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Assessing Teacher Candidate Characteristics, Clinical Placement Practices, and Employment Outcomes for the US PREP Transformed Model: Initial Results for Teacher Preparation Programs in Texas

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Summary

In this brief, we connect teacher preparation and K–12 administrative data from Texas to assess teacher candidate characteristics, clinical placement practices, and employment outcomes for the US PREP transformed model. We find that (1) candidates of color and White candidates are equally likely to participate in the transformed model; (2) teacher preparation programs and their K–12 partners place transformed model candidates into student teaching schools with more minoritized and educationally at-risk students; (3) transformed model completers of color are more likely to become employed in their student teaching district and to teach in schools with more minoritized and educationally at-risk students; and (4) transformed model completers are more likely to stay for a third year of teaching in Texas than peers with other preparation experiences. Our analyses provide stakeholders with initial evidence on the outcomes for transformed model completers and highlight opportunities to learn more about transformed model impacts through future research.

Introduction

US PREP provides technical assistance to nearly 30 university-based teacher preparation programs (TPPs) across the country. Specifically, US PREP provides a range of technical assistance supports and resources to help TPPs enact a transformed preparation model. This transformed model differs from a traditional preparation model through its emphasis on extensive opportunities to practice instruction, strong partnerships between TPPs and K–12 districts, the use of data to inform decision making, and the recruitment/development of highly-effective teacher educators. These elements are exemplified by yearlong student teaching experiences, frequent opportunities for co-teaching and high-quality feedback, regular governance meetings between TPP and K–12 district personnel, and intentionally selected and trained university supervisors (called site coordinators) and mentor teachers. Combined, these elements are expected to improve program quality and the readiness of graduates to teach.

Since early 2019, EPIC has partnered with US PREP to evaluate the implementation and impacts of its technical assistance for university-based TPPs. This has included multiple rounds of interviews with TPP and K–12 district personnel and surveys of teacher candidates, mentor teachers, and university faculty. Our analyses of these interview and survey data have returned positive findings for the transformed preparation model, including stakeholder perceptions that the transformed model facilitates more opportunities for authentic candidate practice, higher-quality feedback to candidates, closer TPP and district partnerships, and richer program data use. Many stakeholders have expressed their belief that transformed model candidates are better prepared to teach than those completing a traditional program. Our evaluation has also identified ways for US PREP to continue to refine its technical assistance, including a deeper focus on relationship building and communication in the early phases of technical assistance, more clearly articulating non-negotiable aspects of program transformation, and greater attention to the challenges of sustainability.[1]

To extend these interview and survey analyses, we have built a teacher preparation data system that connects data on TPP completers and their program experiences to employment and school-level administrative data from the Texas Education Agency (TEA). In this brief we use these data to further assess teacher candidate characteristics, clinical placement practices, and employment outcomes for the transformed model. Specifically, we ask the following questions: (1) What are the characteristics of transformed model completers? (2) What are the characteristics of the schools where transformed model completers student teach? (3) Are transformed model completers employed in a teaching position after program completion? (4) What are the characteristics of the schools where transformed model completers teach? and (5) Are transformed model completers more likely to remain in a teaching position in Texas?

From these analyses, we hope to provide US PREP, TPPs, state education agencies, and K–12 districts with further evidence on the impacts of the transformed preparation model. These data can also highlight areas in which US PREP's technical assistance is effective and areas that may need refinement.

Background

To date, EPIC's evaluation has included the 12 TPPs in US PREP's first and second technical assistance cohorts. For this brief, we leverage TPP and state-level administrative data to focus on five, Texas-based TPPs: Sam Houston State University (SHSU), Texas Tech University (TTU), the University of Houston (UH), the University of Texas El Paso (UTEP), and the University of Texas San Antonio (UTSA). TTU originated the transformed preparation model in 2011 and UH began implementing the transformed model in 2016. SHSU, UTEP, and UTSA were part of the second US PREP cohort and began their program transformation in 2019.

The data for these analyses are derived from three sources. First, the five participating US PREP institutions provided their program finisher files that detail teacher candidates who completed the program in each year. Importantly, TPPs have added fields into these finisher files so that we know the completer's student teaching location and whether the completer was in a transformed preparation model. For this brief, we analyze TPP finisher files from 2015–16 through 2020–21.[2] Second, we use employment and certification files covering all teachers in Texas public schools from 2015–16 through 2022–23. These data detail the schools in which teachers worked, how much teachers worked, the subjects they taught, and teachers' preparation and certification information. Finally, we use school level data on all Texas public schools from 2015–16 through 2021–22. These school level files include aggregate student demographics (e.g. percent economically disadvantaged students) and school personnel characteristics (e.g. teacher demographics).

The comparison group for our analyses varies across research questions. However, our primary aim is to compare transformed model completers to those with other preparation experiences. This includes peers completing a traditional program at the same TPP and those prepared through traditional or alternative routes at other TPPs. Specifically, we compare transformed to traditional model completers from the same TPP when examining completer characteristics, characteristics of student teaching and employment schools, and whether completers are employed in a teaching position. When assessing teacher retention, we compare transformed model completers to those prepared through traditional or alternative routes across TPPs. In the sections below we provide further details regarding the data, sample, and analyses for each question.

[1] Please see the following for our initial work evaluating the US PREP transformed model: EPIC Initial Site Visit Deliverable; EPIC Teacher Candidate Survey Deliverable; EPIC Teacher Educator Survey Deliverable; and EPIC Final Site Visit Deliverable.

[2] The exception to this is TTU, for whom their finisher file includes 2015–16 through 2019–20.

What are the characteristics of transformed model completers?

