

STATE OF MINNESOTA
SPECIAL REDISTRICTING PANEL

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OFFICE OF
APPELLATE COURTS

Peter S. Wattson, Joseph Mansky, Nancy B. Greenwood,
Mary E. Kupper, Douglas W. Backstrom, and James E.
Hougas, III, individually and on behalf of all citizens and
voting residents of Minnesota similarly situated, and
League of Women Voters Minnesota,

Plaintiffs,

and

Paul Anderson, Ida Lano, Chuck Brusven, Karen Lane,
Joel Hineman, Carol Wegner, and Daniel Schonhardt,

Plaintiff-Intervenors,

vs.

Steve Simon, Secretary of State of Minnesota; and
Kendra Olson, Carver County Elections and Licensing
Manager, individually and on behalf of all Minnesota
county chief election officers,

Defendants.

**APPLICATION BY CITIZEN
DATA SCIENTISTS FOR
LEAVE TO PARTICIPATE AS
AMICI CURIAE AND
REQUEST FOR LEAVE TO
FILE BRIEF**

Frank Sachs, Dagny Heimisdottir, Michael Arulfo,
Tanwi Prigge, Jennifer Guertin, Garrison O'Keith
McMurtrey, Mara Lee Glubka, Jeffrey Strand, Danielle
Main, and Wayne Grimmer,

Plaintiffs,

and

Dr. Bruce Corrie, Shelly Diaz, Alberder Gillespie,
Xiongpaoo Lee, Abdirazak Mahboub, Aida Simon,
Beatriz Winters, Common Cause, OneMinnesota.org,
and Voices for Racial Justice,

Plaintiff-Intervenors,

vs.

Steve Simon, Secretary of State of Minnesota,

Defendant.

Pursuant to Rule of Appellate Procedure 129 and this Panel’s direction in its September 10, 2021 Order, Karen Saxe, Paul Zorn, Deanna Haunsperger, Stephen Kennedy, Stephen Polasky, Victor Reiner, Brianna Heggeseth, Lisa Lendway, Shilad Sen, David Van Riper, Jonathan Schroeder, and Tracy Kugler (“the Citizen Data Scientists”) hereby seek leave to file an *amicus curiae* brief in this proceeding, within 48 hours after a decision granting this Application.

I. Statement of Interest and Position

The Citizen Data Scientists are professors, practitioners, and researchers in data science, computer science, mathematics, statistics, and engineering. They include two Past Presidents of the Mathematical Association of America, an Associate Executive Director of the American Mathematical Society, a Member of the National Academy of Sciences, and three research scientists from the Minnesota Population Center at the University of Minnesota.

The Citizen Data Scientists previously sought to intervene in this proceeding, as each resides in a district that is overpopulated according to 2020 Census data. (Sept. 3, 2021 Intervention Papers.) The Panel denied that request on timeliness grounds but invited the Citizen Data Scientists to participate in the public comment process and to request leave to submit a brief as *amici curiae*. (Sept. 10, 2021 Order at 4.)

Following the Panel’s direction, certain Citizen Data Scientists have participated in the public comment process, and all now seek leave to participate as *amici*, to provide the

Panel with information that no party in this proceeding offers.¹ Specifically, and in keeping with their commitment to a nonpartisan, data-driven approach to redistricting, the Citizen Data Scientists seek to provide this Panel with information, grounded in the new field of “computational redistricting,” that will aid the Panel in applying the principles it announced on November 18, 2021, when evaluating, selecting, or drawing redistricting plans.

The fundamental premise of computational redistricting is simple: “Given the number of [redistricting] criteria and the spatial nature of how the criteria operate, it is not easy for humans to find optimal redistricting outcomes on their own.... Put simply, good maps are needles in a haystack of bad or at least worse maps. Enter redistricting algorithms. They are capable of meticulous exploration of the astronomical number of ways in which a state can be partitioned. They can identify possible configurations of districts and zero in on the maps that best meet the redistricting criteria. The algorithms sort through the haystack more efficiently and more systematically so that the needle—the better maps—can be found.”²

¹ In the public hearings, Professor Saxe made oral and written statements on compactness measures; Professor Lendway made an oral presentation on partisan fairness; and Professor Sen provided a written statement on race, communities of interest, and the Voting Rights Act. The Citizen Data Scientists’ *amicus* brief will not duplicate these public statements and will contain data that could not be finalized until after November 18, 2021, when the Panel announced its redistricting principles.

² Emily Rong Zhang, *Bolstering Faith with Facts: Supporting Independent Redistricting Commissions with Redistricting Algorithms*, 109 CALIF. L. REV. 987, 1012–13 (2021) (footnotes and quotation marks omitted); *see also, e.g.*, Siobhan Roberts, *Mathematicians Are Deploying Algorithms to Stop Gerrymandering*, MIT TECHNOLOGY REVIEW (Aug. 12, 2021), <https://www.technologyreview.com/2021/08/12/1031567/mathematicians-algorithms-stop-gerrymandering/>; Moon Duchin, *Geometry Versus Gerrymandering: Mathematicians Are Developing Statistical Forensics to Identify Districts that Disenfranchise Voters*, SCIENTIFIC AMERICAN, Nov. 2018,

Relying on computational redistricting, the Citizen Data Scientists’ experts have searched the universe of maps to find these needles in the haystack. Those efforts also have yielded data points that the Panel can use as benchmarks to evaluate proposed redistricting plans under each of the principles the Panel articulated in its November 18, 2021 Order. Using these benchmarks, the Panel will be able to evaluate every plan submitted by a party or a member of the public both objectively and quickly.

