



# University of Colorado **Boulder**

2019 Program Review

Department of Geography

Academic Review and Planning  
Advisory Committee Report

Approved

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## Process Overview

The Academic Review and Planning Advisory Committee (ARPAC) review of the Department of Geography was conducted in accordance with the 2019 program review guidelines. The unit prepared self-study responses and these were checked by an internal review committee composed of two University of Colorado Boulder (CU Boulder) faculty members from outside of the unit. The internal reviewers submitted a summary of findings derived from the self-study and from interviews and/or surveys with faculty, staff, and student unit members. An external review committee, consisting of two experts from outside of CU Boulder, visited the unit and submitted a report based upon a review of relevant documents and interviews with faculty, staff, and student unit members and university administrators. Internal and external reviewer comments and recommendations are shared when relevant throughout this report.

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## Unit Overview

The Office of Data Analytics (ODA) maintains a standardized description of the Department of Geography [on its website](#). ODA updates the profile annually in the fall semester. This report cites data posted in October 2018, reflecting the state of the Department of Geography as of academic year (AY) 2017-2018. Additional data from the ODA updated data as of AY 2018-2019 and data obtained from the unit are also cited where relevant.

## Disciplinary context

The Department of Geography defines its mission and approach on its website: “We’re experts at bridging the physical and human sciences... We bring a holistic perspective to the physical and human processes that shape the world around us... Our teaching and research span an exceptional array of disciplines and we excel at providing field-oriented, hands-on experience.” Geography departments typically employ physical geography and human geography as two broad subject-matter classifiers. As mentioned above, CU Boulder’s department adds two more: geographic information science (GIS) and environment-society relations. The department is justly proud to maintain high ratings for its efforts: the 2018 Academic Ranking of World Universities (the “Shanghai ranking”) lists it as the top North American program. The infrequent but most recent National Research Council’s assessment (2010) placed CU Boulder’s geography doctoral program second in the nation.

## Research and scholarship

The rankings of the Department of Geography reflect its high productivity in research and scholarship. The external reviewers write that “excellence in the faculty spans across the ranks/demographics.” Indeed, three of the department's faculty members have been designated as Arts and Sciences College Professors of Distinction; and one of them is also a CU Distinguished Professor. The self-study and the unit profile both attest to a significant increase in research funding over the five

years preceding the beginning of this ARPAC review cycle, and the self-study delineates the increase in research production in terms of publications per tenured and tenure-track (faculty member).

The department website classifies the four research areas of its 24 tenure-stream faculty as follows: eight faculty members in physical geography; four in GIS; 12 in human geography; and five in environment-society relations. The expertise of several faculty members spans more than one research area. For example, the self-study describes GIS as employing the methodologies of both physical and human geography in combination with modeling and computation.

In describing faculty members' ongoing physical geography research, the self-study mentions faculty focuses on such areas as climate/cryosphere interactions and polar processes, among others. The self-study further lists multiple areas of human geography research strength, ranging from public community and health to human rights, militarization, indigenous knowledge, and development studies.

For GIS, the self-study lists as research strengths geo-spatial and spatio-temporal modeling; spatial analysis and spatial statistics; uncertainty modeling; generalization and data integration; remote sensing and information extraction; and visualization. These research themes cut across many of the departmental concentrations and build on faculty expertise in physical geography, human geography, modeling and computation. The self-study notes that the recent departure of a senior GIS professor "leaves a significant gap" for the department in this important area. The external reviewers emphasized this gap, too, writing that "Geographical information sciences and remote sensing are growth areas in geographical research and education, and are subfields that

would allow the department to contribute broadly across campus due to the research and educational demand for these areas. The Department does not have the proportion of faculty with expertise in these subfields that characterizes other major departments of geography in North America.”

The self-study describes the research area of “environment-society interactions” as a traditional department strength, and lists a number of faculty research efforts in this area, including human dimensions of climate change; interactions of environmental and social exposures and health; politics of biodiversity and natural resources conservation; and development studies; among others. The self-study also notes that faculty expertise in this area has recently expanded to include work focusing on Latin America, Africa, and Asia.

Collaborations

Geography itself is an interdisciplinary field, and the diverse interests of the department’s faculty and students encourage collaborations across campus and beyond. Five faculty members have appointments in the CU Boulder Institute of Behavioral Science (IBS), while three others hold appointments with the Cooperative Institute for Research in Environmental Sciences (CIRES) and three with the Institute of Arctic and Alpine Research (INSTAAR). External faculty research collaborations exist with corporations and policy-making agencies. Work on climate change and other environmental issues has especially led to formal collaborative work. For example, CU was recently chosen to host the North Central Climate Adaptation Science Center, a five-year project funded by the U.S. Geological Survey to work with land and resource managers in seven Mountain and Midwest states.

