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# Findings of the Committee Reviewing the College of Public Health, University of Iowa September 19, 2019

## Introduction

The College of Public Health (CPH or the College) is youngest of the eleven colleges at the University of Iowa. It was founded in 1999 and moved to the newly constructed College of Public Health Building in 2012. According to the most recent accreditation report completed in 2018, the college enrolls more than 500 students and employs 77 primary faculty. The college offers more than 35 degrees through its five departments, sponsors joint degrees with several other university academic units, and offers continuing education opportunities to the professional public health workforce. The College leads or participates in many research centers: 22 centers are identified by the College and most, if not all, centers require interdisciplinary research collaborations [1].

The committee charged to provide the seven-year review of the College consisted of Keri Hornbuckle (chair), David Cwiertny, and Ann Marie McCarthy. Hornbuckle and Cwiertny are professors in the Department of Civil & Environmental Engineering in the College of Engineering and each hold secondary appointments in CPH. McCarthy is a professor and Associate Dean for Research and Scholarship in the College of Nursing.

## Part I: Charges

The UI Operations Manual requires regular review of colleges, but because the CPH has recently been through accreditation review, Provost Curry expected this review to be brief and focus on two major opportunities for CPH improvement. First, the Provost directed the committee to provide suggestions for **enhanced interdisciplinary research collaborations** with UI colleagues. Recognizing that the CPH has been quite successful in the area of interdisciplinary research (e.g., in FY 2018, faculty and staff served as collaborators on over \$25M of research awards while serving as Principal Investigators on over \$43M), the Provost and the CPH are interested in ensuring that the CPH takes advantage of other opportunities. Specifically, the review committee was asked to consider and offer suggestions on how the CPH might a) Increase research collaboration across departments within the College; and b) Identify potential partners for interdisciplinary research across campus, including partners that the College might not have worked with before. The Provost asked for suggestions in reaching out and/or facilitating those partnerships.

Second, the Provost directed the committee to **identify opportunities to capitalize on the College's collective areas of excellence** (Rural Health, Comparative Effectiveness Research, and Community Engagement) in its research, teaching, and service missions. These three areas were

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identified by the CPH in 2011 and now, eight years later, the Provost recognized the need to review the College's effectiveness in capitalizing on these areas of expertise. The Provost asked the committee to consider the following questions: 1) How can CPH better capitalize on its identified strengths? 2) How can CPH highlight its work in these areas? And 3) Are there ways the CPH can do a better job of integration and synergy with these missions?

## Part II: Committee Activities

The committee was charged on February 6<sup>th</sup>, 2019 by Provost Curry. The committee requested additional information and met to discuss the planned approach on March 7, 2019. The committee reviewed the requested materials including the current CPH Strategic Plan [2], the CPH Self Study and Final Report from the recent Accreditation Review [3], and a spreadsheet of faculty grants and alignment with collective areas of excellence developed in 2011.

To better understand the goals of the charges, the committee met with Dean Edith Parker (March 26, 2019). In discussing the charges, Dean Parker noted that the college is interested in raising the awareness of the CPH efforts in successfully undertaking interdisciplinary research collaborations. She also identified the benefits to students: interdisciplinary collaborative research enhances student flexibility in their careers and improves student resiliency as the need for their skills changes over time. Dean Parker recognized the opportunities to enhance collaborations with their traditionally strong partners like the College of Medicine, the College of Engineering, and the College of Nursing, but also develop new partnerships across campus. She also acknowledged that there were no expectations or formalized activities, research or otherwise, in the College associated with the three identified collective areas of excellence, Rural Health, Comparative Effectiveness Research, and Community Engagement.

To better understand the research productivity of CPH investigators, the committee met with Associate Dean for Research Corinne Peek-Asa (April 24, 2019). She noted that the Strategic Plan identifies a goal that 25% of external grant proposals include a co-investigator from outside the CPH [4]. She provided the most recent quarterly reports of research productivity for FY17, FY18, and FY19.

