ADVITHE VIRTUAL ADVISOR A HIGH-IMPACT TOOL TRANSFORMING COLLEGE ADVISING Design-based implementation study

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	5
KEY FINDINGS	7
RECOMMENDATIONS	8
INTRODUCTION	10
MEET THE USERS	13
DESIGN IMPLICATIONS	18
THEORY OF CHANGE	19
ADVI ADVISORS	21
RESEARCH DESIGN	22
FINDINGS	27
FIRST WAVE OF STUDENTS	27
SECOND WAVE OF STUDENTS	44
IMPLEMENTATION CHALLENGES	49
REFERENCES	53
APPENDIX A: ADVI USER ARCHETYPES	54

LIST OF EXHIBITS

FIGURE 1	High ADVi Reliance Archetype	14
FIGURE 2	Medium ADVi Reliance Archetype	15
FIGURE 3	Low ADVi Reliance Archetype	16
FIGURE 4	Theories Of Implementation and Client Response	20
FIGURE 5	Did ADVi Cause Students To Advance Their College Applications	28
FIGURE 6	What Content Did Students Like The Most?	30
FIGURE 7	Were There Any Topics That You Wished ADVi Covered Better?	32
FIGURE 8	Students Who Knew They Could Use ADVi To Receive Personal Attention From A Human Advisor	35
FIGURE 9	Students Who Knew They Could Text Questions To ADVi Bot	37
FIGURE 10	Share Of Students Who Trusted ADVi	38
FIGURE 11	Sources Of College-Going Advising	41
FIGURE 12	Attitudes and Preferences Related To Help-Seeking	48

EXECUTIVE SUMMARY

In the fall of 2020, the Texas Higher Education Coordinating Board (THECB) entered a research partnership with the Urban Education Institute at The University of Texas at San Antonio (UEI), which was made possible by funding from the Greater Texas Foundation (GTF). The THECB and GTF created this partnership with the UEI to conduct collaborative, improvement-focused research that would strengthen the ADVi Virtual Advising program (ADVi), a virtual college advising system that consists of an artificially intelligent chatbot and a human team of professionally trained college and career advisors. The arrival of ADVi and the three-year engagement with the UEI could not have been timelier.

Just as COVID-19 disrupted traditional sources of college advising, the THECB launched ADVi. Their implementation of ADVi appears to have made a significant impact and exceeded the expectations of its student users. By the end of its first year of operations, the THECB through ADVi helped 276,643 students complete their college application journey.



During this successful start, the UEI research team began collecting data on the ADVi user experience and its implementation. In this report, researchers summarize the findings that they have developed over the first two years of this three-year collaboration and offer recommendations for ADVi's improvement. They have also produced two artifacts that are intended to drive ongoing conversations about systems improvement: (1) user architypes that capture the major clusters of student users and a (2) framework that identifies ADVi's current theories of implementation and client response.

KEY FINDINGS

👌 ADVi made a difference

- Students reported that ADVi helped them through the college application process. They stated that they completed college application steps because of ADVi's timely reminders, next steps, and encouragement.
- All students who interacted with an ADVi advisor said their help met or surpassed their expectations.
- Students said that they would recommend ADVi to friends.
- Students recounted that they needed the most help in completing a financial aid application and searching for scholarships and that ADVi helped them with these tasks.
- All students interviewed grew to trust ADVi's information. Half of them said they would trust ADVi more if their high school or future college promoted it.
- The ADVi bot offered students a shame-free space to ask any college-related question they had "without the risk of feeling dumb."

Student users clustered within one of three personas, or user archetypes

- Three personas generally represent the ADVi user population. They differ from each other based on their level of college knowledge and planning and need for ADVi.
- Though ADVi currently makes the biggest difference for the personas that need ADVi the most, these students need ADVi to do more because their college and career advising needs are much greater.

Students needed ADVi instructions

- More than half of all students in the first wave of interviews did not know they could text with an ADVi advisor or send questions to the ADVi bot.
- None of the students interviewed in the first wave knew about ADVi's hashtag commands.
- Most students did not remember opting into ADVi, which made them skeptical of using ADVi for security reasons.

$\frac{2}{666}$ ADVi filled a void during COVID

 Students described ADVi as filling a gap in their college advising created by COVID-19.

ADVi advisors improvised operational fixes

- ADVi advisors supported ADVi by playing multiple roles aside from providing personalized advice for students.
- ADVi advisors conducted outreach to schools, helped develop temporary, manual processes for tracking student requests for personalized advice, built a repository of answers to frequently asked questions with supporting links and documentation, delegated work across the advising team, and referred students seeking help with social emotional challenges to appropriate counselors.

RECOMMENDATIONS

Timing

- Improve the timing of information campaigns, which occasionally sent information to students after they needed it.
- Stop ADVi from sending more than one text at a time, especially during school hours.
- Create a new way for students to opt-in or sign up for ADVi to reach those students who need help before starting their ApplyTexas application (where students currently opt-in) and as early as ninth grade.

🖺 Personalization

- Empower ADVi advisors to provide more personalized responses by allowing them to see background information on students and where students are in the college application process.
- Deliver more personalized information on scholarship opportunities and college programs.
- Improve ADVi's efficiency and ability to send more personalized information by having it remember how students answered its previous questions.

Content

• Add information on preparing for the application process in 11th grade or as early as 9th grade.

- Add info on scholarships and the collegegoing steps after being accepted to a college.
- Add content to help students navigate their first year in college.
- Add information for DACA students and students who are financially independent.
- Regularly communicate definitions of collegegoing vocabulary terms, such as waitlist, twoyear college, four-year college.
- Continue to use prompts to help students who don't know what questions to ask.
- Experiment with sending messages of varying content: infographics, videos, pictures, text-only, and text with links to determine which are most effective at spurring student action at different points in the college-going process.

$\stackrel{\wedge}{\searrow}$ New Features

- Consider expanding marketing efforts to target students in 11th grade and eventually 9th grade to help them become college-ready before the application process.
- Make it easier for students to recommend and share ADVi with friends.
- Experiment with adding office hours following the school day and into the early evening to allow students to talk to ADVi advisors by phone or video conference.

RECOMMENDATIONS CONTINUED



- Improve staffing to ensure a consistent and adequate number of ADVi advisors are focused on responding to students.
- Create a team of counselors who can provide social-emotional counseling to students who ask for it through ADVi.
- Consider hiring support staff or additional advisors to handle tasks not directly related to college advising, such as school outreach.
- Improve the flow of information on ADVi operational needs to higher-level executives to address issues as they arise

ရို Back Office Processes

- Automate the system for tracking messages from students to advisors. This system should also automate assigning student questions to advisors and tracking their resolution to reduce the chance of losing messages and increase their responsiveness.
- Develop an interface that allows advisors to communicate back to students using a similar text messaging format rather than email.
- Design message campaigns with ADVi advisors to improve the targeting and timing of campaigns.
- Test systems that are supposed to automatically transfer student data to ADVi at the start of each college application cycle or when these systems are updated.

