A Hole in the Middle?

The challenge of downscaling Doughnut Economics as a local development framework

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Abstract: The extraordinary growth of the world economy has dramatically transformed the context within which all humans live. It also introduces several interrelated challenges: providing for the basic development needs of people, reducing global inequality, and avoiding further degradation of the biosphere. Numerous frameworks have been developed in recent years to address these challenges, including Doughnut Economics, a sustainable development framework that combines several development indicators of human wellbeing with the planetary boundaries to define a "safe and just space" as the goal for global development. In this study, I present a concrete quantitative approach to operationalize Doughnut Economics for use at the local level and within a high-income context, the United States, to address the question: How are U.S. cities and counties performing on the social and ecological indicators of the Doughnut? I collected social and ecological data across 27 U.S. localities and find widespread variation in levels of social shortfall and greenhouse gas emissions between them. My findings suggest that previous Doughnut Economics research at the national level obscures patterns of intra-country social shortfall and inequality, underscoring the need for ongoing local data collection and analysis. I integrate my findings with a comparative case study of Amsterdam's local application of Doughnut Economics to identify key challenges of applying a global development framework at the local level. My discussion of the shortcomings of these different methodological approaches to downscaling Doughnut Economics underscore how methodological diversity and triangulation are needed to effectively formulate and evaluate local policies based on Doughnut Economics.

Keywords: doughnut economics, sustainable development, human development, cities, climate change, economic growth

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"In the industrialized world, the great challenge is not to remain competitive, or to increase efficiency or production. It is to slow down without derailing, to reimagine progress beyond more of the same. The challenge is to make ourselves at home in the world. There is plenty more to do, infinite opportunities for progress — but what comes next is improvement, not enlargement."

Katherine Trebeck and Jeremy Williams,
The Economics of Arrival

Introduction

The extraordinary growth of the human population and economic activity over the past few centuries has dramatically transformed the global social and ecological context within which all humans live. Exponential economic growth has driven many significant gains on quality-of-life indicators, but these benefits of economic activity have been unevenly distributed, resulting in widespread socioeconomic inequalities. Unjust levels of deprivation and inequality persist between and within many nations. Economic growth also exponentially increased humanity's resource and energy footprints, accelerating ecological degradation and destabilizing the Earth's climate.

Economic growth continues to pervade and dominate policymaking and development discourses, but in recent years, numerous development frameworks and economic measurement instruments were created as alternatives to this traditional paradigm. One such framework is Doughnut Economics, a sustainable development framework that combines several social indicators of human wellbeing with ecological boundaries to define a "safe and just space" where economic activity is sufficiently high to provide a social foundation for all people but not so high that it degrades the biosphere. In recent years, a growing list of subnational governments—including Amsterdam, Portland, Philadelphia, and others—have announced their intentions to utilize Doughnut Economics in their policymaking, urban planning, and local or regional development processes. However, the indicators used in Doughnut Economics were initially defined at the global scale, and effectively downscaling the Doughnut to utilize it at the national, state, or local levels of policymaking presents an important, yet underexplored challenge for both researchers and policymakers.

In this study, I contribute to the nascent knowledge base on Doughnut Economics by exploring the challenges of downscaling the Doughnut Economics framework and present a concrete approach as to how Doughnut Economics might be operationalized at the local level to investigate the question: How are American cities and counties performing on the social and ecological indicators of the Doughnut?

My methodology adapts the Doughnut Economic framework for use in a high-income context, the United States, where the development indicators in the original Doughnut Economics framework are less relevant and instructive for policymaking. I collected and analyzed data from 27 localities (covering 31 counties and the District of Columbia) within the United States. The results of my data collection illuminate wide heterogeneity within the United States on levels of social shortfall and ecological overshoot and advance the Doughnut Economics literature by developing a subnational quantitative approach to Doughnut Economics, as the prior literature has primarily focused on the national and global levels. These quantitative results highlight previously identified inequalities and underscore the need for more granular, local quantitative data. I also conducted a case study of Amsterdam's application of Doughnut Economics, which was developed using a more qualitative and participatory process. The qualitative approach taken to that case is richly descriptive but makes comparison across localities difficult. My quantitative approach therefore complements approaches like Amsterdam's by offering a quantitative, replicable assessment of performance on the Doughnut indicators across many localities. By analyzing the Amsterdam case alongside my quantitative results, I also identified three overlapping thematic challenges that arise when downscaling Doughnut Economics and discuss implications for policymakers and future research seeking to apply Doughnut Economics at more local levels.

Together, my case study and quantitative findings emphasize the need for multiple methodological approaches in studying Doughnut Economics, illuminate the challenges of operationalizing a global development framework for use at the local level, and underscore the need for further research and data collection in this space as a growing number of cities and subnational government seek to integrate Doughnut Economics into their development and policy planning.

Background

Defining and Measuring Development

How do we define societal progress? How do we pursue it? How do we measure it? These basic questions lie at the core of development theory, diverse theoretical frameworks about how to define and pursue progress.

Many contemporary development frameworks define development in primarily economic terms. These approaches to development as economic development largely build upon the model of Rostovian take-off, in which “traditional societies” transition to “mature” societies (Rostow 1959), a society-wide transformation driven primarily by wholesale transformation of the economy, defined here as the system through which resources, value, and information are extracted, produced, processed, traded, and distributed in service of societal goals (de Muijnck and Tieleman 2021). The creation of Rostow’s model and its elaboration since the 1960’s laid the foundations for a broad range of theories of development and linked development to the processes and outcomes of modernization, in which societies pursue expansive programs of transformation in their social structures, political institutions, and especially economies (McGillivray, 2008).

Governments increasingly began to understand themselves as having interrelated mandates to provide for the safety and wellbeing of citizens and to responsibly utilize available resources in pursuit of such goals, and thus became increasingly focused on effective management of economies (Tansi 1999). A key consequence of these developments—understanding development as modernization and viewing effective economic management as a primary responsibility of government—was the implicit and explicit incorporation of economic benchmarks into the goals of governments at all levels. Economic measurements—per capita income, Gross National Product, Gross Domestic Product—became understood as easy-to-understand benchmarks of societal progress.

In this context, the promotion and maintenance of economic growth— indicated by rising levels of national or per capita incomes—emerged as a widely shared goal of national and subnational governments across the world (Coyle 2014; Feldstein 2017). Economic growth's correlation with a variety of desirable development outcomes, including improved health and educational outcomes (OECD 2021; Roser 2021), reinforced its utility as a proxy measurement of progress. Economic growth also allows for base broadening (expansion of the tax base), as an economy that grows and is taxed at the same level across all years will deliver more resources to a government year-on-year in service of its other goals, and therefore expands available resources in service of government ends (Besley and Persson 2013; Tansi 1999). In theory, a growing economy also allows a government to mitigate intergroup competition for resources: by growing aggregate available resources, zero sum outcomes might be avoided (Coase 1960; Edmans 2020; Hahnel and Sheeran 2009).

Growth (typically as the annual change of or per capita GDP) subsequently became an easily understood and quantifiable metric through which citizens evaluate government performance and economic management (Coyle 2014, Philipsen 2017). The link between economic growth and various on quality-of-life indicators reinforced the growth as development paradigm, and many policymakers adopted growth (increases in

GDP and/or per capita incomes) as useful proxies for societal progress, development, and well-being (OECD 2021; Roser 2021).

The Ecological Consequences of Economic Growth

However, the dominant development paradigm underpinned by economic growth appears increasingly unsustainable, as widespread ecological degradation and destabilization of the Earth's climate could irreversibly perturb global systems beyond the environmental conditions in which humanity evolved (Richardson et al 2023). These findings are often unsurprising, as several early economists warned that overoptimizing for growth would causes economies to burn through resources and deplete stocks of resources (energetic, entropic, and material) in natural world by extracting from them at rates more quickly than the natural world can replenish them (Daly 1968; Georgescu-Roegen 1971; Georgescu-Roegen 1975; Schumacher 1973). These views have largely been validated by subsequent research in the fields of ecological economics and Earth systems sciences.

Iterative advances in the collection and modelling of ecological data have advanced our understanding of the specific ways in which economic activity and growth are degrading the capacity of the biosphere to regenerate stocks of natural resources and assimilate human-generated waste. A landmark 1972 report, *The Limits to Growth*, utilized an early computer model of human populations and economic activity and found that without changes to humanity's growth trajectory, the capacity of the Earth to replenish resources or assimilate pollution would likely be exceeded, leading to rapid collapse of the global economy and population within the next century (Meadows et al 1972). While the report received substantial criticism upon its initial publication, subsequent research and updates to the report have generally validated its projections of economic and population growth and their impact on the biosphere (Daly 1996; Hall and Day 2009; Meadows et al 1992; Meadows et al 2004; Randers 2012; Turner 2008).

Rockström et al. (2009) further advanced our understanding of the consequences of and limits to growth, publishing a new framework for a "safe operating space for humanity." The safe operating space was defined by nine ecological thresholds—called planetary boundaries—of allowable global ecological change past which human activity risked destabilizing the global Earth systems and altering conditions which human life evolved and flourished. Their work estimated that by 2009 humanity had already passed at least three of the nine boundaries. Further research (Steffen, Richardson, and Rockström 2015) updated the measurement and definition of the planetary boundaries. Later work further quantified the extent of human ecological overshoot and indicated that by 2022 humanity was overshooting at least seven of nine of these planetary boundaries (Rockström et al. 2023).

Economic Growth and Social Wellbeing

The traditional growth-focused development paradigm has often failed to deliver on its original promise of societal progress and increased human wellbeing (ul Haq 1976). Sustained GDP growth has masked consistent or rising patterns of inequality and injustice (ul Haq 1976). Policymakers have often over-optimized for growth as development and failed to adequately recognize that growth (rising incomes) serve as a means to development, not an end itself (Sen 1999a).

An illustrative example of these issues can be found in the U.S. context: for decades, the health and life expectancy of Black Americans lagged well behind White Americans and tended to be worse than poorer populations in other nations, even though rising income-levels would otherwise predict better health outcomes for Black

Americans (Sen 1993; Sen 1999b). Growth also can increase issues of food insecurity and widen gender gaps in countries with existing high levels of inequality (Acharya 2023). Even when growth does initially improve wellbeing, it tends to have diminishing returns and is associated with unsustainable patterns of consumption (Cole 2019; Koch 2022; Morris et al 2021; Paulsson, Koch, and Fritz 2024). Despite staggering increases in national and per capita incomes, the benefits of economic growth have often been unevenly distributed, resulting in the emergence or persistence of widespread socioeconomic inequality and inadequacy in many nations. Marginalized groups in the Global North—immigrants, minoritized racial groups, and those of lower socioeconomic status—also have lower levels of the resource-intensive patterns of consumption that drive growth and are associated with many types of ecological breakdown (Goldstein, Reames, and Newell 2022; Kenner, 2015; Starr et al. 2023; Tessum et al. 2019). The emergence and persistence of such patterns of unequal growth or relative deprivation can also be politically destabilizing (Acemoglu and Robinson 2002).

Alternatives to Growth

Economic growth has continued as the hegemonic target indicator of policymaking and development success, although scholars and policymakers in recent decades have developed numerous alternative frameworks and metrics, including the Human Development Index developed by Mahbub ul Haq and the U.N. Development Programme, the Capabilities Approach pioneered by Amartya Sen and Martha Nussbaum, Bhutan’s Gross Happiness Index, the Genuine Progress Indicator, and others (Ackerman et al 1997; Haq 1999; Nusbaum 2000; Sen 1999a; Stanton 2007; Ura et al 2004). These approaches, vary widely in their philosophical underpinnings and technical calculation approaches. In general, alternatives to GDP aim to reflect the wellbeing of a nation more fully and to measure development more holistically by incorporating environmental and/or social factors which are not reflected in the standard measure of economic growth, Gross Domestic Product (GDP). Some of these are typically viewed more as supplemental measures of social welfare to complement GDP in development decision-making, while others are intended as holistic approaches and intended to replace GDP as a measure of development altogether. In parallel, two related bodies of scholarship—post-development and more recently degrowth—has challenged the idea that traditional notions of progress are even possible to achieve or desirable to strive towards (Escobar 1994; Escobar 2017; Ferguson 1985; Hickel 2018; Hickel 2020; Kothari et al. 2019; Rahnema and Bawtree 1997; Sachs 1992).

