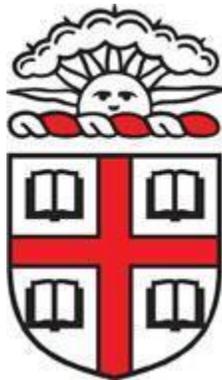




Planetary Health Report Card:

*Warren Alpert School of Medicine at
Brown University*



BROWN
Alpert Medical School

2020-2021 Contributing Team:

- Students: Blaire Byg*, James Thorndike*, Jane Chen, Martin Li, Kanika Malani, Allison Navarette-Welton
- Faculty Mentors: Sarita Warriar, MD
- *Primary Contact: Blaire Byg, blaire_byg@brown.edu and James Thorndike, james_thorndike@brown.edu

Summary of Findings

Curriculum	C+
<ul style="list-style-type: none"> Planetary Health (PH) connections in the curriculum should be made more explicit, with more dedicated time to connecting PH with specific human ailments and organ systems. Alpert Medical School (AMS) should identify PH (including climate change) as a priority theme and include it in learning objectives and test questions.. While there is some PH related content, the majority of this is placed during the first semester of M1. PH content should be more longitudinal and incorporated throughout both the preclinical and clinical curriculum. 	
Interdisciplinary Research	B
<ul style="list-style-type: none"> AMS’s newly established membership in the Planetary Health Alliance and the Global Consortium on Climate and Health Education is encouraging and signals the medical school’s commitment to action. There are several PH-focused researchers affiliated with AMS, many of whom are doing commendable work in PH, such as the Brown University Superfund Research Program. However, there remains a lack of formal support from the medical school for interdisciplinary PH research. In addition to recruiting more diverse PH and healthcare sustainability-focused faculty, AMS should strengthen existing programs like the superfund or create new PH initiatives in order to enhance student involvement in community-facing research in this area. 	
Community Outreach and Advocacy	C
<ul style="list-style-type: none"> In fall 2020, AMS hosted a lecture series on disparities in health that was free for the public and included several talks related to the health impacts of climate change and other environmental factors. AMS also markedly improved its planetary health-related CME course offerings this year. There is one partnership between AMS students and a community environmental justice group for which MS2s can receive service learning credit. AMS should play a larger role in facilitating medical student involvement in community environmental justice groups by advertising opportunities and including at least one environmental justice group in the August service learning orientation for MS1s. AMS should also encourage our teaching hospitals to provide accessible patient-centered materials on planetary health topics. 	
Support for Student-Led Initiatives	B
<ul style="list-style-type: none"> Overall, the medical administration is fairly supportive of student-led planetary health initiatives and has been receptive to feedback on areas where the medical school could improve its commitment to planetary health. The administration could further support student-led initiatives by creating a webpage clearly listing PH-focused faculty for students in search of research mentors, establishing sustainability or PH-specific grant opportunities, and developing a student fellowship program or scholarly concentration designated for PH. 	
Sustainability	B-
<ul style="list-style-type: none"> Brown University has made great strides in its commitment to sustainability including its embrace of LEED certified construction, goal of carbon neutrality by 2040, and robust composting program. In the specific context of the medical school, there are numerous opportunities for improvement, including improved medical student education on sustainable commuting, established sustainability criteria for school events and materials, and measures to increase the direct supply of renewable energy to the AMS building. In embracing these efforts at the operation-level, the school could build a strong foundation for curricular, research, and outreach PH initiatives. 	

Statement of Purpose

Planetary health is human health.