🚫 Trust & Engagement

- Invest in district- and school-level marketing and outreach to educate school staff about ADVi and to have them promote ADVi as a trusted information source.
- Build a coalition of trusted partners (school districts, colleges, nonprofit organizations) who will lend their names and logos for cobranding opportunities, including when ADVi first introduces itself to students.
- Test micro-scripts generated from how students describe ADVi, such as "ADVi—your 24/7 personal college and career advisor."
- Improve student engagement with ADVi by introducing it multiple times with instructions and links to ADVi's website and short video tutorials.
- Send multiple reminders about ADVi's commands and capabilities throughout the year, especially about the #followup command, which connects students to ADVi advisors.
- Provide photos or videos of ADVi advisors to help students feel more comfortable communicating with ADVi advisors.
- To help students reluctant to communicate with ADVi advisors, reinforce the message that there are no dumb questions. ADVi is a safe place to ask questions. And ADVi advisors want to hear from them.

9

INTRODUCTION

Improving access to higher education for all Texas students has long been a goal in our highly diverse state. Then came the COVID-19 pandemic, which Commissioner Harrison Keller of the Texas Higher Education Coordinating Board (THECB) has called "the most significant disruption to higher education institutions since the end of the Second World War."

Freshman enrollment in the country declined 13.1% in the fall of 2020 compared with the previous year, while overall higher education enrollment fell by 2.5% and two-year college enrollment fell by 10.1% during the same period (National Student Clearinghouse Research Center [NSCRC], 2001).

In Texas, college enrollment patterns followed a similar decline. Overall enrollment declined by about 2.1%, while two-year colleges experienced a 10.3% drop (THECB, 2022a). High school students struggled as they learned remotely with limited access to school-based college counselors. Many colleges closed inperson tours and operations. Fewer Texas students completed the FAFSA in fiscal year 2020, decreasing by 2.2% from 218,081 at the end of August 2019 (US Department of Education [USDOE], 2022). All these factors created even more urgency to help students apply to college while keeping them safe from COVID.

Fortunately, when the pandemic hit, the THECB was prototyping the Virtual Advising Project (ADVi), which reaches students 24/7 with "critical and timely information to support their postsecondary journey." The ultimate goal of the project is to help more Texans "access higher education and complete their credentials at Texas colleges and universities" (THECB, 2021). ADVi, short for "advisor," is a text-based, artificially intelligent chatbot that sends text messages about collegegoing information, suggests action steps students can take throughout the process, and responds to incoming questions from users. The ADVi chatbot (or bot) can automatically answer many questions texted by students and connect them to ADVi advisors, a team of professional college advisors, when questions cannot be addressed by the bot.

ADVi started as a partnership with The University of Texas at Austin in 2019. It was then moved to the THECB and made available to all Texas students in the fall of 2020. During the 2020-21 academic year, most ADVi users opted-in to messaging from ADVi when they started an ApplyTexas college application.



The Urban Education Institute at The University of Texas at San Antonio (UEI) established a research partnership with the THECB's Virtual Advising team in the fall of 2020, thanks to generous funding support from the Greater Texas Foundation. Over three years, the UEI team will collaborate with the THECB team to facilitate rigorous continuous improvement cycles to strengthen ADVi's effectiveness and engagement with students.

This research brief provides findings from the project's first and second wave of student interviews, which focused on getting feedback from ADVi student users about their user experience, their understanding of the college-going process, and access to resources outside of ADVi. It also provides findings from focus group interviews held with ADVi advisors to understand the strengths and challenges of implementation and identify areas of improvement.

MEET THE USERS

In design-based research, user archetypes, also referred to as personas, are created to spark a sense of empathy in the people who design programs for the eventual users. With empathy, programs designers have been found to more effectively design programs to meet the needs of their users.

Researchers identified three user archetypes to schematically describe the population of potential ADVi users based on the qualitative research findings generated from student interviews. They also validated the personas by discussing them with ADVi advisors.

Personas include Freddy (pg. 14), Manny (pg. 15), and Sara (pg. 16). A side-by-side of these personas is available in Appendix A on page 54. Each of these personas has unique attributes and biographies. But what primarily differentiates them is their level of reliance on ADVi to help them apply to college.



First-gen, High level of reliance on ADVi

44 ADVi helped me complete my college applications more than any person in my life. I wish I had ADVi at the start of high school."

Freddy's Goals

- Become a medical doctor
- Marry and have kids
- Own a home with a big yard



Freddy's Frustrations

• Not starting to plan for college until my junior year in high school

• Not being able to play on my high school baseball team because I needed to work

High School Academics

- Ranks in top 10% of graduating class
- Highest math credit was pre-calculus
- Completed an AP biology course



College Finances

- No family college savings
- Estimated family contribution = \$0
- Estimated annual unmet need \$13,500

🗩 Freddy's Experience with ADVi

- Does not remember signing up for ADVi
- ADVi was his primary source of info and advice
- Would not have known about ADVi but for starting an Apply Texas application with the help of his favorite teacher
- Most of his questions were on FAFSA and finding strong pre-med programs
- He was happy to ask questions and seek help from ADVi advisors but needed prompts and reminders

≜≡ Freddy's Bio

Graduated from SAISD's Brackenridge HS in 2020, where his favorite class was biology. Worked at a nursing home after school for 2 years of high school. He is the oldest of four siblings and will be first in his family to graduate from high school.



Meet Manny.

Continuing-gen, Medium level of reliance on ADVi

ADVi helped me stay on track. It was my personal college advisor 24/7."

Manny's Goals

- Be a computer software developer
- Travel
- Help my family



Manny's Frustrations

• Not knowing which dual credit courses would transfer and advance me in my degree program

• All the personal info needed for FAFSA



High School Academics

- Ranks in top 10% of graduating class
- Highest math credit was AP Calculus
- Completed 2 AP & 2 dual credit courses



College Finances

- No family college savings
- Estimated family contribution =

\$5.000

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• Estimated annual unmet need = \$8,500

Manny's Experience with ADVi

- Does not remember signing up for ADVi
- ADVi and high school counselor were primary sources of college-going help
- Connected to ADVi through ApplyTexas
- Mostly had FAFSA & scholarship questions
- Benefited greatly from reminders

• Was happy to ask questions of the ADVi bot because it never made him feel like his questions were dumb and it helped him prep for his meetings with his high school counselor

Manny's Bio ి≡

Graduated from NISD's Clark HS in 2020. where his favorite class was a computer science dual credit course at UTSA. Played high school and club soccer and ran cross-country. Raised by his single mom who earned a BS and MPA and serves as a professional in local government.

15



Meet Sara.

Continuing-gen, **Low** level of reliance on ADVi

I knew I was going to Texas A&M as long as I can remember. It's where both my parents went."

^b Sara's Goals

- Earn a bachelor's degree in business from TAMU-College Station
- Start my own marketing business

Sara's Frustrations

• Wish I could start at College Station my freshman year instead of transferring from another school in the TAMU system

Need help planning efficient transfer



High School Academics

- Ranks in top 25% of graduating class
- Highest math credit = pre-calculus
- Completed 4 AP courses



College Finances

- 529 college savings
- Estimated family contribution = \$29.000
- Estimated annual unmet need = \$0

🛛 Sara's Experience with ADVi

- Remembers signing up for ADVi based on her brother's suggestion.
- Asked questions of ADVi bot occasionally, mostly relied on high school counselors and TAMU recruiters.
- Benefited from ADVi bot's reminders and encouragements.

