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Exposing the Myth of a Better World: How Academic Misinformation Conceals Global Poverty Levels

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Abstract This case study confronts academic misinformation on global poverty levels through the analysis of graphics and commentary developed by a University of Oxford–affiliated think tank. The investigation reveals false positives in the group's charts that invite readers to conclude that the population living in extreme poverty has plunged over the last two centuries. The graphics are widely disseminated and used by celebrity thought leaders to counter opposing viewpoints by the public and to admonish the press under the false pretext of negativity bias. This paper exposes reputable sources, their fallacious arguments, and their biases to expand our understanding of the roots of misinformation in the post-truth era.

Keywords poverty, misinformation, disinformation, fake news, journalism, negativity bias, positivity bias, data obscura

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Even when the truth isn't hopeful, the telling of it is.
—Andrea Gibson (2018), Take Me with You

Research questions

- What are the devices and conduits of academic misinformation?
- How do thought leaders rationalize academic misinformation?

Case study summary

- This research examines graphics developed by Our World in Data (OWID), which depict a sharp drop in the percentage of the human population living in extreme poverty over the last two centuries.
- Celebrity thought leaders offer OWID's charts as proof of remarkable progress in the fight against global poverty, despite the *absolute numbers* of those living in poverty having surged over most of the same period.
- Rather than pursuing objective truth, OWID's proponents use the charts as evidence to counter what they claim is the public's skeptical worldview caused by the press and negativity bias.
- An expanded definition of misinformation must recognize misleading academic presentations for their potential to persuade large numbers of readers through wide distribution.
- Future research should investigate if academic misinformation enjoys some immunity to being designated as such, and how it influences education, the public's worldview, and policy and investment in humanitarian efforts.
- Interventions should include enhanced retraction strategies, including an independent registry to remove online academic misinformation.

1. Implications

This study challenges the overly optimistic narrative of the improvement in global human welfare since the early Industrial Revolution by confronting the misinformation propagated by Our World in Data (OWID), an online think tank dedicated to producing "research and data to make progress against the world's largest problems" (Roser, 2024b). OWID is a partnership between University of Oxford scientists who edit and contribute studies to the OWID website, and the educational charity Global Change Data Lab. Notable donors include the Bill and Melinda Gates Foundation and the Musk Foundation (Influence Watch, n.d.). According to OWID, in one recent year its website had "close to 100 million visitors, accounting for 300 million pageviews" (OWID, n.d.-a). It claims its "articles and charts were referenced in nearly 50,000 media articles; over 20,000 of these references were in large media outlets with international reach" (OWID). OWID's research is also used in "primary schools, secondary schools, and higher education institutions across the world" (OWID, n.d.-b).

OWID articles and images are in the top internet search results for queries using the key words "extreme" and "poverty," and include OWID's relative extreme poverty graph (Figure 1) depicting the global population living in extreme poverty from 1820 to 2015 as falling from 89.15% to 9.98% (Hasell & Roser, 2019). The chart is processed from data provided by well-grounded sources—the economist Martin Ravallion and the World Bank (Hasell & Roser, 2019). On a page with a later version of this graph, OWID states, "The world has made immense progress against extreme poverty," and "economic growth made it possible to leave the widespread extreme poverty of the past behind" (Roser, 2023). This iteration of the chart and similar versions offer seeming proof of progress against poverty and the overall advancement of human welfare over the last two centuries. However, to claim that extreme poverty has plunged worldwide by citing the falling *percentage* of impoverished—and to suggest, by extension, that this drop is due to humanity's economic, societal, and technical progress—is misleading. What the chart does not show is the sharp *rise*—over almost the entirety of the same period—in the absolute *numbers* of those living in extreme poverty.

