



Planetary Health Report Card:

Harvard Medical School



HARVARD
MEDICAL SCHOOL

2020-2021 Contributing Team:

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Summary of Findings

Curriculum	C+
<ul style="list-style-type: none"> • HMS has made significant strides over the last few years in incorporating planetary health into the curricula of both Pathways and HST, with several sessions now dedicated to it in each program. PH was incorporated for the first time this year in Essentials I, the only course required for all medical students. • HMS would benefit from a broader effort to incorporate planetary health teaching longitudinally throughout the curriculum rather than concentrating it in a few standalone lectures. 	
Interdisciplinary Research	B+
<ul style="list-style-type: none"> • HMS excels in planetary and environmental health research as a founder of the Planetary Health Alliance, home to leading researchers in these issues, and host to several interdisciplinary research institutes. • Harvard’s planetary health research could be more inclusive by providing a centralized website to make opportunities to participate in this research more accessible to medical students and giving community partners a forum to help focus research on local impacts of climate change and pollution. 	
Community Outreach and Advocacy	B-
<ul style="list-style-type: none"> • HMS and its affiliated hospitals provide extensive educational material for patients and the general public connecting the environment to human health, including events, courses, and online resources. • Goal-directed outreach activities, however, are lacking at the medical school: while Harvard University hosts collaborations with community organizations to promote environmental health, HMS does not, nor does it provide CME courses for professionals on planetary health, despite a broad array of other offerings. 	
Support for Student-Led Initiatives	A-
<ul style="list-style-type: none"> • Harvard University provides many opportunities for students to perform funded planetary health research, initiate sustainability projects around campus, and participate in campus planning. • The Countway Library of Medicine, the Students for Environmental Awareness in Medicine, and orientation activities provide nature- and planetary health-related programming for students, but further engagement with the community through advocacy, the arts, and environmental justice initiatives could enrich these offerings. 	
Sustainability	B
<ul style="list-style-type: none"> • Harvard University has an active Office of Sustainability that has released guidelines for buildings, sustainable foods, supply procurement, and events. Broader publicity of these guidelines and, in some cases, making them mandatory would increase their efficacy. • Harvard University has strong goals for eliminating its carbon footprint, but there is not yet a clear plan for or substantial progress towards meeting these goals at the medical school. 	

Statement of Purpose

Planetary health is human health.

The Planetary Health Alliance defines planetary health as “a field focused on characterizing the human health impacts of human-caused disruptions of Earth's natural systems.” This definition is intentionally broad, intended to encompass the multitude of ways that the environment can affect health, including water scarcity, changing food systems, urbanization, biodiversity shifts, natural disasters, climate change, changing land use and land cover, global pollution, and changing biogeochemical flows. The health of humanity is dependent on our environment and our environment is changing rapidly and in disastrous ways. Although the World Health Organization has called climate change “the greatest threat to global health in the 21st century,” many medical school’s institutional priorities do not reflect the urgency of this danger to human health.

As future health professionals, we must be prepared to address the impacts of human-caused environmental changes on our patients’ health. This preparation is in the hands of the institutions providing our medical training. It is imperative that we hold our institutions accountable for educating medical students about the health impacts of climate change and other anthropogenic environmental changes, generating research to better understand health impacts and solutions, supporting related student initiatives, embracing sustainable practices as much as possible, and engaging with surrounding communities that are most affected by environmental threats. Because climate change and environmental threats disproportionately affect vulnerable populations (for example, communities of color, older adults sensitive to health threats, and individuals in low-resource settings), these issues are inherently ones of equity and justice.

With the purpose of increasing planetary health awareness and accountability among medical schools, we have created a Planetary Health Report Card that medical students internationally can use to grade and compare their home institutions on an annual basis. This medical-student-driven initiative aims to compare medical schools on the basis of discrete metrics in five main category areas: 1) planetary health curriculum, 2) interdisciplinary research in health and environment, 3) university support for student planetary health initiatives, and 4) community outreach centered on environmental health impacts 5) medical school campus sustainability.

Planetary Health Curriculum

Section Overview: This section evaluates the integration of relevant planetary health topics into the medical school curriculum. Today's medical students will be on the frontlines of tackling the health effects of climate change. Therefore, it is critical that medical students are trained to understand the health effects of climate change, as well as planetary health more broadly. Topics like the changing geography of vector-borne diseases, the health consequences of air pollution, environmental health inequities, and disaster response principles must be part of every medical school's core curriculum.

Curriculum: General

1. Did your medical school offer elective courses to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?		
Path ways	HST	
3	3	Yes, the medical school has offered more than one elective whose primary focus is ESH/planetary health in the past year.
2	2	Yes, the medical school has offered one elective whose primary focus is ESH/planetary health in the past year.
1	1	The medical school does not have any electives whose primary focus is ESH/planetary health, but there are one or more electives that include a lecture on planetary health.
0	0	No, the medical school has not offered any electives on planetary health or electives that include ESH/planetary health topics in the past year.
<p><i>Score explanation: HMS offers an elective course jointly with the Harvard T.H. Chan School of Public Health (HSPH), entitled "Human Health and Global Environmental Change", which is taught by Dr. Aaron Bernstein and engages students in planetary health. However, the course is scheduled such that it is difficult for medical students to attend.</i></p> <p><i>There is also a One Health clinical elective that focuses on comparative medicine at the Franklin Park Zoo, and looks at the intersection of environmental, animal, and human health.</i></p>		

Curriculum: Health Effects of Climate Change

2. Does your medical school curriculum address the relationship between extreme temperature health risks and climate change, as well as the socioeconomic/racial disparities in extreme heat exposure?		
Path ways	HST	

3	3	This topic was explored in depth by the core curriculum.
2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: Dr. Basu's Essentials II lecture "Climate Change: An Ecological and Health Equity Crisis" included a case describing renal disease as a result of heat exposure. He further covered the increase in dangerously hot days that will occur with climate change. Dr. Bernstein's lecture in Essentials II also addressed this subject. Essentials II is only required for Pathways students. HST students can opt to take the course but it is not convenient for their schedule. One session of Dr. Bernstein's elective course "Human Health and Global Environmental Change" discusses heat-related illness.