• ADVi was not an important source of college info and advice.

≜≡ Sara's Bio

Graduated from NEISD's Reagan HS in 2020, where here favorite experience was leading the journalism club. She is the youngest of two and hopes to join her brother at TAMU-College Station, where her parents first met at bonfire.

16

First-gen, **High** level of reliance on ADVi

Freddy is the most reliant on ADVi of the three personas. As a first-generation college-going student, he did not begin planning for college until his senior year when his favorite teacher began asking him about his college plans. Freddy also attends a high school that has a below-average sense of college-going culture, as seen by its belowaverage college enrollment rates.

Freddy began using ADVi after his favorite teacher

hounded him to start his ApplyTexas application. But for ApplyTexas and Freddy choosing to opt-in to ADVi messaging, he would not have learned of ADVi at all.

Freddy benefited greatly from the ADVi bot and ADVi advisors. He relied heavily on ADVi advisors to help him and his mom complete his FAFSA application. He also used it to learn about colleges with strong pre-med programs.



Manny

Sara

Freddy

Continuing-gen, Medium level of reliance on ADVi

Manny relies on ADVi more than Sara but needs it less than Freddy. As a continuing-generation college-going student, he has received a lot of advice about preparing for college from his mom. He also attends a high school with a strong team of college advisors and college-going culture.

However, between his year-round, packed schedule of athletic events and dual credit courses on the campus of a local four-year college, Manny benefited greatly from reminders sent by the ADVi bot that kept him on track with his college and financial aid applications. He also appreciated ADVi's words of encouragement, which made him think of ADVi as a "cool mentor."

Like Freddy, Manny began using ADVi after he started his ApplyTexas application. The choice to opt-in to messaging in ApplyTexas was responsible for connecting Manny to ADVi. But for this feature, he would not have received the benefits of ADVi.



Continuing-gen, Low level of reliance on ADVi

Sara relied on ADVi the least as compared to Freddy and Manny. As a continuing-generation collegegoing student, her college plans were set as early as fourth grade. She has always planned to follow in her parents' footsteps by becoming an Aggie at Texas A&M—College Station. In fact, she had hoped to join her older brother who started his college education at TAMU two years earlier.

Unfortunately, Sara did not qualify for automatic admissions based on her class ranking and was only admitted under the TAMU System Admissions Program, which meant she needed to start her college journey at a regional college of TAMU before having the opportunity to transfer to TAMU-College Station. Her parents and high school counselors helped her begin researching her options and planning her freshman year of coursework to minimize any loss of credit during the transfer process.

Sara signed up for ADVi before starting her ApplyTexas application on the advice of her older brother. What she liked most about ADVi were the reminders sent by the ADVi bot that kept her from missing key college application deadlines. She also was grateful for ADVi's encouraging words, though she sometimes felt like she received too many messages.

DESIGN IMPLICATIONS



How can we improve Freddy's ADVi experience?

- Use a preexisting process, such as school enrollment, or TSI or dual enrollment participation, to provide the option to enroll students into ADVi starting in ninth grade.
- Provide prompts to help students select their high school courses and extracurricular experiences to support their college and career goals.
- Begin educating students about the ApplyTexas application process prior to senior year.
- Add more content about scholarship opportunities.

How can we improve Manny's ADVi experience?

- Use a preexisting process, such as school enrollment, or TSI or dual enrollment participation, to provide the option to enroll students into ADVi starting in ninth grade.
- Add content that helps students select dual credit and Advanced Placement courses that align with their college plans.
- Add more content about scholarship opportunities.
- Create ADVi training videos for high school counselors to encourage the integration of ADVi into their high-touch, schoolbased strategies.

How can we improve Sara's ADVi experience?

- Add a feature that estimates a student's class ranking starting in sophomore year so that there are no surprises at the time of applying to college.
- Add more detailed content to help students plan for efficient transfers.
- Create ADVi training videos for high school counselors to encourage the integration of ADVi into their high-touch, school-based strategies.



Continuing-gen **Low** level of reliance on ADVi

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Medium level of reliance on ADVi

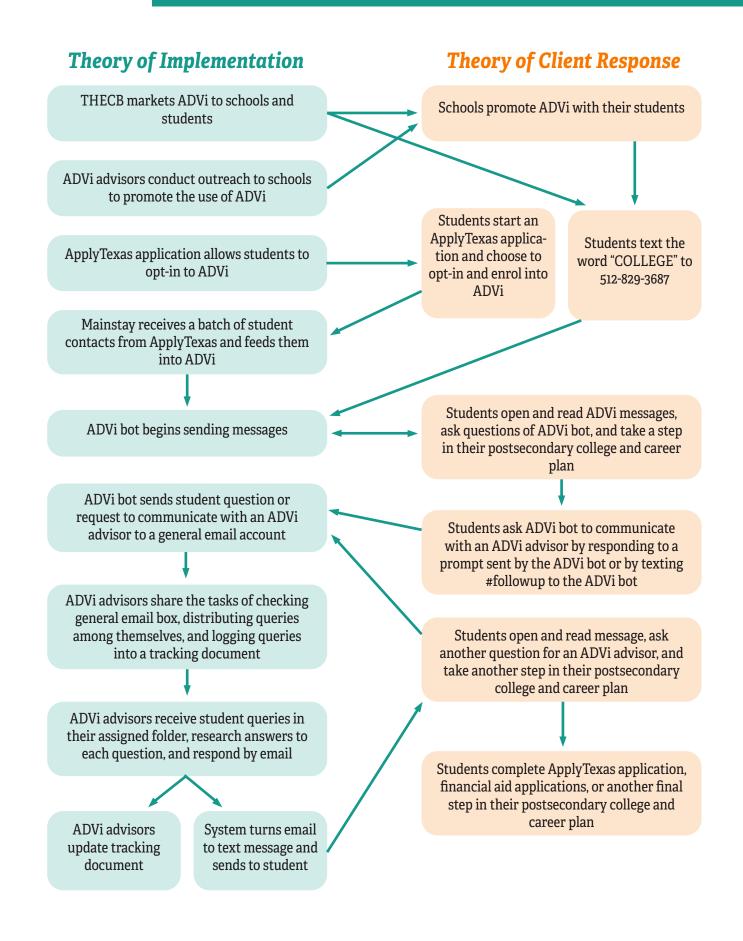
Continuing-gen

THEORY OF CHANGE

Researchers relied on ADVi advisors to develop a schematic framework that describes ADVi's theory of implementation and theory of client response, as shown in figure 4 on page 20. A theory of implementation identifies the essential activities that program operators will implement in theory. A theory of client response identifies how clients are expected to respond to programmatic activities in theory.

Together, these theories are referred to as a theory of change. They help identify (1) where planned activities and client responses fail to meet expectations, (2) where processes are underdeveloped, and (3) where processes could be streamlined. Their development also benefitted from insights offered by students.

