



Planetary Health Report Card:

University of Massachusetts Chan Medical School



UMass Chan
MEDICAL SCHOOL

2021-2022 Contributing Team:

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Summary of Findings

Overall	C
<u>Curriculum</u>	D
<ul style="list-style-type: none"> Although some climate change and planetary health topics are integrated into the medical school curriculum, these topics are concentrated in the first and second years of medical school and leave out many important topics. Recommendations: UMass Chan should update its climate change curriculum website to allow students to join existing curricular projects and explore the current state of climate and health curriculum integration at UMass. UMass should prioritize the integration of the outsized impact of climate change on marginalized communities, global climate and health inequities, and the impact of climate change on indigenous communities. 	
<u>Interdisciplinary Research</u>	C-
<ul style="list-style-type: none"> UMass Chan Medical School joined Practice Greenhealth and the Global Consortium on Climate Change and Health Education this past year. The medical school encourages students to participate in research through the research pathway, capstone projects, and summer fellowships, but there are no specific research fellowships dedicated to planetary health. Recommendations: UMass Chan should consider developing an interdisciplinary climate and health research center in collaboration with the other UMass campuses. 	
<u>Community Outreach and Advocacy</u>	C +
<ul style="list-style-type: none"> UMass Chan meaningfully partnered with two local organizations, ReGreen Springfield and Elders Climate Action MA during the population health clerkships in the fall of 2021, allowing students to develop real world climate advocacy skills and to learn more about environmental justice in their community. Recommendations: UMass should continue to foster and grow partnerships with climate-minded organizations in addition to developing a community facing climate and health course for the local community. 	
<u>Support for Student-Led Initiatives</u>	C
<ul style="list-style-type: none"> UMass Chan has a funded student and faculty supported organization, UMMS Coalition for Climate Action, which is now in its third year of operation. UMass also supports a thriving, student-run community garden. Recommendations: The UMass Chan Student Body Committee should develop a student sustainability liaison position on their governing body. This position would help to streamline sustainability initiatives across the campus and better communicate student requests, concerns, and recommendations to clinical faculty, administrators, and the Office of Sustainability. 	
<u>Campus Sustainability</u>	C
<ul style="list-style-type: none"> The Office of Sustainability at UMass Chan Medical School works tirelessly to support student-led initiatives around climate and health, most recently by increasing the number of electric vehicle charging stations available on campus and facilitating the distribution of community farm shares to students. Recommendations: The UMass system should prioritize divesting from all indirect fossil fuel holdings in the coming year. 	

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 “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”. 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.
- **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 (for example, undergraduate departments (USA), other related departments eg 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 example).

Added to our resources this 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. Did your medical school offer elective courses (student selected modules) to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
3	Yes, the medical school has offered more than one elective whose primary focus is ESH/planetary health in the past year.
2	Yes, the medical school has offered one elective whose primary focus is ESH/planetary health in the past year.
1	The medical school does not have any electives whose primary focus is ESH/planetary health, but there are one or more electives that include a lecture on planetary health.
0	No, the medical school has not offered any electives on planetary health or electives that include ESH/planetary health topics in the past year.
<p><i>Score explanation: At UMass Chan Medical school all second year medical students are required to complete a 2 week population health clerkship. Students are able to choose from a catalog of various longitudinal public health projects that are led by both faculty and students. This year, a local retired family medicine physician and climate advocate organized a new clerkship focused on climate advocacy within the healthcare space. The goal of the clerkship is for students to become familiar with climate threats specific to Massachusetts, climate legislation specific to the state, and understand medical professionals' role in advocating for climate policy. Another elective clerkship provided students with the opportunity to work with ReGreen Springfield on a project entitled "Healing Springfield: Promoting Physical and Mental Health through Urban Greening" that focused on urban planning, the health co-benefits of green spaces, and environmental justice. Given the presence of two clerkships offered that primarily focused on climate change and/or planetary health, we are awarding three points.</i></p>	

Curriculum: Health Effects of Climate Change

2. Does your medical school curriculum address the relationship between extreme heat, health risks, and climate change?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: In the UMass Chan Medical School's required Foundations of Medicine 1 (FOM1) course, lecturers include one slide discussing the impact of heat stress on the tumor suppressor genes and cell apoptosis.</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: In the UMass Chan Medical School's required FOM1 Course, Cancer Concepts, lecturers include one slide discussing the impact of extreme weather events on cancer survival- including how extreme weather events often lead to increased exposure to carcinogens and decreased access to medical treatment.</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: This topic was historically discussed in an optional enrichment elective on climate change and health, but the elective did not take place this year so zero points are being awarded.</i></p>	

5. Does your medical school curriculum address the respiratory health effects of climate change	
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and air pollution?

