

A Model Curriculum for a Course on the Built Environment and Public Health Training for an Interdisciplinary Workforce

Nisha D. Botchwey, PhD, Susan E. Hobson, MPH, Andrew L. Dannenberg, MD, MPH, Karen G. Mumford, PhD, Cheryl K. Contant, PhD, Tracy E. McMillan, PhD, MPH, Richard J. Jackson, MD, MPH, Russell Lopez, PhD, Curtis Winkle, PhD

Abstract: Despite growing evidence of the direct and indirect effects of the built environment on public health, planners, who shape the built environment, and public health professionals, who protect the public's health, rarely interact. Most public health professionals have little experience with urban planners, zoning boards, city councils, and others who make decisions about the built environment. Likewise, few planners understand the health implications of design, land use, or transportation decisions. One strategy for bridging this divide is the development of interdisciplinary courses in planning and public health that address the health implications of the built environment. Professional networking and Internet-based searches in 2007 led to the identification of six primarily graduate-level courses in the U.S. that address the links between the built environment and public health. Common content areas in most of the identified courses included planning and public health histories, health disparities, interdisciplinary approaches, air and water quality, physical activity, social capital, and mental health.

Instructors of these courses collaborated on course content, assignments, and evaluations to develop a model curriculum that follows an active learning-centered approach to course design. The proposed model curriculum is adaptable by both planning and public health departments to promote interdisciplinary learning. Results show that students gain planning and public health perspectives through this instruction, benefiting from active-learning opportunities. Faculty implementation of the proposed interdisciplinary model curriculum will help bridge the divide between the built environment and public health and enable both planners and public health professionals to value, create, and promote healthy environments.

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Introduction

A century ago, planning and public health professionals worked together to protect the public's health and prevent the spread of disease by developing zoning laws to influence the built environment.^{1,2} However, the disciplines soon diverged; public health followed a clinical model, and planning focused

on policy development and physical form. These two fields are re-converging because many chronic diseases are associated with both the built environment and the individual behaviors that cumulatively lead to negative health outcomes.^{3–5}

Traditionally, planning and public health are taught and practiced with little coordination. Most community-design and transportation-planning decisions are made by urban planners, zoning-board members, and city councilors—seldom by public health professionals. Most public health professionals have little contact with planning professionals, except in relatively narrow domains such as water- and sewer-infrastructure-review processes. The model of social determinants of health and environmental health promotion describes health and disease outcomes resulting from the built environment and social context as well as community-level factors. These include infant and child health, obesity, cardiovascular diseases, diabetes, cancer, injuries and

From the Departments of Urban and Environmental Planning and Public Health Sciences, University of Virginia (Botchwey), Charlottesville, Virginia; the Department of Urban Planning and Policy, University of Illinois at Chicago (Hobson, Winkle), Chicago, Illinois; the National Center for Environmental Health (Dannenberg), CDC, the Department of Environmental and Occupational Health (Mumford), Emory University, the Department of City and Regional Planning Program (Contant), Georgia Institute of Technology, Atlanta, Georgia; PPH Partners (McMillan), Flagstaff, Arizona; School of Public Health, University of California Berkeley (Jackson), Berkeley, California; and the Department of Environmental Health, Boston University (Lopez), Boston, Massachusetts

Address correspondence and reprint requests to: Nisha D. Botchwey, PhD, University of Virginia, Campbell Hall, P.O. Box 400122, Charlottesville VA 22904-4122. E-mail: nbotchwey@virginia.edu.

violence, infectious diseases, respiratory health, and mental health.⁴

One strategy for improving understanding and communication between the planning and public health professions is the development of interdisciplinary courses—undergraduate, graduate, or continuing education—that draw faculty and students from both fields. Such courses could help participants understand the linkages between the built environment and public health. Additionally, such courses could stimulate an exchange of ideas and set the stage for continued collaboration across fields.

Research by planning and public health professionals in the area of the built environment and public health has been expanding during the past decade. The Robert Wood Johnson Foundation's Active Living Research program has provided support to interdisciplinary research teams of scholars from both fields.⁶ Moreover, professional conferences in both planning and public health have offered conference tracks and special sessions on the built environment and public health.

