UNDERGRADUATE JOURNALS AND CONFERENCES: PATHWAYS TO UNDERSTANDING THE ECONOMCS PROFESSION

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Abstract

Each year, more than 26,000 students graduate with an economics degree, though too few graduate with a good idea of what professional economists actually do. While students routinely develop basic applied research skills in econometrics and are exposed to journal articles in upper-level electives, many undergraduates remain naive to the process by which knowledge is discovered and scientific standards are enforced within the profession. Understanding the entirety of the scholarly process enhances research and communication skills, promotes students' self-authorship and identity, and engages students in professional development. To address this need, the Issues in Political Economy (IPE) journal and related conference sessions were established in the early 1990s as outlets for undergraduates to present and publish peer-reviewed research in economics. By providing opportunities to organize annual conferences, referee papers, and edit journal issues, IPE reflects authentic practices within the profession. In this paper, we first describe the benefits that accrue to students who participate in the the public dissemination of research. Next, we explain how IPE operates and offer some descriptive evidence of its success over the years. We conclude by describing how several departments have leveraged IPE to complement their curriculum and build a sustainable culture of undergraduate research at their institutions.

Each year, more than 26,000 students graduate with an economics degree. However, many can graduate with little idea of what professional economists do. While there is broad consensus among economists that teaching undergraduates to *think* like economists is a worthy goal, there is less agreement on how (or if) we can best teach undergraduates to *do* economics.

Hansen (2001) was among the first to describe the learning benefits that accrue to undergraduates when they learn to *do* economics research. He argued that students should acquire the ability to: (1) access existing economics knowledge; (2) display understanding of economic knowledge; (3) interpret and evaluate economic knowledge; (4) interpret and manipulate economic data; (5) apply economic knowledge to an analysis of an economic problem; and, (6) create new economic knowledge. It is the latter goal that is at the crux of the issue. At the undergraduate level, developing the ability to create knowledge is especially challenging.

In addressing this challenge, Hoyt and McGoldrick (2017) emphasize the importance of departments' ability to create a "culture of research" that extends from faculty down to its undergraduates. Creating a culture ensures sustainability, but it also refocuses the goals of the curriculum. To support an undergraduate research focus, faculty invariably change the way they teach and what they teach. Specifically, course goals change from content delivery to teaching students to become creators of knowledge rather than consumers. Naturally, establishing this culture takes time.

Ultimately, culture is created and sustained through effective, intentional programming. In response to this challenge, there has been increasing interest in developing pedagogies to teach undergraduates research skills through programs such as summer experiences, honors

theses, capstone courses, and course-based research experiences (Siegfried 2001; Santos and Lavin 2004; McGoldrick 2008; Klein 2013; Siegfried and Walstad 2014; Croushore 2015; Dowd, Connolly, Thompson and Reynolds 2015; Gallagher and McGorry 2015). DeLoach, Perry-Sizemore and Borg (2012) make the case that the key is thoughtful integration of research skills into the entire major curriculum. They argue that students should be introduced to inquiry (and data) in lower-level courses, develop basic applied research skills in econometrics, gain exposure to the professional literature through the use of journal articles in upper level electives, and ultimately complete their own, independent research.

While economists are increasingly focused on teaching research skills to undergraduates[2], to date there has been little attention paid to the role of public dissemination of undergraduate research. Though Hoyt and McGoldrick (2017) specifically argue that providing opportunities for undergraduates to both present and interact with their peers is an important component of developing a rich culture of undergraduate research, exceedingly few undergraduates have access to such opportunities. As a result, most undergraduates remain naive to the process by which knowledge is discovered and scientific standards are enforced within the profession.

The research process is only completed when students participate in the dissemination of their work (Spronken-Smith, Brodeur, Kajaks, Luck, Myatt, Verburgh, Walkington and Wuetherick 2013). As others have noted, "although involvement in research is recognized as offering transformational experiences for undergraduates… the dissemination phase is generally underplayed." (Kneale, Edwards-Jones, Walkington and Hill 2016, p. 160). Conference presentations and journal submission both provide unique opportunities for undergraduates to develop important skills. Submitting a paper to a journal gives students practice in explaining findings using disciplinary language and formats, as well as the opportunity to evaluate and

respond to comments from reviewers (Spronken-Smith et al. 2013). As Mariani, et al. (2013) note, “writing for publication–as opposed to just writing for a grade–encourages students to do their very best work and take on projects that go above and beyond the typical undergraduate paper.” In addition, conference presentations provide students the opportunity to explain one’s work clearly in a way that non-experts can understand and to respond appropriately to questions in real time (Spronken-Smith, et al. 2013).