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

Score Explanation: In the FOM1 course, Development Structure and Function (DSF), Terry Flotte MD offers a case-based learning style lecture on the consequences of climate change and global warming on allergic rhinitis and asthma. The lecture touches on the biological effects of pollution, ground level ozone, particulate matter and indoor air pollution, as well as the racial and socioeconomic disparities of exposure and disease burden. Additionally, in the second-year course, Organ Systems and Disease, in a lecture of Obstructive Lung Disease, lecturer John A. Rankin MD briefly addresses the connection between ozone, particulate matter, and earlier onset and longer duration pollen seasons and respiratory health.

6. Does your medical school curriculum address the cardiovascular health effects of climate change, including increased heat?

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

Score explanation: In the FOM1 course, Foundation of Health and Disease (FHD) students are required to complete an independent learning module on the connection between air pollution and vascular disease. The module emphasizes the relationship between particulate matter from both anthropogenic sources and climate-related sources (e.g. wildfires, and dust) and vascular disease, such as coronary atherosclerosis.

7. 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: In the FOM2 course, “The Brain: Nervous System and Behavior,” Mai-Lan Rogof MD, acknowledges the impact of climate change on mental health in her introductory lecture. She also provides a list of optional reading assignments and multimedia resources on the various connections between climate change and health including the effect of climate change and depression in young people, extreme weather events and PTSD and rising temperatures and suicide rates.</i></p>	

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 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: The medical school curriculum does not address the relationships between health, individual patient food and water security, ecosystem health, and climate change. There was one student-led lecture that addressed this in the past, but the session did not occur this year so no points were awarded.</i></p>	

9. Does your medical school curriculum address the outsized impact of climate change on marginalized populations such as those with low SES, women, communities of color, Indigenous communities, children, homeless populations, and older adults?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: There was one student-led lecture and student-led elective that addressed these topics in the past, but neither the lecture nor the elective occurred this year so no points were awarded.</i></p>	

10. Does your medical school curriculum address the unequal regional health impacts of climate change globally?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.

1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: There was one student-led lecture and student-led elective that addressed these topics in the past, but neither the lecture nor the elective occurred this past year so no points were awarded.</i></p>	

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

11. Does your medical school curriculum address the reproductive health effects of industry-related environmental toxins (e.g. air pollution, pesticides)?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: This topic was not covered in the core curriculum at UMass Chan. Historically it had been addressed in the Optional Enrichment Elective on Climate Change and Health which will be running again in the Fall of 2022.</i></p>	

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 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: At the University of Massachusetts Medical School, students are required to participate in community service clerkships, known as Population Health Clerkships, in their second year. One of the clerkships works with the group ReGreen Springfield, a group dedicated to planting trees in Springfield, MA, where the UMMS-Baystate campus and Baystate Medical Center are located. As part of the clerkship, students are given a tour of the city, which shows the students the neighborhoods most affected by traffic-related environmental health concerns. Students are educated on local policy decisions, and infrastructure developments that are implicated in current dangerous levels of traffic-related air pollutants, that have had widespread health impacts, specifically on low income communities of color. The students performed a quantitative study of the tree canopy of the eligible neighborhoods and gathered qualitative data from Springfield community leaders, and public health NGOs, to help identify perceived challenges and the Springfield landscape.</i></p>	

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

Score explanation: There was one student-led lecture that addressed this topic in the past, but the lecture did not occur this year so no points were awarded.