Commenting on the history of the world's living conditions, OWID writes, "The only way to tell everyone's history is to use statistics" (Roser, 2024a). Yet many of OWID's graphics serve as a reminder that exactly how statistics are used or not used is vital to preventing misinformation and to revealing the objective truths of our world: Indeed, Ravallion's and the World Bank's extreme poverty data show the absolute number of people living in extreme poverty *surged* along with the global population from more than 964 million in 1820 to over 1.9 billion in 1980 (Hasell & Roser). The number of those living in extreme poverty stayed well above 1.5 billion until the early 2000s; it was not until 2011 that it fell below the count of nearly two centuries ago (Hasell & Roser). OWID provides an adjacent chart (Figure 2) that graphs the number of people living in extreme poverty over the same period in absolute terms, although this data is contrasted

against the number of people who are not living in extreme poverty—with the gridlines set to the *billions* (Hasell & Roser). This second chart provokes the comparison of a global population that is not equal over time and visually depresses the population of those living in extreme poverty in the same period. There is nothing to celebrate in the drop in the *percentage* of those living in extreme poverty in light of the magnitude—the absolute numbers—of impoverished whose desperate living conditions often drive them into forms of modern slavery, such as forced labor, the sex trade, or debt bondage (Anti-Slavery International, n.d.).

Further, OWID's presentation of the "world living in extreme poverty" over two hundred years advances a binary narrative that suggests the population living above the extreme poverty line is not impoverished by any definition. While the World Bank's extreme poverty line of $1.95 per capita per day (raised to $2.15 in 2022)—around which many poverty debates are centered and from which OWID's own estimates are derived—has been condemned as being set too low, the institution does draw higher poverty lines at $3.65 per capita per day for lower-middle-income countries and $6.85 for upper-middle-income countries (World Bank Group, n.d.-a). (See Appendix A for a discussion of poverty lines.) With 46% of the world, or 3.5 billion people, living below the $6.85 threshold, there has hardly been improvement since 1990 (World Bank Group, 2024). These numbers firmly refute OWID's thesis that human welfare has improved over the last two hundred years; instead, this data points to the scope of poverty and human suffering throughout the modern era.

Hence, this study refers to OWID's charts as a type of misinformation defined here by the neologism *data obscura*, whereby a data graphic is intentionally or unintentionally promoted over other relevant data, either through omission or distortion, thus obfuscating knowledge essential to gaining a more accurate interpretation of a problem or condition. OWID's *data obscura* support an emergent intellectual agenda that is overly optimistic about societal progress, and ignores the deleterious effects of what it calls progress to such an extent that it resembles dystopian propaganda: The charts invite readers to conclude that the absolute population of people living in extreme poverty has plunged over the last two hundred years, promoting a delusive worldview while preempting readers from interrogating the effects and moral worth of human progress. By framing the debate about the effects of human advancement in terms of "optimism" versus "pessimism" (Roser, 2018; Roser & Ritchie, 2018), OWID discounts the search for objective truth. This strategy supports a political bias, which has been shown to be the leading cause of the recent drop in public confidence in U.S. education (Jones, 2024). OWID's charts are also used to denigrate opposing viewpoints, which itself has ethical implications: Content from reliable sources that has not been flagged as misinformation—but that is still misleading and widely distributed by mainstream media—is thought to be the most persuasive and detrimental (Allen et al., 2024).

Although it is not possible here to quantify the effects of OWID's misinformation, a change in sentiment could negatively affect humanitarian aid if the perceived urgency and impact of such assistance is diminished, as has been shown in the case of health interventions (Gagnon-Dufresne et al., 2023). OWID and its proponents defend their narrative by claiming the public's pessimistic view of the past and future course of human progress is a result of an ingrained psychological trap, a diminished educational system and negligent press. The press, already in the paradoxical position of arbiter of truth and spreader of misinformation, is now a scapegoat. Conversely, the *exposure* of such a group as OWID as a purveyor of misinformation must erode the public's trust in higher education. This taints the integrity of the cohort responsible for its development and dissemination, including institutions of higher learning and their affiliates, who are entrusted by the public to deliver research seeking objective facts to solve real problems.

