TEXAS A&M UNIVERSITY
The Bush School
of Government & Public Service

Assessing the Dual Credit Landscape in Texas

Final Capstone Report

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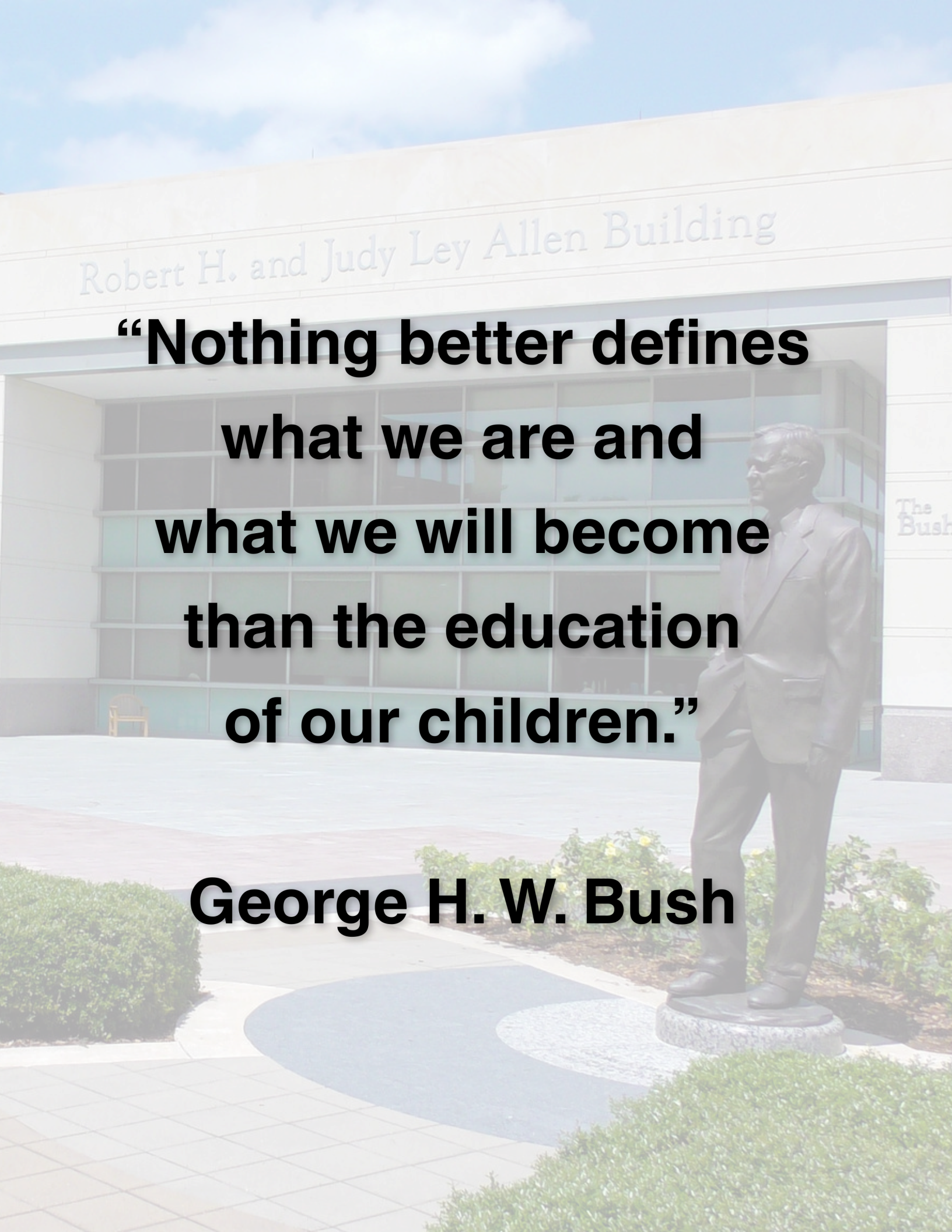


“Nothing better defines what we are and what we will become than the education of our children.”

George H. W. Bush

Executive Summary

The Texas Education Agency (TEA) aims to enhance the program monitoring and evaluation of dual credit partnerships across Texas by establishing a centralized, regularly updated database of Dual Credit (DC) Memoranda of Understanding (MOUs). Despite the Texas Education Code's requirement for Institutions of Higher Education (IHEs) to post their MOUs online, compliance has been inconsistent. Even when MOUs are posted online, the process of finding these agreements and collecting information from them is a substantial undertaking. This report, prepared by a team of Master of Public Service and Administration students from the Bush School of Government and Public Service at Texas A&M University, outlines the efforts to support TEA in creating a more efficient and transparent MOU data collection process, and the creation of a dataset that details the contents of current MOUs.

Background

What is Dual Credit?

Established in 1995, dual credit programs allow eligible high school students to take college-level courses and earn both high school and college credit simultaneously. Dual Credit enrollment among students in Texas has consistently increased year-over-year since 1999 (except during the pandemic), reaching a record high of over 225,000 in the Spring of 2024. Key features of dual credit include contracts between partnering school districts and/or high schools (Partners) and IHEs as MOUs. These agreements are often customized to meet local needs.

Who Benefits From Dual Credit?

High School students have the opportunity to gain early college experience and accelerate degree completion as the primary beneficiaries of dual credit. Families can afford college courses at reduced cost, alleviating the financial burden of college education. Schools and colleges are able to form strengthened partnerships that improve educational outcomes. The Texas Education System as a whole receives a notable increase in postsecondary enrollment and success.

Who is our Client?

The Texas Education Agency oversees the implementation of dual credit programs across Texas. They set statewide goals in collaboration with the Texas Higher

Education Coordinating Board (THECB) and the State Board of Education (SBOE), providing guidance on MOU requirements.

Project Goals

From August 2024 to May 2025, we collaborated with TEA to lay the foundation for a comprehensive system to track and organize Dual Credit MOUs statewide. The core purpose of our project was to establish a new comprehensive data source of Dual Credit MOUs that could be used for program monitoring and evaluation. Throughout this process, our team also assessed the dual credit landscape in Texas and evaluated IHE compliance in posting MOUs publicly.

Overall, our work agreement with TEA was designed with the following goals in mind:

- Make MOUs publicly available to parents and students.
- Make MOUs more accessible to TEA.
- Make a dataset for TEA.
- Synthesize findings for use by TEA.

Methodology

We worked with TEA to establish the scope of the project, then designed methods to collect 26 unique variables from 2,470 total MOUs. We utilized four phases for collecting MOUs, scraping data, analyzing our results, and formulating recommendations.

Phase 1: Document Collection

- Manually identified all available MOUs from IHE websites.
- Downloaded MOUs into one repository using web scraping.
- Converted collected MOUs to machine-readable formats using optical character recognition (OCR) software.
- Contacted IHEs whose MOUs weren’t public in order to retrieve them.

Phase 2: Data Collection

- Identified list of 26 variables to collect based on a sample of MOUs, client preferences, and legal requirements.
- Manually scraped MOUs for variable values with assistance from Notebook LM.
- Designed Python code to automatically scrape data from large sets of uniform MOUs.
- Conducted random quality assurance checks of observations and full “sweeps” of selected variables.

Phase 3: Analyzing Findings

- Compiled dataset of 26 variables from 2,322 MOUs.
- Added school district codes, creating the potential for TEA to merge our data with existing datasets.
- Generated summary statistics.

Phase 4: Presenting Recommendations

- Assessed the current state of the dual credit landscape in Texas.
- Designed a standardized MOU template.
- Provided recommendations to TEA to improve future data collection.

Findings

Our report highlights several challenges, including MOUs not being posted on IHE websites or being difficult to find, ambiguous language, and a lack of standardization among MOUs broadly.

Our analysis from the collected MOUs provides a comprehensive overview of dual credit agreements across Texas, based on 1,705 active MOUs between 73 public IHEs and 1,197 public Partners.

Key takeaways from the capstone experience itself emphasize the importance of team structure and communication, the limitations of AI tools without human interpretation, and the need for additional time to compensate for delays and incomplete information. Key findings include:

Agreement Duration and Coverage: The MOUs in our dataset are active anywhere from 2020 through 2029,[1] offering insights into the structure, accessibility, and regulatory compliance of dual credit programs. Just over half (51%) are short-term agreements lasting under two years. Dual credit partnerships are present in all 20 TEA regions, with 86% of Texas school districts participating in at least one active agreement as of 2024. Most MOUs involve school districts (77%), 23% involve individual high schools, online schools, or specialized programs, including Early College High Schools (ECHS) and Pathways in Technology Early College High Schools (P-TECH).

Legally Required Information: The majority of MOUs meet key legal requirements, with 77% aligned to state goals and 88% publicly available. However, only about half include required course crosswalks within the MOU (some included them elsewhere).

Financial Responsibility: Although dual credit is promoted as a cost-effective pathway to higher education, financial responsibilities vary widely. Only about 60% of MOUs explicitly reference the Financial Aid for Swift Transfer (FAST) program, and tuition and textbook costs often fall to students and high schools. The FAST program, created by the passage of House Bill 8 in 2023, enables eligible students to enroll in dual credit courses at no cost. More than half of the agreements do not address transportation expenses.

Program Design: Most MOUs include both academic and technical course offerings, support online instruction, and allow out-of-district students to participate. Instructional responsibilities are typically shared between IHEs and Partners, and nearly all agreements reference data-sharing practices. This dataset focuses exclusively on MOUs from public IHEs and public Partners. It excludes charter schools, private institutions, and single-course agreements. All findings are based solely on the contents of the MOUs, with no external documents or inferred information considered.

[1] Some MOUs in our database may have been active as early as 2017. This is because our criteria for inclusion, in regards to date, was that they be active on or after January 1st, 2020.

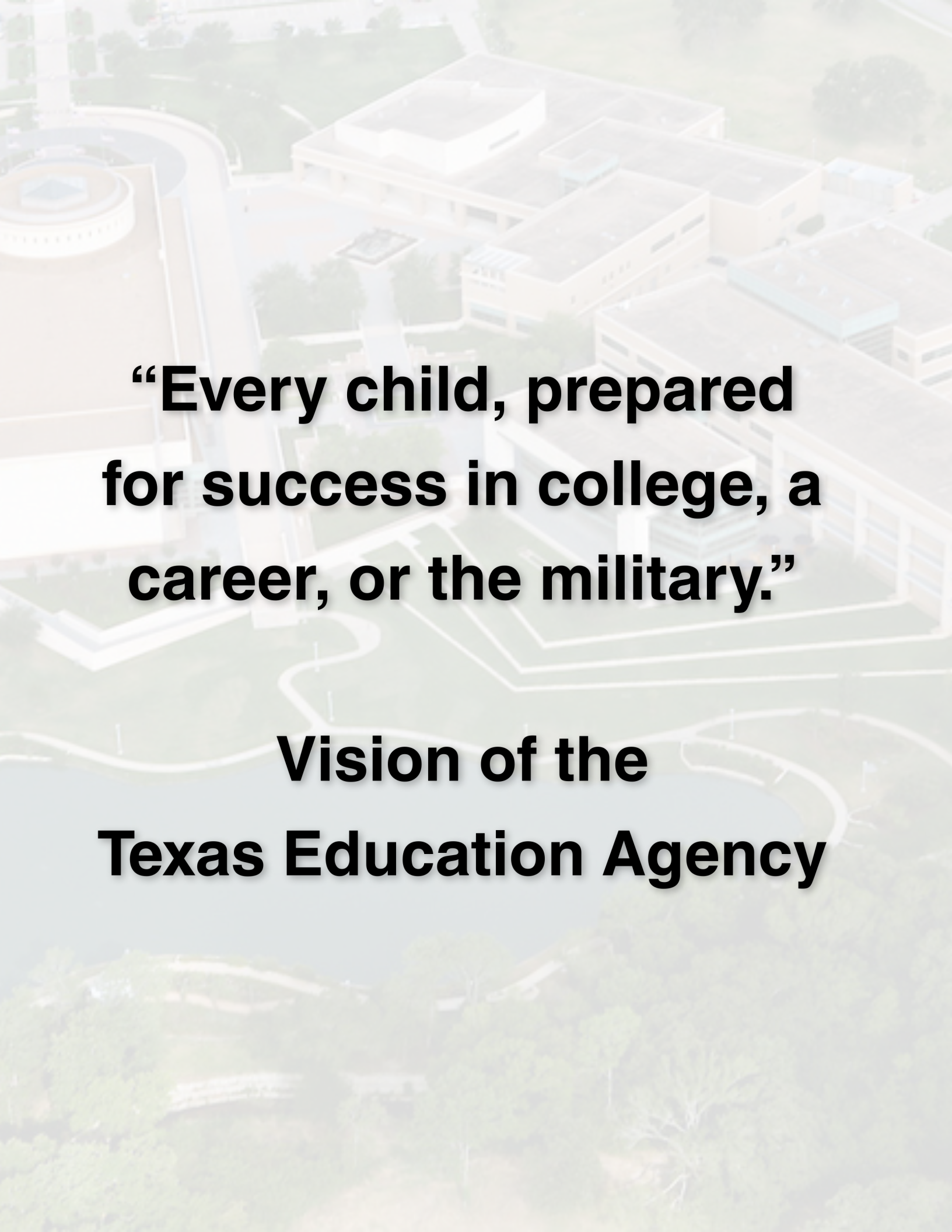
Recommendations

To improve data collection for TEA, accessibility for parents and students, and program design and compliance for school districts and high schools, we provide the following recommendations:

1. **All Dual Credit Programs use our Standard MOU Template**: Our team designed an MOU template, attached in Appendix A, for TEA to distribute and amend as necessary. The template has fillable sections with legally required information and sections for Partners to add information unique to their program design. Using a standard MOU template will make data collection more efficient for TEA, improve Partner compliance, and increase accessibility for parents and students.

2. **ISDs submit MOUs Directly to TEA**: ISDs are currently only required to post their MOUs on their websites. Requesting or requiring ISDs to directly submit MOUs to the agency will improve the speed of data collection for TEA and streamline the compliance process for Partners. Alternatively, ISDs could provide links to where the MOU is posted online.

3. **Digital-Only MOUs**: We found many MOUs were provided as low-quality scans of printed documents with handwritten elements, making data collection more difficult and time-consuming. TEA should provide a template with digital signature capabilities and request digital-only copies of machine-readable MOUs to facilitate faster and more accurate data collection. Digital-only copies would limit the challenges from scanned and hand-signed documents.



“Every child, prepared for success in college, a career, or the military.”

Vision of the Texas Education Agency

Project Background

The Texas Education Agency aims to enhance the program monitoring and evaluation of dual credit partnerships across Texas by establishing a centralized, regularly updated database of Dual Credit (DC) Memoranda of Understanding. Although the Texas Education Code requires IHEs to post their MOUs online, this requirement has not always been fulfilled. In addition, information within MOUs is often inconsistent. TEA envisions a streamlined solution to capture all DC MOUs statewide, supporting the agency's ability to monitor programs, identify gaps in dual credit coverage, and assess institutional compliance with state requirements.

Building on TEA's vision, this report presents the work of a team of Master of Public Service and Administration students from the Bush School of Government and Public Service at Texas A&M University. From August 2024 to May 2025, under faculty supervision and in collaboration with TEA, our team helped lay the foundation for a more efficient and transparent MOU data collection process. This project marks the first of the Bush School's contributions to supporting TEA in establishing a comprehensive and accessible system for tracking and organizing Dual Credit MOUs across Texas.

As part of this project, our team assessed the broader dual credit landscape in Texas, evaluated IHE compliance with the legal requirement to publish MOUs online, and collected as many publicly available agreements as possible. Through this process, we also encouraged greater transparency among institutions. In close collaboration with TEA, we identified key indicators for analysis, built a repository of MOUs in machine-readable PDF format, and developed Python scripts to facilitate data processing.

This report presents the culmination of our efforts. It includes a summary of our methods, key findings, and policy recommendations, as well as the dataset and coding tools we developed. A glossary of terms can also be found in Appendix G. Together, these deliverables contribute to TEA's long-term goal of building a more comprehensive and accessible MOU data infrastructure for the state.

The key project goals include:

- Assessing the dual credit landscape in Texas.
- Encouraging IHEs to make their MOUs publicly available online.

- Evaluating IHE compliance with the legal requirements to publish MOUs.
- Providing publicly accessible links to MOUs or sharing them directly.
- Offering policy recommendations for future data collection efforts.

Specific data collection objectives include:

- Collecting MOUs in machine-readable PDF format in a single repository.
- Developing Python (and other) scripts for data processing.
- Creating a dataset of key MOU indicators in collaboration with TEA.
- Summarizing findings and statistics in a final report.
- Conducting random quality assurance checks to ensure data integrity.

Literature Review

Dual Credit Programs

Established in Texas through Senate Bill 1 in 1995, dual credit (DC) programs allow eligible high school students to take college courses while simultaneously earning both their high school diploma and a college degree (Texas Education Code, 2023). These programs are typically implemented through partnerships between high schools, school districts, colleges, and universities that provide an opportunity for students to advance their academic and career pathways while in high school. The nature of the partnerships is customized to fit the needs, capacities, and interests of the entities involved and tends to vary in their design (Miller et al., 2017).

The state of Texas expects DC programs to adhere to legal frameworks established at the federal, congressional, and state levels. The Texas Higher Education Coordinating Board and the Texas Education Agency established statewide goals for dual credit programs along with a list of required items to be addressed in an MOU between partnering parties (high schools and school districts) and IHEs effective in 2018. According to House Bill 1638, “these statewide goals address enrollment in and acceleration through postsecondary education, performance in college-level coursework, and strong academic advising” (Texas Education Agency, 2018).

At the local level, Texas school districts and IHEs are required to complete an MOU that explains the terms of their partnership prior to administering dual credit courses. TEA has set clear guidelines for what should be included in the local agreement, such as listing eligible course offerings, criteria for student participation, class location and composition, faculty selection and evaluation processes, curriculum content, instructional methods and grading practices, academic policies and support services, credit transcription procedures, funding structures, and defined course sequences where applicable (Texas Education Agency, 2020). An MOU, in this context, is an agreement signed by the IHE and the partnering school, detailing the specifics and responsibilities of each party within the dual credit program.

Dual credit courses are taught by approved instructors with a focus on fulfilling specific statewide goals. The benefits of taking dual credit courses as a high school student include a lower, and in some cases free, cost of college tuition, a smoother transition into college, and the ability to complete a postsecondary degree faster with the transfer of credits (Texas Education Agency, 2024).

Broader Texas Statistics

The Texas Higher Education Data website provides an overview of the landscape of dual credit programs in Texas. Their findings indicate that the overall student participation in dual credit has continued to increase over time. In Spring 2024, there were 225,636 students enrolled in dual credit, with 96% of them enrolled in Texas public universities and community colleges. This is up from the 203,585 students enrolled across all institutions in Texas in Spring 2023 and the 11,054 students enrolled in Spring 2000, when the state began tracking enrollment (Texas Higher Education Coordinating Board, 2025).

