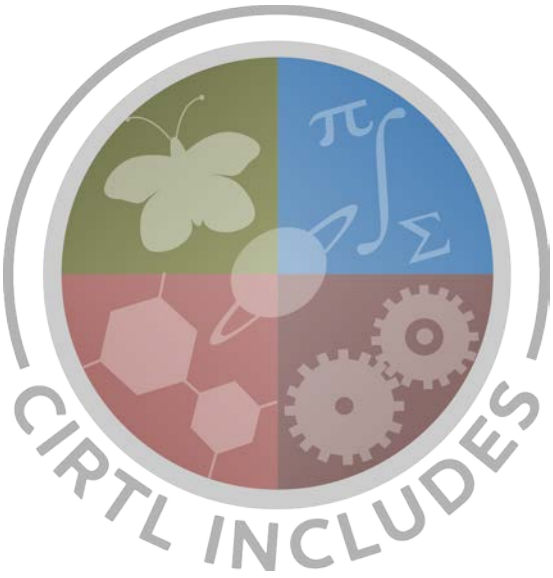

The Career Pathways of Community College STEM Faculty: Results of the CIRTL INCUDES Pilot Study

July 2018

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To learn more about the CIRTL INCLUDES pilot initiative, please visit our website*:*
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Key Findings

The preparation of faculty in effective teaching practices is a major means of improving the quality of undergraduate STEM education. Most studies and initiatives concentrate on four-year institutions, despite the transformative role community colleges (CCs) can play. We conducted a study of more than 3,000 CC STEM faculty members from 11 institutions as part of the CIRTL INCLUDES pilot to learn about their educational and career pathways, where they earned their degrees and worked prior to beginning their first community college positions, participation in teaching development, and interest in two-year faculty careers. We wished to test the validity of a regional collaborative (RC) model for developing faculty pathways, training current and future faculty on inclusive teaching practices, and creating institutional partnerships that would ultimately improve undergraduate STEM outcomes through enhanced teaching, mentoring, and advising practices. Our key findings follow.

About half of respondents (52.6%) earned a master's as their highest degree before moving into their first CC position; about one-quarter (25.9%) earned a doctoral degree.

- Slightly more than half of all master's recipients worked between degree attainment and their first CC position.
- A smaller proportion of doctoral recipients went straight to CC positions.
- Few differences were found between the part-time and full-time faculty pathway.

The regional collaborative model was well-supported by these pilot data.

- A majority of respondents in each RC earned their highest degree within their RC state.
- If respondents worked between highest degree and first CC position, most do so within RC state.
- Half of part-time faculty members did not consider their CC position to be their primary employment; many of these part-time faculty members worked concurrently in other organizations.

Half (51.0%) of all respondents participated in teaching development programs or activities during their highest degree program.

- Master's and doctoral recipients participated at equivalent rates; unsurprisingly, participation was lower among associate's and bachelor's recipients
- Participation was rarely compulsory; motivation to participate instead included desire to improve teaching knowledge, skills, ability; job marketability.
- Barriers included classic features of time, prioritization, and awareness of programs.
- Doctoral degree recipients were more likely to say they were discouraged from participation, and that teaching development was a lower priority *but* the proportion of respondents was low (less than 30%). This finding contrasts with the common narrative of doctoral program cultures suppressing participation in teaching development.

About one-third of respondents (34.7%) said a faculty position at a 2-year institution was their primary career goal during their highest degree program. Many (58.0%) respondents said some kind of faculty position was their primary goal during their highest degree program, indicating a clear interest in faculty positions that may have some teaching responsibilities.

- Master's degree holders reported interest in obtaining 2-year faculty careers in higher proportion than doctoral degree recipients (45.6% vs. 23.3%).
- Full-time faculty respondents reported wanting 2-year careers in higher proportion than part-time faculty (41.6% vs. 22.8%), during their highest degree program.

TABLE OF CONTENTS

Key Findings 1
The CIRTL INCLUDES Pilot Project 2
Methods 4
Results 4
Response Rate and Respondent Characteristics 4
Educational and Career Pathways: The Road to Community College Positions 6
A Strong Regional Collaborative Rationale 10
Concurrent Employment across Local Institutions and Organizations 12
Primary Career Goals during Highest Degree Programs 13
Participation in Teaching Development 14
Conclusions 16
References 17

List of Tables

Table 1: Response Rates 4
Table 2: Respondent Gender, Ethnicity, Race, and Disability 5
Table 3: Respondent Rank and Position Title 6
Table 4: Educational and Career Pathways, All Respondents 7
Table 5: Educational and Career Pathways by Part-Time/Full-Time Employment Status 8
Table 6: Highest Degree Attainment by Part-Time/Full-Time Employment Status, All Respondents 8
Table 7: Highest Degree Earned Institutional Type 9
Table 8: Sample Position Types Prior to beginning First CC Position 10
Table 9: Location of Highest Degree Earned Institutions across Regional Collaboratives 111
Table 10: Employment in Other Institutions and Organizations 133
Table 11: Primary Career Goals during Highest Degree Program by Employment Status and Degree Attainment 13
Table 12: Participation in Teaching Development 144
Table 13: Reason to Participate in Teaching Development by Employment Status and Degree Attainment 15
Table 14: Barriers to Participation in Teaching Development by Employment Status and Degree Attainment 16

