



---

# **Planetary Health Report Card**

## **(Medicine):**

*University of Massachusetts Chan  
Medical School*

---



**UMass Chan**  
MEDICAL SCHOOL

2022-2023 Contributing Team:

- Students: Rachael Lyons, Eden Diamond, Helen Mizrach, Cameron Both, Ryan Marano, Elizabeth Waltman, Amos Armony, Jade Refuerzo
- Faculty Mentors: Dr. Matthew Masiello, MD MPH
- \*Primary Contact: Amos Armony, [amos.armony@umassmed.edu](mailto:amos.armony@umassmed.edu)

## Summary of Findings

Overall	C
<u>Curriculum</u>	C
<ul style="list-style-type: none"> <li>• 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 topics. Implementation of planetary health content has been largely student driven.</li> <li>• <b>Recommendations:</b> UMass Chan should update its website to allow students to join existing curricular projects and explore the current state of climate and health curriculum integration at UMass Chan. UMass Chan should prioritize the integration of the impact of climate change on marginalized and indigenous communities, global climate, and health inequities. They should recruit and assign faculty specifically to oversee the creation and implementation of planetary health into the core curriculum.</li> </ul>	
<u>Interdisciplinary Research</u>	C-
<ul style="list-style-type: none"> <li>• UMass Chan Medical School has continued partnerships with Practice Greenhealth and the Global Consortium on Climate Change and Health Education. The school encourages students to participate in research, but there are no specific research fellowships dedicated to planetary health.</li> <li>• <b>Recommendations:</b> UMass Chan should consider developing an interdisciplinary climate and health research center in collaboration with the other UMass campuses.</li> </ul>	
<u>Community Outreach and Advocacy</u>	B-
<ul style="list-style-type: none"> <li>• UMass Chan meaningfully partnered with ReGreen Springfield and Elders Climate Action MA during the population health clerkships allowing students to develop climate advocacy skills and to learn more about environmental justice in their community.</li> <li>• <b>Recommendations:</b> 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.</li> </ul>	
<u>Support for Student-Led Initiatives</u>	B+
<ul style="list-style-type: none"> <li>• UMass Chan has a funded student and faculty supported organization, UMMS Coalition for Climate Action, They also have invited students to join a curricular Climate Change Taskforce. UMass also supports a thriving, student-run community garden and a student-run elective focused on Climate Action</li> <li>• <b>Recommendations</b> The UMass Chan Student Body Committee should develop a student sustainability liaison position on their governing body.</li> </ul>	
<u>Campus Sustainability</u>	C
<ul style="list-style-type: none"> <li>• The Office of Sustainability at UMass Chan Medical School works to support student-led initiatives around climate and health, increasing the number of electric vehicle charging stations and facilitating the distribution of community farm shares to students.</li> <li>• <b>Recommendations:</b> The UMass system should prioritize divesting from all indirect fossil fuel holdings in the coming year. The school should implement a sustainable event guide for events held on campus.</li> </ul>	

# Statement of Purpose

*Planetary health is human health.*

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

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

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

# Definitions & Other Considerations

## Definitions:

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

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

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

**Other considerations:**

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

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

# Planetary Health Curriculum

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

## Curriculum: General

1. Did your <u>medical school</u> offer elective courses (student selected modules) to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
3	Yes, the medical school has offered <b>more than one</b> elective whose primary focus is ESH/planetary health in the past year.
2	Yes, the medical school has offered <b>one</b> elective whose primary focus is ESH/planetary health in the past year.
1	The medical school does <b>not</b> have any electives whose primary focus is ESH/planetary health, but there are one or more electives that include a <b>lecture</b> on planetary health.
0	No, the medical school has <b>not</b> offered any electives on planetary health or electives that include ESH/planetary health topics in the past year.
<p><i>Score explanation: UMass Chan Medical school second year students were required to complete a two week population health clerkship. Students chose from a catalog of various public health projects, some of which had climate focuses. One clerkship worked directly with Elders Climate Action Massachusetts. The goal of the clerkship was 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 the opportunity to work with <a href="#">ReGreen Springfield</a> on a project that focused on urban tree planning, the health co-benefits of green spaces, and environmental justice in Springfield, MA. In addition, all first and second year students at UMass Chan have the opportunity to take Optional Enrichment Electives which are supplementary curriculums. One elective offered in the fall of 2022, "Climate Health &amp; Action", offered students a six week lecture series detailing the numerous intersections of climate and healthcare. Given the presence of two clerkships and one optional elective 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 <u>medical school</u> curriculum address the relationship between extreme heat, health risks, and climate change?	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.

