A Quantitative Study of Community College Student-Advisor Appointments and Student Success Metrics

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This study aimed to assess the impact of increased student interactions with academic advisors on several student success metrics. Conducted at a large, multicampus, community college with more than 34,000 students, it categorized students into three groups based on the frequency of completed advising appointments. Using fall 2022 to spring 2023 institutional data, the study revealed a robust association between advising frequency and four success metrics. Increased advising appointment frequency was associated with higher persistence rates, earlier spring 2023 registration activity, increased attempted credits for spring 2023, and increased completed credits during fall 2022. This research expands upon existing advising literature surrounding the outcomes of student-advisor contacts with a central focus on community colleges.

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KEY WORDS: quantitative research, academic advising, persistence, retention, community college

Introduction

Academic advising is widely acknowledged as key in supporting student success and engagement in higher education (Bettinger & Baker, 2014; Mu & Fosnacht, 2019; Zhang et al., 2019). Through prescriptive and developmental approaches, advisors are vital resources for students navigating the complexities of their educational journey, guiding students on making informed decisions, developing behavioral awareness and problem-solving skills, and achieving their academic and career goals (Drake, 2011). However, empirical research is needed to understand the impact of the frequency of advising appointments on student success metrics, such as persistence, credit completion rate, attempted credit rates, and registration activity, especially within the community college setting.

Previous studies have indicated a positive relationship between academic advising and some student outcomes (Bettinger & Baker, 2014; Fosnacht et al., 2017; Pechac & Slantcheva-Durst, 2021; Schwebel et al., 2012). Bettinger and Baker (2014)

found that frequent advising interactions were associated with higher credit accumulation and increased likelihood of persistence. Schwebel et al. (2012) explored the effects of increased advisor outreach and the impact on student retention, illustrating a nominal increase in persistence among students who were communicated to most frequently. Pechac and Slantcheva-Durst (2021) identified that coaching, as an intervention strategy for community college students, could support the preliminary gap between students and campus resources, ultimately acting as a booster for institutions looking to enhance student progress and success. The study by Fosnacht et al. (2017) highlighted the importance of academic advising for students transitioning to higher education institutions in the United States. Given the multiplicity and complex nature of the nation's higher education system, Fosnacht et al. (2017) stated that, "advice from peers or family members offers insufficient or incorrect information" (p. 79). Academic advisors help bridge the learning gap for students entering an institution, connecting them to valuable campus resources that can enhance their experience and increase student satisfaction and academic success. These studies highlight the potential influence of advising on student success, but further research is necessary to examine the relationship between the frequency of advising appointments and student outcomes, especially for community colleges.

This quantitative study investigates the associations between the frequency of advising appointments and several student success outcomes. By examining these associations, the study aims to provide evidence-based insights that can guide practitioners in optimizing advising practices and enhancing student success in higher education.

Literature Review

Academic advising brings together faculty members from various academic backgrounds and professional and administrative staff to deliver an important educational service that plays an essential role in supporting the academic success of students (Kot, 2014; Troxel et al., 2021). Academic advising

is a central activity in the process of education that is designed to help students decide their area of study in postsecondary education through a linear process of exploring life and vocational goals, along with course selection and scheduling (O'Banion, 2009/1994/1972). However, conceptually and through practice, academic advising has taken on a larger, more complex role in the postsecondary educational process.

Tukey (1996) explained that the delivery of academic advising services can incorporate multiple institutional agents and offices to provide formal and informal support in the form of student advising. Burton and Wellington (1998) expanded upon O'Banion's model stating that advising is not a linear process but a natural and fluid one where the student and advisor progress through different stages of O'Banion's model, often more than once. Additionally, Kadar (2001) explained that academic advising encompasses fostering a rapport with students to discuss academic and personal issues hindering their postsecondary educational success. Finally, research has demonstrated the importance of academic advising on student success, including its positive association with retention, graduation, transfer, and academic achievement (Bahr, 2008; Bettinger & Baker, 2014; Fosnacht et al., 2017; Swecker et al., 2013). It is becoming more apparent that academic advising is a critical component of student success within higher education institutions (Alvarado & Olson, 2020; Center for Community College Student Engagement, 2018; NACADA: The Global Community for Academic Advising, 2006).

The core components of academic advising focus on the ongoing professional development of advisors, educating students on the informational components of the institution, and developing authentic relationships with advisees that foster a positive and trusting rapport (NACADA: The Global Community for Academic Advising, 2017). Given the importance of the relationship between academic advising and student success, institutional policies and practices are being purposefully designed to improve student success outcomes by encouraging increased proactive advising practices, including frequent contact with an academic advisor (Barbuto et al., 2011). However, many studies of academic advising have been qualitative, incorporating student perspectives about their experiences and satisfaction with academic advisors advising services but not necessarily incorporating advisor feedback or connecting the information advisors provided to

sought after student outputs (Alvarado & Olson, 2020; Mu & Fosnacht, 2019). Additional quantitative research about the nature of academic advising and its association with student success outputs, particularly for large sample sizes of diverse student populations, is critical to better understand how academic advising models and academic advisors may impact student success metrics (Alvarado & Olson, 2020; Fosnacht et al., 2017).

