

ECMC FELLOWSHIP PROGRAM

Fellow Real-World Project

Gender Equity Gaps in the Agriculture Career Cluster at a Rural-Serving Community College in Northern California

Proposed

by

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INTRODUCTION

Equity gap refers to disparities in educational outcomes and student success metrics across race, socioeconomic status, gender, and other student characteristics (Center for Urban Education, 2020). Closing equity gaps is now an important challenge across the nation in education, workforce, and economic development, local community colleges, and particularly rural-serving institutions not only because closing equity gaps will contribute to an increase in workforce population but also because it will support the development of local, regional, and state economies. The Strengthening Career and Technical Education for the 21st Century Act (Perkins V), Assembly Bill 504 and the vision for success goals of the California Community Colleges Chancellor's Office mandate that community colleges develop student equity plans as a strategy to identify emergent inequity and effective approaches to remove barriers. However, rural-serving institutions such as Butte College, a community college in the north and far north region (NFNR) of California, face additional challenges in closing equity gaps due to geographic, cultural, and socioeconomic factors.

The work on gender equity in the Agriculture Career Cluster[®] at Butte offers an opportunity to better understand many challenges that Career Technical Education (CTE) students, particularly those from under-served rural communities, face throughout their academic experience and what specific support can be provided to address their basic needs.

This project aims to use an equity-minded approach to analyze gender enrollment in agriculture career pathways between 2017 and 2021 to allow colleges to see when policies and practices that appear to be beneficial are either closing or worsening inequality in agriculture programs.

Project Purpose

The principal purposes of this project were as follows:

- 1- To use CTE participants' data between fall 2017 and fall 2021 to examine gender enrollment in CTE Career Clusters. We focused on gender enrollment only in agriculture career pathways at Butte.
- 2- To use the equity tool, Percentage Point Gap (PPG), to identify the existence of gender gaps among CTE participants enrolled in the Agriculture Career Cluster to inform policy discussions and develop effective strategies.

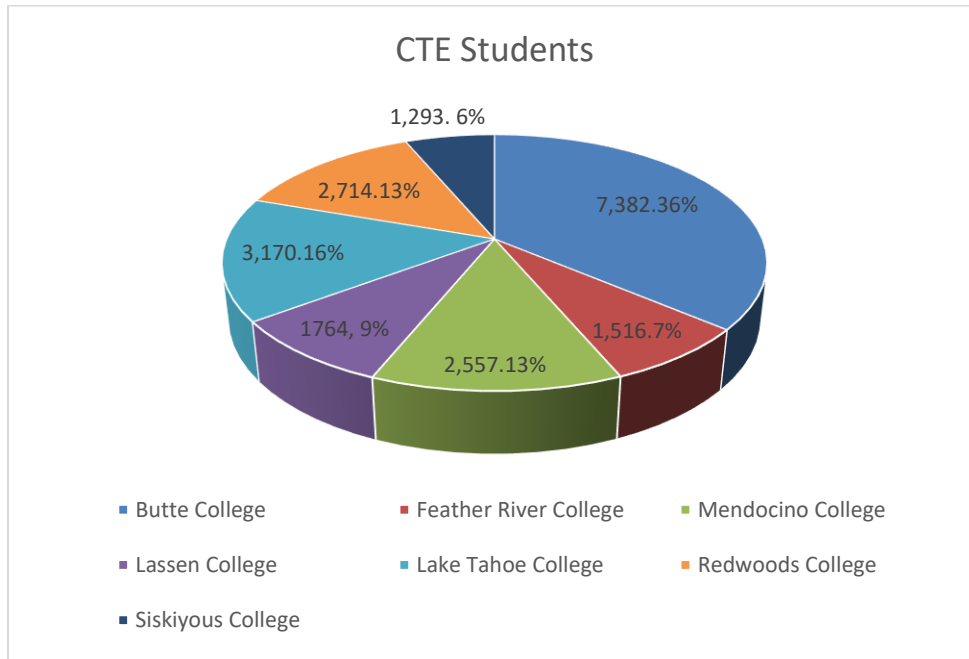
Background

The project focuses on Butte College, a community college located in the NFNR of California. The NFNR is one of the seven macro-regions of the California community college system. The NFNR has a population of more than 3.5 million residents across 22 counties, with 11 community college districts. Rural-serving community colleges in the NFNR include Butte College, College of the Redwoods, College of the Siskiyou, Feather River College, Lake Tahoe College, Lassen College, and Mendocino College. During the academic year 2020-21, 38,676 students (49.49 percent of whom were women and 43.11 percent men) enrolled at 7 out of 11 community colleges defined as rural-serving community colleges. Of those, 52 percent or 20,112 students were identified as CTE students. Nearly 50 percent of students in rural areas are White, 29.95 percent Hispanic, 4.43 percent Asian and 4.65 percent Black. According to the U.S. Census Bureau (December 2021), the unemployment rate in the NFNR ranges from 3.30 percent in

Placer County to more than triple that rate (12.0 percent) in Plumas County; on average 13.9 percent of families are living at or below the poverty level.

