresses matching the U.S. Census Bureau Tigerline database.

OU TULSA
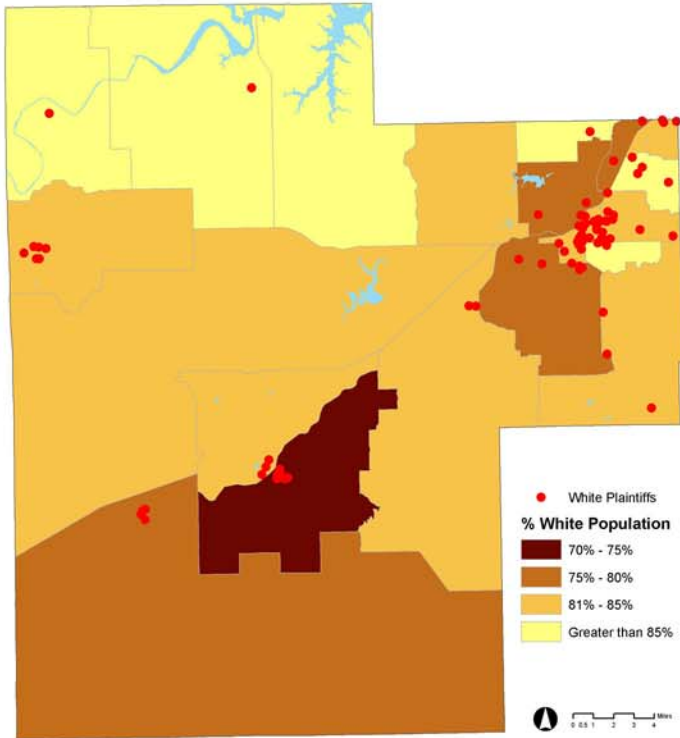
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Creek County Protective Orders
by Census Tract

Number of Creek County protective orders by census tract based on Domestic Violence Intervention Service data for the 2002 calendar year.
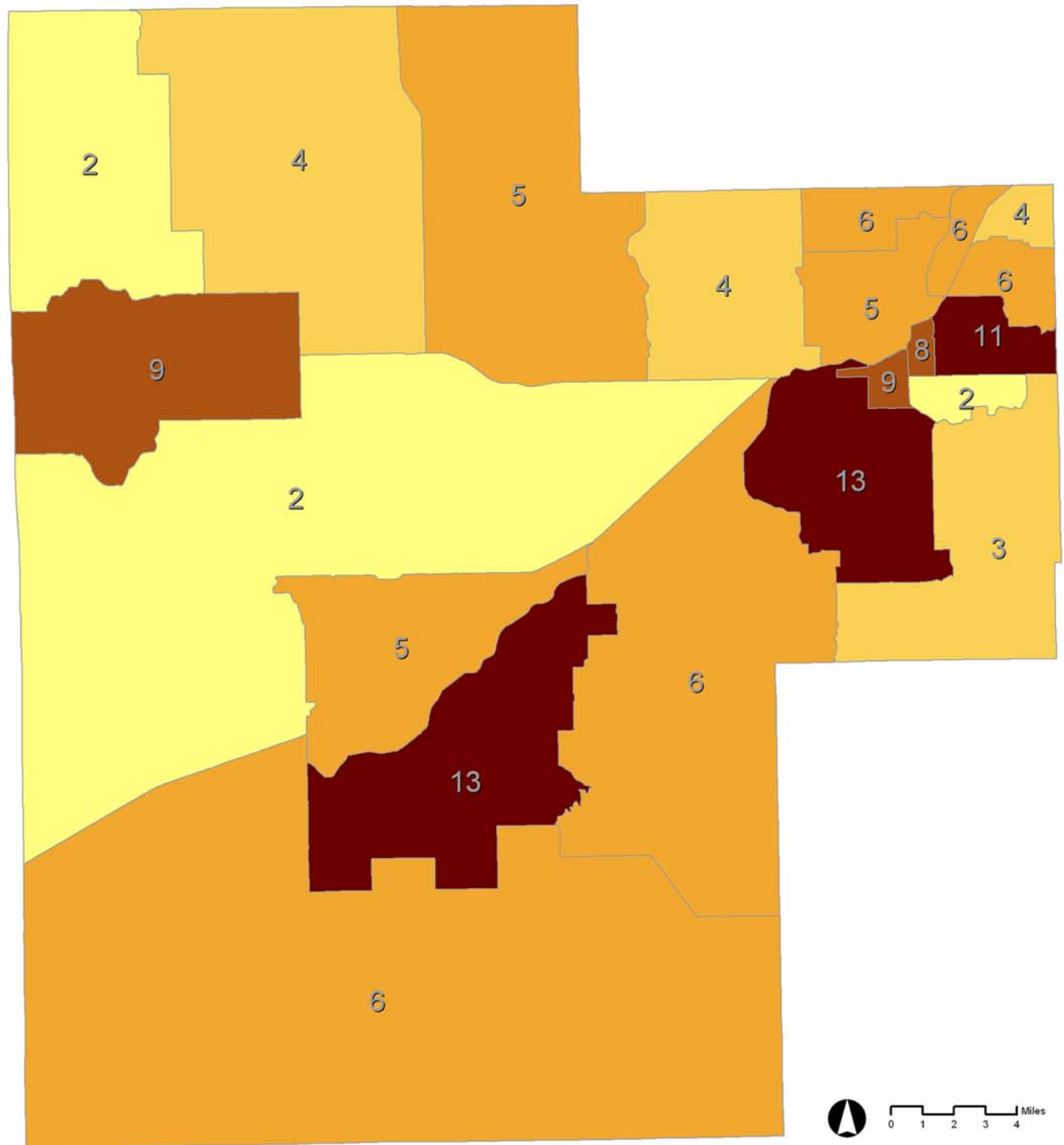
Creek County Protective Orders