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

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

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

Planetary Health Curriculum

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

Curriculum: General

1. Did your medical school offer elective courses to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
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>Score explanation: There were no specific electives offered this past year with a primary focus on ESH/planetary health. However, there were a few electives that included lectures on planetary health broadly. Specifically, Practical Skills in EMS and Disaster Response, Wilderness Medicine, Advocacy in Action, and Healthcare in America offering healthcare in resource-limited settings, leave-no-trace behind principles in wilderness medicine, and a lecture for clinical students on reducing waste in hospital settings. Additionally, an elective entitled "AMS Environmental Coalition" is being restarted this upcoming semester which heavily focuses on ESH and planetary health.</i></p>	

Curriculum: Health Effects of Climate Change

2. Does your medical school curriculum address the relationship between extreme temperature health risks and climate change, as well as the socioeconomic/racial disparities in extreme heat exposure?	
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>Score explanation: As part of the MI core curriculum, the General Pathology block includes some information on racial disparities in extreme heat exposure and the impacts of climate change on illness. Additionally, Microbiology/Infectious Diseases in the MI curriculum also has a few topics on the role of climate change on pathogenesis and disease transmission.</i></p>	

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 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>Score explanation: Extreme weather events are not covered in the core curriculum. In the Wilderness Medicine and Practical Skills in EMS and Disaster Response electives, extreme weather events, including hurricanes, tsunamis, and earthquakes, and their impacts on individual health are covered.</i></p>	

4. Does your medical school 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>Score explanation: In the Microbiology/Infectious Disease block Dr. Mather briefly discusses the role of climate change in emerging infectious pathogens.</i></p>	

5. Does your medical school curriculum address the cardiorespiratory health effects of climate change, including 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.
<p><i>Score explanation: Within the M1 curriculum there are two lectures focused particularly on the cardiorespiratory health effects of climate change. These lectures, presented by Dr. Kane, are entitled “Microbial Carcinogenesis” and “Chemical Carcinogenesis” which detailed occupational and environmental exposures to carcinogens contributing to lung cancer and mesothelioma. Additionally, as part of the Health Systems Science block in the M1 curriculum there are also 2 lectures entitled “Introduction to Environmental Health” and “Occupational and Environmental Health” presented by Dr. Anandarajah and Dr. Levy, respectively, that include information on cardiorespiratory health and pollution. Air pollution is also discussed as a risk factor for pulmonary diseases in the M2 curriculum.</i></p>	

6. Does your medical school 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.
<p><i>Score explanation: Dr. Levy, in his aforementioned required lecture, discussed the impact of climate change on the prevalence of psychological disorders like anxiety and depression. Also in the Health Systems Science course, Dr. Anandarajah gave a lecture, “Introduction to Environmental Health,” which had one bullet point about the detrimental effects of climate change on mental health. This topic was not covered in the AMS Psychiatry block.</i></p>	

7. 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 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>Score explanation: Dr. Levy’s aforementioned lecture discussed the climate change causes of food insecurity on oneslide and emphasized the disproportionate burden this will have on low- and middle-income countries, an important concept rooted in environmental justice. Additionally, Dr. Vivier’s lecture entitled “Childhood Lead Poisoning in RI” and Mr. Drix’s lecture entitled “Port of Providence: Health, Climate Change, and Environmental Justice at an Urban Deepwater Port” address disparities in water safety.</i></p>	

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

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.

Score explanation: Two lectures given in the Health Systems Science course discuss the impact of climate change on marginalized populations. Dr. Levy's lecture on Occupational and Environmental Health includes a discussion on the increased vulnerability of low-income populations, people of color, people living with chronic disease and disabilities, and people living in countries with high levels of greenhouse gas emissions.

9. Does your medical school curriculum address the unequal 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.

Score explanation: The only instance in which global impacts of climate change were discussed was Dr. Levy's lecture on Occupational and Environmental Health. In this lecture, the inequality in countries producing the most greenhouse gas emissions and the countries impacted by these emissions was mentioned.

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

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

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.

Score explanation: Dr. Anandarajah, in her lecture entitled “Introduction to Environmental Health” included one slide detailing the effects of air pollution and quality on pregnancy outcomes and another discussing minimizing mercury exposure while pregnant.

11. 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 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.

