



Planetary Health Report Card (Medicine):

*The University of North Carolina
at Chapel Hill School of Medicine*



2022-2023 Contributing Team:

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Summary of Findings

Overall	C
<u>Curriculum</u>	C
<ul style="list-style-type: none"> ● Strengths: The University of North Carolina School of Medicine (UNC SOM) includes planetary health in each preclinical block, as well as elective courses, but lacks specific topics and depth of materials. ● Recommendations: UNC SOM could include planetary health in its core competencies and offer planetary health-specific electives. Education could include the significant health-care associated carbon footprint, waste production, and over-prescribing of pharmaceuticals. 	
<u>Interdisciplinary Research</u>	B+
<ul style="list-style-type: none"> ● Strengths: UNC SOM and other departments have researchers engaged in planetary health and it impacts human disease and health. ● Recommendations: UNC SOM, which is closely linked to UNC Health, could encourage research on healthcare sustainability and UNC's carbon footprint, perhaps by increasing funding opportunities. In solidarity with institutions committing to prioritize planetary health, UNC SOM could join the Global Consortium on Climate and Health Education. UNC SOM could also include community member feedback to guide research decisions regarding planetary health and sustainability. 	
<u>Community Outreach and Advocacy</u>	D+
<ul style="list-style-type: none"> ● Strengths: UNC Health has a robust Environmental Health Learning Center (EHLC) as part of its online Health Library for patients. ● Recommendations: UNC SOM could collaborate with Gillings School of Global Public Health and their partnered local organizations (such as CleanAIRE NC) to advocate for environmental health and to create education materials and organize events for the Triangle area community. The SOM could create a list of planetary health materials that qualify as CME credits. 	
<u>Support for Student-Led Initiatives</u>	B
<ul style="list-style-type: none"> ● Strengths: UNC's Climate Leadership and Environmental Action Network (CLEAN) has received funding from the Office of Global Health Education (OGHE). UNC Family Medicine Center worked with students to conduct a waste audit of the clinic in November 2022. Since the last report, faculty have supported three medical students in developing a Scholarly Concentration on planetary health. ● Recommendations: UNC SOM could encourage clinical students to coordinate planetary health-related QI projects during their third year. Students would benefit from an organized, accessible website detailing ongoing research projects/mentors and related grant opportunities specifically addressing planetary health. 	
<u>Campus Sustainability</u>	C
<ul style="list-style-type: none"> ● Strengths: UNC's work with the Three Zeroes Initiative and Sustainable Carolina has improved its sustainability. The local public transit system is widely used and now includes electric buses. Recycling and composting bins are reasonably accessible to students. Green Labs has implemented several initiatives to reduce waste in UNC laboratories. The university has seen a 40% decrease in emissions since 2007. ● Recommendations: UNC SOM could join Sustainable Carolina's council to help improve the school's sustainability. Older SOM buildings could be retrofitted to be more eco-friendly, perhaps by adding compost bins. The med school cafeteria (Beach Café) could increase the number of restaurants that source locally grown food. UNC could invest in renewable energy and divest from coal supplied by Duke Energy. 	

Statement of Purpose

Planetary health is human health.

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

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

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

Definitions & Other Considerations

Definitions:

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

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

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

Other considerations:

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

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

Planetary Health Curriculum

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

Curriculum: General

1. 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 more than one elective whose primary focus is ESH/planetary health in the past year.
2	Yes, the medical school has offered one elective whose primary focus is ESH/planetary health in the past year.
1	The medical school does not have any electives whose primary focus is ESH/planetary health, but there are one or more electives that include a lecture on planetary health.
0	No, the medical school has not offered any electives on planetary health or electives that include ESH/planetary health topics in the past year.
<p><i>Score explanation: There were no electives offered in the past year at UNC SOM focusing solely on planetary health. Planetary health topics (e.g., pollution, migration) are sometimes mentioned in electives related to social determinants of health, but they are not the primary focus of any elective offered. Migration is addressed in a Global Health elective (GLBE 159: Migrant Farmworker Health) that is focused on the health of migrant farmworkers. Through independent research electives through the department of Social Medicine (SOCM 103: Readings and Projects in Social Medicine; SOCM 104: International Projects in Social Medicine), students have the opportunity to choose their own topics to explore for projects or papers and may have the opportunity to choose topics related to planetary health.</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 in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: Content on heat-related risks of nephrolithiasis and acute kidney injury is incorporated into the preclinical Renal block. As part of the preclinical years during Foundation phase, students have the option to choose between elective coursework through the SHS 3 curriculum that may touch on heat-related illnesses; courses in 2022 included Global Health and Medical Ethics, and Exploring the Impact of Jails and Prisons on Health Outcomes. During the Individualization phase of clinical training, students have the opportunity to conduct independent projects that may choose to address or research heat-related illnesses through various departments (Department of Social Medicine, Department of Global Health, and Department of Family Medicine to name a few).

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

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

Score explanation: The topic of extreme weather events is touched on with regard to extraordinary circumstances in the lives of students and physicians. Extreme weather events and the effects of climate change are addressed briefly in relation to conditions such as asthma and allergies in the Respiratory block, and tropical medicine and infectious diseases in the Immunology block.