Dual Credit's Role in Higher Education and Workforce Development

Dual credit programs play a vital role in preparing students for college by exposing them to college-level coursework (Villarreal, 2017). This early experience enhances academic readiness, increases college enrollment and persistence, and improves graduation rates while reducing financial burdens (Dai, 2020; Daniyelyan, 2020; Villarreal, 2017). Research shows that dual credit participation leads to higher high school graduation rates, increased university admissions, and greater post-secondary enrollment (Villarreal, 2017). At the community college level, it more than doubles certificate attainment and nearly triples associate degree completions within two years

(Villarreal, 2017). For bachelor's degrees, it notably accelerates graduation, improving four-year, six-year, and eight-year completion rates (Villarreal, 2017).

Student Postsecondary Integration and Persistence

The environment in which students take dual credit courses influences their outcomes. Students who participate in courses on college campuses, rather than only within high schools, benefit from greater academic and social integration, which strengthens their persistence into postsecondary education (Alsup & Depenhart, 2023; Duncheon & Relles, 2020). Alsup & Depenhart (2023) argue that dual credit programs should prioritize strategies that balance academic rigor with social integration to foster student engagement and persistence throughout their educational journey.

Implementation Challenges and Program Costs

Implementing dual credit programs presents several challenges, particularly around instructional alignment and managing program costs. Conflicting expectations between high schools and colleges regarding teaching methods, curricula, and grading standards can create inconsistencies that negatively affect program quality. Establishing a clear framework to align these expectations is needed to improve accountability standards (Duncheon & Relles, 2020). In addition to instructional challenges, program costs vary substantially depending on the type of instructor and the arrangements between institutions. Expenses are often shared among students, families, and institutions (Miller et al., 2018).

Admission and Student Placement

Standardized tests like the American College Test (ACT) and Scholastic Assessment Test (SAT) are often used as requirements to take dual credit classes, but research shows they are weak predictors of academic performance and retention (Dyer et al., 2022). Dyer et al., (2022) argues that a more effective approach to admissions and student placement should consider both cognitive and noncognitive factors, such as academic behaviors, perseverance, mindset, learning strategies, and social skills, to better assess student readiness.

Advising Practices and Equity Challenges

Current advising practices vary, with high school counselors leading the process and college advisors involved in only 25% of cases. Counselors must navigate key challenges, including assessing student readiness, guiding course selection, and

managing time constraints (Miller et al., 2018). Meanwhile, dual credit programs continue to exhibit racial and ethnic disparities, as participants are more likely to be white and female (Dai, 2020; Daniyelyan, 2020; Miller et al., 2018; Moseley, 2022; Xu et al., 2021). Although stronger state initiatives and higher per-student funding have successfully increased overall participation, they have also unintentionally widened racial gaps (Xu et al., 2021). Addressing these challenges requires targeted advising that includes advisor training, improved access to information, and tailored guidance to promote both student preparation and equitable participation (Alsup & Depenhart, 2023; Miller et al., 2018).

Methodology

Our approach included document collection, data extraction (both manual and automated), quality assurance, and an analysis of the data collected as outlined in our process visuals in Appendix B. Our team worked with the client throughout this process to determine the scope of MOUs to collect, as well as the information to be collected from them. Variables were chosen in conjunction with TEA. Some variables, including those that capture legal requirements for DC programs, were suggested by TEA, while others were determined by our team after assessing a sample of MOUs (2 per team member) for common elements. Such variables were subsequently approved by TEA. In the end, we identified a list of 26 distinct variables to collect.

Scoping

We also worked with TEA to establish the scope of our data collection. With their guidance, we determined that private schools and charter schools were not within the scope of this project. Furthermore, agreements between IHEs and Partners to offer only a single college-level course to high school students (single-course agreements) were deemed to be out of scope, as this project was intended only to analyze fully fledged dual credit programs. Another reason an MOU may have been out of scope was its effective date; we only collected MOUs that were active on or after January 1st, 2020, and were the most recent version. For example, if we were sent both an original MOU and its amended version, then we only utilized the amended version. This includes utilizing effective dates on the latest amendment to an MOU.

Document Collection

We decided to collect MOUs via the IHEs rather than the individual schools or school districts (Partners) because of the much smaller number of IHEs (91) as opposed to Partners (~1,200), and our understanding that all MOUS should be available on the websites of either party. Section 28.009 (b-2) (11) of the Texas Education Code (TEC) mandates that any agreement, including MOUs or articulation agreements, concerning DC programs between a public Partner and a public IHE must be posted on the websites of both parties. To begin, we obtained a list of all 91 public IHEs in Texas from the THECB website. We then investigated whether or not these IHEs offered dual credit by examining their websites. If there was any ambiguity, or if the information we needed was not readily available online, then we contacted the IHEs (59) directly to clarify. This process revealed that 77 of the 91 public IHEs in Texas offer dual credit.

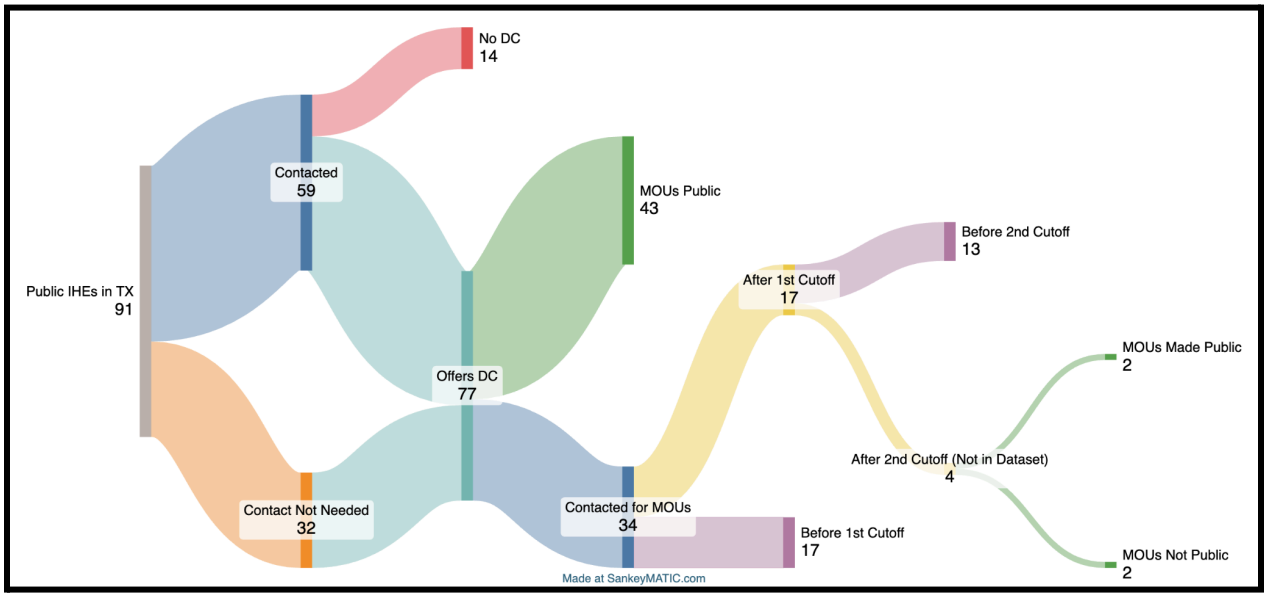
Next, we aimed to determine the compliance of these 77 IHEs with the TEC regarding the public posting of MOUs. Figure 1 below details our MOU collection process. Our initial search found that 43 of the 77 IHEs (56%) were compliant and had their MOUs posted online, while 34 (44%) were not. For most compliant IHEs, we used an automated web scraping process using Python to download large amounts of MOUs from separate websites.[2] Our program read through a list we collected of websites with links to downloadable MOUs and downloaded them in bulk. This approach allowed our team to quickly and efficiently collect a large but uncertain number of MOUs from vastly different websites without having to manually download each document. For more information on coding design and challenges to download these MOUs in bulk, see Appendix C.

Once our documents were downloaded, we began the process of contacting the remaining 34 IHEs to gain access to their agreements. MOUs received or posted to public websites after contact were downloaded manually without our automated web scraping process. Our outreach efforts consisted of a 3-step approach. First, we emailed the dual credit or admissions departments of the non-compliant IHEs using a standardized email template. After approximately two weeks without a response, a follow-up email was sent. Second, if there was still no response after another two weeks, we attempted to contact them by phone. Third, for IHEs that neither posted their MOUs online nor sent them to us after these initial communications, we utilized the Texas Public Information Act (PIA) to formally request the documents. The

[2] The University of Texas at Austin provided an online repository with an option to download in bulk, so these MOUs were downloaded manually and excluded from automated processes.

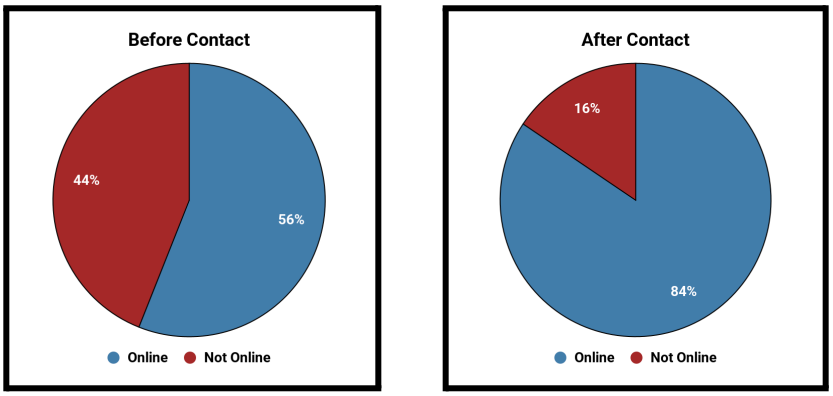
remaining schools either sent us or posted their MOUs online after this step, however three of them became available too close to the end of the project for us to include them in our dataset.

Figure 1: MOU Collection Process



We collected 2,470 MOUs in total, 765 of which (31%) were out of scope (ex. private or charter schools, single-course agreements). However, 1,705 (69%) were in scope and were included. Overall, our dataset represents 73 of the 77 total public IHEs that offer dual credit in the state of Texas as well as 1,191 Partners, capturing 1,717 MOUs. Between the start of this project on August 19th, 2024, and the final MOU collection cutoff date of April 8th, 2025, we found that compliance with Section 28.009 (b-2) (11) of the TEC increased from 43 of the 77 IHEs (56%) to 65 of the 77 (84%) (Figure 2).

Figure 2: Compliance Before vs. After Contact



Data Collection

Machine Readability

With the MOUs collected, the next phase involved extracting our 26 variables. Recognizing the large time investment which manual data collection would require, we explored and ultimately implemented an automated method of data collection alongside our manual processes. This included the use of AI and coding tools; for more information on what we did or did not use and why, see Appendix C.

To make the MOUs usable for automated data extraction, it was necessary to address the format of the files. Many MOU files were initially unsearchable (not “machine readable”), usually because they were images or scanned-in copies. To overcome this, we utilized open-source OCR through a custom Python script to convert these image-based documents into searchable text. This was successful for all MOU files except one[3]. We decided against using online OCR services due to cost considerations and replicability. ChatGPT 4.0 was used as a tool in the creation and troubleshooting of our Python programs. All Python scripts, code, and machine readable MOU files used in this project have been provided to our client in the form of a Google Drive. For more details on the structure and contents of the drive, see Appendix E.

Data Scraping

While we did use some automated tools, manual data scraping proved to be the most efficient approach for IHEs that had small numbers of MOUs (<100). Because each IHE creates their own MOUs, we encountered a wide variety of styles and levels of complexity between MOUs. A thorough review of each document was often necessary to locate the required data. To expedite the collection of basic information such as names and dates, we explored the use of Google's NotebookLM, an AI targeted towards research assistance.

We chose to use NotebookLM over other AIs we tested (Copilot, ChatGPT 4.0) because it analyzes only the documents the user uploads, as opposed to incorporating information from web searches, and provides citations to the source of its findings within those documents, allowing for quick verification of accuracy. For more details on why we did not use Copilot or ChatGPT 4.0, see Appendix C.

[3] One MOU between Texas A&M University-San Antonio and San Antonio ISD was unable to be processed by our OCR script, likely due to image deterioration from printing and scanning.

While NotebookLM proved helpful for locating simple data points with specific prompts, it struggled with more abstract information requiring a deeper understanding of the document's language. This was largely due to inconsistent terminology used across different IHEs. Consequently, some team members found it more effective to use NotebookLM only as an advanced search tool to quickly locate relevant sections within the MOUs for manual data extraction. To ensure consistency of data collection across different manual scrapers using NotebookLM, all team members utilized the same prompt, which can be found in Appendix C.

Another step we took to ensure consistency across all data collection was to create a Manual for Manual Scraping (despite the name, it was used for data scraped both manually and automatically). Our Manual for Manual Scraping was a living document which listed our definitions for all 26 variables, the options for encoding each variable, and keywords for finding various data points. As we went through the data collection process, this Manual was updated on a weekly basis as we encountered various edge cases. We would generally discuss such edge cases as a team, then encode our decisions into the Manual for Manual Scraping. This document was treated as the de facto standard for how to scrape each variable and what kinds of information get coded in different ways. The full Manual for Manual Scraping is in Appendix D[4].

For IHEs with many MOUs (>100) that were fairly uniform, we found automated data scraping using Python scripts to be a worthwhile method. This approach involved creating custom Python programs with the aid of ChatGPT 4.0 to identify and extract specific variables based on defined keywords and patterns. We used this automated scraping method for 2 IHEs: UT Austin (650 MOUs) and Tarleton (103 MOUs).

While the majority of MOUs in our project were scraped manually due to the wide variety of styles and layouts making automation difficult, the success of automation on those IHEs that had uniform MOUs might support the idea that standardization of MOUs across all IHEs would allow for efficient use of similar automated data collection methods in the future.

Quality Assurance Process

To ensure the accuracy and reliability of our collected data, a robust quality assurance (QA) process was implemented for data collected through both the manual and automated methods. Through our QA process, we reviewed 15% of all data collected from MOUs. For the data scraped manually, team members were assigned to check

[4] A formatted codebook of variables can also be in Appendix F.

each other's work on a rotating weekly basis. Entries to be reviewed were selected from the set that had been completed by the original scraper the prior week using a random number generator; this reduced the potential for selection bias. For every IHE in our dataset, a bare minimum of 2 MOUs were double-checked in this manner. For IHEs with only 1 or 2 MOUs, we checked all of that IHE's MOUs through our quality assurance process.

The QA process for data scraped automatically mirrored that of the manual process, with 15% of the results being reviewed by a team member who selected entries using a random number generator. In addition, our automated scripts included coded exceptions which would flag potential errors or inconsistencies that required human review. Any errors identified during the QA process for automated data were discussed with the script developers to refine the scripts and improve their accuracy.

Throughout the project, we also conducted "sweeps" of certain variables. "Sweep" is the term we used to refer to the process of a singular variable being audited in its entirety by one assigned team member. Variables which we targeted for sweeps were those which were more subjective in their interpretation or which had increased error rates relative to other variables.

Data Findings

This section presents our assessment of the dual credit landscape across the state of Texas. Findings are based on the variables we collected, and each data point is taken from active (at the time of writing) MOUs representing all public IHEs in the state of Texas that currently offer dual credit as tracked by the THECB. For MOUs that listed multiple individual Partners separately, we created separate data points for each Partner.

Dual Credit Coverage

Overall, Texas has 1,018 school districts under TEA supervision (Authors Calculations, School Districts 2025). 86% of these districts are represented in our dataset with at least one MOU, while the remaining 14% of these districts have no form of dual credit represented in our dataset. We used these data to generate a map of dual credit

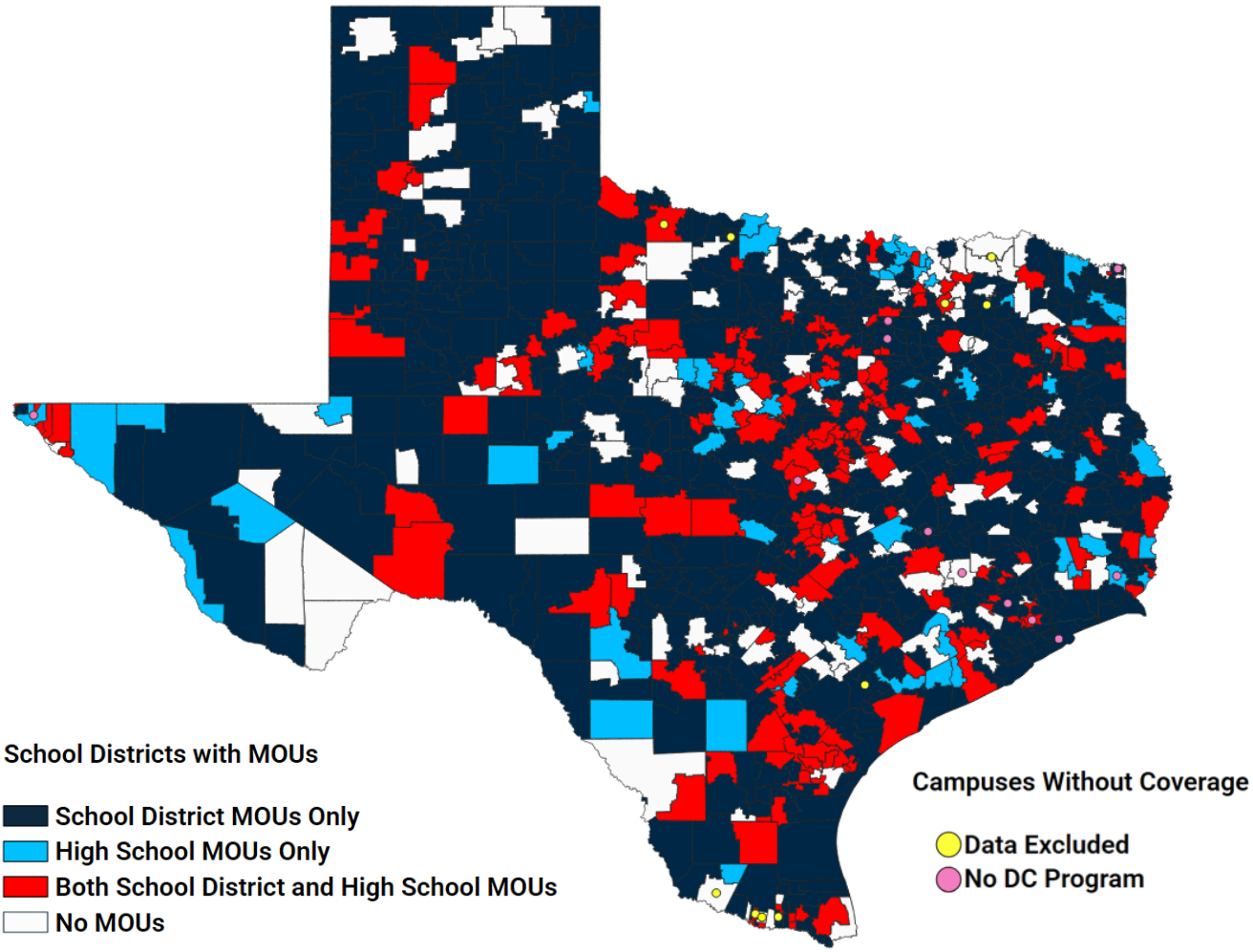
coverage across all school districts in Texas but one, as shown in Figure 3.[5] Most of these districts (61%) are exclusively covered by agreements at the school district level, indicated on the map as dark blue regions. Light blue regions, comprising 6% of total districts, include dual credit programs signed only at the high school level. Red districts represent 19% of all school districts and indicate regions with both school district-level and high school-level MOUs. Looking at the combined numbers, 80% of these districts include MOUs signed at the school district level, while 25% include high school MOUs. All 20 Education Service Centers (ESCs)[6] have at least one active dual credit MOU in 2024, with an average of 81 current MOUs per region.