Score explanation: As mentioned previously, Dr. Vivier gave a lecture on childhood lead poisoning in RI. Additionally, Dr. Kane included a few slides in her lectures on chemical and microbial carcinogenesis on poor water quality and its associated threats in RI.

12. Does your medical school curriculum address the unique climate and environmental health challenges that have impacted and are impacting Indigenous communities?

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.

Score explanation: This topic is not covered at all.

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

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.

Score explanation: Two lectures given in the Health Systems Science course discuss the impact of climate change on marginalized populations. Dr. Levy’s aforementioned lecture on Climate Change and

Health includes a section entitled Climate Change and Social Injustice, which discusses the role that human-driven climate change (including anthropogenic toxins) plays in increasing the vulnerability of poor people, people of color, people living with chronic disease and disabilities, and people living in countries with the least greenhouse gas emissions. In the Health Systems Science course, Dr. Vivier lectured on childhood lead poisoning in RI and the disproportionate impact on children who live below the poverty line and in communities with old housing.

Curriculum: Sustainability

14. Does your medical school 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.

Score explanation: Several lectures in the Scientific Foundations of Medicine course teach concepts of diet and nutrition. There were a few lectures discussing the benefits of a plant-based diet in relation to living sustainably and healthily. In another lecture, the “health co-benefits” of climate change policies also discussed plant-based diets.

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

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.

Score explanation: Although this topic was not covered this year, efforts to advocate for reducing healthcare waste and sustainable healthcare practices are being discussed.

Curriculum: Clinical Applications

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

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

Score explanation: The curriculum does not include strategies or opportunities to discuss the health effects of climate change with patients.

17. In training for patient encounters, does your medical school’s 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.

Score explanation: Environmental and exposure histories are not part of the preclinical curriculum. However, the pediatric clerkship does include some information on taking an exposure history specifically in regards to lead poisoning.

Curriculum: Administrative Support for Planetary Health

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

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.

Score explanation: AMS has established a task force focused on responding to feedback from the 2020 PHRC. This includes a working group dedicated to integrating planetary health topics across the four year curriculum. Also, the medical school is in the process of reinstating an Environmental Coalition

elective. Lastly, there are efforts underway to implement healthcare waste management within the medical school.

19. 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 standalone lectures.
0	There is minimal/no education for sustainable healthcare.

Score explanation: Planetary health/ESH is only discussed in a few lectures that were mentioned above throughout the curriculum. Additionally, these lectures are primarily in the M1 curriculum. However, the AMS planetary health taskforce is actively working to better integrate these topics.

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

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

Score explanation: The medical school does not offer incentives to faculty to incorporate topics of planetary health into courses.

Section Total (34 out of 58)	C+
-------------------------------------	-----------

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

Interdisciplinary Research

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

1.Are there researchers engaged in planetary health research and healthcare sustainability research at your medical school?	
4	Yes, there are faculty members at the School of Medicine who have a primary research focus in planetary health and healthcare sustainability.
3	Yes, there are faculty members at the School of Medicine who have a primary research focus in planetary health or healthcare sustainability.
2	Yes, there are individual faculty members at the School of Medicine who are conducting research related to planetary health or healthcare sustainability, but it is not their primary research focus.
1	There are planetary health and/or healthcare sustainability researchers at the institution, but none associated with the medical school.
0	No, there are no planetary health and/or healthcare sustainability researchers at the institution or medical school at this time.
<p><i>Score explanation: There are several AMS-affiliated investigators with a primary research focus in planetary health, specifically the human health consequences of environmental and occupational toxin exposures. Dr. Kim Boekelheide and Dr. Agnes B. Kane are both Professors of Pathology and Laboratory Medicine at Brown with a focus on environmental exposures who are working on projects through the Brown University Superfund Research Program, an initiative to identify and develop solutions to environmental agent impacts on community health. Dr. David A. Savitz is a Professor of Epidemiology with joint appointments in OB/GYN and Pediatrics at AMS whose research focuses on the health effects of environmental agents on reproductive health outcomes. To our knowledge, there are no AMS faculty with a primary research focus on healthcare sustainability.</i></p> <p><i>Although planetary health researchers exist both at the Brown medical school and institution in general, it is important to note that they still make up a very small percentage of Brown researchers. In addition, research topics tend to center on the health effects of toxicant exposures. While this is an extremely important issue, topics such as the health consequences of extreme temperatures, vector-borne diseases, and air pollution should be emphasized as well.</i></p>	

