

The Virginia Skills Initiative

The Virginia Skills Initiative (VSI) was established as part of the Virginia Office of Education Economics' (VOEE) broader mission to inform policy and practice at the intersection of education and the labor market. Funded by a 2022 Governor's Discretionary Fund award, the project provides an empirical approach to understanding how college graduates' education and skills impact their career opportunities in the Virginia labor market over time. The data and analyses generated through the VSI will provide important insights and lay the foundation for new models of how education and skills contribute to talent development in Virginia. This brief outlines the goals and products of this important project and provides an overview of how these new data will be utilized by VOEE.

Background and Aspiration of the Virginia Skills Initiative

The purpose of the VSI is to develop comprehensive datasets that will enhance VOEE's ability to address complex questions previously constrained by theoretical models. Traditional research on education and workforce alignment, including VOEE's, often relies on assumptions about worker behavior and labor market dynamics, such as skill transferability, worker mobility, and labor market entry and exit points for graduates of diverse degrees and programs. A notable example is the program-to-occupation crosswalk developed by the Bureau of Labor Statistics and the National Center for Education Statistics, which links programs of study with occupations. This crosswalk is primarily based on a conceptual understanding of the alignment of educational programs with occupational outcomes rather than on empirical data detailing the actual career paths or job placements of graduates. Though the program-to-occupation crosswalk serves as an important tool to help understand potential relationships between fields of study and occupations, it does not directly reflect or draw from actual graduate outcomes data.

The VSI datasets will allow VOEE to move beyond estimations to empirical analysis. These data will allow the exploration of pivotal research questions concerning outcomes by field of study, career progression, and wage trajectories. Through analyses of VSI data, in tandem with broader research initiatives, VOEE aims to provide a more thorough and precise understanding of Virginia's workforce, identify misalignments and gaps, and inform policies and practices to improve the alignment of education to the workforce.

At a Glance

- The VSI is a multi-year, multistage project to assess how Virginia college graduates' education and skills affect their career outcomes over time.
- VOEE developed three datasets as part of the project, including the College and Career Outcomes Dataset, which tracks over 640,000 Virginia graduates as they progress from college into their first jobs and beyond.
- Based on these data, VOEE created two interactive dashboards to allow users to view and engage VSI data to answer questions related to the skills taught and the education and career outcomes of graduates across various fields of study. The dashboards are publicly available [here](#).
- VOEE is also analyzing the data in-house and will publish a series of research briefs exploring the relationships between programs of study and career pathways.

First Stage: Creation of Datasets to Empower New Analytical Insights

The first stage of the VSI was the creation of three new Virginia datasets:

1. College and Career Outcomes Dataset
2. Academic Programs Skills Dataset
3. Noncredit Programs Skills Dataset

The College and Career Outcomes Dataset is a unique dataset that contains information about the skills and career pathways of over 640,000 graduates from Virginia postsecondary institutions. By matching data from the State Council of Higher Education of Virginia (SCHEV) with students' professional social profiles and Unemployment Insurance (UI) wage information, the dataset tracks graduates as they progress from their programs of study into their first jobs and beyond (up to 15 years). This novel dataset includes information about graduates from a wide range of fields from academic and noncredit cohorts spanning 2008–2022. The data include each individual's degrees and credentials, occupations and employers as reported on social profiles, employer industries, location (as of 2022), wages reported to the Virginia Employment Commission for UI purposes, and skills.

The College and Career Outcomes Dataset contains detailed records of

- 647,000 awards and degrees earned by individuals at Virginia post-secondary institutions between 2008–2022
- 380,000 additional awards derived from social profiles (including out of state degrees and degrees earned in Virginia before 2008)
- 503,000 individuals earning a degree or award between 2008–2022
- 2.4 million jobs held by individuals in the dataset

The Academic Programs Skills Dataset and the Noncredit Programs Skills Dataset also contain information about the skills of Virginia students. These datasets describe the skills students attain by completing programs at Virginia institutions. The Academic Programs Skills Dataset includes the skills associated with academic programs offered at public 4-year, private not-for-profit, and 2-year institutions. These include hard skills (e.g., Microsoft Excel), soft skills (e.g., communication), codes and regulations (e.g., Occupational Safety and Health Administration), and certifications (e.g., Cisco Certified Network Associate). For instance, the identified skills for a bachelor's degree program in history include world history, economics, US history, writing, and research. The Noncredit Programs Skills Dataset contains similar information about a subset of the Virginia noncredit programs eligible for the Workforce Credential Grant. For example, the skills for a carpentry program include carpentry, roofing, construction, architectural drawing, and calculations.

