Planetary Health Report Card (Medicine):

University of Liverpool

UNIVERSITY OF LIVERPOOL

2022-2023 Contributing Team:

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Summary of Findings

Overall	C+

Curriculum	B

- University of Liverpool does include planetary health(PH) in the curriculum and incorporates it longitudinally, but it lacks in depth lectures and specific content regarding PH and sustainability.
- **Recommendations:** There is a lack of student-selected courses in ESH or PH, nor is there content regarding a few different areas including mental health, impacts on marginalised communities (e.g. homeless, BAME communities). The depth of other areas is also a significant area for improvement.

Interdisciplinary Research	C

- UoL Medical School faculty has made an active effort in increasing awareness and research in PH, by hiring more staff, student surveys on transport and creating their own webpage on PH. However there is disjointedness with the medical student community and the LUHFT Sustainability Team.
- **Recommendations**: University of Liverpool Medical School could organise a conference directly related to Planetary Health, with help from affiliated departments in the University. They could also join the Planetary Health Alliance and the Global Consortium on Climate and Health Education.

Community Outreach and Advocacy	C

- The university's affiliated hospitals provide accessible educational materials for patients regarding environmental exposures although information about climate change and its impacts is limited. A wide range of post graduate courses, though this could be increased. However, the medical school itself does not actively promote planetary health and organise community-facing events/courses or regularly provide updates regarding planetary health in university communications.
- **Recommendations:** More community partnerships relating to planetary health in SSCs, increased promotion of PH and active consideration into information provision to communities.

Support for Student-Led Initiatives	B -

- The support from the University is encouraging, with a plethora of sustainability focused events being held throughout the year for all students. Since the last report, the medical school has initiated creating a sustainability webpage and has worked to facilitate student participation in sustainability projects and although these efforts can be improved.
- **Recommendations:** Recommendations include offering financial support and awards for work in sustainability (essays/research/QIP projects), initiating a specific research program dedicated to planetary health, alongside relaunching the student-staff focus groups within the medical school, and advocating for the presence of a student liaison for sustainability.

Campus Sustainability	C

- There is an overarching theme within the campus sustainability findings that the medical school has insufficient published information and or action plans for multiple realms of sustainability measures. They have however made progress appointing a new sustainability officer who is undertaking a dedicated project to address the carbon footprint of placement transport.
- **Recommendations:** The medical school should publish their own specific plan to reduce their carbon footprint in alignment with the central university, with a Net Zero plan and target included in this. They should also consider creating eco-friendly guidelines for events or spaces shared with other departments.

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 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 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 vs. Institution:** When "medical school" is specified in the report card, this only refers to curriculum and resources offered by the School of Medicine and does not include offerings from other parts of the university (e.g. undergraduate departments (USA), other related departments (e.g. Public Health, Population Health departments). In contrast, when "institution" is specified in the report card, we are referring to the university more

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

- **Environmental history (Metric #19 in Curriculum Section):** This is a series of questions providers are taught to ask during medical encounters that elicit patients' exposures and environmental risk factors. Historically, this has included consideration of exposures like pesticides, asbestos, and lead, though in the modern era shaped by climate change, it can be expanded to include things like wildfire smoke exposure, air pollution and 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.

- **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 medical school offer elective courses (student selected modules) to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
3	Yes, the medical school has offered **more than one** elective whose primary focus is ESH/planetary health in the past year.
2	Yes, the medical school has offered **one** elective whose primary focus is ESH/planetary health in the past year.
1	The medical school does **not** have any electives whose primary focus is ESH/planetary health, but there are one or more electives that include a **lecture** on planetary health.
0	No, the medical school has **not** offered any electives on planetary health or electives that include ESH/planetary health topics in the past year.

Score - 0. Throughout the course the only Student Selected Component would be in the final year, the SAMP, some of which have lecture components. There are no other SSCs other than compulsory research projects. These are detailed below.

There is a compulsory research project component in 3rd year. This is not lecture based. This includes topics such as '"Reviewing the Evidence of the Effectiveness for Improving Diets of Population Level Interventions", "Chronic Kidney Disease of Nontraditional Cause (CKDnt): challenges for research and diagnostics", "Systematic review of covid therapeutics with assessment of evidence for use in low or middle income countries", and "Any topic for a systematic review or audit/service evaluation within an Acute Medicine of Infectious Diseases context." This includes some PH themes and allows students to explore the socioeconomic impacts of PH and some PH and sustainable healthcare themes, however it is not explicit and requires individual interest. For example, a 3rd year (Htet Niang) RS project looking into PPE use with Dr Iain Young.
There has been no change since the previous year.

The SAMP project 5th years must undertake a 6-week student-selected course, which differs in structure for each (i.e. some may be more clinical rather than lecture/teaching based, or research heavy). Student-led SAMPs allow for projects more focussed on Sustainability and Planetary Health, and Selina Aziz is undertaking a SAMP in Planetary Health co-supervised by the academic in Sustainable Healthcare in Liverpool, Iain Young, and Rebecca Chambers an advocate for Green GPs. This SAMP does not have formal lectures or teaching, and may be the first. This SAMP will include the opportunity to research and create public facing information leaflets regarding planetary health and sustainability.

As part of 4th year electives, students have gone on UK based research and electives with Centre of Sustainable Healthcare both last year and this year stemming from interest in sustainability and planetary health. Furthermore, other 4th years go to electives in Africa regarding Women's Health and the HIV crisis, regarding low SES area and disparity in this patient group. These are student-organised, but vetted by the university and support is given via the elective evenings to help support and enable students to go to these brilliant electives.

