Planetary Health Report Card (Medicine):

University of Missouri – Columbia School of Medicine

School of Medicine
University of Missouri

2024-2025 Contributing Team:

- Students: Neha Bollam, Jay Devineni, Taylor A. LaValle, Nicole Walker, Rishi Kondapaneni, Destri Eichman, Samantha Swinfard, Jenny Kim, Shaan Moheet, Paulina Kempa, Juhi Modh, Aishva Kothari, Amy Spencer, Lauren Shaffer, Thanh Phan, Addison Wheatley, Jake Brooks, Carl Laude, Adrienne Hunt, Ashtyn Bevans, Hannah Barnes, Maya Greenquist, Derek Steinback, Aliyah Lyons
- Faculty Mentors: Dr. William Folk

*Primary Contact: Neha Bollam, nbn8c@umsystem.edu

Land acknowledgment:

The University of Missouri-Columbia acknowledges that indigenous peoples and nations, including Osage, Očhéthi Šakówiŋ, Kiikaapoi (Kickapoo), Kaskaskia, and Peoria have stewarded through generations the lands and waterways of what is now the city of Columbia, Missouri. We honor and respect the enduring relationship that exists between these peoples and nations and this land.

Summary of Findings

Overall Grade	C

Curriculum	D

- Over the last year, the University of Missouri-Columbia School of Medicine has continued to add planetary health concepts to the curriculum, including a core curriculum lecture on the impact of climate change on infectious disease epidemiology, as well as a mandatory reading on the association between extreme heat and low birth weight. Despite these additions, many important planetary health concepts remain absent.
- **Recommendations:** Incorporate the impact of climate change on mental health and reproductive health into the medical curriculum. Formally appoint a faculty member dedicated to the longitudinal incorporation of planetary health concepts in the curriculum. Create a planetary health elective course/certificate program.

Interdisciplinary Research	C-

- The University of Missouri-Columbia has several avenues for students and faculty to be involved in interdisciplinary planetary health research, such as the research collaborators tool and the Interdisciplinary Plant Group (IPG) at the Christopher S. Bond Life Sciences Center. However, the School of Medicine appears to only have a peripheral role in the university's interdisciplinary planetary health efforts.
- **Recommendations**: Increase School of Medicine involvement with the Interdisciplinary Plant Group. Organize a conference with the Bond Life Sciences Center to highlight sustainability research. Formally join a national or global planetary health alliance to facilitate collaboration with other universities.

Community Outreach and Advocacy	C+

- The University of Missouri-Columbia School of Medicine offers many community-facing events through our local chapter of Medical Students for a Sustainable Future (MS4SF). MS4SF sends out regular communications related to planetary health and partners with the City of Columbia's Sustainability Office. However, there are currently no educational materials on planetary health for CME or patient education.
- **Recommendations**: Publish educational pamphlets for patients on the MU School of Medicine website. Increase community engagement in events and student involvement with community projects.

Support for Student-Led Initiatives	A

- The University of Missouri-Columbia has research opportunities available for students interested in planetary health but provides few grants or fellowships specific to sustainability initiatives. The university is supportive of student sustainability groups and hosts a variety of co-curricular planetary health events. However, there are no specific student positions dedicated to the advancement of sustainability.
- **Recommendations**: Offer more funding for student-led planetary health initiatives. Create an official "sustainability coordinator" class officer position so students can advocate for sustainability in the school.

Campus Sustainability	C

- The University of Missouri-Columbia's primary medical education building received Platinum LEED certification and prioritized the use of locally sourced materials in its construction. The university has explicit goals for carbon neutrality detailed in the Office of Sustainability's Climate Action Plan.
- **Recommendations**: Establish sustainability guidelines for medical school events and for the procurement of food and drink at MU Health cafeterias. Advocate for the divestment of fossil fuel industries from the University of Missouri-Columbia's endowment portfolio and for increased utilization of renewable energy. Reinstate the composting program at the undergraduate campus and expand to MU Health cafeterias.

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 analysing 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, urbanisation, 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 colour, 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 health professional schools, we have created a Planetary Health Report Card that students internationally can use to grade and compare their institutions on an annual basis. This student-driven initiative aims to compare health professional 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 centred 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 civilization and the state of the natural systems on which it depends." For example, topics such as climate change, declining biodiversity, shortages of arable land and freshwater, and pollution would all fall under the realm of planetary health. Both planetary health and traditional 'environmental health' examine the relationship between human health and the external environment, including extreme temperatures, chemicals, vector-borne diseases, etc. Planetary health explicitly concerns itself with the potential health harms associated with human-caused perturbations of natural systems. Therefore, the human health focus of planetary health makes the field well-adapted for the context of medical school education. Throughout this report card, we use the term planetary health to refer to this broad swath of topics, but resources do not need to explicitly include the term "planetary health" to satisfy the metric.

- **Sustainable Healthcare:** As defined by the Academy of Royal Colleges, sustainable healthcare involves ensuring the ability to provide good quality care for future generations by balancing the economic, environmental, and social constraints and demands within health care settings. A sustainable healthcare system maintains population health, reduces disease burden and minimises use of healthcare services.

- **Education for Sustainable Healthcare (ESH):** is defined as the process of equipping current and future health professionals with the knowledge, attitudes, skills and capacity to provide environmentally sustainable services through health professional education, thus working to decrease the enormous environmental impact of the healthcare industry. Planetary Health Education is an integral part of this education rather than an end in itself. This is because knowledge on Planetary Health is required to be able to fully understand the necessity of sustainable healthcare as well as being part of the broader knowledge needed to fully protect and promote health. In summary, ESH is covered by the three Priority Learning Outcomes of the Centre of Sustainable Healthcare below, and Planetary Health Education is embraced in the first learning objective and is a fundamental requirement to achieve learning outcomes 2 and 3:

    1. Describe how the environment and human health interact at different levels.
    2. Demonstrate the knowledge and skills needed to improve the environmental sustainability of health systems.
    3. Discuss how the duty of a doctor to protect and promote health is shaped by the dependence of human health on the local and global environment.

- **Medical School/Department vs. Institution:** When "Medical school" is specified in the report card, this only refers to curriculum and resources offered by the School/department 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 including all of its campuses. 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 students 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 mould 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. Please be as specific as possible when providing evidence for this metric.

- **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.

- **Core Curriculum:** This refers to taught material that is delivered to the entire cohort of students in one year.