Our dataset does not include information from 4 IHEs.[7] These IHEs have dual credit programs, but we did not get data on which institutions they partnered with, which campuses they offer their programs out of, and at what level their MOUs are signed in time to add them to the dataset. These IHEs are indicated with the ten yellow dots in Figure 3. Because some districts contain more than one campus, each dot reflects the presence of at least one campus in that district. For the most part, these campuses occur in school districts with some form of alternative dual credit coverage. Two IHEs (South Texas College and Paris Junior College) have campuses spread across three school districts without dual credit coverage recorded in our dataset: Paris ISD, Pharr-San Juan-Alamo ISD, and Weslaco ISD. Students in these districts may have access to a dual credit program not captured by our analysis.

Fourteen IHEs in Texas do not have dual credit programs; it is possible that they could increase coverage to students currently without it if they started dual credit programs. To determine whether these IHEs are predominantly located in districts without coverage, we indicate the locations of these campuses in Figure 3 with 11 pink dots. Because some districts contain more than one IHE in this category, each pink dot refers to a district with at least one campus. Most IHEs in this category are located in districts with alternative dual credit program coverage. Only one campus - Prairie View A&M, located in Waller ISD - is located in a district without alternative coverage.

[5] One district, South Texas ISD (STISD), is uniquely an all-magnet school district that contains schools physically located in other school districts. We do not represent STISD on our map, but it is included in our statistics as a district with both district-level and high school-level MOUs.
[6] Education Service Centers are regions established to provide services to school districts throughout the state of Texas (Texas Education Agency, 2024).
[7] Cisco College, Paris Junior College, and Vernon College did not provide their MOUs before the final cutoff date for inclusion in our dataset. South Texas College provided MOUs before that cutoff date but was not included due to a communication error.

Figure 3: Map of Dual Credit Coverage

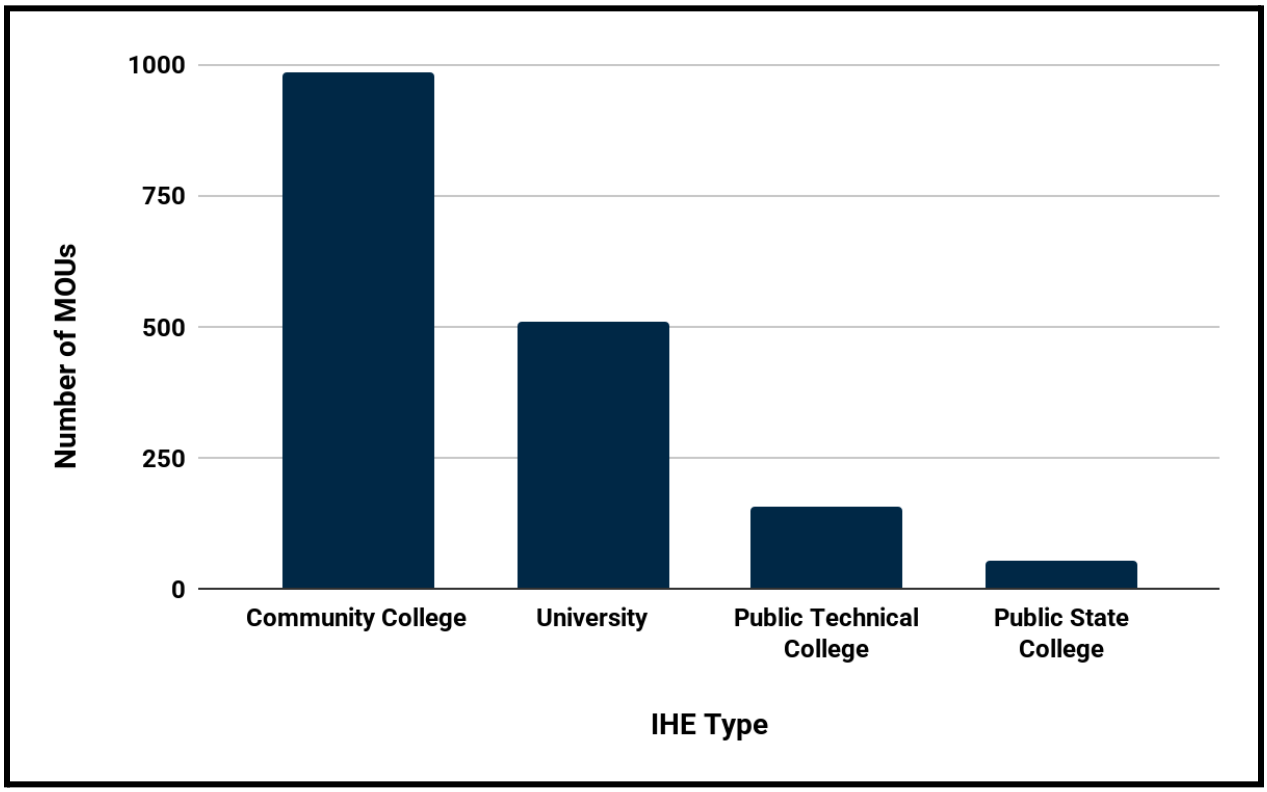


Agreement & Partner Overview

IHEs form partnerships with school districts and high schools. Types of school districts which may offer dual credit include Independent School Districts (ISD), Consolidated Independent School Districts (CISD), Municipal School Districts (MSD), Common School Districts (CSD), and Consolidated Common School Districts (CCSD). Partner schools also encompass regular high schools, early college high schools (ECHS) whose classes lead to associate's or bachelor's degrees, and Pathways in Technology Early College High Schools (P-TECH) whose classes lead to associate's degrees or certificates. Our data also include Online High Schools (OHS) and other types of high schools (ex. Career Academies, Technical Dual Credit Programs).

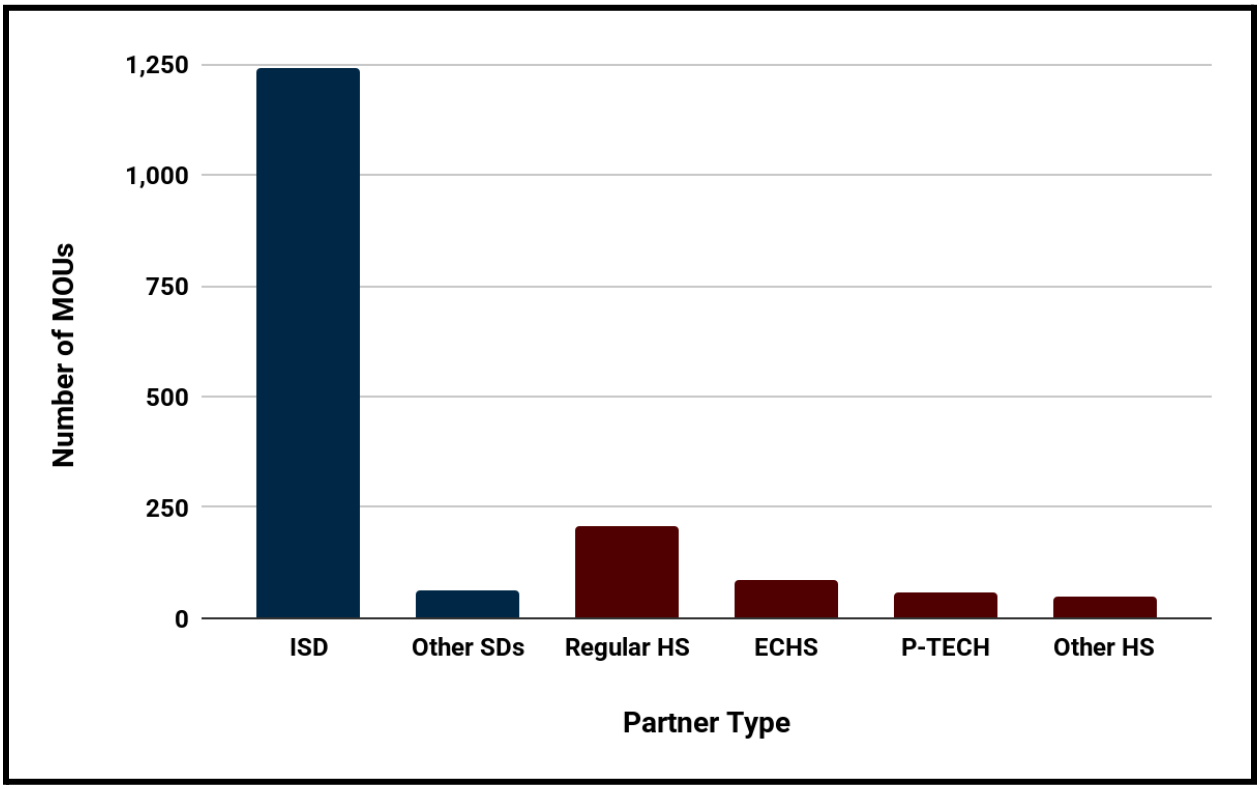
Our dataset includes 73 IHEs and 1,197 Partners, capturing 1,705 MOUs. Figure 4 shows that of the IHEs, 58% are community colleges, 30% are universities, 9% are public technical colleges, and 3% are state colleges. Another insight worth noting is that 30% of Partners have signed MOUs with multiple IHEs. More than a third (36%) of IHEs have signed an agreement with at least 20 Partners.

Figure 4: Distribution of MOUs by IHE Type



The majority of agreements (77%) are between IHEs and school districts, while 23% involve individual high schools, online high schools, or specialized programs, including P-TECH (3%) and ECHS (5%). (Figure 5).

Figure 5: Partner Schools by Type



Agreement Duration

The effective dates of the MOUs span effective dates from 2017 to 2024, with expiration dates ranging from 2020 to 2029. 22% of the agreements remain active until both parties agree to terminate them. 8% of agreements do not clearly state either an effective or expiration date. In such cases, the signature date was used as a substitute for the missing effective date. When the expiration date was not provided, either the effective or signature date was used to assess whether the agreement fell within the scope of the analysis. Of agreements that do specify an effective date, just over half (51%) are valid for less than two years.

Figure 6: Distribution of MOUs by Effective Year

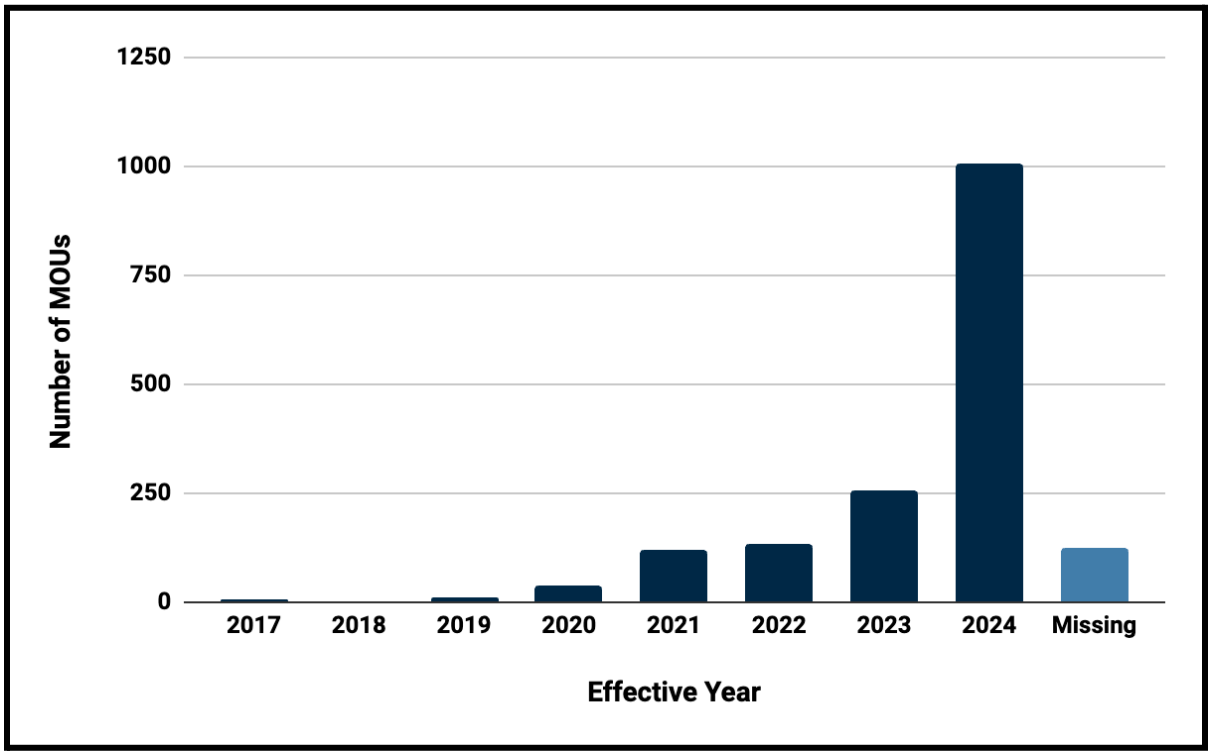
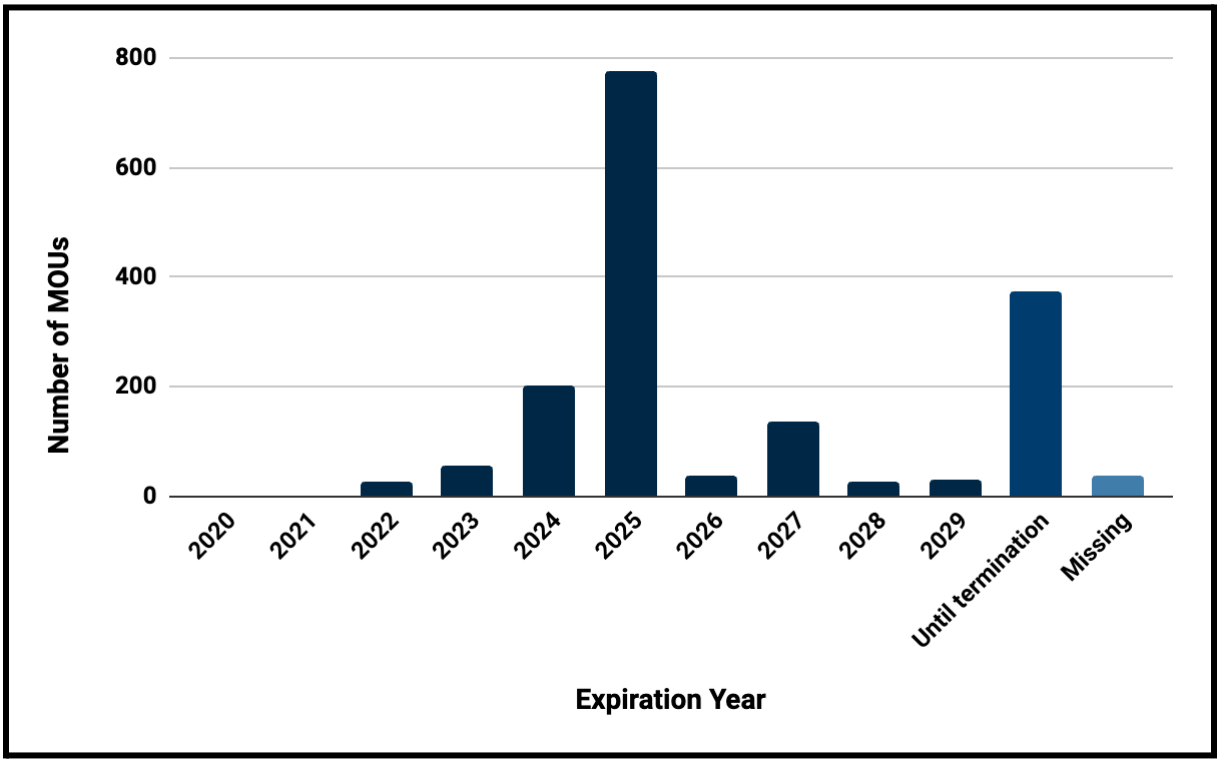


Figure 7: Distribution of MOUs by Expiration Year

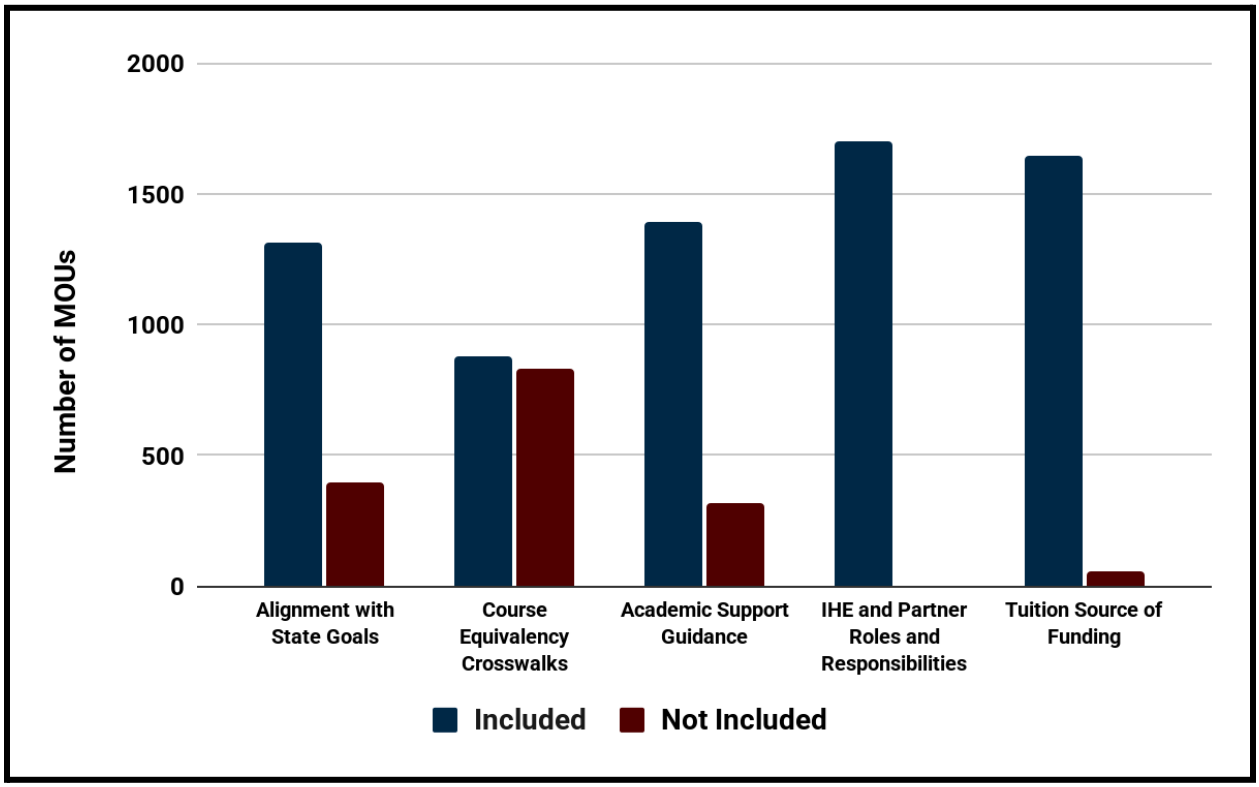


Legally Required Information

Section 28.009(b-2) of the Texas Education Code requires that all dual credit MOUs specify terms and conditions of the partnership, including alignment with state goals, course equivalency crosswalks, guidance on the provision of academic support, defined roles and responsibilities of both IHE and Partner, and the source or sources of funding.