While other disciplines (e.g., psychology, chemistry) already recognize the value that accrues to undergraduate researchers when they present at conferences and submit papers to journals, economics has lagged behind these fields in this regard. Instead, economics faculty typically rely on class presentations, or, less frequently, campus-wide undergraduate research forums to complete the research process cycle. While these may in some basic sense check the box for “public dissemination,” they are not authentic, disciplinary experiences. Students need more authentic opportunities for dissemination of their work; they need to present at professional conferences and publish in peer-reviewed journals. Missing out on these capstone experiences is likely to attenuate the impact of the undergraduate research experience.

In the first part of this paper, we argue that understanding the entirety of the scholarly process deepens critical thinking, enhances research skills, and engages students in professional development. Presenting research at a professional conference and submitting papers to peer-reviewed journals bring additional benefits beyond just “doing” the research. Students who engage in these activities sharpen important skills. In particular, they develop greater appreciation for the bi-directional communication process upon which academic professions depend. They also grow more confident as they develop a greater sense of their own professional and personal identities.

Next, we highlight one model that can be replicated and leveraged in order to give students access to these key experiences. Established in the early 1990s as an outlet for undergraduates to present and publish peer-reviewed research, the Issues in Political Economy (IPE) journal and the annual undergraduate research sessions IPE sponsors at the Eastern Economics Association's conference is an excellent example of how to provide these transformative experiences to economics undergraduates. By providing opportunities to organize annual conferences, referee papers, and edit journal issues, the IPE reflects authentic practices within the profession itself.

In the last part of the paper, we turn the focus to the ways in which the culture of undergraduate research sustains and is sustained by the practice of public dissemination through conference participation and journal submissions. We discuss a number of key characteristics of departments across the country that have created sustainable undergraduate research cultures and describe ways in which they have leveraged participation in IPE to strengthen their own programs.

BENEFITS OF PUBLIC DISSEMINATION

In this section, we describe the direct benefits to students who participate in public dissemination in disciplinary, professional venues. To date, the existing empirical research on this topic has been done exclusively outside of economics, in disciplines with much longer histories of promoting undergraduate research (e.g., psychology, chemistry, geosciences, etc.). This literature has focused almost entirely on the importance of undergraduate participation in professional conferences. Because journal article submissions and publication commonly follow presentation at professional conferences, we argue that these theoretical benefits are also likely to extend to that final step of publication.

While dissemination of research is one step in the research process, there are specific ways in which these activities further the development of the student that goes beyond what is gained from the previous steps. In general, the literature tends to categorize these into (1) skill development; (2) psychosocial development; (3) self-identity or self-authorship; and (4) professional identity. Interestingly, the literature also discusses ways in which these activities may be especially important for the development of individuals from historically under-represented groups.

The development of valuable, transferable skills (i.e., graduate attributes) has been reported as a key benefit to undergraduate student participation in conferences. The most widely discussed benefit that accrues to students is the development of their communication skills. In separate studies, Hill and Walkington (2016) and Walkington, Hill, and Kneale (2017) used semi-structured interviews to explore student experiences after presenting at a national multidisciplinary undergraduate research conference (British Council on Undergraduate Research). Unsurprisingly, the most frequently cited skill that student participants felt the experience helped them improve was communication. Little (2020) also found similar results. In particular, Little (2020) highlights the importance of students "repurposing their work" for presentation to a multidisciplinary audience through conversation with, and benchmarking against, their peers.

These studies have also found that undergraduate research conference participation is associated with increased reported levels of confidence, pride, and self-esteem (Little 2020). Hill and Walkington (2016) found that students gained confidence in expressing their identity as researchers and moved towards what is often called "self-authorship," or the ability to balance the contextual nature of their disciplinary knowledge with intra-personally grounded goals and

values. Using different terminology, Ennis (1985) argues this as the ultimate goal of critical thinking. When students become self-authors, they are able to construct and act upon their beliefs and values. It requires critical analysis, evaluation of data, and the ability to consider multiple perspectives. Undoubtedly, this is also an important step in one's professional development.