- **Clerkship / Outreach:** 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, outreach or placements. This is a relatively short (approximately 4-8 weeks) period of study and patient-centred clinical experience that takes place as part of the undergraduate programme.

- **Clinical rotation:** This is a term used to refer to placements that students go on (e.g., ophthalmology, surgery, cardiology).

- **Physiotherapy vs Physical Therapy:** For the purposes of this report card these terms are considered interchangeable. However, physiotherapy will be used primarily.

- **Community organisations:** For most institutions, there are existing groups that are not directly affiliated with the university and exist as a product of what the community the institution exists in cares about or needs. These specific community organisations relevant to this report include those that are focused around some aspect of climate and health preservation. These community organisations can include but are not limited to local mutual aid initiatives, underserved-resource distribution groups, clean-up and nature conservation groups, community gardeners, and other environmental-related organisations. If your institution does not have access to local volunteerships with community groups, please report any community organisations your institution or school has collaborated with.

- **Climate justice:** The idea that certain population groups and geographical locations which are disproportionately more impacted by climate change are already economically and socially disadvantaged. This double vulnerability sits alongside pre-existing social justice concerns and should therefore shift policy and practice to mitigate the inequitable effects of the climate crisis.

- **Extractivism:** The removal of natural resources typically in large quantities. Within anthropology this term is often used in the context of colonialism to refer to the

historic seizing of natural resources, a practice which has developed business models tied to ecological degradation and loss of biodiversity.

- **Global South:** Nations that often have less economic and industrial development and are typically in the southern hemisphere. These nations have been found to be disproportionately impacted by the climate crisis.

- **Low socioeconomic status (SES):** An individual or geographical area that across a variety of socioeconomic factors (e.g., income, education, race/ethnicity) is considered vulnerable. This vulnerability has been correlated to more adverse health outcomes often as a consequence of encountering more barriers in accessing and receiving healthcare.

- **Low and Middle-Income Countries (LMIC):** Countries that have lower degrees of economic affluence.

- **Anthropogenic:** Created through human activity

- **Marginalized communities:** Groups excluded from mainstream economic, educational, social, and/or cultural experiences due to race, gender identity, sexual orientation, age, physical ability, language, and/or immigration status (Sevelius et al., 2020).

Other considerations:

- If there are more than one "tracks" at your institution 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). Where possible please indicate the proportion of students that are on each track.

Completed in 2022 a Literature Review by Metric is available for the 2022 medicine report card metrics. We are in the process of updating this review and making it more applicable to all the disciplines. However the review serves as a rough collection of references for further learning and a resource for those advocating for increased planetary health engagement at their institutions.

Planetary Health Curriculum

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

Curriculum: General

1.1. Did your medical school offer elective courses (student selected modules) to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
Yes, the medical school has offered **more than one** elective whose primary focus is ESH/planetary health in the past year. (3 points)	
Yes, the medical school has offered **one** elective whose primary focus is ESH/planetary health in the past year. (2 points)	
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. (1 points)	
No, the medical school has **not** offered any electives on planetary health or electives that include ESH/planetary health topics in the past year. (0 points)	
Score Assigned:	0
Score explanation: The University of Missouri-Columbia School of Medicine did not offer electives on planetary health or electives that include ESH/planetary health topics in the past year.	

Curriculum: Health Effects of Climate Change

1.2. Does your medical school curriculum address the relationship between extreme heat, health risks, and climate change?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	2

Score explanation: The University of Missouri-Columbia School of Medicine has a case objective in Block 2 that discusses the risk factors of coronary artery disease including extreme heat. The school also has two mandatory readings in the Block 4 Introduction to Patient Care (IPC) course that discuss extreme heat. One discussed extreme heat and low birth-weight, and the other discussed extreme heat and maternal morbidity. Furthermore, the school also has a lecture in Block 7 discussing heat exposure and kidney disease. However, none of these examples incorporate how climate change plays a role in extreme heat and its health risks.

1.3. Does your <u>medical school</u> curriculum address the impacts of extreme weather events on individual health and/or on healthcare systems?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	2
Score explanation: The University of Missouri-Columbia School of Medicine added a mandatory reading for the Block 4 Introduction to Patient Care (IPC) course that discusses the association between weather-related extreme heat events and low birth weight. However, since no other aspect of the curriculum addresses the impacts of extreme weather events on individuals or the healthcare system, this is considered brief.	

1.4. Does your <u>medical school</u> curriculum address the impact of climate change on the changing patterns of infectious diseases?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	3
Score explanation: At the University of Missouri-Columbia School of Medicine, a faculty member from the MU Health Infectious Diseases Division gives a dedicated lecture in Block 8 that discusses the impact of climate change on the changing patterns of infectious diseases. All medical students are expected to know the material from this lecture, which is included on the exam for that block.	

1.5. Does your <u>medical school</u> curriculum address the respiratory health effects of climate change and air pollution?	
This topic was explored **in depth** by the **core** curriculum.	
This topic was **briefly** covered in the **core** curriculum.	
This topic was covered in **elective** coursework.	
This topic was **not** covered.	
Score Assigned:	2
Score explanation: The University of Missouri-Columbia School of Medicine curriculum includes a lecture on "Occupational and Environmental Lung Diseases" in Block 6. It discusses occupational lung disease, occupational asthma, acute toxic inhalational injury, smoke inhalation, and interstitial fibrosing diseases. In Block 8, there is a discussion on environmental pollution as a risk factor for respiratory infections. These were only covered briefly but are part of the core curriculum. The University of Missouri-Columbia School of Medicine curriculum also contains a lecture within the pediatric clerkship that mentions the adverse effects of climate change on pediatric asthma, specifically on those of lower socioeconomic groups. This was scored as elective coursework because the lecture was only mandatory for students on the Columbia campus, not students on the Springfield Campus or those completing their rotations in St. Louis. It is also unclear if this lecture will be added as a staple to the pediatrics curriculum.	

1.6. Does your <u>medical school</u> curriculum address the cardiovascular health effects of climate change, including increased heat	
This topic was explored **in depth** by the **core** curriculum.	
This topic was **briefly** covered in the **core** curriculum.	
This topic was covered in **elective** coursework.	
This topic was **not** covered.	
Score Assigned:	3
Score explanation: The University of Missouri-Columbia School of Medicine has one learning objective in Block 2, the cardiovascular physiology curriculum, that addresses this point. As part of the patient-based learning process, students are expected to learn and teach these objectives as they prepare for the final examination. The objective is written as follows: "Outline the pathogenesis and pathology of atherosclerotic coronary artery disease. Summarize the epidemiological evidence regarding known risk factors, including the effects of extreme heat."	

