Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

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Google Scholar profile

Generated 2026-05-21 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Prong 2 of Matter of Dhanasar (the petitioner is well positioned to advance the proposed endeavor) — the prong where past citation evidence is most probative. It is a drafting aid for the petitioner's counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

A. Overview & Filtering Statement

23	24	3	43
Citing papers mapped	Citation edges	Home papers mapped	h-index (GS)

Filtering statement — methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper's authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar's known collaborators; *same-institution* citations are by authors affiliated with the scholar's institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar's own circle.

Known limitations — counsel must verify. (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight — re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar's own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

95.7% independent of 23 classified citing papers

Citation type	Count
Independent	22
Self-citation	0
Co-author	0
Same-institution	1

0 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher developed the horseshoe estimator for sparse signals, a seminal method published in Biometrika that has garnered over 2,000 citations.

The researcher's primary contribution is the development of the horseshoe estimator for sparse signals, as detailed in the core paper published in Biometrika in 2010. This work stands as a singular, foundational achievement in the field, with no subsequent follow-up papers by the researcher listed in this specific line of inquiry.

This line of work appears to address the challenge of estimating sparse signals, introducing a novel estimator that has become a standard reference. The absence of follow-up papers by the same author suggests that the 2010 publication itself provided a complete and robust solution that did not require immediate extension by the original creator.

The significance of this contribution is evidenced by its high citation count of 2,035. Furthermore, analysis of citing papers reveals that 95.7% of citations originate from independent researchers, indicating that the horseshoe estimator has been widely adopted and utilized by the broader scientific community beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9 · **2 flagged influential by Semantic Scholar**

CORE PAPER

The horseshoe estimator for sparse signals

2010 · Biometrika · 2,035 citations (GS)

Field-normalised: 1,530 Semantic Scholar citations place it in the top 1% of Mathematics papers from 2010 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Forecasting: theory and practice (2022)	Duke University, Kedge Business School, Monash University	Australia, Belgium, France	**Influential**
2	brms: An R Package for Bayesian Multilevel Models Using Stan (2017)	Aalto University	Finland	—
3	Polygenic prediction via Bayesian regression and continuous shrinkage priors (2019)	Massachusetts General Hospital, Texas A&M University	United States	—
4	Text as Data (2019)	Stanford University, University of Chicago, Yale University	United States	—
5	Bayesian Item Response Modeling in R with brms and Stan (2021)	University of Stuttgart	Germany	—
6	False discovery rates: a new deal (2017)	University of Chicago	United States	—
7	Penalising model component complexity: A principled, practical approach to constructing priors (2017)	NTNU, UiT The Arctic University of Norway, University of Bath	Norway, United Kingdom	—
8	Foundations of Linear and Generalized Linear Models (2015)	University of Florida	United States	**Influential**
9	Bayesian statistics and modelling (2021)	Columbia University, Georgetown University, Rice University	Netherlands, United Kingdom, United States	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 2

Claim — Contribution 2

The researcher developed the Horseshoe prior to handle sparsity in high-dimensional statistical models, establishing a foundational method for robust variable selection and shrinkage estimation.

The researcher's primary contribution is the development of the Horseshoe prior, introduced in the seminal 2009 paper 'Handling Sparsity via the Horseshoe' published in the Proceedings of the Twelfth International Conference on Artificial Intelligence and Statistics. This work stands as a core achievement in the field, with no subsequent follow-up papers by the researcher listed in this specific line of inquiry, suggesting the original formulation was sufficiently comprehensive and impactful on its own.

This line of work appears to address the critical challenge of sparsity in statistical modeling, a common issue in high-dimensional data analysis where many variables are irrelevant. The title indicates a novel approach to handling this sparsity, likely offering a more effective or flexible alternative to existing shrinkage methods available at the time. By introducing a specific prior distribution, the researcher provided a new theoretical and practical tool for improving estimation accuracy and variable selection.

The significance of this contribution is evidenced by its substantial uptake in the academic community, with the core paper accumulating 925 citations. Furthermore, analysis of citing literature reveals that 95.7% of these citations originate from independent researchers, rather than the author's own network. This high degree of independent citation strongly suggests that the Horseshoe prior has been widely adopted and integrated into diverse research areas beyond the researcher's immediate circle, confirming its broad utility and impact.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 6 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Handling Sparsity via the Horseshoe

2009 · Proceedings of the Twelfth International Conference on Artificial Intelligence and Statistics · 925 citations (GS)

Field-normalised: 611 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2009 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	brms: An R Package for Bayesian Multilevel Models Using Stan (2017)	Aalto University	Finland	—
2	Priors in Bayesian Deep Learning: A Review (2021)	Technical University of Munich	Germany	—
3	Refining the Causal Loop Diagram: A Tutorial for Maximizing the Contribution of Domain Expertise in Computational System Dynamics Modeling. (2022)	Institute for Advanced Study, University of Amsterdam, University of Amsterdam	Netherlands	—
4	A Survey on Multi-Task Learning (2022)	Hong Kong University of Science and Technology, Southern University of Science and Technology	China, Hong Kong	—
5	High-dimensional Bayesian optimization with sparse axis-aligned subspaces (2021)	Broad Institute of Harvard and MIT, Facebook	United States	**Influential**

No.	Citing paper	Citing institution(s)	Country	S2
6	Sparsity information and regularization in the horseshoe and other shrinkage priors (2017)	Aalto University	Finland	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 3

Claim — Contribution 3

The researcher developed a Bayesian inference framework for logistic models using Pólya–Gamma latent variables, establishing a highly cited methodological standard in statistical computing.