In addition to the role dissemination plays in developing academic and critical thinking skills, the act of participating in a professional conference appears to help undergraduates clarify their own professional identity and goals. Descriptive analysis of undergraduate conference participants provides evidence that these students report increased interest in pursuing graduate school and a career in that particular field. For example, in their study of undergraduate research students presenting their research at the fall 2007 and fall 2008 American Chemical Society National Meetings, Mabrouk (2009) reports that 64 percent of respondents felt meeting participation had increased their interest in pursuing a career in chemistry in general, and 58 percent felt it also positively affected their decision to pursue advanced study in the field.

As it has in many STEM fields, increasing diversity and inclusion have become important goals within economics. Interestingly, there is also some evidence that participation in professional conferences is especially important for students from historically under-represented groups. One way to do that is to design networking events specifically targeting individuals who identify with those groups (Estien, Myron, Oldfield and Alwin 2021). Even without such events, there is reason to believe that attending professional conferences may be especially impactful for members of minoritized communities. Mabrouk (2009) argues that participation provides African-American students a forum where they test and affirm their professional self-identity and hone presentation skills. Participation in professional conferences may be an important component in the enculturation of novice researchers into the larger disciplinary community, and

such early exposure is likely to be most important for students from groups that are historically under-represented in those disciplines.

ISSUES IN POLITICAL ECONOMY

Issues in Political Economy (IPE) was established to address many of the goals and objectives described above. For most of its history, IPE has operated a peer-reviewed journal as well as an undergraduate research conference whereby students in economics are provided an opportunity to disseminate their research in a professional setting and "complete the research cycle."

IPE typically hosts sessions as part of the Eastern Economics Association's (EEA) annual conference. Submissions are solicited through the IPE and the EEA websites, but most submissions are generated a faculty email listserv that has been cultivated through years of word-of-mouth contact and networking. Submissions are managed directly by IPE and IPE determines its own program (similar to the way CEE organizes sessions at the ASSA). In the past, submissions came directly to IPE via email, but in recent years they are submitted to IPE through the EEA submission portal. Registration fees for IPE participants and faculty are lower than for the EEA conference. Nevertheless, all IPE attendees have access to the complete EEA conference sessions. While there have been a few occasions over the years when the IPE had to host sessions outside of the EEAs, we believe that students benefit more when these sessions are held alongside a larger, professional conference. Consistent with the literature in other fields, we believe that this allows students to feel a sense of professional identity, increasing commitment to a career in the field and further study.

BEGINNINGS

IPE was originally established by Professor Bradley Hobbs during his time at Bellarmine College in the late 1980s. In 2007, he wrote a special foreword to celebrate the 15th annual volume of IPE.

> Issues in Political Economy began as an attempt to bring undergraduate research to the forefront at Bellarmine College in 1989. The first issue was written, produced, and published entirely in-house and our students responded very positively, with a maturity that I admired. After the first issue the Editorial Staff and I met to discuss my suggestion that we open up the process to other universities and colleges and in 1990 Issues in Political Economy "went public."
>
> After a couple of years of toil (desktop publishing was in its infancy) the rising President of the Eastern Economic Association (EEA), David Colander, invited me to consider sessions at the annual EEA meetings as a way to help promote the Journal. We all owe a great debt of gratitude to David for his support. Establishing direct linkages to the EEA formalized the public presentation of undergraduate students' research and provided a national stage for undergraduate research work in economics.
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> Bradley Hobbs. 2007. "Foreword" Issues in Political Economy.

In 1998, the journal and the conference organization were taken over jointly by Elon University and the University of Mary Washington. With two departments involved, editorial control of the journal, and conference organization, alternated every other year. Associate editors and referees for journal submissions are shared between the two universities. Missing only one year, the IPE has enjoyed unprecedented consistency over year years. In 2023, IPE will publish its 31st volume.

A. IPE Journal

To operate a sucessful undergraduate research journal, the practices understandably differ in important ways from the way they might operate at the "professional" level. First, the goals

differ. Undergraduate research journals are not "gate keepers" for scientific discovery. Papers need to follow best-practices, be interesting and well-written, but they are not expected to make a "significant" contribution to the field. Second, the audience differs. Undergraduates are not professional academics. As such, attention to the undergraduate life-cycle is necessary.

Running undergraduate research journals and conferences both pose major challenges. Attending conferences is expensive and not all institutions are supportive of undergraduate research. Journal publication is more competitive and time consuming. The fear of rejection (33 percent acceptance rate) and additional time commitment (reformatting, revising, a thesis during the spring semester of their senior year) discourage submissions. In terms of the timing, conference submission and presentation are far-more tenable. Conference presentations are typically done for research "in process." Submissions to journals are usually done after this. However, the life-cycle of undergraduates makes this sequencing less attractive for journal submissions.