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

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

Score explanation: There has been no significant change to the medical school's curriculum, therefore this explanation has been adapted from last year's PHRC. The impact of climate change on changing patterns of infectious diseases is discussed at various points of the longitudinal Microbiology preclinical curriculum at UNC. For example, the likelihood of increased disease incidence in the United States due to climate change is mentioned in the context of Chagas disease, mosquito-borne diseases, and endemic fungal pathogens. Updates to the curriculum are largely based on the [CDC website's prevalence maps](#).

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

3	This topic was explored in depth by the core curriculum.
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2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: There has been no significant change to the medical school's curriculum, therefore this explanation has been adapted from last year's PHRC. The core preclinical curriculum addresses air pollution as a major respiratory health hazard during the Respiratory block. Air pollution is discussed in the context of industrial toxins, especially in developing countries, and with regard to wildfires. Fine particulate matter, ozone, sulfur dioxide, nitrogen dioxide, and airborne lead and their respective respiratory health impacts are discussed. The core curriculum does less to highlight the impact of air pollution on cardiovascular health with "pollution" mentioned briefly in the context of environmental or epigenetic factors that may play a role in cardiovascular disease. Supplementary information was provided to students in the cardiovascular disease block to be reviewed outside of class.</i></p>	

6. Does your <u>medical school</u> curriculum address the cardiovascular health effects of climate change, including increased heat?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: The cardiovascular health effects are tangentially referenced with regard to respiratory issues such as COPD and asthma that can be caused by the effects of climate change. Both the Respiratory and Cardiovascular curriculum blocks mention the effects of extreme heat on cardiovascular health.</i></p>	

7. Does your <u>medical school</u> curriculum address the mental health and neuropsychological effects of environmental degradation and climate change?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: The mental health and neuropsychological effects of environmental degradation and climate change are discussed in the Social Health Systems course "Health and Human Rights," There is a dedicated class discussion regarding the ethics and impact of climate change, including its impact on mental health. This class is discussion based, after various assigned readings on the topic of climate change. While not a part of the required or elective curriculum, CLEAN Med UNC organized a Zoom webinar series on planetary health in fall 2022, and one speaker discussed climate change and mental health.</i></p>	

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

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

Score explanation: There has been no significant change to the medical school's curriculum, therefore this explanation has been adapted from last year's PHRC. The current preclinical core curriculum does not address the relationships between individual patient food security, ecosystem health, and climate change. However, interested students may choose to explore these topics through the Humanities and Social Sciences Scholarly Concentration and/or the Nutrition Scholarly Concentration.

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

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

Score explanation: Students discuss these topics as they come up during the weekly session of their Patient Centered Care (PCC) course during their preclinical years. Through an elective course for Social and Health Systems (SHS), "Health and Human Rights," there are dedicated discussions regarding climate change and human rights; students prepare for this discussion by reading two relevant materials: 1) ["Climate Change, Human Rights, and Social Justice" by Levy and Patz in Annals of Global Health](#), and 2) [Chapter 14 of the Fourth National Climate Assessment by the US Global Climate Change Research Program](#). Additionally, students may choose to explore these topics through various scholarly concentrations that the school has to offer, such as Global Health, Humanities and Social Sciences, Nutrition, Maternal Health, and Medical Education to name a few. Of note, content related to these topic areas will likely be incorporated into the preclinical core curriculum's 'Social and Health Systems' class in coming years after discussions with faculty who are receptive to the idea.

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

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.

1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: Similar to the effects of climate change on mental health, this topic is covered in the Social Health Systems course Health and Human Rights, during which students discuss the disproportionate generation of greenhouse gasses by larger, wealthier states and the detrimental impact on states that use less nonrenewable energy per capita.</i></p>	

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

11. Does your <u>medical school</u> curriculum address the reproductive health effects of industry-related environmental toxins (e.g. air pollution, pesticides)?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: The core preclinical curriculum addresses air pollution as a major respiratory health hazard during the Respiratory block (see metric 5). Environmental toxins, including fine particulates, ozone, sulfur dioxide, nitrogen dioxide, and airborne lead are referenced during lectures on embryology, which occur in every system block. There is special focus placed on their differential impact depending on time of exposure with weeks 0-8 being the most sensitive.</i></p>	

12. Does your <u>medical school</u> curriculum address important human-caused environmental threats that are relevant to the university's surrounding community?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: This topic was briefly covered during the Hematology block because the university was testing for lead-contaminated water throughout buildings across the public campus. In small groups during the curriculum block, various facilitators did go into depth about the possible and future effects the present lead would have in the years to come on members of the university, including students and workers from the surrounding communities.</i></p>	

13. To what extent does your <u>medical school</u> emphasize the importance of Indigenous knowledge and value systems as essential components of planetary health solutions?	
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3	Indigenous knowledge and value systems are integrated throughout the medical school's planetary health education
2	Indigenous knowledge and value systems as essential components of planetary health solutions are included briefly in the core curriculum.
1	Indigenous knowledge and value systems as essential components of planetary health solutions are included in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: Indigenous knowledge of healthcare is addressed during the Patient Centered Care course (particularly during Clinical Week seminars), however planetary health solutions have only been addressed when students directly ask.</i></p>	