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 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: In the first-year course Determinants of Health, students learn about various factors that contribute to the prevalence of disease in specific populations, the access and receipt of care, and the discrepancies in the healthcare system. The Determinants of Health course provided a document with summarized research articles discussing climate change and its role as a determinant of health, while also providing links to these primary and secondary sources. The articles included those that covered how women, children, and people of color are at a greater risk for the impacts of climate change on their health. In another first-year course, titled Epidemiology and Biostatistics, students are required to read a peer reviewed article on healthful eating as it related various socioeconomic groups. Students were required to answer a series of questions relating to the case including one question which encouraged students to think about how climate change may impact the availability of healthful food.

Curriculum: Sustainability

15. 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.
<p><i>Score explanation: The University of Massachusetts Medical School does not address the environmental and health co-benefits of a plant-based diet in the core curriculum. However, lectures on the co-benefits of a plant-based diet were included in the student elective Culinary Medicine. Speakers included Nicole Broushet, vegan restaurant owner, as well as Dr. Frank Domino, family medicine physician, and Dr. Michelle Dalal, pediatrician. All speakers indicated the health benefits of a plant based diet, though the ties to climate change were more subtle. Students learned how to cook and advise patients of cooking affordable plant based meals.</i></p>	

16. Does your medical school curriculum address the carbon footprint of healthcare systems?	
3	This topic was explored in depth by the core curriculum
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: Historically, this topic was covered in a student run optional enrichment elective that focused on climate change and health. Although the elective is hoping to return in fall 2022, this elective did not occur this year and therefore no points are being awarded.</i></p>	

17. Does your medical school curriculum cover these components of sustainable clinical practice in the <u>core</u> curriculum? (1 point each)	
1	Waste production within the healthcare system and strategies for reducing waste in clinical activities, such as in the operating room
1	The impact of inhalers on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers.
1	The impact of anaesthetic gases on the healthcare carbon footprint and ways to reduce anesthesia environmental impacts, such as total intravenous anaesthesia or choosing less environmentally anaesthetic gas options with reduced greenhouse gas emissions
1	The environmental impact of pharmaceuticals and over-prescribing as a cause of climate health harm. Alternatively teaching on deprescribing where possible and its environmental and health co-benefits would fulfill this metric.

1	The health and environmental co-benefits of non-pharmaceutical management of conditions where appropriate such as exercise or yoga classes for type 2 diabetes; social group activities such as gardening for mental health conditions; active transport such as bicycle schemes for obesity. This is commonly known as social prescribing in the UK.
1	The health and environmental co-benefits of avoiding over-medicalisation, over-investigation and/or over-treatment
<p><i>Score explanation: UMass Chan does not address these topics in its core curriculum. There is focus on non-pharmaceutical management of conditions where appropriate within the first year “Doctoring and Clinical Skills” Course, but there is no explicit connection made with environmental health.</i></p>	

Curriculum: Clinical Applications

18. 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
<p><i>Score explanation: Although this topic was historically addressed in a student-run lecture given to all third year medical students, this lecture did not occur this year and therefore zero points are being awarded. The medical school does not address this topic in its core curriculum.</i></p>	

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 core curriculum includes strategies for taking an environmental history.
1	Only elective coursework includes strategies for taking an environmental history.
0	No, the curriculum does not include strategies for taking an environmental history.
<p><i>Score explanation: The UMass Chan “Doctoring and Clinical Skills” course that primarily teaches students how to conduct a history and physical does not include strategies for taking an environmental history in their 2021-2022 curriculum.</i></p>	

Curriculum: Administrative Support for Planetary Health

20. Is your medical school currently in the process of implementing or improving Education for Sustainable Healthcare (ESH)/planetary health education?	
4	Yes, the medical school is currently in the process of making major improvements to ESH/planetary health education.
2	Yes, the medical school is currently in the process of making minor improvements to ESH/planetary health education.
0	No, there are no improvements to planetary health education in progress.
<p><i>Score explanation: The University of Massachusetts Chan Medical School is in the process of making minor improvements to planetary health education. Notably, although there is a website dedicated to climate and health education at UMass Chan, the website appears unfinished and lacks resources or updates on planetary health curricular activities.</i></p> <p><i>UMass is currently rebuilding their curriculum, and the “Societal Forces Impacting Health and Disease” longitudinal focus topic has a core domain called “Environmental forces” that will require course directors to address climate change trends, the impact of climate change on health and disease, disaster prevention and preparedness, and environmental justice in each block of their courses throughout the preclinical years. Importantly, there are no climate-specific curriculum committees or positions on the committee that are dedicated to integrating planetary health. Additionally, the improvement of planetary health education initiatives is largely student driven at this moment.</i></p>	