Table 1 presents descriptive data on the counts, demographics, and certification areas of transformed and traditional model completers from the five, Texas-based TPPs in our analysis sample. The top panel of Table 1 indicates that there are over 2,900 transformed model completers in our analysis sample—approximately 28 percent of the completers from these TPPs across the 2015–16 through 2020–21 academic years. This varies by institution based on their length of engagement with US PREP. Specifically, the transformed model was developed at TTU, and as such, all their completers went through a transformed model during our study period. UH was scaling the transformed model throughout our study period—between 2016 and 2021, UH went from 0 to nearly 100 percent transformed model completers—and had more than 50 percent transformed model completers overall. As cohort 2 institutions, SHSU, UTEP, and UTSA began engaging with US PREP more recently. Relatively few of their completers—less than five percent—went through a transformed model during our study period.

Table 1. Descriptive data for TPP completers (2015-16 through 2020-21 Completion Years)

	Transformed Model	Traditional Model	SHSU Transformed	TTU Transformed	UH Transformed	UTEP Transformed	UTSA Transformed
# Transformed Model	2,911	7,384	70	1,559	1,174	59	49
% Transformed Model	100.00	0.00	2.55	100.00	52.74	3.62	2.29
Completer Demographics							
% Female	89.78	78.27	98.57	91.60	86.48	91.53	95.92
% Black	4.85	5.48	8.70	3.53	6.84	0.00	0.00
% Hispanic	42.79	49.92	42.03	34.45	49.62	86.44	93.88
% White	45.09	39.13	46.38	59.33	29.26	13.56	6.12
% Other	7.26	5.48	2.90	2.69	14.29	0.00	0.00
Completer Certification Areas							
% Elementary Grades	71.90	45.87	100.00	84.93	54.43	76.27	30.61
% STEM	10.44	13.88	0.00	6.99	16.01	11.86	0.00
% Humanities	9.86	13.14	0.00	5.90	16.18	8.47	0.00
% ESL/Bilingual	38.27	26.58	100.00	54.59	11.84	33.90	69.39
% Foreign Language	0.69	1.21	0.00	0.13	1.53	0.00	0.00
% Special Education	19.31	8.26	12.86	33.03	3.15	1.69	0.00
% Arts/Music	1.51	10.90	0.00	0.77	2.72	0.00	0.00
% PE/Health	0.69	5.38	0.00	1.22	0.00	1.69	0.00
% Other	0.00	2.99	0.00	0.00	0.00	0.00	0.00

Note: This table displays descriptive data on transformed model and traditional model completers for the five Texas-based TPPs in our analysis sample.

The middle panel of Table 1 displays completer demographics. Overall, 90 percent of transformed model completers are female, 43 percent are Hispanic, and 45 percent are White. These demographic values vary across institutions. The bottom panel of Table 1 presents data on completer certification areas. Among transformed model completers, 72 percent earned an elementary grades license, 38 percent earned an English as a second language or bilingual license, and nearly 20 percent earned a special education license.[3] Data on certification areas, particularly for cohort 2 TPPs, show the ways in which programs initially pilot and scale up the transformed model within certain certification areas before expanding to a broader range of certification areas.

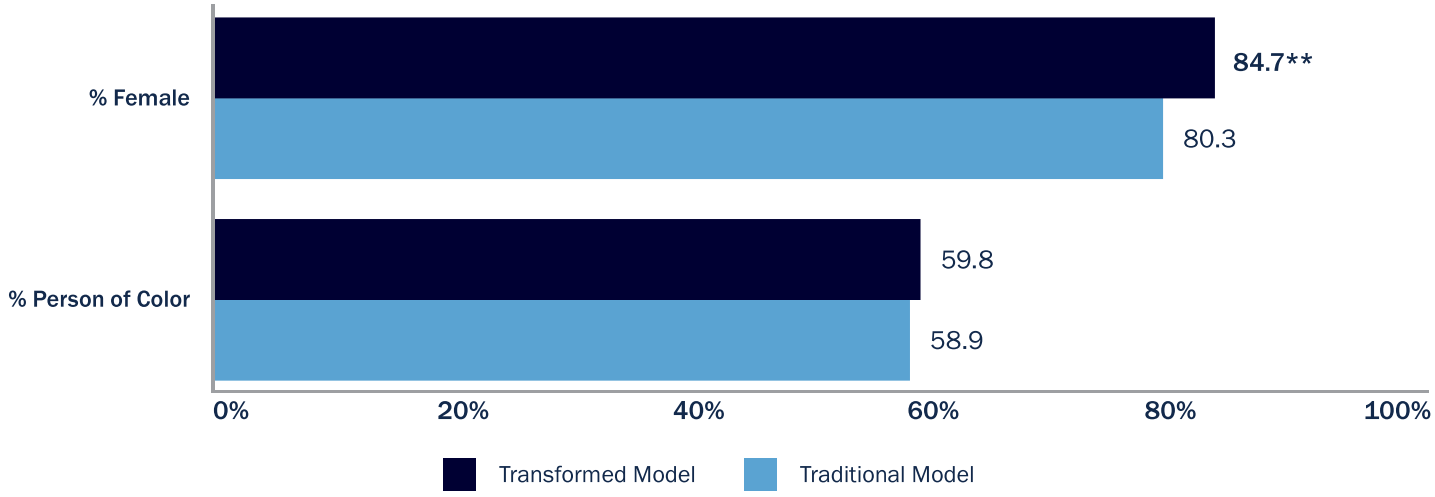
To extend this descriptive reporting, we estimated regression models to assess whether transformed model completers were more likely than those in a traditional program to be female or a person of color. Our models controlled for completion year and certification areas and included a TPP fixed effect, meaning we compared transformed and traditional model completers within the same program.[4] These analyses are important because candidates need access to high-quality preparation to ensure their readiness to be effective, day one teachers. However, the demands of the transformed model—especially yearlong student teaching—may make such a high-quality preparation experience less accessible for candidates with job and familial responsibilities.