2. Is there a dedicated department or institute for interdisciplinary planetary health research at your institution?	
3	There is at least one dedicated department or institute for interdisciplinary planetary health research.
2	There is not currently a department or institute for interdisciplinary planetary health research, but there are plans to open one in the next 3 years.
1	There is an Occupational and Environmental Health department, but no interdisciplinary department or institute for planetary health research.
0	There is no dedicated department or institute.
<p><i>Score explanation: The Institute at Brown for Environment & Society (IBES) supports research to understand the interactions between natural, human and social systems. According to its website, IBES engagement programs “take research from the lab to the statehouse, the hospital, and the public sphere.” In addition, IBES offers several opportunities for students at Brown to get involved, including several research internship programs for undergraduates and support and funding for Masters and PhD students whose research significantly relates to environmental research. There currently does not exist similar formal support systems for medical students interested in planetary health research.</i></p>	

3. Is there a process by which communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda at your medical school?	
3	Yes, there is a process in which community members impacted by climate and environmental injustice have decision-making power in the climate + environmental research agenda.
2	Yes, there is a process in which community members impacted by climate and environmental injustice advise the climate + environmental research agenda.
1	No, but there are current efforts to establish a process for community members to advise or make decisions on the research agenda.
0	There is no process, and no efforts to create such a process.
<p><i>Score explanation: The Brown University Superfund Research Program includes a Community Engagement Core (CEC) which aims to combine academic and community-based approaches to research through partnerships with community organizations that they term “Stakeholders”. Although the core projects of the Superfund are designed by their Primary Investigators, the CEC works with Stakeholders to identify their needs and craft separate projects around them that have the potential to collaborate with the core projects and investigators. Projects are then carried out using community-based participatory measures. Although the Superfund program is not under nor supported by the medical school, faculty affiliated with AMS play key roles in the program. More collaboration between the two, however, is needed.</i></p>	

[Advance-CTR](#) is a program that includes AMS and the surrounding hospitals which aims to “support clinical and translational research in Rhode Island through funding, research resources and services, and professional development opportunities”. Its most recent NIH renewal application includes a Community Engagement and Outreach (CEO) Core. Although the program focuses on health in general rather than planetary health in particular, it has funded a planetary health-related project in the past.

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

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

Score explanation: While there is no centralized website dedicated to planetary health at AMS, Brown University does have a website called [Sustainability at Brown](#) that features various sustainability efforts at the institution including relevant news, student-led efforts, interdisciplinary collaboration, global engagement, and opportunities for students to get involved. Additionally, the IBES has a [website](#) that centralizes its research focuses, funding/research opportunities for students, and the researchers involved in environmental work.

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

4	Yes, the institution has hosted more than one conference or symposium on topics related to planetary health in the past year, including at least one on climate change.
3	Yes, the institution has hosted one conference or symposium on topics related to planetary health in the past year.
2	Yes, the institution has hosted a conference on topics related to planetary health in the past three years.
1	The institution has not hosted any conferences directly, but they have provided financial support for a local planetary health event.