In our dataset, just over three-quarters (77%) of agreements explicitly state their alignment with state educational objectives (Figure 8). Just over half (51%) include a course equivalency crosswalk. A majority (82%) reference the provision of academic support (usually in the form of advising) for dual credit students, with 45% citing IHEs as the party responsible, 3% Partners, and 52% both. Only four MOUs (0.23%) fail to clearly define the roles and responsibilities of each party. Most agreements (97%) specify tuition funding sources. Among agreements in our dataset, 88% are publicly available on the websites of the respective IHE.

Figure 8: Legally Required Information

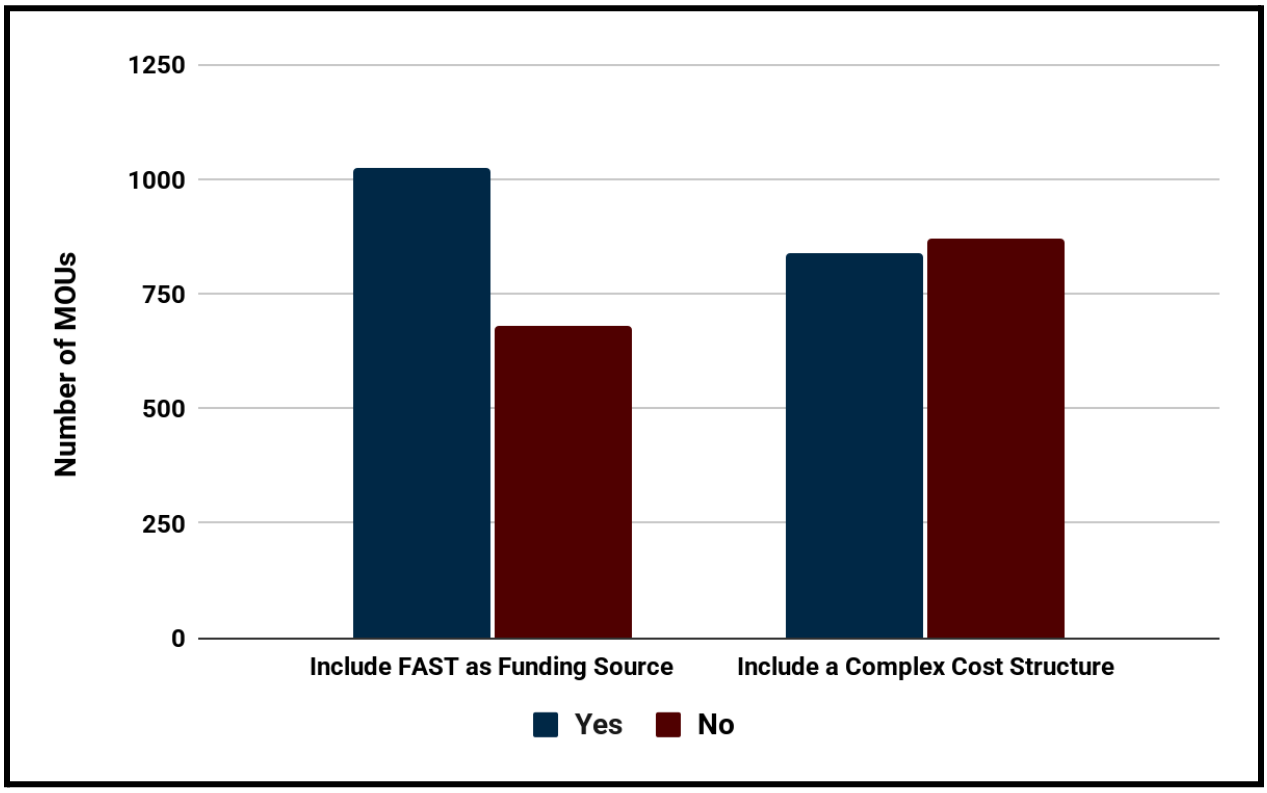


Cost Burden and Financial Responsibility

Dual credit programs are often framed as a tool for improving college affordability. However, the way that financial responsibilities are structured can affect a program's true accessibility, especially for students from low-income backgrounds. This section explores how financial responsibilities are distributed within the MOUs we analyzed.

In our dataset, 60% of MOUs reference the Financial Aid for Swift Transfer (FAST) as a source of tuition funding (Figure 9). House Bill 8 (Texas Legislature, 2023) directed TEA and THECB to coordinate the FAST program, which allows eligible students to enroll at no cost in dual credit courses offered by participating institutions of higher education. FAST comes with its own dual credit pricing model; students who qualify under the program receive free DC tuition, while those who do not qualify are charged a maximum of $55 per credit hour for DC courses. However, participation in FAST does not mean that the Partner may not use other pricing models. 49% of MOUs either rely exclusively on FAST pricing or have their own clearly explained pricing model, while 51% use more complex cost structures.

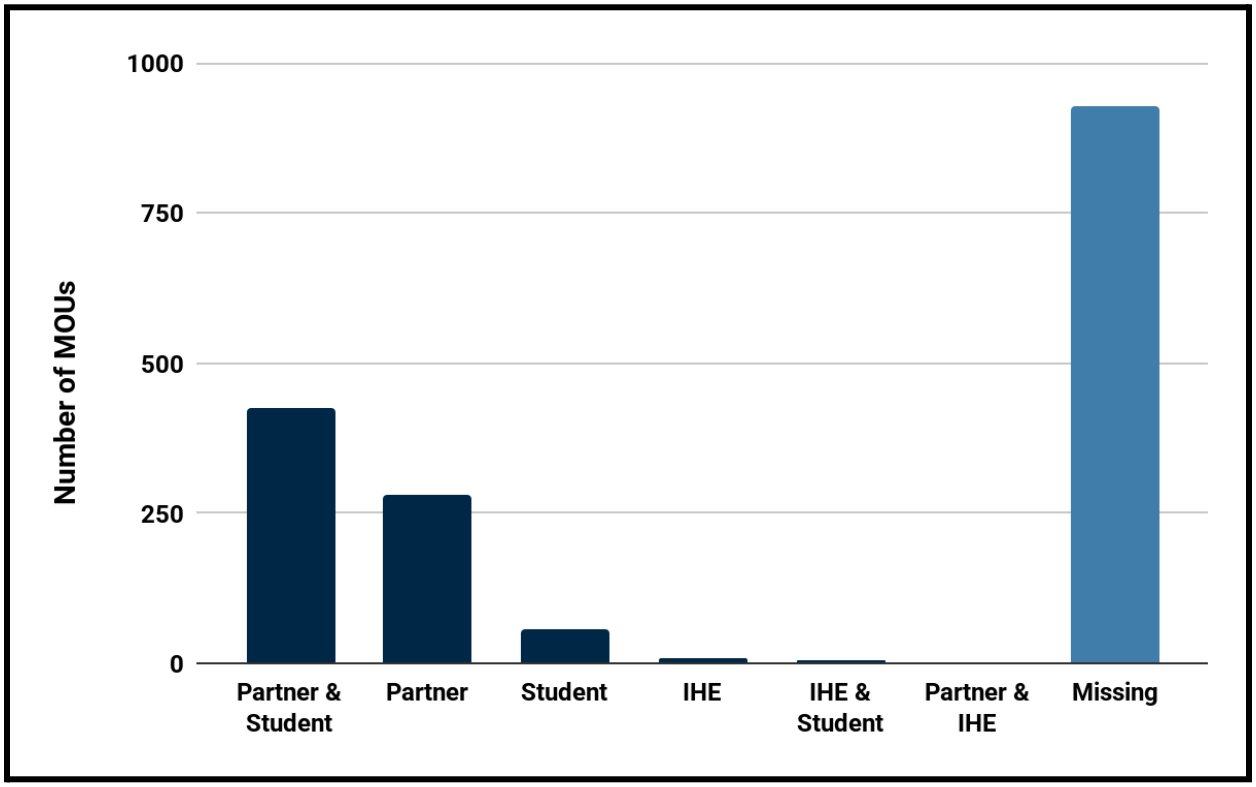
Figure 9: Distribution of MOUs by Whether a Tuition Funding Source Is Specified



Keywords that we used while scraping MOUs for this variable included "FAST" and "Financial Aid for Swift Transfer." While the absence of these keywords does not necessarily imply nonparticipation in the program, lacking them may reduce parents' awareness of a school's involvement in FAST. Since the program's inception in 2023, 76% of schools have explicitly referenced FAST in their MOUs.

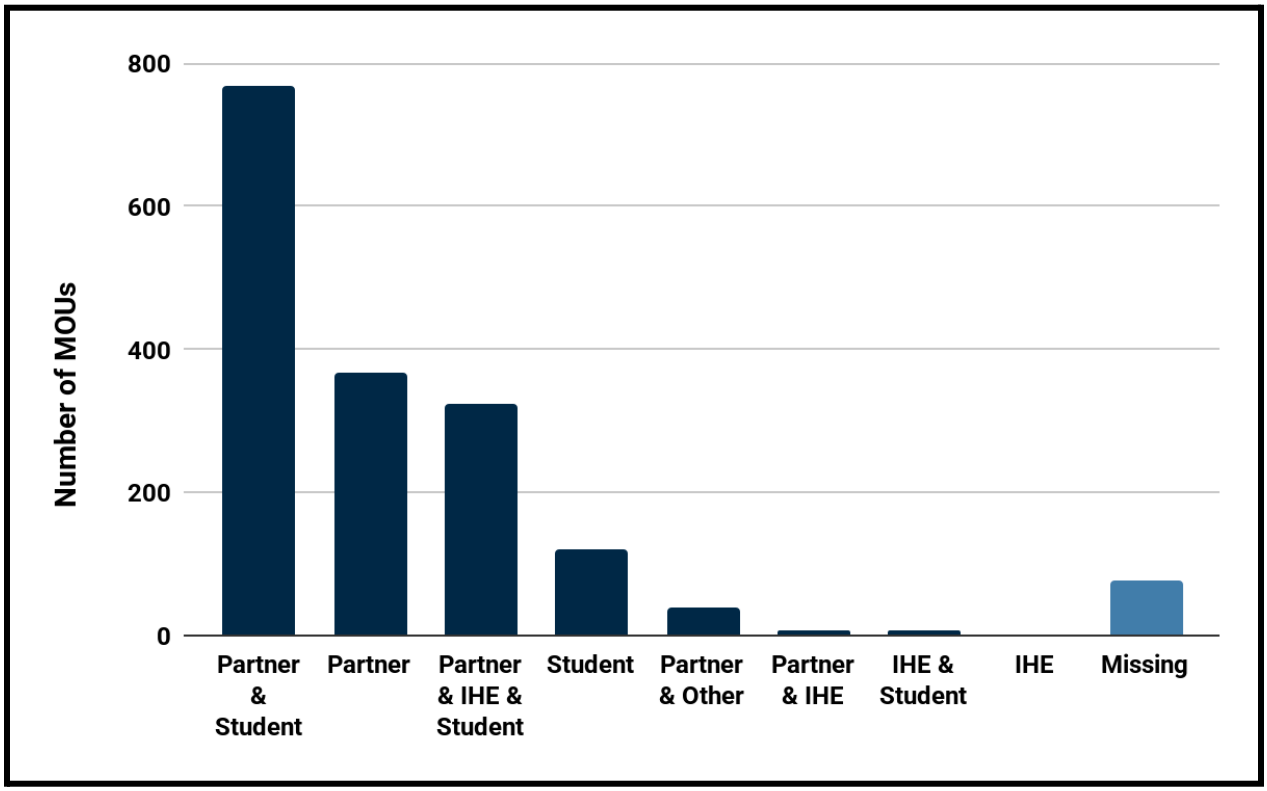
54% of MOUs do not mention the party responsible for transportation costs (Figure 10). Among those that do discuss them, transportation costs are assigned to Partners in 36% of MOUs, to students in 7%, and shared across some combination of these in 56% of the MOUs. This suggests that while transportation is a major logistical factor in partnership implementation, it is often left unaddressed in formal agreements. This may lead to ambiguity or inequitable burden-sharing.

Figure 10: Transportation Cost Responsibility



Responsibility for textbook expenses are often distributed across multiple parties; however, students still frequently bear a substantial portion of the cost. Specifically, 75% of MOUs assign at least partial responsibility for textbook costs to students. However, Partners contribute in this area, with 92% of MOUs assigning at least partial cost responsibility to the Partner. In contrast, only 21% assign at least partial responsibility to the IHE (Figure 11).

Figure 11: Textbook Cost Responsibility



Program Design

Key components outlined in the MOUs shape the structure of dual credit programs across Texas, influencing their ability to effectively meet their intended goals. This section presents how several key program design elements are implemented, including types of courses offered, party responsible for provision of instructors, academic support, the incorporation of degree plans, student eligibility requirements, participation by out-of-district students, online course availability, and data sharing between parties.

Our findings provide a detailed snapshot of how MOUs structure these key aspects of dual credit programs, showing that most agreements permit both IHEs and Partners to provide instructors, include provisions for academic support and advising, and offer a combination of academic and technical courses. The term ‘academic courses’ refers to college-level credits that can be transferred to universities, while ‘technical courses’ are designed to prepare students directly for the workforce. Regarding instructional responsibility, 65% of MOUs allow both the IHE and the Partner to provide instructors and/or training to qualify dual credit course instructors, while 22% assign this role solely to the high school, 11% solely to the IHE, and 2% do not specify the party responsible (Figure 12).

Figure 12: Party Responsible for Providing DC Instructors

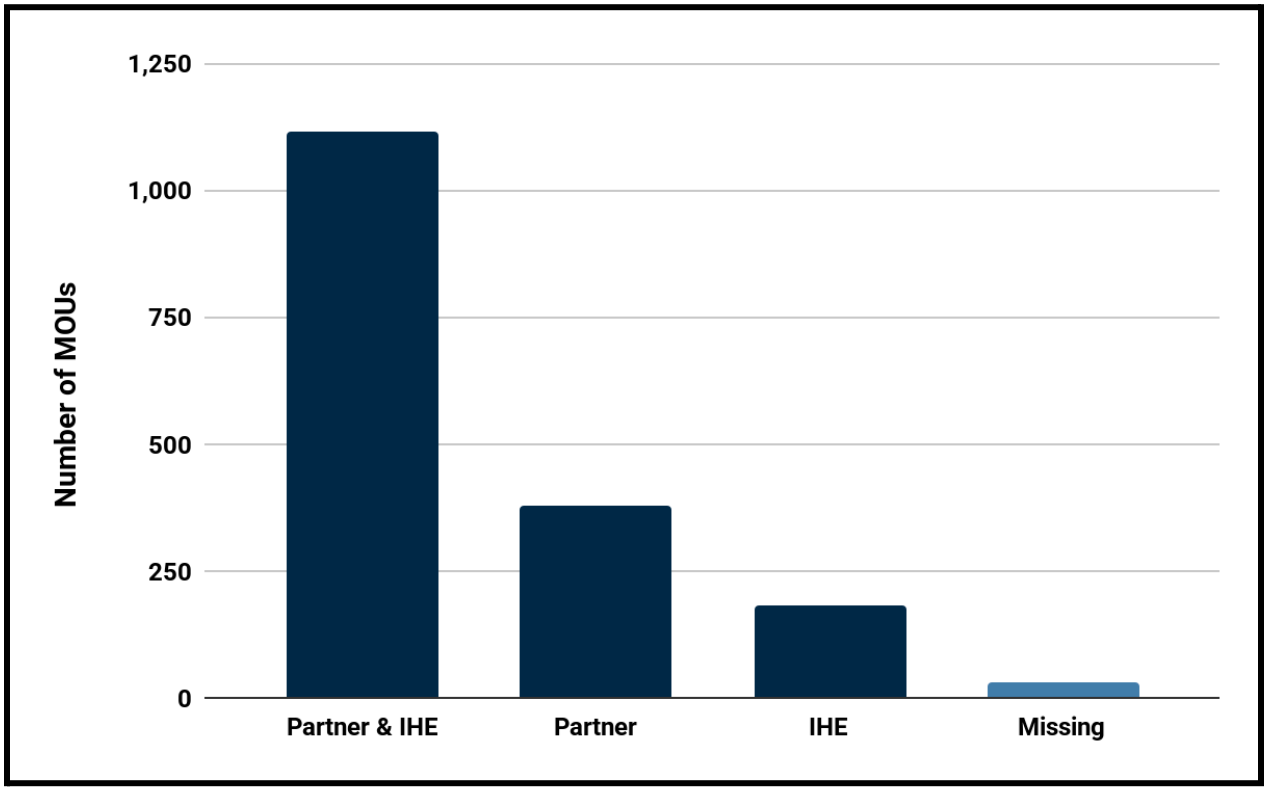
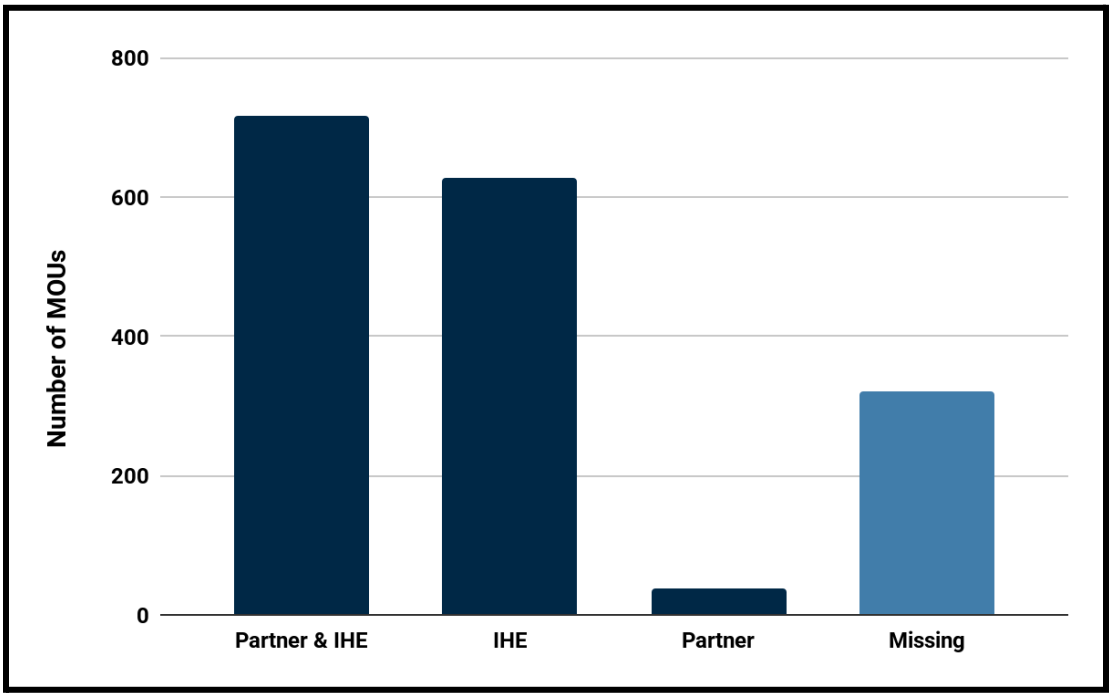