The deadline for annual submissions to IPE is January 31 (https://blogs.elon.edu/ipe/submissions/). Editors assign papers to Associate editors who are assigned to "find" at least two students to referee those papers. To make sure that reviews are done in a timely manner, referees are given one week to write a referee report. At Elon, seniors are required to do referee reports and provided training in the fall semester on how to do this. To manage referee quality, each Associate Editor then takes the referee reports and writes one "consensus" report; this makes sure that authors do not get conflicting or erroneous comments. As a final quality check, the Editor takes those consensus reports and makes changes (as needed). In some cases, Editors may have to completely rewrite the report if they believe the Associates have erred.

While this allows time for current students to complete reviews (done by March), it discourages submissions by current seniors completing theses during the spring. To address this, in 2017 we instituted a second "special" submission deadline for those students who present at the conference. Because all presenters have a completed paper by the conference (i.e., last week in February), we are able to review these new submissions by the end of March. This change virtually doubled the annual submissions. As a result, since 2017 we have published two issues per year, while maintaining a 33 percent acceptance rate. In a typical year, more than half of all submisisons to the journal come from conference participants.

Another important difference between the IPE and professional journals is that we do not require multiple revisions. Given that most submissions are done by seniors (or recent graduates) who are starting new careers or graduate school, we know that they are unlikely to complete significant revisions. As such, we only accept papers that require only minimal revisions (e.g., formatting, grammar). Final decisions are emailed to authors by late March. Accepted papers are given until May to resubmit their papers, though we are tycially willing to wait until June if authors ask for more time.

We have not attempted to collect detailed demographic data related to journal submission over the past three decades. But a casual perusal of papers published (https://blogs.elon.edu/ipe/issues/) reveals a good deal of both institutional, gender and racial diversity over the years. For example in the past 5 years, slightly over 40 percent of all accepted papers were authored or co-authored by a female-identified student, and 30 percent were authored or co-authored by a student from a racially or ethnically minoitized group. Notably, 5 of the 8 editors or co-editors in that time period were also women.

B. IPE Conference

As noted above, the annual conference is usually held as part of the EEA annual conference. Like most regional meetings, the goal of the conference is participation. As such, submissions are not rejected. As with the journal itself, submission processes for undergraduate research conferences typically need to be modified to maximize participation. The annual submission deadline is towards the end of January, far later than for the EEA conference itself (https://blogs.elon.edu/ipe/conference/submissions/). Submissions consist of a name, title, abstract, and name of faculty mentor. The later submission deadline (after fall semester) allows greater access by students since most submissions are either papers completed in fall courses (e.g., econometrics) or senior theses where significant analyses is completed in the fall.

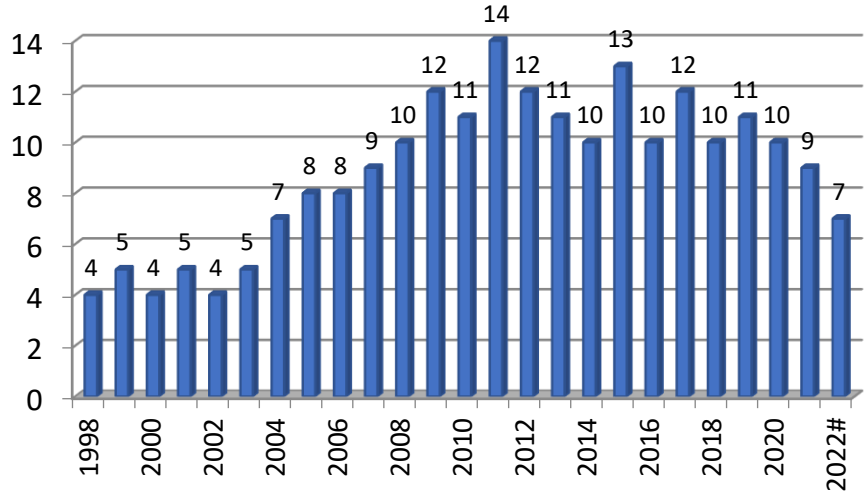
A student from Elon or Mary Washington coordinates the conference, creating thematic sessions with peer discussants for each paper. Typically, presenters in one session are assigned to be disucssants in a subsequent session. Care is taken to ensure that discussants are always students from a different institution than the presenter. Presenters are required to submit a draft of their paper to the conference organizer two weeks prior to the conference so that she is able to distribute the paper to the discussant. During the conference, a student-faculty reception is typically held on Friday evening. This provides a nice opportunity for students to socialize with their peers, and this tends to lower the anxiety level in subsequent sessions. It also provides peer networking opportunities for faculty.