To better understand the extent of extramural funding in the CPH, the committee worked with Aaron Kline, Director of Research Development in the Office of the Vice President for Research (OVPR). We were provided access to grant proposal routing information compiled by the Division of Sponsored Programs (DSP). The DSP Pre-Award External Funding Data reporting solutions (DSP solutions) were developed through partnership with the ITS Business Intelligence Shared Services Center (BISSC) and are the result of a collaborative and inclusive project through engagement of campus stakeholders in focus group needs analysis, testing, and iterative feedback. The committee explored the data provided in DSP solutions and assessed its utility in addressing the charges.

To better understand the extent of interdisciplinary collaborations, Kline directed the committee to Jose Jimenez, the Director of Research Information Systems. Jimenez has been

developing new tools for visualizing the data provided on grant proposal routing forms. We were provided access to the new tools. The committee explored the visualization tools and assessed their utility in addressing the charges.

Lastly, to better understand the view of the CPH faculty and staff, the committee developed a survey which was released June 25 to July 2, 2019. The survey asked for faculty and staff perspectives on the two charges.

## Part III: Committee Findings

### Charge 1. Enhanced Interdisciplinary Research Collaborations.

Interdisciplinary research is an important goal of the College. For example, the current CPH Strategic Plan identifies cross-collegiate and cross-departmental collaborations as an objective to achieving research excellence and sets a target metric to assess success [4]. The target is 25% of all grants to include cross-departmental collaborations and 25% to include cross-college collaborations. Furthermore, the College sets a target for more than 50% of total external research dollars to fall under these two categories.

According to the 2018 Progress Report, these targets were achieved in at least one of the last three years (Table 1). In fact, the College has exceeded this target in several years. It is particularly notable that in FY 2018, 61% of all external grant dollars included cross-departmental collaborations and 56% included cross-collegiate collaborations, indicating that the largest grants were most likely to include these collaborations. Overall, outcome measures illustrate robust and sustained collaborative research partnerships in the CPH.

*Table 1. Performance outcome measures from the CPH strategic plan 2018 progress report.*

Outcome Measures	Target	FY2016	FY2017	FY2018
<b>Collaborations</b>				
Cross-departmental				
Grants (#)	44	37	33	54
All grants (%)	25	20	14	29
Total dollars (\$)	27,069,315	18,367,904	16,452,311	26,647,847
Total dollars (%)	53	44	43	61
Cross-Collegiate				
Grants (#)	44	28	26	38
All grants (%)	25	15	11	20
Total dollars (\$)	27,366,792	16,795,498	15,008,787	24,705,427
Total dollars (%)	54	40	39	56

The OVPR tracks the number and size of cross-unit collaborations using the data reported on routing forms when a proposal is prepared. Our committee explored this data to understand what units on campus were the most fruitful units for CPH research collaborations. We used data collected since the implementation of electronic routing forms in 2010. We reviewed this data using a series of visualization tools developed by the OVPR. Full examination of this data is beyond the scope of this committee but recommended for further review. For example, the visualization tools can identify the specific individuals in each CPH department with the largest representation in cross-unit collaborations, in dollars. The tools can also identify the specific pairs of collaborators associated with the largest cross-unit collaborations in any time period since 2011. The visualizations connect investigators if they appeared on the same grant together as Principal Investigator, Co-Investigator, or Multiple Investigators. We found two of the visualizations – the Chord Diagram and the Matrix – worth examining further.

The committee found the Chord Diagram to be most useful for the analysis of the UI units engaged in research collaborations with CPH (Figure 1) [5]. The Chord Diagram tool illustrates the research collaborations between principal investigators (PIs) and co-PIs. This visualization of routing data indicates extensive collaborations between researchers in the CPH with other UI Colleges. As expected, the Carver College of Medicine (CCOM) researchers represent the largest number of collaborators, with the College of Liberal Arts and Sciences and the College of Engineering representing the next highest numbers (Figure 1).