Several best practices have been identified for providing frequent academic advising appointments at community colleges, including early intervention and initiative-taking outreach; personalized and integrated approach for academic and career goal setting; clear and consistent communication; ongoing assessment and improvement; and collaboration and coordination with other departments and services (Center for Community College Student Engagement, 2018). Regular contact with an academic advisor can provide ongoing support, help students stay on track academically, and provide opportunities for students to discuss their academic goals and progress (Hawthorne et al., 2022; Karp et al., 2021). Klepfer and Hull (2012) argued that engaging with an academic advisor with some sense of frequency could improve persistence rates for students within two-year institutions. Finally, advising appointments can be especially beneficial for community college students, many of whom are first-generation, or low-income, or from underrepresented backgrounds (Donaldson et al., 2016; Fosnacht et al., 2017; Klepfer & Hull, 2012; Swecker et al., 2013).

Present Study/Study Purpose

According to the Council for the Advancement of Standards, student success is the aggregate of many aspects of the student experience, including academic success, connection to the campus, developing interpersonal and intrapersonal skills, and preparing for entrance into the global society and workforce. Institutions may define student success for their population with consideration of student goals and evidence of learning and development. Those attempting to measure students' academic success often point to year-to-year retention rates and percent of students who persist to goal completion (Council for the Advancement of Standards, 2019).

The authors define student success through four key metrics to argue that the institution's advising model is working to support its students:

- semester based persistence
- credits completed in the current term
- credits attempted in the succeeding term
- first date of registration activity for the succeeding term

The success metrics were evaluated against the frequency with which students and advisors formally met. The authors understand this is an incomplete assessment of student success when looking holistically at the student experience. However, the purpose of this study is to understand if academic advising specifically, and the frequency of formal advising appointments, has a positive association with specific student success metrics that are typically considered successful outputs of the academic advising experience. The researchers considered students "persisted" if they either registered for any number of credits for the subsequent semester or if they graduated at the end of the current assessment semester. In both circumstances, a student progressed with their academic goals, either moving toward or accomplishing program completion. In absence of achieving either milestone, a student was categorized as "did not persist."

Although there is increasing recognition in the field about the importance between academic advising and student success, research is needed to better understand the statistical significance between the frequency of academic advisor contacts and its impact on student success metrics (Alvarado & Olson, 2020; Swecker et al., 2013).

This study focused on a multicampus, statewide community college system that leverages a case management model for advising, emphasizing the importance of advisors practicing developmental advising by delivering support, mentorship, and guidance to advisees from matriculation through program completion. Academic advisors collaborate with their students on the creation of academic and career plans, continuously monitor their programmatic progress and academic standing, and coordinate referrals to internal and external wraparound support services. This multicampus statewide community college system utilizes a shared model of advising where faculty advising is also a component of the student advising support system. In total, the community college system employs more than 150 primary role advisors across the campuses with varying levels of staffing dependent upon campus size. To capture the content of advising appointment interactions, primary role advisors leverage a tailored

customer relationship management (CRM) platform to document their advising appointment notes. This study aimed to investigate whether there is an association between the frequency with which a student completes advising appointments and student success metrics. This study was guided by the following research questions:

- RQ1. Is there an association between the frequency of completed studentprimary advisor appointments and student success metrics?
 - RQ1a. Is there an association between the frequency of completed studentprimary advisor appointments and persistence?
 - RQ1b. Is there an association between the frequency of completed studentprimary advisor appointments and completed credits during the fall 2022 semester?
 - RQ1c. Is there an association between the frequency of completed studentprimary advisor appointments and attempted credits for the spring 2023 semester?
 - RQ1d. Is there an association between the frequency of completed studentprimary advisor appointments and the first date for spring 2023 registration activity?

Setting

This study was conducted at a multicampus, statewide community college system during the fall 2022 through the start of the spring 2023 semester. For the sake of confidentiality, the community college system will not be disclosed, but the system has between 10 and 15 community colleges that enroll 30,000–40,000 credit bearing students per academic term.

Each campus employs an academic advising office comprised of full-time, professional, primary role academic advisors. Staffing in each office was dependent on the full-time student enrollment at that campus, with staffing numbers varying between five and 26 professional primary role advisors as of the start of the fall 2022 semester.

At the onset of each semester, all newly registered, credit-seeking students are assigned to an academic advisor based on their program of study. Primary role advisors who function within the case

Table 1. Advising Appointment Count by Semester

		Totals
Groups	Students with no advising appointments	18,351
_	Students with one advising appointment	9,711
	Students with multiple advising appointments	6,278
Total		34,340

management advising model average between 200 and 300 students. After advisor-advisee assignments are confirmed, academic advisors introduce themselves to their advisees primarily by email, sharing pertinent information including their physical office location, contact information, and the services that the academic advising office provides. Throughout the semester, academic advisors routinely communicate with their caseload by email, phone, and in-person conversations about various topics, including campus resources and events, academic progress, academic and career goal planning, and course registration.

For this study, the researchers defined an advising appointment as a meaningful contact between an academic advisor and a student that occurs in-person, via phone, or through a virtual video conferencing platform with a minimum duration of 10 minutes. While advisors frequently conducted brief check-ins with students during the semester, advising appointments offered longer, devoted periods where advisors and students could discuss numerous topics that may have required significant dialogue, attention, and action. Throughout the semester, advisors regularly broadcasted their office hours (i.e., dedicated times throughout the week where advisors were available for scheduled or drop-in advising appointments). Advising appointments with an academic advisor were offered in-person, phone, and virtually. While appointment lengths varied depending on the topic(s) discussed, appointments averaged 30-45 minutes.