1.7. Does your <u>medical school</u> curriculum address the mental health and neuropsychological

effects of environmental degradation and climate change?	
This topic was explored **in depth** by the **core** curriculum.	
This topic was **briefly** covered in the **core** curriculum.	
This topic was covered in **elective** coursework.	
This topic was **not** covered.	
Score Assigned:	0
Score explanation: The University of Missouri-Columbia School of Medicine does not currently include these topics as part of the curriculum, but several faculty members did note interest in exploring the topic in the future.	

1.8. Does your medical school curriculum address the relationships between health, individual patient food and water security, ecosystem health, and climate change?	
This topic was explored **in depth** by the **core** curriculum.	
This topic was **briefly** covered in the **core** curriculum.	
This topic was covered in **elective** coursework.	
This topic was **not** covered.	
Score Assigned:	3
Score explanation: The University of Missouri-Columbia School of Medicine addresses the relationship between individual patient food, health, and patient care in a lecture on social determinants of health and healthcare disparities during Block 3 of Introduction to Patient Care (IPC). This lecture highlights how environmental factors, including unsafe water and exposure to toxins, influence health outcomes. Additionally, a lecture in Block 8 explores how ecosystem health and climate change impact the distribution of infectious diseases and overall public health.	

1.9. Does your medical school curriculum address the outsized impact of climate change on marginalised populations such as those with low SES, women, communities of colour, Indigenous communities, children, homeless populations, and older adults?
This topic was explored **in depth** by the **core** curriculum.
This topic was **briefly** covered in the **core** curriculum.
This topic was covered in **elective** coursework.
This topic was **not** covered.

Score Assigned:	2
Score explanation: The University of Missouri-Columbia School of Medicine briefly covers the outsized impact of climate change on marginalised populations in the core curriculum during Block 3. In the case objectives for that block, the association between patient non-adherence and social determinants of health (SDOH) is discussed. This is connected with the discussion in an Introduction to Patient Care (IPC) lecture in Block 8 that discusses SDOH and the impact of the surrounding environment on overall health. This could be more in depth by discussing certain environmental factors such as heat exposure, greenspaces, exposure to toxic substances, etc.	

1.10. Does your <u>medical school</u> curriculum address the unequal regional health impacts of climate change globally?	
This topic was explored **in depth** by the **core** curriculum.	
This topic was **briefly** covered in the **core** curriculum.	
This topic was covered in **elective** coursework.	
This topic was **not** covered.	
Score Assigned:	0
Score explanation: The University of Missouri-Columbia School of Medicine does not have formal coursework which compares regional health impacts of climate change in the U.S. or globally. However, informal groups such as the Global Health Scholars Program are attempting to cover this material in the future.	

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

1.11. Does your <u>medical school</u> curriculum address the reproductive health effects of industry-related environmental toxins (e.g. air pollution, pesticides)?	
This topic was explored **in depth** by the **core** curriculum.	
This topic was **briefly** covered in the **core** curriculum.	
This topic was covered in **elective** coursework.	
This topic was **not** covered.	
Score Assigned:	1
Score explanation: The University of Missouri-Columbia School of Medicine curriculum includes course learning objectives that address birth defects and several topics, specifically within embryology and neurology, that have connections to industry-related environmental toxins. While there is no explicit mention of these topics, it is reasonable to assume that students may explore these connections in their required independent learning objectives. However, as this process is not standardized, this was scored as a part of elective coursework.	

1.12. Does your medical school curriculum address important human-caused environmental threats that are relevant to the university's surrounding community?	
This topic was explored **in depth** by the **core** curriculum.	
This topic was **briefly** covered in the **core** curriculum.	
This topic was covered in **elective** coursework.	
This topic was **not** covered.	
Score Assigned:	0
Score explanation: Mid-Missouri is at an increased risk of river-related storm events, tornados, and heat-related incidents. The University of Missouri-Columbia School of Medicine curriculum does not formally address these specific human-caused environmental threats that are relevant to Columbia and the surrounding areas.	

1.13. To what extent does your medical school emphasise the importance of Indigenous knowledge and value systems as essential components of planetary health solutions?	
This topic was explored **in depth** by the **core** curriculum.	
This topic was **briefly** covered in the **core** curriculum.	
This topic was covered in **elective** coursework.	
This topic was **not** covered.	
Score Assigned:	0
Score explanation: The University of Missouri-Columbia School of Medicine curriculum does not currently include Indigenous representation or education about vulnerabilities.	

1.14. Does your medical school curriculum address the outsized impact of anthropogenic environmental toxins on marginalised populations such as those with low SES, women, communities of colour, children, homeless populations, Indigenous populations, and older adults?
This topic was explored **in depth** by the **core** curriculum.
This topic was **briefly** covered in the **core** curriculum.
This topic was covered in **elective** coursework.
This topic was **not** covered.

Score Assigned:	0
Score explanation: The University of Missouri-Columbia School of Medicine curriculum addresses this topic implicitly throughout preclinical coursework. However, there is no specific educational material covering this topic, and faculty agreed that the topics were not sufficiently covered.	

Curriculum: Sustainability

1.15. Does your medical school curriculum address the environmental and health co-benefits of a plant-based diet?	
This topic was explored **in depth** by the **core** curriculum.	
This topic was **briefly** covered in the **core** curriculum.	
This topic was covered in **elective** coursework.	
This topic was **not** covered.	
Score Assigned:	0
Score explanation: The University of Missouri - Columbia School of Medicine curriculum does not currently address the environmental and health co-benefits of a plant-based diet.	

1.16. Does your medical school curriculum address the carbon footprint of healthcare systems?	
This topic was explored **in depth** by the **core** curriculum.	
This topic was **briefly** covered in the **core** curriculum.	
This topic was covered in **elective** coursework.	
This topic was **not** covered.	
Score Assigned:	0
Score explanation: At this point in time, the University of Missouri-Columbia School of Medicine curriculum does not provide educational material that addresses this topic. The Block 8 director for the Introduction to Patient Care (IPC) course has agreed to add this material to the curriculum, but she has not yet found a lecturer who can teach on this topic.	