3. Does your medical school curriculum address the impacts of extreme weather events on individual health and/or on healthcare systems?

Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.
2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: Dr. Aaron Bernstein gives a lecture entitled "Climate Change: The world's biggest health problem you've never heard about (at least until now)," in Essentials II in which he discusses Hurricanes Maria and Sandy as examples of the devastating impacts of extreme weather events on health. He discusses the ripple effects on the healthcare system, including power outages leading to loss of cold chain, decreased survival of lung cancer patients undergoing radiation, and distressed migration. Essentials II is elective for HST students.

4. Does your medical school curriculum address the impact of climate change on the changing patterns of infectious diseases?

Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.

2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: HST's Microbiology course includes a lecture by Dr. Bernstein on "Climate Change and Infectious Diseases" that discusses patterns of disease that are changing with our changing climate. Dr. Bernstein's lecture in the Pathways Essentials II course, "Climate Change: The world's biggest health problem you've never heard about (at least until now)," also briefly addresses the link between climate change and antibiotic resistance.

5. Does your medical school curriculum address the cardiorespiratory health effects of climate change, including air pollution?

Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.
2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: HST's Respiratory Pathology course introduced a new lecture this year by Dr. Mary Rice on air pollution and its effects on health. This course further includes a lecture on Interstitial Lung Disease that covers the effects of occupational dust exposures such as silica and asbestos. Homeostasis I in the Pathways curriculum similarly covers this material on occupational exposures, but the Pathways curriculum does not address widespread air pollution and its effect on health. Dr. Bernstein's lectures in Essentials II mentioned the effects of ozone and smog that increase with rising temperatures, but did not explicitly address the effects of air pollution on cardiovascular and respiratory health.

6. Does your medical school curriculum address the mental health and neuropsychological effects of environmental degradation and climate change?

Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.
2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: Dr. Bernstein’s lecture in Essentials II, entitled “Climate change: The world’s biggest health problem you’ve never heard about (at least until now),” touched on higher rates of suicide with rising temperatures and reduced mental health risks with more green space. Graphics included in Dr. Basu’s Essentials II lecture “Climate Change: An Ecological and Health Equity Crisis” also mention the mental health effects of climate change. The subject was not however significantly addressed and is not included in courses mandatory for HST students.

7. Does your medical school curriculum address the relationships between health, individual patient food and water security, ecosystem health, and climate change?

Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.
2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: Food security and its relationship to climate change is briefly addressed in Dr. Gaurab’s lecture in Essentials II, but this course is not mandatory for HST students. Two sessions in Dr. Bernstein’s elective course “Human Health and Global Environmental Change” are dedicated to the effect of climate change on food supplies and potential solutions to increase resiliency.

8. Does your medical school curriculum address the outsized impact of climate change on marginalized populations such as those with low SES, women, communities of color, children, homeless populations, and older adults?

Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.
2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: Dr. Basu’s Essentials II lecture “Climate Change: An Ecological and Health Equity Crisis” addressed the disproportionate impact of climate change on vulnerable populations. He covered both the differential impact on equatorial, poorer countries, and how vulnerable populations and minorities within MA are disproportionately affected. Essentials II is not required for HST.

9. Does your medical school curriculum address the unequal health impacts of climate change globally?

Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.
2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: There was a discussion in Essentials I that mentioned the unequal impacts of climate change globally, but the conversation was limited to a brief slide indicating that those who contribute least to greenhouse gas emissions will be disproportionately impacted. Essentials I is mandatory for all medical students. Dr. Gaurab Basu's lecture in Essentials II includes graphics that detail the cumulative risks from major climate impacts with different degrees of warming. These slides highlight the fact that the impacts of global temperature rise fall overwhelmingly on vulnerable areas and affect different regions of the world unequally. Essentials II is only mandatory for Pathways students.

Curriculum: Environmental Health & the Effects of Anthropogenic Toxins on Human Health

10. Does your medical school curriculum address the reproductive health effects of industry-related environmental toxins (e.g. air pollution, pesticides)?

Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.
2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: Dr. Gaurab Basu's lecture in Essentials II briefly discusses the effect of heat and air pollution on preterm birth, low birth weight and stillbirth in the U.S. and how this burden disproportionately falls on Black mothers. The connection to industry is not explicitly made. Only Pathways students must take Essentials II.

11. Does your medical school curriculum address important human-caused environmental threats that are relevant to the university's surrounding community?

Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.
2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: In the Pathways case-based collaborative learning curriculum, there were a couple of cases longitudinally that reflected environmental exposures that patients might face in particular surrounding communities. Specifically, a case in Homeostasis 1 related the history of a woman who grew up in Chelsea, Massachusetts, in an apartment by I-93 and has had asthma since she was a child.