FIGURE 4: THEORIES OF IMPLEMENTATION AND CLIENT RESPONSE



20

ADVI ADVISORS

ADVi's theory of change begins at the top of Figure 1, where the THECB markets ADVi to students and schools. This activity is also complemented by school outreach conducted by ADVi advisors. From these activities, schools promote ADVi to their students and students sign-up for ADVi.

A major program activity is the design of the ApplyTexas application to require students to opt-out of ADVi if they do not want to receive ADVi messages. This choice architecture allows many students to be included in the ADVi program. However, before they begin receiving messages from ADVi, a batch of student data must be transferred to Mainstay and then Mainstay must input that information into ADVi. This process is expected to be largely automated.

Once student contact data is entered into ADVi, the ADVi bot sends an introductory text message to students. This message explains what ADVi is about and shares some instructions. Following this message, the ADVi bot regularly sends messages to students. From these messages, students are expected to become more informed about the college-going process, ask questions about the process to ADVi, take steps toward completing their college application and financial aid application, and grow in confidence about their ability to complete the college-going process.

Students are regularly asked if they would like a question of theirs to be escalated up to an ADVi advisor for answering. If they agree to communicate with an ADVi advisor, their question or concern is sent to a general email box overseen by the ADVi advisor team. ADVi advisors will review incoming messages, record them on a tracking document, and distribute the questions into their assigned folders. This is a shared set of tasks.

ADVi advisors read their assigned student queries, research information to respond to each query, and then draft a response to each student by email. ADVi advisors then update the person managing the tracking document on the status of each student query.

The system turns the ADVi advisors' email into a text message and sends it to the appropriate student. From these ADVi advisor messages, students are expected to become more informed about the college-going process, ask more questions, take more steps toward completing their college application and financial aid application, and further grow in confidence about their ability to complete the college-going process.

ADVi advisors helped identify a few important distinctions between the ADVi bot's services and those that ADVi advisors provide. The ADVi bot quickly answers a wide range of college questions 24/7. In contrast, ADVi advisors take longer to respond but go deeper in searching for answers to questions that are unique to a student. The ADVi bot and ADVi advisors complement each other and serve as a one-stop-shop for answering students' complete list of college-going questions.

With repeated questions answered, timely reminders, and encouragement, students increase their completion rate of college application and financial aid application, respectively.

RESEARCH DESIGN

Researchers used a qualitative research design to understand the implementation and user experience of ADVi and identify opportunities for improvement. They conducted individual interviews with 60 students who used ADVi. They also facilitated two rounds of focus group interviews with ADVi advisors. Researchers saved and transcribed audio recordings for later analysis using Zoom, a videoconferencing application. During the first two years of the study, researchers met with THECB staff weekly or bi-monthly to coordinate data gathering and share their emerging findings.

Researchers shared their interpretations and then synthesized their findings into the first draft of this report. They then shared the first draft of the report with ADVi advisors and supporting staff for their feedback and to give them an additional opportunity to add to the report. After reviewing the final round of staff feedback, researchers produced this final report.

Study Sample

Researchers used a study sample of 60 students who used ADVi. They individually interviewed these students in two waves. They also interviewed eight advisors during two focus group meetings.

Wave One of Students. Thirty students comprised the first wave of student interviews. These students where all located in Bexar County and intended to enroll in college in fall 2021. Twenty-eight were high school seniors. One was a 2020 high school graduate who took a year-long break from formal education. And one was looking to re-enroll in community college after taking time off to care for her family. Twenty-six students had already applied for college, and all but one had received acceptance letters. The other four students were still in the process of applying.

Of the 30 students, 70% learned remotely during their senior year due to COVID-19. Six, or 20%, were learning in a hybrid environment, some in person and some online remote learning. Only three participants, or 10% of this wave, attended school entirely in person.

Wave Two of Students. Thirty students comprised the second wave of student interviews. These students were located throughout Texas. Twenty-nine enrolled in Texas public colleges and universities in the fall of 2021. Of the 29 enrolled students, one had dropped out of college by the time of our interview in spring 2022. Another student took a semester off and started their postsecondary studies in the spring of 2022. All students identified as first-time college students.

Of the 30 students, 57% learned remotely during their senior year due to COVID-19. Nine, or 30%, were learning in a hybrid environment. Only three participants, or 10% of this wave, attended school entirely in person.

Researchers formed this second wave of students from two equally sized subgroups: Group A and Group B. Group A students used ADVi advisors. Group B students chose not to use ADVi advisors and only relied on the ADVi bot.

Study Period

This study occurred during the COVID-19 pandemic. While students received instruction remotely, their college advisors and college advising centers at their high schools were largely inaccessible. Forty percent of students described their ability to reach a counselor as very difficult. Only 10% reported easy access to counseling staff while in the remote learning environment. As a result, COVID-19 increased ADVi's importance as a source of college-going knowledge.

Student Interview Protocols

Wave One. THECB staff sent a text message through ADVi to all 4,207 opted-in students enrolled in high school in Bexar County. Their message invited students to voluntarily participate in this study's first wave of student interviews. Willing students gave the THECB permission to share their contact information with researchers.

Researchers then reached out to a subset of the 162 students who consented via text, including students from different school districts and with varying levels of engagement with ADVi. Researchers provided participating students a \$10 e-gift card as a nominal gift for their involvement in the study.

Researchers interviewed students in March and April 2021. They used a semi-structured questionnaire focused on the student's user experience with ADVi. They also asked questions on how students would improve ADVi, their use of other college-going resources, and their understanding of the college-going process.

Wave Two. THECB staff expanded the invitation to participate in this study's second wave of student interviews. They invited all students throughout Texas who opted-in to ADVi, had graduated from high school, and enrolled in college in the fall semester of 2021. Once again, the THECB started the recruitment of participants by text messaging potential students. Interested students permitted THECB to share their contact information with researchers.

Researchers then reached out to students to recruit 15 students who had used the ADVi bot and ADVi advisors (Group A) and 15 students who only used the ADVi bot (Group B). Participating students received a \$15 e-gift card. Researchers interviewed students from October 2021 through January 2022. They used a semi-structured questionnaire focused on the student's user experience with ADVi and why they chose to engage with an ADVi advisor or not. Researchers also collected student recommendations for improving ADVi and their use of other collegegoing resources.

Advisor Focus Group Protocols

Researchers coordinated with THECB staff to schedule focus group interviews with ADVi advisors. Researchers led focus group interviews in December 2021 and again in February 2022. They used a semi-structured questionnaire to understand ADVi's implementation experience, challenges, and opportunities for improvement.

"Just being able to be there for students when they need us the most, I think that's like the biggest benefit to the tool as a whole."

-ADVi Advisor

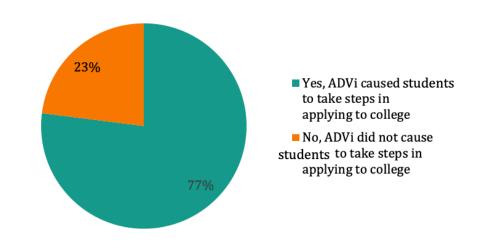
26

FINDINGS

FIRST WAVE OF STUDENTS

Impact

Did ADVi cause students to advance the completion of their college applications? Twenty-seven of the 30 students said they had responded to at least one of the ADVi messages. The other three students did not provide an answer to the question. Seventy-seven percent of students said they had taken action in the college-going process because of an ADVi text. Of this group, most reported completing a FAFSA or another financial aid step because of ADVi. Other examples of actions taken because of ADVi included checking their SAT scores, meeting deadlines, and finishing college applications.