Butte is the largest community college in the region, serving more than 36 percent of the 21,807 CTE students (Figure 1). During the academic year 2020-21, 57.46 percent of students enrolled in CTE identified as women and 41.28 % as men.

Figure 1: CTE Enrollment in the NFNR, 2020-21



Source: MIS, Chancellor office

The Importance of This Project

This project is important for the following reasons:

- This project aligns with the California Community Colleges Chancellor Office’s vision for success goals Perkins V and ECMC’s mission (California Community Colleges Chancellor’s Office, n.d.).
- By understanding the gender enrollment patterns in the Agriculture Career Cluster, Butte can define policies and develop recruitment strategies to increase women enrollment and close gender gaps in achievement and industry needs.

Method of the Evaluation

For this project, we used data from the California Community Colleges Chancellor’s Office management information system (Data Mart) as the primary source. The Data Mart provides information about students, courses, student services, faculty, and outcomes. We examined CTE participant educational records, focusing on enrollment in the Agriculture Career Cluster between fall 2017 and fall 2021. Most of the analysis was limited to only fall semester enrollment and student-level data. Data that we analyzed included gender, age, and

agriculture-related programs. We also examined the gender enrollment in all Career Clusters to determine the likelihood that a potential student enrolls in one of the six agriculture sub-programs. The PPG method allowed us to identify the existence of gender- and age-disproportionate impacts in agriculture career pathways and to estimate the number of students “lost” due to the equity gap or the number of students needed to close the equity gap.

Definitions of Terminology

The following definitions are from Perkins V act.

Completers: Students who acquire associate degrees, credentials, certificates, or specific job-oriented skill sets.

Core Indicators of Performance: Measures states are required under Perkins V to report annually including data on the performance of students disaggregated by gender, race/ethnicity, special population categories and Career Clusters.

Credential: An industry-recognized certificate or certification, a certificate of completion of an apprenticeship, a license recognized by the state or federal government, or an associate or baccalaureate degree.

CTE Participant: A student who completes not less than one course in a CTE program or program of study.

Disproportionate Impact: In broad terms, a condition where access to key resources and supports or academic success may be hampered by inequitable practices, policies and approaches to student support or instructional practices affecting a specific group.

Gender Equity: Gender equity means fairness of treatment for men and women according to their respective needs. This may include equal treatment or treatment that is different, but which is considered equivalent in terms of rights, benefits, obligations, and opportunities.” – United Nations Educational, Scientific and Cultural Organization (UNESDOC)

Gender Equality: Means that men and women are equally valued and free from stereotypes, prejudice, and discrimination so that opportunities do not depend on being a man or a woman. Gender equity and women’s empowerment are pathways to gender equality.

Postsecondary Concentrator: A learner who earns at least 12 credits within a CTE program or program of study or completes a CTE program or program of study that encompasses fewer than 12 credits or the equivalent in total.

Skills Builders: Students who did not earn an award. These students enrolled in non-credit CTE coursework, completed at least 48 hours in that year, and enrolled zero hours in CTE each semester the next year (not enrolled in CTE anywhere in the system) or have completed nine units of Student Accountability Model(SAM) coded A-D, with at least one course SAM

coded A-C (within the prior three years), have not received a vocational/CTE award of six or more units, and are not enrolled the following year (California Community Colleges, n.d.).

Data Analysis

Overview of Agriculture Career Cluster at Butte

Agriculture is a critical economic driver not only for rural communities but also for the state of California. Agriculture is the number one industry within the Butte County. In 2021, the crop values represented more than \$609 million compared to \$696 million in 2017. According to Economic Modeling Specialists International (EMSI), jobs in the agriculture sector are expected to grow by 5 percent between 2020 and 2025 with 52 percent requiring middle skills. However, the supply side is far from meeting the industry demands.

