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Students' Sense Making of Higher Education Policies During the Vertical Transfer Process

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Abstract

More than a third of students enter higher education at a community college; most aim to earn a baccalaureate. Drawing on sense-making theory and longitudinal qualitative data, we examined how community college students interpret state transfer policies and how their interpretations influence subsequent behavior. Data from 3 years of interviews revealed how students adjudicate betweenmultiple intersecting policies. The higher education context, where institutions provided competing signals about policies, left students to navigate complex messages to achieve their transfer goals. Students' approaches to understanding transfer policies primarily followed one of two patterns: adopting policy signals as step-by-step procedures or adapting and combining policy signals to create a customized transfer pathway. Both approaches had important implications for students' transfer outcomes.

Keywords

community college; higher education policy; transfer; sense making; college student success

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More than a third of college students in the United States start at a community college (National Center for Education Statistics, 2018). Nationally, four out of five community college entrants intend to earn a bachelor's degree; but fewer than a third transfer, and only 13% earn a baccalaureate within 6 years (Center for Community College Student Engagement, 2017; Shapiro et al., 2017). With so many students failing to attain their educational goals, the vertical transfer function of community colleges, including programs and policies intended to allow students to transition to 4-year institutions, is not optimized (Bailey et al., 2017; Schudde & Brown, 2019; Taylor & Jain, 2017). Given that community

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colleges enroll a disproportionate number of Black, Latinx, low-income, and first-generation students, this flawed transfer function has implications for equity in educational attainment (Schudde & Goldrick-Rab, 2015).

Explanations for the faulty transfer function vary, but scholars, policy-makers, and practitioners seem to agree that the lack of transparent vertical transfer pathways contributes to confusion among both students and the people to whom students turn for help (Bailey et al., 2017; Fink & Jenkins, 2017; Hossler et al., 2012; U.S. Government Accountability Office [U.S. GAO], 2017). States rely on numerous policies and programs to facilitate transfer, ranging from statewide transfer agreements to orientation programs intended to increase student awareness of the relevant policies and support. Yet little evidence points to students' knowledge of transfer policies, programs, and processes or how students make sense of the available information.

In this study, we draw on sense-making theory (Coburn, 2001; Spillane et al., 2002) to examine the policy signals community college students in Texas receive about state transfer policies and how those signals, most of which come from institutions, shape students' approaches to understanding transfer and their subsequent behavior. Our data from 3 years of interviews with 65 transfer-intending students illuminate how students negotiate multiple transfer policies by adopting, adapting, combining, or ignoring various policy signals they receive (Coburn, 2001). Our findings illuminate how institutions filter information about state policies, how those filters shape students' approaches to managing policy information, and how those processes contribute to or reproduce inequalities in the transfer process.

Hurdles in the Transfer Pathway and Policy Interventions

The process of postsecondary transfer is fraught with bureaucratic hurdles and complex information. Students who intend to transfer must navigate requirements at both their current and their prospective institution. Key barriers to transfer include opaque transfer policies, bureaucratic hurdles, inadequate information about credit portability, and insufficient support services to maintain progress on streamlined pathways (Bailey et al., 2015; Bailey et al., 2017; Hodara et al., 2017). Many students are confused about how to select courses and degrees and, at the same time, hope to avoid credit loss when they transfer (Person et al., 2006). In this section, we provide an overview of transfer-related state policies, followed by a review of transfer services and how institutions filter transfer information. We conclude by considering how current conditions may shape student knowledge about transfer policies.

Transfer-Related Policies

One common policy states enact that may improve the transferability of credits is a statewide *transferable core of lower-division courses*—a set of lower-division courses that provide breadth of knowledge and are universally accepted at public colleges. Thirty-eight states have adopted this strategy (Education Commission of the States, 2020), which should standardize recommended courses for transfer, clarifying the transfer pathway. In practice, however, although core curricula include general education courses that overlap with pre-major and major baccalaureate requirements, lower-division requirements vary by major. For example, any college-level math course could transfer under the core, but only

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certain courses apply toward STEM (science, technology, engineering, and mathematics) baccalaureates. Students require clarity, early in college, about how courses will transfer *and* apply toward a desired degree (Bailey et al., 2017). In Texas, where we drew our sample, the core curriculum was the most prevalent transfer policy described by students and staff.

Another popular strategy for improving transfer success is the creation of *transfer agreements* (also called *articulation agreements*). Several states have such agreements statewide to “facilitate students’ transitions across state higher education institutions by preventing the loss of credits” (Roksa & Keith, 2008, p. 237). As of 2016, 35 states held guaranteed articulation agreements where associate degrees were fully tranferrable for junior status at a public university in the same state (Education Commission of the States, 2020). Other states still rely on “bilateral agreements” between two institutions, leaving students and advisors to navigate specific agreements between colleges and programs (Root, 2013). Even when statewide agreements are present, bilateral agreements are often necessary to negotiate between departments because of variation in postsecondary curricula (Fink & Jenkins, 2017). Despite promising trends in some states, such as Florida and California (Bustillos, 2017; Garcia Falconetti, 2009), little evidence suggests that statewide articulation agreements improve transfer rates or degree attainment. Anderson et al. (2006) found that, within the states that implemented state articulation agreements, the articulation policies did not increase students’ probability of transfer. Roksa and Keith (2008) argued that statewide articulation agreements probably do not aim to increase transfer but rather to prevent credit loss. Even so, their findings, using national data combined with state-level measures of transfer policies, did not suggest that the presence of statewide articulation agreements increased bachelor’s degree attainment or diminished time or credits toward a baccalaureate. Recent research demonstrated the potential of a structured, transfer-oriented associate degree in California to improve transfer rates, but it is difficult to extrapolate to other contexts (Baker, 2016).

Although less common, practices such as common course numbering and reverse transfer are used in 22 states. Common course numbering occurs when public postsecondary institutions use uniform numbering conventions for lower-division courses. Reverse credit transfer policies enable students to earn associate degrees posttransfer after completing additional degree requirements at a baccalaureate-granting institution (Education Commission of the States, 2020). Little research addresses the effectiveness of common course numbering, but a small body of research on reverse transfer suggests that students who earn posttransfer associate degrees through these policies are more likely to earn a bachelor’s degree (Taylor & Giani, 2019).

Institutional Services and the Institutional Filter

Although state-level policies may structure how public institutions determine credit transfer, they do not guarantee that institutions pass along relevant transfer information to students in a clear and coherent manner. Students’ transfer pathways are deeply entangled with how institutions distill and disseminate information about credit portability (Hagedorn, 2010; Townsend & Wilson, 2006). The information students obtain from institutional agents and

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on institutional websites is sifted through *institutional filters*, meaning students see only the transfer policies and support services that colleges share with them.

College personnel are one means by which vital information about transfer is disseminated. Advising staff can introduce students to transfer guides or structured "maps" to guide movement from one institution to another. Making available clear, up-to-date information about transfer options can help students overcome barriers to transfer, as can "intrusive advising"—proactive advising that regularly checks in with students to assess progress (Bettinger & Baker, 2014; U.S. GAO, 2017). Some institutions offer specialized services to guide transfer-intending students, including transfer-specific advisors, centers, and events; but the quality and availability of those resources vary (Bailey et al., 2017; Hodara et al., 2017). Many community colleges cannot meet the demand for effective transfer advising (Allen et al., 2014; Bahr, 2008; Davies & Dickmann, 1998). Plagued by high student-to-advisor ratios, one-on-one consultation is not possible at many institutions (Schudde & Goldrick-Rab, 2015).