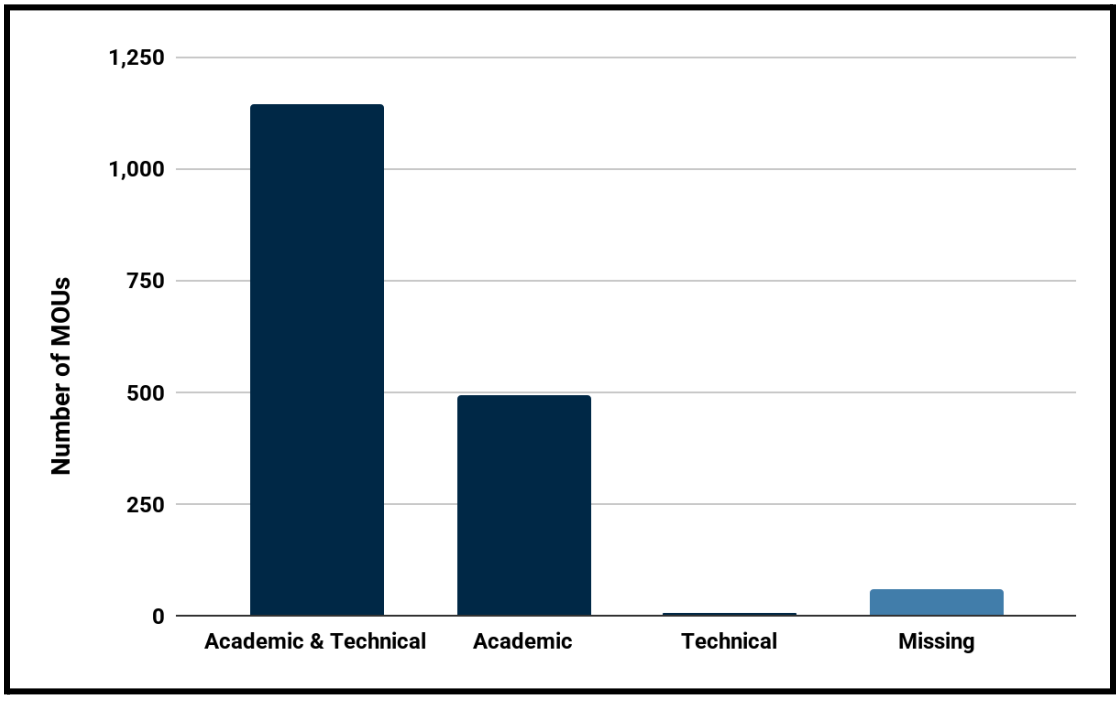
Figure 13 shows that 82% of MOUs reference academic support and advising services for dual credit students. Of these, 52% indicate shared responsibility, 45% place the responsibility on the IHE, and 3% name the Partner as the responsible party.

Figure 13: Party Responsible for Advising and Academic Support



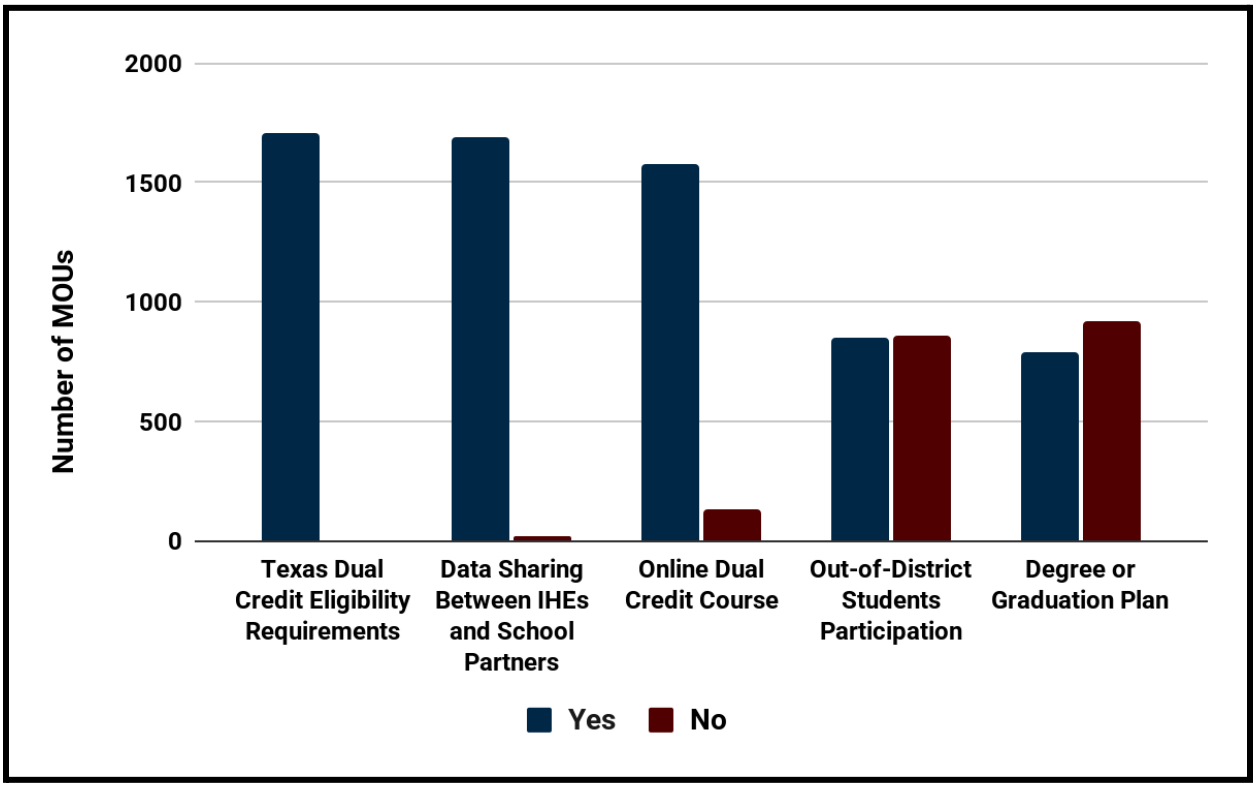
As can be seen in Figure 14, two-thirds (67%) of MOUs include both academic and technical courses; 29% specify only academic courses.

Figure 14: Course Types Included in MOUs



Our findings also highlight that while most MOUs include state eligibility requirements, data sharing provisions, and online course options, fewer explicitly reference degree plans or allow out-of-district student participation (Figure 15). All MOUs (100%) establish criteria for student eligibility, and nearly all (99%) include provisions for sharing student data between the IHE and the Partner. Data sharing was defined in this project as any mention of exchanging student information (ex. grades) between parties. Online courses are included in 92% of MOUs, and 50% allow participation from out-of-district students. However, only 46% reference creating ‘degree plans’ or ‘graduation plans of study’ for students.

Figure 15: Eligibility, Data Sharing, Accessibility, and Degree Plan



Limitations

To ensure transparency and contextualize the scope of our findings, it is important to acknowledge the methodological limitations of our analysis. These limitations reflect some choices we made to preserve consistency, focus, and data reliability, though they also constrain the generalizability and depth of the dataset.

This analysis is based solely on MOUs between public IHEs and public dual credit Partners. It excludes charter schools and private schools. We also excluded single-course agreements and MOUs which expired prior to January 1st, 2020. Furthermore, only the most recent version of each MOU was included. No external documents were used; only information stated explicitly within the MOUs was collected. This was to ensure consistency across data entries and to reflect only the terms formally agreed upon by the parties. For instance, crosswalks posted only to a party's website, but not included in the MOU itself, were marked as being absent.

Data points were determined using a standardized internal Manual for Manual Scraping, which was a living document where we encoded our definitions for each variable available in Appendix D. We recognize that other interpretations of some variables may be valid. While the dataset includes who bears cost responsibility for various facets of dual credit programs, such as textbooks, transportation, and tuition, it does not detail actual dollar amounts; our early-stage evaluations of a sample of MOUs concluded that the real costs are not often disclosed. MOUs from three IHEs submitted documents too late in our process to be included, and one was not able to be included due to a communication error. 15% of all data entries underwent quality assurance checks, with some variables receiving full sweeps. Future research could benefit from merging this dataset with other datasets to explore regional differences or gaps in equal access to dual credit programs.

Takeaways and Challenges

At the outset of this project, we envisioned creating a centralized database containing all required information from all MOUs in Texas, with the realistic possibility of regular data collection. Our project revealed a complicated landscape of dual credit where such a database may be difficult to achieve. Our primary challenges fall broadly under 3 categories: compliance concerns, lack of clarity, and non-standard presentation of data. In this section, we present our takeaways (what we learned from our methodology that improved our accuracy and efficiency), our recommendations to TEA (practical steps the Agency can take to facilitate its goals to perform program evaluation and monitoring), and a brief exploration of the potential for this work to be continued in the future.

Expect incomplete information and time delays.

Interacting with multiple stakeholders presents time-related challenges. In our case, IHEs and Partners were often especially busy during the school year and often unavailable during holiday hours. This made it difficult to reach out to schools for MOUs that were not available online. Points of contact were often unclear, response times varied, and in several cases, institutions would not provide enough information in response to requests. For data collection, a good maxim is to always allot additional time to compensate for time delays - there will always be variables outside your control, and it is wiser to plan ahead than fumble for time last minute. It is also important to anticipate incomplete information by the end of the data collection process - our group found several cases where either a complete MOU was not provided and the school had to be contacted again, or individual MOUs lacked essential information and had to be coded as “missing- not disclosed” for that variable.

Team alignment on definitions and interpretations is critical.

Our team realized early on that we individually interpreted the text in MOUs differently. To manage this, we decided to implement systems to ensure consistency and maintain these systems throughout the project. Regular quality assurance checks, weekly meeting times, establishing clear team roles, and taking a cross-functional approach to group work helped our team stay aligned. We also relied heavily on our Manual for Manual Scraping (Appendix D) to guide our interpretation of variables in the MOUs - and where discrepancies did arise, we had systems in place to resolve them quickly. Establish these systems early on to avoid building hours of work on inconsistent and unreliable data.

Artificial Intelligence should not be relied upon without human interpretation.

AI tools like ChatGPT and NotebookLM were useful on a surface level – they provided baseline coding assistance with Python and facilitated our search for variables within documents. However, perhaps our most critical takeaway from our project is that AI cannot be trusted in lieu of human discretion. AI tools on their own tend to provide unreliable information, often summarizing information without the ability to synthesize. We found NotebookLM frequently successfully located information in the documents, but just as often reported incorrect information. We relied on human judgement to discover the context and nuance within MOUs - if we relied on AI, our data would not be valid. In terms of coding, AI can offer basic code but struggles to correct for niche

errors or edge cases, even in response to increasingly detailed prompts. Ultimately, AI is a tool - it can get you closer to your goal, but it will not solve the problem for you.

Policy Recommendations

Evaluation Criteria

In forming our policy recommendations, we considered the three following questions:

1. *How can we ensure MOUs contain all information required by law?*

   We found many MOUs lack some elements required to be included by the Texas Education Code, resulting in incomplete data and noncompliant IHEs and Partners. Our recommendations incentivize or enforce more complete and consistent inclusion of legally required information.

2. *How can we improve the speed of data collection and reduce time costs?*

   Collecting this data takes a long time, slowed down by disparities in how information is presented, where documents are found online, and inconsistent language among programs. Our recommendations encourage uniform practices that improve data collection through standardization, while also attempting to reduce the burden on state resources.

3. *Who benefits from a change in the status quo, and can we maximize the benefit?*

   Our primary stakeholders are the Texas Education Agency (and relevant state agencies), IHEs and Partner institutions, and, importantly, parents and students. Our recommendations take each group into account - our goal is to maximize benefit across all groups.

Recommendations

Our policy recommendations are based on the challenges we faced, the takeaways we presented, and the interests of our stakeholders. Our recommendations seek to make data collection easier and more efficient for TEA, make MOUs more accessible to parents and students, and make program design and guidance easier and more robust for Partners.

1. **Provide and Request/Require a Standard MOU Template for all Dual Credit Programs to Use**

   Texas Education Code requires MOUs to include specific information in their MOUs, but without additional guidance, some Partners and IHEs have designed Agreements and Contracts that do not fully meet the standards expressed in the statute. **TEA should provide a standard MOU template to ensure all TEC-required information is reported.**

   We found that IHEs with a consistent template-based MOU were much easier to collect data from. Additionally, larger institutions with template-based MOUs were compatible with automatic Python scraping systems. There is potential here to fully automate data collection from MOU templates if they all begin with the same template. **In Appendix A, we provide TEA with a sample template we created.** Although non-exhaustive, it includes sections that allow ISDs and IHEs to provide legally required information, as well as flexible sections designed for ISDs and IHEs to customize their programs. We encourage TEA to use this document with their own amendments, prioritizing information that would be useful for program evaluation and monitoring.

   Implementation:

   - Develop, implement, and annually distribute a standard MOU template **(see Appendix A for a model)**
   - Prioritize the development of consistent terminology across all dual credit programs to enhance data collection efforts.
   - Include required sections for the disclosure of legally required information.
   - Include customizable sections that allow IHEs and ISDs the freedom to design dual credit programs that work for them.
   - **Request that ISDs provide their TEA-assigned ID number to support database integration**

Stakeholder Impacts:

- **TEA:** Improves data collection speed and reliability by creating consistent language and information placement. Provides opportunities for automated data collection using a Python script.
- **IHEs & Partners:** Provides clarity, guidance, and support for less-resourced IHEs and ISDs. Provides flexibility to describe unique systems. Improves compliance with Texas state regulations.
- **Parents & Students:** Provides greater transparency on dual credit costs, roles and responsibilities, and alignment to state goals. Promotes accessibility by standardizing difficult-to-understand language.

2. **Require and Encourage Annual Submission of MOUs to TEA**

Although the Texas Education Code requires school districts and IHEs to annually post MOUs on their respective websites, we found that a large number of IHEs were either not current or noncompliant with their responsibility to do so. **TEA, in collaboration with THECB and the State Board of Education, should require and encourage ISDs to submit their MOUs directly to the agency on an annual basis (or, failing that, to provide links to the MOUs on their websites).**

The TEC already requires ISDs to provide annual reports on student participation and credit hours. TEA can use these existing structures to require/request MOU provision as well.

Implementation:

- Send annual requests to IHEs and ISDs to submit currently active MOUs
- Encourage and remind ISDs of their obligations on an annual basis, possibly by establishing a yearly deadline (e.g, September 1st)
- Work with the THECB and the SBOE to amend existing regulations to enforce these proposals
- Create a shared drive or cloud-based structure to store MOUs for the purposes of archiving and record-keeping

Stakeholder Impacts:

- **TEA**: Reduces the workload of having to collect documents manually from the websites of 91 state institutions or over 1,000 ISDs. Saves time and work hours to allow the agency to focus primarily on data collection from documents
- **IHEs & Partners:** Offers clearer guidance on their responsibilities under TEC and provides them with an annual opportunity to become compliant. A set deadline may also encourage MOUs to be more current with publicly posting their MOUs
- **Parents & Students:** May indirectly benefit from improved access to dual credit agreements

3. Require Digital-Only MOUs, Compatible with OCR and Machine Reading

We found that many MOUs were provided as low-quality scans with handwritten elements, and spent a great deal of time attempting to run these documents through OCR and collect data from them. **TEA should require and encourage digital-only copies of MOUs that are compatible with OCR technology and are machine readable.** TEA can facilitate this step by providing digital signature technology along with their recommended template. This will allow data collectors to perform queries to search within documents and facilitate much faster collection.

Using exclusively digital formatting prevents ISDs and IHEs from printing and scanning their MOUs - a process that can blur text and make data unreadable by machines. Handwritten elements also prove impossible to discern in the most extreme cases and simply time consuming in the least extreme cases. Requiring/requesting documents to be filled out digitally and providing a template with digital signature capabilities eliminates challenges related to poor OCR.

Implementation:

- Encourage and require, in collaboration with the THECB and SBOE, the use of digital-only copies of MOUs
- Design a template with digital fill and e-signature capabilities (ex. via DocuSign or Adobe PDF)

- Provide guidance and support to ISDs and IHEs in need of training on digital document management.

Stakeholder Impacts:

- **TEA:** Saves time and resources otherwise spent interpreting unclear documents or manually scraping for data. Improves record-keeping and data security practices. Enhances information searchability.
- **IHEs & Partners:** Improves record-keeping and data security practices and reduces risk of noncompliance from poor OCR or incomplete files.
- **Students & Teachers:** More access to readable and discernable MOU documents online.

Future Research Recommendations

The dual credit landscape in the state of Texas is broad and complex – as such, there is enormous potential for future expansion of the work done in this project. Developing a comprehensive dataset of course crosswalks for dual credit programs across the state would provide TEA with valuable information for program monitoring and evaluation. A second phase of this project may involve collecting information on course names and numbers, credit hours (high school and college), course types (academic or technical), Public Education Information Management System (PEIMS) codes, grade levels of dual credit students, and/or additional information useful to TEA's program evaluation. Challenges may include disparities in information provided by ISDs, crosswalks provided in locations outside the MOUs, and a continued lack of standardization in MOU formatting.

Our team has found the experience of conducting this project very rewarding, and we hope that the insights gleaned from our efforts may inform program monitoring methods for dual credit going forward. We believe that our recommendation of utilizing standardized documentation has great potential not just for dual credit Memoranda of Understanding, but for other state-mandated forms and documents as well. Such standardization may remove administrative burden from schools across the state. It would also make program monitoring and repeated data collection exponentially more efficient. We also hope that the lessons we learned about incorporating automation through the use of AI and Python coding provide valuable insight which TEA can apply to both dual credit and other program evaluation efforts.

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Appendix A - MOU Template

Dual Credit Memorandum of Understanding (MOU)
between
[FILL IHE NAME HERE]
and
[FILL PARTNER NAME HERE]

The **Contracting Parties** hereby enter into this Memorandum of Understanding, hereinafter referred to as "Agreement", for the purposes of establishing a Dual Credit Program between the two partners to allow high school students to earn dual course credit for award of both high school credit and college certificate and or associate degree credit. Texas Education Code §§ 28.009, 29.182, 29,184; and 19 Texas Administrative Code Chapter 4, Subchapter D and Chapter 9, Subchapter H authorize an institution of higher education to contract with a public-school district for the provision of instruction resulting in dual credit received by a student for such course. This agreement is intended to facilitate cooperation between the IHE and the Partner to establish the Dual Credit Program, which supersedes all previous agreements, versions, and addenda.