Although planning and public health professionals have engaged in this interdisciplinary research and these conference sessions, integrative courses on this topic are not common in either discipline. A 2005 report on the built environment and physical activity, co-authored by the IOM and the Transportation Research Board (TRB), documented existing joint-degree programs in planning and public health but found that most did not include courses or activities that integrated the content of the planning and public health fields.⁷ In 2006, planning and public health presenters described two interdisciplinary courses at the American Public Health Association's annual conference in a session titled "Teaching the Built Environment—Health Connection."⁸ In 2007, the CDC hosted a Public Health Grand Rounds broadcast that highlighted the need to identify and address place-specific health issues.⁹

Currently, faculty in planning and public health recognize the need to equip students with skills that enable them to interact effectively with other fields. Their approaches usually take the form of either class sessions that highlight the other discipline or guest lecturers who offer alternative perspectives. Few courses have a distinct focus on integrating knowledge from both areas to illuminate how environmental approaches could reduce the incidence of diseases. Consequently, students receive an introduction to concerns and opportunities, but they are not fully equipped to incorporate knowledge from the other field into practice. An interdisciplinary curriculum is needed that combines course content on the built environment and public health—a curriculum that faculty can adapt to their individual and school foci and can customize to fit their students' backgrounds, strengths, and weaknesses.

In this paper, six such existing courses are described; additionally, our collective experience is utilized to propose a model curriculum for a course or course modules on the built environment and public health, adaptable for use in schools of planning and public health.

Existing Courses on the Built Environment and Public Health

In 2007, planning and public health faculty who work at the intersection of the built environment and public health were contacted to determine whether they taught courses on this topic. In addition, an Internet search was conducted for such courses and their syllabi. The search engine Google was employed to search for various key words and phrases, including *built environment and public health*, *planning for healthy cities*, *GIS and public health*, and *physical environment and human behavior*.

The Internet searches and direct contact with faculty located 11 courses in universities across the U.S. Syllabi from these courses were obtained. The objectives described in each syllabus and the course topics and readings were examined to determine which courses addressed the interdisciplinary nature of the links between the built environment and public health. Five courses were excluded because they focused on narrow topics rather than on the intersections between the two disciplines.

The six selected courses were taught at Boston University (BU); Emory University/Georgia Institute of Technology (EU/GT); the University of California Berkeley (UCB); the University of Illinois at Chicago (UIC); the University of Texas at Austin (UT); and the University of Virginia (UVA). Course instructors were contacted for additional information, including student enrollment, reading lists, assignments, and evaluation materials. Since the completion of this review, additional courses have been found that otherwise would have been included in the evaluation (Table 1).

Course Summaries

Table 1 provides an overview of the six courses and the faculty, students, and disciplinary homes of the courses. Three of the six courses were taught through planning programs (UIC, UT, UVA), and two were taught in public health schools or departments (BU, UCB). The sixth course (EU/GT) was taught jointly at a school of public health and a planning program, with faculty and students from both schools. Two planning courses were also cross-listed with public health and social work departments. All courses employed a seminar format, structured to include academic and topical readings, lectures, discussions, oral presentations, classroom exercises, guest speakers, and off-campus exercises.

Table 1. Overview of existing courses on the built environment and public health, 2007^{a,b}

	BU	EU/GT	UCB	UIC	UT	UVA
Course name	Built environment: design solutions for public health	Built environment and public health	Built environment and health	Planning for healthy cities	Built environment and public health	Healthy communities
Department or division	Environmental health	Environmental and occupational health/city and regional planning	Environmental health services	Urban planning and policy	Community and regional planning	Urban and environmental planning
Qualifications of primary faculty	1. DSc, MCRP 2. MPH, DSc candidate	1. PhD 2. PhD 3. MD, MPH	MD, MPH	PhD, MUPP	PhD, MPH	PhD, MCP
Course prerequisites	Urban Environmental Health or instructor permission	None	None	None	None	None
Cross-listed and department	No	Yes; see above	No	No	Yes; social work	Yes; public health sciences
Number of students enrolled (year)	18 (2007)	27 (2007)	25 (2007)	16 (2006); 7 (2007)	17 (2006)	21 (2007)
Level of students	Graduate	Graduate	Graduate	Graduate	Graduate	Graduate 43% Undergraduate 57%
Student disciplines or majors	Planning: 33%; public health: 67%	Planning: 37%; public health: 63%	Planning: 20%; public health: 80%	Planning: 79%; public health: 13%; occupational therapy: 4%; social work: 4%	Social work; community and regional planning; health education/promotion; transportation engineering; landscape engineering	Planning/architecture: 76%; public health: 5%; other (art history, foreign affairs, environmental thought and practice, Chinese): 19%
Semester hours	4	2 (public health); 3 (planning)	3	4	3	3

^aKey faculty members who taught the courses at UT and UCB have left those universities. The UT offering is now available as an online course through Northern Arizona University.

