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YEAR 2023-24

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MODULE NAME:	Cartography and Data Visualisation
COURSE PAPER TITLE:	
WORD COUNT:	

Blog Post	Check (x) below as appropriate and add statement of contribution for each group member. I declare that:
	I was present during the lecture and practical work yes/no I contributed equally or comparably to the write-up yes/no Brief statement of my contribution:
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Group working declaration

This declaration was completed with agreement of all members of the group yes/no

and (if relevant) following discussion with our tutor yes/no

Any additional comments:

The Ukraine-Russia War Map

The map visualises Russia's invasion of Ukraine as of February 2022. It was made by the Associated Press. This map effectively simplifies a complex military operation whilst still feeling accurate and thorough. It includes multiple layers to visualise separate elements on the invasion which complement each other rather than feeling over-crowded. This is relevant to any data visualisation that we may conduct, in terms of deciding which variables and elements to highlight. Additionally, it visualises movement with the impact of those movements also shown. This provides cartographical inspiration for when showing transportation of people or resources, that the purposes and consequences of this movement can be incorporated.

The key features of this map are its use of arrows, showing the direction of invading Russian troops and the use of red indicates the threat and fear from movement. Comparatively, Charles Minard's "Figurative Map of the successive losses in men of the French Army during the campaign in Russia 1812–1813" (Rendgen, 2013) used width to represent the number of people marching towards and the retreat which could have been replicated. The use of the specific symbols elicits a sense of chaos and violence, an intentional decision taken to indicate where fighting took place and the chaotic nature of war. Another feature of the map is the lack of colour. The mapmaker utilises a grey colour across Ukraine and neighbouring countries to allude to the dreary and depressing nature of war. A temporal aspect could be included showing when strikes and ground fighting occurred, potentially through applying a gradient to the arrows or symbols. This map only represents the point of view from Russia and does not consider Ukraine's counteroffensive. However, the Associated Press often creates maps like these for other outlets to adapt, so this map has the potential to be improved by other publishers.

References:

Rendgen, S. (2013). The Forgotten Maps of Minard. [online] sandrarendgen.wordpress.com. Available at: https://sandrarendgen.wordpress.com/2013/06/22/the-forgotten-maps-of-minard/ [Accessed 18 Jan. 2024].

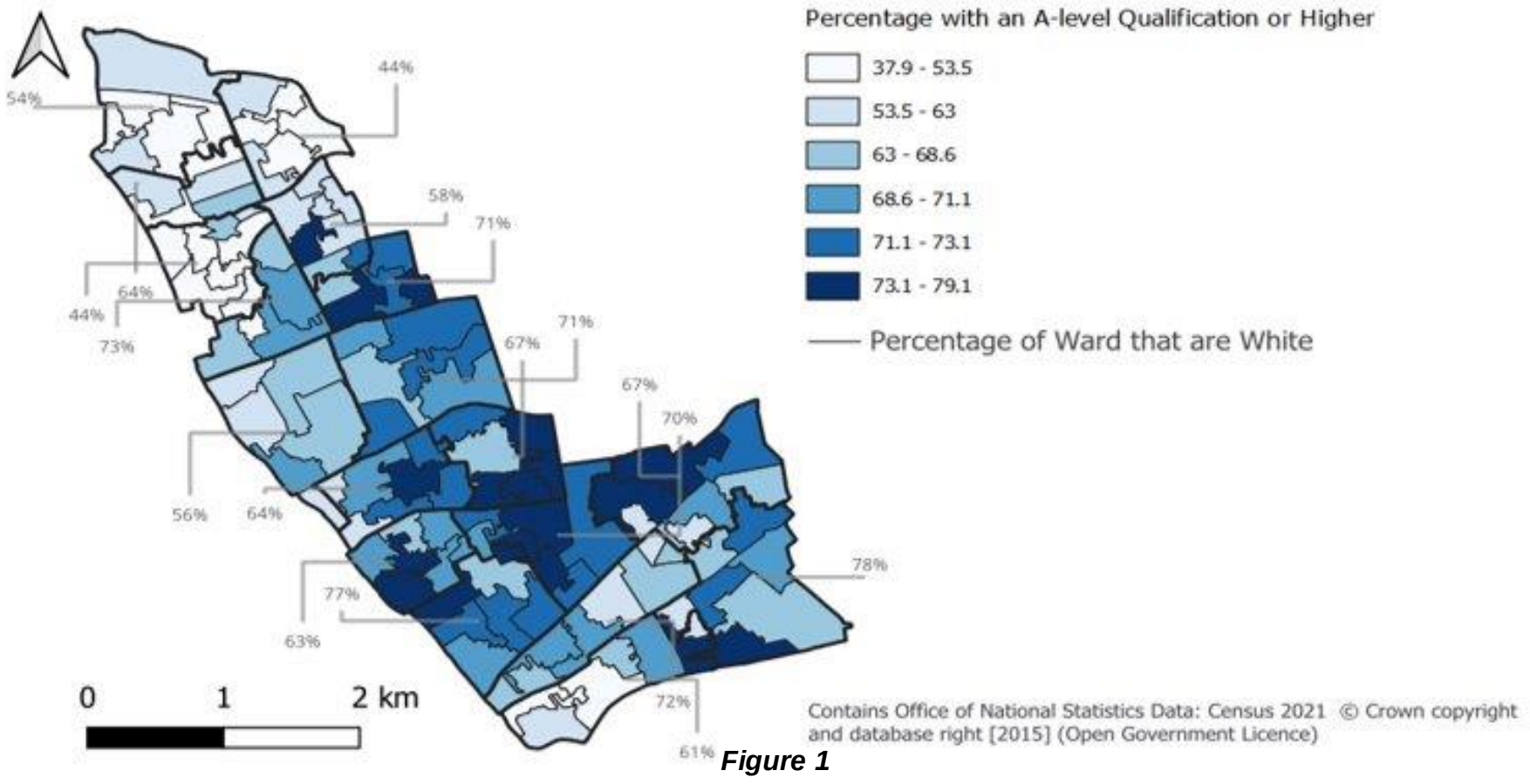


Figure 1

Relations of Ethnic Groups and Higher Education in Kensington & Chelsea, London

Our map (Figure 1) used 2021 census data on highest level of qualification by household and ethnic groups from the ONS website. We chose Kensington and Chelsea due to the education performance being below the national average for all ethnic groups with some disparity between white and other groups in both 2001 and 2011 (Elahi and Khan 2016). The choropleth map shows the percentage of households with A Levels at LSOAs, where darker shades of blue represent a higher percentage of households with an A level qualification or higher. We then included arrows showing the percentage of "White" households in each ward since this was the ethnic group with a majority share.

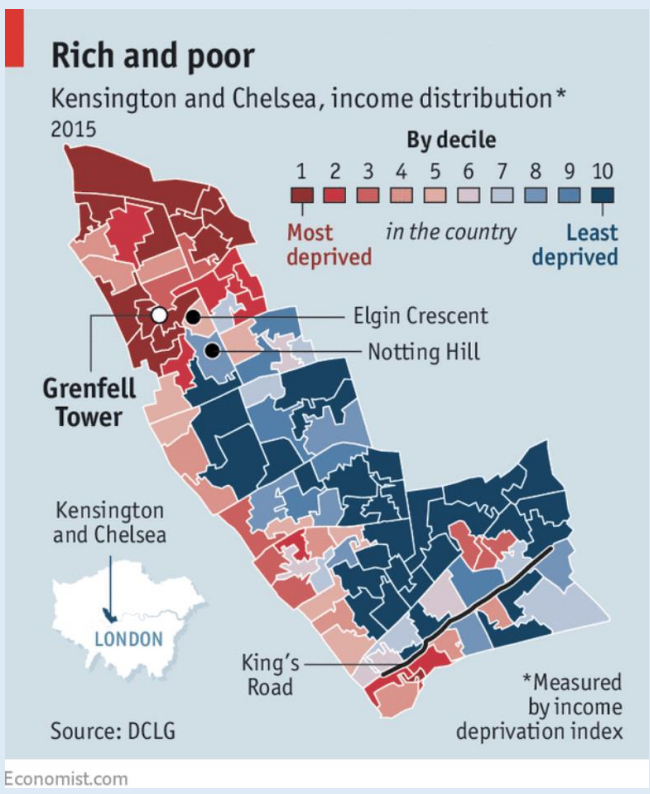


Figure 2 (Source: The Economist, 2017)

Figure 1 indicates the north of the borough has a lower percentage of A-level qualifications or higher, as compared to southern areas. Northern wards also have a lower percentage of white population. Figure 2 shows how this corresponds with the income distribution. However, this correlation cannot determine if there is a true relationship between ethnicity and qualification levels, so further assessment is required. Croxford and Raffe (2014) suggested that an individual's ethnicity can impact their potential in attaining higher education and their chances of getting into better universities. Within higher education, undoubtably, "ethnic differences in academic attainment are ubiquitous and have persisted for many years" (John, 2015). Our specific reason for choosing the higher-level education also implies the difference of people's income after they've graduated, as referenced in Figure 2. Figure 1 could further be used to explain inequality issues; therefore, the implications of this map would encompass broad educational, social, political, and economical dimensions for further studies.