[3] Individuals can earn a teaching license in more than one certification area. As such, values do not necessarily sum to 100.

[4] We prefer models with TPP fixed effects because they allow us to better control for program-specific factors that may be related to the transformed model and the respective outcome. However, a concern with the TPP fixed effect is that TTU completers do not contribute to model estimates (since everyone in the program is part of the transformed model).

Figure 1 displays these demographics results.[5] Comparing within programs, we find that transformed model completers are approximately four percentage points more likely than traditional model completers to be female. There is not a statistically (or practically) significant difference in the likelihood that transformed model completers are a person of color. This lack of a difference is potentially noteworthy, given concerns that the time commitment of the transformed model would make such a preparation experience less accessible for candidates balancing many demands.[6]

Figure 1. Regression estimates comparing the demographics of completers



Note: This figure presents results from regression models comparing the demographics of transformed model versus traditional model completers within the same TPPs. Models control for completion year and certification areas and include a TPP fixed effect. +, *, and ** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

What are the characteristics of the schools where transformed model completers student teach?

As part of the transformed model, US PREP engages with TPPs to deepen their K–12 district partnerships and to prioritize student teaching placements in schools serving many low-income students and students of color. Student teaching in such schools—especially with the support of a highly effective cooperating teacher—may better prepare beginning teachers to work with these student groups. As such, we assess student teaching placement practices by estimating a series of regression models where the outcome is a characteristic of the student teaching school (e.g. percent economically disadvantaged students) and we include separate indicator variables for whether the TPP placed a transformed model candidate or a traditional model candidate at the school in the given year. Importantly, these models include a TPP-by-region fixed effect,[7] meaning we compare the characteristics of student teaching schools for transformed and traditional model candidates to the characteristics of the schools, within the same region, in which the TPP did not place a candidate.[8]

Figure 2 presents results from models assessing K–12 student demographics and program participation measures at student teaching schools. Relative to schools that did not host a student teacher, we find that placement sites for transformed model candidates enroll a significantly higher percentage of economically disadvantaged students, students of color, educationally at-risk students,[9] and limited English proficient students. For example, TPPs place transformed model candidates into schools where, on average, 71 percent of the students are economically disadvantaged. By comparison, only 63 percent of students are designated as economically disadvantaged in non-student teaching schools. There are no significant differences in the characteristics of the K–12 students in schools hosting a traditional model student teacher versus the characteristics of students in non-placement sites.

[5] In answering our research questions, Figures 1–7 display predicted probabilities from our regression models (rather than coefficient estimates). This approach allows for an easier interpretation of results.

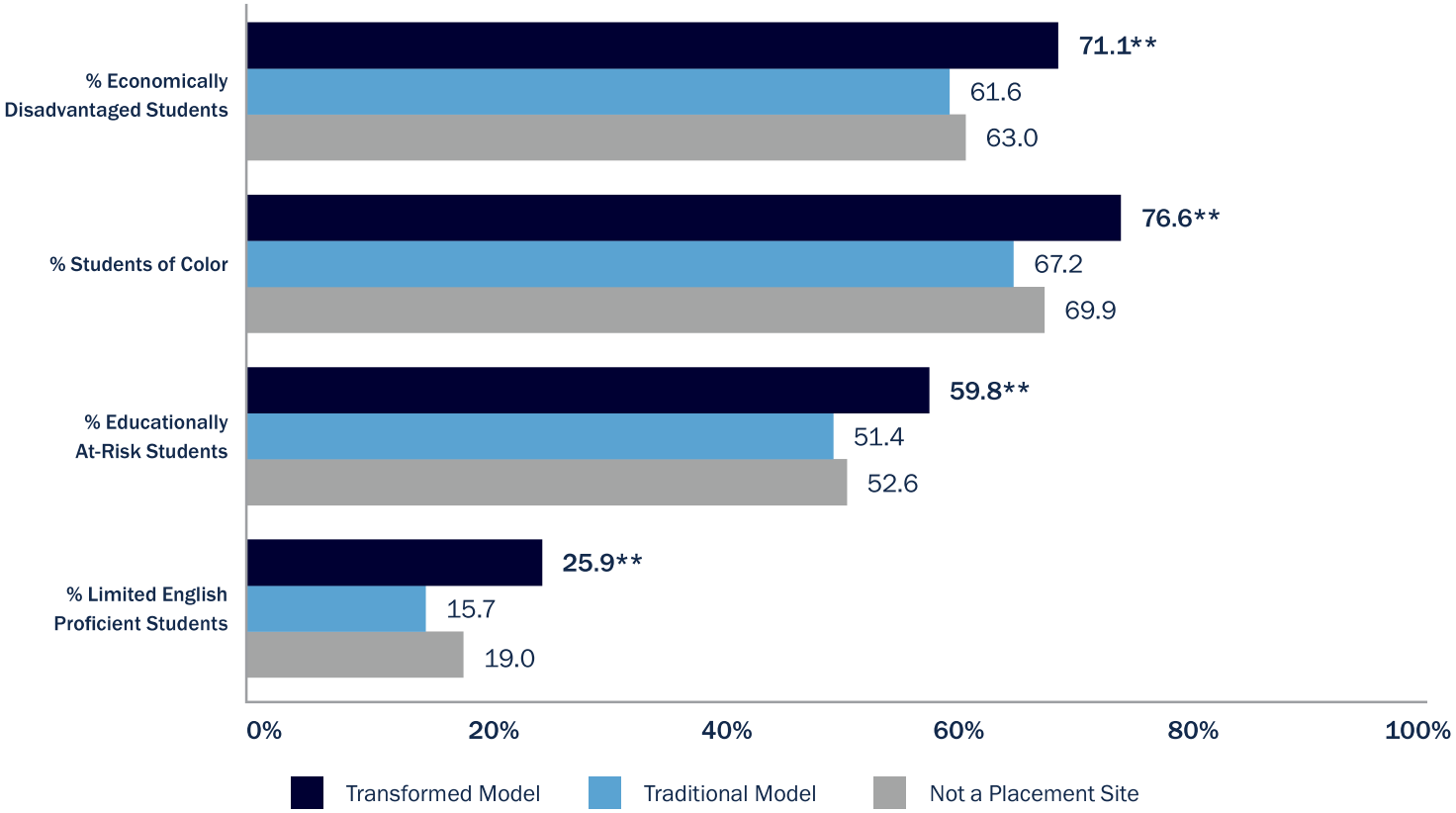
[6] We acknowledge that a teacher candidate's race/ethnicity is an imperfect proxy for factors (e.g. familial responsibilities, financial strain, transportation concerns) that may make it challenging to complete a transformed model. Nonetheless, prior work highlights the challenges that candidates of color face in completing teacher education (Carver-Thomas, 2018). Further work needs to explore a broader range of candidate characteristics and how they are related to transformed model completion.

