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EXPLORING PREDICTORS OF BEING ON-TRACK FOR COLLEGE STUDENTS



TABLE OF CONTENTS

- 01** Introduction
- 02** Background
- 03** Current Study
- 05** Method
- 06** Analytic Plan
- 06** Results
- 10** References

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INTRODUCTION

On-track research is an important framework guiding researchers and practitioners to understand how academic performance in the first year of college predicts graduation rates within 6 and 4 years (Farruggia et al., 2020b; Perez et al., 2020). This research importantly established the on-track index based on UIC students, and it contains four indicators for college graduation: student's GPA during the first term (2.4 or above), credits earned during the first year (22 or more), grade earned in the first year writing 160 course (C or better), and no unresolved financial holds in first term (Farruggia et al., 2020b). While this research establishes the thresholds of first-year students, additional research is needed to identify the predictors that contribute to students being on- or off-track in order to know how to prevent students from being off-track.

Educational researchers and practitioners typically rely on retention as a key milestone for college graduation (Farruggia & Perez, 2020).

This approach is problematic because among UIC students, 50% who do not graduate are not retained to the second year (Hayward, 2020). As such, additional predictors and metrics, and their predictors, which occur before first-to-second year retention are needed to increase the number of students that are on-track to graduate within 6 years. To begin addressing this gap, the on-track research was linked with previous research that focused on the student and family background, basic needs, financial concerns, noncognitive strengths, and early programming among UIC students (e.g., Farruggia et al., 2020c; Farruggia et al., 2020a; Farruggia et al., 2020d; Schwarze, Moss, & Farruggia, 2019). These data are collected before students transition to UIC and provide critical background information related to what they bring with them as challenges and assets. The data were collected with the intention to intervene and connect students with resources early on in their college careers. Through this report, we highlight disparities

across demographic groups, and this provides an opportunity to argue that on-track research should be used to further create equity interventions

during the first year of college to increase retention and graduation rates across racial/ethnic groups at UIC.



BACKGROUND

Student and Family Background

Previous research focusing on inequalities in higher education highlight student and family background characteristics such as race/ethnicity, first-generation in college, and Pell-eligibility. For example, Black and Latinx students, as well as low-income students and students whose parents have not attended college themselves, are less likely to go to college, and once there, they are less likely to complete college compared to their peers (Massey et al., 2003; Musu-Gillette et al., 2017; Posselt et al., 2012; Skomsvold et al., 2011). Additionally, across all racial/ethnic groups, 32% of adults have a bachelor's degree or higher;

however, for Black adults, the rate is 23%, and for Latinx adults, the rate is 16% (U.S. Census Bureau, 2019). Low-income, Black, Latinx, and first-generation college families are also the most impacted by constrained economic contexts, and they face increased barriers when attempting to access and utilize information that can aid in the process of paying for college (Holland 2017; Grodsky and Jones 2007; Avery and Kane 2004; Paulsen and John 2002; Perna 2006; St. John 2006). Together, these barriers related to student and family background began to affect students before matriculating at UIC and have implications for their continued success and retention.

Basic Needs

Recently, there has been growing awareness that college students may face various non-academic barriers that reduce retention and graduation rates (e.g., Bettinger, Boatman, & Long, 2013; Fowler & Boylan, 2010; Karp, 2011). Previous research labels these non-academic barriers as basic needs that students bring with them to the university (Farruggia et al., 2020a). The basic needs that have been identified at UIC are food and housing insecurities, undocumented student support, childcare needs, and student disability accommodations. Students who cannot reliably depend on having a place to sleep or having access to regular meals face the anxiety or barrier resulting from not adequately fulfilling basic needs of daily living (Broton & Goldrick-Rab, 2018). Further, students with childcare responsibilities, whether as parents or family members, may have difficulty attending classes, engaging with campus resources, or meeting financial obligations (Nelson, Froehner, & Gault, 2013; van Rhijn, 2014). In addition, students who are undocumented may be unaware of the range of resources on a college campus and within the community or may doubt they have access to these resources (Diaz-Strong, Gómez, Luna-Duarte, & Meiners, 2011; Pérez, Cortés, Ramos, & Coronado, 2010). Also, students who would benefit from disability accommodations may similarly not be aware of resources on a college campus or may not understand the process of self-identifying and securing these accommodations, even if they had received accommodations in some form at previous institutions (Marshak, Van Wieren, Ferrell, Swiss, & Dugan, 2010). Together, these different domains of basic needs

are critical to address by connecting students with resources in order to ensure continued academic success.