These metrics and frameworks, and the discourse shaping them, although often still subordinated to GDP, have become increasingly salient to policymakers since 1990 (Demals and Hyard 2014). However, pursuing disconnected notions of human development and sustainable development also proved problematic, as widespread gains on human development after 1990 accelerated humanity's aggregate ecological impact (Crabtree 2012; Wedy 2017). Recognition of the need to integrate indicators of social wellbeing with measures of ecological impact helped to shape the creation of the Sustainable Development Goals (SDGs), a set of 17 global goals agreed upon by all U.N Member-States in 2015 (Department of Economic and Social Affairs, 2024).

The SDGs represented a major diplomatic achievement and ostensibly helped increase simultaneous development focus on both improving social wellbeing and ensuring environmental protection. However, many researchers worry whether the SDGs are capable of adequately transforming global development and policymaking to ensure that humanity reduces its impact on the integrity of the biosphere. Critics note that the SDGs perpetuate a view of human development indicators as disconnected from—rather than being embedded within—ecological systems (Stockholm Resilience Centre 2016), lack a coherent scheme to translate their complexity into policy prioritization (Greenland et al. 2023; Kotzé et al. 2022), are difficult to translate into local action (Schleicher, Schaafsma, and Vira 2018), require significant data that is not currently being collected and is difficult to evaluate in a standardized manner across geographic contexts (Lu et al 2015), and often lack sufficient attention to the systemic interconnections between goals. Others worry that the SDGs could prove self-defeating because Goal 8, which calls for continued global economic growth equivalent to 3% per year, will undermine achievement of other goals aiming to maintain biosphere integrity (Eisenmenger et al. 2020; Hickel 2019).

Doughnut Economics: A New Attempt to Integrate Human and Sustainable Development

In 2012, economist Kate Raworth introduced another alternative development framework, Doughnut Economics, which built upon earlier sustainable development and human development traditions by combining several indicators of social and economic progress with Rockström et al.'s concept of planetary boundaries to define the "Doughnut," a conceptual representation of the "safe and just space in which humanity can thrive" (Raworth 2012, Raworth 2017). The Doughnut refers to two concentric targets: an inner ring representing the social foundation, defining a minimum level of socioeconomic activity needed to deliver an adequate distribution of resources and opportunity such that all people are at or above this floor (Raworth 2017). Several of the social indicators of the Doughnut are explicitly or implicitly linked to indicators of the Sustainable Development Goals (Raworth 2017, Warnecke 2023). The outer ring represents the ecological ceiling, defined by the nine planetary boundaries, setting maximum threshold for human activity to prevent degradation of Earth's systems to support life (Raworth 2017). In conjunction with the Doughnut model, Raworth (2017) elaborated seven principles—changing the goal from GDP to "getting into the Doughnut," seeing the economy as socially- and environmentally-embedded, viewing humans as socially adaptable people (rather than homo economicus), seeing economies as dynamic and complex systems, designing economies to be distributive, designing economies to be regenerative, and being agnostic about growth—that together outline an approach to economic policy and development that she argues is needed to move towards the "safe and just space" of the Doughnut.

The Doughnut framework presents a concise, visual model that presents a global snapshot of the extent to which human socioeconomic activity is falling short of meeting basic social needs and the degree of global ecological overshoot. When first introduced, the global Doughnut showed that aggregate human economic activity at the global level was simultaneously falling short of meeting the basic needs of all people while also overshooting several planetary boundaries.

Downscaling the Doughnut

Since the introduction of Doughnut Economics, researchers and policymakers have begun to adapt the ideas Doughnut to smaller scales, recognizing that although Doughnut Economics shows promise as a development framework that simultaneously considers both social needs and ecological limits, its original form as a global framework limits its practical utility as a policymaking tool. The world lacks any true global government, and most development and economic programs are designed and pursued by national or subnational actors, especially governments. To be made useful for policymaking, the Doughnut's global parameters need to be adapted to better correspond with the spatial and political structures of decision-making (Turner and Wills 2022). National, subnational, and local policymakers have more direct ability (than institutions of global governance) to create and implement the types of policies needed to move towards the "safe and just space" defined by the Doughnut (Turner and Wills 2022).

Initial downscaling research focused on applying Doughnut framework to the national or regional level (Cole 2015; Fang, Wu, and He 2021; O'Neill et al. 2018; Roy, Basu, and Dong 2021; Sayers and Trebeck 2014; Sayers and Trebeck 2015; Sayers 2015). Early quantitative findings suggested that that no country performs well on both the social and ecological indicators and that improved performance on the social indicators was most strongly associated with increased emissions (O'Neill et al. 2018). Follow-up time series analysis of country-level data spanning 1992 to 2015 for 140 nations found that during that period no country had met the social needs of its citizens while staying within its ecological limits (Fanning et al. 2022). Alarmingly, this work also showed that significant national progress towards meeting the social indicators typically was associated with a nation's movement into high levels of ecological overshoot (Fanning et al. 2022).

Amsterdam was the first city in the world to publicize its intentions to become a "Doughnut city" in 2020, announcing that it would use the framework in its recovery plan from the COVID-19 pandemic (The Guardian 2020). Several other cities, including Copenhagen, Brussels, Melbourne, Berlin, and Sydney, have also developed city-level initiatives utilizing Doughnut Economics (C40 2023; DEAL 2021; Lazard 2022). In the United States, local interest in the framework has been more limited, although Philadelphia and Portland announced Doughnut initiatives as part of their post-COVID-19 recovery planning (Winters 2021).

Within the Doughnut Economics literature, there is a significant lack of quantitative research at the local level. Currently there is no work being done that would allow researchers and policymakers to know where individual cities and local communities are performing in relation to the Doughnut or to be able to engage in cross-jurisdictional comparison or causal inference. This lack of local data and research is a key obstacle to successfully deploying the Doughnut model. Smaller governments (cities and counties) can often be more responsive to data and innovative in policymaking than national governments, but they require data to act appropriately. Although geographically smaller units such as cities and counties are not discrete units and their social/ecological performance will be tied to larger (state/national/global) dynamics, local application of the framework might also improve aggregate national performance by helping relevant policymakers identify patterns of intra-country inequality, spot hotspots of ecological overshoot, or recognize critical areas of social shortfall. Downscaling the Doughnut's parameters to more closely align to outcomes influenced more directly at other levels of governance (such as the national, state/provincial, or local level) and developing/identifying measurement instruments is therefore a critical step to successfully utilizing the Doughnut framework for sustainable and human development.

Methods

The present study applies Raworth's Doughnut Economics framework to localities within the United States. My approach is inspired by previous research that evaluated performance on the Doughnut's indicators at the national level (O'Neill et al. 2018; Fanning et al. 2022) and addresses the following research question:

- How are American cities or counties performing on the social and ecological indicators of the Doughnut? (Are localities in the United States meeting the basic needs of residents while using resources at a per capita level that could be extended to all people globally without overshooting planetary boundaries?)

Research Framework

I utilize a post-positivist approach to policy research (as discussed in Guba and Lincoln 1994), characterized by a critical realist ontology, which sees data collection as an imperfect, yet useful practice that allows one to develop an imperfect yet discernible and comprehensible model of reality. Post-positivist research recognizes that any single methodological approach is inherently limited and therefore encourages the incorporation of multiple methods and consideration of the strengths and biases of different methods (Shadish 1993). I draw upon the approach and methods used by Fanning et al. (2022) and O'Neill et al. (2018), in which they quantitatively analyzed national performance on the Doughnut's indicators, to develop a quantitative approach to downscaling Doughnut Economics to the local level and see this analysis as complementary to more participatory, qualitative strategies for downscaling the doughnut, such as the approach used by the City of Amsterdam and Raworth's Doughnut Economics Action Lab, as discussed in a later section (Comparative Case Study of Amsterdam). In analyzing the Amsterdam case, I used a nominal casing approach (Soss 2018), which allows for greater reflexivity in the processes of case description by asking *"what is this a case of?"* and then using observational analysis to fit a case to pre-existing or emergent theories and descriptions, rather than rigidly classifying a case as a particular type *a priori*.

Together, my qualitative and quantitative approaches act as complements via triangulation, an epistemological approach which helps to mitigates some of the shortcomings of using isolated methods (Arias Valencia 2022; Hussein 2009; Lin 1998) and is consistent with a post-positivist framework that recognizes the value in combining methods and logics of inquiry (Guba and Lincoln; Lin 1998). By utilizing both quantitative and qualitative approaches to downscaling Doughnut Economics and collecting data across multiple jurisdictions, this study helps to address the shortcomings of previous work on local application of the Doughnut by integrating insights arising from otherwise disconnected logics of inquiry.

Defining the Doughnut: Methods and Data Used to Quantify Local Progress Towards the "Safe and Just Space"

Selection of U.S. Localities for Analysis

For the present study, I collected data for 27 localities in the United States, covered by 31 counties and the District of Columbia. The geographic location of these localities is shown in Figure 1. Dekalb and Fulton counties in Georgia were combined to create my unit of analysis for Atlanta. Five New York counties (Bronx, Kings, New York, Queens, and Richmond) were combined to create the unit of analysis for New York City. My analysis of Oglala Lakota County in South Dakota, known as Shannon County until 2015, incorporates data reported for Shannon County, where applicable.

I chose to use the county-level as my primary unit of analysis because this was the smallest administrative unit for which data was readily available for many of the social indicators. The county-level is proximate to the typical level of local governance (often the city level) and has sufficient overlap with city boundaries for this approach to be useful for city-level decision-making.

I chose a range of localities within the United States for study based on three considerations: data-availability, demographic heterogeneity, and geographic variation. Because city-level data was less consistently available, I chose to collect data at the county-level then prioritized localities for which data was more available for the indicators of interest. I also selected localities that differ from each other across several demographic dimensions (such as income, size, and racial composition) from across several geographic regions of the United States to capture a broader range of U.S. localities, although this approach was not intended to be systematic nor comprehensive. Most of the chosen counties are urban counties, although Navajo County, Arizona (which is part of the Navajo Reservation) and Oglala Lakota (formerly Shannon) County, South Dakota (within the Pine Ridge Reservation) were included to provide insight into the performance of rural counties and of Native American Reservations on the Doughnut's indicators.

My research aims were primarily descriptive and intended to create a "snapshot" of the performance of a variety of American communities to illuminate where these localities lie in relation to the social and ecological indicators of the Doughnut framework. A second aim is to advance a preliminary methodological approach to putting Doughnut Economics into practice at the local level in a high-income context, where traditional development indicators, such as a poverty level defined as $3.10 per person per day (Raworth 2017; World Bank 2023), may be less immediately applicable or informative for policymaking. My final aim was to support the development of preliminary theories about the characteristics or policy context that might impact performance on the Doughnut's indicators. Given that my selection of localities is neither systematic nor representative, this study does not aim to establish causal claims about if or how particular characteristics or policies of a given locality influence their performance on the Doughnut's social or ecological indicators.

