

An Exploration of College and Career Alignment for Community College Students

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**Abstract**

This study employed the career capital framework (DeFillippi & Arthur, 1994; Inkson & Arthur, 2001) and the associated three ways of knowing adapted for community colleges: *knowing why* (aspirations), *knowing how* (knowledge and skills), and *knowing whom* (sources of information). The authors constructed an index to measure the alignment of community college students' experiences and careers. Using survey data captured at seven institutions in three states, the authors identified career capital-related predictors of such alignment. Attending for professional advancement, career program enrollment, student aid and work considerations, and community social networks were among the significant predictors.

## An Exploration of College and Career Alignment for Community College Students

### **Introduction**

Community colleges enroll 40% of first-time college students and 41% of U.S. undergraduates with more than 60% of students concurrently in the workforce (American Association of Community Colleges, 2017). Considering that 99% of new jobs since the Great Recession are filled with those who have at least some college education (Carnevale, Jayasundera, & Gulish, 2016), community colleges may be framed as engines of state and national economic competitiveness by providing access to higher education, specially by serving disproportionate numbers of African American, Latinx, and low-income students (González Canché, 2018) through the acquisition of certificates. However, it is also true that a significant proportion of community college students struggle to earn two-year degrees or transfer to four-year institutions in a timely fashion (Ifill et al., 2016). Moreover, when compared to their four-year native counterparts, community college students have consistently been found to be less likely to earn a four-year degree (González Canché, 2018).

Considering the sector's prevalence in terms of enrollment and the diverse populations served, the alignment between community college students' higher education and career pursuits combined with the context of their local labor-market has implications for both individuals and the local economies in which the colleges are situated. This alignment is what Reyes, Dache-Gerbino, González Canché, Rios-Aguilar, and Deil-Amen (forthcoming) have described as the *geography of opportunity* in community colleges. This connection is also prominent in the recent discussions of "guided pathways" (Bailey, Jaggars, & Jenkins, 2015), "metamajors" (Bailey et al., 2015), and "career communities" (Jenkins, Lahr, & Fink, 2017), and the subsequent reforms that offer students a certain structure, a narrow set of more cohesive curricular options, and guidance through both curricula and academic/career advising that leads them toward degree

completion and goal attainment. From this perspective, it is clear that many of today's reforms in the public two-year sector aim to better connect students' academic achievement and goals with careers and jobs.

The fundamental idea behind these "alignment-based" reforms is for colleges to re-orient their services and programs to offer students the opportunity to increase the coherence between their educational goals and their desired careers. What these efforts still lack is a more comprehensive understanding of the factors that predict alignment between academic experiences and careers and jobs. Following this rationale, the purpose of this study is to offer an analysis of the predictors of alignment between community college and careers by not only considering student-level indicators, but by also considering local financial conditions, such as unemployment levels, mean household incomes, and poverty-levels of the counties wherein the community colleges are located.

We contend that this purpose is timely and relevant as greater understanding is needed regarding the connections between the choices students make at community colleges and their career goals (D'Amico, Rios-Aguilar, Salas, & González Canché, 2012; D'Amico, Salas, González Canché, Rios-Aguilar, & Rutherford, 2017) as well as helping to improve community college student choices to realize the economic value of their degrees (Stuart, Rios-Aguilar, & Deil-Amen, 2014). It is expected that findings from this paper will help colleges by informing their efforts, and especially, by generating discussions among faculty, administrators, and staff who are leading and implementing programs. Specifically, we provide an innovative measure of the alignment between students' goals and future careers that can be used to explore ways in which colleges need to tailor their services and supports.

### **Theoretical Framework**

This multi-site inquiry was grounded in the notion that leveraging the two-year college as a gateway to the workforce requires more than technical skill, content area knowledge, or simple degree attainment. Rather, as we have argued in a series of theorizations about the relationship between academic and career choices in two-year college contexts (D’Amico et al., 2012; D’Amico et al., 2017; González Canché, D’Amico, Rios-Aguilar, & Salas, 2014), boundary-less careers involve dynamic “ways of knowing” (DeFillippi & Arthur, 1994) that become relevant the moment an individual enrolls in a two-year college. In other words, after the choice of a two-year college, more choices follow—and individuals make those choices based on a combination of ways of knowing. Our theoretical framework for thinking about the choices community college students make, the knowledge base from which those choices are generated, and the alignment with what they hope to achieve was framed in a conceptualization of *career capital* (DeFillippi & Arthur, 1994; Inkson & Arthur, 2001), or the understanding of what is needed to develop a career, along with the framework’s three interdependent competencies for career development. *knowing why*, *knowing how*, and *knowing whom*.

Knowing why involves one’s motivation and purpose, knowing how is related to the skills and knowledge one gains during a career, and knowing whom includes relationships, personal and professional networks, and people-driven sources of information accumulated during a career (Inkson & Arthur, 2001). While we relate each with the community college setting, the career capital framework has been shown relevant for other educational settings, including graduate education (Sturges, Simpson, & Altman, 2003), college-level science (Duberley, Cohen, & Leeson, 2007), International Baccalaureate education (Suutari & Smale, 2008), mentoring (Singh, Ragins, & Tharenou, 2009), continuing/further education (Harris & Ramos, 2013), and higher education administrative careers (Smith, 2014).

In the present study, as in our previous work (D'Amico et al., 2012; D'Amico et al., 2017; González Canché et al., 2014), we adapted these three domains of the career capital framework to the community college setting. While we recognize that the compartmentalization of ways of knowing is at times difficult given the fluidity of knowledge construction and the interdependence among them, we have found the distinction of knowing why, how, and whom a generative heuristic. Moreover, we argue that this theoretical framework is particularly useful for better understanding the factors associated with an improved alignment between community college students' academic and professional goals. In the following section we present a literature review around knowing why, how, and whom.

### **Review of Literature: Ways of Knowing**

#### **Aspirations and Purpose (Knowing Why)**

Considering the career capital framework, the first element (knowing why) is a critical piece of choice making in that it defines an individual's purpose and aspirations. In the case of entering community college students, the typical way of considering purpose is educational aspirations and their relationship to careers. For example, Hoachlander, Sikora, and Horn (2003) found that, for those entering higher education through the community college, nearly half expected to earn an associate's degree, 25% sought transfer, approximately 15% did not seek a credential, and just over 10% expected a career-focused certificate. These figures, while conveying more immediate goals, do not tell the whole story, since approximately 81% of entering community college students at some point hope to earn at least a baccalaureate degree (Horn & Skomsvold, 2011).<sup>1</sup> Degree aspirations, however, only provide one element of the different expectations that may have motivated community college selection in the first place,

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<sup>1</sup> To reach 81%, one must add the two right-most columns in Table 1-A of Horn and Skomsvold (2011): 37.3% intend to earn a bachelor's degree and 44.1% intend to earn above a bachelor's degree totaling 81.4%.

which is especially true for career-focused community college students. Specifically, marginalized groups, including first-generation college students (Nomi, 2005), rural students (Tieken, 2016), and African American males (Wood & Harrison, 2014), show greater likelihood of attending community college with the explicit expectation to advancing their careers rather than transferring to a four-year institution, or to attaining a four-year degree.

