



Planetary Health Report Card (Medicine):

*Chobanian & Avedisian School of
Medicine (Boston University)*



Chobanian & Avedisian
School of Medicine

2023-2024 Contributing Team:

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Overall	C
<u>Curriculum</u>	C +
<ul style="list-style-type: none"> The Boston University School of Medicine (BUSM) Planetary Health Curriculum contains sessions on impacts of environmental health on patients in the setting of asthma and other cardiopulmonary illnesses, with a focus on environmental justice. The Medical School is in the midst of transitioning to a redesigned curriculum and there are ongoing efforts to incorporate more longitudinal planetary health education into the new curriculum. Recommendations: BUSM should continue the work of reaching out to lecturers and clinical educators about including relevant planetary health or sustainability information in their lessons. The material on environmental health could be expanded to teach more broadly about the health impacts of climate change, including information on mental health and natural disasters. Finally, the medical school could collaborate with the School of Public Health to offer relevant electives or lectures. 	
<u>Interdisciplinary Research</u>	C
<ul style="list-style-type: none"> Boston University School of Public Health (BUSPH) Center for Climate and Health has a robust program focusing on interdisciplinary research in planetary health. Recommendations: BUSM could collaborate with the Office of Sustainability and the BUSPH to centralize resources related to health and the environment in a medical school specific context. This could include information for researchers at the medical school as well as medical students interested in participating in planetary health research. Additionally, the medical school should consider joining the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education. 	
<u>Community Outreach and Advocacy</u>	C -
<ul style="list-style-type: none"> Boston University as a whole has connections with sustainability organizations in the community (i.e. the Food Kitchen, BMC Garden, etc.) and BUSM prides itself on community outreach, but has few partnerships specifically focused on planetary health. Recommendations: BUSM could partner with more environmental organizations in the region to offer students volunteer and activism opportunities in this arena. 	
<u>Support for Student-Led Initiatives</u>	C -
<ul style="list-style-type: none"> The medical school is supportive of student-led initiatives (i.e. Sustainability Committee, Gardening Club, Campus Climate Lab) and is engaged in helping develop improved content around planetary health. Student groups seeking funding for their activities or research have appropriate avenues to do so. Recommendations: The Medical Campus Sustainability Intern role could be expanded to encompass issues of planetary health and sustainability in the medical curriculum. Furthermore, faculty advisors could encourage student groups such as the Climate Action Group, the Wilderness Medicine Elective, and the Global Health Equity Program to host events that connect climate and health. 	
<u>Campus Sustainability</u>	C
<ul style="list-style-type: none"> Sustainability is a main area of focus for Boston University, which has a robust Climate Action Plan with goals to be carbon neutral by 2040 as well as a Zero Waste Plan. Major successes have included a commitment to divest from fossil fuels and procurement guidelines that focus on sustainable purchasing. Recommendations: The Office of Sustainability could expand its presence on the medical campus. More specifically, BUSM should continue to create, implement and enforce guidelines for sustainability for our student groups and food vendors on campus. 	

Statement of Purpose

Planetary health is human health.

The Planetary Health Alliance describes planetary health as “a solutions-oriented, transdisciplinary field and social movement focused on analyzing and addressing the impacts of human disruptions to Earth’s natural systems on human health and all life on Earth.” 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 nationally and internationally 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.

Definitions & Other Considerations

Definitions:

- **Planetary Health:** is described by the Planetary Health Alliance as “the health of human civilisation and the state of the natural systems on which it depends.” For example, topics such as climate change, declining biodiversity, shortages of arable land and freshwater, and pollution would all fall under the realm of planetary health. Both planetary health and traditional ‘environmental health’ examine the relationship between human health and the external environment, including extreme temperatures, chemicals, vector-borne diseases, etc. Planetary health explicitly concerns itself with the potential health harms associated with human-caused perturbations of natural systems. Therefore, the human health focus of planetary health makes the field well-adapted for the context of medical school education. Throughout this report card, we use the term planetary health to refer to this broad swath of topics, but resources do not need to explicitly include the term “planetary health” to satisfy the metric.
- **Sustainable Healthcare:** As defined by the Academy of Royal Colleges, sustainable healthcare involves ensuring the ability to provide good quality care for future generations by balancing the economic, environmental, and social constraints and demands within health care settings. A sustainable healthcare system maintains population health, reduces disease burden and minimises use of healthcare services.
- **Education for Sustainable Healthcare (ESH):** is defined as the process of equipping current and future health professionals with the knowledge, attitudes, skills and capacity to provide environmentally sustainable services through health professional education, thus working to decrease the enormous environmental impact of the healthcare industry. Planetary Health Education is an integral part of this education rather than an end in itself. This is because knowledge on Planetary Health is required to be able to fully understand the necessity of sustainable healthcare as well as being part of the broader knowledge needed to fully protect and promote health. In summary, ESH is covered by the three Priority Learning Outcomes of the Centre of Sustainable Healthcare below, and Planetary Health Education is embraced in the first learning objective and is a fundamental requirement to achieve learning outcomes 2 and 3:
 1. Describe how the environment and human health interact at different levels.
 2. Demonstrate the knowledge and skills needed to improve the environmental sustainability of health systems.
 3. Discuss how the duty of a doctor to protect and promote health is shaped by the dependence of human health on the local and global environment.
- **Medical School vs. Institution:** When “medical school” is specified in the report card, this only refers to curriculum and resources offered by the School of Medicine and does not include offerings from other parts of the university (e.g. undergraduate departments (USA), other related departments (e.g. Public Health, Population Health departments). In contrast, when “institution” is specified in the report card, we are referring to the university more

broadly. Any resource reasonably accessible by medical students, no matter where in the institution the resource comes from or if it is specifically targeted for medical students, can meet this metric.

- **Environmental history (Metric #19 in Curriculum Section):** This is a series of questions providers are taught to ask during medical encounters that elicits patients' exposures and environmental risk factors. Historically, this has included consideration of exposures like pesticides, asbestos, and lead, though in the modern era shaped by climate change, it can be expanded to include things like wildfire smoke exposure, air pollution and mold after flooding. Key components include place of residence over the lifecourse, occupational history, food and water sources (e.g. meat from industrial feeding operations, regular fishing in contaminated water, access to clean drinking water), and exposure to air pollution.
- **Elective:** The word "elective" refers to an optional course or lecture series that a medical student can opt to take part in but is not a requirement in the core curriculum. Generally, these elective courses take place in the preclinical curriculum but vary by school.
- **Clerkship:** This is a term used in the USA to refer to placements that medical students go on e.g. Pediatrics, General medicine, Psychiatry. In the UK these are referred to as rotations or placements.

Other considerations:

- If there are more than one "tracks" at your medical school with two different curricula (for example, Harvard Medical School has a Pathways and HST curriculum track), you can choose to fill out a report card for each track, or fill out just one report card and average the scores received by each track in cases where the scores are different (see the 2021 Harvard or Oxford report cards as examples).

Added to our resources last year, the Planetary Health Report Card [Literature Review by Metric](#) collates the evidence behind each of the metrics in the Planetary Health Report Card. It serves as a collection of references for further learning and a resource for those advocating for increased planetary health engagement at their institutions.

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 and other environmental changes. Therefore, it is critical that medical students are trained to understand the health effects of these changes, as well as planetary health issues and principles 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

1.1. Did your <u>medical school</u> offer elective courses (student selected modules) to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
3	Yes, the medical school has offered more than one elective whose primary focus is ESH/planetary health in the past year.
2	Yes, the medical school has offered one elective whose primary focus is ESH/planetary health in the past year.
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	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>A new public health awareness track has been recently added this academic year focusing on environmental impacts on public health and developed into a 12 week curriculum that is available and optional for students to engage in. This track is complete with a team-based project proposal and active initiative that engages students with the wider academic community at the school and surrounding areas to make an impact on patient care through a lens of environmental justice and awareness. There are no other electives that focus on this.</i></p> <p><i>Additionally, ESH is covered at the beginning of the LEADS curriculum track, which is mandatory for all first and second year medical students. LEADS stands for Learn, Experience, Advocate, Discover, and Serve (LEADS) curriculum. Students spend a few days consisting of lectures on the impact of environmental health on their patient population within the Boston area and correlates to clinical vignettes.</i></p> <p><i>As part of the new Advanced Integration (AI) curriculum, second year students will run through case simulations in multiple subspecialties of medicine. In the Emergency Medicine week, students are exposed to climate-change oriented cases that help affect differential diagnoses.</i></p>	

