Dallas Nudging Impact Report
WEB APPENDICES

February 2022

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THE **hope** CENTER

FOR COLLEGE,
COMMUNITY,
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APPENDIX A. RANDOMIZATION

Dallas College is a newly consolidated consortium of what was previously seven independently accredited community colleges in the Dallas metro area. In this study, we identified an eligible sample of students based on the student's fall 2020 enrollment status and intensity (whether they were enrolled in 8 or 16-week courses) and FAFSA or TASFA application status. We then randomly assigned students to either receive nudges or not to receive nudges, and whether nudged students were to receive information-only or "attuned" nudges (see Appendix H-4 for sample sizes; Appendix B for a description of the differences in messaging). Once randomization was complete, the nudge group and the non-nudge group are compared to see whether they were relatively equal across gender identity, race and ethnicity, age, US citizenship, Expected Family Contribution (EFC), cumulative GPA, and credits before fall 2020 (see Appendix H3 for baseline comparison). We adhere to the What Works Clearinghouse Standards manual for what was within an acceptable range for differences between groups and anything between 0.05 and 0.25 was adjusted in our impact estimates (see table notes for details in Appendix H-4).

APPENDIX B. SAMPLE NUDGES

FIGURE B-1 | EMERGENCY AID SAMPLE NUDGES

Information-Only	Attuned
Hey, this is Alex with Dallas College. If you need extra financial support, check out our emergency grants. Available to students taking 6+credits. Click this link to apply: www.dcccd.edu/emergencyaidtext	Hey, this is Alex with Dallas College. We know many students are facing financial challenges. Whatever situation you face, our emergency grants are intended to help you meet your needs and make progress toward your goals. Available to students taking 6+ credits! Click this link to apply: www.dcccd.edu/emergencyaidtext

FIGURE B-2 | PUBLIC BENEFIT SAMPLE NUDGES

Information-Only	Attuned
Hey, this is Alex with Dallas College. Did you know that Dallas College can connect you with programs if you recently lost your job or need money for food or childcare? Click here to connect with a Navigator: www.dcccd.edu/navigatorstext	Hey, this is Alex with Dallas College. Times are hard for many students. Did you know that Dallas College can connect you with programs to help if you recently lost a job or need money for food or childcare? That way you can focus on studying and work toward your goals. Our Navigators want to support you. Click here to connect: www.dcccd.edu/navigatorstext

FIGURE B-3 | FINANCIAL AID SAMPLE NUDGES

Information-Only	Attuned
TEXT 1: Hey, this is Alex with Dallas College. I'm checking in on your financial aid. If your income	TEXT 1: Hey, this is Alex with Dallas College. I'm checking in about financial aid. We know many

went down in the last year, you can request a change to get more money. Click here to request a change: https://formswift.com/swift-student TEXT 2: For more info on financial aid, click here: www.dcccd.edu/financialaidtext	students' income went down in the last year. If yours has, you can request a change to get more money. We want to support you, so you can focus on studying and work toward your goals. Click here to request a change: https://formswift.com/swift-student TEXT 2: For more info on financial aid, click here: www.dcccd.edu/financialaidtext

FIGURE B-4 | CAMPUS FOOD AND HOUSING SAMPLE NUDGES

Information-Only	Attuned
Hey, this is Alex with Dallas College. Did you know that we have programs like a food pantry, a clothing closet, and partnerships with organizations to support you with affordable food, housing, and more? Click here to connect with someone who can assist: www.dcccd.edu/navigatorstext	Hey, this is Alex with Dallas College. We know money is tight for many students now. That's why we have programs like a food pantry, a clothing closet, and partnerships with community organizations to support you with affordable food, housing, and more. Whatever your situation, we want to meet you where you are—so you can focus on studying and make progress toward your goals. Click here to connect with someone who can assist: www.dcccd.edu/navigatorstext

APPENDIX C. SURVEY FIELDING AND RESPONSE RATES

In fall 2020, Dallas College fielded a survey that was created by The Hope Center to gather information on student responses to the text messages and the variation in modalities among those messages. The survey went to 4,000 randomly selected study participants: 3,000 from the treatment groups (1,500 from each treatment group – information-only and attuned messaging) and 1,000 from the control group. Initial invitations to participate in the survey were emailed on December 7th, 2020, via Dallas College. Text nudges to remind students to participate in the survey were sent weekly from December 17th, 2020, through January 28th, 2021. Student outreach included email and texts from Dallas College. Students from the treatment who were selected to participate in the survey were offered a $15 gift card with a chance at an additional $50 gift card. Students from the control group who were selected to participate were offered a $20 gift card. Incentives were distributed by email, text, and follow-up phone calls.