Participants

Researchers used the data collected during the fall semester through the CRM platform and the institution's enterprise resource planning (ERP) system. Data from the CRM platform included all credit-earning students who completed one or more advising appointment during the fall semester. Data from the ERP system included all enrolled, credit-earning students during the fall 2022 semester. These data lists combined provided researchers with a comprehensive data set that highlighted three student groups: students with no completed advising

appointments, students with one completed advising appointment, and students with multiple completed advising appointments. The authors reviewed the methodology and results in Swecker et al. (2013) and decided a grouping mechanism for students was most appropriate to organize statistical tests. Upon reviewing the results of Swecker et al. (2013), which demonstrated an effect on student retention based on increased frequency of student contact with advisors, the researchers decided a group category of 0, 1, 2 or more would be appropriate for this study. Table 1 illustrates the total population of students that the researchers analyzed for this study (n = 34,340), with the breakdown of the identified student groups.

Procedure

Academic advisors leveraged the institution's CRM platform to document advising appointments with students. A customized advising appointment form was created to allow advisors to capture the relevant details of each interaction, including the student's name and identification number; the appointment date, time, and location; the modality of the appointment; pertinent notes from the appointment regarding topics discussed; and any applicable takeaway actions for the student or advisor.

After the fall semester concluded, the data collected on the CRM platform was exported and merged with a secondary data set exported from the ERP system. Together, these merged data sets allowed the researchers to determine what, if any, trends existed among the three identified student groups.

Measures

Through statistical testing and analysis of the data, researchers compared each of the four identified student success metrics (persistence from the fall 2022 semester, completed credits during the fall 2022 semester, attempted credits for the spring 2023 semester, and the first date for spring 2023 registration activity) against each of the identified student groups.

Table 2. Descriptive Statistics Crosstabulation Results Comparing Student Groupings and Persistence

			Did Not		
			Persist	Persisted	Total
Student	No advising	Count	6,577	11,774	18,351
Groups	appointments	Expected count	4,882.7	13,468.3	18,351.0
•		% within advising appointment count	35.8%	64.2%	100.0%
	One advising	Count	1,737	7,974	9,711
	appointment	Expected count	2,583.8	7,127.2	9,711.0
	11	% within advising appointment count	17.9%	82.1%	100.0%
	Multiple advising	Count	823	5,455	6,278
	appointments	Expected count	1,670.4	4,607.6	6,278.0
		% within advising appointment count	13.1%	86.9%	100.0%
Totals		Count	9,137	25,203	34,340
		Expected count	9,137.0	25203.0	34,340.0
		% within advising appointment count	26.6%	73.4%	100.0%

To begin, the researchers evaluated the persistence rates for each student group as a dichotomous factor; students either persisted or they did not persist. Researchers considered a student "persisted" if they either registered for any number of credits for the spring 2023 semester or if they graduated at the end of the fall 2022 semester. In both circumstances, a student progressed with their academic goals, either moving toward or accomplishing program completion. In the absence of achieving either of these milestones, a student was categorized as "did not persist."

Additional testing compared the student groups to persistence while controlling for legal sex, enrollment status, and race. Legal sex was categorized as female or male. During the analysis, the authors evaluated the participants' legal sex data to ensure consistency. Researchers excluded participants whose legal sex was not designated, in part to focus the analvsis specifically on the traditional binary classifications of "male" and "female." Additionally, the authors were not able to validate that the absence of a legal sex designation in the data set was intentional or the result of a systematic error within the student information system used by the institution. Of the total participants in the original data set, 51 participants were excluded. Enrollment status was categorized as dichotomous values of either parttime or full-time. Full-time enrollment status included students who registered for 12 or more credit hours. Race was categorized into one of four options: White, Black or African American, Hispanic/Latino, or various/multiple. The various/multiple category had reported values of Asian, American Indian or Alaska native, native Hawaiian or other Pacific Islander, two or more races, and race and ethnicity unknown. As a result of the significantly smaller n values present for each of the aforementioned reported race values, the various/multiple category was created.

Finally, researchers evaluated the student success metrics of the first date for spring 2023 registration activity, attempted credits for the spring 2023 semester, and completed credits during the fall 2022 semester against the frequency of advising appointments. Researchers defined the student success metric of the first date for spring registration activity as the first calendar date that a student registered for any number of credits for the spring 2023 semester. Registration activity data was captured in, and extracted from, the institution's ERP system. For each student success metric, the researchers compared the mean values of each of the student groups to determine if there were any significant associations between student success metrics and the frequency of advising appointments.

Results

Researchers evaluated whether there were strong statistical associations between the frequency of advising appointments and each of the student

Grouping and Persistence			
	Value	df	Asymptotic Significance (Two-Sided)
Pearson Chi-Square	1764.961 ^a	2	.000
Likelihood Ratio	1840.101	2	.000
Linear-by-Linear Association	1622 838	1	000

Table 3. Chi-Square Test Results for Descriptive Statistics Crosstabulation Results Comparing Student Grouping and Persistence

34,340

success metrics. Table 2 displays the descriptive statistics crosstabulation results that compared the student groups (rows) to the persistence data categories (columns). Expected count values, which represented the projected frequencies in each cell if the null hypothesis were true, were also included.