^bCourses identified following completion of case studies include 2007 courses at Cornell University Department of Design and Environmental Analysis, Columbia Mailman School of Public Health, and the University of West Florida School of Allied Health and Life Sciences. New courses on the built environment and health have been initiated in 2008 at the University of Washington College of Architecture and Urban Planning, Virginia Polytechnic Institute Department of Urban Affairs and Planning, and the Ohio State University City and Regional Planning Program.

BU, Boston University; EU/GT, Emory University and Georgia Institute of Technology; MCRP, Master of City and Regional Planning; MUPP, Master of Urban Planning and Policy; MCP, Master of City Planning; UCB, University of California Berkeley; UIC, University of Illinois at Chicago; UT, University of Texas at Austin; UVA, University of Virginia

All six courses were taught at the graduate level; one course enrolled both graduate and undergraduate students. Three courses included students primarily from the home discipline of the instructor; the three others achieved a greater balance among students from planning, public health, and other disciplines.

Course Objectives and Topics

All courses sought to equip students with the ability to identify a problem, evaluate the built environment's impacts on public health, and develop design and policy solutions to address public health issues such as obesity, environmental contamination, and social equity. All required students to think outside their disciplines. One course (BU) helped students to identify design elements that respond to specific health issues. Some courses (EU/GT, UIC, UT, UVA) provided a greater policy- and decision-making focus in which students evaluated the impact of the built environment on health. Other courses (EU/GT, UCB, UVA) provided a similar focus but emphasized the concerns of vulnerable populations (the poor, children, women, the elderly, the disabled, and minorities) both domestic and international.

The courses typically began with an examination of the historical foundations of planning and public health. This overview was followed by specific topics, including health disparities, air and water quality, climate change, physical activity, transportation, social capital, and mental health. With these topics as a base, the courses then covered potential solutions for challenges to the built environment and public health, ranging from protecting open space to mitigating health disparities and serving vulnerable populations. The courses also provided a broad collection of tools about which students learned and, in some cases, applied locally. Table 2 lists some of these tools, including health impact assessments and environmental impact assessments.

Readings and Course Assignments

Textbooks commonly used in the courses were *Urban Sprawl and Public Health*¹ and *Neighborhoods and Health*.¹⁰ In addition, instructors drew journal readings most frequently from the public health field (*American Journal of Public Health*, *American Journal of Preventive Medicine*, *Journal of Urban Health*^{4,11-15}) and from planning-related publications and organizations (e.g., *Cities*, the TRB, the Local Government Commission's Center for Livable Communities¹⁶⁻¹⁹). Public health journals were utilized more than planning-related publications because the former have published the majority of research in this area and have supported special issues on

Table 2. Topics and tools presented in six courses on the built environment and public health, 2007^a

Topic or tool	Courses that included topic or tool (%)
Planning history/perspective	100
Public health history/perspective	100
Health disparities/vulnerable populations/aging	100
History of interdisciplinary approach	83
Air quality, water quality	83
Physical activity and mobility	83
Social capital and mental health	83
Healthy homes and neighborhoods	67
Climate change and sustainable planning	67
Health impact assessments	67
Planning design solutions (e.g., zoning, preservation)	67
Transportation/traffic safety/injuries	50
Food/nutrition/food security	50
Disasters	33
Environmental-impact assessments	33
Healthcare system/access to care	33

^aTopics and tools presented in only one course include schools, economics of the built environment, creating and preserving open space, sociologic and anthropologic evaluations, public health promotions, urban renewal, revitalization and housing of the poor, health policies, and Photovoice methods.²⁰ (See Table 3 for a definition of Photovoice.)

this topic; planning-related journals only recently have begun to do so. These readings spanned a variety of topics, from the history of the two disciplines to transportation planning and safety to healthcare policy. Course readings also included overviews, commentaries, theory papers, and technical research reports.

Each course contained several assignments to help students think critically and apply principles while blending planning and public health perspectives and methodologies. In addition to term papers and exams, assignments ranged from in-class debates on predetermined topics to field-based data-collection efforts designed to introduce students to empirical research (Table 3²⁰).