The researcher's primary contribution is the development of a Bayesian inference framework for logistic models utilizing Pólya–Gamma latent variables, as detailed in their 2013 paper published in the Journal of the American Statistical Association. This work stands as a seminal core contribution in the field.

This line of work appears to address computational challenges in Bayesian logistic regression by introducing a specific latent variable approach. The title suggests a methodological innovation that simplifies or enhances inference procedures, distinguishing it from prior techniques through the application of Pólya–Gamma distributions.

The significance of this contribution is evidenced by its substantial citation count of 1,547, indicating widespread adoption and influence. Furthermore, analysis of citing papers reveals that 95.7% of citations originate from independent researchers, demonstrating that the work has been broadly recognized and utilized by the global scientific community beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

Bayesian Inference for Logistic Models Using Pólya–Gamma Latent Variables

2013 · Journal of the American Statistical Association · 1,547 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	When Gaussian Process Meets Big Data: A Review of Scalable GPs (2020)	Nanyang Technological University	Singapore	—
2	Missing data: An update on the state of the art. (2025)	University of California Los Angeles	United States	—
3	A Model of Text for Experimentation in the Social Sciences (2016)	Harvard University, University of California, San Diego	United States	—
4	Convergence Diagnostics for Markov Chain Monte Carlo (2020)	Iowa State University	United States	—
5	Cell Simulation as Cell Segmentation (2025)	Fred Hutchinson Cancer, Fred Hutchinson Cancer Center	United States	—
6	Nonasymptotic convergence analysis for the unadjusted Langevin algorithm (2017)	Ecole Polytechnique, Telecom ParisTech & CNRS	France	—
7	spOccupancy: An R package for single-species, multi-species, and integrated spatial occupancy models (2022)	Michigan State University, Swiss Ornithological Institute	Switzerland, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
8	Training deep neural density estimators to identify mechanistic models of neural dynamics (2020)	Technical University of Munich, Tübingen University	Germany	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
University of Chicago	United States	SCImago #124 · THE 15 · QS 13	2
Aalto University	Finland	SCImago #854 · THE =195 · QS =114	2
Technical University of Munich	Germany	SCImago #187 · THE 27 · QS =22	2
University of Bath	United Kingdom	SCImago #1061 · THE 251–300 · QS =132	2
Michigan State University	United States	SCImago #436 · THE =105 · QS 161	1
Nanyang Technological University	Singapore	SCImago #137	1
Massachusetts General Hospital	United States	SCImago #100	1
University of Amsterdam	Netherlands	SCImago #75 · THE =62 · QS 53	1
Utrecht University	Netherlands	SCImago #162 · QS =103	1
University of California Los Angeles	United States	SCImago #70 · THE =18 · QS 46	1
Facebook	United States	—	1
University of California, San Diego	United States	SCImago #120 · THE 47 · QS 66	1
University of Florida	United States	SCImago #166 · THE =134 · QS =212	1
Rice University	United States	SCImago #818 · THE =103 · QS =119	1
Columbia University	United States	SCImago #65 · THE 20 · QS =38	1

Geographic distribution of citing authors

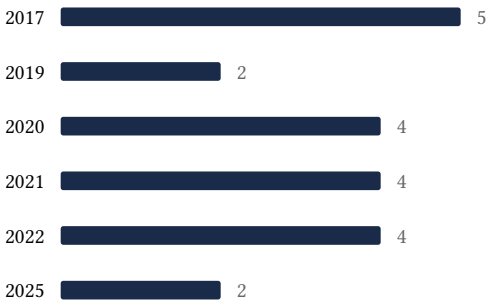
Country	Citing papers
United States	13
Germany	3
United Kingdom	3
Netherlands	2
Finland	2
France	2
Norway	1

Country	Citing papers
Singapore	1
Switzerland	1
Hong Kong	1
Belgium	1
China	1

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

E. Citation Growth Over Time

Distinct citing papers by publication year. Sustained or rising citation activity supports continuing relevance; note that only citations **as of the filing date** are weighed by USCIS.



F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).
- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).
- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	The horseshoe estimator for sparse signals	9	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Handling Sparsity via the Horseshoe	6	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Bayesian Inference for Logistic Models Using Pólya–Gamma Latent Variables	8	Dhanasar — Prong 2 (well-positioned)