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 2. No change from 2021-22. *The Sustainable Healthcare workshop for year 1 students has been postponed to the end of the year, after this report will have been published. A Sustainable Healthcare workshop for year 1 students covered a range of health impacts of global warming - briefly mentioning heat stress and cardiovascular failure in relation to extreme heat. However, it did not mention the socioeconomic aspects of this topic. The infographic is discussed again in 4th year in GP teaching sessions (CCT), but once again briefly, and in the 'Responding to Climate Change in Primary Care' video. This workshop signposts many areas of PH, encourages discussion amongst students, however the singular session and extra reading/resource lists lacked depth.*	

3. Does your <u>medical school</u> 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.
A Sustainable Healthcare workshop for year 1 students briefly mentioned that rising sea levels due to climate change is responsible for the creation of 'environmental refugees' in countries that are most affected by these changes. It also mentioned the unfair impact this will have on children and their health if we do not begin to make changes with planetary health in mind. A lecture on Biological threats to the body: Bacteria by Prof. Aras Kadioglu mentions how sandstorms in the Sahara and western africa can impact disease and how pollution and diesel exhaust particles have a negative impact also. *There is also a 'Responding to Climate Change in Primary Care' video, which provides a brief*	

overview of various effects of climate change and mitigation strategies from Dr Nicola Dowling, using IPCC tools. This covers local issues such as increased flooding around the Mersey region, more extreme weather nationally, as well as global issues of desertification. This also covers increased migration to and thus how issues that may seem far and also something we must consider.
It is also mentioned during GP-lead CCT sessions during the later years.

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.

Dr Maheswaran's Lecture to Year 3 students on Infectious Disease- Globalisation, Climate Change and Sustainability. This lecture has been present for a few years, and considers in depth the burden of disease in different continents, the impact of globalisation and travel on health, society, politics and economics, climate change impacts, transmission dynamics and more.

This is supplemented by the Year 1 Sustainability workshop, as well as the Responding to Climate Change in Primary Care video in year 5, alongside the other briefer mentions of it throughout the course.

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.
2	This topic was **briefly** covered in the **core** curriculum.
1	This topic was covered in **elective** coursework.
0	This topic was **not** covered.

In a lecture on the global health aspects of the respiratory system, Dr Dan Pope talks about household air pollution and how it affects different parts of the world. He mentions WHO initiatives specifically in African countries.
A lecture on paediatric asthma pathology by Dr Ian Sinha explains links between asthma and air pollution and also discussed about the injustice of air pollution - people of low socioeconomic class, particularly women and children in poverty, in the developed world, generate the least air pollution but are exposed to it the most, developing cardio-respiratory problems from the pollution/lower life expectancy/social issues - and benefit the least from environmental policies. This was discussed in a format of local problems in Liverpool and the North, alongside global problems such as in Bangladesh.
Another lecture on respiratory signs and symptoms by Dr Calum Semple details the main risk factors

for severe respiratory tract infections, including pollution and socioeconomic differences. A lecture on 'Biological threats to the body: Bacteria' by Prof. Aras Kadioglu mentions the links between air pollution and pneumococcal disease. A Sustainable Healthcare workshop for year 1 students briefly mentioned that climate change will lead to an increase in air pollution, and the impacts that will have on our cardiorespiratory health.
There is also a 'Responding to Climate Change in Primary Care' video, which provides a brief overview of various effects of climate change and mitigation strategies from Dr Nicola Dowling, usingIPCC tools. This covers the effect of air pollution at a national level, which describes respiratory and cardiorespiratory effects of climate change. This also compares deaths between diabetes and air pollution to stress how big an issue it is.

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.

There is a 'Responding to Climate Change in Primary Care' video, which provides a brief overview of various effects of climate change and mitigation strategies from Dr Nicola Dowling, using IPCC tools. This covers the effect of air pollution at a national level, which describes respiratory and cardiorespiratory effects of climate change, such as heart disease and stroke. There is no specific lecture on just cardiorespiratory effects of climate change.

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.

There is no specific lecture on Climate/Eco-Anxiety or Neuropsychological effects. This was signposted in the Sustainable Healthcare workshop. However in the Common Mental Health Presentations GP-led CCT for 4th years, there are a few slides on how to improve mental health, such as green space, and trying to move away from pharmaceutical approaches to mental health.

8. Does your <u>medical school</u> 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.

Food and water Security and Systems. This is covered briefly in various parts of the course, such as in the Sustainable Healthcare Workshop in year 1, in the Climate Change in Primary Care video in year 4, considering the impact of floods and desertification, as well as food security and infectious disease transmission too.

In year 2 and 3 there is a consideration of malnutrition and food security in the Gastrointestinal block briefly. In year 3 - Public, Preventative & Global Health (PPGH), there are learning outcomes that briefly mention the impact of climate change on global health - "Understand how globalisation and climate change is causing profound changes to the burden of infectious diseases". The learning outcome "Critically interpret the role of poverty, urbanisation and food insecurity" also prompted a discussion on how such populations affected by these factors encounter health impacts at a higher proportion.

9. Does your <u>medical school</u> 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?

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 2

A Sustainable Healthcare workshop for year 1 students briefly mentioned that the major impacts of Climate change is going to impact children much more.
Dr Ian Sinha's paediatric respiratory lecture "The Impact of Poverty on the Health of Children" covered international climate issues, and discussed the social divide, where the rich and affluent would be able to cope with climate changes such as the demographic of those affected in Delhi (rickshaw drivers, low SES), alongside the the greater effect on women and children, and their lack of property/financial rights for example in Bangladesh.

In year 3 - Public, Preventative & Global Health (PPGH), there are learning outcomes that briefly mention the impact of climate change on global health - "Understand how globalisation and climate change is causing profound changes to the burden of infectious diseases". The learning outcome "Critically interpreting the role of poverty, urbanisation and food insecurity" also prompted a discussion on how such populations affected by these factors encounter health impacts at a higher proportion.
However, it does not address other marginalised populations.

In Year 3, there is a Global Women's Health Lecture, by Dr Andrew Weeks, which is a in depth lecture in women's health and inequalities - it considers the difference of women's health in developed and developing nations, such as provision of basic services and basic resources, and all the complicated process involved in procuring something such as gloves.

In year 4, a lecture in the paediatrics block: Pre-placement lectures for General Practice also signposted many resources for students to refer to for information on how climate change impacts health and opportunities for greener prescribing. The GP lead CCT (Community Clinical Teaching) sessions are trying to include more PH themes, such as in the Women's health (O&G), where they considered the unequal distribution and access to contraceptives and women's health. They have included a 25 minute video considering impacts of climate change, as a brief introduction to it, by the GP Climate Change lead in 4th year core curriculum content.