The post-truth era presents a range of information challenges for the public and policymakers alike. In turn, institutions of higher learning, as the public's arbiter, investigate the contours of misinformation in its many manifestations—from fake news to disinformation, plagiarism, and simple mistakes. While harmful misinformation does largely emanate from politically polarized and other spurious sources, and notwithstanding recent high-profile cases of academic fraud and plagiarism, the academic paper peer-review process, and the rigor of dialectics to expose falsehoods in search of truth, there is a paucity of research into this question.

Whether due to an honest error, an informed but fallacious opinion, or more calculated deceit, academic misinformation must be challenged as such. Academic institutions must reaffirm their obligation to the public and act: One corrective is a universal academic misinformation registry that includes think tanks, government institutions, and learned societies. Although a number of scholarly retraction and fact-checking mediums exist, particularly around research papers, there is currently no unified system to track misinformation derived from academic sources to its *destination(s)*, or to call for its retraction, correction, or labelling by the news media. Outreach would include traditional

media, educators and the public to better inform them of misinformation about salient subjects as we strive to understand and solve the most pressing problems of our world.

2. Evidence

In 2019, Microsoft cofounder Bill Gates, tweeted a graphic (Figure 3) by OWID featuring graphs on extreme poverty, basic education, literacy, democracy, vaccination, and child mortality. Gates (2019) says, "This is one of my favorite infographics. A lot of people underestimate just how much life has improved over the last two centuries: https://b-gat.es/2S23hlG." These charts purport to support Gates's claim of advancement in human welfare since the early Industrial Revolution. While all are problematic, it is the extreme poverty chart, with its deceptive presentation, widespread distribution, and potential influence on the public's worldview and policymakers' actions, that is the focus of this analysis. (Other versions of this chart include earlier data plotted to 2011 (Matthews, 2015), and data to 2018 updated in 2021 (Roser, 2023).

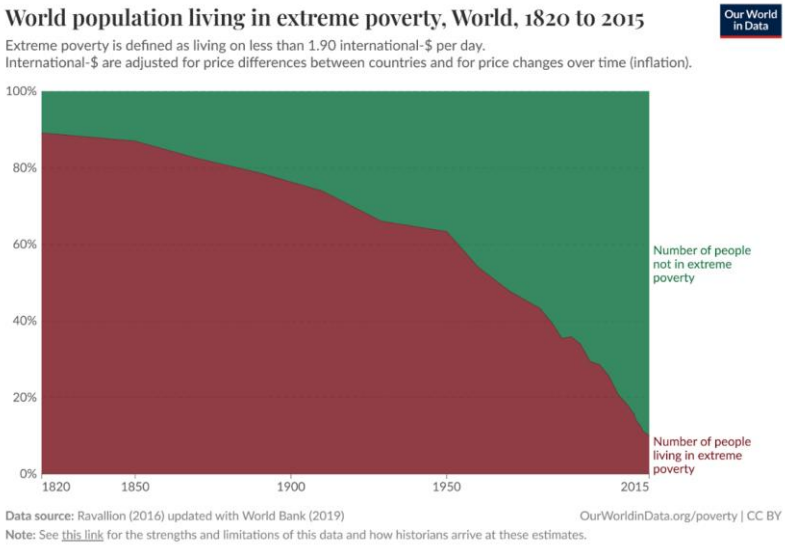

Figure 1. OWID processed graphic showing the relative percentage of world population living and not living in extreme poverty, 1820 to 2015 (Hasell & Roser, 2019) | Data: Ravallion (2016) updated with World Bank (2019) | OWID graphics, data and code are open access under the Creative Commons BY license.