National  
and  
international  
context

The self-study reports that Academic Analytics data support the view that Geography’s faculty members are highly productive and influential researchers. Among the 28 Association of

American Universities (AAU) institutions whose geography departments have doctoral programs, Academic Analytics ranks CU's Geography faculty members as well above the median in research productivity, and fourth in citations per publication.

It is noteworthy that fewer than half of AAU institutions have geography departments with doctoral programs. This circumstance reflects the fact that at many peer universities, the various areas studied by geography departments are dispersed into other units. The consequences of such historical patterns for CU Boulder's Department of Geography are discussed below.

### Campus context

The self-study describes the unit's interdisciplinary research and teaching contributions across campus. In addition to holding appointments in various CU Boulder institutes, Geography faculty members are the lead administrators of CIRES, the National Snow and Ice Data Center, the Center for Asian Studies, and the Earth Lab. Geography faculty members also contribute to interdisciplinary certificate programs in public health, Arctic studies, population studies, and demography and contribute significantly to CU Boulder's international curriculum via regional strengths in Latin America, Europe, the former Soviet Union, Africa, China, Tibet, and South and Southeast Asia.

In regard to Geography's ranking relative to that of other CU units, the self-study emphasizes that CU Boulder's 2014 academic prioritization report listed the department as one of only six (out of 50) programs rated "highly effective." In the more recent academic prioritization exercise of 2018, the department's rating dipped slightly into the "effective" category but still placed it seventh among 50 programs. The self-study also stresses that Geography is the only CU Boulder program



rated by the Academic Ranking of World Universities (the “Shanghai Ranking”) as best in North America for scholarly achievement.

Faculty  
and  
research  
personnel

According to the 2017-2018 ODA unit profile, the department employs 24 tenured and tenure-track faculty members (five assistant, nine associate, and ten full professors), two instructor-track faculty members, and two other faculty members (one lecturer and one visiting professor). Subsequent to the date of this profile, one of the full professors was named a distinguished professor.

At the time of the last ARPAC review in 2012, Geography had 23 tenure-stream faculty members, so it has seen a net gain one tenure-stream faculty member during the review period. This is not to say that Geography has not had faculty losses in that time. The self-study counts seven tenure-stream faculty members in physical geography, a decrease from 11 in 2012 when ARPAC last reviewed the department, and 2.5 FTE faculty members in the disciplinary growth area of GIS, a decrease from four in 2012. The self-study notes that since the 2012 review the department lost three full, one associate, and one assistant professor to other institutions.

The department identifies salary compression as one cause of these losses and seeks to gain funding to minimize further losses and to rebuild faculty numbers. While pay for its assistant and associate professors averages slightly higher than comparative pay at other AAU schools, Geography’s full professors earn an average 12% less than their peers as of fall 2019.

If permitted to do so, the department would seek an individual hire in each of five areas: geographic data science, soil physical geography, paleoclimatology, hydrology focused on mountain

water systems, human geography focused on food, and American West water resource issues. The external reviewers recommend increasing faculty numbers in GIS and remote sensing.

Staff According to the ODA profile for AY 2017-2018, Geography employs four staff members: one exempt professional staff member (an information technologist), two administrative assistants, and an office manager. Several hourly student workers augment the support provided by staff members.

The self-study describes both the undergraduate assistant position and the information technology position as having been recently cut from 1.0 to 0.5 FTE. Thus, the self-study reports, the total unit staffing of 3.0 staff FTE represents a decline from 4.0 FTE staff positions in 2013. The self-study also relates that this number will decline further to 2.5 FTE in 2021, when the information technology position will be absorbed into the Office of Information Technology (OIT). The self-study further speculates that the reduction of the undergraduate student assistant position from 1.0 to 0.5 FTE may have impeded efforts to attract undergraduate majors, and that the reformulation of the IT position may erode the student laboratory's functioning. The department would like to return to prior staffing levels.

Undergraduate education

Undergraduates can earn a geography BA degree. Reflecting the diverse nature of the subject as described above, it isn't surprising that undergraduates can opt to specialize in one of six tracks: general geography, human geography, environment and society, physical geography, and GIS. The self-study authors note that this structure helps students better achieve their interests and professional goals. In addition, the department offers undergraduate certificates in Arctic studies, GIS, and hydrology. Students may also minor in geography.

The 2017-2018 Office of Data Analytics profile indicates 175 geography undergraduate majors and 51 minors. These numbers reveal a 13% five-year decline in majors (an 18% decline if measured from the time of the 2012 ARPAC review). Fall 2019 data indicate a further decline to 163 majors. That said, the number of geography minors has more than doubled over the past five years, and by fall 2019 had increased in number to 82.