2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation: The UMass Chan Medical School's retired Foundations of Medicine 1 (FOM1) course included 1 slide discussing the impact of heat stress on the tumor suppressor genes and cell apoptosis. This was not carried over into the new curriculum, however this topic was addressed in the Climate Health &amp; Action optional elective. Dr. Health Alker, Jennifer Bradford, and Julie Skarha presented on the health effects of extreme heat generally and explained their research more specifically on health outcomes in incarcerated populations with varying degrees of cooling at their facilities. This topic was also broadly addressed by the elective's introductory lecture by Dr. Gaurab Basu who outlined the major health equity consequences of climate change.</i></p>	

<b>3. Does your <u>medical school</u> curriculum address the impacts of extreme weather events on individual health and/or on healthcare systems?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation: Score explanation: In the UMass Chan Medical School's required first year Vista curriculum Principles course, 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. The Vista Epi-Bio course mentioned health care delivery interruption post extreme weather events. In the Climate Health &amp; Action optional elective, Dr. Gaurab Basu and Dr. Amy Collins both addressed extreme weather events' disruptions in healthcare delivery and healthcare systems.</i></p>	

<b>4. Does your <u>medical school</u> curriculum address the impact of climate change on the changing patterns of infectious diseases?</b>	
3	This topic was explored <b>in depth</b> by the <b>core</b> curriculum.
2	This topic was <b>briefly</b> covered in the <b>core</b> curriculum.
1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.
<p><i>Score explanation: This topic was discussed by Dr. Howard Heller during an optional enrichment elective, Climate Health &amp; Action. Dr Heller, an infectious disease specialist, discussed the geographic spread and reemergence of various vector borne diseases due to changing weather patterns. Students learned how climate change will affect infectious disease spread, severity, and geographic endemicity.</i></p>	

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

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

*Score explanation: In the second year respiratory block, 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. Lastly, in the optional elective, Climate Health & Action, students heard Dr. Brita Lundberg (Boston Physicians for Social Responsibility) present on the health effects of air pollution which included a detailed explanation of the pulmonary and cardiovascular consequences.*

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

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

*Score explanation: In the second year cardiovascular system block students are offered 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. Additionally, during the optional elective, Climate Health & Action, Dr. Health Alker, Jennifer Bradford, and Julie Skarha presented on the health effects of extreme heat specifically on incarcerated populations. In a different session during the elective, students heard from Dr. Bhargavi Chekuri about the risks posed by extreme heat on pregnant people, particularly in their third trimester.*

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

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



1	This topic was covered in <b>elective</b> coursework.
0	This topic was <b>not</b> covered.

*Score explanation: In the fall of 2022, second year students taking “The Brain: Nervous System and Behavior,” heard from Dr. Mai-Lan Rogof, about the impact of climate change on mental health during her introductory lecture. She also provided 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. In the fall of 2023 this information will be presented to second year students as part of the new Nervous System Block. Additionally, the optional elective, Climate Health & Action included a lecture given by Dr. Lise Van Susteren from the Climate Psychiatry Alliance, detailing the trends in climate anxiety and tools to help patients.*

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

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

*Score explanation: The relationships between patient food and water security, ecosystem health, and climate change were addressed in two optional courses: The Climate & Action optional elective and the Rural Population Health Clerkship. In the elective, multiple lecturers touched briefly on climate change’s impact on contamination of water and decreasing nutrient content of food being detrimental to human health. Through the Clerkship, students had the opportunity to volunteer on Many Hands Organic farm and learn from the farm owner about the intimate relationships between climate change, ecosystem health, and human health.*

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

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

*Score explanation: During the optional elective, Climate Health & Action, Dr. Health Alker, Jennifer Bradford, and Julie Skarha presented on the health effects of extreme heat specifically on incarcerated populations. They described the findings of their research which explored the discrepancy in health outcomes depending on incarceration facility temperature regulation. The group discussed the numerous ways that vulnerable populations suffer inequitably from the health effects of climate change.*