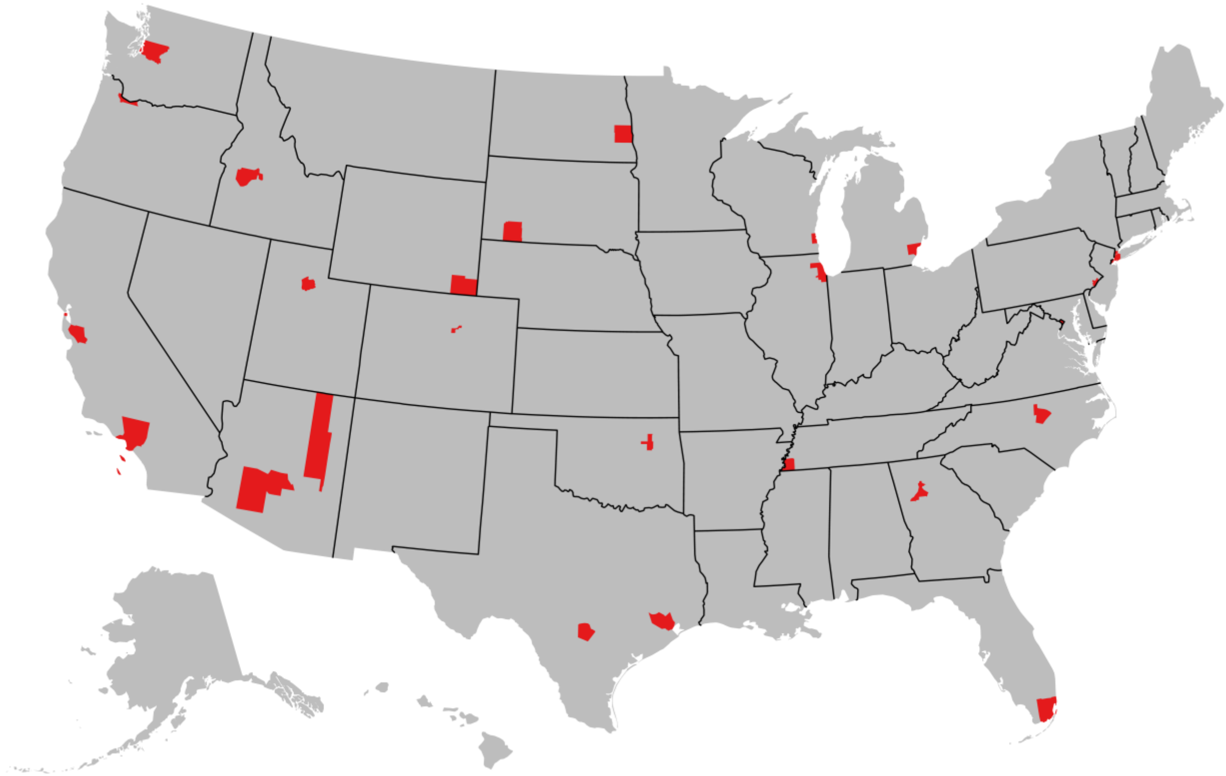


Figure 1. Location of 27 localities (31 counties and the District of Columbia) included in present study. Borders shown at the county level.

Selection of Social Indicators, Calculation Approach, and Data Sources

Defining what constitutes the "just" space of the Doughnut requires selection of contextually appropriate indicators and data. However, this process—selecting indicators, choosing data sources, and defining thresholds—introduces significant normative subjectivity into my approach. Recognizing that limitation, I selected indicators that corresponded to Raworth's original indicators while also selecting for cross-jurisdictional comparability and data availability. Other researchers, policymakers, or democratic polities facing different incentives and political constraints might opt to select different indicators and data sources.

I selected 13 different indicators (see Table 1) of the social wellbeing based upon Raworth's Doughnut (2017). County-level data was used for 9 of the 13 variables. State-level data was used for two variables which county-specific information was unavailable. A combination of state and county data was used for one indicator (energy access), and at the Continuum of Care level (discussed below) for the final indicator. Because my goal was to evaluate general performance of localities on the Doughnut's indicators (rather than to make causal claims or identify trends), I used data for multiple years and then calculated the arithmetic mean to reduce the year-to-year variation in the data. In order to assess performance, I drew upon a common approach used to construct development indicators (such as the Human Development Index) that define "yardsticks" to set the range for an index, and then normalized specific data against that range to yield the final index value (Meier and Rauch 2005)

One key aim of the present study is to advance a preliminary quantitative methodology for downscaling the Doughnut as policymaking tool in high-income, highly-industrialized economic contexts, where the original Doughnut indicators or other traditional development indicators might be less applicable. For example, Raworth's poverty indicator defines poverty as $3.10 per person per day (Raworth 2017). In the US context, this definition of poverty has applied to roughly 1% or less of the population since the 1960s (World Bank Poverty and Inequality Platform – with major processing by Our World in Data, 2023) and is not designed to capture poverty in high-income countries (World Bank 2020). Other definitions and measures of poverty are needed to reflect the reality of poverty in a high-income context, reflecting that even with incomes that might be high relative to international definitions of poverty, some portion of the population in such contexts nevertheless lack adequate resources or capabilities (Sen 1999). I retained Raworth's original social indicators (such as infant mortality rate and life expectancy) in some cases, but in other cases, I substituted different measurements or adjusted thresholds for use in a high-income context.

In selecting numerical boundaries for my various indices, I opted to use data from OECD nations (or from the U.S. itself), as these would allow for comparison against data from countries often viewed as economic peers to the U.S. and whose standards of living and internal policy goals more closely align to that of the United States. This comparative approach parallels the policy analysis done by the OECD itself and that used by researchers making comparative assessment of U.S. policy outcomes relative to peer nations (see Rakshit, McGough, and Amin (2024) as an example of this approach on U.S. health outcomes and Gould and Weithing (2012) as an analysis of poverty outcomes). I also opted for such an approach because it may more easily be taken up into existing institutional mechanisms of policy monitoring and evaluation, which often utilize OECD data and members for comparison (Pal 20219). The global influence of the OECD occurs primarily via its capacity for knowledge production and dissemination (Pal) and aligning Doughnut Economics into this pathway may be one manner to facilitate its propagation.

I also made the instrumental decision to opt for indicators for which data was already being collected across many jurisdictions over many years, as this would facilitate data collection and allow for cross-jurisdictional comparison. Some of Raworth's original indicators are also binary (such as the proportion of population living in countries with homicides rates of 10 per 100,000 or more). I instead formulated my indices such that differences between localities, like that between a homicide rate of 9.9 and 1.5, are observable in the final index.

My approach to defining thresholds followed previous research that applies Doughnut Economics at the national level (Fanning et al 2022; O'Neill et al. 2018). Like those authors, I calculated the performance on each of the Doughnut's social indicators by defining maximum (threshold) and minimum values for each indicator, serves as the denominator in each index and sets the range of values from 0.0, where none of the population's needs are met on a given indicator, to 1.0, where the threshold that represents the "social foundation"—the level of adequate resources to fulfil some basic human need—has been reached (Raworth 2012; Raworth 2017). The numerator is then defined as the distance from either the upper or lower bound (depending on the indicator) to the data value. The numerator is divided by the denominator to yield a value, typically between 0.0 and 1.0. The index approaches 1.0 as the locality in question approaches the threshold of the social foundation, whereas values closer to 0.0 indicate larger levels of social shortfall. Thresholds and equations for each social indicator are shown in Table 1 and described below:

- <u>Food Security (FS):</u> I use county-level data on the proportion of the population facing food insecurity. Raworth's original indicator, undernourishment, which measures the supply of available calories to a population (Meade and Rosen 2013), is less relevant for high-income countries, which are generally able to meet the caloric needs of most citizens (Ritchie and Roser 2024). While food insecurity in low-income nations is often characterized by a population level caloric deficit (Meade and Rosen 2013; Ritchie 2022), in the United States, it is instead more typically associated with undernourishment and undernutrition (Lee et al. 2022; Shifler Bowers, Francis, and Kraschnewski 2018; Our World in Data 2022; Ritchie and Roser 2024). Food insecurity is associated with numerous chronic health risks and measures limited or uncertain access to adequate food and is a more informative indicator for high-income contexts (U.S. Department of Agriculture, 2023). I constructed an index using maximum and minimum values of 100% and 0% of the population experiencing food insecurity, respectively.

- Energy Access (EN): Nearly all the U.S. population has electricity access (World Bank 2023), making Raworth's original indicator uninformative in the U.S. context. However, many households in the U.S. spend a disproportionate level of its income on energy/electricity. Energy poverty in low-income households can force individuals into difficult choices between the purchase of food or medicine and paying to maintain energy access (UNC 2023). I constructed an index by multiplying the state average energy burden for low-income households and county level poverty rate. Energy burden is the percent of income spent on electricity and fuel (Rubin, Freed, and Aggarwhal 2023). The minimum value was defined as 0.015, the product of the average energy burden for non-low-income households, 3%, by a poverty rate of 5%. The maximum value for this index 0.092, the product of the highest low-income energy burden in the country (23%) and a poverty rate of 40%.

- Digital Access (DD): I used county-level Digital Divide Index values from Purdue University (Gallardo 2024). This index is the sum of two components: a measure of the infrastructure (broadband access and internet speeds) and a socioeconomic component (Gallardo), with values ranging from 0 to 100. Raworth's original indicator, Networks, measures loneliness and social isolation. I used Digital Access for two reasons: 1) internet access is becoming increasingly essential for individuals to be socially and economically integrated into their communities (Valentín-Sívico et al. 2023), and 2) data was available at the county-level. Ideally, policymakers downscaling Doughnut Economics can collect or identify other local measures to capture the strength of networks in communities and address issues of social isolation and loneliness.
- Housing (H): I calculated homelessness rates, defined as the number of homeless persons per 10,000 population using counts of homeless persons from the Department Housing and Urban Development (HUD). HUD reports data at the Continuum of Care (CoC) program level. Most CoCs aligned to my unit of analysis (county) and I calculated the homelessness rate using the CoC homeless counts for a given year and population data in that year from the American Communities Survey or Census. However, the Atlanta metro area is served by three CoC's: Atlanta CoC, Fulton County CoC, DeKalb County CoC, and the Detroit metro area is served by two CoCs (Detroit City and Wayne County). For these cases, I aggregated the homelessness counts for all three counties to calculate the homelessness rate. To calculate rates for those counties that were not part of a geographically-localized CoC, I assumed equal distribution of

homeless persons across the state for areas not already covered by metropolitan CoCs. This meant that I assigned a proportional, by population, homeless population to that county. This was the case for Navajo County, Arizona; Cass County, North Dakota; and Oglala Lakota County, South Dakota. Raworth's original indicator used percent of the population living in slum conditions as defined by the World Bank and is not available for high-income nations. Homelessness rate is reported as rate per 10,000 residents that lacks access to basic housing. A minimum value of 4.1 per 100,00 people is used, the lowest rate of any U.S. subgroup. A maximum value of 121 per 10,000 (which was the highest rate reported by any U.S. CoC in my dataset) was used, as this was also higher than any national rate reported by OECD nations (OECD 2023).

- <u>Gender Representation (GE)</u>: I constructed an index of female representation in State Legislatures, with 50%, or gender parity, as the maximum value and 0% as the minimum. Raworth's original indicator reflects gender representation in national legislatures. I chose to use a smaller political unit, states, to capture differences in gender inequality in political representation for different localities. Future researchers should seek to integrate data on local level representation and other measures of gender political inclusion.
- <u>Access to Work (WK)</u>: I use employment data at the county level to construct an index. The national average unemployment rate 3.8% in 2023 was used to construct the full employment maximum value of 96.2%. This threshold is higher than the 95% used by Fanning et al (2022) because U.S. unemployment is generally lower than the rate observed in the range of countries in their dataset and most OECD countries (OECD 2023). The minimum value is set to 0%.

- Social Equity (SE): I constructed this index using county-level data of P80/P20 Income Ratio, which is the ratio of incomes at the 80th percentile to those at the 20th percentile. I used P80/P20 instead of Raworth's original indicator, the Palma Ratio, which compares the income or wealth share of the top 10% to the bottom 40% because Palma data in the U.S. was not available at the county-level. I used a maximum value of 11, the highest P80/P20 ratio in the OECD, and a minimum of 4, which approximates the P80/P20 ratios in Scandinavian nations (De Nardi et al. 2000, OECD 2023)
- Democratic Participation (DP): I constructed an index of voter-turnout across four federal elections: 2014, 2016, 2018, and 2020. I balanced these four elections between midterm and Presidential elections so that the indicator was not skewed by the different patterns in turnout observed between these two types of federal elections. For the index, I used an upper bound of 95% based upon the highest voter-turnout observed in a subnational region within the OECD since 2009, and a lower bound of 24%, the lowest voter turnout of any subnational region within the OECD since 2009 (OECD Regions at a Glance 2023). State-turnout data was collected from the University of Florida Election Lab database. I used turnout based upon voting-eligible population, which reflects a more consistent turnout rate denominator than these other turnout rate measures. Election officials in the U.S. typically report turnout rates amongst registered voters, but these voter registration turnout rates are not comparable across space and time because states and localities vary in management of voter registration rolls and have differing voter registration laws and policies (UF Election Lab 2023).