The Agriculture Career Cluster at Butte College includes Agriculture Technology and Sciences, General; Horticulture; Landscape Design and Maintenance; Floriculture/ Floristry; Agriculture Business, Sales, and Service; Natural Resources; Parks and Outdoor Recreation; Wildlife and Fisheries; and Agricultural Power Equipment Technology.

In the 2018-19 academic year, the Agriculture Career Cluster was the fifth of the top five fields of study with 10.56 percent of students enrolled. The top five fields of choice were Health Science, Business Management & Administration, Human Services, Law and Public Safety, and Agriculture, Food & Natural Resources, which combined accounted for 77.82 percent of total enrollment.

Of 1,133 students enrolled in the Agriculture, Food & Natural Resources Career Cluster, 33.72 percent (382) were women and 66.3 percent were men (Table 1). Regarding race enrollment in agriculture, none of the ethnic groups made up more than 20 percent. Agriculture appeared not to be the focus of the Black group. For every 20 participants enrolled in CTE Career Clusters, only one enrolled in Agriculture.

Table 1: CTE Participant* Enrollment by Career Cluster, 2019-20

Num	Career Cluster	Total Enrollment	Men	Women	Cluster (%)	Women (%)	Men (%)
1	Health Science	2,482	742	1,740	23.1%	70.1%	29.9%
2	Business, Management & Administration	1,774	889	885	16.5%	49.9%	50.1%
3	Human Services	1,637	359	1,278	15.2%	78.0%	21.9%
4	Law, Public Safety, Corrections & Security	1,322	853	469	12.3%	35.4%	64.5%
5	Agriculture, Food & Natural Resources	1,133	751	382	10.5%	33.7%	66.3%
6	Arts, A/V Technology & Communications	849	452	397	7.9%	46.7%	53.2%
7	Information Technology	383	322	61	3.5%	15.9%	84.1%
8	Architecture & Construction	264	225	39	2.5%	14.7%	85.2%
9	Manufacturing	235	225	10	2.2%	4.2%	95.7%
10	Transportation, Distribution & Logistics	195	182	13	1.8%	6.6%	93.3%
11	Marketing	188	84	104	1.7%	55.2%	44.7%

12	Education & Training	107	30	77	1.00%	71.9%	28.0%
13	Finance	88	55	33	0.82%	37.50%	62.5%
14	Science, Technology, Engineering & Mathematics	71	51	20	0.66%	28.17%	71.8%
15	Government & Public Administration	0	0	0	0.00%	0.00%	0.0%
16	Hospitality & Tourism	0	0	0	0.00%	0.00%	0.0%
	Total	10,728	5,220	5,508	1		
	Percent		48.66%	51.34%			

Source: California Community Colleges, Chancellor’s Office, Management Information System 2019-20

Agriculture Career at Butte

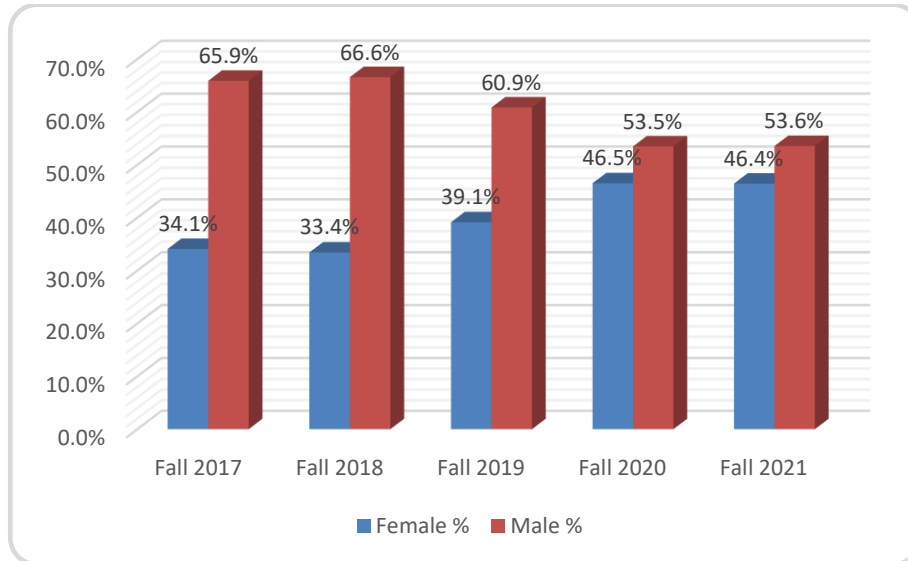
The agriculture career pathways at Butte provide students with entry-level employment opportunities and skills that allow them to either transfer to four-year institutions to continue their studies or join the workforce. The Agriculture Career Cluster offers a variety of degree and certification programs in eight agriculture-related areas (Table 2). Students enrolled in agriculture-related areas develop critical thinking, communication and teamwork skills that are part of industry requirements. Table 2 shows that women students are over-represented in the Animal Science program with an average of 56.35 percent of enrollment. In the Agriculture Power Equipment Technology program, the average enrollment for the past five years was 16.92 percent. Men students continue to be over-represented in the Agriculture Business, Sales, and Service; Forestry; Natural Resources; and Plant Science programs with an average of 60 percent of enrollment. In fall 2018 for instance, women students were evenly represented in the Animal Science program and outnumbered men in Forestry, but they were drastically under-represented in the Agriculture Power Equipment Technology program (10 percent).