List of Figures

Figure 1: Respondent Disciplinary Identity by NSF Broad Category, with Mathematics and Statistics Details. 6
Figure 2: Proportion of Highest Degrees Earned and Positions Held Prior to CC1 12

The CIRTL INCLUDES Pilot Project

Improving undergraduate science, technology, engineering, and mathematics (STEM) education is a national priority (PCAST, 2012). Social and structural inequities continue to plague higher education, resulting in a low proportion of first generation, underrepresented minority, low-income, and transfer students majoring in STEM disciplines as well as to the decreased likelihood of graduation (NAP, 2011; NCES, 2013). Poor teaching is often cited as a major contributor to this problem (PCAST, 2012; PKAL, 2002; Singer, Nielson, & Schweingruber, 2012). Despite decades of reform efforts, many faculty members have not adopted evidenced-based teaching practices (Austin, 2011; Kober, 2015). There is an ongoing need to prepare more graduate students (future faculty) as effective, future postsecondary teachers (Austin, Campa, Pfund, Gillian-Daniel, Mathieu, & Stoddart, 2009; Bouwma-Gearhart, Millar, Barger, & Connolly, 2007; Gillian-Daniel, 2008; Mathieu, 2013).

Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (INCLUDES) is a comprehensive initiative from the National Science Foundation to "enhance U.S. leadership in science and engineering discovery and innovation by proactively seeking and effectively developing science, technology, engineering and mathematics (STEM) talent from all sectors and groups in our society (NSF, 2018)." The CIRTL INCLUDES pilot was formed to build the foundation for a national cross-sector alliance to increase the learning, persistence, and completion of underrepresented group (URG) STEM undergraduates across the entire higher education landscape, and thereby to increase their contribution to the U.S. STEM enterprise (CIRTL INCLUDES, 2018).

The mission of the CIRTL INCLUDES pilot was to develop STEM faculty, for all sectors of postsecondary education, able to use and adapt evidence-based, inclusive teaching, mentoring and advising practices that yield increased success of URG students. To build such a national STEM faculty, the pilot pursued three mutually reinforcing strategic goals:

- Strategic Goal 1—Deepen the preparation of *all* future STEM faculty in evidence-based teaching, mentoring and advising practices that promote URG undergraduate success.
- Strategic Goal 2—Expand and strengthen faculty preparation specifically for 2-year colleges, where many URG students have their first STEM undergraduate experience.
- Strategic Goal 3—Target the preparation of future URG STEM faculty for effective teaching and mentoring, contributing to earlier success across the spectrum of their early-career responsibilities.

To accomplish these goals, the pilot synthesized and built upon the extensive research base around broadening participation and developed a research agenda to extend our knowledge about how to use that research base for impact toward broadening participation.

The Community College STEM Faculty Pathways Study

This report provides the results of one aspect of the CIRTL INCLUDES pilot's work, developing an implementation-focused research agenda that will specifically support Strategic Goal 2.

Prior research has predominantly focused on the preparation of current faculty at research and four-year institutions, despite the crucial role that community colleges play in developing a

STEM-qualified workforce (Baber, 2011; Hagedorn & Purnamasari, 2012; Tsapogas, 2004). To match the diverse career possibilities available to STEM graduate students, we must also consider community colleges (Austin, 2002; Golde & Dore, 2001; Nerad, Aanerud, & Cerny, 2004), their specific institutional contexts, and the career pathways of their full- and part-time faculty. Beyond a few studies (e.g., Fugate & Amey, 2000; Gahn & Twombly, 2001), little is known about the career pathways of community college faculty and their pedagogical training.

We conducted a study of more than 3,000 community college STEM faculty members from 11 CIRTL INCLUDES partner institutions to learn to test the validity of a regional collaborative model for developing faculty pathways, training current and future faculty on inclusive teaching practices, and institutional partnerships that would ultimately improve undergraduate STEM outcomes through enhanced teaching, mentoring, and advising practices.

Methods

We created an online survey instrument based on other community college- or faculty-related surveys (e.g., Community College Faculty Survey of Student Engagement; HERI Faculty Survey; NSOPF), augmented by feedback from community college administrators and faculty for added face validity. Items included respondents' prior employment (up to 3 positions) and educational attainment (highest degree and 3 additional degrees), and previous interest in community college careers.

Participants were full- and part-time community college faculty who were teaching STEM-related courses at the time of the survey. In consultation with the National Science Foundation (NSF, 2015) and disciplinary listings for community colleges (Russell, 2012), we broadly defined STEM to encompass traditional disciplines and career/technical fields to match the community college context. We distributed the survey on a rolling basis to 11 institutions in three states (CA, IA, TX). In California, several surveys were administered in person as well as online. We invited 3,009 full- and part-time faculty members to respond.

Results

Response Rate and Respondent Characteristics

We received a 13.6% response rate overall (410 faculty members) from across the three regional collaboratives (see Table 1). Slightly more than half of the respondents were female (53%), and a majority were Not Hispanic (79%), White (72%), and did not identify as having a disability (89.0%). See Table 2 for complete demographic characteristics.