<p>14. Does your <u>medical school</u> 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?</p>	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: There has been no significant change to the medical school's curriculum, therefore this explanation has been adapted from last year's PHRC. Similar to metric 10, this topic is discussed in the Social Health Systems course Health and Human Rights. The class broadly discusses the differential impact of climate change and environmental toxins on marginalized populations within and beyond the United States.</i></p>	

Curriculum: Sustainability

<p>15. Does your <u>medical school</u> curriculum address the environmental and health co-benefits of a plant-based diet?</p>	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<p><i>Score explanation: There has been no significant change to the medical school's curriculum, therefore this explanation has been adapted from last year's PHRC. Pre-clinical nutrition lectures tend to focus on the health benefits of various diets (i.e., Mediterranean diet, DASH diet) as evidenced by clinical study outcomes. The Mediterranean diet is promoted in lecture material as a healthful diet because a large component is fruits, vegetables and legumes, but the environmental impacts are not addressed. A</i></p>	

purely plant-based (“vegan”) diet is mentioned in some lecture materials as potentially beneficial for certain diseases (e.g., diabetes), but lectures do not go further in discussing this diet. A summer elective class in culinary medicine did not address environmental impacts of diet. Content in the Nutrition Scholarly Concentration acknowledges in passing that some diets are more environmentally friendly, but spends little to no time on these aspects.

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

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

Score explanation: As part of the third semester of the preclinical Foundation Phase curriculum, students have the option to choose between elective coursework through the SHS 3 that may touch on heat-related illnesses. Courses in 2022 included Global Health and Medical Ethics, and Exploring the Impact of Jails and Prisons on Health Outcomes.

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

2	The health and environmental co-benefits of avoiding over-medicalisation, over-investigation and/or over-treatment
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 fulfill this metric.
1	The health and environmental co-benefits of non-pharmaceutical management of conditions where appropriate such as exercise or yoga classes for type 2 diabetes; social group activities such as gardening for mental health conditions; active transport such as bicycle schemes. This is commonly known as social prescribing in the UK.
1	Environmental impact of surgical healthcare on planetary health and the climate crisis, and how can it be mitigated
1	The impact of anesthetic gasses on the healthcare carbon footprint and ways to reduce anesthesia environmental impacts, such as total intravenous anesthesia or choosing less environmentally harmful anesthetic gas options with reduced greenhouse gas emissions
1	The impact of inhalers on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers.
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)

Score explanation: These topics have yet to be broached by the medical school curriculum.

Curriculum: Clinical Applications

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?	
2	Yes, there are strategies introduced for having conversations with patients about climate change in the core curriculum.
1	Yes, there are strategies introduced for having conversations with patients about climate change in elective coursework.
0	No, there are not strategies introduced for having conversations with patients about climate change
<p><i>Score explanation: This was a topic of discussion in the "Health and Human Rights" elective course. The course focused on how to inspire action and mitigate the mental health impacts felt due to the climate crisis</i></p>	

19. In training for patient encounters, does your <u>medical school's</u> curriculum introduce strategies for taking an environmental history or exposure history?	
2	Yes, the core curriculum includes strategies for taking an environmental history.
1	Only elective coursework includes strategies for taking an environmental history.
0	No, the curriculum does not include strategies for taking an environmental history.
<p><i>Score explanation: There has been no significant change to the medical school's curriculum, therefore this explanation has been adapted from last year's PHRC. The Patient Centered Care course includes instruction on how to take a history from patients regarding environmental exposures. One specific case that students utilize involves a patient with likely pneumonitis due to exposure to inhaled irritants through military work.</i></p>	

Curriculum: Administrative Support for Planetary Health

20. Is your <u>medical school</u> currently in the process of implementing or improving Education for Sustainable Healthcare (ESH)/planetary health education?	
4	Yes, the medical school is currently in the process of making major improvements to ESH/planetary health education.
2	Yes, the medical school is currently in the process of making minor improvements to ESH/planetary health education.
0	No, there are no improvements to planetary health education in progress.
<p><i>Score explanation: Climate change and its health impacts have been addressed briefly in every block of the preclinical curriculum as of February 2023. As the school approaches the 2023-2024 academic</i></p>	

year, the medical school will be implementing the new curriculum titled “Translational Education at Carolina”(TEC) that is rooted in efforts to encourage learners to become well-rounded clinicians, which includes being knowledgeable about planetary health and its effects on patient wellbeing.

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

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

Score explanation: There has been no significant change to the medical school’s curriculum, therefore this explanation has been adapted from last year’s PHRC. The discussions regarding sustainable healthcare remain mostly between the Climate Leadership and Environmental Action Network (CLEAN), medical school faculty, and the hospital system. These efforts will hopefully lead to broader discussion and inclusion in the medical school curriculum in the coming years.