21. How well are the aforementioned planetary health/Education for Sustainable Healthcare topics integrated longitudinally into the core curriculum?	
6	Planetary health/ESH topics are well integrated into the core medical school curriculum.
4	Some planetary health/ESH topics are appropriately integrated into the core medical student curriculum.
2	Planetary health/ESH is not integrated and is primarily addressed in (a) standalone lecture(s).
0	There is minimal/no education for sustainable healthcare.
<p><i>Score explanation: Currently, the topics are well-interspaced into the first-year curriculum including courses in biochemistry (related to exposure to free radicals produced by pollutants), genetics (related to the effect of pollutants on DNA methylation patterns), pulmonary health, epidemiology and biostatistics, with added information in the first semester of the second-year curriculum, including topics such as pulmonary pathophysiology. Additionally, there is a resource page that is included in the Psychiatry block of the University’s “Brain” course that includes information on how climate change is impacting mental health. Currently, the majority of the information related to planetary health and</i></p>	

climate change is within the first-year curriculum, though planetary health and climate change is also discussed in three separate courses of the second-year curriculum. Given the lack of climate and health education in the third and fourth year curricula as well as the overall lack of mention of several important climate and health topics, we are awarding four points.

22. Does your medical school employ a member of faculty to specifically oversee and take responsibility for the incorporation of planetary health and sustainable healthcare as a theme throughout the course?

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

Score explanation: No, UMass Chan does not employ a faculty member to specifically oversee curricular integration of planetary health and sustainable healthcare. The Deans at UMass have been receptive to supporting further integration of planetary health into the curriculum, but none of them are specifically held to or responsible for this work.

Section Total (23 out of 69)

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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.

1. Are there researchers engaged in planetary health research and healthcare sustainability research at your medical school?	
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:</i> We carefully reviewed the School of Medicine research network. UMass Medical School has over 300 basic-science faculty in various appointments and close to 3000 associated clinical faculty. We were unable to identify faculty at the Medical School whose primary research or interdisciplinary endeavors focused on planetary health and/or healthcare sustainability. Several faculty members have research interests focused on climate change and sustainability. For example, one researcher at UMass Chan recently published on environmental sustainability in Mohs surgery.</p> <p>UMass Medical School is part of a 5-campus system incorporated as the University of Massachusetts. Within the University System we did identify institutes and programs whose focuses are on planetary health and healthcare sustainability. Two examples of these programs are the Institute for Global Health based at the University of Massachusetts - Amherst campus with research focused on global pollution trends. Another example is the Sustainable Hospital Program located at the University of Massachusetts - Lowell campus. We are not awarding points for researchers at these programs, however, because they are not housed at the medical school.</p>	

2. Is there a dedicated department or institute for interdisciplinary planetary health research at your institution?

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

Score explanation: The University of Massachusetts Chan Medical School has an Environmental Health and Safety Department which has a [“mission to provide a safe environment to all people associated with the institution.”](#) At the institution level The University of Massachusetts also has several examples of interdisciplinary institutes focused on planetary health. The “Safe Home Care and Hospitals” program has a specific research program focused on Sustainable Hospitals (referenced above in question 1). Another example is the Institute for Diversity Science based at the University of Massachusetts - Amherst Campus. Within the Institute for Diversity Science is an interdisciplinary Climate research group composed of over 60 faculty and researchers with the specific mission to [“pursue a wide range of projects that examine the diversity of human impacts and responses in the context of global climate change.”](#)

While determining this grade and formulating the score explanation, we also considered the tremendous opportunity for further development of interdisciplinary research on planetary health and health care sustainability, especially at the medical school. While the UMass - Amherst Climate research group contains 60 faculty members, none of those listed hold a primary appointment in the School of Medicine.

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

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

Score explanation: No such process or efforts to create such a process were identified.