Curriculum: Health Effects of Climate Change

1.2. Does your <u>medical school</u> curriculum address the relationship between extreme heat, health risks, and climate change?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>As part of the new Advanced Integration (AI) core curriculum, second year students will run through case simulations in multiple subspecialties of medicine. In the Emergency Medicine week, students are exposed to climate-change oriented cases that help affect differential diagnoses.</i></p> <p><i>First-year students are also introduced to climate-change oriented cases in their core Pulmonology module.</i></p>	

1.3. Does your <u>medical school</u> curriculum address the impacts of extreme weather events on individual health and/or on healthcare systems?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>In required pre-lecture course work, there was material on the health impacts of extreme weather, rising sea levels, increasing CO2 levels, and rising temperatures. The coursework emphasized the importance of the US Climate Resilience Toolkit that maps climate-related hazards and can help assess risks in a geographic location.</i></p>	

1.4. Does your <u>medical school</u> curriculum address the impact of climate change on the changing patterns of infectious diseases?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>The relationship between climate change and changes in vector ecology was briefly covered in pre-lecture coursework on environmental health.</i></p>	

1.5. Does your <u>medical school</u> curriculum address the respiratory health effects of climate change and air pollution?	
3	This topic was explored in depth by the core curriculum.

2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<i>First-year students engage in a lecture on Respiratory side-effects of climate change and air pollution, specifically focused in the Boston area. There is a 3 hour long lecture component with tie-ins to clinical vignettes about tree cover, rising temperature, heat maps, and treatments. This lecture is supplemented by pre-lecture material focused on the effects of climate change and air pollution on various illnesses.</i>	

1.6. Does your <u>medical school</u> curriculum address the cardiovascular health effects of climate change, including increased heat?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<i>This was never covered in class or in lecture materials.</i>	

1.7. Does your <u>medical school</u> curriculum address the mental health and neuropsychological effects of environmental degradation and climate change?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<i>Second-year students were exposed to the patterns of mental health diagnoses to pay attention to when treating and evaluating patients exposed to major climate disasters during their Psychology modules.</i>	

1.8. Does your <u>medical school</u> curriculum address the relationships between health, individual patient food and water security, ecosystem health, and climate change?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

First-year students were exposed to information about the connections between individual health and the environment through lectures and pre-lecture coursework throughout the course. As part of core ethics-based coursework, material involving the impact of climate change and environmental resources on human health was covered. In addition, the specific effects of pollution and climate change on respiratory health was covered in the Pulmonology unit.

1.9. 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, Indigenous communities, children, homeless populations, and older adults?

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

The first week of classes in the core curriculum for all M1s is called “Health Equity Week” where students receive many lectures focused on the intersectionality of SES and health in underprivileged and marginalized communities. For example, there was one lecture that focused entirely on social determinants of health and its cross-sectional impact within the aforementioned communities, including those with low SES, women, communities of color, and homeless populations.

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

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

An elective course that focused on global health emphasized historical, economical and socio-political forces resulting in structural, racial and ethnic inequities in global health. In pre-lecture coursework, the topic of “environmental racism” was discussed in the context of decolonization of global health. There was not a distinct focus on environmental impacts on different regions (ie. higher temperatures).

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

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

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.