The limited availability of advising resources makes online information about transfer important; yet many community colleges offer little to no online content, and what is available is often confusing and out-of-date (Schudde et al., 2018; U.S. GAO, 2017). The U.S. GAO (2017) found that the availability of clear transfer information varied dramatically across institutions. This variation creates an uneven playing field; students who attend colleges with opaque transfer information may struggle more in attempting to transfer (Schudde et al., 2018). Unfortunately, community college students also cannot rely on 4-year institutions to fill the void in transfer-specific advising or online content; some 4-year institutions are reluctant to collaborate, whereas others face resource constraints similar to those faced by public 2-year institutions (Herrera & Jain, 2013; U.S. GAO, 2017).

In a study of transfer policies in 10 states, Hodara et al. (2017) argued that states with "institution-driven" transfer systems often leave room for error because advising staff must customize advising from various transfer planning guides, unlike states with more transparent "2 + 2" systems, where lower-division courses align across the higher education system. In institution-driven contexts, colleges have more control in crafting and filtering policy information. After interviewing more than 50 community college and university personnel working in Texas's institution-driven transfer system, Bailey et al. (2017) argued that to navigate transfer, students and advisors must rely on conflicting, out-of-date information from various sources, including the state coordinating board and institutions' websites.

Student Knowledge About Transfer

Given the complex puzzle of intersecting policies and services available to facilitate transfer, the resulting transfer information is complex and may not be student friendly (Schudde et al., 2018; U.S. GAO, 2017). Institutions tend to provide policy information to students on a need-to-know basis (Schudde et al., 2021). Many students voice a need for greater support during the transfer process (Allen et al., 2014; Davies & Dickmann, 1998; Herrera & Jain, 2013; Jain et al., 2011, 2016; Senie, 2016). To our knowledge, little, if any, research has

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been conducted on how students understand or leverage information about transfer-related policies.

Prior research suggests that many community college students have inadequate information as they navigate transfer (Allen et al., 2014). Students' information constraints—their lack of the information necessary to prepare for and achieve their educational aspirations—can result in poor decisions, loss of time and money, and, ultimately, movement away from the credential they hope to earn (Scott-Clayton, 2011). Students struggle to track down the necessary information, where "information about course content and prerequisites is often located in one place, while course schedules are in another place, and the requirements for specific degree programs are spelled out in yet another" (Scott-Clayton, 2011, p. 5). In her recent book, Wang (2020) described the "granular precision" necessary for transfer-intending community college students to access transferrable courses or programs at the time they need them, due to both a lack of broad articulation and a "limited menu" of transferrable courses (pp. 146–147). To avoid "curricular friction," where students accumulate unnecessary courses or are unable to get the transferrable course they need, several pieces must concurrently align, including "accurate information, money, schedule, [and] work" (p. 146). Students seek, but struggle to obtain, accurate information through advising (Allen et al., 2014; Davies & Dickmann, 1998) or through elaborate information gathering (Schudde et al., 2021).

Although state policies may be an important policy lever for improving the transfer function of community colleges, understanding their role in the transfer process requires that we examine where students obtain information about transfer policies, how they make sense of that information, and how their sense making influences their behavior. State higher education policies are enacted by institutions and their agents, but the primary intended beneficiaries of those policies are students. In this study, we examine how transfer-intending community college students in Texas navigate transfer policy information.

Conceptual Framework

Research on policy implementation over the past several decades has shifted from a top-down perspective, with a focus on statutes or policy language (Mazmanian & Sabatier, 1983), to a bottom-up perspective, with the recognition that policies are shaped by implementation, filtered through the behaviors of implementers on the ground (Lipsky, 2010; McLaughlin, 1976; Weatherley & Lipsky, 1977). To understand how policies are implemented and why they achieve (or fail to achieve) their intended effects, it is important to understand how actors, including the targets or recipients of these policies, interpret them. In this study, we consider students as sense makers—actors who navigate policies on the ground—and examine their interpretations of relevant policy information by leveraging the concept of sense making (Spillane et al., 2002).

Sense making captures the cognitive aspects of policy implementation, including whether and in what ways actors understand policies, their related practices, and, potentially, how their beliefs and attitudes change (Spillane et al., 2002; Weick et al., 2005). Sense making involves "noticing and bracketing" and "labeling and categorizing" received information

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in efforts to find meaning in ambiguity (Weick et al., 2005, p. 411). It includes three central elements: (1) cognitive structures or schemas, which comprise actors' knowledge, beliefs, and attitudes; (2) actors' situations or social contexts, including both macrocontexts (e.g., "thought communities," professions, or in our case the higher education system) and microcontexts (e.g., social norms, formal organizational structures, and informal social networks); and (3) policy signals or messages (Spillane et al., 2002). Policy signals include both "formal policy," such as "legislation, brochures, regulations" (Spillane et al., 2002, p. 392), and other "carrier" messages about those policies, such as messages from institutional programming and materials and those carried by individual and collective actors to others in the organization (Coburn, 2001, p. 146). Coburn (2001) described how most policy signals received by implementing agents, in her case teachers and principals, were "carried" signals that were filtered through the organization (p. 146). The signals themselves do not necessarily explain what actors should do with the information or how to proceed (Spillane et al., 2002). Instead, individuals' schemas and macro- and microcontexts guide them to focus on or ignore certain aspects of a policy or pieces of information. For that reason, variation in a policy's outcomes is inherent, resulting from differences in individuals' prior experiences, cognitive structures, and embedded social contexts. When policies fail to achieve their outcomes, sense making focuses not on the policy itself but on how people understand it.

In education, empirical research using sense making has examined how teachers, leaders, and other school-level actors interpret and implement policies (e.g., Bertrand & Marsh, 2015; Coburn, 2001, 2005; Jennings, 2010; Spillane & Anderson, 2014). These studies revealed how cognition—"individual beliefs and resources"—shapes the implementation of policy, the use of data, and school competition (Sandfort & Stone, 2008, p. 134). As school-level actors respond to multiple pressures and policy initiatives, they must interpret multiple messages about policy (Coburn, 2001). However, only a few studies used sense-making theory to address the targets of policy—the recipients of social welfare policies, or in our case students.

Among the handful of studies that applied sense-making theory to the experiences of students is research on how Latinx and low-income students understood information provided by California's Early Assessment Program, designed to notify students about their college readiness levels (Almeida, 2016); how first-generation urban high school seniors made sense of "college readiness" (Duncheon, 2018); and how youth understood a state policy offering flexible learning options to "disengaged" students (Lewthwaite et al., 2017). These studies found that students' social contexts, particularly their school-based relationships, shaped their sense-making processes. Behringer (2009) examined the sense making of community college students enrolled in remedial courses. Most students viewed remediation as part of the higher education experience and were proud to have made it to college, but they faced challenges and frustrations in these courses—and more broadly within the institution—when they did not know where to obtain guidance. Those challenges navigating the community college influenced their sense-making processes.

To navigate transfer and make transfer-related decisions, community college students must interpret multiple messages about transfer policy from various sources—including

community college events, institutional websites, advisors, and policy documents. In the decentralized higher education system in Texas, where institutions have multiple bilateral transfer agreements that determine which courses transfer to which programs, students play a central role in navigating and interpreting policy. As governance shifts from a more centralized model to a network model, knowledge about policy and implementation of policy become more decentralized (Sandfort & Stone, 2008). Although advisors at community colleges and 4-year institutions play a role in shaping students' interpretations of policies, students often "self-advise," curating resources from multiple sources: the Web, state agencies, community colleges, and universities (Schudde et al., 2021). Students make decisions about whether and how to leverage policies to influence their own outcomes.

Sense-making theory enables our exploration of how students interpret messages about Texas state policies designed to improve transfer. When actors draw on multiple, competing policy signals, sense making can illuminate how those actors "have adapted, adopted, combined, or ignored messages and pressures" about the policies and how these "deliberations" shape their practices—-their decisions about which courses to take, which major to declare, or which transfer destination to select (Coburn, 2001, p. 147).

