

**UNITED STATES DISTRICT COURT  
WESTERN DISTRICT OF MICHIGAN  
SOUTHERN DIVISION**

MICHAEL BANERIAN, *et al.*,

Plaintiffs

v.

Case No.

**Three-Judge Panel Requested  
28 U.S.C. § 2284(a)**

JOCELYN BENSON, in her official capacity  
as the Secretary of State of Michigan, *et al.*,

**ORAL ARGUMENT REQUESTED**

Defendants.

**DECLARATION OF THOMAS M. BRYAN  
IN SUPPORT  
OF THEIR MOTION FOR PRELIMINARY INJUNCTION**

## **EXPERT REPORT OF THOMAS M. BRYAN**

I, Thomas Mark Bryan, affirm the conclusions I express in this report are provided to a reasonable degree of professional certainty.

### **EXPERT QUALIFICATIONS**

1. I am an expert in demography with more than 30 years of experience. Described more fully below, I have been retained by the Plaintiffs in the above captioned case as an expert to provide redistricting analysis related to Michigan congressional redistricting plans. I am being compensated \$450 an hour for my services.
2. I graduated with a Bachelor of Science in History from Portland State University in 1992. I graduated with a Master of Urban Studies (MUS) from Portland State University in 1996, and in 2002 I graduated with a Master in Management and Information Systems (MIS) from George Washington University. Concurrent with earning my Management and Information Systems degree, I earned my Chief Information Officer certification from the GSA.<sup>1</sup>
3. My background and experience with demography, census data and advanced analytics using statistics and population data began in 1996 with an analyst role for the Oregon State Data Center. In 1998 I began working as a statistician for the U.S. Census Bureau in the Population Division – developing population estimates and innovative demographic methods. In 2001 I began my role as a professional demographer for ESRI Business Information Solutions, where I began developing my expertise in Geographic Information Systems (GIS) for population studies. In May 2004 I continued my career as a demographer, data scientist and expert in analytics in continuously advanced corporate roles, including at Altria and Microsoft through 2020.
4. In 2001 I developed a private demographic consulting firm “BryanGeoDemographics” or “BGD”. I founded BGD as a demographic and analytic consultancy to meet the expanding demand for advanced analytic expertise in applied demographic research and analysis. Since then, my consultancy has broadened to include litigation support, state and local redistricting, school redistricting, and municipal infrastructure initiatives. Since 2001, I have undertaken over 150 such engagements in three broad areas:
  - state and local redistricting,
  - applied demographic studies, and
  - school redistricting and municipal infrastructure analysis.

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<sup>1</sup> Granted by the General Services Administration (GSA) and the Federal IT Workforce Committee of the CIO Council. <http://www.gwu.edu/~mastergw/programs/mis/pr.html>.

5. My background and experience with redistricting began with McKibben Demographics from 2004-2012, when I provided expert demographic and analytic support in over 120 separate school redistricting projects. These engagements involved developing demographic profiles of small areas to assist in building fertility, mortality and migration models used to support long-range population forecasts and infrastructure analysis. Over this time, I informally consulted on districting projects with Dr. Peter Morrison. In 2012 I formally began performing redistricting analytics and continue my collaboration with Dr. Morrison to this day. I have been involved with over 40 significant redistricting projects, serving roles of increasing responsibility from population and statistical analyses to report writing to directly advising and supervising redistricting initiatives. Many of these roles were served in the capacity of performing Gingles analyses, risk assessments and Federal and State Voting Rights Act (VRA) analyses in state and local areas.
6. In each of those cases, I have personally built, or supervised the building of numerous databases combining demographic data, local geographic data and election data from sources including the 2000, the 2010 and now 2020 decennial Census. I also innovated the use of the U.S. Census Bureau's statistical technique of "iterative proportional fitting" or "IPF" of the Census Bureau's American Community Survey, and the Census Bureau's Special Tabulation of Citizen Voting Age Population Data to enable the development of districting plans at the Census block level. This method has been presented and accepted in numerous cases we have developed or litigated. These data have also been developed and used in the broader context of case-specific traditional redistricting principles and often alongside other state and local demographic and political data.
7. In 2012, I began publicly presenting my redistricting work at professional conferences. I have developed and publicly presented on measuring effective voting strength, how to develop demographic accounting models, applications of using big data and statistical techniques for measuring minority voting strength – and have developed and led numerous tutorials on redistricting. With the delivery of the 2020 Census, I have presented on new technical challenges of using 2020 Census data and the impact of the Census Bureau's new differential privacy (DP) system. This work culminated with being invited to chair the "Assessing the Quality of the 2020 Census" session of the 2021 Population Association of America meeting, featuring Census Director Ron Jarmin.
8. I have written professionally and been published since 2004. I am the author of "Population Estimates" and "Internal and Short Distance Migration" in the definitive demographic reference "The Methods and Materials of Demography". In 2015 I joined a group of professional demographers serving as experts in the matter of *Evenwel, et al. v. Texas* case. In *Evenwel*, I served in a leadership role in writing an Amicus Brief on the use of the American Community Survey (ACS) in measuring and assessing one-person, one vote. In 2019 I co-authored "Redistricting: A Manual for Analysts, Practitioners, and Citizens",

and in 2021 I co-authored “The Effect of the Differential Privacy Disclosure Avoidance System Proposed by the Census Bureau on 2020 Census Products”.

9. I have been deposed once in the last four years, in the matter of *Harding v. County of Dallas* and have testified once in the last four years, in the matters of *Caster v. Merrill*, *Milligan v. Merrill* and *Singleton v. Merrill* in Alabama.
10. I have been recognized as an expert witness by two courts. This includes the following courts: US District Court of Alabama 2021 and US District Court of Alabama 2022.
11. I maintain membership in numerous professional affiliations, including:
  - International Association of Applied Demographers (Member and Board of Directors)
  - American Statistical Association (Member)
  - Population Association of America (Member)
  - Southern Demographic Association (Member)

## **FINDINGS**

12. I draw from the Michigan Constitution as the primary guidance for my assessment. Article IV § 6 of the Michigan Constitution states:
- (13) The commission shall abide by the following criteria in proposing and adopting each plan, in order of priority:
- (a) Districts shall be of equal population as mandated by the United States constitution, and shall comply with the voting rights act and other federal laws.
  - (b) Districts shall be geographically contiguous. Island areas are considered to be contiguous by land to the county of which they are a part.
  - (c) Districts shall reflect the state's diverse population and communities of interest. Communities of interest may include, but shall not be limited to, populations that share cultural or historical characteristics or economic interests. Communities of interest do not include relationships with political parties, incumbents, or political candidates.
  - (d) Districts shall not provide a disproportionate advantage to any political party. A disproportionate advantage to a political party shall be determined using accepted measures of partisan fairness.
  - (e) Districts shall not favor or disfavor an incumbent elected official or a candidate.
  - (f) Districts shall reflect consideration of county, city, and township boundaries.
  - (g) Districts shall be reasonably compact.
13. I have reviewed the Michigan Enacted Plan and Map, and the Plaintiffs' Remedy Plan and Map. In this report, I compare the plans by assessing population equality (a), geographic contiguity (b), the number of geographic splits (f), and geographic compactness (g). An assessment of communities of interest (c), partisan politics (d), incumbency (e) are not included in this analysis.