Financial Concerns

A substantial body of research has demonstrated that financial constraints are a key barrier to retention and graduation for college students (Tierney, Venegas, & De La Rosa, 2006; Baum & Ma, 2014), particularly for under-represented, low-income, and first-generation students (e.g., Musu-Gillette, de Brey, McFarland, Hussar, Sonnenberg, & Wilkinson-Flicker, 2017; Cox, 2016; Goldrick-Rab, 2006; Kim, 2004). At UIC, this growing national consensus has been corroborated through a number of findings such as in the 2013 study of non-returning first year students where first-year UIC students indicated that finances were a key reason for their early departure (Farruggia, 2015). Further, the financial constraints, commitments, and responsibilities students encountered adversely impacted academic, social, and family-related processes (Perez & Farruggia, 2021). Previous research identified five areas related to student financial concerns prior to starting at UIC: concern regarding family daily living expenses, textbooks and materials, college daily living expenses, transportation to and from college, and tuition and fees concerns (Farruggia et al., 2020c).

Noncognitive Assets

There has been growing interest among administrators in institutions of higher education to better understand the role that noncognitive assets play in students' success in college (e.g., Farruggia, et al., 2018; Pintrich, 2004). Noncognitive assets encompass a wide range of

skills, strategies, behaviors, and attitudes (Farrington et al., 2012). One framework put forth by Farrington et al. (2012) suggests that noncognitive assets consist of a number of conceptual categories including academic mindsets (e.g., sense of belonging, self-efficacy), learning strategies (e.g., time management, academic goal engagement), academic perseverance (e.g., grit), social skills (e.g., interpersonal skills), and academic behaviors (e.g., help-seeking). Beginning in 2013, UIC began assessing noncognitive assets among first-year students through self-reported surveys. As the evidence for the importance of noncognitive assets continued to accumulate (e.g., Crisp et al., 2015; Farruggia et al., 2018; Fong et al., 2017), the primary aim of the project also shifted to developing a system to assess incoming students' assets and provide a summary to advisors to help them better support students during the transition to the first year of college.

Early Programming

The transition to college is a critical moment where students can be vulnerable if support and structures are not provided. The ability to live on campus provides students with various social and academic benefits (Graham, Hurtado, & Gonyea, 2018). For example, previous research found that among Black students, those who live on campus have significantly higher GPAs than similar students at the same institution who lived off campus with family (López Turley & Wodtke, 2010). In addition to living on campus, participating in new student orientation and first-year seminars may also help promote retention and early academic success (Glass & Garrett, 1995; Schnell & Doetkott, 2003). The use of first-year seminars at UIC has been increasing, and seminars are now part of the first-year experience for nearly all incoming UIC first-year, full-time students starting with the Fall 2020 cohort. This implementation was supported by previous research linking seminar participation with increased retention (Schwarze, Moss, & Farruggia, 2019).

CURRENT STUDY

This study aimed to provide nuance and better understanding as to who are the students that are on- or off- track. In addition, this study aimed to identify predictors that contribute to being off-track and the extent to which student and

family background characteristics, basic needs, financial concerns, noncognitive assets, and early programming may increase the likelihood of students being on-track.

METHOD

Participants

Study participants come from both the 2018 (N= 4,159) and 2019 (N= 4,407) entering first-year student cohorts. For most of the data analyses, we relied upon the 2018 cohort because the spring semester for the 2019 cohort was interrupted by the Covid-19 pandemic (spring 2020). Many policies were temporarily changed, such as grading, to address pandemic-related student needs. This may have impacted on-track status, so we opted to use the 2018 cohort as we were more confident in its accuracy. However, the 2019

student cohort is specifically used to highlight the financial and basic needs concerns as these data were not collected prior to the 2019 cohort.

Table 1 shows demographic information for the students in this study. Over half of the students are from first-generation in college backgrounds (neither parent has a four-year college degree) and are Pell-grant eligible. Pell-grant eligible students are those who may receive a federal subsidy for post-secondary education, with the amount of aid depending on the student's financial need.