- Peace and Justice (PJ): I constructed an index using county-level homicide rates, reported as homicides per 100,000 population, for this indicator. The highest annual homicide rate in any OECD country since 2010 (35.13 per 100,000) set the maximum value. The minimum value was set at 1.0, as two-thirds of OECD countries have homicide rates at or below this rate (OECD 2023).
- Economic Foundation (EF): I construct this index using the county-level percent of children living in poverty, with a threshold of 95% (5% in poverty) and lower bound value of 0%. I use child poverty to better capture economic opportunity in the United States, as Raworth's original indicator was defined as the population proportion with an income less than purchasing power parity of $3.10 per day.
- Education Access (ED): I used county-level high school graduation rates to construct this index. The maximum value of 95% is roughly equal to the highest secondary school graduation rate in the OECD (OECD 2024), while the minimum value was set at 0%. I used high school graduation instead of Raworth's original education indicators—adult population who lack basic literacy and the portion of out-of-school children—because these values are generally low amongst OECD nations (OECD 2023).
- Health – Life Expectancy (LE): I collected life expectancy at birth at the county level, then constructed an index using a maximum value of 84.5 years, the highest life expectancy of any OECD country in 2021, and a minimum of 62.3 years, the lowest life expectancy of any OECD country in 2021 (OECD 2023). In the United States, even marginalized racial and socioeconomic groups have life expectancies above Raworth's original indicator value of 70 years (Hill and Artiga 2023; Raworth 2017).

- Health – Infant Mortality (IM): I collected infant mortality data at the county level, then constructed an index using a maximum value of 26.4 deaths per 1000, the highest rate of any OECD country in 2021, and a minimum of 1.70 deaths per 1000, the lowest life expectancy of any OECD country in 2021 (OECD 2023).

Table 1. Summary of Social Indicators

Indicator					
Social	**Variable(s)**	**Threshold(s)**	**Data Source (Years)**	**Smallest Level of Data Availability**	**Formula**
Food Security (FS)	Index of percent of population facing food insecurity	Max = 100% Min = 0%	Feeding America (2016 – 2020)	County	$Index_{\substack{Food\\Security}} = \frac{Value_{observed} - Value_{min}}{Value_{Max} - Value_{Min}}$
Energy Access (EN)	Index of low-income energy burden and poverty rate	Max = 100 Min = 0	RMI (2020 - Energy prices); UW-Madison PHI – County Health Rankings (2016-2020, poverty)	State (energy burden), County (poverty)	$Index_{\substack{Energy\\Access}} = Rate_{Poverty} * Rate_{\substack{Energy\\Burden}}$
Digital Access (DD)	Index of population access to affordable internet and infrastructure	Max = 100 Min = 0	Purdue Digital Divide Index (Gallardo 2024) (2017 – 2020)	County	$Index_{\substack{Digital\\Divide}} = Index_{Infrastructure} * Index_{\substack{SES\\Score}}$
Housing (H)	Index of homeless persons per 10000 population	Max = 121 persons per 10,000 Min = 0	Department of Housing and Urban Development (2016 – 2020)	County/City CoC*	$Index_{Housing} = \frac{Value_{Max} - Value_{observed}}{Value_{Max} - Value_{Min}}$
Gender Representation (GE)	Index of female representation in State Legislatures	Max = 50% women in legislature (gender parity) Min = 0%	Rutgers Center for American Women and Politics (2016 – 2020)	State	$Index_{Gender} = \frac{Value_{observed} - Value_{min}}{Value_{Max} - Value_{Min}}$
Access to Work (WK)	Index of employment rate	Max = .962 Min = 0	UW-Madison PHI – County Health Rankings (2016 – 2020)	County	$Index_{Employment} = \frac{Value_{Max} - Value_{observed}}{Value_{Max} - Value_{Min}}$
Social Equity (SE)	Index of P80/P20 Income Ratio	Max = 11 Min = 4	UW-Madison PHI – County Health Rankings (2016 – 2020)	County	$Index_{\substack{Social\\Equity}} = \frac{Value_{Max} - Value_{observed}}{Value_{Max} - Value_{Min}}$

Democratic Participation (DP)	Index of voter-turnout in federal elections (voting eligible population	Max = Min =	University of Florida Election Lab (2014, 2016, 2018, 2020 elections)	State	$Index_{\substack{Democratic \\ Participation}} = \frac{Value_{observed} - Value_{Min}}{Value_{Max} - Value_{Min}}$
Peace and Justice (PJ)	Index of homicide rate	Max = 35.13 homicides per 100,000 Min = 1 homicide per 100,000	UW-Madison PHI – County Health Rankings (2016 – 2020)	County	$Index_{\substack{Peace \\ Justice}} = \frac{Value_{Max} - Value_{observed}}{Value_{Max} - Value_{Min}}$
Economic Foundation (EF)	Percent children living in poverty	Max = 95% Min = 0%	UW-Madison PHI – County Health Rankings (2016 – 2020)	County	$Index_{\substack{Economic \\ Foundation}} = \frac{Value_{Max} - Value_{observed}}{Value_{Max} - Value_{Min}}$
Education Access (ED)	Index of high school graduation rate	Max = 95% Min = 0%	UW-Madison PHI – County Health Rankings (2016 – 2020)	County	$Index_{\substack{Education \\ Access}} = \frac{Value_{Max} - Value_{observed}}{Value_{Max} - Value_{Min}}$
Health – Life Expectancy (LE)	Index of life expectancy at birth	Max = 85.4 years Min = 62.3 years	UW-Madison PHI – County Health Rankings (2016 – 2020)	County	$Index_{\substack{Life \\ Expectancy}} = \frac{Value_{observed} - Value_{Min}}{Value_{Max} - Value_{Min}}$
Health – Infant Mortality (IM)	Index of infant mortality rate	Max = 26.4 deaths per 1000 live births Min = 1.7 deaths per 1000 live births	UW-Madison PHI – County Health Rankings (2016 – 2020)	County	$Index_{\substack{Infant \\ Mortality}} = \frac{Value_{Max} - Value_{observed}}{Value_{Max} - Value_{Min}}$

Selection of Ecological Indicators, Calculation Approach, and Data Sources

My approach to downscaling the planetary boundaries primarily drew upon the approach used in earlier work applying Doughnut Economics at the national level (Fanning et al 2022; O'Neill et al. 2018). For ecological thresholds, the general process involves taking the global planetary boundaries and calculating a per person allowance for each ecological threshold. A per capita allowance for ecological thresholds also aligns to prior policy recommendations designed to reduce ecological overshoot (Jackson 2009). Local per capita levels of overshoot can then be calculated by taking a jurisdiction's levels of overshoot for that indicator and dividing that by the jurisdiction's population. Dividing the per capita levels of overshoot by the threshold yield's an overshoot ratio which allows for normalized comparison across time and jurisdictions against the planetary boundary.

I initially aimed to collect data on six different ecological indicators: Climate Change, Phosphorous Loading, Nitrogen Loading, Land-System Change (Land Use), Ecological Footprint, and Material Footprint. All of these indicators except for ecological footprint have been defined and quantified at the global level in the earlier literature on planetary boundaries (Rockström et al. 2023; 2009). Although it is not one of the original indicators in Rockström et al's planetary boundaries framework (2009) or the original Doughnut framework (Raworth 2012), I also included ecological footprint, which measures how much biologically productive land and sea area are required to produce the natural resources and assimilate the waste for a given population (or person), following the approach of Fanning et al (2022) and O'Neil (2018). I included it here because the ecological footprint is a commonly used, scalable indicator of ecological impact that also lends itself more easily to cross-jurisdictional comparisons. More recent data is also available for this indicator, as the Global Footprint Network publishes an annual dataset, the National Footprint and Biocapacity Accounts, which includes estimates of national biocapacity and national ecological footprints by year. This data makes it easier to downscale ecological footprint, at least to the national level.

I was unable to locate sources with data available at my unit of analysis, the county level, for all six indicators. For the Climate Change indicator, emissions data was available at the state-level, which I used to calculate a per capita emissions level for each state and calculate an overshoot ratio for this indicator. For the remaining ecological indicators, I therefore had to rely on national-level data from Fanning et al. (2022) for my overshoot estimates, which limits my ability to meaningfully compare overshoot between jurisdictions and limits my ability to hypothesize how particular overshoot outcomes may be associated with specific policies.

For the Climate Change indicator, I calculated per capita carbon footprint from the state-level data, then calculated overshoot ratios using a long-term per capita threshold that would be required to limit global warming to the goal of 1.5°C of maximum warming as outlined in the Paris Agreement. Several estimates exist that quantify the allowable per capita annual emissions levels that would be consistent with meeting the Paris goals, I therefore used the most conservative of these estimates, a per capita emissions level of 1.5 tons CO_2-equivalents per year by the year 2050 (Wilson 2022), to define the long-term Climate Change boundary. My approach allowed for current per capita emissions levels to be easily compared against this emissions threshold by constructing a ratio of a given locality’s per capita emissions level for the period of the study against the threshold. The emissions overshoot ratio thus represents the level of overshoot against the maximum level of emissions that would be in line with the long-term goal of limiting global warming to 1.5°C or below from the Paris Agreement. These ratios help to answer the question: "How are emissions levels in this place compared to the levels needed to mitigate climate change in the long-term?"

I also defined an interim Climate Change boundary and calculated overshoot ratios using an additional Climate Change threshold defined by the updated 2030 Nationally Determined Contribution (NDC) submitted by the Biden Administration when the United States re-joined the Paris Agreement in 2021 (U.S. Department of State 2021). This interim threshold was calculated by taking the lower-bound absolute emissions target of 3,805 Megatons CO2-equivalents (MtCO2e) per year in 2030 from the updated US NDC and dividing that emissions level by the U.S. population in a given year, yielding a per capita threshold. The per capita emissions level for each locality is then divided by the threshold to construct a ratio of that emissions level against an emissions level consistent with the pledged emissions reductions needed by 2030, which. These ratios help to assess whether emissions levels in this place are consistent with U.S. commitments under the Paris Agreement and are the low-end estimates of the level of emissions reductions needed to be on-track by 2030 (Climate Action Tracker 2023) to meet the long-term goal of limiting global warming as defined in the threshold above.

I did not collect data for three of the planetary boundaries included in the Raworth's original Doughnut framework: biodiversity loss, stratospheric ozone depletion, or ocean acidification. As discussed by Fanning et al. (2022) and O'Neil (2018), it is difficult to move from global estimates of allowable impacts on biodiversity to country-level estimates and therefore even more difficult to move to estimating specific biodiversity impact estimates at the subnational level. Stratospheric ozone depletion is omitted because this indicator is already globally managed under the

Montreal Protocol and global performance on this indicator suggests that this global governance scheme is successfully helping humanity move out of overshoot for this boundary (Fanning et al 2022). Like earlier downscaling research (Fanning et al 2022), I omitted ocean acidification because the units for this boundary are not easily converted to administrative/geographic unit below the global scale. Additionally, ocean acidification is primarily driven by climate change (Le Quéré et al 2009, Doney et al 2009, Doney 2010). If humans were to not transgress the climate change boundary, the ocean acidification barrier would also not be transgressed (Steffen et al 2015, Fanning et al 2022). The climate change boundary therefore adequately captures human impact on ocean acidity for the purposes of an evaluative framework like the Doughnut.

Table 2. Summary of Ecological Indicators

Indicator					
Ecological	**Variable(s)**	**Boundary (per year)**	**Data Source**	**Smallest-Level of Data Availability**	**Formula**
Climate Change (CC)	Index of per capita CO2 emissions	1.5 t CO2e per capita	SEDS – EIA (2016 – 2020)	State	$Index_{\substack{Climate \\ Change}} = \frac{Value_{\ Observed}}{Value_{\ Boundary}}$
Phosphrous Loading (P)	"Inflow of phosphorus to ocean from freshwater systems. (MtP/year).	0.8 kilograms P per capita	USA National Data from Fanning et al, 2022 (2015)	National	$Index_{P} = \frac{Value_{\ Observed}}{Value_{\ Boundary}}$
Nitrogen Loading (N)	Amount of N2 removed from atmosphere for human use (MtN/year).	8.4 kilograms N per capita	USA National Data from Fanning et al, 2022 (2015)	National	$Index_{N} = \frac{Value_{\ Observed}}{Value_{\ Boundary}}$
Land-system change (LU)	Human appropriation of net primary production (HANPP).	2.4 tons C per capita	USA National Data from Fanning et al., 2022 (2015)	National	$Index_{Land\ Use} = \frac{Value_{\ Observed}}{Value_{\ Boundary}}$
Ecological Footprint (EF)	Global hectares per capita (Gha/pp)	3.7 to 3.9 Gha per capita	Global Footprint Network, National Footprint & Biocapacity Accounts (2016-2020)	National	$Index_{\substack{Ecological \\ Footprint}} = \frac{Value_{\ Observed}}{Value_{\ Boundary}}$
Material Footprint (MF)	Raw material consumption (RMC)	6.8 tonnes per capita	USA National Data from Fanning et al, 2022 (2015)	National	$Index_{\substack{Material \\ Footprint}} = \frac{Value_{\ Observed}}{Value_{\ Boundary}}$

Results

U.S. Localities and Social Shortfall

Table 3 displays the extent of all social shortfall and climate change overshoot for 27 U.S. localities, representing 31 counties and the District of Columbia. Indices for the U.S. overall were calculated for indicators in which comparable national data was available from the same data sources used at the local level. These results are also presented in Table 3. Appendix 1 presents the results of social shortfall as bar charts for all localities.