Table 1: Response Rates

Regional Collaborative	Invited *n*	Responded *n*	Response Rate (%)	Percentage of Response Group (%)
California	727	164	22.6%	40.0%
Iowa	1,086	93	8.6%	22.7%
Texas	1,196	153	12.8%	37.3%
Total	3,009	410	13.6%	100.0%

*Table 2: Respondent Gender, Ethnicity, Race, and Disability**

Respondent Gender	**California RC *n* (%)**	**Iowa RC *n* (%)**	**Texas RC *n* (%)**	**All Faculty *n* (%)**
Female	84 (54.5%)	35 (46.1%)	80 (55.6%)	199 (53.2%)
Male	62 (40.3%)	38 (50.0%)	59 (41.0%)	159 (42.5%)
Prefer not to say	8 (5.2%)	2 (2.6%)	4 (2.8%)	14 (3.7%)
Other, please tell us	0 (0.0%)	1 (1.3%)	1 (0.7%)	2 (0.5%)
Total	154 (100.0%)	76 (100.0%)	144 (100.1%)*	374 (99.9%)
Respondent Ethnicity	**California RC *n* (%)**	**Iowa RC *n* (%)**	**Texas RC *n* (%)**	**All Faculty *n* (%)**
Not Hispanic or Latino	127 (81.9%)	70 (92.1%)	95 (67.4%)	292 (78.5%)
Hispanic or Latino	17 (11.0%)	0 (0.0%)	40 (28.4%)	57 (15.3%)
Prefer not to say	11 (7.1%)	6 (7.9%)	6 (4.3%)	23 (6.2%)
Total	155 (100.0%)	76 (100.0%)	141 (100.1%)*	372 (100.0%)
Respondent Race	**California RC *n* (%)**	**Iowa RC *n* (%)**	**Texas RC *n* (%)**	**All Faculty *n* (%)**
American Indian or Alaska Native	0 (0.0%)	0 (0.0%)	2 (1.4%)	2 (0.5%)
Asian	24 (15.9%)	1 (1.4%)	5 (3.5%)	30 (8.2%)
Black or African American	6 (4.0%)	1 (1.4%)	7 (5.0%)	14 (3.8%)
White	97 (64.2%)	63 (86.3%)	103 (73.0%)	263 (72.1%)
More than one race	1 (0.6%)	2 (2.7%)	5 (3.5%)	8 (2.2%)
Other	4 (2.6%)	0 (0.0%)	5 (3.5%)	9 (2.5%)
Prefer not to respond	19 (12.6%)	6 (8.2%)	14 (9.9%)	39 (10.7%)
Total	151 (99.9%)*	73 (100.0%)	141 (99.8%)*	365 (100.0%)
Respondent Disability	**California RC *n* (%)**	**Iowa RC *n* (%)**	**Texas RC *n* (%)**	**All Faculty *n* (%)**
Faculty with Disability	8 (5.2%)	4 (5.3%)	10 (7.0%)	22 (5.9%)
Faculty without Disability	136 (87.7%)	68 (90.7%)	128 (89.5%)	332 (89.0%)
Prefer not to say	11 (7.1%)	3 (4.0%)	5 (3.5%)	19 (5.1%)
Total	155 (100.0%)	75 (100.0%)	143 (100.0%)	373 (100.0%)

*Total values may differ across demographic characteristics due to missing data and may not equal 100.0% due to rounding.

A substantial proportion identified with mathematics and statistics as their disciplinary background, along with other physical sciences (see Figure 1).

