

2023

2nd Annual online
**Health Geography Symposium for
PhD and Emerging Researchers**



2nd Annual Online
Health Geography
Symposium 2023

2nd

ANNUAL HEALTH GEOGRAPHY SYMPOSIUM

ABSTRACT VOLUME

Organizers



International Geographical
Union Commission on Health
and the Environment
(IGU CHE)



**Maastricht
University**



UNIVERSIDADE DE COIMBRA



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Health Geography
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Organizing Committee



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Organizers



International Geographical
Union Commission on Health
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(IGU CHE)



**Maastricht
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UNIVERSIDADE DE COIMBRA



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BUCHAREST



SERAMPORE GIRLS' COLLEGE

Programme Overview

Day	Time	Plenary room	Breakout room 1	Breakout room 2	Breakout room 3
14 th December	12:00 - 12:30	Opening Session	*	*	*
	12:35 - 13:35	Ph.D. Outcome	Climate Change and Health	Environment and Health	Ph.D. Progress
	13:45 - 15:00	Ph.D. Outcome	Infectious Diseases and Health Geography	Environment and Health	Ph.D. Progress
15 th December	12:00 - 13:00	Ph.D. Progress	Gender and Health	Gender and Health	Health geography
	13:10-14:40	Ph.D. Progress	Urban Health	Health geography	Health geography
	14:45 - 15:00	Closing session	*	*	*



Conference Chair and Welcome address on behalf of the International Geographical Union Commission on Health and the Environment (IGU CHE)

Eva Pilot – Scientific Secretary of IGU CHE

Eva Pilot is a passionate, curious researcher and docent in global health. Her research interests cover health geography, health monitoring, maternal health, environment and health and health system research. She is the Scientific Secretary of the International Geographical Union Commission on Health and the Environment and co-chair of the Network on Health Geography Research. Her work is nested in the Health Geography and System Thinking Group, embedded in the Health Law and Governance Group at Maastricht University, Netherlands.



Opening Lecture – Putting the "Health" in Health Geography

Michael R. Desjardins - Johns Hopkins Bloomberg School of Public Health, USA

Dr. Michael R. Desjardins is an Assistant Research Professor and core faculty member in the Spatial Science for Public Health Center & Department of Epidemiology at Johns Hopkins Bloomberg School of Public Health. His general research interests are medical geography, spatial epidemiology, spatial statistics and modeling, geostatistics, geo-visualization, mixed methods, and longitudinal analysis. His research has been and is currently funded by numerous intramural and extramural sources, including the NSF, NIH, and the Maryland Department of Health. Dr. Desjardins teaches numerous courses at Hopkins and supervises a variety of master's and PhD students and postdoctoral fellows. Dr. Desjardins is the Special Issues Editor for *Health & Place*, editorial boards for *Wellbeing, Space and Society*, and *Cartography and Geographic Information Science (CaGIS)*. He also serves on the organizing committee for the upcoming 2024 International Medical Geography Symposium and is the United States representative for the International Geographical Union & Commission on Health and Environment.



Closing remarks on behalf of the International Geographical Union Commission on Health and the Environment (IGU CHE)

Liliana Dumitrache – Co-Chair of IGU CHE

Dr. Liliana Dumitrache is a Professor and Head of the Department of Human Geography at the University of Bucharest. Dr Dumitrache's current academic activity, research, and teaching is focussed on geodemography and geography of health and health care. She manages both master's and undergraduate degrees offered by her institution. She is the geographer to have introduced Geography of Health and Health Care as a teaching course in higher education curricula, along with researching this field in Romania. She is Co-Chair of the International Geographical Union Commission of Health and the Environment.

Programme Schedule

14 th of December		
Time	Opening Session	
12:00 - 12:30	Opening Session	
Plenary room	Eva Pilot	Welcome address and remarks on behalf of International Geographical Union (IGU) Commission on Health and the Environment
	Michael R. Desjardins	Plenary lecture on Putting the "Health" in Health Geography
12:35 - 13:35	Session 1	
Plenary room	Ph.D. Outcome Chair: Asraful Alam	Stunting and associated factors among under five children in Kolda region, in southern Senegal: Socio-spatial analysis <i>Cheikh Tidiane SAMB</i> Space-Time Analysis of Tuberculosis (2016-2020) in South Punjab, Pakistan <i>Munazza Fatima, Department of Geography, The Islamia University Bahawalpur Pakistan</i> Reducing the burden of anemia in Indian women of reproductive age through clean-air targets and increased crop diversity <i>Arup Jana, Dept. of Population & Development, International Institute for Population Sciences, India</i>

<p>Breakout room 1</p>	<p>Climate Change & Health Chair: Ronan Foley</p>	<p>Cardiorespiratory Diseases and Hospitalizations Aggravated by Extreme Climate Variables in the Brazilian Amazon <i>Mariana Andreotti DIAS, PPgDEM/UFRN; FGVcemasp</i></p> <p>Factors Affecting Public Awareness on low-carbon lifestyle-based stakeholders analysis in China <i>Yan Wu, Maastricht University</i></p> <p>Contested Quantification for Planetary Health - A critical look at the datafication of nature <i>Paula Hepp, FHML Maastricht University</i></p>
<p>Breakout room 2</p>	<p>Environment and Health Chair: Narendra Kumar</p>	<p>Introduction of Railways in Colonial Bengal and it’s impact on Public Health: Few contradictory reports <i>Laboni Sarkar, West Bengal State University, Barasat</i></p> <p>Analyzing Inequality, Ecological Decline, and Cooling Island Effects for Improved Public Health in Urban Parks of Delhi <i>Priyanka Jha, Jamia Millia Islamia, India</i></p> <p>The interaction of Reminiscence Therapy plus walking interventions on cognitive performance and well-being of older adults with early stage dementia of Alzheimer Type. <i>Carmen Pocknell; Cassandra Dinius, Maynooth University</i></p> <p>The relationship between bronchial asthma, sanitation activity in landfill sites, and accessibility to sanitation facilities <i>Mădălina Aleca, Craiova University, Faculty of Medicine</i></p>
<p>Breakout room 3</p>	<p>Ph.D. Progress Chair: Liliana Dumitrache</p>	<p>Assessment of urban outdoor thermal comfort conditions as a factor influencing pedestrians wellbeing <i>Tiago Silva, University of Lisbon, Portugal</i></p> <p>Climate crisis adaptivity in urban primary healthcare <i>Jaqueline Hildebrandt, Institute of Hygiene and Public Health, University Hospital Bonn, Bonn, Germany</i></p> <p>Marine fishing and climate change: a China’s perspective on fisheries economic development and greenhouse gas emissions <i>Yidan Xu, Maastricht University</i></p>
<p>13:45 - 15:00</p>		<p>Session 2</p>

<p>Plenary room</p>	<p>Ph.D. Outcome Chair: Liliana Dumitrache</p>	<p>The impact of heat waves on mortality in São Paulo, Brazil: a space-time analysis of excess mortality among people aged 65 years and over <i>Sara Lopes de Moraes, University of São Paulo</i></p> <p>Determinants of geographic distribution of age-specific mortality in Dakar, Senegal. <i>Assane Niang Gadiaga, University of Southampton</i></p> <p>East Tennessee Older Women's Perceptions of Health Policies <i>Heather Davis, University of Tennessee</i></p>
<p>Breakout room 1</p>	<p>Infectious Diseases and Health Geography Chair: Alexandra Cioclu</p>	<p>Impact of socio-economic factors on Tuberculosis treatment outcomes in Jigawa State, Nigeria: A Mixed Methods Study <i>Dr Muhammad Abdulkadir, Geography Department Sulle Lamido University Kafin Hausa Jigawa State</i></p> <p>Geospatial analysis of the Health-Associated Socio-economic and Infrastructural Disparities during COVID-19 in Kolkata Municipal Corporation <i>Tanmoy Basu, Department of Geography, Katwa College</i></p> <p>Excess Mortality due to Covid-19 Pandemic: A Global Scenario <i>Amrita Paul, Vidyasagar University</i></p> <p>Spatial Patterns, Hotspots, and Drivers of HIV/AIDS in Africa <i>Dorcas Olawuyi, Department of Geography, University of Ibadan</i></p> <p>Seasonal Incidence of Malaria and its Spatiality in Urban Expansion Zones in Manaus, Amazonas, Brazil <i>Rayane Almeida, Federal University of Amazonas</i></p> <p>Climate Variability's Impact on Residents' Health Quality in Southern Nigeria's Calabar River Basin <i>Abali Temple, Rivers State University</i></p>

<p>Breakout room 2</p>	<p>Environment and Health Chair: Shahnaz Basheer</p>	<p>Spatial assessment of health infrastructure of Purulia district using GIS with special reference to tribal population <i>Gourab Dutta, Adamas University</i></p> <p>Territorial disparities in the distribution of healthcare units in the Bucharest-Ilfov Metropolitan Area after the Pandemic (the case of family physicians units) <i>Cristian Cazacu, University of Bucharest</i></p> <p>The access of the population from Romanian rural communities to sanitary equipments <i>AdrianToma, University of Bucharest</i></p> <p>Tourism, health, geography and their implications on building a sustainable environment <i>Ana Maria Agudaru, Alexandru Ioan Cuza University of Iasi</i></p> <p>Eccentric Effects of Plants: An Unavoidable Facet Of Human-Development <i>Sipra Biswas, Kultali Dr. B. R. Ambedkar College, West Bengal</i></p> <p>Eco friendly and sustainable technology in construction <i>Vikas Durgam, India</i></p>
<p>Breakout room 3</p>	<p>Ph.D. Progress Chair: Michael R. Desjardins</p>	<p>Caring for Older People Living with HIV in Long-Term Care in BC’s Fraser Health Region <i>Leah Coppella, Simon Fraser University</i></p> <p>Does Prolonged Urban Exposure associate with elevated Obesity Among Rural-to-Urban Migrants in India? Insights from the Longitudinal Aging Study in India <i>Bittu Mandal, Indian Institute of Technology Indore</i></p> <p>Nature Based Solutions for Climate Change Impacts on Food Production in China <i>Pim Martens, University College Venlo, Maastricht University, The Netherlands</i></p> <p>Oral Health. Concept. <i>Alexandru Mihailescu, Faculty of Geography, “Simion Mehedinti Doctoral School”, University of Bucharest</i></p>

15 th of December		
12:00 - 13:00	Session 3	
Plenary room	<p>Ph.D. Progress Chair: Sophie Vanwambeke</p>	<p>Public policy issues surrounding the care of pregnant women in vulnerable situations in Ile-de-France <i>Maria IASAGKASVILI, University Rennes 2 - ESC - UMR ESO Rennes</i></p> <p>Environmental Quality around Schools: A Privilege for the Wealthy or a Right for All? <i>Madeleine Guyot, UCLouvain, Earth & Life Institute, Earth and Climate, Belgium</i></p> <p>The importance of spatial vector distribution models to prevent tick-borne diseases in cattle in Ecuador <i>Ximena Pérez-Otáñez, Earth & Life Institute, UCLouvain, Louvain-la-Neuve</i></p>
Breakout room 1	<p>Gender & Health Chair: Liliana Dumitrache</p>	<p>The role of family structure on family planning use of women in West Bengal: A perspective of three decades <i>Sourav Mondal, International Institute for Population Sciences (IIPS), India</i></p> <p>Estimation of Mean Menopausal Age and its Variations across India: Evidence from large scale surveys <i>Ranjita Ghosh, Institute for Social and Economic Change, India</i></p> <p>Exploring Nutritional Diets and Well-being Among Rural Scheduled Tribe Women in Reproductive age Group: A case of Canning Sub-division, South 24 Pargana District. West Bengal, India <i>Mst Tania, Parveen</i></p> <p>Prevalence of Superstitions and Myths among rural Women's in relation to Health aspects in Malda District of West Bengal (India): A Micro Level Analysis <i>Md Areful Hoque, St. Xavier's College Mahuadanr Jharkhand India</i></p>

<p>Breakout room 2</p>	<p>Gender & Health Chair: Azize Millogo</p>	<p>Health Issues of Tiger Widows in the Sunderbans, West Bengal India <i>Debaroti Das, PND College, Palta</i></p> <p>Assessing Women's Wellbeing in India <i>Hemant Mishra, Jamia Millia Islamia, New Delhi, India</i></p> <p>Investigating Various Correlates Associated with Maternity Care Expenditure in India: Evidence from National Sample Survey Data <i>Abhishek Kumar Singh, Jawaharlal Nehru University, India</i></p>
<p>Breakout room 3</p>	<p>Health Geography Chair: Ricardo Almendra</p>	<p>Access and Utilization of Healthcare Services in Wushishi Local Government Area of Niger State, Nigeria <i>Abdulmuakhhir Ishaq, Federal University of Technology Minna</i></p> <p>Bargarh District A Case Study of Cancer Patients <i>Boleshwar Patra, Panchayat College Bargarh, Odisha, India</i></p> <p>Accessibility to cardiovascular hospitals in Romania <i>Alexandra Cioclu, University of Bucharest, Faculty of Geography</i></p> <p>Comparative study on Efficiency of primary health centers: Geographical disparities to access health care service in Kerala, India <i>Rahna N N, India</i></p>
<p>13:10 - 14:40</p>		<p>Session 4</p>

<p>Plenary room</p>	<p>Ph.D. Progress Chair: Sophie Vanwambeke</p>	<p>Trends and Patterns of Elderly Population Growth in Urban Dynamics in India <i>Abhishek Kumar Singh, Jawaharlal Nehru University, India</i></p> <p>Tourist mobility – principles, models, and integrated policies of organizing and planning for tourist travels. <i>Maria-Alexandra Ivanescu, Ion Mincu University of Architecture and Urban Planning</i></p> <p>One Health and Social Ecology, an approach to vector-borne disease research: Case study - Lyme borreliosis in Bonn <i>Maria Luisa Espinel-Ramos, Graduate School One Health & Urban Transformation - Center for Development Research - University of Bonn</i></p>
<p>Breakout room 1</p>	<p>Urban Health Chair: Alexandra Cioclu</p>	<p>Cardiovascular disease morbidity and mortality: modelling of risk factors in Lisbon Metropolitan Area, Portugal <i>João Pedro Marques-Reis, Centre of Geographical Studies, Institute of Geography and Spatial Planning, University of Lisbon</i></p> <p>The Perception of Noise in Coimbra Catarina Ferrão, Geography and Tourism Department, University of Coimbra</p> <p>A Spatial Regime Analysis of Motorcycle Accidents in Nigeria <i>Judah Moyin-Jesu, Department of Geography, University of Ibadan</i></p> <p>The importance of Lisbon's urban environment for well-being <i>Iuria Betco, Institute of Geography and Spatial Planning</i></p> <p>Impact of Urbanization and Mining Activities on Ecosystem Health in the Asansol-Durgapur Industrial Region of West Bengal in India Manirul Islam, Aliah University, India</p>

<p>Breakout room 2</p>	<p>Health Geography Chair: Mariana Andreotti Dias</p>	<p>Analysing Depression among Adolescents and Young Adults across Uttar Pradesh and Bihar <i>Sneha Kumari, The INCLEN Trust International, New Delhi, India</i></p> <p>Exploring Spatial Clusters of Respiratory Diseases in South Punjab, Pakistan: A Geospatial Epidemiological Analysis <i>Neda Firouraghi, Mashhad University of Medical Sciences</i></p> <p>A study on health linkages and nutritional status among women of Thiruvananthapuram District, Kerala, India <i>Shahnaz Basheer, Central University of Tamil Nadu, Thiruvavarur, India</i></p> <p>Childhood Undernutrition across Caste/Ethnic Groups in India: Prevalence, Determinants, and Transition from 2005–2006 to 2019–2021 <i>Pritam Ghosh, Ramsaday College, Haora, West Bengal 711401, India</i></p> <p>Retail Trade and Availability of in Natural and Ultra-Processed Foods in a Brazilian Metropolitan Area <i>Gomes da Silva Verônyky, CCS – UFPE</i></p>
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<p>Breakout room 3</p>	<p>Health Geography Chair: Asraful Alam</p>	<p>On the Margins: Exploring Barriers to Health Service Accessibility for Tribal Women in India <i>Zainul Abedin, Jamia Millia Islamia, India</i></p> <p>Groundwater Arsenic Risk Assessment for Human Health Geography of Deltaic West Bengal, India <i>Debaroti Das, PND College, Palta</i></p> <p>Exploratory study on accessibility to healthy food options. Case study: Dambovita, Romania <i>Angelo Andi Petre, University of Bucharest, Faculty of Geography</i></p> <p>Status, problematics and challenges on post-pandemic health systems: comparison of Madagascar and Romanian people’s access on health care in the last five years <i>Yolande Raharilantsoa, Mention Géographie, University of Antananarivo</i></p> <p>The Difference and Relationship between Health and Socio-Economic Status of the Paddy Cultivators - A Analytical Study on Koch Bihar District, West Bengal <i>Abdul Halim Miah, University of North Bengal, India</i></p>
<p>14:45 - 15:00</p>	<p>Closing Session</p>	
<p>Plenary room</p>	<p>Liliana Dumitrache</p>	<p>Closing remarks on behalf of International Geographical Union (IGU) Commission on Health and the Environment</p>