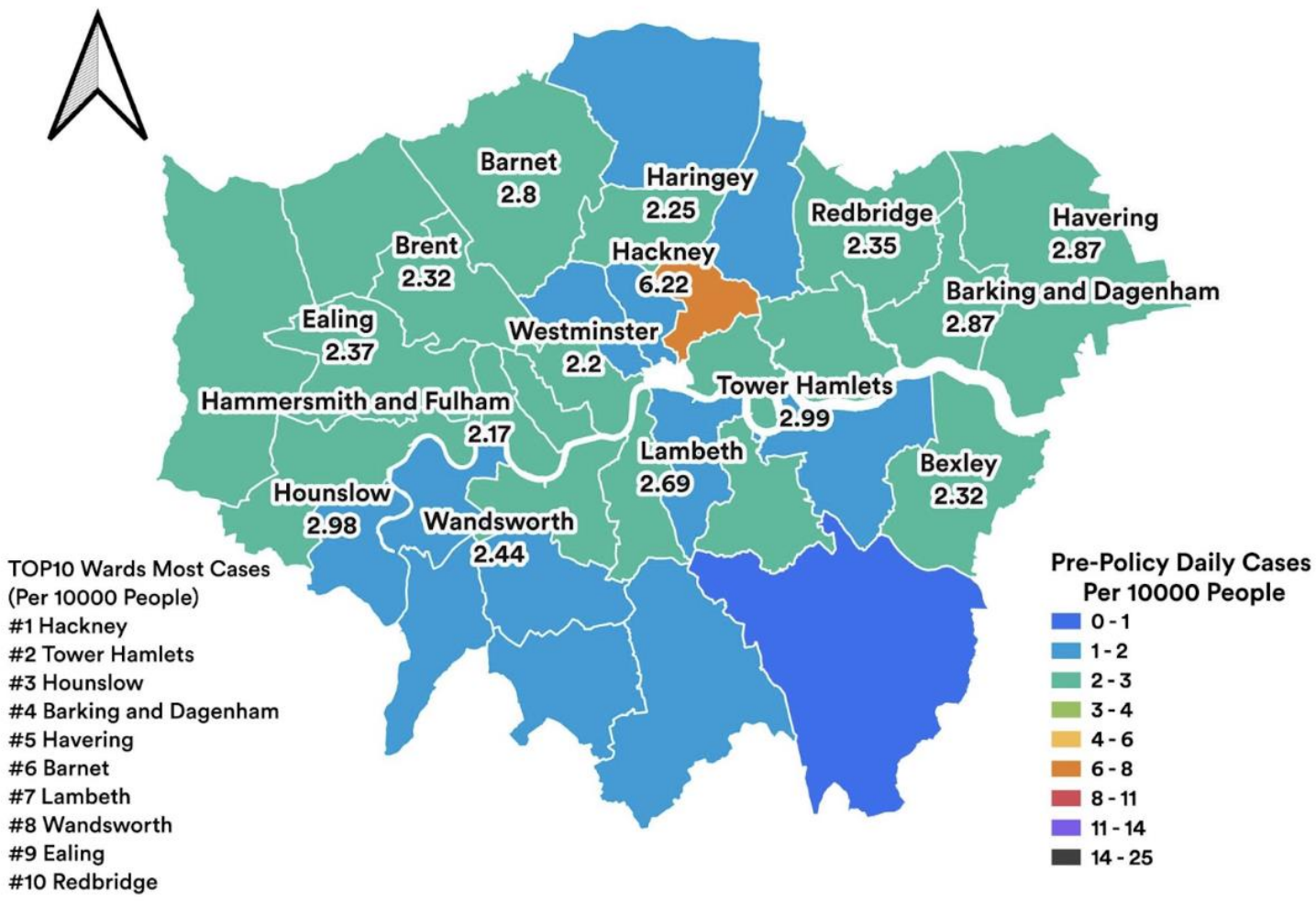
References:

Croxford, L. and D. Raffe. (2014) 'Social class, ethnicity and access to higher education in the four countries of the UK: 1996–2010', International Journal of Lifelong Education, 33(1), pp.77-95.

Elahi, F and O. Khan. (2016) 'Ethnic Inequalities in London', Capital for All, Runnymede Report. [https://www.capitalmass.org.uk/perch/resources/files/london-inequality-report-v3.pdf, accessed 29th January 2024]

John T.E. Richardson. (2015) 'The under-attainment of ethnic minority students in UK higher education: what we know and what we don't know', Journal of Further and Higher Education, 39(2), pp. 278-291, DOI: 10.1080/0309877X.2013.858680

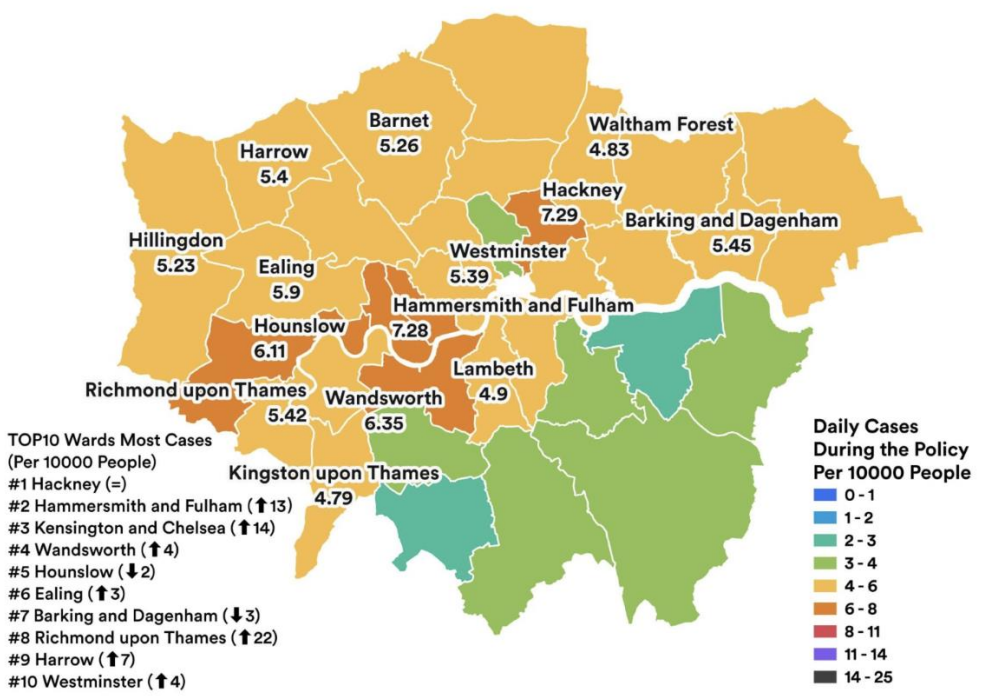
The Economist (2017). Kensington and Chelsea: a wealthy but deeply divided borough. [online] The Economist. Available at: https://www.economist.com/britain/2017/06/24/kensington-and-chelsea-a-wealthy-but-deeply-divided-borough.