The treatment and control surveys obtained a gross response rate of 33% and 43%, respectively. Survey responses were matched by Dallas College to student records using a student ID. Responses where an ID match could not be found were discarded. A total of 998 responses were used, with net response rates of 22% and 30% for treatment and control, respectively.

APPENDIX D. UNDERLYING ITEM INFORMATION USED IN FACTOR ANALYSES

Question/Factor	Items included in factor
How normal do you think it is to seek emergency aid?	When students at Dallas College seek out emergency grants, to what extent do you think it is... …normal? …appropriate? …commonplace?
Do you feel empowered in seeking emergency aid?	When Dallas College gives students emergency grants, how much is it... …like a handout for people in need? …because they are sincerely motivated to help students achieve their goals?
How motivated are you to seek emergency aid?	If you faced financial challenges, how would you feel about seeking out an emergency grant from Dallas College? I would... …want to seek it out. …feel reluctant to seek it out. …feel hesitant to seek it out.
Do you feel that there is a stigma in seeking aid?	If you needed emergency aid, to what extent do you think people on campus would... …judge or think negatively about you? …look down on you? …think less of you if you sought emergency aid?
Do you feel shame in applying for emergency aid?	Imagine that you applied for and received an emergency grant. To what extent would it make you feel... …ashamed? …guilty? …embarrassed?
Do you feel empowered in applying for or receiving emergency aid?	Imagine you applied for and received an emergency grant. To what extent would it make you feel... …proud of myself? …ready to take on a change? …capable?

APPENDIX E. EQUATIONS AND METHODOLOGIES USED IN THIS REPORT

Unadjusted model

$$Y_i = \beta_0 + \beta_1(Treatment_i) + \varepsilon_i$$

In the model above, y_i represents the outcome for student i; $Treatment_i$ is a dichotomous indicator for whether a student was assigned to treatment, and ε_i is a term for student-specific random error. β_1 represents the treatment impact, the average difference in outcome y_i for the treatment group relative to the control group. For all dichotomous outcomes we estimate a logistic OLS regression model; continuous outcomes are estimated using linear OLS regression model.

Adjusted model:

$$Y_i = \beta_0 + \beta_1(Treatment_i) + \Sigma\beta_n\chi_n + \varepsilon_i$$

In the adjusted model presented above, χ_n is a vector of student-level, pre-treatment covariates found to not be in balance at baseline according to What Works Clearinghouse standards (0.25>ES>0.05). β_n represents the coefficient for each variable in vector χ_n. β_1 represents the treatment impact, the average improvement in outcome for the treatment group relative to the control group.

Interaction Models:

$$Y_i = \beta_0 + \beta_1(Treatment_i) + \Sigma\beta_n\chi_n + \Sigma\beta_n(\chi_n * Treatment_i) + \varepsilon_i$$

The model presented above builds on the preceding models by examining a potential interaction effect between treatment and specific student characteristics. $\chi_n * Treatment_i$, is an interaction term between treatment and race/ ethnicity, gender, and negative EFC status, respectively. β_n represents the coefficients for each term and interaction term.

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APPENDIX F. DEFINITIONS OF OUTCOMES USED IN THIS REPORT

Edquity Engagement: Edquity engagement is a measurement of whether a student applies through Edquity for emergency aid. Edquity is a third-party provider of emergency aid. Students fill out and submit applications on a smartphone app. Emergency aid nudges sent to students included a link to a Dallas College webpage that directed students to the Edquity app. Students are eligible to be approved for aid once per term. Applications were connected to a student identifier to allow for analysis of utilization. Students who did not apply or did not use the Edquity app at all were calculated as zero.

Dallas College Navigator Engagement: Dallas College Navigator (DCN) engagement is the extent to which a student either directly speaks to, calls, or emails a DCN. Upon the recent consolidation of the seven individual campuses into one college with multiple campuses, Dallas College installed the DCN as a centralized triage where DCNs assist students in understanding non-tuition supports and send referrals to campus-based supports. Nudges to financial aid, public benefits, and campus food and housing resources included a link to a Dallas College webpage that provided students with information on how to contact DCNs. Students who did not engage with a DCN were measured as zero.