*In another session of the elective, students learned from Dr. Bhargavi Chekuri, about the unique ways that climate change impacts women, girls, and gender minorities.*

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

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

*Score explanation: 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.*

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

*Score explanation: This topic was addressed in the Optional Enrichment Elective on Climate Health & Action through a presentation by Dr. Bhargavi Chekuri, the co-director of the Diploma in Climate Medicine at University of Colorado School of medicine. Dr. Chekuri explained the increased exposure that women have to environmental toxins globally due to gendered occupational divisions and briefly mentioned reproductive health effects such as increased miscarriage and pregnancy complications.*

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

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

*Score explanation: At the University of Massachusetts Chan Medical School, second year students were required to participate in population health clerkships. 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 members to help identify perceived challenges to urban tree planting. Through the Optional Elective, Climate Health & Action, students learned from Dr. Brita Lundberg about the local climate initiatives being organized by Boston Physicians for Social Responsibility. Dr. Lundberg discussed local power plant projects and the consequent contaminated surrounding neighborhoods. She also described the problem of gas leaks and the local legislative efforts to minimize their effects on local communities.*

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

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

*Score explanation: As part of the Optional Elective, Climate Health & Action, Dr. Bhargavi Chekuri discussed the unique knowledge that indigenous women have about inter-related issues of poverty, health, water and food systems, energy management and sustainability. She described the importance of including these communities in conversations around climate solutions and amplifying their voices.*

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

*Score explanation: In the first-year course, titled Foundations of Prevention, Treatment, and Disease, 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. The discussion that followed helped students understand the inequitable effects of climate change specifically in relation to access to nutritional food. Within the Climate Health & Action optional elective, multiple lectures including Dr. Gaurab Basu's introduction and Dr. Brita Lundberg's air pollution talk, discussed the inequitable effects of environmental pollutants on marginalized communities.

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

*Score explanation:*

*In the first year course Principles II, during the Epi-Bio Block, students read and review an article entitled “Healthy Eating and Risks of Total and Cause-Specific Death among Low-Income Populations of African-Americans and Other Adults in the Southeastern United States: A prospective Cohort Study” by Yu, D. et al. As part of the discussion, students were asked “Are there any additional factors related to a changing climate and other environmental exposures that could affect the conclusions of the study? Explain.”*

*In addition, lectures in the student elective Culinary Medicine touched on the co-benefits of a plant-based diet. 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.*

**16. Does your medical school curriculum address the carbon footprint of healthcare systems?**

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

*Score explanation: As part of the Optional Elective, Climate Health & Action, Dr. Amy Collins from Health Care Without Harm presented to students about the numerous ways in which the healthcare sector both contributes to and is impacted by climate change. Students learned that healthcare contributes 8.5% of total U.S. emissions, that the majority of those emissions are scope three emissions, largely from supply chain and pharmaceuticals, and that clinical care is the single largest driver of emissions. Students were taught that as clinicians they have opportunities to reduce emissions through*

using a climate lens to identify low-value, inefficient care and prioritize prevention. Lastly, Dr. Collins reviewed several organizations such as Health Care Without Harm, Practice Greenhealth, and The Cool Food Pledge, all of which are addressing the footprint of healthcare systems.

**17. Does your medical school curriculum cover these components of sustainable clinical practice in the core curriculum? (points for each)**

2	The health <b>and</b> environmental <b>co-benefits</b> of <b>avoiding</b> over-medicalisation, over-investigation and/or over-treatment
2	The environmental impact of <b>pharmaceuticals</b> and over-prescribing as a cause of climate health harm. Alternatively teaching on <b>deprescribing</b> where possible and its environmental and health co-benefits would fulfill this metric.
1	The health <b>and</b> environmental <b>co-benefits</b> of <b>non-pharmaceutical management</b> of conditions where appropriate such as exercise or yoga classes for type 2 diabetes; social group activities such as gardening for mental health conditions; active transport such as bicycle schemes. This is commonly known as social prescribing in the UK.
1	Environmental impact of <b>surgical</b> healthcare on planetary health and the climate crisis, and how can it be mitigated
1	The impact of <b>anaesthetic</b> gases on the healthcare carbon footprint and ways to reduce anaesthesia environmental impacts, such as total intravenous anaesthesia or choosing less environmentally harmful anaesthetic gas options with reduced greenhouse gas emissions
1	The impact of <b>inhalers</b> on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers.
1	<b>Waste production</b> within healthcare <b>clinics</b> and strategies for reducing waste in clinical activities (e.g. single use items in the inpatient or outpatient setting)
0	<i>Score explanation: UMass Chan does not address these topics in its core curriculum. There is focus on non-pharmaceutical management of conditions where appropriate within the clinical skills courses, but there is no explicit connection made with environmental health.</i>