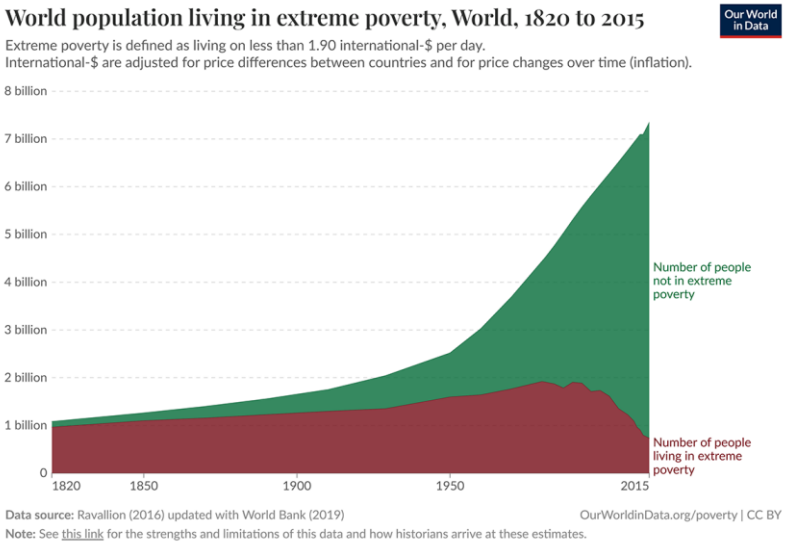

Figure 2. OWID graphic shows the absolute world population in billions living and not living in extreme poverty, 1820 to 2015 (Hasell & Roser, 2019) | Data: Ravallion (2016) updated with World Bank (2019) | OWID graphics, data and code are open access under the Creative Commons BY license.

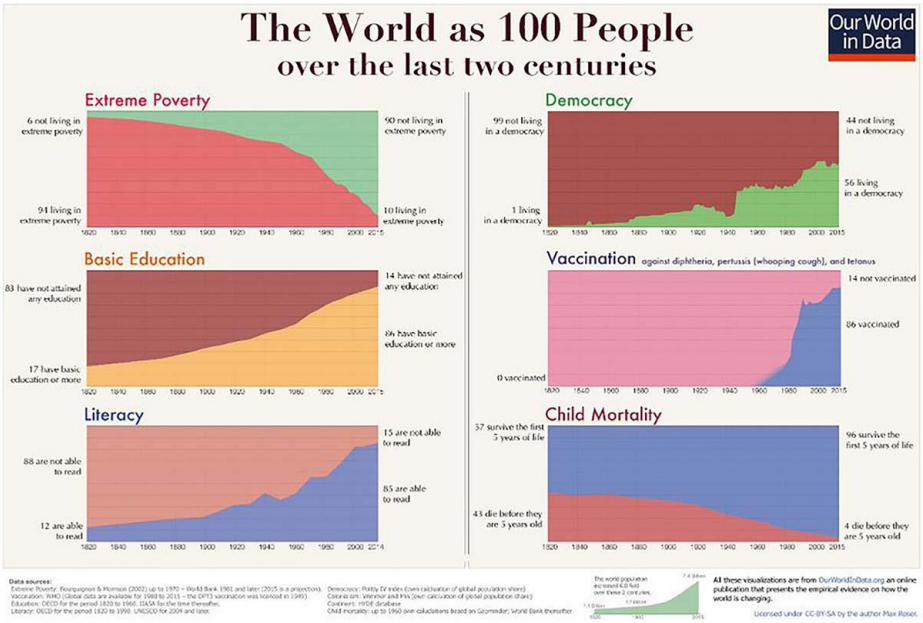

Figure 3. Screengrab of OWID graphic tweeted by Bill Gates in 2019 (Gates, 2019). All graphs have been updated at Gates's referenced link to the OWID page, therefore the specific data sources are ambiguous | OWID graphics, data and code are open access under the Creative Commons BY license.