Furthermore, Essentials I, which is required for all students, briefly addressed the contribution of the built environment to social determinants of health, touching on access to clean air and water and how that might be different by neighborhood. Finally, HST's new course, Growth of the Physician Scientist (GPS) had a session specific to cardiovascular disease that discussed environmental exposures in different Boston area neighborhoods.

12. Does your medical school curriculum address the unique climate and environmental health challenges that have impacted and are impacting Indigenous communities?		
Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.
2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: This topic was not explicitly addressed.

13. Does your medical school curriculum address the outsized impact of anthropogenic environmental toxins on marginalized populations such as those with low SES, women, communities of color, children, homeless populations, and older adults?		
Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.

2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: Dr. Basu's Essentials II lecture "Climate Change: An Ecological and Health Equity Crisis" addressed the disproportionate impact of climate change on vulnerable populations. He covered both the differential impact on equatorial, poorer countries, and how vulnerable populations and minorities within MA are disproportionately affected. This subject was also addressed in Dr. Bernstein's lecture in Essentials II. HST students are not required to take Essentials II.

Curriculum: Sustainability

14. Does your medical school curriculum address the environmental and health co-benefits of a plant-based diet?

Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.
2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score Explanation: Nutrition as a whole is given little attention in the core HMS curriculum. In Essentials II, Dr. Gaurab Basu's lecture entitled "Climate Change: An Ecological and Health Equity Crisis" included one slide on the health co-benefits of sustainable diets. HST students, however, are not required to take Essentials II. An elective course entitled "Metabolism, Nutrition, and Lifestyle Medicine" includes a lecture by Walter Willett on Food and Sustainability. The associated reading was "Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems." In addition, in an optional lecture in Essentials I, which is taken by both Pathways and HST students, Dr. Caren Solomon addresses the highest-impact individual actions medical students can take, including eating a plant-based diet.

15. Does your medical school curriculum highlight the waste generated by the healthcare system and identify ways to advocate for and implement sustainable best practices in health care?

Path ways	HST	
3	3	This topic was explored in depth by the core curriculum.

2	2	This topic was briefly covered in the core curriculum.
1	1	This topic was covered in elective coursework.
0	0	This topic was not covered.

Score explanation: Dr. Basu's lecture in Essentials II and Dr. Bernstein's lecture in Essentials II both discuss the enormous carbon footprint of the healthcare sector and the resulting need for advocacy around sustainability in medicine. Several avenues for this advocacy were discussed. However, this course is not required for HST students. In addition, Dr. Caren Solomon's optional lecture in Essentials I addresses the impact of the healthcare system on climate change.

Curriculum: Clinical Applications

16. In training for patient encounters, does your medical school's curriculum introduce strategies to have conversations with patients about the health effects of climate change?

Path ways	HST	
2	2	Yes, there are strategies introduced for having conversations with patients about climate change in the core curriculum.
1	1	Yes, there are strategies introduced for having conversations with patients about climate change in elective coursework.
0	0	No, there are not strategies introduced for having conversations with patients about climate change

Score explanation: In an optional session part of the Essentials I course taken by all medical students, Dr. Caren Solomon talked about having conversations with patients, in a primary care setting or otherwise. As examples, Dr. Solomon mentioned counseling patients on the risks that extreme heat might pose to them, or how allergy season is affected by a changing climate.

17. In training for patient encounters, does your medical school's curriculum introduce strategies for taking an environmental history or exposure history?

Path ways	HST	
2	2	Yes, the core curriculum includes strategies for taking an environmental history.
1	1	Only elective coursework includes strategies for taking an environmental history.
0	0	No, the curriculum does not include strategies for taking an environmental history.

Score explanation: Session #5 of Interviewing and Communication Skills, a course taken by all Pathways students, very briefly discussed taking an environmental and occupational exposure history with an emphasis on occupational history. In HST's Introduction to Clinical Medicine, environmental and occupational exposure histories were included in the course resources. For both Pathways and HST, this teaching on strategies for taking environmental and exposure histories should be further expanded.

Curriculum: Administrative Support for Planetary Health

18. Is your medical school currently in the process of improving Education for Sustainable Healthcare (ESH)/planetary health education?

Path ways	HST	
4	4	Yes, the medical school is currently in the process of making major improvements to ESH/planetary health education.
2	2	Yes, the medical school is currently in the process of making minor improvements to ESH/planetary health education.
0	0	No, there are no improvements to planetary health education in progress.

Score explanation: Over the last few years, improvements have been made in ESH/planetary health education, including a new session that was implemented in Essentials I, the only course required for all medical students, this year. These changes have been driven by individual faculty and students rather than through a broader effort undertaken by the administration.

19. How well are the aforementioned planetary health/Education for Sustainable Healthcare topics integrated longitudinally into the core curriculum?

Path ways	HST	
6	6	Planetary health/ESH topics are well integrated into the core medical school curriculum.
4	4	Some planetary health/ESH topics are appropriately integrated into the core medical student curriculum.
2	2	Planetary health/ESH is not integrated and is primarily addressed in (a) standalone lecture(s).
0	0	There is minimal/no education for sustainable healthcare.

Score explanation: HST includes lectures in the Microbiology Course on the effects of climate change on infectious diseases and in the Respiratory Course on environmental lung disease, appropriately integrating these topics with specific organ systems. However, these are standalone lectures and are only in a few courses. For Pathways, the teaching on planetary health/ESH is concentrated in standalone lectures broadly covering the health impacts of climate change. Student-led efforts are currently underway to integrate this teaching throughout the core curriculum.

20. Bonus: Does your medical school have a program that offers incentives for faculty/departments to develop new planetary health/ESH courses and/or incorporate planetary health/ESH into existing courses?