The curriculum addresses how climate change impacts some marginalised populations but specific impacts of anthropogenic environmental toxins were not explicitly mentioned. The information provision on effects on homeless, older adults, indigenous communities and BAME communities need to be improved and thus this was given a 2.

10. Does your <u>medical school</u> 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.

A Sustainable Healthcare workshop for year 1 students briefly mentioned that rising sea levels due to climate change is responsible for the creation of 'environmental refugees' in countries that are most affected by these changes. It also mentioned the unfair impact this will have on children and their health if we do not begin to make changes with planetary health in mind. A lecture on Biological threats to the body: Bacteria by Prof. Aras Kadioglu mentions how sandstorms in the Sahara and western africa can impact disease and how pollution and diesel exhaust particles have a negative impact also.
There is also a 'Responding to Climate Change in Primary Care' lecture video, which provides a brief overview of various effects of climate change and mitigation strategies from Dr Nicola Dowling, using Intergovernmental Panel on Climate Change (IPCC) tools. This covers local issues such as increased flooding around the Mersey region, more
extreme weather nationally, as well as global issues of desertification. This also covers increased migration to and thus how issues that may seem far and also something we must consider.
There are other lectures also regarding different topics or systems that also consider regional variations in health due to climate change, such as Women's Health.

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.

In the year 4 Fertility Cased Based Learning case, there is a discussion in sexual history taking which is to include occupation. This also covers risk factors for infertility/subfertility, including lifestyle factors and factors such as pesticides, fertilisers, and chemicals - the depth of discussion on this differed according to tutor leading the session.
There may be research projects relating to this amongst the year group, but this was not elicited this year so we have scored as though it was not.

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.

The curriculum in year 2 and 4 covers air pollution in year 4 for paediatric patients, with Dr Ian Sinha, ('Paediatric Asthma' lecture), and how they're trying to reduce threats by ensuring people cannot live near landfills etc, by taking responsible individuals to court and making systemic changes. This lecture is an in-depth view of the problem of urban living and also the problem of low SES populace and causes of lower mortality in the area. There are other lectures, such as year 2 lecture on 'Lung Cancer', that also explores the relationship between diesel exhaust fumes, urban pollution and lung cancer.
Furthermore, the issues of ship building and asbestosis in Liverpool history is highlighted as important in the risk of Interstitial Lung Disease (ILD) and mesotheliomas in year 2, with its consequences in death certification, and compensation, throughout the course (e.g. for OSCEs and coroner reporting). Further environmental risk factors for ILD are included, such as farmer's lung, and other more global causes. Nicola Dowling's video on Climate change in Primary Care and other lectures mentioned Merseyside flooding as a local event that was highlighted as a consequence of climate change was noted in lectures around changing infectious disease and and weather events and compared to the global weather events and increased flooding and drought.

13. To what extent does your <u>medical school</u> emphasise the importance of Indigenous knowledge and value systems as essential components of planetary health solutions?

3	Indigenous knowledge and value systems are **integrated throughout** the medical school's planetary health education
2	Indigenous knowledge and value systems as essential components of planetary health solutions are included **briefly** in the core curriculum.

1	Indigenous knowledge and value systems as essential components of planetary health solutions are included in **elective** coursework.
0	This topic was **not** covered.
This topic is not covered. There are sometimes discussions in CCT groups, however it is student-led or individual-tutor driven.	

14. Does your <u>medical school</u> 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?	
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.
In year 3 - Public, Preventative & Global Health (PPGH), there are learning outcomes that briefly mention the impact of climate change on global health - "Understand how globalisation and climate change is causing profound changes to the burden of infectious diseases". The learning outcome "Critically interpret the role of poverty, urbanisation and food insecurity" also prompted a discussion on how such populations affected by these factors encounter health impacts at a higher proportion. *In year 4, a lecture by Dr Ian Sinha in the paediatrics block: The Impact of Poverty on the Health of Children discussed the injustice of air pollution - people of low socioeconomic class, particularly women and children in poverty generate the least air pollution but are exposed to it the most and benefit the least from environmental policies. This is discussed anthropogenic causes and consequences of climate change in depth at a local level and discussed cases at a global level also.* *Furthermore Nicola Dowling's (GP) video on climate change in Primary Care discussed pollution, whereas in the women's health block and development block, discussions on puberty alongside fertility stimulated some discussions on the role of pollution, pesticides, fertilisers.* *The curriculum addresses how climate change and air pollution impacts some marginalised populations but greater incorporation of this into course content to mention it explicitly could boost this to a 3.*	

Curriculum: Sustainability

15. Does your <u>medical school</u> curriculum address the environmental and health co-benefits of a plant-based diet?	
3	This topic was explored **in depth** by the **core** curriculum.
2	This topic was **briefly** covered in the **core** curriculum.
1	This topic was covered in **elective** coursework.
0	This topic was **not** covered.

In year 1, there is a learning outcome in the gastrointestinal block that discusses the significance of a plant based diet - Explain how diet impacts on the microbiota and microbial activity. Lecture 15 describes how the human gut microbiota can be altered by short term dietary intervention and scientifically how the gut microbiota is shaped by habitual diet, stressing the importance of diet as a factor shaping microbial composition. Some benefits of a plant based diet are also explained - high fruit fibre intake may protect against Crohn's disease and it may be effective towards cancer prevention.
This is continued yearly in the GI block, predominantly in IBD and IBS lectures (e.g. lectures by Prof Probert).
In year 2, there is further discussion on research on diet- fruit fibre being protective towards IBD.
In year 3, there is a lecture on climate crisis and primary care and it explains how a planetary health diet, which highlights a plant-forward diet, can prevent 11 million premature deaths and lead to a sustainable global food system by 2050 (referred to the EAT-Lancet Commission).