Aspirations are not always constant, however. While several studies show that aspirations held steady in college (Conway, 2010; Nielsen, 2015; Voorhees & Zhou, 2000), others found some lowering of aspirations (Driscoll, 2007) or raising of aspirations (Leigh & Gill, 2004). In certain cases, evolving aspirations are related to a focus on careers. Conway (2010) found that those who lower aspirations shift from transfer to career programs; Nielsen (2015) determined that women's aspirations held partially due to career focus; and Kujawa (2013) showed that aspirations might be enhanced with greater options for career-focused students such as articulation from an Associate of Applied Science to an applied baccalaureate degree.

Having purpose is also associated with outcomes, as those with higher levels of intended education have been found more likely to persist or earn a credential (Bailey, Jenkins, & Leinbach, 2007; Bers & Smith, 1991). There are also labor market implications. Xu, Jaggars, and Fletcher (2016) showed that, while those who begin their education at a two-year college are less likely to earn a four-year degree, they do not experience significantly lower earnings in the years immediately following college, which is perhaps good news for career-focused community college students.

Finally, aspirations and their connection with college choice (Flint, 1992; Hearn, 1991; Kurlaender, 2006) help to bridge the gap between two elements of the career capital framework (knowing why and knowing how), further emphasizing the interdependence between ways of

knowing. As depicted next, in our conceptualization of career capital adapted for the community college setting, knowing how refers to the college and program choice, as well as navigating college financially.

### **Knowledge and Skills for College and Career (Knowing How)**

**College choice.** As Inkson and Arthur (2001) showed, individuals need to know how to acquire the content knowledge and navigation skills needed for careers. In the community college setting, this can be seen by students choosing an institution and a specific program to acquire skills to match their aspirations and purpose. In the higher education literature, this is discussed around the topic of college choice, which shows that considerations vary by student subpopulation and relevant drivers. Predominant choice models from the literature (e.g., Hossler & Gallagher, 1987) may be more relevant for the traditional aged college students exploring multiple enrollment options following high school. Many community college students may not see abundant options for college (Lendy, 2009). There is a specific base of college choice literature especially relevant to community colleges. One model is Somers et al. (2006) discussion of key influences on community college enrollment choices, which involve student support, financial aid, programs, access, location, student aspirations, and encouragement from friends and family.

Career-related decision-making is another theme in community college choice literature as Absher and Crawford (1996) and Kitchens (1988) found academic program choice among top reasons for community college student enrollment; Santos (2004) determined that a particular degree program was the top reason for Latinx community college students; and Joshi, Beck, and Nsiah (2009) learned that those who work greater numbers of hours were more likely to pursue the community college path. The recent literature on “guided pathways” (Bailey et al., 2015) incorporates choice elements around curriculum and careers by promoting more defined



curriculum maps based on structured programs that reduce course-taking choices and lead students down paths to completion and employment.

While program and career choices are important for community college students of all ages, there may be particular relevance for adults and those who delay entry to college. Horn, Cataldi, and Sikora (2005) found that those who delay enrollment following high school are more likely to attend a community college; whereas, those who enter immediately following high school are more likely to attend a four-year institution. Additionally, adults returning to college may be motivated by a personal or work-related event (Bers & Smith, 1987), the quest for a desirable career (Rosenbaum, Ahearn, & Rosenbaum, 2016), or a return to the workforce from military service, the corrections system, or significant time away from work and the need to reacquire skills (Pierce, 2017-2108). In each case, older students may select community college due to relevance, convenience, and affordability.

For many students, pursuing their education in a community college is about seeking a higher income (Valadez, 1993), and some may pursue community college due to shorter-term credentials and consideration for financial concerns (St. John, Paulsen, & Carter, 2005). Harlow and Bowman (2016) found greater maturity about career decisions from community college students than those seeking baccalaureates perhaps due to their more immediate focus on jobs.

**Financial knowhow.** Each of these considerations about college directly connects with another key piece of the career capital framework adapted for community college students—the *knowhow* to navigate college, especially through the financial challenges. While the knowing how domain includes choosing community college programs to acquire the technical skills needed to advance in a career, the other important skills include being able to navigate organizations and processes in order to be successful. This is the case for college students meeting financial demands, since college cost is a primary determinant in the choice to attend a

community college (Iloh & Tierney, 2014; Laanan, 2003) and particularly relevant for specific subgroups such as first-generation college students (Nomi, 2005), African American students (Baber, 2014; St. John, Paulsen, & Carter, 2005), Asian Pacific American students (Wang, Chang, & Lew, 2009), and Latinx students (O'Connor, Hammack, & Scott, 2010).

Knowing that financial literacy is important for collegegoers (Harnisch, 2010; Kezar & Yang, 2010; Starobin, Hagedorn, Purnamasari, & Chen, 2013), many community college students struggle when balancing work and navigating financial aid processes. This can be especially challenging for minoritized and marginalized student groups, such as the first-generation population (Nomi, 2005), and it is essential to create mechanisms for students to gain greater awareness about options to fund their education. Bouse and Hossler (1991) indicated that admission and financial aid offices need to place pertinent postsecondary education cost information into students' hands no later than the tenth or eleventh grade; however, one of the barriers may be the lack of knowledge about college finances until just before enrollment. Kelchen and Goldrick-Rab (2015) determined that an initiative like an early commitment Pell Grant would help families understand college finances by notifying them of Pell status in the 8th grade rather than 12th. There is an important role for parents (Somers, Cofer, & VanderPutten, 2002), high school and college counselors (LaManque, 2009), and other "non-parent family and community members" (Mwangi, 2015, p. 145) in helping to build the financial knowhow necessary for entering and persisting in college. Additionally, older students and those who are independent from their parents may not have the encouragement or support to apply for financial aid, and this population has been shown to be less likely to complete the Free Application for Federal Student Aid (Kofoed, 2017). Thus, financial knowhow may be a particular challenge for community college students who are more likely to be first-generation, low-income, older, and students of color.

One important aspect seen by the literature related to college choice and financial knowhow is the gathering of information. The following section addresses the final piece of the career capital framework, knowing whom, and the relevant sources of information about college and careers for community college students.

### **Sources of Information (Knowing Whom)**

A key premise of our conceptualization of career capital for community colleges is that institutional and program area choice is intertwined with potential careers. While the choice process for community college students is discussed as a part of knowing how in the previous section, the sources of information that enlighten college and career decisions are aligned with the knowing whom domain, which we operationalize as sources of information for college students.

Previous literature explores sources of information about higher education choices (Absher & Crawford, 1996; González Canché et al., 2014; Bers, 2005; Bers & Galowich, 2003; Nomi, 2005; Santos 2004; Somers et al., 2002; Tucciarone, 2007, 2008; Zastrow, 2007) to include family, friends, high school and college teachers and counselors, employers, college recruiting materials, websites, advertisements, and other media portrayals of higher education. More recent discussions of engagement are related to the development of professionally-relevant social capital while in college (Rios-Aguilar & Deil-Amen, 2012) and specifically in the online social network environment (Evans, McFarland, Rios-Aguilar, & Deil-Amen, 2016).