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

The health **and** environmental **co-benefits** of **avoiding** over-medicalisation, over-investigation and/or over-treatment (2 points)	2
The environmental impact of **pharmaceuticals** and over-prescribing as a cause of climate health harm. Alternatively teaching on **deprescribing** where possible and its environmental and health co-benefits would fulfil this metric. (2 points) .	2
The health **and** environmental **co-benefits** of **non-pharmaceutical management** of conditions where appropriate such as exercise or yoga classes for type 2 diabetes; social group activities such as gardening for mental health conditions; active transport such as bicycle schemes. This is commonly known as social prescribing in the UK. (1 point)	1
Environmental impact of **surgical** healthcare on planetary health and the climate crisis, and how can it be mitigated. (1 point)	1
The impact of **anaesthetic** gases on the healthcare carbon footprint and ways to reduce anaesthesia's environmental impacts, such as total intravenous anaesthesia or choosing less environmentally harmful anaesthetic gas options with reduced greenhouse gas emissions. (1 point)	1
The impact of **inhalers** on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers. (1 point)	1
Waste production within healthcare **clinics** and strategies for reducing waste in clinical activities (e.g. single use items in the inpatient or outpatient setting) (1 point)	1
Score explanation: The University of Missouri-Columbia School of Medicine curriculum covers several of these topics (including overdiagnosis, overtreatment, and nonpharmacologic management of various conditions) within the Introduction to Patient Care course that students are required to take during preclinical years. However, the environmental impacts of these phenomena are not mentioned.	

Curriculum: Clinical Applications

1.18. In training for patient encounters, does your <u>medical school's</u> curriculum introduce strategies to have conversations with patients about the health effects of climate change?	
Yes, there are strategies introduced for having conversations with patients about climate change in the **core** curriculum. (2 points)	
Yes, there are strategies introduced for having conversations with patients about climate change in **elective** coursework. (1 points)	
No, there are **not** strategies introduced for having conversations with patients about climate change. (0 points)	
Score Assigned:	0
Score explanation: The University of Missouri-Columbia School of Medicine curriculum teaches interviewing skills through role play and small group sessions within the Introduction to Patient Care (IPC) course. At this time, no strategies for conversations about health effects of climate change are included.	

1.19. In training for patient encounters, does your medical school's curriculum introduce strategies for taking an environmental history or exposure history?	
Yes, the **core** curriculum includes strategies for taking an environmental history. (2 points)	
Only **elective** coursework includes strategies for taking an environmental history. (1 point)	
No, the curriculum does **not** include strategies for taking an environmental history. (0 points)	
Score Assigned:	1
Score explanation: The University of Missouri-Columbia School of Medicine curriculum does teach students to take an occupational history and address current living situations within the social history section of the patient interview. However, there is little specific training on how to inquire about specific patient exposures to environmental toxins that could impact health. This could be easily incorporated into the existing curricular structure by including specific follow-up questions within the social history interview template provided to students in their Introduction to Patient Care (IPC) course in Block 1.	

Curriculum: Administrative Support for Planetary Health

1.20. Is your medical school currently in the process of implementing or improving Education for Sustainable Healthcare (ESH)/planetary health education?	
Yes, the medical school is currently in the process of making **major** improvements to ESH/planetary health education. (4 points)	
Yes, the medical school is currently in the process of making **minor** improvements to ESH/planetary health education. (2 points)	
No, there are **no** improvements to planetary health education in progress. (0 points)	
Score Assigned:	2
Score explanation: At the University of Missouri-Columbia School of Medicine, as a result of the 2024 PHRC outcomes, multiple block directors responsible for curricular content in the preclinical years took the initiative to add some planetary health-related topics into appropriate lectures and block objectives for the current academic year and are continuing to work with our organization to refine the planetary health curriculum. There is also significant support for the implementation of this change from the deans who recognize planetary health as an important addition to medical education. Many required readings in the Introduction to Patient Care (IPC) course also focus on implications of climate change for future health outcomes, which contribute to planetary health education.	

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

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

Score Assigned:	4
Score explanation: All current integration of planetary health is primarily addressed either in standalone lectures, readings, or within learning objectives that require student-led exploration of these topics.	

1.22. Does your <u>medical school</u> 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?
Yes, the **medical school** has a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare. (1 point)
No, the **medical school** does **not** have a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare. (0 points)

Score Assigned:	0
Score explanation: There is not a specific faculty or staff member currently responsible for overseeing integration of planetary health and sustainability into the medical education curriculum.	

Section Total (25 out of 72)	**34.72%**

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Interdisciplinary Research

Section Overview: ***This section evaluates the quality and quantity of interdisciplinary planetary health research at the 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, institutions 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 emphasised.*

2.1. Are there researchers engaged in planetary health research and healthcare sustainability research at your institution?	
Yes, there are faculty members at the **institution** who have a **primary** research focus in planetary health **or** sustainable healthcare/vetcare. (3 points)	
Yes, there are individual faculty members at the **institution** who are conducting research **related** to planetary health or healthcare sustainability, OR are part of a national/international sustainability working group, but it is not their primary research focus. (2 points)	
There are sustainability researchers at the **institution**, but not specifically associated with healthcare/vetcare. (1 point)	
No, there are **no** planetary health and/or sustainability researchers at the **institution** at this time. (0 points)	
Score Assigned:	1
Score explanation: The University of Missouri-Columbia School of Medicine has a dedicated Interdisciplinary Plant Group (IPG), which is an interdisciplinary research group focused on understanding how plants are adapting to changing environments, and how this effect translates to human and animal health. There are many researchers under the directors' leadership at IPG who are working together to answer these questions. For example, Dr. Lin's primary research is focused on bioremediation, ecological restoration, natural products and development of bioeconomy. Although IPG claims to be affiliated with the School of Medicine, there are no individual faculty members listed who are affiliated with the School of Medicine, and none of their work is specifically related to healthcare sustainability. Due to these limitations, a score of 1 is most appropriate.	

2.2. Is there a dedicated department or institute for interdisciplinary planetary health research at your institution?
There is **at least one** dedicated department or institute for interdisciplinary planetary health research. (3 points)
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. (2 points)

There is an **Occupational and Environmental Health department**, but no interdisciplinary department or institute for planetary health research. (1 points)	
There is **no** dedicated department or institute. (0 points)	
Score Assigned:	3
Score explanation: The Christopher S. Bond Life Sciences Center is an interdisciplinary center at University of Missouri-Columbia that focuses on solving problems intersecting with human and animal health, environment, and agriculture. The Plants For Our Future division of this center is specifically focused on how plants are coping with changes in stressors and how management of these stressors can impact human and animal health. The Interdisciplinary Plant Group (IPG) at the University of Missouri also has similar mission values. IPG is a dedicated interdisciplinary group of several colleges within the institution including the Agriculture, Food and Natural Resources college, Arts and Science, and Engineering college, the School of Medicine, and the USDA-ARS Plant Genetics Research Unit. The aim of this interdisciplinary group is to combine efforts to study how plants are adapting to a changing environment, and how that affects human and animal health. Based on this information, a score of 3 is justified for the University of Missouri-Columbia.	