During AY 2017-2018, 74 geography majors graduated; a 12% increase over that observed five years ago. However, the following year the number declined significantly to 50 graduates. The graduate number places Geography in the middle of the 49 ODA-ranked departments, and toward the bottom of the eight units in this review cycle. Five of the 74 students in AY 2017-2018 (7%) graduated with honors, an increase of almost 50% from five years ago. The median time-to-graduation after declaring the major was four years, about average among CU Boulder departments.

The self-study authors report that the department is more closely monitoring its introductory courses, in part to help stem the aforementioned enrollment drop. The external reviewers also note concern with the enrollment declines but laud the unit's efforts to increase awareness of the degree and offer more attractive course offerings and degree tracks.

Despite the modest enrollment decline in some of its degree programs, the department did plenty of undergraduate teaching, especially utilizing tenure-stream faculty members. During AY 2017-2018, the department taught over twelve thousand student credit hours (SCH), placing it in the broad middle of CU Boulder units; 79% of these hours were taught to non-majors, the highest percentage of the eight units in the

current review cycle. Sixty percent of total SCH were taught by tenure-stream faculty members, the fifth highest percentage among CU Boulder units despite a modest decline from five years previous. Moreover, the tenure-stream faculty member undergraduate teaching load included relatively large classes, averaging 60 students per section, 15th highest among the 50+ rated units.

The self-study explains that a great many non-majors take Geography undergraduate courses to fulfill the minimum academic preparation standards (MAPS) required by the University of Colorado Board of Regents. The College of Arts and Sciences, unlike other CU Boulder colleges, has interpreted the MAPS requirement in social science to include a requirement in geography.

ODA also reports on measures of the program's effectiveness and student satisfaction. FCQ ratings were below the median of 51 ranked units, but the ODA 2016 senior survey found that over 75% of the respondents were generally satisfied with their major, including opportunities for faculty contact and program advising—among the top quartile of ODA-ranked units. Geography seniors felt relatively less positive when evaluating job market preparation provided by the curriculum and CU Boulder more generally.

In January 2019, the internal reviewers conducted an online survey of Geography undergraduate students, summarizing, “the result is overwhelmingly positive and does not raise any grave concerns.”

The strategic plan included in the self-study identifies five undergraduate program goals for the next seven years: to closely monitor course enrollments in light of curriculum changes, and to act quickly to respond to enrollment changes;

to continue work with the Academic Center for Success to make undergraduates aware of geography-related opportunities; to enhance student club offerings as a means to improve undergraduate student participation; to increase undergraduate student engagement in department research through programs such as the Undergraduate Research Opportunities Program (UROP), internships, honors, and independent learning courses and seminars; and to develop course-specific learning outcomes and quantifiably measure their success.

The self-study requests help for Geography with developing means and effective tools to measure if undergraduate majors are meeting the department's learning outcome goals.

#### Graduate education

The department offers geography MA and PhD degrees, the latter with an option to specialize in hydrology. In addition, Geography offers graduate certificates in development studies, in hydrological sciences, and in earth data analysis, and participates in graduate certificates in interdisciplinary documentary media practices (offered through the College of Media, Communication and Information) and in population studies (offered through the Institute of Behavioral Science).

ODA reports AY 2017-2018 Geography graduate student enrollments of 22 MA students and 49 PhD students, placing the department in the broad middle of ranked units. While the number of MA students had increased by 10% in the previous five years, enrollment in the department's marquee PhD program had decreased by 13% in the same period. During AY 2017-2018, the department granted eight MA degrees, a decline of 27% from five years previously, and 12 PhD degrees, an increase of 50% from five years previously. Given the small numbers of students involved, this data has to be carefully interpreted. The self-study authors report that since the 2012

ARPAC review, the department witnessed a 31% decrease in MA program enrollments (a decrease from 28 to 20), and relatively static PhD program enrollment. The department takes pride in its graduation rates and its median times-to-degree that only slightly exceed the gold standard of two years to attain an MA degree and five years to attain a PhD.

The department employs five of its graduate students as part-time graduate instructors, 34 as teaching assistants, and two as graduate research assistants.

ODA reports that FCQ scores for Geography graduate classes are in the broad middle of ranked units. The internal reviewer survey of MA and PhD students found that 94% of the students who responded indicated they were “satisfied” or “very satisfied” with the graduate program. The internal reviewers found that the graduate students were less satisfied with their received financial support, but noted that the amount of financial support is not under the department’s control.

Both the self-study and the external reviewers observe that Geography’s graduate recruitment packages are lower than one would expect for a top program, making it difficult to compete in the recruitment process against other, better-funded programs. The external reviewers also agree with the self-study’s concern over the shrinking size of the MA program, and wonder whether the institution of interdisciplinary certificates has actually made it less attractive for students to enroll in the MA program, since substantial portions of the department’s graduate curriculum are available to them by means of certificates. The external reviewers urge Geography to evaluate this issue.