The Texas Context

Eighty-one percent of Texas community college students enroll in transfer programs, but fewer than a quarter of transfer aspirants transfer, a pattern that closely mirrors national trends (Texas Higher Education Coordinating Board [THECB], 2014). The Texas public higher education system includes 80 two-year institutions and 39 four-year institutions within several college and university systems, many of which have their own boards of trustees (Perna & Finney, 2014; THECB, 2016). The 119 institutions, overseen by the THECB, form the public higher education pipeline for transfer.

Texas has several initiatives and policies related to transfer. Although studies using national data suggest that Texas has a statewide articulation policy (Anderson et al., 2006; Roksa, 2009), that classification is somewhat misleading. Texas has a transferable general education core, but it does not provide a comprehensive "map" for transfer. The courses in the *core curriculum* can be transferred between public colleges statewide as a block of 42 credits, or as a partial block when students do not transfer "core complete." In addition, the *field of study* (FOS) curricula comprise additional lower-division courses in eight major fields (at the time of our inquiry) that must transfer between colleges. Although the core and the FOS should eliminate course duplication for students who switch between Texas's public postsecondary institutions, research suggests that lower-division coursework, particularly courses from the core, may not count toward a degree in a given major (Bailey et al., 2017).

Other initiatives in the state, such as transfer agreements, are "encouraged, but not required" (THECB, 2014, p. 3). Texas does not have a state-mandated transferable associate degree. Texas transfer agreements are bilateral, made between individual institutions. These agreements vary in availability and quality based on which college and which program students transfer to and from (Bailey et al., 2017). Some institutions develop and post transfer guides for students that describe how courses within a particular major should

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transfer between two institutions (Schudde et al., 2018). These institutional guides illustrate which coursework should be taken at a community college to enable a student to then transition in the same field to a university, and they often include explicit or implicit signals of state policies like the core. Students do not know in advance which universities and programs will admit them, which creates additional complications. Following a transfer guide that does not align with the requirements of a final destination program may result in problems with credit transfer (how credits are accepted at the destination institution) and applicability (how credits apply toward a specific degree).

In 2011, Texas established a *reverse transfer* policy to guarantee that students who transfer from a community college to a public university are eligible for an associate degree. In the state's online common application, "Apply Texas," students can "opt in" for reverse transfer, consenting to share their university transcript with previously attended community colleges. Students who earn at least 30 credits at a community college are eligible to have their transcript sent to that community college, after they accrue 90 credits total, to determine whether the student will receive an associate degree (Texas HB3025, 2011). For those who opt in on their university application, the process should occur automatically.

Students' knowledge and interpretation of state transfer policy have significant implications for outcomes in Texas. Like other states, Texas continues to lack incentives for institutions across the 2- and 4-year sectors to collaborate to develop clear transfer pathways and efficiently implement transfer policies (Bailey et al., 2017; Schudde et al., 2018). This situation compels students (and their advisors) to gather information from various sources to increase the probability that they will attain their educational goals (Schudde et al., 2021).

Data and Method

In this study, we examined how students receive, engage with, and respond to state higher education policies relevant to institutional transfer. To do so, we asked the following questions:

1. What policy signals do student receive about transfer policy, and from where do they receive them?
2. How do students understand and describe transfer-related policies?
3. How do students' understandings of the policies influence their educational practices, including behavior related to transfer?

To address these questions, we analyzed 3 years of interview data from transfer-intending Texas community college students.

Sample

The students in our sample attended one of two public community college districts located in different metro areas within central Texas. The districts were fairly close to each other geographically and offered similar postsecondary opportunities; this allowed us to explore trends in policy signals across different sites. Within each system, students can, and often do, take courses at multiple campuses, depending on their major, course availability, and

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the distance to home or work. The first district offered instruction to 40,803 students in the fall of 2017, of whom 23% were Pell Grant recipients (THECB, 2017). Just under half (48.48%) of them were White, 29% Latinx, 8.4% Black, 5.3% Asian, and 8.3% another race or multiracial. The second district served 52,590 students, with 28% receiving Pell Grants. Latinx students were the most prevalent (62%) in the second district; 23.6% were White, 7.9% Black, 2.6% Asian, and 3% another race or multiracial.

We conducted initial interviews with the students in fall 2015, and we followed up with them in fall 2016 and 2017. We targeted students who expressed an intention to transfer to a 4-year institution within the next 12 months. At each community college district, we worked with staff to email listservs. We also recruited students through tabling sessions on campus, where we handed out flyers for the study. Any students intending to transfer within the next 12 months were eligible to participate, but we selected community colleges in two urban areas—one of which included a campus that was designated as both a Hispanic-Serving Institution and a Historically Black College—to ensure that we could recruit students who were racial minorities, came from low-income families, and/or were the first in their families to attend college.

We recruited 104 participants in the first year. We sought to follow up with all of them in the second year, but only 61 responded. In Year 3, we spoke with 66 and included more specific questions pertaining to state transfer policy. The Year 3 interviewees who still lived in Texas constituted our sample ($n = 65$). We dropped 1 student who had transferred to a community college in another state after the first year in the analytic sample because he was no longer exposed to Texas transfer policies. Forty-eight percent of our analytic sample identified as Latinx ($n = 32$), 24% White ($n = 16$), 17% Black ($n = 11$), 6% American Indian/Alaska Native ($n = 4$), and 3% Asian ($n = 2$). The ages of the students in our sample ranged from 21 to 59 years, with an average age of 29. First-generation college students constituted nearly 48% of our sample. As of the Year 3 interview, the students had spent an average of 2.78 years in community college (minimum = 1 year, maximum = 7 years). We collected self-reported income data from the surveys we administered, although 12 students did not answer this question. The average annual income reported was approximately $22,148; however, the median income was $18,500.

Data Collection

We conducted semistructured interviews (Patton, 1990) that lasted about 60 minutes each, and we recorded and transcribed them. We trained our team of six interviewers using Sattin-Bajaj's (2018) protocol. During the interviews, we asked the participants how and why they selected courses, what majors and careers they were considering, how and from whom they gathered information about transfer, and which schools they were choosing from. In Year 3, we probed deeper about specific state policies to understand how students made sense of the policies and how their knowledge influenced their behaviors. We first asked general questions about how they believed their courses would transfer and where they turned for help in determining transferability. We then probed to see whether they were aware of specific policies (Texas core curriculum, FOS, etc.) if they did not mention them. We anticipated that by providing brief context on a given policy (e.g., FOS), then asking if

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anyone had mentioned it to them, we would hear more students say "Yes," perhaps because it sounded familiar or they felt they should know this information. However, as we note in the findings, this was not the case.

During our Year 3 interviews, if students had misinformation or asked questions about the policies, we continued with the interview in order to capture the student's current knowledge and understanding. However, once the interview was completed, we either clarified critical information verbally with the student or, if they asked us a question that we needed to research, we followed up with the student by phone or email after the interview. We explained that we could not serve as the students' *advisors*—this was an important distinction for us—but that we could provide general information that was available online or in other documents to help them find the information they needed. Our provision of this information occurred at the end of the Year 3 interview, so it was unlikely to influence our results. We understand that this intervention influenced the data going forward—that some of the positive outcomes we observed could have been due to our checking in with the students each year and, in some cases, directing them to specific information online—but we felt that was appropriate in the context of this qualitative study.

We provide the interview protocol from each year in the supplemental appendix (in the online version of the journal). Every year, we tailored our interview protocol to each student based on the student's unique responses to the previous interviews and surveys. We also collected institutional documents from the students to supplement our interviews; these included transfer guides, degree plans, and other instruments the students used to inform their transfer plans.

Data Analysis

Data analysis took place throughout the 3 years of data collection. Each year, we coded all the interviews after data collection, and in the second year, we created a memo for each participant that served as a longitudinal record capturing different themes and synthesizing student experiences across the years. We then created an extended metamatrix to explore policy sense making in the data. In our analysis for this study, we drew from both the memos and the matrix. We elaborate on this below.