Map 1: *Pre-policy (4th July 2020 – 3rd August 2020). Data source: Our World in Data, n.d.*

The 'Eat Out to Help Out' Scheme and COVID-19 Cases

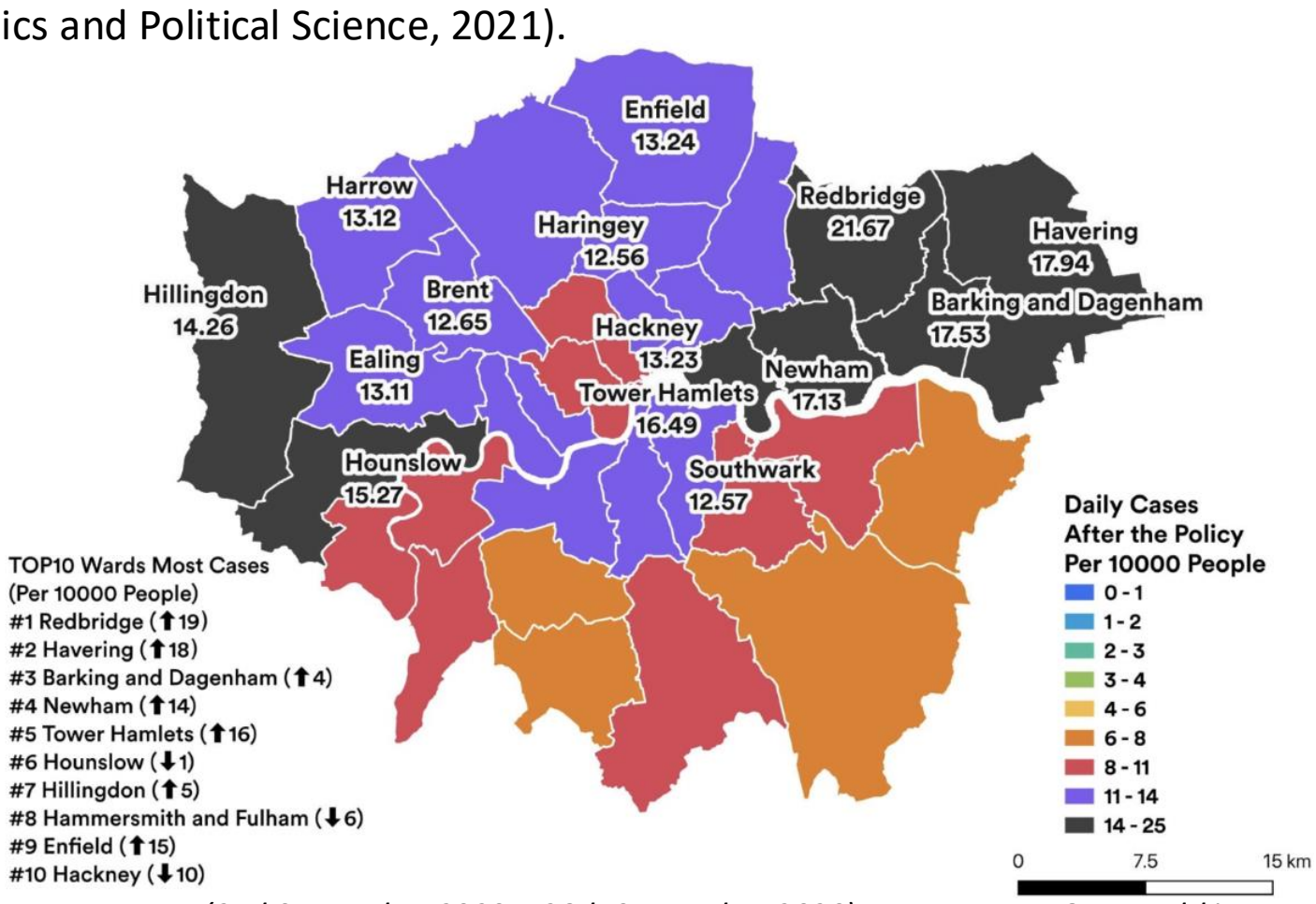
Before: A month prior to the 'Eat Out to Help Out (EOTHO) Scheme', there was a noticeably lower number of daily COVID-19 cases per 10,000 people being reported. Map 1 shows some areas such as Hackney had a higher rate of cases, but in comparison the rest of London had fewer. As a result of lockdown across the UK, many businesses suffered from a lack of customers, causing "monthly GDP in July 2020 [to be] 11.7% below the level of February 2020" (Stephens *et al.*, 2020). The government implemented a policy "aimed to support businesses reopening after the first COVID-19 lockdown period" (Hutton, 2020) aiming to boost consumption. At this point, citizens would have accumulated their savings, making spending desirable.



Map 2: *During policy (4th August 2020 – 1st September 2020). Data source: Our World in Data, n.d.*

During: "Diners received a state-backed 50% discount on meals and soft drinks in pubs and restaurants (up to £10 each) on Mondays, Tuesdays and Wednesdays around the UK during August 2020. " (BBC, 2023). Map 2 shows an overall increase in cases with similar geographic patterns. However, several boroughs joined the top 10 in Map 2 - Kensington and Chelsea rose 14 spaces and Richmond upon Thames rose 22. Hackney, remained the borough with the most cases but was less of an outlier than pre-policy.

After: Map 3 shows a large increase in cases, with many boroughs more than doubling. The distribution of cases changed with higher counts in the North-West and North-East of London. The increase in cases is higher than the expected trend compared to Maps 1 and 2. The schemes' expenditure was £840 billion and discounted over 160 million meals (BBC, 2023), suggesting the scheme's final cost was larger than its benefits, as any gain from the scheme "may have come at the cost of more infections" (London School of Economics and Political Science, 2021).



Map 3: *After policy (2nd September 2020 – 28th September 2020). Data source: Our World in Data, n.d.*

References:

BBC (2023). Eat Out to Help Out: What was the impact of the scheme? BBC News. [online] 11 Dec. Available at: https://www.bbc.co.uk/news/uk-67658106.

London School of Economics and Political Science (2021). Eat Out to Help Out scheme had a 'limited effect on the UK's restaurants and cafes'. [online] London School of Economics and Political Science. Available at: https://www.lse.ac.uk/News/Latest-news-from-LSE/2021/b-Feb-21/Eat-Out-to-Help-Out-scheme-had-a-limited-effect-on-the-UK%27s-restaurants-and-cafes.

Our World in Data (n.d.). COVID-19 Data Explorer. [online] Our World in Data. Available at:https://ourworldindata.org/explorers/coronavirus-data-explorer?time=2020-03-01..latest&facet=none&country=~GBR&hideControls=true&Metric=Confirmed+cases&Interval=7-day+rolling+average&Relative+to+Population=false&Color+by+test+positivity=false.

Stephens, M., Cross, S. and Luckwell, G. (2020). Coronavirus and the impact on output in the UK economy - Office for National Statistics. [online] www.ons.gov.uk. Available at: https://www.ons.gov.uk/economy/grossdomesticproductgdp/articles/coronavirusandtheimpactonoutputintheukeconomy/july2020.

Hutton, G. (2020). Eat Out to Help Out Scheme. commonslibrary.parliament.uk. [online] Available at: https://commonslibrary.parliament.uk/research-briefings/cbp-8978/.