16. Does your <u>medical school</u> 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.

In the Year 3 'General Practice & Community Clinical Teaching' (CCT) module, there is discussion of the environmental impacts of metered-dose inhalers, which includes figures and statistics of the carbon footprint produced by metered-dose inhalers and alternative methods to reduce the environmental impacts of inhalers. The session highlights key points to minimise the environmental burden of inhalers such as optimising asthma care and switching from metered-dose inhalers to dry powder inhalers.
In the student-led elective coursework 'Sustainability in Action,' there are a number of infographics and useful resources made available to students that highlight the waste generated by the healthcare system, namely the module discussing the impact of COVID-19 on the planet.
There is also a 'Responding to Climate Change in Primary Care' video and slides in CCT (Community Clinical Teaching, GP lead sessions) presentation which has the graph of the NHS carbon footprint, and discusses different contributors to the carbon
footprint, the impact of the NHS to this, and how to reduce it. This was covered in depth.
Furthermore, on the side, in elective projects, there are ways to get involved in sustainable QI projects.
Furthermore, SfGH Liverpool (Students of Global Health Liverpool) and The LUHFT (Liverpool University Hospitals Foundation Trust) Clinical Sustainability Group provided a workshop during this academic year regarding this in depth, but though this was outside of the curriculum it was promoted throughout the medical school via the Mbchb News Team.

17. Does your <u>medical school</u> curriculum cover these components of sustainable clinical practice in the <u>core</u> 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 fulfil 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 **anaesthetic** gases on the healthcare carbon footprint and ways to reduce anaesthesia environmental impacts, such as total intravenous anaesthesia or choosing less environmentally harmful anaesthetic gas options with reduced greenhouse gas emissions
1	The impact of **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)
	1. *Deprescribing, STOPP, and other lectures in preventing over medicalising and over-prescribing is covered many times during the course, especially in later years for the benefits of mental health, sustainability, and to streamline practice/quality improvement.* 2. *The carbon footprint of pharmaceuticals is emphasised similarly throughout the course, especially in later years, and is once again highlighted in the Climate Change in Primary Care video.* 3. *Non-pharmaceutical management is emphasised in almost all specialities, and include things like green prescribing, gym subscriptions, social activities, simply going for a walk or changing how one goes to work, and more.* 4. *Surgical healthcare impact receives some attention in conjunction with resource use and waste disposal, alongside anaesthetic gases. This is done during 3rd, 4th and 5th years (clinical years), such as during CCTs and sustainable healthcare workshops.* 5. *Anaesthetic gases are a hot topic and have been discussed in sustainable healthcare lectures, seminars, and also in the anaesthetics block in 5th year.* 6. *The use of inhalers has been emphasised particularly amongst GPs and respiratory physicians, pertaining to their environmental impact, and there has been a significant movement to pushing patients who can tolerate them to the dry powder inhalers. Discussions about how to push for this have been proposed to medical students in complex conversation scenarios.* 7. *Reducing waste is also a pretty hot topic due to the pandemic and resource shortages, and following various research projects comes a lot of discussions regarding streamlining care to reduce waste alongside streamlining protocols through quality improvement.*

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

Strategies not specific to climate change include the ICE framework - Ideas, Concerns, Expectations, and the social and environmental history.
Year 4 Population and Global Health workshop on "Public Health is Everywhere", talks about the wider determinants of health, which does introduce discussions about what doctors can do, talking to patients about factors that cause climate change (smoking), foods, promoting wellbeing.
No specific work in CCP theme (communication for clinical practice) on how to approach these topics in practice. However in the 'Responding to Climate Change in Primary Care' video, from Dr Nicola Dowling, the GP PH lead, she covers raising awareness and how to talk to patients about climate change, including giving advice about thinking about climate change, the power of shared decision making, and highlighting it when you could. Furthermore, with the awareness of changing inhalers, there have been discussions amongst CCT groups - GP led - and on placement with nurses about how to have these complex, not-necessarily-medical, conversations with patients.

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.

In the longitudinal curriculum theme 'Communication for Clinical Practice' (CCP), which is implemented from year 1 to year 5, medical students are taught to elicit a full social history from patients. This includes asking patients about their environmental and occupational exposures (e.g. dust, asbestos, chemicals, and pollutants), as a standard part of history-taking.

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.

Unfortunately, this year's team has had little contact with the faculty regarding the PHRC. However we note that there has been a change from the previous year due to the report, such as with more sustainable transport options, SH promotion, and the employment of another member of staff specifically focussing on Sustainability (Sustainability Officer). Furthermore, we know that there were plans and attention for sustainability and PH curriculum changes across the faculty, from full-time, part-time and volunteer clinical teachers. Curriculum changes have been relatively minor, as larger changes have to go through longer vetting processes.

21. How well are the aforementioned planetary health/Education for Sustainable Healthcare topics integrated longitudinally into the <u>core</u> 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.
Planetary Health is a theme throughout the curriculum implemented in a longitudinal fashion throughout the different blocks to help integrate it into everyday care and decision making. This is done relatively well. It is not given a 6 as there are still topics that are desired and could be well integrated, as well as depth of knowledge in some areas. Some areas are well integrated due to individual interest and research base.	

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?	
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.
Dr Iain Young is the Sustainability Lead and is an academic employed by the School of Medicine who is responsible for overseeing curriculum changes and was a contact for the PHRC project, who also engages in a lot of sustainability research in Liverpool.	

Section Total (52 out of 72)	**72%**

Back to Summary Page here

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 emphasised.*

1. Are there researchers engaged in planetary health research and healthcare sustainability research at your medical school?	
3	Yes, there are faculty members at the **medical school** who have a **primary r**esearch 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.

Dr Iain Young is Vice Dean of Student Experience and Risk at the Liverpool School of Medicine. His interest in sustainability is long standing, translating this across many disciplines in the university and in 2016 gained national recognition in the Green Gown Awards.

There is a new Sustainability Project Officer, Phoebe Archer, employed this year by the Medical School who is researching 'student travel behaviours and the reasons behind them including the beliefs, attitudes and perceptions affecting student travel choices and presenting barriers to change' to help create a campaign to improve this impact on their carbon footprint.

The LUHFT (Liverpool University Hospitals Foundation Trust) Clinical Sustainability Group, founded in The Royal Liverpool Hospital in 2021-22, has been continuing to create a network of doctors (and students) in the area who are interested in sustainability. This would help make changes in our affiliated hospitals, in the curriculum, and form a wider base of medical and non-medical individuals who have a (primary) research interest in sustainability or planetary health. This has continued from last year and they are engaging in research projects. This is not formally affiliated with the medical school however, and the research projects they are undertaking this year, such as a Dr Duranka Perara, in improving sustainability, are not utilising students and do not have official ties with the medical school. This is due to no formalised or easily accessible framework to include students, leading to only individual effort in including the medical school in their project/ or students.
Within the wider University, there are a number of individuals interested in Climate Change, Health, and Sustainability. We have made no updates on this since last year unfortunately.