The 2019 graph presents two options to view—relative or absolute values; see Figures 1 and 2, respectively (Hasell & Roser, 2019). Both figures encourage readers to believe that the *number* of those living in extreme poverty has dropped over the last two centuries: By plotting percentages, Figure 1 displays the sharp fall in the rate of extreme poverty and omits the absolute number of impoverished that spiked with global population growth. In fact, the population living in extreme poverty rose from 964 million in 1820, to 1.6 billion in 1950, to 1.9 billion in 1980, and counts stayed above one billion throughout the 1980s and 1990s (Ravallion & World Bank, 2019). Notably, the right-side Y-axis of Figure 1 is erroneously titled, "Number of people not in extreme poverty" instead of "Percentage of people not in extreme poverty"; those not noting the discrepancy might think that the absolute number of people in extreme poverty is displayed. Figure 2 (Hasell & Roser, 2019) also depresses Y-axis values into the billions to present a chart that is not equal over time and is more representative of global population growth than of the course of extreme poverty. (See Appendix B for a corrective to these *data obscura* whereby a double-Y-axis, representing the number of people living in extreme poverty charted to the hundreds of millions instead of billions, is added to Figure 1. This immediately exposes the proportionality–raw number paradox and reveals a strikingly different and far more essential perspective on the global expanse of extreme poverty.)

Figures 1 and 2, and closely related charts, remain widely disseminated in online media, such as *The Wall Street Journal* (Ip, 2019) and the *Financial Times* (Wolf, 2024). Figure 2 is featured on the *Extreme poverty* (2024) page of Wikipedia (2024). The figures are also used as corroborating evidence in academic journals: An article on global inequality in one international journal highlights the conclusions drawn from OWID's misinformation, stating, "With the development of Technology and the consequent creation of jobs and wealth, a substantial decline in poverty took place in the world from the 18th Century onwards. Hence, and according to [Figure 1], a decrease of extreme poverty of the world's population can be considered the miracle of Technology" (Santos et al., 2022: p. 1299). Similar assertions are found in the webpages of relief organizations and think tanks, including those of the Bill and Melinda Gates Foundation (Tulshyan, 2018) and the American Enterprise Institute (Pethokoukis, 2022).

The veracity of OWID's charts have been defended by the press: In 2015, the news website *Vox* headlined, "This chart shows one of humanity's greatest modern accomplishments" (Matthews, 2015), referring to an earlier version of Figure 1. In a reprise of the subject in 2019, *Vox* joins with the Harvard University professor, author, and OWID donor Steven Pinker in supporting Gates's comments as related to Figure 1, against the protests of Jason Hickel, an anthropologist at the London School of Economics. Alarmingly, *Vox* offers a false dichotomy that justifies the use of percentages over counts by tying the reporting of raw numbers on extreme poverty to racism by Western nations, saying, "Using absolute numbers risks confusing reducing poverty with *preventing poor people from existing* [author's italics]" (Matthews, 2019). Here, *Vox* suggests that questioning the interplay between extreme poverty and

overpopulation is done only by Caucasians discussing other ethnicities when, in fact, other ethnicities are also distressed about overpopulation: A recent United Nations poll showed consistent concern across surveyed counties, including, 69% of respondents in India, 63% in Nigeria, and 53% in Egypt saying the global population is too high; 83%, 72%, and 56%, respectively, said their own national population is too high (Nater, 2023). *Vox's* equivocations continue, asserting, "We use poverty rates, not absolute numbers, in discussion of US poverty" (Matthews, 2019). This is incorrect. Both the percentage and absolute numbers are reported by government agencies such as the U.S. Census Bureau (2025), and by world organizations, including the World Bank Group (2024).

Rather than addressing absolute numbers and hard facts, OWID delivers rhetoric, arguing "optimism" versus "pessimism" when discussing important issues such as poverty (Roser & Ritchie, 2018). This explains OWID's reliance on proportionality in presenting extreme poverty graphics and its subversion of absolute numbers. OWID claims that the public's negative worldview is due in part to an ingrained social pessimism (Roser & Ritchie, 2018), and blames "a failure of our media and our education systems" (Roser & Ritchie), specifically, the press, for being "overly obsessed with reporting single events and with things that go wrong" (Roser, 2024a). This is despite the fact that OWID's own work, which the *New York Times* calls "indispensable" (Kristoff, 2022), is widely disseminated and even defended by the mainstream media, as is the case with *Vox*. While negativity bias in the media does occur, OWID's use of this theory reads as a preemptive argument in defense of its *data obscura*.