TABLE 1
Student Demographics (2018-2019 Cohorts)

Demographic	2018	2019	Total%
Female	2,285	2,420	55%
Male	1,874	1,987	45%
Asian American	848	962	21%
Black	354	345	8%
Latinx	1,660	1,818	41%
White	876	863	20%
Other	421	419	10%
First-generation in college	2,099	2,462	53%
Pell-Grant eligible	2,345	2,543	57%
Total Students	4,159	4,407	8,566

Measures

We utilized the on-track index that was previously developed for college students (Farruggia et al., 2020b). The four indicators included in the index are: first-term GPA (2.4 and above), credits earned during the first year (at least 22 credits), writing grade (first attempt and at least a C in the writing 160 course), and no unresolved financial holds during the first term. For a student to be considered on-track, they must meet the threshold

criteria for all four indicators.

Other measures included in the report were related to student's academic performance prior to matriculating to UIC (e.g., high school GPA). Student and family background measures were also used (e.g., race/ethnicity). The noncognitive strength measures (e.g., academic self-efficacy), as well as basic needs (disability accommodations) and financial concerns (e.g., paying for tuition) prematriculation survey items are also included

in this report. Lastly, measures surrounding the early college experiences (e.g., first year seminar participation) were used. For more details related to the measures, please see Table 1 in the appendix.

Procedures

Student, academic, demographic and background data were retrieved from the institutional data warehouse. The noncognitive assets student data, as well as the financial concerns and basic

needs data, all came from a prematriculation survey, completed at the time of placement testing before students started at UIC. The vast majority of entering first-year students in 2018 (87% of the cohort) and 2019 (93% of the cohort) completed the inventory. Apart from international students, there is little variation among student demographics as to who did and did not complete the inventory.

ANALYTIC PLAN

The analyses are presented in five sections. The first section provides basic information about the percentage of students who are on-track, as well as the percentage of students who met the various on-track indicators. Next, we examine on-track rates by student and family background factors that occurred prior to matriculation at UIC. The third section looks at noncognitive strengths of students and its relationship to being on- or off-track. The fourth section focuses on the financial concerns and basic needs of students and how they relate to students being on-track. The fifth and final section

considers student’s early college experiences and how it relates to the percentage of being on-track.

The predominant method utilized were crosstabulations to determine how on-track indicators, financial, and basic needs concerns were related to a student being on or off track by the end of their first year. Means and standard deviations were also calculated to examine differences on noncognitive strengths between students who were and were not on-track at the end of their first year.

RESULTS

Students Who are On-Track

The overall on-track rate among the 2018 cohort is 65%, meaning that 65% of students met all four indicators. (For the 2019 cohort, the on-track rate

is 69%.) Among the four indicators, first-term GPA and credits earned in the first year have lower rates of students that are on-track (Table 2).

TABLE 2
2018 Students On-Track by the Indicators

On-Track	First-Term GPA	Writing Class Grade	Credits Earned in the First Year	No/Resolved First-Term Financial Hold
65%	74%	93%	76%	92%

While the overall on-track rate is 65%, students who met any three indicators represented 15% of the

cohort (Table 3). As expected, few students met no indicators (2% of the cohort).

TABLE 3
2018 Students On-Track by the Indicators Met

On-Track: All 4 Indicators Met	3 Indicators Met	2 Indicators Met	1 Indicators Met	0 Indicators Met
65%	15%	9%	5%	2%

On-Track Rates Across Student and Family Background Factors

Table 4 demonstrates that there are important differences in the on-track rate across demographic characteristics. Achievement and equity gaps across race and ethnicity are also found for on-track. For example, Black and Latinx students have lower rates of being on-track relative to White and Asian students. On-track disparities in terms of first-generation in college and Pell-eligible also reflect disparities found in college graduation. Differences in on-track that are consistent with disparities in graduation demonstrates that the index is valid across different groups of students.