An additional element is the importance of working with individuals, such as college counselors, advisors, and faculty, especially for students who do not have family networks with a postsecondary background (Baber, 2014; Bragg & Krismer, 2016; Nomi, 2005; Somers et al., 2002). This is largely true around the career component of advising that can be included in a class setting (Goomas, 2012), as an important part of community college advising overall

(O'Banion, 2012), delivered through in-person or technology-based delivery through career services offices (Strusowski, 2013), or obtained through experience in a specific program and through completed courses (Parks, Rich, & Getch, 2012). Karp (2013) also offers key principles for working with students on their career decisions. Among the recommendations is the integration of career and academic advising, as the two are intertwined for the career-focused community college student. This integration is also reflected in the guided pathways model, which emphasizes the need for an "intake processes" that helps entering students identify their higher education and career goals (Bailey et al., 2015). Thus, it is a combination of whom one knows (sources of information) and what one knows (knowledge and skills).

What seems apparent from the review of literature related to each of the three ways of knowing in the career capital framework (knowing why, knowing how, knowing whom) is that community college student aspirations and purpose, college and program choices, and sources of information about college and career converge around concept of career capital acquisition. The following sections describe our study to measure the alignment that students in community colleges experience between college and career and the predictors of that alignment associated with career capital.

## **Method**

### **Research Questions**

Employing variables associated with the career capital framework reconceptualized for the community college setting and devising a measure for the alignment students experience between their social and academic experiences in community college and careers, the authors used the following research questions to guide the present study:

1. What factors related to community college students' experiences associated with the career capital framework (knowing why, knowing how, knowing whom) best predict community college-career alignment?
2. What additional factors, including demographics, academic background, academic performance, and local service area market conditions, best predict community college-career alignment?

### **Instrument**

The instrument used in this study was the *College and Career Capital Survey*, first employed and validated during the pilot study (D'Amico et al., 2012) and later revised through the correction of items and shortening of the instrument to reduce completion time. Survey items were constructed around six main categories: (1) college and career aspirations (knowing why), (2) college choices to acquire career knowledge and the knowhow to navigate college financially (knowing how), (3) sources of information about careers (knowing whom), (4) academic preparation and achievement, (5) demographics and personal/professional experience, and (6) a series of items related to the alignment of community colleges and careers.

### **Sample**

A total of 1,308 students enrolled at seven southeastern community colleges in three states participated in the in-class survey, and 1,230 complete records were used for the analysis. The non-random sample targeted at least 10 class sections at each institution. To ensure a mix of college transfer and career program students, a minimum of the following class sections was surveyed at each institution: three first-semester college-level English, three developmental English, two from career programs, and two college transfer courses in disciplines other than English. The institutions surveyed represented Hardy and Katsinas' (2006) former Carnegie Basic Classifications (two urban, two suburban, and three rural). This large and unique multi-

institution, multi-state sample was captured with support gained through partnerships with and the vision of community college leaders at the participating colleges.

Among the many descriptors of the sample, 61% were female, 64% were White, the mean age was 25, 65% were employed, 8% had served in the military, 52% received Pell Grants, 46% intended to transfer to a four-year institution, 23% responded that their current job was aligned with desired careers, and 90% indicated that their academic program was aligned with their desired career. Overall, the distributions of descriptors are within student population ranges at the seven participating institutions when comparing with data from the College Scorecard ([collegescorecard.ed.gov](http://collegescorecard.ed.gov)) and institutional reports. For instance, the range of female representation among the colleges was 58%-65%, compared with 61% in the sample; the range of average ages was 23-29, compared with 25 in the sample; and the Pell recipient percentage range was 41%-59%, compared with 52% in the sample. The ethnicity range is a wider with 42%-70% White enrollment; however, one institution had a White population of 42% and the range for the remaining six was 59%-70%, compared with 64% for the entire sample. Based on a summary of the seven participating colleges, the sample seems to be representative of the institutions under study.

### **Data Analysis**

The data were analyzed in three stages. The first leveraged descriptive statistics to characterize the sample. The second included the generation of a proxy for understanding the alignment between community college and careers, which we call the College and Career Alignment Index (CCAI). The purpose of the index is to provide a multifaceted measure for understanding the connections between a community college student's academic journey and their career experiences and plans. This is important for two primary reasons. The literature on community college students' expectations and attainment of goals has consistently emphasized

the importance of a career focus (e.g., Stuart et al., 2014), and the use of this index will enable the identification of predictor variables that can explain the academic and career alignment.

While it may be convenient to assume that an individual will select a major or program of study in a purposeful way, we sought to achieve greater complexity by exploring multiple ways in which a community college student might be pursuing higher education aligned with current or future careers.

With these purposes in mind, it was important to recognize the diversity of experiences among community college students in terms of educational and professional backgrounds in both the survey and the index. From this view, considering that students in community colleges bring myriad experiences, resources, motives, and abilities, our survey was designed following a non-deficit approach. This approach allowed us to document the perceptions of students regarding their decision to attend a community college including their individual education aspirations along their targeted employment. The survey also enabled gaining a better understanding of their social networks, such as sources of information regarding academic and career prospects, as well as their perceived understanding of their local labor markets. This latter point is central in our survey given that for many students the community college experience has direct and almost immediate career-motivated purposes that are shaped by local contexts. Another example of the ways in which our survey is uniquely situated to understand community college experiences is our overt emphasis on understanding the manners in which they use Pell grant support. This notion is a marked departure of the literature that simply assumes that this federal support is used for education-related expenses. In reality, the complexities surrounding low-income students makes them be creative with regard to the use of grant support that goes outside the academic world and considers their real-life expenses. In sum, we are confident that our survey gets us closer to comprehensively capturing community college students' experiences.

The following elements of the survey were selected and used to construct the CCAI (a more detailed description of the formula used to construct the index is included in the Results section):

- Alignment between academic program and intended career field using 16 Career Clusters,
- Alignment between academic program and current employment using 16 Career Clusters,
- Alignment between current employment and intended career field using 16 Career Clusters,
- Perceived alignment between current and intended career field,
- Perceived alignment between academic program and intended career field,
- Current or previous employment in intended career field,
- Participation or intent to participate in work-based learning while attending community college,
- Perception of local jobs available in intended career fields after graduation.

When assembling the first three items in the index, we used the 16 Career Clusters, which include Agriculture, Food, and Natural Resources; Architecture and Construction; Arts, A/V Technology and Communications; Business, Management and Administration; Education and Training; Finance; Government and Public Administration; Health Science; Hospitality and Tourism; Human Services; Information Technology; Law, Public Safety, Corrections, and Security; Manufacturing; Marketing; Science, Technology, Engineering, and Mathematics; and, Transportation, Distribution, and Logistics (Advance CTE, n.d.). On the survey, students indicated which cluster was associated with their major or intended major (to account for future transfer students), the career area of current employment (if employed), and the career area in



which students want to work in the future. A student was considered to have alignment if they indicated the same Career Cluster for any two items (program-intended career, program-current career, current employment-future employment).