Path ways	HST	
1	1	Yes, the medical school has an incentive program.
0	0	No, the medical school does not have an incentive program.

Score explanation: To the best of our knowledge, HMS does not have an incentive program to encourage teaching on planetary health/ESH.

	Pathways	HST	Grade
Section Total (P: 37 out of 58, HST: 31 out of 58)	B-	C	C+

Are there additional curriculum resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Interdisciplinary Research

Section Overview: *This section evaluates the quality and quantity of interdisciplinary planetary health research at the medical school and broader institution. Interactions between health and the environment are complex and multifactorial. While climate change has been extensively studied from an environmental science perspective, planetary health is an emerging field. As leading health institutions with talented researchers and research resources, medical schools should fund research studying the health effects of climate change and anthropogenic environmental toxins. This obligation is particularly strong because the public and policymakers are more attentive to climate change when its implications for human health are emphasized.*

1. Are there researchers engaged in planetary health research and healthcare sustainability research at your medical school?	
4	Yes, there are faculty members at the School of Medicine who have a primary research focus in planetary health and healthcare sustainability.
3	Yes, there are faculty members at the School of Medicine who have a primary research focus in a planetary health or healthcare sustainability.
2	Yes, there are individual faculty members at the School of Medicine who are conducting research related to planetary health or healthcare sustainability, but it is not their primary research focus.
1	There are planetary health and/or healthcare sustainability researchers at the institution, but none associated with the medical school.
0	No, there are no planetary health and/or healthcare sustainability researchers at the institution or medical school at this time.
<p><i>Score explanation: Medical school faculty members based at the Harvard Global Health Institute have a primary research focus on climate change's effects on health as well as adapting the healthcare system to climate change.</i></p>	

2. Is there a dedicated department or institute for interdisciplinary planetary health research at your institution?	
3	There is at least one dedicated department or institute for interdisciplinary planetary health research.
2	There is not currently a department or institute for interdisciplinary planetary health research, but there are plans to open one in the next 3 years.
1	There is an Occupational and Environmental Health department, but no interdisciplinary department or institute for planetary health research.
0	There is no dedicated department or institute.

Score explanation: Several interdisciplinary research institutes host a plethora of planetary health educational and research initiatives, including climate change and health-focused research conducted by faculty at [Harvard Global Health Institute](#) and the [Center for Climate, Health, and the Global Environment](#) (C-CHANGE), and work on broader environmental degradation and its impacts on human health by faculty of the [Harvard Chan-National Institute of Environmental Health Sciences](#) (NIEHS) Center for Environmental Health.

3. Is there a process by which communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda at your medical school?

3	Yes, there is a process in which community members impacted by climate and environmental injustice have decision-making power in the climate + environmental research agenda.
2	Yes, there is a process in which community members impacted by climate and environmental injustice advise the climate + environmental research agenda.
1	No, but there are current efforts to establish a process for community members to advise or make decisions on the research agenda.
0	There is no process, and no efforts to create such a process.

Score explanation: There is no process, and no efforts to create such a process.

4. Does your institution have a planetary health website, or a website centralizing various campus resources related to health and the environment?

3	There is an easy-to-use, adequately comprehensive website that centralizes various campus resources related to health and the environment including all of the following: upcoming events, leaders in planetary health at your institution, and relevant funding opportunities.
2	There is a website that attempts to centralize various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive.
1	The institution has an Office of Sustainability website that includes some resources related to health and the environment.
0	There is no website.

Score explanation: Several interdisciplinary research institutes primarily based at the Harvard T.H. Chan School of Public Health (HSPH) have rich planetary health programming and publish comprehensive information on their educational and research initiatives, including the [Harvard Global Health Institute](#), [C-CHANGE](#), and the [Harvard Chan-NIEHS](#) Center for Environmental Health. No centralized website exists that aggregates information on opportunities to engage in research across campus, however.

5. Has your institution recently hosted a conference or symposium on topics related to planetary health?	
4	Yes, the institution has hosted more than one conference or symposium on topics related to planetary health in the past year, including at least one on climate change.
3	Yes, the institution has hosted one conference or symposium on topics related to planetary health in the past year.
2	Yes, the institution has hosted a conference on topics related to planetary health in the past three years.
1	The institution has not hosted any conferences directly, but they have provided financial support for a local planetary health event.
0	No, the institution has not hosted a conference on topics related to planetary health in the past three years.
<p><i>Score explanation: The University has hosted several planetary health-related conferences in the past year, including Foods, Farms, Fisheries, and Forests, The Climate Crisis and Clinical Practice, and Africa Leads the Way: Harnessing Multi-Sectoral Collaboration to Achieve Universal Health Care, all in 2020, and Racism, Disparities, and Environmental Health in 2021.</i></p>	

6. Has your institution or medical school joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education?	
2	Yes, the medical school has joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education.
1	Yes, the institution has joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education, but the medical school specifically has not.
0	No, the institution has not joined the Planetary Health Alliance or the Global Consortium on Climate and Health Education.
<p><i>Score explanation: The Harvard University Center for the Environment and the Harvard T.H. Chan School of Public Health (HSPH) are founding institutional members of the Planetary Health Alliance and hosted the Alliance's inaugural Planetary Health Annual Meeting in 2017 at Harvard Medical School (HMS). Both HMS and HSPH are members of the Global Consortium on Climate and Health Education.</i></p>	

Section Total (15 out of 19)	B+
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Are there additional research resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Community Outreach and Advocacy

