What Does it Mean? Turning Teacher Supply and Demand Data into Actionable Outreach

Rebecca G. Lawver
Department Head & Professor
Applied Sciences, Technology, and Education
Utah State University
1498 N 800 E | ASTE 101C
UMC 2300
Logan, UT 84321
(435) 797-1254
rebecca.lawver@usu.edu

Michael Spiess
Professor Emeritus
California State University, Chico
College of Agriculture
Chico, CA 95929-0310
(530) 521-6866
mspiess@csuchico.edu

Ashley Rogers
Program Manager
Professional Development & Teacher Recruitment and Retention
National Association of Agricultural Educators
859-967-2895 (office)
arogers.NAAE@uky.edu

Amy R. Smith
Associate Professor and Program Leader
University of Minnesota
146 Ruttan Hall
St. Paul, MN 55108
(612) 624-6590
arsmith@umn.edu

Daniel D. Foster
Associate Professor
The Pennsylvania State University
212 Ferguson Building
University Park, PA 16802
(814) 863-0192
foster@psu.edu

What Does it Mean? Turning Teacher Supply and Demand Data into Actionable Outreach

Introduction

Data visualizations are powerful tools for enhancing stakeholder engagement, transforming complex information into clear and compelling insights (Fischer et al., 2023; Walker et al., 2008). In agricultural education, the National Supply and Demand for Agricultural Education project offers a rich dataset (Foster et al., 2025). Still, its value is often hidden in spreadsheets and static reports, underutilized by those who need it most. Despite the potential of this information to shape policy, guide recruitment, and drive program improvement, its complexity can make it inaccessible to key audiences. This innovation addresses a critical need: transforming supply and demand data into digestible, visual formats—charts, maps, infographics—that not only simplify understanding but reveal trends, gaps, and opportunities. Compelling visualizations support transparency, foster data-informed decision-making, and build trust. By leveraging these tools, we can better inform, engage, and mobilize stakeholders at both the state and national levels.

How it works

The core goal of this innovation is to present agricultural teacher supply and demand data in ways that are engaging, relevant, and impactful for a wide range of stakeholder groups—including students, academic advisors, teacher educators, school and university administrators, policymakers, and advocacy organizations. Effective communication begins with thoughtful design, and data visualization offers a powerful medium for translating raw information into insights that inspire understanding and action. Users should start by accessing the National Supply and Demand Project website (Foster et al., 2025), which offers an extensive, publicly available dataset. The platform enables users to query variables such as state, year, gender, and the number of program completers, among others, allowing them to tailor their data extraction to specific geographic or demographic needs. Once the desired data is identified, users download a CSV file for further organization and analysis. The next phase involves preparing and visualizing the data. Users clean and structure the dataset using spreadsheet software such as Microsoft Excel or Google Sheets. From there, visualizations can be created using a range of platforms based on skill level and intended output, including Excel, Canva, Infogram, or more advanced tools like Tableau. These tools enable the creation of customized visuals, such as bar charts illustrating teacher shortages by region, line graphs tracking trends in the number of program completers over time, infographics that summarize key state-level findings, and maps visualizing national supply and demand patterns. These visuals can be embedded into marketing materials, recruitment packets, grant proposals, legislative briefings, or strategic planning documents, making the data more compelling and usable across contexts.

Results to Date

State leaders have increasingly leveraged the National Supply and Demand (NSD) datasets to create customized, data-driven outreach tools that resonate with their local stakeholders. In one example, Utah developed and disseminated a series of infographics and one-pagers that illustrated a decade-long increase in agricultural education teachers and programs called “Decades of Demand”. The information shared included the total number of programs and teachers from 2011 to 2024, key demographic variables, reasons cited for leaving the profession, the number of teachers exiting annually, trends in teacher demand over time, sources of new teacher supply, and recommended strategies for partnerships and pathway development. These

materials were instrumental in justifying policy reforms related to teacher preparation and staffing. Additionally, the data revealed a significant rise in alternatively certified teachers, prompting Utah's Team Ag Ed to design targeted strategies for teacher induction and professional support. Building on this type of innovation, several other states have adapted NSD data into tailored materials for diverse audiences, including college recruiters, school administrators, teacher associations, FFA staff, donors, foundation boards, departments of agriculture, and policy influencers. This inclusive approach has enhanced the credibility, relevance, and clarity of outreach communications. At the national level, the National Association of Agricultural Educators' State Teach Ag Results (STAR) program has formalized and expanded these efforts (NAAE, 2025). By producing concise, state-specific reports grounded in NSD data, the STAR program has equipped state leaders with actionable insights into trends in teacher supply, demand, and retention. These user-friendly summaries support strategic planning, elevate local conversations, and help stakeholders make more informed decisions that strengthen agricultural education at the state and regional levels.

Future Plans

Users are encouraged to explore the National Supply and Demand dataset to uncover unique patterns, challenges, and success stories that reflect the realities of agricultural education in their states. Identifying these distinctive trends can support the development of more targeted, relevant, and persuasive messaging for stakeholders, from policymakers and funders to prospective teachers and school leaders. Educators, program leaders, and advocates are urged to engage with the NSD and NAAE teams for support, training, and strategic guidance. Peer-to-peer collaboration across states can also foster the exchange of effective visualization practices and outreach strategies. Looking ahead, future efforts will focus on several key initiatives: (1) Training undergraduate and graduate students in data literacy and visualization to expand the pool of skilled communicators in agricultural education; (2) Developing a user-friendly visualization toolkit to support STAR coordinators and state leaders in designing impactful outreach materials; and (3) Integrating data visuals into annual reporting processes to improve stakeholder engagement and long-term program evaluation. States are also encouraged to form multidisciplinary teams—including students, communication specialists, teacher educators, and advisory board members—to co-create visual assets that reflect local needs and enhance communication fidelity. When embraced as a shared, iterative process, data visualization becomes not just a tool but a catalyst for advocacy, innovation, and sustained investment in agricultural education.

Resources Needed/Cost

A key strength of this innovation is its accessibility. The National Supply and Demand dataset is freely available and open to all users, eliminating financial barriers and promoting widespread engagement. No specialized software or advanced technical skills are required. Users need only a basic understanding of spreadsheets and data analysis, along with familiarity with standard visualization tools such as Excel, Google Sheets, or Canva. The most critical resource is not technology, but mindset—a willingness to explore the data, experiment with design, and create visuals that communicate meaningfully to local audiences. This low-cost, high-impact approach empowers educators, students, and program leaders to transform raw data into strategic tools that drive conversation and change in agricultural education.

References

Foster, D. D., Smith, A. R., Rogers, A., Lawver, R. G., & Spiess, M. (2025). *National Agricultural Education Supply and Demand Project* [data set]. American Association for Agricultural Education. http://nsd.aaaeonline.org.

NAAE. (2025). *State Teach Ag Results (STAR) Program overview.* National Association of Agricultural Educators. https://www.naae.org/teach-ag/state-teach-ag-results-program/program-overview/

Fischer, L. M., Schroeder, E., Gibson, C., McCord, A., & Orton, G. (2023). An Experimental Study Investigating the Type of Data Visualizations Used in Infographics on Participant Recall and Information Recognition. *Journal of Applied Communications, 107 (3)*. https://doi.org/10.4148/1051-0834.2489

Walker, D. H. T., Bourne, L. M., & Shelley, A. (2008). Influence, stakeholder mapping, and visualization. *Construction Management and Economics, 26*(6), 645–658. https://doi.org/10.1080/01446190701882390