The third and final stage of data analysis employed regression with school-level, institutional, and market fixed effects.<sup>2</sup> The regressors in the models were selected to account for the following: the three elements of the career capital framework, aspirations and purpose (knowing why), knowledge and skills related to community college attendance choice, program enrollment, and navigating college (knowing how), and sources of information about careers (knowing whom); academic preparation and achievement; demographics/personal; and labor market variables related to each college's local service area, which were added to capture characteristics at the local-level that might potentially be influencing community college students' college and career alignment. The labor market variables include: labor force unemployment, percent resident population 65+, private nonfarm establishments, federal expenditures, median household income, people in poverty, Social Security recipients, and number of veterans.<sup>3</sup> Figure 1 provides the full list of independent variables.

Several variables were constructed using factor analyses with varimax rotation to validate the scales in this study. The three social network scales have high levels of reliability as measured by the Cronbach's alpha: (1) community social network (social network websites, employer, community group/church;  $\alpha = .81$ ), (2) family/friend social network (family member, friend, classmate;  $\alpha = .77$ ), and (3) college network (college counselor/advisor, college

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<sup>2</sup> We relied on fixed effects given our main purpose of accounting for most variation between higher level units from the parameter estimation. We refrained from employing multilevel models not only due to their strong assumptions (e.g., students' random allocation within community colleges and in three states) but also and perhaps more importantly because we did not aim to model for variation taking place at such higher levels, but rather analyze whether a more general trend might be observed, after accounting for variation between higher levels.

<sup>3</sup> We relied on five-year estimates at the county-level provided the American Community Survey. We identified these estimates and then merged them with the seven community colleges using the indicator COUNTYCD provided by IPEDS at the institution-level, under its UNITID or institution ID.

admissions/recruiting representative, official web pages, recruitment materials from specific colleges;  $\alpha = .91$ ). Factors measuring students' motives for community college enrollment included: (1) professional advancement reasons ( $\alpha = .78$ ) and (2) convenience (closeness from home/work, affordable;  $\alpha = .73$ ). Finally, uses of Pell Grants were measured by the following factors: (1) Pell for life expenses (using Pell to pay rent, bills, food, and transportation;  $\alpha = .77$ ), Pell for educational expenses (tuition, books, computer;  $\alpha = .71$ ), and Pell for other uses (phone, clothing, recreation, loans;  $\alpha = .72$ ). Statistical controls accounted for academic and demographic/background variables and institution fixed effects. The authors acknowledge the possible bias they may result from social desirability when responding to the survey (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

### **Results**

The descriptive analysis describes the various ways in which college and careers align for community college students. For example, students had high perceived levels of alignment between current community college program and future career. This alignment was far greater than connections between current jobs and future careers. Participants were optimistic about the potential for local jobs following graduation, and nearly two-thirds planned to participate in work-based learning prior to leaving community college. Many students did not plan on community college being the final stop on their educational journeys, since 46% planned to transfer to a university, which was somewhat aligned with program enrollment, since just over half were enrolled in a transfer program. One of the most surprising findings was that 58% of respondents indicated that their educational aspirations increased since attending the community college (see Figure 2).

The reasons underlying the community college choice also offered relevant insights to this study (Figure 3). The two most predominant reasons for attending a community college

were career preparation and affordability, both directly aligned with our community college conceptualization of knowing how. Additionally, two-thirds of students were working while in college, and more than one-third were working more than 20 hours per week. Students were also finding other ways to navigate college financially, as more than half received Pell Grants and 21% took out loans. Last are the key sources of information about careers, where college instructors and advisors were two of the top three sources of information with family ranking second (Figure 4). A full list of descriptive statistics is included in Table 1.

The second phase was the construction of the CCAI, which serves as the dependent variable for the study and measures overall alignment between college and careers. The index was created using items described in the previous section and normalized with the formula  $X_{0,1} = \frac{X_i - X_{min}}{X_{max} - X_{min}}$  to continuously range from 0 to 1 (M = 0.476; SD = 0.221) for ease of interpretation (D'Amico et al., 2017). The index was calculated for each participant, and as Figure 5 shows, the distribution approximates normally across the range from 0 to 1.

The final phase of the analysis included measuring the items we associate with career capital ways of knowing and other variables that predict college and career alignment. Based on the exploratory nature of the study, the models are based upon a stepwise regression in which the regressors that are not contributing toward the overall goodness of fit were excluded. Table 2 shows three models: (a) no fixed effects, (b) institution-fixed effects, and (c) institution-fixed effects and local market effects (e.g., unemployment, household income, people in poverty).

Each of the three regression models shows statistically significant variables in all portions of the career capital framework. First is knowing why, related to an individual's aspirations and purpose. Attendance for professional advancement, a key aspirational factor, was significant in predicting higher college and career alignment. Second is knowing how. The results showed

this domain within the career capital framework as the most prevalent with three statistically significant variables. Enrollment in a career program, an important aspect of gaining the knowledge and skills needed for a career, was significant. Additionally, three aspects of the knowhow to navigate community college financially were also significant in predicting overall alignment as shown by the CCAI: (1) qualifying for merit-based aid was a positive predictor; (2) using Pell Grants for uses other than life and educational expenses (e.g., recreation, clothing) was a negative predictor, and (3) working any number of hours as compared with those who do not work was a positive predictor. Within the knowing whom domain, community social network, which is comprised of social network websites, employers, and community or church groups, was significant in predicting higher college and career alignment across the models.

The only demographic variable reaching positive significance was age, as older students may have a greater focus on careers. Regarding previous academic achievement, all levels of education were significant positive predictors of an individual's college and career alignment as compared with those who had not yet earned a high school diploma, such as those who completed courses through dual enrollment.

Finally, several of the local labor market indicators were significant. A higher unemployment rate, a greater percentage of the population over 65, nonfarm establishments, and total federal expenditures were statistically significant and negatively associated with CCAI. In addition, a greater number of people of all ages in poverty was positively associated with college-career alignment. Each of these significant findings shows that economic conditions are potential influencers of the community college student experience, especially as it pertains to direct or perceived alignment with careers.

### **Discussion**

The lives and career pursuits of community college students are complicated and nuanced with varied interests, academic pathways, entry and exit points, prior experiences, and ways of navigating the college process while enrolled. The current study employed a framework that brought together several important components of the college and career process around the key career capital-associated concepts of aspirations, acquisition of knowledge and skills needed for career pursuits and navigating college, and the development of networks to aid in the college and career process. In many ways, the findings of this study demonstrate the applicability of the career capital framework, when aligned with relevant variables, to community college students, and the need to expand upon structural reforms. That is our research reminds scholars, leaders, and practitioners that structural solutions (e.g., a “guided pathways” approach) need to be grounded in a contextual understanding of students’ lives and of the resources and labor market conditions existing in local communities that surround community colleges.