[7] Texas has 20 education regions. Please see the following for a region map: tea.texas.gov/about-tea/other-services/education-service-centers/education-service-centers-map

[8] These models also control for the year of the student teaching placement.

[9] Texas defines educationally at-risk students as those who are at-risk of not meeting standards or dropping out of school. Please see the following for specific criteria: ritter.tea.state.tx.us/peims/standards/1314/e0919.html

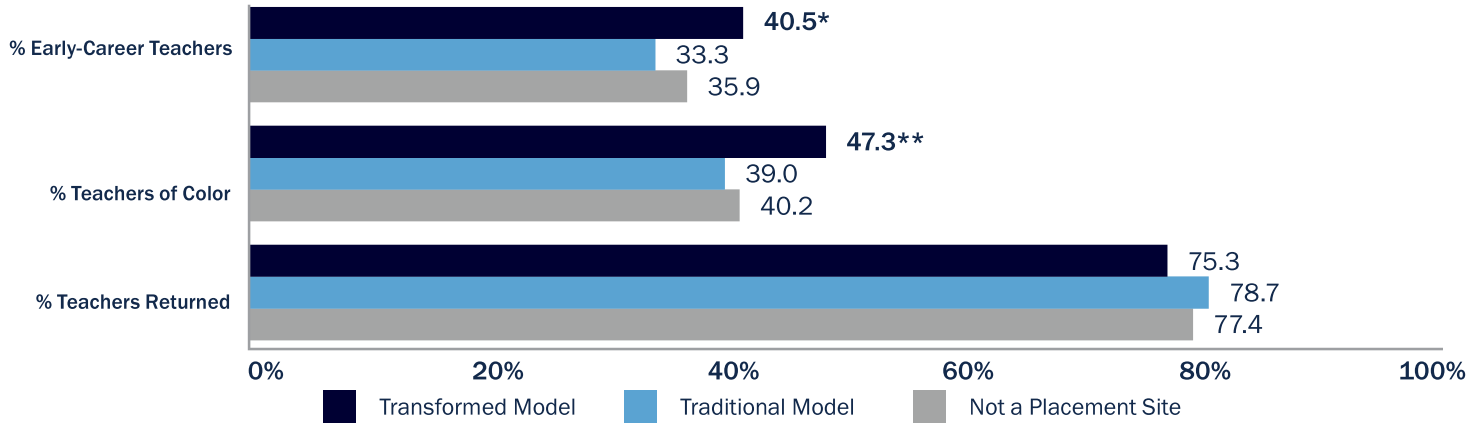
Figure 2: Regression estimates comparing K–12 students in student teaching placement sites



Note: This figure presents results from regression models in which we compare the characteristics of schools that hosted a transformed model student teacher or a traditional model student teacher to the characteristics of schools that did not host a student teacher from the respective university. Models control for the year of student teaching placement and include a TPP-by-region fixed effect. +, *, and ** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

Figure 3 displays results from models assessing characteristics of the teacher workforce in student teaching schools. Relative to schools that did not host a student teacher, we find that sites for transformed model candidates employed a higher percentage of early career teachers[10] and teachers of color. For instance, TPPs place transformed model candidates into schools where, on average, 47 percent of the teachers are people of color. By comparison, only 40 percent of the teachers are people of color in non-student teaching schools. There are no significant differences in the teacher retention rates for schools hosting a transformed model candidate versus non-placement sites. Likewise, there are no significant differences in the teacher workforce characteristics for schools hosting a traditional model candidate versus non-placement sites.

Figure 3: Regression estimates comparing teacher workforce characteristics in student teaching placement sites



Note: This figure presents results from regression models in which we compare the characteristics of schools that hosted a transformed model student teacher or a traditional model student teacher to the characteristics of schools that did not host a student teacher from the respective university. Models control for the year of student teaching placement and include a TPP-by-region fixed effect. +, *, and ** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

[10] We define early-career teachers as those with five or fewer years of experience.