APPENDIX G. DEFINITIONS OF VARIABLES USED IN THIS REPORT

Race / Ethnicity: Race / Ethnicity originates from Dallas College's administrative database of student records. Students choose one of the following categories:

- White / Caucasian
- African American / Black – referred to as Black in text
- Hispanic / Latinx – referred to as Latinx in text
- American Indian / Alaskan Native
- Southeast Asian
- Native Hawaiian / Pacific Islander
- Other Asian
- Other Race
- Unknown
- International
- Two or More Races

Due to sample size, we collapse the following race/ethnicity categories into a single "Other" category: American Indian / Alaskan Native, Southeast Asian, Native Hawaiian / Pacific Islander, Other Asian, Other Race, Unknown, International, Two or More Races.

Gender: Gender originates from Dallas College's administrative database of student records. Students could choose one of two categories: male or female.

Age: Age in years originates from year of birth provided from Dallas College's administrative database of student records. An estimate of student age was calculated as the time from the student's year of birth to the year the treatment was implemented (2020).

Citizenship: Citizenship originates from Dallas College's administrative database of student records. Students could fall into one of two categories: "yes", affirming that the student Is a US citizen or permanent resident, and "no", affirming that the student is not a US citizen or permanent resident.

Free Application for Federal Student Aid (FAFSA): FAFSA originates from Dallas College's administrative database of student records and comes from a student's application for federal aid.

Expected Family Contribution (EFC): EFC originates from Dallas College's FAFSA data. EFC is a measure of how much the student and their family can be expected to contribute to the cost of the student's education for a given award year. EFC can impact a students' eligibility for certain types of federal student aid. The value is calculated using the information provided in a student's FAFSA application and is truncated at a floor of $0.

Negative Expected Family Contribution (EFC): Negative EFC is an adjustment to the EFC model that allows for outputs below $0. See the Hope Center's The Real Price of College report for more detail on this calculation.

APPENDIX H. DETAILED TABLES FROM ANALYSES REFERENCED IN REPORT

TABLE H-1 | DETAILED STUDENT PERCEPTIONS OF TEXT MESSAGING, BY MESSAGE TYPE

Perceptions	Info Only		Attuned		Paired T-Test for Mean Differences	
	N	%	N	%	p-value	t-test statistic
Public Benefits						
Respected	147	72.06	153	75.74	0.25	1.15
Empowered	111	54.95	135	67.16	0.00	2.84
Motivated	119	58.91	142	71.36	0.00	3.74
Understood	131	64.85	149	74.13	0.01	2.55
Cared For	144	71.29	156	77.61	0.06	1.89
Supported	146	72.64	154	77.00	0.14	1.46
Connected to DCCCD	124	61.08	142	70.65	0.01	2.57
Disconnected from DCCCD	15	7.46	21	10.50	0.72	0.35
Food & Housing Assistance						
Respected	142	70.30	151	75.50	0.61	0.50
Empowered	103	50.74	133	65.84	0.02	2.28
Motivated	120	59.41	138	69.35	0.09	1.70
Understood	136	67.00	152	75.62	0.05	1.96
Cared For	154	76.62	159	78.71	0.43	0.78
Supported	152	75.62	160	79.21	0.35	0.94
Connected to DCCCD	144	70.94	151	74.75	0.35	0.94
Disconnected from DCCCD	27	13.37	27	13.57	0.76	-0.31
Financial Aid						
Respected	128	65.31	148	76.29	0.10	1.64
Empowered	103	53.09	119	62.30	0.05	1.95
Motivated	121	61.42	129	67.19	0.32	0.99
Understood	121	61.73	126	65.97	0.23	1.20
Cared For	132	67.01	129	67.54	0.60	0.53
Supported	128	65.64	136	71.20	0.41	0.82
Connected to DCCCD	120	61.22	128	66.32	0.27	1.10
Disconnected from DCCCD	16	8.16	23	11.98	0.70	0.38
Emergency Aid						
Respected	143	71.50	136	68.69	0.22	-1.24
Empowered	106	53.27	123	62.12	0.12	1.55
Motivated	125	61.88	131	66.50	0.42	0.80
Understood	130	64.36	130	65.99	0.30	1.04
Cared For	136	67.66	144	72.73	0.29	1.05

Supported	145	71.78	148	74.75	0.82	0.23
Connected to DCCCD	129	63.86	133	67.51	0.81	0.25
Disconnected from DCCCD	23	11.39	20	10.15	0.57	-0.56

N= 195

Source | Data come from survey of student perceptions of different text nudges styles.

Notes | Students were provided text of information-only and attuned nudges for four campus-based services. After each text presented in the survey, students were asked about how that messaging made them feel – in particular towards Dallas College. Students were asked to rate their feelings on a five-point Likert scale (Not at all, Slightly, Moderately, Very, and Extremely). Answers where the student felt either Very or Extremely were used to create the construct.