In the first domain of knowing why, which is explained as aspirations and purpose, the majority of students indicated optimism about potential local jobs and an interest in work-based learning, both of which have the potential to connect individuals’ college experience with careers. Consistent with findings by Leigh and Gill (2004), the majority of students surveyed at the seven Southeastern community colleges increased their aspirations since enrolling in the two-year setting, thus enhancing their interest in not only completing a community college program but potentially moving on to higher levels of education, which is important to the discussion of community colleges “heating up” aspirations (see, e.g., Cejda & Kaylor, 2001; Rosenbaum, Deil-Amen, & Person, 2007). This makes Kujawa’s (2013) finding especially relevant for career-focused community college students for whom an Associate of Applied Science (A.A.S.) may seem like a terminal degree, thus making it critical to create A.A.S. pathways to baccalaureate opportunities. The regression analysis also showed an important finding related to greater

college and career alignment. Those seeking professional advancement experienced greater alignment, demonstrating the importance of that immediate connection between college and career for so many student subgroups (see, e.g., Nomi, 2005; Tieken, 2016; Wood & Harrison, 2014).

Knowing how to acquire career knowledge and skills through community college education and the knowhow for navigating college financially were also important to the analysis in this study. Descriptively, we learned that the two most predominant reasons participants selected a community college were for career preparation and affordability. First on career preparation, the literature demonstrates how enrollment in a specific degree program is so important to the college choice process (Absher & Crawford, 1996; Joshi, Beck, & Nsiah, 2009; Santos, 2004). Second, affordability is a primary driver of when choosing a college (Baber, 2014; Iloh & Tierney, 2014; Laanan, 2003; Nomi, 2005; O'Connor, Hammack, & Scott, 2010; St. John, Paulsen, & Carter, 2005; Wang, Chang, & Lew, 2009).

The regression findings around college and career alignment shed additional light on both the skill development and financial knowhow elements of this study. Student enrollment in a career-focused program, which expressly targets knowledge and skill development for a specific professional area, was a predictor of a higher CCAI score, as opposed with those on a more explicit transfer path. Intertwined with this finding is the concept of higher education aspirations, which shows that the three domains of the career capital framework may be labeled independently, but they are not discrete ideas. Each may coincide with the other elements in the context of the community college students' college and career experiences.

The other primary regression findings relevant to knowing how the significant variables are related to receiving aid and working through college. Work experience may be associated with greater alignment and signify an enhanced understanding of professional life, even if that

work does not occur in the same industry. Another key finding, though, is that individuals who use Pell Grants for expenses other than life and educational costs see less alignment. This could indicate two different phenomena, the first being a lack of prioritization of educational goals due to many other priorities (e.g., supporting other family members, meeting current job expectations), and the second may be significant financial need where there is no other income available for tangential financial demands. In essence, the knowhow to navigate college financially has implications for the alignment of college and careers.

The third element of the career capital framework knowing whom, is also relevant to the alignment of college and careers. The descriptive findings demonstrate that two of the three most prevalent sources of information occurred in the community college setting (college instructors and advisors) with family also being important. This shows the positioning of college-located agents in the career development process, especially for community college students and those who may not have strong networks to help understand college going and career development (see, e.g., Baber, 2014; Bailey et al., 2015; Goomas, 2012; Nomi, 2005; O'Banion, 2012; Parks, Rich, & Getch, 2012; Somers et al., 2002). Thus, the community college has an opportunity to enhance career knowledge through the connections between students and dedicated individuals working in those institutions. The regression findings support the importance of social networks online and acquiring information through employers and community groups, as they were important in predicting greater alignment. This is perhaps similar to previous work by Evans et al. (2016) that showed socio-academic engagement in online social networks leading to improved GPAs, and reinforces the value of future exploration into networking for enhanced social, academic, and career integration.

One demographic variable, age, was a significant predictor of greater alignment. This, too, was consistent with previous literature that showed that adults and those who delay entry

into higher education or return to higher education may be more likely to attend a community college (Horn, Cataldi, & Sikora, 2005) and may be more likely to have a work-related reason for that return (Bers & Smith, 1987). Therefore, it is not surprising to see older students with a more direct alignment between college pursuits and career goals.

Finally, the findings on labor market factors were also relevant in predicting greater alignment. The higher unemployment rate, an older population, and infusion of needed federal dollars may provide clues into the pessimism about economic conditions, employment prospects, and conditions of local economic productivity. However, the finding on nonfarm establishments was contrary to our expectations, thinking that business startups could generate local opportunities and the potential of closer alignment between current jobs, academic programs, and future careers. In addition to each specific labor market finding, at the macro-level these results continue to demonstrate the importance of the *geography of opportunity* for community college students (Reyes et al., forthcoming). That is, our findings confirm the importance of place and local economic conditions and their effect on individuals working to gain some form of postsecondary education and build capital needed for a successful career trajectory. These pieces of the study further demonstrate the importance of research that strategically draws on sampling frames to include rural, suburban, and urban community colleges (see, Hardy & Katsinas, 2006).

### **Implications for Practice**

Employing the career capital framework to understand the community college experience is a multi-layered and nuanced discussion of building *agency* among collegegoers in the two-year setting. Offering structural opportunities for enhancing aspirations, such as articulation agreements for career program and transfer students, as well as the personal support of in-college networks for gaining insights about college and careers is critical. The role of faculty and advisors, the two primary conduits for career information in the college setting cannot be



overstated. Our findings show the human sources of information as much more prevalent than the information driven through other outlets; therefore, it is the job of colleges to ensure that academic information in class and with advisors is provided with career-focused content. The findings of this study regarding the stronger alignment for career program students could also inform colleges engaged in the “guided pathways” movement (Bailey et al., 2015) that seeks to direct students toward selecting a metamajor aligned with career interests and pursuing a structured curriculum with intensive guidance—an idea reinforced by this study. There is an opportunity to problematize the lower alignment for those seeking transfer as compared with those in career programs. This can be particularly relevant for transfer students in avoiding credit loss (Fink, Jenkins, Kopko, & Ran, 2018; Monaghan & Attewell, 2015) due to a lack of focus or changing majors when one determines that a program is not aligned with career interests.

Lastly, affordability remains a primary driver for college choice and is second only to the desire to prepare for a career, but some of the findings show a troubling scenario when considering the intersection between college-career alignment and the knowhow to navigate college financially. The finding that shows lower college and career alignment for Pell Grant recipients using funds needs other than more typical educational or living expenses demonstrates a lack of financial knowhow as well as a lack of focus on a more career-relevant college experience. In an era dominated by discussions of student outcomes, being mindful of the experience of underserved students is critical (see, e.g., Bragg & Durham, 2012). In this case, low-income students could potentially benefit from career-centered advising to ensure a greater focus on the community college experience. With rising costs and uncertainty of state and federal aid, the community college commitment to affordability and free community college tuition initiatives may be the conduits through which significant portions of the population gain

the skills and knowledge necessary to participate in the economy. However, it is important for practitioners to understand that students connect college and careers in many ways. Financial understanding is but one element, and it is the responsibility of institutions to ensure that the human resources through formal and informal networks are there to assist students to gain the financial knowhow to navigate college and a better understanding of educational relevance by drawing connections between college and career experiences.