N of Valid Cases

For the student group with no advising appointments, the expected count of students who should not have persisted was less than the actual count of students who did not persist. In comparison, the expected count of students who should have persisted was larger than the actual count of students who did persist. For the student group with one advising appointment, the expected count of students who should not have persisted was significantly higher than the actual count of students who did not persist. In comparison, the expected count of students who should have persisted was less than the actual count of students who did persist. For the student group with multiple advising appointments, the expected count of students who should not have persisted was significantly higher than the actual count of students who did not persist. In comparison, the expected count of students who should have persisted was less than the actual count of students who did persist.

As illustrated in Table 3, the Pearson chi-square asymptotic significance (two-sided) value, or p-value, was .000. A p-value of less than .05 implies a statistical significance between the row and column variables. Those test results allowed the researchers to confidently reject the null hypothesis associated with RQ1a and conclude that there was indeed a strong statistical association between the frequency of advising appointments and persistence rates for all three student groups.

Given the increasing importance of desirable persistence rates at higher education institutions, the researchers opted to perform secondary statistical tests to control for additional student factors to further strengthen the analyses. To account for the factors of legal sex, enrollment status, and

race, a second descriptive statistics crosstabulation analysis was performed, incorporating each of those factors as control variables.

Table 4 illustrates that when including legal sex as a control variable for the student groups, similar trends regarding expected count versus actual counts for persistence rates existed among all three student groups. Table 5 illustrates the results of the chi-square test when controlling for legal sex, returning p-values of <.001 for females and males.

Table 6 illustrates that when accounting for enrollment status, the researchers continued to see the same patterns regarding excepted counts versus actual counts for persistence rates among all three student groups. Table 7 illustrates the results of the chi-square test when controlling for enrollment status, returning p-values of <.001 for part-time and full-time students.

Table 8 illustrates that when accounting for race, the same patterns were seen regarding excepted counts versus actual counts for persistence rates among all three student groups. Table 9 illustrates the results of the chi-square test when controlling for race, returning p-values of <.001 for the White, Black or African American, Hispanic/Latino, and various/multiple categories. For all race variables combined, a p-value of .000 was returned.

Given the strong statistical association illustrated in the results of each of the secondary statistical tests—where legal sex, enrollment status, and race were incorporated as control variables—the researchers remain confident in their rejection of the null hypothesis associated with RQ1a.

As with persistence, the researchers were also interested in determining if a strong statistical association exists between the frequency of advising appointments and the additional student success metrics. Table 10 illustrates the results of the one-way analysis of variance (ANOVA) with descriptive statistics that compared the student groups to the remaining student success metrics of first date

^a0 cells (.0%) have expected count less than 5. The minimum expected count is 1670.42.

Table 4. Descriptive Statistics Crosstabulation Results Comparing Student Groupings and Persistence with Legal Sex as a Controllable Variable

with Le	egal Sex as a Control	lable Variable		1 0	
			Did Not Persist	Persisted	Total
Student Groups	No advising	Count	3,862	7,029	10,891
(Female)	appointments	Expected count	2,882.4	8,008.6	10,891.0
		% within advising	35.5%	64.5%	100.0%
		appointment count			
	One advising	Count	1,070	4,835	5,905
	appointment	Expected count	1,562.8	4,342.2	5,905.0
		% within advising appointment count	18.1%	81.9%	100.0%
	Multiple advising	Count	548	3,362	3910
	appointments	Expected count	1,034.8	2,875.2	3,910.0
		% within advising appointment count	14.0%	86.0%	100.0%
Total		Count	5,480	15,226	20,706
		Expected count	5,480.0	15,226.0	20,706.0
		% within advising	26.5%	73.5%	100.0%
		appointment count			
Student Groups	No advising	Count	2,715	4,745	7,460
(Male)	appointments	Expected count	2,001.0	5,459.0	7,460.0
		% within advising appointment count	36.4%	63.6%	100.0%
	One advising	Count	667	3,139	3,806
	appointment	Expected count	1,020.9	2,785.1	3,806.0
	арропшист	% within advising	17.5%	82.5%	100.0%
		appointment count	17.570	02.370	100.070
	Multiple advising	Count	275	2,093	2,368
	appointments	Expected count	635.2	1,732.8	2,368.0
	11	% within advising	11.6%	88.4%	100.0%
		appointment count			
Total		Count	3,657	9,977	13,634
		Expected count	3,657.0	9,977.0	13,634.0
		% within advising	26.8%	73.2%	100.0%
		appointment count			
Student Groups	No advising	Count	6,577	11,774	18,351
(Total)	appointments	Expected count	4,882.7	13,468.3	18,351.0
		% within advising	35.8%	64.2%	100.0%
		appointment Count			
	One advising	Count	1,737	7,974	9,711
	appointment	Expected count	2,583.8	7,127.2	9,711.0
		% within advising	17.9%	82.1%	100.0%
	3.6.1/2.1 1.2.2	appointment count	022	5 455	C 270
	Multiple advising	Count	823	5,455	6,278
	appointments	Expected count	1,670.4	4,607.6	6,278.0
		% within advising appointment count	13.1%	86.9%	100.0%
Total		Count	9,137	25,203	34,340
2 3 1412		Expected count	9,137.0	25,203.0	34,340.0
		% within advising	26.6%	73.4%	100.0%
		appointment count	_ 5.0 / 0		
		appointment count			

		Value	df	Asymptotic Significance (Two-Sided)
Female	Pearson chi-square	975.523 ^b	2	<.001
	Likelihood ratio	1,009.471	2	<.001
	Linear-by-linear association	887.662	1	<.001
	N of valid cases	20,706		
Male	Pearson chi-square	794.897 ^c	2	<.001
	Likelihood ratio	839.909	2	<.001
	Linear-by-linear association	741.626	1	<.001
	N of valid cases	13,634		
Total	Pearson chi-square	1,764.961 ^a	2	.000
	Likelihood ratio	1,840.101	2	.000
	Linear-by-linear association	1,622.838	1	.000

34.340

Table 5. Chi-Square Test Results for Descriptive Statistics Crosstabulation Results Comparing Student Grouping and Persistence with Legal Sex as a Control Variable

for spring 2023 registration activity, attempted credits for the spring 2023 semester, and completed credits during the fall 2022 semester.