### **POPULATION EQUALITY (DEVIATION)**

14. The first, most important objective of redistricting is to equally apportion population based on the results of the latest decennial census. Any redistricting plan must reapportion population, allowing for nearly equal number of inhabitants per district. Equal population is the most fundamental principle in redistricting because it underpins the entire American electoral process. The core purpose of the Census is to apportion political power, and to allow states and localities to draw political districts that equalize political power through “one person, one vote” or OPOV. The “one person, one vote” principle is meant to ensure that voters in each election district hold equally weighted ballots. Equalizing total population during redistricting, to the last person, accomplishes this end. Any difference from perfectly balanced population during redistricting will introduce what is known as “deviation”. And this is why the Michigan Constitution specifically prioritizes this as the most important redistricting objective. In Michigan, the total population determined by the 2020 Census was 10,077,331.<sup>2</sup> Divided by 13 districts – this results in an ideal population per district of 775,179.3. In Michigan, as with almost all other states, this means that congressional districts will not deviate by more than one person above or below this target.

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<sup>2</sup> <https://www.census.gov/library/stories/state-by-state/michigan-population-change-between-census-decade.html>

15. The population deviations for the Enacted Plan are shown in Table 1. These deviations inexplicably have *not* been minimized per the direction of the Constitution. They unnecessarily deviate anywhere from 487 too many in District 13 to 635 too few in District 5.

**Table 1 Population Deviation by District**

<b>DISTRICT</b>	<b>TOTAL PERSONS</b>	<b>DEVIATION</b>
District One	775,375	+196
District Two	774,997	-182
District Three	775,414	+235
District Four	774,600	-579
District Five	774,544	-635
District Six	775,273	+94
District Seven	775,238	+59
District Eight	775,229	+50
District Nine	774,962	-217
District Ten	775,218	+39
District Eleven	775,568	+389
District Twelve	775,247	+68
District Thirteen	775,666	+487

16. By comparison, Plaintiffs' Remedy Map achieves near population equality, as shown in Table 2 (below). The population deviation of the Plaintiff's Plan is as close to zero as possible and complies with the direction of the Michigan Constitution.

**Table 2: Plaintiff's Remedial Plan Population Deviation by District**

<b>DISTRICT</b>	<b>TOTAL PERSONS</b>	<b>DEVIATION</b>
District One	775,179	0
District Two	775,179	0
District Three	775,179	0
District Four	775,180	+1
District Five	775,179	0
District Six	775,180	+1
District Seven	775,179	0
District Eight	775,180	+1
District Nine	775,179	0
District Ten	775,179	0
District Eleven	775,179	0
District Twelve	775,179	0
District Thirteen	775,180	+1

### **CONTIGUITY**

17. An examination of both the Enacted Plan and the Plaintiffs' Remedial Plan indicate both are contiguous and comply with the law.



## GEOGRAPHIC SPLITS

18. I next turn my attention to the unity of administrative geography in Michigan. Traditional redistricting principles (as provided by the NCSL<sup>3</sup>) mandate that splitting administrative geography should be minimized in a successful redistricting plan. There are three relevant layers of administrative geography in Michigan, including counties, county subdivisions and places. The U.S. Census Bureau provides useful details in understanding the number and characteristics of these layers in Michigan as follows:<sup>4</sup>
- **Counties:** There are 83 counties in Michigan. All counties in Michigan are functioning governmental entities, each governed by a board of commissioners.
  - **County Subdivisions:** As of 2010 there were 1,573 county subdivisions in Michigan known as minor civil divisions (MCDs). There are 1,123 townships and 117 charter townships which are all actively functioning governmental units. Townships are the original units of government formed in the state. There may be slight variations in these numbers with the yet unreleased 2020 Census Bureau Geographic Reference Files for Michigan.
  - **Places:** As of 2010 there were 692 places (533 incorporated places and 159 CDPs) in Michigan. The incorporated places consist of 275 cities and 258 villages. Incorporated villages are dependent within county subdivision. Incorporated cities are independent of any township or charter township. There may be slight variations in these numbers with the yet unreleased 2020 Census Bureau Geographic Reference Files for Michigan.
19. In some cases, splits are unavoidable. In Michigan, at the county level, three counties need to be split, because they significantly exceed the target population of 775,179. Wayne County (1,793,561) needs to be split at least twice. Oakland County (1,274,395) and Macomb County (881,217) both need to be split at least once.
20. In comparing plans, the Plaintiffs' Remedy Plan scores better than the Enacted Plan in terms of number of splits for Counties, Townships and Villages. The Enacted Plan scores better than the Plaintiffs' Plan in terms of number of splits for Cities – as shown in Table 3 (below).

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<sup>3</sup> <https://www.ncsl.org/research/redistricting/redistricting-criteria.aspx>

<sup>4</sup> <https://www.census.gov/geographies/reference-files/2010/geo/state-local-geo-guides-2010/michigan.html>

**Table 3: Splits by Plan by Level of Geography**

Geography	Enacted Plan		Plaintiffs' Remedial Plan	
	Splits	Segments	Splits	Segments
Counties	15	36	<b>10</b>	<b>23</b>
Townships	14	28	<b>10</b>	<b>20</b>
Cities	<b>7</b>	<b>15</b>	9	19
Villages	5	10	<b>4</b>	<b>8</b>
Total	41	89	<b>33</b>	<b>70</b>

21. There are 5 fewer county splits (10 vs. 15) with 13 fewer county segments (23 vs. 36) in the Plaintiffs' Plan. This is driven in part by the difference of segments in Oakland County in the Enacted Plan (6) compared to the number of segments in the Plaintiffs' Plan (4). There are 4 fewer township splits (10 vs. 14) with 8 fewer segments (20 vs. 28) in the Plaintiffs' Plan. There are 2 *greater* city splits (9 vs. 7) with 4 *greater* segments (19 vs. 15) in the Plaintiffs' Plan. There is 1 fewer village split (4 vs. 5) with 2 fewer segments (8 vs. 10) in the Plaintiffs' Plan. In total, the Plaintiffs' Plan has 8 fewer geographic splits than the Enacted Plan (33 vs. 41) and 19 fewer segments (70 vs. 89). Details of geographic splits in the Enacted Plan may be found in Appendix A and details of geographic splits in the Plaintiffs' Remedial Plan may be found in Appendix B.

### COMPACTNESS

22. To deter gerrymandering, many state constitutions require districts to be "compact." Geographic compactness of districts is a measure to ensure that districts do not excessively deviate from being "reasonably shaped". The concept of "reasonably shaped" is an ambiguous and arbitrary description of what compactness actually is. Yet, the law offers few precise definitions other than "you know it when you see it," which effectively implies a common understanding of the concept. In contrast, academics have shown that compactness has multiple dimensions and have generated many conflicting measures.<sup>5</sup> While many states require compactness in their plans, none explicitly specify



<sup>5</sup> "How to Measure Legislative District Compactness If You Only Know it When You See it" <https://gking.harvard.edu/presentations/how-measure-legislative-district-compactness-if-you-only-know-it-when-you-see-it-7>

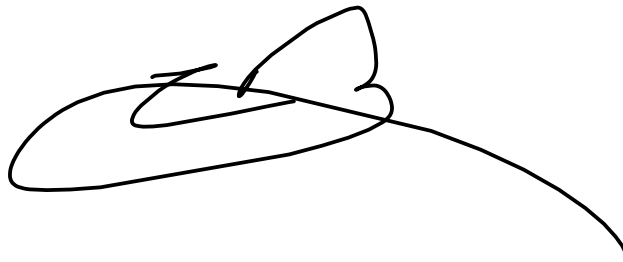
which measures to use or what standard is acceptable.<sup>6</sup> A district that is “most compact” by one compactness measure can easily and frequently be less compact by another. There is no professional consensus on a “right” measure, and every widely used compactness measure works differently. In redistricting, courts have most commonly used compactness measures of Polsby-Popper and Reock scores - and these are the measures I use here.