0	No, the institution has not hosted a conference on topics related to planetary health in the past three years.
<i>Score explanation: Neither AMS nor Brown University has hosted an interdisciplinary planetary health conference in the past three years, nor has the institution provided financial support for a local event.</i>	

6. Has your institution or medical school joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education?	
2	Yes, the medical school has joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education.
1	Yes, the institution has joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education, but the medical school specifically has not.
0	No, the institution has not joined the Planetary Health Alliance or the Global Consortium on Climate and Health Education.
<i>Score explanation: As of 2021, AMS has joined both the Planetary Health Alliance and the Global Consortium on Climate and Health Education. Academic institution PHA members are listed here and consortium members are listed here.</i>	

Section Total (14 out of 19)	B
-------------------------------------	----------

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

Community Outreach and Advocacy

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

1. Does your medical school partner with community organizations to promote planetary and environmental health?	
3	Yes, the medical school meaningfully partners with multiple community organizations to promote planetary and environmental health.
2	Yes, the medical school meaningfully partners with one community organization to promote planetary and environmental health.
1	The institution partners with community organizations, but the medical school is not part of that partnership.
0	No, there is no such meaningful community partnership.
<p><i>Score explanation: Alpert Medical School students currently work with Groundwork RI, a non-profit focused on improving urban environmental stewardship, through the Applied Community Engagement Partnership program run by the Family Medicine Interest Group. MS2s can receive service learning credit from AMS for participating in this project. While the medical school does not actively partner with any other community groups, Brown University's Superfund Research Program has a Community Engagement Core that actively involves community stakeholders in identifying priorities and developing community-based education and programming to address those priorities. AMS has also established a community engagement working group within within the Planetary Health Task Force to suggest improvements in this area.</i></p>	

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

0	The medical school has not offered such community-facing courses or events.
<p><i>Score explanation: In fall 2020, Alpert Medical School offered a lecture series called “Decoding Disparities” that included several lectures focused on the health impacts of climate change. While targeted to medical professionals, the lectures were advertised on the Brown Events website and members of the public were able to register and attend free of charge. However, Alpert Medical School does not offer any courses or events on planetary health that are specifically targeted to community members.</i></p>	

3. Does your medical school have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?	
2	Yes, all students regularly receive communication updates dedicated to planetary health and/or sustainable healthcare.
1	Yes, planetary health and/or sustainable healthcare topics are sometimes included in communication updates.
0	Students do not regularly receive communications about planetary health or sustainable healthcare.
<p><i>Score explanation: Medicine@Brown, a magazine sent to alumni and students, sometimes includes articles about planetary health topics. The daily Events@Brown e-newsletter for medical students also sometimes includes information about planetary health-related events. However, no university update communications provide regular coverage of planetary health topics.</i></p>	

4. Does the medical school offer continuing medical education (CME) courses that address planetary health and/or sustainable healthcare?	
2	Yes, multiple in-person or online CME courses relating to planetary health and/or sustainable healthcare are offered, including at least one with a primary focus of planetary health.
1	Yes, one in-person or online CME course related to planetary health and/or sustainable healthcare is offered.
0	There are no CME courses on planetary health or sustainable healthcare topics.
<p><i>Score explanation: Alpert Medical School offered three online single-credit CME courses with learning objectives relating to planetary health in 2020. These courses were: The Climate Gap (directly focused on how climate change increases health disparities), Health Disparities in Respiratory Diseases (included discussion of environmental risk factors), and Diastolic Heart Failure: A Bad Name for a Bad Disease & Heat Exposure & the Implications for Human Health (included discussion of how climate change will affect health by increasing heat exposure).</i></p>	

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

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

Score explanation: There are no online resources about environmental health exposures available at any of Alpert Medical School's affiliated hospitals.

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

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

Score explanation: There are no online resources about climate change health impacts available at any of Alpert Medical School's affiliated hospitals.

Section Total (7 out of 14)	C
------------------------------------	----------

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

Support for Student-Led Planetary Health Initiatives

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

1. Does your institution offer support for medical students interested in enacting a sustainability initiative?	
2	Yes, the institution offers grants available to medical students for students to enact sustainability initiatives.
1	The medical school encourages sustainability QI projects (to fulfill clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, but there is no student funding available.
0	No, the institution does not offer opportunities or support for sustainability initiatives.