4. Does your institution have a planetary health website that centralizes ongoing and past

research related to health and the environment?	
3	There is an easy-to-use, adequately comprehensive website that centralizes various campus resources related to health and the environment including all of the following: upcoming events, leaders in planetary health at your institution, and relevant funding opportunities.
2	There is a website that attempts to centralize various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive.
1	The institution has an Office of Sustainability website that includes some resources related to health and the environment.
0	There is no website.
<p><i>Score explanation:</i> No unified institutional website dedicated to announcing and communicating resources about Planetary Health or Health Care Sustainability was identified at the University of Massachusetts. The University of Massachusetts Medical School does have an Office of Sustainability website with some resources and project updates.</p>	

5. Has your institution recently hosted a conference or symposium on topics related to planetary health?	
4	Yes, the medical school has hosted at least one conference or symposium on topics related to planetary health in the past year.
3	Yes, the institution has hosted at least one conference or symposium on topics related to planetary health in the past year.
2	Yes, the institution has hosted a conference on topics related to planetary health in the past three years.
1	The institution has not hosted any conferences directly, but they have provided financial support for a local planetary health event.
0	No, the institution has not hosted a conference on topics related to planetary health in the past three years.
<p><i>Score explanation:</i> UMass Chan Medical School has not hosted a conference related to planetary health in the past three years.</p>	

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 not a member of such an organization
<i>Score explanation: UMass Chan Medical School is currently a member of Practice Greenhealth as an academic partner. We also recently joined the Global Consortium on Climate and Health Education.</i>	

Section Total (7 out of 17)	C-
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Are there additional research resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Community Outreach and Advocacy

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

1. Does your medical school partner with community organizations to promote planetary and environmental health?	
3	Yes, the medical school meaningfully partners with multiple community organizations to promote planetary and environmental health.
2	Yes, the medical school meaningfully partners with one community organization to promote planetary and environmental health.
1	The institution partners with community organizations, but the medical school is not part of that partnership.
0	No, there is no such meaningful community partnership.
<p><i>Score explanation: During the Population Health Clerkship in the Population-based Urban and Rural Community Health (PURCH) track, medical students are able to work with ReGreen Springfield, an organization that promotes the planting of trees in the Springfield community. Students are able to work alongside organizational leaders during dedicated curriculum time and ultimately present their work back to the larger class as part of the Population Health Clerkship. Similarly, students also have the opportunity to work with Elders Climate Action MA during the Population Health Clerkship during which they learn from community advocates and engage in local climate advocacy.</i></p> <p><i>The UMass Medical School Office of Sustainability also has several meaningful community partnerships. For example, they currently partner with the Regional Environmental Council in support of a community garden that is now located on the medical school campus.</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: Although the UMass Office of Sustainability does hold annual Earth Day events focusing on sustainability, these events are typically only open to UMass students and employees. There are currently no community-facing courses or events at UMMS that address planetary health.</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: The Office of Sustainability has a regular newsletter, Growing Green, which includes sustainability tips and information about efforts on the UMMS campus.</i></p>	

4. Does the institution or main affiliated hospital trust engage in professional education activities targeting individuals post graduation with the aim of ensuring their knowledge and skills in planetary health and sustainable healthcare remain up to date during their professional career?	
2	Yes, the institution or main affiliated hospital trust offers multiple in-person or online courses relating to planetary health and/or sustainable healthcare for post-graduate providers, including at least one with a primary focus of planetary health.
1	Yes, the institution or main affiliated hospital trust offers one course relating to planetary health and/or sustainable healthcare for post-graduate providers
0	There are no such accessible courses for post-graduate providers
<p><i>Score explanation: Based on our research, there appear to be no such accessible courses for post-graduate providers.</i></p>	

5. Does your medical school or its primary affiliated hospital 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.
<p><i>Score explanation: For the purposes of this evaluation, Baystate Health was considered to be an affiliated hospital with UMMS. Both Baystate and UMass Memorial have educational materials on environmental exposures within their respective patient information libraries, accessible online. UMass Memorial's patient library specifically discusses mold in the environment, air pollution, carbon monoxide poisoning, lead poisoning, radon, and multiple chemical sensitivity. The asthma section of the patient library also contains a resource on occupational triggers of asthma.</i></p>	

6. Does your medical school or its primary affiliated hospital 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.
<p><i>Score explanation: The Baystate Medical Center patient library links to a resource on climate change through the National Library of Medicine. The UMass Memorial does not have any patient-facing materials about the impacts of climate on health.</i></p>	

