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# Planetary Health Report Card (Medicine): *Warren Alpert Medical School of Brown University*

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THE WARREN ALPERT  
**Medical School**  

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BROWN UNIVERSITY

2023-2024 Contributing Team:

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## Summary of Findings

Overall	B
<u>Curriculum</u>	B
<ul style="list-style-type: none"> <li>The Warren Alpert Medical School (AMS) has improved in its presentation of planetary health related concepts since the last PHRC. Inclusion of relevant lectures early on in the Health Systems Science helps provide early exposure to medical students. The planetary health didactic session as part of the doctoring curriculum aims to improve student fluency with climate change and human health.</li> <li><b>Recommendations:</b> Intentional integration of planetary health concepts, including the impact of environmental change on human health into the curriculum</li> </ul>	
<u>Interdisciplinary Research</u>	B
<ul style="list-style-type: none"> <li>There have been substantial improvements in the interdisciplinary research category for AMS in the past year. <b>Following up on last year's recommendations, a new website specifically dedicated to planetary health was launched (<a href="#">Planetary Health   Brown University</a>), and planetary health is now an officially stated part of the mission for the entire Division of Biology and Medicine.</b> Existing funding opportunities may support student-projects in this area, but are not specific to planetary health. AMS has several investigators with a focus in planetary health and health impacts.</li> <li><b>Recommendations:</b> Further opportunities for planetary-health specific funding could help foster more student involvement and research within this space.</li> </ul>	
<u>Community Outreach and Advocacy</u>	C+
<ul style="list-style-type: none"> <li>Through its student-led group AMS Eco, AMS has been able to maintain its relationship with the PNPP group that plants trees in Providence. Improvements since last year include the addition of affiliated hospitals that have accessible educational materials for patients about environmental health exposures and the health impacts of climate change.</li> <li><b>Recommendations:</b> Development of community partnerships and deepening of existing relationships may improve the status of community outreach and advocacy efforts. Institutional support for improving this area may be found in working with the Director of Community Engagement &amp; Scholarship at AMS.</li> </ul>	
<u>Support for Student-Led Initiatives</u>	B
<ul style="list-style-type: none"> <li>Support for student-led initiatives related to planetary health has not significantly changed since the last PHRC. While AMS supports the AMC Eco group, and Brown's Office of Sustainability offers a seed grant to competitive sustainability focused applications, there is still room for improvement.</li> <li><b>Recommendations:</b> Currently, support for student-led initiatives mostly comes from the University rather than the Medical School. We recommend AMS offer increased support to students interested in sustainable initiatives for example via creating a website that advertises mentors or opportunities for students relating to PH or ESH and prioritises grants for related research.</li> </ul>	
<u>Campus Sustainability</u>	B
<ul style="list-style-type: none"> <li>AMS has made improvements in campus sustainability since the last PHRC report through increased usage of renewable energy and addition of a bike rack at the medical school building.</li> <li><b>Recommendations:</b> There is room for improvement in this domain. AMS has initiated plans for transportation and building enhancements. Additional potential improvements include enhancing sustainability in lab spaces and implementing sustainable guidelines for events and procurement.</li> </ul>	

# 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 <b>more than one</b> elective whose primary focus is ESH/planetary health in the past year.
2	Yes, the medical school has offered <b>one</b> elective whose primary focus is ESH/planetary health in the past year.
1	The medical school does <b>not</b> have any electives whose primary focus is ESH/planetary health, but there are one or more electives that include a <b>lecture</b> on planetary health.
0	No, the medical school has <b>not</b> offered any electives on planetary health or electives that include ESH/planetary health topics in the past year.
<p><i>Score explanation: The Warren Alpert Medical School offered a semester-long preclinical elective titled Planetary Health for the third year in a row. This was led by Brown faculty members, Dean Katherine Smith and Dr. Kyle Martin, in collaboration with medical students. The elective focused on how shifts in weather patterns, land use change, and increased contact between humans and animals have led to new threats to human health, specifically highlighting emerging infectious disease, mental health, heat-related illness, and natural disaster. The elective featured speakers, small group discussions and 6 hours of community-based activity relevant to planetary health. The elective created the service learning component in this most recent year to encourage participation in local planetary health initiatives.</i></p> <p><i>Additional electives which include content on planetary health include Wilderness &amp; Environmental Medicine (post-clerkship), Wilderness Medicine, Advocacy in Action, and Practical Skills in EMS and Disaster Response.</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 <b>in depth</b> by the <b>core</b> curriculum.

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

*Score explanation: As part of the M1 core curriculum at Brown, the course Health Systems Science includes lectures titled "Occupational Health and Climate Change" and "Planetary Health". The former explores the intersections of global warming and health risks; specifically, the lecture covered heat-related disorders, increased mortality during heat waves, and individual risk factors totalling about 10 of 107 slides. The latter is an introduction to planetary health and certain health related impacts of climate change. There are several slides detailing how warmer temperatures are increasing vector-borne disease in the context of climate change. Nearly twenty percent of the lecture slides are dedicated to extreme heat explaining how the US is reaching new heat records, how extreme heat impacts various organ systems, common heat-related illness symptoms, risk factors amongst different age groups, and how urban heat islands in Rhode Island are negatively impacting local populations. Time was allotted to think-pair-share on the topic of extreme heat.*

*Other lectures and small group assignments during the first semester of the M1 curriculum briefly discussed this relationship.*

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

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

*Score explanation: As part of the M1 core curriculum at Brown, the course Health Systems Science includes a lecture titled "Occupational Health and Climate Change" which briefly covers the topic of extreme weather and individual health. Specifically, the lecture mentions changes in precipitation resulting in stronger hurricanes, floods, droughts, and sea-level changes leading to human injury, death and population displacement over two slides. A "Planetary Health" lecture briefly discussed extreme weather and its impacts on health and the healthcare system in the core curriculum. There is also a required lecture on infectious disease and planetary health in the microbiology-infectious disease block.*