Table of Content



SECTION-A		PH.D. OUTCOME
Thematic Topics		Title of the presentation
01	The impact of heat waves on mortality in São Paulo, Brazil: a space-time analysis of excess mortality among people aged 65 years and over Sara Lopes de Moraes¹	
02	Reducing the burden of anemia in Indian women of reproductive age through clean-air targets and increased crop diversity Arup Jana¹, Aparajita Chattopadhyay²	
03	East Tennessee Older Women's Perceptions of Health Policies Heather A. Davis¹, Lisa C. Lindley², Solange Muñoz³	
04	Stunting and associated factors among under five children in Kolda region, in southern Senegal: Socio-spatial analysis Cheikh Tidiane Samb¹, Aminata Niang Diène²	
05	Space-Time Analysis of Tuberculosis (2016-2020) in South Punjab, Pakistan Munazza Fatima^{1*}, Ibtisam Butt², Neda Firouraghi³, Maria Khalil⁴ and Behzad Kiani⁵	
06	Determinants of geographic distribution of age-specific mortality in Dakar, Senegal Assane Niang Gadiaga¹, Aminata Niang Diene², Catherine Linard³	
07	The importance of spatial vector distribution models to prevent tick-borne diseases in cattle in Ecuador Ximena Pérez-Otáñez^{1,4}, Richar Rodríguez-Hidalgo^{1,2}, Lenin Ron-Garrido^{1,2,3}, Sophie O. Vanwambeke⁴	
SECTION-B		PH.D. PROGRESS PRESENTATION
08	Assessment of urban outdoor thermal comfort conditions as a factor influencing pedestrians wellbeing Tiago Silva¹, António Lopes^{1,2}; João Vasconcelos^{1,2,3}	
09	Climate crisis adaptivity in urban primary healthcare Jaqueline Hildebrandt¹, Thomas Kistemann²	
10	Marine fishing and climate change: a China's perspective on fisheries economic development and greenhouse gas emissions Yidan Xu¹, Pim Martens² and Thomas Krafft³	
11	Caring for Older People Living with HIV in Long-Term Care in BC's Fraser Health Region Leah Coppella¹	
12	Oral Health Concept Alexandru Mihailescu¹, Dumitrache Liliana², Nae Mariana³, Simion Gabriel⁴, Suditu Bogdan⁵	
13	Environmental Quality around Schools: A Privilege for the Wealthy or a Right for All? Madeleine Guyot¹, Harmony Brulein¹; Antoine Lecat²; Sophie O. Vanwambeke¹	
14	Nature Based Solutions for Climate Change Impacts on Food Production in China Yan Yu¹, Pim Martens²	
15	Trends and Patterns of Elderly Population Growth in Urban Dynamics in India	

	Abhishek Kumar Singh¹, Pawan Kumar Yadav²
16	Tourist mobility – principles, models, and integrated policies of organizing and planning for tourist travels. Maria-Alexandra Ivănescu¹, Mihaela-Hermina Negulescu², Marta Benages-Albert³
17	One Health and Social Ecology, an approach to vector-borne disease research: Case study - Lyme borreliosis in Bonn. Maria Luisa Espinel-Ramos¹, Timo Falkenberg²
18	Public policy issues surrounding the care of pregnant women in vulnerable situations in Ile-de-France Maria Iasagkasvili¹, Clélia Gasquet²
19	Does Prolonged Urban Exposure associate with elevated Obesity Among Rural-to-Urban Migrants in India? Insights from the Longitudinal Aging Study in India Bittu Mandal¹, Kalandi Charan Pradhan²
SECTION-C	
GENERAL PRESENTATION	
Climate Change and Health	
20	Cardiorespiratory Diseases and Hospitalizations Aggravated by Extreme Climate Variables in the Brazilian Amazon Mariana Andreotti Dias¹, Reizane Maria Damasceno SILVA², Francisco Jablinski CASTELHANO³, Julia MOORE⁴, Vitoria BARBOSA⁵, Weeberb Joao REQUIA⁶
21	Factors affecting public awareness on low-carbon lifestyle-based stakeholders' analysis in China Yan Wu¹, Pim Martens², Thomas Krafft³
22	Contested Quantification for Planetary Health - A critical look at the datafication of nature Paula Hepp¹, Anja Krumeich², Mohammed Nadiruzzaman³
23	Climate Variability's Impact on Residents' Health Quality in Southern Nigeria's Calabar River Basin Temple Probyne Abali¹
Environment and Health	
24	Introduction of Railways in colonial Bengal, and its impact on public health: Few contradictory reports Laboni Sarkar¹
25	Analyzing Inequality, Ecological Decline, and Cooling Island Effects for Improved Public Health in Urban Parks of Delhi Priyanka Jha¹, Pawan Kumar Yadav²
26	The relationship between bronchial asthma, sanitation activity in landfill sites, and accessibility to sanitation facilities Mădălina Aleca¹, Camelia Teodorescu², Alexandra Cioclu²
27	The interaction of Reminiscence Therapy plus walking interventions on cognitive performance and well-being of older adults with early-stage dementia of Alzheimer Type. Carmen Pocknell¹, Pocknell C.E.² Dinius C.J.³ Caffrey M.P.⁴ Foley R.⁵ Commins S.⁶ Roche R.A.P.⁷
28	Impact of Urbanization and Mining Activities on Ecosystem Health in the Asansol-Durgapur Industrial Region of West Bengal in India

	Manirul Islam¹, Moududa Khatun²
29	The Perception of Noise in Coimbra Ferrão, Catarina¹; Almendra, Ricardo²
30	The access of the population from Romanian rural communities to sanitary equipment's Adrian Toma¹, Marinela Crețu²
31	Eccentric Effects of Plants: An Unavoidable Facet of Human-Development Sipra Biswas¹
32	Eco friendly and sustainable technology in construction Durgam Vikas¹, K Nagaraja²
Gender and Health	
33	The role of family structure on family planning use of women in West Bengal: A perspective of three decades Sourav Mondal¹, Manas Ranjan Pradhan²
34	Estimation of Mean Menopausal Age and its Variations across India: Evidence from large scale surveys Ranjita Ghosh¹, T.S. Syamala²
35	Exploring Nutritional Diets and Well-being Among Rural Scheduled Tribe Women in Reproductive age Group: A case of Canning Sub-division, South 24 Pargana District. West Bengal, India Tania Parveen¹, Suraj Tamang¹
36	Prevalence of Superstitions and Myths among rural Women's in relation to Health aspects in Malda District of West Bengal (India) : A Micro Level Analysis Md Areful Hoque¹
37	Health Issues of Tiger Widows in the Sunderbans, West Bengal India Debaroti Das¹, Umashankar Mandal²
38	Assessing Women's Wellbeing in India Hemant Mishra¹ Asif¹, Zainul Abedin², Jamia Millia Islamia², Navneet Kaur³, Jamia Millia Islamia³, Shahzad Ahmad⁴
39	Investigating Various Correlates Associated with Maternity Care Expenditure in India: Evidence from National Sample Survey Data Abhishek Kumar Singh¹
Health Geography	
40	Access and Utilization of Healthcare Services in Wushishi Local Government Area of Niger State, Nigeria Abdul Muakhhir Ishaq¹, Mukhtar Falmata², Usman Muhammed Nma³, Waziri Aliyu Mahmood⁴, Ahmed Yusuf⁵, Abdulkarim Ishaq Aliyu⁶
41	Bargarh District: A Case Study of Cancer Patients Boleshwar Patra¹
42	Accessibility to cardiovascular hospitals in Romania Alexandra Cioclu¹
43	Analysing Depression among Adolescents and Young Adults across Uttar Pradesh and Bihar Sneha Kumari¹, Robin Raj²

44	A study on health linkages and nutritional status among women of Thiruvananthapuram District, Kerala, India Shahnaz Basheer¹
45	Spatial assessment of health infrastructure of Purulia district using GIS with special reference to tribal population Gourab Dutta¹
46	Exploring Spatial Clusters of Respiratory Diseases in South Punjab, Pakistan: A Geospatial Epidemiological Analysis Munazza Fatima¹, Ibtisam Butt², Neda Firouraghi³
47	Retail Trade and Availability of In Natura and Ultra-Processed Foods in A Brazilian Metropolitan Area Gomes da Silva Verônyky¹, Nathalia Barbosa de Aquino², Juliana Souza Oliveira³
48	On the Margins: Exploring Barriers to Health Service Accessibility for Tribal Women in India Zainul Abedina¹, Asif², Navneet Kaur¹, Hemant¹
49	Groundwater Arsenic Risk Assessment for Human Health Geography of Deltaic West Bengal, India Debaroti Das¹, S Halder²
50	Exploratory study on accessibility to healthy food options. Case study: Dambovita, Romania Angelo Andi Petre¹, Ioana Alexandra Mirea²
51	Status, problematics, and challenges on post-pandemic health systems: comparison of Madagascar and Romanian people's access on health care in the last five years Yolande Raharilantsoa¹, Joselyne Ramamonjisoa¹, Liliana Dumitrache²
52	The Difference and Relationship between Health and Socio-Economic Status of the Paddy Cultivators: A Analytical Study on Koch Bihar District, West Bengal Abdul Halim Miah¹, Ranjan Roy²
53	Tourism, health, geography, and their implications on building a sustainable environment Agudaru Ana Maria¹
Infectious Diseases and Health Geography	
54	Impact of socio-economic factors on Tuberculosis treatment outcomes in Jigawa State, Nigeria: A Mixed Methods Study Muhammad Abdulkadir¹ Jigawa State², Binta Zakari³
55	Geospatial analysis of the health-Associated Socio-economic and Infrastructural Disparities during COVID-19 in Kolkata Municipal Corporation Tanmoy Basua¹, Biraj Kanti Mondal²
56	Excess mortality due to covid-19 pandemic: a global scenario Amrita Paul¹
57	Spatial Patterns, Hotspots, and Drivers of HIV/AIDS in Africa Dorcas Olawuyi¹, Tolulope Osayomi²
58	Comparative study on Efficiency of primary health centers: Geographical disparities to access health care service in Kerala, India Rahna NN¹
Urban Health	

59	Cardiovascular disease morbidity and mortality: modelling of risk factors in Lisbon Metropolitan Area, Portugal Marques-Reis, João Pedro¹, Morgado, Paulo² Rocha, Jorge³
60	Seasonal incidence of malaria and its spatiality in urban expansion zones in Manaus, Amazonas, Brazil Rayane Brito de Almeida¹, Natacha Cintia Regina Aleixo²
61	Territorial disparities in the distribution of healthcare units in the Bucharest-Ilfov Metropolitan Area after the Pandemic (the case of family physicians units) Cristian Cazacu¹
62	The importance of Lisbon's urban environment for well-being Iuria Betco¹, Jorge Rocha²
63	Childhood Undernutrition across Caste/Ethnic Groups in India: Prevalence, Determinants, and Transition from 2005–2006 to 2019–2021 Pritam Ghosh¹
64	A spatial regime analysis of motorcycle accidents in Nigeria Judah Moyin-Jesu¹, Tolulope Osayomi²

SECTION-A

Ph.D. Outcome

“THE IMPACT OF HEAT WAVES ON MORTALITY IN SÃO PAULO, BRAZIL: A SPACE-TIME ANALYSIS OF EXCESS MORTALITY AMONG PEOPLE AGED 65 YEARS AND OVER”**Sara Lopes de Moraes¹**¹Department of Geography, University of São Paulo, São Paulo, BrazilCorresponding Email: sara.moraes@usp.br

The impact of heatwaves events on human health has become one of the leading public health concerns of the 21st century. Many studies indicate that heatwaves are associated with high mortality rates and hospital admissions worldwide, especially among people aged 65 or older living in megacities. São Paulo is the largest city in Brazil and presents a substantial ageing population, significant socioeconomic and environmental inequalities that can contribute to high risk of heat-related mortality. Therefore, this study evaluated and estimated the effects of heatwaves events on mortality among people aged 65 or over living in São Paulo. In order to assess the mortality risk during the occurrence of heatwaves we used epidemiological models, health impact assessments methods as well as space-time modelling techniques. We first estimate the mortality through a time-series analysis (Distributed Lag Models), and we found a statistically significant association between cause-specific mortality (cardiovascular and respiratory) and heatwaves events. The highest risk of cardiovascular mortality was identified at heatwaves classified as more intense that lasts longer. Later, we estimate the mortality attributed to heat during a specific heatwave event (the heatwave of 2014) and the heatwave-attributable mortality by socioeconomic status. To estimate the mortality attributed to heat, we used the Weather Research & Forecasting (WRF) model to simulate air temperature at the height of 2 m with a high resolution of 1 km x 1 km across the city. Additionally, we considered the responsible persons' monthly average income in three analysis classes: low-income, middle-class, and high-income as a socioeconomic variable. Consequently, our estimates suggest that 12% of the total deaths were attributable to the heat during the 2014 heatwave event. In addition, our estimates indicate low-income areas (1.09; CI: 1.07 - 1.11) had a higher mortality risk than high-income areas (1.07; CI: 1.02 - 1.10). Our findings could contribute to formulating and implementing public health policy measures to reduce the negative impacts of extreme air temperature events on the health of São Paulo's population and the susceptibility of its residents.

Keywords: heatwaves, São Paulo, urban health, attributable mortality, and climate change.

“REDUCING THE BURDEN OF ANEMIA IN INDIAN WOMEN OF REPRODUCTIVE AGE THROUGH CLEAN-AIR TARGETS AND INCREASED CROP DIVERSITY”

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This study focuses on enhancing women's hemoglobin levels by exploring the impact of crop diversity while considering PM2.5 and CO2 moderation. It uses nationally representative data from sources like the National Family and Health Survey-5, the Water Resources Information System, the National Sample Survey, DACNET, and satellite imagery. Employing multivariable linear regression, moderation, and health benefit analysis, the study identifies regions with high anaemia prevalence, mainly in the North-Eastern, Eastern, and parts of the Northern regions, where elevated PM2.5 and CO2 levels are noted. The research shows that diversified agriculture correlates with improved hemoglobin levels, suggesting better access to micronutrient-rich foods. However, increased PM2.5 and CO2 levels weaken this effect. Additionally, introducing a 10% increase in crop diversity, coupled with a 10% reduction in PM2.5 and a 5% reduction in CO2 emissions, suggests that about 341 districts could attain the Anaemia Mukt-Bharat initiative's desired target.

Keywords: hemoglobin , women , air pollution, crop diversity

“EAST TENNESSEE OLDER WOMEN'S PERCEPTIONS OF HEALTH POLICIES”

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Older women face unique challenges regarding health disparities. This study aims to provide an understanding of older women's perceptions and situated experiences regarding the gendered health disparities they face, which are characterized by the policies related to older women's health and the norms in which they live, particularly geopolitical and social norms. The purpose of this project is to provide

policy and decision-makers with insights into older women’s experiences and perceptions of the policies that affected their health and healthcare. Semi-structured interviews were conducted with twelve women in Appalachian East Tennessee, specifically in Blount, Sevier, and Knox Counties. The study examined: the women’s perceived impact on themselves of federal, state, and local policies, particularly of Medicare and Medicaid; the role of social norming and health narratives on their perceptions and outcomes, especially the stigmatization, discrimination, and health marginalization older women encounter; and the role of place and place-based drivers on these determinates. This study sought to determine if these factors impact the participants’ awareness or lack of awareness of policies related to older women. Findings showed that older women in East Tennessee lacked knowledge of health policies and health disparities; that older woman perceived systemic and individual discrimination occurring in policymaking, clinical care, and health research; and that they perceived that their access to healthcare was impacted by place-based drivers. These findings have implications for policymaking and intervention design in co-production with older women in order to mitigate older women’s health disparities.

Keywords: Older Women, Gendered Health Disparities, Health Policy, Health Marginalization, Place-Based Health.

“STUNTING AND ASSOCIATED FACTORS AMONG UNDER FIVE CHILDREN IN KOLDA REGION, IN SOUTHERN SENEGAL: SOCIO-SPATIAL ANALYSIS”

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Malnutrition is a major public health problem in Senegal. Although remarkable progress has been noted over the past two decades, it is linked to half of the causes of death of children under five in the country. The improvement in the overall nutritional situation over the past decade masks significant regional, intra-regional, and socio-economic disparities.

This cross-sectional study examines prevalence levels and individual and contextual factors associated with chronic malnutrition in children under five in the Kolda region of southern Senegal. A stratified, two-stage random survey was used to select 1080 households in 181 villages and neighborhoods. It was chosen to ensure representativeness at the level of each health district. A socio-anthropological approach was also used to document community representations of malnutrition and its determinants.

The results indicate a precarious situation of chronic malnutrition in children under five ((23,3 %) with socioeconomic and geographic inequalities. Contrary to our hypotheses and previous research, the risk of chronic malnutrition is slightly higher in urban areas than in rural areas. Urban children are 5.6% more at risk of chronic malnutrition than their rural counterparts at the 5% threshold. Also, the risk of chronic malnutrition is higher in the most urbanized health district. The mother's level of primary schooling has no effect on chronic malnutrition in children. The mother's education is a protective factor against chronic malnutrition in children only when the mother's level of education has reached secondary school or higher.

The model identifies the level of education of the head of the household, his or her age, the mother's health district of residence, the household's standard of living, and the mother's ethnicity as the five main determinants of chronic malnutrition in children under five in Kolda, the region most affected by chronic malnutrition in Senegal. The difficulty of naming malnutrition and its various forms further complicates its prevention and management.

In a context of territorialization of public nutrition policies, reducing social and spatial inequalities in development and investment in the "first 1,000 days" window of opportunity is necessary to improve the nutritional situation in the peripheral regions of Senegal, but not only. Further research is needed to better understand the higher risk of chronic malnutrition in urban areas.

Keywords: Stunting, Risk factors, Determinant, Socio-spatial analysis, Senegal, Kolda.