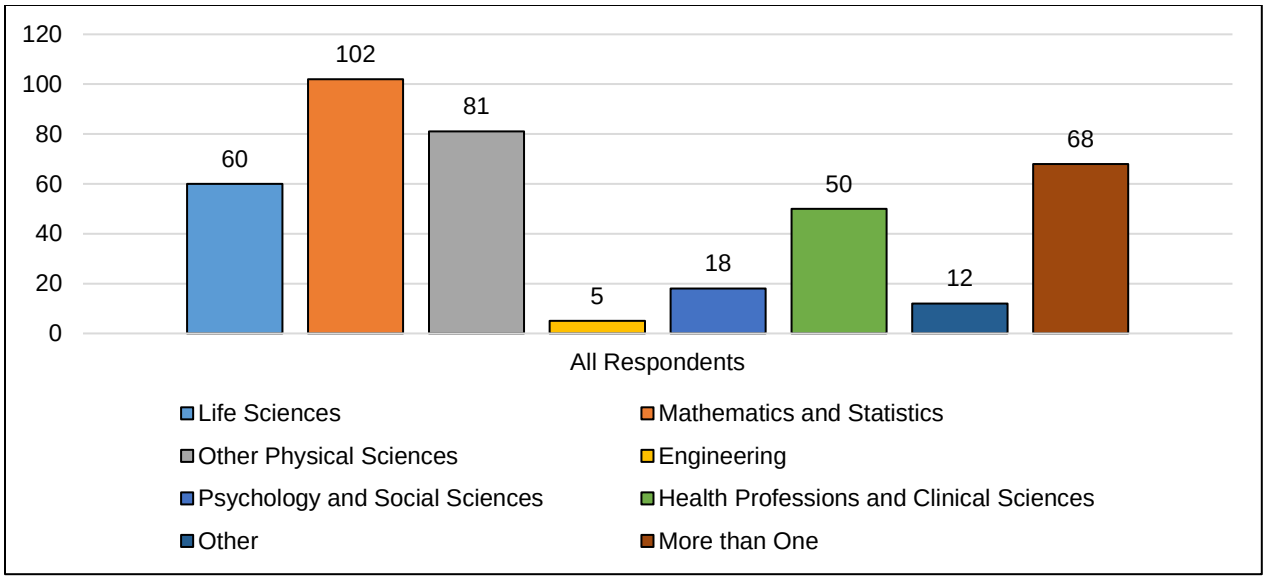

Figure 1: Respondent Disciplinary Identity by NSF Broad Category, with Mathematics and Statistics Details.[1]

Respondents were distributed across rank and position title (see Table 3).

Table 3: Respondent Rank and Position Title

Respondent Rank	**California RC** ***n*** **(%)**	**Iowa RC** ***n*** **(%)**	**Texas RC** ***n*** **(%)**	**All Faculty** ***n*** **(%)**
Professor	56 (34.1%)	21 (22.6%)	36 (23.7%)	113 (27.6%)
Associate Professor	25 (15.2%)	8 (8.6%)	15 (9.9%)	48 (11.7%)
Assistant Professor	15 (9.1%)	10 (10.8%)	16 (10.5%)	41 (10.0%)
Instructor or Lecturer	11 (6.7%)	9 (9.7%)	29 (19.1%)	49 (12.0%)
Adjunct Instructor or Lecturer	51 (31.1%)	40 (43.0%)	45 (29.6%)	136 (33.3%)
Other	6 (3.7%)	5 (5.4%)	11 (7.2%)	22 (5.4%)
Total	164 (99.9%)*	93 (100.1%)*	152 (100.0%)	409 (100.0%)

*Total may not equal 100.0% due to rounding.

Educational and Career Pathways: The Road to Community College Positions

The career pathways of community college STEM faculty are complex, nonlinear, and individualized (see Table 4). These results were developed from several open-ended items. Respondents were asked to share information about their educational and career pathways

[1] Life Sciences include Agricultural sciences and Life sciences (e.g., biology, ecology, physiology, zoology). Physical Sciences include Chemistry; Computer, information sciences, and support technology; Earth, environmental, geological, and geographical sciences; Environmental technologies/technicians; Mathematics and statistics; Physics and astronomy. Engineering includes engineering and engineering technologies/technicians. Other includes Mechanical/repair technologies/technicians, other science technologies/technicians, public safety, and not otherwise classified.

In final coding, "More than One" includes combinations such as Health Professions/Clinical Sciences and Life Sciences (23); Engineering and Other Physical Sciences (9); Engineering and Mathematics/Statistics (8); Mathematics/Statistics and other Physical Sciences (4); and those that do not follow a discernible pattern.

prior to attaining their first community college position, which may not have been their position at the time of the survey. We asked faculty members about their highest degree earned; up to three additional higher education degrees; and up to three key positions after earning that highest degree. We then sorted the responses by the dates and looked at each respondent case to code the specific pathway to their *first* community college position (CC1).

The method was developed and primarily coded by one researcher (LBH) and validated by a second (JNS).

Table 4: Educational and Career Pathways, All Respondents[§]

Educational and Career Pathways	***n***	**Percentage (%)**
Non-graduate degree attainment → CC1*	19	4.9%
Non-graduate degree attainment → Work → CC1	39	10.1%
Master's degree attainment → CC1	96	24.9%
Master's degree attainment → Work → CC1	107	27.7%
Doctoral degree[†] attainment → CC1	29	7.5%
Doctoral degree attainment → Work → CC1	71	18.4%
Other	25	6.5%
Total	386	100.0%

§Pathway based on highest earned prior to first CC position degree, not entire educational pathway. *CC1=*First* reported community college position, not community college position at the time of the survey. †Doctoral degree (i.e., Ph.D.) or professional degree (e.g., D.V.M., M.D., J.D., D.D.S.).

About half of respondents (52.6%) earned a master's as their highest degree before moving into their first CC position; about one-quarter (25.9%) earned a doctoral degree. Slightly more than half of all master's recipients worked between degree attainment and their first CC position. A smaller proportion of doctoral recipients went straight to CC positions. We observed few differences between part-time and full-time faculty in terms of their pathway. Additional, some respondents earned additional credentials after starting their first CC position; 12.6% did so (not reported in Table 5).

We saw no notable difference in the pathways to the first community college position between current part-time and full-time faculty members (see Table 5). Further, we saw no meaningful difference in highest degree attainment between these two groups (see Table 6).