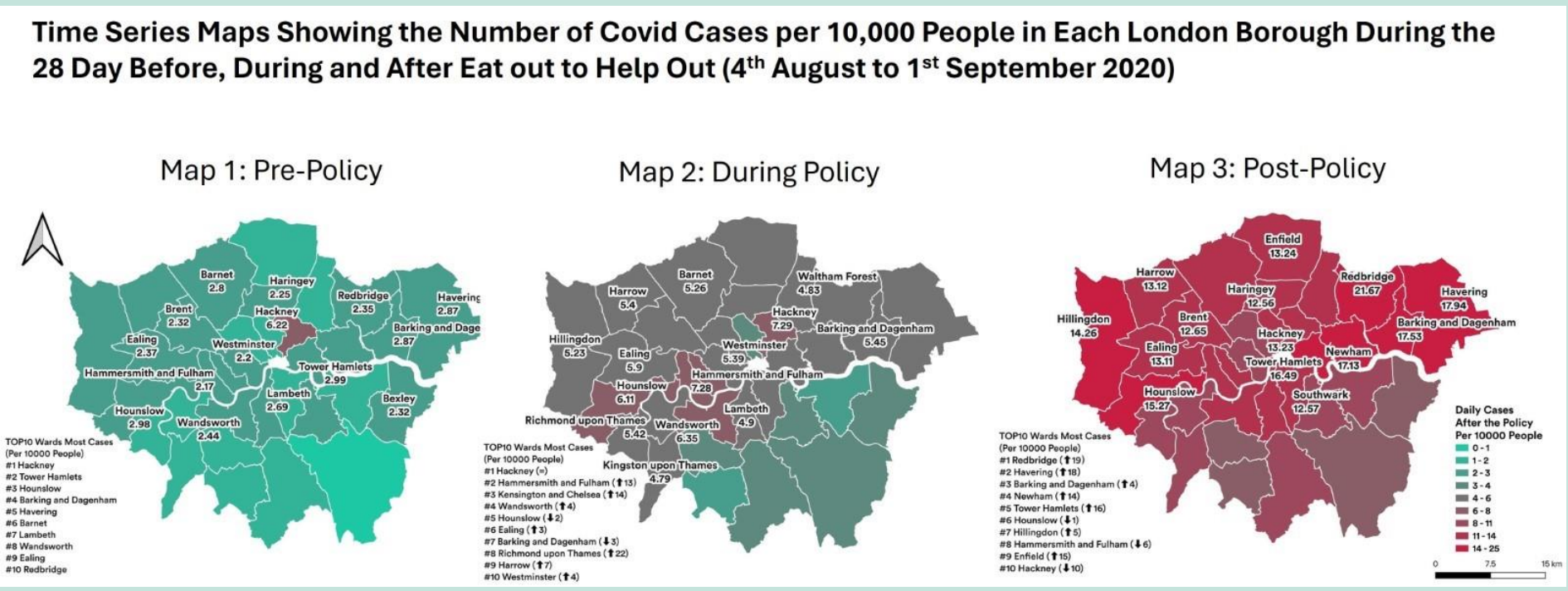
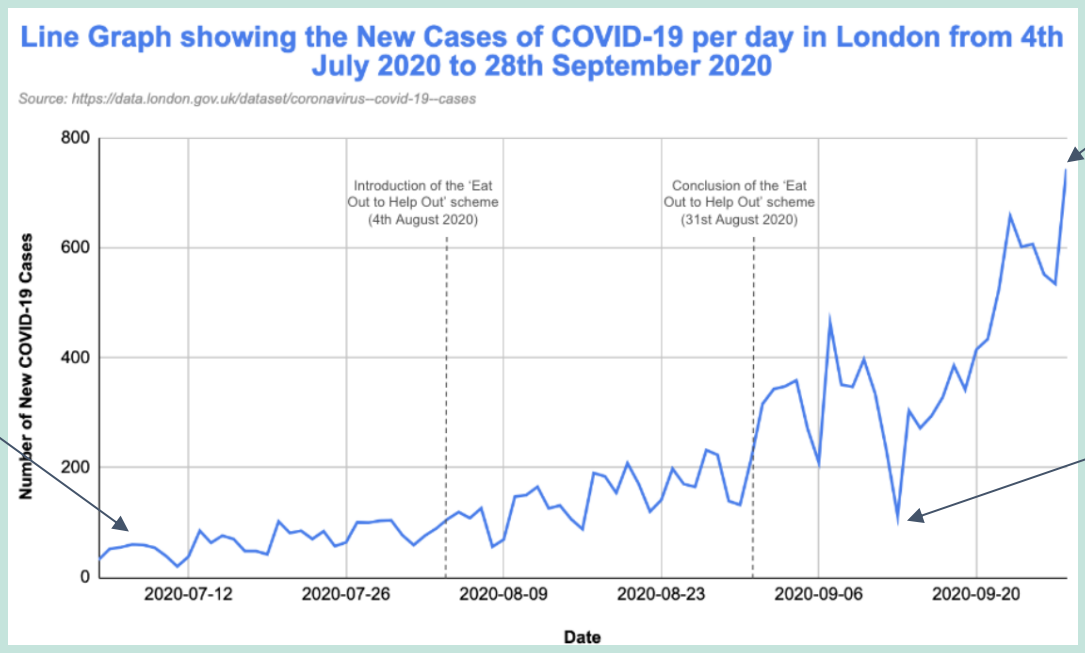


Figure 1: *Converted maps from Blog 3. Data Source: Our World in Data, n.d.*

The Data Story of the 'Eat Out to Help Out' Scheme

The EOTHO scheme was the fifty percent reduction off the cost of food and non-alcoholic drinks, with limitless visits in participating restaurants from 3rd to 31st August 2020 (HM Revenue & Customs, 2020). The analysis of this policy resulted from its significance during the COVID-19 pandemic in the UK. It sparked global debate, with critics suggesting it prioritized economics over public safety. We aimed to highlight its financial and humanitarian fronts, visualizing its debatable decision-making and ramifications. The EOTHO scheme appears to have impacted the number of COVID-19 cases, especially north of the Thames, as expressed in Figure 1. Boroughs such as Redbridge, Hillingdon and Newham saw their number of cases per 10,000 worsen by approximately 10 times in the month after the scheme ended. Figure 2 complements this theory since there is a noticeable spike in new cases in September 2020.



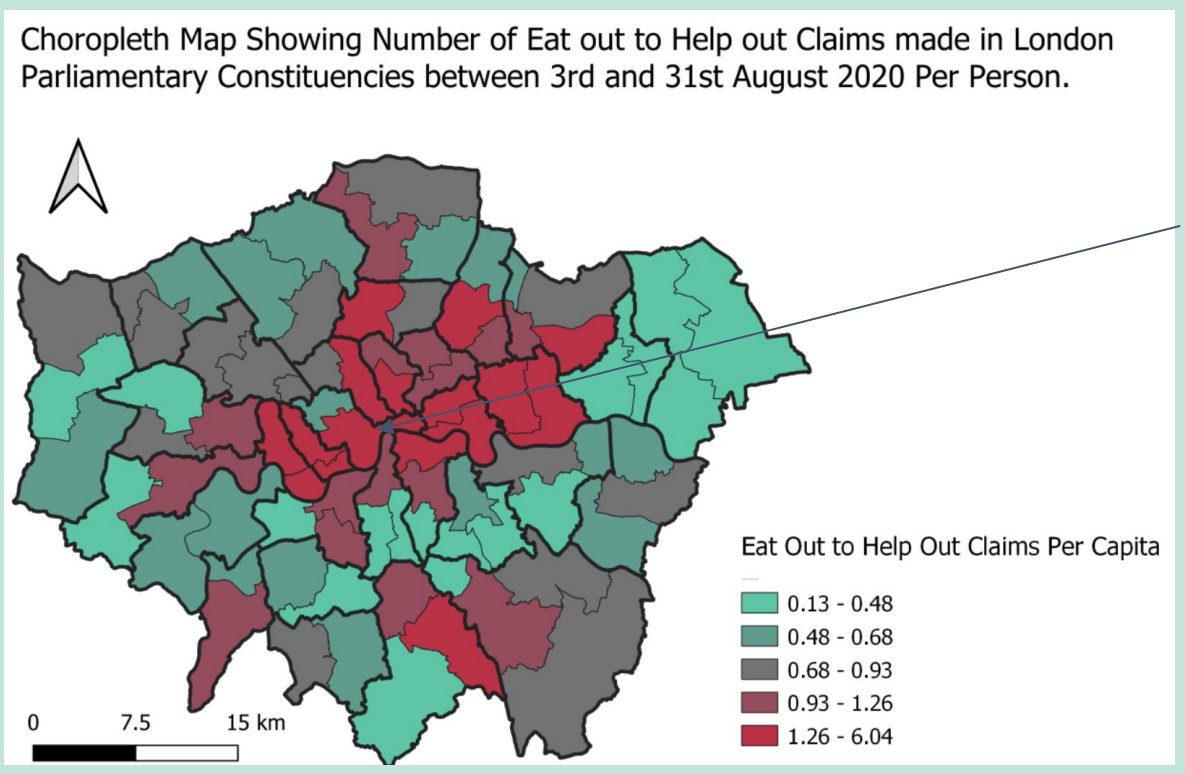
The rate of new cases was relatively stable prior to the introduction of EOTHO.