1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>In the Foundations 3 unit that is required for all first-year medical students, there is brief coverage in pre-lecture coursework of teratogens and their effect on fetal development, including medications like thalidomide, environmental agents like organic solvents and lead, and physical causes like ionizing radiation.</i></p>	

1.12. Does your <u>medical school</u> curriculum address important human-caused environmental threats that are relevant to the university's surrounding community?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Pollution in the community in the city of Boston was covered during Health Equity Week, the first week of all first-year medical students. Students received bus tours of different areas in Boston and learned about the unique environmental health effects experienced by residents in each area. Throughout the core curriculum, the topics of redlining and inequities in exposure to toxins in Boston was mentioned, specifically their impacts on respiratory health.</i></p>	

1.13. To what extent does your <u>medical school</u> emphasize the importance of Indigenous knowledge and value systems as essential components of planetary health solutions?	
3	Indigenous knowledge and value systems are integrated throughout the medical school's planetary health education
2	Indigenous knowledge and value systems as essential components of planetary health solutions are included briefly in the core curriculum.
1	Indigenous knowledge and value systems as essential components of planetary health solutions are included in elective coursework.
0	This topic was not covered.
<p><i>This was not covered in pre-lecture coursework or lecture material.</i></p>	

1.14. Does your <u>medical school</u> 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, Indigenous populations, and older adults?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.

1	This topic was covered in elective coursework.
0	This topic was not covered.
<i>This was not covered in pre-lecture coursework or lecture material.</i>	

Curriculum: Sustainability

1.15. Does your <u>medical school</u> curriculum address the environmental and health co-benefits of a plant-based diet?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<i>This was not explicitly covered in lectures or pre-lecture coursework. The impact of a healthy diet and exercise was emphasized in the Cardiovascular unit, but there was never emphasis on a plant-based diet.</i>	

1.16. Does your <u>medical school</u> curriculum address the carbon footprint of healthcare systems?	
3	This topic was explored in depth by the core curriculum
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<i>This was not covered in lectures or pre-lecture coursework.</i>	

1.17. Does your <u>medical school</u> curriculum cover these components of sustainable clinical practice in the <u>core</u> curriculum? (points for each)	
2	The health and environmental co-benefits of avoiding over-medicalisation, over-investigation and/or over-treatment
2	The environmental impact of pharmaceuticals and over-prescribing as a cause of climate health harm. Alternatively teaching on deprescribing where possible and its environmental and health co-benefits would fulfill this metric.
1	The health and environmental co-benefits of non-pharmaceutical management of conditions where appropriate such as exercise or yoga classes for type 2 diabetes; social group activities such as gardening for mental health conditions; active transport such as bicycle schemes. This is commonly known as social prescribing in the UK.

1	Environmental impact of surgical healthcare on planetary health and the climate crisis, and how can it be mitigated
1	The impact of anaesthetic gases on the healthcare carbon footprint and ways to reduce anesthesia environmental impacts, such as total intravenous anaesthesia or choosing less environmentally harmful anaesthetic gas options with reduced greenhouse gas emissions
1	The impact of inhalers on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers.
1	Waste production within healthcare clinics and strategies for reducing waste in clinical activities (e.g. single use items in the inpatient or outpatient setting)
	<i>Health and environmental co-benefits of non-pharmaceutical management is emphasized in the Cardiovascular unit, where diet and exercise is an important intervention in many cardiovascular diseases. In addition, there is emphasis throughout the curriculum of the benefits of green spaces on health.</i>

Curriculum: Clinical Applications

1.18. In training for patient encounters, does your <u>medical school's</u> curriculum introduce strategies to have conversations with patients about the health effects of climate change?	
2	Yes, there are strategies introduced for having conversations with patients about climate change in the core curriculum.
1	Yes, there are strategies introduced for having conversations with patients about climate change in elective coursework.
0	No, there are not strategies introduced for having conversations with patients about climate change
<p><i>Score explanation: Doctoring</i> <i>While there was emphasis in core curriculum on how to have conversations about environmental exposures (ie. asbestos), there was no focus on how to have conversations with patients about the effects of climate change on health.</i></p>	

1.19. In training for patient encounters, does your <u>medical school's</u> curriculum introduce strategies for taking an environmental history or exposure history?	
2	Yes, the core curriculum includes strategies for taking an environmental history.
1	Only elective coursework includes strategies for taking an environmental history.
0	No, the curriculum does not include strategies for taking an environmental history.
<p><i>Score explanation: Doctoring.</i> <i>In required pre-lecture coursework for core curriculum, there were recommendations on how to take an Environmental Exposure History. In required small-group sessions, students practiced taking environmental histories for a mock case.</i></p>	