Course Logistics

Instructors indicated several obstacles to the teaching of interdisciplinary courses. Some faculty noted difficulty in teaching all students at a challenging level because of differences in students' prior knowledge and their grasp of discipline-specific language (terms and foundational theories). Achieving a common context and vocabulary at the beginning of the course helped resolve these concerns. In some cases, scheduling class meeting times was difficult because of conflicting course times in different disciplines. Location presented some problems, with many classes meeting at a

Table 3. Selected learning objectives and assignments in six courses on the built environment and public health, 2007

	Learning objective	Assignment
Local neighborhood case study (BU)	To illustrate how building practices are influenced and to evaluate the effectiveness and sustainability of design innovations	Tour a local neighborhood and answer essay questions concerning the community's urban revitalization plan, using analytic techniques presented in class
Campus and neighborhood walkability audit (EU/GT)	To assess the walkability of residential and campus settings as part of physical activity environment at home or school	Use existing or newly developed instruments to collect field data in two or more settings, in either a residential or campus environment; gain data-collection experience and reflect on daily settings and their walkability, including sidewalks, barriers, traffic, destinations, and the presence of others
Service-learning group project (UT, UVA)	To become familiar with community organizations and their process to improve the welfare of communities	Work for the entire semester with a group of service providers, such as assisting hurricane evacuees in Austin TX or developing a resource book for an urban farm
Activity diary (UT)	To increase awareness of how choices, constraints, and design affect movement patterns and physical activity	Keep a week-long travel diary of pedometer readings and travel patterns, with critique of how built environment influenced travel
Transit use (EU/GT)	To understand opportunities and barriers for alternative transportation systems relying on mass transit	Follow a round-trip circuit of 8–10 segments on bus, heavy rail, trolley, and on foot while monitoring waiting times, ridership numbers, wayfinding, and relative safety
Newspaper op-ed article or radio perspective (UCB, UVA)	To write persuasively about contemporary social issues, integrating information and ideas, and present ideas in a clear, succinct way in a public forum	Produce oral perspective or op-ed article on the built environment and health, related to policy and ethics of popular interest; read it aloud and distribute to the class for discussion and critique; submit for broadcast or publication
Debates (UIC)	To gain appreciation for contemporary issues related to topics presented in class	Debate a topic assigned at beginning of semester; present pro and con positions, each followed by 2-minute rebuttals
Policy memos (UT, EU/GT)	To construct critical arguments and present succinct positions to educate decision-makers	Draft two policy memos on built environment issues directed to decision-makers at local and state levels
Photovoice ^a report (UVA)	To collect community perspectives on the feasibility of built environment approaches to remedying disparities of social capital and mental health—or other topics	Develop recommendations through in-class Photovoice exercise; evaluate feasibility of recommendations based on reflections and assigned readings
Healthy communities portfolio (UVA)	To engage in reflective thinking about what student has learned during the semester	Present portfolio illustrating the evolution during the semester of the student's thinking about healthy communities, with narrative discussing lessons and future applications of the work

^aPhotovoice, an approach developed by Caroline Wang in 1994, enables economically and politically disenfranchised populations to express themselves with greater voice. It is a method in which participants take pictures that address a particular topic and share them with others to develop recommendations and implementation plans—an effective way to share knowledge, thoughts, and beliefs about a given topic. This approach helps communities identify important issues and develop recommendations on how to make changes.²⁰

BU, Boston University; EU/GT, Emory University and Georgia Institute of Technology; UCB, University of California Berkeley; UIC, University of Illinois at Chicago; UT, University of Texas at Austin; UVA, University of Virginia

distance on the same campus or on a campus different from students' usual class locations. For courses involving two institutions, inconsistent academic calendars made course scheduling and grading more difficult. Finally, enrollment in courses across colleges within one university or across two universities could present (but did not for these courses) tuition implications for students.

Course Assessments

Course assessments were a combination of student evaluations made available by instructors as well as instructors' reflective evaluations following the close of the class. Students reported that they liked the opportunity to learn from classmates, especially those from other disciplines, through in-class discussions and out-

of-class collaborative exercises. Students also enjoyed guest lectures and field trips to broaden their knowledge of issues and interventions affecting the built environment and public health. Students suggested that (1) supplementary reading material contain more depth and different viewpoints, (2) lectures be expanded beyond material found in the readings to include emerging areas of interest, (3) guest-speaker presentations be better coordinated to build on previous lessons, and (4) a greater mix of lecture and facilitated discussions be provided so topics could be explored in more depth.