Section Total (8 out of 14)	C+
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Are there additional community engagement and advocacy resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Support for Student-Led Planetary Health Initiatives

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

1. Does your institution offer support for medical students interested in enacting a sustainability initiative/QI project?	
2	Yes, the institution <i>either</i> offers grants for students to enact sustainability initiatives/QI projects <i>or</i> sustainability QI projects are part of the core curriculum.
1	The medical school encourages sustainability QI projects (to fulfill clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, but there is no student funding available and there is no requirement to participate.
0	No, the institution does not offer opportunities or support for sustainability initiatives or QI projects.
<p><i>Score explanation: Students can choose to work on a sustainability QI project through the Interprofessional Quality Improvement Council, which provides the structure, training and faculty and peer support and feedback to conduct QI projects. This council is not specific to sustainability, but sustainability QI projects are still eligible for participation. There is no funding available through this opportunity.</i></p> <p><i>Additionally, UMMS has some funding available for students who are interested in enacting sustainability initiatives. While these resources are not specifically for sustainability initiatives, students may use them for projects to further sustainability work. One example of a grant available to students is the MLK Jr. Semester of Service Student Award, which supports student-driven service projects in the communities that surround the UMass Worcester campus.</i></p>	

2. Does your institution offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
2	The institution has a specific research program or fellowship for students interested in doing planetary health/sustainable healthcare research.
1	There are research opportunities for students to perform research related to planetary health/sustainable healthcare but these require student initiative to seek these out and carry them out in their spare time.
0	There are no opportunities for students to engage in planetary health/sustainable healthcare research.

Score explanation: While there are a few groups of individuals conducting research that relates to planetary health at UMass Medical School, there is no institutional advertisement of the projects that are being conducted. Students interested in getting involved in climate related research must seek out these opportunities through mentorship or connecting with the student-led Coalition for Climate Action.

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 UMMS website features a webpage called "[Growing Green: Campus Sustainability](#)" that showcases a few sustainability initiatives across campus, however, it lacks information on planetary health and sustainable healthcare projects or mentors.

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

Score explanation: The [UMMS Coalition for Climate Action](#) is a funded student organization with faculty support dedicated to supporting planetary health and sustainability in healthcare.

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: Representatives from the UMMS Coalition for Climate Action proposed the creation of a student sustainability representative to serve on the Student Body Committee with support from the Office of Sustainability following the publication of the 2020-2021 PHRC, but have not yet been awarded approval for such a position.</i></p>	

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)
<p><i>Score explanation:</i></p> <ul style="list-style-type: none"> • <i>The Community Garden Interest Group at UMass Chan Medical School runs a community garden located behind the medical school. They provide fresh produce to the greater UMass community and allow students to participate in planting and harvesting of crops.</i> • <i>The UMMS Coalition for Climate Action leads several planetary health related events per semester, all of which are geared toward student learners. For example, this past semester the UMMS Coalition for Climate Action hosted a viewing party for an American Academy of Pediatrics webinar on climate change and pediatric health equity and also hosted an educational session featuring a speaker from the UMass Chan Medical School Office of Sustainability.</i> • <i>Students had the opportunity to learn from ReGreen Springfield during their Population and Community Health Clerkship in the fall of 2021 during a project entitled “Healing Springfield: Promoting Physical and Mental Health through Urban Greening.” The students surveyed</i> 	

residents in three environmental justice neighborhoods of the city to determine the perceived benefits gained from increased tree plantings and enhancements of existing tree cover. They also performed a quantitative study of the tree canopy of the eligible neighborhoods using i-Tree software which examines the structure, function and economic value of trees in the landscape. Finally, they gathered qualitative data from Springfield community leaders and public health NGOs to help identify perceived challenges and the Springfield landscape.