23. The Polsby-Popper measure is a ratio that compares a region’s area to its perimeter, with values that range from 0 (least compact) to 1 (most compact) A perfect circle would score a value of 1. The Reock compactness score is computed by dividing the area of the voting district by the area of the smallest circle that would completely enclose it. Since the circle encloses the district, its area cannot be less than that of the district, and so the Reock compactness score will always be a number between zero and one (which may be expressed as a percentage). Again, values range from 0 (least compact) to 1 (most compact).
24. In examining Appendix C (Polsby-Popper Compactness Scores by Plan by District) the Enacted Plan has an average compactness of .41, and the Plaintiffs’ Remedial Plan has an average compactness score of .46. In examining Appendix D (Reock Compactness Scores by Plan by District) the Enacted Plan has an average compactness of .42, and the Plaintiffs’ Remedial Plan has an average compactness score of .45.
24. Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Dated: January 26, 2022

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Thomas M. Bryan




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<sup>6</sup> For example, the Constitution of Illinois says only “Legislative Districts shall be compact”. The Constitution of Hawaii requires that “Insofar as practicable, districts shall be compact.”

**Appendix A: Enacted Plan Geography Splits Inventory**

25. Enacted map splits the following counties into (congressional districts):

Berrien County	(4 <sup>th</sup> and 5 <sup>th</sup> )
Calhoun County	(4 <sup>th</sup> and 5 <sup>th</sup> )
Eaton County	(2 <sup>nd</sup> and 7 <sup>th</sup> )
Genesee County	(7 <sup>th</sup> and 8 <sup>th</sup> )
Kalamazoo County	(4 <sup>th</sup> and 5 <sup>th</sup> )
Kent County	(2 <sup>nd</sup> and 3 <sup>rd</sup> )
Macomb County	(9 <sup>th</sup> and 10 <sup>th</sup> )
Midland County	(2 <sup>nd</sup> and 8 <sup>th</sup> )
Monroe County	(5 <sup>th</sup> and 6 <sup>th</sup> )
Muskegon County	(2 <sup>nd</sup> and 3 <sup>rd</sup> )
Oakland County	(6 <sup>th</sup> , 7 <sup>th</sup> , 9 <sup>th</sup> , 10 <sup>th</sup> , 11 <sup>th</sup> and 12 <sup>th</sup> )
Ottawa County	(2 <sup>nd</sup> , 3 <sup>rd</sup> and 4 <sup>th</sup> )
Tuscola County	(8 <sup>th</sup> and 9 <sup>th</sup> )
Wayne County	(6 <sup>th</sup> , 12 <sup>th</sup> and 13 <sup>th</sup> )
Wexford County	(1 <sup>st</sup> and 2 <sup>nd</sup> )

26. Enacted map splits the following county subdivisions into (congressional districts):

Algoma Township	(2 <sup>nd</sup> the 3 <sup>rd</sup> )
Arbela Township	(8 <sup>th</sup> and 9 <sup>th</sup> )
Argentine Township	(7 <sup>th</sup> and 8 <sup>th</sup> )
Georgetown charter Township	(3 <sup>rd</sup> and 4 <sup>th</sup> )
Kalamo Township	(2 <sup>nd</sup> and 7 <sup>th</sup> )
Laketon Township	(2 <sup>nd</sup> and 3 <sup>rd</sup> )
Lincoln charter Township	(4 <sup>th</sup> and 5 <sup>th</sup> )
Macomb Township	(9 <sup>th</sup> and 10 <sup>th</sup> )
Milan Township	(5 <sup>th</sup> and 6 <sup>th</sup> )
Milford charter Township	(7 <sup>th</sup> and 9 <sup>th</sup> )
Muskegan Township	(2 <sup>nd</sup> and 3 <sup>rd</sup> )
Royalton Township	(4 <sup>th</sup> and 5 <sup>th</sup> )
Wexford Township	(1 <sup>st</sup> and 2 <sup>nd</sup> )
White Lake Charter Township	(9 <sup>th</sup> and 11 <sup>th</sup> )

27. Enacted map splits the following places (not including CDPs) into (congressional districts):

Dearborn Heights City	(12 <sup>th</sup> and 13 <sup>th</sup> )
Detroit City	(12 <sup>th</sup> and 13 <sup>th</sup> )
Fenton City	(7 <sup>th</sup> , 8 <sup>th</sup> and 9 <sup>th</sup> )
Flatrock City	(5 <sup>th</sup> and 6 <sup>th</sup> )
North Muskegan City	(2 <sup>nd</sup> and 3 <sup>rd</sup> )
Novi City	(6 <sup>th</sup> and 11 <sup>th</sup> )

Village of Grosse Pointe Shores City (10<sup>th</sup> and 13<sup>th</sup>)

Hubbardston Village (2<sup>nd</sup> and 7<sup>th</sup>)

Lennon Village (7<sup>th</sup> and 8<sup>th</sup>)

Milford Village (7<sup>th</sup> and 9<sup>th</sup>)

Otter Lake Village (8<sup>th</sup> and 9<sup>th</sup>)

Reese Village (8<sup>th</sup> and 9<sup>th</sup>)

**Appendix B: Plaintiff Remedial Plan Geography Splits Inventory**

28. Plaintiffs' map splits the following counties into (congressional districts):

Ionia County	(3 <sup>rd</sup> and 7 <sup>th</sup> )
Kalamazoo County	(4 <sup>th</sup> and 5 <sup>th</sup> )
Macomb County	(9 <sup>th</sup> and 10 <sup>th</sup> )
Midland County	(2 <sup>nd</sup> and 8 <sup>th</sup> )
Monroe County	(5 <sup>th</sup> and 6 <sup>th</sup> )
Oakland County	(7 <sup>th</sup> , 9 <sup>th</sup> , 11 <sup>th</sup> and 12 <sup>th</sup> )
Ottawa County	(2 <sup>nd</sup> and 4 <sup>th</sup> )
Shiawassee County	(7 <sup>th</sup> and 8 <sup>th</sup> )
Wayne County	(6 <sup>th</sup> , 12 <sup>th</sup> and 13 <sup>th</sup> )
Wexford County	(1 <sup>st</sup> and 2 <sup>nd</sup> )

