Using Data to Identify and/or Verify Meta-Majors

The RP Group in Collaboration with the Academic Senate for California Community Colleges (ASCCC) and California Community Colleges Chancellor's Office

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Meta-majors refer to the creation of broad program pathways or areas of interest, such as *Allied Health or Business*.[1] They are key components of the Guided Pathways efforts that provide students with a more structured and integrated academic experience.

There are several different approaches (e.g., sorting exercises)[2] colleges can use to develop their meta-majors; this guide offers colleges an example of how one type of data, curriculum information, can be used to identify potential meta-majors or validate the meta-majors that have already been created.

Using Degree of Curricular Overlap to Identify/Verify Meta-Majors

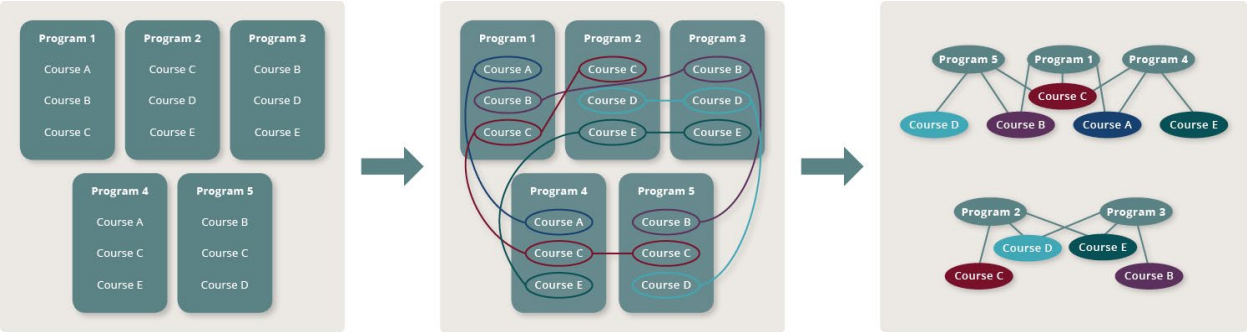
One way colleges can identify or validate meta-majors or clusters of programs is by examining the shared course requirements for programs. The California Community Colleges Chancellor's Office (CCCCO) collects and maintains an inventory of courses and programs (i.e., certificates and degrees) from all California Community Colleges and has recently included data that identifies the core required coursework for certificates and

[1] https://jfforg-prod-new.s3.amazonaws.com/media/documents/Meta-Majors07-07-20161.pdf

[2] See Academic Senate for California Community College's *Considerations for Guidelines while Constructing Meta-majors*: https://ccconlineed.instructure.com/courses/2634/files/222337/download?verifier=zRVch2AVpm1sr8bJUCzBkU8nOE8lOcWQSApN9aaY&wrap=1, Career Ladders Project's Guided Pathways Inquiry and Design: Degree and Certificate Sorting for Meta Majors: https://www.careerladdersproject.org/wp-content/uploads/2017/04/CLP-Guided-Pathways-Inquiry-and-Design_Degree-and-Certificate-Sorting-for-Meta-Majors.pdf, and Jobs for Future *Key Meta-Major Questions to Consider*: https://jfforg-prod-new.s3.amazonaws.com/media/documents/Meta-Majors-Key-Questions-071816.pdf

degrees reported by colleges. These data can be used to identify which programs could be clustered or grouped together into meta-majors based on the course(s) that are shared as core requirements for each program (i.e., overlapping coursework). Here is an illustration of grouping programs based on shared core requirements.

Figure 1. Illustration for Clustering Programs Based on Shared Coursework



The following provides detailed steps for how to approach using curriculum data to identify potential clusters based on overlapping coursework.