The Academic Programs Skills Dataset and the Non-credit Programs Skills Dataset contain information about

- 368 academic programs
- 138 Workforce Credential Grant programs
- 6,051 identified skills across all programs

Second Stage: Analysis and Products Based on VSI Data

With the development of these three datasets, the VSI is entering a second stage of the project. This stage involves integrating the datasets into VOEE's larger body of work and using them to create publicly accessible tools and conduct new analyses that will comprise a significant part of VOEE's FY25 research agenda.

Virginia College and Career Outcomes Explorer

A core part of VOEE's mission is creating interactive dashboards that allow stakeholders across the Commonwealth to view and engage data to answer questions related to education, workforce alignment, and workforce development. The first major tool using the College and Career Outcomes Dataset is a new dashboard, the *Virginia College and Career Outcomes Explorer*, which launched in July of 2024.

The *Explorer* is an analytical tool designed to provide insights into employment and career outcomes of graduates from Virginia's postsecondary institutions. This tool allows stakeholders to interact with career data from the College and Career Outcomes Dataset. Users can engage with data visualizations that highlight graduates' initial industry and job placements, their career progressions, and the skills listed on their professional social profiles. Through the *Explorer*, VOEE seeks to inform educators, policymakers, and workforce planners about how higher education provides career opportunities in the Virginia labor market. Users may access the *Virginia College and Career Outcomes Explorer* [here](#).

Program-to-Skills Mapping Dashboard

A second new dashboard also launched in July 2024. The *Program-to-Skills Mapping Dashboard* displays data from the Academic Programs and Noncredit Programs Skills Datasets. Users can select an academic or noncredit program and review the most common skills taught across its courses. This tool is designed to aid researchers, workforce developers, and educators by providing a comprehensive view of the skill sets emphasized in Virginia's higher education offerings. Users may access the *Program-to-Skills Mapping Dashboard* [here](#).

Launching a New Series of Research Briefs

VOEE has commenced analyzing the three VSI datasets independently and in collaboration with key research partners. Starting in the fall of 2024, VOEE plans to publish research briefs based on the Virginia College and Career Outcomes Dataset. These briefs will explore the most common programs of study and career progressions for graduates working in various career paths, including data science and artificial intelligence, manufacturing, and knowledge work. In the future, VOEE intends to expand its analysis to investigate the career trajectories of liberal arts graduates, specifically examining the pathways these graduates take into the state's knowledge and information workforce.

The Impact of the VSI on VOEE's Future Research Agenda

After establishing a foundation for data management, data models, and self-service dashboards, VOEE's FY25 research agenda centers on five key themes, with VSI data as a key component.

One focus area of VOEE is evaluating career pathways to understand how Virginia's postsecondary graduates enter and move within the labor market. These analyses will draw on data collected through the VSI to answer important questions, including:

- How are regional graduates participating in local employment opportunities?
- How are graduates filling occupations not aligned with their programs of study in the local and state economy?
- What are the most common career pathways for graduates from different programs of study?

Answering questions such as these will provide a data-informed understanding of higher education's effects on career access, career progression, and wage progression in Virginia.

A related area of focus for FY25 is workforce and skill set adjacencies. This work will also rely heavily on data from the VSI. VOEE will analyze VSI data to identify new job sector relations, overlaps between different occupations and skill sets, and transferable skills. These analyses will provide a deeper understanding of workforce adjacencies and inform policy and practice around talent and workforce development.

VOEE's other three research agenda themes will also incorporate VSI data. In FY25, VOEE will shift its focus toward higher-level analysis, storytelling, and communication. This will include analyses of data from the VSI. VOEE also aims to disseminate its data and analyses more broadly in a continuing effort to become the primary source for information about education and workforce alignment in the Commonwealth. VSI data and their analyses will help position VOEE as the leader in this field. Finally, VOEE will continue to expand and enhance its Education and Workforce Alignment Dashboard this year, in part with data and findings from the VSI.

Next Steps

Over the next two years, VOEE will continue to work with all three VSI datasets to inform higher education policy and practice in Virginia.

Beyond the dashboards and analyses already described, VOEE has identified other applications for the VSI datasets, including:

- Developing an empirical education program-to-occupation (CIP-SOC) crosswalk for Virginia programs.
- Developing a graduate supply/demand model to estimate the percentage of Virginia postsecondary students who remain in a region after graduation and incorporating these estimates into the Education and Workforce Alignment Dashboard.
- Using college outcomes data to better understand how graduates from select programs transition into occupations unrelated to their field of study and, as a result, meet the need for workers in high-demand and difficult-to-fill positions.

Moving forward, VOEE will continue collaborating with stakeholders to identify further applications for these datasets and explore additional use cases as part of its ongoing research agenda.