### **Implications for Future Research**

The survey approach used for this seven-institution, three-state study provided the data needed to better understand college and career alignment and the predictors of such alignment within an adapted career capital framework. This has conceptual limitations, however, in that aspects of the framework are more difficult to explore through surveys than other methods. For example, knowing how, and its connection with choosing a program area (career/transfer) does not allow for the nuanced discussion of whether a specific program is meeting individual needs, and the perceived benefits of enrollment in that program. Future study that captures the perceptions of students and what led to changing aspirations, how specific programs of study prepare or do not prepare them with the knowledge and skills needed, and the benefits and shortcomings of relationships with social networks would greatly enhance understanding on this topic and represents the authors' intent moving forward. The alignment of college and careers is an individual experience through which community college students build agency—a premise that can be explained through inquiry capturing student voices. Additionally, future work that measures alignment and its relationship to both academic and labor market outcomes would enhance understanding on the college and career experience.

### **Conclusion**

Underscoring the importance placed on community college in terms of preparing individuals for economically satisfying careers, this exploration of college and career alignment and predictors associated with career capital provides a new way of understanding the community college experience. The results suggest that community college students, who are focused on work and taking advantage of educational opportunities, will experience the greatest alignment. This can be seen through enrollment in a career program, expressing the purpose of professional advancement, and maintaining employment while in school. Another critically important finding is the role of people, evidenced by community social networks influencing career decisions and resulting alignment implications. In all, elements of the three ways of knowing that are a part of the career capital framework (knowing why, knowing how, knowing whom) were significant in predicting higher alignment. While each of the career capital items is listed separately, it is the framework as a whole that might shape better understandings and, by consequence, policy and praxis for growing the value of a community college degree for individuals.

Finally, and looking forward, our hope is that the present study and future research will move the field toward understanding the development of individual student agency and how the ways of knowing that we have begun describing here might function as mediational tools for students to grow their abilities to make purposeful choices across their postsecondary experiences and careers that move them, their families, and communities—and a nation—forward.

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Table 1  
*Summary statistics*

Variable	n	Mean	St.dev	Min	Max	Missing
Major Aligned w/ Employ Cluster	1230	0.896	0.305	0	1	0
Major Aligned w/ Cur Employ Cluster	1230	0.224	0.417	0	1	0
Cur Employ Aligned w/ Employ Cluster	1230	0.233	0.423	0	1	0
Have/Had Job in Career	1230	0.233	0.423	0	1	0
Current Job-Career Alignment	1230	1.186	0.928	0	3	0
Program and Career Alignment	1230	2.472	0.648	0	3	0
Work-Based Learning	1230	0.651	0.464	0	1	0
Perceived Jobs after Grad	1230	0.869	0.337	0	1	0
Summary Alignment Index	1230	6.765	2.247	2	12	0
CCAI (normalized)	1230	0.476	0.225	0	1	0
College GPA	1230	3.88	0.965	1	5	0
Required to Take Remedial	1230	1.302	1.252	0	4	0
Prev Ed – Less Than HS	1230	0.064	0.245	0	1	0
Prev Ed – HS Diploma	1230	0.615	0.487	0	1	0
Prev Ed – Some College	1230	0.219	0.414	0	1	0
Prev Ed – 2-yr Degree	1230	0.063	0.242	0	1	0
Prev Ed – 4-yr Degree or More	1230	0.034	0.182	0	1	0
Work - None	1230	0.346	0.476	0	1	0
Work 1-5 Hours	1230	0.05	0.217	0	1	0
Work 6-10 Hours	1230	0.063	0.244	0	1	0
Work 11-15 Hours	1230	0.066	0.248	0	1	0
Work 16-20 Hours	1230	0.131	0.337	0	1	0
Work >20 Hours	1230	0.344	0.475	0	1	0
Aspirations Increased	1230	0.579	0.494	0	1	0
Sources – College Network	1230	1.682	0.59	0.698	2.794	0
Sources – Family/Friend Social Network	1230	1.657	0.561	0.65	2.601	0
Sources – Instructor	1230	2.959	1.039	1.033	4.132	0
Sources – Community Social Network	1230	1.229	0.474	0.609	2.437	0
Enrolled in Transfer Program	1230	0.542	0.498	0	1	0
Enrolled in Career Program	1230	0.434	0.496	0	1	0
Pay for All of Education	1230	0.182	0.386	0	1	0
Pay for Most of Education	1230	0.125	0.331	0	1	0
Receive No Fin Aid	1230	0.214	0.41	0	1	0
Receive Pell	1230	0.517	0.5	0	1	0
Receive Fed Loans	1230	0.207	0.406	0	1	0
Receive State Grant	1230	0.159	0.365	0	1	0
Receive Merit Aid	1230	0.109	0.312	0	1	0
Receive Other Aid	1230	0.163	0.37	0	1	0
Attend for Prof Advancement	1230	2.385	0.52	0	2.814	0
Attend for Convenience	1230	1.675	0.353	0.513	2.053	0
Plan to Transfer to a 4-Year	1230	0.464	0.499	0	1	0
Perceive Opportunity to Transfer	1230	2.742	1.009	0.98	3.92	0

Pell for Life Expenses	1230	0.058	0.14	0	0.639	0
Pell for Educational Expenses	1230	0.401	0.4	0	0.855	0
Pell for Other Uses	1230	0.031	0.078	0	0.488	0
Female	1230	0.608	0.488	0	1	0
Age	1230	24.959	9.348	4	69	0
Ethnicity – African American	1230	0.152	0.238	0	1	0
Ethnicity – Asian	1230	0.041	0.198	0	1	0
Ethnicity – Hispanic/Latinx	1230	0.064	0.245	0	1	0
Ethnicity – Native American	1230	0.011	0.106	0	1	0
Ethnicity – Other	1230	0.026	0.159	0	1	0
Ethnicity – White	1230	0.642	0.480	0	1	0
Veteran	1230	0.077	0.267	0	1	0
Civ Labor Force Unemployment Rate	1230	12.211	2.664	9.4	17	0
% Resident Population 65+	1230	13.069	1.535	9.5	15	0
Private Nonfarm Establishments	1230	4431.485	3513.655	752	12213	0
Federal Government Total Expenditure	1230	2537174	3975911	241135	12931526	0
People All Ages in Poverty	1230	28496.33	19832.37	7444	67337	0
Social Security Recipients	1230	34967.81	23191.47	6095	84365	0
Total Veterans	1230	16664.16	13304.29	2286	43099	0
Median Household Income	1230	43143.722	4168.864	36149	47979	0