My results show substantial variation between the localities included in the study on most of the indicators. As shown in Table 3, the only indicator for which all localities included were consistently high was Access to Work, an index of the local employment rate. Meanwhile, the Gender Equality and Democratic Participation indicators show consistent shortfall across all localities. The Life Expectancy indicator shows the largest range: the index values for Manhattan and Queens show that life expectancy at birth in these places approaches the highest values in the OECD, whereas the value for Oglala Lakota County is near the low-end of life expectancies in the OECD. The Housing indicator also varies widely, with indices for New York and San Francisco approach the low end of this index, defined by the highest homelessness rate in the nation, 120 per 100,000 (over 1 in 1000) residents experiencing homelessness, while Cook, Navajo, and Wayne Counties all approach the top of the Housing index, suggesting homelessness rates that are an order of magnitude lower than New York City and San Francisco County.

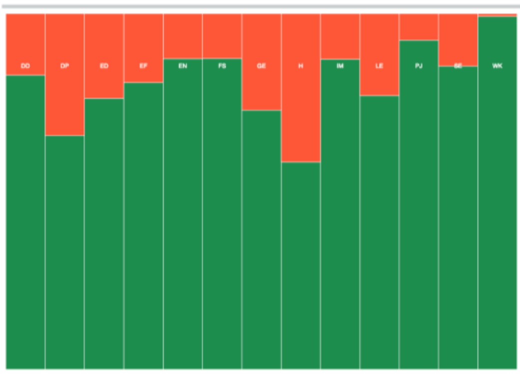
Table 3. Social shortfall and climate change overshoot in 27 U.S. localities.

Due to data limitations and calculation approach, housing data is only available at the aggregate (not county level) for Atlanta and New York City. All indexes are out of 1.0. For social indicators, values at or above 1.0 appear as green, values at 0.85 appear as yellow, and values at or below 0.7 appear as red. For climate change values, colors scale from white at 0.0 to dark red at (or above) 10.

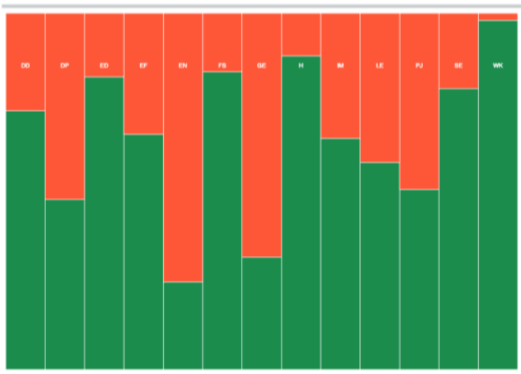
County	Locality	State	Food Security	Energy Access	Digital Access	Housing	Gender Equity	Access to Work	Social Equity	Democratic Participation	Peace & Justice	Economic Foundation	Education Access	Health (Life Expectancy)	Health (Infant Mortality)	Climate Change
Ada	Boise	ID	0.899	0.881	0.823	0.809	0.625	1.006	0.948	0.548	0.985	0.879	0.832	0.82	0.879	7.245
Bexar	San Antonio	TX	0.87	0.598	0.765	0.881	0.426	1	0.898	0.453	0.833	0.755	0.922	0.723	0.822	15.455
Bronx	Bronx	NY	0.829	0.227	0.677	--	0.584	0.964	0.638	0.482	0.807	0.574	0.654	0.804	0.846	5.587
Bronx, Kings, New York, Queens, Richmond Combined	New York City	NY	0.864	0.53	0.767	0.241	0.584	0.983	0.64	0.482	0.889	0.724	0.739	0.916	0.892	5.587
Cass	Fargo	ND	0.93	0.886	0.831	0.625	0.4	1.016	0.959	0.596	0.993	0.892	0.908	0.814	0.855	49.364
Cook	Chicago	IL	0.89	0.788	0.767	0.961	0.701	0.979	0.788	0.559	0.691	0.77	0.891	0.775	0.787	10.453
DeKalb		GA	0.857	0.551	0.808	--	0.556	0.982	0.872	0.55	0.683	0.717	0.75	0.802	0.783	8.64
Dekalb, Fulton Combined	Atlanta	GA	0.859	0.599	0.816	0.798	0.556	0.983	0.77	0.55	0.69	0.742	0.788	0.778	0.789	8.64
Denver	Denver	CO	0.886	0.887	0.831	0.707	0.836	1.003	0.828	0.675	0.847	0.791	0.661	0.801	0.843	10.308
District of Columbia		DC	0.892	0.751	0.799	0.714	0.616	0.972	0.551	0.526	0.54	0.715	0.724	0.688	0.724	2.576
Durham	Durham	NC	0.859	0.718	0.798	0.909	0.49	0.994	0.872	0.577	0.714	0.757	0.853	0.797	0.801	7.722
Fulton		GA	0.861	0.633	0.822	--	0.556	0.983	0.696	0.55	0.695	0.761	0.816	0.761	0.792	8.64
Harris	Houston	TX	0.847	0.578	0.782	0.933	0.426	0.989	0.853	0.453	0.776	0.741	0.914	0.763	0.824	15.455
King	Seattle	WA	0.898	0.909	0.831	0.57	0.753	0.998	0.897	0.608	0.952	0.88	0.862	0.886	0.907	6.92
Kings County	Brooklyn	NY	0.843	0.471	0.752	--	0.584	0.982	0.63	0.482	0.847	0.693	0.74	0.906	0.896	5.587
Laramie	Cheyenne	WY	0.89	0.833	0.781	0.896	0.267	0.998	0.992	0.55	0.947	0.866	0.807	0.756	0.818	69.519
Los Angeles	Los Angeles	CA	0.885	0.819	0.753	0.566	0.547	0.978	0.799	0.503	0.852	0.759	0.844	0.878	0.892	5.861
Maricopa	Phoenix	AZ	0.874	0.695	0.776	0.887	0.774	0.99	0.922	0.511	0.861	0.777	0.823	0.792	0.836	8.388
Miami-Dade	Miami	FL	0.897	0.692	0.739	0.919	0.542	0.983	0.772	0.583	0.778	0.738	0.831	0.84	0.868	7.31
Milwaukee	Milwaukee	WI	0.864	0.566	0.737	0.922	0.509	0.986	0.849	0.678	0.68	0.698	0.794	0.664	0.718	10.94
Multnomah	Portland	OR	0.874	0.873	0.827	0.583	0.728	0.992	0.852	0.657	0.925	0.806	0.762	0.77	0.872	6.238
Navajo	Navajo, Hopi Nations	AZ	0.794	0.306	0.576	0.977	0.774	0.947	0.763	0.511	0.697	0.607	0.822	0.529	0.763	8.388
New York	Manhattan	NY	0.871	0.603	0.792	--	0.584	0.991	0.29	0.482	0.95	0.758	0.745	0.999	0.929	5.587
Ogalala Lakota	Pine Ridge Reservation	SD	0.731	0.454	0.422	0.902	0.431	0.922	0.784	0.58	0.452	0.615	0.698	0.111	0.425	11.522
Philadelphia	Philadelphia	PA	0.825	0.453	0.727	0.702	0.435	0.97	0.669	0.574	0.488	0.624	0.78	0.625	0.688	11.071
Queens County	Queens	NY	0.894	0.697	0.81	--	0.584	0.991	0.871	0.482	0.935	0.81	0.768	0.954	0.892	5.587
Richmond	Staten Island	NY	0.909	0.697	0.828	--	0.584	0.983	0.793	0.482	0.937	0.811	0.826	0.832	0.884	5.587
Salt Lake	Salt Lake City	UT	0.889	0.936	0.847	0.861	0.423	1.006	1.01	0.529	0.953	0.873	0.841	0.769	0.855	12.591
San Francisco	San Francisco	CA	0.881	0.908	0.787	0.327	0.547	1.005	0.56	0.503	0.874	0.87	0.777	0.944	0.94	5.861
Santa Clara	San Jose	CA	0.918	0.946	0.825	0.661	0.547	1	0.853	0.503	0.951	0.908	0.895	0.988	0.937	5.861
Shelby	Memphis	TN	0.836	0.246	0.726	0.881	0.316	0.98	0.789	0.478	0.506	0.66	0.822	0.581	0.649	9.2
Tulsa	Tulsa	OK	0.855	0.67	0.766	0.86	0.333	0.997	0.899	0.459	0.748	0.777	0.872	0.647	0.76	9.217
Wake	Raleigh	NC	0.894	0.856	0.879	0.93	0.49	0.996	0.963	0.577	0.947	0.868	0.91	0.868	0.822	7.722
Wayne	Detroit	MI	0.819	0.229	0.697	0.955	0.565	0.968	0.739	0.619	0.452	0.638	0.847	0.577	0.675	10.275
US Average						**0.86**	**0.532**	**0.988**		**0.548**				**0.746**		**10.351**

Figure 2. Comparison of Social Shortfall in 3 localities

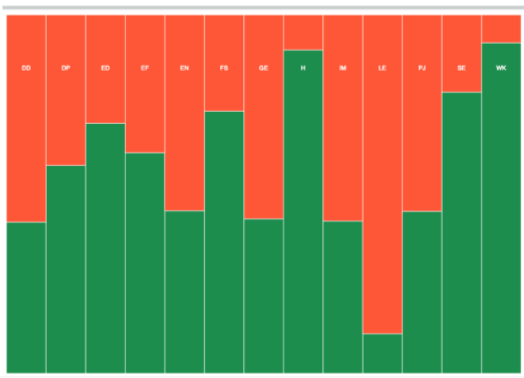
All indices are out of 1.0. A value of 1.0 indicates that the threshold has been met or exceeded. Indicators are Digital Divide (DD), Democratic Participation (DP), Education (ED), Energy Access (EN), Economic Foundation (EF), Food Security (FS), Gender Equity (GE), Housing (H), Health: Infant Mortality (IM), Health: Life Expectancy (LE), Peace and Justice (PJ), Social Equity (SE), and Access to Work (WK).



Multnomah County, Oregon (Portland)



Shelby County, Tennessee (Memphis)



Oglala Lakota County, South Dakota

These localities also vary widely in their overall relationship to the "just space" defined by the Doughnut's social indicators. Some counties (Wake, Cass, Salt Lake, King, Santa Clara) show relatively high values on most (10-11) indicators. Meanwhile, counties like Oglala Lakota, Navajo, and Philadelphia show low values for all but two or three of the indicators. This contrast is further highlighted in Figure 3, which displays the level of social shortfall for Multnomah County, Oregon; Shelby County, Tennessee; and Oglala Lakota County, South Dakota. In general, Multnomah County has higher values on each of the indicators than both Shelby and Oglala Lakota counties, although it has noticeably lower value for the Housing indicator, a result of the relatively high homelessness rate in Portland. The contrast in life expectancy (LE) between these is particularly stark, as this index indicates that life expectancy in Oglala Lakota County is well behind the other two and would lie near the lower end of life expectancies of OECD nations. Shelby County and Oglala Lakota Counties also have significantly lower values relative to Portland on the Peace & Justice indicator, reflecting the relatively high homicide rates in these localities.

Localities with higher non-white populations also appear to show greater levels of social shortfall than those that are predominantly white. This trend—increasing levels of shortfall (decreasing average values of the social indicator) as the non-white proportion of the county's population increases—is shown in Figure 3, which compares the (arithmetic) mean of each county's 12 social indicators against the proportion of its population that is non-white (from the U.S. Census Bureau).