*Other preclinical electives including Planetary Health and Wilderness Medicine briefly discussed extreme weather events such as flooding, hurricanes, droughts and forest fires and their impact on health and the health system.*

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

3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
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2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation: As part of the first-year course Health Systems Science at Brown, the lecture "Occupational Health and Climate Change", global warming resulting in wider and longer transmission of vector-borne diseases such as West Nile, Lyme and Malaria and the increase in floods and droughts increasing waterborne diseases is discussed over four slides. This impact is also briefly discussed during the Microbiology/Infectious Disease block in the spring semester of the M1 curriculum. The lecture "Planetary Health" given during first-year discussed the effect of climate change as it relates to the spread and transmission of Lyme Disease and Alpha Gal over six slides. There are several lectures in the Microbiology/Infectious Disease course diving into this topic.</i></p>	

<b>1.5. Does your <u>medical school</u> curriculum address the respiratory health effects of climate change and air pollution?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation: As part of the M1 core curriculum at Brown, the course Health Systems Science includes a lecture titled "Occupational Health and Climate Change" which discusses the relationship between greenhouse gases, climate change, and respiratory/allergic disorders. Specifically, the lecture provides an overview of the dramatic increase in atmospheric carbon dioxide and methane levels over the past few decades and exacerbations of asthma, COPD, and allergic rhinitis due to atmospheric ozone, particulate matter, and increased pollen production. This is discussed over ten slides including infographics. The lecture "Planetary Health" given during first-year discussed the effect of climate change on increasing smog, particulate air pollution, and wildfires which all exacerbate respiratory conditions such as asthma and COPD. In the M2 core curriculum a lecture titled "Environmental Lung Disease" discusses how air pollution and particulate matter exacerbate respiratory illness.</i></p>	

<b>1.6. Does your <u>medical school</u> curriculum address the cardiovascular health effects of climate change, including increased heat?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation: As part of the required first-year course Health Systems Science at Brown, the lecture "Occupational Health and Climate Change" briefly mentions the relationship between climate change and cardiovascular health effects in its exacerbation of coronary artery disease over one slide.</i></p>	



The lecture “Planetary Health” given during first-year discussed the effect of climate change on the cardiovascular system especially as it relates to heat as well as how certain respiratory health effects of climate change can exacerbate cardiovascular health.

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

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

*Score explanation: As part of the M1 core curriculum at Brown, the course Health Systems Science includes a lecture titled “Occupational Health and Climate Change” that mentions mental health consequences including anxiety, worry, depression and despair, and PTSD in association with climate change. The lecture “Planetary Health” given during first-year briefly discussed the mental health effects of climate change and environmental degradation.*

*The Planetary Health pre-clinical elective featured speaker Dr. Joshua Wortzel, highlighting his research on the impacts of climate change and extreme weather events on mental health, both in the community and within the medical field.*

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

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

*Score explanation: As part of the first-year course Health Systems Science, the lecture “Planetary Health” given during first-year discusses how the continued degradation of natural systems, including land use changes, water scarcity, and changing food systems, both from climate change and individual behaviors, impact health.*

**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 <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.

1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score Explanation: As part of the required first-year course Health Systems Science, the lecture "Occupational Health and Climate Change" has one slide that reveals populations in which climate change worsens existing socioeconomic inequities. The slide lists people with low-incomes, people belonging to minority groups, immigrants, women, children, older adults, individuals with chronic disease and/or disabilities without going into further detail about each group. The lecture "Planetary Health" given during first-year discussed how climate justice equals social justice by showing how warmer temperatures will disproportionately affect those of low SES, especially people experiencing homelessness. This lecture also details how US islands in the Caribbean and Pacific are particularly vulnerable to climate change and lists both recent impacts and downstream effects of specific climate change outcomes such as increased water temperatures, sea level rise, increased intensity of tropical storms, and changing precipitation. The lecture goes on to explain that US territories do not have equal access to climate change relief funding that aids the states after natural disasters.</i></p>	

<b>1.10. Does your <u>medical school</u> curriculum address the unequal regional health impacts of climate change globally?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score Explanation: As part of the first-year course Health Systems Science at Brown, the lecture "Occupational Health and Climate Change" briefly discussed the relationship between climate change and global social injustice. The lecture mentions how "countries with most GHG emissions suffer the least", and "countries with the most greenhouse gas emissions suffer the most" over two slides. The lecture also briefly discusses the role of climate change in the Syrian Civil War, where drought and food shortages played a role in socioeconomic and political instability leading to armed conflict.</i></p>	

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

<b>1.11. Does your <u>medical school</u> curriculum address the reproductive health effects of industry-related environmental toxins (e.g. air pollution, pesticides)?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score Explanation: A first-year lecture entitled "Teratogens" outlined certain exposures that could cause birth defects including radiation and chemical exposure. Another lecture entitled "Occupational</i></p>	

*Health and Climate Change” briefly mentions the negative impact of pesticides on reproductive health, specifically citing how DBCP-exposed farm workers in the Philippines were inadvertently sterilized.*

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

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

*Score Explanation: As part of the first-year course Health Systems Science, lead poisoning disparities in Rhode Island are discussed. 9 Superfund sites in Rhode Island and the Brown Superfund Research Program are also reviewed in a separate lecture. The lecture “Introduction to Planetary Health” also discusses the impacts of extreme heat in Rhode Island specifically impacting urban heat islands and individuals experiencing homelessness in Providence. A member from the Rhode Island Executive Office of Health and Human Services delivered a lecture entitled “State of Health in Rhode Island” also describes addressing climate change as a priority in improving health in RI.*