TABLE H-2 | STUDENT PERCEPTIONS OF SEEKING AID FACTOR LOADINGS FOR UNDERLYING ITEMS

Factor and Underlying Items	Loading	Uniqueness
How normal do you think it is to seek emergency aid?		
When students at Dallas College seek out emergency grants, to what extent do you think it is normal?	0.91	0.17
When students at Dallas College seek out emergency grants, to what extent do you think it is commonplace?	0.88	0.22
When students at Dallas College seek out emergency grants, to what extent do you think it is appropriate?	0.79	0.37
Do you feel empowered in seeking emergency aid?		
When Dallas College gives students emergency grants, how much is it like a handout for people in need?	-0.77	0.40
When Dallas College gives students emergency grants, how much is it because they are sincerely motivated to help students achieve their goals?	0.77	0.40
How motivated are you to seek emergency aid?		
If you faced financial challenges, how would you feel about seeking out an emergency grant from Dallas College? I would want to seek it out.	0.53	0.72
If you faced financial challenges, how would you feel about seeking out an emergency grant from Dallas College? I would feel reluctant to seek it out.	0.86	0.25
If you faced financial challenges, how would you feel about seeking out an emergency grant from Dallas College? I would feel hesitant to seek it out.	0.91	0.17
Do you feel that there is a stigma in seeking aid?		

If you needed emergency aid, to what extent do you think people on campus would judge or think negatively about you?	0.92	0.15
If you needed emergency aid, to what extent do you think people on campus would look down on you?	0.97	0.07
If you needed emergency aid, to what extent do you think people on campus would think less of you if you sought emergency aid?	0.95	0.10
Do you feel shame in applying for emergency aid?		
Imagine you applied for and received an emergency grant. To what extent would it make you feel ashamed?	0.92	0.16
Imagine you applied for and received an emergency grant. To what extent would it make you feel guilty?	0.89	0.21
Imagine you applied for and received an emergency grant. To what extent would it make you feel embarrassed?	0.91	0.16
Do you feel empowered in applying for or receiving emergency aid?		
Imagine you applied for and received an emergency grant. To what extent would it make you feel proud of yourself?	0.82	0.33
Imagine you applied for and received an emergency grant. To what extent would it make you feel ready to take on challenges?	0.84	0.30
Imagine you applied for and received an emergency grant. To what extent would it make you feel capable?	0.83	0.31

Source | Data come from survey of student perceptions of different text nudges styles.

Notes | Items were grouped across common constructs based on correlation analysis. Factor analysis was conducted to produce predicted principal component factor estimates. Test statistics represent the significance of unpaired within-group differences for each construct.

TABLE H-3 | COMPARISON OF SAMPLE DEMOGRAPHICS TO DALLAS COLLEGE ENROLLMENT

Category		Total Enrollment	All	Text Nudges - Info Only Group	Text Nudges - Attuned Group	Both Treatment Groups	No Outreach - Control Group
				%			
	N	76,325	18,287	4,500	4,500	9,000	9,287
Gender	**Female**	60.83	68.32	68.16	67.09	67.62	68.99

	Male	29.89	31.68	31.84	32.91	32.38	31.01
	White or Caucasian	16.90	13.67	13.53	13.51	13.52	13.80
Race/Ethnicity	**African American/Black**	20.92	29.06	28.49	29.62	29.06	29.07
	Hispanic/Latinx	48.07	44.25	45.13	43.91	44.52	43.99
	Asian	7.73	6.43	6.09	6.58	6.33	6.53
	Pacific Islander	0.04	0.07	0.00	0.07	0.03	0.10
	Indigenous or Native American	0.27	0.32	0.38	0.18	0.28	0.36
	Multi-Racial	1.96	1.96	2.31	1.89	2.10	1.83
	International	0.24	0.19	0.20	0.22	0.21	0.16
	Unknown	3.88	4.06	3.87	4.02	3.94	4.17

Source | Total enrollment data comes from Dallas College student records as released for the 2020-21 school year, retrieved from the Dallas College information dashboard.

Notes | Totals may not add to 100 within category due to missing data.