I. CONTRACT AND CONTRACTING PARTIES

Institution of Higher Education
hereby **IHE**

Name [NAME HERE]
Address [ADDRESS HERE]
[CITY, STATE, ZIP]

Secondary Education Partner
hereby **Partner**

Name [NAME HERE]
Address [ADDRESS HERE]
[CITY, STATE, ZIP]
TEA School District Code [TEA ID HERE]

Partnership Type:
hereby **Dual Credit Program**

check one:
☐ ECHS ☐ Technical Dual Credit
☐ P-TECH ☐ Career Academy
☐ Dual Credit Program ☐ Other

If other, please specify:

III. TERM AND TERMINATION

Effective Date: [INTENDED START DATE HERE]
Expiry Date: [INTENDED END DATE HERE]

This Agreement will become effective on the day of last signature or the effective date above, whichever is later; and remain in effect until the expiry date or until either party decides to terminate the agreement. Either party may terminate this Agreement by giving the other party notice in writing at least thirty (30) days before the beginning of the first day of the IHE semester or Partner semester, whichever is earlier. It is the intent of both parties that no termination shall be made during the middle of the school year which will disrupt the academic progress for the students of the program, unless the parties mutually agree.

IV. DUAL CREDIT PROGRAM GOALS

House Bill 1638, TEC, Section 28.009 (b-1) and (b-2), requires Texas Higher Education Board (THECB) and the Texas Education Agency (TEA) to collaboratively develop statewide goals for dual credit programs to provide guidance for institutions of higher education (IHEs) and independent school districts (ISDs). The following are the specific program goals aligned with the statewide goals for the programs covered under this Agreement:

1. Independent school districts and institutions of higher education will implement purposeful and collaborative outreach efforts to inform all students and parents of the benefits and costs of dual credit, including enrollment and fee policies.

   Provide an overview of the dual credit program goals here, with specific descriptions on how the program goals align with this statewide goal.

   Suggested measures of implementation:
   - *Documentation summarizing collaboration and outreach efforts of IHEs and secondary school partners will be readily available and posted.*

   Suggested items to include:
   - *Collaboration between ISDs and IHE partner(s) to host informational sessions for students and parents on dual credit opportunities, benefits and cost*
   - *ISD and IHE dual credit webpages reflect the most current dual credit program information including enrollment and fee policies*
   - *Hosting dual credit 101 sessions for high school counselors*
   - *Collaboration between ISDs and IHE partner(s) on a marketing campaign*

2. Dual credit programs will assist high school students in the successful transition to and acceleration through postsecondary education.

Provide an overview of the dual credit program goals here, with specific descriptions on how the program goals align with this statewide goal.

Suggested measures of implementation:

- *Analysis of measures in enrollment in and persistence through postsecondary education, disaggregated by student sub-population.*

Suggested items to include:

- *Student enrollment in postsecondary after high school*
- *Time to degree completion*
- *Semester credit hours to degree*

3. All dual credit students will receive academic and college readiness advising with access to student support services to bridge them successfully into college course completion.

Provide an overview of the dual credit program goals here, with specific descriptions on how the program goals align with this statewide goal.

Suggested measures of implementation:

- *Analysis of measures in enrollment and degree completion, disaggregated by student sub-population.*

Suggested items to include:

- *Student enrollment in postsecondary after high school*
- *Time to degree completion*
- *Decrease in excess number of semester hours beyond required hours to degree completion*

4. The quality and rigor of dual credit courses will be sufficient to ensure student success in subsequent courses.

Provide an overview of the dual credit program goals here, with specific descriptions on how the program goals align with this statewide goal.

Suggested measures of implementation:

- *Analysis of performance in subsequent course work.*

V. ROLES AND RESPONSIBILITIES

House Bill 1638, TEC, Section 28.009 (b-2), requires any Agreement to establish the Partner's and the IHE's respective roles and responsibilities in providing the program.

A. IHE ROLES

a. The IHE agrees to post this Agreement, including any amendments, to the website each year for public review.

Website: [INSERT WEBSITE HERE]

b. The IHE will: *(check all that apply)*
☐ Provide IHE faculty and academic staff to develop and define college-level course materials and curriculum
☐ Provide or recruit faculty to teach Dual Credit Program courses
☐ Implement one or more Dual Credit Program courses
☐ Deliver instructional materials to all students
☐ Consider the use of free or low-cost open educational resources in courses offered under the program
☐ TEA should copy and paste this line to include any other payable sources the agency deems is necessary to include for the purposes of data collection.

c. The IHE is responsible for funding in part or in whole:
☐ Tuition costs
☐ Transportation costs that might be incurred for students from the Dual Credit Program
☐ Instructional materials
☐ TEA should copy and paste this line to include any other payable sources the agency deems is necessary to include for the purposes of data collection.

d. IHE agrees to fulfill any additional roles and responsibilities excluded from the Agreement that may be specified in any addendum to the Agreement.

B. PARTNER ROLES

a. The Partner agrees to post this Agreement, including any amendments, to the website each year for public review.

Website: [INSERT WEBSITE HERE]

b. Pursuant to Texas Education Code §§ 28.010, each school year, Partner agrees to notify the parent of each district student enrolled in grade nine or above of:
   i. The availability of the Dual Credit Program;
   ii. Funding for enrollment in the Dual Credit Program;
   iii. Subsidies based on financial need available for Dual Credit Program students; and
   iv. Qualifications for enrollment in the Dual Credit Program.

   Notification may be provided on the Partner's Internet website, in which case Partner agrees to include the name and contact information of the public or private entities offering the program.

c. The Partner will: *(check all that apply)*
   ☐ Provide Partner teachers and academic staff to develop and define college-level course materials and curriculum
   ☐ Provide or recruit teachers to teach Dual Credit Program courses
   ☐ Implement one or more Dual Credit Program courses
   ☐ Deliver instructional materials to all students
   ☐ Consider the use of free or low-cost open educational resources in courses offered under the program
   ☐ TEA should copy and paste this line to include any other payable sources the agency deems is necessary to include for the purposes of data collection.

d. The Partner is responsible for funding in part or in whole:
   ☐ Tuition costs
   ☐ Transportation costs that might be incurred for students from the Dual Credit Program
   ☐ Instructional materials
   ☐ TEA should copy and paste this line to include any other payable sources the agency deems is necessary to include for the purposes of data collection.

e. Partner agrees to fulfill any additional roles and responsibilities excluded from the Agreement that may be specified in any addendum to the Agreement.

VI. DUAL CREDIT PROGRAM COSTS

A. Unless otherwise specified in this Agreement, the student or student's parent/guardian will pay tuition and fees for students enrolled in dual credit courses, in accordance with the following table. The Parties reserve the right to cancel course sections in which enrollment is less than [FILL MINIMUM ENROLLMENT] students.

B. FEE TABLE

Student Category	Total Costs	Total Costs (FAST)	Minimum Credits
In-district students	*$ per credit hour/semester*		
Out-of-district students			
Other categories as determined by the Parties			

C. LIST OF TUITION AND FEES

- **a.** Tuition: *provide a description of tuition costs and what they are used for*
- **b.** Example Fee (Textbooks): *if the Dual Credit Program issues fees, list and describe them here.*
- **c.** Example Fee (Transportation): *if the Dual Credit Program issues fees, list and describe them here*
- **d.** Example Fee (Registration): *if the Dual Credit Program issues fees, list and describe them here*

D. The Parties may amend tuition rates through the usual amendment process provided they provide advance notice. The Parties may provide fee waivers on a case-by-case basis.

VII. FINANCIAL AID FOR SWIFT TRANSFER (FAST)

If the IHE has **not** opted into the FAST program, do not fill this section out. If the IHE has opted into the FAST program under HB8:

1. All dual credit classes shall be billed at the FAST maximum tuition rate set by the Texas Higher Education Coordinating Board. Dual credit students who are not eligible for FAST shall be assessed dual credit tuition, fees, and textbook charges as approved by the WC Board of Trustees. The IHE shall waive all tuition and fees for students who qualify for FAST as verified by the Texas Higher Education Coordinating Board.

2. Students of public independent school districts are eligible to participate in the FAST program after qualifying for the Free and Reduced Lunch program. The IHE does not determine eligibility for student participation in FAST.

VIII. STUDENT ELIGIBILITY

Provide a description of student eligibility requirements for college-level courses. Consider providing information through the following structure:

A. TEST REQUIREMENT OVERVIEW

Academic Courses	
STAAR: *Algebra I EOC*	*Level 2, Score 4000*
TSI: *Mathematics*	950 **OR** 910-949 + diagnostic score of 6
TSI: *ELAR*	945-990 + Essay of at least 5 **OR** 910-944 + diagnostic score of 4-6 + Essay score of 5-8
Additional Test Requirement	*Additional Score Requirement*
Technical Courses	
Additional Test Requirement	*Additional Score Requirement*

B. ACADEMIC COURSES

A high school student is eligible to enroll in academic dual credit courses if the student:

a. Demonstrates college readiness by achieving the Texas Success Initiative ("TSI") minimum passing standards as set forth in 19 Texas Administrative Code § 4.57 on relevant assessment instrument section(s) approved by the THECB in 19 Texas Administrative Code§ 4.56

b. Demonstrates that the student is exempt under the TSI provisions as set forth in 19 Texas Administrative Code§ 4.54

c. *Additional eligibility requirements as required by the Parties. Potential requirements may include:*

   i. *High school GPA*
   ii. *Letters of recommendation*
   iii. *Disadvantaged students*
   iv. *Prior disciplinary or attendance issues*

C. TECHNICAL COURSES

A high school student is eligible to enroll in workforce credit dual courses if the student:

a. Achieves the minimum score for TSI college readiness in reading, writing, and/or mathematics as set forth in 19 Texas Administrative Code § 4.85 on other approved assessments for dual credit student eligibility requirement

b. *Additional eligibility requirements as required by the Parties. Potential requirements may include:*

   i. *High school GPA*
   ii. *Letters of recommendation*

iii. *Disadvantaged students*
iv. *Prior disciplinary or attendance issues*

D. ADMISSION PROCESS

Provide a description of the admission process. Consider providing information on:

a. *Admission applications*
b. *Required fee payments*
c. *Test score submission*
d. *Transcripts*
e. *Proof of Residency*
f. *Timeline*

IX. ACADEMIC POLICIES

Use this section to describe the individual academic policies and procedures of the Parties. Consider using the following structure.

A. IHE POLICIES

Provide a description of the IHE academic procedures and policies. Consider providing information on:

a. *Civil Rights Compliance*
b. *Title IX*
c. *Students with Disabilities*
d. *Student Conduct and Discipline*
e. *Access by students to IHE resources*

B. PARTNER POLICIES

Provide a description of the IHE academic procedures and policies. Consider providing information on:

a. *Civil Rights Compliance*
b. *Title IX*
c. *Students with Disabilities*
d. *Student Conduct and Discipline*
e. *Access by students to Partner resources*

C. CURRICULUM AND INSTRUCTION

Provide a description of the course curriculum and instructions here. Consider providing descriptions of:

f. Syllabus and course design
g. Alignment with Partner or IHE goals
h. Course Monitoring
i. Class Location
j. Online Courses
k. Access of Dual Credit Program to out-of-district students
l. Attendance policy

D. STUDENT EXPECTATIONS

The Parties may consider providing responsibilities for students taking dual credit courses. Consider providing information on:

a. Attendance requirements
b. In-class conduct
c. Extracurricular activities
d. Makeup or late work

E. GRADING SYSTEM

Provide a description of the grading system used by the Dual Credit Program. Consider providing descriptions of:

a. Letter, GPA, or Percentage Grades
b. Withdrawal or incomplete procedures
c. Failure procedures

F. ACADEMIC GUIDANCE AND SUPPORT

House Bill 1638, TEC, Section 28.009 (b-2), requires any Agreement to describe the academic supports and, if applicable, guidance that will be provided to students participating in the program. The Parties shall establish common advising strategies and terminology related to dual credit and college readiness, provide for endorsements described by Texas Education Code § 28.025(c-1), and identify tools to assist school counselors, students, and families in selecting endorsements offered by the College.

Provide a description of academic guidance and support students may receive in the Dual Credit Program. Consider providing descriptions of:

A. ADVISING

a. *Access to services and facilities*
b. *Advising strategies*
c. *Assigned advisors*
d. *Degree plan*

B. CAREER SERVICES

C. STUDENT SUPPORT

a. *Counseling or mental health services*

G. DATA SHARING

Provide a description of the nature of data sharing between Contracting Parties. Consider providing information on:

a. *FERPA requirements, identifiable information access*
b. *Applicable Texas law or regulations*
c. *IHE policies*
d. *ISD policies*
e. *Student and Parent/Guardian rights*

X. COURSE EQUIVALENCY CROSSWALK

House Bill 1638, TEC, Section 28.009 (b-2), requires any Agreement to establish, or provide a procedure for establishing, the course credits that may be earned under the agreement, including by developing a course equivalency crosswalk or other method for equating high school courses with college courses and identifying the number of credits that may be earned for each course completed through the program.

Parties may use the following tables to provide course crosswalks or provide their own, provided custom-made crosswalks provide information on course names, PEIMS numbers, and credit hours.

A. ACADEMIC COURSE CROSSWALK

Service ID	Partner Course Name	Credits	IHE Course Name	Credits

B. TECHNICAL COURSE CROSSWALK

Service ID	Partner Course Name	Credits	IHE Course Name	Credits

XI. AMENDMENT POLICY

Contracting Parties may amend this agreement with written consent of both parties. Any changes to this Agreement may only be made by mutual written agreement of the Parties. This Agreement may not be assigned by either party without the express written consent of the other party. Any attempt to assign without such consent shall be void, and shall be deemed a material breach of this Agreement. In each amendment, Parties agree to indicate which Sections of the original Agreement are amended.

Additional sections may be required in an amendment. Examples may include:

a. *Indemnity*
b. *Intellectual Property concerns*
c. *Notice of consent, approval, or requests between Parties*
d. *Additional programs*
e. *Conflict resolution*

XII. LEGAL COMPLIANCE

TEA should use this section to capture any previously unmentioned legal obligations that the Parties must operate under. This section may include references to applicable state laws or regulations, as well as federal laws or regulations.

XIII. SIGNATURES

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their duly authorized representative as shown below.

Secondary Education Partner
[PARTNER NAME HERE]

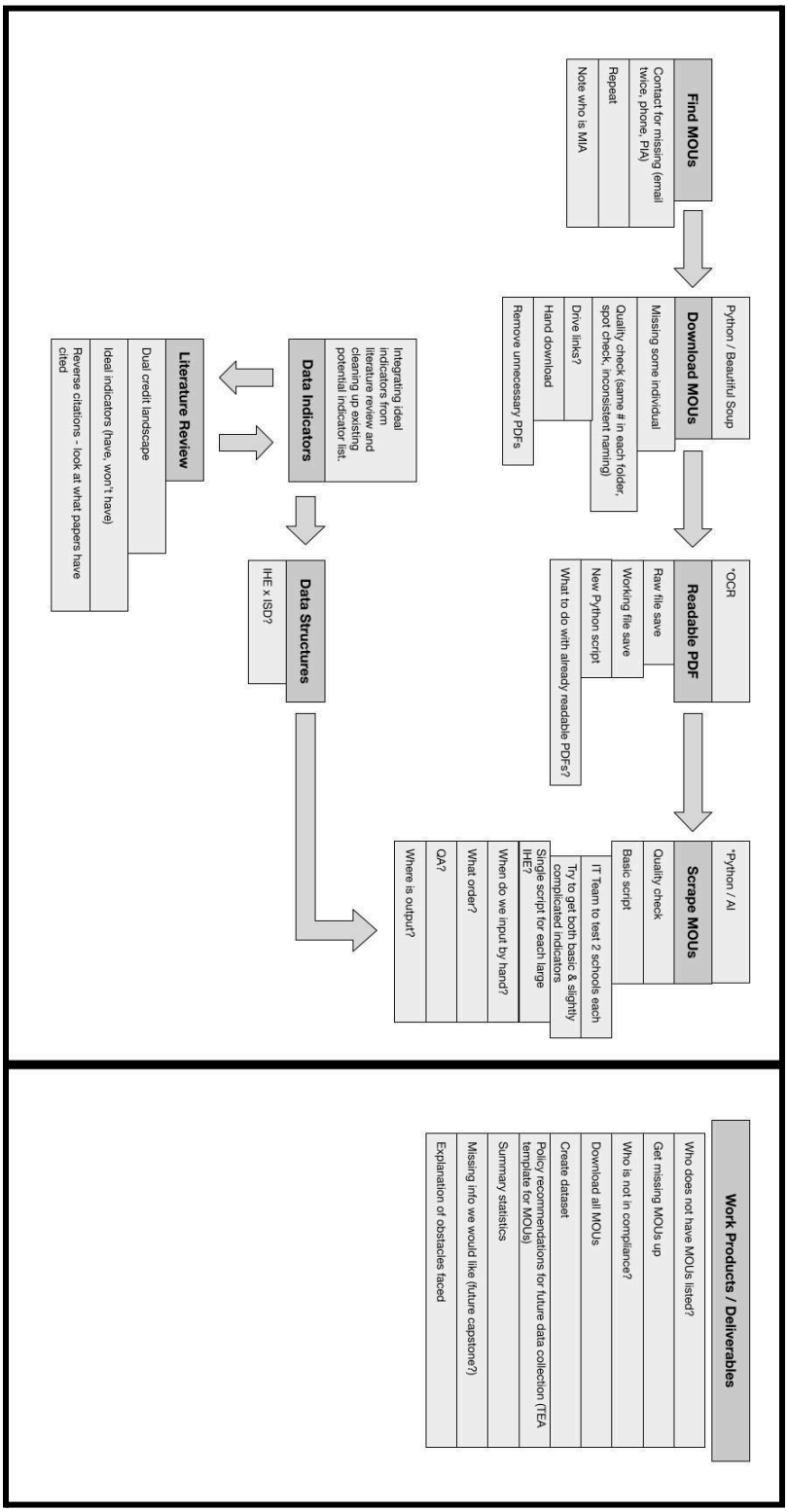
Signature:
Title:
Date:

Institution of Higher Learning
[IHE NAME HERE]

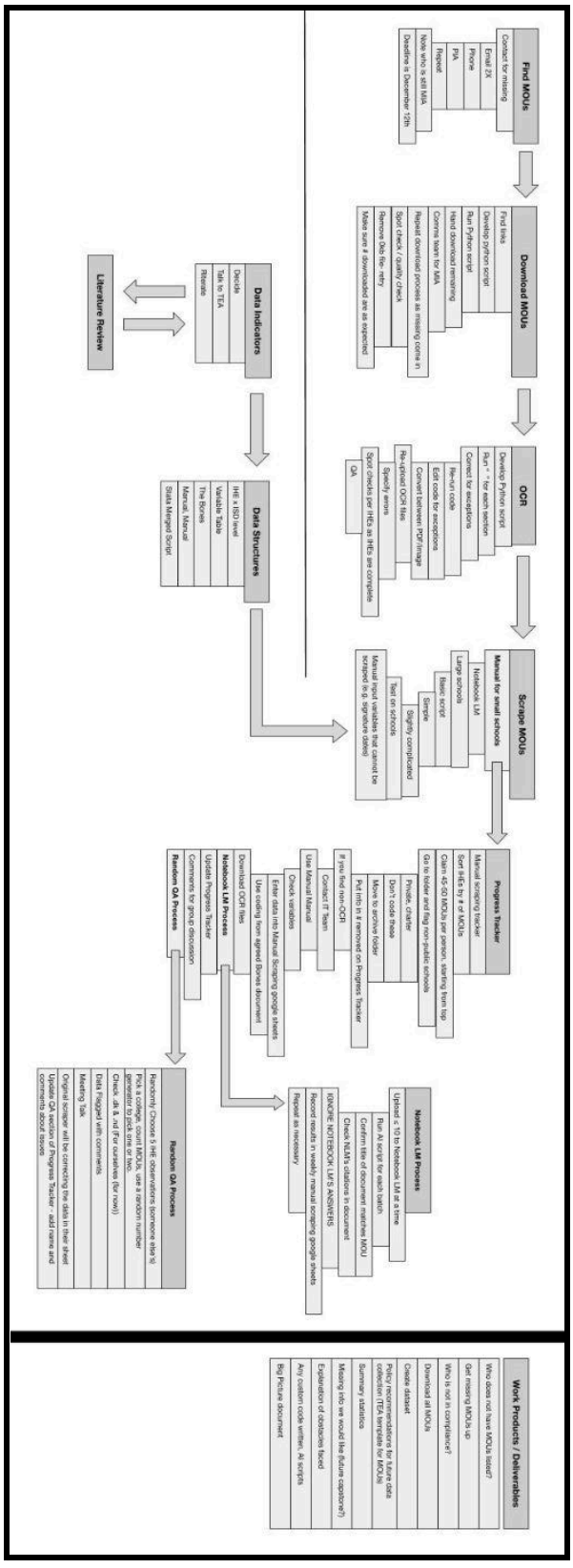
Signature:
Title:
Date:

Appendix B - Big Picture Process

Version 1 (8/19/24 – 10/25/24)



Version 2 (10/26/24 – 5/6/25)



Appendix C - Notes on Usage of AI and Python

Artificial Intelligence (AI) Usage

There has been a lot of debate surrounding the use of AI language models such as ChatGPT and Microsoft's Copilot in research and other academic tasks. As a learning exercise, and to explore the benefits and drawbacks of this new technology, our team decided early on to try and incorporate the use of select AI tools into our project in a controlled and transparent fashion. One of the first and simplest ways we used AI was in the creation of our three basic programs. With limited coding experience, and curiosity towards its abilities, our team utilized ChatGPT 4.0 to assist in the creation of three simple Python programs to 1) download MOUs files from university websites, 2) apply an OCR program to any documents that did not contain searchable text data, for example, because they were images of scanned files, and 3) to search for certain data in the document and generate a report for our data collections efforts.