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

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

Score explanation: Changes to the curriculum that included implementation of planetary health education have been present throughout the 2022-2023 core preclinical curriculum. Several medical school faculty members have taken interest and support for implementation of a more robust curriculum.

Section Total (33 out of 72)

45.8%

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

Interdisciplinary Research

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

1. Are there researchers engaged in planetary health research and healthcare sustainability research at your <u>medical school</u> ?	
3	Yes, there are faculty members at the medical school who have a primary research focus in planetary health or healthcare sustainability.
2	Yes, there are individual faculty members at the medical school who are conducting research related to planetary health or healthcare sustainability, but it is not their primary research focus.
1	There are planetary health and/or healthcare sustainability researchers at the institution , but none associated with the medical school.
0	No, there are no planetary health and/or healthcare sustainability researchers at the institution or medical school at this time.
<p><i>Score explanation: The Center for Environmental Medicine, Asthma, and Lung Biology (CEMALB) was founded in 1979 at UNC SOM under the leadership of Dr. Phillip Bromberg. The center was established to study the environmental impacts on human respiratory health. Since June 2020, under Dr. Ilona Jaspers' leadership, the center has taken multidisciplinary approaches and a variety of experimental models in their research focus. Investigators study the effects of inhaled contaminants on human subjects to identify biological mechanisms, establish dose-response patterns, and screen toxicants and potential interventions. The center works closely with the Public Health and Integrated Toxicology Division of the U.S. Environmental Protection Agency (EPA), located on the UNC SOM medical campus.</i></p>	

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

Score explanation: UNC [Institute for the Environment](#) (IE) fosters collaborations among faculty, students, and staff across the university to identify and solve the world's environmental challenges and sustain and improve the environment. Through IE UNC has multiple outstanding environmental faculties and departments engaging in educational, research, and/or outreach activities related to environmental science and human health. Some of these departments include Pediatric Allergy, Immunology, and Rheumatology, City and Regional Planning, Anthropology, Epidemiology, Water Institute, Environmental Sciences and Engineering, Curriculum in Toxicology, Center for Environmental Health and Susceptibility, etc.

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

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

Score explanation: The Center for Environmental Health and Susceptibility ([CEHS](#)) has the Stakeholder Advisory Board ([SAB](#)) and the Community Engagement Core (CEC) provides community members impacted by climate and environmental injustice to advise the research agenda, however, the CEHS is affiliated with the institution and not directly with the medical school. Currently, there are no processes for vulnerable community members to advise research ongoing at the medical school. However, current efforts do exist to establish such a process. Members at the Center for Environmental Medicine, Asthma, and Lung Biology (CEMALB) are engaged in generating resources for the general public.

4. Does your institution have a planetary health website that centralizes ongoing and past research related to health and the environment?

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

Score explanation: The Center for Environmental Health and Susceptibility ([CEHS](#)) at UNC Gillings School of Global Public Health provides a comprehensive website that provides updated information

about ongoing planetary health research, upcoming events, and funding opportunities. Additionally, the UNC Institute for the Environment ([IE](#)) is another online resource that provides larger institutional updates.

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

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

Score explanation: UNC Water Institute hosted its annual [UNC Water and Health Conference](#) on October 24-28, 2022. The conference was highlighted with topics in point-of-use water quality treatment, urban sanitation, neglected communities in the U.S., etc. The conference topics reflected the Water Institute's commitment to improving public health by achieving universal access to safe drinking water, sanitation, and hygiene services that are safe, affordable, and sustainable. The conference provided a space for policymakers, practitioners, and researchers to gather and review evidence-based approaches.

6. Is your medical school a member of a national or international planetary health or ESH organization?

1	Yes, the medical school is a member of a national or international planetary health or ESH organization
0	No, the medical school is not a member of such an organization

Score explanation: UNC School of Medicine is not a member of any planetary health organization. The UNC School of Global Public Health is a member of the Global Consortium on Climate Health and Education, however the medical school is not.

Section Total (13 out of 17)

76.5%

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

Community Outreach and Advocacy

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

1. Does your medical school partner with community organizations to promote planetary and environmental health?	
3	Yes, the medical school meaningfully partners with multiple community organizations to promote planetary and environmental health.
2	Yes, the medical school meaningfully partners with one community organization to promote planetary and environmental health.
1	The institution partners with community organizations, but the medical school is not part of that partnership.
0	No, there is no such meaningful community partnership.

Score explanation: Among the community organizations with which UNC Health and the School of Medicine's departments, centers, and programs and initiatives are partnered, none are related to the promotion of planetary and environmental health.

Between UNC's Carolina Center for Public Service, Institute for the Environment, Center for Public Engagement with Science, and Gillings School of Global Public Health, the broader institution partners with numerous community organizations dedicated to environmental justice and planetary health. These organizations include, but are not limited to, [CleanAIRE NC](#), [Clean Water for North Carolina](#), [the Scrap Exchange](#), and the [Winyah Rivers Alliance](#). UNC undergraduates also have the opportunity to work with local organizations that promote environmental sustainability through the [Service-Learning Courses](#) program and [Sustainable Triangle Field Site](#). In addition, graduate students (including medical students getting a graduate degree) at the Gillings School of Public Health may complete an 'Environmental Health Solutions' [practicum](#) by partnering with an external organization and helping to provide environmental solutions for public health and wellbeing and/or build resilience to climate and environmental change.