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.

There is no dedicated department or institute dedicated to interdisciplinary planetary health research. The University has been developing new interdisciplinary research theme 'Climate Futures' (over prev 30 months) – bringing the University's research on climate and the environment under the headings of Science, Society and Solutions. This will allow the researchers and topics of Climate change to be focused together and allow increased promotion across the campus - creating a conceptual interdisciplinary department.
They hope to bring this into fruition in the next year.

In the meantime:
The School of Environmental Sciences in the University of Liverpool collaborates with governmental organisations (e.g. National Environment Research Council) and is affiliated with the departments of medicine, engineering in their sustainability ambitions via the Sustainability Team. However, the focus on Planetary Health is uncertain. There is an interdisciplinary Research Team in the Sustainability Team of UoL, which includes researchers from Health and Life Sciences, Science and Engineering, and Humanities and Social Sciences. They hope to explore different ways in which we contribute to climate change, ways to mitigate and adapt to it in communities, policy, etc.
Students and medical students are not yet affiliated with decision making, however the sustainability team have made plans this year to roll out a provisional student council including 9 students across the university to have their input into decisions.

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

There are Staff-Student EDI (Equality, Diversity and Inclusion) Meetings to help improve communications between faculty and students, for a responsive and flexible research agenda, as well as encourage EDI. These meetings are still a work in progress, but have been running now for a few

years. This doesn't get a 2 however as it is a general EDI meeting and subjects about climate and environmental research agenda will only be raised if done so by students. *The lack of input by those communities disproportionately affected has been acknowledged by the medical school last year. There have been no specific discussions this current year, though there is an Equality, Diversity and Inclusion Staff-student working group where this could be brought up in future.*

4. Does your institution have a planetary health website that centralises ongoing and past research related to health and the environment?	
3	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.
2	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.
1	The **institution** has an **Office of Sustainability website** that includes **some** resources related to health and the environment.
0	There is **no** website.
The University does have a dedicated Sustainability website. It is relatively easy to use, highlights how to get involved, upcoming events, and has the majority of all campus resources in one place or with links that direct you to different other places on the University website. It is kept updated. They do highlight upcoming events, for example Sustainability Week, however they do not centralise leaders in planetary health at your institution, and relevant funding opportunities. The only flaw is the lack of subheading specifically regarding planetary health, and there are few events and resources regarding planetary health as opposed to sustainability, which may reflect a wider deficit in awareness of PH in staff and students in the campus. The Medical school does not have a specific webpage for sustainability but GP Dr James Young has been active in trying to establish one this year after last year's PHRC report.	

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.

No conference has been hosted in the past 4 years on topics related to PH.

6. Is your <u>medical school</u> a member of a national or international planetary health or ESH organisation?	
1	Yes, the medical school is a member of a national or international planetary health **or** ESH organisation
0	No, the medical school is **not** a member of such an organisation
The Medical School is not a member of a national or international PH organisation.	

Section Total (9 out of 17)	**53%**

Back to summary page here

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.*

1. Does your medical school partner with community organisations to promote planetary and environmental health?	
3	Yes, the **medical school** meaningfully partners with **multiple** community organisations to promote planetary and environmental health.
2	Yes, the **medical school** meaningfully partners with **one** community organisation to promote planetary and environmental health.
1	The **institution** partners with community organisations, but the medical school is not part of that partnership.
0	No, there is **no** such meaningful community partnership.
Similar to last year, the medical school is a partner in recycling and composting as part of the institution, with CompostWorksUK and LivFoodGrowers. LivFoodGrowers constitutes one community organisation promoting local food supply. However, the medical school has not specifically partnered with community organisations yet, as this is an institution wide partnership.	

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.
The institution/ medical school does not currently offer any community-facing courses or events offered currently.	

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.
The medical school sends out weekly bulletins to respective year groups as well as monthly newsletters which sometimes feature sustainability and global health related topics such as promoting events organised by the student working group or introducing new officers and their collaboration with the medical school in new sustainability projects. However, this information is not regular nor does it cover specific issues/ tips. Alternatively, the institution now regularly communicates updates on sustainability and planetary health via a specific Sustainability Hub instead of in university updates each semester.	

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
As part of intercalation, the medical school offers a master's programme, Sustainable Food Systems MSc, which includes a compulsory module of Sustainable Food Systems (LIFE747). Within this programme, there are also optional modules that students may take to further their knowledge in planetary health and sustainable healthcare, such as Monitoring Urban Air Pollution (ENVS666), Evidence-based Public Health: Theory, Methods, and Practice (PUBH418), and Health Inequalities: Evidence and Policy (PUBH407). *Additionally, the medical school offers a masters in Public Health MPH, which comprises modules of Health & Society (PUBH150), Health Improvement (PUBH130), and Evidence-based Public Health: Theory, Methods, and Practice (PUBH418). The modules in this programme can also be studied individually as CPD.* *Also available for intercalating medical students is the Global Healthcare Ethics MSc course, which offers two optional modules that are related to public health, Health & Society (PUBH150) and Health Policy, Governance and Economics (PUBH170).* *For both postgraduate and intercalating students, the School of Medicine provides a number of research groups with focuses in planetary health and sustainability, such as Environment and Health,*	

Environment, sustainability and technology in Architecture, *Environmental Change*, and *Planning, Environmental Assessment and Management*.

The main hospital trust affiliated with the School of Medicine is working towards a sustainability plan for 2022-2025 and has published leaflets/resources to provide up-to-date educational material on sustainability and planetary health for healthcare professionals.

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 centres have accessible educational materials for patients.

Most educational materials for patients regard air pollution and smoking.
Some affiliated hospitals such as The Royal Liverpool and Broadgreen hospitals and Liverpool Women's have downloadable patient leaflets concerning cigarette smoke exposure and infection control (microbe exposure) for patients. However, some hospitals only provide leaflets on certain medical conditions with no information on environmental health exposures.