Score explanation: The medical school supported an initiative by a student interest group to implement composting and single-stream recycling programs at the medical school and all affiliated buildings. The composting and recycling programs were implemented in 2019 and have been funded by the medical school. This demonstrates the medical school administration's willingness to support student-driven sustainability initiatives. However, there are no direct funds or grants for students who wish to propose and implement new sustainability initiatives and the onus is largely on the students to seek out sources of funding. Although the [Institute at Brown for Environment and Society](#) offers research, training, and travel awards for PhD students conducting environmental research, there are currently no distinct grants for medical students to establish sustainability initiatives.

2. Does your institution offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
3	The institution offers an explicit paid fellowship for medical students to do research related to planetary health and/or sustainable healthcare.
2	The institution offers paid research opportunities for students and planetary health/sustainable healthcare projects would be considered eligible.
1	There are unfunded research opportunities for students to perform research related to planetary health/sustainable healthcare.
0	There are no opportunities for students to receive funding for planetary health/sustainable healthcare research.

Score explanation: There are no distinct fellowships for medical students regarding planetary health. There is a diversity fellowship that often engages with environmental activism, but it is not explicitly for PH affairs. Students can apply for summer funding for research assistantships in fields of interest, including planetary health and sustainable healthcare projects, as long as a medical school faculty member supports the project.

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

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

Score explanation: The medical school website links to [Brown Vivo](#) which lists all AMS faculty and their interests. Students can search for faculty or for the specific interests of the faculty. The medical school website also links to The Institute at Brown for Environment and Society, which has a page featuring university-wide faculty working with IBES, several of whom are affiliated with the medical school.

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

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

Score explanation: AMS ECo is the student-led group that promotes the intersection of health and environment. It is funded by the school, and while there are no faculty formally listed on its roll (as it is a student-led group), there are multiple AMS faculty that are aware of ECo and are sympathetic toward its activities. AMS BrANCH (Brown Agriculture, Nutrition, and Community Health) is another student-led group that works with community partners to establish green spaces and teach

environmental health and nutrition curriculum at a local elementary school. BrANCH also receives funding from the school.

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

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

Score explanation: There are multiple medical students involved with the Planetary Health Task Force which had its inaugural meeting in December 2020. The task force currently has two working groups focused on improving the planetary health curriculum in the medical school and improving community partnerships on planetary health and the environment. Once the planetary health curriculum proposal is completed by the task force, it will be presented to the medical school curriculum committee, which is the ultimate decision-making body for changes to the curriculum.

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

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

Score explanation:

- **Garden:** *AMS does not have its own garden, however the AMS rooftop has green ground cover which helps reduce heating and cooling demands. BrANCH and students involved in a*

Diabetes Health Equity Zone grant are involved in the growth of community gardens in Providence.

- **Panels, speaker series, or similar events:** *The medical school sponsored a lecture series in the fall of 2020 called [“Decoding Disparities”](#) which examined “how the effects of systemic racism, climate change and social determinants of health have disproportionately and adversely impacted the health of Black and Indigenous individuals and people of color in America.” There was a specific lecture in this series titled “The Climate Gap: How Climate Change Increases Health Disparities” and several other lectures that touched on the links between the environment and health disparities. Furthermore, there is a partnership with the Office of Sustainability to have a climate change and health lecture each year.*
- **Events in which students learn directly from members of a local environmental justice community:** *There were no such institution-sponsored events this year.*
- **Cultural arts events, installations, or performances:** *There are no such institution-sponsored events.*
- **Local volunteer opportunities related to building community resilience to anthropogenic environmental impacts:** *There were no such volunteer opportunities offered this year, in part due to the effects of COVID-19 and the limits that social distancing protocols placed on volunteer opportunities and community engagement.*
- **Wilderness or outdoor programs:** *AMS offers a student orientation program for incoming first years called First-year Orientation at Alpert Med. It has two divisions, one of which, called FOAM Out, includes backpacking and camping as trip options. There is an elective, Wilderness Medicine, that has a backpacking trip and follows leave no trace principles.*

