# Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

## Abdullah Almaatouq

Massachusetts Institute of Technology

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

| 41 | 41 | 5 | 20 |
|---|---|---|---|
| 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.

**80.5% independent** of 41 classified citing papers

| Citation type | Count |
|---|---|
| Independent | 33 |
| Self-citation | 2 |
| Co-author | 3 |
| Same-institution | 3 |

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 advanced collective intelligence theory by demonstrating how adaptive social networks enhance crowd wisdom and extending these insights to integrative experimental design in behavioral sciences.*

CLAIM: This line of work centers on the researcher's 2020 PNAS paper, which appears to establish that adaptive social networks promote the wisdom of crowds, followed by a 2024 Behavioral and Brain Sciences paper on integrative experiment design.

ORIGINALITY: The progression from network dynamics to experimental methodology suggests a novel approach to understanding how social structures influence collective decision-making and how these principles can be applied to improve research design in social and behavioral sciences.

SIGNIFICANCE: The core paper has garnered 249 citations, while the follow-up work has accumulated 162 citations. Notably, 87.8% of classified citations originate from independent researchers, indicating broad adoption and impact beyond the researcher's immediate academic circle.

**INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 10** · **1 flagged influential by Semantic Scholar**

**CORE PAPER**

### Adaptive social networks promote the wisdom of crowds

2020 · PNAS (Proceedings of the National Academy of Sciences) · 249 citations (GS)

Field-normalised: 153 Semantic Scholar citations place it in the top 1% of Sociology papers from 2020 indexed by Semantic Scholar, by citation count.

| No. | Citing paper | Citing institution(s) | Country | S2 |
|---|---|---|---|---|
| 1 | Information aggregation and collective intelligence beyond the wisdom of crowds (2022) | Loyola University Chicago, University of St Andrews | United Kingdom, United States | — |
| 2 | How behavioural sciences can promote truth, autonomy and democratic discourse online (2020) | Harvard University, Max Planck Institute for Human Development, University of Bristol | Germany, United Kingdom, United States | — |
| 3 | Social network group decision making: Characterization, taxonomy, challenges and future directions from an AI and LLMs perspective (2025) | Dalian University of Technology, De Montfort University, Shanghai Maritime University | China, Spain, United Kingdom | — |
| 4 | The network science of collective intelligence (2022) | University of Pennsylvania | United States | Background |
| 5 | Beyond collective intelligence: Collective adaptation (2023) | Brunel University London, Carnegie Mellon University, Centre for Coevolution of Biology and Culture, Durham University | Denmark, Germany, Italy | — |
| 6 | Creating and Capturing Value from Open Innovation: Humans, Firms, Platforms, and Ecosystems (2023) | Chalmers University of Technology, Eindhoven University of Technology, University of California, Berkeley | Netherlands, Sweden, United States | — |

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

**Beyond Playing 20 Questions with Nature: Integrative Experiment Design in the Social and Behavioral Sciences**

2024 · Behavioral and Brain Sciences · 162 citations (GS)

Field-normalised: 58 Semantic Scholar citations place it in the top 5% of Psychology papers from 2024 indexed by Semantic Scholar, by citation count.

| No. | Citing paper | Citing institution(s) | Country | S2 |
|---|---|---|---|---|
| 1 | Deep learning-aided decision support for diagnosis of skin disease across skin tones (2024) | Duke University School of Medicine, MIT, Northeast Dermatology Associates | United States | — |
| 2 | Automated Social Science: Language Models as Scientist and Subjects (2024) | Harvard University, MIT, MIT & NBER | United States | — |
| 3 | The mixed subjects design: Treating large language models as potentially informative observations (2025) | — | — | — |
| 4 | Generalizability of choice architecture interventions (2025) | Eötvös Loránd University, Microsoft Research, University College London | Canada, Hungary, United Kingdom | **Influential** |

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

## Contribution 2

### Claim — Contribution 2

*The researcher pioneered a scientific mass collaboration framework to measure the predictability of life outcomes, establishing a highly cited benchmark for large-scale social science inquiry.*

CLAIM: The researcher's core contribution is the development and execution of a scientific mass collaboration to measure the predictability of life outcomes, as detailed in their 2020 paper. This work stands as a singular, foundational piece in this specific line of inquiry, with no subsequent follow-up papers by the researcher extending this particular framework.