Since 1997, interest in both the journal and conference have increased (see Figures 1 and 2). Participation is highest for the annual conference. However, unsurprisingly, participation in recent years has declined. The combination of COVID restrictions and institutional resource constraints has decreased undergraduate access to the conference.

Between the years of 2010 to 2020, the IPE conference averaged 11 sessions, with 58 participants from 23 different institutions. While the participant institutions vary from year to year, such consistency is indicative of the fact that a fair number of the same departments are sending students year after year. In the next section, we will summarize a few of the ways in which departments have integrated IPE activities into their extra-curricular programs.

Recall that findings from other disciplines have suggested that UR conferences have the ability to increase diversity and inclusion. Figure 3 summarizes participation rates of women and other under-represented groups in IPE conferences over the past five years. It is interesting to note the relatively large percentage of women and under-represented groups participating in the IPE conference. It is also interesting that conference participation for these groups exceeds journal participation (noted above). It would be interesting to do research into the impact of participation on individuals' decisions to persist in the profession as well as reasons for why they are less likely to submit papers to the journal.

Figure 1
Total Number of Sessions at IPE Conferences



Notes: # denotes years where EEAs are in New York City and # denotes years in which the IPE conference was not held at the typical in-person EEAs.

Figure 2
Number of Student Presenters at IPE Conferences

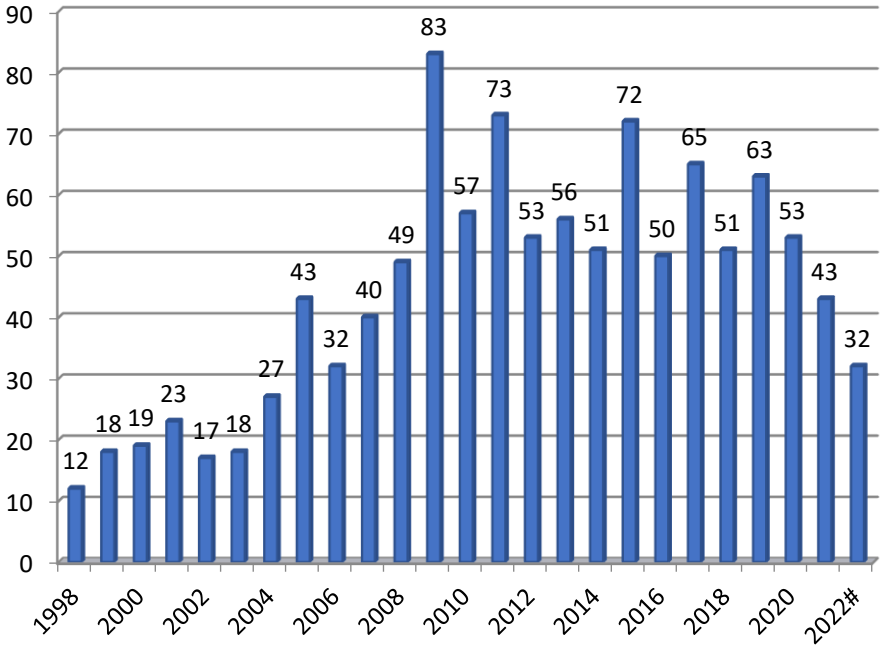
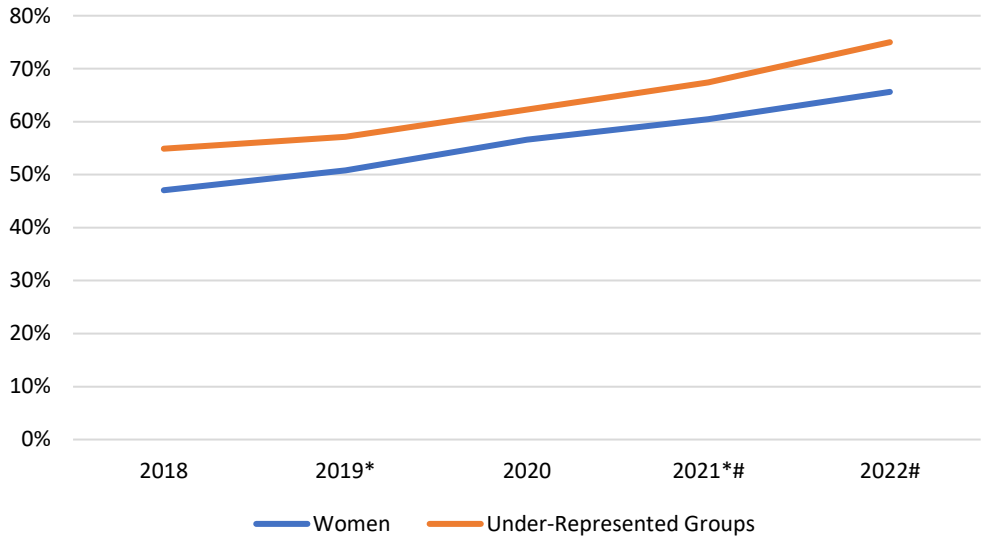