When looking at individual indicators that make-up first-year on-track, differences by race/ethnicity, gender, first-generation in college status, and Pell-eligibility follow expected patterns. However, the differences by race/ethnicity, similar to differences in graduation rates, seem to be larger than differences by other student demographics. For instance, Black and Latinx students have substantially lower percentages of being on-track for first-term GPA, credits earned in the first year and financial holds compared to their White and Asian American Peers; differences are typically 15%-20%. Writing class grade also has a gap, although not quite as large as the other three indicators.





TABLE 4
2018 Students On-Track by the Indicators Across Student Demographics

Demographic	On-Track	First-Term GPA	Writing Class Grade	Credits Earned in the First Year	No/Resolved First-Term Financial Hold
Race/Ethnicity					
Asian American	76%	82%	96%	86%	97%
Black	52%	64%	90%	64%	80%
Latinx	57%	67%	91%	69%	90%
White	74%	83%	97%	82%	96%
Gender					
Female	68%	77%	94%	78%	93%
Male	62%	71%	93%	74%	92%
First-Generation in College					
First-Generation	61%	70%	92%	72%	90%
Continuing-Generation	69%	78%	95%	79%	95%
Pell-Eligible					
Pell-Eligible	62%	70%	92%	73%	91%
Non-Pell-Eligible	70%	80%	95%	80%	95%
All Students	65%	74%	93%	76%	92%

We also looked at how many of the on-track indicators were met (Table 5). It is likely that off-track students who met 3 of 4 indicators would be more likely to recover than those who met

no indicators. For all subgroups of students who were off-track (did not meet all four indicators), the largest proportion had met three indicators. One difference to note among subgroups is that Black and Latinx had larger proportions of zero

TABLE 5**2018 Students On-Track by the Indicators Met Across Student Demographics**

Demographic	On-Track: All 4 Indicators Met	3 Indicators Met	2 Indicators Met	1 Indicators Met	0 Indicators Met
Race/Ethnicity					
Asian American	76%	13%	6%	3%	0.2%
Black	52%	15%	14%	9%	5%
Latinx	57%	17%	12%	7%	4%
White	74%	15%	7%	2%	1%
Gender					
Female	68%	15%	9%	5%	2%
Male	62%	16%	10%	6%	3%
First-Generation in College					
First-Generation	61%	15%	10%	6%	3%
Continuing-Generation	69%	16%	8%	4%	1%
Pell-Eligible					
Pell-Eligible	62%	15%	11%	6%	3%
Non-Pell-Eligible	70%	16%	7%	4%	1%
All Students	65%	15%	9%	5%	2%

indicators met compared to other groups. Next, differences in pre-college family financial indicators by on-track status were examined for the 2018 Cohort. Table 6 indicates those students that are on-track by the end of their first year have lower amounts of unmet need and higher amounts of expected family contribution (EFC)

relative to all students and the off-track subset. Postsecondary institutions use a student's EFC to determine a family's financial need and it is calculated by subtracting the EFC from an institution's cost of attendance for one year, which includes tuition.

TABLE 6**2018 Students and Comparison of On- and Off-Track Rates Across Family Financial Background**

	All Students	On-Track	Off-Track
Unmet Need	\$7,215 (\$6,520)	\$6,851 (\$6,507)	\$7,913 (\$6,483)
Expected Family Contribution (EFC)	\$11,487 (\$29,721)	\$12,938 (\$29,285)	\$8,825 (\$30,536)

Note. Means and standard deviations reported.



Table 7 provides academic preparation information and demonstrates differences between on- and off-track students. For example, on-track students have higher high school GPAs, combined ACT scores, AP credits earned, and lower rates of

being placed in English and Math developmental courses. Together, these tables demonstrate that there is a consistent pattern of associations between academic preparation for college and being on-track.

TABLE 7
2018 Students and Comparison of On- and Off-Track Rates Across Academic Preparation

	All Students	On-Track	Off-Track
High School GPA	3.35 (.38)	3.44 (.37)	3.18 (.34)
ACT-Composite	23.36 (4.24)	24.10 (4.31)	21.99 (3.74)
AP Credits Earned	14.88 (13.30)	16.51 (14.07)	9.54 (8.49)
English Developmental Placement	13%	9%	22%
Math Developmental Placement	28%	21%	40%

**On-Track Rates Across Students’
Noncognitive Assets**

We also examined the relationships between noncognitive strengths and on-track status. Relative to students that are off-track, students that are on-track have higher mean scores for sense of belonging, time management, academic motivation, academic goal engagement, academic self-efficacy, perception of academic readiness,

help-seeking, growth mindset, and family-school balance. These differences are statistically significant (all p’s > .05). These differences are important because students with lower levels of noncognitive strengths should be connected to advisors and resources during the transition to UIC to ensure that they are on a path to being on-track by the end of their first year.