Under patient information, the Wirral University Teaching Hospital offers direct access to patient.info, which contains numerous articles on environmental health exposures. Such articles include "Industrial Dust Diseases," "Asbestos-related Disease," "How your environment affects skin conditions," "How air pollution affects your health," and "The effect of air pollution on asthma sufferers." Although these articles are accessible and relevant, it should be noted that these resources were not directly published by the Wirral University Teaching Hospital.

Additionally, Blackpool Teaching Hospitals have several accessible patient leaflets and health videos published on their website about environmental health exposures. In particular, they have published resources on "Aspergillosis during Demolition, Renovation, and Construction," "Smoking and Alcohol," " All about asthma," and numerous other guides on giving up smoking.

NB - as part of a student-led SAMP, this year, further educational materials are being looked into and promoted.

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.

No new data was found for this metric - the information as of 2021/2022 remains correct for 2022/2023.

Hospitals affiliated with the School of Medicine have not published their own resources on climate change and its health impacts for patients. However, the Wirral University Teaching Hospital website provides a link under the patient information category that includes articles addressing climate change. An example of a climate change article available on the website is "How to cope with climate change anxiety."

Section Total (7 out of 14)	**7**

Back to summary page here

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** *either* offers grants for students to enact sustainability initiatives/QI projects *or* sustainability QI projects are part of the core curriculum.
1	The **medical school** or **institution** encourages sustainability QI projects (to fulfil 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.
Monetary prizes have been promoted by the Dean of the Medical Schools for certain projects undertaken by students, however this is not specifically for sustainability related projects. At the end of the past academic year (July 2022) the medical school advertised a series of six summer projects related to sustainability with an available bursary of £1500 or £250 per week for six weeks. There were six project titles available to choose from and these covered a wide range of sustainability parameters or initiatives within the medical school. However, these projects did not go beyond initial meetings.	

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.

Overall, there are opportunities at multiple points in the curriculum to undertake either research, an elective with a planetary healthfocus but this is not a dedicated research programme, falling under the remit of the research and scholarship programme and therefore relies on supervisor interest or work that surrounds sustainability and planetary health, or a student seeking a sustainability related project themselves. Third year medical students are provided with a list of research projects, one of which they must complete. These include '"Reviewing the Evidence of the Effectiveness for Improving Diets of Population Level Interventions", "Chronic Kidney Disease of Nontraditional Cause (CKDnt): challenges for research and diagnostics", "Systematic review of covid therapeutics with assessment of evidence for use in low or middle income countries", and "Any topic for a systematic review or audit/service evaluation within an Acute Medicine of Infectious Diseases context." This includes some planetary health themes and allows students to explore the socioeconomic impacts of planetary health and sustainable healthcare themes, however it is not explicit and requires individual interest. For example, 3rd year student's (Htet Niang) RS project looking into PPE use with Dr Iain Young. There has been no change since the previous year.

Similarly, the student selected component of 5th year (SAMP) which involves a research project/audit, required student-initiative, and this year a student (Selina Aziz) is undertaking a sustainability/PH SAMP regarding public facing promotion. Dr Duranka Perara of the LUFHT Sustainability Group has offered projects to students this year, but this is not officially affiliated with the medical school.

As part of 4th year electives, students have undertaken UK based research and electives with Centre of Sustainable Healthcare both last year and this year stemming from interest in sustainability and planetary health. Furthermore, other 4th years take electives in Africa regarding Women's Health and the HIV crisis, regarding low SES area and disparity in this patient group. These are student-organised, but vetted by the university and support is given via the elective evenings to help support and enable students to undertake these elective opportunities. Given that there is no specific research programme this was given a 1 not a 2.

3. Does the <u>medical school</u> 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 web page 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.

There is no medical-school specific webpage for locating planetary health and/or sustainable healthcare projects or mentors nor is there a separate page/section on a larger institutional planetary health website. However this year, volunteer clinical teacher Verity Brooker, along with the medical school's Sustainability Officer (Phoebe Archer), are working on creating an intranet page regarding sustainability/ PH, after last year's report highlighted this issue.

There is some information on potential mentors to contact relating to planetary health (students and staff) as the medical school is currently in the process of compiling academics and drs who are interested in this area, however these are all distributed between different newsletters/articles for the medical school instead of a dedicated webpage.

The institution has a webpage dedicated to sustainability and planetary health highlighting opportunities for university students to get involved such as sustainability internships, volunteering and mapping the curriculum checking for the inclusion of planetary health themes such as the UN sustainable development goals. As this is not accessible as a medical school specific page, thus this has been awarded zero.

4. Does your <u>medical school</u> 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 organisation **with faculty support** at my medical school dedicated to planetary health or sustainability in healthcare.
1	Yes, there is a student organisation at my medical school dedicated to planetary health or sustainability in healthcare but it **lacks faculty support.**
0	No, there is **not** a student organisation at my institution dedicated to planetary health or sustainability in healthcare.

The staff-student Working Group (started in December 2021) includes representation from clinical skill staff, GPs, clinical fellows, faculty, and students from across the year groups. All members are dedicated to planetary health and sustainability and were involved in formulating ideas on how to integrate sustainability and planetary health into the curriculum. Following the regular meetings held last year (2021-2022), the group has been on hold this year (2022-2023) but there are plans to relaunch it in the new year (2023).

This group did not gain a 2 as this was not a student organisation, but a staff-chaired or staff-led organisation. This would be funded as it is held in office hours.
There is a Whatsapp student sustainability group (created in 2022) by Selina Aziz which promotes local and university events, and encourages participation in the above group, as well as creating a like-minded network passionate for sustainability and planetary health. However, this has limited impact without faculty support.

There is a new Sustainable Medicine student society focussed specifically in promoting sustainable healthcare in Liverpool, however there have not yet been any activities. Similarly, Students for Global Health Liverpool, re-formed last year, has some focus on PH, and is planning a sustainable food workshop to promote PH engagement.

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?	
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.

There is no such student in the medical school. The institution planned to have a student council regarding sustainability however we have no further updates about this from last year.