Table 5: Educational and Career Pathways by Part-Time/Full-Time Employment Status

Educational and Career Pathway	**Part-Time Faculty *n* (%)**	**Full-Time Faculty *n* (%)**	**All Faculty *n* (%)**
Non-graduate degree attainment → CC1*	6 (4.4%)	13 (5.2%)	19 (4.9%)
Non-graduate degree attainment → Work → CC1	12 (8.8%)	27 (10.8%)	39 (10.1%)
Master's degree attainment → CC1	36 (26.3%)	60 (24.1%)	96 (24.9%)
Master's degree attainment → Work → CC1	38 (27.7%)	69 (27.7%)	107 (27.7%)
Doctoral degree† attainment → CC1	10 (7.3%)	19 (7.6%)	29 (7.5%)
Doctoral degree attainment → Work → CC1	30 (21.9%)	41 (16.5%)	71 (18.4%)
Other	5 (3.6%)	20 (8.0%)	25 (6.5%)
Total	137 (100.0%)	249 (99.9%)	386 (100.0%)

Table 6: Highest Degree Attainment by Part-Time/Full-Time Employment Status, All Respondents

Highest Degree	**Part-Time Faculty *n* (%)**	**Full-Time Faculty *n* (%)**	**All Faculty *n* (%)**
Associate's Degree	4 (2.7%)	9 (3.5%)	13 (3.2%)
Bachelor's Degree	10 (6.8%)	16 (6.3%)	26 (6.5%)
Master's Degree	81 (55.1%)	136 (53.5%)	217 (54.11%)
Doctoral Degree	39 (26.5%)	81 (31.9%)	120 (30.0%)
Professional Degree	11 (7.5%)	6 (2.4%)	17 (42.4%)
Other	2 (1.4%)	6 (2.4%)	8 (19.9%)
Total	**147 (100.0%)**	**254 (100.0%)**	**401 (100.0%)**

We then investigated the types of positions faculty held before taking their first community college positions, after completing their highest degrees. We coded according to Bureau of Labor Statistics, Standard Occupation Classifications. Responses were primarily coded by one researcher (LBH) and validated by a second (JNS). Respondents could work in more than one position at a time, and those position could be (and frequently were) simultaneous with theirs first community college position, underscoring the complexity of the personal career pathways for this group.

We found initial support for the regional collaborative model in forming partnerships among research universities, comprehensive universities, and local industry. Table 7 shows the types of institutions from which respondents earned these highest degrees, using the 2015 Basic Carnegie Classification (Indiana University Center for Postsecondary Education, n.d.).

Table 7: Highest Degree Earned Institutional Type

Highest Degree Institution	***n***	**Percentage (%)**
Doctoral Universities	249	65.7%
Highest Research Activity	173	45.6%
Higher Research Activity	58	15.3%
Moderate Research Activity	18	4.7%
Master's Colleges and Universities	87	23.0%
Larger Programs	79	20.8%
Medium Programs	8	2.1%
Baccalaureate Colleges	3	0.8%
Associate's Colleges	15	4.0%
Special Focus Four-Year	11	2.9%
International Institutions	14	3.7%
Total	379	100.0%

We next closely examined the positions of those who earned graduate degrees. A substantial proportion of the faculty worked in other postsecondary teaching roles, and the proportion of those who did so as they moved closer to taking their community college position (see Table 8). We display in this table all teaching roles and those focused on scientist roles, not all those reported, which were typically less than 15% for each category among graduate degree recipients overall. We found more than 15 occupational categories for the entire respondent group for each of the three key positions. These results represent an initial reporting, and more may following in future dissemination.

*Table 8: Sample Position Types Prior to beginning First Community College Position**

Position One, Condensed Pathways (*n* = 250)				
Sample Positions	Master's → CC1 *n (%)*	Master's→W→ CC1 *n (%)*	Doctoral→ CC1 *n (%)*	Doctoral→ W→CC1 *n (%)*
Postsecondary Teachers	7 (26.9%)	16 (15.8%)	3 (50.0%)	12 (18.2%)
Primary, Secondary, Special Ed. Teachers; Ed Admin, Other Ed. Occupations	10 (38.5%)	33 (32.7%)	0 (0.0%)	4 (6.1%)
Grad. Students and Postdocs	0 (0.0%)	7 (6.9%)	1 (16.7%)	21 (31.8%)
Scientists and Technicians	2 (7.7%)	9 (8.9%)	1 (16.7%)	12 (18.2%)
Position Two, Condensed Pathways (*n* = 180)				
Sample Positions	Master's → CC1 *n (%)*	Master's→W→ CC1 *n (%)*	Doctoral→ CC1 *n (%)*	Doctoral→ W→CC1 *n (%)*
Postsecondary Teachers	6 (37.5%)	17 (28.8%)	3 (60.0%)	25 (47.2%)
Primary, Secondary, Special Ed. Teachers; Ed Admin, Other Ed. Occupations	7 (43.8%)	10 (16.9%)	0 (0.0%)	5 (9.4%)
Grad. Students and Postdocs	0 (0.0%)	1 (1.7%)	1 (2.0%)	6 (11.3%)
Scientists and Technicians	1 (6.3%)	9 (15.3%)	1 (20.0%)	5 (9.4%)
Position Three, Condensed Pathways (*n* = 107)				
Sample Positions	Master's → CC1 *n (%)*	Master's→W→C C1 *n (%)*	Doctoral→ CC1 *n (%)*	Doctoral→ W→CC1 *n (%)*
Postsecondary Teachers	3 (25.0%)	8 (22.2%)	0 (0.0%)	13 (43.3%)
Primary, Secondary, Special Ed. Teachers; Ed Admin, Other Ed. Occupations	6 (50.0%)	9 (25.0%)	0 (0.0%)	2 (6.7%)
Scientists and Technicians	0 (0.0%)	7 (19.4%)	1 (100.0%)	5 (16.7%)

*Percentages reported reflect the proportion of respondents who provided a usable response between their highest degree program, within that pathway category (i.e., column), and beginning their first community college position.