N of valid cases

When comparing the student success metric of days from spring registration opening and advising appointment frequency, Table 10 illustrates a decrease in the mean values of the student groups as advising appointment frequency increases. When compared to students who had no advising appointments, students with one or more advising appointments registered for the spring 2023 semester 6-9 days earlier, on average. When comparing the student success metric of spring attempted credits and advising appointment frequency, Table 10 illustrates an increase in the average attempted credits for the spring 2023 semester as advising appointment frequency increases. When compared to students who had no advising appointments, students with one or more advising appointments registered for, on average, 0.9-1.4 more credits, demonstrated by the increase in Mean values. Finally, when comparing the student success metric of fall earned credits and advising appointment frequency, Table 10 illustrates an increase in the average completed credits for the fall 2022 semester as advising appointment frequency increases, again, demonstrated by the increase in Mean values. Compared to students who had no advising appointments, students with one or more advising

appointments completed, on average, 1.3-1.6 more credits.

Table 11 illustrates the results of the one-way ANOVA test for each of the three student success metrics. For each student success metric, the returned significance value was <.001. Those significance values allowed the researchers to confidently reject the null hypotheses associated with RQ1b, RQ1c, and RQ1d and conclude that there was a strong statistical association between the student success metrics and the frequency of advising appointments.

Discussion

The results indicated that advising appointment frequency has a strong statistical association with student persistence rates, credits earned, credits attempted, and the initial date of registration for a subsequent term. When accounting for the control variables of enrollment status, legal sex, and race, the analyses continued to indicate a strong statistical association between the frequency of advising appointments and the rate of persistence for the identified student groups. The overall results of this study highlight the crucial role that academic advisors can play in supporting students' educational journeys and academic achievement. By beginning to establish a clear association between advising frequency and student success measures, the study provides empirical evidence that can guide and

 $[\]overline{^{a}0}$ cells (0.0%) have expected count less than 5. The minimum expected count is 1,670.42.

^b0 cells (0.0%) have expected count less than 5. The minimum expected count is 1,034.81.

^c0 cells (0.0%) have expected count less than 5. The minimum expected count is 635.16.

Table 6. Descriptive Statistics Crosstabulation Results Comparing Student Groupings and Persistence with Enrollment Status as a Controllable Variable

with E	nrollment Status as a	Controllable Variable		1 0	
			Did Not Persist	Persisted	Total
Student Groups	No advising	Count	5,710	8,496	14,206
(Part-Time)	appointments	Expected count	4,575.1	9,630.9	14,206.0
		% within advising	40.2%	59.8%	100.0%
		appointment count			
	One advising	Count	1,423	4,763	6,186
	appointment	Expected count	1,992.2	4,193.8	6,186.0
		% within advising appointment count	23.0%	77.0%	100.0%
	Multiple advising	Count	643	3,110	3,753
	appointments	Expected count	1,208.7	2,544.3	3,753.0
		% within advising appointment count	17.1%	82.9%	100.0%
Total	-	Count	7,776	16,369	24,145
		Expected count	7,776.0	16,369.0	24,145.0
		% within advising	32.2%	67.8%	100.0%
		appointment count			
Student Groups	No advising	Count	867	3,278	4,145
(Full-Time)	appointments	Expected count	553.3	3,591.7	4,145.0
		% within advising	20.9%	79.1%	100.0%
	0	appointment count	214	2 211	2.525
	One advising	Count	314	3,211	3,525
	appointment	Expected count	470.6	3,054.4	3,525.0
		% within advising appointment count	8.9%	91.1%	100.0%
	Multiple advising	Count	180	2,345	2,525
	appointments	Expected count	337.1	2,187.9	2,525.0
		% within advising appointment count	7.1%	92.9%	100.0%
Total		Count	1,361	8,834	10,195
		Expected count	1,361.0	8,834.0	10,195.0
		% within advising	13.3%	86.7%	100.0%
	NI 1 ' '	appointment count		11.774	10.251
Student Groups	No advising	Count	6,577	11,774	18,351
(Total)	appointments	Expected count	4,882.7	13,468.3 64.2%	18,351.0
		% within advising appointment count	35.8%	04.2%	100.0%
	One advising	Count	1,737	7,974	9,211
	appointment	Expected count	2,583.8	7,127.2	9,711.0
	шррошине	% within advising	17.9%	82.1%	100.0%
		appointment count	2,7,7,0	0_11_7	
	Multiple advising	Count	823	5,455	6,278
	appointments	Expected count	1,670.4	4,607.6	6,278.0
		% within advising appointment count	13.1%	86.9%	100.0%
Total		Count	9,137	25,203	34,340
2 3 1411		Expected count	9,137.0	25,203.0	34,340.0
		% within advising	26.6%	73.4%	100.0%
		appointment count			