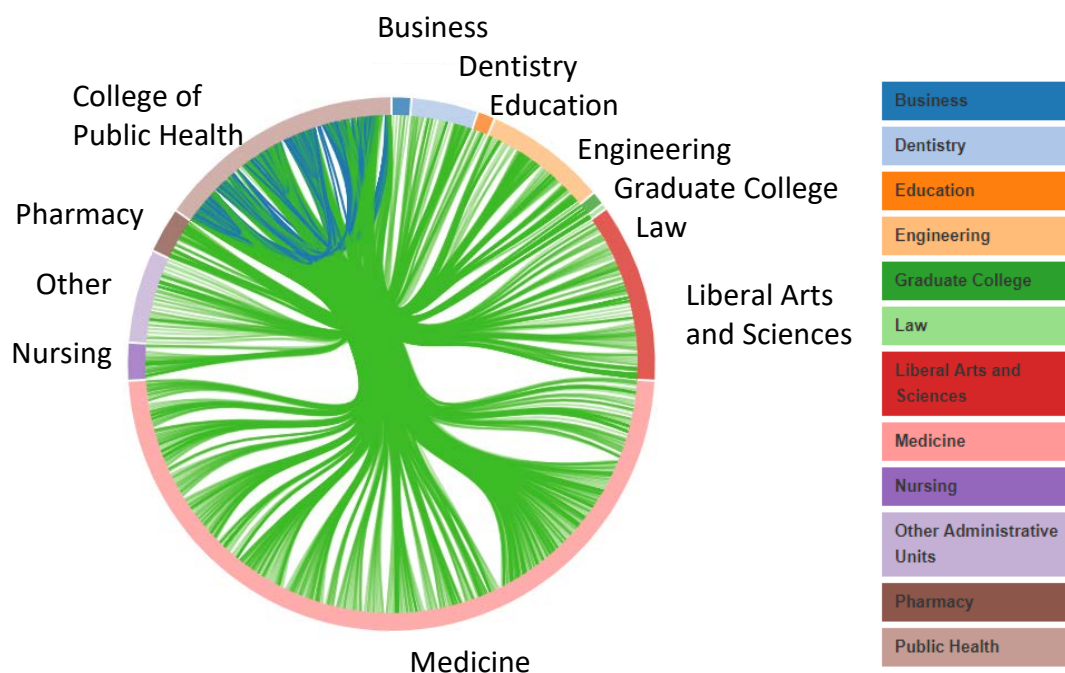
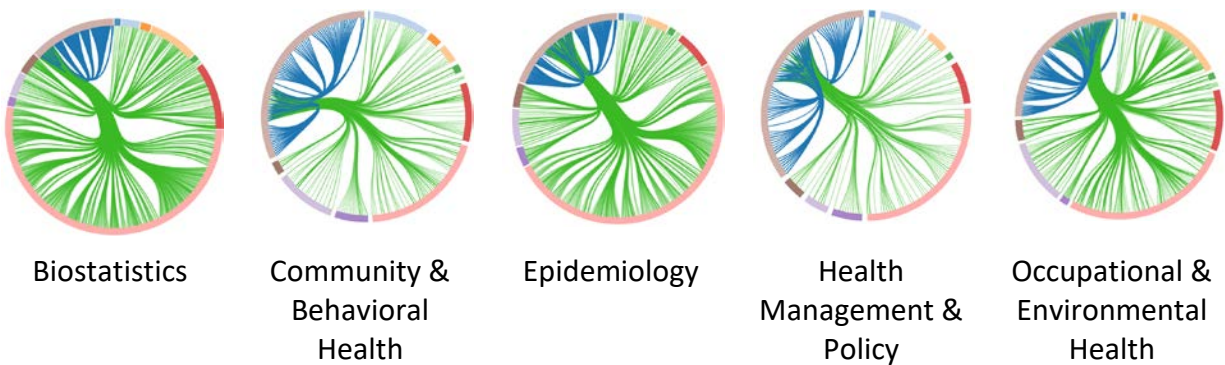


Figure 1. Funded collaborations of CPH researchers reported on routing forms submitted to DSP between July 2011 and June 2019. Each green line represents a single CPH researcher collaborating with a single researcher from other colleges at the UI. Each blue line represents a single CPH researcher collaborating with a single researcher from another department within CPH.