According to the self-study, the department regularly assesses its graduate curriculum through surveys of graduate students,

and has made a number of changes to that curriculum to respond to student needs and interests. The strategic plan included in the self-study details four goals to increase the attractiveness of the department's graduate program over the next seven years, including: to identify the reasons driving masters enrollment declines since 2012, and to determine possible solutions; to closely monitor the new earth data analytics-foundations professional certificate to determine how successfully it integrates, complements, and improves the graduate program; to examine the success of the department's older hydrological sciences, development studies, and population studies graduate certificates and determine if they should continue; and to discuss the creation of a geographic information system graduate certificate now that its undergraduate counterpart is in place.

Additionally, the department identifies three graduate student professional development goals: to continue course improvements devoted to student writing quality, including research proposal writing; to increase faculty member mentoring of graduate teaching assistants; and to the extent permissible by the university, continue to involve graduate students in department governance processes, including via Geography's graduate student organization.

Post-doctoral  
training

The Office of Data Analytics identified only one postdoctoral fellow. The self-study indicates that Geography has competed for the Chancellor's postdoctoral fellowships, but has been awarded only one, and the intended candidate chose a position elsewhere.

Budget

The self-study reports that Geography receives an operating budget from the College of Arts and Sciences that has remained fairly stable at about \$45,000-46,000 per year in recent years. A sizable proportion of this budget goes to

student transportation for field courses. These transportation expenses were previously funded by course and program fees, but the funding model shifted to an allocation from the College of Arts and Sciences when course and program fees were eliminated by the campus.

Aside from the salary and operating budget supplied by the College of Arts and Sciences, the self-study also mentions gift funds, but does not describe their size or their precise use for departmental initiatives. However, the strategic plan included in the self-study mentions that going forward, the department plans to enhance its funding from agencies and private foundations (e.g. Keck and the Warren and Betty Ford Foundations) and to leverage its collaboration with CU Boulder research centers and institutes to gain additional external funds.

Department faculty members have done well in securing research grants. The self-study reports that in the last five years (2013-2017) a variety of agencies (National Science Foundation, National Institutes of Health, National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, etc.) have funded Geography faculty members, either as principal investigators or co-principal investigators, to a total of \$4,602,745 (compared to \$2,581,000 five years ago). The self-study adds that additional grant dollars may be attributed to Geography faculty members affiliated with IBS, CIRES, and INSTAAR. The self-study reports, however, that after the allocation procedure, Geography accrues only about \$48,000 per year in departmental administration indirect cost recovery (DAICR), and that this amount is insufficient to cover startup packages for new faculty recruits.



Space  
and  
Infrastructure

The department is housed in the decrepit Guggenheim building, which, unlike the eponymous museum, was not designed by Frank Lloyd Wright. The Office of Data Analytics reports that Geography's assignable square footage per tenure-stream faculty member ranks it 33rd out of 44 degree-granting academic units. The per-person square footage, however, is less of an issue than is the building's lamentable state of repair. Guggenheim has seen only minimal improvements since it was constructed in 1908. The self-study summarizes:

Seven years of continued deterioration have resulted in conditions that are at times intolerable for student occupation (excessive heat in summer since there is no air conditioning; water leaks; broken windows, lack of controlled heating in some classrooms, rodent infestations). This makes it difficult for our current students to work, study, and teach in Guggenheim, thus having an impact on student retention and time-to-graduation rates. In addition, the conditions in Guggenheim, coupled with the dispersed student space across campus, affect our ability to recruit new graduate students. When potential applicants visit the department, we often hear how shocked, surprised, and disappointed they are with the physical space we can offer them, and how this plays a part in some decisions to go elsewhere.

The paucity of workable Guggenheim space has encouraged significant numbers of Geography faculty members to office elsewhere, including in the Museum Collections Building (two faculty members), Cristol Chemistry (one), Ekeley (one), the Sustainability, Energy and Environment Community building (four), East Campus RL2 (one), and the IBS Building (two).

Geography has seen some physical plant improvements since its 2012 ARPAC review. A teaching room was renovated into a wet laboratory for physical geography students, and the main GIS undergraduate teaching laboratory (named KESDA) was renovated, with its hardware and software upgraded on a semi-regular basis. Despite these advances, the situation is bad. Perhaps the best assessment comes from the external

reviewers in their report: “When an institution allows a general deterioration of space it promotes a sense that no one cares and that no one is responsible.”

CU Boulder has made the renovation of Guggenheim one of its top capital construction requests to the state of Colorado for more than a decade, but despite approval by the Board of Regents, the project has not received state funding.

Governance

The department's by-laws are detailed, e.g., not only requiring that faculty meetings be held once a month during the academic year, but also that they be held “on a Thursday, at 3:30 pm.” The by-laws’ participation and voting procedures are quite inclusive. For example, any faculty member may submit an agenda item. The outcomes of faculty member votes are determined by majority rule, and faculty members may vote by absentee ballot. Graduate students elect representatives who are expected to attend faculty meetings and are collectively considered as present on faculty member recruiting committees, with the right to cast a group vote.