*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 <b>core</b> curriculum.
1	Yes, there are strategies introduced for having conversations with patients about climate change in <b>elective</b> coursework.
0	No, there are <b>not</b> strategies introduced for having conversations with patients about climate change

*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.*

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

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

*Score explanation: The UMass Chan "Doctoring and Clinical Skills" course that primarily teaches students how to conduct a history and physical exam does include strategies for taking an environmental history in their 2022-2023 curriculum. The class is entitled, "Revisiting Problem Solving: The Environmental and Occupational History," and learning objectives include identifying signs and symptoms of environmental/occupational exposures, describing the links between patient signs & symptoms and environmental/occupational exposures, constructing appropriate questions to elicit environmental/occupational exposures. In this class students work through two case presentations where patients present with cough and shortness of breath related to their environmental exposures. In a separate class within the same course entitled "Why is my Stomach Killing me?" students work through an undifferentiated case of a young person who has lethargy and confusion as a result of lead poisoning. Considering both of these classes in the required curriculum address elements of environmental history taking, we are awarding two points.*

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

*Score explanation: 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.*

*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. While there is a faculty committee directly responsible for overseeing the integration of the "Societal Forces*

*Impacting Health and Disease”, there are no climate-specific positions on the committee that are dedicated to integrating planetary health. Concurrently, the curriculum faculty have recently established a climate health task force made up of both students and faculty responsible for overseeing the integration of climate health longitudinally throughout the curriculum. Notably, the committee is still in preliminary planning stages and no concrete curriculum or plan for integration has been established as of yet.*

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

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

*Score explanation: 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 climate change is within the first and second year curriculum though efforts are underway to increase integration throughout the third and fourth years. 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	<b>Yes, the medical school</b> has a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare
0	<b>No, the medical school</b> does <b>not</b> have a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare.

*Score explanation: Yes, UMass Chan has a specific committee dedicated to curriculum integration of “Societal Forces Impacting Health and Disease,” (SFHD) which explicitly includes climate health. The SFHD committee is led by Dr. Susan Hogan, and the integration of this longitudinal focus topic is overseen by Dr. Yasmin Carter. Recently, a climate health curriculum committee solely responsible for integration of planetary health and sustainable healthcare, has been established, though they have only met twice as of March 2023. 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 (33 out of 72)	C
------------------------------	---

Back to Summary Page [here](#)

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



# Interdisciplinary Research

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

1. Are there researchers engaged in planetary health research and healthcare sustainability research at your <u>medical school</u> ?	
3	Yes, there are faculty members at the <b>medical school</b> who have a <b>primary</b> research focus in planetary health <b>or</b> healthcare sustainability.
2	Yes, there are individual faculty members at the <b>medical school</b> who are conducting research <b>related</b> to planetary health or healthcare sustainability, but it is not their primary research focus.
1	There are planetary health and/or healthcare sustainability researchers at the <b>institution</b> , but none associated with the medical school.
0	No, there are <b>no</b> planetary health and/or healthcare sustainability researchers at the <b>institution</b> or <b>medical school</b> at this time.

*Score explanation:* We carefully reviewed the School of Medicine research network. UMass Medical School has over 300 basic-science faculty in various appointments and over 3400 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.

Over the summer of 2022, the same faculty member offered students the opportunity to participate in a summer research project on environmental sustainability in medicine, examining what measures hospital departments can take to increase their environmental awareness and sustainability. This project included a curriculum of lectures, journal reviews on environmental sustainability, and provided students with an opportunity to shadow clinicians to observe potential areas for sustainable intervention.