Table 7. Chi-Square Test Results for Descriptive Statistics Crosstabulation Results Comparing Student
Grouping and Persistence with Enrollment Status as a Control Variable

		Value	df	Asymptotic Significance (Two-Sided)
Part-Time	Pearson chi-square	1,045.664 ^b	2	<.001
	Likelihood ratio	1,091.949	2	<.001
	Linear-by-linear association	985.944	1	<.001
	N of valid cases	24,145		
Full-Time	Pearson chi-square	349.784°	2	<.001
	Likelihood ratio	345.885	2	<.001
	Linear-by-linear association	298.701	1	<.001
	N of valid cases	10,195		
Total	Pearson chi-square	1,764.961 ^a	2	.000
	Likelihood ratio	1,840.101	2	.000
	Linear-by-linear association	1,622.838	1	.000
	N of valid cases	34,340		

^a0 cells (0.0%) have expected count less than 5. The minimum expected count is 1,670.42.

inform the work of administrators and practitioners in the field.

For example, the outcomes of the study emphasize the importance of promoting regular and consistent advising appointments for community college students with academic advisors. Advising administrators can use this research to develop departmental policies and programs that encourage community college students to engage with academic advisors regularly throughout their academic careers. By encouraging frequent advising sessions, advising administrators can increase the likelihood that students receive the necessary guidance, support, and resources needed to make well-informed decisions about their course selection, academic progress, and career goals and pathways. To increase the likelihood of a student's ability to be successful in persisting from term to term, advising administrators and campus policymakers can emphasize the importance of frequent interactions between students and academic advisors early and often at the onset of each academic semester. Research has shown that increased interactions within the first few weeks of the semester may increase the likelihood of a student's ability to be successful in persisting (Freer-Weiss, 2004).

Addressing completion rates has been a challenge for higher education institutions, especially for community colleges whose student population is more likely to be impacted by socioeconomic, personal, and institutional barriers (Chen & Hu, 2021; Goldrick-Rab, 2010). This study

finds a strong association between the frequency of advising contact and increases in both credits attempted and credits earned for most students within the studied community college system. It is important to note, that while the statewide averages for completed credits from the fall 2022 semester and attempted credits for the spring 2023 semester illustrated increases as the frequency of appointments increased, which was statistically significant, the researchers observed nominal variability between individual campuses. For example, two institutions had completed credit averages for the fall 2022 semester decreased slightly when student advising appointments increased in frequency from one to two or more. Likewise, the average attempted credit rates for spring 2023 also decreased slightly at two institutions when student advising appointments increased in frequency from one to two or more. The researchers hypothesized that the observed differences could be the result of numerous factors at those individual campus locations, including geographical position, student population demographics, or organizational structure. Future research is needed to understand the nominal differences that may exist between the system-wide results and those individual campus locations that illustrated the nominal differences. Regardless, along with financial incentives (Anderson, 2017), improving academic progress monitoring, (Jenkins et al., 2019), and providing quality support mechanisms on and off campus, increasing the frequency of contact between academic advisors and community college students

^b0 cells (0.0%) have expected count less than 5. The minimum expected count is 1,208.67.

^c0 cells (0.0%) have expected count less than 5. The minimum expected count is 337.08.

Table 8. Descriptive Statistics Crosstabulation Results Comparing Student Groupings and Persistence with Race as a Controllable Variable

			Did Not Persist	Persisted	Total
Student Groups	No advising	Count	2,690	5,393	8,083
(White)	appointments	Expected count	1,976.6	6,106.4	8,083.0
		% within advising	33.3%	66.7%	100.0%
		appointment count			
	One advising	Count	634	3,484	4,118
	appointment	Expected count	1,007.0	3,111.0	4,118.0
		% within advising appointment count	15.4%	84.6%	100.0%
	Multiple advising	Count	244	2,146	2,390
	appointments	Expected count	284.4	1,805.6	2,390.0
		% within advising	10.2%	89.8%	100.0%
		appointment count			
Total		Count	3,568	11,023	14,591
		Expected count	3,568.0	11,023.0	14,591.0
		% within advising	24.5%	75.5%	100.0%
		appointment count			
Student Groups	No advising	Count	1,197	1,809	3,006
(Black or African	appointments	Expected count	904.7	2,101.3	3,006.0
American)		% within advising	39.8%	60.2%	100.0%
		appointment count			
	One advising	Count	341	1,253	1,594
	appointment	Expected count	479.8	1,114.2	1,594.0
		% within advising appointment count	21.4%	78.6%	100.0%
	Multiple advising	Count	192	956	1,148
	appointments	Expected count	345.5	802.5	1,148.0
		% within advising	16.7%	83.3%	100.0%
		appointment count			
Total		Count	1,730	4,018	5,748
		Expected count	1,730.0	4,018.0	5,748.0
		% within advising	30.1%	69.9%	100.0%
		appointment count			
Student Groups	No advising	Count	1,986	3,252	5,238
(Hispanic/Latino)	appointments	Expected count	1,455.8	3,782.2	5,238.0
		% within advising	37.9%	62.1%	100.0%
		appointment count			
	One advising	Count	570	2,412	2,982
	appointment	Expected count	828.5	2,153.2	2,982.0
		% within advising appointment count	19.1%	80.9%	100.0%
	Multiple advising	Count	298	1,751	2,049
	appointments			1,479.5	2,049.0
	11	% within advising	569.5 14.5%	85.5%	100.0%
		appointment count			
Total		Count	2,854	7,415	10,269
		Expected count	2,854.0	7,415.0	10,269.0

Table 8. Descriptive Statistics Crosstabulation Results Comparing Student Groupings and Persistence with Race as a Controllable Variable (cont.)