The department has four standing committees: undergraduate, graduate, personnel, and computer. To take the undergraduate committee as an example of inclusive departmental governance: it consists of equal numbers of undergraduates and faculty members and is responsible for making recommendations and issuing reports to the faculty on all undergraduate matters, such as curriculum planning, courses, requirements, advising, resources, career planning, publicity, and special activities and programs.

The self-study authors appended the department’s written policies governing reappointment, promotion, and tenure. These policies comply with the University of Colorado and Board of Regents law and policy. The teaching evaluation

criteria appropriately describe multiple measures of teaching for evaluating a faculty member. The criteria also require faculty members to separately categorize their efforts into undergraduate and graduate teaching. The research evaluation criteria address publication productivity and significance as well as a faculty member's grant funding record.

The department has utilized a formal mentoring process since 1993. Each assistant professor is paired with a tenured professor who has similar research interests. The two are expected to meet at least once per semester, as well as annually with the department chair to review progress and plans. Most assistant professors hired in the past have been promoted with tenure—a record that the department attributes partly to its mentoring program. However, the external reviewers note that in their meetings, “[s]ome of the junior faculty were unsure regarding the specific expectations for tenure or for promotion to full professor.”

Finally, the department's website details student and faculty member grievance procedures. Student grade appeals are handled in accord with the College of Arts and Sciences' policy. Procedures for handling other grievances are spelled out, dependent on the contingencies of the case: e.g., what happens if the chair is the griever?

Inclusive  
excellence

The percentages of tenure-stream faculty members who identify either as women (36% in the 2017-2018 ODA unit profile) or as belonging to an underrepresented minority population (14%) place the department in the broad middle of 66 ODA-ranked units but place the department fourth and first, respectively, among the 13 units reviewed in the current cycle. The corresponding percentages among its undergraduate majors (36% women, 12% with underrepresented minority status) are below the median of all units and place the

department seventh and eighth, respectively, among the eight units under review that have undergraduate degree programs. Over the previous five years, the percentage of women undergraduate majors remained stable, but the percent of undergraduate majors with underrepresented minority status increased by 74%.

While its percentage of women graduate students (49%) is in the broad middle both of total campus units ranked and of the units in the current review cycle and has increased by 10% from the levels five years prior, the percentage of Geography graduate students who identify with an underrepresented minority population (4%) is among the lowest among both total campus units and the units in the current review cycle.

Over the same five-year period, the number of international undergraduate geography majors more than tripled, and the unit ranks in the highest quartile in the percentage of both undergraduate and graduate international students, among the eight units in the current review cycle.

The self-study lists a number of departmental efforts to reach out to undergraduate students who identify as belonging to minority groups. The strategic plan included in the self-study describes a goal to improve representation among geography graduate students from underrepresented minority populations. Geography has also pledged to work toward faculty hiring diversity, including by leveraging a College of Arts and Sciences competitive diversity hire line to recruit a mid-career faculty member.

Climate  
and  
culture

ARPAC conducted a climate survey of faculty, staff, and graduate student appointees in March 2018. The self-study reports that while this survey found general satisfaction with the department climate among faculty members, a sizable minority

of faculty members who responded felt that “at CU Geography, one or more faculty members say things or behave in ways that humiliate or intimidate other faculty.” Relatedly, and perhaps most importantly, 26% felt that faculty incivility was having a disruptive effect on department functioning. The self-study indicates that a small number of faculty members may be responsible for the majority of this behavior.

The self-study also reports a small but significant number of graduate students who responded that women, international students, students from minority populations, and students of different religions or political views are not treated with respect. The self-study provides a number of plans to address these issues among both faculty and graduate students, including discussion at a future faculty retreat. Likewise, the department plans to host an annual graduate student retreat to help solve climate-related issues affecting that group, including advising and recruiting process inequities.

Surveys of geography undergraduate and graduate students conducted by the internal reviewers also assessed aspects of the department climate. More than eight of every ten participating undergraduate students “strongly agreed” with the statement “Geography encourages a climate that is tolerant and respectful of all individuals.” Similar results were found in the graduate student survey, which showed that 91% agreed that the department encourages a climate that is tolerant and respectful of all individuals. The internal reviewers summarized their unit climate evaluation by noting that “there is a strong commitment to the department by staff, and a mutual appreciation between staff, students and faculty.”

The self-study requests that the College of Arts and Sciences support to conduct regular anonymous climate surveys of all

faculty, staff, and graduate students as a means to proactively address possible issues.

Strategic vision  
and  
planning

The self-study includes a detailed and comprehensive 15-page strategic plan. The plan identifies goals set at the time of the 2012 ARPAC review and provides a candid assessment of the department's performance on each. The plan also elaborates new goals, which have been mentioned in the sections above. The self-study acknowledges that a fully new strategic plan is warranted in the near future.