Figure 3
Percentage of Women and Members of Under-Represented Groups Presenting at IPE Conferences



ENHANCING SUSTAINABILIY

Hoyt and McGoldrick (2017) have argued for the importance of departments creating a "culture of research" that extends from faculty down to its undergraduates. Creating a culture ensures sustainability. Departments with that research culture change the way they teach. The course goals change from content delivery to teaching students to become creators of knowledge rather than consumers. Of course, establishing culture is not easy. Ultimately, culture is created and sustained through effective and intentional programming. It also requires departmental faculty who buy into the goals.

Providing opportunities for undergraduates to both present and interact with their peers is one important component of developing a rich culture of undergraduate research (Hoyt and McGoldrick 2017). To truly become part of a larger culture, there needs to be meaningful integration of research into the entire major curriculum (DeLoach, Perry-Sizemore and Borg

2012). The long-running success of both the journal and the conference would not have happened without consistent and meaningful integration of undergraduate research into departmental programming.

In this section, we outline how Elon and other institutions have integrated IPE into their own programs. This information is used to develop a taxonomy of characteristics that appear to support the sustainability of a culture of undergraduate research in general, and a record of consistent engagement in conference presentations and journal submissions more specifically.

A. Elon University

Since the late 1990s, IPE has helped Elon University to develop and sustain a holistic culture of research. At Elon, the IPE is integrated into the senior year experience. All BA majors are required to complete a two-semester thesis that starts with a two-hour fall seminar and continues in the spring with a two-hour closely mentored, independent research project. In the fall, seniors are introduced to the concept of peer review and practice writing referee reports of past student theses. After that, students begin to referee papers that have been submitted to the IPE journal. Seniors are also required to attend research seminars presented by external speakers invited to campus. The idea is that seniors are exposed to all aspects of academic, professional life.

Top-performing seniors are selected to be co-editors and associate editors. This responsibility is shared with students from the University of Mary Washington, who are selected to be associate editors. The IPE conference serves as a venue for dissemination as well as a reward for our best students. Our top students self-select to present. The quality is managed with tight deadlines and close mentoring. Typically, less-motivated students will self-select out of this

conference (late February), preferring to present their thesis work later in the spring at our university student research forum (late April).

Hosting the IPE journal and organizing the annual conference bring resource demands as well as opportunities for our students. For many reasons, not every department has the ability (or should) to attempt to replicate this. Obviously, if every school had their own journal and conference the benefit of these activities would be lost. Having said that, we believe that most of the benefits cited from existing literature come from participation, rather than organization. In the following sections, we outline some of the different ways participant institutions have integrated IPE into their programs.

B. Participating Institutions

The economics departments that have been the most frequent participants have also been ones who have found ways to incorporate IPE into their curriculum, specifically, and cultivate a sustainable culture of undergraduate research, more generally. In this section, we highlight some of the ways these programs have accomplished these related goals and draw some parallels between their distinctive approaches.

Only a few departments that have participated in the IPE over the years require majors to write a multi-semester-long thesis. As noted above, the economics BA major at Elon has chosen to require all its seniors to write a thesis. At the College of Wooster, the entire college mandates that undergraduates, regardless of major, complete a thesis. All (or nearly all) faculty are involved in mentoring these projects. With this rare level of institutional commitment to undergraduate research, naturally the culture supports students presenting at conferences. All

seniors write a thesis that can span both their junior and senior years. Typically, it is a three-semester project.

Though accomplished through a different curricular structure, Smith College also has a rich culture of undergraduate research. All students take a senior seminar, which requires a much more in-depth term project than the typical "seminar." These projects involve all steps of the research project, including data collection and analysis; an excellent example of so-called course-embedded undergraduate research. The most promising of these are then encouraged to enroll in a small "research lab" during the spring. This allows students to fully develop their papers, prepare for the conference, and even submit their papers to the IPE journal later in the spring. Like the previous examples, this model also has board-based support from faculty, since many teach the senior research seminars. Because the most promising projects are continued into the spring, these projects end up spanning the entire academic year.