29. Plaintiffs' map splits the following county subdivisions into (congressional districts):

Caledonia charter Township	(7 <sup>th</sup> and 8 <sup>th</sup> )
Chesterfield Township	(9 <sup>th</sup> and 10 <sup>th</sup> )
Georgetown charter Township	(2 <sup>nd</sup> and 4 <sup>th</sup> )
Homer Township	(2 <sup>nd</sup> and 8 <sup>th</sup> )
Milan Township	(5 <sup>th</sup> and 6 <sup>th</sup> )
Milford charter Township	(7 <sup>th</sup> and 9 <sup>th</sup> )
Orange Township	(3 <sup>rd</sup> and 7 <sup>th</sup> )
Ross Township	(4 <sup>th</sup> and 5 <sup>th</sup> )
Southfield Township	(11 <sup>th</sup> and 12 <sup>th</sup> )
Wexford Township	(1 <sup>st</sup> and 2 <sup>nd</sup> )

30. Plaintiffs' map splits the following places (not including CDPs) into (congressional districts):

Detroit City	(12 <sup>th</sup> and 13 <sup>th</sup> )
Fenton City	(7 <sup>th</sup> , 8 <sup>th</sup> and 9 <sup>th</sup> )
Ferndale City	(11 <sup>th</sup> and 12 <sup>th</sup> )
Flatrock City	(5 <sup>th</sup> and 6 <sup>th</sup> )
Livonia City	(6 <sup>th</sup> and 12 <sup>th</sup> )
Northville City	(6 <sup>th</sup> and 11 <sup>th</sup> )
Portage City	(4 <sup>th</sup> and 5 <sup>th</sup> )
Village of Grosse Pointe Shores City	(10 <sup>th</sup> and 13 <sup>th</sup> )
Wixom City	(9 <sup>th</sup> and 11 <sup>th</sup> )
Casnovia Village	(2 <sup>nd</sup> and 3 <sup>rd</sup> )
Hubbardston Village	(3 <sup>rd</sup> and 7 <sup>th</sup> )
Otter Lake Village	(8 <sup>th</sup> and 9 <sup>th</sup> )
Reese Village	(8 <sup>th</sup> and 9 <sup>th</sup> )

**Appendix C: Polsby-Popper Compactness Scores by Plan by District**

<b>DISTRICT</b>	<b>ENACTED PLAN POLSBY-POPPER</b>	<b>REMEDIAL PLAN POLSBY-POPPER</b>
District One	0.40	0.40
District Two	0.41	0.48
District Three	0.30	0.50
District Four	0.41	0.54
District Five	0.27	0.43
District Six	0.39	0.40
District Seven	0.56	0.53
District Eight	0.43	0.42
District Nine	0.53	0.50
District Ten	0.48	0.63
District Eleven	0.41	0.41
District Twelve	0.48	0.43
District Thirteen	0.29	0.30
<b>Average</b>	<b>0.41</b>	<b>0.46</b>

**Appendix D: Reock Compactness Scores by Plan by District**

<b>DISTRICT</b>	<b>ENACTED PLAN REOCK</b>	<b>REMEDIAL PLAN REOCK</b>
District One	0.38	0.38
District Two	0.56	0.54
District Three	0.32	0.49
District Four	0.42	0.59
District Five	0.19	0.32
District Six	0.39	0.39
District Seven	0.52	0.51
District Eight	0.41	0.41
District Nine	0.53	0.52
District Ten	0.47	0.57
District Eleven	0.48	0.44
District Twelve	0.57	0.49
District Thirteen	0.21	0.21
<b>Reock Average</b>	<b>0.42</b>	<b>0.45</b>



**Appendix E Thomas M. Bryan CV**

**Thomas M. Bryan**

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tom@bryangeodemo.com

**Redistricting Résumé and C.V.**

**Introduction**

I am an applied demographic, analytic and research professional who leads a team of experts in state and local redistricting cases. I have subject matter expertise in political and school redistricting and Voting Rights Act related litigation, US Census Bureau data, geographic information systems (GIS), applied demographic techniques and advanced analytics.

**Education & Academic Honors**

2002 MS, Management and Information Systems - George Washington University

2002 GSA CIO University graduate\* - George Washington University

1997 Graduate credit courses taken at University of Nevada at Las Vegas

1996 MUS (Master of Urban Studies) Demography and Statistics core - Portland State University

1992 BS, History - Portland State University

**Bryan GeoDemographics, January 2001-Current: Founder and Principal**

I founded Bryan GeoDemographics (BGD) in 2001 as a demographic and analytic consultancy to meet the expanding demand for advanced analytic expertise in applied demographic research and analysis. Since then, my consultancy has broadened to include litigation support, state and local redistricting, school redistricting, and municipal infrastructure initiatives. Since 2001, BGD has undertaken over 150 such engagements in three broad areas:

- 1) state and local redistricting,
- 2) applied demographic studies, and
- 3) school redistricting and municipal Infrastructure analysis.

The core of the BGD consultancy has been in state and local redistricting and expert witness support of litigation. Engagements include:

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Granted by the General Services Administration (GSA) and the Federal IT Workforce Committee of the CIO Council. <http://www.gwu.edu/~mastergw/programs/mis/pr.html>

### **State and Local Redistricting**

- 2021: Served as Consultant to the Arizona Independent Redistricting Commission, presenting “Pros and Cons of (Census data) Differential Privacy”. July 13, 2021.
  - <https://irc.az.gov/sites/default/files/meeting-agendas/Agenda%207.13.21.pdf>
- 2021: Chosen by Virginia Senator Tommy Norment to be the Republican nominee for the position of Special Master to the Virginia Supreme Court in designing the Legislative, Senate and Congressional redistricting plans for the State of Virginia. Did not end up serving.
  - [https://www.vacourts.gov/courts/scv/districting/special\\_masters\\_nominations\\_senator\\_norment.pdf](https://www.vacourts.gov/courts/scv/districting/special_masters_nominations_senator_norment.pdf)
- 2021: Retained as demographic and redistricting expert for the Wisconsin Legislature in *Johnson v. Wisconsin Elections Commission*, No. 2021AP001450-OA (Wis. Supreme Court) and related Wisconsin redistricting litigation. Offering opinions on demography and redistricting for redistricting plans proposed as remedies in impasse suit.
- 2021: Retained as demographic and redistricting expert by the State of Alabama Attorney General’s office. Currently serving as the State’s demographic and redistricting expert witness in the matters of *Milligan v. Merrill*, *Thomas v. Merrill* and *Singleton v. Merrill* over Alabama’s Congressional redistricting initiatives.
- 2021: Retained as nonpartisan demographic and redistricting expert by counsel in the State of North Carolina to prepare commissioner redistricting plans for Granville County, Harnett County, Jones County and Nash County. Each proposed plan was approved and successfully adopted.
- 2021: Retained as demographic and redistricting expert by Democratic Counsel for the State of Illinois in the case of *McConchie v. State Board of Elections*. Prepared expert report in defense of using the American Community Survey to comply with state constitutional requirements in the absence of the (then) delayed Census 2020 data.
  - <https://redistricting.ils.edu/case/mcconchie-v-ill-state-board-of-elections/>.
- 2021: Retained by counsel for the Chairman and staff of the Texas House Committee on Redistricting as a consulting demographic expert. Texas House Bill 1 subsequently passed by the Legislature 83-63.
  - <https://capitol.texas.gov/BillLookup/History.aspx?LegSess=873&Bill=HB1>
- 2021: In the matter of the *State of Alabama*, *Representative Robert Aderholt*, *William Green and Camaran Williams v. the US Department of Commerce*; *Gina Raimondo*; *the US Census Bureau* and *Ron Jarmin* in US District Court of Alabama Eastern Division. Prepared a

demographic report for Plaintiffs analyzing the effects of using Differential Privacy on Census Data in Alabama and was certified as an expert witness by the Court.