What were their initial expectations? Ten of the 30 students said that they expected to receive reminders. A smaller share expected messages from the universities they applied to, the College Board or ApplyTexas. They also expected answers to general questions and assistance with FAFSA and scholarships. One student did not anticipate interacting with ADVi.

Has ADVi met the students' expectations? Nineteen students, or 66%, said ADVi had met their expectations. Seven students said it had exceeded their expectations because of the detailed messages and 24-hour access. Only one student said that ADVi had not met their expectations because they had not interacted enough with the ADVi bot.

Would students recommend ADVi to others? Twenty-six students, or 87%, would recommend ADVi to a peer. These students referenced ADVi's effective reminders and helpful resources. They thought ADVi would be especially beneficial for students who do not have other resources or are too shy to ask for help. Other reasons for recommending ADVi were to keep their friends and siblings on track and because the information from ADVi is more in-depth than other sources.

Two students would not recommend ADVi to other students. One said he would if his friends were interested in college, while the other stated that her friends figured things out independently. These students also reported that they would recommend ADVi if the THECB adopted their suggestions for improvement.

One student applied for both in-state and out-of-state schools, and although she planned to go out of state, she still found ADVi helpful and relevant. She recommended that the team increase outreach to students who were solely applying out-of-state and, therefore, would not be able to opt-in through ApplyTexas.

"With everything else except mail, I have to be the one to seek out those posts, videos or conversations, so I like that the text messages come even without me having to do anything." -San Antonio ISD Student, March 2021

Timing & Content

What ADVi content did students like most? Sixteen students, or 53%, thought the messages about financial aid were the most helpful; specifically helpful was guidance on filling out the FAFSA. Smaller percentages of students mentioned other topics, including information about scholarships, motivational messages, guidance for filling out college applications, and writing essays. Nine students, or 33%, said ADVi's reminders and status checks were beneficial regardless of the specific topic.

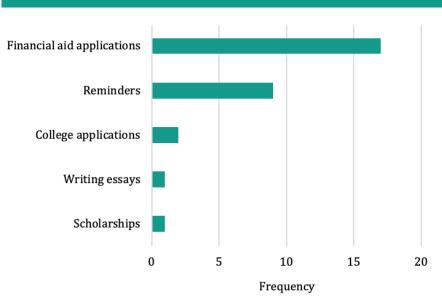


FIGURE 6: WHAT CONTENT DID STUDENTS LIKE THE MOST?

What ADVi content did students like least? Twelve students, or 40%, said that most of or all ADVi's message topics were helpful and relevant. Ten students, or 33%, said messages about steps the student had already taken were the least beneficial.

Were there any topics that students wished were covered by ADVi?

Seven students, or 23%, wanted more information about scholarships with links to specific scholarships. Five students, or 17%, wanted to know more about the steps after getting into college, including choosing a college, registering for housing, appealing financial aid decisions, taking the Texas Success Initiative (TSI) test, and signing up for orientation. Four students, or 13%, wanted specific information about their college of interest, including advisors' contact information and information about the college-going process tailored to their circumstances. One student wanted information about virtual college tours due to the pandemic, and another wanted more assistance with application essays. Ten students, or 33%, did not have a suggestion for additional topics.

One student was in the process of re-enrolling at a community college. Although she was not a high school student, she thought the texts were beneficial and relevant to her. ADVi could not provide information about submitting an appeal to re-enroll in school. Still, she benefitted from the financial aid information.

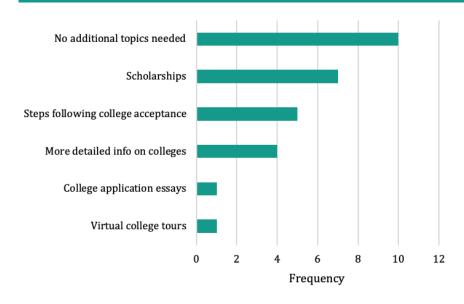


FIGURE 7: WERE THERE ANY TOPICS THAT YOU WISHED ADVI COVERED BETTER?

Do students prefer text-only messages over messages that include URL links? Twenty students, or 67%, preferred text-only messages. They especially liked messages that included menu prompts over texts that had links. Students said that text-only messages were shorter and easier to understand. They also found that they lost focus after clicking on a link and being sent to a website with various information. Another reason for this preference was that some students did not trust links. A few students said that if ADVi had given more details on the links with a screenshot of the linked website, they would have been more likely to click on them. Five students, or 17%, preferred texts with links because websites offer more information than texts alone, and lengthy texts can be overwhelming. Five students, or 17%, said their preference depends on the specific topic and the amount of related information. One student was indifferent. What other type of content (infographics, videos, pictures, etc.) would be a good resource? Students had different opinions about other media they would like to receive. Ten students, or 33%, wanted to receive infographics because (1) they could see all the information in one place, (2) they found it more aesthetically appealing, and (3) they were more likely to look at an image than a block of text. Ten students, or 33%, wanted to receive short videos about the college process. And 10, or 33%, wanted pictures of some sort, including motivational images. A small percentage of students also felt that articles and step-by-step

application guides would be helpful.

What did students like the most about ADVi, overall? Ten students, or 33%, especially liked what they perceived to be ADVi's personality. They said the tone of the texts made the ADVi bot "feel very human." They also noted that the check-ins to see how they were doing made them feel like someone cared about them. One student specifically liked the humor and use of emojis. Seven students, or 23%, preferred the reminders about financial aid and grades the most because it "took a lot of the stress away." Five students, or 17%, liked the quality of the information they received. Five, or 17%, liked the frequency, the quick response time, and the 24-hour access to the ADVi bot. Four, or 13%, liked the texts with menu options. A smaller percentage of students liked the campaign timeline.

What did students like the least about ADVi, overall? Ten students, or 33%, said there was nothing they liked the least about ADVi. However, 13 students, or 43%, said ADVi's campaign timeline lagged their personal

timeline. Seven students, or 23%, did not like when ADVi sent more than one text at a time resulting in a burst of notifications that distracted them in class. Six students, or 20%, did not like when ADVi repeated questions without remembering their previous answers. One student said that when ADVi asked if he completed a step for the second time, he became unsure and doubted that he had done it.

A smaller group of students said some of the messages were redundant or infrequently arrived, arriving for two weeks then not for a month. They also wished they could have opted in earlier, preferably in the 11th grade. One student did not like being asked what stage he was in at the beginning of the process when factors were outside his control, like waiting for an admissions decision and FAFSA results.

There was no consensus on the preferred frequency of the texts. Some students wanted to receive more messages, while others wanted fewer, especially when they were further along.