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We explored the Chord Diagram to understand differences between departments (Figure 2). On a department level, Chord Diagrams indicated that the Departments of Biostatistics and Epidemiology appear to have the greatest number of collaborations with CCOM, most frequently with the Department of Internal Medicine. The Department of Community & Behavior Health and the Department of Health Management & Policy have the largest number of collaborations with other departments in the CPH.

The Chord Diagram only illustrates the variety of collaborating pairs of individuals over a particular time frame. It reveals nothing about the size of those collaborations (e.g., in number of participants or in dollars). Nor does it indicate whether a collaboration was maintained over a long or short period. Each line represents only one pair of collaborators that was reported on a routing form for a funded proposal at any time during the filtered period (8 years, in the cases shown in this report).

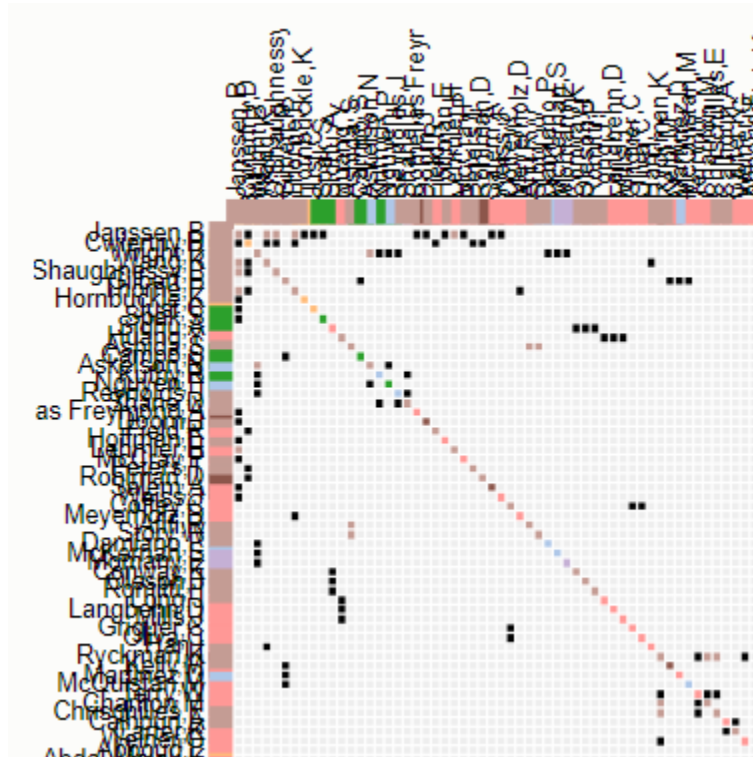


*Figure 2. Funded collaborations of CPH researchers in each CPH department as reported on routing forms submitted to DSP between July 2011 and June 2019.*

The committee examined the Matrix diagrams to better understand the size and impact of each collaboration (Figure 3). Like the Chord Diagram, the Matrix figure illustrates pairs of collaborations across UI units reported for any period between 2011 and the present. It can also be filtered by College, Department, and individual researcher. However, unlike the Chord Diagram, the Matrix can be organized by dollars. The Matrix figure captures the total research dollars associated with a pair of collaborators during the indicated time period. For example, a query of the last year (July 2018 to July 2019) reveals Dr. Brandi Janssen to be associated with the largest collaborations across units for this time period. Over the last two years, the query reveals Dr. James Torner to hold the top spot.

We noticed that collaborations with the largest dollar amounts were associated with research centers. Clearly the CPH engagement with research centers provides extensive interdisciplinary opportunities. We found the following researchers and their centers to be particularly strong in

this regard (in alphabetical order, and one of their center affiliations): Fred Gerr (Occupational Medicine Residency Program); Brandi Janssen (Iowa Center for Agricultural Safety and Health); Mike Jones (Public Policy Center); Hans Lehmler (Iowa Superfund Research Center); Patrick O’Shaughnessy (Heartland Center for Occupational Health and Safety); Diane Rohlman (Healthier Workforce Center of the Midwest); Brian J Smith (Holden Comprehensive Cancer Center); Peter Thorne (Environmental Health Sciences Research Center); and Kai Wang (Institute for Vision Research).