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

1	The institution has offered community-facing courses or events, but the medical school was not involved in planning those courses or events.
0	The institution/medical school have not offered such community-facing courses or events.
<p><i>Score explanation: The UNC Gillings School of Global Public Health offers four online modules at no cost to community members: “UNC: Extreme Heat & Air Quality: Implications for Human Health,” “Environmental Asthma Triggers,” “Lead in Drinking Water Resources,” and “Preventing Lead Poisoning Online Training Module.” Respectively, these modules inform community members about the associations between extreme heat, air pollution, and health; address the effects of air pollution on asthma and the populations that are disproportionately affected; provide resources on the health impacts from lead exposure; and discuss the main causes of lead exposure and poisoning, testing recommendations for children, and prevention methods.</i></p> <p><i>In partnership with the NC Museum of Natural Sciences, the Center for Public Engagement with Science also offers the Youth Engaging in the Science of Resilience program, a free summer program for high school students to explore the impacts of climate change in their local communities, investigate strategies for increasing community resilience, and complete a community action project. Finally, the Center for Public Engagement provides a free local teacher institute, ‘At Water’s Edge Current Watershed Science for the Classroom.’ which focuses on evaluating human impacts on watersheds and promoting stewardship of these coastal ecosystems.</i></p>	

3. Does your medical school have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?	
2	Yes, all students regularly receive communication updates dedicated to planetary health and/or sustainable healthcare.
1	Yes, planetary health and/or sustainable healthcare topics are sometimes included in communication updates.
0	Students do not receive communications about planetary health or sustainable healthcare.
<p><i>Score explanation: Vital Signs, the UNC Health newsletter received by the medical school community, has occasionally featured announcements related to planetary health and environmental justice. Additionally, student government officers send out a “Weekly Blast” newsletter email to Foundation Phase students that includes sustainable healthcare news related to ongoing medical student efforts.</i></p>	

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

Score explanation: Among Continuing Medical Education's (CME) offered activities (which are listed by individual departments of the UNC School of Medicine), none are related to planetary health or sustainable health care. Of note, UNC's Office of Continuing Professional Development neither maintains a comprehensive list of CME sessions nor tracks session topics.

5. Does your medical school or its primary affiliated hospital have accessible educational materials for patients about environmental health exposures?

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

Score explanation: There has been no significant change to the medical school's and main affiliated hospital's educational materials for patients about environmental health exposures; therefore, this explanation has been adapted from last year's PHRC. UNC Health's online Health Library features an [Environmental Health 'Learning Center,'](#) which contains information about numerous related health topics. Topics include but are not limited to "Avoiding Mercury in Fish," "Child Safety: Air Pollution," "Quick Tips: Shopping for Organic and Chemical-Free Foods," "Insect Repellants," and "Black Lung Disease."

6. Does your medical school or its primary affiliated hospital have accessible educational materials for patients about climate change and health impacts?

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

Score explanation: There has been no significant change to the medical school's and primary affiliated hospital's educational materials on climate change and health impacts therefore, this explanation has been adapted from last year's PHRC. UNC Health does not provide patient-facing materials about climate change and its health impacts.

Section Total (5 out of 14)	35.7%
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Are there additional community engagement and advocacy resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Support for Student-Led Planetary Health Initiatives

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

1. Does your medical school or your institution offer support for medical students interested in enacting a sustainability initiative/QI project?	
2	Yes, the medical school or institution <i>either</i> offers grants for students to enact sustainability initiatives/QI projects <i>or</i> sustainability QI projects are part of the core curriculum.
1	The medical school or 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.
0	No, neither the medical school or the institution offer opportunities or support for sustainability initiatives or QI projects.

Score explanation:
There has been no significant change to the medical school's and institution's support for sustainability initiatives/QI projects, therefore this explanation has been adapted from last year's PHRC. UNC SOM does not have grants to enact sustainability initiatives/QI projects or integrate sustainability QI projects as part of the core curriculum for medical students. However, the SOM encourages sustainability QI projects and offers resources to succeed in these projects. For example, students in the Clinician Leadership in Quality and Safety Scholarly Concentration may focus on environmental sustainability in healthcare for their program's required QI project. Additionally, a clinical QI project is required for all students to complete the SHS (Social Health Systems) 5 course. This project may focus on sustainability, but this topic is not required.

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

Score explanation:
UNC does not have fellowships for medical students specifically focusing on planetary health/sustainable healthcare. However, there are research opportunities for students to seek out and perform research related to planetary health. UNC's Gillings School of Public Health offers medical

students the opportunity to pursue a Masters in Public Health which can include coursework and research that focus on planetary health and/or sustainable healthcare. There is an MPH Environmental Health Solutions concentration, but it is less accessible for medical students to complete due to a separate application process and additional graduation requirements. Outside of the MPH degree programs, medical students can also work on research projects through Gillings-affiliated programs (such as the Center for Environmental Health and Susceptibility). The CMSRP (Carolina Medical Student Research Program) is an 8-week summer program that can give students funding for research related to planetary health/sustainable healthcare. There is grant funding available for eligible MD/PhD faculty members to pursue planetary health research, namely through the interdisciplinary graduate program called the, "[Curriculum in Toxicology and Environmental Medicine](#)". Medical students may be able to work with faculty members who are receiving this funding.