“SPACE-TIME ANALYSIS OF TUBERCULOSIS (2016-2020) IN SOUTH PUNJAB, PAKISTAN”

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Pakistan is among the top countries with the highest tuberculosis (TB) burden in the world. This study aims to identify and visualize spatiotemporal clusters of TB cases in South Punjab Province Pakistan during 2016–2020. We obtained TB data from the national surveillance of the District Health Information System from January 2016 to December 2020. We applied space-time scan statistics using the Discrete

Poisson model to identify and investigate spatiotemporal patterns of TB at the tehsil level, which is a subunit of districts, in the study area. The region consistently experienced many new tuberculosis cases with Multan as the highest reporting division. A purely temporal clustering pattern was observed from December 2017 to February 2020 with a relative risk (RR) of 1.21 ($P < 0.001$). However, purely spatial scanning identified two significant high-risk ($P < 0.001$) clusters of TB within the South Punjab region comprising 36.5% and 6.8 % of total cases, respectively. The first spatial cluster was located in the central part of the region (RR=1.69), while the second cluster was observed in the northern area (RR=1.46). Interestingly, the most significant spatial-temporal cluster (RR=1.80) was also identified in the central part of the region, comprising 26.8% of the total TB cases, with the temporal accumulation of cases from October 2017 to March 2020. Our study revealed significant space-time clusters at the tehsil level, based on which public health interventions and strategies can be tailored to address the specific needs of these regions, potentially leading to more effective TB prevention and control measures.

Keywords: Tuberculosis; Spatiotemporal analysis; Scan-statistics; Pakistan; Cluster analysis

***“DETERMINANTS OF GEOGRAPHIC DISTRIBUTION OF AGE-SPECIFIC MORTALITY IN
DAKAR, SENEGAL”***

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Monitoring mortality rates across time, space and age-groups is important to assess the well-being of a population and hence its progression towards the Sustainable Development Goals. While Sub-Saharan Africa is experiencing the highest mortality levels worldwide in all age groups except the elderly, the continent is also subject to important spatial variations of mortality rates, including within countries and cities. The objective of this paper is to analyze the spatial heterogeneity in the distribution of age-specific mortality rates in Dakar (Senegal) by modelling the complex relationships between age-specific mortality rates and a set of environmental and socio-economic risk factors. Age-specific mortality rates at neighborhood level were extracted from the 2013 census database and their spatial distribution was first characterized using cluster analyses. Geographically weighted regressions were then used to relate age-specific mortality rates to contextual risk factors. Local spatial autocorrelation indices revealed the

existence of clusters of mortality for all age-groups (child-adolescent, adult and old-age mortality), with hotspots of child-adolescent and adult mortality observed in suburban areas. Our findings suggest that the determinants of mortality vary according to age-specific groups and where people live. While population density was identified as a significant risk factor across all age groups and throughout the city, the set of variables involved in explaining spatial variations of child-adolescent and adult mortality also included education, poverty, sanitation, lack of access to health care services due to lack of income and access to safe water sources. These findings can have significant policy-implication for geographically targeted public health interventions.

Keywords: Age-specific mortality rates, Dakar, socioeconomic characteristics, environmental conditions.

“THE IMPORTANCE OF SPATIAL VECTOR DISTRIBUTION MODELS TO PREVENT TICK-BORNE DISEASES IN CATTLE IN ECUADOR”

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Hard ticks impact cattle in tropical and subtropical regions worldwide. In the case of Ecuador, the primary species identified on cattle in this study is *Rhipicephalus microplus*. These species result in economic losses for cattle farmers, not only affecting the health of the cattle through pathogen transmission but also indirectly impacting human health due to the chemicals used for control and their residues.

The spatial distribution of these species has been linked, in other countries, primarily to variables associated with temperature. The objective of this study was to determine the distribution of *R. microplus* and generate a predictive map for this species in continental Ecuador. For this research, 2895 farms were visited between 2012 and 2015, where animals were inspected, and information and tick samples were collected. Using Quantum GIS 3.0.1 and the georeferenced points from each farm, distribution maps were created. In the Random Forest model, 19 bioclimatic variables, along with vapor pressure obtained from “Climatologies at High resolution for the Earth's Land Surface Areas” (CHELSA), were employed. As a result, *R. microplus* was present in 38.51% of the farms. Random Forest prediction models were

established for *R. microplus*, with validation values: Accuracy = 0.97, Sensitivity = 0.96, and Specificity = 0.96. The bioclimatic factors integrated into the Random Forest model were Bio 1, Bio14, Bio4, Bio12, Bio13, Bio3, Vapor pressure max and min, Bio 2, and Bio 18.

In conclusion, the models derived from tick records and bioclimatic variables can predict the distribution at the level of continental Ecuador. Spatial modeling of ticks is crucial for preventing diseases transmitted to cattle. It provides insights into geographical distribution, enabling targeted control strategies. This helps anticipate risk areas, implement preventive measures, and efficiently manage cattle health, reducing economic losses and promoting animal well-being.

Keywords: Distribution, spatial, vector, suitability, cattle ticks



End of Section



SECTION-B

Ph.D. Progress Presentation

“ASSESSMENT OF URBAN OUTDOOR THERMAL COMFORT CONDITIONS AS A FACTOR INFLUENCING PEDESTRIANS WELLBEING”

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Human interaction with the thermal environment occurs on a daily basis [1], primarily in the urban environments where the majority of the world’s population resides [2]. Since the climate of urban areas is influenced by several elements and structures that promote energy concentration and it is sensitive to climatic phenomena, its population might face a greater risk of exposure to events causing thermal stress (heat or cold related) [3–6]. Due to multiple factors, thermal comfort is a complex issue to assess, therefore, the employment of new tools, methods and data is required.

In this context, a project was conceived in Lisbon with the aim of assessing urban outdoor thermal comfort conditions through roving missions in six different areas during the four seasons of the year. This experiment utilized a mobile weather station to observe, collect, and evaluate environmental data, namely the Universal Thermal Climate Index (UTCI). The UTCI was analysed at difference spatial scales, in order to verify not only spatiotemporal variations but also to identify possible thermically uncomfortable areas where people’s wellbeing might be affected. This analysis employed GIS techniques and R programming, using the Local Climate Zones (LCZ) as the spatial scale.

During the four seasons the majority of collected UTCI values were classified as "no thermal stress," except during the summer. Occasional instances of "slight cold stress" especially during the winter were observed, while "moderate heat stress," and "strong heat stress" conditions were prevalent in the summer. In a general overview, LCZs corresponding to high and low rise compact urban areas (LCZ 1 and 3,

respectively), and large low rise urban areas (LCZ 8) consistently had some of the highest UTCI values across seasons, routes, and times of day.

Conversely, LCZs 2, 3, 8, and B consistently had the lowest UTCI values. Sparsely wooded areas (LCZ B) showed elevated UTCI values in winter, the transitional seasons, and at night, and lower values in the summer. This could be attributed to the full growth of the foliage canopy. Regarding thermal stress, high, medium and low rise compact urban areas (LCZs 1, 2, 3) and LCZ 8 were identified as the least comfortable. These results suggest that evaluating UTCI conditions per LCZ at the pedestrian level should consider a higher resolution scale, as very localized conditions may explain the variations in UTCI.

Keywords: Climate change, urban climate, microclimate, UTCI.

“CLIMATE CRISIS ADAPTIVITY IN URBAN PRIMARY HEALTHCARE IN GREATER ACCRA (GHANA) AND THE RHINE RUHR METROPOLIS (GERMANY)”

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Introduction: By crossing ecological boundaries, the world’s social and economic systems compromise life on earth and reinforce both climate crisis and biodiversity loss. Despite years of efforts of scientific communities to raise understanding of Planetary Health and other holistic concepts that recognise human, animal, environmental, and ecosystem health as interdependent, urgent political and cultural change remains absent. A particularly large burden to respond to climate crisis-related consequences weighs on primary healthcare practitioners. They are the first to detect early health warning systems and react to climate-sensitive diseases and injuries on the one hand, while they belong to the most trusted professional groups and are therefore assigned the role of change agents on the other.

Objectives/Methods: Mixed methods identify the most relevant urban health threats in Greater Accra (Ghana) and the Rhine Ruhr Metropolis (Germany), intertwined with Planetary Health dynamics of health and disease. A cross-sectional survey assesses Knowledge, Attitude, Practices and Burden (KAP-B) as well as their potential influencing factors (“cues to action”, defined by the Health Belief Model) among first responding healthcare practitioners in the respective urban regions. The survey’s overarching themes are climate crisis resilience and adaptivity, Planetary Health understanding, climate-sensitive health

counselling, and inter-sectoral collaboration. Secondary data on extreme weather event occurrence will be utilized to investigate the relationship between collected geographical KAP-B variations and extreme weather vulnerability.

Outcomes: Identification of extreme weather vulnerability and other cues to action that affect KAP scores will guide policy recommendations to increase climate crisis mitigation and adaptivity in urban healthcare. Furthermore, conclusions to adjust the education and training of health professionals can strengthen climate crisis preparedness and mitigation in cities with comparable characteristics. For the Ghanaian region, which health professionals are most suitable for delivering climate-sensitive health counselling will be specified. Furthermore, practical implications on the most appropriate knowledge transfer medium for each professional group and social characteristic will improve healthcare's adaptivity to climate crisis-related threats.

Keywords: Co-benefits, Climate sensitive health counselling, urban health, climate crisis adaptivity, primary healthcare.

***“MARINE FISHING AND CLIMATE CHANGE: A CHINA’S PERSPECTIVE ON FISHERIES
ECONOMIC DEVELOPMENT AND GREENHOUSE GAS EMISSIONS”***

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Consistent greenhouse gas (GHG) emissions have induced irreversible impacts on ocean health, requiring urgent action to ensure the green development of the ocean. Marine fishing, a pillar ocean industry, is a major GHG emissions contributor to the ocean because of its heavy reliance on fuel combustion. However, the increasing GHG emissions from marine fishing is an easily overlooked but essential issue in China. This study offers a diverse perspective by integrating the concepts of total carbon emissions (TC), carbon intensity (CI), and per capita carbon emissions (PC) as indicators into calculation and discussion. To better understand the relationship between GHG emissions and economic development in marine fishing, a comprehensive framework is developed by combining the environmental Kuznets curve, the Tapio elasticity index, and the decomposition model. Results indicated that (1) GHG emissions increased from 16.479 million tons in 2001 to 18.601 million tons in 2020, in which trawlers and gillnetters are the main sources in fishing operations. (2) Compared with TC and PC, CI has been relatively affected by COVID-19 in 2020. (3) GHG emissions and gross marine fishing product (GFP) presented an inverted U-shaped

relationship in China; a downward trend came in the 13th Five-year Plan period (2016-2020). (4) Most provinces strongly decoupled GFP and CI. Still, PC and TC need more effort to decouple. (5) GHG emissions promoted by an industry structure driven, though carbon intensity and industry scale aid in GHG emissions reduced.

Keywords: Marine fishing economy, Greenhouse gas emission, COVID-19.

“CARING FOR OLDER PEOPLE LIVING WITH HIV IN LONG-TERM CARE IN BC’S FRASER HEALTH REGION”

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People who are HIV+ are living longer thanks to various treatment options. In Canada, 50% of all people living with HIV are over 50 and 1 in 5 new infections are in people over 50 years of age. Therefore, in the coming years we will see more OPLWH (older people living with HIV/AIDS) entering long-term care (LTC). Literature shows that this unique demographic has complex care and social needs, yet there has been no explicit consideration of how to support them. In addition to this, considerable stigma still exists about HIV which can lead to a lack of social support particularly in care settings, contributing to lack of belonging or health effects such as depression. So, while the literature reiterates this growing trend and its social challenges, it lacks consultation with the very stakeholders who matter most (OPLWH) with the communities they intend to live in (LTC). Therefore, we work from the belief that now is the time to understand how to best support their social and medical care needs and wants. Using a community-based research approach in collaboration with Fraser Health Authority, we will look at how we might support or create sustainable networks of community in LTC for OPLWH’s care and sexual wellbeing in the Fraser region. We will hold interviews with six stakeholder communities (LTC physicians; LTC administrators; LTC front-line care providers; LTC residents & family caregivers; and people with lived experience of HIV i.e., potential future residents, and community organization leaders) about opportunities, barriers and challenges around intersections between HIV-positivity and aging and LTC as a care environment. Our approach is built around the principles of collaboration, co-creation, communication, and trust, all of which are vital components of researching how to improve wellbeing and belonging in care homes sustainably. Findings will be disseminated in collaboration with a visual artist as well as a call to action for more research attention to this issue.

Keywords: long-term care, older people, HIV/AIDS, sexual health, wellbeing.

“ORAL HEALTH CONCEPT”

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The first chapter of the doctoral thesis "Territorial dynamics of dental services in Romania, and effects on the oral health of the population: case study - South-West Oltenia Development Region" aims to provide a theoretical framework on the concept of oral health, from the Geography of Health's perspective. The chapter "Oral health. Concept.", will focus on the definition of health and oral health in particular, on the existing oral health infrastructure in Romania and especially in the South-West Oltenia Development Region. Also, the doctoral thesis will be integrated into the wider field of Health Geography, by highlighting the common points between oral health and dental services.

Keywords: Health Geography, oral health, dental services, Romania, South-West Oltenia.

“ENVIRONMENTAL QUALITY AROUND SCHOOLS: A PRIVILEGE FOR THE WEALTHY OR A RIGHT FOR ALL?”

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Green spaces in schools promote students' mental well-being, reduce stress, and enhance concentration (Dadvand et al., 2015). Children are also particularly vulnerable to air pollution-related diseases (Landrigan et al., 2018) and since they spend a significant amount of time at school, it is crucial to ensure that they all have access to a quality environment. This equitable access to environmental quality at school remains underexplored (see, for example, van Velzen & Helbich, 2023), especially in Belgium. This study investigated the relationship between students' socioeconomic status and the environmental quality of French-speaking schools in Brussels and Wallonia, Belgium. Variations were observed based on the type of environment (rural, urban) and educational level (primary, secondary). We used a socioeconomic index

(ISE) that classifies schools based on seven indicators measuring the socioeconomic status of their population. Our analyses showed a significant correlation between the ISE and environmental quality around schools. Disadvantaged schools (lower ISE) had higher pollution levels, partly explained by the concentration of advantaged schools (higher ISE) in rural areas and fewer in dense urban zones. The correlation was less pronounced, or even absent, when considering different types of environments, except for secondary schools in dense urban areas, which showed a significant correlation between a lower ISE and higher pollution levels. Our results also indicated that disadvantaged schools had lower vegetation coverage, even when accounting for different types of environments. In conclusion, our research highlights the importance of considering socioeconomic context in planning to ensure equitable access to environmental quality around schools.

Keywords: school, air pollution, greenness, socio-economic status.

***“NATURE BASED SOLUTIONS FOR CLIMATE CHANGE IMPACTS ON FOOD PRODUCTION
IN CHINA”***

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Food production has always been a vital topic in China, one of the most populous country in the world. However, it is being greatly threatened by continuous climate change over recent years. By making use of the inner elements of systems, integrated crop-livestock system is argued as a plausible path to enable farmers to adapt to climate change while stabilizing food production and improving livelihoods. However, its adoption has not been attached enough attention in China. To promote its adoption, this study will take an integrated approach. First, we will analyze farmers’ perceptions of integrated crop-livestock systems, then the socioeconomic impacts of these systems will be quantitatively assessed, and finally the multilevel, Nature based Solutions framework for integrated crop-livestock systems will be constructed. The promoted adoption of integrated crop-livestock systems in China as well as other developing countries may finally contribute to Sustainable Development Goals, such as Zero Hunger, Climate Action and No Poverty.

Keywords: Food production, integrated crop-livestock systems, climate change, China.

***“PUBLIC POLICY ISSUES SURROUNDING THE CARE OF PREGNANT WOMEN IN
VULNERABLE SITUATIONS IN ILE-DE-FRANCE”***

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For a number of years, social and healthcare players have been regularly trying to bring to light the situation of pregnant women or women with newborn babies living on the streets (DSAFHIR, 2020), which is increasingly publicized and considered today (Davoudian, 2020). Several studies show that pregnant women living in extremely precarious conditions are at greater risk of complications during pregnancy and after childbirth (Tang et al., 2021).

Like other vulnerable groups in Ile-de-France, this population, although a priority due to their obvious vulnerability, is affected by the overcrowding of social and emergency accommodation. This chronic systemic saturation can lead to episodes of life on the streets for expectant or new mothers and their families. The difficulty of accessing safe, permanent accommodation is also leading to more and more frequent use of emergency shelters, which only last a few days on average. As a result, we are witnessing the systematization of a principle of structural residential wandering, throughout the region, but also nationally, as part of plans to regulate reception with a view to preparing Paris for the Rugby World Cup and the Olympics in 2024. As a result, these women are going to look for solutions with associations, solidarity hosters to be able to sleep in safety, but also often in spaces considered public. In this context, they are particularly exposed to violence.

The aim of this research is to demonstrate how current public policy issues concerning the reception of exiles relate to those concerning the care of pregnant women in precarious situations in the Ile-de France region, through an analysis of the interplay of actors and constant forced mobility and its impact on the deteriorating health of these women and their families.

The project also aims to retrace the trajectories of these women and the ways in which they are reclaiming public spaces and how this constant forced mobility has an impact on their mental and physical health.

The aim of this qualitative study is to link data from the SI-SIAO (SIAO), the ROSALIE software (DELTA) and activity data from the SOLIPAM network, in order to identify, through a qualitative study based on biographical and cartographic interviews with women and the professionals who support them, the ways in which the social and medical spheres of their lives are articulated on a daily basis during

pregnancy and up to 6 months of age. The second part of the study is quantitative, involving questionnaires and an exhaustive review of the literature on the subject.

Keywords: Homelessness, housing, health, public institutions, precariousness.