Table 2

*Exploratory regression models with institution and market fixed effects*

	No fixed effect	Fixed effects	Fixed effects and local market
(Intercept)	0.03 (0.04)	0.00 (0.04)	1.24** (0.46)
Prev Ed – HS Diploma	0.06** (0.02)	0.07** (0.02)	0.07** (0.02)
Prev Ed – Some College	0.09*** (0.03)	0.10*** (0.03)	0.10*** (0.03)
Prev Ed – 2-yr Degree	0.11*** (0.03)	0.13*** (0.03)	0.13*** (0.03)
Prev Ed – 4-yr Degree or More	0.09* (0.04)	0.10* (0.04)	0.10* (0.04)
Work 1-5 Hours	0.19*** (0.03)	0.19*** (0.03)	0.19*** (0.03)
Work 6-10 Hours	0.14*** (0.02)	0.14*** (0.02)	0.14*** (0.02)
Work 11-15 Hours	0.17*** (0.02)	0.17*** (0.02)	0.17*** (0.02)
Work 16-20 Hours	0.18*** (0.02)	0.18*** (0.02)	0.18*** (0.02)
Work >20 Hours	0.19*** (0.01)	0.19*** (0.01)	0.19*** (0.01)
Sources – Instructor	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Sources – Community Social Network	0.06*** (0.01)	0.06*** (0.01)	0.06*** (0.01)
Enrolled in Career Program	0.07*** (0.01)	0.07*** (0.01)	0.07*** (0.01)
Receive Merit Aid	0.04* (0.02)	0.04* (0.02)	0.04* (0.02)
Attend for Prof Advancement	0.03** (0.01)	0.03** (0.01)	0.03** (0.01)
Pell for Other Uses	-0.22** (0.07)	-0.23** (0.07)	-0.23** (0.07)
Female	0.01 (0.01)	0.02 (0.01)	0.02 (0.01)
Age	0.00** (0.00)	0.00** (0.00)	0.00** (0.00)
Veteran	-0.04 (0.02)	-0.03 (0.02)	-0.03 (0.02)
Civ Labor Force Unemployment Rate			-0.01* (0.00)
% Resident Population 65+			-0.06**



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			(0.02)
Private Nonfarm Establishments			-0.00*
			(0.00)
Federal Government Total Expenditure			-0.00**
			(0.00)
Median Household Income			-0.00
			(0.00)
People All Ages in Poverty			0.01*
			(0.00)
R <sup>2</sup>	0.27	0.28	0.28
Adj. R <sup>2</sup>	0.26	0.27	0.27
Num. obs.	1230	1230	1230
RMSE	0.19	0.19	0.19

\*\*\*p<0.001, \*\*p<0.01, ^\*p<0.05

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**Knowing Why (Aspirations)**

- Attend for professional advancement
- Plan to transfer to 4-year institution
- Aspirations increased since enrollment

**Knowing How (Knowledge and Skills)**Knowing How to Prepare for Career

- Enrolled in transfer program
- Enrolled in career program

Knowhow for Navigating College

- Financial aid (none, Pell, federal loans, state grant, merit aid, other aid)
- Pay for education (all or most)
- Pell Grant uses (life expenses, educational expenses, other uses)
- Working while in college (not working, 1-5 hrs/week, 6-10 hrs/week, 11-15 hrs/week, 16-20 hrs/week, 20+ hrs/week)
- Attend for convenience (location/cost)

**Knowing Whom (Sources of Information)**

- College instructors
- Family/friend social network (classmate, family, friend)
- College network (advisor, admission rep, college website, recruitment materials)
- Community social network (social networks on Web, employer, community group/church)

**Academic Preparation and Achievement**

- College GPA
- Previous level of education (less than HS, HS diploma, some college, 2-yr degree, 4-year degree or more)
- Required to take remedial education