TABLE 8

2018 Students and Comparison of On- and Off-Track Rates Across Noncognitive Assets

	On-Track	
	On	Off
Academic Goal Engagement	4.39*** (.61)	4.24 (.67)
Academic Motivation	3.87*** (.56)	3.75 (.57)
Academic Self-Efficacy	3.24*** (.77)	3.09 (.77)
Belonging Certainty	3.19 (.95)	3.15 (.98)
Family-School Balance	3.22* (.59)	3.17 (.59)
Growth Mindset	3.32* (.62)	3.28 (.65)
Help-Seeking	3.35** (.53)	3.30 (.57)
Managing Stress	3.55 (.79)	3.60 (.80)
Perception of Academic Readiness	2.89** (.47)	2.84 (.46)
Sense of Belonging	3.07*** (.64)	2.93 (.65)
Time Management	2.39*** (.71)	2.26 (.69)

Note. Means and standard deviations reported. For all noncognitive strengths, independent-samples t-test were conducted. *** $p < .001$. ** $p < .01$. * $p < .05$.

On-track Rates Across Student’s Basic Needs and Financial Concerns

Next, basic needs and financial concerns were assessed for differences in on-track status (Table 9). As these are assessed prematriculation, they can serve to identify students who would benefit from support early on in college. Among the 2019 cohort, there were differences in on-track rates for those who did and did not request support. In all areas, on-track rates were lower for those who did ask for a referral. Students with referral requests to the disability resource center had the

lowest rate of being on-track (59%) compared to those who did not make a request (72%). Other domains smaller, but present differences. This is important as this is a referral system, meaning all of the students who request additional support are contacted by the appropriate offices. Despite the current support provided, more may be necessary. The on-track differences across the basic needs domains also demonstrate that students come to UIC with important intersectional identities and barriers that require additional resources and attention from university staff and faculty.



TABLE 9

2019 Students' On-Track Rates With and Without Basic-Need Requests

	Percent On-Track
Disability Resource Center	
Yes, request made	59%
No, request not made	72%
Undocumented Student Support	
Yes, request made	61%
No, request not made	70%
Child Care	
Yes, request made	64%
No, request not made	70%
Food Insecurities	
Yes, request made	67%
No, request not made	71%
Housing Insecurities	
Yes, request made	67%
No, request not made	71%
Total	69%

Note: The overall on-track percentage is higher because it is based on the 2019 cohort and not 2018. The “yes” and “no” responses correspond to whether or not the student made a basic need request and does not indicate if they are on or off track.

A similar pattern arose for students with increased college financial concerns having lower rates of being on-track (Table 10). The on-track percentage corresponds to the proportion of students who responded “yes”, “somewhat”, or “no” to each concern being present. While many students receive need-based financial aid, it appears to not be enough to assuage the financial concerns of students, which in turn impacted their success in the first-year of college. For instance, when looking at family expenses generally, 75% of students who indicated that their families had financial resources to meet daily living expenses were on-track, whereas only 66% of students were on-track

among those who indicated that their families did not have enough money to meet daily living expenses. Across the college-related financial concerns areas, the largest gap was for textbooks and materials costs where students who were concerned about their ability to pay for textbooks and materials had an on-track rate of 67% compared to students who were not concerned who had an on-track rate of 75%.

TABLE 10

2019 Students' On-Track Rates Across Levels of Financial Concerns

	Percent On-Track
Family Daily Living Expenses Met	
Yes met	75%
Somewhat met	64%
Not met	66%
Textbooks and Materials Concerns	
Yes, a concern	67%
Somewhat a concern	70%
Not a concern	75%
College Daily Living Expenses Concerns	
Yes, a concern	68%
Somewhat a concern	70%
Not a concern	73%
Transportation Concerns	
Yes, a concern	67%
Somewhat a concern	70%
Not a concern	72%
Tuition and Fees Concerns	
Yes, a concern	68%
Somewhat a concern	71%
Not a concern	75%
Total	69%

Note: The overall on-track percentage is higher because it is based on the 2019 cohort and not 2018. The “yes” and “no” responses correspond to whether or not the student made a basic need request and does not indicate if they are on or off track.