Section Overview: *This section evaluates medical school engagement in community outreach and advocacy efforts associated with planetary health. Researching and teaching planetary health is necessary but not sufficient. It is critical that institutions also directly engage with communities most affected by environmental health harms. Although climate change is a problem largely created by those with power and resources, its impacts fall disproportionately on under-resourced populations and communities of color. Institutions should partner with local communities affected by climate change and pollution to share information about environmental health threats, advocate together for change, and provide opportunities for students to be a part of this work.*

1. Does your medical school partner with community organizations to promote planetary and environmental health?	
3	Yes, the medical school meaningfully partners with multiple community organizations to promote planetary and environmental health.
2	Yes, the medical school meaningfully partners with one community organization to promote planetary and environmental health.
1	The institution partners with community organizations, but the medical school is not part of that partnership.
0	No, there is no such meaningful community partnership.
<p><i>Score explanation: The Harvard T.H. Chan School of Public Health (HSPH) hosts the Environmental Justice Student Organization, which partners with local community organizations to raise awareness of and address environmental injustices. The Harvard Chan-National Institute for Environmental Health Sciences (NIEHS) Center for Environmental Health’s Community Engagement Core works with a number of community organizations, including hosting “Science Days” at The Dorchester Winter Farmers Market and partnering with the Cambridge Science Festival. Harvard Medical School (HMS) does not have any ongoing, meaningful partnerships with community organizations to promote planetary and environmental health.</i></p>	

2. Does your medical school offer community-facing courses or events regarding planetary health?	
3	The medical school offers community-facing courses or events at least once every year.
2	The medical school offers courses or events open to the community at least once per year, but they are not primarily created for a community audience.
1	The institution has offered community-facing courses or events, but the medical school was not involved in planning those courses or events.

0	The medical school has not offered such community-facing courses or events.
<p><i>Score explanation: The Center for Climate, Health, and the Global Environment (C-CHANGE), based at HSPH but with many faculty and leadership with co-appointments at HMS, hosts nearly monthly seminars and workshops open to the broader community. HSPH also hosts and films panels with government and business leaders on topics including environmental health and climate change through The Forum series and the Leadership Studio. Harvard University's Graduate School of Arts and Sciences also hosts an office, Science in the News, dedicated to hosting public-facing seminars on emerging issues in science. The series hosted two workshops on planetary health-related topics in 2018. HMS offers the course, "The Health Effects of Climate Change," to the public through Harvard's EdX online learning platform.</i></p>	

3. Does your medical school have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?	
2	Yes, all students regularly receive communication updates dedicated to planetary health and/or sustainable healthcare.
1	Yes, planetary health and/or sustainable healthcare topics are sometimes included in communication updates.
0	Students do not regularly receive communications about planetary health or sustainable healthcare.
<p><i>Score explanation: Harvard University's Office of Sustainability provides health-related content in their monthly newsletter every few months, including on topics such as active transportation, nutrition, and how pandemics and climate change are related.</i></p>	

4. Does the medical school offer continuing medical education (CME) courses that address planetary health and/or sustainable healthcare?	
2	Yes, multiple in-person or online CME courses relating to planetary health and/or sustainable healthcare are offered, including at least one with a primary focus of planetary health.
1	Yes, one in-person or online CME course related to planetary health and/or sustainable healthcare is offered.
0	There are no CME courses on planetary health or sustainable healthcare topics.
<p><i>Score explanation: Despite offering several dozen courses for Continuing Medical Education credit in 2020, several of which, such as culinary medicine, cardiovascular medicine, COPD, infectious diseases, toxicology, and healthcare disparities, could provide meaningful discussions of planetary health topics, none of the available courses cover issues in planetary health. Beth Israel Deaconess Medical Center (BIDMC), in partnership with Harvard Medical School, does offer an interdisciplinary fellowship in Climate and Human Health for emergency physicians seeking further training in planetary health issues.</i></p>	

5. Do hospitals affiliated with your medical school have accessible educational materials for patients about environmental health exposures?

2	Yes, all affiliated hospitals have accessible educational materials for patients.
1	Some affiliated hospitals have accessible educational materials for patients.
0	No affiliated medical centers have accessible educational materials for patients.

Score explanation: While none of the primary HMS-affiliated teaching hospitals have a comprehensive site tying environmental exposures to disease, all have patient-facing materials online making those connections for individual conditions. Beth Israel Deaconess Medical Center (BIDMC)'s [Institute for Lung Health](#) links pollution to chronic lung disease, and the hospital maintains blog posts on environmental exposures contributing to [cancer](#) and [pregnancy health](#). Brigham and Women's Hospital (BWH) provides a robust accounting of environmental causes of [lung disease](#) and other [chronic diseases](#) as well as numerous press releases of relevant research. Cambridge Health Alliance (CHA) keeps a lively blog with information on [occupational health exposures](#). Massachusetts General Hospital (MGH) has a series of [articles on lung diseases](#) that prominently feature environmental exposures as a cause, as well as a [press release](#) on the cardiovascular impacts of air pollution.

6. Do hospitals affiliated with your medical school have accessible educational materials for patients about climate change and health impacts?

2	Yes, all affiliated hospitals have accessible educational materials for patients.
1	Some affiliated hospitals have accessible educational materials for patients.
0	No affiliated hospitals have accessible educational materials for patients.