White Plaintiffs

- White Plaintiffs

% White Population
- 70% - 75%
- 75% - 80%
- 81% - 85%
- Greater than 85%

African American Plaintiffs

- Black Plaintiffs

% African American Population
- Less than 1%
- 1% to 2%
- 2% to 4%
- Greater than 4%

Native American Plaintiffs

- Native American Plaintiffs

% Native American
- Less than 8%
- 8% to 10%
- 10% to 12%
- Greater than 12%
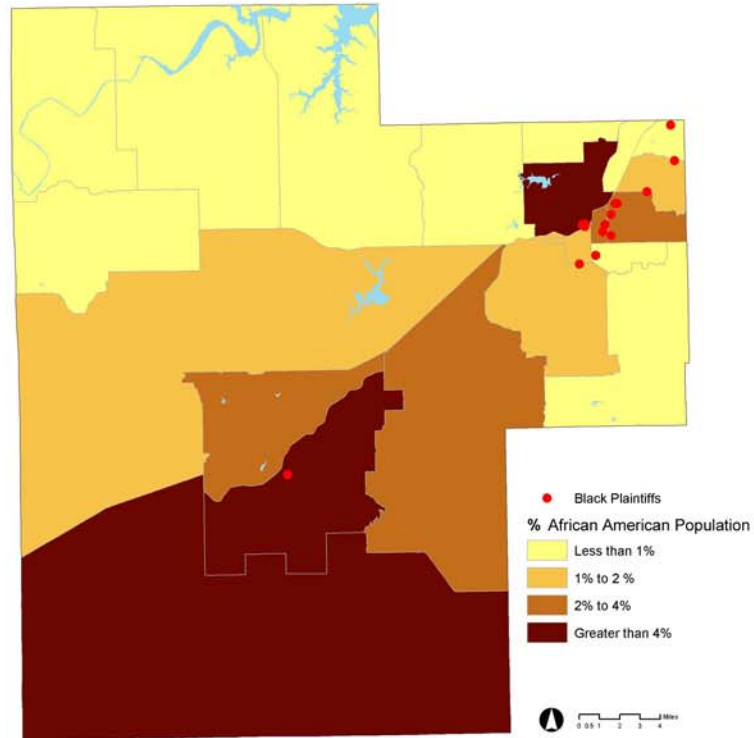
Hispanic Plaintiffs