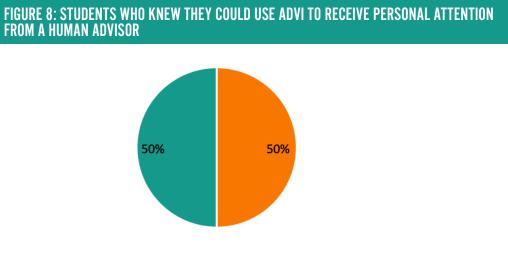
"I believe I applied for financial aid because it slipped my mind to do it and the bot reminded me to, so I was kind of glad to see it, like 'Oh okay, thanks for the reminder."

-Northside ISD Student, April 2021

34

ADVi Advisor Engagement

Did students ever text with an ADVi advisor? None of the students in the first wave of interviews texted with a human ADVi advisor, with possibly one exception who was not sure. And 50% of the students were unaware of the feature. When students learned about this feature from researchers, almost all said they would be interested in texting with an advisor in the future.



- Did not know they could reach a human advisor through ADVi
- Knew they could reach a human advisor through ADVi

Why are students interested in texting with a human advisor? Four of the students interested in texting with an advisor felt this way because they thought the ADVi advisors would know more about college than their high school counselors, or they liked having advisors as a "back pocket" resource. Two students liked the idea of sending human advisors their small, non-personal questions. Other interested students preferred to meet with the same advisor to avoid repeating information. They wanted meeting hours to be flexible and outside of the school day and liked the idea of talking to someone who was not involved in their daily life, like their school counselors.

One student said she would feel nervous talking to a human advisor but would do it if there were no other options.

Why aren't students interested in texting with a human advisor? Three students said they did not need the additional assistance, and three others thought texting back and forth with a human would take too long. This second group either felt comfortable only texting the bot, did not want to "be bothersome" to the human advisors, or were uncomfortable sharing personal information via text.

Would students be interested in talking with a human advisor via video or phone in real time? Twenty-five students, or 83% of students were interested in talking in real-time with ADVi's human advisors through video or phone. Eleven students, or 37%, wanted to ask more specific, complex questions that are hard to do via text. Nine students, or 30%, liked the idea of seeing an advisor and knowing she is a person.

Five students, or 17%, did not think the video chats with ADVi advisors were necessary. They reasoned that they could go to their potential college for specific information, access an advisor at school, or use the ADVi bot. Did students know they could text their questions to the ADVi bot?

Sixteen students, or 53%, did not know they could text their questions to the bot. Of the twelve students, or 40%, aware of this feature, many remembered reading about it in an ADVi message. Those who texted did so based on curiosity or experience with text bots. Several students who knew about this feature had not tried it. One said she avoided texting her questions because she felt nervous about being connected to a human advisor by accident.

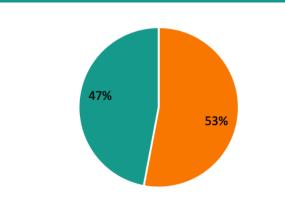


FIGURE 9: STUDENTS WHO KNEW THEY COULD TEXT QUESTIONS TO ADVI BOT

- Did not know they could text questions to ADVi bot
- Knew they could text questions to ADVi bot

Trust

Did students trust the information they received from ADVi? All but two of the students trusted the information they received from ADVi. Ten students, or 33%, trusted ADVi because of its connection to other organizations: five trusted ADVi because of its association with ApplyTexas, and four trusted ADVi because they thought the texts were from UTSA. One said that she immediately trusted ADVi because

she found out about it at a UTSA information session. Four students, or 13%, trusted ADVi because of its quality answers and because it confirmed information they already knew.

Students offered other reasons for trusting ADVi: the authentic tone of its messages, the introductory text, being able to research ADVi, knowing it gets its information from humans, it did not ask for personal information, and its links worked.

Of the two students who did not trust ADVi, one student said she is generally not trusting of text messages. Another student sometimes trusted ADVi and sometimes did not when messages included links.

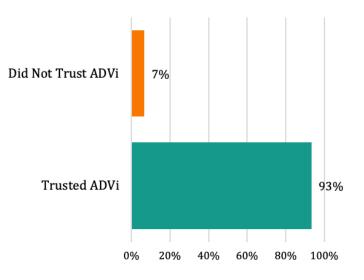


FIGURE 10: SHARE OF STUDENTS WHO TRUSTED ADVI (N=30)

Would students' level of trust change if they received the information through email? Thirteen students, or 43%, said they would have the same level of trust since the information is coming from the same source. However, six of these students preferred text messages over emails due to their easy access and informal style.

Four students, or 13%, said they might trust emailed messages more if they were professionally formatted and had contact information. Three students would trust emails more. One student said that since she was already receiving emails from colleges, she would trust that mode of communication.

Although it is not a trust factor, seven students mentioned that they receive too many emails or do not check their email frequently.

What would increase students' level of trust in ADVi? None of the students had heard about ADVi from school staff, and half of the students said they would trust ADVi more if their school promoted it. Five students, or 17%, would trust ADVi more if ADVi shared more information about itself, including what it is, who created it, and who monitors it. They also said they would trust ADVi more if they had access to a website with this information.

Students offered a variety of other ideas for increasing trust: more check-ins from the bot; content specific to the student's colleges of interest and their particular college-going status; reviews from past users; information about where student's responses and information go; and friendlier messages with easy-to-understand language.

Did students remember opting into ADVi? Most students did not remember how they opted into ADVi. Ten students, or 33%, had no understanding of ADVi when they started receiving messages.

Would it have been helpful to receive an email confirming the opt-in and providing more details about ADVi? Twenty-one students, or 70%, said getting an email with more information about ADVi after opting in would have increased their trust and engagement. Several students frequently checked their email to stay on top of college updates. Had an introductory message been sent, they would have received it promptly.

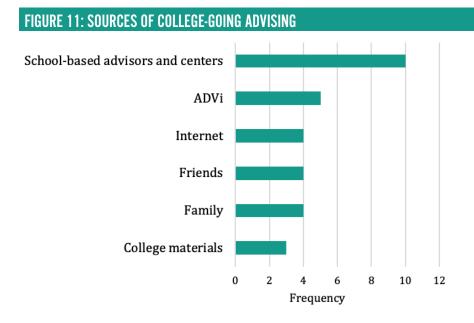
Nine students, or 30%, did not think it would be helpful to receive an email about ADVi. They strongly preferred texting or thought the email would get lost in their inbox.

College-Going Resources

What other resources did students turn to for information about the college process? Students' most popular college-going resources were family and friends, high school counselors, and the internet, specifically Google and social media.

Which college-going resources were the most important or helpful? Ten students, or 33%, said their most important resources were schoolbased: high school counselors, college and career programs, or other school-based resources. Five students, or 17%, said ADVi was their most important resource because of the variety of topics and reassurance it provided.

The remaining students identified other helpful resources: university materials, the internet, and family and friends.



Which resources were the least important or helpful? Six students, or 20%, said their high school counselors were the least helpful because of their lack of information and inability to attend to all the students. Six students, or 20%, said ADVi was the least beneficial because they had already completed the steps that ADVi sent them. Four students, or 13%, said their family members were the least helpful, and one student identified the internet as the least beneficial.