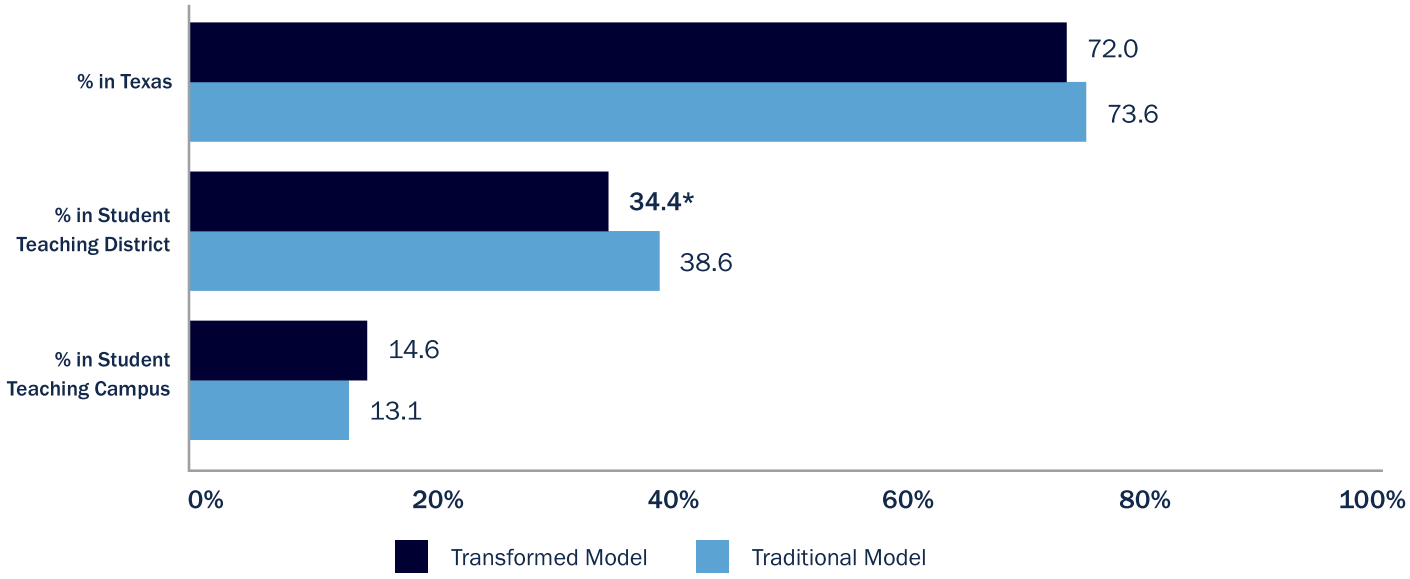
Are transformed model completers employed in a teaching position after program completion?

We begin these analyses by reporting the percentage of candidates who are teaching in Texas public schools in the year following program completion. Among transformed model completers, we find that nearly 83 percent teach in Texas public schools in the following year. By comparison, the value for traditional model completers is 69 percent. Approximately 44 percent of transformed model completers teach in their student teaching district and 15 percent teach in their student teaching school in the year following program completion. The corresponding values for traditional model completers are 34 and 13 percent, respectively.

These descriptive data are valuable but do not account for factors that may influence completion of a transformed model and subsequent employment. That is, certain TPPs may have higher employment rates than other TPPs regardless of the transformed model. As such, we estimated a series of regression models to assess whether transformed model completers are teaching in the year after program completion. These analyses control for candidates' completion year, certification areas, and demographics and include a TPP fixed effect, such that we are comparing the employment outcomes of transformed and traditional model completers from the same program. While it is important to assess whether transformed model completers are teaching in any Texas public school, we are particularly interested in whether they are more likely to be employed in their student teaching district or campus. Such results may signal closer TPP-district partnerships. Becoming employed in the student teaching district/campus may also suggest that the beginning teacher has greater familiarity with their work environment.

Figure 4 displays these employment results. Comparing within TPPs, we find that transformed and traditional model completers are equally likely to teach in Texas public schools in the year after program completion. Transformed model completers are significantly less likely than traditional model completers—by approximately four percentage points—to teach in the same district in which they student taught.[11] Further analyses (not displayed) show that employment in the student teaching district varies by completer demographics. In particular, transformed model completers of color are nearly 17 percentage points more likely than White transformed model completers to secure a teaching position in their student teaching district. Finally, Figure 4 shows that transformed model completers are no more or less likely to teach at their student teaching campus in the year after program completion. However, among those who become employed in their student teaching district, transformed model completers are 10 percentage points more likely than traditional model completers to remain at their student teaching school (not displayed).

Figure 4: Regression estimates comparing the likelihood of teaching in the year after program completion