Other departments follow a similar model. Keene State College, the University of Mary Washington and others have fall senior seminars where students complete independent research projects. Hartwick College refers to theirs as a one-semester "thesis", and students can complete that in either the fall or spring semesters. Obviously, only those completing in the fall are in a position to present at spring conferences. The best of these are selected and those students continue work during the spring to prepare their manuscripts and presentations. Others, such as Minnesota State University at Moorhead and West Chester University follow a similar strategy but use a fall econometrics course in place of a senior seminar. These departments typically have fewer faculty directly involved in the mentoring, however. Often, it is limited to only the fall professor and one other professor who may work with students in the spring.

Furman University has long had students present at the IPE conference, many of whom have also published their research in the journal. Furman has an endowed summer undergraduate research program where groups of students work together on a topic. Typically, these are rising seniors who subsequently polish their papers in the fall and present in the spring.

C. Characteristics of Sustainable Undergraduate Research Cultures

While curricular structure and incentives differ across departments, those who have managed to generate a sustainable presence at the conference year after year have several key things in common. Factors that contribute to increased sustainability include: (1) broad (more than one faculty member) commitment by department; (2) ability to create a multiple semester, engaged learning experience; (3) direct ties to formal degree requirements; and (4) broad, institutionalized support. These factors are summarized in Table 1 and explained in more detail below.

First, there is a department-wide commitment to undergraduate research. While there is often one lead faculty or champion for the endeavor, there are others in the department who serve as mentors to undergraduate research. Second, these departments have (or have created) a major curricular structure that supports undergraduate research in general and presenting at spring conferences like the IPE conference in particular. Specifically, they have all found ways to create multi-semester, closely mentored, research experiences that allow students to go well-beyond what could be done in a course-embedded research project. Third, while not all have formalized such activities into their graduation requirements, many have. Fourth, the most successful departments have administrative and financial support to take students to conferences. For example, several, like Elon, Minnesota State and Furman have a combination of endowments and annual benefactor commitment to support undergraduate research and travel. All these

institutions also specifically value mentoring of undergraduate research in promotions, tenure and annual merit raise decisions.

Table 1: Taxonomy of Factors the Promote Sustainable Undergraduate Research

Factors Promoting Sustainability	**Examples**
Multi-Semester Research Experience	Multi-semester Thesis Econometrics plus independent research/study
Department Commitment	Departmental appointment of an Honors thesis, or UR coordinator who seeks input from faculty mentors to select students to attend conference Two faculty who coordinate Econometrics and Senior Seminar Financial support for UR
Formalized Degree Requirement	Required multi-semester thesis for BA
Institutional Support	Financial Support for Travel or Summer Research Valuing mentoring in promotions and tenure

CONCLUSION

In this paper, we have argued that undergraduate students benefit from experiencing the entirety of the research process, including presenting their research publicly and submitting papers to a journal for publication. We have also detailed how IPE has attempted to help fill this void over the past three decades. Evidence suggests that undergraduates who participate in IPE conferences are more diverse than the profession on average, and points to greater opportunities for the profession to diversify by paying greater attention to the professional development of undergraduates.

This paper has also detailed several common factors that have led to the sustainability of departmental efforts to engage students in meaningful undergraduate research. Factors that appear contribute to increased sustainability include a broad-based commitment by department, the ability to create multiple semester, engaged learning experiences, a connection to formal degree requirements, and consistent, support from the larger institution.

The research that does exist from other disciplines suggest a number of benefits accrue to undergraduate students when they are provided opportunities to participate in profession conferences and submit research for peer review to journals. Because no such research has been conducted within the economics profession, there is a clear opportunity to deepen our understanding of the benefits of undergraduate research along these lines.

In addition to the research agenda, there are also clear opportunities to expand access to these experiences throughout the discipline. Siegfried and Walstad (2014) report that a fairly large number of departments require undergraduates to complete a research-based capstone project (over 50 percent of private institutions) if not a full-fledged undergraduate thesis (more than 30 percent of private institutions). Such opportunities are less prevalent at public institutions, but still about 30 percent of large PhD granting institutions at least require a senior seminar. Despite this, very few economics majors ever have the opportunity to participate in a professional conference.