- Hispanic Plaintiffs

% Hispanic Population
- Less than 1%
- 1% to 2%
- 2% to 5%
- Greater than 5%

OU TULSA
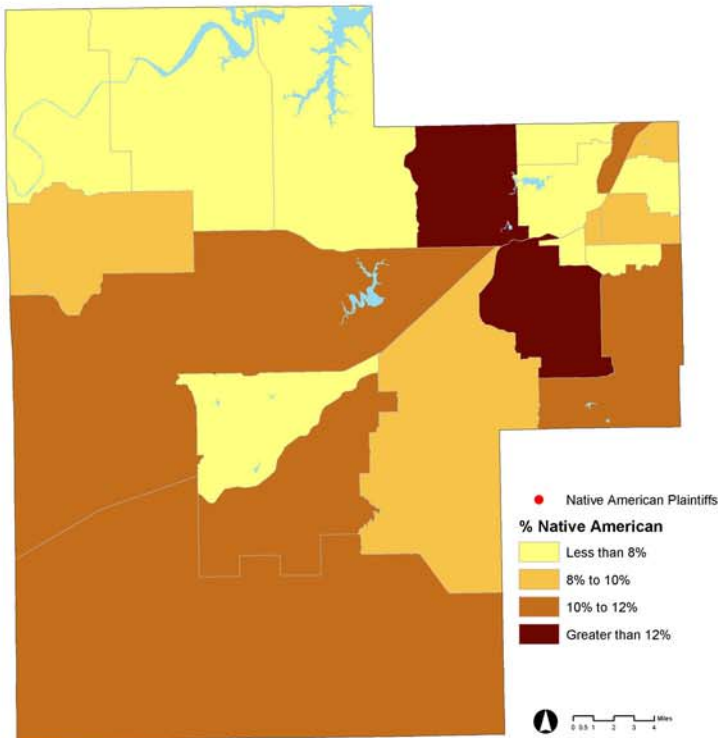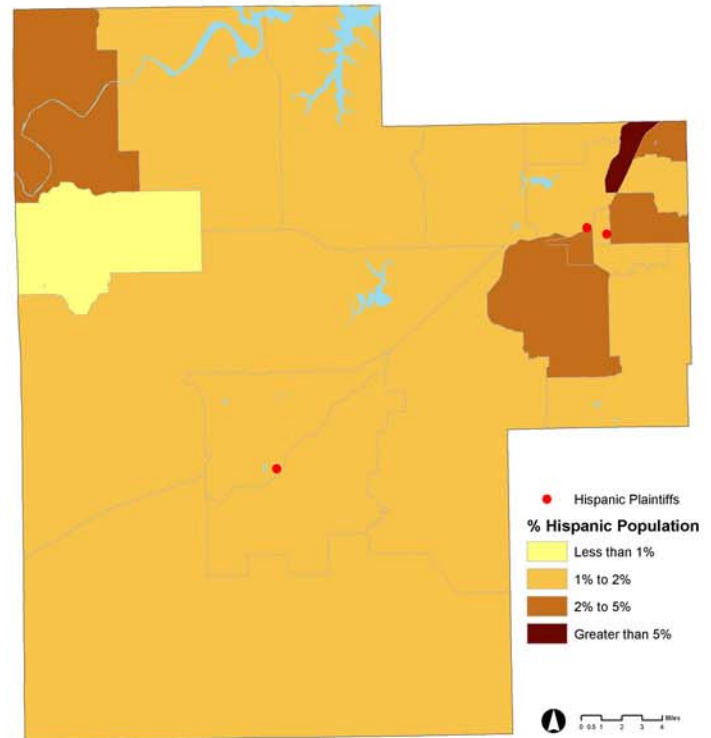
Creek County protective orders by ethnic group based on Domestic Violence Intervention Service data for the 2002 calendar year and U.S. Census Bureau data for the year 2000.