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

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

Score explanation:

The medical school does not have one centralized web page with specific information related to planetary health or sustainable healthcare. CLEAN UNC has its own webpage as a student organization with information about planetary health and sustainable healthcare, but it is not an official SOM website. While it does have past events hosted by the organization, this website could be improved by including faculty and projects interested in planetary health - or it could be replaced by an institution website. UNC SOM websites that include planetary health information and research include [Curriculum in Toxicology](#) and [Collaborative Departments](#), but these are not centrally organized. Other programs at this institution do have more centrally-organized websites, such as the [Gillings School of Public Health](#). These can be resources for medical students but are not specific to medical students. There is a [database](#) for finding research mentors, but as of February 2023, there are only a few projects and mentors that focus on how environmental factors affect pathophysiology of disease (such as air pollutants and asthma) or how sustainable agriculture relates to improved nutrition.

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

2	Yes, there is a student organization with faculty support at my medical school dedicated to planetary health or sustainability in healthcare.
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1	Yes, there is a student organization at my medical school dedicated to planetary health or sustainability in healthcare but it lacks faculty support .
0	No, there is not a student organization at my institution dedicated to planetary health or sustainability in healthcare.
<p><i>Score explanation: There has been no significant change to the medical school's registered student groups, therefore this explanation has been adapted from last year's PHRC.. There is a student organization with faculty support dedicated to planetary health and sustainability in healthcare at UNC SOM (CLEAN - Climate Leadership and Environmental Action Network). CLEAN Med UNC has an official faculty advisor, and the organization has received encouraging support from some faculty and deans (although not all faculty are on board). CLEAN is also funded annually by the Office of Global Health Education in the School of Medicine and by the student government for projects and scholarships that increase student engagement and learning of global health education and planetary health.</i></p>	

<p>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?</p>	
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: There has been no significant change to the medical school's and institution's decision-making council status, therefore this explanation has been adapted from last year's PHRC. There is no official position for such a student liaison currently.</i></p>	

<p>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)</p>	
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> The Carolina Community Garden is an organic, sustainable garden that hosts workdays for any volunteers - many of which are faculty, staff, and students at UNC. UNC SOM students participate in bi-annual service days which often include medical student-specific volunteer shifts at this garden. UNC also has an ongoing agricultural and educational garden called Edible Campus UNC that students can volunteer at and harvest produce for their own consumption. Additionally, an undergraduate class (Biology 217) handles the care and maintenance of a medicinal plant garden on UNC's campus, and in the process learns about the medicinal properties of plants.</p> <p>Students at UNC and planetary health supporters (with the aid of Twitter) were invited to a 4-part lecture series organized by medical students in which experts from UNC detailed the catastrophic changes caused by climate change and ways that are being investigated to help ameliorate its impacts. The talks were given by four different professors and attendees were entered in a chance to win UNC gifts. UNC's Curriculum in Toxicology and Environmental Medicine also hosts regular seminars on various planetary health topics - for example, air pollution-induced cardiovascular disease.</p> <p>The No Coal UNC is a group that advocates for the use of clean renewable energy at UNC. The group is led by Chapel Hill-Carrboro community members. UNC students (including SOM students) attend this group's meetings and anti-coal protests.</p> <p>UNC has a yearly global photography exhibition hosted at the FedEx Global Education Center. The competition is open to anyone at the university and is meant to highlight outstanding photographs capturing images of all topics. In 2022, one of the spotlighted pictures was by a UNC student who submitted photographs she had taken detailing the negative effects of climate change. Another student has written a book to educate people about climate change. In addition, UNC recently created a "Picturing Nature" seminar that explores nature's many meanings and influences throughout time, including now in a time of environmental crisis, through the use of imagery and photos.</p> <p>CompostMates is a UNC-born organization that offers free compost pick-up for people who otherwise can't afford similar services. The organization is funded by a fellowship and allows weekly pick ups of compost to be dropped off at the Edible Campus Gardens or Carolina Community Gardens.</p> <p>The NC Botanical Garden, located in Chapel Hill, offers volunteer opportunities for community members conservation, education, garden maintenance, and more. UNC SOM's Wilderness Medicine Club continues in its second year of existence and has increased its membership, kicking off the year with a weekend-long trip to western NC that included kayaking, camping, hiking, and educational sessions on wilderness medicine. UNC has an outdoor education center that organizes programs for all UNC students to get outdoors (kayaking, hiking, camping, etc.) and offers outdoor equipment rentals. Additionally, the UNC Kenan Rural Scholars Program is meant to help guide students seeking a primary care career through various didactics in rural health, mentorship, clerkships, and summer placements. Scholars went on a two-day trip to Nantahala allowing students and leadership staff to bond through experiences such as whitewater rafting, camping, and hiking. The group also learned about natural history, diverse wildlife plants and their uses, explored the sustainable garden supplying campground meals, and took a course on wilderness medicine.</p>	
Section Total (11 out of 15)	
73.3%	