2.3. Is there a process by which communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda at your institution?	
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. (3 points)	
Yes, there is a process in which community members impacted by climate and environmental injustice **advise** the climate + environmental research agenda. (2 points)	
No, but there are **current efforts** to establish a process for community members to advise or make decisions on the research agenda. (1 points)	
There is **no** process, and **no** efforts to create such a process. (0 points)	
Score Assigned:	0
Score explanation: 'The Connector' is a collaborative effort between the University of Missouri-Columbia's division of research, innovation, and impact and the office of extension and engagement that functions to connect the ideas of the community through outreach and engagement activities as well as by providing professional development, consulting, and connections to researchers. MU Extension, itself, also aims to connect with the rural community in order to support agriculture and the state's natural resources, which would be subject to hardships in the event of extreme weather, climate change, and environmental injustice. Additionally, it aims to increase the number of rural high school graduates and to align research, teaching, and clinical approaches to address health issues prevalent in rural communities. However, it does not appear that the community has input or decision-making power regarding the research agenda, and it does not appear that there is intent to create a process to give the community a voice on the matter at this time.	

2.4. Does your institution have a planetary health website that centralises ongoing and past research related to health and the environment?	
There is an **easy-to-use, adequately comprehensive** website that **centralises** 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. (3 points)	
There is a website that **attempts to centralise** various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive. (2 points)	
The **institution** has an **Office of Sustainability website** that includes **some** resources related to health and the environment. (1 point)	
There is **no** website. (0 points)	
Score Assigned:	3
Score explanation: Sustain Mizzou is a student-run environmental program at the University of Missouri-Columbia that aims to educate students, faculty, and the community with resources and information related to environmental events and organizations. Although the central theme of Sustain Mizzou does not include any information regarding research, the interdisciplinary nature of this initiative connects students and faculty across multiple departments to collaborate on research projects concerning health and the environment. Sustain Mizzou also includes an easy to use virtual web tour that highlights the initiatives taken on the Mizzou campus as well as guides to obtain more information and a calendar for current events. The Interdisciplinary Plant Group (IPG) at the University of Missouri makes up what Sustain Mizzou lacks by highlighting the research focus on sustainability in a user-friendly website. Furthermore, there are several student-led organizations at the University of Missouri-Columbia School of Medicine where the focus is on sustainability and planetary health. To highlight a few, there are "Medical Students for a Sustainable Future" and "Cultivate Health in Medicine: Nutrition & Agriculture." These communities have a focus on volunteering events with the Columbia community.	

2.5. Has your institution recently hosted a conference or symposium on topics related to planetary health?
Yes, the **institution** has hosted at least one conference or symposium on topics related to planetary health in the past year. (4 points)
Yes, the **institution** has hosted at least one conference or symposium on topics related to sustainable healthcare/vetcare in the past year. (3 points)
Yes, the **institution** has hosted a conference on topics related to planetary health / sustainable healthcare/vetcare in the past three years. (2 points)
The **institution** has not hosted any conferences directly, but they have provided financial support for a local planetary health event. (1 point)

No, the **institution** has not hosted a conference on topics related to planetary health in the past three years. (0 points)

Score Assigned:	0

Score explanation: The Christopher S. Bond Life Sciences Center at the University of Missouri-Columbia has several groups that focus on planetary health research, but there are no current plans to host a planetary health conference. The University of Missouri-Columbia research department may host a few events related to planetary health as part of a guest lecture series, but there are currently no dedicated lecture series on this topic.

2.6. Is your institution a member of a national or international planetary health or ESH/ESV organisation?
Yes, the institution is a member of a national or international planetary health **or** ESH/ESV organisation. (1 points)
No, the institution is **not** a member of such an organisation. (0 points)

Score Assigned:	0

Score explanation: The University of Missouri-Columbia School of Medicine is not listed in the members list of the Planetary Health Alliance or the Global Consortium on Climate and Health Education. School administration confirmed that there is no current membership with planetary health organizations.

Section Total (7 out of 17)	**41.18%**

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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 colour. Institutions should partner with local communities affected by climate change and pollution to share information about environmental health threats, advocate together for change, and provide opportunities for students to be a part of this work.*

3.1. Does your institution partner with community organisations to promote planetary and health?	
Yes, the **institution** meaningfully partners with **multiple** community organisations to promote planetary and environmental health. (3 points)	
Yes, the **institution** meaningfully partners with **one** community organisation to promote planetary and environmental health. (2 points)	
The **institution** does not partner with community organisations, but has participating in community focused events relating to planetary health. (1 point)	
No, there is **no** such meaningful community partnership. (0 points)	
Score Assigned:	3
Score explanation: Our local MS4SF chapter is connected with the Missouri Coalition for the Environment (MCE) and coordinates with them on environmental advocacy issues. We also have a relationship with Volunteer Columbia, with whom we have adopted a 0.25 mile section of a local trail, where we periodically pick up trash and uproot invasive species such as bush honeysuckle and wintercreeper. Additionally, our MS4SF chapter is connected with Mayor Barbara Buffaloe and the City of Columbia Office of Sustainability, with whom we host speaking events. Through this connection, students can volunteer with a number of sustainability projects developed by the City of Columbia, such as "Show Me The Heat" and the "Youth Monarch Conservation Program."	

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

The **institution/medical school** have not offered such community-facing courses or events. (0 points)

Score Assigned:	3

Score explanation: The University of Missouri-Columbia offers numerous community facing events related to planetary health, mostly through Sustain Mizzou, our university's undergraduate sustainability group. These events include regular garden workdays, campus cleanups, stream cleans, tailgate recycling, and beekeeping. Additionally, our chapter of MS4SF has hosted or been involved with at least one community-facing event since our existence, including events with the City of Columbia Office of Sustainability, non-profit environmental advocacy organizations, and Springfield Community Gardens. We also work annually with Climate Leaders At Mizzou (CLAM) to petition the University of Missouri to divest from fossil fuel companies.