TABLE H-4 | BASELINE EQUIVALENCE, BY GROUP

Category	All	No Outreach - Control Group	Both Treatment Groups	Text Nudges - Info Only Group	Text Nudges - Attuned Group	p-value	Difference Control Group vs Both Treatment Groups	N
Overall	18,287	9,287	9,000	4,500	4,500			
Gender Identity (%)								
Female	68.32	68.99	67.62	67.13	68.08	0.05	0.04	12,493
Race/Ethnicity (%)								
Hispanic/Latinx	44.25	43.99	44.52	44.34	44.27	0.47	0.01	8,092
African American/Black	/29.06	29.07	29.06	29.31	29.11	0.98	0.00	5,315
White or Caucasian	13.67	13.80	13.52	13.47	13.62	0.58	0.01	2,499
Other	13.02	13.14	12.90	12.88	12.99	0.63	0.01	2,381
Age								
Student Age, in Years	26.12	26.15	26.09	26.13	26.05	0.59	0.01	18,287
Citizenship (%)								
US Citizen	97.41	97.37	97.44	97.50	97.43	0.76	0.02	17,813
Expected Family Contribution								
EFC ($)	1725.17	1740.71	1709.20	1699.04	1719.32	0.49	0.01	16,048
Negative EFC (%)	66.81	66.83	66.78	66.74	66.79	0.94	0.00	10,736
Transcript Information Prior to Fall 2020								
Part-Time Fall 2020	64.86	64.97	64.76	64.73	64.84	0.77	0.01	11,736
Cumulative GPA	2.86	2.86	2.86	2.83	2.88	0.81	0.00	15,466
Cumulative Credits	28.82	28.85	28.79	28.77	28.82	0.88	0.00	18,287

Source | Data on student characteristics come from Dallas College administrative records.

Notes | Table reports the effect size of difference between treatment and control groups. Effect size is estimated using Hedges G or Cox's Index, as appropriate and denotes effect sizes for binary and continuous measures. Missing FAFSA data due to students who did not fill out an application for the 2020 academic year. Missing GPA data due to students who dropped out of college, other records with missing information were imputed with zeros. Percentages may not add up to 100 due to rounding.

TABLE H-5 | COMPARISON OF STUDENT CHARACTERISTICS OF STUDY AND SURVEY SAMPLES

	Study Sample		Survey Sample	
Category	**N**	**%**	**N**	**%**
Gender Identity (%)				
Female	12,493	68	783	78
Male	5,794	32	215	22
Race/Ethnicity (%)				
White or Caucasian	2,499	14	141	14
African American/Black	5,315	30	307	30
Hispanic/Latinx	8,092	44	422	42
Other	2,381	14	128	12
Age				
Student Age, in Years	18,287	26	998	28
Citizenship (%)				
US Citizen	17,813	98	976	98
Non-US Citizen	474	2	22	2
Expected Family Contribution ($)				
EFC	1,725	--	1,537	--
Negative EFC	-3,780	--	-8,783	--
Transcript Information Prior to Fall 2020				
Part-Time	11,736	64	626	64
Cumulative GPA	2.86	--	2.93	--
Cumulative Credits	29	--	31	--

Source | Data on student characteristics come from Dallas College administrative records.

Notes |Table reports the characteristics between the 18,287 students included in the study and the 998 students who were of the random sample of study participants who answered the survey. Missing FAFSA data due to students who did not fill out an application for the 2020 school year. Missing GPA data due to students who dropped out of school. Records with missing information were dropped from analyses. Percentages may not add up to 100 due to rounding.

TABLE H-6 | TEXT NUDGES RESPONSE RATES LONGITUDINALLY, BY GROUP

Week of	Resource Type	Text Nudges - Info Only		Text Nudges - Attuned	
		%	Avg N	%	Avg N
	Calendar Year 2020				
9/9	Emergency Aid	4,406	2.66	4,424	2.33
9/16	Public Benefits	4,402	1.14	4,416	1.00
9/23	Financial Aid	4,385	1.94	4,398	0.93
9/30	Campus food and housing	4,367	1.01	4,392	0.68
10/7	Emergency Aid	4,350	1.20	4,374	1.12
10/14	Public Benefits	4,337	1.15	4,351	0.53
10/21	Financial Aid	4,311	0.82	4,330	0.62
10/28	Campus food and housing	4,291	0.82	4,314	0.63
11/4	Emergency Aid	4,271	0.80	4,296	0.77
11/11	Public Benefits	4,238	0.68	4,259	0.82
11/18	Financial Aid	4,155	0.45	4,150	0.30
11/25	Campus food and housing	4,140	0.63	4,140	0.39
12/2	Emergency Aid	4,123	0.85	4,125	0.63
12/9	Public Benefits	4,116	0.78	4,108	0.46
12/16	Financial Aid	4,093	0.50	4,094	0.38
	Calendar Year 2021				
1/20	Emergency Aid	4,047	1.06	4,075	0.74
1/27	Public Benefits	4,038	0.67	4,042	0.40
2/3	Financial Aid	4,017	0.50	4,023	0.30
2/10	Campus food and housing	3,997	0.48	4,012	0.35
2/17	Emergency Aid	3,977	0.30	3,998	0.33
2/24	Public Benefits	3,967	0.53	3,991	0.40
3/3	Financial Aid	3,950	0.30	3,978	0.26
3/10	Campus food and housing	3,943	0.41	3,967	0.43
3/17	SKIP (spring break)	--	--	--	--
3/24	Emergency Aid	3,936	0.51	3,958	0.35
3/31	Public Benefits	3,928	0.33	3,948	0.33
4/7	Financial Aid	3,917	0.22	3,937	0.23
4/14	Campus food and housing	3,913	0.38	3,929	0.38
4/21	Emergency Aid	3,904	0.41	3,919	0.36
4/28	Public Benefits	3,899	0.36	3,913	0.28
5/5	Financial Aid	3,891	0.32	3,908	0.23

