

REPORT AND RECOMMENDATIONS FROM THE WORKING GROUP ON
MINORS AND ADMINISTRATIVE ISSUES

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Current Developments

While Schools and Programs of Public Health sparsely populate the landscape of higher education in the United States—with fewer than 100 all together—the participants of the Consensus Conference find many signs of promise in program development, some in unexpected places in the nation's 2000 institutions that offer baccalaureate degrees. New courses and programs in public health and related interdisciplinary fields are capturing attention among the most innovative undergraduate curricula. Academic minor programs in public health appear to be under development in various types of institutions across the country. An array of related programs in societal health and applied ethics are finding places on college and university websites. These programs signal emergence of a new category of interdisciplinary initiative, sometimes including both a minor and a major—many in the Arts and Sciences. The minor programs specifically entitled Public Health now are overwhelmed by demand, with students packed into any available seats or in many cases unable to get a seat. While it is challenging to count the programs, internet searches indicate both activity and potential.

These new minors are of two types: minors sponsored by Public Health units (schools, colleges, departments, or programs; hereafter PH units¹) and minors developed as interdisciplinary ventures within, primarily, Schools of Arts and Sciences (hereafter A&S). Schools of Nursing have expertise sufficient not only to participate but also to lead such initiatives. Other Health Science or Allied Health Schools (hereafter HS units) may participate in both types of programs and may provide leadership. While the two models differ, as we will discuss below, sponsors of current programs and those in planning unite in enthusiasm and agreement with the objectives of the Consensus Conference. Both professional school and A&S leaders see value in real-world experience gained through public health minors. They agree in emphasizing the benefits that should be accessible to all undergraduates. They seek opportunities for local and global application of knowledge and analytic skills, experiential learning linked to civic engagement, practice of applied ethics, problem solving, and team work from the “population perspective.” They want to instill public health knowledge, understanding, skills, and attitudes into general and liberal education, with the goal of an educated citizenry. Students should, in this sense, understand public health as a way of thinking and of knowing the world. Knowledgeable leaders want students to grapple with ecological or systemic understandings of human rights and healthcare in diverse societies around the globe. At the same time, they want to encourage PH professionals to embrace liberal education goals. These vital objectives of undergraduate learning, anchored in the AAC&U LEAP outcomes,² are clearly on the minds of academic leaders.

Across the spectrum, leaders understand that public health minors have currency. These programs interest undergraduates who are paying attention to the world. Health topics introduce a new and highly relevant approach to global understanding within undergraduate majors. PH 101 and EPI 101 serve as options or electives in many majors or as general education courses. More important, such courses have the potential to reshape the student's outlook on his or her own discipline, even those so evidently far distant as the humanities. One has only to imagine a major in Spanish geared to the health professions or a major in philosophy with an emphasis on human rights to see the possibilities.³ Current world challenges intensify the interest. Environmental degradation and disasters, bioterrorism, pandemic disease, and population

dynamics—immigration, depopulation, effects of prolonged warfare—all are topics of concern to undergraduates. Many seek avenues to socially and globally responsible work within vulnerable populations and communities. They understand the need for an educated citizenry.

Undergraduate students, those in A&S in particular, are also hungry for career options related to their majors and want to explore programs that might lead to graduate and professional school. The minor educates citizens and opens both pathways and alternatives to medical school among the many health-related professional fields. Many undergraduates enter A&S majors unaware of the array of health professions that may later be right for them; many enter the life sciences with unrealistic plans to become physicians. In health professional undergraduate schools, students across the spectrum find public health knowledge and practice essential to their success in these rapidly changing fields. To a person the participants in the working group shared this awareness, and it emerged as a point of agreement as well at the Consensus Conference. The challenge, all agreed, is to find models that work for the majority of institutions that have not seen the importance and potential of public health within undergraduate education.