Section Total (8 out of 15)

C

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

Campus Sustainability

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

1. Does your medical school and/or institution have an Office of Sustainability?	
3	Yes, there is an Office of Sustainability with multiple full-time staff dedicated to campus sustainability. If the Office of Sustainability serves the entire campus, there is at least one designated staff member for sustainability at the hospital and/or medical school.
2	There is an Office of Sustainability with one or more full-time staff dedicated to campus sustainability, but no specific staff member in charge of medical school and/or hospital sustainability.
1	There are no salaried sustainability staff, but there is a sustainability task force or committee
0	There are no staff members or task force responsible for overseeing campus sustainability
<p><i>Score explanation: The University of Massachusetts Medical School has an Office of Sustainability with two full time employees – one Sustainability & Energy Manager and one associate director of sustainability & campus services. This Office of Sustainability is specific to the UMass Medical School campus but does collaborate with Offices of Sustainability at all UMass campuses for institution wide initiatives and Earth Week celebrations. There is no sustainability task force or committee for the medical school.</i></p>	

2. How ambitious is your medical school/institution’s plan to reduce its own carbon footprint?	
4	The institution has a stated goal of carbon neutrality by 2030 or earlier and the medical school / institution has a well-defined and adequate plan in place to achieve this goal.
3	Yes, there is a stated carbon neutrality goal by at least 2040 and the medical school/institution has a well-defined and adequate plan in place to achieve this goal.
2	Yes, there is a stated carbon neutrality goal by at least 2040, but the medical school/institution has not created a plan to reach that goal or the plan is inadequate.
1	There is a CO2 emission reduction goal, but it is not one of carbon neutrality.
0	There is no stated goal for reduction of CO2 emissions.

Score explanation: The UMMS Office of Sustainability has a stated goal of reducing Scope 1 and Scope 2 greenhouse gas emissions by 15% by 2026 and has a detailed 5-year plan to achieve this goal which includes supporting replacement of inefficient HVAC equipment, recommissioning existing building systems, and increasing use of a heat exchanger. The UMass system, of which the medical school is a part, has a commitment to achieving climate neutrality by 2050. There are no specific plans in place for achieving the goal of climate neutrality by 2050. Since the system-wide carbon neutrality goal is stated to occur after 2040, we awarded the institution 1 point in this category.

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: All medical school buildings are currently 100% powered by fossil fuels. In 2020, UMass Chan completed a solar study to evaluate the potential for on-site renewable energy production at its main campus. The study determined that on-site renewable energy production would provide marginal economic benefit. However, the institution is exploring opportunities to align renewable energy installations with LEED certification of new construction, as well as potential off campus installations. UMass Chan is a part of the UMass system, which is the largest public “off taker” of renewable energy in the Massachusetts Commonwealth. “Off taking” is the process of purchasing electricity from renewable sources.

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 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: Sustainable building practices are utilized for new buildings. A new research building is currently being constructed on campus with a 75-well geothermal system; the target for this building is LEED gold. The most recent building to be constructed, the Albert Sherman Center, is LEED gold and was designed with sustainability in mind. The building was designed for thermal optimization and 95% of the steel that was used was made from recycled material. The medical school follows “LEED plus 2.0” building standards for new construction as required by MA [Executive Order 594](#). Extensive recommissioning has been undertaken, but no buildings have been completely retrofitted.

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.

Score explanation: Many students live close to campus and choose to walk, although single occupancy vehicles remain the primary means of student transport. There are currently 32 electric vehicle charging ports on campus. Covered bicycle parking is located in the parking garages and bike racks are available outside most occupied buildings. There is a shuttle system in place that is not electrified. The Worcester Regional Transit Authority serves the UMass campus and connects to all major local routes in addition to connecting to the local commuter rail stop for access to Boston. Employees can also choose to carpool, for which they would be able to split the cost of one parking permit and access parking spots that are closer to the entrance. The student learning communities sponsor a “Go Green challenge” one to two times per year which encourages carpooling amongst students.

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.

Score explanation: UMass Chan Medical School does not currently have a composting program. They do have conventional recycling programs, but recycling bins are not always easily accessible or conveniently placed. They also have a program called "SWAP," short for "Surplus with a Purpose," which facilitates redistribution of surplus office supplies, lab equipment, and furniture that would have otherwise been disposed of.

7. Does the medical school apply sustainability criteria when making decisions about the campus food and beverage selections (e.g. local sourcing, reduced meat, decreased plastic packaging)?

