



Pilot Profile: Virginia

The Temporary Assistance for Needy Families (TANF) Data Collaborative Pilot Initiative is a component of the TANF Data Innovation project. The 30-month pilot offered technical assistance and training to support cross-disciplinary teams of staff at eight state and county TANF programs in the routine use of TANF and other administrative data to inform policy and practice.

RESEARCH QUESTIONS. The pilot team at the Virginia Department of Social Services (VDSS) sought to develop analytical tools to help TANF case workers customize education/employment-related services to increase the likelihood of participants' labor market success after they leave the program. The team investigated which demographic characteristics, household compositions, receipt of other public benefits, and past education/employment-related activities could predict success, and how to construct an unbiased predictive tool using such variables.



The pilot team at VDSS included a mix of staff members with TANF policy, program, and data analytics expertise.

DATA LANDSCAPE. The pilot team conducted new analyses on state administrative data, linking data from four sources: TANF **enrollment data** was used to identify a cohort of TANF case leads (heads of household) who received TANF benefits during 2017 or later, then exited the program during calendar year 2019. The pilot tried to predict the labor market outcomes of these individuals within a year of exit. Predictive variables were drawn from a **cross-program data set** detailing their household's monthly use of other benefits including SNAP, Medicaid, and childcare subsidies, along with their demographics, geographic location, and household composition. The TANF program supplied information on their assigned **education/employment-related activities** as part of the program, such as vocational training, education, job search, and subsidized and unsubsidized work. Based on **Unemployment Insurance system data** from the Virginia Employment Commission, the pilot team coded various labor market outcomes before and after receiving TANF. For its analysis, the pilot team distinguished between case leads who exited TANF prior to March 2019 (whose labor market outcomes would be unaffected by the COVID-19 pandemic during the 12 months following their exit) and those who exited between March and December 2019.

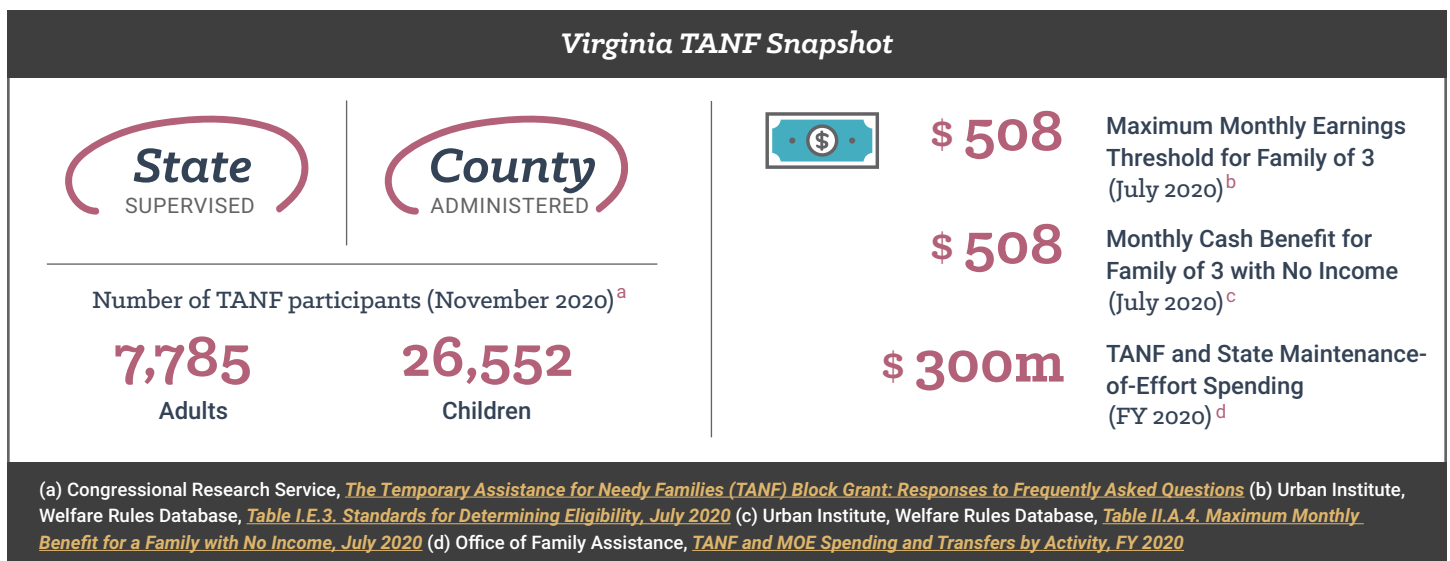
PILOT HIGHLIGHTS

The Virginia team wanted to develop a tool to help TANF case workers customize education/employment-related services to increase the likelihood of labor market success after leaving the TANF program. The team now has initial predictive analytics and variable importance models up and running to support the development of this tool. As a next step, the team plans to (1) continue refining the models with a new dataset, and (2) develop a strategy for how the analytic models can be combined to create a tool, and how the tool could be validated and deployed.