- <https://www.alabamaag.gov/Documents/news/Census%20Data%20Manipulation%20Lawsuit.pdf>
- <https://redistricting.ils.edu/case/alabama-v-u-s-dept-of-commerce-ii/>
- 2020: In the matter of *The Christian Ministerial Alliance (CMA), Arkansas Community Institute v. the State of Arkansas*. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Providing demographic and analytic litigation support.
  - [https://www.naacpldf.org/wp-content/uploads/CMA-v.-Arkansas FILED-without-stamp.pdf](https://www.naacpldf.org/wp-content/uploads/CMA-v.-Arkansas%20FILED-without-stamp.pdf)
- 2020: In the matter of *Aguilar, Gutierrez, Montes, Palmer and OneAmerica v. Yakima County* in Superior Court of Washington under the Washington Voting Rights Act (“WVRA” Wash. Rev. Code § 29A.92.60). In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Providing demographic and analytic litigation support.
  - <https://bloximages.newyork1.vip.townnews.com/yakimaherald.com/content/tncms/assets/v3/editorial/a/4e/a4e86167-95a2-5186-a86c-bb251bf535f1/5f0d01eec8234.pdf.pdf>
- 2018-2020: In the matter of *Flores, Rene Flores, Maria Magdalena Hernandez, Magali Roman, Make the Road New York, and New York Communities for Change v. Town of Islip, Islip Town Board, Suffolk County Board of Elections* in US District Court. On behalf of Defendants - provided a critical analysis of plaintiff’s demographic and environmental justice analysis. The critique revealed numerous flaws in both the demographic analysis as well as the tenets of their environmental justice argument, which were upheld by the court. Ultimately developed mutually agreed upon plan for districting.
  - <https://nyelectionsnews.wordpress.com/2018/06/20/islip-faces-section-2-voting-rights-act-challenge/>
  - <https://www.courthousenews.com/wp-content/uploads/2018/06/islip-voting.pdf>
- 2017-2020 In the matter of *NAACP, Spring Valley Branch; Julio Clerveaux; Chevon Dos Reis; Eric Goodwin; Jose Vitelio Gregorio; Dorothy Miller; and Hillary Moreau v East Ramapo Central School District (Defendant)* in United States District Court Southern District Of New York (original decision May 25, 2020), later the U.S. Second Circuit Court of Appeals. On behalf of Defendants, developed mutually agreed upon district plan and provided demographic and analytic litigation support.
  - <https://www.lohud.com/story/news/education/2020/05/26/federal-judge-sides-naacp-east-ramapo-voting-rights-case/5259198002/>

- 2017-2020: In the matter of *Pico Neighborhood Association et al v. City of Santa Monica* brought under the California VRA. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Providing demographic and analytic litigation support. Executed geospatial analysis to identify concentrations of Hispanic and Black CVAP to determine the impossibility of creating a minority majority district, and demographic analysis to show the dilution of Hispanic and Black voting strength in a district (vs at-large) system. Work contributed to Defendants prevailing in landmark ruling in the State of California Court of Appeal, Second Appellate District.
  - <https://www.santamonica.gov/press/2020/07/09/santa-monica-s-at-large-election-system-affirmed-in-court-of-appeal-decision>
- 2019: In the matter of *Johnson v. Ardoin / the State of Louisiana* in United States District Court. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support.
  - <https://www.brennancenter.org/sites/default/files/2019-10/2019-10-16-Johnson%20v%20Ardoin-132-Brief%20in%20Opposition%20to%20MTS.pdf>
- 2019: In the matter of *Suresh Kumar v. Frisco Independent School District et al.* in United States District Court. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support. Successfully defended.
  - <https://www.friscoisd.org/news/district-headlines/2020/08/04/frisco-isd-wins-voting-rights-lawsuit>
  - <https://www.courthousenews.com/wp-content/uploads/2020/08/texas-schools.pdf>
- 2019: At the request of the City of Frisco, TX in collaboration with demographic testifying expert Dr. Peter Morrison. Provided expert demographic assessment of the City's potential liability regarding a potential Section 2 Voting Rights challenge.
- 2019: In the matter of *NAACP v. East Ramapo Central School District* in US District Court Southern District of NY. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support.
- 2019: In the matter of *Johnson v. Ardoin* in United States District Court. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support. Prepared analysis of institutionalized prison population versus noninstitutionalized eligible to vote population.
  - <https://casetext.com/case/johnson-v-ardoin>

- 2019: In the matter of *Vaughan v. Lewisville Independent School District et al.* in United States District Court. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support.
  - <https://www.nbcdfw.com/news/local/lawsuit-filed-against-lewisville-independent-school-district/1125/>
- 2019: In the matter of *Holloway, et al. v. City of Virginia Beach* in United States District Court, Eastern District of Virginia. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided expert demographic and analytic litigation support.
  - <https://campaignlegal.org/cases-actions/holloway-et-al-v-city-virginia-beach>
- 2018: At the request of Kirkland City, Washington in collaboration with demographic testifying expert Dr. Peter Morrison. Performed demographic studies to inform the City's governing board's deliberations on whether to change from at-large to single-member district elections following enactment of the Washington Voting Rights Act. Analyses included gauging the voting strength of the City's Asian voters and forming an illustrative district concentrating Asians; and compared minority population concentration in pre- and post-annexation city territory.
  - [https://www.kirklandwa.gov/Assets/City+Council/Council+Packets/021919/8b\\_SpecialPresentations.pdf#:~:text=RECOMMENDATION%3A%20It%20is%20recommended%20that%20City%20Council%20receive,its%20Councilmembers%20on%20a%20citywide%2C%20at-%20large%20basis](https://www.kirklandwa.gov/Assets/City+Council/Council+Packets/021919/8b_SpecialPresentations.pdf#:~:text=RECOMMENDATION%3A%20It%20is%20recommended%20that%20City%20Council%20receive,its%20Councilmembers%20on%20a%20citywide%2C%20at-%20large%20basis)
- 2018: At the request of Tacoma WA Public Schools in collaboration with demographic testifying expert Dr. Peter Morrison. Created draft concept redistricting plans that would optimize minority population concentrations while respecting incumbency. Client will use this plan as a point of departure for negotiating final boundaries among incumbent elected officials.
- 2018: At the request of the City of Mount Vernon, Washington., in collaboration with demographic testifying expert Dr. Peter Morrison. Prepared a numerous draft concept plans that preserves Hispanics' CVAP concentration. Client utilized draft concept redistricting plans to work with elected officials and community to agree upon the boundaries of six other districts to establish a proposed new seven-district single-member district plan.
- 2017: In the matter of *Pico Neighborhood Association v. City of Santa Monica*. In collaboration with demographic testifying expert Dr. Peter Morrison. Worked to create draft district concept plans that would satisfy Plaintiff's claim of being able to create a majority-minority district to satisfy Gingles prong 1. Such district was not possible, and the Plaintiffs case ultimately failed in California State Court of Appeals Second Appellate District.