3	Yes, the medical school has adequate sustainability requirements for food and beverages, including meat-free days or no red-meat, and is engaged in efforts to increase food and beverage sustainability.
2	There are sustainability guidelines for food and beverages, but they are insufficient or optional. The medical school is engaged in efforts to increase food and beverage sustainability.
1	There are sustainability guidelines for food and beverages, but they are insufficient or optional. The medical school is not engaged in efforts to increase food and beverage sustainability.
0	There are no sustainability guidelines for food and beverages.

Score explanation: Sustainable food purchasing requirements are included in the contract language with the UMass food provider, NexDine. Specific language includes that "maximizing the purchase and utilization of foods within a 200-mile radius of Worcester; minimizing waste, and prioritizing the use of plant-based foods. NexDine filters cooking oil to reduce overall usage by 35% and the used cooking oil is recycled into yellow grease for animal feed. The on campus Albert Sherman Center dining facility is the only Green Certified Restaurant in the Worcester area. Dining was closed for most of 2021 and supply chain issues made sourcing local produce more challenging. In the summer of 2021, UMass offered community supported agriculture shares to the community which resulted in 80+ shares being distributed. There is also a student-run community garden which was expanded in 2021.

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.

Score explanation: The UMass Sustainability Council is collaborating with the Unified Procurement Services Team to receive better data to measure success in procuring more environmentally responsible supplies and resources across all UMass campuses using the AASHE STARS data framework. In the [2021-2026 Sustainability and Climate plan](#), the university sets a goal to implement environmentally preferable purchasing guides and standards. To achieve this, a series of strategies are outlined to integrate sustainability language into purchasing documents, support sustainable lab materials purchasing, and increase partnership with sustainability purchasing organizations. Concrete actions to achieve these strategies in the proposed timeline are lacking.

9. Are there sustainability requirements or guidelines for events hosted at the medical school?

2	Every event hosted at the medical school must abide by sustainability criteria.
1	The medical school strongly recommends or incentivizes sustainability measures, but they are not required.
0	There are no sustainability guidelines for medical school events.

Score explanation: There are no sustainability requirements or guidelines for events hosted at the medical school. The UMMS Sustainability Plan includes plans to develop a sustainable foods event guide, but this has not yet been created or implemented.

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: A past [fume hood efficiency project](#) in the Lazare Research Building at UMass Medical School has resulted in reduced costs and energy consumption from laboratory spaces. There is also a chemical “exchange” program for unopened chemicals still in good condition to reduce waste of unused chemicals. Additionally, the Office of Sustainability has an ongoing “shut the sash” campaign that encourages lab members to lower the sashes of fume hoods to reduce energy usage. The UMMS Sustainability plan outlines that UMass Chan will extend support for more sustainable procurement practices of laboratory chemicals, office supplies, electronics, and other goods by 2022 but actions have not yet been to achieve this goal.

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 or has made a commitment to fully divest, but currently still has fossil fuel investments.
1	The institution has not divested from fossil-fuel companies, but faculty and/or students are conducting organized advocacy for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been no efforts to change that.
<p><i>Score explanation: UMass has completely divested from both coal and fossil fuels for all directly held shares. We are categorizing this as a partial divestment given that indirect endowment holdings, or endowment holdings not directly held by UMass may still include investment in fossil fuels.</i></p>	

Section Total (16 out of 31)	C
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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%

**Within each grade bracket, a score in the top 5% (5 to 9%), receives a "+", and a score in the bottom 5% (0-4%) receives a "--". For example, a percentage score of 78% would be a B+.*

Planetary Health Grades for the University of Massachusetts Chan School of Medicine

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

Section	Raw Score	Letter Grade
Planetary Health Curriculum (30%)	$(23 / 69) \times 100 = 33\%$	D
Interdisciplinary Research (17.5%)	$(7 / 17) \times 100 = 41\%$	C-
Community Outreach and Advocacy (17.5%)	$(8 / 14) \times 100 = 57\%$	C+
Support for Student-led Planetary Health Initiatives (17.5%)	$(8 / 15) \times 100 = 53\%$	C
Campus Sustainability (17.5%)	$(16 / 31) \times 100 = 52\%$	C
Institutional Grade	46%	C

Report Card Trends

Section Overview

This graph demonstrates trends in overall and section grades for the years in which University of Massachusetts Chan Medical School has participated in the Planetary Health Report Card initiative.