Instructors felt that hands-on activities were valuable experiential learning components because they reinforced readings and lessons from other classes and permitted students to engage personally with the material. Oral presentations and debates were helpful because they prepared students for public speaking, an important skill for future careers. Faculty found that having students from varying disciplinary backgrounds was a strength, but it also presented challenges. Differences in terminology, analytical approaches, and writing styles created, at times, difficulties in building foundational knowledge across disparate disciplines.²¹ More evaluations of the case study and similar courses, along with evaluations of the courses' impact on student learning, are needed to augment the strengths of this instruction.

Model Curriculum for a Course on the Built Environment and Public Health Considerations in Course Design

Based on comments from both students and instructors, a model curriculum was designed for a course on the built environment and public health that provides both foundational knowledge and learning opportunities for students engaging in this interdisciplinary material. This proposed model course is informed by the work of L. Dee Fink, a leader in course design who argues that traditional, content-based methods of teaching are insufficient because they focus on information, not transformation, and on teaching instead of learning. He proposes an integration of situational factors, learning goals, teaching and interactive-learning activities, and feedback and assessment to accomplish the training of self-directed learners.²² Fink's strategy blends content-centered approaches with learning-centered approaches through which students engage in critical thinking, the application of course knowledge to real-world problems, and thoughtful reflection. Fink's approach also stresses the importance of contextual, or situational, factors, such as the difficulty of teaching students who have varied levels of experience and knowledge.

In Fink's method, situational factors are addressed directly in the learning goals and activities. These learning goals and active-learning or collaborative activities help build the skills that faculty want students to have at the end of the semester. Such activities may include students' designing a built environment that acts to decrease the prevalence of a chronic disease or conducting, in teams, a case study that applies methodologies from various disciplines to a place-based health problem. Feedback and assessment procedures emerge directly from the learning goals, and assessment focuses on the characteristics of high-quality work; students are also involved in assessing and determining appropriate criteria for evaluating their work in preparation for working in the field.

Course Design

Course objectives from the six existing courses were reviewed in relation to Fink's framework and shaped into a 15-week model course (Table 4^{4,11,23-42}). The model course was organized into four units: (1) planning and public health foundations, (2) natural and built environments, (3) vulnerable populations and health disparities, and (4) health policy and global impacts. These units provide an organizing structure for learning goals, session topics, readings, and assignments (adapted from those in Table 3), and are designed to emphasize active learning. The format provides flexibility for drawing on the strengths and the particular interests of faculty and students. Overall, the course sequence is driven by the learning goals and their associated content.

Learning goals for the course were developed according to Fink's taxonomy, which includes foundational knowledge (understanding and remembering information and ideas); application (developing skills; thinking critically, practically, and creatively; and managing projects); human dimensions (learning about oneself and others); caring (developing new feelings, interests, and values); learning how to learn (improving learning skills); and integration (connecting ideas, people, and realms of life).²²

Unit 1 presents an overview of both fields, from their origins to the present. Emphasizing the first learning goal of foundational knowledge, this unit orients students to the core values of both fields and their interdisciplinary connections. Unit 2 covers the natural environment and the human impact on its systems of the application of planning tools that shape the built environment to address chronic illness. A highlight of this unit is a service-learning group project during which students apply tools from environmental planning, transportation planning, and environmental health to a local issue. Unit 3 emphasizes diverse populations, their environments, and associated health issues. Students explore the historical, socioeconomic,

Table 4. Learning activities in proposed 15-week model course on the built environment and public health