Score explanation: Most of the primary HMS-affiliated teaching hospitals have at least one patient-facing resource on the health effects of climate change. [BIDMC](#) links climate change to human health in its sustainability materials. BWH has no mention of climate change in its patient-facing materials. [CHA](#) provides a detailed webpage for the public on the connections between COVID19 and climate change. [MGH](#) maintains a patient-facing site with a wealth of resources on the health impacts of climate change. Therefore, a score of 1.75 was awarded.

Section Total (8.75 out of 14)	B-
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Are there additional community engagement and advocacy resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Support for Student-Led Planetary Health Initiatives

Section Overview: *This section evaluates institutional support for student-led planetary health initiatives, such as funding, fellowships, programming, and student groups. Planetary health is a young field and, as young people facing a future deeply shaped by climate change, students are often some of the first at an institution to engage with it. Institutions should provide support for students to engage in sustainability quality improvement (QI) initiatives, discover mentors in their area of interest, and receive funding for planetary health projects.*

1. Does your institution offer support for medical students interested in enacting a sustainability initiative?	
2	Yes, the institution offers grants available to medical students for students to enact sustainability initiatives.
1	The medical school encourages sustainability QI projects (to fulfill clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, but there is no student funding available.
0	No, the institution does not offer opportunities or support for sustainability initiatives.
<p><i>Score explanation: Harvard University's Office for Sustainability administers the Campus Sustainability Innovation Fund for teams made up of students, faculty, and staff to enact research and operational projects on campus or in the local community to mitigate or adapt to climate change, as well as a Student Grants program for student-initiated pilot programs to improve the University or the surrounding community's alignment with the University's Sustainability Plan across energy, water use, greenhouse gas emissions, health and food, waste, and other areas.</i></p>	

2. Does your institution offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
3*	The institution offers an explicit paid fellowship for medical students to do research related to planetary health and/or sustainable healthcare.
2	The institution offers paid research opportunities for students and planetary health/sustainable healthcare projects would be considered eligible.
1	There are unfunded research opportunities for students to perform research related to planetary health/sustainable healthcare.
0	There are no opportunities for students to receive funding for planetary health/sustainable healthcare research.
<p><i>Score explanation: HMS' Office of Scholarly Engagement provides funding for medical students to pursue research, clinical, and service projects, including in planetary health.</i></p>	

3. Does the medical school have a webpage where medical students can find specific information related to planetary health and/or sustainable healthcare activities and mentors within the medical school? For example, projects achieved, current initiatives underway at the medical school and/or contact of information of potential mentors.

2	The medical school has a webpage with specific information related to planetary health or sustainable healthcare that includes up-to-date information on relevant initiatives and contact information of potential mentors.
1	There is a medical school webpage that features some information on projects and mentors within planetary health and sustainable healthcare within the medical school, but it lacks key information.
0	There is no medical-school specific webpage for locating planetary health and/or sustainable healthcare projects or mentors.

Score explanation: The online faculty lists of Harvard's interdisciplinary research institutes in planetary health, including the climate change and health-focused [Harvard Global Health Institute](#) and [Center for Climate, Health, and the Global Environment](#) (C-CHANGE) at Harvard T.H. Chan School of Public Health (HSPH), and the broader environmental degradation and health impacts-oriented [Harvard Chan-National Institute of Environmental Health Sciences](#) (NIEHS) Center for Environmental Health, provide contact information and research abstracts for potential research project mentors in planetary and environmental health.

4. Does your medical school have funded, registered student groups dedicated towards fostering a culture of planetary health engagement, scholarship, and advocacy on campus, supported by faculty advisors?

2	Yes, there is a funded student organization with faculty support at my medical school dedicated to planetary health or sustainability in healthcare.
1	Yes, there is a student organization at my medical school dedicated to planetary health or sustainability in healthcare but it lacks faculty support and/or funding.
0	No, there is not a student organization at my institution dedicated to planetary health or sustainability in healthcare.

Score explanation: HMS's [Students for Environmental Awareness in Medicine](#) (SEAM) organization consists of 85 student members led by an 8-member executive board who advocate for increased attention to environmental health in the medical curriculum, conduct campaigns to increase the Longwood Medical Area's sustainability, organize co-curricular seminars and conferences for their classmates to learn about planetary health, such as the [Medical Response to Climate Change](#) in 2018, and engage with the broader community to reduce climate pollution and mitigate the effects of climate change. SEAM has benefited from the mentorship of many faculty advisors across HMS, HSPH, and Harvard's affiliated teaching hospitals.

5. Is there a student liaison representing sustainability interests who serves on a medical school or institutional decision-making council to advocate for sustainability best practices?

1	Yes, there is a student representative that serves on a medical school or institutional decision-making council.
0	No, there is no such student representative.

Score explanation: A medical student is involved in the Sustainability Planning Subcommittee of the [Presidential Committee on Sustainability](#) for Harvard University, tasked with formulating the University's sustainability plan for 2021-2030.

6. In the past year, has the institution had one or more co-curricular planetary health programs or initiatives in the following categories? (1 point each)

1	Projects where students are able to gain experience in organic agriculture and sustainable food systems, such as gardens, farms, community supported agriculture (CSA), fishery programs, or urban agriculture projects.
1	Panels, speaker series, or similar events related to planetary health that have students as an intended audience.
1	Events in which students learn directly from members of a local environmental justice community about the climate and environmental challenges they face, and how health professionals can partner with their community to address these exposures and impacts.
1	Cultural arts events, installations or performances related to planetary health that have students as an intended audience.
1	Local volunteer opportunities related to building community resilience to anthropogenic environmental impacts.
1	Wilderness or outdoors programs (e.g., that organize hiking, backpacking, kayaking, or other outings for students) that follow Leave No Trace principles.