3.3. Does your institution have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?

Yes, all students **regularly** receive communication updates dedicated to planetary health and/or sustainable healthcare. (2 points)
Yes, planetary health and/or sustainable healthcare topics are regularly included in communication updates to **some courses**. (1 point)
Students **do not** receive communications about planetary health or sustainable healthcare. (0 points)

Score Assigned:	2

Score explanation: Students receive regular email updates from the medical school's chapter of Medical Students for a Sustainable Future (MS4SF) that include meeting times, journal articles, and more ways to get involved with sustainability. Additionally, our chapter of MS4SF has hosted an event with the City of Columbia Office of Sustainability which gave students a direct opportunity to sign up for the City of Columbia's sustainability monthly newsletter.

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

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. (2 points)
Yes, the **institution** or **main affiliated hospital trust** offers one course relating to planetary health and/or sustainable healthcare for post-graduate provider. (1 point)
There are **no** such accessible courses for post-graduate providers. (0 points)

Score Assigned:	0

Score explanation: The University of Missouri-Columbia does not currently offer any CME courses regarding these topics. While our chapter is actively working to change this moving forward, funding is a large barrier as it would cost our chapter $600 per in-person session to get our events registered for CME credit.

3.5. Does your institution or its affiliated teaching hospitals have accessible educational materials for patients about environmental health exposures?	
Yes, the **medical school** or **all affiliated hospitals** have accessible educational materials for patients. (2 points)	
Some affiliated hospitals have accessible educational materials for patients. (1 point)	
No affiliated medical centres have accessible educational materials for patients. (0 points)	
Score Assigned:	0
University of Missouri Health Care offers resources related to environmental health through its Environmental Health & Safety department, which provides information on various environmental health topics (ehs.missouri.edu). Additionally, the MU Libraries offer guides to trusted resources on environmental health (libraryguides.missouri.edu). However, specific educational materials tailored for patient use regarding environmental health exposures are not featured whatsoever in the available resources.	

3.6. Does your institution or its affiliated teaching hospitals have accessible educational materials for patients about the health impacts of climate change?	
Yes, the **medical school** or **all affiliated hospitals** have accessible educational materials for patients. (2 points)	
Some affiliated hospitals have accessible educational materials for patients. (1 point)	
No affiliated hospitals have accessible educational materials for patients. (0 points)	
Score Assigned:	0
Score explanation: No educational materials regarding climate change and its health impacts are available online for patients through the University of Missouri-Columbia or affiliated MU Health facilities.	

Section Total (8 out of 14)	**57.14%**

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Support for Student-Led Planetary Health Initiatives

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

4.1. Does your institution offer support for students interested in enacting a sustainability initiative/QI project?	
Yes, the **institution** *either* offers grants for students to enact sustainability initiatives/QI projects *or* sustainability QI projects are part of the core curriculum. (2 points)	
The **institution** encourages sustainability QI projects (to fulfill clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, **but** there is no student funding available and there is no requirement to participate. (1 point)	
No, **neither** the medical school or the institution offer opportunities or support for sustainability initiatives or QI projects. (0 points)	
Score Assigned:	2
Score explanation: The University of Missouri-Columbia School of Medicine is broadly supportive of student initiatives and QI projects in a variety of subjects, but there is limited funding or grants for either the School of Medicine or the University of Missouri-Columbia. The Trans World Airlines (TWA) Scholarship was established to fund students who are performing research in areas that will provide a positive impact to environmental issues. Recipients will receive a total amount of $7,000 minimum.	

4.2. Does your institution offer opportunities for students to do research related to planetary health and/or sustainable healthcare/vetcare?	
The **institution** has a **specific** research program or fellowship for students interested in doing planetary health/sustainable healthcare/vetcare research. (2 points)	
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. (1 point)	
There are **no opportunities** for students to engage in planetary health/sustainable healthcare research. (0 points)	
Score Assigned:	1

Score explanation: The University of Missouri-Columbia has research opportunities for students interested in studying planetary health, and it has research fellowships available for topics related to planetary health. However, none of these fellowships are available to medical students, and medical students must seek out non-fellowship research opportunities and perform them in their spare time.

4.3. Does the institution have a webpage where students can find specific information related to planetary health and/or sustainable healthcare/vetcare activities and mentors within the institution? For example, projects achieved, current initiatives underway at the medical school and/or contact of information of potential mentors.	
The institution has a webpage with specific information related to planetary health or sustainable healthcare/vetcare that includes up-to-date information on relevant initiatives and contact information of potential mentors. (2 points)	
There is an institution webpage that features some information on projects and mentors within planetary health and sustainable healthcare within the medical school, but it lacks key information. (1 point)	
There is **no institution** specific webpage for locating planetary health and/or sustainable healthcare projects or mentors. (0 points)	
Score Assigned:	2
Score explanation: The University of Missouri-Columbia School of Medicine website has a "Research Collaborators" tool that allows students to search for areas of research interest, including sustainability. This tool allows students to identify potential research mentors and projects in their area of interest.	

4.4. Does your institution have registered student groups dedicated towards fostering a culture of planetary health engagement, scholarship, and advocacy on campus, supported by faculty advisors?	
Yes, there is a student organisation **with faculty support** at my medical school dedicated to planetary health or sustainability in healthcare. (2 points)	
Yes, there is a student organisation at my medical school dedicated to planetary health or sustainability in healthcare but it **lacks faculty support.** (1 point)	
No, there is **not** a student organisation at my institution dedicated to planetary health or sustainability in healthcare. (0 points)	
Score Assigned:	2
Score explanation: The University of Missouri-Columbia School of Medicine has a chapter of MS4SF, which has support from a faculty advisor and several other members of the Office of Medical Education. MS4SF provides information to medical students about sustainability issues, engages in environmental advocacy at the institutional and political levels, and facilitates partnerships that will help make human activity more sustainable for the planet. There are also	

numerous undergraduate sustainability groups on campus, most notably Sustain Mizzou, a highly active organization that is well-supported by faculty.

4.5. Is there a student liaison representing sustainability interests who serves on a department or institutional decision-making council to advocate for curriculum reform and/or sustainability best practices?	
Yes, there is a student representative that serves on a department or institutional decision-making council/committee. (1 points)	
No, there is no such student representative. (0 points)	
Score Assigned:	0
Score explanation: Although the University of Missouri-Columbia School of Medicine has a Curriculum Board with student representatives, the Curriculum Board does not have members who represent specific issues, including the issue of sustainability.	