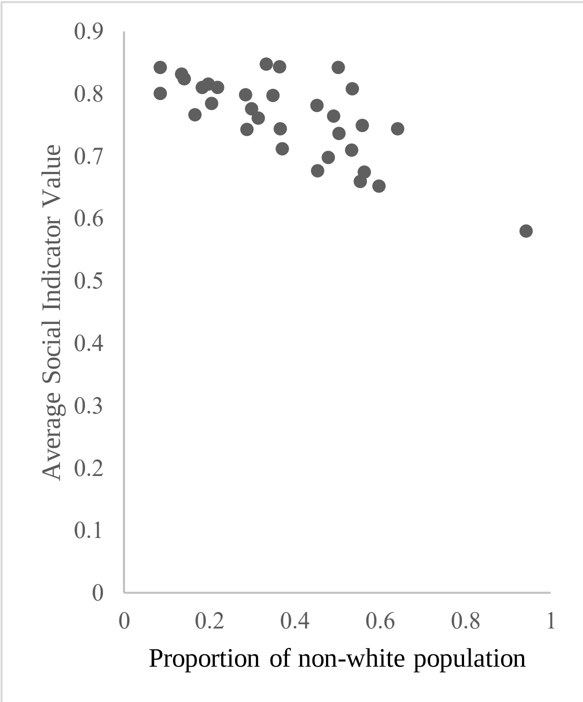


Figure 3. Social shortfall and non-white population proportion for 31 counties and the District of Columbia

Limitations

Although several patterns in the data (such as the racialized disparity described above) appear in the data, my selection of localities is descriptive and therefore cannot necessarily be generalized across other localities in the United States. Furthermore, my approach to defining thresholds does not allow for causal inference between different indicators or between indicators or policies. I was constrained to choosing sources of data for which local level data was available. Although local social data was generally more available than ecological data, local data can lack granularity or specificity (Poisot et al 2019), and this introduces greater uncertainty into data-dependent policymaking processes that and can undermine movement towards policy goals.

My use of data is also constrained by pre-existing categories of data. The ability to define indicators and access data are also restricted by the availability of data and existence of predefined categories, which ties local application of the Doughnut into the path dependency and power relationships of predefined data categories and methodologies. Quantitative data, though often viewed as "objective," requires relying on human observations about a set of phenomena in the world, and these are invariably shaped by human subjectivity. As an example, I use an index based on the local homicide rate as my indicator Peace & Justice (similar to Raworth). The homicide rate is a measure of deaths caused by killing by another person per 100,000 persons in a population. Multiple assumptions, uncertainties, and normative judgements have already been baked into the data prior to my choice of indicator that shape and constrain any use of this data, including who does or does not get officially counted in the population, what set of deaths get officially recorded, and critically which deaths are considered homicides. The power to define these categories, collect and retain data, and subsequently infer or make policy using that data often requires a level of concentrated power, and the uncritical use or leveraging of these predetermined data categories can reinforce existing disparities in power, particularly over knowledge production and decision-making (Wiggins and Jones 2023).

U.S. Localities and Ecological Overshoot

Table 4 presents the performance by locality on the Climate Change indicator from 2015-2021 against a short-term emissions overshoot thresholds based upon the 2030 emissions target defined by the U.S. NDC and long-term emissions overshoot threshold needed to stay within the goal of the Paris Agreement. Emissions levels within the United States vary widely although all localities overshoot the Climate Chance boundary. The District of Columbia performs best the amongst those localities included in the study, with per capita emissions falling at roughly 2.5 times the threshold of 1.5MtCO2 per capita, while per capita emissions of Fargo and Laramie are orders of magnitude higher, at nearly 50 and 70 times above the threshold, respectively. These results suggest that all of the localities included in this analysis must significantly reduce emissions to reach an emissions level that would be sustainable in the long-term. When the 2030 NDC boundary is used instead of the long-term target, these cities and counties perform much better, and several cities have already reached emissions levels consistent with the 2030 NDC target.

Limitations

As discussed in the Methods section, the lack of subnational on most of the ecological indicators limits my ability to make meaningful comparisons between localities on most of these indicators, as they all are calculated using the same 2015 U.S. national data from Fanning et al. (2022). Due to this lack of subnational data, Table 3 does not present findings for five of six ecological indicators, as these results are based upon national data and therefore identical and less instructive than other indicators for which data was available at the state or local level. Nevertheless, I include those results in the charts in Appendix 2, which presents full results as Doughnut charts for all 27 localities, to allow for presentation of the data in the same manner as earlier work on the national level performance on the Doughnut's indicators (Fanning et al 2018; Fanning et al 2022). The results presented in Appendix 1, based on Fanning et al.'s data (2018), show that the U.S. is overshooting all the planetary boundaries included in the analysis. Although economic integration and extraterritorial impacts complicate isolating localized ecological impacts, future research on downscaling the Doughnut indicators should prioritize developing methods to collect and analyze data on the ecological indicators at the local level. Meaningful local analysis will allow for more meaningful application of this framework at the local level, help to identify hotspots and patterns of ecological overshoot, and facilitate meaningful inter-jurisdictional comparison and policy coordination and learning across levels of governance. Researchers should focus on key gaps in local ecological data, such as identifying areas with disproportionate biogeochemical flows, elevated losses of local biodiversity, or rapidly deteriorating water access or land availability will likely be key areas of analysis and focus in order to improve national and global performance on the Doughnut indicators.

The Climate Change indicator, which was calculated from state-level emissions data, should be interpreted cautiously. Intrastate comparisons (such as San Francisco to Los Angeles) on this indicator are not meaningful and interstate comparisons should be interpreted as providing more general insights about the wide variability in emissions levels seen within the United States. My index also uses state emissions estimates that include the energy production, consumption, and transportation needs within a geographically-defined area, and therefore may not reflect the full climate impacts of the carbon embodied in the consumption practices and a territorial based approach to assessing emissions impacts introduces additional limitations. A nation, state, or locality that appears to have lower emissions may simply have outsourced its production (and underlying energy-needs and climate impacts) to other geographic region (Lenk et al. 2021; Wu, Ma, and Schröder 2022). However, my finding that higher emissions levels are not obviously associated with improved outcomes on the social indicators appears consistent with recent work that suggests U.S. emissions-levels are decoupling from economic activity, even after adjusting for emissions offshoring (Ritchie and Roser 2024). Other research also suggests that most U.S. emissions are now associated with investment, rather than consumption activity, and per capita emissions are declining for low- and middle-income groups but increasing for the wealthiest 1% (Chancel 2022), which may impact the geographic variation seen in the emissions patterns reported above.

Equitably addressing widespread variation in unsustainable behavior, which varies widely by economic, geographic, and demographic factors (Sovacool et al. 2022), is another core challenge in downscaling the Doughnut. I used per capita thresholds for each of the ecological indicators that assumed equal per capita allocations of planetary boundary in the present and future, as this approach easily allowed for easier cross-jurisdictional comparison and ready to identification of where a locality was relative to the "safe and just space" and to short-term and long-term emissions targets. Similarly, the Amsterdam City Portrait (discussed in the following section, Comparative Case Study of Amsterdam) referenced equality-based shares when quantitative performance on ecological indicators was included in that case. Both approaches do not address that high-income nations generally have higher historical responsibility for climate change (Hickel 2020) and the wide disparities in current resource use (Fanning et al 2022). Strict equality-based thresholds for the Climate Change indicator may also be criticized as inequitable and inconsistent with the obligations of higher-income (referred to as Annex I) certain to certain international treaty bodies (UNFCCC 1992), although my use of an intermediate target based upon the U.S. 2030 NDC begins to address such criticisms. A contrasting approach (Fanning et al. 2022; O'Neil (2018) uses historical population levels and emissions data to calculate national aggregate emission levels and compared those to a national "fair share" of the carbon budget that assumes equal shares for all people from the industrial age on. This approach more directly addresses the normative question of historic responsibility for climate change but is more limited in its ability to be forward-looking and prescriptive for specific emissions targets because for nations already in overshoot (i.e., that have already used more than their "fair share" of the carbon budget), there are no concrete intermediate emissions reductions to aim towards as policy targets.

Table 4. Emissions overshoot ratio (Climate Change indicator) in U.S. localities, 2016-2021.
All values are ratios where 1.0 is equal to the emissions threshold. The left panel uses a per capita threshold of 1.5 CO2e. Right panel uses a per capita threshold calculated using that year's population (Census/ACS) and the national emissions target for 2030 from the most recent U.S. NDC. Colors scale from white at 0.0 to dark red at (or above) 10. Ratios calculated using state-level emissions data accessed at SEDS, EIA.

Emissions Overshoot (long-term boundary)								Emissions Overshoot (2030 NDC boundary)						
Locality	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2016 - 2020**	**Locality**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Ada	7.26	7.25	7.25	7.49	6.98	7.19	7.24	Ada	0.92	0.93	0.93	0.97	0.91	0.94
Atlanta	9.33	9.07	9.00	8.53	7.27	7.67	8.64	Atlanta	1.19	1.16	1.16	1.10	0.95	1.00
Bexar	15.69	15.67	15.95	15.72	14.25	14.96	15.45	Bexar	2.00	2.01	2.05	2.03	1.86	1.96
Cass	48.44	50.13	52.00	49.87	46.37	48.45	49.36	Cass	6.17	6.42	6.70	6.45	6.06	6.34
Cook	10.80	10.73	11.13	10.73	8.87	9.67	10.45	Cook	1.37	1.38	1.43	1.39	1.16	1.27
DC	2.67	2.47	2.70	2.64	2.39	2.51	2.58	DC	0.34	0.32	0.35	0.34	0.31	0.33
Denver	10.63	10.54	10.54	10.62	9.21	9.80	10.31	Denver	1.35	1.35	1.36	1.37	1.20	1.28
Durham	8.19	7.86	7.97	7.78	6.80	7.29	7.72	Durham	1.04	1.01	1.03	1.01	0.89	0.95
Harris	15.69	15.67	15.95	15.72	14.25	14.96	15.45	Harris	2.00	2.01	2.05	2.03	1.86	1.96
King	7.25	7.10	6.97	7.38	5.90	6.36	6.92	King	0.92	0.91	0.90	0.95	0.77	0.83
Laramie	69.81	72.18	73.51	67.93	64.16	62.86	69.52	Laramie	8.89	9.25	9.47	8.79	8.38	8.23
Los Angeles	6.02	6.04	6.06	6.06	5.13	5.52	5.86	Los Angeles	0.77	0.77	0.78	0.78	0.67	0.72
Maricopa	8.72	8.56	8.76	8.46	7.44	7.62	8.39	Maricopa	1.11	1.10	1.13	1.09	0.97	1.00
Miami-Dade	7.72	7.58	7.59	7.25	6.41	6.91	7.31	Miami-Dade	0.98	0.97	0.98	0.94	0.84	0.90
Milwaukee	11.04	11.35	11.61	10.85	9.84	10.48	10.94	Milwaukee	1.41	1.45	1.50	1.40	1.29	1.37
Multnomah	6.13	6.24	6.31	6.62	5.89	6.04	6.24	Multnomah	0.78	0.80	0.81	0.86	0.77	0.79
Navajo	8.72	8.56	8.76	8.46	7.44	7.62	8.39	Navajo	1.11	1.10	1.13	1.09	0.97	1.00
NYC	5.78	5.64	5.97	5.79	4.75	5.24	5.59	NYC	0.74	0.72	0.77	0.75	0.62	0.69
Ogalala Lakota	11.42	11.18	11.77	12.01	11.23	11.28	11.52	Ogalala Lakota	1.45	1.43	1.52	1.55	1.47	1.48
Philadelphia	11.36	11.22	11.46	11.39	9.92	10.94	11.07	Philadelphia	1.45	1.44	1.48	1.47	1.30	1.43

Salt Lake	12.88	12.68	12.94	12.80	11.65	12.39	12.59
San Francisco	6.02	6.04	6.06	6.06	5.13	5.52	5.86
Santa Clara	6.02	6.04	6.06	6.06	5.13	5.52	5.86
Shelby	10.13	9.67	9.20	9.00	8.00	8.87	9.20
Tulsa	10.16	9.67	9.23	9.00	8.02	8.87	9.22
Wake	8.19	7.86	7.97	7.78	6.80	7.29	7.72
Wayne	10.35	10.40	10.93	10.63	9.06	9.82	10.28
US Average	10.69	10.55	10.80	10.48	9.24	9.86	10.35
	Long-term Boundary (CO_2e pp)						
	2016 - 2021						
	1.5						

Salt Lake	1.64	1.62	1.67	1.66	1.52	1.62
San Francisco	0.77	0.77	0.78	0.78	0.67	0.72
Santa Clara	0.77	0.77	0.78	0.78	0.67	0.72
Shelby	1.29	1.24	1.18	1.16	1.05	1.16
Tulsa	1.29	1.24	1.19	1.17	1.05	1.16
Wake	1.04	1.01	1.03	1.01	0.89	0.95
Wayne	1.32	1.33	1.41	1.38	1.18	1.29
US Average	1.36	1.35	1.39	1.36	1.21	1.29
	2030 NDC Boundary (CO_2e pp)					
	2016	**2017**	**2018**	**2019**	**2020**	**2021**
	11.78	11.71	11.65	11.59	11.48	11.46

Comparative Case Study of Amsterdam: Doughnut Economics in Action?