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

Campus Sustainability

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

1. Does your medical school and/or institution have an Office of Sustainability?	
3	Yes, there is an Office of Sustainability with multiple full-time staff dedicated to campus sustainability. If the Office of Sustainability serves the entire campus, there is at least one designated staff member for sustainability at the hospital and/or medical school.
2	There is an Office of Sustainability with one or more full-time staff dedicated to campus sustainability, but no specific staff member in charge of medical school and/or hospital sustainability.
1	There are no salaried sustainability staff , but there is a sustainability task force or committee
0	There are no staff members or task force responsible for overseeing campus sustainability
<p><i>Score explanation: UNC's Office of Sustainability, Sustainable Carolina, launched in 2020. The mission statement of Sustainable Carolina reads as follows: "Advance Carolina's sustainability goals through collaborative partnerships across operations, academics, and research." Sustainable Carolina is led by Mike Piehler, a professor who is extensively involved in sustainability, with faculty and staff from 8 departments and schools and 3 students making up the advisory council. However, there are no representatives from the medical school on the council.</i></p>	

2. How ambitious is your institution/medical school plan to reduce its own carbon footprint?	
5	The institution/medical school has a written and approved plan to achieve carbon neutrality by 2030
3	The institution/medical school has a written and approved plan to achieve carbon neutrality by 2040
1	The institution/medical school has a stated goal of carbon neutrality by 2040 but has not created a plan to reach that goal or the plan is inadequate
0	The institution/medical school does not meet any of the requirements listed above
<p><i>Score explanation: UNC updated its Climate Action Plan in 2021, laying out more ambitious goals to achieve net-neutrality in carbon emissions by 2040. Several avenues to decrease emissions were identified, including procuring renewable energy (~21%), purchasing renewable energy certificates</i></p>	

(~21%), and exploring next generation fuel sources (~35%) to name a few. More information on the Climate Plan can be found [here](#).

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

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

Score explanation: UNC is currently engaged in efforts to increase renewable energy usage via expansion of solar panel installation and exploring options to purchase renewable energy from Duke Energy. However, no medical school buildings currently utilize this technology. [UNC's cogeneration facility](#) uses 50% natural gas and has been able to provide up to a third of campus electricity by converting waste heat from the steam production process, ultimately reducing coal consumption by 54% since 2007. More info can be found on the [2022 Sustainability Report](#) from Sustainable Carolina.

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

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

Score explanation: UNC's new medical education building [Roper Hall](#), which is planned to be completed later in 2023, has been registered for LEED certification. They plan on using "high efficiency heating, cooling and lighting systems and will employ low-flow fixtures and stormwater and condensate harvesting. These features will enable the building to use 30% less energy and 40% less water than the baseline for this building type." The Mary Ellen Jones building was renovated in 2020 and received a gold certified LEED NC 2009 rating. Marsico Hall was also constructed to LEED Silver standards. Most older buildings on the medical campus have not been retrofitted to improve sustainability measures.

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

impact of commuting?	
2	Yes, the medical school has implemented strategies to encourage and provide environmentally-friendly transportation options such as safe active transport, public transport, or carpooling and these options are well-utilized by students. Alternatively, the campus location is not amenable to unsustainable forms of transportation by default.
1	The medical school has implemented some strategies to provide environmentally-friendly transportation options, but the options are unsatisfactorily accessible or advertised.
0	The medical school has not implemented strategies to encourage and provide environmentally-friendly transportation options.

Score explanation: The town of Chapel Hill has invested heavily in safe and efficient public transportation in the form of the Chapel Hill Public Transit Bus system. This bus system is free to use for anyone and is well connected to the university and medical campus from many locations in the greater Chapel Hill and Carrboro area. This service is widely used by students and faculty, and the SOM does mention it as a method for transportation during Foundation Phase. However, UNC SOM does require a car to complete third year rotations. Bus options at campuses outside of the main UNC hospital in Chapel Hill are not advertised well, and carpooling has not been explicitly encouraged.

6. Does your <u>medical school</u> have an organics recycling program (compost) and a conventional recycling program (aluminum/paper/plastic/glass)?	
2	Yes, the medical school has both compost and recycling programs accessible to students and faculty.
1	The medical school has either recycling or compost programs accessible to students and faculty, but not both.
0	There is no compost or recycling program at the medical school.

Score explanation: Recycling and composting stations are available at many dining halls on UNC's campus, the main ones for medical students being in Beach Café in the Brinkhous-Bullitt building. However, there are not composting stations in educational or office buildings in the SOM.