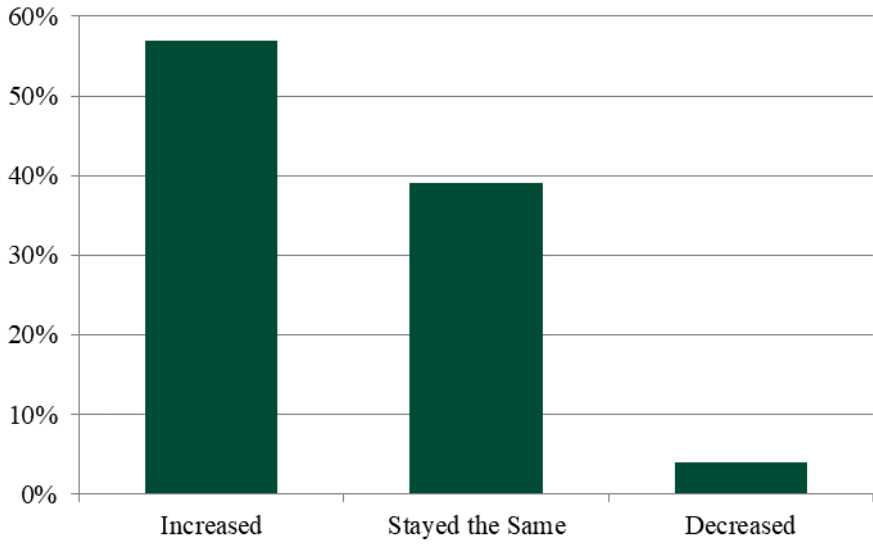
**Demographics/Personal**

- Age
- Ethnicity
- Gender
- Veteran

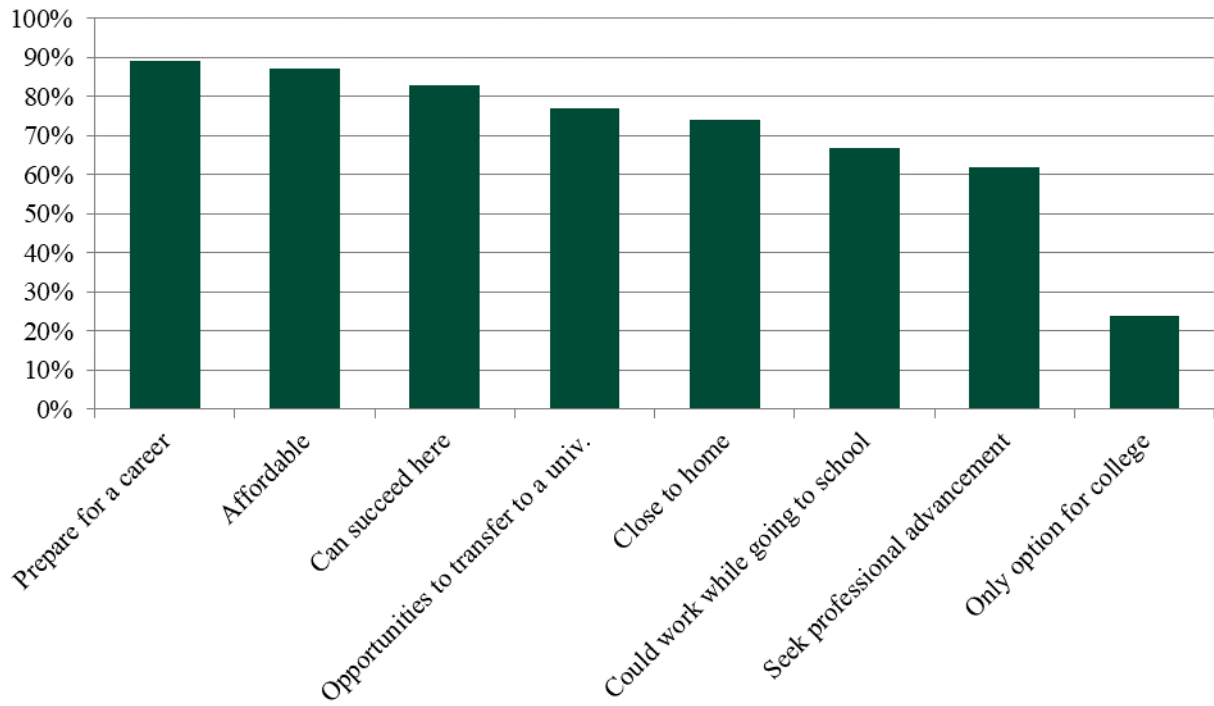
**Labor Market (College Service Area)**

- Labor force unemployment rate
- Percent resident population 65+
- Private nonfarm establishments
- Federal government total expenditure
- Median household income
- People all ages in poverty
- Social Security recipients
- Total veterans

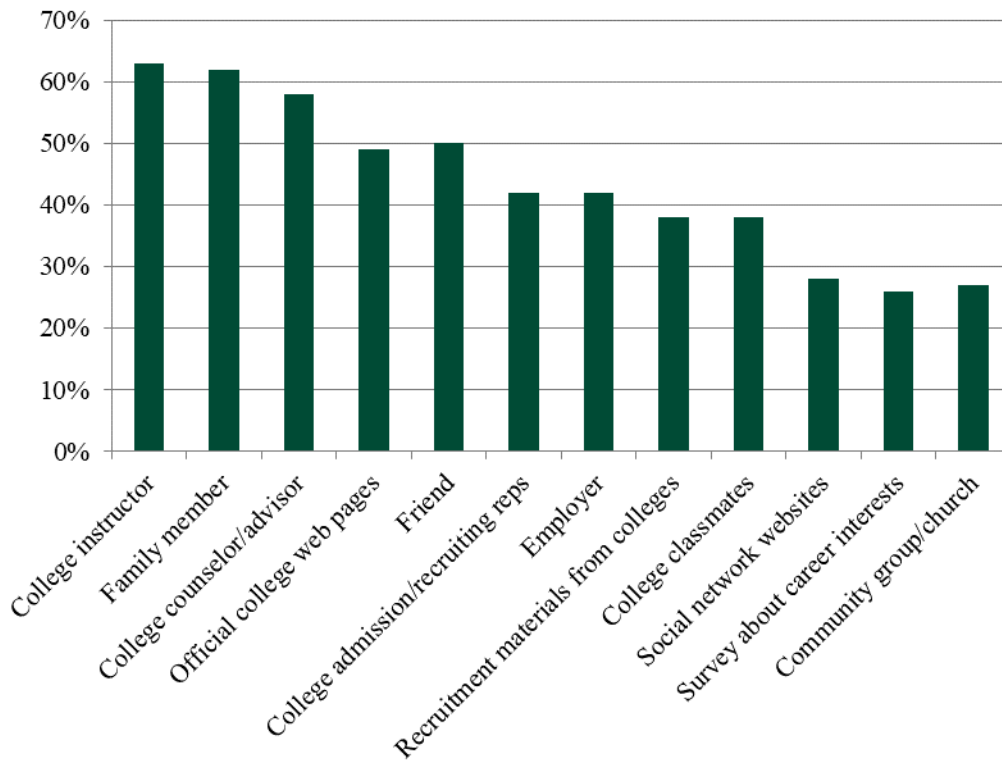
Figure 1. Career capital domains: Independent variables for regression analysis



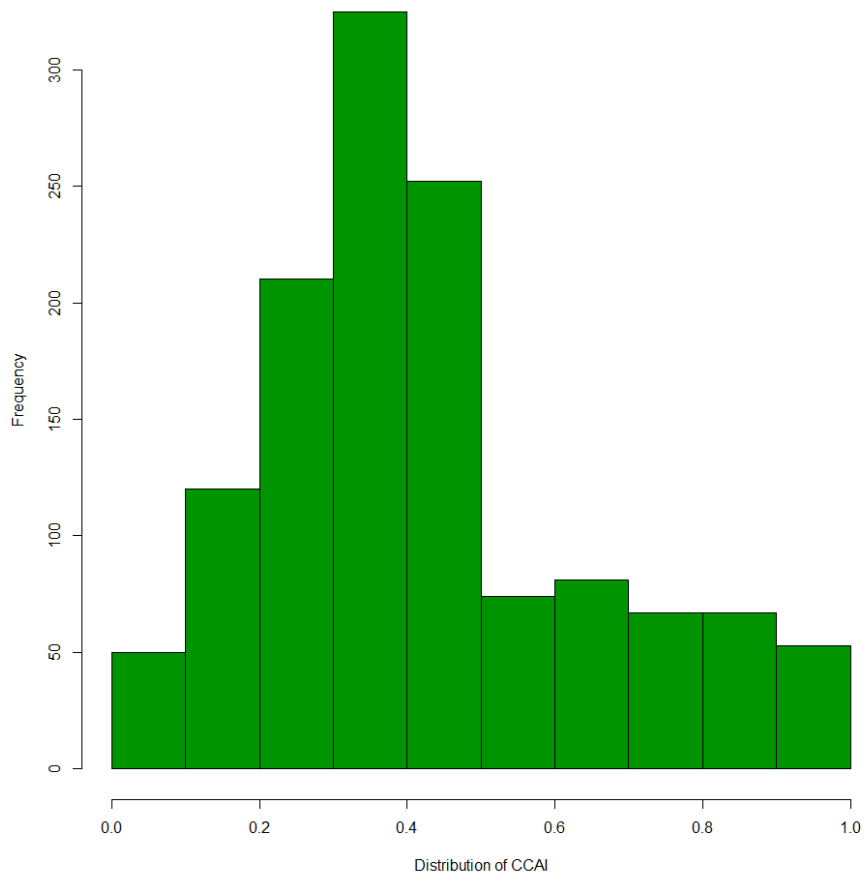
*Figure 2.* Changes in perception of highest expected level of education since enrolling in this college



*Figure 3.* Reasons affecting students' decisions to attend a community college (fair amount or a lot)



*Figure 4.* Student reliance on sources of information about future careers (fair amount or a lot)



*Figure 5.* The dependent variable, College and Career Alignment Index, was normalized using this equation  $X_{0,1} = \frac{X_i - X_{min}}{X_{max} - X_{min}}$  to continuously range from 0 to 1 (M = 0.476; SD = 0.221)