Number of new cases approximately quadrupled towards the end of September 2020.

Sudden drop may be due to '0' values for Greenwich, Newham and Kensington and Chelsea.

Figure 2: *Line graph showing new COVID-19 cases throughout the EOTHO scheme.*

"Any economic gains from the scheme may have come at the cost of more infections" (London School of Economics and Political Science, 2021). This trade-off indicates that the scheme may have been reckless considering the pandemic was still prevalent in the UK to stimulate consumer spending in hospitality. Naomi Fulop, from Justice UK for Covid-19 Bereaved Families, said: "It's unbearable to think that if it wasn't for Rishi Sunak's reckless, unscientific and callous approach, my mum might still be with me." (Walker, 2023). Testimonies like this highlight how a unique policy as this came at the cost lives. John Edmunds underlined how the subsidy could have been directly given to the hospitality sector without incurring an epidemiological risk (Walker, 2023). Figure 3 shows the number of claims of the EOTHO scheme and indicates a correlation to Figure 1 and the areas that resulted in higher case rates. However, this is simply for extra context around the spatial distributions of the EOTHO claims rather than to draw any statistical conclusions.



There is a separation between inner and outer London - could be as a result from people would travel into inner London to eat at restaurants they may not usually go to in order to take advantage of the scheme.

Figure 3: *Choropleth map showing EOTHO claims per capita across London. Data source: Elvery and Gregory, 2020.*

References:

Elvery, M. and Gregory, J. (2020). The places in London where Eat Out to Help Out was most popular. [online] My London. Available at: https://www.mylondon.news/news/west-london-news/eat-out-help-out-london-18878977.

HM Revenue & Customs (2020). Get a discount with the Eat Out to Help Out Scheme. [online] GOV.UK. Available at: https://www.gov.uk/guidance/get-a-discount-with-the-eat-out-to-help-out-scheme.

London School of Economics and Political Science (2021). Eat Out to Help Out scheme had a 'limited effect on the UK's restaurants and cafes'. [online] London School of Economics and Political Science. Available at: https://www.lse.ac.uk/News/Latest-news-from-LSE/2021/b-Feb-21/Eat-Out-to-Help-Out-scheme-had-a-limited-effect-on-the-UK%27s-restaurants-and-cafes.

Our World in Data (n.d.). COVID-19 Data Explorer. [online] Our World in Data. Available at: https://ourworldindata.org/explorers/coronavirus-data-explorer?time=2020-03-01..latest&facet=none&country=~GBR&hideControls=true&Metric=Confirmed+cases&Interval=7-day+rolling+average&Relative+to+Population=false&Color+by+test+positivity=false.

Walker, P. (2023). Science adviser referred to Rishi Sunak as 'Dr Death', Covid inquiry hears. The Guardian. [online] 19 Oct. Available at: https://www.theguardian.com/uk-news/2023/oct/19/science-adviser-referred-to-rishi-sunak-as-dr-death-covid-inquiry-hears.

Figure 1: *Map of Bangladesh River Systems (Data source: Natural Earth, n.d.).*

River Systems In Bangladesh

The making of the map shown in Figure 1 was mainly produced in QGIS. The area we chose to use in our map is the country of Bangladesh. This South-Asian country is widely known for having the most numbers of rivers in the world, specifically 238 major rivers (Uddin and Jeong, 2021). As we can see in the map, the entire Bangladesh has been divided into multiple parts by the rivers. The thickness of the lines is different, the thicker the blue line means the larger the river. We labelled out names of the rivers and the whole visual layout is inspired by the 'Cuba Marine Zone and Limits' map (Tait, 2018).

The priority of our colour scheme is to present the visual hierarchy and highlight the contrast between the base map and our interest. Figure 2 shows that from our visual hierarchy, we first put the river outlines (as seen in dark blue), and the light green title. Then the country outlines, states and provinces outlines, followed by the map symbols. Next is the country names, surrendering lakes, urban areas, rest of the world (in grey-green and in grey), and lastly, the ocean. This hierarchy division matches the interest of our research - the main rivers in Bangladesh.

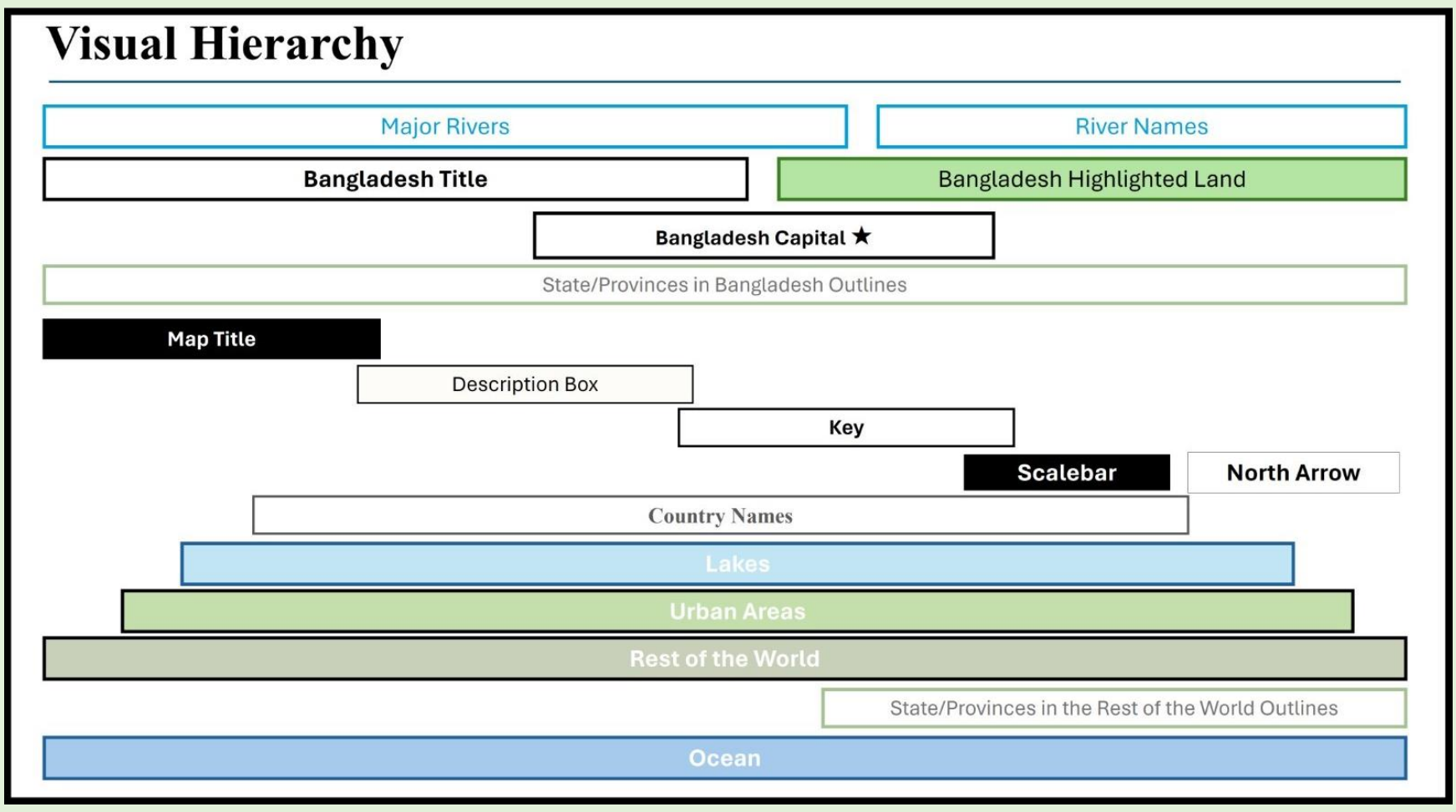


Figure 2: *Hierarchy of Features shown in Bangladesh River Map (Inspired by: Tait, 2018).*

References:

Natural Earth (n.d.). Downloads | Natural Earth. [online] naturalearthdata.com. Available at: https://www.naturalearthdata.com/downloads/.