Coding and Memoing—We coded the data each year using the Dedoose qualitative software and hybrid coding (Miles et al., 2014). In Year 3, we developed deductive codes from the literature and from community college transfer policies in Texas (e.g., the *policy* family of codes included *policy-core*, *policy-FOS*, *policy-other*; the *transfer information* family of codes included *transfer info-advisor*, *transfer info-four-year*, *transfer info-online*) to identify engagement with and potential impacts of the policies, in addition to where students received information. These broad codes helped us identify excerpts relevant to our research questions, including what information the students had about transfer policies, how they described the policies, and where they received information. Initially, all the team members individually coded the first two transcripts. After each round of coding, we resolved disagreements and discussed the coding scheme to determine the necessary revisions. We tested for interrater reliability using our final coding scheme. After achieving

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adequate interrater reliability, each coder individually coded a caseload of the remaining transcripts. We worked in pairs to check the coding; the partners met in person to discuss and resolve the coding disagreements and brought the remaining disagreements to the full team for final resolution. Once we had coded the interviews, we examined them thematically, identifying how the students discussed, understood, and interpreted policies. We categorized the themes and ideas that emerged inductively from the data and used them to build our metamatrix.

After the initial coding, we created or updated memos for each student (we initially created the memos in Year 2 as a longitudinal record of interview data, updating them in Year 3). These detailed memos, 10 to 20 pages long, captured data from the 3 years of interviews, surveys, and field notes. In Year 3, one specific section of each memo was dedicated to how the students engaged with state transfer policies; we relied most heavily on this section for the analysis.

Throughout the data collection and analysis processes, we worked to verify or correct our interpretations of the students' responses to maintain the credibility and trustworthiness of our study. We triangulated data across the multiple sources (various rounds of interviews and surveys) to ensure that our data and analyses were consistent and accurately represented the students' experiences. Although the memos were updated annually with the most recent data, the coders continually referenced prior interviews to update the memos for clarity and coherence. Moreover, we recontacted interviewees if we needed further clarifications, and we included tailored questions in each subsequent year's interview protocol to address inconsistencies or questions about the student's transfer experience and trajectory.

Matrix—We created qualitative matrices (Miles et al., 2014) to synthesize findings across students, campuses, and data sources. We derived categories for the matrices from the themes identified during coding and memoing. We focused on how the students understood and operationalized transfer policy messages to create broad themes, where the themes that emerged were *procedural* or *strategic* approaches to understanding transfer policies. During this process, we identified a third theme: students who showed no knowledge of the transfer policies; we coded these students as "nondeliberators." For each student, our matrix also captured demographic data, stage in the transfer process, how they defined or understood various state policies regarding transfer, where or from whom they gathered information about transfer policies, and how these understandings influenced their behavior.

To fill out the matrix and enhance the validity of our findings, six coders worked in teams of two to analyze a set of participants. On each team, one coder would populate each cell in the matrix for their assigned participants; the second team member reviewed the analysis to confirm credibility of data interpretation. The team members met to discuss areas of disagreement and worked toward consensus by adding more details or adjusting the interpretation. If they could not reach consensus, they conferred with the full research team. We initially examined the data in the matrix inductively to see which themes and categories emerged, and then we went back over the data to classify the interviewees into those themes. Finally, we examined the matrices for patterns and themes within and across categories to draw out major findings.

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Results

Throughout the transfer process, students received a variety of policy signals and deliberated over how to adopt, adapt, combine, or ignore signals, as illustrated in Figure 1. Students were situated in a macro-context (see "Texas Context" section) that prioritized institutional autonomy and emphasized students' responsibility to gather transfer information and advocate for themselves. Although students could receive direct policy signals, most signals were filtered through postsecondary institutions. Students used existing knowledge—their schema—and interacted within their micro-contexts to deliberate, adopting, ignoring, or modifying (adapting/combining) signals over time. Students' deliberation approaches informed their educational practices, including decisions about courses taking, preferred transfer destination, and whether to earn an associate degree. Next, we describe the policy signals and sources encountered, students' deliberative approaches, and their educational practices.

Policy Signals and Sources

We define policy signals as the information the students received about transfer policies—the core, FOS, and reverse transfer. As shown in Figure 1, the signals are distinct from, but interrelated to, the sources of those signals. It was quite uncommon for the students to receive direct policy signals (legislative documents and online resources from state agencies); instead, they received policy signals from institutions (advice, transfer guides, and degree plans).

Signals for some transfer policies were more prevalent than for others, as shown in Table 1. The majority of students in our sample were familiar with the core curriculum (only 7 of the 65 students had not heard of the term), which they often referred to as "the basics"—general classes required for their degree. Receipt of signals about other transfer policies was more sporadic. Only 6 students knew about the option to earn their associate degree through reverse transfer. Of those, 4 became aware of the policy during or after the transfer process, suggesting that policy signals about reverse transfer were minimal prior to transfer. Ten students (15% of the overall sample) conveyed knowledge, as mandated by the FOS policy, that major courses could apply to a 4-year degree in the same field for certain majors. However, they lacked a clear sense that the FOS policy required public universities to count each FOS course toward their degree. Furthermore, none of the students were aware of the policy by name.

Sources of Policy Signals

Table 1 also outlines the sources of transfer policy signals reported by the students. Most of the students relied on signals from multiple sources. Eighty percent of students acquired information on transfer processes and policies from at least one community college agent, including general advisors, major-specific advisors, and faculty ($n = 52$). Among those, a few students ($n = 5$) noted a preference to receive transfer information from faculty members in their major programs. One student explained, "I go straight to the program director or the department themselves. It is better to go to them than [to rely on] word of mouth." Institutional websites were another common source of transfer policy signals: 86%

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of students sought online transfer information from their community college or prospective universities ($n = 56$). Students described college websites as a source "you can really trust" but acknowledged that the information was not always easy to find. A first-generation student elaborated, "I try to search on each school's website; however, it is kind of hard. Very limited. You have got to dig deep into it." The community college or desired university's website was a common means to identify transfer guides—student-facing documents that outlined which courses would transfer between the community college and a given university.

Forty-five percent of our participants ($n = 29$) used transfer guides, typically focused on a specific major. Students were usually not aware of the original source of the transfer guide (i.e., whether it was created by the community college or the university). Of the full sample, 37% ($n = 24$) noted that they had learned about the core curriculum from transfer guides or from an associate degree plan in which core courses were explicitly marked (this was not always the case—the explicit markers in guides/plans seemed to vary by institution and major). To fully understand the policy and how it worked, students would need to do additional research.

In addition to receiving policy signals from institutions and institutional agents, more than half of the students actively followed external messages about transfer from noninstitutional sources ($n = 33$). One student described seeking information from friends and family who had already transferred, explaining, "If it worked for them, then it seems like it's going to work for you." Such microcontexts helped the students make sense of the multiple messages they received. One student elaborated on how her friends helped her make sense of these messages:

> There was a lot of confusion between [the community college] and [UT San Antonio] on what classes were needed. But I would rely on my friends who have transferred before me to tell me which ones I need to take and what is required.

Overall, the students received transfer information from various actors within their networks. When multiple sources produced conflicting messages, the students were forced to reconcile them.

Microcontexts: Institutional Filters and the Quality of Policy Signals

Many students reported feeling frustrated or confused when deliberating between multiple policy signals and sources. Students' schemas, deliberation approaches, and subsequent educational practices are enmeshed within specific microcontexts (defined by student networks and institutional contexts), as illustrated in Figure 1. The microcontexts can act as a sieve—for example, the institutions students interact with determine which filtered policy signals they receive—and serve to clarify those signals, because students rely on their networks and prior experiences to deliberate across policy signals.