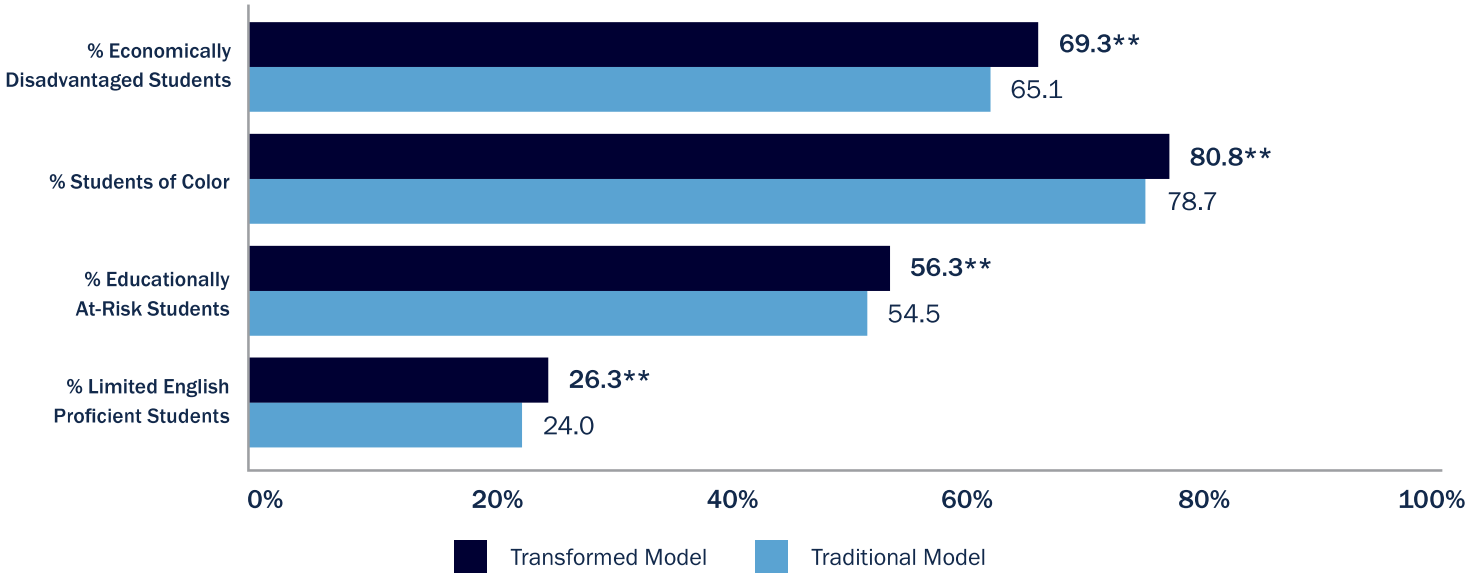
Note: This figure presents results from regression models comparing the likelihood of teaching in the year after program completion for transformed and traditional model completers within the same TPPs. Models control for candidates' completion year, certification areas, and demographics and include a TPP fixed effect. +, *, and ** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

[11] It is important to note that when enacting a transformed model many TPPs choose to partner with fewer districts for their student teaching placements. For example, prior to engaging with US PREP (in 2016), UH placed student teachers into 25 districts. By 2021, when nearly all UH candidates completed a transformed model, UH placed student teachers in only 14 districts. These placement practices may influence the likelihood of securing a teaching position in the student teaching district.

What are the characteristics of the schools where transformed model completers teach?

The results in Figures 2 and 3 showed that TPPs place transformed model candidates into student teaching sites with higher percentages of minoritized and educationally at-risk students and with higher percentages of early-career teachers and teachers of color. A natural extension of these analyses is to assess the characteristics of the schools in which transformed model completers teach. These models are directly connected to the mission of US PREP—building teacher candidate knowledge and competency so that they can positively impact K–12 students, especially those who have been historically marginalized. As such, we estimated regression models where the outcome is a characteristic of a completer's initial employment school (e.g. percent economically disadvantaged) and we control for candidates' completion year, certification areas, and demographics. These models include a TPP fixed effect, meaning we compare the characteristics of initial employment schools for transformed model completers relative to traditional model completers from the same program.

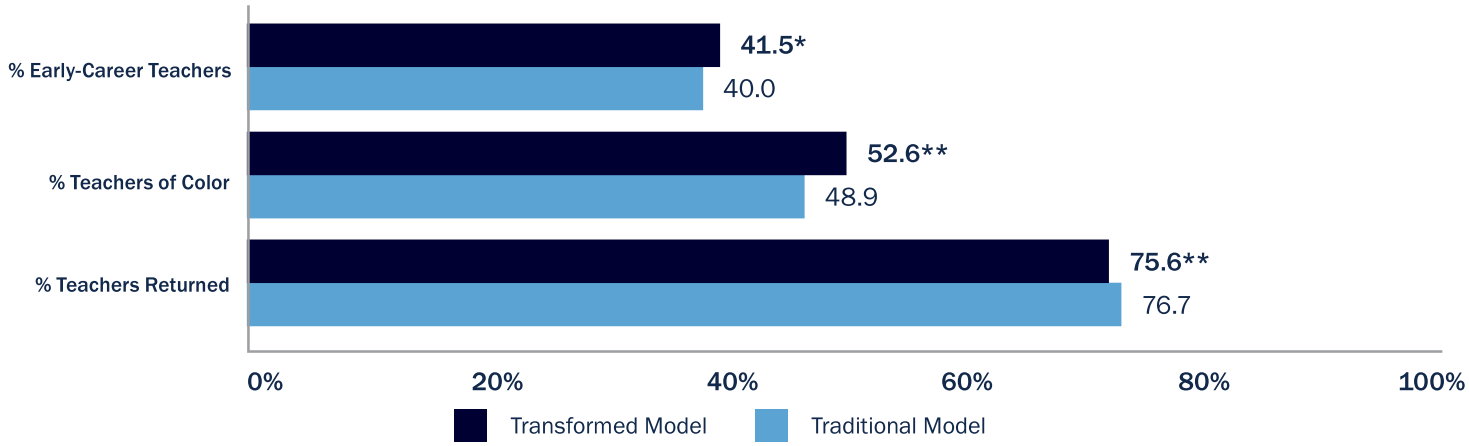
Figure 5: Regression estimates comparing K–12 students in initial employment schools



Note: This figure presents results from regression models in which we compare the characteristics of initial employment schools for transformed model completers to the characteristics of initial employment schools for traditional model completers. Models control for candidates' completion year, certification areas, and demographics and include a TPP fixed effect. +, *, and ** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

Figure 5 displays results from models assessing K–12 student demographics and program participation measures at initial employment schools. Relative to the schools where traditional model completers work, we find statistically significant (but modest) differences in the employment schools of transformed model completers. In particular, we find that transformed model completers work in schools with approximately four percent more economically disadvantaged students and two percent more students of color, educationally at-risk students, and limited English proficient students, respectively.