Toward a Definition of a Minor Program

While there exists no national model for minor programs, discussion at the Consensus Conference identified some widely recognized features. Minor programs are typically half the size of major programs in A&S. In a school that counts course units, the typical A&S major requires 10-12 courses. The typical minor will require 4-5 courses, perhaps including a partial-unit practicum. In a school that counts student credit hours, the minor may run as high as 21 SCH, about 7 courses. Minor programs often require 2-4 foundational courses (depending on how credits are counted) and then offer an array of approved electives. Some minor programs culminate in a capstone course or experience. Some require applied or experiential learning. Minor programs are generally designed to do something other than provide a truncated version of a major. Some departments rely on minors to boost course enrollments by introducing students from outside the department to a new field or to provide foundational work in fields where a major would be too costly or enroll too few degree students. When minors are related to the student's major field or discipline, they deepen liberal education and open a subfield or specialization, which may lead toward a profession. Minor programs located at some distance from the major will enhance liberal education through breadth and contrast. Exploration of a field distant from the major may likewise contribute to lifelong learning and career planning. As liberal education seeks breadth, depth, and intellectual flexibility, minor programs complement major programs in countless ways.

Two Models

Public Health Model for Universities with Public Health Schools or Programs: Consensus Conference participants discovered that most of the action in minor program development is taking place at large universities with professional PH schools or programs and an array of other health professional schools, including medicine. Observation suggests that minor programs follow in the wake of majors in Public Health, as is true in other disciplines. As graduate schools and programs in Public Health extend degrees to undergraduates, faculty soon realize that undergraduate minor programs are potentially fruitful recruiting grounds for the MPH and other health professional programs. Consensus Conference participants were quick to affirm the goals of educating the future citizenry through such programs—beyond opening a pipeline to the health professions and PH in particular. The conference identified several programs that are

opening new avenues to undergraduates from a base in PH. Boston University, Temple University, and the University of Virginia—all with schools or programs in PH—have developed successful minors open to undergraduates and especially attractive to A&S students. A new interdisciplinary degree in public health at Johns Hopkins University has recently become the largest undergraduate major in A&S.⁴

A PH-unit minor may begin by situating all courses in the PH unit. It may employ unit faculty exclusively, and recruit students primarily in A&S. Course content emphasizes healthcare from a population perspective.⁵ The perspective of professional Public Health shapes the minor in this model. There are, however, variations on the model, as exemplified by some recent interschool collaboration. Some programs bridge PH and A&S, offering courses through both units.⁶ For example, Boston University's School of Public Health has launched a highly successful College of Arts and Sciences Public Health Minor, enrolling undergraduates side by side with PH graduate students in graduate PH and EPI courses. They provide a shuttle bus to bring undergraduates to the PH campus. A new minor in Global Public Health at the University of Virginia is anchored in PH in the Medical School and dedicated to undergraduate education in the A&S—with an emphasis on global knowledge and experience integral to the university's liberal education program. A significant goal of the program is to prepare and send undergraduates abroad for experiential or service learning. Programs of this design, with the PH unit located in a School of Medicine or as a separate unit, for example, may develop a minor first and consider a major second or decide not to pursue a major at all. Bridge designs may require that the minor program share administrative responsibility, course content, and joint faculty appointments between A&S and a HS unit. These collaborative designs may emphasize PH theory and concept within an array of disciplines more than they direct learning toward healthcare practice. In other words, collaborative or joint programs may tend more toward the theoretical and didactic than the clinical/professional. They may become more inter- or multidisciplinary, according to the orientation of the liberal arts.

An A&S-based Model for Colleges and Universities without PH Schools or Programs: This model is more a creative ferment than full implementation as of this writing. The Consensus Conference has, however, found encouraging signs of growth in both liberal arts baccalaureate and comprehensive institutions.⁷ An interest in health-related programs appears generally to be springing to life amid the interdisciplinarity now reshaping the arts and sciences. Experiential and applied learning activities now attract broad support in the liberal arts, a noticeable change. Innovative programs in such fields as health communication are beginning to find homes in the social sciences.⁸ Interdisciplinary projects variously named Health and Society, Health Studies, and Medical or Biomedical Ethics are turning up as concentrations, specializations, minors, and (occasionally) majors within A&S.⁹ New health sciences or health studies programs are discovering champions within the sciences.