Among the more complex policy signals the students navigated were competing narratives about core completion and earning an associate degree prior to transfer. Advisors and transfer guides at community colleges often directed students to complete the core and an associate degree prior to transfer. One student explained that she never researched how

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courses would move from one institution to another because she "had been lectured so many times [to the tune of] 'Don't just transfer out; graduate with your associate degree."' She decided, "I'm not going to transfer in the middle of it; I'm going to get the full degree, and then I'll leave," even though she knew she was "going to be transferring with a degree and not necessarily with credits." A handful of students recognized that community colleges, which are funded primarily through student enrollment, are incentivized to encourage pretransfer core completion and associate degrees. A student, dubious about pressure from her advisor to get an associate degree, observed, "They care for their statistics. I know if people graduate from here, then that helps with that." After inferring that earning the associate degree could delay transfer, several students sought alternative information on how to approach course selection and transfer.

Policy signals from major advisors or recruiters at prospective transfer destinations sometimes were misaligned with the signals from the community college. A student described how, after reviewing his transcript, a major advisor at his target university proposed that "shortening" his community college coursework would reduce his time to a bachelor's degree. The advice clashed with his community college advisor's, leaving him unsure of how to proceed. But other students noted that receiving policy signals from a university representative offered "perspective." A first-generation Latina student explained that a university recruiter provided her with "pretty much the same thing" she could get "on the Internet" but also "actually provided [her] with the [transfer] plan and . . . a business card." In her case, the individualized attention and personal contact, coupled with the endorsement of the transfer guide by a university representative, strengthened her trust in the signals. However, if the signals from the university conflict with other signals, students will have to deliberate among them.

Deliberating Between Policy Signals

We identified two primary themes that broadly captured the students' deliberation approaches, a step in the sense-making process in which students determine how to make use of the policy signals received. Under a procedural approach, students understood policies in terms of recommended or required steps to attain the goal of transfer and either adopted or ignored a given signal. Under a strategic approach, students recognized multiple options and engaged with multiple (sometimes competing) policy signals to determine which ones to adapt, combine, or ignore (see Figure 1). There were also five students who did not fit into these themes; we refer to them as nondeliberators. The themes we uncovered are a snapshot of students' deliberation process, as their approaches may change as they gather information and in response to their contexts and practices. For that reason, in Figure 1, we include dotted arrows throughout the sense-making process to show that students may return to prior phases and adjust their approach.

Procedural Approach—Transfer policies were commonly described by the students as procedures for transferring rather than as state-level mandates. In our year 3 interviews, 38 of the 65 students perceived a given policy signal as a set of requirements that would guide them to their desired degree, a perception that encouraged them to adopt that signal. For example, all of these students described the core as a group of courses in which they could

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enroll without a thought—"no-brainer" courses. They were introduced to the word "core" on a degree plan or a website or in conversations with advising staff. When describing it, students frequently recited a list of classes they believed were part of the core. As one noted, "I guess the core classes are like math, science, English, history. I think I [took core classes], because I took the two English, the two sciences, the math I needed, and the two history classes." A psychology major revealed her procedural approach to the core, explaining that she used the core to "just finish the courses I should take before going into, I guess, my actual psychology courses." Adopting the core policy signal made her feel that she was on track to move on to major-specific coursework. Another student, who transferred to Texas State University after 2 years at a community college, followed "this worksheet [from my advisor] . . . that actually said core classes, so it was all your math, all your science, philosophy, English, so I took those at [the community college]." Advisors seemed to emphasize the core as a procedure that students could follow before determining their major. One student explained how her advisor emphasized core completion:

> They told me when I was deciding, I guess, what I should major in.… I spoke to a counselor, and she was like, "Well, I guess you have to have like 42 credit hours. So you can work on that off the bat and then see what you want to major in." That's how I knew [about the core]. But I had to have those 42 hours.

These students felt that adopting the core allowed them to select general courses before making other educational decisions, for example, about transfer destinations and majors.

However, students who adopted the core with this understanding did not always distinguish between *transferability* (how community college credits are counted on admission to the university) and *applicability* (how credits count toward requirements for a degree in a given major). A student illustrated an understanding that the core was essential, although she also seemed aware that she needed to align her courses to requirements at a destination university. She said, "I know I have to be core complete and have, I think, 60 credits to graduate from community college. Besides that, I don't know. I guess I have to see [the] school I'm going to, to see what else they require." Another student demonstrated a sense about transferability but struggled to describe how courses would count toward his degree. He explained, "Yes, I believe there may be a couple of [courses] that aren't transferable, but for the most part, they are. The core classes are transferable, or something like that." Core course-work often counted as a prerequisite for majors but could also count toward a desired bachelor's degree if students took a core class aligned with that degree (e.g., college-level algebra is a core course at all institutions and will transfer, but it counts as a pre-major requirement—an elective—for some majors and as fulfilling a math requirement for others). Half of the students adopting the core curriculum as a procedure did not examine whether the core courses would apply toward their desired degree ($n = 19$); of those students, 11 aimed to finish their "basics" as part of their associate degree before transferring.

Twenty-one percent of the students who used a procedural deliberation approach used a transfer guide, which they viewed as a straightforward procedure to follow toward transfer ($n = 8$). The specificity of these documents, particularly for course sequences at the community college, provided a checklist and made students feel confident about course selection. One student, an older college entrant who was the first in her family to enroll in

college, commented, "For me and my situation, having a family and being a single mom . . . the best thing for me . . . was having something on paper saying I know what the heck I'm doing." The transfer guide offered her clear guidelines to follow toward her goal. However, transfer guides are a product of a given institution. For students we identified as using a procedural approach, the guides emphasized one policy signal, typically the core, but did not capture other policies, such as FOS or reverse transfer. A student explained, "The transfer guide, it just had the courses that I would need to take but also showed transfer overs. It was my basics." She felt the transfer guide told her what courses to take, but on reflection, she realized that it primarily emphasized the core. The guides did not encourage students to adapt or combine components of different transfer policies.

Strategic Approach—In response to an ecosystem with varying and sometimes competing policy signals, some students ($n = 22$) described their deliberation as a process in which they compared and contrasted policy signals in an effort to create a tailored transfer plan. Unlike a procedural approach to understanding policy signals (in which students adopted prepackaged policy signals), students with a strategic approach were less inclined to adopt one policy signal in full; instead, they deliberated over which signals to ignore, combine, or adapt. We noticed that students employing a strategic deliberation approach described seeking transfer information from more sources, on average, than students employing a procedural approach. However, the breakdown of institutional versus noninstitutional sources, among the sources they received signals from, looked similar across both deliberation approaches.

Students who expressed a strategic understanding tended to ignore policy signals that were irrelevant to their intentions, particularly guidance from their community college to complete an associate degree or the core curriculum prior to transfer. Those with a strategic approach were explicit about having chosen not to earn an associate degree prior to transfer because they perceived a mismatch between coursework required for the associate degree and that required for their desired bachelor's degree. A student explained why she focused on ensuring that courses would count toward her final degree: "So I'm trying to find the classes that will transfer and will actually be credited, because, I mean, [taking classes that don't] is just wasting money." Another student elaborated on the need to focus on the baccalaureate goal:

> When you're attending a community college and you are going towards an associate degree, you're not doing your transfer plan, you're not doing your basics to transfer, you're doing your associate degree. You have to know that not all those classes are going to be accepted at the university.

Several students reasoned that getting an associate degree before transferring would be a "waste of money" because not all courses would count toward their bachelor's. A student with a (rare) comprehensive understanding of reverse transfer explained why she opted to reverse transfer: She could transfer and take core classes at her transfer destination that would apply to her major and concurrently fulfill associate degree requirements. She surmised that "advisors tell students to [get the associate first] so that way in case you don't transfer, at least you have a degree." For students who were certain about getting

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a bachelor's degree, she thought reverse transfer was more effective—they could earn an associate degree on the way to a baccalaureate. Similarly, another student cautioned against following the advice to earn an associate degree without additional information: "Sometimes advisors want to help you with your goals and everything, but you have to really research and go in depth and look at other things." She argued that guidance from advisors was "too focused on just one goal"; they "encourage you to take classes but they might not give you all the information you need at that time."