Tait, A. (2018). Visual Hierarchy and Layout. Geographic Information Science & Technology Body of Knowledge, 2018(Q2). doi:https://doi.org/10.22224/gistbok/2018.2.4.

Uddin, M.J. and Jeong, Y.-K. (2021). Urban river pollution in Bangladesh during last 40 years: potential public health and ecological risk, present policy, and future prospects toward smart water management. Heliyon, [online] 7(2), p.e06107. doi:https://doi.org/10.1016/j.heliyon.2021.e06107.

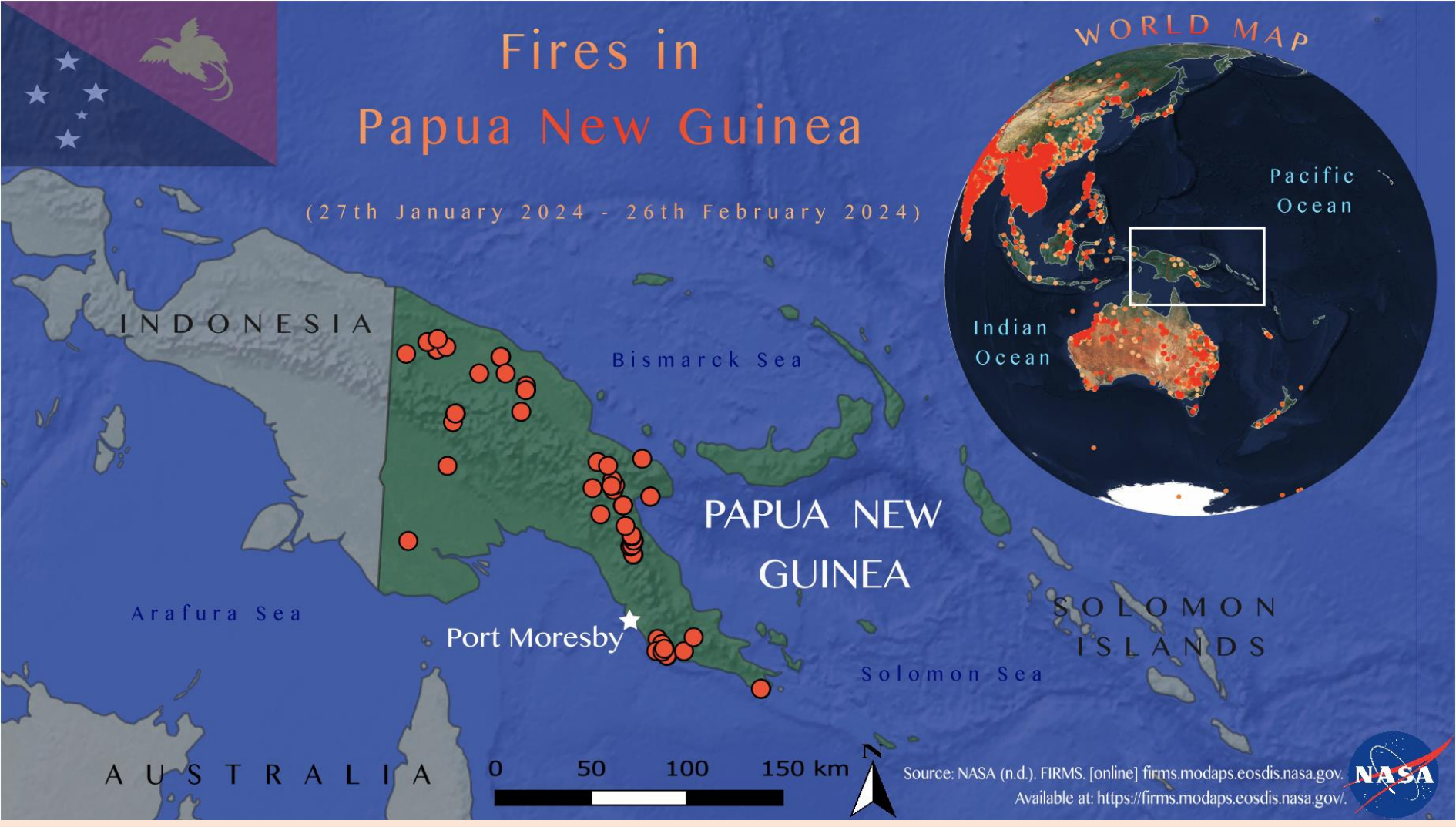


Figure 1: *Map on fires in Papua New Guinea (Data source: NASA, n.d.).*

Map on fires in Papua New Guinea

Papua New Guinea was chosen as the location of focus due to a low expectancy of big fires, especially in comparison to nearby countries in Oceania. Firstly, it is worth highlighting how between 27th January and 26th February 2024 is in the middle of Papua New Guinea's Summer, with the highest average air temperatures but also the wet season (World Bank Group, n.d.), perhaps signaling why in terms of fires, Papua New Guinea is a low hazard area.

The map shows the fires in Papua New Guinea observed by NASA, with a fairly dispersed pattern visible. Most of the fires are along the Northern Edge with a Cluster in Lae and another smaller cluster to the South-East if Port Moresby. Most fires being along the Northern edge is expected as this is the hottest area on average of Papua New Guinea. Additionally, all fires during the date range shown are on the country mainland rather than any surrounding islands. Overall, the fires in Papua New Guinea between 27th January and 26th February 2024 are expected and not too problematic.

References:

NASA (n.d.). Fire Information for Resource Management System. [online] firms.modaps.eosdis.nasa.gov. Available at: https://firms.modaps.eosdis.nasa.gov/.

World Bank Group (n.d.). World Bank Climate Change Knowledge Portal. [online] climateknowledgeportal.worldbank.org. Available at: https://climateknowledgeportal.worldbank.org/country/papua-new-guinea/climate-data-historical.