Score explanation: The Countway Library at HMS hosts a [Community Garden](#) open to all members of the Harvard Longwood Medical Area community for local gardening. Annually, the Countway Library hosts an autumn harvest festival with community musicians to celebrate sustainable, community-oriented urban horticulture. Recently, a group of faculty mentors to HMS SEAM hosted the [Climate Crisis and Clinical Practice Symposium](#) that targeted clinical trainees and professionals. Both the Harvard Chan School of Public Health's [Hikers Club](#), which is also open to medical students, and the first-year educational adventure trip (FEAT), an annual weekend of wilderness activities for incoming medical and dental students, use Leave No Trace practices on their wilderness excursions. To date, there have been no artistic events or installations at HMS or Harvard University highlighting issues in planetary health, nor institutionally-sponsored events for students to learn directly from members of a local environmental justice community.

Section Total (12 out of 15)	A-
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Are there additional student-led initiative resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Campus Sustainability

Section Overview: This section evaluates the support and engagement in sustainability initiatives by the medical school and/or institution. The healthcare industry is a major contributor to greenhouse gas emissions as well as pollution that harms local, regional, and global ecosystems. While healthcare is, by nature, a resource-intensive endeavor, the healthcare sector is well poised to lead the world to a more sustainable future. This will involve scrutinizing every aspect of how our systems operate, from where we source our energy, to how we build our infrastructure, to what companies we invest in. Our medical schools, clinics, and hospitals must set the standard for sustainable practices, and show other sectors what is possible when it comes to minimizing environmental impact.

1. Does your medical school and/or institution have an Office of Sustainability?	
3	Yes, there is an Office of Sustainability with multiple full-time staff dedicated to campus sustainability. If the Office of Sustainability serves the entire campus, there is at least one designated staff member for sustainability at the hospital and/or medical school.
2	There is an Office of Sustainability with one or more full-time staff dedicated to campus sustainability, but no specific staff member in charge of medical school and/or hospital sustainability.
1	There are no salaried sustainability staff, but there is a sustainability task force or committee
0	There are no staff members or task force responsible for overseeing campus sustainability
<p><i>Score explanation: Harvard University has a large Office of Sustainability with many full-time staff. Most of Harvard's graduate schools have a dedicated sustainability officer. In the past, Harvard Medical School had a sustainability officer as well, but this position has unfortunately been eliminated in the past year. The medical school facilities team has an energy manager who oversees sustainability, but this is not his exclusive role.</i></p>	

2. Does your medical school and/or institution have a stated goal of carbon neutrality by 2050?	
4*	The medical school is already carbon neutral.
3	Yes, there is a stated carbon neutrality goal and the medical school has a well-defined and adequate plan in place to achieve this goal.
2	Yes, there is a stated carbon neutrality goal, but the medical school has not created a plan to reach that goal or the plan is inadequate.
1	There is a CO2 emission reduction goal, but it is not one of carbon neutrality.
0	There is no stated goal for reduction of CO2 emissions.

Score explanation: Harvard University has set a goal of being [carbon neutral by 2026 and carbon free by 2050](#). As of now, there is not a clear plan for meeting those goals, although in 2020 the University established a Presidential Committee on Sustainability to create a plan. The facilities team at Harvard Medical School is awaiting direction on a strategy from the university at large.

3. Do buildings/infrastructure used by the medical school for teaching (not including the hospital) utilize renewable energy?

3*	Yes medical school buildings are 100% powered by renewable energy
2	Medical school buildings source >80% of energy needs from off-site and/or on-site renewable energy.
1	Medical school buildings source >20% of energy needs from off-site and/or on-site renewable energy.
0	Medical school buildings source <20% of energy needs from off-site and/or on-site renewable energy.

Score explanation: Harvard Medical School recently installed solar panels on the roof of the New Research Building. However, these panels generate a very small percentage of the school's energy. The percentage of the buildings' energy that comes from renewables is well below 20%.

4. Are sustainable building practices utilized for new and old buildings on the medical school campus, with design and construction of new buildings and remodeling of old buildings conforming to a published rating system or sustainable building code/guideline?

3	Yes, sustainable building practices are utilized for new buildings on the medical school campus and the majority of old buildings have been retrofitted to be more sustainable.
2	Sustainable building practices are utilized for new buildings on the medical school campus, but most old buildings have not been retrofitted.
1	Sustainable building practices are inadequately or incompletely implemented for new buildings.
0	Sustainability is not considered in the construction of new buildings.

Score explanation: Harvard University has [Green Building Standards](#) that were last updated in 2017. These standards cover both new buildings and projects to retrofit or improve the sustainability of existing infrastructure. The medical school facilities team regularly conducts energy audits to improve the sustainability of HMS's buildings, which has allowed them to cut greenhouse gas emissions by about 30% between 2006 and 2019.