About half of the students who employed a strategic deliberation approach used transfer guides to prioritize how to adapt, combine, or ignore policy signals ($n = 11$). They viewed the specific transfer agreements between their community college and universities as policies they could take advantage of to improve the transfer process. As one student explained,

> The good thing about [my community college] is the classes practically always transfer anywhere. And they have partnerships with the universities, and they do the two plus two thing.… They match you up and make sure [courses] transfer for the bachelor's degrees.

Those who knew about and followed a 2 + 2 transfer plan (a transfer guide that outlined 2 years of coursework in a given major at the community college and 2 years of subsequent coursework in the same major at a specific university) prioritized the policy signals from the plan to avoid credit loss. Because of the plan, one student explained, "I knew that [the courses on it] were all transferable, because I knew that I was going to go into the university from there. And I think it is on the paper, it says '2 + 2'—like 2 years early college and then 2 years university." The plan both informed students about policies like the core and made students feel comfortable ignoring some core courses by offering a term-by-term map of the transfer pathway. The transfer guide helped build students' strategies; it led them to embrace useful parts of the policies (i.e., to determine which courses would also apply to their program of interest) and ignore other parts (i.e., core courses that were not part of the 2 + 2 plan—students would decide not to focus on becoming "core complete"). This was necessary because students following the core on its own could accrue credits that would transfer as electives without fulfilling requirements toward their desired bachelor's degree—leaving them with excess electives.

Students who described strategic approaches to transfer policies also displayed more awareness of the policies as state policies, which allowed them to adjudicate between competing policy signals. For example, these students noted details about the core that were missing in descriptions from students with procedural approaches. One student explained that the core was a block of courses, accepted statewide, that "just have priority" because "any college in Texas needs all these classes," and that "as long as [she] stayed with the state university . . . most of the core would transfer." The student recognized that the core could maximize credit transferability but, through other policy signals, also understood that core courses were not guaranteed to count toward a bachelor's degree in a specific major. Another student, a geography major, noted that he first learned about the core from transfer guides and he spent time comparing the core courses required at his community college with those at his preferred destination university: "I looked into it in depth. Although [my

community college] does have a core curriculum as well, it doesn't always match 100%, because they have their own requirements." He realized that there were "certain Texas requirements" and that those requirements—the core curricula—differed across institutions, and he concluded that it might not be simple to substitute courses toward his desired baccalaureate. These realizations led students to adapt the core policy signal—determining which courses to take at the community college—rather than to adopt it in full.

Nondeliberators—Five students did not fit into either the procedural or the strategic theme—they were unaware of the policy signals. These students were not verbally introduced to policies through discussions with staff or faculty, even though each of them met with a community college advisor. In those meetings, they were never given a transfer guide, which could have served as a source of transfer policy signals. All five students instead followed an associate degree plan that was moving them toward a terminal associate degree. Their degree plans did not flag core courses or note transferrable courses. As a result, these students did not recognize or understand the transfer policies when we inquired about them.

Among the nondeliberators, three of the students had not yet transferred and expressed no knowledge of the core. One student tried to make sense of the terminology during the interview, looking through his transcript and saying, "I believe [I took core courses], but I'm not too sure if they were or not. I'm not 100% sure if they were." He scrolled through his digital transcript and added, "I don't know which ones are core curriculum. I see the liberal arts, math, geography, Spanish maybe. I don't know if that's considered core curriculum." Two of the students had already transferred and first learned of the core once they arrived at their transfer destination. One of them noted, "I think I finally realized that that's what it was when I was transferring over. On one of the bachelor's degree plans, it actually said, on the sideline, 'Texas core.'" These students became strategic in course selection when they learned of the policy after transferring, but the policies could not inform their community college course taking or their timeline for transfer. As the dotted arrows in Figure 1 indicate, students' sense making is an iterative process. They move through the process and make educational decisions based on the available information; if they receive additional information or interact within their microcontext in a new way, they might deliberate differently over policy signals over time.

Practices and Implications

Students' deliberation approaches shaped their educational decisions, as depicted in Figure 1. Procedural, strategic, and nondeliberative approaches sometimes led to different educational decisions, mostly about how and when to transfer. Students needed to determine which university (and major) to pursue, whether to earn an associate degree along the way, and which courses would achieve those goals, including how many courses should be taken at the community college.

Students selected their coursework based on the policy signal(s) they adopted or modified and based on their prior knowledge. Students who fully adopted the core curriculum assumed that doing so would minimize credit loss, thereby cutting down on the time and

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money spent at the 4-year institution. They prioritized taking core courses above all else. “It [following the core] helped me not to take classes that were unnecessary,” one student explained.

Those who received more tailored messages that adapted the core to their goals—for example, from a major-specific transfer guide—often elected to transfer before completing the core or associate degree, taking a strategic deliberative approach to policy signals. One student, who transferred to Texas A&M University at College Station (A&M), ignored the core requirements and strictly followed a transfer guide for his intended major at A&M. This student, informed by materials from the university’s website, also planned to receive his associate degree through reverse transfer—a process he referred to as “one of those backward credit thingies.” Another student, who transferred to the University of Texas at Austin (UT) as a Spanish major, noted that his community college “puts everyone on this track to take college algebra,” but “UT doesn’t accept college algebra, so you’re just wasting your semester away, freaking taking college algebra.” By following UT’s transfer guide, rather than the guidance to follow the associate degree plan, he delayed taking math until posttransfer (and did not, as a result, transfer core complete).

Course-taking decisions among students who took a strategic approach were more often focused on major requirements. One student described the need to prioritize major requirements instead of the core if it was clear that certain core courses would not align with her nursing requirements. She said, “I want to take classes specifically for these nursing programs. I don’t want to take anything more, anything less.” In determining which courses to take at the community college, these students prioritized transferring with courses required specifically for their planned major at the university, meaning they completed only core courses that aligned with the major requirements. Transfer guides that made it clear which core courses would apply toward a bachelor’s degree (and which would not) facilitated their deliberation process.

Students’ deliberation approaches and educational practices had implications for their outcomes. By the third interview, fewer than half of the students in our sample had transferred, and most of the remaining students still intended to do so (only one explicitly stated that he no longer planned to transfer). Transfer rates among students who had a strategic deliberation approach were somewhat higher than those of their peers, with 59% ($n = 13$) transferring by the third interview compared with 42% ($n = 16$) among students who took a procedural approach and 40% ($n = 2$) among students who did not deliberate about policy signals. Students’ understandings of policies appeared to inform their decisions about the timing of transfer—specifically, how many credits to complete before transfer, a consequential decision for the time needed to complete a bachelor’s degree. Among the students who transferred, those who deliberated about transfer policy signals using a strategic approach spent, on average, 2.2 years at the community college, whereas those with a procedural approach spent 2.9 years and nondeliberators spent 4.8 years.

Because curricula across institutions were often misaligned, students could find themselves with excess credits if they took coursework that would not count toward their final degree.

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One student, a pre-med major who strove to be core complete before transferring, described the consequences of her course-taking decisions:

> A lot of the classes didn't go through. My stats class didn't go through. My philosophy class didn't go through. My physics classes didn't go through because my major is calc based. I mean, it's fine. Now thinking about it . . . it does push my graduation date later.

When this student said the courses "didn't go through," she meant that the courses—all part of her community college's core curriculum—did not count toward her final degree. Another student described a similar scenario with a literature course she took as part of the core at her community college: "I didn't take anything that I didn't need. But I think there was one by mistake. It was British Literature, but it wasn't the right one. I didn't want to take a class just to take it, you know." When she arrived at her university, she discovered that she had to retake it. She lamented, "I feel like each university has their own [core], so UT has their own and A&M, so [the community college] would advise one class and the university another." Even though the core courses transferred, those that were not part of the university's core counted as elective credits only.