Figure 6: Regression estimates comparing teacher workforce characteristics in initial employment schools



Note: This figure presents results from regression models in which we compare the characteristics of initial employment schools for transformed model completers to the characteristics of initial employment schools for traditional model completers. Models control for candidates' completion year, certification areas, and demographics and include a TPP fixed effect. +, *, and ** indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

Figure 6 presents results from models assessing characteristics of the teacher workforce in initial employment schools. Compared to the employment schools for traditional model completers, we find that transformed model completers work in schools with higher percentages of early-career teachers and teachers of color. For example, transformed model completers secure teaching positions in schools where approximately 53 percent of the teacher workforce are persons of color, relative to 49 percent for traditional model completers. Likewise, transformed model completers work in schools with slightly lower teacher retention rates.

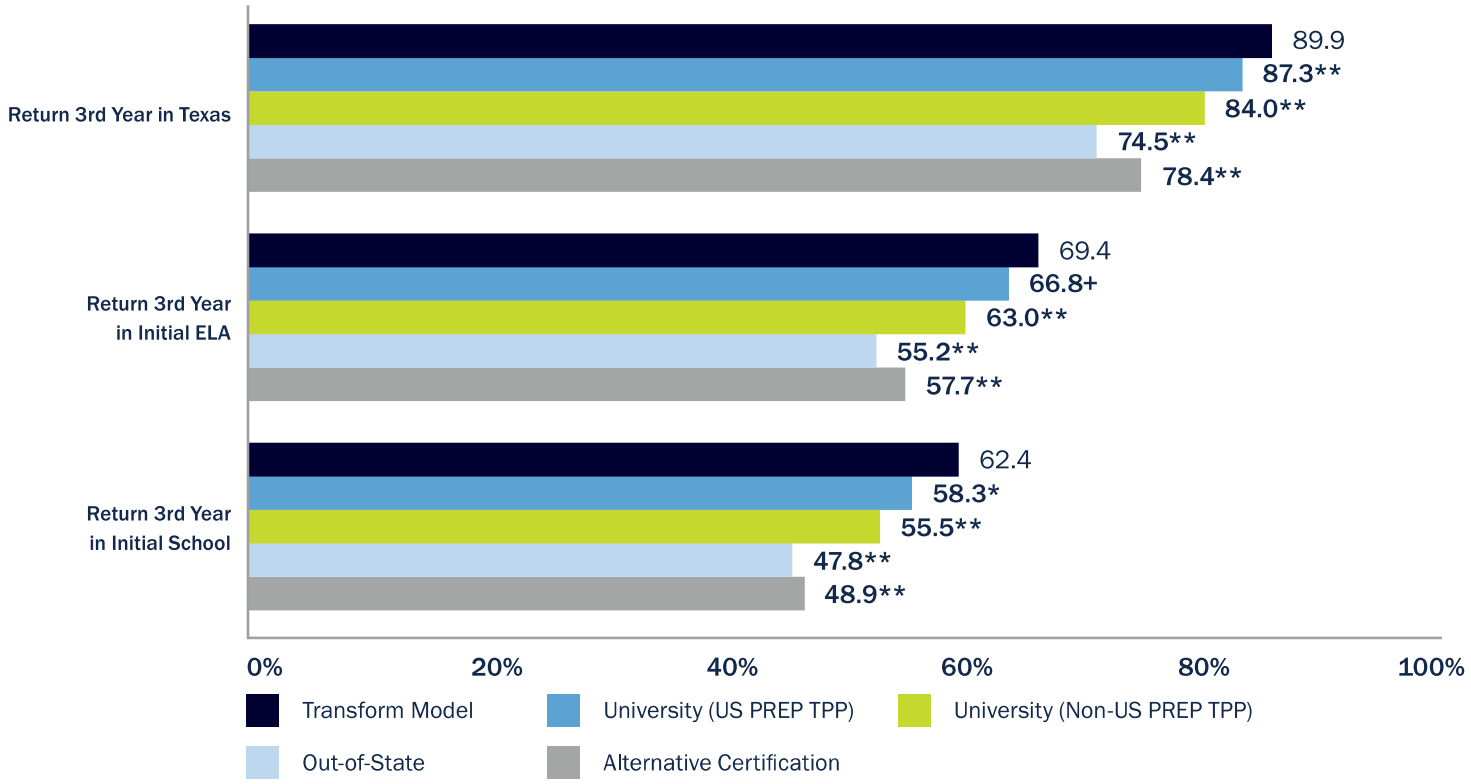
Further analyses (not displayed) show significant differences in these employment school characteristics based on completer demographics. Specifically, we find that transformed model completers of color teach in K–12 schools with more minoritized and educationally at-risk students, more teachers of color, and lower teacher retention rates than their White transformed model peers. For instance, among transformed model completers, completers of color teach in schools in which the percentage of economically disadvantaged students is 14 percentage points higher—76 to 62 percent—than the schools in which White transformed model completers work.

Are transformed model completers more likely to remain in a teaching position in Texas?

Retaining teachers benefits student achievement, school culture, and district finances and may be increasingly important as K–12 schools help students re-engage with learning in the aftermath of the COVID-19 pandemic. Furthermore, prior studies show that high-quality teacher preparation predicts early-career teacher retention.