Curriculum: Administrative Support for Planetary Health

1.20. Is your medical school currently in the process of implementing or improving Education for Sustainable Healthcare (ESH)/planetary health education?	
4	Yes, the medical school is currently in the process of making major improvements to ESH/planetary health education.
2	Yes, the medical school is currently in the process of making minor improvements to ESH/planetary health education.
0	No, there are no improvements to planetary health education in progress.
<p><i>Score explanation: There are ongoing minor initiatives to incorporate more content regarding sustainability and planetary health into the curriculum. This is being incorporated as a part of the LEADs curriculum that is required of all medical students (M1-M2).</i></p>	

1.21. How well are the aforementioned planetary health/Education for Sustainable Healthcare topics integrated longitudinally into the core curriculum?	
6	Planetary health/ESH topics are well integrated into the core medical school curriculum.
4	Some planetary health/ESH topics are appropriately integrated into the core medical student curriculum.
2	Planetary health/ESH is not integrated and is primarily addressed in (a) standalone lecture(s) .
0	There is minimal/no education for sustainable healthcare.
<p><i>Planetary health is primarily addressed in standalone lectures rather than longitudinally integrated into the core curriculum, but there also has been material integrating the effects of pollutants on health. There have been lectures that addressed environmental health inequities in the city of Boston, the effect of structural inequities on health in general, and the effects of various toxins on respiratory illnesses. First-year students have also completed pre-class material addressing various environmental health effects on fetal development and various diseases, and this material has been both part of a standalone environmental health module and integrated into other modules.</i></p>	

1.22. Does your medical school employ a member of faculty to specifically oversee and take responsibility for the incorporation of planetary health and sustainable healthcare as a theme throughout the course?	
1	Yes , the medical school has a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare
0	No , the medical school does not have a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare.
<p><i>Score explanation: Dr. Molly Cohen-Osher is the Assistant Dean for Curriculum and Instructional Design. She is working to improve curricular integration of planetary health but that is not her designated role.</i></p>	

Section Total: 34/72	47%
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Back to Summary Page [here](#)

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.*

2.1. Are there researchers engaged in planetary health research and healthcare sustainability research at your <u>medical school</u>?	
3	Yes, there are faculty members at the medical school who have a primary research focus in planetary health or healthcare sustainability.
2	Yes, there are individual faculty members at the medical school 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: There is at least one faculty member (Ana Goldman MD) who is conducting research on climate change and its impact on human health.</i></p>	

2.2. Is there a dedicated department or institute for interdisciplinary planetary health research at your <u>institution</u>?	
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.
<p><i>Score explanation: The Medical School does not have a dedicated department to Planetary Health, but the closely affiliated BU School of Public Health does have a dedicated Center for Climate and Health.</i></p>	

2.3. 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 <u>medical school</u>?	
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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: The medical school does not seem to have a process by which individuals impacted can provide their input into the research agenda. However, there does seem to be a process through which members of the community who have experienced adverse health impacts from heat can voice their opinions and contribute to ongoing research and conversations. For example, the [Boston-Area Health Working Group](#) states that they welcome participation from members of local academic institutions, community based organizations, government agencies, private companies, and more.”

2.4. Does your institution have a planetary health website that centralizes ongoing and past research 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: BU has a centralized website for [Sustainability](#).

2.5. Has your institution recently hosted a conference or symposium on topics related to planetary health?

4	Yes, the medical school has hosted at least one conference or symposium on topics related to planetary health in the past year.
3	Yes, the institution has hosted at least 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: BU hosted an interdisciplinary event called Research on Tap: Environmental Cultures, Power, and Equity. The Office of Research also hosted another event called Research on Tap: Measuring Corporate Impacts on the Environment & Society.</i></p>	

2.6. Is your <u>medical school</u> a member of a national or international planetary health or ESH organization?	
1	Yes, the medical school is a member of a national or international planetary health or ESH organization
0	No, the medical school is not a member of such an organization
<p><i>Score explanation: The Medical School is not currently a member of the Global Consortium on Climate and Health Education, however the School of Public Health is a member.</i></p>	