On-Track Rates Across Student’s Early College Experiences

Finally, early college experiences were examined for differences in on-track rates. These are all considered high-impact practices and serve to enhance the college experience, as well as promote success in college. Table 11 provides information for the 2018 cohort. Specifically, students who lived in on-campus housing during their first year were on-track (71%) at higher rates than those who lived off-campus/at home (62%).

While incoming students are required to attend orientation, when students complete orientation, it may serve to identify those at-risk for not being on-track. Specifically, differences in the on-track rate by the month students attended orientation are noted. Students who attended early (in June) have higher on-track rates (72%) compared to students who attend in later summer months (49%) or not at all (61%).

Another high-impact practice are first-year seminars. While not mandatory for all students, comparisons were made between those who successfully completed a seminar (took and passed the course), unsuccessful in their seminar course (took the course, but did not pass it) and those who did not take a first-year seminar course. Students who successfully complete a first-year seminar have higher on-track rates compared to those who were unsuccessful or never took a seminar. It is noteworthy that unsuccessful students have an on-track rate of 21%. Intervention for unsuccessful students is essential as the likelihood of being on-track and graduating from college is quite low.

Together, these analyses provides additional evidence for the importance of early college programming. They highlight both the benefit, as well as a means to identify vulnerable students

if engagement is not possible. Oftentimes, students with increased financial concerns avoid on-campus housing because it is too costly. If students are not able to live in housing, then additional support should be available to ensure early college success. Likewise, attending orientation late, or not at all, should trigger an early alert with their advisors as well as first-semester support to make sure they have the tools needed to be successful. Early alerts are generated across courses that student's may be struggling with during the semester as a way to intervene early so that the student successfully completes the course. Remedying these gaps early-on will help increase the on-track rates across race/ ethnicity, first-generation in college, and Pell eligibility.

Conclusion and Next Steps

This study demonstrated how critical it is to link the on-track indicator with additional predictors related to how students experience basic needs, financial concerns, and noncognitive strengths in the transition to UIC. This study will help inform educational practitioners and college advisors as they intervene before students are not retained between their first and second year. Connecting students to resource centers that can help with their relevant basic needs concerns, the financial aid office, as well as alerting advisors of student's noncognitive assets will help mitigate the disparities across demographics in who is on-track by the end of their first year at UIC. Together, this research can contribute to increasing retention and graduation rates across all race/ ethnic groups.

To build on the results of this study, current research is focusing on what predictors contribute to students who did and did not recover from going off-track during their first year at UIC.

TABLE 11
2018 Students' On-Track Rates Across Early College Experiences

	Percent On-Track
Lived in On-Campus Housing	
On campus	71%
Off campus	62%
Orientation Attendance Month	
June	72%
July	59%
August	49%
Never	61%
First-Year Seminars	
Successful	74%
No Seminar	61%
Unsuccessful	21%
All Students	65%

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APPENDIX

Table 1. Measures included in the report:

Student and Family Background

- Race/ ethnicity
- Gender
- First-generation in college
- Pell-eligibility
- Unmet need
- Expected family contribution

Prematriculation Academic Performance

- High School GPA
- ACT composite score
- AP credits earned
- English developmental placement
- Math developmental placement

First-year On-Track

- First term GPA
- Credits earned during the first year
- Writing course grade
- Financial hold during the first term

Noncognitive Strengths

- Sense of belonging
- Time management
- Academic motivation
- Academic goal engagement
- Belonging certainty
- Managing stress
- Academic self-efficacy
- Perception of academic readiness
- Help-seeking
- Family-school balance

Basic Needs

- Disability accommodation
- Undocumented student support
- Childcare
- Food insecurities
- Housing insecurities

Financial Concerns

- Family daily living expenses
- Textbooks and materials
- College daily living expenses
- Transportation to and from college
- Tuition and fees

Early College Experiences

- Living in on-campus housing
- Orientation attendance and the associated timing
- Participation in first-year seminars