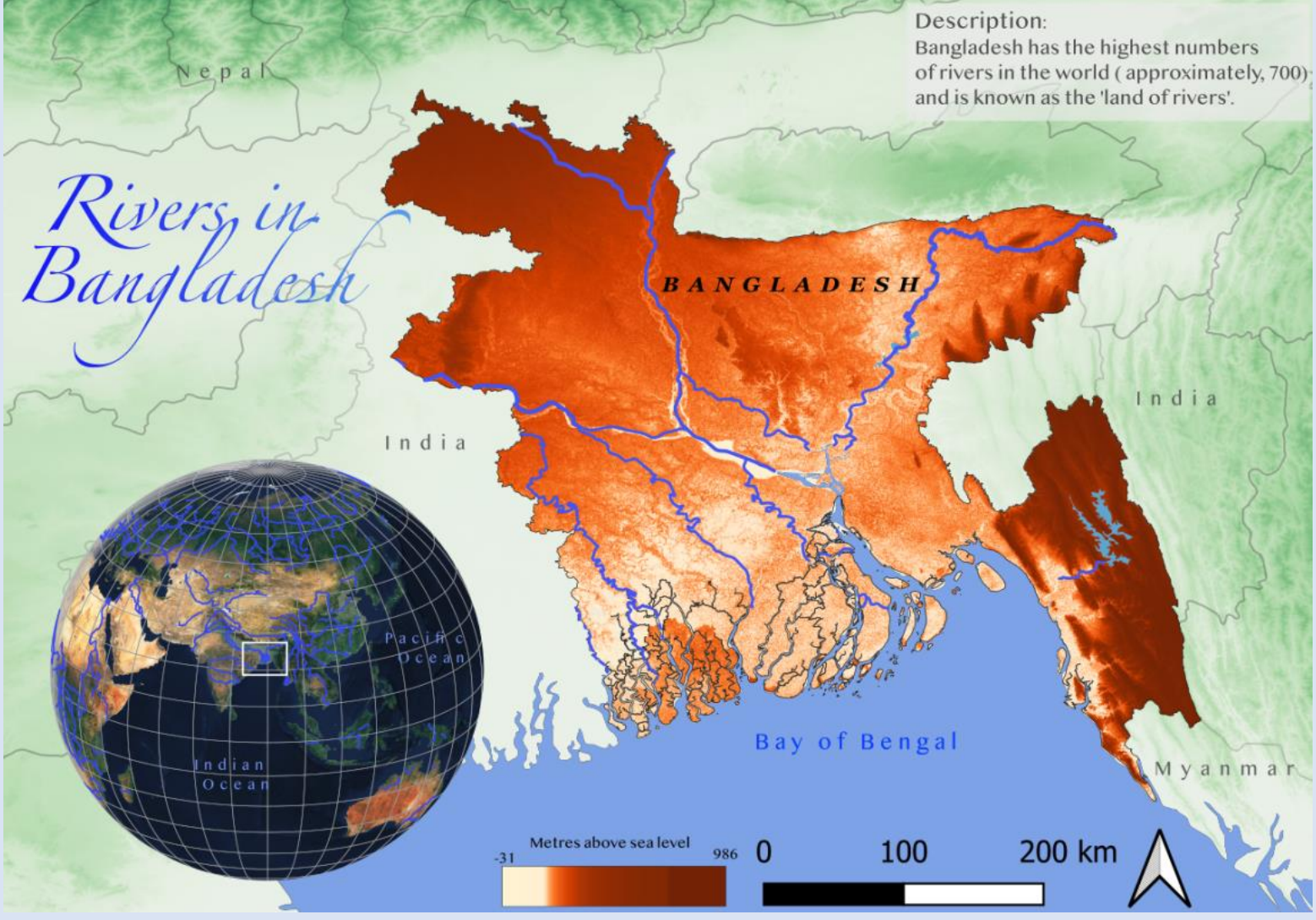
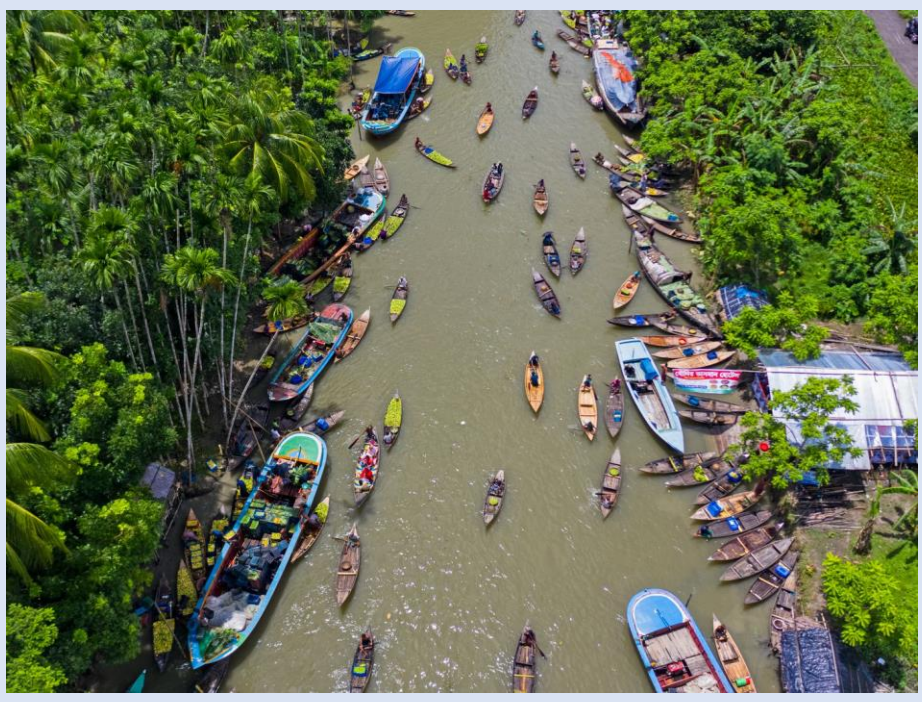


Figure 1: *Map of major Rivers (Data source: Natural Earth (n.d.) and NASA (2024)).*

Rivers and Topography in Bangladesh

Blog 5 involved mapping rivers in Bangladesh, a country characterized by its intricate riverine network, crucial for its ecology, economy, and societal fabric. We improved the map with a basemap that also incorporates smaller rivers (Figure 2) in order to enhance the spatial narrative and understanding. Building upon our previous dataset, we kept the main rivers of Bangladesh, such as the Ganges, Brahmaputra, and Meghna. Careful consideration was given to symbology and color palette to ensure clarity and visual hierarchy. Main rivers were depicted with bold, prominent lines to emphasize their significance, while smaller rivers were represented with thinner, subtler lines to avoid visual clutter. A harmonious color palette was chosen to enhance readability and distinguish between different layers without overwhelming the viewer.



High-resolution elevation data allows us to identify valleys, ridges, and other landforms that influence the course of rivers, providing a deeper understanding of their spatial distribution and behavior. Elevation plays a significant role in shaping human settlements, infrastructure development, and land use patterns along river systems. Low-lying areas are often vulnerable to flooding, influencing decisions related to urban planning, agriculture, and disaster risk management. By integrating elevation data into river maps, we can assess the vulnerability of communities to flood hazards, identify suitable locations for infrastructure development, and inform land use planning decisions. By integrating both elevation data (basemap) and river systems on a map, we can develop a holistic understanding of the landscape's morphology, hydrological dynamics, ecological significance, and socioeconomic implications, to facilitate informed decision-making and sustainable management of natural resources.