*Figure 3. Funded collaborations of CPH researchers reported on routing forms submitted to DSP between July 2018 and June 2019, organized by dollars associated with each pair of collaborators.*

The importance of research centers was reiterated in the response to our survey (discussed in more detail below). Faculty and staff mentioned several research centers within and outside of the CPH that represent additional opportunities for research collaborations with CPH faculty in the next five years: CCOM Sustainability Program, GPCAH, HCOHS, Neonicotinoid Collaboratory, the Iowa Flood Center, the Iowa Cancer Registry, and the Cancer Epidemiology and Population Science program in CCOM. Research Centers are not the only way CPH collaborates across disciplines. We found a great deal of evidence of long-standing and productive collaborations funded outside of research centers between individual researchers. For example, there are many partnerships between Biostatistics faculty and staff with researchers in CCOM, and the Department of Statistics and Actuarial Science in CLAS.

We explored the Matrix diagram to understand differences between departments (Figure 4). Our initial results are not particularly revealing. The visualization tool is in development and its utility is limited by the challenge of displaying so many names. We were not able to make any comparisons between departments using this tool.

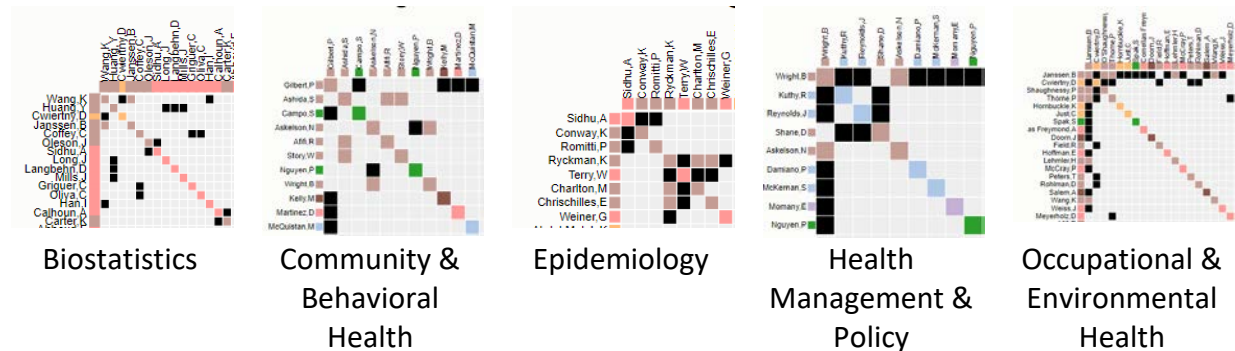


Figure 4. Matrix diagrams links pairs of individuals who participated in cross collaborations organized by total dollars. Illustrated here are results for each department for the period July 2018 to July 2019).

## Charge 2. Opportunities to Capitalize on Collective Areas of Excellence.

A survey of faculty and research staff was the primary tool the committee used to evaluate the second charge and the impact of the three collective areas of excellence identified by the College. We released a survey to all CPH faculty and research staff asking their opinions. Of 193 recipients, 77 responded to our survey (an overall response rate of 40%). Of the 67 faculty members, 40 responded (a 60% response rate). Of the 126 research staff members, 35 responded (28% response rate).

Our survey questions asked participants about their engagement with the three collective areas of excellence. Most respondents were able to link their research with at least one of the areas. Of the faculty respondents, about 30% identified alignment with Rural Health; about 20% aligned with Comparative Effectiveness Research; and about 30% aligned with Community Engagement. Only 17% of faculty respondents found none of the areas aligned with their research. Although a smaller number of research staff responded to this question, their distribution between areas was similar to faculty and 22% of the staff respondents found none of the areas aligned with their research.