- <https://law.justia.com/cases/california/court-of-appeal/2020/b295935.html>
- 2017: In the matter of *John Hall, Elaine Robinson-Strayhorn, Lindora Toudle, Thomas Jerkins, v. Jones County Board of Commissioners*. In collaboration with demographic testifying expert Dr. Peter Morrison. Worked to create draft district concept plans to resolve claims of discrimination against African Americans attributable to the existing at-large voting system.
  - <http://jonescountync.gov/vertical/sites/%7B9E2432B0-642B-4C2F-A31B-CDE7082E88E9%7D/uploads/2017-02-13-Jones-County-Complaint.pdf>
- 2017: In the matter of *Harding v. County of Dallas* in U.S. District Court. In collaboration with demographic testifying expert Dr. Peter Morrison. In a novel case alleging discrimination *against* White, non-Hispanics under the VRA, I was retained by plaintiffs to create redistricting scenarios with different balances of White-non-Hispanics, Blacks and Hispanics. Deposed and provided expert testimony on the case.
  - <https://www.courthousenews.com/wp-content/uploads/2018/08/DallasVoters.pdf>
- 2016: Retained by The Equal Voting Rights Institute to evaluate the Dallas County Commissioner existing enacted redistricting plan. In collaboration with demographic testifying expert Dr. Peter Morrison, the focus of our evaluation was twofold: (1) assess the failure of the Enacted Plan (EP) to meet established legal standards and its disregard of traditional redistricting criteria; (2) the possibility of drawing an alternative Remedial Plan (RP) that did meet established legal standards and balance traditional redistricting criteria.
  - <http://equalvotingrights.org/wp-content/uploads/2015/01/Complaint.pdf>
- 2016: In the matter of *Jain v. Coppell ISD et al* in US District Court. In collaboration with demographic testifying expert Dr. Peter Morrison. Consulted in defense of Coppell Independent School District (Dallas County, TX) to resolve claims of discriminatory at-large voting system affecting Asian Americans. While Asians were shown to be sufficiently numerous, I was able to demonstrate that they were not geographically concentrated - thus successfully proving the Gingles 1 precondition could not be met resulting the complaint being withdrawn.
  - <https://dockets.justia.com/docket/texas/txndce/3:2016cv02702/279616>
- 2016: In the matter of *Feldman et al v. Arizona Secretary of State's Office et al* in SCOTUS. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided analytics on the locations and proximal demographics of polling stations that had been closed subsequent to *Shelby County v. Holder* (2013) which eliminated the requirement of state and local governments to obtain federal preclearance before implementing any changes to their voting laws or practices. Subsequently provided expert point of view on disparate impact as a result of H.B. 2023. Advised Maricopa County officials

and lead counsel on remediation options for primary polling place closures in preparation for 2016 elections.

- <https://arizonadailyindependent.com/2016/04/05/doj-wants-information-on-maricopa-county-election-day-disaster/>
- [https://www.supremecourt.gov/DocketPDF/19/19-1257/142431/20200427105601341\\_Brnovich%20Petition.pdf](https://www.supremecourt.gov/DocketPDF/19/19-1257/142431/20200427105601341_Brnovich%20Petition.pdf)
- 2016: In the matter of *Glatt v. City of Pasco, et al.* in US District Court (Washington). In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Provided analytics and draft plans in defense of the City of Pasco. One draft plan was adopted, changing the Pasco electoral system from at-large to a six-district + one at large.
  - <https://www.pasco-wa.gov/DocumentCenter/View/58084/Glatt-v-Pasco---Order---January-27-2017?bidId=>
  - <https://www.pasco-wa.gov/923/City-Council-Election-System>
- 2015: In the matter of *The League of Women Voters et al. v. Ken Detzner et al* in the Florida Supreme Court. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Performed a critical review of Florida state redistricting plan and developed numerous draft concept plans.
  - <http://www.miamiherald.com/news/politics-government/state-politics/article47576450.html>
  - [https://www.floridasupremecourt.org/content/download/322990/2897332/file/OP-SC14-1905\\_LEAGUE%20OF%20WOMEN%20VOTERS\\_JULY09.pdf](https://www.floridasupremecourt.org/content/download/322990/2897332/file/OP-SC14-1905_LEAGUE%20OF%20WOMEN%20VOTERS_JULY09.pdf)
- 2015: In the matter of *Evenwel, et al. v. Abbott / State of Texas* in SCOTUS. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Plaintiffs. Successfully drew map for the State of Texas balancing both total population from the decennial census and citizen population from the ACS (thereby proving that this was possible). We believe this may be the first and still only time this technical accomplishment has been achieved in the nation at a state level. Coauthored SCOTUS Amicus Brief of Demographers.
  - [https://www.supremecourt.gov/opinions/15pdf/14-940\\_ed9g.pdf](https://www.supremecourt.gov/opinions/15pdf/14-940_ed9g.pdf)
  - <https://www.scotusblog.com/wp-content/uploads/2015/08/Demographers-Amicus.pdf>
- 2015: In the matter of *Ramos v. Carrollton-Farmers Branch Independent School District* in US District Court (Texas). In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Used 2009-2013 5-year ACS data to generate small-area estimates of minority citizen voting age populations and create a variety of draft concept redistricting plans. Case was settled decision in favor of a novel cumulative voting system.



- [https://starlocalmedia.com/carrolltonleader/c-fb-isd-approves-settlement-in-voting-rights-lawsuit/article\\_92c256b2-6e51-11e5-adde-a70cbe6f9491.html](https://starlocalmedia.com/carrolltonleader/c-fb-isd-approves-settlement-in-voting-rights-lawsuit/article_92c256b2-6e51-11e5-adde-a70cbe6f9491.html)
- 2015: In the matter of *Glatt v. City of Pasco et al.* in US District Court (Washington). In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Consulted on forming new redistricting plan for city council review. One draft concept plan was agreed to and adopted.
  - <https://www.pasco-wa.gov/923/City-Council-Election-System>
- 2015: At the request of Waterbury, Connecticut, in collaboration with demographic testifying expert Dr. Peter Morrison. As a result of a successful ballot measure to convert Waterbury from an at-large to a 5-district representative system, consulted an extensive public outreach and drafted numerous concept plans. The Waterbury Public Commission considered alternatives and recommended one of our plans, which the City adopted.
  - <http://www.waterburyobserver.org/wod7/node/4124>
- 2014-15: In the matter of *Montes v. City of Yakima* in US District Court (Washington). In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants. Analytics later used to support the Amicus Brief of the City of Yakima, Washington in the U.S. Supreme Court in *Evenwel v. Abbott*.
  - <https://casetext.com/case/montes-v-city-of-yakima-3>
- 2014: In the matter of *Harding v. County of Dallas* in the US Court of Appeals Fifth Circuit. In the novel case of Anglo plaintiffs attempting to claim relief as protected minorities under the VRA. Served as demographic expert in the sole and limited capacity of proving Plaintiff claim under Gingles prong 1. Claim was proven. Gingles prongs 2 and 3 were not and the case failed.
  - <https://electionlawblog.org/wp-content/uploads/Dallas-opinion.pdf>
- 2014: At the request of Gulf County, Florida in collaboration with demographic testifying expert Dr. Peter Morrison. Upon the decision of the Florida Attorney General to force inclusion of prisoners in redistricting plans – drafted numerous concept plans for the Gulf County Board of County Commissioners, one of which was adopted.
  - <http://myfloridalegal.com/ago.nsf/Opinions/B640990E9817C5AB85256A9C00631387>
- 2012-2015: In the matter of *GALEO and the City of Gainesville* in Georgia. In collaboration with demographic testifying expert Dr. Peter Morrison, on behalf of Defendants -consulted on defense of existing at-large city council election system.
  - <http://atlantaprogressivenews.com/2015/06/06/galeo-challenges-at-large-voting-in-city-of-gainesville/>