## Past Reviews

The department has addressed all of the ARPAC recommendations in the 2012 review and has seen at least some forward progress with all of them, though there have been some setbacks and frustrations, especially in the area of space renovation.

Geography was asked to complete a strategic plan that bolsters the unit's already high reputation. Since that review, the unit has constructed a hiring plan and used departmental retreats and discussions to create other elements of a strategic plan as it relates to undergraduate curriculum and graduate recruitment. As mentioned above, the self-study for the current review includes an updated strategic plan for the department, but acknowledges a need to revise that plan wholesale. Faculty hiring has been successful but has just barely kept up with recent retirements and other losses.

Further post-review developments include: Geography implemented ARPAC recommendations to allow the extension of the chair's term from three to four years; it strengthened the GIS program; updated DAICR agreements to conform to campus policy; increased student participation in the honors program; revised its bylaws; and increased faculty participation in undergraduate student mentoring. Additionally, academic advising has been successfully restructured to a team of four advisors housed in the Environmental Design program (ENVD) and shared with ENVD and the Environmental Studies program. Geography hopes this new structure will expose more students to the opportunities afforded by its curriculum.

The department reports partial but frustrated progress in several areas. Geography received funding to implement limited space improvements as described above, but the renovation of the Guggenheim building continues to be deferred by the Colorado state legislature. Student populations have been

diversified, especially in terms of international students and students from underrepresented minority populations; but despite productive departmental discussions, recruitment of diverse faculty remains elusive. Finally, the department would like further support and guidance in developing assessment of student learning outcomes and student success.



## Analysis

The Department of Geography has earned its top rankings. Its excellence in research and teaching, well documented in the self-study, is borne out not only by academic metrics such as those employed by external ranking agencies, but also by measures of undergraduate and graduate student satisfaction expressed in recent surveys. In addition, Geography demonstrates a truly thoughtful and comprehensive culture of evaluating its own programs, culture, and climate, incorporating that self-assessment into an evolving strategic planning process that defines attainable goals and well-defined steps to meet those goals. ARPAC lauds the department for these efforts in strategic planning as well as for Geography's demonstrated success and status in comparison to its peers nationwide and worldwide.

At the same time, Geography faces further challenges, most of which have already been defined and anticipated by the department in the self-study. While some of these are well within the unit's control, others are structural and will require external assistance and/or resolution.

Significantly, crucial aspects of the department's strategic planning—including for faculty hiring and student enrollment, discussed further below—are complicated by the evolution of geography departments nationally, to which we now turn.

As Brian Baskerville, a geographer at the United States Department of Agriculture, writes: "In the latter half of the 20th century, geography as an academic discipline suffered greatly, especially in American higher education. The reasons for this are undoubtedly many, but the biggest contributor was arguably a decision made at Harvard University whose president in 1948, James Conant, declared geography to be 'not a university subject.' In the ensuing decades, universities began dropping departments of geography as an academic

discipline until it was no longer found in the nation's top schools.” This unfortunate history is reflected in the rankings of the remaining departments named “geography” that maintain doctoral programs. US News and World Report does not rank departments named “geography.” Instead, the internet query “rankings of PhD programs in geography”, prominently points to a web page maintained by CSU-Pueblo business statistics professor Justin Holman, whose 2017 ranking of the 60 PhD programs labelled as “geography” includes as the top five the University of California, Santa Barbara, University of Colorado Boulder, Ohio State University, University of Oregon, and Pennsylvania State University. Those five are all fine schools that one would be proud to attend or to work for. But both the absence of rankings from U.S. News and the absence of elite schools from Holman’s list provide some evidence that elite institutions don’t emphasize geography departments as much as they once did.

But this did not deter universities from offering geography subject areas in other departments and programs, as Baskerville also describes. The same spread of geography’s subject areas to other departments has also occurred at CU Boulder, despite the presence of our own high-quality Department of Geography. For example, teaching and research in the relatively new subject area of remote sensing and its applications (e.g., LIDAR mapping technology)—a field called out by the external reviewers as a needed growth area for Geography —widely exist elsewhere on campus. The Department of Aerospace Engineering Sciences hosts a remote sensing graduate certificate requiring four courses chosen from a list of 26, only six of which are offered by Geography; four other CU Boulder departments provide the other 20 eligible courses. Similarly, while several Geography faculty members specialize in hydrology, hydrologists are also domiciled in the

Department of Geological Sciences and in the Department of Civil, Environmental, and Architectural Engineering.