4.6. 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)	**Score**
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 organise hiking, backpacking, kayaking, or other outings for students)	1
Score explanation: 1. The University of Missouri-Columbia School of Medicine interest group Cultivate Health provides students opportunities to focus on lifestyle changes and ways to practice healthy life habits. These include focus on community gardening and understanding the intersection between community health, agriculture, and one's health. In addition, Sustain Mizzou hosts regular garden work days at a community garden that is run by the MU Child Development	

Lab and the MU Master Gardeners. Sustain Mizzou also organizes regular trips to the local farmer's market to promote sustainable agriculture.

2. The University of Missouri-Columbia provides a variety of opportunities for students to engage with speakers that present on topics related to planetary health and its intersection with health. Many of these events are organized by our local MS4SF chapter and targeted toward medical students. Sustain Mizzou also has general meetings at least once a month, and during these meetings they often have guest speakers who represent organizations or interests related to sustainability. All students are invited to attend these meetings.
3. The guest speakers that Sustain Mizzou invites to general meetings are often members of the local environmental justice community who speak to various climate and environmental challenges. Our MS4SF chapter also hosts meetings in which community guests are invited to speak about their passions, how they are serving the community, and how medical students might get involved. This includes events with the Missouri Coalition for the Environment and the City of Columbia's Office of Sustainability.
4. The University of Missouri-Columbia has a 3-credit Environmental Art course in which students learn about the history of environmental art and ultimately create their own environmental art projects that may be available for public viewing. The City of Columbia, in conjunction with the University of Missouri-Columbia, also hosts an annual Earth Day Festival that brings artists and environmentalists, and students are heavily featured in this event.
5. Our MS4SF chapter hosts volunteer events, including local trail clean ups, at least 4 times per year. Sustain Mizzou also hosts several volunteer events each month, including garden workdays, campus cleanups, stream cleans, tailgate recycling, and beekeeping.
6. The University of Missouri-Columbia School of Medicine hosts a float trip at the beginning of each M1/M2 year in order to promote building relationships and provide an opportunity for students to appreciate the great Missouri outdoors. The student rec center and other student orgs also promote opportunities for students to engage in outdoor rock climbing expeditions and other wilderness activities. For example, Venture Out is a student group at the University of Missouri-Columbia that offers outdoor outings including orienteering, alpine tower climbing, and ropes courses.

Section Total (13 out of 15)	**86.67%**

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Campus Sustainability

Section Overview: ***This section evaluates the support and engagement in sustainability initiatives by the 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 endeavour, the healthcare sector is well poised to lead the world to a more sustainable future. This will involve scrutinising 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 minimising environmental impact.*

5.1. Does your institution have an Office of Sustainability?	
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. (3 points)	
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 hospital sustainability. (2 points)	
There are **no salaried sustainability staff,** but there is a sustainability task force or committee. (1 point)	
There are **no** staff members **or** task force responsible for overseeing campus sustainability. (0 points)	
Score Assigned:	0
Score explanation: The University of Missouri-Columbia no longer has an Office of Sustainability nor a sustainability task force or committee. There is a student-run environmental program called Sustain Mizzou, but that is purely geared towards increasing student involvement in sustainability.	

5.2. How ambitious is your institution's plan to reduce its own carbon footprint?	
The institution has a **written and approved plan** to achieve carbon neutrality by **2030** (5 points)	
The institution has a **written and approved plan** to achieve carbon neutrality by **2040** (3 points)	
The institution has a stated goal of carbon neutrality by **2040** but has **not created a plan** to reach that goal or the **plan is inadequate** (1 point)	
The institution/medical school does **not** meet any of the requirements listed above (0 points)	
Score Assigned:	3
Score explanation: The University of Missouri-Columbia has a published Climate Action Plan with an original goal of carbon neutrality by 2050, but it is currently exceeding goals each year which	

would place the new estimate closer to 2040. The University of Missouri has reduced greenhouse emissions by 51 percent from 2008 to 2016.

5.3. Do buildings/infrastructure used by the institution for teaching (not including the hospital) utilize renewable energy?	
Yes institution buildings are **100%** powered by renewable energy. (3 points)	
Institution buildings source **>80%** of energy needs from off-site and/or on-site renewable energy. (2 points)	
Institution buildings source **>20%** of energy needs from off-site and/or on-site renewable energy. (1 point)	
Institution buildings source **<20%** of energy needs from off-site and/or on-site renewable energy. (0 points)	
Score Assigned:	1
*Score explanation:*The University of Missouri-Columbia's Patient Centered Care Learning Center, the preclinical medical education building, is powered primarily by the onsite MU Power Plant along with the majority of campus. The power plant utilizes a Combined Cooling Heat and Power (CCHP) with renewable biomass energy and a 34 kilowatt solar photovoltaic panel. There is also an on-site 20 kW wind turbine and offsite wind farm. Renewable energy makes up 40 percent of the total campus energy supply. The university has also entered the EPA's Green Power Partnership and has been named the International District Energy Association's System of the Year twice.	

5.4. Are sustainable building practices utilised for new and old buildings on the institution's campus, with design and construction of new buildings and remodelling of old buildings conforming to a published sustainability rating system or building code/guideline?	
Yes, sustainable building practices are utilised for new buildings on the institution's campus and the **majority** of old buildings **have been retrofitted** to be more sustainable. (3 points)	
Sustainable building practices are utilised for new buildings on the institution's campus, but most old buildings have **not been retrofitted.** (2 points)	
Sustainable building practices are **inadequately or incompletely** implemented for new buildings. (1 point)	
Sustainability is **not considered** in the construction of new buildings. (0 points)	
Score Assigned:	3
Score explanation: The University of Missouri-Columbia's Patient Centered Care Learning Center, which is the only medical educational building, received Platinum LEED certification in 2009. It also exhibits metal louvers and vertical fins on the building to block sun and heat. Additionally,	

multiple structures within the building had materials locally sourced. This building used a total of 29% recycled content, including use of recycled materials in the carpet and recycled stone. Construction of this building used 72% FSC wood. With the construction of this building, there was a decrease in total energy use intensity, irrigation demand, and fixture water use. 17% of the energy for this building comes from renewable sources. Furthermore, water refill stations are available on each floor to offset the use of plastic water bottles, and landscaping around the building displays species native to Missouri.