**1.13. To what extent does your medical school emphasize the importance of Indigenous knowledge and value systems as essential components of planetary health solutions?**

3	Indigenous knowledge and value systems are <b>integrated throughout</b> the medical school’s planetary health education
2	Indigenous knowledge and value systems as essential components of planetary health solutions are included <b>briefly</b> in the core curriculum.
1	Indigenous knowledge and value systems as essential components of planetary health solutions are included in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score Explanation: The required first-year course Health Systems Science included a lecture titled “Introduction to Indigenous Health” that discusses the important connections between indigenous populations, land, food sovereignty, and health outcomes. Planetary health solutions and conservation practices were briefly discussed in the context of the indigenous Chamoru population of Guam. Another lecture called “Introduction to Planetary Health” briefly mentions that addressing climate change will entail collaboration with many groups, including indigenous communities.*

**1.14. 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, Indigenous populations, and older adults?**

3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
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2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score Explanation: Through a required small group assignment on Asthma, Mold, and Housing Code Protections this year, MSI students researched and prepared mock legislative testimonies on protecting children and vulnerable populations from household environmental exposures. Through this assignment, students were able to learn about environmental justice disparities at the local and national level. Time was spent discussing this topic in Health Systems Science small groups. The lecture “Planetary Health” given during first-year discussed how climate justice equals social justice by showing how warmer temperatures will disproportionately affect those of low SES, especially people experiencing homelessness. “The Occupational Health and Climate Change” lecture describes how families in older, low-income housing are often exposed to lead dust from old paint and also how those of low SES are incentivized into hazardous work via higher pay.</i></p>	

**Curriculum: Sustainability**

<b>1.15. Does your <u>medical school</u> curriculum address the environmental and health co-benefits of a plant-based diet?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score Explanation: As part of the M1 core curriculum at Brown, the course Health Systems Science includes a lecture titled “Planetary Health,” which very briefly discusses how a transition to more sustainable plant-based diets can reduce the environmental footprint of agriculture and improve health. In a first year lecture titled ‘Weight Control: Popular Diets and Other Interventions’, the Mediterranean diet is described as moderate-fat plant-based diet that is sustainable.</i></p>	

<b>1.16. Does your <u>medical school</u> curriculum address the carbon footprint of healthcare systems?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score Explanation: The Planetary Health elective briefly discussed the carbon footprint of the health care system and recent efforts to quantify the carbon footprint. Dr. Kyle Martin spoke to the fact that the healthcare industry is responsible for a large proportion of the United States carbon emissions due to electricity and waste production. This highlighted the reciprocal impacts of the healthcare industry on climate change, and the impacts of climate change on healthcare.</i></p>	

1.17. Does your <b>medical school</b> curriculum cover these components of sustainable clinical practice in the <b>core</b> curriculum? (points for each)	
2	The health <b>and</b> environmental <b>co-benefits</b> of <b>avoiding</b> over-medicalisation, over-investigation and/or over-treatment
2	The environmental impact of <b>pharmaceuticals</b> and over-prescribing as a cause of climate health harm. Alternatively teaching on <b>deprescribing</b> where possible and its environmental and health co-benefits would fulfill this metric.
1	The health <b>and</b> environmental <b>co-benefits</b> of <b>non-pharmaceutical management</b> 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 <b>surgical</b> healthcare on planetary health and the climate crisis, and how can it be mitigated
1	The impact of <b>anaesthetic</b> gases on the healthcare carbon footprint and ways to reduce anaesthesia environmental impacts, such as total intravenous anaesthesia or choosing less environmentally harmful anaesthetic gas options with reduced greenhouse gas emissions
1	The impact of <b>inhalers</b> on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers.
1	<b>Waste production</b> within healthcare <b>clinics</b> and strategies for reducing waste in clinical activities (e.g. single use items in the inpatient or outpatient setting)
0	<i>Score Explanation: There are brief mentions against overutilization of tests and overprescription of certain medications in several lectures, but they do not address the environmental impact of these practices.</i>

***Curriculum: Clinical Applications***

1.18. In training for patient encounters, does your <b>medical school's</b> 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 <b>core</b> curriculum.
1	Yes, there are strategies introduced for having conversations with patients about climate change in <b>elective</b> coursework.
0	No, there are <b>not</b> strategies introduced for having conversations with patients about climate change
<i>Score Explanation: In the Planetary Health elective there was a session dedicated to how doctors can talk about the physical and mental health consequences of climate change with their patients. The Doctoring 1 course included a didactic titled Planetary Health. The didactic required precourse work in the form of readings and watching a Ted Talk by Dr. Courtney Howard entitled "Healthy Planet,</i>	

*Healthy People”. The didactic involved small group discussion featuring the topic of planetary health and its impact on patients.*

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

2	Yes, the <b>core</b> curriculum includes strategies for taking an environmental history.
1	Only <b>elective</b> coursework includes strategies for taking an environmental history.
0	No, the curriculum does <b>not</b> include strategies for taking an environmental history.

*Score Explanation: As part of the year one Doctoring curriculum at Brown, the medical interview includes an exposure history where students learn to ask questions about environmental exposures and hazards at home and at work. Questions include "Have you ever changed or wanted to change your residence due to a health concern?" "is there anything about your current physical home and neighbourhood that might be impacting your health?" and "are you exposed to any health hazards at work such as chemicals and dust?" Further, there was a Doctoring class on how to conduct an environmental exposures questionnaire during patient encounters.*

***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 <b>major</b> improvements to ESH/planetary health education.
2	Yes, the medical school is currently in the process of making <b>minor</b> improvements to ESH/planetary health education.
0	No, there are <b>no</b> improvements to planetary health education in progress.