“DOES PROLONGED URBAN EXPOSURE ASSOCIATE WITH ELEVATED OBESITY AMONG RURAL-TO-URBAN MIGRANTS IN INDIA? INSIGHTS FROM THE LONGITUDINAL AGING STUDY IN INDIA”

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With rapid urbanization and extensive rural-urban migration, obesity has become an increasingly prevalent health risk in low- and middle-income countries. Previous research has consistently indicated that the exposure to urban environments has adverse effects on health, with a particular emphasis on its association with obesity. However, it remains unclear whether such patterns exist in India. This study utilized data from the first wave (2017-18) of the Longitudinal Ageing Study in India to examine overall obesity and abdominal obesity among middle-aged and older adults, (n = 31,694). BMI (>25 kg/m²) and waist circumference (>102cm and >88cm for men and women, respectively) were employed to assess overall obesity and abdominal obesity. The prevalence of overall obesity was 3.31% and 11.34%, abdominal obesity was 10.44% and 31.18% for rural non-migrants and rural-to-urban migrants, respectively. By utilizing logistic and quintile regression techniques, the research reveals that individuals migrating from rural to urban areas have notably higher chances of experiencing obesity compared to those who remain in rural regions. Moreover, within the group of rural-urban migrants, prolonged urban residence were strong and cumulative predictors for overall obesity. The risk of obesity were 1.91 times (those who lived 5 or less years in urban areas), 2.05 times (for 6-10 years), 2.40 times (for more than 10 years) higher compared to their rural counterparts. This study identified rural-to-urban migration and extended urban exposure as crucial risk factors for the development of obesity. This study suggests intervention programs for healthier weight among rural-urban migrants in India.

Keywords: Obesity, Migration, Old age, India.

“ONE HEALTH AND SOCIAL ECOLOGY, AN APPROACH TO VECTOR-BORNE DISEASE RESEARCH: CASE STUDY - LYME BORRELIOSIS IN BONN”

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Research, surveillance and prevention of vector-borne diseases should be addressed through integrated approaches that include multidimensional analyses of human, environmental and animal health in combination with human social factors. A complex interplay between the environment, animal and human health, and human social and behavioural factors drives vector-borne disease processes. Environmental changes trigger adaptive mechanisms that change the composition of the human, animal and vector populations and can facilitate the transmission of vector-borne diseases. On the other hand, social norms, settlement patterns, livelihood systems and community dynamics shape human-nature interactions. However, the influence of human social and behavioural factors on interactions at the environment-animal-vector-human interface and the transmission of vector-borne diseases must be better understood. Therefore, such a complex system requires a holistic and multidimensional approach, considering the environment, human and animal health and the community dynamics. In this sense, One Health and social-ecological approaches are essential for understanding the dynamics of vector-borne diseases. The One Health approach analyses the interconnectedness and interdependence of environmental, human, and animal health. The social-ecological perspective integrates natural and social sciences in the study of ecosystems. It completes the picture by analysing the multiple impacts of human behaviour on environmental, human, and animal health.

This study analyses Lyme borreliosis, a tick-borne disease, in the urban and peri-urban areas of Bonn, North Rhine-Westphalia, as a case study encompassing various ecological, human, social and behavioural factors within the One Health framework. It aims to improve understanding of local risk factors to develop integrated surveillance and prevention strategies that address human social dynamics associated with the emergence and transmission of vector-borne diseases.

Keywords: One Health, Social-Ecology, Vector-borne diseases, Tick-borne diseases, Lyme borreliosis.

**“TRENDS AND PATTERNS OF ELDERLY POPULATION GROWTH IN URBAN DYNAMICS
IN INDIA”**

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Globally, the elderly (60 years and above) population are growing, and similar trends are seen in Asia and India. India is undergoing a tremendous demographic change, and the old population is growing significantly. According to the 2011 Census, 8.6% of India's population, or 104 million individuals, are 60 or older. There are more women than men among the elderly. According to the National Commission on Population Report 2020, there will be 67 million men and 71 million women in India who are 65 or older in 2021. The old population growth rate is predicted to increase from 35.8% in 2011–21 to 40.5% in 2021–31, whereas the general population growth rate is predicted to decrease during the same period from 17.7% to 12.4% to 8.4%. By 2050, it is predicted that the percentage of people who are 80 or older will rise from 0.9% in 2015 to 3%. However, Longevity increases, joint family breakdown, and social fabric breakdown push seniors into isolation and neglect. India's ageing population presents a number of social, economic, and health issues, including isolation, abuse, poverty, reliance, chronic illnesses, and disability. Due to urbanization, migration, and modernity, the traditional joint family structure and social fabric that provided support and care for the elderly are deteriorating. The elderly are particularly vulnerable because they lack social security, health insurance, financial stability, and access to high-quality medical treatment. The elderly have a greater prevalence of chronic illnesses than the younger population, including diabetes, hypertension, cardiovascular disorders, and cancer. Elderly people have a greater proportion of disabilities than the general population, which affects their capacity to move about, take care of themselves, and engage in social activities. This study aims to evaluate ageing in India and its related issues, as well as the population's ageing based on gender and place of residence across the various states in India. Correlation and regression analysis will be employed to study the impacts of % decadal growth rate of the elderly in the general population and human development index. This study is useful for policymakers, researchers, practitioners, civil society organizations, and the general public interested in comprehending and addressing the issues of ageing in India. This study contributes to the global discourse on ageing and development, as India is one of the world's largest and most diverse nations with a sizeable geriatric population.

Keywords: Elderly Population Growth, Demographic Transition, Urban Dynamics, longevity, and Geriatric.

***“TOURIST MOBILITY PRINCIPLES, MODELS, AND INTEGRATED POLICIES OF
ORGANIZING AND PLANNING FOR TOURIST TRAVELS”***

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The paper aims to research the existing tourism mobility offer and to identify principles, models, and policies of (re) organization and integrated planning that could be implemented in strategies and plans in different areas with high tourist interest in Romania. In the current context, global concerns are strongly focused on mitigating climate changes and resilience to it. Urban mobility, including tourism, are ones of the main areas of action for this purpose. Moreover, at the national level, tourist mobility is lacking dedicated infrastructure, making the tourist trips car-dependent and unsustainable. Thus, a tourist mobility offer is necessary in order to align with the international goals regarding sustainability. The research methodology adopts a dual approach. The theoretical framework is based on an in-depth review of specialized literature, relevant plans, and strategies pertinent to tourist mobility, as well as statistical data that enriches the theoretical foundation. In parallel, the applied dimension entails a complex analysis, leveraging diverse methodologies such as case studies, questionnaires and surveys, interviews, and an examination of project research presented in academic and professional forums. This comprehensive methodology aims to yield insights that contribute to the development of strategic plans capable of addressing the complex challenges inherent in tourist mobility. Finally, the paper proposes to create a best practice guide that could be used in development strategies and sustainable urban mobility plans at the national level.

Keywords: tourist mobility, planning, policies, travel behavior, sustainable mobility.



End of Section



SECTION-C

General Presentation

“CARDIORESPIRATORY DISEASES AND HOSPITALIZATIONS AGGRAVATED BY EXTREME CLIMATE VARIABLES IN THE BRAZILIAN AMAZON”

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The exposure to extreme weather conditions, such as temperature, humidity, and precipitation, is present in every country worldwide, particularly, in densely urbanized areas, affecting populations in several ways and reducing individuals' immune response. To identify the local context of the climate crisis, an investigation was conducted to explore the relationship between exposure to extreme levels of temperature, humidity, and precipitation and hospitalizations for cardiorespiratory diseases in the Amazon region, Northern Brazil. A statistical meta-analysis model enhanced by socioeconomic variables such as education and income per municipality level and age group together with control models, considering age groups and gender, were used to calculate the effect sizes of climate variables and their variances in groups of individuals. The results indicate a positive association between all climate variables - humidity, temperature, and precipitation - and hospitalizations for respiratory diseases, regardless of years of education, for all age groups and genders. The precipitation variable increases the relative risk for hospitalizations of men and women in the age group (46-55 years) and (>65 years), and for women (16-25 years). Hospitalizations for circulatory diseases, without considering years of education, have revealed a relative risk mainly associated with temperatures for all age groups and genders. The humidity variable, when related to hospitalizations for circulatory diseases, only presented an impact over the relative risk when not associated with income, for men and women (15-25 years), men (16-25 years and 46-55 years). The same condition occurred for the temperature variable, not considering income, showing a significative increase in relative risk for men and women (15-25 years) and women (16-25 years). Precipitation, without considering income, presented an increase in the relative risk of hospitalization only for women (26-35

years). Thus, we can confirm that the lack of education is a factor that operates for the increase of relative risk of hospitalizations for circulatory diseases when associated with extreme temperatures for all women and men in age groups ranging from 15 years old to over 65 years old; and the lack of income implies hospitalizations associated with temperature for younger women and men (15-25 years). The results emphasize the importance of prioritizing the preservation and creation of green spaces in urban areas as a way to promote cardiovascular health in Brazil, as well as the promotion of public policies and care for young adults in the first phase.

Keywords: Cardiorespiratory Diseases, Extreme Climate, Brazilian Amazon, Hospitalizations.

***“FACTORS AFFECTING PUBLIC AWARENESS ON LOW-CARBON LIFESTYLE BASED
STAKEHOLDERS ANALYSIS IN CHINA”***

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Background: Dealing with climate change is not only the responsibility of nations but also the responsibility of individuals. Low-carbon city transformation requires synergism and cooperation of stakeholders. With the increasing of global warming and the rise of extreme weather events, more ordinary people are becoming aware of the impact of climate change on their lives. However, awareness does not mean a willingness to proactively take action. Collaborative efforts from stakeholders are also needed through the advancement of both low-carbon production and consumption practices, as well as the pursuit of energy conservation for long-term sustainability. Despite the efforts invested in analyzing low-carbon conception and urban transformation, there is still insufficient research on public’s attitude and behaviour towards climate change and low-carbon transition in China.

Approach and Method: This research adopted purposive sampling technique to show the current level of public low-carbon awareness in China and the factors affecting public’s awareness towards low-carbon lifestyle from stakeholders’ perspective. We interviewed 36 participants through online and face-to-face, who are stakeholders from different sectors and industries involved in low-carbon city transformation in China, such as government officer, company managers, professors or researchers, reporters, and managers in NGOs, and residents. The interview data was analysed through ATLAS.ti 22.2.0.

Results and Discussion: There are four main results from our research: (1) Most public’s understanding of climate change and low-carbon more tends to the terms closed to their life, such as high temperature,

rainstorm, and waste sorting. (2) Compared to traditional media and news, public is more likely to learn about low-carbon through short videos or advertisements on social media; (3) Feelings of limited capability and a lack of trust in collective action affect public to take low-carbon behaviour; (4) Reasonable reward, punishment, and supervision mechanisms from the cooperation of stakeholders will drive public to take low-carbon action.

In the discussion, this research basing on the planned behaviour theory showed that cooperation from different stakeholders can produce a result that is not obtainable by each individual. We believe that a deeper understanding of low-carbon concepts and a better communication are still needed among the public.

Keywords: Climate change, Low-carbon lifestyle, Urban health, Collective action.

“CONTESTED QUANTIFICATION FOR PLANETARY HEALTH - A CRITICAL LOOK AT THE DATAFICATION OF NATURE”

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In the context of climate change and planetary health, the datafication of natural processes and their effects on human health is gaining importance, not least due to data's role in international funding mechanisms. In Bangladesh, (increasing) water salinity has become the focus of much research and could emerge as an asset to access Climate Change funding. By taking Bangladesh's water salinity monitoring infrastructure as a case study, this paper problematizes the “neutrality” of water salinity data. Adopting the methodological approach of an “infrastructural inversion” we foreground the relational nature of infrastructure and, hence, data production. The study draws on ethnographic fieldwork conducted in Bangladesh, including key-informant interviews and guided observations along the different steps of the data production chain. We highlight how the involvement of a large variety of actors gave rise to vastly different data infrastructures and explicate the influence of actors' “problematization”. Salinity data (infrastructure) also played an important role in legitimizing the actors' operations, creating the need for negotiation across different priorities. These negotiations were further embedded in pre-existing infrastructures that emerged as a form of containment, adding yet another layer of relationality. Discussing these findings in the context of Bangladesh and the international development sector reveals the complex interplay between different human and non-human actors engrained in water salinity data. We thereby

provide global health researchers, policy makers and development practitioners with a detailed case study whilst simulating fundamental reflections on the hegemony of datafication.

Keywords: data production, infrastructure, water salinity, Bangladesh, planetary health.

“CLIMATE VARIABILITY'S IMPACT ON RESIDENTS' HEALTH QUALITY IN SOUTHERN NIGERIA'S CALABAR RIVER BASIN”

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Nigeria's population is rapidly increasing, which has resulted in a high level of climate unpredictability and its impact on the health quality of the residents. This study examined the rainfall trend patterns driven by climate variability that has influenced the health quality of residents in Nigeria's Calabar river basin. It involved analysing climatic data documentation from the Nigerian Meteorological Agency (NiMeT) that spans 50 years (1971-2021) of the study area and comparing it to NiMeT's historical meteorological maps of Nigeria between 1941-1970 and 1971-2000, also known as the base period), in order to determine the status of climate variability. The comparison revealed a historically consecutive rise in temperature, as evidenced by the showers starting late and ending early. The length of the rainy season was shortened as a result, which had a significant impact on farming operations in the area. The August Break dry season has grown less significant in the region, indicating substantial changes in the region's established weather patterns. According to the inquiry, the environment has warmed greatly as a result of rising temperatures, and harmattan dust pollution has also been worse recently, posing a health risk to the residents. To mitigate the effects of climate unpredictability, the research recommends boosting energy efficiency, transitioning to cleaner energy sources such as solar and wind, minimising deforestation, and planting trees. Furthermore, the Montreal Protocol of 1987, the Convention on Long-Range Transboundary Air Pollution of 1979, the Kyoto Protocol of 1997, the Clean Air Act of 1990, UNCED of 1992, the USA Congress of 2008, and other international organisations' global warming action plans should be strictly followed.

Key words: Climate, Livelihood, Health, Rainfall, River basin, NiMeT.

“INTRODUCTION OF RAILWAYS IN COLONIAL BENGAL, AND ITS IMPACT ON PUBLIC HEALTH: FEW CONTRADICTIONARY REPORTS”

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In colonial Bengal, the advent of railways represented a transformative moment in both transportation infrastructure and socio-economic progress. The expansion of railways significantly facilitated the movement of people and goods, streamlining transportation. However, this heightened interconnectedness had its downsides, notably the increased transmission of diseases like malaria. The article conducts a thorough historical analysis, exploring how railways altered settlement patterns, including the construction of embankments and dams, and influenced the interaction between humans and disease vectors. Drawing from government health reports, news accounts, and diverse perspectives, the article critically assesses the issues arising from embankments and dams. It also examines the measures undertaken by colonial authorities, such as the implementation of malaria control techniques, to address public health challenges stemming from the introduction of railways. This comprehensive exploration contributes to a nuanced understanding of the environmental and health ramifications associated with major infrastructural changes implemented during the colonial era, providing valuable insights into historical contexts.

Key words: Railways, Bengal, emabnkaments, malaria, public health, diverse reports.

***“ANALYZING INEQUALITY, ECOLOGICAL DECLINE, AND COOLING ISLAND EFFECTS
FOR IMPROVED PUBLIC HEALTH IN URBAN PARKS OF DELHI”***

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Cities worldwide are experiencing rapid changes in their morphology because of fast urbanization. Most of their green hinterland has been converted to fulfill the demands of accelerating urban processes. As more and more people move into urban areas, environmental issues have become more prominent. The result is the fast depletion of green spaces in and around urban centers. These spaces, especially the green ones, provide physical, psychological, recreational, and aesthetic benefits to urban people. Public parks comprise open spaces within the city, comprising gardens, parks, natural environment, etc. Urban communities' ecological, social, and economic well-being all benefit from parks in and around their communities. Parks in metropolitan areas are particularly susceptible to the threats posed by urbanization, including conversion of land use, fragmentation, deterioration, and invasion. The study uses geospatial

methods to analyze urban parks' temporal dynamics and spatial distribution in Delhi, India. The findings suggest that the urban park area grew between 1990 and 2022, but this growth was uneven and clustered. Urban parks were more prevalent in Delhi's central and southern regions than in its northern and eastern areas. As revealed by spatial metrics, most urban parks were relatively small, irregular, isolated, and fragmented. Inequality in space and ecological decline are two problems that our research suggests are plaguing Delhi's urban parks. The study conducted in Delhi investigated the park cool island (PCI) effect in urban parks. which showed that parks had a PCI effect with larger parks with enough width had stronger PCI intensity. An increased density of hardened elements could significantly weaken the PCI effect. It can be recommended that urban planners and managers consider urban parks' spatial patterns and dynamic nature and implement measures to increase the parks' number, quality, and accessibility.

Keywords: Urban Parks, PCI Effect, Nature Based Solutions, Urban Heat Island, Delhi.

“THE RELATIONSHIP BETWEEN BRONCHIAL ASTHMA, SANITATION ACTIVITY IN LANDFILL SITES, AND ACCESSIBILITY TO SANITATION FACILITIES”

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The prevalence of bronchial asthma is on the rise among both adults and young individuals, including children. The urban population, which is exposed to factors such as vehicle traffic, dust particles from open construction sites, and windblown particles from nearby landfill sites, can be considered as contributing factors to this disease. In Romania, many landfills have undergone improvements, resulting in a significant reduction of pollution, including odours. This study aims to investigate the correlation between exposure to landfill waste and bronchial asthma prevalence, as well as access to medical treatment. Distance from health facilities is a crucial factor in accessing medical care for monitoring health status and seeking treatment. The analysis included a group of 328 individuals who either currently work or have worked in the past in economic sanitation units across 46 different localities with waste landfills, both functional and non-functional. The distance from health facilities was found to be directly related to the number of calls made to medical services once symptoms appeared. Proper management of asthma symptoms can significantly improve the health-related quality of life for people of all ages, including children.