The Guild (The University of Liverpool Student Union) elected student body doesn't have any elected members who are specifically in the role of sustainability however both of the deputy presidents ran with policies of sustainability on their manifestos and are campaigning for a Green New Deal as a pose to the current university policy. They have been promoting gathering their own metrics regarding different themes as well for curriculum reform (Sustainability Mapping), including PH themes, as well as EDI (equality, diversity and inclusion). They noted that the medical school is somewhat estranged from the rest of the institution, and want to find the best way to encourage medical students and faculty into this process, while also campaigning for a greener and more sustainable policy.

6. In the past year, has the institution had one or more co-curricular planetary health programs or initiatives in the following categories? (1 point each)	
1	Projects where students are able to gain experience in organic agriculture and sustainable food systems, such as gardens, farms, community supported agriculture (CSA), fishery programs, or urban agriculture projects.
1	Panels, speaker series, or similar events related to planetary health that have students as an intended audience.
1	Events in which students learn directly from members of a local environmental justice community about the climate and environmental challenges they face, and how health professionals can partner with their community to address these exposures and impacts.
1	Cultural arts events, installations or performances related to planetary health that have students as an intended audience.
1	Local volunteer opportunities related to building community resilience to anthropogenic environmental impacts.
1	Wilderness or outdoors programs (e.g., that organise hiking, backpacking, kayaking, or other outings for students)

1. The student union advertises opportunities for students to get involved with Sustainable Urban agriculture projects, which has a 'Get Growing' campaign and a Hedgehog Friendly campus. This would fall under urban agriculture projects.

2. There are multiple guest lectures and educational events hosted by the university and the student union especially planned for the upcoming Sustainability Week 2023 - 20th of February until the 28th, including Self-and-Collective Care for Activists-Climate Anxiety and Burnout, 'Tent Talks' with Hana Sanadi, and How to Improve Biodiversity in your area. Naturally it focuses primarily on sustainability, but as it does address climate anxiety, we are giving this score for crossing into the subject of planetary health.

4. There are very few events that are related to sustainability that are targeted specifically for medical/healthcare students specifically, especially regarding local environmental

justice-cum-healthcare. There have been student-organised events for student audiences such as a medical student society (liverpool lifestyle medicine) specifically catering towards sustainable food sourcing and nutrition and the information and science behind these.

5. There are a number of events planned by the institution 2022-23, during sustainability week and as part of the 'Give it Go' fresher's event campaign. These involve the screening of films to students in halls in particular relating to sustainability as well as craft/workshop sessions pertaining to sustainable art work and literature.

https://www.liverpool.ac.uk/sustainability/get-involved/events/php/index.php?event=103598

https://www.liverpool.ac.uk/sustainability/get-involved/events/php/index.php?event=103475

https://www.liverpool.ac.uk/sustainability/get-involved/events/php/index.php?event=103609

https://www.liverpool.ac.uk/sustainability/get-involved/events/php/index.php?event=103607

https://www.liverpool.ac.uk/sustainability/get-involved/events/php/index.php?event=103594

6. Liverpool guild advocates quite a few opportunities for students to get involved with wildlife and sustainable horticulture in the vicinity of the university some of which are particularly targeted into dealing with the consequences of human's harm to the environment such as Leave Liverpool tidy. Other projects are more involved with the maintenance of local green spaces and helping with the preservation of local flora and fauna such as green fingers which allows for teaching and inspiration of a younger generation, nature recovery gym and the university gardening program.

https://www.liverpoolguild.org/volunteering-opportunities/leave-liverpool-tidy-volunteer

https://www.liverpoolguild.org/volunteering-opportunities/green-fingers-volunteers

https://www.liverpoolguild.org/volunteering-opportunities/nature-recovery-green-gym

https://www.liverpoolguild.org/volunteering-opportunities/gardening-volunteer-5239

7. There are multiple societies on both the institutional level and the medical school level which are involved in wilderness and outdoors activities

Sports clubs such as cycling and kayaking and many societies have walking activities which either are carried out as routine or with fundraising in mind such as the Liverpool medical school societies three peaks challenge. Clubs that are involved in outdoor hiking such as wilderness medicine. As well as this there is a planned nature walk for sustainability week.

https://www.liverpoolguild.org/groups/green-society-ab28

https://www.liverpoolguild.org/groups/liverpool-wilderness-medicine

https://www.liverpool.ac.uk/sustainability/get-involved/events/php/index.php?event=103613

Section Total (9 out of 15)	**60%**

Back to summary page here

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 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.*

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

The Medical School has salaried individuals. The Medical School has a Head of Sustainability, Dr Iain Young. The medical school has recently appointed a new Sustainability Project Officer, Phoebe Archer. She has been tasked primarily to continue a sustainability project from Dr Iain Young. The GP lead of Sustainability, Dr James Young, also focuses on sustainability aspects of the GP coursework and is the contact for further developments.

The wider institution has an environmental Sustainability Team responsible for carrying out the sustainability strategy of the university, which covers all domains of sustainability, this comes under the department for Estate Management Division of Facilities, Residential and Commercial Services. This here constitutes the Office of Sustainability, and employs multiple staff in the institution. They also give operational support. There is also the sustainability support team who organise how governance, communications, engagement and action plans are undertaken and to bring sustainability into day to day practice of the university and its stakeholders. It should be noted that this Sustainability Team may have other day-to-day responsibilities other than Sustainability, and that the affiliation with the medical school has room for improvement.

A new student society has been set up regarding Sustainable Medicine this year, but the activity has not yet started, but hopes to do so in the next academic year.

https://www.liverpool.ac.uk/sustainability/our-sustainable-university/

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
	The university itself has set a goal to achieve net zero by at least 2035, with an established climate plan published outlining how they will complete this target. The medical school itself has not addressed its own net zero goals or set any targets for addressing its own carbon footprint. However the targets set out by the university will include the medical school activity therefore this metric is given a 3.

3. Do buildings/infrastructure used by the medical school for teaching (not including the hospital) utilise 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.
No, the campus buildings do not currently use renewable energy, and this includes the medical school itself (Cedar House) as well as the clinical skills and HARC (Human Anatomy Resource Centre) buildings. Liverpool university does generate most of its electricity on site however this is currently from gas resources. There is no change from 21-22.	