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Creek County Protective Orders
Risk Assessment Scores

Risk Assessment Scores
- 0.0 - 4.0
- 4.1 - 11.0
- 11.1 - 20.0

% Minority Population
- 20% to 33%
- Less than 20%

Miles
0 0.5 1 2 3 4

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Risk assessment scores of Creek County protective order plaintiffs based on Domestic Violence Intervention data for the 2002 calendar year. Non-white population by census tract based on U.S. Census Bureau data for the year 2000.

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Creek County Protective Orders

Case Assignment

Miles
0 1 2 3 4
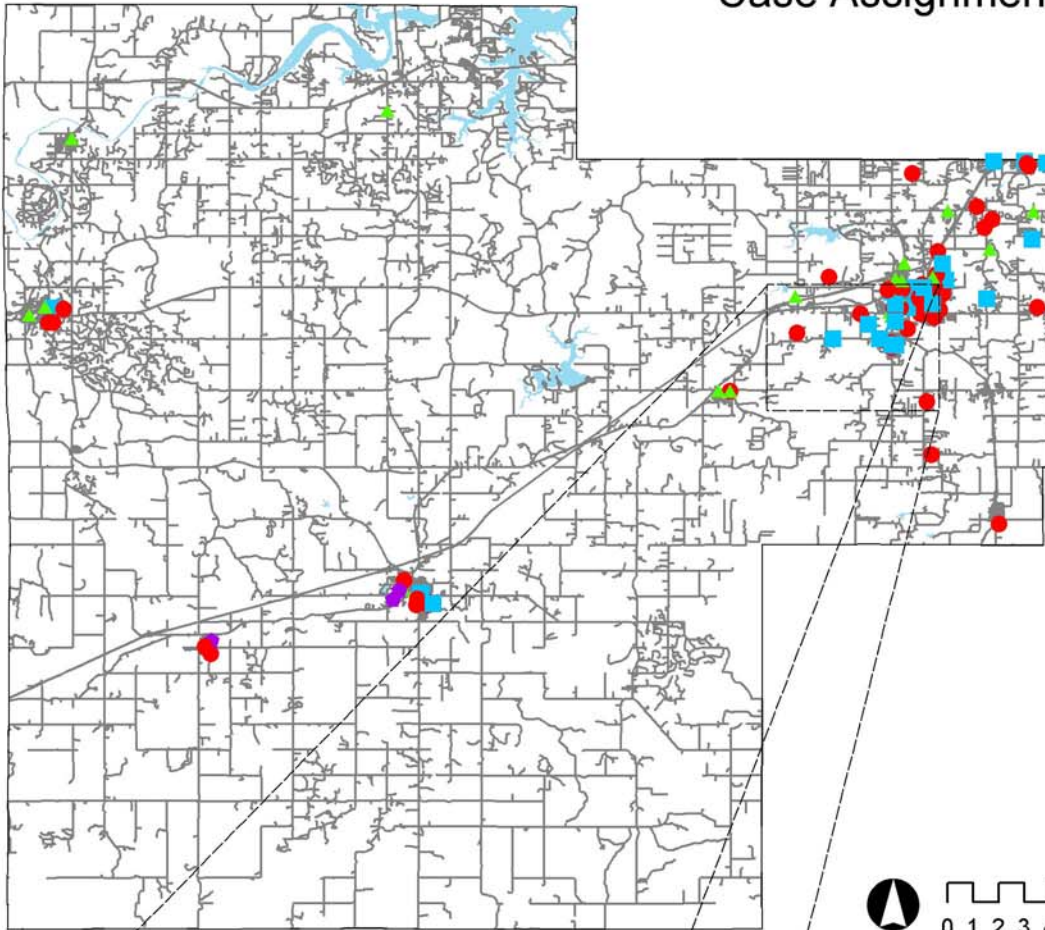
Sapulpa Inset
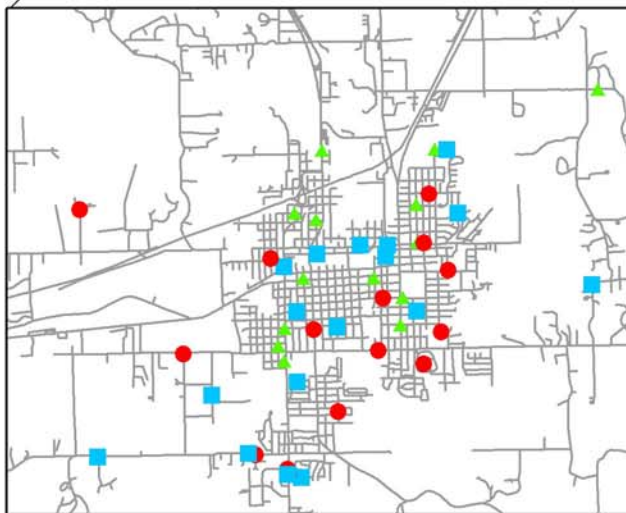
Case Assigned to Judge:

- ● Miller
- ⬟ Vasser
- ▲ White
- ■ Woolery

Assignment of Creek County protective orders based on Domestic Violence Intervention Service data for the 2002 calendar year. Map shows 135 of 302 cases with defendants' addresses matching the U.S. Census Bureau Tigerline database.
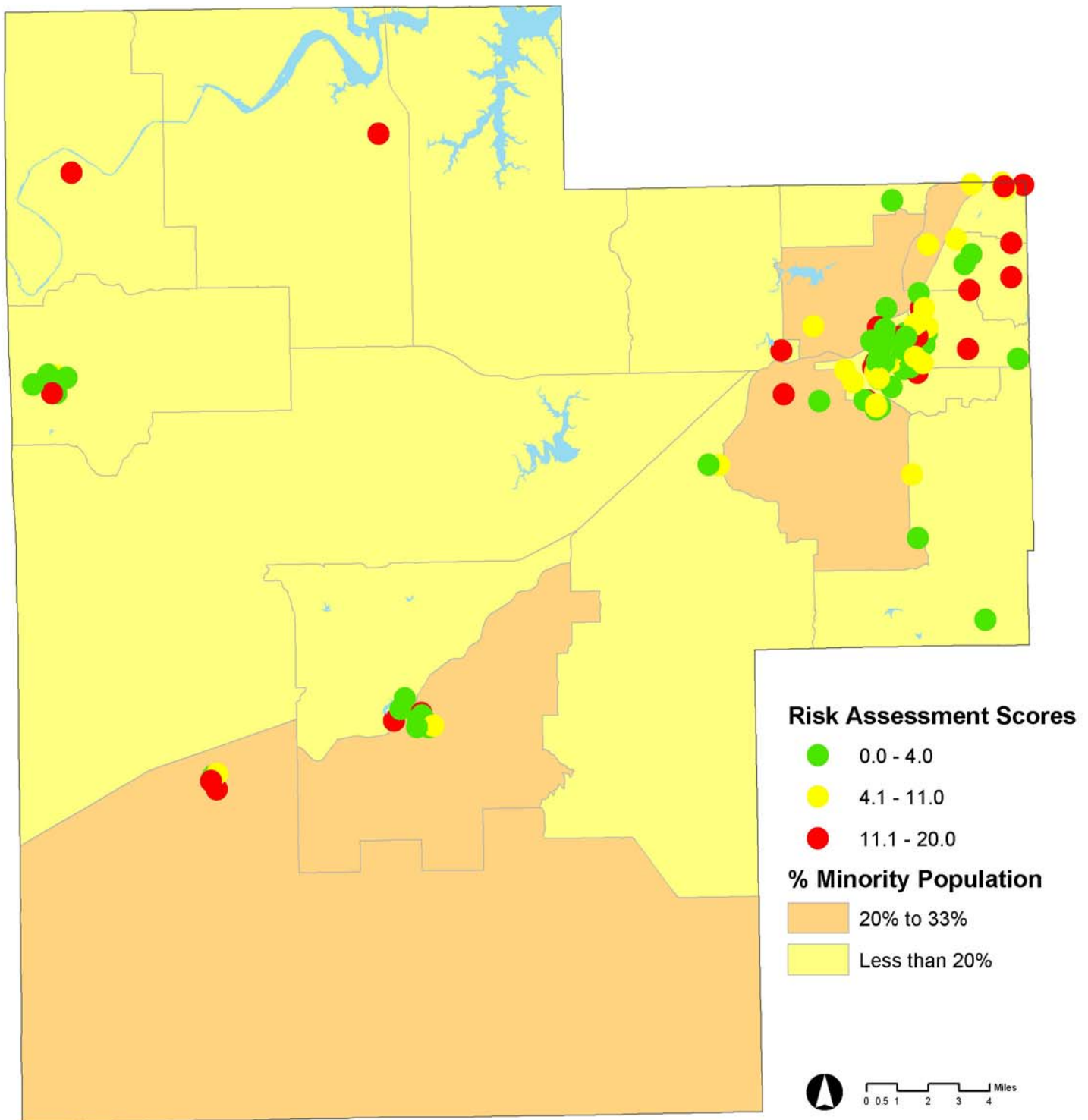
Creek County Protective Orders