Among comprehensive institutions, California State University, Fresno, and SUNY Fredonia, for example, offer public health minors. San Francisco State University, College of Health and Human Services, which offers the MPH degree, is breaking new ground that will be useful for comprehensive institutions without schools or programs.¹⁰ The SFSU Department of Health Education offers two minors based in public health (Health Education and Women's Health) and an array of population-based general education courses, including epidemiology and

environmental health to fulfill integrative science requirements, and a number of social science courses in public health. A new minor program entitled Public Health at Muhlenberg College—a liberal arts college—is the first of its kind.¹¹ While few liberal arts institutions have created more than a smattering of specialized courses or concentrations, there is no doubt that interest is beginning to coalesce.

In the A&S model, the liberal arts and departmental perspectives shapes the minor. That is, the program may seek to strengthen liberal education and global perspectives by enabling students to use the lens of public health and population study within and across disciplines. This objective differs somewhat from the goals of the PH-unit model, which tends toward professionalism and may focus on healthcare application. Unlike PH-unit models, A&S-based programs may also integrate the humanities and social sciences into the sciences by introducing an international or global perspective on science.

Toward a Model for Most Institutions

Innovative work in public health in liberal arts and comprehensive institutions will require contributions across the institution and within the regional community. Many possible structures or administrative homes for minor programs are possible, provided that essential expertise in the field of public health be foundational to the design. A department of philosophy with expertise in applied ethics and a willing faculty leader may host an interdisciplinary minor program, for example, by providing essential administrative support and program stewardship. In this case, a collaborative of departments would need to ensure that the core or foundational courses are staffed and listed properly in appropriate departments, PH 101 perhaps in a social science department and EPI 101 in biology. A faculty advisory committee could provide oversight and could be organized by the lead faculty member from philosophy. New programs may, alternatively, be housed in an interdisciplinary center, as for example in the Center for Healthy Living at Western Washington University.¹² If there is a School of Nursing or another HS unit, a partnership may follow, drawing on the expertise of community/public health nursing faculty or other faculty in health-related fields. Should there be no other HS unit, faculty leaders will find public health expertise in the local community through municipal, county, or regional public health departments, health systems, and hospitals. The key to program development, all agree, is PH expertise. If no faculty member has an MPH, the institution should invest in consultation and team teaching, along with faculty professional development—to bring that expertise from the outside and develop it from within. An institution might engage public health practitioners as adjunct faculty, a win-win opportunity. The institution acquires the expertise it needs; practitioners gain status and benefits from joining the faculty.

Potential Collaboration with A&S

Whichever the model, the new minor will require collaboration with faculty in A&S. As we have mentioned above, an interest in interdisciplinary health programs seems to be evolving quite naturally in A&S, a sign of the times. Any social science department with an eye to the community is likely to hire faculty who study a field related to public health. Foundational work across the social sciences has a population base, of course. Bridges are common between population-based work in social sciences and ethnography (especially in anthropology or medical anthropology); between ethnography and narrative study of fiction or nonfiction in English or other modern languages, for example, there are very few steps. Studies of people's

health and behavior relate easily to studies of people's stories and expression. Faculty interested in narrative are found throughout the humanities, journalism, cultural studies, women's and gender studies, disability studies, film, communication, media or digital studies, and the arts. Although it may appear to be a reach, it is not hard to find a member of an English or Spanish department who might develop a course or join a team-taught course related to public health. As environmental studies draws faculty throughout A&S, public health appears poised to do the same. Indeed, environmental studies programs encourage the study of public health. Eco-criticism or green literary studies, post-colonial and cultural studies, and world or global studies throughout the humanities similarly prompt inquiry into public health. As philosophy and religion departments devote energy to applied ethics and law, public health is an attractive field for practice.

Potential Collaboration with Schools of Nursing

The current and projected workforce shortage of nurses has prompted growth in the nation's baccalaureate schools and programs of nursing—of which 672 exist.¹³ Regional universities and comprehensive colleges often prepare professional nurses. Potential for collaboration between Schools of Nursing and A&S is considerable at a wide range of institutions. As nurses are required to study and practice public health toward community application, so nursing faculty can provide expertise essential to program development for the minor that would be open to non-nursing and nursing majors. Many nursing faculty hold community health nursing graduate degrees and PH doctorates. Community nursing education, required for baccalaureate nursing degrees, is founded on population-based public health. All accredited undergraduate baccalaureate nursing programs require training in community health, including principles and structure of public health, health promotion and disease prevention, epidemiology, population-based health assessment and care delivery, health disparities, and morbidity/mortality. While nursing students may be unable to fit a minor in public health into the undergraduate degree program, they may increase the numbers of students who enroll in the foundational courses of EPI 101 and PH 101. Creative programming, using general or liberal education courses—where EPI 101 fulfills a life science requirement and PH 101 a social sciences requirement—may in fact enable nursing students to complete the minor.