ARPAC sees a potential opportunity here. While remote sensing and hydrology are no doubt each approached differently in the different departments that host these fields, it may be the case that teaming up across relevant departments may benefit all. The interdisciplinary academies urged by the Academic Futures process, for example, might encourage an interdepartmental major in hydrology or in remote sensing, and/or might encourage undergraduates majoring in degrees other than that offered by Geography to seek a geography minor. Moreover, as a campus good, the departments might collectively pursue cluster hires. In any case, it would benefit the campus as a whole to consider these fields as interdepartmental wholes rather than siloed parts, in which case Geography (like the other departments) could better advocate for resources in this area to be directed its way.

Faculty  
recruitment,  
retention,  
and  
mentoring

Since the 2012 ARPAC review, Geography has lost four physical geographers and 2.5 FTE dedicated to geographic information systems/remote sensing specialists to other institutions. These losses may be laid at least in part at the feet of structural difficulties particular to CU Boulder. As in most units on campus, full professor salaries lag those of disciplinary colleagues at AAU peer institutions. As addressed further below, the department has also suffered staff losses, and continues to make do in the inadequate Guggenheim Building. All of these factors may discourage faculty members from remaining at CU Boulder when other, perhaps better-funded institutions beckon. ARPAC encourages the campus to revive efforts from previous years to address salary compression for highly-productive tenured faculty, and not to let up on advocating for renovation of the Guggenheim building. In addition, however, ARPAC believes that a case might be made

across the campus (as referenced above) for a cross-campus, interdisciplinary cluster hire in GIS/remote sensing, and Geography should be part of any such effort.

The department has done well in hiring promising faculty and in mentoring pre-tenure faculty members through the tenure process. However, given that junior faculty still feel unsure about standards for promotion and tenure, this area should be a special focus of mentoring, perhaps of direct mentoring by the chair rather than by an appointed faculty mentor.

Staff  
support

While the internal reviewers report that staff members are committed to the department and there seems to be an atmosphere of mutual respect among faculty, staff, and students, Geography is somewhat demoralized by its staff numbers' shrinking size, both past and projected. The unit should work with the College of Arts and Sciences, and vice versa, either to propose an additional full- or half-time staff position, or to construct a memoranda of understanding with OIT that will assure that information technology support will be continued at the same level once the current staff member in this area moves full-time from Geography to OIT.

Space  
and  
infrastructure

As described above, the state of the Guggenheim building is simply shameful, and surely violates health and safety standards. If possible, Geography administrative, faculty and graduate student offices, at the very least, should be moved to another building as long as Guggenheim remains unrenovated.

Undergraduate  
education

Undergraduate enrollments in Geography have declined, if not precipitously. The unit does a considerable amount of important teaching for non-majors, but some of that is prompted by the College of Arts and Sciences' interpretation of the MAPS social science requirement to mean geography. The self-study recognizes a need to increase student recruitment and

retention, but also recognizes that factors not wholly within the department's control, such as undergraduate movement toward the STEM fields, have contributed to the decline. As with the faculty, Geography might suffer from other departments offering similar foci (e.g., hydrology and remote sensing) that come, in those cases, with the brand name of a more obviously scientific or engineering degree.

ARPAC applauds Geography's current efforts and plans to increase undergraduate recruitment and retention, and recommends that the department explore new tools offered by ODA to track movement into and out of the major, so as to identify and either amend or capitalize on key points at which students are gained or lost; and, second, the department should build bridges with the new Program in Exploratory Studies (PES), where students whose majors are undecided or who were not eligible upon enrollment for placement in the College of Engineering and Applied Science are advised on possible alternative majors in their areas of interest.

#### Graduate education

Geography has a fine record in training and placing its graduate students, and is to be lauded for the PhD students' short time-to-degree in relation to other departments. The unit's esteemed research is surely a big factor in its recruiting top-quality students. The self-study makes a convincing case, however, that the department's substandard facilities and its inability to offer adequate funding packages hinder efforts to continue attracting the best possible graduate students.

The self-study also points out that prospective graduate students are recruited not only into other geography programs, but also into other disciplines such as geology or anthropology. Here, the interdisciplinary nature of geography itself as a discipline seems to be the structural problem. The external reviewers speculate that the "introduction of new

[interdisciplinary] graduate certificates might be responsible for the decline [in master's student enrollments], and if so the Department will need to assess if the certificates offer a net positive for the Department measured in terms of enrollment and intellectual environment." Interdisciplinarity might, however, also be part of the solution, especially in recruiting students in a master's program outside of Geography to the department's doctoral program. Geography may want to reposition the interdisciplinary certificates in which it participates as a bridge for master's students in another field to make the leap into doctoral studies in geography.

Inclusive  
excellence

ARPAC admires Geography's many efforts to increase diversity among its community and applauds its success in recruiting women faculty and students, as well as international students. The department's low percentages of faculty and students from underrepresented minority groups may be par for the field nationwide. Nonetheless, ARPAC urges the department to leverage its global research and teaching perspectives to market its courses and degree programs to students who share an interest in diverse populations and perspectives; such students may include a higher percentage of students from diverse groups than the department currently enjoys. ARPAC also encourages the department to continue its efforts to diversify its faculty, including continued targeted hires and other opportunities afforded by campus programs.