The second use of AI was by our team of manual data scrapers. While two institutions of higher education (IHEs) had hundreds of MOUs, making it worth our time to automate the scraping of data from their MOUs, most did not. This meant that it was more efficient in those cases for our team to scrape the data manually. Nearly every IHE used different styles and levels of complexity when creating these MOUs, which required us to actively search through each MOU in its entirety to try and find the relevant data. To expedite the collection of very basic information, such as Partner names and types, we used Google's freely available research-assistance AI, NotebookLM, to find and display certain data as indicated by a standard prompt. We chose NotebookLM because, unlike ChatGPT, it only analyzes documents uploaded to it when answering questions, as opposed to searching the web to formulate responses. It also cites where in the uploaded document it found the results it is displaying, which enables the user to quickly check the answer provided by the AI against the source document. Furthermore, NotebookLM can handle multiple documents at once, which we hoped would help our small team scrape the relevant data in a timely fashion.

In both of these use cases, we found the AI to be helpful if utilized carefully. The most successful use of AI was in the creation of our small Python programs. ChatGPT was very effective not only in creating, from scratch, programs based upon our described needs but also in teaching us how Python worked in general. Later, as we took the programs and edited them based on our changing needs, ChatGPT was very useful in fixing errors and telling us why they happened in the first place.

Our use of NotebookLM was less successful than that of ChatGPT. We discovered that it could be effective in finding simple information in uploaded MOUs when given specific prompting, but it could not accurately locate more abstract data that required a more complex understanding of the written language of the document. The problem seemed to stem from the fact that nearly every IHE wrote their MOU differently, with different terminology for the data we were collecting. This made it difficult to write specific prompts for some data points, leading to unclear or incorrect answers from NotebookLM. It also suffered from the tendency to occasionally make up information despite explicitly being told not to. Early on we realized that the best use of NotebookLM was as a search tool and in the end, some of our manual scrapers simply decided not to use NotebookLM and defaulted to ctrl-f instead. Because NotebookLM provides citations to the exact locations in the document where it finds its answers, we could simply use its responses to our prompt as a way to jump to the relevant sections in the documents and find the data ourselves. The exact prompt we used with NotebookLM can be found here:

NotebookLM Prompt

> *Are any of these agreements for an ECHS, early college high school, charter school, private school, religious school, or magnet school? << ask before*

Please examine each of these agreements and answer the following questions:

> *What is the effective date for this agreement?*
>
> *On what date was the document signed?*
>
> *Does this agreement have an expiry date?*
>
> *Does this agreement feature a dual credit course crosswalk or other comparison of college classes to high school classes?*
>
> *Does this agreement mention whether the college participates in the FAST program?*
>
> *Who is responsible for paying the tuition for these dual credit classes?*
>
> *What is the tuition rate for these dual credit classes?*
>
> *Does this agreement specify where the funding for this program is to come from?*
>
> *Who is responsible for paying for student transportation?*

Does this agreement cover academic classes, technical or vocational classes, or both?

Does this agreement mention the state goals this dual program is attempting to meet?

What, if any, academic support is offered to dual credit students?

Are dual credit students offered academic advising? Which party is responsible?

Does this agreement clearly describe the roles and responsibilities of each party?

Does this agreement mention data sharing between parties?

Who provides the instructors for these classes?

Who is responsible for paying textbook or material costs?

Are there eligibility requirements to enroll in these dual credit classes?

What grading system is used for these dual credit classes?

Are dual credit students required to create a degree plan?

Are these dual credit classes offered online?

Are out-of-district students, including homeschooled or private school students, mentioned in the agreement?

Does this agreement mention ECHS, early college high school, or P-TECH programs?

Remember to answer the questions for each of these documents, not skipping any, and if there is no data in which to answer a question for a given document, please note so. Make sure your answers are brief.

Thank you.

Recall that we did not use NotebookLM's direct answers to these questions as they were frequently incorrect, but we did look at the portions of the documents that it flagged as the text it used to provide its answer.

Python Scripting Notes

To create our three programs (the web-scraping program, the data collection program, and the OCR program), we chose to write them ourselves using the Python programming language. We chose Python due to its popularity and the availability of open-source resources and guides for its use. The popularity of Python, and its simplicity as a programming language, also made it easier to use ChatGPT to help correct errors and bugs. Due to time constraints and the limited programming experience of our team members, we believed that the use of a programming language that was easy to learn and easy for ChatGPT to help with would be the best choice. We were also fortunate to have been able to call on Dr. Ryan Beasley for advice on writing the code and where to find certain resources.

Automating File Downloads

The purpose of the first set of scripts was to extract MOUs from public university websites. Given the large volume of documents, we opted to automate the process and reduce the workload for the manual scraping team. The web scraping script we created uses BeautifulSoup, as suggested by Dr. Beasley. This Python package is designed to navigate and parse HTML files, making it ideal to search through and collect information from websites. Our script went through four iterations, which will be provided in the Google Drive associated with this project.

Ultimately, our Python script successfully located and downloaded over 1,500 individual documents. The most common challenge we faced in creating this script was navigating through websites with complex construction. Several websites had the links to download the MOUs hidden within multiple layers of the GUI interface, which made it difficult to access with Python. Other institutions hosted their MOUs on a cloud storage platform. For some institutions, this was useful - for example, UT Austin stored their documents all in one place in a Box, Inc. cloud drive. In this instance, the use of a shared drive structure was useful - it allowed us to manually download every file we needed with one button. However, other institutions chose to post their MOUs individually as Google Drive links. The lack of a centralized structure and general inaccessibility made our task more difficult to accomplish.

Optical Character Recognition

Once our documents were collected in the shared drive, we processed them with our OCR script. This code was designed to run multiple files through OCR technology. This would generate machine-readable PDFs to be used in a future script and to facilitate manual scraping. The primary packages we used here are **ocrmypdf,** which allows for converting PDFs to a machine-readable format; **os** and **shutil**, which allowed our script to access and copy files in our directory; and **pymupdf**, which allowed us to open PDF files for manipulation. These software packages represent common, open-source Python tools found in popular code repositories such as Github.

In the design of this script, we applied lessons we learned in our previous attempt. Instead of developing several versions that vary in structure and purpose, we used just two versions - a small test script to OCR one or two files, and a full version we would add exceptions to as we found them. We also experimented with the structure of the script; instead of creating several functions, most of the code ran through a triple loop in the main function.

When creating this script, we found it necessary to correct for errors as they occurred - this is because the errors associated with PDF compatibility with OCR are not visible like the issues presented in web scraping. We solved this problem by creating different processes for each exception and giving each document a “tag” in the file name based on the issue that it presented. Files that did not present any initial problems, or files that were already machine-readable, were marked with the **ocr**_ tag. Files that were tagged with accessibility features were marked with **taggederror**_ and skipped - these were already compatible with machine reading. Files that were digitally signed were marked with the **digsig**_ tag and forced through the technology to ensure the data could be extracted without issue. One edge case we found were PDFs with an unrecognizable color scheme - for these files, we attached a **color**_ tag and added a line of code to alter the color scheme of the file. This did not impact the visual appearance of the document. Finally, some PDFs were encrypted and manually scanned, making it difficult to manually scrape or detect text with OCR. We created a separate process for these files: collecting images of each page, converting these images to PDFs, compiling the new PDFs, running these PDFs through OCR, and attaching the **bruteforce**_ tag. Overall, we processed 864 **ocr**_ files, 134 **taggederror**_ files, 382 **digsig**_ files, 4 **color**_ files, and 126 **bruteforce**_ files.

Data Scraping

For our final and most complicated script, we designed code to scan large groups of MOUs with similar structures (i.e., those following a template), extract relevant data, and record the information in an Excel file. We opted to apply automation to two universities; UT Austin (589 documents) and Tarleton University (102 documents). They were selected because they had large numbers of fairly uniform MOUs. The institutions with non-uniform contracts or smaller numbers were distributed to members of the manual scraping team. We developed two scripts, one for each university. This allowed us to study the differing languages and formats and tailor our strategies for collecting the data. The script uses **pandas,** a Python package designed to access and manipulate data in Excel files. We were able to collect over **13,400 values** within **673 observations** - and later trimmed the data to 304 PDFs fully recorded.

Our approach to data collection groups the variables into four categories, each requiring a different approach. **Group 1** required a *Scan and Record* method: given a text file with information, the script would search the document for any term in the file and record that term if found. This worked well for variables like *Partner Name* and *IHE Name*. **Group 2** required a *Search and Record* method, which would use keywords defined by the Python scripter. Once found, pre-determined values based on the keywords found would be used. For variables like FAST this worked well - if key terms like “FAST” or “swift transfer” were found, we would record “yes” - otherwise we would record no. This method was also used for categorical variables - for example, for Academic Program, we would search for separate academic and technical keywords and record “academic”, “technical”, “both”, or “.nd”, depending on the result. **Group 3** required a more complicated *Search and Paste* method - this was especially useful for effective and expiry dates. Given a list of keywords, the script would search for them. Once found, the script would check the adjacent groups of words in the PDF, searching for a date - and once found, the script would extract this information and record it. This process was necessary to avoid extracting incorrect information in the form of dates unrelated to effective and expiry dates. **Group 4** variables had complicated structures that we determined needed to be collected manually to maximize our efficiency. This was the case for variables like Last Signature Date, which was usually handwritten and made OCR-detection unreliable.

Challenges and Limitations

We encountered several challenges and limitations in this project. Python scripts prove to be invaluable in our attempt to streamline the file collection and OCR process. Using ChatGPT to create a baseline for our code and minor debugging saved time and created a backbone to build from; however, obscure technical issues and complex code structure still elude the language processor, leaving plenty of room for human code. OCR technology struggles with handwritten and blurry text, emphasizing the need for high-quality scans or online form-filling. Several hidden structural issues presented a problem for OCR technology, which requires detailed exception handling within the script.

In the process of creating code for scraping variable information from PDfs, we iterated on versions that included the **spaCy** package, designed to import a Natural Language Processor. The goal was to use a natural language model and pre-set keywords to detect highly similar terms we might have missed - for example, when searching for data sharing using “data”, “sharing”, and “FERPA”, the NLP might also search for “information”, “records”, “confidential”, and other similar terms. In the end, we opted not to incorporate this package or natural language processing into the workflow, as it introduced a variable of unreliability late into the project. Continued experimentation with NLP technology is recommended, as it can potentially be useful for projects with longer time frames. Despite these limitations, our automated approach substantially reduced the workload and allowed us to extract structured data efficiently.

Appendix D - Manual for Manual Scraping

Note: During the scraping process, we originally used the variable "isd" to refer to the dual credit Partner. In the final dataset, "isd" was renamed to "Partner" to reflect that not all Partners are independent school districts (ISDs).

Public School

- Check the type of school by keyword searching.
    - Scrape: regular MOU, P-TECH, Early College High School (ECHS), Career Academies (CA), and Technical Dual Credit Programs (TDCP)
    - Do Not Scrape: private, charter, magnet, College Prep Math and English Language Arts Courses, EMT, Premier/DBA/ResponsiveEd, Career Academy.
    - If not listed here, consider not scraping/discuss with the group.
- Check if name connotes that it may be a religious school.
- If any type other than Independent School District → archive it.
- If MOU needs to be archived for any reason, then don't enter its data onto any of our manual scraping sheets.

IHE Name

- String variable: As written in Cleaned IHE List.

Partner Name (reference here)

- String variable: As written in MOU, with formatting as described below.
    - Unless there are discrepancies between how different IHEs name the same Partner. In that case, standardize the Partner name, discussing with the team if necessary.
- Capitalize the proper nouns.
- When using hyphens for tags, format as space-hyphen-space.
- Use tags to indicate what kind of Partner the data refers to.
- If School District:
    - (Default) if Independent School District (ISD) or Collegiate Independent School District:
        - [ISD Name] - ISD
        - E.g. Bastrop - ISD
    - If Consolidated Independent School District (CISD):

        - [ISD Name] - CISD
        - E.g. Anderson-Shiro - CISD
    - If Common School District (CSD):
        - [ISD Name] - CSD
        - E.g. Crockett County - CSD
    - If Consolidated Common School District (CCSD)
        - [ISD Name] - CCSD
        - E.g. Crockett County - CCSD
    - If Municipal School District (MSD):
        - [ISD Name] - MSD
- If High School:
    - (Default) if it is just a high school, not an ISD:
        - [School Name] - HS
        - E.g. Alice - HS
    - If Early College High School (ECHS) or Early College Academy (ECA):
        - [School Name] - ECHS
        - E.g. Brazos Valley - ECHS
    - If Pathways in Technology (P-TECH):
        - [School Name] - P-TECH
        - E.g. College Station - P-TECH
    - If Technical Dual Credit Agreement/Program:
        - [School Name] - TDCP
        - E.g. Uvalde - TDCP
    - If Career Academy:
        - [School Name] - CA
        - E.g. Bastrop - CA
    - If it is an online high school:
        - [School Name] - OHS
        - E.g. Texas Virtual Academy - OHS
- If the Partner name is a school district (as opposed to a high school) and exists more than once in the State of Texas:
    - Check the School District Locator to confirm that the instances are indeed in separate geographies
    - If they are indeed separate entities in separate geographies, then apply a letter suffix to the end of the Partner name corresponding to the ascending numerical order of the district's code
        - E.g. if Wylie ISD in Collin County, (43914), use "Wylie - A"

        - E.g. if Wylie ISD in Taylor County, (221912), use “Wylie - B”
- If MOU lists multiple institutions:
    - If the MOU mentions a dual credit program for the ISD in general, as well as several high school programs (including individual schools, ECHS, or P-TECH programs), create an ISD entry and several individual School entries
    - If the MOU is explicitly intended to create an ECHS or P-TECH program and not a traditional dual credit program, use the School Name (or ISD name if School unavailable) for the individual School entries, without creating an overall ISD entry

Effective Date

- String Variable with Categories: (MM/DD/YY), (MONTH YY), (SEMESTER YY), or (.nd)
- If exact date is given → (MM/DD/YY)
- If only month and year are given → (MONTH YY)
- If only semester and year are specified → (SEMESTER YY)
- If month and year are specified but not the day, then enter the date as day 1 of that month using (MM/DD/YY) format
- Not disclosed → (.nd)
- If there are amendments, then use the latest date of any amendment
- Keywords: term, commence, execute

Last Signature Date

- String Variable with Categories: (MM/DD/YY) or (.nd)
- Date → (MM/DD/YY)
- Not disclosed → (.nd)
- Defer to the most recent signature date, whether it is from the IHE or ISD

Expiry Date

- String Variable with Categories: (MM/DD/YY), (SEMESTER YY), (MONTH YY), (until termination), (X year/s or until termination), (after X year/s), or (.nd)
- If specific date is given → (MM/DD/YY)
- If only month and year are given → (MONTH YY)
- If only semester and year are given → (SEMESTER YY)
    - E.g. If it expires at the end of the academic year → (spring YY)
- If it stays in effect “until termination” → (until termination)

- If it stays in effect for “X years” or “X academic years” until termination → (X years or until termination)
- If it stays in effect for “X years” or “X academic years” from a given date, which is typically the effective date → (after X years)
- If not disclosed → (.nd)
- Keywords: term, terminate

Dual Credit Course Crosswalk

- Categorical Variable: (yes) or (no)
- If the MOU itself contains a course crosswalk → (yes)
- If the MOU itself does not contain a course crosswalk, even if another section of the document mentions that one exists → (no)
- If the course crosswalk is referenced as being a separate document from the MOU itself → (no)

FAST

- Categorical Variable: (yes) or (no)
- If FAST is explicitly mentioned → (yes)
- If FAST is not explicitly mentioned → (no)
- If a program that sounds similar to FAST is described but FAST is not explicitly mentioned → (no)
- Keywords: swift, transfer, swift transfer, $, 55, $55

Complicated Tuition

- Categorical Variable: (yes), (no), or (.nd)
- If tuition pricing is clear and obvious → (no)
- If Partner adheres to FAST pricing and FAST pricing alone → (no)
- If the tuition pricing is specified in any document other than the MOU itself → (yes)
- If one must seek information from any source other than the MOU itself to be able to determine tuition costs → (yes)
- If there are different and/or undisclosed rates for tuition based on which party is paying for it (unless it’s FAST program) → (yes)
- If parties pay differently and/or parties receive funds differently from each other and it it not clear/obvious → (yes)
- If it takes more than 10 seconds to understand → (yes)
- If uncertain→ (yes)

- If tuition is not mentioned → (.nd)
- Keywords: waive

Tuition Source of Funding *(Required by Law)*
- Categorical Variable: (yes) or (no)
- If source of funding for tuition is explicitly mentioned → (yes)
    - This can include “course fees”
- If source of funding for tuition is not explicitly mentioned → (no)
- Flag for double check if (no), because this one is legally required.
- Keywords: course fees, tuition, funding

Transportation Cost Responsibility
- Categorical Variable: (isd), (ihe), (stu), (isd_ihe), (isd_stu), (ihe_stu), (isd_ihe_stu), or (.nd)
- If not disclosed → (.nd)
- If not explicitly stated → (.nd)

Course Type
- Categorical Variable: (academic), (technical), (both), or (.nd)
- If both academic and technical programs are offered → (both)
- If only academic programs are offered → (academic)
- If only technical programs are offered → (technical)
- If not disclosed → (.nd)
- If the MOU only lists classes but doesn’t specify overall program type → (.nd)
- Keywords: Academic Course Guide Manual, ACGM, workforce, Workforce Education Course Manual, WECM, degree, associate, associate's, technical, CTE, AAS (technical)

Dual Credit Alignment to State Goals *(Required by Law)*
- Categorical Variable: (yes) or (no)
- If MOU explicitly mentions any relevant state codes or standards→ (yes)
- If clearly and obviously states the IHE’s “alignment with state educational goals” → (yes)
- If MOU does not explicitly mention any state codes or standards → (no)
- Flag for double check if (no), because this one is legally required.
- Keywords: rigor, TEC, Texas Education Code, House Bill 1638, statewide, SDCG

Academic Support Guidance *(Required by Law)*

- Categorical Variable: (yes) or (no)
- If guidance on provision of academic support or advising for students is explicitly mentioned → (yes)
- If guidance on provision of academic support or advising for students is not explicitly mentioned → (no)
- Flag for double check if (no), because this one is legally required.