Keywords: asthma, dust, accessibility, pulmonary hospital.

“THE INTERACTION OF REMINISCENCE THERAPY PLUS WALKING INTERVENTIONS ON COGNITIVE PERFORMANCE AND WELL-BEING OF OLDER ADULTS WITH EARLY-STAGE DEMENTIA OF ALZHEIMER TYPE”

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The population of older adults (60+) is increasing, leading to a pronounced growth of age-related disorders, including Alzheimer’s Disease. Therefore, it is a major health challenge to develop treatments and improve quality of life by providing communities with evidence-based programmes. Walking presents cognitive and psychological benefits and can minimise age-related loss in memory-related regions of the brain, notably structural and functional changes to the pre-frontal cortex and hippocampus for older adults and people with Alzheimer’s Disease. Reminiscence Therapy (RT) has been shown to produce psychological and cognitive benefits, including improved memory, for older adults with dementia. We used a Public and Patient Involvement (PPI) approach to investigate potential cognitive, and/or well-being benefits when combining these two interventions in a sample of older adults with Alzheimer’s Disease. The intervention group, facilitated by a researcher, were guided through a series of weekly historical walking tours of their local community over a period of four weeks. We compared this group, who walked and were encouraged to recall stories about the locations, with a control group who reminisced using only photos of the same sites. Cognitive measurements (including the MOCA, EAMI Memory Interview and Holden Communication Scale) and well-being measures (CASP-19 questionnaire, Satisfaction with Life Scale SWLS) were also administered. Changes in pre- and post-intervention measures of cognition and well-being will be discussed in the context of potential benefits and future studies. Walking, combined with RT, may represent an inexpensive, accessible, easily implemented and non-invasive therapy for older adults living with Alzheimer’s Disease.

Keywords: Reminiscence Therapy, Non-Pharmacological Interventions, Exercise , Local Irish Areas, Dementia.

“IMPACT OF URBANIZATION AND MINING ACTIVITIES ON ECOSYSTEM HEALTH IN THE ASANSOL-DURGAPUR INDUSTRIAL REGION OF WEST BENGAL IN INDIA”

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Health refers to a normal range of any element of physiology related to organisms without disturbance in normalcy, and the term health with ecosystems was first used by Hutton to explain the capability of Earth to maintain self-health. Ecosystem health refers to a condition of the ecosystem that maintains its quality and provides necessary needs or support to society without disturbances to its quality. However, this unprecedentedly urbanization is deteriorating the ecosystem process and its services. Therefore, ecological threats due to urbanization are a major concern in the world nowadays. In this regard, the Asansol-Durgapur Industrial region is an important economic zone in eastern India. This region has been witnessing rapid population growth as well as mining activities. So, the main aim of the assessment of ecosystem health (EH) is to uncover the spatial-temporal condition of ecosystem health (EH) in this region. Ecosystem health comprises three components such as vigor, organization, and resilience and ecosystem services are the outcome of a healthy ecosystem. For this purpose, we applied vigor-organization-resilience and Ecosystem services value (VORS) indices used to assess the condition of ecosystem health. The socio-economic data and Landsat 5 Thematic Mapper and Landsat 8 Operational Land Imager (OLI) were used for 1911,2001,2011 and 2021. The results of ecosystem health (EH) value showed that Durgapur and Asansol municipal corporations, Kulti Municipal, and Pandebeswar have the weak condition of EH. On the other hand, Durgapur-Faridpur, Jamuia block, and Baraboni have relatively weak conditions of EH. Due to the concentration of dense vegetation in Kanksa Block has relatively good condition of EH.

Keywords: Health, Ecosystem Health, Urbanization, Ecosystem services, Resilience

“THE PERCEPTION OF NOISE IN COIMBRA”

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Within the European Union countries, over 75% of the population resides in urban areas, and it is expected that this percentage will increase, with projections indicating continued urbanization in the coming decades (Eurostat, 2023). As urban landscapes evolve and technological advancements push us into a future marked by constant activity, the acoustic panorama of our surroundings is undergoing a profound

transformation (Hemmat et al., 2023). The noise, coming from traffic, construction, industry, and recreation echoes through our communities, disrupting the balance between humans, and the environment (Mohamed, 2021). People can be exposed to excess noise at home, school, work, and other settings, and whilst noise exposure can disrupt concurrent activities and performance: noise pollution distribution in each city around the world is necessarily influenced by its own design (Morillas et al., 2018). However, previous studies reported that some citizens do not perceive themselves as seriously affected by noise even though most of the time, they are highly exposed to noise (Souza et al., 2020). This is often associated with their perception: human perception of noise can differ on many factors, ranging from their sensitivity to noise, age, health conditions, socioeconomic status, as well as housing conditions (Koprowska et al., 2018). This study seeks to explore the relationship between objectively measured noise levels, through noise maps and the subjective perception of noise and living conditions, based on a questionnaire-based survey to the citizens of Coimbra, Portugal. Regression models will be applied to analyse the association between the perception of noise and the noise exposure level where citizens live in: we hypothesize that this association can be mediated by poor house conditions and urban green spaces. Presently, a number of studies explored the noise distribution in urban environments (Yang et al., 2020; Masum et al., 2021), in addition, the majority compares those measured values with guidelines without taking into account the citizens perception (Kalawaputi et al., 2020; Ibili et al., 2021); regarding that, this study intends to contribute with a comparison between quantitative and qualitative results warranting attention to the dealing of noise pollution taking into account the citizens perception.

Keywords: Noise Pollution; Perception of Noise Pollution; Noise Maps; GIS; Coimbra.

***“THE ACCESS OF THE POPULATION FROM ROMANIAN RURAL COMMUNITIES TO
SANITARY EQUIPMENTS”***

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Access to an adequate toilet is a human right that everyone should have. Although in other Western European countries people talk about the lack of sanitary infrastructure as a history, in Romania this is a very actual issue, as in the Romanian countryside most toilets are located in the backyard. Even if most of the risks related to the inexistence of sewage infrastructure are directed towards the environment, the lack of it also has an impact on sanitation. The consequences of this problem are numerous and are evident

on several levels: social, health and environmental, affecting not only the population itself but also other people who carry out their activities in the vicinity. Thus, this problem does not only belong to the individuals who have toilets in their backyard but to the entire community and society as a whole. The sewage network belongs to the sanitation infrastructure essential to the health of communities. The study involves a micro-analysis and multiple perspectives from sociological, economic, ecological and health perspectives. The study involves a micro-analysis of the research carried out in the field and an analysis of the perspectives of addressing the subject from a sociological, economic, environmental and health point of view. Unhygienic toilets are a threat to the health of individuals and the environment. Access to water and sanitation helps to maintain hygiene and save at least 829,000 people from dying each year worldwide due to faecal contaminated water and poor hygiene. The Romanian rural environment is characterised by significant discrepancies in basic utilities. Lack of indoor toilets and lack of sanitation and running water services are a significant problem for many households in rural communities, generating numerous health risks for the inhabitants of these areas and beyond. In addition, there are numerous other problems affecting the whole community (irreversible pollution of the ecosystem, strong odour discomfort, destruction of flora and fauna habitat, social stigma, aesthetic alteration of the landscape, potential housing conflicts, migration of inhabitants to another rural or urban area, etc.). Access to basic utilities in Romania is very limited, which further accentuates the gap and inequalities between urban and rural areas. Coroiesti commune in Vaslui county is our study area. This commune includes hilly areas, but also low areas, with 7 villages with about 1800 inhabitants, it is a typical administrative unit for the Romanian rural environment. Within this commune the lack of adequate toilets (inside the house, connected to the public sewage system, consisting of WC, sink, bathtub or shower and hot water) is a problem faced by most households (more than 80%). Through this study we aimed to find out what are the opinions of the inhabitants of the villages of the commune of Coroiesti regarding inequalities in access to public utilities, the causes that determine these inequalities, and especially the perception of the risks they face because of this problem. From our point of view, a harmonious development of rural communities by reducing the technological gaps in this area is of great concern, since only in this way the living conditions in these areas can improve, the risks of contracting diseases caused by these shortages can be reduced and the general health of the population will improve, allowing the whole community to develop in a sustainable manner.

Keywords: sewage network, Romania, rural population, health.

“ECCENTRIC EFFECTS OF PLANTS: AN UNAVOIDABLE FACET OF HUMAN-DEVELOPMENT”

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Plants are considered to be the most significant contributors to air purification by the process of interception of particulate matters, absorption of gaseous pollutants etc. produced as a result of human-activities and development. But as a paradox, trees have, at the same time, some unhygienic endowments which are attributed to human-activities and development, if not planted in the settlements particularly in the urban areas considering some general cause-effect associations. They reason deceleration of flow of wind resulting in halting and settling of the pollutants, dusts and atmospheric moisture etc in and around the trees placed arbitrarily. The trees with larger canopy and leafy branches badly affect the availability of enough and quality-time sunlight to the people and even to the other plants and it is a common phenomenon in the intense residential segments. Thus, these trees may be regarded as coolness-sinks especially in the winter months. Also, in absence of light, plants emit CO₂ to the local environ which acts like slow poisoning to the animals including human being during the hours. The dense plants also help in trapping the human-harmful pollens nearer to the earth. These phenomena lead to making an unhygienic ambient particularly in the settlement areas. Apart from these, there are some trees which are responsible for worsening the air-quality by emitting some sorts of volatile organic compounds, reactive hydrocarbons etc to the adjacent atmosphere. Again, there are some trees which have allelopathic and other physical negative effects on the nearby plants which, in turn, affect the human being. Such adverse effects of plants are, obviously, featured and increased by the process of unplanned developmental human activities. However, the author, in the article intends to highlight those malapropos effects of the plants which may be detrimental for the mankind in the long run.

Keywords: Plants, Malapropos effects, Unplanned development, Detrimental, Long run.

“ECO FRIENDLY AND SUSTAINABLE TECHNOLOGY IN CONSTRUCTION”

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The proposed project exclusively uses the waste materials that are being produced from various industries as a by-product. Hence the project work had an advantage to produce cheaper building blocks in the form of earthen blocks and preserves the eco system leading to ecological balance.

This project proposal is to impart skills among the one who desires in order to survive and enhance their livelihood. Once, enough masons/artisans are trained, they could collaborate with institutional/organizational supports like DRDA, Municipalities and other engineering departments of public works for taking advantages under project constructions such as Indian Swachhatha League (I.S.L) and Swatch Bharath Programs.

Keywords: Sustainability, ECO friendly, Net zero, Global warming, Enhancing BPL lives.

“THE ROLE OF FAMILY STRUCTURE ON FAMILY PLANNING USE OF WOMEN IN WEST BENGAL: A PERSPECTIVE OF THREE DECADES”

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The family as an integrated and functional unit of society has, for a considerable time, captured researchers' attention. Evidence based on small-scale studies indicates remarkable changes in Indian family structure with the rise in the levels of education and spirit of individualism, population mobility, urbanization, the onset of demographic transition, and increasing occupational differentiation. Previous studies shows that family structure has a significant role is family planning use. So, in this backdrop, the present study assesses the relationship between the family planning use of a daughter-in-law and the family structure she lives in (specifically the presence of adult female members, i.e., sister-in-law, mother-in-law) using large-scale nationally representative National Family Health Surveys (NFHS) data over the last three decades (1992/93- 2019/21) in West Bengal. Specifically, data from NFHS-1 (n=3817), NFHS-2 (n=3970), NFHS-3 (n=4876), NFHS-4 (n=13678), and NFHS-5 (n=16467) were analysed, keeping the family structure as the dependent variable and several socio-economic characteristics as independent variables. Univariate, bivariate, and multivariate analyses were performed using Stata with a 5% significance level. It has been found that, compared to nuclear family, women were significantly less likely to use modern spacing in families with both mother-in-law (MIL) and sister-in-law (SIL) and families with other extended family members without MIL and SIL. Compared to nuclear family, women

were significantly higher likely to use modern limiting method in families with MIL or SIL present and less likely to use it in families with other extended family members without MIL and SIL. Compared to nuclear family, any traditional method used was significantly less likely in families with other extended family members without MIL and SIL. This concludes that the women residing in non-nuclear households had lesser likelihood of using any contraceptive methods in West Bengal over the last thirty years except modern limiting methods. To improve the family planning use for women in non-nuclear family, special focus should be given on them in the concerned policies and programs.

Keywords: family planning, family structure, mother-in-law, sister-in-law, daughter-in-law.

***“ESTIMATION OF MEAN MENOPAUSAL AGE AND ITS VARIATIONS ACROSS INDIA:
EVIDENCE FROM LARGE SCALE SURVEYS”***

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Age at menopause is an important bio-marker confirming women's entry to menopause. This phase is very crucial for women from a health perspective as different morbid conditions may arise. Thus, there is a need of proper care and treatment during this period. Thus, estimating the age of menopause is very important in this scenario as most of the health programmes are still focused till the reproductive age group. Moreover, no attempt was made to estimate the mean age at menopause in India using national-level based data. The main objective of the paper is to estimate the mean age at menopause in India and its major states. The study used National Family Health Survey (NFHS) fifth-round data and Longitudinal Ageing Study in India (LASI) wave one data. To estimate the mean age at menopause, John Hajnal's Singulate mean age at marriage (SMAM) technique was adopted. The mean age at menopause in India was 46 years, with a rural-urban gap. A wide state-wise variation was seen, with Bihar having the lowest mean age at menopause, followed by Telangana and Andhra Pradesh. Kerala had the highest mean age at menopause, with the women attaining menopause at 47.6 years. The study findings suggest that focus should be given to women in the states where the age at menopause is low. The study recommends proper health programmes should be made to focus on women's health issues once they approach menopause.

Keywords: Menopause, age at menopause, NFHS-5, LASI, SMAM.

“EXPLORING NUTRITIONAL DIETS AND WELL-BEING AMONG RURAL SCHEDULED TRIBE WOMEN IN REPRODUCTIVE AGE GROUP: A CASE OF CANNING SUB-DIVISION, SOUTH 24 PARGANA DISTRICT. WEST BENGAL, INDIA”

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This study delves into the intricate interplay between nutritional diets and the overall well-being of rural Scheduled Tribe women in the reproductive age group, focusing on the Canning Sub-division in the South 24 Pargana District of West Bengal, India. Recognizing the unique socio-cultural context and dietary practices within this community, our research aims to shed light on the nutritional status of these women and its implications for their health. The investigation employs a mixed-methods approach, combining dietary surveys, anthropometric measurements, and qualitative interviews to obtain a comprehensive understanding of the women's nutritional habits and their perceived impact on well-being. Special emphasis is placed on the reproductive age group, acknowledging the critical role of nutrition in maternal and child health. Preliminary findings indicate a complex tapestry of dietary practices influenced by cultural traditions, economic factors, and geographic nuances. The study also seeks to identify potential challenges and opportunities for improving nutritional outcomes among this demographic. Insights from this research hold the potential to inform targeted interventions and policies aimed at enhancing the overall health and well-being of Scheduled Tribe women in the studied region.

Keywords: Anthropometric Measurement, Dietary Patters, Food habits, Socio-Economic status, well beings.

“PREVALENCE OF SUPERSTITIONS AND MYTHS AMONG RURAL WOMEN’S IN RELATION TO HEALTH ASPECTS IN MALDA DISTRICT OF WEST BENGAL (INDIA): A MICRO LEVEL ANALYSIS”

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Health has been a matter of universal concern in all times of history and have attracted to the attention of the academicians, researchers, planners, policy-makers. The future of nation is lies with its healthy population whereas sick population is liability. Superstition is defined as a blind belief in supernatural

powers. Living in 21st century, India still survives under thick cloud of superstitious beliefs. Prevalence of Superstition and Myths in India is like a curse of new India and widespread social problems. Superstition is mainly prevalent among illiterates, uneducated and scientifically less advanced people and backward societies. Astrologers, priests, godmen, babas, tantriks, black magician, stragers, witch doctor contribute to the propagation of superstition sin our society. This paper is an attempt to examine the major causes of superstitions and myths, to find out the health-related aspects superstitions and myths and to suggest valuable remedial measures to eliminate the problems. The entire study is based on primary sources of data. Malda district of West Bengal has been selected as the study area. The result of the study shows that 26.88 percent of the respondents are believes that we must avoid drinking water while standing, sleeping under the tree during night times leads to mental ill health, drinking milk and eating fish causes skin diseases, believe in evil eyes for occurrence of any illness, first milk of mother is bad for baby, not eating papaya during pregnancy, not keeping new born babies and mothers clothes outside after sunset, pregnant woman should not come out of the house during an eclipse, not sleeping with head facing north direction, wear copper ring considered for good health, dog bites or snakebites witch doctors medicinal herbs better etc. The study also reveals that major causes of prevalence of superstitions and myths are lack of education, blindly follow of culture-tradition and strict rituals of society and religions, deep faith in supernatural power, fears, to put blame on luck etc. Education is the best solution, changing the mindset of peoples, strict laws, awareness to the peoples will play an important role to remove the superstitions from our society. Adam Smith said that Science is the great antidote to the poison of superstition and myths.

Keywords: Health, Mental, Medicinal Herbs, Superstitions, Fears.

“HEALTH ISSUES OF TIGER WIDOWS IN THE SUNDARBANS, WEST BENGAL, INDIA”

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Tiger widows of Sundarbans, the largest mangrove vegetation, are the worst hit. The climate change is forcing the male counterpart to take risk and proceed deep into the jungle to earn their livelihood and without proper permit when they are facing dead due to tiger attack, they are not getting their allowances. Tiger widows have to face the wrath of the family as well as society. They are also forced to go for fishing

at the deep of the night risking their lives and their wards. Due to this constant blaming and accusing they are undergoing mental disturbances. When mental health is disturbed then it's having an adverse impact on their physical health leading to hypertension, cardiac disorders, stomach ailments, gynecological problems etc. Few adverse cases are also witnessed when these unfortunate human beings are developing suicidal tendencies. To combat this problem, education, vocational training, short term courses may be offered to these tiger widows who have to bear a lot without having done any wrong. More livelihood options to be created for them so that they may have a decent standard of living.