5. Has the medical school implemented strategies to encourage and provide environmentally-friendly transportation options for students and reduce the environmental

impact of commuting?	
2	Yes, the medical school has implemented strategies to encourage and provide environmentally-friendly transportation options such as safe active transport, public transport, or carpooling and these options are well-utilized by students. Alternatively, the campus location is not amenable to unsustainable forms of transportation by default.
1	The medical school has implemented some strategies to provide environmentally-friendly transportation options, but the options are unsatisfactorily accessible or advertised.
0	The medical school has not implemented strategies to encourage and provide environmentally-friendly transportation options.
<p><i>Score explanation: Harvard Medical School has several programs to encourage sustainable commuting, including offering students discounted MBTA subway passes and BlueBikes bike sharing memberships. Bike lanes around the medical school campus have also been recently upgraded. Given the campus location in the middle of Boston, it is rare that students use their own cars to commute to campus. Harvard also has a shuttle that runs between the medical school and main university campuses. Harvard has recently purchased four 100% electric buses, representing 30% of the total shuttles.</i></p>	

6. Does your medical school have an organics recycling program (compost) and a conventional recycling program (aluminum/paper/plastic/glass)?	
2	Yes, the medical school has both compost and recycling programs accessible to students and faculty.
1	The medical school has either recycling or compost programs accessible to students and faculty, but not both.
0	There is no compost or recycling program at the medical school.
<p><i>Score explanation: Compost and recycling are available throughout the medical school buildings.</i></p>	

7. Does the medical school apply sustainability criteria when making decisions about the campus food and beverage selections?	
3	Yes, the medical school has adequate sustainability requirements for food and beverages and is engaged in efforts to increase food and beverage sustainability.
2	There are sustainability guidelines for food and beverages, but they are insufficient or optional. The medical school is engaged in efforts to increase food and beverage sustainability.
1	There are sustainability guidelines for food and beverages, but they are insufficient or optional. The medical school is not engaged in efforts to increase food and beverage sustainability.

0	There are no sustainability guidelines for food and beverages.
<p><i>Score explanation: Harvard University has put forward “Sustainable and Healthful Food Standards.” Restaurant Associates runs all of the cafes at Harvard Medical School, and they have their own sustainability requirements for purchasing, though these are not mandated by the medical school. Restaurant Associates is further engaged in improving these efforts, including offering and promoting more plant forward food options.</i></p>	

8. Does the medical school or associated institution apply sustainability criteria when making decisions about supply procurement?	
3	Yes, the medical school has adequate sustainability requirements for supply procurement and is engaged in efforts to increase sustainability of procurement.
2	There are sustainability guidelines for supply procurement, but they are insufficient or optional. The medical school is engaged in efforts to increase sustainability of procurement.
1	There are sustainability guidelines for supply procurement, but they are insufficient or optional. The medical school is not engaged in efforts to increase sustainability of procurement.
0	There are no sustainability guidelines for supply procurement.
<p><i>Score explanation: Harvard’s Office for Sustainability has written Sustainable Purchasing Guidelines for the university, but they are optional and lacking in detail. Although a commitment was made to require vendors to comply with applicable Harvard sustainability goals by 2020, it is unclear if this commitment has been met or enforced.</i></p>	

9. Are there sustainability requirements or guidelines for events hosted at the medical school?	
2	Every event hosted at the medical school must abide by sustainability criteria.
1	The medical school strongly recommends or incentivizes sustainability measures, but they are not required.
0	There are no sustainability guidelines for medical school events.
<p><i>Score explanation: Harvard has published a Sustainable Meeting and Event Guide, but the guidelines are not requirements.</i></p>	

10. Does your medical school have programs and initiatives to assist with making lab spaces more environmentally sustainable?	
2	Yes, the medical school has programs and initiatives to assist with making lab spaces more environmentally sustainable.

1	There are guidelines on how to make lab spaces more environmentally sustainable, but not programs or initiatives.
0	There are no efforts at the medical school to make lab spaces more sustainable.
<i>Score explanation: Yes, there is a Green Lab Certification program for labs at the medical school.</i>	

11. Does your institution's endowment portfolio investments include fossil-fuel companies?	
4	The institution is entirely divested from fossil fuels and has made a commitment to reinvest divested funds into renewable energy companies or renewable energy campus initiatives.
3	No, the institution is entirely divested from fossil fuels.
2	The institution has partially divested from fossil-fuel companies.
1	The institution has not divested from fossil-fuel companies, but faculty and/or students are conducting organized advocacy for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been no efforts to change that.
<i>Score explanation: In February 2020, Harvard Medical School's Faculty Council voted 23-5 on a resolution supporting divestment. Harvard University has made a commitment that its investments will produce net zero carbon emissions by 2050, and efforts are underway to reduce the endowment's investment in fossil fuels. A recent interview discussing this effort was published in The Harvard Gazette.</i>	

Section Total (19 out of 29)	B
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Are there additional sustainability resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Grading

Section Overview

This section focuses on the grading of the report card. The institution received a grade for each of the individual sections as well as an overall institutional grade. Section point totals were tallied, divided by the total points available for the section, and converted to a percentage. The overall institutional grade is a weighted average of the section grades, with curriculum receiving a higher weight owing to its larger number of metrics. Letter grades for each section and the institution overall were then assigned according to the table below.

Letter Grade	Percentage
A	80% - 100%
B	60% - 79%
C	40% - 59%
D	20% - 39%
F	0% - 19%

Planetary Health Grades for Harvard Medical School

The following table presents the individual section grades and overall institutional grade for Harvard medical School on this medical-school-specific Planetary Health Report Card.

Section	Raw Score	Grade
Planetary Health Curriculum (30%)	Pathways 37 / 58 = 64% HST 31 / 58 = 53% Overall 68 / 116 = 59%	C+
Interdisciplinary Research (17.5%)	15 / 19 = 79%	B+
Community Outreach and Advocacy (17.5%)	8.75 / 14 = 62.5%	B-
Support for Student-led Planetary Health Initiatives (17.5%)	12 / 15 = 80%	A-
Campus Sustainability (17.5%)	19 / 29 = 66%	B
Institutional Grade	68%	B