*Score Explanation: As part of a restructuring of the preclinical curriculum, the Planetary Health Curricular Integration Committee assisted in the process of pitching additional planetary health related material to most courses in the pre-clinical educational sequence. The Office of Medical Education has expressed support for this effort and encouraged meeting with course leaders to discuss appropriate inclusion within each course. Students have met with faculty who teach during four learning blocks, Microbiology/Infectious Diseases, Nutrition/Metabolism, Cardiology, and Pulmonology, to discuss ways in which they can incorporate planetary health into their curriculum. Some faculty have already expressed interest in adding a slide or case study into their lectures where planetary health is applicable.*

*The school has recently approved planetary health as one of twelve longitudinal threads to incorporate into curricular revision. Learning objectives include describing how anthropogenic changes to natural systems influence health outcomes, articulating the disproportionate impact of environmental changes on marginalized populations, incorporating knowledge of environmental change into clinical practice, proposing strategies to engage marginalized populations in making decisions that affect health of populations and ecosystems, communicating messages on planetary health to patients and lay audiences, and proposing strategies to achieve “patient-planet health co-benefits”.*

**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 <b>well integrated</b> into the core medical school curriculum.
4	<b>Some</b> 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 <b>(a) standalone lecture(s)</b> .
0	There is <b>minimal/no</b> education for sustainable healthcare.

*Score Explanation: For the 2023-24 year, Alpert Medical School (AMS) course leaders have allocated standalone lectures focused on environmental health and climate change, subsequent references to planetary health are mostly absent from the curriculum. Currently, there is no longitudinal integration of planetary health in the core-curriculum. The student-led Planetary Health Curriculum Committee sought to increase mentions of planetary health into subsequent course material following the first semester of M1 and its dedicated standalone lectures.*

**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	<b>Yes</b> , the <b>medical school</b> has a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare
0	<b>No</b> , the <b>medical school</b> does <b>not</b> have a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare.

*Score Explanation: As of 2023-24, AMS does not have a specific faculty/staff member responsible for this aspect of curricular integration nor are there any plans in place for the designation of such a position, although Dean Katherine Smith and Dr. Kyle Martin are serving in this capacity.*

**Section Total (47 out of 72)**

**65%**

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*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.*

<b>2.1. Are there researchers engaged in planetary health research and healthcare sustainability research at your <u>medical school</u>?</b>	
<b>3</b>	Yes, there are faculty members at the <b>medical school</b> who have a <b>primary</b> research focus in planetary health <b>or</b> healthcare sustainability.
<b>2</b>	Yes, there are individual faculty members at the <b>medical school</b> who are conducting research <b>related</b> to planetary health or healthcare sustainability, but it is not their primary research focus.
<b>1</b>	There are planetary health and/or healthcare sustainability researchers at the <b>institution</b> , but none associated with the medical school.
<b>0</b>	No, there are <b>no</b> planetary health and/or healthcare sustainability researchers at the <b>institution</b> or <b>medical school</b> at this time.
<p><i>Score explanation: There are several AMS-affiliated investigators with a primary research focus in planetary health, specifically the human health consequences of environmental/occupational toxin exposures and reducing hospital waste. Many faculty in Pathology and Laboratory Medicine at Brown focus on environmental exposures, including Dr. Jeff Bailey. Dr. David A. Savitz, Professor of Epidemiology with joint appointments in OB/GYN and Pediatrics at AMS, conducts research on the health effects of environmental agents on reproductive health outcomes. In addition, Dr. Katelyn Moretti and Dr. Kyle Denison Martin, both Assistant Professors of Emergency Medicine are working with several medical students to reduce waste in the ED at Miriam Hospital and Kent Hospital. Dr. Allan Just, who recently joined the School of Public Health, studies the effects of air pollution on human health. This is not a comprehensive listing of all faculty interested in this area, and there have been increasing numbers of professors interested in this area. In May 2022, AMS introduced the Ruth Sauber Medical Education Fund for Planetary health. This new initiative will allow third and fourth year medical students to pursue a gap year conducting research projects related to planetary health. To our knowledge, there are no AMS faculty with a primary research focus on healthcare sustainability, although students have found increased interest among faculty for looking into this area. Additional research efforts should be focused on other topics including health consequences of extreme temperatures, vector-borne diseases, and air pollution.</i></p>	

<b>2.2. Is there a dedicated department or institute for interdisciplinary planetary health research at your <u>institution</u>?</b>	
<b>3</b>	There is <b>at least one</b> dedicated department or institute for interdisciplinary planetary health research.



2	There is <b>not currently</b> a department or institute for interdisciplinary planetary health research, but there are <b>plans</b> to open one in the next 3 years.
1	There is an <b>Occupational and Environmental Health department</b> , but no interdisciplinary department or institute for planetary health research.
0	There is <b>no</b> dedicated department or institute.
<p><i>Score explanation: There is no dedicated department or institute for interdisciplinary planetary health research at AMS. The Institute at Brown for Environment and Society (IBES) generally supports research at the undergraduate, masters, and doctoral levels.</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> ?	
3	Yes, there is a process in which community members impacted by climate and environmental injustice have <b>decision-making power</b> in the climate + environmental research agenda.
2	Yes, there is a process in which community members impacted by climate and environmental injustice <b>advise</b> the climate + environmental research agenda.
1	<b>No</b> , but there are <b>current efforts</b> to establish a process for community members to advise or make decisions on the research agenda.
0	There is <b>no</b> process, and <b>no</b> efforts to create such a process.
<p><i>Score explanation: Currently, AMS lacks a comprehensive plan for engaging community members in prioritizing climate change and environmental health research. However, two promising developments offer potential for collaboration. First, the Division of Biology and Medicine has established a dedicated Community Engagement division, which could play a key role in this process. Second, the Division's <a href="#">newly revised mission statement</a> (Fall 2023) explicitly emphasizes planetary health: "The mission of the Division of Biology and Medicine at Brown University is to advance knowledge and the health and well-being of people and planet." This strategic shift reflects a significant accomplishment and the culmination of long-standing advocacy efforts, creating a clear framework for future action.</i></p>	

2.4. Does your <u>institution</u> have a planetary health website that centralizes ongoing and past research related to health and the environment?	
3	There is an <b>easy-to-use, adequately comprehensive</b> website that <b>centralizes</b> 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 <b>attempts to centralize</b> various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive.
1	The <b>institution</b> has an <b>Office of Sustainability website</b> that includes <b>some</b> resources related to health and the environment.
0	There is <b>no</b> website.