Keywords: Tiger widows, Sundarban, allowances, mental disturbances, vocational training.

“ASSESSING WOMEN’S WELLBEING IN INDIA”

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Women constitute nearly half of the population of India, being 586.46 million (48.14%) during the Census of 2011. The wellbeing of women is a complex multifaceted issue that reflects the intersection of various cultural, social, economic, and political factors. Despite having equal politico-legal status conferred by the Constitution under Article 14, the patriarchal setup in India has relegated women to ‘the second sex.’ This is reflected in several key indicators across different social, economic and political dimensions, such as Sex Ratio (943 females per 1000 males in 2011), Literacy Rate (64.3% in 2011), Maternal Mortality Rate (97 per lakh live births in 2018-20), Mean Age at Marriage (22.7 years in 2020), Workforce Participation Rate (32.8% in 2021-22), Parliamentary Representation (14% in 2023), Crime Rate against Women (62.4 in 2021) etc. Gender Equality has been enlisted as Sustainable Development Goal (SDG 5) and is monitored closely through several government programmes. However, the backwardness of women becomes sharper when the disparities are measured against men across the same indicators. These disparities give rise to distinct spatial patterns across the states in India. Very few academic endeavours have been made to discern and assess the gender disparities and assess the overall wellbeing of women in India. This paper attempts to assess the level and spatial patterns of the wellbeing of women across India by constructing a composite ‘Women’s Wellbeing Index’ and measure gender disparities using Sopher’s Disparity Index using latest available data from the Census of India, vital statistics, National Family Health Survey (NFHS), National Crime Records Bureau (NCRB). Using multivariate regression analysis, we also

analysed the respective influence of the selected indicators on the overall wellbeing of women. The indicators used vary across six vertical dimensions namely demography, health, education, economy, polity and security. Our ‘Women’s Wellbeing Index’ presents a detailed perspective of the status of women empowerment, being a more potent tool than the Gender Development Index (GDI) of the United Nations. The measurement of disparity identifies the intensity of gender differences across spatial units whereas the multivariate regression analysis reveals the significant predictors of women’s wellbeing in India.

Keywords: Gender, Health, India, Wellbeing, Women.

“INVESTIGATING VARIOUS CORRELATES ASSOCIATED WITH MATERNITY CARE EXPENDITURE IN INDIA: EVIDENCE FROM NATIONAL SAMPLE SURVEY DATA”

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The cost of maternity care [Antenatal Care (ANC), Delivery and Postnatal Care (PNC)] is gaining new records every day in public and private health sectors of India, which is often cited as the strongest barrier to utilizing quality health care during pregnancy and childbirth. Given this context, the present study aimed to, first, examine the socio-economic and demographic differentials in mean maternity care expenditure in public and private health facilities in India; second, investigate the effects of various correlates on the public and private maternity care expenditure using the unit-level data from the 75th round (2017-18) of the National Sample Survey Organization. The Heckman selection model was used to examine the factors explaining component-wise public and private maternity spending in India. The results reveal that the mean spending on ANC, delivery and PNC in public health facility were INR 1505, INR 3683 and INR 988, while that from private health facility were INR 6963, INR 22,492 and INR 2966, respectively. Overall, the mean spending on delivery, ANC and PNC in private health facilities had increased by 6, 4 and 3 times compared to that from public health facilities in India. Furthermore, multivariate analyses confirmed that respondents’ age group, level of education, social and wealth status, religion, health insurance and place and region of residence emerged as significant factors explaining component-wise public and private maternity spending. Findings from this paper suggested the importance of government spending on the public health sector to magnify the accessibility and affordability of quality maternity

care that may curtail households' economic distress to obtain utmost care from private health facilities in India, irrespective of their socio-economic status.

Keywords: Antenatal Care, Delivery and Postnatal Care, Maternity Care Expenditure, National Sample Survey Organization, Maternity Care.

“ACCESS AND UTILIZATION OF HEALTHCARE SERVICES IN WUSHISHI LOCAL GOVERNMENT AREA OF NIGER STATE, NIGERIA”

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This study examined the access and utilization of healthcare services in the Wushishi Local Government Area of Niger State. Primary data were collected using a questionnaire schedule and focus group discussion, whereas secondary data were collected from the Niger State Ministry of Health and the National Population Commission. Sabon Gari and Maito wards were purposely selected as urban and rural areas. Four hundred questionnaires were administered to the respondents, and Focus Group Discussion was conducted. All the respondents were selected using availability sampling. Regarding utilization of healthcare services, the four healthcare providers of traditional, religious, modern public, and modern private are all available, and their services are acceptable to the people. However, traditional and religious healthcare service providers are more accessible and affordable in both areas than in the modern public and private sectors. Most people utilize various healthcare services, depending on the nature of their illness. Most use traditional healthcare services for chronic and orthopedic conditions. For mental disorders, people use religious healthcare services. For surgical and communicable diseases, maternity, and common illnesses, the people patronize the modern public more, followed by the modern private. People also prefer to be treated in modern private healthcare facilities. Therefore, the study recommends that the government should provide adequate and modern medical equipment, healthcare personnel should be employed, payment of treatment and services should be affordable, waiting time for healthcare personnel should be reduced, and healthcare facilities should be open 24 hours.

Keywords: Access, Healthcare service providers, Healthcare services, Utilization.

“BARGARH DISTRICT A CASE STUDY OF CANCER PATIENTS”

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Location -Bargarh district is located on states of Odisha western sides. It's agricultural District and most of the peoples are depends on agriculture. It's Latitude: 21.3324°N, Longitude: 83.6168° E geographical.

Research question- agricultural areas, exposure to pesticides, herbicides, and other agricultural chemicals could potentially be linked to health issues, including cancer. Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (United Nations).

Health geography is a field of study that examines the spatial patterns and variations in health outcomes, health-related behaviors, healthcare access, and the distribution of diseases or illnesses. It integrates concepts from geography, public health, epidemiology, and social sciences to understand how geographical factors influence health.

Factors contributing cancer- This study was performed to evaluate the carcinogenic health risk of pesticides used in agricultural field in rural pockets of eastern India. The analysis of pesticide residue in rice grain sample was performed by Gas Chromatography Mass Spectrometry (GC-MS). It was observed that for pesticide DDT, the HR values was ranging between 0.5 to 3.2 and for lindane HR was 0.4 to 1.1, respectively. The DDT and Lindane exhibited HR values >1 in some sampling sites which revealed the carcinogenic effects and HR <1 in some sampling sites which revealed non carcinogenic effects of same pesticide. These results revealed a clear indication of potential carcinogenic health risk to human health through consumption of contaminated rice in some areas of Bargarh district. DDT has a long half-life, so it persists in the environment for a longer period of time and induces carcinogenic risk to human health predominantly than other pesticide lindane. A case study on cancer prevalence in Bargarh district was also carried out to support the findings of quantitative analysis. The primary data collected from the cancer affected area by personal questionnaires method to the person concern and the secondary data collected from the Bargarh District Head Quarters Hospital's register. The cancer death reported by the from the year 2015 to 2021 was 320, 380, 293, 323, 278, 409, 346 in the year of 2015, 2016, 2017, 2018, 2019, 2020, 2021 respectively, with the total number of 2349 cases. From the questionnaire data, it was observed

that the occurrence of male and female cancer cases was 51.75% and 48.25%, respectively. Therefore, it was concluded that there was no significant difference in gender wise cancer prevalence. The most affected age group was 51–60, that is, 26.92% followed by 41–50, that is, 23.42%. Therefore, it was concluded that the middle-aged adults (40–60) were more vulnerable to the cancer than young adults (3–40) and old adults (60–100). The most prevalent cancer was breast (22.72%) followed by stomach (14.33%).

Conclusion- Government must be taking awareness campaign program related cancer and lifestyle that impact on our health, health infrastructure and sufficient doctor , instrument facility and making a world class cancer hospital established in this area and long demand of people's also but government neglected on this serious issue.

Keywords: Cancer, health, demand.

“ACCESSIBILITY TO CARDIOVASCULAR HOSPITALS IN ROMANIA”

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Cardiovascular diseases represent the leading cause of mortality globally. Incidentally, Romania registered the highest mortality rate due to circulatory system diseases in the EU; therefore, its healthcare system has to adapt to this population risk, namely, all health facilities providing cardiovascular care should be readily available and easily accessible. This study aimed to measure the potential spatial accessibility to cardiovascular hospitals in Romania. The country has 161 cardiovascular hospitals, of which 84 can provide complex medical assistance. Although distance is an essential indicator of accessibility, time-based analysis is more reflective of real-world scenarios due to the unpredictability of travel. The potential access to the nearest hospital providing cardiovascular care was analysed using API (Application Program Interface) and a personal car as the transportation mode. As a first research step, the potential accessibility to all hospitals in Romania with a cardiology unit was measured, followed by the potential accessibility to hospitals that offer complex care. Three different time slots were considered: 7:00-9:00 AM, 5:00-7:00 PM and 10:00-12:00 PM, to differentiate between the time frames affected by traffic congestion from those unaffected. While there are numerous cardiovascular hospitals in Romania, their potential accessibility varies across the country. Results show that in the case of 23% of the population, reaching the nearest hospital would take longer than 60 minutes. Inhabitants from mountainous areas, the Danube Delta, and other remote areas, especially rural ones, are the most affected. Investing in medical

infrastructure, equipping healthcare facilities with modern technology, and ensuring access to healthcare services in underserved regions are all essential steps towards shaping the healthcare network. This study can support local authorities in optimising hospital access and planning the territorialisation of health resources.

Keywords: cardiovascular, hospitals, Romania, API, population.

“ANALYSING DEPRESSION AMONG ADOLESCENTS AND YOUNG ADULTS ACROSS UTTAR PRADESH AND BIHAR”

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Depression among adolescents and young adults remains a widely underestimated and overlooked issue in society. This study aims to bring attention to this societal shadow by exploring the prevalence of depression among adolescents and young adults in Uttar Pradesh and Bihar and its association with various socio-economic characteristics. The study is based on secondary data of the Understanding the Lives of Adolescents and Young Adults (UDAYA) Wave-1 (2015-16) and Wave-2 (2018-19), conducted by Population Council. The research employs Descriptive Analysis and a Random Effect model to assess depression levels over time. The initial wave revealed that 1.16% of males and 5.61% of females experienced moderate to severe depression, with subsequent surveys indicating an increase to 3.17% for males and 10.23% for females in 2018-19. The study establishes significant connections between depression and factors such as parental physical aggression, witnessing father's violence towards the mother, discussions about friendship, number of friends, freedom to express opinions within the family, and other personal concerns. The findings underscore the pressing need for family-based interventions and age-appropriate programs to address the escalating prevalence of depressive illness among adolescents and young adults, emphasizing the pivotal role of communication in both familial and peer networks.

Keywords: Depression, Adolescent and Young Adults, UDAYA, Mental Health.

“A STUDY ON HEALTH LINKAGES AND NUTRITIONAL STATUS AMONG WOMEN OF THIRUVANANTHAPURAM DISTRICT, KERALA, INDIA”

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Nutrition is one of the most critical contributors to human health, and passable nutrition is the fundamental right of all individuals. The study delves into the intricate relationship between the health and nutritional well-being of women in Thiruvananthapuram, Kerala, India. Thiruvananthapuram, a region known for its relatively high human development index, presents a unique context for exploring the health status and nutritional factors that affect women, but there can still be variations in health and nutrition within the region. The health and nutritional status of women in Kerala is generally better compared to many other Indian states. However, there can still be variations within the state, and factors such as education, socioeconomic status, and geographical location can influence women's health and nutritional status. Through a comprehensive examination, this study aims to assess the prevalence of undernutrition, determinants of nutritional status, and potential linkages between women's health and their dietary habits. It sheds light on the factors that contribute to the well-being of women in this specific geographical area. The research methodology involves quantitative and qualitative methods, which was essential to accomplish the objectives of the study. These methods allowed for a comprehensive and multi-faceted approach to assess the nutritional status and associated factors among women in the selected age group and to uncover the intricacies of health and nutrition disparities. The study aimed to understand the complexities of nutritional well-being among this specific population. The findings of this study have the potential to inform targeted interventions and policies aimed at improving the overall health and nutritional status of women in the region.

Keywords: Women's health, Nutrition, Dietary Habits, Lifestyle, Covid-19, Sustainable Food Systems.

“SPATIAL ASSESSMENT OF HEALTH INFRASTRUCTURE OF PURULIA DISTRICT USING GIS WITH SPECIAL REFERENCE TO TRIBAL POPULATION”

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Institutions such as Hospitals and Community health centers play a key role in providing required medical facilities to the general public. There exists a hierarchy between these institutions based on the level of services provided by them ranging from primary services provided by PHC, BPHC, etc. to special services provided by specialty hospitals. Distribution and Accessibility to these places is a key influencing factor

in health seeking behavior. Purulia is the westernmost district of the West Bengal state of India and is a part of the Chota Nagpur Plateau, a region characterized by its undulating topography, rich cultural diversity, and a significant tribal population. Most of them live in isolated places from the mainstream population in their very own culture which is intricately tied with nature. As they live isolated which makes them Vulnerable to inaccessibility of proper healthcare services.

Through our study an attempt has been made to portray the current health infrastructural condition of Purulia district and how much accessible it is for the tribal clustered population regions. To access the health infrastructure condition and accessibility various data and reports from secondary sources have been collected, locations of hospitals and community health centers have been extracted from google maps and google earth, road network and other required spatial objects have been digitized from google earth and toposheets, and other required spatial data have been downloaded from various sources. Which were processed using GIS software and mapped to provide meaningful results. Key findings will shed light on critical gaps in healthcare access for tribal communities, revealing areas with inadequate coverage and limited proximity to health facilities. The results contribute to the identification of priority zones for the establishment or enhancement of healthcare infrastructure, offering valuable insights for policymakers, healthcare authorities, and local communities.

Keywords: Health Care Facilities, Health infrastructure, Network Analysis, Accessibility, Tribal Health.

“EXPLORING SPATIAL CLUSTERS OF RESPIRATORY DISEASES IN SOUTH PUNJAB, PAKISTAN: A GEOSPATIAL EPIDEMIOLOGICAL ANALYSIS”

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Respiratory diseases are one of the main causes of morbidity and mortality in developing countries like Pakistan. The current study is based on geospatial analysis of five major respiratory diseases such as acute respiratory infections (ARI), tuberculosis (TB), Pneumonia, asthma, and chronic obstructive pulmonary diseases (COPD) across South Punjab, Pakistan. The key purpose is to measure spatial patterns which might be helpful for generating local environmental etiological hypotheses for these diseases. Tehsil-level

reported case data for each respiratory disease was collected through 1,487 government health centers from the study area for five years 2016-2020. Techniques of spatial autocorrelation were applied to find results. Local Moran's I statistics were used to perform cluster and outlier analysis. Local clustering was further assessed by using Getis Ord G_i^* statistics to assess the intensity of hotspots and cold spots at the Tehsil level. Results showed spatial heterogeneity of respiratory diseases in the region identifying both high (hotspots) and low (cold spots) clusters. The Getis-Ord G_i^* statistic highlighted significant hotspots and cold spots, revealing ARI hotspots in the northeastern and central regions, asthma hotspots in the central and north-central regions, COPD high-risk areas in the north and northeast, pneumonia hotspots in the central region, and TB hotspots in the central area. These findings provide valuable insights for targeted public health interventions in the identified hotspots, facilitating the allocation of resources for disease prevention and control. Finally, this study provides also a set of suggestions addressing the local environmental and socio-economic issues and minimizing the incidence of respiratory diseases through administrative environmental management and community participation. In addition, this study will not only provide a base for advance geospatial research regarding these diseases but can also be applied in other regions of the country.

Keywords: Respiratory Diseases, Geospatial Epidemiological Analysis, Spatial Clusters, Health Geography

“RETAIL TRADE AND AVAILABILITY OF IN NATURA AND ULTRA-PROCESSED FOODS IN A BRAZILIAN METROPOLITAN AREA”

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The processes of globalization and urbanization of the food industry caused changes in food that culminated in food standardization. As a result, rates of obesity, hypertension, diabetes, and dyslipidemia have exponentially increased due to the transition from traditional diets to a food routine based on ultraprocessed foods (UPF) (Baker et al., 2020). The aim of this study was to analyze the food environment, based on the availability of fresh foods and UPF in a Brazilian metropolitan area. This was a cross-sectional, descriptive, and observational study conducted in two census tracts in the city of Recife, the capital of the state of Pernambuco, between May and August 2019. The selection of the tracts was

based on the higher degree of food insecurity (FI). In the process of characterizing food retail establishments, an appropriate instrument was used in accordance with the classification of the Food Environment Audit Instrument Manual (AUDITNOVA). This instrument was based on the NOVA classification of foods in the dietary guide for the Brazilian population (Brazil, 2014), as prescribed by Borges et al. (2018). A total of 46 establishments were identified in the evaluated census tracts, of which 26 (56.5%) exclusively or predominantly marketed UPF (snack bars, convenience stores); 10 (21.7%) were mixed-use points (bakeries), 8 (17.4%) sold fresh/Minimally Processed Foods (MPF) (vegetable and fruit stores, farmers' markets), and 2 (4.3%) were supermarkets and hypermarkets. Regarding availability, a higher prevalence of fresh foods was observed in the fresh/MPF establishments and in supermarkets and hypermarkets. UPF, on the other hand, were available in all categories of establishments but were more predominant in those exclusively or predominantly selling UPF and supermarkets and hypermarkets. The high density of establishments selling UPF compared to fresh foods indicates a high exposure for individuals in this region, which may explain the high prevalence of FI. Furthermore, the presence of fresh foods and ultraprocessed foods in supermarkets and hypermarkets needs to be emphasized, as these spaces have transformed how people access food, especially UPF. Thus, there is a clear need for the formulation of specific public policies to build healthy food environments in different territories and social contexts, ultimately providing Food and Nutritional Security (FNS) to the population.