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 and sustainable urban development. Another example is the Sustainable Hospital Program located at the University of Massachusetts - Lowell campus that promotes research that supports both environmental and patient safety with a focus on cancer and asthma prevention. We are not awarding points for researchers at these programs, however, because they are not housed at the medical school.

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

<b>your institution?</b>	
3	There is <b>at least one</b> dedicated department or institute for interdisciplinary planetary health research.
2	There is <b>not currently</b> a department or institute for interdisciplinary planetary health research, but there are <b>plans</b> to open one in the next 3 years.
1	There is an <b>Occupational and Environmental Health department</b> , but no interdisciplinary department or institute for planetary health research.
0	There is <b>no</b> dedicated department or institute.
<p><i>Score explanation:</i>            The University of Massachusetts Chan Medical School has an Environmental Health and Safety Department which has a "<a href="#">mission to provide a safe environment to all people associated with the institution.</a>" 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 <a href="#">Institute for Diversity Science</a> 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 "<a href="#">pursue a wide range of projects that examine the diversity of human impacts and responses in the context of global climate change.</a>"</p> <p>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 over 60 faculty members, none of those listed hold a primary appointment in the School of Medicine.</p>	

<b>3. Is there a process by which communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda at your <u>medical school</u>?</b>	
3	Yes, there is a process in which community members impacted by climate and environmental injustice have <b>decision-making power</b> in the climate + environmental research agenda.
2	Yes, there is a process in which community members impacted by climate and environmental injustice <b>advise</b> the climate + environmental research agenda.
1	<b>No</b> , but there are <b>current efforts</b> to establish a process for community members to advise or make decisions on the research agenda.
0	There is <b>no</b> process, and <b>no</b> efforts to create such a process.
<p><i>Score explanation: No such process or efforts to create such a process were identified</i></p>	

**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 <b>easy-to-use, adequately comprehensive</b> website that <b>centralizes</b> various campus resources related to health and the environment including all of the following: upcoming events, leaders in planetary health at your institution, and relevant funding opportunities.
2	There is a website that <b>attempts to centralize</b> various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive.
1	The <b>institution</b> has an <b>Office of Sustainability website</b> that includes <b>some</b> resources related to health and the environment.
0	There is <b>no</b> website.
<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 Chan Medical School does have an Office of Sustainability <a href="#">website</a> with some resources and project updates but does not share information about ongoing and past research related to health and the environment.</p>	

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

<b>6. Is your <u>medical school</u> a member of a national or international planetary health or ESH organization?</b>	
1	Yes, the medical school is a member of a national or international planetary health or ESH organization
0	No, the medical school is <b>not</b> a member of such an organization
<p><i>Score explanation:</i> UMass Chan Medical School is currently a member of <a href="#">Practice Greenhealth</a> as an academic partner. We also recently joined the <a href="#">Global Consortium on Climate and Health Education</a>.</p>	

Section Total (7 out of 17)	C-
-----------------------------	----

Back to summary page [here](#)

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

## Community Outreach and Advocacy

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

1. Does your <b>medical school</b> partner with community organizations to promote planetary and environmental health?	
3	Yes, the <b>medical school</b> meaningfully partners with <b>multiple</b> community organizations to promote planetary and environmental health.
2	Yes, the <b>medical school</b> meaningfully partners with <b>one</b> community organization to promote planetary and environmental health.
1	The <b>institution</b> partners with community organizations, but the medical school is not part of that partnership.
0	No, there is <b>no</b> such meaningful community partnership.
<p><i>Score explanation: 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 urban tree planting and examines environmental injustice 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 "Climate Change and Public Health: Advocacy in Action," during the Population Health Clerkship during which they learned about the health impacts of climate change and how to engage in local climate advocacy. Students met with local environmental advocacy groups (Sierra Club, Climate Code Blue, Elders Climate Action, Gas Leaks Allies, etc) and also local state senator, representative, and local lobbyists to advocate for specific green initiatives.</i></p> <p><i>The UMass Medical School Office of Sustainability also has several meaningful community partnerships. For example, they currently partner with the <a href="#">Regional Environmental Council</a> in support of a community garden that is now located on the medical school campus. This year, the garden expanded to include several blueberry bushes. UMass also partners with a local pig farmer who collects food scraps from the campus nearly every week day, helping to combat food waste.</i></p>	

2. Does your <b>medical school</b> offer community-facing courses or events regarding planetary health?	
3	The <b>medical school</b> offers community-facing courses or events at least once every year.