*Score explanation: 2023 and 2024 saw the development and launch of a new centralized integrated website specifically dedicated to planetary health: <https://planetary-health.brown.edu/>. This supplements the broader institution's Office of Sustainability's website, [Sustainability at Brown](#), features relevant campus sustainability news, student-led efforts, interdisciplinary collaborations, global engagement, and opportunities to get involved. The website connects to IBES' website which further highlights environmental science research at the institution. [Vivo.Brown.Edu](#) is a comprehensive, searchable catalog of researchers and their interests/publications.*

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

4	Yes, the <b>medical school</b> has hosted at least one conference or symposium on topics related to planetary health in the past year.
3	Yes, the <b>institution</b> has hosted at least one conference or symposium on topics related to planetary health in the past year.
2	Yes, the <b>institution</b> has hosted a conference on topics related to planetary health in the past three years.
1	The <b>institution</b> has not hosted any conferences directly, but they have provided financial support for a local planetary health event.
0	No, the <b>institution</b> has not hosted a conference on topics related to planetary health in the past three years.

*Score explanation: Brown's Office of Sustainability granted a seed grant to Dr. Alison Hayward, an emergency medicine attending to hold an in-person symposium at the medical school on Climate Change and Health in Spring 2024. This will be a regional conference addressing solutions to address the health impacts of climate change. Brown's School of Public Health hosted a "[Climate and Health](#)" Seminar Series in February 2023. This event brought together a diverse group of experts to discuss climate change's impact on patterns of infectious disease and how this predisposes the world to future pandemics. The panel highlighted multidisciplinary approaches to research currently underway at Brown to help identify and mitigate these risks. Furthermore, the medical school offered a forum discussion "[Planetary Health: Tackling Emerging Disease to Extreme Heat](#)" which was recorded and distributed on Youtube and Brown's website.*

**2.6. Is your medical school 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 <b>not</b> a member of such an organization

*Score explanation: AMS is a part of both the Planetary Health Alliance and the Global Consortium on Climate and Health Education.*

<b>Section Total (11 out of 17)</b>	<b>65%</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.*

3.1. Does your <b>medical school</b> partner with community organizations to promote planetary and environmental health?	
3	Yes, the <b>medical school</b> meaningfully partners with <b>multiple</b> community organizations to promote planetary and environmental health.
2	Yes, the <b>medical school</b> meaningfully partners with <b>one</b> community organization to promote planetary and environmental health.
1	The <b>institution</b> partners with community organizations, but the medical school is not part of that partnership.
0	No, there is <b>no</b> such meaningful community partnership.
<p><i>Score explanation: Alpert Medical School partners with the Providence Neighborhood Planting Program (pnpp.org) and Farm Fresh Rhode Island (farmfreshri.org). PNPP works closely with the City of Providence to develop green spaces within the city through planting trees, and Farm Fresh RI works to reduce food waste and increase accessibility to locally sourced foods. Brown medical students had two opportunities, in the spring of 2022 and again in the fall of 2022, to attend neighborhood tree planting events. Outside of the medical school, there are other opportunities offered through Brown University, such as Clean Break, where items that are going to be thrown away by students are donated to the Providence community. On the community partnerships and volunteering portal “Brown Engage,” there are 7 community partners in which Brown students have volunteered in the past that are related to planetary health initiatives. However, these partnerships are through Brown University and not Alpert Medical School.</i></p>	

3.2. Does your <b>medical school</b> offer community-facing courses or events regarding planetary health?	
3	The <b>medical school</b> offers community-facing courses or events at least once every year.
2	The <b>medical school</b> 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 <b>institution</b> has offered community-facing courses or events, but the <b>medical school</b> was not involved in planning those courses or events.
0	The <b>institution/medical school</b> have not offered such community-facing courses or events.

*Score explanation: In 2022, Alpert Medical School offered a lecture titled “Planetary Health: Tackling Emerging Disease to Extreme Heat” during the school’s family weekend, which was open to community members. There is a radio podcast “Possibly,” which has weekly episodes about important planetary health topics. This is a partnership with the Public’s Radio in Rhode Island and the Institute at Brown for Environment at Society (IBES), however Alpert Medical School is not involved in this initiative. The Planetary Health Preclinical elective now has a required community service learning component, which encourages local partnerships and community engagement.*

**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 <b>regularly</b> receive communication updates dedicated to planetary health and/or sustainable healthcare.
1	Yes, planetary health and/or sustainable healthcare topics are <b>sometimes</b> included in communication updates.
0	Students <b>do not</b> receive communications about planetary health or sustainable healthcare.