Potential Collaboration with HS Schools:

Participants at the Consensus Conference agreed that the wide array of HS Schools and programs, many of which can be found at comprehensive institutions, offer both faculty expertise for minor program development and potential demand from students. There is no HS baccalaureate degree program that cannot be enhanced by a minor in public health. There is likewise no HS curriculum that cannot enrich an interdisciplinary minor in public health through shared or cross-listed courses and faculty expertise. Environmental Health degree programs are an excellent case in point. These programs study the complex interplay of environment and human health and take a systemic approach to health interventions through environmental modification and control.¹⁴ PH minors are attractive to Pharmacy students. The PharmD degree requires no separate baccalaureate degree and thus combines undergraduate liberal education with professional study. A minor program in PH may be a valuable complement and enable students to meet general education requirements. Other undergraduate HS majors such as Occupational Therapy, Kinesiology or Exercise Science, Speech/Language Pathology, and Audiology are likely to take interest in the PH minor.

Potential Collaboration with Two-Year Colleges:

Two-year colleges deserve particular attention. Two-year institutions or community colleges have tremendous potential to cultivate student interest in PH and to provide foundational courses as requirements for the associate's degree and for dual-admission and transfer to baccalaureate institutions. A comprehensive strategy to support development of public health minor programs can extend opportunities and provide models for partnership between two- and four-year schools—serving a large population of students in the United States. Especially promising would be shared curricular development for PH 101 and EPI 101 between two-year colleges and the four-year universities in which associate's degree holders are likely to complete the baccalaureate. Innovative public health teaching fellowships for graduate students can be created at nearby community colleges. One such program brings MPH and doctoral students from a state university to teach on a community college campus.¹⁵ The program has a pipeline design, emphasizing opportunities for students from underrepresented groups. A population-based approach to public health program development suggests an emphasis on community colleges and the regional comprehensive universities that receive most of their two-year graduates.

Learning Outcomes of Public Health Minors—Linked to LEAP Outcomes

Foundational or Core Learning: Whatever the institutional model, participants at the Consensus Conference reached broad agreement on the foundation or core. A minor program may require 2-4 foundation courses. Population-based EPI 101 (science base, research methods, and theory) and PH 101 (social science base, concepts, perspectives, and policy; environmental and occupational health; ethics; community emphasis) form the core of the core, without exception. There may be different approaches to locating these two courses within the curriculum. Some institutions may combine EPI 101 and PH 101 for first- or second-year students and require an upper-division epidemiology course for the minor. Some may require that students enrolled in either course have completed statistics or bio-statistics as a prerequisite. To emphasize a point of consensus arising from the Boston conference: different course models may exist, each effective in its own way within a given institutional context. The disciplinary knowledge base of public health, the distinctive learning outcomes of EPI 101 and PH 101, may be presented in a variety of designs. The number and titles of courses will matter less in the end than the integrity of the learning goals of public health for an educated citizenry, which institutions may address in their own distinctive ways.

Minor programs should extend and develop foundational learning beyond PH 101 and EPI 101 and should include a capstone experience. The conferees recommend the following outcomes to be re-introduced and re-connected to the foundation of PH 101 and EPI 101 throughout the courses accepted for the minor:

- Understanding of health promotion and disease prevention
- Foundational understanding of ethics and human rights, theoretical and applied to real-world problems such as disaster preparedness and bioterrorism
- Fluency in using statistics (may or may not be a prerequisite) or biostatistics
- Understanding of global and international health, environmental health, and contemporary health issues such as disparities in healthcare across populations, based on gender, race, age, ethnicity: “Public health is global,” as one working group member observed.