- 2012-: Confidential. Consulted (through Morrison & Associates) to support plan evaluation, litigation, and outreach to city and elected officials (1990s - mid-2000s). Executed first statistical analysis of the American Community Survey to determine probabilities of minority-majority populations in split statistical/administrative units of geography, as well as the cumulative probabilities of a “false-negative” minority-majority reading among multiple districts.
- 2011-: Confidential. Consulted on behalf of plaintiffs in Committee (Private) vs. State Board of Elections pertaining to citizen voting-age population. Evaluated testimony of defense expert, which included a statistical evaluation of Hispanic estimates based on American Community Survey (ACS) estimates. Analysis discredited the defendant’s expert’s analysis and interpretation of the ACS.

School Redistricting and Municipal Infrastructure Projects

BGD worked with McKibben Demographics from 2004-2012 providing expert demographic and analytic support. These engagements involved developing demographic profiles of small areas to assist in building fertility, mortality and migration models used to support long-range population forecasts and infrastructure analysis in the following communities:

Fargo, ND 10/2012	Charleston, SC 8/08
Columbia, SC 3/2012	Woodland, IL 7/08
Madison, MS 9/2011	White County, IN 6/08
Rockwood, MO 3/2011	Gurnee District 56, IL 5/08
Carthage, NY 3/2011	Central Noble, IN 4/08
NW Allen, IN 9/2010	Charleston First Baptist, SC 4/08
Fayetteville, AR 7/2010	Edmond, OK 4/08
Atlanta, GA 2/2010	East Noble, IN 3/08
Caston School Corp., IN 12/09	Mill Creek, IN 5/06
Rochester, IN 12/09	Rhode Island 5/06
Urbana, IL 11/09	Garrett, IN 3/08
Dekalb, IL 11/09	Meridian, MS 3/08
Union County, NC 11/09	Madison County, MS 3/08
South Bend, IN 8/09	Charleston 12/07
Lafayette, LA 8/09	Champaign, IL 11/07
Fayetteville, AR 4/09	Richland County, SC 11/07
New Orleans, LA 4/09	Lake Central, IN 11/07
Wilmington New Hanover 3/09	Columbia, SC 11/07
New Berry, SC 12/08	Duneland, IN 10/07
Corning, NY 11/08	Union County, NC 9/07
McLean, IL 11/08	Griffith, IN 9/07
Lakota 11/08	Rensselaer, IN 7/07
Greensboro, NC 11/08	Hobart, IN 7/07
Guilford 9/08	Buffalo, NY 7/07
Lexington, SC 9/08	Oak Ridge, TN 5/07
Plymouth, IN 9/08	Westerville, OH 4/07

Projects Continued

Baton Rouge, LA 4/07  
 Cobb County, GA 4/07  
 Charleston, SC District 20 4/07  
 McDowell County, NC 4/07  
 East Allen, IN 3/07  
 Mt. Pleasant, SC District 2 2/07  
 Peach County, GA 2/07  
 North Charleston, SC District 4 2/07  
 Madison County, MS revisions 1/07  
 Portage County, IN 1/07  
 Marietta, GA 1/07  
 Porter, IN 12/06  
 Harrison County, MS 9/06  
 New Albany/Floyd County, IN 9/06  
 North Charleston, SC 9/06  
 Fairfax, VA 9/06  
 Coleman 8/06  
 DeKalb, GA 8/06  
 LaPorte, IN 7/06  
 NW Allen, IN 7/06  
 Brunswick, NC 7/06  
 Carmel Clay, IN 7/06  
 Calhoun, SC 5/06  
 Hamilton Community Schools, IN 4/06  
 Dilworth, MN 4/06  
 Hamilton, OH 2/06  
 West Noble, IN 2/06  
 New Orleans, LA 2/06  
 Norwell, IN 2/06  
 Middletown, OH 12/05  
 West Noble, IN 11/05  
 Madison, MS 11/05  
 Fremont, IN 11/05  
 Concord, IN 11/05

Allen County 11/05  
 Bremen, IN 11/05  
 Smith Green, IN 11/05  
 Steuben, IN 11/05  
 Plymouth, IN 11/05  
 North Charleston, SC 11/05  
 Huntsville, AL 10/05  
 Dekalb, IN 9/05  
 East Noble, IN 9/05  
 Valparaiso, IN 6/05  
 Penn-Harris-Madison, IN 7/05  
 Elmira, NY 7/05  
 South Porter/Merriville, IN 7/05  
 Fargo, ND 6/05  
 Washington, IL 5/05  
 Addison, NY 5/05  
 Kershaw, SC 5/05  
 Porter Township, IN 3/05  
 Portage, WI 1/05  
 East Stroudsburg, PA 12/04  
 North Hendricks, IN 12/04  
 Sampson/Clinton, NC 11/04  
 Carmel Clay Township, IN 9/04  
 SW Allen County, IN 9/04  
 East Porter, IN 9/04  
 Allen County, IN 9/04  
 Duplin, NC 9/04  
 Hamilton County / Clay TSP, IN 9/04  
 Hamilton County / Fall Creek TSP, IN 9/04  
 Decatur, IN 9/04  
 Chatham County / Savannah, GA 8/04  
 Evansville, IN 7/04  
 Madison, MS 7/04  
 Vanderburgh, IN 7/04  
 New Albany, IN 6/04

## **Publications**

- In the matter of *Johnson v. Wisconsin Elections Commission*, No. 2021AP0014500A, in the Supreme Court of Wisconsin. Assessing the features of proposed redistricting plans by the Wisconsin Legislature and other parties to the litigation. December 2021.
- In the matters of *Caster v. Merrill* and *Milligan v. Merrill* in US District Court of the Northern District of Alabama. Civil Action NOs. 2:21-cv-01536-AMM; 2:21-cv-01530-AMM. Declaration of Thomas Bryan. Assessing the compliance and performance of the demonstrative VRA congressional plans of Dr. Moon Duchin and Mr. William Cooper. December 2021.
- In the matter of *Milligan v. Merrill* in US District Court of the Northern District of Alabama. Civil Action NO. 2:21-cv-01530-AMM. Declaration of Thomas Bryan. Assessing the compliance and performance of the Milligan and State of Alabama congressional redistricting plans. December 2021.
- In the matter of *Singleton v. Merrill* in US District Court of the Northern District of Alabama. Civil Action NO. 2:21-cv-01291-AMM. Declaration of Thomas Bryan. Assessing the compliance and performance of the Singleton and State of Alabama congressional redistricting plans. December 2021.
- “The Effect of the Differential Privacy Disclosure Avoidance System Proposed by the Census Bureau on 2020 Census Products: Four Case Studies of Census Blocks in Alaska” PAA Affairs, (with D. Swanson and Richard Sewell, Alaska Department of Transportation and Public Facilities). March 2021.
  - <https://www.populationassociation.org/blogs/paa-web1/2021/03/30/the-effect-of-the-differential-privacy-disclosure?CommunityKey=a7bf5d77-d09b-4907-9e17-468af4bdf4a6> .
  - <https://redistrictingonline.org/2021/03/31/study-census-bureaus-differential-privacy-disclosure-avoidance-system-produces-concerning-results-for-local-jurisdictions/>
  - <https://www.ncsl.org/research/redistricting/differential-privacy-for-census-data-explained.aspx>
- In the matter of the *State of Alabama, Representative Robert Aderholt, William Green and Camaran Williams v. the US Department of Commerce; Gina Raimondo; the US Census Bureau and Ron Jarmin* in US District Court of Alabama Eastern Division. Declaration of Thomas Bryan, Exhibit 6. Civil Action NO. 3:21-CV-211, United States District Court for Middle Alabama, Eastern Division. Assessing the impact of the U.S. Census Bureau’s approach to

ensuring respondent privacy and Title XIII compliance by using a disclosure avoidance system involving differential privacy. March 2021.