A Strong Regional Collaborative Rationale

The rationale for regional collaboratives—that is, mutually reciprocal partnerships among two-year colleges, comprehensive universities, research universities, and local industries and organizations—is well-supported by the data from this pilot study. We asked respondents about the state where they earned their highest degree and other highest credentials, and where each of their employment positions were located after completing that degree prior to beginning their first community college position, all of which have been described in the previous sections. The

majority of study participants received their highest degrees in the state in which they currently work (see Table 9). Further, most of the positions described above (in Table 8) were also located in the same states in which the faculty worked prior to taking that position (see Figure 2 for a comprehensive summary).

Table 9: Location of Highest Degree Earned Institutions across Regional Collaboratives (RCs)

Highest Degree Institution Region	**CA RC**	**IA RC**	**TX RC**
California	107 (68.2%)	0 (0.0%)	2 (1.3%)
California Border State	2 (1.3%)	2 (2.2%)	4 (2.7%)
Iowa	1 (0.6%)	56 (62.9%)	0 (0.0%)
Iowa and Iowa Border State	7 (4.5%)	6 (6.7%)	3 (2.0%)
Texas	2 (1.3%)	3 (3.4%)	111 (74.5%)
Texas and Texas Border State	3 (1.9%)	1 (1.1%)	10 (6.7%)
Non-Regional Collaborative State	31 (19.7%)	21 (23.6%)	14 (9.4%)
Outside of the U.S.	4 (2.5%)	0 (0.0%)	5 (3.4%)
Total	157 (100.0%)	89 (99.9%)*	149 (100.0%)

*Total may not equal 100.0% due to rounding.