Keywords: Ultra-processed, food environment, food insecurity.

“ON THE MARGINS: EXPLORING BARRIERS TO HEALTH SERVICE ACCESSIBILITY FOR TRIBAL WOMEN IN INDIA”

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India has the world's second-largest tribal population after China, predominantly in rural and remote forested areas. Despite their cultural richness, tribal communities face heightened vulnerability, backwardness, and limited access to modern technology. Relying on traditional medicinal practices, tribal populations, particularly women, confront significant health challenges. Present systematic review studies the barriers to healthcare accessibility for tribal women in India. Utilizing Google Scholar in February 2023, we surveyed English-language literature employing keywords such as tribal women, health services, accessibility, and India. From an initial pool of articles spanning 1995–2023, 53 were objectively

chosen and organized according to Penchansky and Thomas's five dimensions of accessibility: availability, accessibility, accommodation, affordability, and acceptability. The discerned challenges within healthcare for tribal women encompass availability issues (shortage of workforce, equipment, specialized doctors, healthcare violence, low enrollment, centralization, and awareness), accessibility barriers (dispersed settlements, inaccessible tribal areas), accommodation concerns (limited support for domiciliary deliveries), affordability challenges (violence against Self Help Groups), and acceptability barriers (cultural practices, taboos, non-adoption, and insufficient male participation). To mitigate the influence of obstacles that impede access to healthcare, policymakers should give precedence to incorporating community involvement and awareness, enhancing healthcare infrastructure, implementing mobile health units and telemedicine, designing specialized maternal and child health initiatives, promoting financial inclusion and assistance, and integrating empirical studies into the healthcare policies of India.

Keywords: Tribal Women, Healthcare accessibility, Barriers, Health Infrastructure, and India.

“GROUNDWATER ARSENIC RISK ASSESSMENT FOR HUMAN HEALTH GEOGRAPHY OF DELTAIC WEST BENGAL, INDIA”

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Inorganic arsenic is found in soil, sediments and groundwater while organic arsenic is found in fish and shellfish. contamination is high in West Bengal. It has been first detected in 1978 in West Bengal. Presently, about 72 blocks in 8 districts in West Bengal are arsenic affected. This toxicity is having adverse effect on health of the populace of West Bengal. The stratigraphic study reveals arsenic prone aquifers occur in the southern part of West Bengal beneath the alluvial plain. The health ailments like skin irritation, respiratory, cardiovascular, hematological disorders, diabetes, genotoxic etc. This paper tries to analysis the status of arsenic toxicity, stratigraphy and mitigation measures from this toxic element.

Keywords: Groundwater, Deltaic , stratigraphic, aquifers, cardiovascular.

“EXPLORATORY STUDY ON ACCESSIBILITY TO HEALTHY FOOD OPTIONS. CASE STUDY: DAMBOVITA, ROMANIA”

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The accessibility of food directly influences the health of a population, and supermarkets, known for offering a diverse array of nutritious options at competitive prices, play a pivotal role in shaping dietary habits of the population. This study focuses on assessing the accessibility to supermarkets in Dâmbovița County, Romania. Residing in areas with limited access to supermarkets has been linked to health-related challenges. Utilizing Geographic Information System (GIS) methods, we integrated three key measures of proximity, availability, and diversity to examine the relationship between supermarket accessibility and health outcomes. Our findings highlight significant disparities between urban and rural settlements. Urban and suburban areas generally exhibit higher nutritional accessibility scores to supermarkets, while numerous rural settlements lack supermarkets in close proximity. Notably, rural settlements with considerably low accessibility scores are concentrated in the northern part of the county, contrasting with those in the extreme south, which demonstrate satisfactory nutritional accessibility. This research underscores the need for future investigations to focus on settlements with low nutritional accessibility, exploring in-depth how residents in these areas procure their food and if it is related to disease occurrence. Understanding these dynamics is crucial for developing targeted interventions aimed at promoting healthier dietary choices and improving overall community well-being.

Keywords: Supermarkets, Accessibility, Romania, Proximity.

“STATUS, PROBLEMATICS AND CHALLENGES ON POST-PANDEMIC HEALTH SYSTEMS: COMPARISON OF MADAGASCAR AND ROMANIAN PEOPLE’S ACCESS ON HEALTH CARE IN THE LAST FIVE YEARS”

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Health systems in the world have been fragilized by the Covid-19 pandemic. If the coronavirus epidemics impacts have seemed similar in several countries, noteworthy disparities have been recorded among territorial access on health care. Coronavirus pandemics have shown in the OCDE’s countries the gap in the health systems and the real people’s access on care services. In intermediate or emergent countries as

Romania, the situation has more inequalities deal with historical and political heritage in the health system. In on hand, in despite of the covid-19 pandemic's funds in the poor countries as Madagascar, epidemics responses and access in the health care have been decreased. International aids effects on the system have not reduce territorial disparities and the difficulties of the vulnerable people to access in health care. In other hand, problem of access in health care and the health resources like in the most countries under-developed result not only of the lake of financial and human resources. Health systems in these countries, based on the colonialism system and in the political post-independence, have face on the high demographic and economic poverty growth, have not adapted in the situation.

Our aims are to evaluate and compare health systems of the two country Madagascar and Romania with geographical approach specifically in three scopes: health resources and access to health care; demographic growth and the trend of adaptation on the cares services; finance and territorial organization of the health systems of the two countries. In this first step of this study, methodology is based in bibliography, collect of statistical data and descriptives analysis. Data of the Romanian's health system are available on the TEMPO online of Statistical service, which have been collected during two months at the Faculty of Geography in Bucharest. Data of the Madagascar's health system are on the statistical services and on the Minister of Health's rappers.

In despite of the different on the health resources of the two countries deal to the diverse of the development level, our first result refers on the similarities in three aspects on central organization of health system, in the process to access on the care services and finally on the opposition of the access on health care on urban and rural area especially in isolated area. These similarities could be associated on the similar historical heritage on the socialism political. Nevertheless, this preliminary result requires more inquiries in the next study.

Keywords: Madagascar, Romania, Health systems, Care services, Disparities, Health care access

“THE DIFFERENCE AND RELATIONSHIP BETWEEN HEALTH AND SOCIO-ECONOMIC STATUS OF THE PADDY CULTIVATORS - A ANALYTICAL STUDY ON KOCH BIHAR DISTRICT, WEST BENGAL”

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The World Health Organization defines health as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.” This definition captures the multidimensional nature of human well-being but leaves the concept of health unbounded. The present study focuses on the difference and relationship between health and the socio-economic status of paddy cultivators. The study is based on primary and secondary data sources. The study is based on present variables, i.e., demographic, economic, and social variables. The socio-economic condition of paddy farmers is an important issue and the prime concern of the planners because they play a major role in the production of agricultural output and take an active role in the creation of demand in rural economies. So, paddy cultivators are considered agents to contribute to agricultural production and consumers to create demand in the economy. Various studies have been made directly by the planning commission or by prominent scholars to know the socio-economic condition of paddy farmers in general or employment and wage among rural labourers in particular. So that it will be easy to chalk out remedial measures. Paddy cultivation plays a vital role in the economic development of India as well as Koch Bihar district. Paddy cultivation is not only an important agricultural activity in the Koch Bihar district but also a significant contributor to the local economy. It provides livelihoods for many people and plays a vital role in food security in the region.

Keywords: Human Well-Being, Infirmity, Livelihood, Occupation & Food Security.

“TOURISM, HEALTH, GEOGRAPHY AND THEIR IMPLICATIONS ON BUILDING A SUSTAINABLE ENVIRONMENT”

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The joint between health, tourism, and geography serves as fundamental key in building a sustainable future, aiming to shape equitable healthcare access, responsible travel practices, and mindful spatial planning. This study aims to analyze their interconnection, focusing on the impact on the environment in order to promote economic development in a sustainable way.

Health tourism and health geography have a significant connection, approaching the subject of health from different perspectives, with an emphasis on location, access to services and the impact of the environment on health. Health geography studies the distribution of health services at a geographical level and it is an essential discipline for the complex understanding of how the geographic environment and social factors influence the health status of individuals and communities. It plays a great role in planning

health systems and the analysis of health disparities, which may be related to social, economic or demographic factors. The redistribution of medical services not only improves access but also helps optimize resource use, supporting a more sustainable healthcare system.

At the same time, health tourism is one of the fundamental methods of capitalizing the principles of health geography, operating at the intersection of healthcare system, tourism sector and geographical considerations, aiming to the development of sustainable environments. This type of tourism has come with creative and sustainable ways of development, bringing a set of new paths and perspectives, combating not just the Pandemic but also the limitations from the health sector. Along with its positive impact on society, it is crucial to mention that health industry has always been a sensitive topic while talking about sustainability, as it may clearly represent environmental risks due to the generation of health waste, energy-intensive operations and the use of potentially harmful substances, contributing to environmental pollution and ecological strain. Exploring both the positive and negative dimensions of health tourism through the perspective of health geography may optimize its benefits, leading to a sustainable evolution ahead.

The methodology is represented by the analysis of existing scholarly works to summarize the implications, gaps, and insights, in order to gain a detailed picture of the health tourism in the context of sustainable development.

Once geographical aspects are taken into consideration, health tourism may represent an effective tool for building a sustainable environment, considering its ability to optimize the allocation of health resources, stimulate economic growth, minimize environmental impacts and promote cultural exchange.

Keywords: health tourism, medical geography, sustainability.

***“IMPACT OF SOCIO-ECONOMIC FACTORS ON TUBERCULOSIS TREATMENT OUTCOMES
IN JIGAWA STATE, NIGERIA: A MIXED METHODS STUDY”***

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Tuberculosis (TB) is a major public health problem and at 48%, in Nigeria and Jigawa state in particular has the lowest treatment success rate nationally. Addressing the social determinants of TB is crucial to

ending TB. This study sought to understand the extent and ways in which socio-economic factors affect TB treatment outcomes in Jigawa State. The study conducted a convergent parallel mixed methods study in 10 TB Diagnostic and Treatment Units. The study enrolled former TB patients diagnosed with drug-susceptible TB between January 2022 and December 2022. Unit TB and laboratory registers were reviewed to identify pre-treatment losses to follow-up. Four focus group discussions with former TB patients and 18 key informant interviews with healthcare workers were conducted. Principle component analysis was used to generate wealth quintiles that were compared to treatment outcomes using the proportion test. The association between sociodemographic characteristics and TB treatment outcomes was evaluated using the chi-square test and multiple logistic regression. A total of 313 participants were randomly selected from 1184 former TB patients recorded in the unit TB registers. Of these, 264 were contacted in the community and consented to join the study: 57% were male and 156 (59.1%) participants had unsuccessful treatment outcomes. The wealthiest quintile had a 58% reduction in the risk of having an unsuccessful treatment outcome (adj OR = 0.42, 95% CI 0.18–0.99, $p = 0.047$). People who were employed in the informal sector (adj OR = 4.71, 95% CI 1.18–18.89, $p = 0.029$) and children under the age of 15 years who were not in school or employed (adj OR = 2.71, 95% CI 1.11–6.62, $p = 0.029$) had significantly higher odds of unsuccessful treatment outcome. Analysis of the pre-treatment loss to follow-up showed that 17.2% of patients with pulmonary bacteriologically confirmed TB did not initiate treatment with a higher proportion among females (21.7%) than males (13.5%). Inadequate food, belonging to migratory communities, stigma, lack of social protection, drug stock-outs and transport challenges affected TB treatment outcomes. This study confirmed that low socio-economic status is associated with poor TB treatment outcomes emphasizing the need for multi- and cross-sectoral approaches and socio-economic enablers to optimise TB care.

Keywords: Tuberculosis; Diagnostics; Treatment; Jigawa state.

“GEOSPATIAL ANALYSIS OF THE HEALTH-ASSOCIATED SOCIO-ECONOMIC AND INFRASTRUCTURAL DISPARITIES DURING COVID-19 IN KOLKATA MUNICIPAL CORPORATION”

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Globally, the COVID-19 pandemic had a completely disastrous effect on socioeconomic and health conditions and Kolkata is not an exception according to a report from the West Bengal Health Portal (2022). The first COVID-19 case was found in Kolkata on March 17, 2020, which became more susceptible due to population congestion and public unawareness. Thus, the current study is attempt to analyze the drivers of health-associated socio-economic and infrastructural inequalities in Kolkata. In this aspect, the three-month moving average of time series analysis was employed in the current study to examine the temporal changes in COVID-19 cases as well as new fatalities, active cases, and patient discharges. Additionally, factors influencing socioeconomic, infrastructural, and health-related disparities are analyzed by the Composite Ibrahim index (CIb) and mean composite standardized scores (Mean Composite Z-scores) to determine the ward-wise socioeconomic development, household conditions, and assets, as well as the composition of the selected criteria of household inequality drivers of COVID 19 in Kolkata. In May 2020, there were 473 active cases, 123 discharges, 35 fatalities, and a total of 683 COVID-19 incidents. COVID-19 infections have had some very serious effects on urban inhabitants. The socioeconomic position and household health of the Kolkata Municipal Corporation wards varied significantly. The bulk of the 141 wards in the eastern and central-western parts of KMC had COVID-19. In contrast to the socioeconomically developmental status zones, the COVID-19 vulnerability regions are found in the less developed wards of KMC. Between early 2020 and early 2022, there was an overall upward trend in the number of COVID-19 cases, deaths, and patient discharges. The greatest levels of household-oriented COVID health disparity are found in the KMC wards. There are significant COVID-19 drivers against the development. The hypothesis is supported by the considerable ($p < 0.05$) positive link found between household-level COVID-19 susceptibility and socioeconomic advancement. The pandemic situation was declined gradually until January 1, 2022, then quickly until February 1, 2022, at which point it essentially came to a standstill until March 6, 2022. The socioeconomic development of corporation wards must be supported while the risk of COVID-19 or other acute respiratory diseases is decreased. This can be achieved by upholding hygiene, following COVID protocols, living a healthy lifestyle, educating the public, conducting additional research, and offering non-governmental and government support.

Keywords: Healthcare infrastructures, ward wise disparity, composite index, ZPR. Kolkata.

“EXCESS MORTALITY DUE TO COVID-19 PANDEMIC: A GLOBAL SCENARIO”

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Excess mortality, defined as the increase in all-cause mortality relative to the expected mortality, is widely considered as a more objective indicator of the COVID-19 death toll. In the year 2020, there was barely an excess mortality all over the world. The COVID-19 pandemic initially reported in China, followed by even higher numbers in countries like Italy, Spain, United Kingdom, United States, and other advanced countries caused significant loss of human lives, disrupted livelihoods and collapsed well-being throughout the world. It is noteworthy that there has been always a positive correlation between COVID-19 mortality rate and mean age of population, life expectancy, and pre-COVID-19 '65-yr+ mortality percentage. Perhaps this is the reason behind the more susceptibility of older population to greater number of COVID-19 deaths.

Though to make a comparative analysis of the impact of the COVID-19 pandemic amongst countries or across the time span is difficult because the officially reported numbers of cases and deaths can be strongly affected by testing capacity and reporting policy by different governments worldwide, but if we make an overall mortality analysis of 2020 and the general mortality between 2016 and 2019, we can surely trace the difference, especially in many of the western European countries like Germany, Sweden and Spain.

In Sweden excess mortality was 3 per cent without and 8 per cent with consideration of increasing life expectancy. Life expectancy continues to improve in almost all the European countries. Since the year 2016, life expectancy has been increasing gradually like 78.1, 78.3, 78.4, 78.6 years for 2016, 2017, 2018, 2019 respectively. This is not just because of only the

decline of child mortality, but also the development in all ages has been the reason. Data also shows that Germany is the country where the average mortality was lower in 2020 than the preceding four years whereas excess mortality for Sweden and Spain accounted for 3 and 15 per cent respectively. It should also be kept in mind that 2020 is a leap year which has 0.75 days longer than the normal year the calculation will be changed, though with a least effect on the cumulative mortality rate. Sweden experienced a higher death caused by COVID-19 than Norway, Finland, Denmark due to mobility reduction in Sweden than its neighbouring countries. In the case of Spain excess death caused by disproportionate shortfall of doctors and nurses.

It was widely pre-assumed that perhaps Africa would be worst hit when the COVID 19 virus eventually reached the continent. But, Africa's COVID-19 mortality graph is, ironically and dramatically lower than

that of more advanced countries with better health infrastructure. Most African countries, even with their less advanced healthcare systems, continue to experience lower COVID-19 mortality rates for obviously this is due to the governments' involvement in balancing their COVID-19 restrictive and socioeconomic measures.

India too has been passing through the phase of disastrous impact of COVID-19, as a part of worldwide pandemic. It caught several people off guard, accelerated at an incredible pace, leading to the wholesale collapse of public health system of India. People engaged in the economic activity at grassroot level organisations became first respondent. According to the figures provided by Indian government, it has the second-highest number of confirmed cases in the world (after US). Further, as per the World Health Organisation, India recorded 5.5 lakhs of COVID-19 deaths since the initiation of this pandemic against 4.4 crore reported cases. In May 2022, this organisation estimated 4.7 million excess deaths, both directly and indirectly related to COVID-19 to have taken place in this country with a total population of 140 crore, it took such a hazardous scenario that experts started to state that the virus may reach an endemic stage rather than completely disappear.