- Understanding of population science with an emphasis on population health and health literacy
- Experiential learning; service learning
- Understanding of collective action and methods of working toward community change
- Capstone learning through service and application, an integrative capstone experience, perhaps based on case study or culmination of the work of a learning community.¹⁶

On this foundation (and toward the capstone), minor programs may build many different structures or be shaped by different interdisciplinary emphases. Designs will depend on institutional mission and strengths. Assuming EPI 101 and PH 101 are required, the working group understands that advanced courses may share some of the same learning objectives—to use public health concepts, for example, to examine a local health issue or understand disease determinants and causation—but seek performance at a higher level. Elective courses may accomplish a number of the following:

- Encourage work in applied science
- Open health career avenues for A&S students in Public Health, Environmental Health, health communication and the full range of professional programs
- Invite new and diverse student populations into the sciences
- Foster study, community-based work, and methods for achieving change in health policy, politics, and legislation: “The community is a living laboratory,” a participant commented.
- Foster understanding of cultural difference, in U. S. and world context: “Cultivate cultural understanding and humility,” one program observes.
- Teach behavior change strategies (individual and community-based)
- Require both qualitative and quantitative analysis
- Open study of small- and large-group communication
- Open connections to diverse fields using a population or societal approach: nutrition, sociology, psychology, anthropology, economics, political science, organizational studies, human physiology
- Bring study of law, ethics, human rights, public policy, and social responsibility into action
- Connect theology, ethics, and medicine
- Promote advanced language study
- Open the field of health communication within communication, media, or digital studies
- Connect the study of drugs and alcohol, nutrition and health, and sexuality to population-based study
- Teach information management and analysis: learning to use such tools as SPSS and work with human-subject and confidentiality issues

The overall design of a minor should be distinctive and shaped by a mission-based commitment, as in the case of the University of Virginia minor in Global Public Health. An institution with advanced community-outreach programs may choose to build service and community-based research into the options or electives. A minor intended to serve pre-medical and pre-allied health students may emphasize pre-professional education. Schools with strong communication programs may emphasize health communication. Planners should consider the academic culture of the institution as they open a discussion of structure.

Strategy for Development of a Sustainable Integrative Public Health Minor

While many variations and approaches will suffice, conferees recommend the following—particularly for liberal arts colleges and comprehensive institutions, but applicable to all institutions:

1. Find a champion, who is likely to come from the social sciences but may hold a position in philosophy and ethics, biology, or environmental study or science.
2. Seek faculty and administrative support for the program.
3. Draft mission statement and vision related to institutional mission.
4. Start or promote development with a lead department, perhaps most readily to be found in the social sciences but open to any willing department, which will become the administrative host or home.
5. Prepare a plan for faculty development and a timeline; develop foundation or core courses (EPI 101 and PH 101); seek general education approval of foundation courses.
6. Prepare for advising and service learning to be centered in the host department or an affiliated center.
7. Organize a network of affiliated faculty who will help with advising; consider organizing an advisory committee or board.
8. Connect the program to the sciences through development of EPI 101, which may meet general education requirements in the sciences, including laboratory science.
9. Encourage statistics faculty to incorporate public health problems and examples into regular statistics instruction—understanding that many liberal arts majors outside the sciences will take statistics to fulfill general education requirements in quantitative reasoning.
10. Organize events that attract interest. One institution sponsored a well-attended interdisciplinary panel on the topic of DNA testing and risk, bringing together a public health professional, a philosophy professor, a psychologist in behavioral medicine, a medical sociologist, and a biologist.
11. Apply for start-up funding (internal or external) after making progress on all of the above.

Administrative Issues and Requirements

Because institutions differ so widely in structure and mission, the conferees found that there was no one set of answers to all administrative problems. The meeting did, however, produce a comprehensive set of questions that will require answers during the planning and implementation phases of a new program.