OWID draws much of its rationale from its apologists: In his book *Enlightenment Now*, Pinker claims, "*The world has made spectacular progress in every single measure of human well-being,"* but "*almost no one knows about it*" [his italics] (Pinker, 2018: p. 52). Pinker places the blame on the human psyche and its propensity to favor pessimism over optimism when considering world events, arguing that, "Moral reasoning requires proportionality" (Pinker, 2018: p. 47). In a 2019 interview with the online weekly *52 Insights*, Pinker repeats the refrain of journalism as the constant purveyor of this pessimistic worldview, accusing "journalists and intellectuals generally toward accentuating the negative as a way of appearing wise and not naïve" (52-Insights, 2019). The late author and physician Hans Rosling, who remains a source of inspiration for OWID (Ritchie, 2024)—and who co-created the expansive database Gapminder, which amalgamates data on global problems, and upon which much of OWID's work depends—also believed journalism owned a part of the problem. He states, "You can not use the news media if you want to understand the world" (Gyldensted, 2017). Like Pinker, Rosling argued that much of the fault lies within the human psyche. In his posthumously published book *Factfulness: Ten Reasons We're Wrong About the World—and Why Things Are Better Than You Think,* Rosling states that skeptics are blinded to the improved state of the world by instincts that include the inclination to see more bad than good, and to misconstrue numbers when considering the state of humanity. Rosling tells readers to recognize "when a lonely number seems impressive (small or large), and [to remember] that you could get the opposite impression if it were compared with or divided by some other relevant number. To control the size instinct, get things in proportion" (Rosling et al., 2018).

Proportions and counts, however, are not mutually exclusive. Especially in the case of poverty, both should be considered to gain a greater reckoning: Today, with respect to 2021 estimates (Sumner & Ortiz-Juarez, 2021), approximately 64% of the world's population—more than five billion people—subsist on less than the minimal $13 a day required to permanently escape poverty.

3. Methods

This paper follows a case study approach with in-depth examination of the literature related to and supporting OWID's *data obscura* and academic misinformation more generally. Using OWID to investigate misinformation emanating from academic sources proved valuable. OWID's use of verifiable datasets from reliable sources such as the World Bank to process graphics supporting its overoptimistic narrative of progress in addressing global extreme poverty was particularly productive. OWID's attachment to one of the world's premier academic institutions—the University of Oxford—and its dissemination by thought leaders and humanitarian charities helped establish OWID as a trustworthy source. It is reasonable to presume that much of the public readily accepts arguments reliant on OWID data when found in the press or elsewhere.

In answering the first research question, an assessment of logical fallacies produced an approximate but inadequate definition of the type of misinformation demonstrated by OWID's extreme poverty graphics; therefore, the neologism *data obscura* was employed. Like *camera obscura*, *data obscura* is accurate to its thesis but it is missing the perspective essential to making it accurate for the observer (i.e., when using a *camera obscura,* the image is flipped). A review of

the literature found OWID's highly misrepresentative charts distributed in the popular press, in academic papers, on thought leaders' websites, and within humanitarian institutions.

The second research question is answered by examining the overoptimistic commentary celebrating the drop in the percentage of the global population living in extreme poverty and the upsurge of human progress since the dawn of the Industrial Revolution. Thought leaders explain the de facto suppression of their positions, and defend OWID's *data obscura,* by accusing the news media of a pervasive negativity bias that unduly influences the public's worldview. This is manifest in the referenced literature.

Of particular interest for future research is to further explore whether academic misinformation is allowed to subsist outside of current misinformation definitions simply because it emerges from scholarly sources. Does academic misinformation enjoy immunity from the scrutiny of social media fact-checkers? Weighing the impact of misinformation stemming from so-called reliable academic sources on humanitarian efforts such as global poverty is paramount. Such research should help tighten ethical standards as well as spur the development of novel interventions aimed at tracing and retracting academic misinformation.