ORIGINALITY: The title suggests a novel methodological approach, leveraging a 'scientific mass collaboration' to address the complex challenge of predicting life outcomes. This indicates a shift toward large-scale, collaborative data analysis to tackle questions that may have been previously inaccessible to individual research teams, highlighting a significant methodological innovation in social science research.

SIGNIFICANCE: The work has garnered substantial attention, with 454 citations indicating its high impact within the field. Notably, 87.8% of the classified citing papers originate from independent researchers, demonstrating that the contribution has been widely adopted and validated by the broader scientific community beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9

CORE PAPER

**Measuring the predictability of life outcomes with a scientific mass collaboration**

2020 · 454 citations (GS)

Field-normalised: 255 Semantic Scholar citations place it in the top 1% of Sociology papers from 2020 indexed by Semantic Scholar, by citation count.

| No. | Citing paper | Citing institution(s) | Country | S2 |
|---|---|---|---|---|
| 1 | Breaking the Social Media Prism: How to Make Our Platforms Less Polarizing (2020) | Duke University | United States | — |
| 2 | Algorithmic injustice: a relational ethics approach (2021) | University College Dublin | Ireland | Background |
| 3 | The future of AI and education: Some cautionary notes (2022) | Monash University | Australia | — |
| 4 | On the Limits of Artificial Intelligence (AI) in Education (2024) | Monash University | Australia | — |
| 5 | Education and Technology: Key Issues and Debates (2021) | Monash University | Australia | — |
| 6 | Agent-Based Modeling in Economics and Finance: Past, Present, and Future (2025) | Oxford Martin School | United Kingdom | — |
| 7 | Collaborating During Coronavirus: The Impact of COVID-19 on the Nature of Work (2020) | Harvard Business School, HEC Paris, Stanford University | France, United States | — |
| 8 | What Is Your Estimand? Defining the Target Quantity Connects Statistical Evidence to Theory (2021) | Dartmouth College, Princeton University | United States | Background |
| 9 | Using sequences of life-events to predict human lives (2023) | Northeastern University, Statistics Denmark, Technical University of Denmark | Denmark, United States | — |

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

## Contribution 3

**Claim — Contribution 3**

*The researcher established a systematic framework for evaluating human-AI collaboration utility through a high-impact meta-analysis published in Nature Human Behaviour.*

The researcher's primary contribution is the publication of a seminal systematic review and meta-analysis titled 'When combinations of humans and AI are useful' in Nature Human Behaviour (2024). This work serves as the foundational piece for this line of inquiry, standing alone without direct follow-up publications by the same author in the provided dataset.

This line of work appears to address the critical need for rigorous, aggregated evidence regarding the efficacy of human-AI teams. By conducting a systematic review and meta-analysis, the researcher likely synthesized disparate findings to clarify under what conditions such collaborations yield positive outcomes, offering a structured approach to a rapidly evolving field.

The significance of this contribution is evidenced by its rapid accumulation of 641 citations. Furthermore, citation analysis reveals that 87.8% of citing papers originate from independent researchers, indicating broad adoption and influence across the global academic community beyond the researcher's immediate network.

**INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 7** · **2 flagged influential by Semantic Scholar**

**CORE PAPER**

**When combinations of humans and AI are useful: A systematic review and meta-analysis**

2024 · Nature Human Behaviour · 641 citations (GS)

Field-normalised: 321 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2024 indexed by Semantic Scholar, by citation count.

| No. | Citing paper | Citing institution(s) | Country | S2 |
|---|---|---|---|---|
| 1 | AI Aversion or Appreciation? A Capability–Personalization Framework and a Meta-Analytic Review (2025) | Fudan University, MIT, Shenzhen University | China, United States | — |
| 2 | Implementing Artificial Intelligence in Critical Care Medicine: a consensus of 22 (2025) | Amsterdam UMC, Vrije Universiteit Amsterdam, Beth Israel Deaconess Medical Center, Columbia University Irving Medical Center | Belgium, Brazil, Israel | — |
| 3 | Complementarity in human-AI collaboration: Concept, sources, and evidence (2025) | IBM Germany, Karlsruhe Institute of Technology | Germany | **Influential** |
| 4 | AI makes you smarter but none the wiser: The disconnect between performance and metacognition (2026) | Aalto University, HU Berlin, Independent Researcher | Canada, Finland, Germany | — |
| 5 | Examining human-AI interaction in real-world healthcare beyond the laboratory (2025) | TUD Dresden University of Technology | Germany | **Influential** |
| 6 | Generative AI in Marketing and Principles for Ethical Design and Deployment (2024) | European University Viadrina, University of Pennsylvania | Germany, United States | — |
| 7 | Collaborative Gym: A Framework for Enabling and Evaluating Human-Agent Collaboration (2024) | — | — | — |

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

## D. Citing-Institution Prestige & Geography

### Top citing institutions

| Institution | Country | World ranking | Citing papers |
|---|---|---|---|
| University of Pennsylvania | United States | SCImago #52 · THE 14 · QS 15 | 5 |
| University of Washington | United States | SCImago #45 · THE 25 · QS 81 | 4 |
| Stanford University | United States | SCImago #18 · THE =5 · QS 3 | 4 |
| Massachusetts Institute of Technology | United States | SCImago #41 · THE 2 · QS 1 | 4 |
| Princeton University | United States | SCImago #386 · THE =3 · QS =25 | 4 |
| MIT | United States | — | 4 |
| Microsoft Research | United States | — | 3 |
| Monash University | Australia | THE =58 · QS =36 | 3 |
| Max Planck Institute for Human Development | Germany | SCImago #2574 | 2 |
| University of Toronto | Canada | SCImago #39 · THE 21 · QS 29 | 2 |

| Institution | Country | World ranking | Citing papers |
|---|---|---|---|
| Harvard University | United States | SCImago #4 · THE =5 · QS 5 | 2 |
| New York University | United States | SCImago #116 · THE =31 · QS 55 | 2 |
| Northwestern University | United States | THE 30 · QS =42 | 2 |
| Santa Fe Institute | United States | SCImago #3445 | 2 |
| University of Chicago | United States | SCImago #124 · THE 15 · QS 13 | 2 |

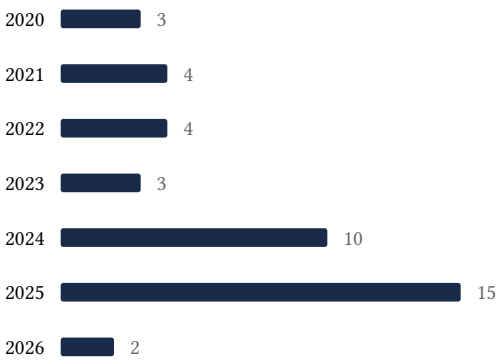
### Geographic distribution of citing authors

| Country | Citing papers |
|---|---|
| United States | 27 |
| United Kingdom | 11 |
| Germany | 9 |
| Canada | 5 |
| Australia | 3 |
| Denmark | 3 |
| Italy | 3 |
| Netherlands | 3 |
| China | 2 |
| Ireland | 2 |
| South Korea | 2 |
| Israel | 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 | Adaptive social networks promote the wisdom of crowds | 10 | Dhanasar — Prong 2 (well-positioned) |
| Contribution 2 | Measuring the predictability of life outcomes with a scientific mass collaboration | 9 | Dhanasar — Prong 2 (well-positioned) |
| Contribution 3 | When combinations of humans and AI are useful: A systematic review and meta-analysis | 7 | Dhanasar — Prong 2 (well-positioned) |