REFERENCES

Allgood, S., Walstad, W. B., & Siegfried, J. J. (2015). Research on teaching economics to undergraduates. *Journal of Economic Literature*, *53*(2), 285-325.

Croushore, D. (2015). Teaching an economics capstone course based on current issues in monetary policy. *Eastern Economic Journal*, *41*(4), 504-512.

DeLoach, S. B., Perry-Sizemore, E., & Borg, M. O. (2012). Creating quality undergraduate research programs in economics: How, when, where (and why). *The American Economist*, *57*(1), 96-110.

Dowd, J. E., Connolly, M. P., Thompson Jr, R. J., & Reynolds, J. A. (2015). Improved reasoning in undergraduate writing through structured workshops. *The Journal of Economic Education*, *46*(1), 14-27.

Estien, Cesar O., Eli B. Myron, Callie A. Oldfield, Ajisha Alwin, and Ecological Society of America Student Section. "Virtual scientific conferences: benefits and how to support underrepresented students." *The Bulletin of the Ecological Society of America* 102, no. 2 (2021): e01859.

Ennis, R. H. (1985). A logical basis for measuring critical thinking skills. *Educational leadership*, *43*(2), 44-48.

Gallagher, M. J., & McGorry, S. Y. (2015). Service learning and the capstone experience. *International Advances in Economic Research*, *21*(4), 467-476.

Helen, P. K. A. E. J., & Hill, W. J. International Journal for Researcher Development. *Journal for Researcher Development*, *7*(2), 159-177.

Hill, J., & Walkington, H. (2016). Developing graduate attributes through participation in undergraduate research conferences. *Journal of Geography in Higher Education*, *40*(2), 222-237.

Hoyt, G. M., & McGoldrick, K. (2017). Promoting undergraduate research in economics. *American Economic Review*, *107*(5), 655-59.

Kent, C., Allen, P. J., Harding, S., & Fielding, J. L. (2019). The Psychology Undergraduate Research Conference: A Pathway to Publishing? *Frontiers in Psychology, 10*, 491.

Klein, C. C. (2013). Econometrics as a capstone course in economics. *The Journal of Economic Education, 44*(3), 268-276.

Kneale, P., Edwards-Jones, A., Walkington, H., & Hill, J. (2016). Evaluating undergraduate research conferences as vehicles for novice researcher development. *International Journal for Researcher Development*.

Little, C. (2020). Undergraduate research as a student engagement springboard: Exploring the longer-term reported benefits of participation in a research conference. *Educational Research, 62*(2), 229-245.

Lopatto, D. (2004). Survey of undergraduate research experiences (SURE): First findings. *Cell biology education, 3*(4), 270-277).

Mabrouk, P. A. (2009). Survey study investigating the significance of conference participation to undergraduate research students. *Journal of Chemical Education, 86*(11), 1335.

Mariani, M., Buckley, F., Reidy, T., & Witmer, R. (2013). Promoting student learning and scholarship through undergraduate research journals. *PS: Political Science & Politics, 46*(4), 830-835.

McGoldrick, K. (2008). Doing economics: Enhancing skills through a process-oriented senior research course. *The Journal of Economic Education, 39*(4), 342-356.

Russell, S. H., Hancock, M. P., & McCullough, J. (2007). Benefits of undergraduate research experiences. *Science, 316*(5824), 548-549.

Santos, J., & Lavin, A. M. (2004). Do as I do, not as I say: Assessing outcomes when students think like economists. *The Journal of Economic Education*, *35*(2), 148-161.

Siegfried, J. J. (2001). Principles for a successful undergraduate economics honors program. *The Journal of Economic Education*, *32*(2), 169-177.

Siegfried, J. J., & Walstad, W. B. (2014). Undergraduate coursework in economics: A survey perspective. *The Journal of Economic Education*, *45*(2), 147-158.

Spronken-Smith, R. A., Brodeur, J. J., Kajaks, T., Luck, M., Myatt, P., Verburgh, A., Walkington, H., & Wuetherick, B. (2013). Completing the research cycle: A framework for promoting dissemination of undergraduate research and inquiry. *Teaching and Learning Inquiry*, *1*(2), 105-118.

Wagner, J. (2015). A framework for undergraduate research in economics. *Southern Economic Journal*, *82*(2), 668-672.

NOTES

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[2] While there is increasing attention is being paid to the importance of developing research skills within the undergraduate curriculum, only about half of economics departments even require econometrics (Allgood, Walstad and Siegfried 2015).