As I moved through my quantitative analysis, I conducted a nominal case study of Amsterdam's application of Doughnut Economics, which allowed me to develop initial comparisons between their approach to downscaling Doughnut Economics from the global to the local scale and mine, which allowed for iterative analysis of the challenges that arise when downscaling the Doughnut Framework. After the city announced that it would use the framework in its recovery plan from the COVID-19 pandemic (The Guardian 2020), the city partnered with Kate Raworth's organization, the Doughnut Economics Action Lab (DEAL), to carry out a stakeholder consultation process and create its "City Portrait," a government document that applies the Doughnut Framework for evaluation and policy planning at the city level (DEAL 2020). The Amsterdam City Portrait was developed in collaboration with three global policy networks, Biomimicry 3.8, Circle Economy, and C40, and via consultative workshops with Amsterdam residents in town hall meetings across the city (City of Amsterdam 2020). The central question that motivated creation of the Amsterdam City Portrait is: "How can Amsterdam be a home to thriving people, in a thriving place, while respecting the wellbeing of all people, and the health of the whole planet?" (City of Amsterdam 2020).

The Amsterdam City Portrait provides an overview of the Doughnut framework, discusses the process of creating a city portrait, analyzes the above question through four "lenses" (Local Social, Local Ecological, Global Ecological, and Global Social), then discusses how the City Portrait can be used to inform community level action, policy analysis, and policymaking. The lenses analyze several indicators pertinent to the following four questions:

- What would it mean for the people of Amsterdam to thrive?

- What would it mean for Amsterdam to thrive within its natural habitat?
- What would it mean for Amsterdam to respect the health of the whole planet?
- What would it mean for Amsterdam to respect the wellbeing of people worldwide? (City of Amsterdam 2020)

The City Portrait report concludes with a discussion of how these lenses should inform policymaking and city level action, attempting to shift traditional notions of policymaking (as a cyclical process of agenda setting, research and policy formulation, adoption, implementation, monitoring and evaluation) into a multidirectional, multilevel analytical and development process (City of Amsterdam 2020).

My analysis of the process used to operationalize Doughnut Economics in Amsterdam's case suggests that they used an approach that was participatory, interpretive, and context specific, features that make such an approach both politically and normatively appealing. However, this approach also limits the generalizability of their insights, and the lack of detailed methodology or data on how the social thresholds or planetary boundaries might be quantified at the city level means that it is difficult to compare Amsterdam to other jurisdictions or to evaluate its relationship to a downscaled "safe and just space." Through a reflexive process (Minna et al. 2024), in which I iteratively moved between analysis of the Amsterdam case and analysis of my downscaling approach and results, I encountered several themes that were resonate with problems previously identified in either the broader sustainable development literature or more recent literature on downscaling Doughnut Economics:

(1) Localizing a global framework can introduce or surface paradoxical policy interactions;

(2) Downscaling from global to local analytical frame encounters issues of data availability and struggles to adequately capture systemic complexity (Acosta 2022);

(3) Defining the Doughnut locally can introduce or amplify pre-existing disparities in power and representation (Turner and Wills 2022).

Emergence of cross-jurisdictional policy tensions

Amsterdam's local application of the Doughnut—which was created as a combination of expert consultations and democratically-representative, participatory processes—is likely to introduce extraterritorial spill-over effects and paradoxical policy interactions that are not easily reconciled without an integrated approach across multiple levels of governance. This challenge is not easily remedied: local application of the Doughnut seems more common, likely because it is more politically viable at local scales than at the national level. Localization of the Doughnut is also attractive because it ostensibly allows for expedited implementation of ecologically sound or socially just policies. Different polities, ranging from the global to national to local levels, will likely take different approaches to normative questions of social justice. Policy agreement and subsequent coordination between different levels of governance is therefore not a given.

The Amsterdam City Portrait method attempts to address issues of cross-jurisdictional impacts or interactions through simultaneous application of both "global" and "local" lenses, but these lenses do not directly address how they reconcile the potential for regional and global spill over effects or contradictory policies across levels of government. The City Portrait notes in its Global Ecological section that "Cities have ecological impacts far beyond their borders, thanks to the intensive resource use inherent in their consumption of products such as food, electronics, clothing, and construction materials (City of Amsterdam 2020)," and implies the need to reduce the city's emissions by scaling up renewable energy. In a separate lens, the Global Social, the Amsterdam report's authors also note the human rights and labor abuses connected to the production of technologies used by residents of Amsterdam. However, the authors do not discuss or attempt to offer guidance on how policymakers might weigh the need to reduce local or global ecological pressure against possible social trade-offs, or consider how policies at other levels (regional, national, or global) might interact with localized pursuit of the Doughnut's "safe and just space."

Challenges of collecting adequate data and capturing systemic-complexity

Local analysis (using the Doughnut or another policymaking framework) theoretically allows for more tailored and responsive policymaking and economic management, but challenges with data availability and possible blindness to systemic interconnections across governance and geographic scales can obscure the complex interrelationships that constitute the ecological and social systems of any given locality like Amsterdam.

Amsterdam's approach to evaluation lacked robust discussions of how it addressed any lack of data availability or the inherent limitations of the data types used in its evaluation. As discussed in the Results section, the availability of local data is often a function of path-dependent policies, which risks reinforcing previous normative choices and power relationships. Amsterdam's City Portrait included several snapshots of desirable wellbeing outcomes, but then tied each of these to an existing category of quantitative data already being collected by governments. Policymakers have also historically privileged collection of certain types of quantitative data (Ford and Goger 2021), and the Doughnut's original indicators are all quantitative and therefore are (from a post-positivist perspective) unable to adequately capture the nuances of reality needed for effective policy formulation on their own. Importantly, the participatory process used by Amsterdam collects and integrates interpretive, qualitative data into its evaluation of Amsterdam's progress towards the Doughnut's "safe and just space." However, because the Amsterdam City Portrait lacks a clearly articulated approach to collecting and considering quantitative data for the Doughnut's indicators, its interpretability and cross-jurisdictional comparability are more limited.

The Amsterdam City Portrait, like several other attempts to downscale Doughnut Economics, generally presents the social and ecological indicators as distinct and does not deeply examine the systemic interconnections between indicators. The City Portrait is filled with examples of data indicators and citizen suggestions of how their city might address particular social or ecological needs, but these examples are presented in a siloed manner—fitting uniquely within Local Social, Local Ecological, Global Ecological, or Global Social lenses—without robust discussion of how particular indicators are linked and influence one another directly and indirectly. For example, for the indicator "Equality in Diversity," the authors noted that "In total, 15% of [Amsterdam] residents reported experiencing discrimination in 2017: 39% of incidents concerned ethnicity, or skin colour; and 29% concerned nationality (City of Amsterdam, 2020)." However, nowhere in the document do the authors note how this phenomenon is linked to other social indicators included in their analysis, such as political voice (voter turnout), safety (victimization of violent crime), jobs (business climate), or health (obesity, mental health) despite well-documented connections between discrimination and voter turnout (Leighley and Vedlitz 1999, Spierings and Vermeulen 2023), discrimination and victimization (Harvey and Mattia 2022, Notovey 2023), or discrimination and health outcomes (Davis 2020). Additional literature suggests that certain variables can further mediate their interactions with each other, underscoring the need to understand how different indicators might interact. For example, crime victimization drives higher levels of social withdrawal and worsens mental health, with this effect being mediated by the experience of identity-based discrimination (Ruijne et al. 2022). This pattern continues across all lenses. Given the myriad interconnections between the numerous ecological and social phenomena—across both local and global levels—represented in the report, this lack of multifactor analysis and under-discussion of the systemic connections are likely to undermine policymakers seeking to develop coherent policy responses to undesirable social and ecological outcomes, as many of these emerge out of the scale and complexity of a system and cannot be analyzed in isolation from the systemic context (Calenbuhr 2020).

Amplification of pre-existing disparities in power and participation

Amsterdam's City Portrait was created by outside experts in consultation with residents situated in Amsterdam itself, but without input from individuals in other geographic regions affected by Amsterdam's globalized economic ties. Their methodology also does not clearly address how or if they attempted to increase participation of marginalized populations and underrepresented neighborhoods in creating Amsterdam's City Portrait. Measurement and categorization of data are political acts unto themselves, and the power to choose what gets measured, in what units and in which contexts is a significant source of power that often reinforces the power of incumbent actors in data-rich environments, especially government agencies and corporate actors (Wiggins and Jones 2023). Without special attention (and potentially capacity-building efforts) to the process used to select local data indicators, localization of the Doughnut risks retrenching existing patterns of power. As noted above, most of the quantitative data referenced in the Amsterdam report appears to refer to previously collected data, and the report itself lacks discussion and justification as to why particular data categories or sources were used.

The importance of such process-level considerations (participation, data selection, etc.) is underscored in the literature on effective and equitable stakeholder consultation processes. Participation is a multi-dimensional process and several mechanisms impact the nature and outcomes of participation processes including breadth of involvement (what range of stakeholders and other actors are included in the process?), communication and collaboration (what is the form, direction, and intensity of information flows between actors?), and the degree to which power is delegated to participants (are subsequent policy decisions dependent on the outcomes and recommendations created via the participatory process?) (Newig et al 2018). Processes that are broader, more collaborative, and hold delegated power are generally viewed as leading to more equitable environmental outcomes (Newig et al).

The cursory consideration and discussion of these process components suggests that the Amsterdam City Portrait may not adequately consider how existing disparities in power (within Amsterdam and between Amsterdam and other nations) showed up in their process of creating the City Portrait and shaped its findings and policy implications. Recent research on climate governance in Leeds underscores the challenge of globally inclusive and just governance, (Solanki 2021) highlighting how municipalities in the Global North can inadvertently retrench "coloniality in power" via their processes of knowledge production and stakeholder engagement (Quijano and Ennis 2000). Such concerns are further amplified in the case of Amsterdam, which undertook this process in ostensive isolation and without clear mechanisms for coordination with other levels of governments in Amsterdam or dynamic coordination with other communities across the world.

Together these three themes help to contextualize my quantitative results presented below and help to clarify both the utility and limitations of downscaling a global framework like Doughnut Economics via any single methodological approach.

Discussion

My results suggest substantial variation in the performance of 27 U.S. localities on nearly all (12 of 13) social indicators and alarming instances of social shortfall. Previous research at the national level suggests that United States is performing relatively well on the social indicators of the Doughnut (Fanning et al, 2022); my results add a critical nuance to that national-level research by illustrating that even in high-income countries that perform well on traditional development indicators, there may be substantial subnational social shortfall or high levels of inequality masked in aggregate national data. I also find that emissions levels vary widely among these localities, without clear links to social performance. Although my methods only allow for descriptive assessment of the association between emissions levels and social shortfall, this lack of a pattern is an important avenue for further inquiry, as national-level research suggests a consistent trade-off between reducing social shortfall and preventing ecological overshoot (O'Neill et al. 2018).

Better understanding local patterns of inequality is critical for policymakers seeking to operationalize the Doughnut locally, as different groups may have different levels of responsibility for ecological degradation (Alio et al. 2010; Davies et al. 2018; Hanbury Lemos 2022; Rice et al. 2022; Tessum et al. 2019) and ecological degradation often imposes disproportionate, negative social consequences for marginalized groups (Berberian, Gonzalez, and Cushing 2022; Hickel 2018; et al. 2022). Neither my approach nor that taken by Amsterdam directly addresses how to resolve varying levels of historical culpability for ecological degradation or the disproportionate social impacts caused by ecological degradation.