STEP 1: Access and download the CCCCO data files

Download the curriculum data files from the CCCCO's Data Mart College Master Course File table: https://datamart.cccco.edu/Courses/College_MCF.aspx[3]

The Data Mart has a publicly available query tool where users can download COCI-related data[4] from each CCC, which includes the following files:

- Master Program File: List of all reported certificates and degrees and their attributes (e.g., award type, program area, status)
- Master Course File: List of all reported courses and their attributes (e.g., credit status, program area, status)
- Program Course File: List of all reported core and required elective courses for each reported certificate and degree

STEP 2: Conduct a cluster analysis

One strategy for grouping programs based on overlapping coursework is to conduct a statistical analysis called a hierarchical cluster analysis. Using a cluster analysis method,[5] clusters of program awards (i.e., degrees and certificates) can be identified based on the

[3] These files include data reported by colleges in the Chancellor's Office Curriculum Inventory (COCI 2.0): https://coci2.ccctechcenter.org

[4] It is unknown how often the data in this query tool get updated.

[5] For a copy of the statistical code used for this suggested analysis, please contact research@rpgroup.org.

number of required core courses that overlap between programs. In addition to using the degree of course overlap, colleges could also use other data points such as the Taxonomy of Program (TOP) codes to group programs based on shared TOP codes.

When conducting the analyses, consider the following:

1. The accuracy and completeness of the data files:
    a. Does the Master Program File accurately reflect all the program offerings (degrees and certificates) the college offers? For example, colleges can compare the programs listed in the Master Program File with what is in the college's catalog OR any other source that has the most accurate and current information
    b. Are the appropriate required core courses and electives reflected for each program?
        i. Determine which programs will be used to identify overlapping courses.
        ii. Verify that all programs identify their associated courses.
2. Any relevant curricular context:
    a. Should noncredit programs be included in the analysis?
    b. How should single course programs (e.g., EMT) be categorized or grouped?
    c. What role do program and course prerequisites play in helping us understand how programs relate to one another in a pathway?
    d. What type of general education courses are required and cut across programs, with a specific lens on math?
3. The cluster parameters:
    a. How many overlapping courses across programs would be sufficient for a cluster? How many clusters or meta-majors would make sense for the college?

STEP 3: Gather additional data to further contextualize and assess the college's meta-major efforts

Once meta-majors have been identified, consider examining their efficiency and effectiveness. The table on the next page provides possible data considerations colleges can use to assess and evaluate their meta-major efforts. When reviewing most of the data presented below, examine these data through an equity lens where the data are disaggregated by key student characteristics, such as race/ethnicity.

COLLEGE CONSIDERATION	DATA THAT CAN BE USED TO EXAMINE THE CONSIDERATION
Including the students' perspectives	Collect student voices using surveys, focus groups, and/or forums to determine whether the meta-majors resonate with and make sense to students
Distribution of students across meta-majors	• Determine the number of students with a declared major in each meta-major • Look at past trends to see how many students have completed each program
Adequate number of sections being offered for courses that students need to complete their program of study	For each overlapping course, identify: • Number of programs that require the course • Number of students in those programs (based on declared major) ---e.g., first time in college students • Number of sections offered in each course • Course scheduling options • Wait lists and fill rates
Resources and workloads across meta-majors	For each meta-major, examine capacity in terms of: • Number of counselors/advisors available to support students in each meta-major • Number of FT instructional faculty in each meta-major • % of courses in meta-major taught by PT/FT faculty • Classroom spaces for each meta-major
Adequate program offerings/areas based on need and alignment of pathways with K12, universities, and industry	Identify regional, state, and national labor needs, including supply and demand in: • K12 pathways/program areas • University pathways/program areas
Efficiency Measures in Pathways	Identify the following: • Number or proportion of students who have attempted and successfully completed nine focused area/major units • Proportion of focused units relative to load taken in a given time period • Proportion of focused units in a year matched to the declared program area • Time to completion for students in each program pre/post meta-major development • Major change rates among students pre/post meta-major development

Concluding Remarks

This guide provides practitioners with an illustration of how data can be used to support meta-major development and validation work as part of the college's Guided Pathways efforts. However, designing and implementing meta-majors is a complex process, and the steps outlined here are part of a multi-faceted approach to ensuring that meta-majors are designed with students in mind. Please be sure to consult other strategies and key considerations to further support your college's redesign efforts.

For more information

Visit https://rpgroup.org/guided_pathways or contact research@rpgroup.org.

Acknowledgements

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To access the codes for the cluster analysis, go to: https://drive.google.com/file/d/10hHo98llK_LE4rXwHvhR1tA2ToNd3_Tf/view?usp=sharing