With these motivations, we estimated a series of regression models to assess whether transformed model completers were more likely to persist in teaching. These analyses focused on five cohorts of first-year teachers in Texas public schools in the 2016–17 through 2020–21 academic years and estimated the likelihood that these beginning teachers would return for a third year of teaching in any Texas public school, in their initial hire school district, and in their initial hire school. These models included controls for completers' first year teaching, certification areas, demographics, and characteristics of their initial employment school. Our retention models also included a school fixed effect, meaning we compare the retention outcomes of transformed model completers to those of other beginning teachers working in the same schools. In particular, we compare the retention outcomes of transformed model completers to other teachers prepared (1) at one of the five university-based TPPs in our analysis sample; (2) at another university-based TPP in Texas (not in the US PREP coalition during our study period); (3) at an out-of-state institution; and (4) through an alternative (non-university based) certification program in Texas.

Figure 7: Regression estimates for retention into a third year of teaching in Texas



Note: This figure presents results from regression models in which we compare the likelihood that beginning teachers return for a third year of teaching in Texas public schools, in their initial hire district, and in their initial hire school. Models control for completers' first year of teaching, certification areas, demographics, and characteristics of the initial employment school. Models also include a school fixed effect. +, *, and ** indicate statistical significance between transformed model completers and the specified teacher preparation group at the 0.10, 0.05, and 0.01 levels, respectively.

Figure 7 displays results from our retention analyses. As shown in the top panel, we find that transformed model completers are significantly more likely to return for a third year of teaching in Texas than all our comparison groups. Ninety percent of transformed model completers return for a third year of teaching in Texas. This is nearly three percentage points higher than other completers from the same universities, six percentage points higher than completers from different Texas universities, 15 percentage points higher than completers from an out-of-state institution, and 11 percentage points higher than those completing an alternative certification program.

Results are similar when assessing the likelihood of returning for a third year of teaching in the initial hire district and in the initial hire school (middle and bottom panels of Figure 7). Across all comparisons, transformed model completers are significantly more likely to return than peers teaching in the same schools. Nearly 70 percent of transformed model completers return for a third year of teaching in their initial hire district and more than 62 percent return to their initial hire school.

Discussion

In this brief we connected teacher preparation and K–12 administrative data from Texas to assess teacher candidate characteristics, clinical placement practices, and employment outcomes for the US PREP transformed model. Overall, our analyses revealed several key takeaways and opportunities for future research.

First, when comparing within TPPs, we found that transformed and traditional model completers were equally likely to be a person of color. This result is noteworthy, given that the requirements of a transformed model, especially yearlong student teaching, may make it more challenging for certain candidates to pursue and complete. While this empirical finding is suggestive of positive news—the transformed model is equally accessible to candidates of color—it is also worth noting the limitations of these analyses. We lack richer and more complete data on candidate characteristics. US PREP, TPPs, and K–12 districts would benefit from future analyses that consider whether the candidate is a first-generation college student or a community college transfer and candidates' financial status and familial responsibilities.

Second, TPPs and their K–12 district partners place transformed model candidates into student teaching schools with more

minoritized and educationally at-risk students. Such placements may better prepare candidates to work with these students as in-service teachers. Furthermore, such placements align with US PREP's emphasis on TPPs serving historically marginalized student populations. One limitation of these analyses, however, is our lack of data linking candidates to their cooperating teacher. Given prior studies showing the importance of cooperating teachers, future work should assess whether transformed model completers were matched to better credentialed or more effective teachers. These analyses will better inform the placement practices of TPPs and their K–12 partners.

Third, we found differences in the likelihood of becoming employed in the student teaching district and in the characteristics of employment schools by candidate race/ethnicity. Transformed model completers of color are 17 percentage points more likely than White transformed model completers to secure a teaching position in their student teaching district. Likewise, transformed model completers of color teach in K–12 schools with more minoritized and educationally at-risk students than their White transformed model peers. These results should be interpreted cautiously, as they come from a limited number of TPPs.

However, there are positive takeaways from these findings—i.e. transformed model completers of color staying in their student teaching districts and teaching marginalized students—and reasons for TPPs to further examine the connections between clinical placement and employment locations, especially for White candidates.

Finally, our retention analyses show that transformed model completers are more likely to stay for a third year of teaching in Texas—overall, in their initial hire district, and in their initial hire school—than peers with other preparation experiences. These retention differences are large in magnitude when comparing transformed model completers versus out-of-state prepared and alternative certification teachers. The differences are more modest in magnitude (2–4 percentage points) when comparing transformed model completers to others from a US PREP supported institution. Nonetheless, these results suggest that completing a transformed preparation model increases early-career teacher retention. These retention analyses should be repeated in the future, with data from additional TPPs in the US PREP coalition, and coupled with analyses on the instructional effectiveness of transformed model completers.

For more on this topic:

Bastian, K.C. Ducille, C., & Fuller, S.C. (2021). Transformation Through Technical Assistance: Analyses of Survey Data for Teacher Preparation Programs in the US PREP Coalition. Available from: epic.unc.edu/wp-content/uploads/sites/1268/2023/05 Transformation-through-Technical-Assistance.pdf.

Carver-Thomas, D. (2018). *Diversifying the Teaching Profession: How to Recruit and Retain Teachers of Color.* Palo Alto, CA: Learning Policy Institute.

Gottlieb, J.J. & Kirksey, J.J. (2022). Innovations in University-Based Teacher Preparation: Comparing the 'Grow Your Own' Alternative to the Traditional Program at Texas Tech. Available from: ttu-ir.tdl.org/server/api/core/bitstreams/75abbc49-47b0-4466 a209-55d4fd35e1c0/content

Kirksey, J.J. & Gottlieb, J.J. (2023). Teacher Preparation Goes Virtual in the Wild West: The Impact of Fully Online Teacher Preparation in Texas. Available from: ttu-ir.tdl.org/server/api/core/bitstreams/12d8c126-06d9-4e90-bc27-63dd5d078344 content

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