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

The newer buildings that have been built were built using sustainable building practices, with efforts to retrofit older buildings. An example of a newer building is Cedar House, with its refurbishment. The wider campus has many features of sustainability, with BREEAM Excellent new buildings, e.g. Management School, Central Teaching Hub, Vine Court. Furthermore, there are "Green and brown roofs, providing environmentally friendly habitats for local flora and fauna" and roof gardens, or "Solar heat and power generation in the Foundation building, Electrical Engineering, Management School, Dover Court and Vine Court".

In renovation updates mention of sustainability: Our sustainable University - Sustainability - University of Liverpool And City campus - Sustainability - University of Liverpool, mention many items such as ongoing ultra-low energy LED lighting replacements schemes at Biosciences, Sydney Jones Library and the Sports Centre with plans for many more across the university. The energy is connected to the combined energy plant next door.

The buildings have been retrofitted as far as they can be, with LED lighting, connection to the Energy Centre on campus (combined heat and power system, alongside sequencing controls). All of the changes have been made according to building planning permissions, and are also limited due to these permissions (e.g. they cannot double glaze). They have attained a score of 3 as they have retrofitted as far as possible. The Masterplan Estate Strategy 2026+ describes plans for redevelopment of buildings for 2026, which has sustainability as a major focus. As plans have not yet been retrofitted, this has gained a 2, however it is acknowledged that there are plans for this.

5. Has the <u>medical school</u> 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-utilised 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.

There is a new project started by Dr Iain Young which has now been taken over by Phoebe Archer, the Sustainability Project Officer for the Medical School. This project has not yet been implemented and is currently in the process of conducting data collection. The aim of the project is to address the carbon footprint of travel for the 1200 MBChb students to and from placements sites, the furthest of which would be Southport (19 miles) or Blackpool (Blackpool students are given accommodation). They plan to produce education resources, interventions, and awareness campaigns to try and encourage and implement more environmentally friendly travel choices. They have released a student survey to gather student experiences and suggestions which will be collected after the 17th of March. (2) Although the results are not published yet, this is a major improvement from last year. Carpooling is utilised but on students' own initiative rather than Medical School's encouragement or via the use of any apps. Southport and Ormskirk Hospital has been providing a new mini-bus transportation service this year open to all students placed there, trialling different times, which has been well received by students.

The Royal Liverpool Hospital is accessible via foot/ cycle/ bus, so by default its location allows environmentally-friendly transportation. However the other sites are normally accessed via public transport or cars, which is the main focus of this research project. It should be noted and commended that there is an improvement on this metric compared to last year.

6. Does your <u>medical school</u> have an organics recycling program (compost) and a conventional recycling program (aluminium/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.

Yes, the medical school building Cedar House has conventional recycling in most communal areas and kitchens, which is a standard for every university campus building. The university uses an external company, SUEZ recycling and recovery to process its recycling management. There is composting which runs with the central universities composting programme, but this is not accessible by the medical school thus this score was given 1 rather than 2.
All university halls of residence also have the three recycling bins where staff and students can separate rubbish.

https://www.liverpool.ac.uk/sustainability/our-sustainable-university/waste-and-recycling/

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 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.
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.

The medical school does not have direct influence on the campus' catering system. However, the university has recognised the need to procure catering goods sustainability, utilising their buying power. The university states that they strive to choose sustainable suppliers, such as local producers not being discriminated against in procurement decisions. They also recognise the need to encourage suppliers to reduce their carbon footprint.

The university has published sustainability criteria that are used by the university under the six main principles of sustainable food. The criteria are obligations that will be kept when making

procurement decisions. They also have strict commitments and targets surrounding the food available in their own food outlets. These cover most food groups and are mandatory targets. The medical school do not publish specific advice or criteria but also do not provide food outlets to students and this is all through the guild of students. The medical school has no active campaigns regarding this however, and thus this is a 1.

https://www.liverpool.ac.uk/sustainability/our-sustainable-university/purchasing-and-catering/

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.

The medical school does not have any procurement information or dedicated staff members relating to its supply chain.
The university is a member of the North Western Universities Purchasing Consortium. The group has published frameworks relating to various parameters of sustainable procurement. The university says it works to ensure that sustainability is considered in its procurement activity but does not have its own set criteria for this. They do however have some published guidance surrounding its supply chain actions but these are not comprehensive and do not cover all the realms of procurement.

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.

There are no sustainability requirements for events hosted at the medical school. This is something that is a strong recommendation for the next academic year, with guidelines specific to broad event categories such as teaching sessions, social events and activities and conferences.

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.
Lab space sustainability initiatives are made through central university and are not medical school specific. There are no formal lab spaces linked specifically with the medical school, only lecture spaces. The medical school does however use HARC and clinical skills areas. There are no initiatives to assist in making lab spaces more sustainable.	

11. Does your institution's endowment portfolio investments include fossil-fuel companies?	
4	The institution is **entirely divested** from fossil fuels **and** has made a **commitment to reinvest divested funds** into renewable energy companies or renewable energy campus initiatives.
3	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 organised advocacy** for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been **no efforts** to change that.
The university pledged in 2019 to end any current investment in fossil fuel companies. They have an ethical investment policy outlined below: *It is divesting from many companies in certain unethical sectors of the economy but has exclusion criteria limiting itself, such as companies that receive 10% or more of their revenue from the sale of fossil fuels. This is therefore not an entirely perfect pledge due to the fact companies that receive less than 10% of sale revenue from fossil fuels will still be included in investment decisions.*	

Section Total (15 out of 32)	**47%**

Back to summary page here

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

Section	Raw Score %	Letter Grade
Planetary Health Curriculum (30%)	(52/72) x 100 = 72.22%	B
Interdisciplinary Research (17.5%)	(9/17) x 100 = 52.94%	C
Community Outreach and Advocacy (17.5%)	(7/14) x 100 = 50.00%	C
Support for Student-led Planetary Health Initiatives (17.5%)	(9/15) x 100= 60.00%	B-
Campus Sustainability (17.5%)	(15/32) x 100 = 46.88%	C
Institutional Grade	**58.38%**	**C+**

Report Card Trends

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