For all institutions:

- Successful programs require investment and commitment from the administration and grassroots interest of faculty—who share an understanding of institutional mission and a vision for the public health minor program, and in particular the goal of an educated citizenry. Not only is this goal socially valuable, but it also helps to refocus and re-center discussion when, as inevitably happens, turf issues arise.
- Effective programs negotiate across boundaries of departments and schools. An administrative entrepreneur at the center of the institution (in the office of academic affairs) can help.
- Successful programs need a champion who invests in sustained leadership.
- There are predictable administrative planning issues, which will vary with institutional type. Effective planning begins with mission and vision and then calculates the costs of program

development and implementation, as well as the regular operating budget of a sustainable program. It is essential to answer the following questions:

- Who is releasing faculty to plan and run the new minor program?
- How much can and should planners achieve before negotiating for additional resources?
- Who leads the program?
- Where is the faculty director's line?
- Interdisciplinary or interschool programs cost time and money. In institutions without formula funding, how do planners find or negotiate for start-up costs?
- Under formula funding, who pays?
- Where does tuition flow within the institution?
- Does the institution permit or encourage leadership to be shared or rotated among departments over time, especially in the case of interdisciplinary programs?
- How does the institution handle the costs of team teaching? Will it permit team teaching at full faculty credit or weighting during a set period of program development (perhaps two semesters)?
- Common program management issues:
 - Who advises? How does the institution assign, credit, and share advising for other interdisciplinary or interschool programs?
 - Who pays attention to course sequencing in interdisciplinary programs?
 - How does the institution list interdisciplinary courses in program material and in student records?
 - What models for interdisciplinary programs, such as Women's and Gender Studies, exist at the institution? How does the institution support departments that host other programs?
 - Is it necessary to have a departmental base or a hosting department for an interdisciplinary program or can the program survive by floating?
- Successful programs, according to conferees, will require full integration with and within the A&S unit. A thriving public health minor will be built on respect for difference of perspective between professional schools and A&S, and between the sciences, social sciences, and humanities within A&S. Stakeholders involved in planning might well consider the preferred level of preparation they want to seek for students and the long-term goals of the minor in institutional context.
 - How do planners achieve full immersion in A&S, with the goal of an educated citizenry firmly before all stakeholders?
 - Do the goals of the minor serve a population beyond the pre-medical/health professional students?
 - Do the goals of the minor invite students in the humanities to enroll and faculty in the humanities to address public health in disciplinary context?
 - Do the goals of the minor address the institutional commitment to general and liberal education?

For Schools and Colleges with HS Units:

- Minors may be easier to develop if the A&S unit has access to a HS unit. Deliberate crossover between schools can be productive. Questions to anticipate:

- How to handle calendar and scheduling differences between schools, especially in universities with HS campuses?
- Should undergraduates enroll in graduate epidemiology or public health courses?
- How are students enrolled in a minor program granted access to upper-division and graduate courses?
- If undergraduates take graduate PH epidemiology, should it be less heavily quantitative for the undergraduates (a separate set of assignments, for example)? One program is finding that undergraduates perform well in graduate courses. Another program worries that the rigor of the courses will decline if undergraduates enroll.
- Should epidemiology and public health courses be located or administratively housed in the A&S unit?
- Turf issues may arise if A&S creates a major that competes with undergraduate public health majors or Allied Health or HS degree programs. Minors are safer territory in general.
- Public health minors should have at the very least a toehold, or better, an anchor or home in A&S, especially the social sciences. There are advantages also to a 5-year BA (or BS)/MPH design, which institutions may wish to consider.

For Schools and Colleges without HS Units:

- A&S units and liberal arts colleges without access to an HS unit will need to seek external resources:
 - web-based or internet courses
 - community-based health professionals (using the business school model, employing as adjunct faculty epidemiologists from public health departments)
 - consortia with local hospitals
 - support from and collaboration with related non-profits or foundations
- Planners need to answer the following question: Does the success of a minor program depend on the participation of faculty who have PH degrees? Differences of opinion exist. Nurses often have MPH or DrPH degrees and can work as team members with A&S faculty. Some social science and science faculty have or are willing to earn MPHs, especially now that there are online programs available. Some institutions will need to hire adjunct faculty with degrees in PH for team teaching, program advisory, and curricular development. Concerns about the role of adjunct faculty are more readily addressed if the adjunct faculty take assignments that require and reward their professional expertise and that allow them to work in full partnership with standing faculty.