			Did Not Persist	Persisted	Total
		% within advising appointment count	27.8%	72.2%	100.0%
Student Groups	No advising	Count	704	1,320	2,024
(Various/Multiple)	appointments	Expected count	534.2	1,489.8	2,024.0
		% within advising appointment count	34.8%	65.2%	100.0%
	One advising	Count	192	825	1,017
	appointment	Expected count	268.4	748.6	1,017.0
		% within advising appointment count	18.9%	81.1%	100.0%
	Multiple advising	Count	89	602	691
	appointments	Expected count	182.4	508.6	691.0
		% within advising appointment count	12.9%	87.1%	100.0%
Total		Count	985	2,747	3,732
		Expected count	985.0	2,747.0	3,732.0
		% within advising appointment count	26.4%	73.6%	100.0%
Student Groups	No advising	Count	6,577	11,774	18,351
(Total)	appointments	Expected count	4,882.7	13,468.3	18,351.0
, ,		% within advising appointment count	35.8%	64.2%	100.0%
	One advising	Count	1,737	7,974	9,711
	appointment	Expected count	2,583.8	7,127.2	9,711.0
		% within advising appointment count	17.9%	82.1%	100.0%
	Multiple advising	Count	823	5,455	6,278
	appointments	Expected count	1,670.4	4,607.6	6,278.0
		% within advising appointment count	13.1%	86.9%	100.0%
Total		Count	9,137	25,203	34,340
		Expected count	9,137.0	25,203.0	34,340.0
		% within advising appointment count	26.6%	73.4%	100.0%

be critical to increase student completion percentage rates.

Early registration for community college students is another important component of producing more successful outcomes for students. Several studies have looked closely at this concept and found that students who registered later in the enrollment cycle produced lower retention rates and completion percentages (Hale & Bray, 2011; Smith et al., 2002). This study shows a strong association between the increased frequency of advising contacts and the first date of registration for the

subsequent term. It may behoove advising administrators to evaluate their academic advising outreach practices, and when necessary, increase the institutional messaging regarding those services to emphasize the importance of frequent advisor-student contact. Faculty members also can play a critical role in connecting students early with academic advising services. As such, it is recommended that faculty members leverage their position and relationship with students appropriately to encourage and ensure that they remain well connected and supported at the institution (Schneider, 2022).

Table 9. Chi-Square Test Results for Descriptive Statistics Crosstabulation Results Comparing Student Grouping and Persistence with Race as a Control Variable

		Value	df	Asymptotic Significance (Two-Sided)
White	Pearson chi-square	786.231 ^b	2	<.001
	Likelihood ratio	835.398	2	<.001
	Linear-by-linear association	728.518	1	<.001
	N of valid cases	14,591		
Black or African American	Pearson chi-square	290.058°	2	<.001
	Likelihood ratio	298.667	2	<.001
	Linear-by-linear association	265.776	1	<.001
	N of valid cases	5,748		
Hispanic/Latino	Pearson chi-square	558.574 ^d	2	<.001
•	Likelihood ratio	575.997	2	<.001
	Linear-by-linear association	508.584	1	<.001
	N of valid cases	10,269		
Various/Multiple	Pearson chi-square	167.836 ^e	2	<.001
•	Likelihood ratio	176.110	2	<.001
	Linear-by-linear association	159.197	1	<.001
	N of valid cases	3,732		
Total	Pearson chi-square	1,764.961 ^a	2	.000
	Likelihood ratio	1,840.101	2	.000
	Linear-by-linear association	1,622.838	1	.000
	N of valid cases	34,340		

^a0 cells (0.0%) have expected count less than 5. The minimum expected count is 1,670.42.

Institutional administrators and campus policymakers can use this research as a foundation for establishing clear goals for how they define organizational student success metrics and evaluate the impact that advising interactions have on those metrics. For example, institutions can review research conducted by Belfield et al. (2019) for establishing institutionally appropriate leading success indicators, such as first-year credit momentum, gateway course completion rates, and fall-to-spring persistence, as the desired outputs of their advising model to measure against advisor-student appointment frequency. Additionally, advising administrators can use this research methodology for assessing the functional outputs of their advising programs, such as assessing advisor frequency and measuring student satisfaction with advising services (Russell et al., 2008). Campus administrators can establish expectations for frequent connections early in a student's academic career and assess if they led to increases in student's sense of belonging and engagement with their institution (Means & Pyne, 2017). Finally, by emphasizing to community college students the benefits of frequent advisor contact, institutions may see a positive impact on student transfer capital (Hayes et al., 2020). Students who have frequent contact with their academic advisor are more likely to establish healthy and trusting relationships, which in turn may lead to students feeling more comfortable partnering with their academic advisor to discuss transfer opportunities as part of the next steps in their educational journey.

Limitations and Future Research

While the researchers are confident, given the population size, that the preliminary results allow them to draw appropriate initial conclusions about the statistical association between the success metrics and advising appointment frequencies, a longitudinal study that examines the student success

^b0 cells (0.0%) have expected count less than 5. The minimum expected count is 584.44.

^c0 cells (0.0%) have expected count less than 5. The minimum expected count is 345.52.