APPROACH AND RESEARCH METHODS. The pilot team used MDRC’s predictive analytics tool (comprised of three R notebooks) and variable importance analysis to design a tool to help case workers recommend the best set of services for clients. First the team selected (at random) a subset of VDSS’s cohort records with which to define and shape predictive models. They then tested these models’ performance head-to-head using the remaining records. The team initially developed four sets of predictor variables of increasing complexity – that is, incorporating an increasing number of predictive variables. The simplest set included the number of people in the household, whether the household included preschool-age children, and the head of household’s earnings for one quarter prior to entering the TANF program. More complex sets included variables such as other benefits used, additional household characteristics, additional pre-TANF employment and earning patterns, and education/employment activities engaged in during previous TANF spells. The team

then paired each set of variables with one or more modeling approaches such as logistic regression and more complex machine learning algorithms. After identifying the most promising models, the team assessed each in terms of simplicity, performance, and bias (whether the model avoided predictions that correlate with protected characteristics including race, gender, age, citizenship, and disability status).

The pilot team used variable importance analysis to examine which TANF program services were most associated with an increased likelihood of labor market success for case leads exiting TANF, controlling for other variables.



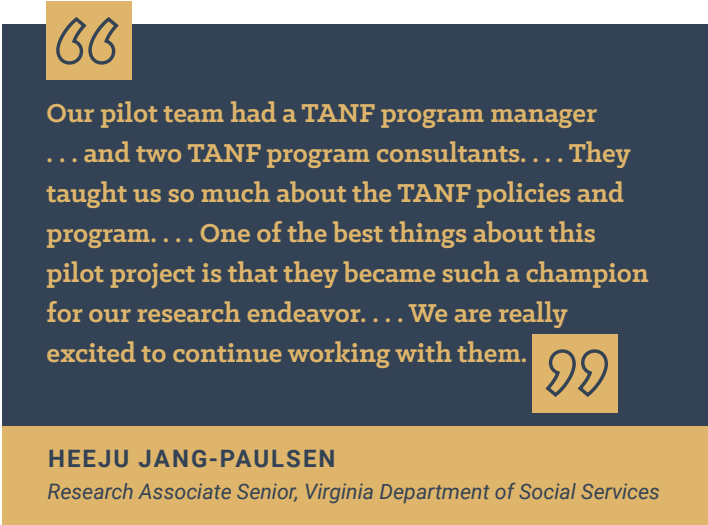
INITIAL FINDINGS AND NEXT STEPS. Key findings from Virginia’s initial analyses include the following:

- The team was able to define a few models that accurately predicted labor market outcomes after case leads exited TANF. Future labor market outcomes were heavily driven by prior labor market performance.
- The most predictive model used a generalized linear model (GLM) modeling approach.

- None of the models identified were equally effective at predicting outcomes for subgroups of participants representing protected classes. Work is ongoing to reduce and mitigate such bias.
- The team is still working on refining its variable importance analysis with the goal of making service recommendations for TANF participants at different levels of risk for poor outcomes. It is important to note that this analysis only indicates associations with the services provided, not the causal effects of these services.

Looking forward, the pilot team aims to build a second predictive model using a new data set comprised of a

TANF entry cohort, rather than focusing on the date the case leads exited from TANF. The team also plans to pursue more reliable external data to measure educational attainment and local economic conditions and collect feedback from frontline TANF workers who may ultimately use the pilot’s predictive tool. Finally, the team plans to develop a strategy for how the analytic models can be combined to create a tool, and how the tool could be validated and deployed.



Our pilot team had a TANF program manager . . . and two TANF program consultants. . . They taught us so much about the TANF policies and program. . . One of the best things about this pilot project is that they became such a champion for our research endeavor. . . We are really excited to continue working with them.

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 Research Associate Senior, Virginia Department of Social Services

This profile was based primarily on reports and presentations produced by the pilot team at the Virginia Department of Social Services. For more information, contact Heeju Jang-Paulsen, Research Associate Senior (heeju.jang-paulsen@dss.virginia.gov). The TANF Data Innovation (TDI) Project Team – which includes MDRC (lead), Chapin Hall at the University of Chicago, the Coleridge Initiative, and Actionable Intelligence for Social Policy at the University of Pennsylvania – provided technical assistance and training. Erika Lundquist of MDRC was the Virginia TDC pilot coach. This document was edited by MDRC and designed by Public Strategies.

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