Section Total (12 out of 17)	70%
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Back to Summary Page [here](#)

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.*

3.1. 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: Sections 6.5 - 6.7 of the Medical Campus Institutional Master Plan (linked below) documents partnerships with the Green Ribbon Commission, Zero Waste Boston, and Carbon Free Boston. These are all hosted through Boston University as an overarching institution. The medical school does not offer specific opportunities to work with local environmentally-focused community organizations, although it would support a student group that initiated such a program.</i></p> <p>https://www.bumc.bu.edu/about/institutional-master-plan/</p>	

3.2. 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 institution/medical school have not offered such community-facing courses or events.
<p><i>Score explanation: The BU School of Public Health offers a summer enrichment program for high-school-aged students that aims to introduce them to many topics in public health, including environmental health (linked below). The medical campus holds an annual Sustainability Festival on</i></p>	

Talbot Green on the medical campus that is open to the community but is mainly focused on students, faculty, and staff.

[PopHealth](#)

3.3. 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 receive communications about planetary health or sustainable healthcare.

Score explanation: Students receive regular communications from “Sustainability@BU” with institution-wide updates on upcoming events and opportunities that include the medical campus. Students are also welcome to sign up for communications from the BUSPH Center for Climate and Health.

3.4. Does the institution or main affiliated hospital trust engage in professional education activities targeting individuals post graduation with the aim of ensuring their knowledge and skills in planetary health and sustainable healthcare remain up to date during their professional career?

2	Yes, the institution or main affiliated hospital trust offers multiple in-person or online courses relating to planetary health and/or sustainable healthcare for post-graduate providers, including at least one with a primary focus of planetary health.
1	Yes, the institution or main affiliated hospital trust offers one course relating to planetary health and/or sustainable healthcare for post-graduate providers
0	There are no such accessible courses for post-graduate providers

Score explanation: No CME or other post-graduate educational opportunities around planetary health or sustainability were found.

3.5. Does your medical school or its affiliated teaching hospitals have accessible educational materials for patients about environmental health exposures?

2	Yes, the medical school or 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: No accessible educational materials about environmental health exposures were found.

3.6. Does your medical school or its affiliated teaching hospitals have accessible educational materials for patients about the health impacts of climate change?

2	Yes, the medical school or 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: The Boston Medical Center website has a page describing sustainability efforts. <https://www.bmc.org/sustainability>

Section Total (6 out of 14)

43%

Back to Summary Page [here](#)

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.*

4.1. Does your medical school or your institution offer support for medical students interested in enacting a sustainability initiative/QI project?	
2	Yes, the medical school or institution <i>either</i> offers grants for students to enact sustainability initiatives/QI projects <i>or</i> sustainability QI projects are part of the core curriculum.
1	The medical school or institution 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 and there is no requirement to participate.
0	No, neither the medical school or the institution offer opportunities or support for sustainability initiatives or QI projects.
<p><i>Score explanation: Avenues exist for students to access grants for various initiatives through the larger institution's Campus Climate Lab. Student groups like the Climate Action Group are eligible for funding to enact various sustainability initiatives. Finally, through the school of medicines LEADS track, students can elect to specialize in community/environmental health.</i></p>	

4.2. Does your institution offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
2	The institution has a specific research program or fellowship for students interested in doing planetary health/sustainable healthcare research.
1	There are research opportunities for students to perform research related to planetary health/sustainable healthcare, but these require student initiative to seek these out and carry them out in their spare time.
0	There are no opportunities for students to engage in planetary health/sustainable healthcare research.
<p><i>Score explanation: Medical students can pursue research related to planetary health by reaching out to the Center for Climate and Health program. They could get support from the medical school and carve out dedicated time in the curriculum to pursue this research. There is not, however, a specific program for medical students to do research in the climate health field.</i></p>	

4.3. 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	
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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.
<p><i>Score explanation: While the BU School of Public Health (BUSPH) has a centralized website for the Center for Climate and Health, there is no medical school-specific website for mentors or projects. However, medical students can get involved in planetary health research with mentors from the BUSPH or other departments around the university.</i></p>	