*Score explanation: AMS now has a dedicated Planetary Health website (<https://planetary-health.brown.edu/>) which went live this year. On that webpage, the school’s education, impact, and innovation are highlighted to the public. We expect regular coverage of issues related to planetary health to come through the website. On the news portion of the Alpert Medical School website, there are occasionally articles and public events advertising regarding planetary health. Specifically, Today@Brown is a newsletter sent out to students and Brown community members which occasionally advertises planetary health events.*

**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 <b>institution</b> or <b>main affiliated hospital trust</b> 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 <b>institution</b> or <b>main affiliated hospital trust</b> offers one course relating to planetary health and/or sustainable healthcare for post-graduate providers
0	There are <b>no</b> such accessible courses for post-graduate providers

*Score explanation: In 2023, the Alpert Medical School and affiliated hospitals did not offer any continuing medical education courses related to planetary health or sustainable healthcare. The Alpert Medical School CME catalog and Lifespan CME catalog were searched with the queries “planetary health,” “climate change,” and “environmental health,” and no courses could be 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 <b>medical school</b> or <b>all affiliated hospitals</b> have accessible educational materials for patients.
1	<b>Some</b> affiliated hospitals have accessible educational materials for patients.
0	<b>No</b> affiliated medical centres have accessible educational materials for patients.
<p><i>Score explanation: There are no online resources about environmental health exposures available for patients at the Alpert Medical School website. There was a free public online lecture on lead poisoning through the Lifespan Community Health Ambassador series in January 2023, however the recording is not very easily accessible through online searching. Lifespan is the medical school's hospital system affiliate.</i></p>	

<b>3.6. Does your <u>medical school</u> or its <u>affiliated teaching hospitals</u> have accessible educational materials for patients about the health impacts of climate change?</b>	
2	Yes, the <b>medical school</b> or <b>all affiliated hospitals</b> have accessible educational materials for patients.
1	<b>Some</b> affiliated hospitals have accessible educational materials for patients.
0	<b>No</b> affiliated hospitals have accessible educational materials for patients.
<p><i>Score explanation: Since last year, one lecture has been made available online via Youtube that pertains to Planetary Health (the same lecture mentioned in section 3.2) about the health impacts of climate change. There are a lot of great community handouts on climate change on the Rhode Island Department of Health <a href="#">website</a>. It would be great if Alpert Medical school and its hospital affiliates could help distribute these.</i></p> <p><i>There is a recorded lecture on Lifespan's youtube account (which is the primary affiliate) through the Lifespan Community Health Ambassador's lecture series on emergency preparedness in the context of climate change, however it is hard to find through online searching and not easily accessible.</i></p>	

<b>Section Total (8 out of 14)</b>	<b>57%</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.*

4.1. Does your <u>medical school</u> or your <u>institution</u> offer support for medical students interested in enacting a sustainability initiative/QI project?	
2	Yes, the <b>medical school</b> or <b>institution</b> <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 <b>medical school</b> or <b>institution</b> encourages sustainability QI projects (to fulfill clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, <b>but</b> there is no student funding available and there is no requirement to participate.
0	No, <b>neither</b> the medical school or the institution offer opportunities or support for sustainability initiatives or QI projects.
<p><i>Score explanation: Since 2019, a student-led initiative has driven composting and single-stream recycling maintenance at the medical school buildings and affiliate sites, funded by the medical school and managed by the Brown Facilities Department. This demonstrates the administration's support for sustainability efforts originating from the student community.</i></p> <p><i>The Office of Sustainability and The Climate Solutions Initiative offers Sustainability Seed Grants to “provide faculty, students, and staff with opportunities to advance sustainability research, teaching and community engagement while contributing to Brown's sustainability goals as articulated in the University Sustainability Strategic Plan.”</i></p>	

4.2. Does your <u>institution</u> offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
2	The <b>institution</b> has a <b>specific</b> 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 <b>require student initiative</b> to seek these out and carry them out in their spare time.
0	There are <b>no opportunities</b> for students to engage in planetary health/sustainable healthcare research.
<p><i>Score explanation: Similar to prior years, medical students at Brown are eligible to apply for the Ruth Sauber Medical Education Fund in Planetary Health. This funded opportunity involves a one year experience where students conduct faculty-mentored research on a topic in planetary health under the guidance of a faculty mentor. Students may apply for funded summer research assistantships where they conduct planetary health focused research; however, this funding is not limited to this domain. Beyond</i></p>	



*the medical school, the institution's Office of Sustainability supports competitive applications for seed grants that focus on sustainable research.*

**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 medical school and/or contact of information of potential mentors.**

2	The <b>medical school</b> 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 <b>medical school</b> 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 <b>no medical-school</b> specific webpage for locating planetary health and/or sustainable healthcare projects or mentors.

*Score explanation: As of writing, there does not exist a AMS-specific website for locating planetary health and/or sustainable healthcare projects or mentors within the medical school. There are efforts underway to develop a Planetary Health website which would include a description of faculty members involved in relevant initiatives.*

**4.4. Does your medical school 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 <b>with faculty support</b> 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 <b>lacks faculty support</b> .
0	No, there is <b>not</b> a student organization at my institution dedicated to planetary health or sustainability in healthcare.

*Score explanation: For several years, AMS has been home to AMS Eco, a student-run group that promotes the intersection of health and environment. It is funded by AMS, and while there is no formal faculty advisor, AMS faculty regularly support this group's efforts. In the past year, this group partnered with the Providence Neighborhood Planting Program and handed out composting bins to students. The Planetary Health Curricular Integration Committee sought to integrate planetary health into the preclinical curriculum.*

**4.5. Is there a student liaison representing sustainability interests who serves on a medical school or institutional 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: Within the past year, no student has been designated to specifically represent sustainability on any decision-making council within the medical school or institution more broadly. While the Planetary Health Curricular Integration Committee had students and supportive faculty, it lacked any official decision-making authority.</i></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 Brown Market Shares Program offers a weekly supply of locally and sustainably sourced produce, dairy, eggs, and meat for AMS students and members of the Brown Community. There is a subsidy available to medical students to improve affordability.</i></p> <p><i>There have not been any institutionally sponsored initiatives where students can learn about environmental justice from local organizations and activists, nor have there been cultural or artistic events relating to planetary health.</i></p> <p><i>There was an opportunity to volunteer with the Providence Neighborhood Tree Planting Program in planting trees around Providence. Plans are underway to collaborate again this Spring.</i></p> <p><i>A pre-clinical elective “Wilderness Medicine” was offered to medical students in the fall of 2023. The Brown Outing Club (BOC) is a University-wide student group that conducts outdoor trips, both local and regionally. They offer outing gear that can be rented for a subsidised price and have a no-questions asked financial aid policy for joining their trips.</i></p>	