Faculty and staff did not find a lot of benefit in identifying these three areas, beyond promotion of the college or other external goals. Our survey asked about the benefits to the respondent's research. The most frequent response was 'no' or a weak affirmation. Faculty members, in particular, did not find much benefit to their own work, even though the alignment to one or more of the areas was strong. Of 29 faculty comments, 18 (62%) commented that the identification of these three collective areas of excellence provided no particular benefit to their research.

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Our survey asked how the CPH could better capitalize on these three collective areas of excellence. The responses were quite diverse. Several respondents noted the opportunity to promote the college, to bring people together, or to use them to guide hiring decisions. But no single set of ideas dominated the responses. The respondents did not seem to have strong opinions, but they also found the three areas of excellence to remain relevant for promoting the college or educating others about CPH research. Other areas that were suggested should these areas be re-evaluated included environmental issues, global health, social justice, and health equity. Please see the appendix for the detailed responses.

## Part IV: Observations and Recommendations

### **Summary of Observations:**

- The committee found the CPH to have clear goals for interdisciplinary collaborations and to frequently achieve those goals.
- The OVPR visualization tools are interesting and provide a semi-quantitative structure for understanding who is participating in collaborations outside of their department and college, and what departments and colleges are most active in such collaborations.
- The survey of faculty and research staff indicates that most CPH researchers find the three collective areas of expertise to be still relevant, but they also think the value of identifying these areas is limited and does not have much impact on their research goals or activities.

### **Recommendations:**

- We recommend that the College continue to track interdisciplinary collaborations, especially because many CPH faculty and staff members expressed concern about how the new budget model may affect such investments.
- We recommend the College explore the visualization tools prepared by the OVPR to better understand the evolution of interdisciplinary collaborations over time, and to identify those research centers, departments and other groups of people who are most engaged. The tools will also be valuable in identifying Colleges and Centers across campus where partnerships are more limited or underutilized and thus provide opportunities for strategic growth in new interdisciplinary research and collaborations.
- Even with the self-reported performance outcome measures (Figure 1) and the OVPR visualization tools, it was difficult for the committee to assess how the interdisciplinarity of CPH compares to other Colleges at the University of Iowa (UI). Nor was the committee able to assess how CPH ranks relative to its peer institutions across the United States concerning interdisciplinary activity. With their recent development of the data visualization tool, we believe OVPR should work with Colleges at UI, including CPH, to help provide such assessment of their interdisciplinary, both within and beyond the University.
- There are many well-documented challenges to conducting interdisciplinary research at American Research Intensive (R1) universities, including evaluating impact of publishing outside of one's primary field of study, how to appropriately allocate credit on collaborative research products, impact on promotion and tenure decisions, and

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overcoming differing funding and incentive structures (e.g., salary, student support mechanisms, etc.) across disciplines. Indeed, many of these challenges exist at UI. Given its stellar record of interdisciplinary collaborations to date, the committee felt that CPH is well positioned to be a leader at the UI in helping to establish best practices for interdisciplinary research. If not yet established, the Committee encourages the CPH to set clear expectations and guidelines for faculty that engage in interdisciplinary research that illustrates a commitment to the value of such research going forward.

- We recommend that the CPH improve the marketing of their research centers to increase their visibility on campus and leverage their resources, both personnel and financial, to stimulate more interdisciplinary research opportunities at UI. There may be strategic partnerships with other research centers and organizations on campus (e.g., including but not limited to PPC, CHEEC, CGRER and the new Office for Sustainability and the Environment through CLAS) to pool resources and create more meaningful opportunities to seed new research collaborations and promote interdisciplinary student training in this time of team science.
- We recommend that the College communicate with the faculty and staff the objectives and expectations of the three collective areas of excellence. It may also be time to discuss benefits of adding or reframing areas. Any future conversations about existing or potential new areas of excellence for CPH should be inclusive of all faculty and research staff.

## Appendix

Survey results are provided as an appendix to this report.

## References

1. *Research Centers in the College of Public Health*. [Available from: <https://www.public-health.uiowa.edu/research-centers/>].
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