7. Does the <u>medical school</u> apply sustainability criteria when making decisions about the campus food and beverage selections (e.g. local sourcing, reduced meat, decreased plastic packaging)?	
3	Yes, the medical school has adequate sustainability requirements for food and beverages, including meat-free days or no red-meat, and is engaged in efforts to increase food and beverage sustainability.
2	There are sustainability guidelines for food and beverages, but they are insufficient or optional . The medical school is engaged in efforts to increase food and beverage sustainability.
1	There are sustainability guidelines for food and beverages, but they are insufficient or optional . The medical school is not engaged in efforts to increase food and beverage sustainability.
0	There are no sustainability guidelines for food and beverages.

Score explanation: Carolina Dining Services (CDS) provides a sustainability report annually. It has received a [Gold Award](#) from the Association for the Advancement of Sustainability. The only CDS cafeteria located on the medical campus is Beach Café, which has some food options meeting sustainability criteria, but several outside vendors that serve food in the space (Chick-fil-A, etc.) do not meet criteria. The remainder of the CDS cafeterias that source local food and participate in programs like "meat-less Mondays" are on the undergrad campus and are not frequented by medical school students and faculty. The medical school is not engaged in efforts to improve the sustainability of food and beverage provided.

8. Does the medical school or institution apply sustainability criteria when making decisions about supply procurement?

3	Yes, the medical school has adequate sustainability requirements for supply procurement and is engaged in efforts to increase sustainability of procurement.
2	There are sustainability guidelines for supply procurement, but they are insufficient or optional . The medical school is engaged in efforts to increase sustainability of procurement.
1	There are sustainability guidelines for supply procurement, but they are insufficient or optional . The medical school is not engaged in efforts to increase sustainability of procurement.
0	There are no sustainability guidelines for supply procurement.

Score explanation: UNC Chapel Hill has published sustainable procurement guidelines on [The Sustainability Tracking, Assessment & Rating System \(STARS\)](#). Guidelines include the like: all new building projects and renovations should comply with LEED standards; purchased paper products should be at least 30% from recycled sources; all utilized computers, monitors, light fixtures, etc. should be Energy Star compliant.

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

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

Score explanation: UNC School of Medicine does not currently have any guidelines pertaining to sustainability of school events. When food is catered for events, local vendors are primarily utilized.

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

2	Yes, the medical school has programs and initiatives to assist with making lab spaces more environmentally sustainable.
1	There are guidelines on how to make lab spaces more environmentally sustainable, but not programs or initiatives.

0	There are no efforts at the medical school to make lab spaces more sustainable.
<p><i>Score explanation: Green Labs works closely with members of UNC Chapel Hill research labs to implement sustainable practices in lab spaces across campus and promote a culture of sustainability in these spaces. They strive to achieve net zero waste, net zero water use, and net zero greenhouse gas emissions. Mary Ellen Jones, which houses some laboratories under the SOM, utilizes Green Labs' services. Advertisement for their programs can be found in lobbies, in elevators, and on lab bulletin boards.</i></p>	

11. Does your <u>institution's</u> endowment portfolio investments include fossil-fuel companies?	
4	The institution is entirely divested from fossil fuels and has made a commitment to reinvest divested funds into renewable energy companies or renewable energy campus initiatives.
3	The institution is entirely divested from fossil fuels.
2	The institution has partially divested from fossil fuel companies or has made a commitment to fully divest , but currently still has fossil fuel investments.
1	The institution has not divested from fossil-fuel companies, but faculty and/or students are conducting organized advocacy for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been no efforts to change that.
<p><i>Score explanation: UNC Chapel Hill currently has not divested from fossil fuels. Per their 2021 Climate Action Guidelines, UNC "is working to move the cogeneration facility away from coal as quickly as is technically and financially feasible." Students are highly motivated to see the university divest from coal and other fossil fuels; in March of 2022, students organized a march for the 2022 Global Climate Strike, the first time the event has been held in person since 2019 due to the pandemic.</i></p>	

Section Total (15 out of 32)	46.9%
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Are there additional sustainability resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Grading

Section Overview

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

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

**Within each grade bracket, a score in the top 5% (_5 to _9%), receives a “+”, and a score in the bottom 5% (_0- _4%) receives a “--”. For example, a percentage score of 78% would be a B+.*

Planetary Health Grades for the University of North Carolina at Chapel Hill School of Medicine

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

Section	Raw Score %	Letter Grade
Planetary Health Curriculum (30%)	$(33/72) \times 100 = 45.83\%$	C
Interdisciplinary Research (17.5%)	$(13/17) \times 100 = 76.47\%$	B+
Community Outreach and Advocacy (17.5%)	$(5/14) \times 100 = 35.71\%$	D+
Support for Student-led Planetary Health Initiatives (17.5%)	$(11/15) \times 100 = 73.33\%$	B
Campus Sustainability (17.5%)	$(15/32) \times 100 = 46.88\%$	C
Institutional Grade	$(A \times 0.3 + B \times 0.175 + C \times 0.175 + D \times 0.175 + E \times 0.175) = 54.42\%$	C

Report Card Trends

Section Overview

This graph demonstrates trends in overall and section grades for the years in which the University of North Carolina at Chapel Hill School of Medicine has participated in the Planetary Health Report Card initiative.

PHRC Trends for the University of North Carolina School of Medicine