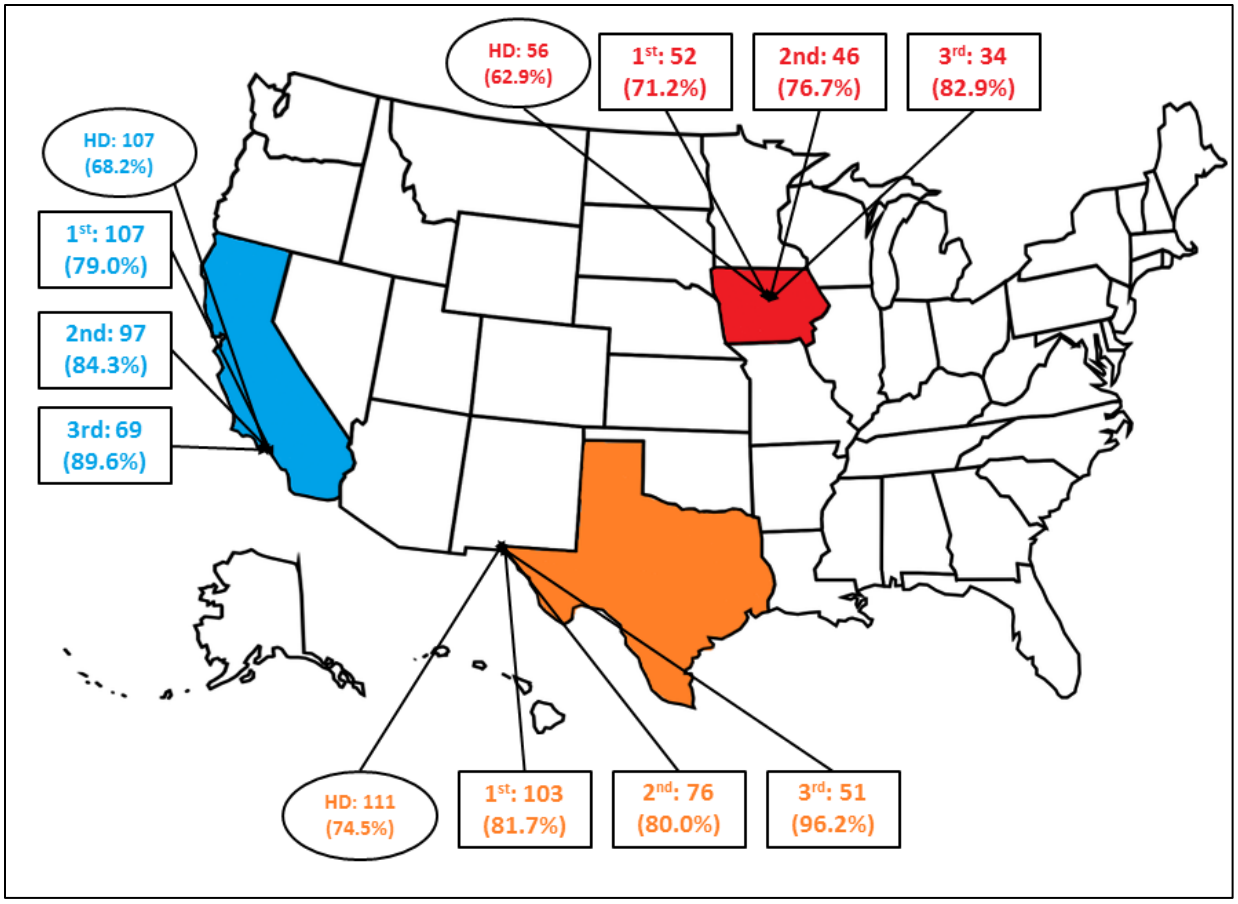

Figure 2: Proportion of Highest Degrees Earned and Positions Held Prior to CC1 in Each RC.
HD = Highest Degree; 1st = First position held after earning highest degree prior to holding CC1; 2nd = Second position held after earning highest degree prior to holding CC1; 3rd = Third position held after earning highest degree prior to holding CC1

Concurrent Employment across Local Institutions and Organizations

While nearly all (246, 98.4%) of full-time faculty considered their community college position to be their primary employment, only half (74, 49.7%) of the part-time faculty responded in this way. Table 10 displays the other types of organizations respondents worked in concurrently at the time of the survey; respondents could identify more than one additional place of employment. These data show that, from a regional perspective, many current community college faculty are already working between and among many postsecondary institutions and. Of those working in at least one other community college, two-thirds were part-time faculty members (64.7%) compared to one-third full-time faculty members (35.7%); there was less discernible difference between those working in four-year institutions. A significant number of part-time faculty members also work in primary or secondary education roles (95.5% of which were part-time faculty).

Table 10: Employment in Other Institutions and Organizations

Employment in Other Sectors	Part-Time Faculty	Full-Time Faculty	Total
Other Community Colleges	27 (64.3%)	15 (35.7%)	42 (100.0%)
Other Four-Year Institutions	21 (56.8%)	16 (43.2%)	37 (100.0%)
Primary or Secondary Education	21 (95.5%)	1 (4.5%)	22 (100.0%)
Government	10 (71.4%)	4 (28.6%)	14 (100.0%)
Non-Profit Organizations	11 (64.7%)	6 (35.3%)	17 (100.0%)
For-Profit Organizations	15 (60.0%)	10 (40.0%)	25 (100.0%)
Self-Employed	20 (54.1%)	17 (45.9%)	37 (100.0%)
Other	10 (52.6%)	9 (47.4%)	19 (100.0%)

Primary Career Goals during Highest Degree Programs

About one-third of respondents (34.7%) said a faculty position at a 2-year institution was their primary career goal during their highest degree program (see Table 11). Many (58.0%) respondents said any faculty position was the primary goal during that program.

Table 11: Primary Career Goals during Highest Degree Program by Employment Status and Degree Attainment

Career Goal	Part-Time Faculty	Full-Time Faculty	Master's	Doctoral†	All Faculty
Faculty member at two-year college	33 (22.8%)	104 (41.6%)	99 (45.6%)	31 (23.3%)	137 (34.7%)
Faculty member at four-year college, teaching focus	23 (15.9%)	37 (14.8%)	24 (11.1%)	35 (26.3%)	92 (23.3%)
Faculty member at four-year college, research focus	16 (11.0%)	16 (6.4%)	5 (2.3%)	26 (19.5%)	
Research career in government, industry, or business	10 (6.9%)	15 (6.0%)	16 (7.4%)	7 (5.3%)	25 (6.3%)
Non-research career in government, industry, or business; or NGO	17 (11.7%)	24 (9.6%)	21 (9.7%)	8 (6.0%)	41 (10.4)
Start my own business	6 (4.1%)	3 (1.2%)	1 (0.5%)	5 (3.8%)	9 (2.3%)
Other	25 (17.2%)	31 (12.0%)	29 (13.4%)	14 (10.5%)	56 (14.2%)
Undecided	15 (10.3%)	20 (8.0%)	22 (10.1%)	7 (5.3%)	35 (8.9%)
Total	145 (99.9%)	250 (100.0%)	217 (100.1%)	133 (100.0%)	395 (100.1%)*

†Doctoral degree (i.e., Ph.D.) or professional degree (e.g., D.V.M., M.D., J.D., D.D.S.). *Total may not equal 100.0% due to rounding.

Participation in Teaching Development

Despite faculty career aspirations, only 51.0% of all respondents participated in teaching development during their highest degree programs (see Table 12). Master's and doctoral recipients participated at equivalent rates; unsurprisingly, participation was lower among other degree groups, who do not often have funding or opportunities to participate in teaching.