Where does ADVi rank on students' list of resources? Of the 27 students who answered this question, seven students, or 26%, said ADVi ranked highest on their list of resources (either on its own or tied with another resource). Eleven students, or 41%, said it ranked in the middle, and nine students, or 33%, said it ranked last.

Understanding of the College-Going Process

How confident did students feel about knowing the steps to get into college? Fifteen students, or 50%, felt confident or somewhat confident. Eleven, or 37%, felt very confident. Several students said they became more confident as they moved along in the college process. Other students were confident because they had multiple resources, submitted many applications, or had a high level of determination.

One student had learning differences and was unfamiliar with commonly used college-going terms like "waitlist" and "2-year and 4-year schools." He also struggled with the wording of questions on his college applications. He wondered about the availability of campus services to help with his academic success. This student shared that he was enrolled in special education classes and found the college application and decision process particularly challenging.



- "Apply as soon as possible, and even though you may have your heart set on one school, you need to keep your options open."
- "Turn in applications before the priority deadline unless you have something you could add to your resume."
- "Take your summer [before senior year] deciding what you want to major in and what is important to you, how far the school will be, how much will it cost, and what financial aid and scholarships you should or can apply for."
- "Write an informational university essay so the university gets to know who you are...and apply to as many scholarships as possible."
- "Do an overview of who you are as a student: check your GPA, test scores, and habits."
- "Focus on academics and become a well-rounded student early on in the high school process and join any extracurriculars."
- "Get your FAFSA done because it will take the longest to compile your parents' tax documents."

Overall, students seemed to understand the steps they had already taken but had little advice to give on the steps following college acceptance. 44

Are there any steps that students still feel uncertain about? Half of the students felt unsure about their remaining steps, including registering for orientation, housing, and classes, submitting their final transcript, and applying for scholarships. One student wondered how she would fit in at the college she chose and how she would adapt to being independent.

Students Who Connected to ADVi Advisors

Did students remember learning about the opportunity to communicate with an ADVi advisor? ADVi made an impression on the 15 students interviewed who engaged with ADVi advisors (or Group A). They all said that they remembered the offer to connect with an ADVi advisor and the questions they had for the advisor. Their questions ranged from financial aid to topics related to specific college programs.

Students reported being pleasantly surprised at the offer to speak to an advisor. One student "did not expect the speedy and thorough replies" they received. Another student reported that they "felt like I was talking to a mentor."

Why did students choose to communicate with an ADVi advisor? Students agreed to speak to an advisor due to (1) curiosity, (2) a belief that asking for help costs nothing and doesn't hurt, and (3) convenience.

Some students sought reassurance that they were on track, while

others wanted more help learning the next step to take. For both, ADVI advisors acted as a guide offering students support and reassurance along their college-going journey. Students reported that whenever they needed an ADVi advisor, they were there for them.

Did students recognize the difference between ADVi bot and ADVi advisor messages? All students recognized the difference between texting with the ADVi bot and texting with an ADVi advisor. They identified a structure to ADVi bot messages that ended with yes-or-no questions. In contrast, ADVi advisor messages provided a name and an opportunity to respond to open-ended questions.

Did Students know the command to connect to an ADVi advisor? Eight of the 15 students, or 53%, replied that they did not know about the command (#followup) to connect to an ADVi advisor. This figure aligns with the finding that 50% of students in wave one did not know they could connect to an ADVi advisor.

Did ADVi advisors meet student expectations? Group A students expected detailed answers and explanations to their questions put to ADVi advisors. All felt the interaction with an advisor met or surpassed their expectations. Nearly all (93%) reported that the ADVi advisor answered their question. One participant reported finding another resource to answer their questions before hearing back from an ADVi advisor.

How long did students wait to get a response from an ADVi advisor?

Student answers ranged from 10-to-15 minutes to three-to-four days. More than half (53%) reported a "very quick" turnaround time from 20 minutes to a few hours.

How would students prefer to communicate with ADVi advisors?

Most (53%) preferred a video conference platform, like Zoom, and 14% chose telephone calls. The remaining desired text messaging.

When would students prefer to communicate with an ADVi advisor?

Twelve, or 80%, chose early afternoon or evening times to connect to an ADVi advisor. Four students, or 27%, wanted an immediate connection to an advisor. Others suggested weekly office hours at a designated time or appointments as their preferred time to meet.

Students Who Did Not Connect to ADVi Advisors

Did the ADVi bot alone meet student needs? The 15 students interviewed (or Group B for short) who did not choose to connect with an ADVi advisor said that the ADVi bot met their needs. They reported that the ADVi bot offered useful, timely information on various topics, deadlines, and opportunities. And they appreciated the encouragement and reassurances the ADVi bot offered.

Why did students choose not to communicate with an ADVi advisor?

Group B students provided the following reasons for not engaging with an advisor:

- Found their answer before hearing back.
- Weren't clear when they were offered an opportunity to speak to an advisor.
- Didn't know what to ask or how to articulate their questions.
- They were afraid they would be judged or "look stupid" for their questions.
- Students wanted help with topics they felt ADVI advisors could not give. Examples of mental health services and information about specific campus experiences or programs were provided.

Were differences found between Group A and Group B students?

Researchers hypothesized that a students' inclination for seeking help from others, in general, would influence whether they availed themselves of ADVi advisors. Some evidence gathered supports this claim.

"The bot was one of my favorite parts of my senior year. Whenever I sent a thank you, the bot will reply with a little smiley face. The fact that it was programmed to do that, I was sad to see him go." -Magnolia ISD Student, January 2022

All 30 students were asked about their attitudes and preferences related to reliance on others and help-seeking behavior, as shown in Figure 8. Eighty-six percent of students who spoke to an ADVI advisor (Group A) said they felt comfortable asking for help. This figure was 67% for students who did not communicate with an ADVI advisor (Group B). Eighty percent of Group A said they frequently discussed problems with others, while 73% of Group B responded similarly. Both groups found it difficult to depend on others: 40% of Group A and 47% of Group B said they relied on others. And both groups expressed comfort in opening up to others at equal rates, 67%.

These results are only exploratory given their small sample size. However, they suggest that there may be a meaningful difference in help-seeking attitudes and preferences between the two groups.

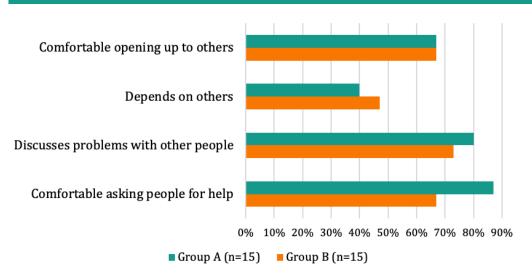


FIGURE 12: ATTITUDES AND PREFERENCES RELATED TO HELP-SEEKING

IMPLEMENTATION CHALLENGES

Researchers investigated the ADVi system in its first two years. At this early stage of development, they were able to identify several areas of improvement.

Marketing and Outreach. It appears that most students are reached by the ApplyTexas application. However, this means many more students who need help prior to starting their ApplyTexas application are not reached. Moreover, the college-going process begins in earnest in 9th grade, and some would argue in the middle school grades. As a result, an overreliance on ApplyTexas to reach students leaves out students who need the most help and in earlier grades where the benefits of college preparation compound.