Units	Learning goals	Session topics	Supplemental readings	Suggested assignments ^a
Unit 1: Planning and public health foundations (2 wks)	Foundational knowledge: Understand public health and planning history, evolution, and important movements to the present, as well as historical and current theories on the relationship between the built environment and public health	Planning history Public health history Interdisciplinary applications	Dannenbergs (2003) ¹¹ Northridge (2003) ⁴ Peterson (1979) ²³ Malizia (2005) ²⁴	(1) Local neighborhood case study (2) Campus and neighborhood walkability
Unit 2: Natural and built environments (6 wks)	Application: Identify contemporary features of the built environment such as patterns of development, parks, public works projects, housing, and transportation systems; employ methods developed by sociologists, anthropologists, public health leaders, urban planners, and architects to address chronic illnesses and impacts of the built environment	Land use and transportation Planning design approaches Health impact assessments Environmental-impact assessments Indoor and outdoor air quality Water quality Food security	Giles-Corti (2003) ²⁵ Evans (2003) ²⁶ Friedman (2001) ²⁷ Twiss (2003) ²⁸ Dannenbergs (2008) ²⁹ CDC (2005) ³⁰ Pucher (2003) ³¹ Lucy (2003) ³²	(1) Service-learning group project (2) Activity diary (3) Transit use
Unit 3: Vulnerable populations and health disparities (3 wks)	Human dimensions: Learn about oneself and the context in which others operate to better integrate that understanding when evaluating differing built environments, socioeconomic positions, social and cultural backgrounds, and health status Caring: Adopt new feelings, interests, or values based on issues addressed throughout the semester	Vulnerable populations (the poor, children, women, the elderly, the disabled, and minorities) and health disparities Mental health Social capital Environmental justice	McMillan (2005) ³³ ICMA (2003) ³⁴ Evans (2003) ³⁵ CDC (2000) ³⁶ Leyden (2003) ³⁷	(1) Newspaper op-ed article or radio perspective (2) Debates
Unit 4: Health policy and global impacts (3 wks)	Learning how to learn: Develop skills to identify studies and engage communities, critique methods and findings, and apply lessons from planning and public health research to current and future problems	Health policy Sustainable planning and global warming Healthy housing	Librett (2003) ³⁸ McMichael (2000) ³⁹ Saeger (2003) ⁴⁰ Geller (2003) ⁴¹ Younger (2008) ⁴²	(1) Policy memos (2) Photovoice report
Final (1 wk)	Integration: Integrate current evidence regarding the impacts of the built environment on health with information and perspectives from other courses and/or personal experiences	Final portfolio		Healthy communities portfolio

^aDetails of these assignments are described in Table 3. wk, week

and cultural dimensions of these groups; speak persuasively about the human side of these dimensions; and are guided to care about particular issues related to the natural and built environment from which they can craft prevention and intervention approaches. Unit 4 investigates the impacts of health policies and practices on the health of the planet. Students gain greater awareness of ethical considerations in decision making and an understanding of how policy decisions socially and physically affect systems.

To complete the course, each student submits a cumulative learning portfolio that highlights the final learning goal: the integration of information with the student's academic and personal experiences. This assignment reflects the evolution of the student's think-

ing about the subject along with the student's view of the future of planning and public health disciplines.

Foundational readings for these four units were based on two books and 22 articles (Table 4^{4,11,23-42}). *Urban Sprawl and Public Health*¹ and *Integrating Planning and Public Health*⁴³ provide a solid foundation for the development of students' understanding of the general concepts in the four units and offer a further opportunity to delve into specific issues and solutions. Supplemental articles describe how the built environment-public health connection has been studied and how these studies have resulted in design requirements, policies, and funding. These articles also instruct students on the varying methods used by different disciplines to study the built environment. Useful websites

that reference built environment and health issues include those of the American Planning Association,⁴⁴ the National Association for County and City Health Officials,⁴⁵ the CDC,⁴⁶ the Harvard Center for Society and Health,⁴⁷ Active Living Research,⁴⁸ and Design for Health at the University of Minnesota.⁴⁹

Discussion

Over the past decade, public and scholarly attention has increasingly focused on the relationship between the built environment and public health. However, few courses at U.S. universities have been developed to address these issues. This study analyzed six such courses, summarizing the assessments of the students and the instructors involved in them, and presented a model curriculum for use and adaptation in disciplines related to planning, the built environment, and public health.

In the proposed course, students are asked—through the linking of learning goals with course topics, readings, and assignments—to master materials and skills on various built environment and health topics, to engage personally with issues and problems, and to synthesize their thoughts by analyzing problems from multiple perspectives and developing innovative solutions. This model curriculum provides opportunities for students from varying disciplines to gain foundational knowledge and to examine tools associated with urban planning and public health. Students are challenged to learn such material through extensive readings, guest lecturers, field-based assignments, data-collection activities, and local community involvement. This curriculum is a framework that faculty can customize according to their interests and resources. The materials and experiences in the model curriculum will assist faculty and students in bridging the divide between disciplines, addressing the opportunities and challenges associated with interdisciplinary training, and enabling planners and public health professionals to value, create, and promote healthy environments. Expected to be operational by January 2009 is a website (faculty.virginia.edu/nbotchwey/BuiltEnvironmentandHealthCurriculum.htm) focusing on the six courses described in this paper (and others subsequently identified); assessment information; useful approaches; and future directions.