2	The <b>medical school</b> offers courses or events open to the community at least once per year, but they are not primarily created for a community audience.
1	The <b>institution</b> has offered community-facing courses or events, but the <b>medical school</b> was not involved in planning those courses or events.
0	The <b>institution/medical school</b> have not offered such community-facing courses or events.
<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>	

<p><b>3. Does your <u>medical school</u> have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?</b></p>	
2	Yes, all students <b>regularly</b> receive communication updates dedicated to planetary health and/or sustainable healthcare.
1	Yes, planetary health and/or sustainable healthcare topics are <b>sometimes</b> included in communication updates.
0	Students <b>do not</b> receive communications about planetary health or sustainable healthcare.
<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>	

<p><b>4. Does the <u>institution</u> or <u>main affiliated hospital trust</u> 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?</b></p>	
2	Yes, the <b>institution</b> or <b>main affiliated hospital trust</b> offers multiple in-person or online courses relating to planetary health and/or sustainable healthcare for post-graduate providers, including at least one with a primary focus of planetary health.
1	Yes, the <b>institution</b> or <b>main affiliated hospital trust</b> offers one course relating to planetary health and/or sustainable healthcare for post-graduate providers
0	There are <b>no</b> such accessible courses for post-graduate providers
<p><i>Score explanation: Based on our research, there appear to be no such accessible courses for post-graduate providers.</i></p>	

<p><b>5. Does your <u>medical school</u> or its primary <u>affiliated hospital</u> have accessible educational materials for patients about environmental health exposures?</b></p>	
2	Yes, <b>all</b> affiliated hospitals have accessible educational materials for patients.
1	<b>Some</b> affiliated hospitals have accessible educational materials for patients.

0	<b>No</b> 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 <a href="#">Baystate</a> and <a href="#">UMass Memorial</a> 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>	

<b>6. Does your <u>medical school</u> or its <u>primary affiliated hospital</u> have accessible educational materials for patients about climate change and health impacts?</b>	
2	Yes, <b>all</b> affiliated hospitals have accessible educational materials for patients.
1	<b>Some</b> affiliated hospitals have accessible educational materials for patients.
0	<b>No</b> affiliated hospitals have accessible educational materials for patients.
<p><i>Score explanation: The Baystate Medical Center patient library <a href="#">links</a> 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>	

<b>Section Total (9 out of 14)</b>	<b>B-</b>
------------------------------------	-----------

Back to summary page [here](#)

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

## Support for Student-Led Planetary Health Initiatives

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

1. Does your <b>medical school</b> or your <b>institution</b> offer support for medical students interested in enacting a sustainability initiative/QI project?	
2	Yes, the <b>medical school</b> or <b>institution</b> <i>either</i> offers grants for students to enact sustainability initiatives/QI projects <i>or</i> sustainability QI projects are part of the core curriculum.
1	The <b>medical school</b> or <b>institution</b> encourages sustainability QI projects (to fulfill clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, <b>but</b> there is no student funding available and there is no requirement to participate.
0	No, <b>neither</b> the medical school or the institution offer opportunities or support for sustainability initiatives or QI projects.
<p><i>Score explanation: The UMass Chan Medical School has funding that is allocated to each of the student-led “learning communities,” which has been used to fund sustainability projects such as a Kelley Green Week, where teams of students can earn points for their “learning community” by making sustainable choices. Funding is also available through the Student Body Committee, which distributes funds to registered student organizations. These funds have sponsored the creation and upkeep of an on-campus community garden and support the UMass Chan Climate Coalition.</i></p> <p><i>Other resources are made available to students through grant applications. While 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 <b>institution</b> offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
2	The <b>institution</b> has a <b>specific</b> research program or fellowship for students interested in doing planetary health/sustainable healthcare research.
1	There are research opportunities for students to perform research related to planetary health/sustainable healthcare, but these <b>require student initiative</b> to seek these out and carry them out in their spare time.
0	There are <b>no opportunities</b> for students to engage in planetary health/sustainable healthcare research.