Section Total (10 out of 15)

B

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

Campus Sustainability

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

1. Does your medical school and/or institution have an Office of Sustainability?	
3	Yes, there is an Office of Sustainability with multiple full-time staff dedicated to campus sustainability. If the Office of Sustainability serves the entire campus, there is at least one designated staff member for sustainability at the hospital and/or medical school.
2	There is an Office of Sustainability with one or more full-time staff dedicated to campus sustainability, but no specific staff member in charge of medical school and/or hospital sustainability.
1	There are no salaried sustainability staff, but there is a sustainability task force or committee
0	There are no staff members or task force responsible for overseeing campus sustainability
<p><i>Score explanation: As an entity of Brown University, AMS is overseen by the campus Office of Sustainability. The department has a core staff of eight which includes educators and engineers who serve the medical school as a part of the Brown community. However, there is no staff member responsible solely for the medical school.</i></p>	

2. Does your medical school and/or institution have a stated goal of carbon neutrality by 2050?	
4	The medical school is already carbon neutral.
3	Yes, there is a stated carbon neutrality goal and the medical school has a well-defined and adequate plan in place to achieve this goal.
2	Yes, there is a stated carbon neutrality goal, but the medical school has not created a plan to reach that goal or the plan is inadequate.
1	There is a CO2 emission reduction goal, but it is not one of carbon neutrality.
0	There is no stated goal for reduction of CO2 emissions.
<p><i>Score explanation: Brown University including AMS is not currently carbon neutral. However, Brown has a well-defined plan to achieve carbon neutrality no later than 2040, to which it committed to in</i></p>	

2019, by means of carbon offset, renewably-generated electrification of campus heating, and constructing net-zero buildings. Brown is expected to offset 100% of its electricity use in the next few years by an operational wind farm and an under-construction solar farm.

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

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

Score explanation: The medical school building does not have any on-site renewable energy sources. The building is supplied by the grid, but currently only 2019 data is available. Renewables made up 16.8% of energy sources. Less than 1% was sourced from coal and oil while the remaining was sourced from natural gas and nuclear energy.

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

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

Score explanation: 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 2012. All new construction on Brown's campus must be at least LEED Silver compliant.

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

impact of commuting?	
2	Yes, the medical school has implemented strategies to encourage and provide environmentally-friendly transportation options such as safe active transport, public transport, or carpooling and these options are well-utilized by students. Alternatively, the campus location is not amenable to unsustainable forms of transportation by default.
1	The medical school has implemented some strategies to provide environmentally-friendly transportation options, but the options are unsatisfactorily accessible or advertised.
0	The medical school has not implemented strategies to encourage and provide environmentally-friendly transportation options.
<p><i>Score explanation: AMS generally discourages commuting to school via automobile, as students must pay for on campus parking or utilize metered street parking. Bus rides across the Rhode Island Public Transit Authority system are free to all members of the AMS community. In recent years, the university's office of sustainability conducted a review of medical student commuting behaviors and suggested the implementation of a carpooling network for students, expanded shuttle schedules, and 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. While the university's office of transportation provides some information on its website, AMS does not provide any medical student specific information on sustainable transportation options.</i></p>	

6. Does your medical school have an organics recycling program (compost) and a conventional recycling program (aluminum/paper/plastic/glass)?	
2	Yes, the medical school has both compost and recycling programs accessible to students and faculty.
1	The medical school has either recycling or compost programs accessible to students and faculty, but not both.
0	There is no compost or recycling program at the medical school.
<p><i>Score explanation: AMS has a longstanding aluminum, paper, plastic, and glass recycling program. The medical school began implementing its composting program in 2019, which currently consists of composting bins in each of the three student lounges.</i></p>	

7. Does the medical school apply sustainability criteria when making decisions about the campus food and beverage selections?	
3	Yes, the medical school has adequate sustainability requirements for food and beverages and is engaged in efforts to increase food and beverage sustainability.
2	There are sustainability guidelines for food and beverages, but they are insufficient or optional. The medical school is engaged in efforts to increase food and beverage sustainability.