Data Availability Statement

The author confirms that the data supporting the findings of this study are available within the article via the corresponding citations and referenced links provided in the bibliography, with respect to the last date accessed.

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Appendix A: Brief review of poverty lines

It is important for the context of this analysis to note that poverty definitions are rigorously debated in the literature. In the case of OWID's extreme poverty dataset, which is based on world gross domestic product distribution, Hickel contends it was not purposed to measure global poverty, much less relate to village life in the 1800s (Matthews, 2019). He also stresses that viable poverty numbers have been available only since 1981. More generally, poverty lines taper according to a range of often tenuous variables, including the estimations, extrapolations, and judgements of economists seeking to better define poverty over space and time. All delineations are problematic, with often dramatic contrasts: For example, it is estimated that nearly 70 million people fall under the extreme poverty line for every 10 cents added to the $1.90 threshold (Sumner & Ortiz-Juarez, 2021). Lowering the dollar amount used to define poverty can also change our understanding of where the majority of the world's poor live—from Africa when the line is lower, to Asia when the threshold is slightly higher (Sumner & Ortiz-Juarez).

In 2022, the World Bank reset the international extreme poverty line to include those living on less than $2.15 a day, up from $1.90 when OWID's chart was first released. This new threshold remains contentious and is criticized as overoptimistic and biased toward satisfying the narrative of powerful institutions that claim the success of their policies in combating global poverty (Sumner et al., 2022). As Azevedo (2014) noted, the World Bank's view of poverty as a "pronounced deprivation in well-being," especially with regard to a lack of "income or consumption to put them above some adequate minimum threshold," does, however, offer more encompassing definitions. Considering the grim prospects for those in poverty, thresholds that account for poverty beyond the world's poorest countries are required to expose humanity's greatest problem. For example, the World Bank's poverty lines for lower- and upper-middle-income countries are $3.65 and $6.85 per capita per day (World Bank Group, n.d.-b), respectively, while other calculations use much higher amounts. Hickel (2019) points to a $7.40 per day requirement to meet basic nutritional needs and support normal longevity, and there is the constant requirement of $13 a day to permanently escape poverty (Sumner and Ortiz-Juarez, 2021: p. 4). Using these higher amounts swells the ranks of the world's chronically poor by the billions.

At the $2.15 poverty line, recent global traumas such as war and the COVID-19 pandemic have seen global poverty improvement stall in what the World Bank Group (2024) is now calling a lost decade – even before the reduction of aid for developing countries was announced by the United States. As mentioned, according to the World Bank Group, the number of people living below the $6.85 poverty line has not diminished in 30 years, with those living below $13 per day rising from nearly 3.5 to over 5 billion people since 1981 (Sumner & Ortiz-Juarez, 2021: p. 7). In light of this, Figure 4 is offered as a corrective to OWID's *data obscura* and as an artifact to better inform readers of the enduring and somber truth of global poverty.

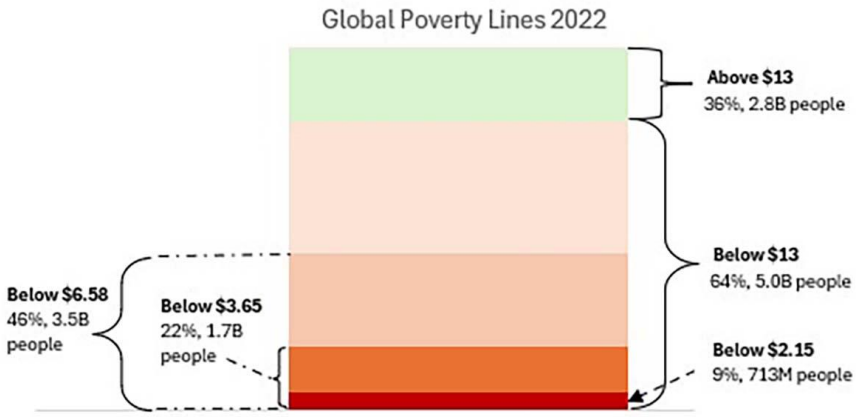

Figure 4. An estimated 64% of the global population—over five billion people—either live in or are in danger of sliding into poverty. Poverty lines are calculated per capita, per day, with data projections below $2.15, $3.65, and $6.85 based on World Bank Reporting (World Bank Group, n.d.-a; 2024); above and below $13 extrapolated from Sumner et al. (2022).