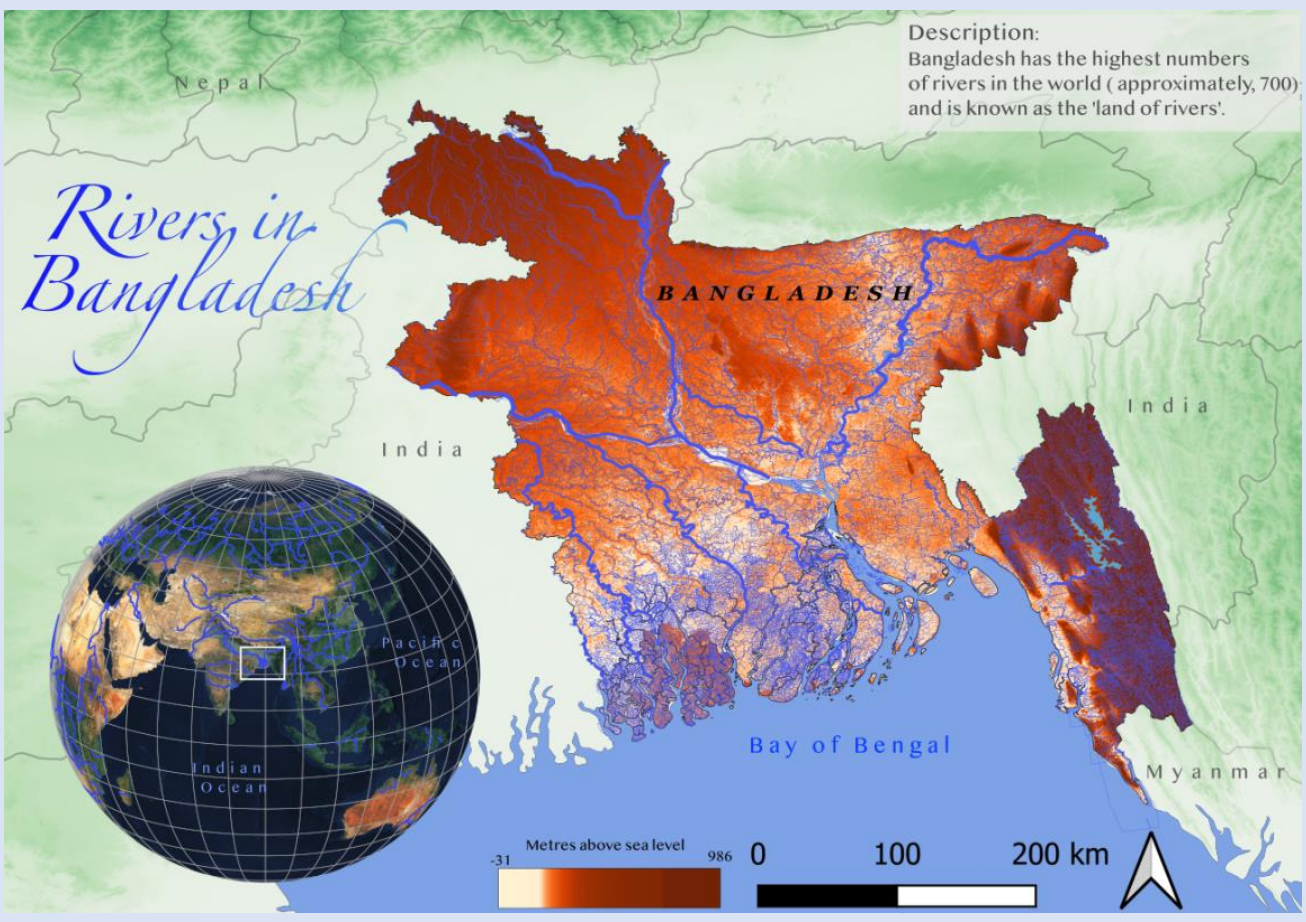


Figure 2: *Includes small connecting rivers (Data source: Natural Earth (n.d.) and Humanitarian Data Exchange (2018)).*

References:

Humanitarian Data Exchange (2018). Bangladesh - Rivers - Humanitarian Data Exchange. [online] data.humdata.org. Available at: https://data.humdata.org/dataset/bangladesh-water-courses.

NASA (2024). Earth data search. [online] Nasa.gov. Available at: https://search.earthdata.nasa.gov/search?q=bangladesh&lat=23.203011870786085&long=89.244140625&zoom=5.

Natural Earth (n.d.). Downloads | Natural Earth. [online] naturalearthdata.com. Available at: https://www.naturalearthdata.com/downloads/.

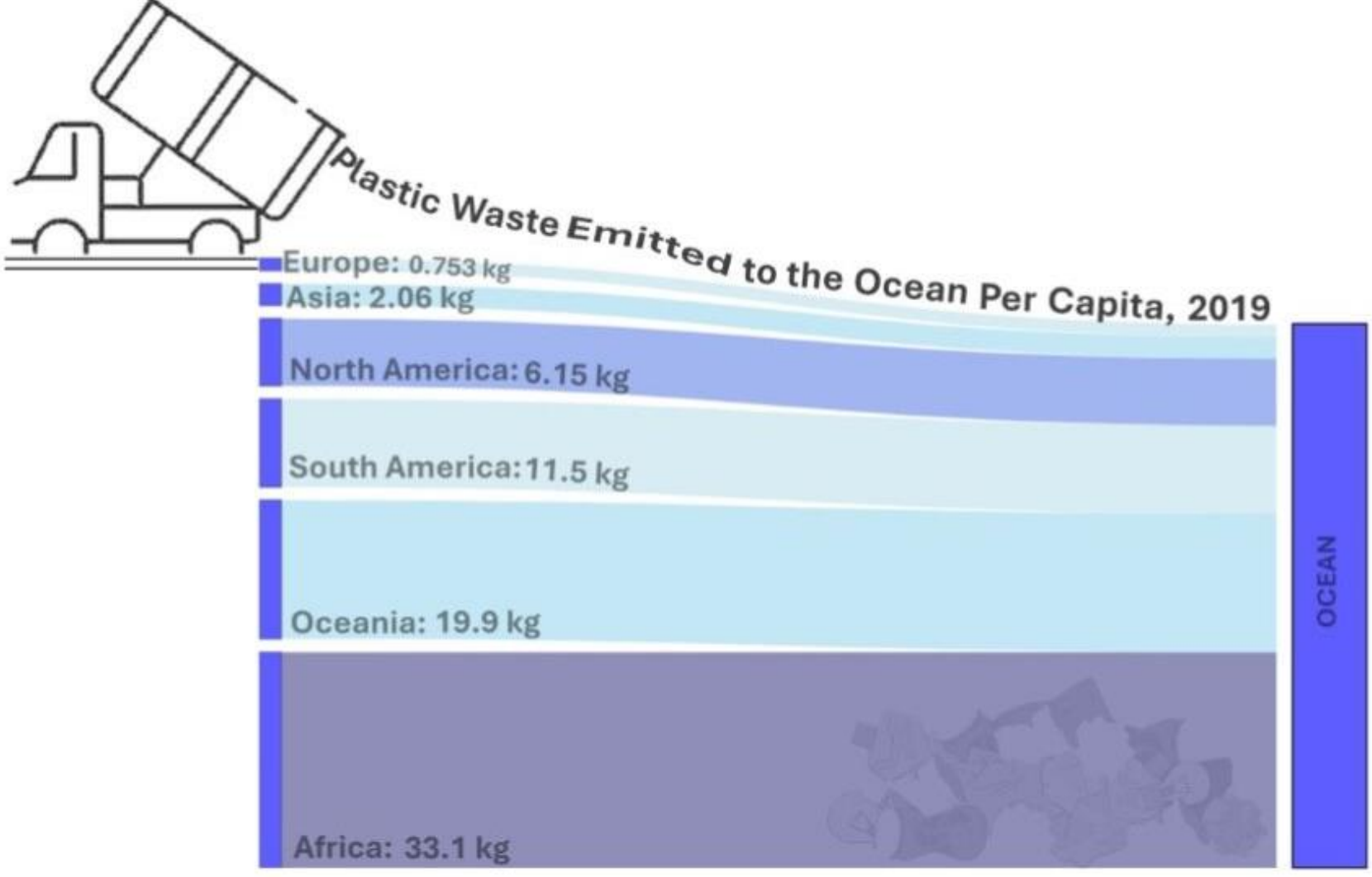


Figure 1: *Flow diagram showing plastic waste emitted to the ocean per capita (Data source: Our World in Data, 2021).*

Charting Plastic Waste

The main aims of our charts are to show some basic information about plastic waste around the world. The Figure 1 shows the plastic waste emitted to the ocean per capita by continents. From the top to the bottom, the larger the colored area means the higher the number of plastic emissions per capita. The pattens are somewhat surprising as Asia would be expected to emit more plastic waste due to large secondary industries and Europe would also be expected to be higher due to large consumerism. Africa being the biggest plastic waste emitter per capita in 2019 could be indicative of waste being sent from other continents, for Africa to dispose of, suggesting that Figure 1 may be misleading in terms of plastic waste production

Figure 2 is a radar chart which could show the information collectively. Each branch of the radar chart shows an industry's amount of plastic emission. The advantage of this graph is that it could show the proportion vividly. A larger numerical difference means a more contrasting visual effect. In our graph, (the industry) of packaging has a huge amount of waste compared to other industries. This is likely as packaging is often a one-use item. Industrial machinery was surprisingly very low, but this could be following the same logic as large machinery has a longer duration of use before disposal.

Figure 2: *Radar chart showing annual global plastic waste by industry (Data source: Our World in Data, 2022).*

References:

Our World in Data (2021). Plastic Waste and Pollution Data Explorer. [online] Our World in Data. Available at: https://ourworldindata.org/explorers/plastic-pollution?facet=none&country=OWID_EUR~OWID_ASI~OWID_NAM~OWID_OCE~OWID_AFR&pickerSort=asc&pickerMetric=entityName&hideControls=false&Metric=Plastic+emitted+to+ocean&Per+capita=true&Share+of+world+total=false&Source=Meijer+et+al.+%282021%29.

Our World in Data (2022). Plastic waste generation by industrial sector. [online] Our World in Data. Available at: https://ourworldindata.org/grapher/plastic-waste-by-sector.