1	There are sustainability guidelines for food and beverages, but they are insufficient or optional. The medical school is not engaged in efforts to increase food and beverage sustainability.
0	There are no sustainability guidelines for food and beverages.
<p><i>Score explanation: 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.</i></p>	

8. Does the medical school or associated institution apply sustainability criteria when making decisions about supply procurement?	
3	Yes, the medical school has adequate sustainability requirements for supply procurement and is engaged in efforts to increase sustainability of procurement.
2	There are sustainability guidelines for supply procurement, but they are insufficient or optional. The medical school is engaged in efforts to increase sustainability of procurement.
1	There are sustainability guidelines for supply procurement, but they are insufficient or optional. The medical school is not engaged in efforts to increase sustainability of procurement.
0	There are no sustainability guidelines for supply procurement.
<p><i>Score explanation: 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 GreanSeal 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>	

9. Are there sustainability requirements or guidelines for events hosted at the medical school?	
2	Every event hosted at the medical school must abide by sustainability criteria.
1	The medical school strongly recommends or incentivizes sustainability measures, but they are not required.
0	There are no sustainability guidelines for medical school events.
<p><i>Score explanation: 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 paper-free. Additionally, the student run organization, Brown Green Events, provides training and guidelines to assist student groups in throwing sustainable events.</i></p>	

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

2	Yes, the medical school has programs and initiatives to assist with making lab spaces more environmentally sustainable.
1	There are guidelines on how to make lab spaces more environmentally sustainable, but not programs or initiatives.
0	There are no efforts at the medical school to make lab spaces more sustainable.

Score explanation: Across Brown, an initiative to reduce lab ventilation during unoccupied periods was implemented a few years ago. 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.

11. Does your institution’s endowment portfolio investments include fossil-fuel companies?

4	The institution is entirely divested from fossil fuels and has made a commitment to reinvest divested funds into renewable energy companies or renewable energy campus initiatives.
3	No, the institution is entirely divested from fossil fuels.
2	The institution has partially divested from fossil-fuel companies.
1	The institution has not divested from fossil-fuel companies, but faculty and/or students are conducting organized advocacy for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been no efforts to change that.

Score explanation: In March 2020, Brown University announced a halt on investments in fossil fuel extraction companies. To date, it has sold 90% of its investments in fossil fuel extraction companies (no commitment exists for non-extraction companies in the fossil fuel industry). This announcement was a culmination of the investment office’s effort, which began in 2014, to holistically reevaluate the risk associated with fossil fuel investments. The university lacks a concrete plan for complete divestment from the fossil fuel industry as well as for reinvestment in sustainable energy. However, the investment office does oversee the Brown University Sustainable Investing Fund and its student-run counterpart, the Brown Socially Responsible Investment Fund, which as small, distinct subsets of the endowment, adhere to environmental, social, and governance investment criteria and support sustainability initiatives at Brown.

Section Total (18 out of 29)	B-
-------------------------------------	-----------

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 School of Medicine

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

Section	Raw Score	Grade
Planetary Health Curriculum (30%)	34 / 58 = 59%	C+
Interdisciplinary Research (17.5%)	14 / 19 = 74%	B
Community Outreach and Advocacy (17.5%)	7 / 14 = 50%	C
Support for Student-led Planetary Health Initiatives (17.5%)	10 / 15 = 66.7%	B
Campus Sustainability (17.5%)	18 / 29 = 62%	B-
Institutional Grade	62%	B-