*Score explanation: UMass Chan Medical School offers students the opportunity to participate in faculty-designed summer research projects through the Summer Research and Curriculum Exploration Program. One faculty member offered students the opportunity to participate in a summer research project on environmental sustainability in medicine, examining what measures hospital departments can take to increase their environmental awareness and sustainability. Additionally, the first year curriculum in anatomy includes an introduction to the “green burial,” as the UMass Chan Medical School is the first anatomy program in the country to offer a green burial to the anatomical donors. First year students are invited to participate in research in this field. Students otherwise interested in getting involved in planetary health specific research must seek out other opportunities through outside mentorship or connecting with the student-led Climate Coalition.*

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

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

*Score explanation: The UMMS website features a webpage called “[Growing Green: Campus Sustainability](#)” that showcases a few sustainability initiatives across campus and at least one potential mentor that can be contacted. It also includes details on the 2021-2026 Sustainability and Climate Action Plan, with specific information related to sustainable healthcare and medical education. However, the website has not been updated since May of 2022 and thus lacks details on current potential initiatives.*

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

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

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

<b>5. Is there a student liaison representing sustainability interests who serves on a <u>medical school</u> or <u>institutional</u> decision-making council to advocate for curriculum reform and/or sustainability best practices?</b>	
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: As a part of the UMass Chan Medical School Sustainability and Climate Action Plan for 2021-2026, three focus groups have been created: Grounds and Transportation, Materials and Management, and Buildings and Energy. Each of the three groups are accessible to medical students and any member of the UMass Chan community who is interested in brainstorming ideas in supporting sustainable solutions in the areas of focus. These meetings are run by the Office of Sustainability in the Facilities Department.</i></p> <p><i>As of the 2022-2023 Academic year, UMass Chan Medical School is in the process of transitioning to a new curriculum model (VISTA curriculum). A subcommittee of both faculty and medical students known as "Societal Forces Influencing Health and Disease" meets monthly with a goal of incorporating content on nine core domains ranging from Environmental Factors and Climate Change to Social Justice into the new VISTA curriculum. Students serving on this committee have advocated for curriculum reform to enhance coverage of sustainability and climate related content.</i></p>	

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

*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. The Coalition for Climate Action also put on the Climate Health and Action elective, a focused speaker series on the intersection of healthcare and planetary health. Students had the opportunity during the Population and Community Health Clerkship in the Fall of 2022 titled "Climate Change and Public Health: Advocacy for Action" to directly interface with multiple local branches of environmental justice organizations, including Climate Code Blue, Gas Leaks Allies, local branches of the Sierra Club, Elders Climate Action, among others. Several of these groups, such as Climate Code Blue, specifically focused on how the medical community can get involved in Massachusetts-based environmental justice advocacy.*

*There are several wilderness or outdoor programs offered. The Wilderness Medicine elective teaches students how to deal with medical emergencies in the wild by leading hikes and other outdoor experiences. There is also a UMass Medical hiking club that sponsors hiking and wellness walks.*

*Students had the opportunity to learn from ReGreen Springfield during their Population and Community Health Clerkship in the fall of 2022 on a project that focused on urban tree planning, the health co-benefits of green spaces, and environmental justice. The students used i-Tree software to conduct an analysis of tree canopy in the Upper Hill, Old Hill, and McKnight neighborhoods in Springfield to determine where to plant trees to maximize environmental health benefits to residents. They also gathered qualitative data from Springfield community members to identify perceived barriers to urban tree planting. During the week of the clerkship, the students also conducted literature reviews on the multiple physical, psychological, and environmental health benefits of enhanced tree coverage in environmental justice communities.*

<b>Section Total (11 out of 15)</b>	<b>B+</b>
-------------------------------------	-----------

Back to summary page [here](#)

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

# Campus Sustainability

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

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

2. How ambitious is your <b>institution/medical school</b> plan to reduce its own carbon footprint?	
5	The institution/medical school has a <b>written and approved plan</b> to achieve carbon neutrality by <b>2030</b>
3	The institution/medical school has a <b>written and approved plan</b> to achieve carbon neutrality by <b>2040</b>
1	The institution/medical school has a stated goal of carbon neutrality by <b>2040</b> but has <b>not created a plan</b> to reach that goal or the <b>plan is inadequate</b>
0	The institution/medical school does <b>not</b> meet any of the requirements listed above
<p><i>Score explanation: 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</i></p>	