- <https://redistricting.ils.edu/wp-content/uploads/AL-commerce2-20210311-PI.zip>
- Peter A. Morrison and Thomas M. Bryan, Redistricting: A Manual for Analysts, Practitioners, and Citizens (2019). Springer Press: Cham Switzerland.
- “Small Area Business Demography.” in D. Poston (editor) Handbook of Population, 2<sup>nd</sup> Edition. (2019). Springer Press: London (with P. Morrison and S. Smith).
- “From Legal Theory to Practical Application: A How-To for Performing Vote Dilution Analyses.” *Social Science Quarterly*. (with M.V. Hood III and Peter Morrison). March 2017
  - <http://onlinelibrary.wiley.com/doi/10.1111/ssqu.12405/abstract>
- In the Supreme Court of the United States Sue Evenwel, Et Al., *Appellants*, V. Greg Abbott, in his official capacity as Governor of Texas, et al., *Appellees*. *On appeal from the United States District Court for the Western District of Texas*. Amicus Brief of Demographers Peter A. Morrison, Thomas M. Bryan, William A. V. Clark, Jacob S. Siegel, David A. Swanson, and The Pacific Research Institute - As amici curiae in support of Appellants. August 2015.
  - [www.scotusblog.com/wp-content/uploads/2015/08/Demographers-Amicus.pdf](http://www.scotusblog.com/wp-content/uploads/2015/08/Demographers-Amicus.pdf) )
- Workshop on the Benefits (and Burdens) of the American Community Survey, Case Studies/Agenda Book 6 “Gauging Hispanics’ Effective Voting Strength in Proposed Redistricting Plans: Lessons Learned Using ACS Data.” June 14–15, 2012
  - <http://docplayer.net/8501224-Case-studies-and-user-profiles.html>
- “Internal and Short Distance Migration” by Bryan, Thomas in J. Siegel and D. Swanson (eds.) The Methods and Materials of Demography, Condensed Edition, Revised. (2004). Academic/Elsevier Press: Los Angeles (with D. Swanson and P. Morrison).
- “Population Estimates” by Bryan, Thomas in J. Siegel and D. Swanson (eds.) The Methods and Materials of Demography, Condensed Edition, Revised. (2004). Academic/Elsevier Press: Los Angeles (with D. Swanson and P. Morrison).
- Bryan, T. (2000). U.S. Census Bureau Population estimates and evaluation with loss functions. *Statistics in Transition*, 4, 537–549.

### **Professional Presentations and Conference Participation**

- Session Chairman on Invited Session “Assessing the Quality of the 2020 Census”, including Census Director Ron Jarmin at the 2020 Population Association of America meeting May 5, 2021.
  - <https://paa2021.secure-platform.com/a/organizations/main/home>
- “The Effect of the Differential Privacy Disclosure Avoidance System Proposed by the Census Bureau on 2020 Census Products: Four Case Studies of Census Blocks in Alaska”. 2021 American Statistical Association - Symposium on Data Science and Statistics (ASA-SDSS). With Dr. David Swanson.
  - <https://ww2.amstat.org/meetings/sdss/2021/index.cfm>
- “New Technical Challenges in Post-2020 Redistricting” 2020 Population Association of America Applied Demography Conference, 2020 Census Related Issues, February 2021. With Dr. Peter Morrison.
  - <https://www.youtube.com/watch?v=ETvvoECt9sc&feature=youtu.be>
- “Tutorial on Local Redistricting” 2020 Population Association of America Applied Demography Conference, February 2021. With Dr. Peter Morrison.
  - <https://www.youtube.com/watch?v=ETvvoECt9sc&feature=youtu.be>
- “Demographic Constraints on Minority Voting Strength in Local Redistricting Contexts” 2019 Southern Demographic Association meetings (coauthored with Dr. Peter Morrison) New Orleans, LA, October 2019. Winner of annual E. Walter Terrie award for best state and local demography presentation.
  - <http://sda-demography.org/2019-new-orleans>
- “Applications of Big Demographic Data in Running Local Elections” 2017 Population and Public Policy Conference, Houston, TX.
- “Distinguishing ‘False Positives’ Among Majority-Minority Election Districts in Statewide Congressional Redistricting,” 2017 Southern Demographic Association meetings (coauthored with Dr. Peter Morrison) Morgantown, WV.
- “Devising a Demographic Accounting Model for Class Action Litigation: An Instructional Case” 2016 Southern Demographic Association (with Peter Morrison), Athens, GA.
- “Gauging Hispanics’ Effective Voting Strength in Proposed Redistricting Plans: Lessons Learned Using ACS Data.” 2012 Conference of the Southern Demographic Association, Williamsburg, VA.

- “Characteristics of the Arab-American Population from Census 2000 and 1990: Detailed Findings from PUMS.” 2004 Conference of the Southern Demographic Association, (with Samia El-Badry) Hilton Head, SC.
- “Small-Area Identification of Arab American Populations,” 2004 Conference of the Southern Demographic Association, Hilton Head, SC.
- “Applied Demography in Action: A Case Study of Population Identification.” 2002 Conference of the Population Association of America, Atlanta, GA.

### **Primary Software Competencies**

ESRI ArcGIS: advanced

SAS: intermediate

Microsoft Office: advanced

### **Professional Affiliations**

International Association of Applied Demographers (Member and Board of Directors)

American Statistical Association (Member)

Population Association of America (Member)

Southern Demographic Association (Member)

American BAR Association (Affiliated Professional: Solo, Small Firm and General Practice Division)

### **Relevant Work Experience**

January 2001- April 2003 ESRI Business Information Solutions / Demographer

Responsibilities included demographic data management, small-area population forecasting, IS management and software product and specification development. Additional responsibilities included developing GIS-based models of business and population forecasting, and analysis of emerging technology and R&D / testing of new GIS and geostatistical software.

May 1998-January 2001 U.S. Census Bureau / Statistician

Responsibilities: developed and refined small area population and housing unit estimates and innovative statistical error measurement techniques, such as Loss Functions and MAPE-R.

### **Service**

Eagle Scout, 1988, Boy Scouts of America. Member of the National Eagle Scout Association. Involved in leadership of the Boy Scouts of America Heart of Virginia Council.



### **References**

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