<b>Section Total (10 out of 15)</b>	<b>67%</b>
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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.*

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 <b>at least one designated staff member</b> 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 <b>no specific staff member</b> in charge of medical school and/or hospital sustainability.
1	There are <b>no salaried sustainability staff</b> , but there is a sustainability task force or committee
0	There are <b>no</b> staff members <b>or</b> task force responsible for overseeing campus sustainability
<p><i>Score explanation: Brown University maintains an active Office of Sustainability with eight full time staff members and several undergraduate interns. There is no specific staff member assigned to the medical school and/or affiliated hospitals.</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 <b>written and approved plan</b> to achieve carbon neutrality by <b>2030</b>
3	The institution/medical school has a <b>written and approved plan</b> to achieve carbon neutrality by <b>2040</b>
1	The institution/medical school has a stated goal of carbon neutrality by <b>2040</b> but has <b>not created a plan</b> to reach that goal or the <b>plan is inadequate</b>
0	The institution/medical school does <b>not</b> meet any of the requirements listed above
<p><i>Score explanation: Brown University (including AMS) is not currently carbon neutral. However, Brown's sustainability plan proposes to achieve carbon neutrality by 2040 with a 75% reduction by 2025 via carbon offset, renewable natural gas offset, renovation of the main campus heat generation plant, and construction of net-zero buildings. This carbon offset will be achieved through investment into a Texan wind farm and a Rhode Island-based solar farm.</i></p>	

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

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

*Score explanation: The medical school building does not have any on-site renewable energy sources and is supplied by the ISO-New England grid, a part of the Eastern interconnection grid. In 2023, an initiative was launched to install blade light controls within the building, which are programmed to shut off at 11:00 PM each night and stay off until sunset the following day. The building achieved LEED Gold at completion of its 2013 Renovation, with full LED conversion in 2017. Additional decarbonization measures such as converting the domestic hot water heaters from natural gas to electric resistance were implemented. Starting no later than July 2024, the medical school building will offset all of its electricity use through solar RECs.*

**5.4. 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 sustainability rating system or building code/guideline?**

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

*Score explanation: The medical school is housed in a renovated building that previously served as the headquarters of a jewelry manufacturing company. The building was completed in 2011 and achieved a LEED Gold rating in 2013. The property's automation system undergoes continuous commissioning using analytics tools. In the future, alongside the construction of the new Integrated Life Sciences Building, the medical school building will transition to a district heating and cooling system, effectively eliminating the need for boiler operations.*

**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 <b>environmentally-friendly transportation options</b> such as safe active transport, public transport,
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	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 <b>some</b> strategies to provide environmentally-friendly transportation options, but the options are <b>unsatisfactorily</b> accessible or advertised.
0	The medical school or institution has <b>not</b> implemented strategies to encourage and provide environmentally-friendly transportation options.
<p><i>Score explanation: AMS generally discourages commuting to school via automobile, as students must pay for on campus parking or utilize metered street parking. Bus rides with the Rhode Island Public Transit Authority (RIPTA) system are free to all members of the Brown community via ID card. In recent years, the university's Office of Sustainability and Resiliency (OSR) conducted a review of medical student commuting behaviors and suggested the implementation of a carpooling network for students, expanded shuttle schedules, and added more secure and accessible bike storage. The university has since expanded shuttle service to the medical school and added additional bike racks beside the AMS building. Brown supports a partnership between the city of Providence and Spin Bikes/Scooters but has no financial stake in the partnership; the Office of Transportation does offer several resources including free bike repair through a community organization (Bikes at Brown). There is one unit with two electric vehicle charging ports at the medical student parking lot. Additionally, the OSR provides "Sustainability Tips" on their website, advising students on eco-friendly practices such as maintaining the proper PSI since low tire pressure increases fuel consumption and CO2 emissions.</i></p>	

<b>5.6. Does your <u>medical school</u> have an organics recycling program (compost) and a conventional recycling program (aluminum/paper/plastic/glass)?</b>	
2	Yes, the medical school has <b>both</b> compost <b>and</b> recycling programs accessible to students and faculty.
1	The medical school has <b>either</b> recycling <b>or</b> compost programs accessible to students and faculty, but not both.
0	There is <b>no</b> compost or recycling program at the medical school.
<p><i>Score explanation: AMS has long standing aluminum, paper, plastic, and glass recycling programs. The medical school began implementing its composting program in 2019, which currently consists of composting bins in each of the three student lounges. During the fiscal year 2023, Brown had 798.5 tons of material picked up for composting.</i></p>	

<b>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)?</b>	
3	Yes, the medical school has <b>adequate</b> sustainability requirements for food and beverages, including meat-free days or no red-meat, and <b>is engaged</b> in efforts to increase food and beverage sustainability.
2	There are sustainability guidelines for food and beverages, but they are <b>insufficient or optional</b> . The medical school <b>is engaged</b> in efforts to increase food and beverage sustainability.