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References

1. Frumkin H, Frank L, Jackson R. Urban sprawl and public health: designing, planning, and building for healthy communities. Washington DC: Island Press, 2004.
2. Schilling J, Linton L. The public health roots of zoning: in search of active living's legal genealogy. *Am J Prev Med* 2005;28(2S):96–104.
3. Corburn J. Confronting the challenges in reconnecting urban planning and public health. *Am J Public Health* 2004;94:541–6.
4. Northridge ME, Sclar ED, Biswas P. Sorting out the connections between the built environment and health: a conceptual framework for navigating pathways and planning healthy cities. *J Urban Health* 2003;80:556–68.
5. Malizia EE. Planning and public health: research options for an emerging field. *J Plan Educ Res* 2006;25:428–32.
6. Sallis JF, Linton L, Kraft M. The first Active Living Research Conference: growth of a transdisciplinary field. *Am J Prev Med* 2005;28(2S2):93–5.
7. Sclar ED, Northridge ME, Karpel EM. Promoting interdisciplinary curricula and training in transportation, land use, physical activity, and health. Transportation Research Board Special Report 282: does the built environment influence physical activity? Examining the evidence. trb.org/downloads/sr282papers/sr282SclarNorthridgeKarpel.pdf.
8. Lopez R, Botchwey N, Corburn J. Built Environment Institute II: Teaching the Built Environment—Health Connection. APHA 134th Annual Meeting and Exposition: Public Health and Human Rights. Environment Section Program; 2006 Nov 4–8; Boston MA. www.apha.org/apha/PDFs/Environ/2006_APHA_Env_Program_083106.xls.
9. CDC. Healthy places leading to healthy people: community engagement improves health for all. www.publichealthgrandrounds.unc.edu/places/index.htm.
10. Kawachi I, Berkman LF. Neighborhoods and health. Oxford: Oxford University Press, 2003.
11. Dannenberg AL, Jackson RJ, Frumkin H, et al. The impact of community design and land-use choices on public health: a scientific research agenda. *Am J Public Health* 2003;93:1500–8.
12. McAvoey P, Driscoll M, Gramling B. Integrating the environment, the economy, and community health: a community health center's initiative to link health benefits to smart growth. *Am J Public Health* 2004;94:525–7.
13. Frank L, Anderson M, Schmid TL. Obesity relationships with community design, physical activity, and time spent in cars. *Am J Prev Med* 2004;27:87–96.
14. Boarnet MG, Anderson CL, Day K, McMillan TE, Alfonzo M. Evaluation of the California Safe Routes to School legislation: urban form changes and children's active transportation to school. *Am J Prev Med* 2005;28(2S2):134–40.
15. Zimmerman R. Mass transit infrastructure and urban health. *J Urban Health* 2005;82:21–32.
16. Colantonio A, Potter R. City profile: Havana. *Cities* 2005;23:63–78.
17. Barredo J, Demichell L. Urban sustainability in developing countries' megacities: modeling and predicting future urban growth in Lagos. *Cities* 2003;20:297–310.
18. Rosenbloom S. Mobility of the elderly: good news and bad news. In: Conference proceedings 27—transportation in an aging society: a decade of experience. Proceedings of a conference; 1999 Nov 7–9; Bethesda MD. Washington DC: Transportation Research Board, 2004. onlinepubs.trb.org/onlinepubs/conf/reports/cp_27.pdf.
19. Burden D. Street design guidelines for healthy neighborhoods. Sacramento CA: Local Government Commission's Center for Livable Communities, 1999.
20. Wang CC, Burris MA. Empowerment through Photovoice: portraits of participation. *Health Educ Q* 1994;21:171–86.
21. Stokols D, Hall KL, Taylor BK, Moser RP, Syme SL. The science of team science: assessing the value of transdisciplinary research. *Am J Prev Med* 2008;35(2S):S77–S252.
22. Fink LD. Creating significant learning experiences: an integrated approach to designing college courses. San Francisco CA: Jossey-Bass, 2003.
23. Peterson J. The impact of sanitary reform upon American urban planning, 1840–1990. *J Soc Hist* 1979;13:83–103.
24. Malizia EE. City and regional planning: a primer for public health officials. *Am J Health Promot* 2005;19(5S):1–13.
25. Giles-Corti B, Donovan RJ. Relative influences of individual, social environmental and physical environmental correlates of walking. *Am J Public Health* 2003;93:1583–9.
26. Evans L. A new traffic safety vision for the U.S. *Am J Public Health* 2003;93:1384–5.
27. Friedman MS, Powell KE, Hutwagner L, Graham LM, Teague WG. Impact of changes in transportation and commuting behaviors during the 1996