II. An *Amicus* Brief Is Desirable.

The traditional role of *amici* is to assist the Court, including by offering the Court “expertise not possessed by any party to the case.” *Neonatology Assocs., PA v. CIR*, 293 F.3d 128, 132 (3d Cir. 2002) (then-Judge Alito, applying Federal Rule of Appellate Procedure 29). This is the role the Citizen Data Scientists seek to play here. They believe no party to this case is using the sophisticated computational-redistricting methods that their experts have deployed to generate the Minnesota-specific data they offer in their *amicus* brief. See *Hippert* Special Redistricting Panel, Nov. 29, 2011 Order at 2 (*amici* properly “inform the court as to facts or situations which may have escaped consideration”).

As the Panel is aware, redistricting requires satisfying multiple objectives at once, and improving on one principle often can worsen others. Maps that strike the right balance—where no single criterion can be further improved without sacrificing one or

<https://www.scientificamerican.com/article/geometry-versus-gerrymandering/>; Amariah Becker, Moon Duchin, Dara Gold & Sam Hirsch, *Computational Redistricting and the Voting Rights Act*, 20 ELECTION L.J. (forthcoming 2022), <https://www.liebertpub.com/doi/10.1089/elj.2020.0704>.

more of the others—are called “Pareto-optimal.” Without computational redistricting, maps that attain or approach “Pareto-optimal” status are nearly impossible to find. Exploring millions of alternatives by computer sheds light on the trade-offs between principles, illuminating when improving one objective inevitably comes at the expense of others. Without an intensive, systematic search, one cannot tell whether sacrificing one aim is necessary to achieve others or instead results from unwarranted fealty to a particular objective, partisan or not, intended or not.

The Citizen Data Scientists can help the Panel assess the balance—or lack thereof—in each proposed redistricting plan. Their experts’ exploration of the universe of maps has yielded data that the Panel can use as guideposts to (a) eliminate maps that go too far in elevating any one redistricting criterion at the expense of other criteria and (b) identify maps that do the best job of optimizing all the Panel’s redistricting criteria simultaneously. Specifically, having searched for “Pareto-optimal” maps themselves,³ the Citizen Data Scientists seek *amicus* status to present data that answers questions like these:

- What is the tightest population deviation, within the Panel’s plus-or-minus 2% threshold for legislative districts, that can be reached without sacrificing the map’s ability to satisfy other redistricting objectives?

³ Separate from this Application, and acting as members of the public, the Citizen Data Scientists have submitted to the Panel the maps and reports for their proposed legislative and congressional redistricting plans, which were developed through computational redistricting and thus were designed to approach Pareto optimality. The Citizen Data Scientists have provided or are in the process of providing the same materials to counsel for all parties in this proceeding, the Chairs of the Minnesota Senate and House Redistricting Committees, and the Governor.

- What are the minimum numbers of divisions (or splits) of contiguous American Indian reservation lands, counties, minor civil divisions (cities and townships), and voting districts (precincts) that can be achieved for legislative or congressional maps before trade-offs against competing considerations must be made?
- What are the thresholds for reasonable district compactness, under each of the five measures chosen by the Panel, that can be attained in a map that still satisfies all the other redistricting principles?
- What is the minimum number of divisions (or splits) of Minneapolis's officially delineated neighborhoods and St. Paul's officially delineated planning districts that can be accomplished consistent with other principles, such as population equality?

These answers can be illuminated through computational redistricting. They cannot, however, be plucked from thin air, identified by analyzing a mere handful of proposed maps, or derived by comparing proposed maps to those approved by prior Special Redistricting Panels. The 2020 Census shows that Minnesota's population has grown by 7.6 percent in the last decade,⁴ but that growth has been uneven.⁵ As a result, not only are

⁴ U.S. Census Bureau, *Minnesota's Population at 5,706,494 in 2020, Up 7.6% Since 2010*, Aug. 25, 2021, <https://www.census.gov/library/stories/state-by-state/minnesota-population-change-between-census-decade.html>

⁵ *E.g.*, MPR News, *Census: Major Changes for State Demographics, Politics*, Aug. 13, 2021, <https://www.mprnews.org/story/2021/08/12/census-major-changes-for-state-demographics-politics>.

the district lines drawn in 2012 outdated, but the manner in which the 2012 plan achieved the 2012 redistricting principles is *also* outdated. For any number of reasons, a score on a given redistricting metric that was considered “good” or even “excellent” in 2012 may—or may *not*—actually be a “good” or “excellent” score when evaluated using the 2020 Census data. The Citizen Data Scientists’ *amicus* brief can help the Panel identify what constitutes a “good” or “excellent” score now, based on both the current Census data *and* what computational redistricting shows about Pareto-optimal levels for the whole collection of redistricting principles.

Ten years from now, drawing maps one at a time, by hand or by mouse, will have gone the way of the quill pen and the electric typewriter. Computational redistricting will prevail. But Minnesotans should not have to wait another decade to gain the benefits of the best available technology. The data-driven benchmarks laid out in the Citizen Data Scientists’ *amicus* brief will aid the Panel in efficiently and transparently fulfilling its responsibilities, and that in turn will help ensure fair representation for all Minnesotans for the coming decade.

Dated: November 30, 2021

Respectfully submitted,

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CERTIFICATION OF DOCUMENT LENGTH

The undersigned hereby certifies that this Application by Citizen Data Scientists for Leave to Participate as *Amici Curiae* and Request for Leave to File Brief complies with the length limitations in Minn. R. Civ. App. P. 129.01(c). The Application contains 1,497 words, inclusive of any footnotes and exclusive of the caption and signature block.

Dated: November 30, 2021

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