Discussion

In this article, we used sense-making theory to examine how transfer-intending community college students understood transfer policies and how that understanding informed their transfer practices. Analyzing student interview data from a longitudinal study of transfer-intending community college students in Texas, we illustrate that postsecondary institutions shaped students' opportunity to receive information about existing state policies. Students deliberated across received transfer policy signals using one of two primary patterns. The majority of students adopted a given policy signal as a procedure or a step-by-step transfer pathway. A slightly smaller group of students demonstrated a strategic approach to policy signals, combining and adapting policy signals to create a customized transfer pathway that suited their needs. A handful of students were unaware of any of the state's transfer policies despite having met with advising staff for transfer guidance. Students' limited understandings—and, in some cases, misunderstandings—of transfer policies were shaped by their macro- and micro-contexts and had important implications for their ability to efficiently and effectively achieve their transfer goals.

The prevalence of procedural approaches among the students in our sample (58%) suggests that "raw" policy signals are important, as many students adopted a signal rather than adapting or combining signals. When students took a procedural approach, the core curriculum primarily dictated their behavior, whereas reverse transfer influenced very few students and FOS did not influence any, chiefly because students were unaware of the policies. Most students did not recall receiving policy signals about FOS and reverse transfer. Without those relevant signals, which they could have adapted or combined with other signals, students fully adopted the core curriculum and became susceptible to taking coursework that would not apply to a baccalaureate.

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Students who received multiple policy signals were often initially confused by the conflicting information. However, we found that receiving multiple signals eventually spurred them to take a strategic deliberation approach in which they reconciled the signals. The conflicting information caused them to question and reexamine all the signals they had received to date and to adapt or combine signals. This is not to say that creating student confusion is ideal but, rather, that in a state context with multiple transfer policies, students benefit from receiving signals about the various policies so they can leverage them to create an individualized transfer plan.

Students' approaches to deliberating across policy signals influenced their educational decisions and, potentially, their college outcomes. Those who adhered tightly to the core, without adapting the policy message to align with other major requirements, sometimes accrued extra elective credits. Although students did not necessarily lose credits in transferring, they needed additional courses at the university to fulfill major requirements, thus delaying graduation. This scenario occurred primarily with math or science courses that, on transfer, proved not to be the appropriate courses for their major. The emphasis on core completion at community colleges, like the emphasis on associate degree completion, can be at odds with students' aspirations to earn a baccalaureate if students' course-taking strategies are not specifically tailored to ensure that the courses both transfer *and* apply to the desired bachelor's degree.

The consequences of nonoptimal course taking fall on the student. In an institution-driven transfer system, the receiving institution has a great deal of authority over credit applicability (Hodara et al., 2017). In Texas, where students face varied policy signals from institutional actors, students choose what to pay attention to, what to ignore, and how to follow or modify existing policies. In a state context that emphasizes institutional autonomy and individual responsibility, the burden is on students to make sense of the various policy signals they receive. Without knowledge of the state policies, students have no recourse if policies are not followed and no knowledge of what should occur during transfer and the application of credits to their degree. In a different study that illuminates the interinstitutional dynamics of the transfer system, we provide evidence of institutions purposefully ignoring the state policies (Schudde et al., 2021). For instance, some university staff acknowledged that they will not accept credits for core courses on transfer unless the community college explicitly marked every core course on a student's transcript with "core," even though they are mandated to provide that credit with no requirement that the transcript be marked.

The Role of Institutions

In Texas, the state does not actively send policy signals to students to inform them about transfer policies but rather posts some information about state policies (e.g., policy overviews, legislative documents) online and otherwise relies on institutions to provide information to students. This differs from other states that offer student-facing resources, typically maintained by the state's department of education, such as California's "A Degree With a Guarantee" campaign and website or Virginia's website, which highlights state policies for transfer and includes a list of articulation agreements. Granted, both of those

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states have a statewide agreement that may offer a clearer policy signal. Other states with a transferable core curriculum policy like Texas still tend to provide some online information about the policy. For example, the Ohio Department of Education maintains a website with a student-facing section about the Ohio Transfer Module. The THECB similarly maintains a website about Texas's core curriculum, though it is sometimes out-of-date and can be difficult to find and navigate (Schudde et al., 2018). Our findings suggest that, at least within our sample, students were not aware of it.

As a result, students primarily receive filtered policy signals from various institutions, with wide variation across the colleges in which policy signals are sent and in the quality of the information (Schudde et al., 2018). Students from different institutions receive different signals and different advice. This is partially by policy design; in an effort to maintain institutional autonomy, the state allows different colleges to develop their own core curricula as long as those curricula contain certain broad components (Bailey et al., 2017).

The quality of institutional information provided for transfer-intending students varies widely (Schudde et al., 2018; U.S. GAO, 2017). Within our sample, students rarely received information about FOS and reverse transfer policies from their community colleges, even though awareness of these policies could help students make efficient and effective educational decisions about which courses to take, when to transfer, and which university and major would (and should) accept their credits. By failing to provide information about FOS and reverse transfer—policies emphasized by the state's coordinating board, at least at the time—community colleges minimize student take-up of the policies. Even when community college personnel were aware of policies like FOS, prior research suggests that there was a lag in updating institutional transfer guides and online information (Schudde et al., 2018). Without information from their institutions, students did not gain access to the relevant policy signals.

Implications for Policy and Practice

Ideally, students should not need to distinguish between institutional and state policies in order to navigate transfer; they should be able to follow policies procedurally. In the context we examined, however, which offers high institutional autonomy over how credits apply toward a degree, students assume additional risk when adhering to policy signals filtered through any single institution. The variation in the quality of filtered policy signals and in the curricula of institutions had important implications for the students' awareness of state policies. Students cognizant of state transfer policies more often understood what to expect during transfer, especially when considering multiple destination universities (each of which may differently accept and apply community college credits). Without such knowledge, students were susceptible to being misguided by the filtered signals from their institution.

Sources of policy signals, such as transfer guides, could help students navigate various policy signals but only if they were comprehensive—covering multiple state policies—and aligned with the students' goals, moving them efficiently toward a bachelor's degree. If students were provided with clear and straightforward transfer guides that appropriately aligned with state (and institutional) policies, they could follow the transfer guides without any issue. High-quality transfer guides encouraged students to take a strategic deliberation

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approach by making it clear that they could adapt and combine policy signals (e.g., guides showed that some core credits would not apply to a degree; ideally, transfer guides would include FOS and reverse transfer policy signals). Institutions could work to develop transfer guides that incorporate multiple policy signals and encourage efficient course taking. Doing so would sometimes require them to emphasize transferring before completing the core curriculum or an associate degree, which may go against the incentives of community colleges.

In Texas, the state's accountability structure largely leaves institutions to monitor themselves and to maintain and verify their own materials for students. The quality of some of the information appeared to suffer: Some students described transfer guides that did not clearly show which courses would transfer and count toward a degree; others described materials that gave conflicting information about how credits would transfer. One state policy solution would be for the coordinating board to offer a template for transfer guides that includes approachable definitions for various state policies, where colleges would be encouraged to clearly mark which courses would transfer and which would apply to a bachelor's degree under the state's core and FOS policies. Future research might explore the types and quality of policy signals included in transfer guides to potentially inform best practices for developing transfer guides.

Research from other contexts suggests that students of color and those from low-income families are disproportionately likely to face challenges navigating transfer, where their path to transfer is hindered by "overt and hidden barriers" (Wang, 2020, p. 87). An additional area for future research would be to further explore the variation across student background in policy signals received and sense making. We did not find evidence of variation in the signals received or deliberation approaches across race or family income, but given the small sample size and lack of variation across family income, it is possible that other data might be better suited for answering that question. Such an inquiry would allow further consideration of the equity implications of extant policy signals, including how signals from colleges could be better leveraged to ensure access to transferable coursework for students from racially minoritized backgrounds and low-income families. Wang (2020) argued that building equity-minded transfer pathways would likely require incorporating advising into instruction, where community college faculty clarify whether and how their courses transfer, which could provide additional signals for students and reduce the variation in which students gain access to which signals.