Source | Data is from SignalVine tracker of text nudges sent and responses from nudge recipients.
Notes | Response data represents only incoming messages from nudge recipients and not subsequent responses sent to nudge recipients. Response rates are calculated as the total responses sent from recipients over the total texts sent to recipients that day.

TABLE H-7 | AVERAGE UNADJUSTED EDQUITY AND DALLAS COLLEGE NAVIGATOR ENGAGEMENT RATES, BY GROUP

	Average Edquity Engagement Rates	Average Dallas College Navigator Engagement Rates
Both Treatment Groups (Attuned and Information Only Nudges)	36.33	3.64
Attuned Nudges	37.41	3.76
Information Only Nudges	34.53	3.41
Control (No Nudges)	31.75	3.09

N = 18,287

Source | Data on Dallas College Navigator (DCN) engagement are from DCN case management system where Navigators input student engagements via phone, email, or web referrals. Data on Edquity engagement are based on applications for emergency aid submitted to Edquity via cell phone applications and web browser.

Notes | Rates represent mean percent use of service by students in each group via post-estimation marginal effects based on a logistic regression which controlled for race/ethnicity and FAFSA application status.

TABLE H-8 | COMPARISON OF UNADJUSTED EDQUITY AND DALLAS COLLEGE NAVIGATORS ENGAGEMENT RATES, BY GROUP

	Edquity Engagement Rates		Dallas College Navigator Engagement Rates	
	Difference (%)	p-value	Difference (%)	p-value
Model 1: Nudging Treatment Groups vs Control (ref)	4.93	0.00	0.61	0.02
Model 2: Attuned vs Information Only Nudges(ref)	0.71	0.48	0	1.00
Model 3: Attuned Nudges vs Control(ref)	5.29	0.00	0.61	0.07
Model 4: Information Only Nudges vs Control(ref)	4.58	0.00	0.61	0.07

N = 18,287

Source | Data on Dallas College Navigator (DCN) engagement are from DCN case management system where Navigators input student engagements via phone, email, or web referrals. Data on Edquity engagement are based on applications for emergency aid submitted to Edquity via cell phone applications and web browser.

Notes | Difference column represents percent point differences in use of service by students in each group via post-estimation marginal effects based on a logistic regression which controlled for race/ethnicity and FAFSA application status.

TABLE H-9 | COMPARISON OF ADJUSTED EDQUITY AND DALLAS COLLEGE NAVIGATORS' ENGAGEMENT RATES, BY GROUP AND NEGATIVE EFC

	Students With an EFC At or Above $0		Students with EFC Below $0		Students with EFC below -$1,500		Students with EFC Below -$2,500	
	Edquity Engagement Rates	DCN Engagement Rates	Edquity Engagement Rates	DCN Engagement Rates	Edquity Engagement Rates	DCN Engagement Rates	Edquity Engagement Rates	DCN Engagement Rates
Both Treatment Groups (Stigma Reducing and Information Only Nudges)	30.01	2.66	43.96	4.31	44.06	4.48	44.28	4.55
Stigma Reducing Nudges	32.26	2.78	44.59	4.48	44.74	4.69	45.04	4.76
Information Only Nudges	26.55	2.42	42.87	3.96	43.26	4.07	43.63	4.16
Control (No Nudges)	21.53	2.12	41.17	3.50	41.79	3.53	42.23	3.64

N = 16,037

Source | Data on Dallas College Navigator (DCN) engagement are from DCN case management system where Navigators input student engagements via phone, email, or web referrals. Data on Edquity engagement are based on applications for emergency aid submitted to Edquity via cell phone applications and web browser.