1	There are sustainability guidelines for food and beverages, but they are <b>insufficient or optional</b> . The medical school is <b>not</b> engaged in efforts to increase food and beverage sustainability.
0	There are <b>no</b> sustainability guidelines for food and beverages.
<p><i>Score explanation: There is one third party food vendor located within the medical school building. It is not required by the university to adhere to any food sustainability standards. The medical school utilizes Brown Dining's catering service for school sponsored events but does not participate in catering's "Green Event" option, which includes sustainably sourced food and reusable dining ware. Food is usually served in paper containers with plastic utensils, and food waste is composted. While Brown's Dining Services has food sourcing and sustainability goals, AMS is not actively engaged in these efforts. Leftover food from events is frequently placed in student lounges to avoid food waste.</i></p>	

<b>5.8. Does the <u>medical school</u> or <u>institution</u> apply sustainability criteria when making decisions about supply procurement?</b>	
3	Yes, the medical school has <b>adequate</b> sustainability requirements for supply procurement <b>and</b> is <b>engaged</b> in efforts to increase sustainability of procurement.
2	There are sustainability guidelines for supply procurement, but they are <b>insufficient or optional</b> . The medical school is <b>engaged</b> in efforts to increase sustainability of procurement.
1	There are sustainability guidelines for supply procurement, but they are <b>insufficient or optional</b> . The medical school is <b>not engaged</b> in efforts to increase sustainability of procurement.
0	There are <b>no</b> sustainability guidelines for supply procurement.
<p><i>Score explanation: Brown University provides its departments with broad sustainability guidelines to steer their sourcing decisions. The university has banned the purchase of any furniture containing flame retardants, and GreenSeal and Eco certified cleaning products are used exclusively in all university buildings. AMS does not have any specific sustainability criteria for the sourcing of its other materials.</i></p>	

<b>5.9. Are there sustainability requirements or guidelines for events hosted at the <u>medical school</u>?</b>	
2	Every event hosted at the medical school <b>must</b> abide by sustainability criteria.
1	The medical school <b>strongly recommends or incentivizes</b> sustainability measures, but they are <b>not required</b> .
0	There are <b>no</b> sustainability guidelines for medical school events.
<p><i>Score explanation: Neither Brown University nor AMS have sustainability requirements or criteria for events hosted at the medical school. However, medical school staff do undertake measures to make events as paper-free as possible.</i></p>	

**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 <b>programs</b> and <b>initiatives</b> to assist with making lab spaces more environmentally sustainable.
1	There are <b>guidelines</b> on how to make lab spaces more environmentally sustainable, but not programs or initiatives.
0	There are <b>no</b> efforts at the medical school to make lab spaces more sustainable.
<p><i>Score explanation: Across Brown, an initiative to reduce lab ventilation during unoccupied periods was implemented. AMS's anatomy lab ventilation optimization was completed in 2017. The labs of the medical building require 24/7 ventilation, but unoccupied ventilation rates were deemed satisfactory after inspection by an industrial hygienist. In addition, Brown has a laboratory ventilation management team that meets quarterly to review energy and safety initiatives. Lab ventilation standards have been developed and continued measures are being evaluated to reduce energy use from fume hoods and sash positions.</i></p>	

<b>5.11. Does your <u>institution's</u> endowment portfolio investments include fossil-fuel companies?</b>	
4	The institution is <b>entirely divested</b> from fossil fuels <b>and</b> has made a <b>commitment to reinvest divested funds</b> into renewable energy companies or renewable energy campus initiatives.
3	The institution is <b>entirely divested</b> from fossil fuels.
2	The institution has <b>partially divested</b> from fossil fuel companies <b>or</b> has made a <b>commitment to fully divest</b> , but <b>currently</b> still has fossil fuel investments.
1	The institution has <b>not divested</b> from fossil-fuel companies, but faculty and/or students are <b>conducting organized advocacy</b> for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been <b>no efforts</b> to change that.
<p><i>Score explanation: Brown University and the Office of Investment have outlined requirements for its fund managers: no investment in tobacco or companies who do business in Sudan. President Paxton announced a commitment to divest from fossil fuel extraction in March 2020. The Investment Office Endowment Report for 2022 stated, "Historically, dedicated fossil fuels investments would have been included in Real Assets but Brown's exposure in the space has been reduced to effectively zero." Previous communication with Managing Director Peter Levine clarified this as a reduction of fossil fuel investments from approximately 5-6% to less than 0.5% of the endowment. Furthermore, he emphasized the endowment has no financial or strategic incentive to pursue investment in fossil fuels and has selected its fund managers with this in mind. Additionally, the Investment Office Endowment Report for 2023 stated "A newly endowed gift will create the Subra Suresh Symposium at the Frontiers of Technology and Society, honoring the former National Science Foundation director and Brown professor-at-large. The symposium will bring leading scholars to campus to share their work on topics central to Brown Engineering's mission to advance technological solutions to pressing societal problems. The initial symposium in 2024 will focus on sustainable energy."</i></p>	

<b>Section Total (22 out of 32)</b>	<b>69%</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 the Warren Alpert Medical School of Brown University

The following table presents the individual section grades and overall institutional grade for the Warren Alpert Medical School of Brown University Planetary Health Report Card.

Section	Raw Score %	Letter Grade
<b>Planetary Health Curriculum (30%)</b>	$(47/72) \times 100 = 65.28\%$	B
<b>Interdisciplinary Research (17.5%)</b>	$(11/17) \times 100 = 64.71\%$	B
<b>Community Outreach and Advocacy (17.5%)</b>	$(8/14) \times 100 = 57.14\%$	C+
<b>Support for Student-led Planetary Health Initiatives (17.5%)</b>	$(10/15) \times 100 = 66.67\%$	B
<b>Campus Sustainability (17.5%)</b>	$(22/32) \times 100 = 68.75\%$	B
<b>Institutional Grade</b>	$(65.28 \times 0.3 + 64.71 \times 0.175 + 57.14 \times 0.175 + 66.67 \times 0.175 + 68.75 \times 0.175) = 64.61\%$	<b>B</b>



# Report Card Trends

## Section Overview

This graph demonstrates trends in overall and section grades for the years in which **The Warren Alpert Medical School of Brown University** has participated in the Planetary Health Report Card initiative.