Under the status quo, students must navigate a complex web of policy signals from various sources. Ideally, states could ease students' burden through background work—determining how credits transfer and apply, without students needing to serve as sense makers of various transfer policy signals. For example, after California moved to the "degree with a guarantee" policy, universities had to accept associate degrees toward the first 2 years of a bachelor's degree, putting the burden on institutions to determine how those credits apply. The message is simpler for students. Rather than adapting and combining multiple policy signals, as in the current system, students would instead follow an associate degree plan and be guaranteed acceptance at and transfer to a public university in the same major (Schudde et al., 2020).

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We advocate for the adoption of a policy under which associate degrees guarantee admission in the same major to at least one public university, where institutions must apply the 60 credits toward the bachelor's degree and count students as core complete (so transfer students can focus on major-specific courses). Under such a policy, universities must accept core and pre-major courses to the extent that it allows junior standing in the same major, but how they accept and substitute courses is otherwise up to them. This places the burden on the institution/department to decide how credits will substitute, rather than on the student to pay for the accumulation of excess elective credits. We expect that this would improve clarity for students better than any information-based approach, but we suspect that some actors in state higher education policy would not find it palatable. One potential repercussion might be selective institutions deciding to accept fewer transfer students as a result; at the same time, at least in the Texas context, that trend is happening anyway but without any corresponding benefits for students.

Lessons for Other Contexts

In the context we examined, variation in institutions' curricula and policy signal quality left students who were aware of the origin of transfer policies and who deliberated among various signals better prepared for transfer. Knowledge of multiple policy signals offered insights about credit transfer and prepared students for what to expect during transfer, but it also put them in the difficult position of adjudicating across those signals to determine how to combine and adapt (or potentially ignore) them, especially if they wanted to consider multiple destination universities (each of which may accept and apply their credits differently).

Given its multiple public university and community college systems, the Texas higher education context may be more decentralized than in other states. The issue of misalignment between policy signals—where institutions sometimes emphasize different policy signals or differentially encourage adopting versus adapting/combining the policies—is partially a function of the macrocontext, which prioritizes local control and institutional autonomy.

However, the extant literature on community college transfer suggests that the student experiences we captured—where they must deliberate across policy signals from various sources—are not unique to Texas. Studies that describe effective transfer partnerships emphasize the importance of well-articulated transfer curricula and outreach among staff at 4-year institutions to clarify whether and how they accept credits on transfer, even in contexts with state-wide transfer agreements (Fink & Jenkins, 2017; Handel & Williams, 2012). Our results directly illustrate what the sense-making process looks like for students, including the types of signals and sources they receive and the approaches they take to leverage signals to inform their educational decisions. Future research might continue to explore how students make sense of transfer policies in other contexts, including the predictors of the different deliberation approaches. We also hope to spur research on these dynamics in other contexts, including the variation in filtered policy signals across institutions, how filtered signals compare with direct policy signals from the state, and how students obtain and make sense of those policy signals.

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Conclusion

Because more than a third of college students, the majority of whom hope to earn a baccalaureate, begin higher education at a community college, higher education stakeholders need to understand how students experience and make sense of existing policies in order to develop and fine-tune an efficient transfer function. Institutions send policy signals to students that ultimately guide those students' educational decisions. The content that institutions send matters, as does the filtering process that prevents some signals from reaching student sense makers, often to those students' detriment. In a decentralized higher education system like that of Texas, the burden is placed on students to be the arbiters of policy signals. Students' educational practices rely heavily on their process of adopting, adapting, combining, or ignoring policy signals. The consequences of adopting faulty policy signals and the burden of developing a customized transfer pathway ultimately fall on students, with important implications for equity.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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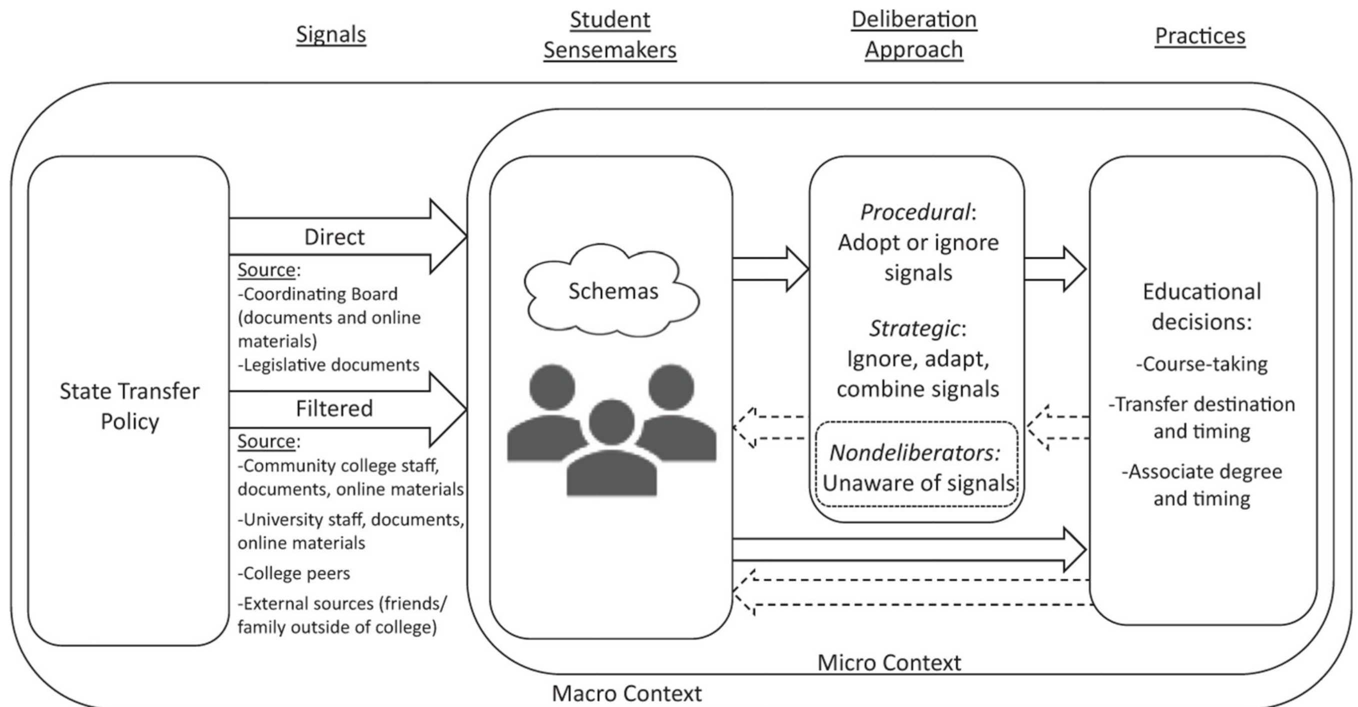

Figure 1. Student sense making of transfer policies.

Note. The figure represents a conceptual model of transfer-intending students' sense-making processes. Students are situated within a macrocontext within which they receive either direct or filtered signals about state transfer policies. Students' schemas, deliberation approaches, and subsequent educational practices are enmeshed within specific microcontexts (defined by student networks and institutional contexts). Students deliberate over the received policy signals using several different approaches, which inform their educational practices. The dotted arrows represent how sense making is an iterative process; students may return to prior phases and adjust their approach in response to their contexts and practices and as they learn new information.

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Table 1

Policy Signals and Sources of Signals Received by the Students

Received policy signals about	***n***	**%**
Core curriculum	58	89
Reverse transfer	6	9
Fields of study	10	15
Sources of policy signals		
Community college personnel	52	80
Institutional websites	56	86
Transfer guide	29	45
Noninstitutional sources	33	51
Total students	65	100