Keywords: Excess mortality, COVID-19, Death-rate, Life Expectancy, Mean age of population, public health.

“SPATIAL PATTERNS, HOTSPOTS, AND DRIVERS OF HIV/AIDS IN AFRICA”

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HIV/AIDS remains a pressing public health concern in Sub-Saharan Africa, where an estimated 39.0 million individuals were living with HIV in 2022, constituting nearly 66% of the global burden. This study, therefore explores the spatial patterns of HIV/AIDS prevalence in Africa, with a view to identifying its hotspot and drivers. Utilizing data from the World Development Indicators (WDI) 2020 and the United Nations Development Program (UNDP) 2020, we applied Global Moran's I, Local Moran's I, Getis-Ord G_i^* , multivariate regression, and Geographically Weighted Regression (GWR) to unveil spatial patterns, hotspots, and influencing factors. Our findings reveal a positive spatial autocorrelation in HIV/AIDS prevalence, with notable hotspots concentrated in southern Africa. Multivariate regression analysis indicates that spatial variations in HIV prevalence are significantly influenced by the literacy rate among females aged 15, international tourism, male condom usage, life expectancy, Human Development Index

(HDI), and female unemployment rate ($R^2= 0.563$; $AIC= 321.6754$). Conversely, the GWR model revealed regional disparities, highlighting that high international tourism and female unemployment, coupled with low male condom usage, life expectancy, and HDI rate, are prominent in southern Africa ($R^2= 0.534$; $AIC= 127.7177$). In conclusion, Southern Africa emerges as the epicenter of the HIV/AIDS epidemic in Africa, and economic factors emerge as primary drivers of infection. The study advocates for heightened awareness of the disease and emphasizes the importance of creating more employment opportunities in the region.

Keywords: HIV/AIDS, Spatial epidemiology, Spatial Analysis, Africa, and Pandemic.

***“COMPARATIVE STUDY ON EFFICIENCY OF PRIMARY HEALTH CENTERS:
GEOGRAPHICAL DISPARITIES TO ACCESS HEALTH CARE SERVICE IN KERALA, INDIA”***

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Primary Health Care (PHC) is a comprehensive, community-based healthcare approach designed to offer essential and accessible services to individuals and communities. It serves as a fundamental pillar in global healthcare systems, emphasizing preventive measures, health education, and community involvement. The core principles of PHC, as outlined in the Alma-Ata Declaration of 1978, include equity, community participation, and intersectoral collaboration. Equity in PHC ensures that essential healthcare services are available and accessible to all individuals, regardless of their socio-economic status or geographical location. This micro-level study focuses primarily on a municipality in Kerala, a state in India. The aims of the study are as follows: To investigate basic indicators of primary health centers, including basic infrastructure and general medical care in the study area. To examine household responses regarding the PHC in the study area. Methodology: Primary data are collected through schedules and observation methods, involving direct interviews with patients, households, and staff in eight PHCs. Secondary data, sourced from the Handbook of Block Panchayath, complement the study. A prepared schedule is used for data collection, recorded using mobile phones. The interpretation of both primary and secondary data is facilitated, and suitable graphs are generated to represent detailed information. Locational maps are created with open-source software. The study emphasizes the importance of healthcare services, asserting that the enjoyment of the highest attainable standard of health is a fundamental right for every human being. Regardless of race, religion, political belief, or economic and

social conditions, the Indian government, as a welfare-oriented entity, is obligated to provide health for all. Achieving this goal necessitates access to essential health facilities, with a focus on the efficient functioning of healthcare systems, particularly in rural areas through Primary Health Centers. The study acknowledges the crucial role of Primary Health Centers in responding to public health emergencies, as highlighted by the COVID-19 pandemic. In conclusion, Primary Health Care remains a foundational approach prioritizing accessibility, community involvement, and collaboration across sectors. As healthcare systems evolve, PHC continues to be a critical framework for promoting health equity, preventing diseases, and ensuring comprehensive and sustainable healthcare for all. In the study area, the majority of people in the panchayat depend on the primary health centers. Providing good and proper healthcare is a prime responsibility of the government.

Keywords: Open-source software, primary health center, Health equity, Basic infrastructure, General medical care

“CARDIOVASCULAR DISEASE MORBIDITY AND MORTALITY: MODELLING OF RISK FACTORS IN LISBON METROPOLITAN AREA, PORTUGAL”

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Cardiovascular diseases (CVD) are, currently, the main cause of death in Portugal (INE, 2023). From a systematic review of national and international literature, 24 risk factors were identified, associated with different dimensions (individual lifestyle; demographic and socioeconomic factors; environmental factors) (Marques-Reis et al., 2022). Additionally, few articles with spatial analytical approaches were identified, especially in Portugal. The main objectives of this study are implementing a risk model in the Lisbon Metropolitan Area, finding the geographical areas with highest and lowest probability of CVD incidence, and identifying the main variables responsible for its higher or lower incidence, correlating them with existing CVD morbidity data (incidence of ischemic heart disease, acute myocardial infarction and hypertension) (DGS, 2023). Considering some of the indicators identified in the systematic review, 30 variables were analyzed, related to population health (physical and mental), physical environment

(green spaces, walkability and cyclability indices, air pollutants, temperature, etc.) and demographic and socioeconomic environment (education, employment and income). All data was processed and standardized on a 100-metre hexagonal grid (as unit of analysis) due to its advantages in studies that involve representing the closest neighborhood (Birch et al., 2007), and different geographical models were applied to assess the distribution of variables and their relationship, and to model the respective risk of incidence: clustering, linear relationship and spatial autocorrelation models (including the Multivariate Quantile LISA, the Spatial Autocorrelation (Global Moran's I) and the Ordinary Least Squares methods), and risk analysis models (such as Multicriteria Analysis). The preliminary results of this study suggest not only an urban-rural difference, but also a difference between the two margins of Lisbon Metropolitan Area — with a higher risk incidence and morbidity in the south margin —, in line with the increase, over the last decade, in mortality rates from circulatory system diseases in the municipalities on this margin. It is expected to obtain conclusions that allows risk assessment at urbanization or neighborhood levels; these aim to contribute positively to informed decisions directed at each territory — at socioeconomic level, spatial planning and infrastructure creation —, through the developing of a platform for publishing, communicating and disseminating results, and making granulate data available to public and private entities, in order to reduce morbidity and mortality from CVD in areas of greater risk, following the example of those with lower risk.

Keywords: Cardiovascular diseases; Geographic Information Systems; Risk analysis; Risk factors; Spatial analysis

“SEASONAL INCIDENCE OF THE MALARIA DISEASE AND ITS SPATIALITY IN URBAN EXPANSION ZONES IN MANAUS-AM”

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This study aimed to analyze the seasonal incidence of malaria and spatiality in the urban expansion areas of Manaus in the years 2012-2022. Malaria data were obtained from SIVEP-MALARIA, restricting them to "autochthonous cases" and collected on a monthly scale. The climatic data used were "Monthly Total Rainfall" and "Monthly Average Temperature", obtained from INMET with the same period. Regarding the analysis of the urban expansion of Manaus, maps were created from images from Google Earth Pro.

The theoretical foundation is based on Oliveira e Costa on "occupation and urban expansion of Manaus". The results showed that the occurrence of malaria in Manaus showed a bimodal pattern over the years analyzed, with a higher record in the months of July, August and September, the less rainy period in Manaus. The incidence of malaria recorded in the urban perimeter of Manaus was concentrated in the North and East expansion zones of the city, as it is related to irregular urban occupation, enhancing favorable conditions for the proliferation of the mosquito that transmits the disease. The lack of infrastructure and basic services in these areas increases socio-spatial inequalities and exposes the population to the risk of the disease. The production of new urban spaces, materialized by the occupations, is the very reproduction of malaria risks, as well as socio-spatial inequalities, since the population living in the most distant areas of Manaus, for the most part, is composed of poorer social groups, is at greater risk of contracting malaria, where sanitation and health services are absent.

Keywords: Rainfall Seasonality. Urban Space. Occupation. Malaria Disease, Manaus City.

“TERRITORIAL DISPARITIES IN THE DISTRIBUTION OF HEALTHCARE UNITS IN THE BUCHAREST-ILFOV METROPOLITAN AREA AFTER THE PANDEMIC (THE CASE OF FAMILY PHYSICIANS UNITS)”

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In this paper it will be analyzed the evolution of distribution of general practitioner at the scale level of the city of Bucharest on the review units from the last censuses, highlighting the ratio between the number of inhabitants from the previous censuses and the number of general practitioners, analyzing in the end the results according to the national average. At the end, poorly served areas and overserved areas will be outlined, for the two periods of time, which will be correlated with factors of a social nature and with factors of urban morphology that have a significant impact over the spatiality, explaining the differences and bringing arguments for the concentration of personnel in certain areas and the lack of it in others, using GIS instruments. Last but not least, a comparison will be made between the situation from one census to another, highlighting the units that suffered losses of values and the units that accumulate a surplus of general practitioner, as well as the reasons why all these transformations occurred and especially why this have a model of spatiality that have not change a lot from a census to another.

Keywords: Bucharest, GIS, general practitioners.

*“THE IMPORTANCE OF LISBON'S URBAN ENVIRONMENT FOR WELL-BEING”***Iuria Betco¹, Jorge Rocha²**^{1,2}Instituto de Geografia e Ordenamento do Território da Universidade de Lisboa, Portugal*Corresponding Email:* betcoiuria@edu.ulisboa.pt

As the world becomes more urbanized, planners and health professionals are concerned about the effects of urban environments on residents' mental health. Since urban environments have the power to encourage or discourage lifestyle choices and behaviors that have an impact on mental health, there has been a growing awareness of how these factors can impact people's mental health (Reeves et al., 2011). It is crucial to comprehend the possible influence that Lisbon's urban setting may have on the well-being (i.e., sentiment) of the individuals. Using a Sentiment and Emotion lexicon from the Canadian National Research Council (NRC) (Mohammad and Turney, 2013), we conducted a sentiment analysis based on data from the social network Twitter (actual X) (Chen et al., 2022; Liu et al., 2023). This made it possible to identify areas where sentiment is both positive and negative.

A set of thirty explanatory variables that describe the morphology of Lisbon's city were taken into consideration for the impact identification. However, since different people experience space differently, it can be difficult to pinpoint exactly which elements of the urban experience contributed to the sentiment. To improve knowledge of the elements in the urban environment that can explain sentiment, a machine learning (ML) model linked to an agnostic model was employed. ML is acknowledged for producing results with greater accuracy than traditional methods (Molnar, 2019). Random Forest (RF), Extreme Gradient Boosting (XGBoost), Neural Network (NN), and K-Nearest Neighbour (KNN), one of the simplest algorithms used, and a linear model for comparison (Generalized Linear Model - GLM) were all tested. RF was found to have the highest predictive ability when using positive/negative sentiment as the dependent variable and 30 explanatory variables related to the urban environment. Twitter (actual X) data makes a good proxy for sentiment analysis, however, permission to access the user's location at the time of publication is a disadvantage for sentiment analysis, resulting in a large portion of the comments not being considered. Besides that, the sentiment analysis revealed that the Portuguese are happy in places associated with leisure and consumption, such as museums, event venues, gardens, shopping malls, stores, and restaurants. The Local Interpretable Model-Agnostic Explanations (LIME) and the SHapley Additive exPlanation (SHAP), two agnostic models that were used, played a crucial role in this research. According

to SHAP, the explanatory variables most related to sentiment are distance to fitness equipment, distance to green spaces, and popularity of locations.

Keywords: urban environment, well-being, sentiment analysis, machine learning, agnostic model.

***“CHILDHOOD UNDERNUTRITION ACROSS CASTE/ETHNIC GROUPS IN INDIA:
PREVALENCE, DETERMINANTS, AND TRANSITION FROM 2005–2006 TO 2019–2021”***

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Backgrounds: Presently the proportion of stunted, wasted, and underweight children are higher than the global average. These three aspects of undernutrition (stunting, wasting and undernutrition) vary across different caste/ethnic groups of India. On the other hand, these three measures individually fail to explain overall comprehensive picture of undernutrition. **Objectives:** The study aims to determine the prevalence of undernutrition by the Composite Index of Anthropometric Failure (CIAF-aggregate of Stunting, Wasting and Underweight) and the time-dependent significant determinants of undernutrition among children under five years from four recognized social groups, i.e., Scheduled Tribe (ST), Scheduled Caste (SC), Other Backward Class (OBC), and Others, or General group, between 2005–06 and 2019–21 in India. It also explains the transition in the probability of CIAF among ST, SC, OBC, and General children belonging to different socio-demographic, economic backgrounds, and geographic regions from 2005-06 to 2015-16, 2015-16 to 2019-21, and 2005-06 to 2019-21 in India. Besides, the investigation also explains the transition in the prevalence of CIAF among ST, SC, OBC, and General children under five years of age belonging to various socio-demographic, economic, and geographical backgrounds from 2005-06 to 2015-16, 2015-16 to 2019-21, and 2005-06 to 2019-21 in India.

Materials and methods: The three rounds of the National Family Health Survey (NFHS-3, NFHS-4, and NFHS-5) was employed in this study. Time-dependent and time-independent logistic regression models are employed to identify the major determinants and predicted probabilities of CIAF, respectively, among four social groups. The predicted probabilities of CIAF among ST, SC, OBC, and General children belonging to various socio-demographic, economic backgrounds, and geographic regions are extracted from logistic regression models and represented graphically.

Results: Undernutrition was most prevalent among ST under-five children, followed by SC, OBC, and General children throughout the last 15 years. Since 2005–06, the magnitude of CIAF risk elimination was comparatively higher among socially marginalized children (ST, SC, and OBC) than General. The investigation also outlines a significant, and consistent effect of child age, maternal nutritional level, education status, household economic status, and geographic regions on the prevalence of undernutrition among all four social groups in India from 2005–06 to 2019–21. CIAF risk reduced higher among the children from all social groups living with thin, less educated mothers, and belongs to middle economic class and northern, central, and eastern part of India during last 15-years.

Conclusion: The policymakers must focus much on the ST, SC and OBC sections for eliminating childhood undernutrition. Specifically, more attention is needed for the ST, SC, OBC children living with non- or less-educated mothers, belonging to poor families, living in central, western, and eastern Indian states for eliminating the childhood CIAF. This might contribute to lowering intergroup inequality (SDG 10.2) in India in terms of the incidence of hunger (SDG 2.2), undernutrition, and child mortality (SDG 3.2).

Keywords: Undernutrition, CIAF, social inequality, caste/class, India.

“A SPATIAL REGIME ANALYSIS OF MOTORCYCLE ACCIDENTS IN NIGERIA”

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Road traffic accidents involving motorcycles are increasingly prevalent in contemporary Nigeria, particularly in urban areas where there is a rising demand for transportation services. Despite growing academic interest, limited research has focused on the spatial patterns and associated risk factors of motorcycle accidents. This paper aims to address this gap by examining the geographical clustering and drivers of motorcycle crashes across three spatial regimes: National, northern Nigeria, and southern Nigeria. Data sourced from the Federal Road Safety Commission's (F.R.S.C.) annual reports were analyzed using Global Moran's I, Local Getis Ord, bivariate correlation, and linear regression. The results revealed a significant positive spatial autocorrelation in motorcycle accidents over the study period, with the Federal Capital Territory and Nasarawa State consistently identified as hotspots. At the national level, a negative correlation was observed between motorcycle accidents and population size ($r = -0.297$). In northern Nigeria, the Human Development Index emerged as the sole significant risk factor ($r = 0.527$),

while in southern Nigeria, GDP ($r = -0.51$), IGR ($r = -0.568$), HDI ($r = -0.826$), and Poverty ($r = 0.425$) were identified as significant factors. The findings suggest the need for targeted interventions, including public sensitization programs and rigorous enforcement of traffic laws and road safety measures, to mitigate the rising incidence of motorcycle accidents in Nigeria.

Keywords: Motorcycle, Spatial Autocorrelation, Hotspots, Nigeria.



End of Section



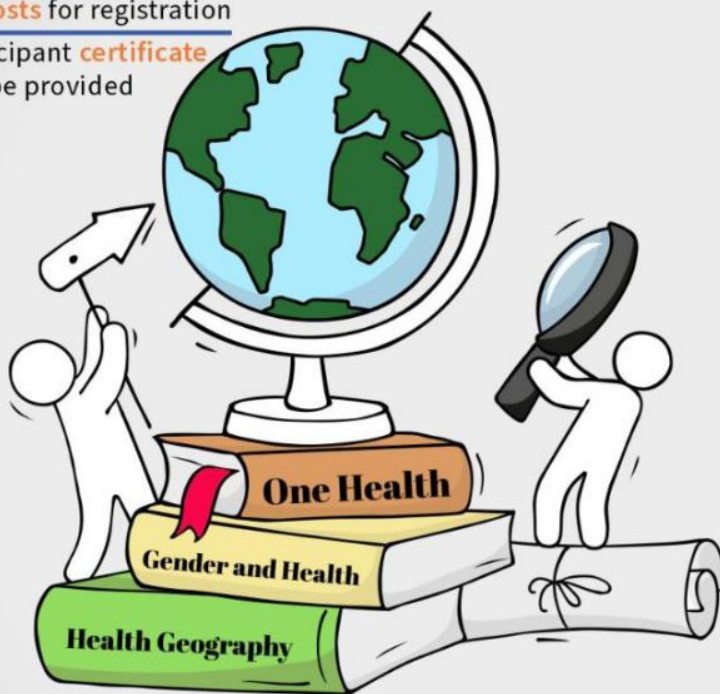
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