Finally, first meeting students via ApplyTexas misses the opportunity to gain student trust by meeting them through their schools. Students said they would have trusted and engaged more with ADVi had their school promoted ADVi. Because many students did not remember how they signed-up for ADVi, they were initially skeptical of using it. **ApplyTexas-Mainstay Connection.** During the 2022 academic year, ApplyTexas updated their computer systems. This update caused a delay in the transfer of student data to Mainstay, which caused a delay in ADVi campaigns to students. A consequence of this unexpected break in the process meant ADVi advisors received a surge of student queries within an abbreviated timespan, likely leading to delayed responses to students and reduced impact on completion rates.

ADVi Instructions. Most students interviewed did not ask the ADVi bot questions or try to connect to an ADVi advisor because they did not know they could engage ADVi in these ways.

ADVi Campaigns. The vendor, Mainstay, designed and initiated all messaging campaigns. They launched their campaigns without consulting or coordinating with ADVi advisors. Advisors reported that this siloed practice resulted in poorly targeted campaigns. ADVi advisors believed their involvement in design and planning could help improve the effectiveness of messaging campaigns.

ADVi Advisor Services. Advisors lacked background data on students who reached out to them and could not see where students were in their application process. These shortcomings made it difficult for advisors to give more relevant advice to students. If advisors had this information, advisors could generate, and save for reuse, information for more narrowly defined subgroups of students with similar needs. Furthermore, with this information, advisors could better judge the effectiveness of their responses to student questions.

By design, ADVi follows a help desk model rather than a case management model. Consequently, there is a lack of continuity in the student-ADVi relationship. Exchanges are less personalized and require advisors to treat each student encounter as a first-time meeting.

Some students seek social-emotional counseling, which is beyond the scope and capacity of the ADVi college advising team. For a short time, ADVi advisors responded to these requests by referring them to an ADVi advisor who had appropriate training while she was a part of the ADVi advisory team. They now have identified others within THECB who can take these calls for help and who have appropriate training in social-emotional counseling.

Back Office System. The current system had students sending queries via text messaging to a general email box, but advisors received messages and responded by email. This text-to-email system produced a few unintended issues. While students still receive an advisor's response on their phone's text messaging application, the text-to-email system changed the original communication style from informal to formal and concise to wordy. Also, the manual distribution of student messages to advisors sometimes lost student messages and experienced accidental deletion of email folders.

The ADVi team has created its escalation tracking system, a document that tracks when a student requests help from an ADVi advisor. This system is another manual, ad hoc solution that involves Mainstay generating data and THECB staff processing it further. Because this system is manual it is vulnerable to human error and inconsistencies.

Future Research

This study uncovered many research questions outside its current scope. Future research should use quantitative methods to identify ADVi's effect size on college application completion rates and explore heterogeneous effects by student subgroups. More research should be conducted to understand a fuller range of student outcomes potentially impacted by ADVi. As suggested in the list of recommendations, experimentation should be conducted on the effects of different message content at various points in the college-going process. As adoption of ADVi increases within high schools, research should explore promising practices for integrating ADVi into high schoolbased college advising. Finally, future research should develop the three personas to under stand their postsecondary preparation needs starting in middle school and develop content accordingly.

"I love this little guy. He has given me more support than my grandparents do."

-Magnolia ISD Student, January 2022

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APPENDIX A: ADVI USER ARCHETYPES



First-gen High level of reliance on ADVi

"ADVi helped me complete my college applications more than any person in my life. I wish I had ADVi at the start of high school."

Freddy's Goals

- Become a medical doctor
- Marry and have kids
- Own a home with a big yard

Freddy's Frustrations

Not starting to plan for college until my junior year in high school
Not being able to play on my high school baseball team because I needed to work

Freddy's Experience with ADVi

Does not remember signing up for ADVi
ADVi was his primary source of info and advice

 Would not have known about ADVi but for starting an Apply Texas application with the help of his favorite teacher

Most of his questions were on FAFSA and finding strong pre-med programs
He was happy to ask questions and seek help from ADVi advisors but needed

prompts and reminders

High School Academics

- Ranks in top 10% of graduating class
- Highest math credit was pre-calculus
- Completed an AP biology course

College Finances

- No family college savings
- Estimated family contribution = \$0
- Estimated annual unmet need = \$13,500

Freddy's Bio

Graduated from SAISD's Brackenridge HS in 2020, where his favorite class was biology. Worked at a nursing home after school for 2 years of high school. He is the oldest of four siblings and will be first in his family to graduate from high school.

Manny

Continuing-gen ADVi

"ADVi helped me stay on track. It was my personal college advisor 24/7."

Manny's Goals

- Be a computer software developer
- Travel
- Help my family

Manny's Frustrations

• Not knowing which dual credit courses would transfer and advance me in my degree program

All the personal info needed for FAFSA

Manny's Experience with ADVi

- Does not remember signing up for ADVi
- ADVi and high school counselor were primary sources of college-going help
- Connected to ADVi through ApplyTexas
- Mostly had FAFSA & scholarship questions
- Benefited greatly from reminders

• Was happy to ask questions of the ADVi bot because it never made him feel like his questions were dumb and it helped him prep for his meetings with his high school counselor

High School Academics

- Ranks in top 10% of graduating class
- Highest math credit was AP Calculus AB
- Completed 2 AP and 2 dual credit courses

College Finances

- No family college savings
- Estimated family contribution = \$5,000
- Estimated annual unmet need = \$8,500

Manny's Bio

Graduated from NISD's Clark HS in 2020, where his favorite class was a computer science dual credit course at UTSA. Played high school and club soccer and ran cross-country. Raised by his single mom who earned a BS and MPA and serves as a professional in local government.

Sara



Continuing-gen Low level of reliance on ADVi

"I knew I was going to Texas A&M as long as I can remember. It's where both my parents went."

Sara's Goals

Earn a bachelor's degree in business from TAMU-College Station
Start my own marketing business

Sara's Frustrations

Wish I could start at College Station my freshman year instead of transferring from another school in the TAMU system
Need help planning an efficient transfer

Sara's Experience with ADVi

• Remembers signing up for ADVi based on her brother's suggestion.

- Asked questions of ADVi bot occasionally, mostly relied on high school counselors and TAMU recruiters.
- Benefited from ADVi bot's reminders and encouragements.
- ADVi was not an important source of college info and advice.

High School Academics

- Ranks in top 25% of graduating class
- Highest math credit = pre-calculus
- Completed 4 AP courses

College Finances

- 529 college savings
- Estimated family contribution = \$29,000
- Estimated annual unmet need = \$0

Sara's Bio

Graduated from NEISD's Reagan HS in 2020, where here favorite experience was leading the journalism club. She is the youngest of two and hopes to join her brother at TAMU-College Station, where her parents first met at bonfire.

THE VIRTUAL ADVISOR A HIGH-IMPACT TOOL TRANSFORMING **COLLEGE ADVISING**

DESIGN-BASED IMPLEMENTATION STUDY By Dr. Michael U. Villarreal, Helena Fischer, Elena Serna-Wallender. Jasmine Victor, and Matthew Singleton



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