Climate  
and  
culture

While the internal reviewers' student surveys demonstrated that students, on the whole, find the department's environment to be respectful and welcoming, both the self-study and the external reviewers discuss the fact that faculty do not feel the same. ARPAC agrees with the external reviewers that the "self-initiated and conducted climate survey is commendable and a solid first step in addressing some faculty concerns over what some consider a degree of incivility particularly during faculty

meetings.” ARPAC also endorses the external reviewer’s suggestion that Geography should “agree on and outline what could be called 'rules of engagement' that would govern the style of conversation when discussing contentious issues in faculty meetings.” Finally, ARPAC urges the department and, if necessary, the dean of the College of Arts and Sciences, to take further action if faculty members continue with disrespectful behavior, using the policies and procedures outlined in the campus policy of *Professional Rights and Duties of Faculty Members*.

## Recommendations

The members of the Academic Review and Planning Advisory Committee address the following recommendations to the Department of Geography and to the offices of responsible administrators:

To the Unit:

1. Focus the department's case for more tenure-stream faculty on the arguments that (1) particular subject areas it serves are underfunded on the campus, rather than just within Geography; and (2) campus resources needed to remedy the underfunding in those subject areas are best allocated to Geography. Consider proposing joint or cluster hires with other departments that have shared research and teaching interests.
2. Clarify tenure and promotion standards processes in the by-laws and encourage the clear communication of those processes to junior faculty members through the long-standing and successful faculty mentoring system, and through additional mentoring by the department chair as needed.
3. Continue to more aggressively market the undergraduate geography major and use other tools to boost enrollment:
  - a. In particular, target prospective underrepresented minority students;
  - b. Seek assistance from ODA in understanding student entrance into and exit from the major, in order to identify points of opportunity for recruitment and retention;
  - c. Build an ongoing advising relationship with the Program in Exploratory Studies (PES) to familiarize that group of students with geography studies and its career potentials.
4. Consider the effectiveness of the interdisciplinary graduate certificates in recruiting students into Geography rather than



into a related department. If certificates are maintained, use the opportunity to recruit master's students participating in those certificates into doctoral study in geography.

5. Consulting with the assessment group in ODA, continue efforts to define and assess student learning outcomes and determine student post-graduation careers and educational paths.

6. Open a sustained departmental conversation and apply campus policy to address the complaints registered in the March 2018 climate survey regarding comments made by faculty that compromise a civil and respectful work environment:

- a. As contemplated in the self-study, institute a set of ground rules for departmental discussions in faculty meetings and other gatherings;
- b. Implement plans to conduct a regular cycle of climate surveys of faculty, staff, and students; and
- c. With the assistance of the Department of Human Resources, require training for faculty who need to be made aware that their interactions with others in the department can come off as demanding and disrespectful. Faculty members should be reminded to treat all people with respect.
- d. Follow up on continued poor behavior with sanctions as outlined in the campus policy of *Professional Rights and Duties of Faculty Members*.

To the Dean of the  
College of Arts and  
Sciences:

7. Consider Geography proposals for faculty hiring that fill recent deficits in prominent research areas. Consider and assist in interdisciplinary joint and cluster hire proposals across departments in areas of specialization that Geography shares with those departments.

8. Support Geography in conducting a regular cycle of climate surveys of all faculty, staff, and graduate students so that the department may be proactive in the identification and remediation of issues.

9. Support Geography, if necessary, in sanctioning faculty who persist in disrespectful behavior toward others in the department.

To the Provost:

10. Sponsor a cross-campus study to measure the resources being devoted to subject areas in other departments that significantly overlap with subject areas that Geography identifies as most critical to its future. Ensure a rational allocation of additional resources to the unit(s) best equipped to meet the additional needs of those specific areas. Consider proposals for cluster hires or joint hires.

11. Continue to support the chancellor in advocating with the CU System and the Board of Regents for renovation of the Guggenheim building. While the building awaits renovation, consider moving the Geography administrative, faculty, and graduate student offices in Guggenheim to another location.

## Required Follow-Up

The chairs of the Department of Geography shall report annually on the first of April for a period of three years following the year of the receipt of this report (i.e., April 1st of 2022, 2023, and 2024) to the divisional dean for natural sciences and the dean of the College of Arts and Sciences and to the provost on the implementation of these recommendations. Likewise, the dean of the College of Arts and Sciences shall report annually on the first of May to the provost on the implementation of recommendations addressed to the program. The provost, as part of the review reforms, has agreed to respond annually to all outstanding matters under their purview arising from this review year. All official responses will be posted online.