	<p>existing building systems, and increasing use of a heat exchanger. The UMass system, of which the medical school is a part of, 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 no points in this category.</p>
--	---

<p><b>3. Do buildings/infrastructure used by the <u>medical school</u> for teaching (not including the hospital) utilize renewable energy?</b></p>	
--	--

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

*Score explanation: 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 of campus installations. A new educational research building began construction in the past year and within its plans are 75 geothermal wells that are expected to account for 5% of the UMass Chan campus energy needs.*

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

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

*Score explanation: 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 <b>environmentally-friendly transportation options</b> 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 <b>some</b> strategies to provide environmentally-friendly transportation options, but the options are <b>unsatisfactorily</b> accessible or advertised.
0	The medical school has <b>not</b> 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 <b>both</b> compost <b>and</b> recycling programs accessible to students and faculty.
1	The medical school has <b>either</b> recycling <b>or</b> compost programs accessible to students and faculty, but not both.
0	There is <b>no</b> compost or recycling program at the medical school.

*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.*

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

1	There are sustainability guidelines for food and beverages, but they are <b>insufficient or optional</b> . The medical school is <b>not</b> engaged in efforts to increase food and beverage sustainability.
0	There are <b>no</b> sustainability guidelines for food and beverages.
<p><i>Score explanation: 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. In the summer of 2022, 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 2022. The student food pantry also partners with local farms to provide fresh local produce to students.</i></p>	

<b>8. Does the <u>medical school</u> or <u>institution</u> apply sustainability criteria when making decisions about supply procurement?</b>	
3	Yes, the medical school has <b>adequate</b> sustainability requirements for supply procurement <b>and</b> is <b>engaged</b> in efforts to increase sustainability of procurement.
2	There are sustainability guidelines for supply procurement, but they are <b>insufficient or optional</b> . The medical school is <b>engaged</b> in efforts to increase sustainability of procurement.
1	There are sustainability guidelines for supply procurement, but they are <b>insufficient or optional</b> . The medical school is <b>not engaged</b> in efforts to increase sustainability of procurement.
0	There are <b>no</b> sustainability guidelines for supply procurement.
<p><i>Score explanation: 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 <a href="#">2021-2026 Sustainability and Climate plan</a>, 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.</i></p>	

<b>9. Are there sustainability requirements or guidelines for events hosted at the <u>medical school</u>?</b>	
2	Every event hosted at the medical school <b>must</b> abide by sustainability criteria.
1	The medical school <b>strongly recommends or incentivizes</b> sustainability measures, but they are <b>not required</b> .
0	There are <b>no</b> sustainability guidelines for medical school events.
<p><i>Score explanation: There are currently no sustainability requirements or guidelines for events hosted at the medical school. The UMMS Sustainability Plan includes plans to develop a sustainable event guide, but this has not yet been created or implemented.</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 <b>programs</b> and <b>initiatives</b> to assist with making lab spaces more environmentally sustainable.
1	There are <b>guidelines</b> on how to make lab spaces more environmentally sustainable, but not programs or initiatives.
0	There are <b>no</b> efforts at the medical school to make lab spaces more sustainable.

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

*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.*

**Section Total (17 out of 32)**

**C**

Back to summary page [here](#)

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

## Grading



### Section Overview

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

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

*\*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 UMass Chan School of Medicine

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

Section	Raw Score %	Letter Grade
<b>Planetary Health Curriculum (30%)</b>	$(33/72) \times 100 = 46\%$	C
<b>Interdisciplinary Research (17.5%)</b>	$(7/17) \times 100 = 41\%$	C-
<b>Community Outreach and Advocacy (17.5%)</b>	$(9/14) \times 100 = 64\%$	B-
<b>Support for Student-led Planetary Health Initiatives (17.5%)</b>	$(11/15) \times 100 = 73\%$	B+
<b>Campus Sustainability (17.5%)</b>	$(17/32) \times 100 = 53\%$	C
<b>Institutional Grade</b>	$(A \times 0.3 + B \times 0.175 + C \times 0.175 + D \times 0.175 + E \times 0.175) = 554.0\%$	C

# Report Card Trends

## Section Overview

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

### Planetary Health Report Card Trends for UMass Chan Medical School