Table 2: Women Enrollment in Agriculture Career Pathways

Agriculture Pathways	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Average
Agricultural Power Equipment Technology	13.8%	10.0%	18.9%	22.0%	19.8%	16.92%
Agriculture Business, Sales, and Service	32.4%	28.3%	34.6%	45.2%	47.2%	37.56%
Agriculture Technology and Sciences	38.5%	35.7%	48.4%	57.3%	58.1%	47.58%
Animal Science	60.0%	50.0%	62.1%	44.2%	65.5%	56.35%
Forestry	20.8%	53.8%	44.0%	41.7%	25.0%	37.07%
Horticulture	39.8%	46.5%	40.2%	44.4%	53.9%	44.98%
Natural Resources	33.3%	40.2%	38.6%	46.9%	41.7%	40.16%
Plant Science	34.1%	31.1%	41.2%	49.7%	48.1%	40.82%

Source: California Community Colleges, Chancellor’s Office, Management Information System 2021

Figure 2: Enrollment in Agriculture Career Pathways



Disproportionate Enrollment in Agriculture Career Cluster

In this section, we used fall enrollment data to analyze the gender equity gaps in the Agriculture Career Cluster over five semesters. Students enrolled in the Agriculture Career Cluster can earn an associate in science for transfer degree, associate of science degree, industry credentials or certificates.

While the percentage of women enrolled in agriculture has increased over time, the percentage of men has been generally decreasing. Enrollment for women students increased from 34.1 percent in fall 2017 to 46.4 percent in fall 2021. At the same time, men enrollment decreased by 19.5 percent between fall 2017 and fall 2021. The gap between men and women has narrowed over time, from 31.8 percentage points in fall 2017 to 7.1 percentage points in fall 2021. The change can be due to several activities such as dedicated events, prospective student follow-ups, periodic reviews, and an increase in work-based learning opportunities.

Success in Agriculture

In this section, we focused our analysis on completion in the Agriculture Career Cluster. One of the questions that we try to answer here is whether any under-represented age group is disproportionately affected in terms of completion in the Agriculture Career Cluster. To answer this question, we used data from the Chancellor's Office, particularly data for the fall 2021 academic year. According to fall 2021 data, a total of 816 CTE students (53.55 percent men and 46.45 percent women) enrolled in at least 0.5 CTE units in the Agriculture & Environmental Sciences Instructional Program. In applying the PPG model, Table 3 shows that there is an equity gap between women and men in the Agriculture Career Cluster. Women in the rest of the age categories have been disproportionately affected. On the other hand, men younger than 25 and older than 35 years of age are disproportionately affected. The equity number needed to end the equity gap is 15 for both men and women 35 years of age or older. These results corroborate the general overall enrollment in the agriculture sector.

Table 3: Completion of Agriculture Career Cluster

Women Age Group	CTE Participants	Women Success	% Participants	% Success	Success Rate	PPG	MOE	Full Equity Number
Younger Than 25	244	190	64.38	66.90	77.87	2.25	-5.4	N/A
25 to 29	56	41	14.78	14.44	73.21	-2.41	-11.2	2
30 to 34	18	11	4.75	3.87	61.11	61.11	0.0	N/A
35-60	61	42	16.09	14.79	68.85	-6.77	-10.8	5
Total	379	284	100	100				
Men Age Group	CTE Participants	Men Success	% Participants	% Success	Success Rate	PPG	MOE	Full Equity Number
Younger Than 25	276	204	63.16	63.16	73.91	0.94	-5.2	N/A
25 to 29	65	54	14.87	16.72	83.08	10.10	-10.8	N/A
30 to 34	30	26	6.86	8.05	86.67	86.67	0.0	N/A
35-60	66	39	15.10	12.07	59.09	-13.88	-10.7	10
Total	437	323	100	100				