- summer Olympic Games in Atlanta on air quality and childhood asthma. *JAMA* 2001;285:897-905.
28. Twiss J, Dickinson J, Duma S, Kleinman T, Paulsen H, Rilveria L. Community gardens: lessons learned from California healthy cities and communities. *Am J Public Health* 2003;93:1435-41.
 29. Dannenberg AL, Bhatia R, Cole BL, Heaton SK, Feldman JD, Rutt CD. Use of health impact assessment in the U.S.: 27 case studies, 1999-2007. *Am J Prev Med* 2008;34:241-56.
 30. CDC. Barriers to walking and bicycling to school: U.S., 2004. *MMWR Morb Mortal Wkly Rep* 2005;54:949-52.
 31. Pucher J, Dijkstra L. Promoting safe walking and cycling to improve public health: lessons from the Netherlands and Germany. *Am J Public Health* 2003;93:1509-16.
 32. Lucy WH. Mortality risk associated with leaving home: recognizing the relevance of the built environment. *Am J Public Health* 2003;93:1564-9.
 33. McMillan TE. Urban form and a child's trip to school: the current literature and a model for future research. *J Planning Literature* 2005;19:440-56.
 34. International City/County Management Association (ICMA). Active living for older adults: management strategies for healthy and livable communities. 2003. E-43140. bookstore.icma.org.
 35. Evans G. The built environment and mental health. *J Urban Health* 2003;80:536-55.
 36. CDC. Blood lead levels in young children—U.S. and selected states, 1996-1999. *MMWR Morb Mortal Wkly Rep* 2000;49:1133-7.
 37. Leyden KM. Social capital and the built environment: the importance of walkable neighborhoods. *Am J Public Health* 2003;93:1546-51.
 38. Librett JJ, Yore MM, Schmid TL. Local ordinances that promote physical activity: a survey of municipal policies. *Am J Public Health* 2003;93:1399-403.
 39. McMichael AJ. The urban environment and health in a world of increasing globalization: issues for developing countries. *Bulletin of the WHO* 2000;78:1117-26.
 40. Saegert SC, Klitzman S, Freudenberg N, Cooperman-Mroczek J, Nassar S. Healthy housing: a structured review of published evaluations of U.S. interventions to improve health by modifying housing in the U.S., 1990-2001. *Am J Public Health* 2003;93:1471-7.
 41. Geller A. Smart growth: a prescription for livable cities. *Am J Public Health* 2003;93:1410-5.
 42. Younger M, Morrow-Almeida HR, Vindigni SM, Dannenberg AL. The built environment, climate change, and health: opportunities for co-benefits. *Am J Prev Med* 2008;35:517-26.
 43. Morris M, Duncan R, Hannaford K, et al. Integrating planning and public health. Chicago: APA Planning Advisory Service, 2006.
 44. American Planning Association. Healthy communities through collaboration. <https://www.planning.org/research/healthy/>.
 45. National Association of County and City Health Officials. Community design/land use planning; other topics. www.naccho.org/topics/hpdp/land_use_planning.cfm.
 46. CDC. Designing and building healthy places. www.cdc.gov/healthyplaces.
 47. Harvard School of Public Health, Interdisciplinary Consortium on Urban Planning and Public Health (ICUPPH). Harvard center for society and health: ICUPPH web resources. www.hsph.harvard.edu/centers-institutes/society-and-health/interdisciplinary-consortium-icupph/interdisciplinary-consortium-web-resources/index.html.
 48. Active Living Research. Tools and resources. www.activelivingresearch.com/resourcesearch.
 49. University of Minnesota. Design for Health. www.designforhealth.net/.

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