Table 12: Participation in Teaching Development

Participation in Teaching Development	**Participated *n* (%)**	**Did not Participate *n* (%)**	***Total* *n* (%)**
All Participants	196 (51.0%)	188 (49.0%)	384 (100.0%)
California RC	79 (50.0%)	79 (50.0%)	158 (100.0%)
Iowa RC	46 (56.1%)	36 (43.9%)	82 (100.0%)
Texas RC	71 (49.3%)	73 (50.7%)	144 (100.0%)
Employment Status			
Part-Time Faculty	70 (50.7%)	68 (49.3%)	138 (100.0%)
Full-Time Faculty	126 (51.2%)	120 (48.8%)	246 (100.0%)
Highest Degree Earned			
Associate's	4 (33.3%)	8 (66.7%)	12 (100.0%)
Bachelor's	9 (36.0%)	16 (64.0%)	25 (100.0%)
Master's	112 (53.8%)	86 (41.3%)	208 (100.1%)*
Doctoral	65 (55.6%)	52 (44.4%)	117 (100.0%)
Professional	3 (21.4%)	11 78.6%)	14 100.0%)

Teaching development participation was rarely compulsory (14.2%), which stands in contrast to earlier studies of teaching development (Connolly, Savoy, Lee, & Hill, 2016). Motivation to participate instead included desire to improve teaching knowledge, skills, ability; job marketability (see Table 13). Barriers included classic features of time, prioritization, and awareness of programs (see Table 14). Doctoral degree recipients were more likely to say they were discouraged from participation, and that teaching development was a lower priority, *but* the proportion of respondents was low. This finding is in contrast to the common narrative of doctoral program cultures suppressing participation in teaching development.

Table 13: Reason to Participate in Teaching Development by Employment Status and Degree Attainment

Reasons to Participate in Teaching Development	**Part-Time Faculty *n* (%)**	**Full-Time Faculty *n* (%)**	**Master's Degree *n* (%)**	**Doctoral Degree *n* (%)**	**All Faculty *n* (%)**
Participation was required	20 (13.2%)	41 (15.9%)	38 (17.5%)	19 (13.9%)	61 (14.2%)
To improve my teaching skills	65 (43.0%)	21 (46.9%)	100 (46.1%)	65 (47.4%)	186 (43.4%)
To improve knowledge of teaching and learning topics	58 (38.4%)	105 (40.7%)	86 (39.6%)	58 (42.3%)	163 (38.0%)
To gain practical teaching experience	50 (33.1%)	75 (29.1%)	65 (30.0%)	50 (36.5%)	125 (29.1%)
To prepare as a career for a faculty member	36 (23.8%)	70 (27.1%)	54 (24.9%)	45 (32.8%)	106 (24.7%)
To be more competitive on the job market	32 (21.2%)	48 (18.6%)	34 (15.7%)	42 (30.7%)	80 (18.6%)
To improve my work as a teaching assistant	19 (12.6%)	36 (14.0%)	27 (12.4%)	27 (19.7%)	55 (12.8%)
To interact with people from other disciplines	17 (11.3%)	21 (8.1%)	19 (8.8%)	15 (10.9%)	38 (8.9%)
Other	26 (17.2%)	36 (14.0%)	32 (14.7%)	20 (14.6%)	62 (14.5%)

Table 14: Barriers to Participation in Teaching Development by Employment Status and Degree Attainment

Barriers to Participation in Teaching Development	**Part-Time Faculty *n* (%)**	**Full-Time Faculty *n* (%)**	**Master's Degree *n* (%)**	**Doctoral Degree *n* (%)**	**All Faculty *n* (%)**
Not enough time	70 (46.4%)	114 (44.2%)	96 (44.2%)	73 (53.3%)	184 (42.9%)
Not aware of programs or offerings	47 (31.1%)	86 (33.3%)	66 (30.4%)	2 (38.0%)	133 (31.0%)
Programs/activities conflicted with my schedule	27 (17.9%)	46 (17.8%)	40 (18.4%)	22 (16.1%)	73 (17.0%)
Not a high priority	25 (16.6%)	41 (15.96%)	27 (12.4%)	38 (27.7%)	66 (15.4%)
Little or no interest in TD	7 (4.6%)	15 (5.8%)	12 (5.5%)	10 (7.3%)	22 (5.1%)
Discouraged from participating (e.g., by advisor, department)	6 (4.0%)	16 (6.2%)	5 (2.3%)	17 (12.4%)	22 (5.1%)
Did not find the programs/activities to be useful	6 (4.0%)	13 (5.0%)	9 (4.1%)	10 (7.3%)	19 (4.4%)
People running the programs/activities not helpful	2 (1.3%)	7 (2.7%)	3 (1.4%)	5 (3.6%)	9 (2.1%)
Did not feel like I fit in	4 (2.6%)	3 (1.2%)	2 (0.9%)	5 (3.6%)	5 (1.2%)
Did not enjoy the experience	1 (0.7%)	4 (1.6%)	4 (1.8%)	1 (0.7%)	5 (1.2%)

Conclusions

The results of this pathway survey provide a research foundation to examine the career pathways of community college STEM faculty members, which will hopefully inform a future INCLUDES Alliance. Community college faculty members' career pathways are complex, which argues for multi-faceted reform solutions that expand and improve their access to preparation as effective teachers, mentors, and advisors in light of broadening participation efforts. This report demonstrates the value of a regional collaborative approach that involves 2-year and 4-year higher education institutions and other local constituents. However, this report is only the beginning. Further investigation is needed to better understand the pathways and decision-making that leads faculty members to two-year colleges. We can additionally research how a regional collaborative can best support future and current community college STEM faculty and learn from their extensive classroom experience working with diverse learners.

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