4.4. Does your <u>medical school</u> have 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 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 .
0	No, there is not a student organization at my institution dedicated to planetary health or sustainability in healthcare.
<p><i>Score explanation: The Climate Action Group encourages students to participate in environmental activism, hosts speakers such as the Elders Climate Action of Massachusetts, and organizes events for students to explore local green spaces. This student group has a dedicated faculty advisor.</i></p> <p>Climate Action Group</p>	

4.5. Is there a student liaison representing sustainability interests who serves on a <u>medical school</u> or <u>institutional</u> decision-making council to advocate for curriculum reform and/or sustainability best practices?	
1	Yes, there is a student representative that serves on a medical school or institutional decision-making council/committee.
0	No, there is no such student representative.
<p><i>Score explanation: BUSM employs a medical student to serve as a Sustainability Intern. This person serves on a sustainability committee within the medical school. This committee works to improve sustainability on the medical campus but their scope does not include curriculum reform.</i></p> <p>BUSM Intern</p>	

4.6. In the past year, has the <u>institution</u> 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)
<p><i>Score explanation: The BMC Rooftop Farm provides fresh local produce to the BMC Demonstration Kitchen, Preventive Food Pantry, and to hospitalized patients. Medical students are welcome to volunteer on the farm.</i></p> <p><i>The BU School of Public Health Center for Climate and Health hosts speaker series related to planetary health that medical students are welcome to attend. The School of Public Health also hosted an event with a speaker from Green Roots, a local environmental justice organization. They spoke about the specific health concerns facing Chelsea, MA and about how academic institutions can partner with communities to address environmental health concerns.</i></p> <p><i>The Outdoors Club organizes hiking outings for students in local natural spaces.</i></p>	

Section Total (12 out of 15)	80%
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Back to Summary Page [here](#)

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.*

5.1. Does your <u>medical school</u> and/or <u>institution</u> 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: BU has a robust Office of Sustainability and there is a medical student Sustainability Intern on the medical campus, but no staff member who works specifically with the medical school or hospital.</i></p>	

5.2. How ambitious is your <u>institution/medical school</u> plan to reduce its own carbon footprint?	
5	The institution/medical school has a written and approved plan to achieve carbon neutrality by 2030
3	The institution/medical school has a written and approved plan to achieve carbon neutrality by 2040
1	The institution/medical school has a stated goal of carbon neutrality by 2040 but has not created a plan to reach that goal or the plan is inadequate
0	The institution/medical school does not meet any of the requirements listed above
<p><i>Score explanation: The Boston University Climate Action Plan has a stated goal of carbon neutrality by 2040. The strategies for achieving this include energy efficiency, shifting to electricity for heating and cooling, sourcing 100% renewable energy, and transitioning BU's fleet to electric vehicles. BU's Zero Waste Plan was developed by a 54-member task force during the fall of 2019, and released on March 3, 2021. The Plan outlines 21 different initiatives that focus</i></p>	

on various important aspects of Zero Waste. As of January 2024, BU is halfway towards the Zero Waste goal. To see progress, you can view the [data dashboard](#).

5.3. Do buildings/infrastructure used by the <u>medical school</u> 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.
<p><i>Score explanation: At this time, 100% of the BU energy needs are met with renewable RECs via a South Dakota wind farm. BU purchases electricity from 48.6 MW of wind generation capacity annually through a 15-year Power Purchase Agreement (PPA) with ENGIE North America. Annually, the associated 205,000 Green-e Certified RECs are enough to meet the energy requirements of both the main BU campus and the medical campus.</i></p>	

5.4. Are sustainable building practices utilized for new and old buildings on the <u>medical school</u> campus, with design and construction of new buildings and remodeling of old buildings conforming to a published sustainability rating system or 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.
<p><i>Score explanation: While BU has committed to pursuing LEED Gold certifications for all new construction as part of their Climate Action Plan, most older buildings on the medical campus have not been significantly retrofitted. Some newer buildings achieving LEED Gold certification on the medical campus include the Medical Student Residence and the Goldman School of Dental Medicine. Another bioresearch building has been LEED Certified but did not achieve Gold or Silver specifications. These three buildings represent a small proportion of the medical campus.</i></p>	

5.5. Has the medical school or institution implemented strategies to encourage and provide environmentally-friendly transportation options for students and reduce the environmental impact of commuting?