Source: MIS (2021) MOE: Margin of Error PPG: Percent Point Gap

Strategies for Closing Equity Gaps

Following the analysis presented in the previous section, addressing student equity and achievement gaps is one of the 116 community colleges' priorities in California. In California, several strategies and initiatives have been put in place at both the state and federal levels to address the equity challenge. Outlined below are some of the common policies that we have identified as directly or indirectly contributing to closing equity gaps.

- California Assembly Bill 19 (2017) includes increasing credentials and certificates as part of the goal of the California college promise.
- California Senate Bill 1348 (2018) requires each community college program that offers a credential to report information and licensing data to the state.
- California Assembly Bill 199 (2021) requires the Chancellor's Office to provide grants to encourage community college students to go into a CTE profession through participation in qualifying state-approved apprenticeship programs.
- California Assembly Bill 504 (2017) requires the implementation of a student equity achievement plan and the creation on the campus of a center for equity.
- California Assembly Bill 2235 (2020) requires a student equity plan to include campus-based research.

Other incentives include the Perkins Reserve Grant with priority to rural areas that have a focus on closing equity gaps among CTE students. For instance, the Student Equity Program at Butte provides leadership and accountability to resolve systemic inequities for all Butte College students through engaged research, community outreach, professional development and expanding pathways for access.

SUMMARY OF FINDINGS

As well as urban institutions, rural-serving institutions play an important role in preparing students from under-served and economically disadvantaged backgrounds to join the workforce, transfer to four-year institutions, and contribute to the well-being of rural communities.

CTE students enrolled in the Agriculture Career Cluster at Butte face multiple geographic, academic, and socioeconomic challenges that directly affect their retention and employment opportunity. However, various interventions such as women as guest speakers, job shadowing, work-based learning and coverage of basic needs can be attempted to increase women representation in the agriculture community. In addition, the Student Equity Program provides leadership and accountability to resolve systemic inequities for all Butte College students (Brown, 2021).

Agriculture is the Career Cluster with the fifth highest enrollment at Butte. In the 2019-20 academic year, about 11 percent of CTE students were enrolled in the Agriculture Career Cluster. In other words, for every 10 CTE students at Butte, only one student enrolls in the Agriculture Career Cluster. Of those registered, 33.72 percent were women, and 66.3 percent were men. We found the existence of a disproportionate impact in Agriculture Career Cluster enrollment between men and women.

Our results reveal that both women and men 35 years and older were disproportionately affected. Women students were more likely to enroll and earn credentials in agriculture than men students. Among those 25 years and older, skill builder men students were more likely to earn credentials in agriculture than women students. Given the current Agriculture Career Cluster structure and demographics, it appears that if nothing is done to increase enrollment and particularly women enrollment across agriculture sub-program areas, the gender gaps will continue to grow and will affect the workforce.

Recommendations

Our recommendations are as follows:

- Work collaboratively with public community-based organizations and the private sector to identify and implement culturally responsive support for CTE students to close gender gaps in the Agriculture Career Cluster and increase academic achievement and workforce success.
- Collaborate with all stakeholders to develop policies and funding models that are more suitable for under-represented CTE students at Butte. An example of collaboration is working with local businesses and industries to increase the number of CTE students enrolled in work-based learning programs.
- Partner with telecommunication providers and the U.S. Department of Agriculture to help more students be able to access broadband connections for online courses and provide more grants to support agriculture programs with focus on under-represented students.
- Use Perkins reserve funds or state funds to create new initiatives to address equity gaps among CTE students — particularly students in the non-traditional fields or programs with low enrollment and less completion such as in the Agriculture Career Cluster.
- Work closely with industry partners to validate labor market information as well as develop curriculum that aligns occupations to agriculture career pathways.

- Simplify academic and socioeconomic support for CTE students. For instance, in addition to financial aid, colleges should develop activities that help students with housing, transportation and textbook programs and provide students with a voucher to support credential fees.
- Implement Data Equity Day to allow stakeholders to collaborate and participate in the decision-making process based on data.
- Encourage research to be done to identify the most influential agent for women to choose a career in agriculture.

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