Notes | Rates represent marginal means of use of service by students in each group via post-estimation marginal effects based on a logistic regression that controlled for race/ethnicity.

TABLE H-10 | HETEROGENEITY OF UNADJUSTED IMPACTS ON USE OF EDQUITY APP, BY AGE

Category	Unadjusted			Adjusted		
	Impact on Utilization (b)	Standard Error (se)	p-value	Impact on Utilization (b)	Standard Error (se)	p-value
18 to 20 Years Old	-0.37	0.06	0.00	-0.37	0.06	0.00
Over 30 Years Old	0.64	0.06	0.00	0.49	0.06	0.00
26 to 30 Years Old	0.30	0.07	0.00	0.24	0.07	0.00
Text Nudges x 21 to 25 Years Old (ref)	0.30	0.06	0.00	0.30	0.06	0.00
Text Nudges x 18 to 20 Years Old	-0.26	0.09	0.00	-0.26	0.09	0.00
Text Nudges x Over 30 Years Old	-0.04	0.08	0.67	-0.03	0.09	0.72
Text Nudges x 26 to 30 Years Old	0.02	0.09	0.87	0.02	0.10	0.83

N = 18,287

Source | Data above were collected by Dallas College staff obtained from Dallas College and from Edquity applications.

Notes | Impacts are modeled using logistic regression and controlled for student race and ethnicity, and whether the student completed the FAFSA; b represents the log-odds. Where applicable, missing demographic and outcome data were mean imputed. All other missing outcomes were imputed as zero.

TABLE H-11 | HETEROGENEITY OF UNADJUSTED IMPACTS ON USE OF EDQUITY APP

Category	Impact on Utilization (b)	Standard Error (se)	p-value
Model 1: Student Gender			
Male	-0.50	0.05	0.00
Text Nudges x Female (ref)	0.22	0.04	0.00
Text Nudges x Male	0.04	0.07	0.53
Model 2: Student Race/Ethnicity			
African American / Black	0.89	0.05	0.00
White/Caucasian	0.35	0.07	0.00
Other	0.36	0.07	0.00
Text Nudges x Hispanic/Latinx (ref)	0.26	0.05	0.00
Text Nudges x African American / Black	-0.05	0.07	0.47
Text Nudges x White/Caucasian	-0.16	0.10	0.11
Text Nudges x Other	0.04	0.10	0.66
Model 3: Negative EFC			
EFC < $0	0.96	0.05	0.00
Text Nudges x EFC <= $0 (ref)	0.48	0.06	0.00
Text Nudges x EFC < $0	-0.36	0.07	0.00

N = 18,287

Source | Data above were collected by Dallas College staff obtained from Dallas College and from Edquity applications.

Notes | Impacts are modeled using logistic regression, and controlled for student race and ethnicity, and calculated expected family contribution per FAFSA data; b represents the log-odds. Where applicable, missing demographic and outcome data were mean imputed. Other race/ethnicity includes American Indian, Southeast Asian/Pacific Islander, Multi-Racial, International, and Unknown categories. All other missing outcomes were imputed as zero.

TABLE H-12 | HETEROGENEITY OF UNADJUSTED IMPACTS ON USE OF DALLAS COLLEGE NAVIGATORS

Category	Impact on Utilization (b)	Standard Error (se)	p-value
Model 1: Student Gender			
Male	-0.28	0.14	0.04
Text Nudges x Female (ref)	0.22	0.10	0.02
Text Nudges x Male	-0.10	0.19	0.61
Model 2: Student Race/Ethnicity			
African American / Black	0.03	0.13	0.80
White/Caucasian	-1.11	0.27	0.00
Other	-0.43	0.21	0.04
Text Nudges x Hispanic/Latinx (ref)	-0.06	0.12	0.65
Text Nudges x African American / Black	0.37	0.18	0.04
Text Nudges x White/Caucasian	0.81	0.34	0.02
Text Nudges x Other	0.45	0.28	0.11
Model 3: Negative EFC			
EFC < $0	0.53	0.16	0.00
Text Nudges x EFC <= $0 (ref)	0.27	0.18	0.13
Text Nudges x EFC < $0	-0.03	0.21	0.88

N = 18,287

Source | Data above were collected by Dallas College staff obtained from Dallas College and from Edquity applications.

Notes | Impacts are modeled using logistic regression, and controlled for student race and ethnicity, and calculated expected family contribution per FAFSA data; b represents the log-odds. Where applicable, missing demographic and outcome data were mean imputed. Other race/ethnicity includes American Indian, Southeast Asian/Pacific Islander, Multi-Racial, International, and Unknown categories. All other missing outcomes were imputed as zero.