Dispositions

Sapulpa Inset

Dispositions

- ▲ PO Not Filed
- ● PO Granted
- ■ Plaintiff Failed to Appear
- ■ Dismissed by Judgement
- ■ Dismiss by Agreement
- ⬠ None of the above

Dispositions of Creek County protective orders based on Domestic Violence Intervention Service data for the 2002 calendar year. Map shows 135 of 302 cases with defendants' addresses matching the U.S. Census Bureau Tugerline database.

Tulsa County Protective Orders

Selective Sample

Plaintiffs
Defendants

Miles
0 1 2 3 4

OU TULSA

Location of a representative sample of Tulsa County protective order plaintiffs and defendants based on Domestic Violence Intervention Service data for the 2002 calendar year. Map shows 184 of 211 plaintiffs and 106 of defendants with addresses matching the U.S. Census Bureau Tigerline database.

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Tulsa County Protective Orders

Selective Sample by Census Tract

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Location of a representative sample of Tulsa County protective orders by census tract based on Domestic Violence Intervention data for the 2002 calendar year.

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Tulsa County Protective Orders

Risk Assessment Scores - Selective Sample

Miles
0 1 2 3 4

Risk Assessment Scores

- 🟢 0.0 - 4.0
- 🟡 4.1 - 11.0
- 🔴 11.1 - 17.0

% Minority Population

- Greater than 67%
- 34% to 66%
- 20% to 33%
- Less than 20%

OU TULSA

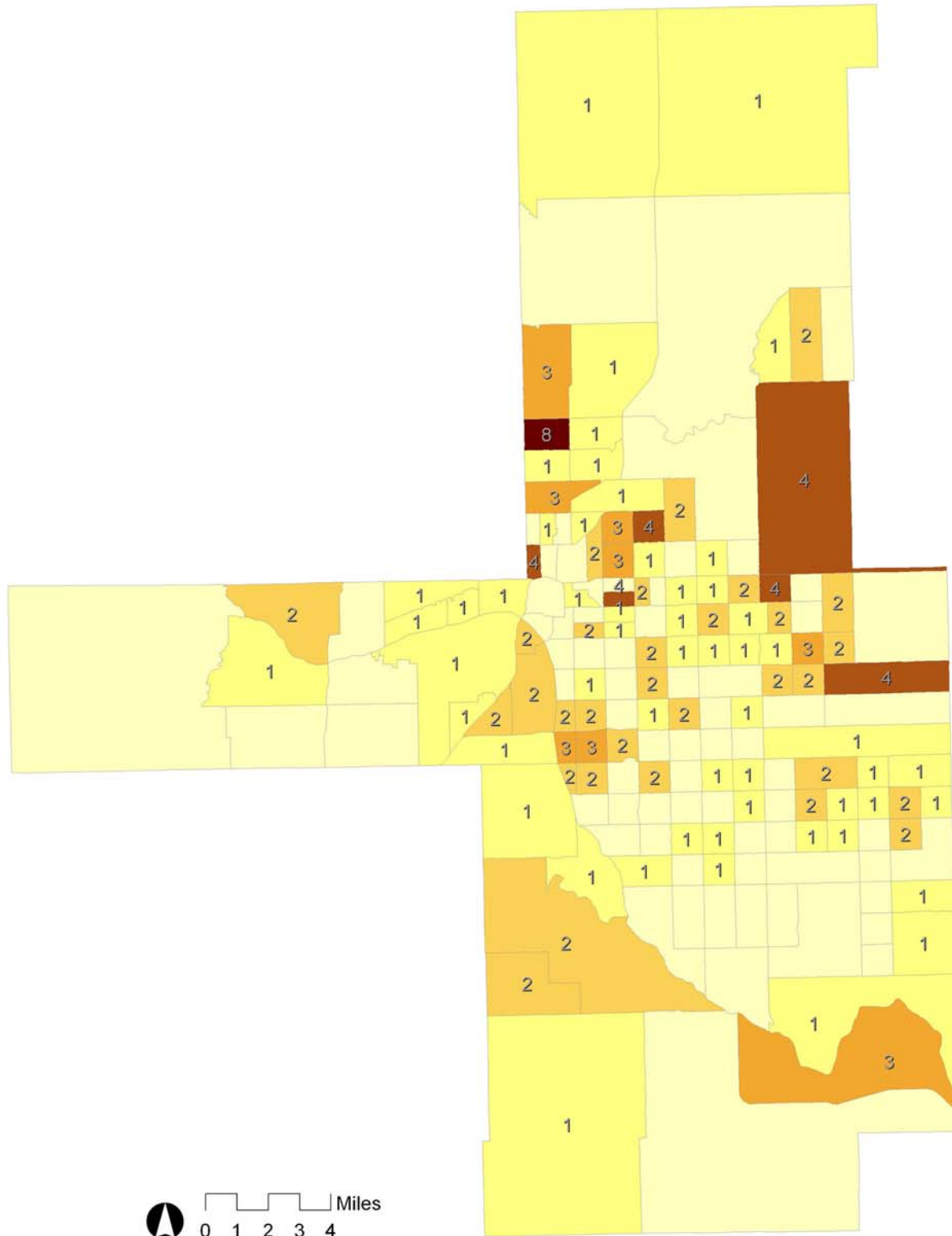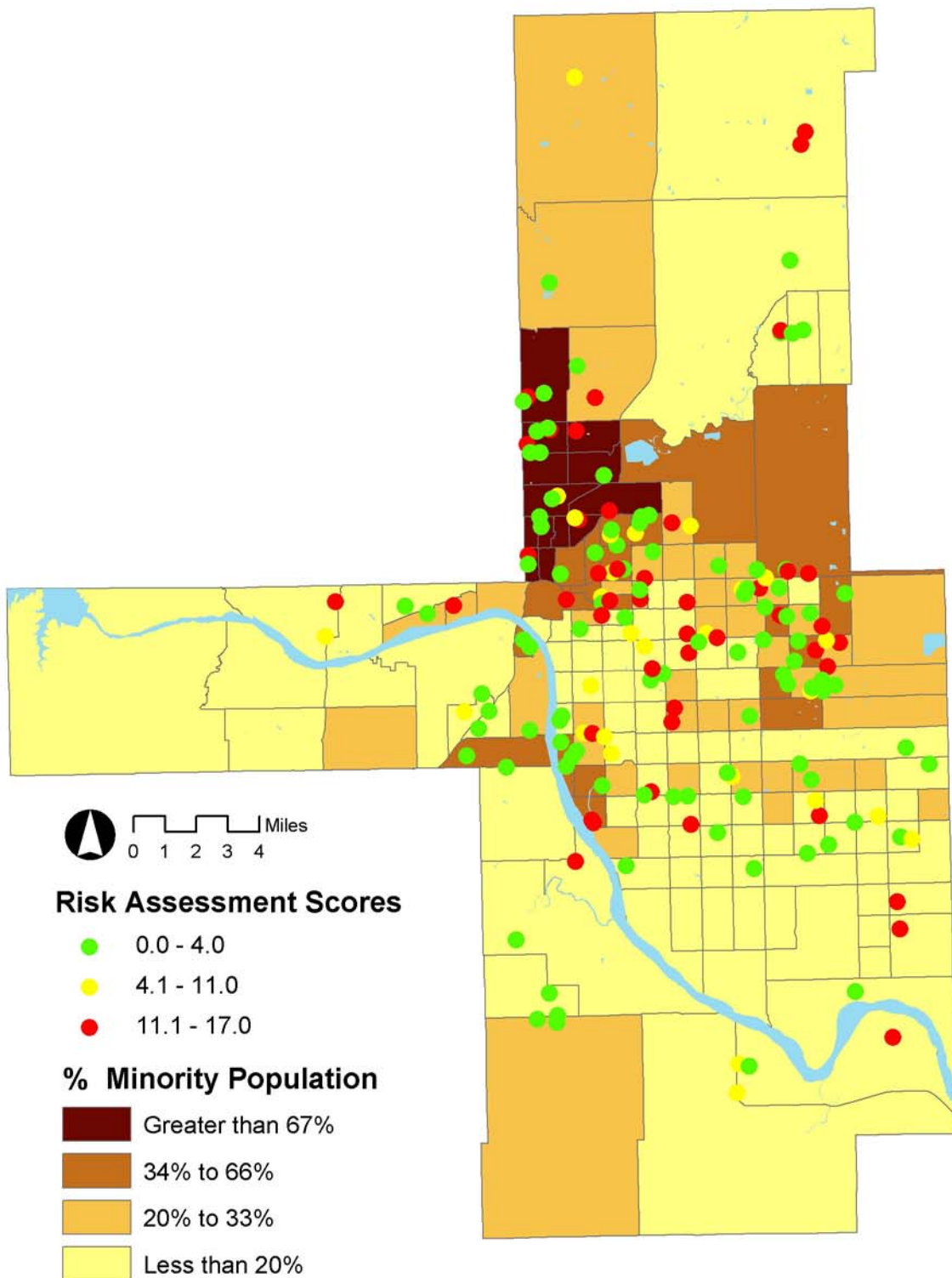Risk assessment scores of a representative sample of Tulsa County protective order plaintiffs based on Domestic Violence Intervention Service data for the 2002 calendar year. Non-white population by census tract based on U.S. Census Bureau data for the year 2000.

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Tulsa County Protective Orders

Selective Sample

Distances from Plaintiff to Defendant Addresses

Total Cases in Sample: 211
Cases Missing Address: 71
Cases with Unmappable Address: 50
Cases with Shared Address: 33
Cases with Different Address: 57
Mean Distance of Different Addresses: 6.2 Miles
Mean Distances of all Mappable Cases: 3.9 Miles

Miles
0 1 2 3 4

—— Separation Distance
● Defendant Location
● Plaintiff Location

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Straight line distance from plaintiff's address to defendant's address for a representative sample of Tulsa County protective orders with plaintiff and defendant reporting different residences based on Domestic Violence Intervention Service data for the 2002 calendar year.

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