^d0 cells (0.0%) have expected count less than 5. The minimum expected count is 569.47.

^e0 cells (0.0%) have expected count less than 5. The minimum expected count is 182.38.

Table 10. Descriptive Statistics Results for Student Success Metrics

						Interv	nfidence val for ean		
		N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
Days from Spring	No advising appointments	11,165	41.86	34.445	.326	41.22	42.50	3	119
Registration	One advising appointment	7,775	35.76	31.142	.353	35.06	36.45	0	119
Opening	Multiple advising appointments	5,379	32.76	30.185	.412	31.95	33.56	3	119
	Total	24,319	37.89	32.722	.210	37.48	38.31	0	119
Spring Attempted	No advising appointments	11,168	8.355	3.7710	.0357	8.285	8.425	1.0	23.0
Credits	One advising appointment	7,779	9.284	3.6628	.0415	9.203	9.366	1.0	20.0
	Multiple advising appointments	5,380	9.779	3.5913	.0490	9.683	9.875	1.0	23.0
	Total	24,327	8.967	3.7443	.0240	8.920	9.014	1.0	23.0
Fall Earned	No advising appointments	18,351	6.20	4.336	.032	6.14	6.26	0	23
Credits	One advising appointment	9,711	7.54	4.422	.045	7.45	7.63	0	23
	Multiple advising appointments	6,278	7.79	4.464	.056	7.68	7.90	0	23
	Total	34,340	6.87	4.443	.024	6.82	6.92	0	23

metrics over multiple semesters would further corroborate the preliminary results. Additional statistical testing that controls for enrollment status, legal sex, and race when evaluating students' registration activity, attempted credits per term, and completed credits per term will also strengthen the analyses of those student success metrics against the frequency with which student's complete advising appointments.

Future research is also needed to evaluate and account for the personal motivation and grit of the population. These factors involve internal processes, individual experiences, and varying levels of perseverance and determination. Capturing and measuring these constructs in a quantitative manner may oversimplify their nature, potentially overlooking the important nuances and variations amongst the individuals being evaluated. Adequately measuring personal motivation and grit

through standard quantitative measures may be risky, as existing measures may not fully encapsulate the multidimensional aspects of the aforementioned constructs, resulting in incomplete or inaccurate findings. The authors recognize that highly individualistic circumstances, such as personal motivation and grit, medical situations, and financial hardships may impact the student success metrics. In absence of a longitudinal perspective that accounts for how these factors can fluctuate over time because of evolving circumstances and experiences, the quantitative research may continue to be limited in scope. The researchers recommend that future research incorporates qualitative research methods and encompasses a mixed-methods research approach to provide a more comprehensive, nuanced assessment of the student success metrics identified in

Table 11. One-Way Analysis of Variance Results for Student Success Metrics

		Sum of Squares	df	Mean Square	F	Sig.
Days from Spring	Between groups	352,787.276	2	176,393.638	166.994	<.001
Registration Opening	Within groups	25,684,643.129	24,316	1,056.286		
	Total	26,037,430.406	24,318			
Spring Attempted Credits	Between groups	8,515.459	2	4,257.729	311.454	<.001
	Within groups	332,521.016	24,324	13.670		
	Total	341,036.475	24,326			
Fall Earned Credits	Between groups	18,023.300	2	9,011.650	468.883	<.001
	Within groups	659,936.629	34,337	19.219		
	Total	677,959.929	34,339			

this study and their association with the frequency of completed advising appointments.

Finally, the researchers were not able to gather additional, clarifying data regarding the participants identified as "not persisting," and more specifically, the subset of that population who may have transferred to another higher education institution. Therefore, students may have "not persisted" according to this study; however, they may in fact have continued their education elsewhere. Additional research regarding student transfer rates would be required to illustrate this population appropriately in future related studies focused on persistence.

Conclusion

The findings of this quantitative research study. which indicate a strong association between the increased frequency of advising appointments and positive student success metric outcomes, can have significant implications for higher education practitioners. Administrators at community colleges who are interested in bolstering the success of their students should consider facilitating increased, consistent opportunities for their students to connect with academic advisors. Increasing the frequency with which students and advisors connect may provide community colleges with the ability to offer continuous mentorship and guidance to their students, especially those who may be experiencing academic or personal struggles, to increase the likelihood of success.

For example, if community colleges leverage early alert systems to identify students who may need additional guidance and support, administrators should consider developing a strategic campaign that invites those students to connect more frequently with academic advisors. A communication campaign—which may include direct outreach to those students by email, phone, and text messaging—should advertise the support and services offered through the academic advising office that would be most beneficial to the student. Additionally, collaborating with other institutional stakeholders to increase the usage of the early alert system may increase the reach of the communication campaign.

If institutional administrators consider increasing the frequency that students and academic advisors connect, they may need to evaluate their current academic advising resource allocations. With budgetary constrictions increasing across the higher education landscape, and institutions often facing more difficult decisions regarding campus support services, institutional administrators may need to make a more concerted effort with budgetary allocations for their academic advising services. The authors hope this research contributes to the ongoing discussions in higher education regarding academic advising services and their potential contributions to student success. Academic advisors at community colleges can play a crucial role in narrowing the learning divide for incoming and continuing students alike. By providing students with strategic guidance and linking them with valuable resources on and off campus, institutions can comprehensively enrich their students' educational journeys, which ultimately may foster higher levels of student persistence and academic achievement.

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