Appendix B: A corrective for OWID's data obscura charts

Figure 5 offers another simple corrective to OWID's *data obscura* by adding a double-Y-axis to Figure 1. Here, the number of people living in extreme poverty is charted to the hundreds of millions instead of billions to immediately expose the proportionality–raw number paradox and reveal a strikingly different and far more essential perspective on the global expanse of extreme poverty: The sharp departure between rates and counts is apparent, allowing readers to clearly see that the number of extremely impoverished has soared throughout most of the modern era. Such a contrast prompts an interrogation that is not inherent in the OWID charts and that forces fundamental questions, including the detrimental effects of societal and technological progress on numbers of people, the benefits and problems of population growth, the global carrying capacity, and the causes of the sharp drop in extreme poverty numbers over the last two decades.

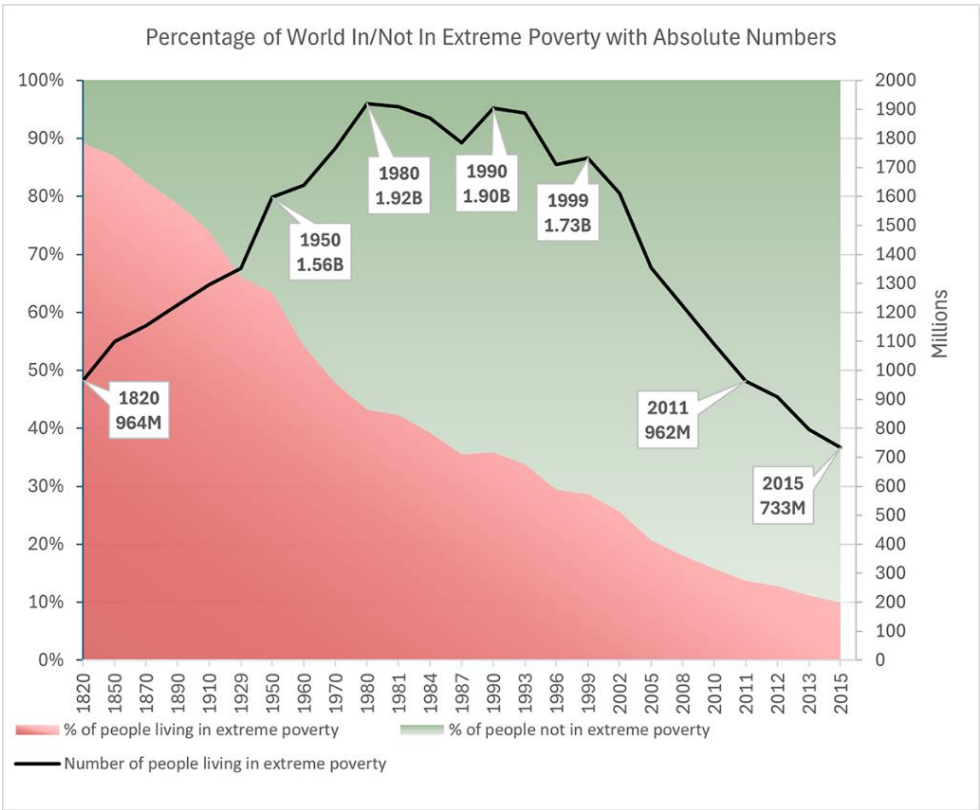

Figure 5. Using the double-Y-axis set to hundreds of millions reveals the surge in the number of people living in extreme poverty, 1820 to 2015.