TABLE H-13 | HETEROGENEITY OF ADJUSTED AND UNADJUSTED IMPACTS ON USE OF EDQUITY APP, BY RACE AND GENDER

Category	Unadjusted			Adjusted		
	Impact on Utilization (b)	Standard Error (se)	p-value	Impact on Utilization (b)	Standard Error (se)	p-value
Male	-0.56	0.09	0.00	-0.51	0.09	0.00
African American/Black	0.88	0.06	0.00	0.85	0.06	0.00
White/Caucasian	0.39	0.08	0.00	0.37	0.08	0.00
Other	0.30	0.09	0.00	0.36	0.37	0.33
Male x African American/Black	0.01	0.12	0.91	0.00	0.13	0.99
Male x White/Caucasian	-0.03	0.16	0.85	-0.06	0.16	0.71
Male x Other	0.32	0.16	0.04	0.34	0.16	0.03
Text Nudges x Female x Hispanic/Latinx (ref)	0.23	0.06	0.00	0.23	0.06	0.00
Text Nudges x Male x Hispanic/Latinx	0.16	0.12	0.16	0.17	0.12	0.15
Text Nudges x Female x African American/Black	0.01	0.09	0.95	0.01	0.09	0.92
Text Nudges x Female x White/Caucasian	-0.23	0.12	0.06	-0.23	0.12	0.06
Text Nudges x Female x Other	0.15	0.12	0.22	0.16	0.13	0.21
Text Nudges x Male x African American/Black	-0.24	0.17	0.17	-0.24	0.17	0.17
Text Nudges x Male x White/Caucasian	0.13	0.22	0.55	0.14	0.22	0.53
Text Nudges x Male x Other	-0.37	0.21	0.09	-0.41	0.22	0.06

N = 18,287

Source | Data above were collected by Dallas College staff obtained from Dallas College and from Edquity applications.

Notes | Impacts are modeled using logistic regression, and controlled for student race and ethnicity, and whether the student completed the FAFSA; b represents the log-odds. Where applicable, missing demographic and outcome data were mean imputed. Other race/ethnicity includes American Indian, Southeast Asian/Pacific Islander, Multi-Racial, International, and Unknown categories. All other missing outcomes were imputed as zero.

TABLE H-14 | HETEROGENEITY OF ADJUSTED AND UNADJUSTED IMPACTS ON USE OF DALLAS COLLEGE NAVIGATORS, BY RACE AND GENDER

	Unadjusted			Adjusted		
Category	**Impact on Utilization (b)**	**Standard Error (se)**	**p-value**	**Impact on Utilization (b)**	**Standard Error (se)**	**p-value**
Male	-0.11	0.19	0.57	-0.11	0.19	0.57
African American/Black	0.07	0.15	0.63	0.07	0.15	0.63
White/Caucasian	-0.85	0.30	0.00	-0.85	0.30	0.00
Other	-0.36	0.25	0.15	0.34	0.77	0.66
Male x African American/Black	-0.17	0.31	0.58	-0.17	0.31	0.58
Male x White/Caucasian	-1.17	0.79	0.14	-1.17	0.79	0.14
Male x Other	-0.17	0.45	0.71	-0.09	0.45	0.84
Text Nudges x Female x Hispanic/Latinx (ref)	0.04	0.14	0.80	0.04	0.14	0.80
Text Nudges x Male x Hispanic/Latinx	-0.34	0.28	0.24	-0.34	0.28	0.24
Text Nudges x Female x African American/Black	0.30	0.21	0.16	0.30	0.21	0.16
Text Nudges x Female x White/Caucasian	0.43	0.39	0.26	0.43	0.39	0.26
Text Nudges x Female x Other	0.40	0.34	0.24	0.39	0.34	0.25
Text Nudges x Male x African American/Black	0.28	0.43	0.52	0.28	0.43	0.52
Text Nudges x Male x White/Caucasian	1.59	0.90	0.08	1.59	0.90	0.08
Text Nudges x Male x Other	0.22	0.61	0.72	0.21	0.61	0.73

N = 18,287

Source | Data above were collected by Dallas College staff obtained from Dallas College and from Edquity applications.

Notes | Impacts are modeled using logistic regression, and controlled for student race and ethnicity, and whether the student completed the FAFSA; b represents the log-odds. Where applicable, missing demographic and outcome data were mean imputed. Other race/ethnicity includes American Indian, Southeast Asian/Pacific Islander, Multi-Racial, International, and Unknown categories. All other missing outcomes were imputed as zero.