5.5. Has the institution implemented strategies to encourage and provide environmentally-friendly transportation options for students and reduce the environmental impact of commuting?	
Yes, the institution has implemented strategies to encourage and provide **environmentally-friendly transportation options** such as safe active transport, public transport, or carpooling and these options are well-utilised by students. Alternatively, the campus location is not amenable to unsustainable forms of transportation by default. (2 points)	
The institution has implemented **some** strategies to provide environmentally-friendly transportation options, but the options are **unsatisfactorily** accessible or advertised. (1 point)	
The institution has **not** implemented strategies to encourage and provide environmentally-friendly transportation options. (0 points)	
Score Assigned:	1
Score explanation: Students have multiple environmentally-friendly transportation options including free transit on the city's bus routes with stops near the medical school and extensive bike-friendly trail systems with bike racks at each entrance to the medical school building. However, several off-campus clinical sites are more difficult to access without a car in the 3rd and 4th years, and the majority of students drive to school. There is no mention of environmentally friendly transportation options during orientation week, and few students utilize these options.	

5.6. Does your institution have an organics recycling program (compost) and a conventional recycling program (aluminium/paper/plastic/glass)?	
Yes, the institution has **both** compost **and** recycling programs accessible to students and faculty. (2 points)	
The institution has **either** recycling **or** compost programs accessible to students and faculty, but not both. (1 point)	
There is **no** compost or recycling program at the medical school. (0 points)	
Score Assigned:	1
Score explanation: The University of Missouri-Columbia has 3-in-1 waste bins located throughout the medical school building that include paper and plastic/aluminum recycling. There is no composting program currently available to students. The University of Missouri has done	

composting in the past in the undergraduate campus dining halls, but this program is not currently active.

5.7. Does the institution apply sustainability criteria when making decisions about the campus food and beverage selections (e.g. local sourcing, reduced meat, decreased plastic packaging)?	
Yes, the institution has a**dequate s**ustainability requirements for food and beverages, including meat-free days or no red-meat, and **is engaged** in efforts to increase food and beverage sustainability. (3 points)	
There are sustainability guidelines for food and beverages, but they are **insufficient or optional**. The institution **is engaged** in efforts to increase food and beverage sustainability. (2 points)	
There are sustainability guidelines for food and beverages, but they are **insufficient or optional.** The institution is **not** engaged in efforts to increase food and beverage sustainability. (1 point)	
There are **no** sustainability guidelines for food and beverages. (0 points)	
Score Assigned:	1
Score explanation: The University of Missouri-Columbia procures over $1 million worth of food annually from Missouri farmers and retailers including Missouri Legacy Beef to support locally and regionally based businesses. However, the medical school is not currently engaged in any specific efforts to increase food and beverage sustainability.	

5.8. Does the institution apply sustainability criteria when making decisions about supply procurement?	
Yes, the institution has **adequate** sustainability requirements for supply procurement **and** is **engaged** in efforts to increase sustainability of procurement. (3 points)	
There are sustainability guidelines for supply procurement, but they are **insufficient or optional.** The institution is **engaged** in efforts to increase sustainability of procurement. (2 points)	
There are sustainability guidelines for supply procurement, but they are **insufficient or optional.** The institution is **not engaged** in efforts to increase sustainability of procurement. (1 point)	
There are **no** sustainability guidelines for supply procurement. (0 points)	
Score Assigned:	3
Score explanation: The University of Missouri-Columbia has a published set of requirements for use of environmentally friendly cleaning supplies that requires a third party certification for routinely used chemicals. Paper and plastic products purchased must meet the EPA's Comprehensive Procurement guidelines. The guidelines include standards for implementing these criteria upon the construction of new buildings including the training of custodial staff.	

5.9. Are there sustainability requirements or guidelines for events hosted at the institution?	
Every event hosted at the institution **must** abide by sustainability criteria. (2 points)	
The institution **strongly recommends or incentivizes** sustainability measures, but they are **not required.** (1 point)	
There are **no** sustainability guidelines for institution events. (0 points)	
Score Assigned:	0
Score explanation: There are not currently any formal sustainability guidelines for events hosted by the University of Missouri-Columbia or its medical school.	

5.10. Does your institution have programs and initiatives to assist with making lab spaces more environmentally sustainable?	
Yes, the institution has **programs** and **initiatives** to assist with making lab spaces more environmentally sustainable. (2 points)	
There are **guidelines** on how to make lab spaces more environmentally sustainable, but not programs or initiatives. (1 point)	
There are **no** efforts at the institution to make lab spaces more sustainable. (0 points)	
Score Assigned:	2
Score explanation: While the medical building does not have any laboratory spaces, the University of Missouri-Columbia does have a chemical redistribution program to help reduce waste and decrease disposal and purchasing costs related to environmentally hazardous substances.	

5.11. Does your institution's endowment portfolio investments include fossil-fuel companies?
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. (4 points)
The institution is **entirely divested** from fossil fuels. (3 points)
The institution has **partially divested** from fossil fuel companies **or** has made a **commitment to fully divest**, but **currently** still has fossil fuel investments. (2 points)
The institution has **not divested** from fossil-fuel companies, but faculty and/or students are **conducting organised advocacy** for divestment. (1 point)
Yes, the institution has investments with fossil-fuel companies and there have been **no efforts** to change that. (0 points)

Score Assigned:	1
Score explanation: The University of Missouri-Columbia has not divested from fossil-fuel companies. However, there have been several organized advocacy efforts to promote divestment, primarily led by students in Climate Leaders at Mizzou and the Mizzou Energy Action Coalition. Administration has denied these requests in the past, citing the need to keep education as affordable as possible, but efforts are still underway to encourage divestment from fossil-fuel companies.	

Section Total (16 out of 32)	**50.00%**

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Grading

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

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

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

Section	Raw Score %	Letter Grade
Planetary Health Curriculum (30%)	(25/72) x 100 = 34.72%	D
Interdisciplinary Research (17.5%)	(7/17) x 100 = 41.18%	C-
Community Outreach and Advocacy (17.5%)	(8/14) x 100 = 57.14%	C+
Support for Student-led Planetary Health Initiatives (17.5%)	(13/15) x 100= 86.67%	A
Campus Sustainability (17.5%)	(16/32) x 100 = 50.00%	C
Institutional Grade	**(Ax0.3 + Bx0.175 + Cx0.175 + Dx0.175 + Ex0.175) = 51.12%**	**C**