Advising Academic Support - Responsibility

- Categorical Variable: (ihe), (isd), (isd_ihe), or (.nd)
- If only the IHE is responsible → (ihe)
- If only the Partner is responsible → (isd)
- If both IHE and Partner share responsibility → (isd_ihe)
- If responsible party for academic support and/or advising are not clearly and obviously stated → (.nd)

Roles Responsibilities - ISD & IHE *(Required by Law)*

- Categorical Variable: (yes) or (no)
- If evident in MOU → (yes)
    - Does not have to be said verbatim but does need to be clear
- If roles are not clearly outlined → (no)
- Flag for double check if (no), because this one is legally required.

Data Sharing - IHE & ISD *(Required by Law)*

- Categorical Variable: (yes) or (no)
- If stated that the parties share any student information, even if it is only grades → (yes)
- If not stated that the parties share any student information → (no)
- Flag for double check if (no), because this one is legally required.
- Keywords: data, sharing, data sharing, FERPA, confidentiality, report

Instructor Provided

- Categorical Variable: (isd), (ihe), (isd_ihe), (.nd), or (other)
- If instructors can only be provided by the IHE → (ihe)
- If instructors can only be provided by the ISD → (isd)
- If either the ISD or IHE can provide instructors → (isd_ihe)

- If the IHE has a process by which an ISD instructor can become qualified to teach dual credit courses → (isd_ihe)
- If mentioned, but unclear → (other)
- If not stated clearly → (.nd)
- Keywords: instructor, faculty, SACSCOC

Textbook Costs - Responsible

- Categorical Variable: (isd), (ihe), (stu), (isd_ihe), (isd_stu), (ihe_stu), (isd_ihe_stu), (isd_other), or (stu_other)
- If not disclosed → (.nd)
- If a nonspecific third party is responsible → (other)
- Keywords: book, books, materials

Mentions Texas Eligibility Requirements

- Categorical Variable: (yes) or (no)
- If MOU mentions any standardized test (such as TSI) or other eligibility requirement → (yes)
- If MOU does not mention any standardized test (such as TSI) or other eligibility requirement → (no)
- Keywords: TSI, TSIA, TSI-A, d2, TSIA2, Texas Success Initiative, TAC, Texas Administrative Code

Grading System

- Categorical Variable: (percentage), (letter), (gpa), (pass_fail), (combo), (other), (.nd)
- “Numeric” or percentage out of 100 → (percentage)
- Letter grade (ABC) → (letter)
- GPA out of 4.0, 5.0, or 6.0, scale, etc. → (gpa)
- Pass or fail grade → (pass_fail)
- Any combination of the percentage, GPA, letter, or pass_fail → (combo)
- Any other grading system or if MOU says that district adopts its own grading system → (other)
- They use their own pre-existing (?) standard → (other)
- If the MOU says “standard grading system” → (other)
- If not mentioned → (.nd)
- Keywords: grades, letter grades, GPA, letter, numeric, numerical

Degree Plan

- Categorical Variable: (yes) or (no)
- If degree plans are explicitly mentioned → (yes)
- If something such as a “graduation plan of study” is described but the words “degree plan” are not mentioned verbatim → (yes)
- If degree plans are not explicitly mentioned → (no)
- Keywords: graduation plan of study

Online Courses Available ISD

- Categorical Variable: (yes) or (no)
- If it is clearly stated that online courses are offered → (yes)
- If the school is clearly an online/virtual school → (yes)
- If it is not clearly stated that online courses are offered → (no)
- Keywords: distance, distance education, distance learning, web, web-based, virtual, virtually, electronic, electronically, internet

Out of District

- Categorical Variable: (yes) or (no)
- If out-of-district students, including private or homeschool students, are explicitly mentioned → (yes)
- If out-of-district students, including private or homeschool students, are not explicitly mentioned → (no)
- Keywords: private, homeschool, home-school, home school, non-accredited, parochial

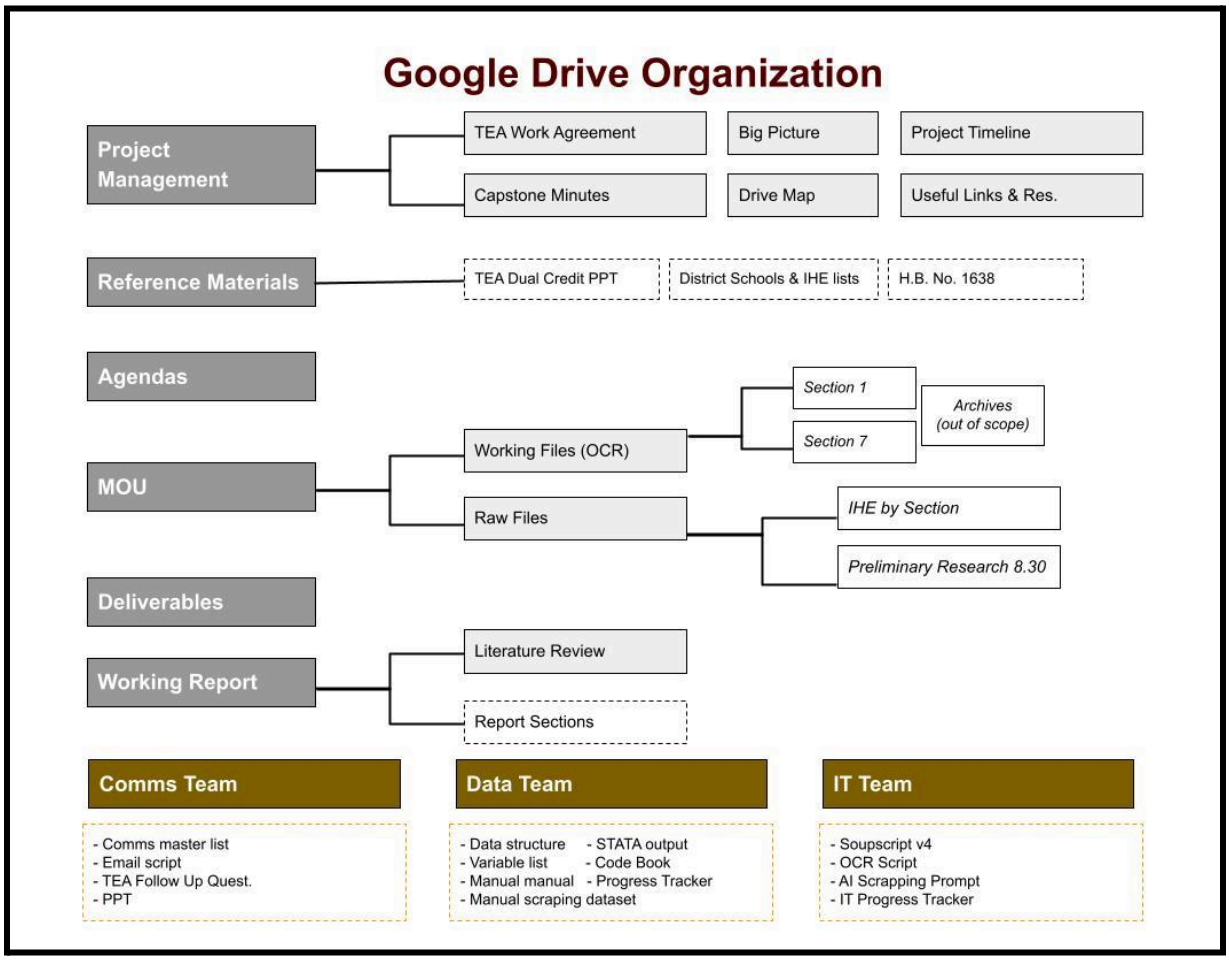
ECHS

- Categorical Variable: (yes) or (no)
- If the MOU involves an Early College High School (ECHS) → (yes)
- If the MOU involves a P-TECH program → (yes)
- If not → (no)

QA

- Categorical Variable: (yes) or (no)
- If quality assessed by someone other than original scraper → (yes)
- If not quality assessed by someone other than original scraper → (no)
- Leave comment and highlight changed cells

Appendix E - Google Drive Structure



Appendix F - Codebook and Variables Table

ID	Variable	Description	Type	Value Labels	Missing Value	Comments
1	entry_id	Unique identifier for each scrapper's entry.	Num.			
2	ihe	IHE Name: As written in the Cleaned IHE List	String			
3	ihe_type	IHE Type: Type of Institution of Higher Education (ex: Community College).	Cat.	Com Col, Pub Tech Col, State Col, or Univ		The values refer to "Community College," "Public Technical College," "State College Public," or "University."
4	ihe_city	IHE City: City where the Institution of Higher Education is located.	String			
5	ihe_zip_code	IHE Zip Code: ZIP code of the Institution of Higher Education.	String			
6	partner_name	Partner Name: As written in MOU, with formatting as described in the Manual Manual	String			
7	partner_type	Partner Type: The type of the partner school.	Cat.	CA, CCSD, CISD, CSD, ECHS, HS, ISD, MSD, OHS, P-TECH, or TDCP		The values refer to Career Academy, Consolidated Common School District, Consolidated Independent School District, Common School District, Early College High School or Early College Academy, High School, Independent School District or Collegiate Independent School District, Municipal School District, Online High School, Pathways in Technology, Technical Dual Credit Agreement/Program.
8	partner_district	Partner School District Number: The district number assigned to the Partner from TEA school districts list.	String			
9	eff_date	Effective Date: Date the MOU became effective.	String	MM/DD/YY, MONTH YY, or SEMESTER YY	.nd	Only in scope if MOU was in effect on or after January 1st, 2020.
10	last_sign_date	Last Signature Date: Most recent signature date on the MOU by either party.	String	MM/DD/YY	.nd	

11	exp_date	Expiry Date: Date the MOU expires.	String	MM/DD/YY, MONTH YY, SEMESTER YY, until termination, X year/s or until termination, or after X year/s	.nd	
12	course_crosswalk	Dual Credit Course Crosswalk: Whether or not there is a crosswalk (mapping) for dual credit courses between the IHE and Partner.	Cat.	yes or no		"yes" means the MOU itself contains a course crosswalk.
13	fast	FAST: Whether or not the MOU states that the Partner party participates in the Financial Aid for Swift Transfer (FAST) Program.	Cat.	yes or no		"yes" means the FAST program is explicitly mentioned in the MOU.
14	tuition	Complicated Tuition: Whether or not the MOU makes tuition rates clear and obvious according to the parameters outlined in the Manual Manual.	Cat.	yes or no	.nd	"no" means the tuition pricing is clear and obvious in the MOU or it refers only to FAST pricing alone.
15	transport_cost	Transportation Cost - Responsibility: The party responsible for covering transportation costs.	Cat.	partner, ihe, stu, partner_ihe, partner_stu, ihe_stu, or partner_ihe_stu	.nd	"stu" value refers to student who could be responsible for the cost.
16	course_type	Course Type: Whether the MOU includes academic courses, technical courses, or a combination of both.	Cat.	academic, technical, or both	.nd	
17	align_state_goal	Dual Credit Alignment to State Goals: Whether or not the MOU explicitly mentions alignment with state educational goals or references a specific state code relating to such.	Cat.	yes or no		"yes" means the MOU explicitly mentions any relevant state codes or standards or it clearly and obviously states “alignment with state educational goals.”
18	academ_supp	Academic Support Guidance: Whether or not guidance on provision of academic support / advising for dual credit students are referenced in the	Cat.	yes or no		

		agreement.				
19	roles_ihe_partner	Roles Responsibilities - ISD & IHE: Whether or not the respective roles and responsibilities of the ISD and Partner are clearly defined.	Cat.	yes or no		
20	tuition_funding	Tuition Source of Funding: Whether or not the sources of funding for the program are explicitly described.	Cat.	yes or no		
21	data_sharing	Data Sharing - IHE & ISD: Whether or not the MOU references data sharing between the IHE and Partner.	Cat.	yes or no		"yes" means it is stated that the parties share any student information, even if it is only grades.
22	advising_resp	Advising Academic Support - Responsibility: The party or parties responsible for providing academic support / advising.	Cat.	ihe, partner, or partner_ihe	.nd	
23	instruct	Instructor Provided: Which party or parties provide(s) the instructors for the dual credit program.	Cat.	partner, ihe, partner_ihe, or other	.nd	
24	mou_online_ihe	MOU Available Online - IHE: Whether or not the MOU is accessible publicly online via the IHE's website.	Cat.	yes or no		
25	textbook_responsible	Textbook Costs - Responsible: Which party is or parties are responsible for paying textbook costs for dual credit students.	Cat.	partner, ihe, stu, partner_ihe, partner_stu, ihe_stu, partner_ihe_stu, partner_other, or stu_other	.nd	
26	eligibility_req	Mentions Texas Eligibility Requirements: Whether or not the MOU includes state requirements for assessing student college (dual credit) readiness.	Cat.	yes or no		"yes" means the MOU mentions any standardized test (such as TSI) or other eligibility requirement.

27	grading	Grading System: The type of grading system used for the dual credit program.	Cat.	percentage, letter, gpa, pass_fail, combo, or other	.nd	“percentage” refers to any “numeric” or percentage out of 100. “letter” refers to ABC grades. “gpa” refers to any GPA out of 4.0, 5.0, or 6.0 scale. “pass_fail” refers to Pass or fail grade. “other” refers to any other grading system or if MOU says that district adopts its own grading system. “combo" refers to any combination of the percentage, GPA, letter, or pass_fail.
28	degree_plan	Degree Plan: Whether or not the MOU mentions degree plans for dual credit students.	Cat.	yes or no		
29	online_course	Online Courses Available ISD: Whether or not online courses are available in the dual credit program.	Cat.	yes or no		
30	out_of_dist	Out of District: Whether or not opportunities for out-of-district students, including homeschooled or private school students, to participate in the dual credit program are addressed in the MOU.	Cat.	yes or no		
31	echs	ECHS: Whether or not the MOU involves an Early College High School (ECHS).	Cat.	yes or no		
32	eff_date_new	Effective Date: Converted and stored in the correct date format.	Date	DD/MM/YY		
33	eff_date_special	Effective Date: Stores other date formats.	String	MONTH YY, SEMESTER YY	.nd	
34	last_sign_date_new	Last Signature Date: Converted and stored in the correct date format.	Date	DD/MM/YY		
35	last_sign_date_special	Last Signature Date: Stores other date formats.	String		.nd	
36	exp_date_new	Expiry Date: Converted and stored in the correct date format.	Date	DD/MM/YY		

37	exp_date_special	Expiry Date: Stores other date formats.	String	MONTH YY, SEMESTER YY, until termination, X year(s) or until termination, or after X year(s)	.nd	
38	scraper	Scrapper Name: Indicates who scraped the MOU for the entry.	Cat.			
39	qa	QA Name: Indicates who ensured the quality assurance for the entry.	Cat.			Someone other than original scraper

Appendix G - Glossary of Terms

- **CA:** Career Academy. Career Academy schools fall under ECHS designation.
- **Charter School:** Tuition-free public schools open to all students in Texas. These are not included in our dataset.
- **CSD:** Common School District.
- **Community College:** Public postsecondary institution that provides credit toward an associate's degree or certificate.
- **CCSD:** Consolidated Common School District.
- **CISD:** Consolidated Independent School District.
- **Dual Credit:** A system in which an eligible high school student enrolls in college course(s) and receives credit for the course(s) from both the college and high school.
- **Early College High Schools (ECHS):** Defined by the Texas Education Agency (n.d.) as "open-enrollment high schools that allow students least likely to attend college an opportunity to receive both a high school diploma and either an associate degree or at least 60 credit hours toward a baccalaureate degree"
- **HS:** High School.
- **ISD:** Independent School District.
- **Institution of Higher Education (IHE):** Any public technical institute, public junior college, public senior college or university, medical or dental unit, public state college, or other university or college. For this project, IHEs form partnerships with school districts and high schools to provide dual credit programs.
- **Memorandum of Understanding (MOU):** An agreement signed by two parties detailing the specifics and responsibilities of each party within a dual credit program.
- **MSD:** Municipal School District.

- **OHS:** Online High School. Tuition-free public schools that are headquartered in independent school districts but serve grades 3-12 and provide education exclusively online.
- **Optical Character Recognition (OCR):** A technology that electronically detects typed, handwritten, or printed text in an image and converts these images into machine-readable text that can be copied and pasted.
- **Partner:** Texas schools or school districts that form partnerships with IHEs to provide dual credit programs. Includes district-level (ISD, CISD, MSD, CSD, CCSD) and high school-level (HS, OHS, CS, TDCP, ECHS, P-TECH).
- **Pathways in Technology Early College High School (P-TECH):** P-TECH Schools fall under the ECHS designation, which the Texas Education Agency (n.d.) defines as "open-enrollment high schools that allow students least likely to attend college an opportunity to receive both a high school diploma and a credential and/or an associate degree" P-TECH programs, however, are intended to ultimately lead students to employment rather than an academic degree.
- **Private School:** Any non-public high school. These are not included in our dataset.
- **Public Information Act (PIA) Request:** A formal, written request made by a citizen to a governmental body in Texas for access to specific public records or information held by that body.
- **Public State College:** Institutions of the Texas State University System with special designation from the Texas Higher Education Coordinating Board.
- **Public Technical College:** Public technical institutes with special designation from the Texas Higher Education Coordinating Board.
- **QA:** Quality Assurance.
- **SBOE:** State Board of Education.
- **TDCP:** Technical Dual Credit Program.

- **TEA:** Texas Education Agency.
- **THECB:** Texas Higher Education Coordinating Board.
- **University:** Public postsecondary institution that provides credit toward a bachelor's degree.