2	Yes, the medical school or institution 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 or institution has implemented some strategies to provide environmentally-friendly transportation options, but the options are unsatisfactorily accessible or advertised.
0	The medical school or institution has not implemented strategies to encourage and provide environmentally-friendly transportation options.
<i>Score explanation: The BU Medical Campus offers a secure bike cage, a discounted city bike membership, a discounted public transit pass, and a shuttle that goes from the medical campus to the main campus. However, it is difficult to access off-campus clinical sites without a car.</i>	

5.6. Does your <u>medical school</u> 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.
<i>Score explanation: The medical school has recycling bins all around campus as well as a compost receptacle in the cafeteria and in the Medical Student Residence.</i>	

5.7. Does the <u>medical school</u> apply sustainability criteria when making decisions about the campus food and beverage selections (e.g. local sourcing, reduced meat, decreased plastic packaging)?	
3	Yes, the medical school has adequate sustainability requirements for food and beverages, including meat-free days or no red-meat, 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.
<i>Score explanation: The medical school cafeteria currently does not have sustainability requirements but the BU Office of Sustainability has been working with the food service provider to increase sustainability.</i>	

5.8. Does the medical school or 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.

Score explanation: In 2021, BU has launched their sustainable purchasing program. When a competitive RFP is issued, a minimum of 15% of the available points of the selection criteria on the supplier scorecard shall be allotted to sustainability. Factors that may be considered include, but are not limited to, environmental preference, human health implications, or social equity business practices. It includes Required Minimums, which are the basic sustainability certifications and practices required for the University to consider purchasing a product. Preferred Standards are additional considerations that represent a higher level of sustainability but may be more difficult to achieve. While this initiative is common to the entire institution, medical campus procurement falls under these same guidelines.

5.9. 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.

Score explanation: The Student Committee on Medical School Affairs has a list of recommendations to make an event more sustainable, but they are not required.

<https://www.bumc.bu.edu/scomsa/planning-events/being-sustainable/>

5.10. 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.

Score explanation: The BU Environmental Health and Safety site has a pollution prevention page with recommendations for general lab sustainability and support for solvent recycling and chemical reuse.

The medical campus has styrofoam recycling for laboratories and the BU Zero Waste Plan has a section on Lab Waste and Chemicals.

5.11. 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	The institution is entirely divested from fossil fuels.
2	The institution has partially divested from fossil fuel companies or has made a commitment to fully divest , but currently still has fossil fuel investments.
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.

Score explanation: In 2021, the president of the university announced plans to divest from fossil fuels, including no new investments in fossil-fuel-focused products or companies that extract fossil fuels. The policy also states that there would be immediate divestment from fossil fuel extractors but that other fossil fuel investments may take as much as a decade to be completely removed from the endowment.

Section Total (24 out of 32)

75%

Back to Summary Page [here](#)

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 the Boston University Chobanian and Avedisian School of Medicine

The following table presents the individual section grades and overall institutional grade for the Boston University Chobanian and Avedisian School of Medicine on this medical-school-specific Planetary Health Report Card.

Section	Raw Score %	Letter Grade
Planetary Health Curriculum (30%)	$(34/72) \times 100 = 47\%$	C-
Interdisciplinary Research (17.5%)	$(12/17) \times 100 = 71\%$	B-
Community Outreach and Advocacy (17.5%)	$(6/14) \times 100 = 43\%$	C-
Support for Student-led Planetary Health Initiatives (17.5%)	$(12/15) \times 100 = 80\%$	A-
Campus Sustainability (17.5%)	$(24/32) \times 100 = 75\%$	B+
Institutional Grade	$(47 \times 0.3 + 71 \times 0.175 + 43 \times 0.175 + 80 \times 0.175 + 75 \times 0.175) = 61\%$	B-