Conclusion

The promise of academic minor programs in public health is extraordinary. Such programs integrate well with A&S and many other major programs, bringing critical global issues into discussion within a wide array of disciplines. Opportunities for collaboration between units, especially bridging A&S and professional schools, are enriching to institutions in countless ways. Professional school faculty may find the experience of teaching engaged undergraduates to be refreshing and inspiring. A&S faculty may discover a startling new perspective on their research and scholarship when they observe the world through a population lens. The population base of public health supports new approaches or new lenses through which to view both liberal arts and professional school majors. The emphasis on application and real-world problem solving enhances liberal education, both general education and the major. Public health minors

invite students to take socially responsible steps and provide valuable direction for career choices. Considering the magnitude of world health problems and the great diversity of peoples and cultures, we believe public health minors help students to focus on solutions, to be sensitive to difference and aware of vulnerable populations, and to be hopeful about action toward a more just and fair world. Through such programs, colleges and universities address critical needs for an educated citizenry and foster leadership development. While there are administrative challenges, as in any interdisciplinary or interschool project, committed stakeholders will find solutions. We expect that outcomes will fully reward the effort. For undergraduates who will live through much of the 21st century, these are highly engaging and relevant programs that will conduce to the good of the world.

¹ Throughout, the capitalized initials PH indicate credentialed units and credentialed professionals. References to minor programs in public health appear in lower-case, to indicate that the program does not offer a professional credential.

² The Association of American Colleges and Universities has opened a 10-year campaign entitled Liberal Education and America's Promise (LEAP). This campaign to promote the value of liberal education draws on AAC&U's earlier Greater Expectations initiative to re-envision and re-define liberal education (embracing general education and the major) for the 21st century. The LEAP campaign reports and documents are available at <http://www.aacu.org/advocacy/leap/index.cfm>. A one-page visual of the LEAP project is available at http://www.aacu.org/advocacy/pdfs/LEAP_VisionFlyer.pdf.

³ The University of Wisconsin-Eau Claire, for example, has a Spanish for Health Professions minor designed for nursing, Spanish, and other majors. See <http://www.uwec.edu/newsreleases/06/april/0412NursingSpanish.htm>

⁴ Arts and Sciences Magazine, Johns Hopkins University (Fall/Winter 2006), 23-26.

⁵ See the minor program in Public Health at Temple University: www.temple.edu/chp/departments/publichealth/PH_undergrad_FAQ.htm

⁶ The Boston University PH minor is available at sph.bu.edu/index.php?option=com_content&task=view&id=464&Itemid=566. The University of Virginia PH minor is available at www.healthsystem.virginia.edu/internet/phs/phpp/globalpublichealthminor.cfm

⁷ The term comprehensive refers to institutions that offer baccalaureate and master's degrees but generally not doctorates.

⁸ See the College of New Jersey liberal learning concentration in health communication: <http://www.tcnj.edu/~liberal/concentrations/health.html>.

⁹ Drew University, in New Jersey, is currently planning a minor. Discussion between planners and Susan Albertine on December 15, 2006, provided useful information about PH minors and closely related interdisciplinary ventures at liberal arts colleges. Drew has identified programs at Beloit College, Dickinson College, Lafayette College, Lawrence College, Muhlenberg College, and Wellesley College.

¹⁰ For public health initiatives at San Francisco State University, see <http://www.sfsu.edu/~hed/undergrad/ge.htm> and <http://www.sfsu.edu/~hed/undergrad/minors.htm>

¹¹ See the PH minor at Muhlenberg College: www.muhlenberg.edu/depts/publichealth.

¹² Western Washington University houses the Center for Healthy Living in the College of Humanities and Social Sciences. The Center sponsors interdisciplinary courses and hires regional public health professionals to teach. See www.wwu.edu/depts/healthyliving

¹³ The American Association of Colleges of Nursing lists 672 baccalaureate programs.

¹⁴ The National Environmental Health Association (NEHA) has membership of about 5,000 nationally. Information about Environmental Health degree programs is available through the Association of Environmental Health Academic Programs: www.aehap.org

¹⁵ Reported at the Consensus Conference as a program at UCLA. Waiting for confirmation.

¹⁶ See Nancy S. Shapiro and Jodi H. Levine, Creating Learning Communities: A Practical Guide to Winning Support, Organizing for Change, and Implementing Programs (San Francisco: Jossey-Bass Publishers, 1999).