Accounting for local disparities—such as the racial disparities suggested in my results—poses challenging ethical questions about how to best address these inequities while also improving overall performance on the Doughnut indicators. My findings suggest that localities with higher proportions of non-White populations generally have lower values on social indicators. While caution is warranted due to my non-systematic selection of localities, this pattern aligns with broader research on structural racial inequality in the U.S. that finds numerous racialized disparities in socially desirable outcomes between White and non-White (particularly Black and Native American) populations in the United States (Bowdler and Harris 2022; Kaiser Family Foundation 2024; Klein et al. 2023; National Academies of Sciences et al. 2017; Opportunity Insights 2018).

Equitably addressing disparities within and across borders may require creating differentiated thresholds for jurisdictions, devolving power to local actors, and coordinating policies across jurisdictions and levels of governance. However, devolving power to local authorities to determine their own ecological thresholds or notions of social justice introduces additional ethical questions: How does one reconcile hard and immovable ecological limits with the ecological impacts and resource requirements of a locally-determined definition of what constitutes a just or adequate life for its residents? How does one weigh the normative outputs of local democratic processes against the social or ecological needs of those outside that polity?

Downscaling a global framework like the Doughnut requires grappling with issues of distributional justice (Ryberg et al. 2020) and may require creating more flexible or dynamic definitions of downscaled boundaries (Tan et al. 2022). However, creating locally differentiated thresholds could introduce ecologically destructive incentives if inequalities across standards of living drive an escalating cycle of resource. Conversely, failure to adequately adapt thresholds to local contexts could obscure inequality and relative deprivation. Even in places that appear to provide a relatively high standard of living, relative deprivation and inequality constrain the capabilities of individuals, diminish their ability to realize their full human potential (Sen 1999a), and introduce serious social consequences such as worse health outcomes (Polacko 2021), wasteful consumption patterns (Galí 1994), interpersonal aggression and hostility (Greitemeyer and Sagioglou 2019), and violent extremism (Kunst and Obaidi 2020). Directing policy outcomes with insufficiently local thresholds and methods may increase the risk that local inequality and relative deprivation might be overlooked and lead to subsequent negative outcomes.

Implementing the Doughnut effectively at smaller scales also requires consideration of a complex set of causal relationships between the Doughnut's indicators, which are connected by dozens of positive/reinforcing relationships, negative/balancing relationships, and relationships with unclear evidence on the directionality between indicators (Acosta 2022). Complex interrelationships make the timing, magnitude, and extent of policy-directed changes difficult to measure and predict (Myrdhal 1974) and can lead to unanticipated and counterproductive outcomes, sometimes referred to as policy resistance (Meadows 2008).

Using methodological tools, such as systems-mapping and modelling, to better understand systemic relationships (Capmourteres et al. 2019) may help to identify key leverage points or trade-offs in how policies might affect different indicators. This requires local specification and policy formulation to adjust for unique local interlinkages. This type of systems-analysis is an ongoing and evolutionary process (Bossel 1996), as the sustainability of a system changes over time and cannot be assessed from the systems it is embedded within or from the various subsystems which comprise it (Bossel 2000). Systemic interrelationships also interact with decision-making at other levels of governance and extend beyond the geographic reach of policymakers implementing Doughnut Economics in a particular locality (Warnecke 2023).

Effectively utilizing the Doughnut at the local level "will require renewed attention to coordination across multilevel governance (Turner and Wills 2022)." Local policy evaluation, if not coordinated with other levels, could inadvertently mask patterns of offshoring or extra-territorialization of ecological impacts. Furthermore, in an increasingly globalized world, local policymakers may not be in control of many of the governmental or economic choices that ultimately determine what or how their jurisdictions would need to measure in relation to the Doughnut's indicators. Coordination across localities and different levels of governance, measurement of progress towards mutually defined goals, and effective monitoring against less flexible ecological limits likely requires a dynamic and integrated approach to data collection and policy evaluation on the Doughnut's indicators.

Balancing the trade-offs between the global and local contributions to moving towards the Doughnut's safe and just space will likely require finding creative ways to simultaneously empower actors across levels of governance to innovate while cultivating shared feelings of responsibility for global sustainability goals. The more quantitative approach I develop in this study lends itself to cross-jurisdictional or top-down policy coordination/comparison but is also less responsive and richly descriptive of the local context. In contrast, the strength of Amsterdam's primarily locally participatory and qualitative approach to downscaling the Doughnut is also the source of its limitation. Amsterdam's approach opens space for rethinking policy priorities and empowering bottom-up local actors, but by itself cannot offer a comprehensive picture of how the city is performing on the Doughnut's indicators, lead to the generation of data that would lend itself to cross-jurisdictional comparison, nor offer guidance on how to resolve cross-jurisdictional policy interactions. The Amsterdam case illuminates concrete challenges that arise if the Doughnut is solely defined at the local level through more bottom-up processes. However, this does not mean that top-down definition of the indicators will necessarily be more effective at moving a local community—or humanity overall—towards the Doughnut's safe and just space. An overly prescriptive approach risks reinforcing the coloniality of power (Quijano and Ennis 2000) and reproducing the ecologically and socially destructive dynamics of the status quo (Sachs 1992). Overly prescriptive development thought also risks homogenizing away local sources of solutions (Sachs 1992). Transformational change towards sustainable and humane systems is likely to require numerous social innovations—new rules norms, ways of thinking, processes for action and decision-making (van der Leeuw 2010, Westley and Antadze 2010), which is enabled through ideological and cultural heterogeneity (Norström et al. 2014).

Policy Implications

Identifying sustainable pathways forward will require working backwards from a predefined safe space to viable policies, rather than shoehorning pre-existing policies into a sustainability framework (Cooper and Dearing 2019). Policymakers likely need to utilize a variety of evaluative techniques to understand the web of relationships between long-term goals, particular policy options, and individual indicators in the Doughnut. Many of the Doughnut's indicators have complex, causal impacts on other indicators (Acosta 2022, Capmourteres et al. 2019), and the identification of possible feedback loops is an important step to identifying high- and low-leverage points for creating policy change in a complex system and should be an important consideration in identifying the most effective targets for policymaking (Meadows and Wright 2008).

Integrated analysis of the connections between various indicators for a complex global development framework also allows for better prioritization and agenda-setting to focus policies that impact multiple outcomes (Lim, Jørgensen, and Wyborn 2018; Pradhan et al. 2017). The variety of social shortfall and consistent levels of ecological overshoot highlighted in my results may particularly be challenging for local policymakers who are typically very resource-constrained (monetary, time, staff) and therefore require them to devote greater attention to policy prioritization and opportunity costs of various policy approaches aimed to improve local performance on the Doughnut's indicators. Greater attention likely needs to be given to multi-impact policies, which could include policies to counter the feedback loops that structurally reinforce the drive for resource-intensive economic growth (Richters and Siemoneit 2019), those that cap resource use and redistribute economic rents (Jackson 2009), or emissions reduction policies that could be designed to simultaneously address the racialized health disparities associated with fossil fuel production (Donaghy et al. 2023).

The selection of one set of indicators, however, will not encompass the many possible methods of measuring social progress and may not reflect the priorities of residents. It is therefore incumbent on policymakers and future researchers who might take up my findings in future to supplement these measures of social progress with additional data, including qualitative data, that incorporates the voices and democratic preferences of people in each locality on how they would like to define the social foundation of the Doughnut. Sustainability indicators more are more effective and more likely to be dynamically updated if they are clearly linked to locally articulated goals and desires (Reed et al. 2005).

Collaboration across geographies and democratic deliberation will be needed to understand how particular nations and communities can best address different levels of ecological overshoot, social shortfall, and historic or ongoing responsibility for these development challenges. While it is likely impossible to engage in any adequate globally inclusive or representative consultative process, the framing of certain indicators as “Global Social” targets for “the good life,” even if they are based on the SDGs, has the potential to further reinforce existing power dynamics (Blicharska et al 2021, Goulart and Falanga 2022) and ignores questions of historical responsibility and redress for the patterns of social shortfall or ecological overshoot observed in Amsterdam, many of which are rooted in legacies of inequalities that include atmospheric appropriation (Fanning and Hickel 2023), colonization (Steinmeitz 2024), or participation in the Transatlantic slave trade (Engerman 2009). Furthermore, my approach may help to draw attention to the impacts of structural inequality on certain communities (exemplified in Oglala Lakota County’s social indicators and by the trend shown Figure 3), but on its own my quantitative approach cannot answer the question of how to address that legacy, or how best to do so while also protecting the Earth’s biosphere in the aggregate.

Research Frontier

Future policymakers and researchers seeking to downscale the Doughnut Economics framework should utilize reflexive practices and triangulation as key methodological approaches, as the limitations and challenges discussed above illuminate how variety of challenges can arise if relying on an isolated logic of inquiry or singular evaluative methods. Future research and more systematic data collection can build upon my work to build time series analysis of city-level progress over time on the Doughnut's social and ecological indicators, causally identify the impact of specific policies on the Doughnut's indicators and develop transferable strategies to inform policymakers in other cities and at other levels of governance. Future quantitative research should also utilize a more systematic and externally generalizable approach to choosing localities to confirm racialized disparities in social shortfall or ecological overshoot and elucidate the drivers of such patterns, as these may present opportunities to address multiple indicators of social shortfall by addressing racial inequality in the United States. Additional work may also help to bridge between my approach, which acts primarily to construct a local evaluative methodology, with broader systems-analysis or structural modelling approaches that might be used to engage in predictive modelling of the impact of policy changes on various indicators of the Doughnut.

Conclusion

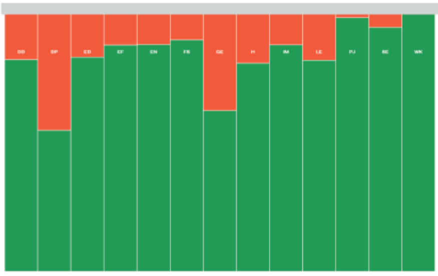
My results present a troubling picture of consistent social shortfall and ecological overshoot on the Doughnut's various indicators across 27 localities within the United States, suggesting that much needs to be done to move localities within the United States towards the "safe and just space" defined in the Doughnut Economics framework, introducing an important nuance to the downscaling Doughnut Economics literature. I find substantial variation between U.S. localities, as well as descriptive evidence of potentially racialized disparities on the levels of social shortfall observed in different localities. This study contributes to the growing body of Doughnut Economics research by exploring the challenges of downscaling this framework to the local level and by operationalizing a quantitative and transferable approach to using Doughnut Economics for local development within in a high-income context.

Successfully downscaling the Doughnut to the local level will require both researchers and policymakers to assess progress using a variety of evaluative techniques to mitigate the shortcomings of any singular technique while dynamically adjust their approach to moving towards the “safe and just space” originally outlined in Raworth’s global Doughnut Economics framework. My case study and methodological approach together highlight core challenges in effectively applying Doughnut economics at a local level: defining the “safe and just space” represented by the Doughnut means selecting indicators, setting thresholds of social sufficiency and planetary boundaries, and identifying appropriate data sources. In this process, local policymakers must make normative choices, and the process itself raises questions about how to devolve decision-making power effectively or equitably in a manner that addresses existing patterns of inequality and anticipates where distributional conflicts and trade-offs between contradictory goals are likely to arise. Policymakers should devote significant attention to promoting greater collaboration and coordination across multiple levels of governance to promote policy coherence. After choosing local social and ecological indicators, local policymakers will need to engage in a further analysis to identify data gaps and systemic interconnections between indicators, as this will identify higher leverage policy interventions and feedback loops that might amplify or undermine policy action determined by the Doughnut.

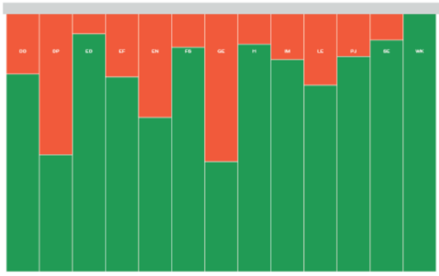
Moving towards the doughnut’s safe and just space will likely require policymakers at multiple levels of governance, researchers, and local actors to engage in a more dynamic, responsive, and discursive policy cycle that moves between traditional top-down governance structures and inclusive and participatory policy processes led at the local level. Top-down approaches and more generalizable methods introduce the risk of reinforcing existing power dynamics, but a solely bottom-up approach may prevent broader policy coherence between jurisdictions or obscure the global implications of local decision-making. Balancing global and local priorities will likely require fluidly empowering actors at all levels, fostering a shared responsibility for moving towards the Doughnut's safe and just space, utilizing triangulation between a variety of evaluative tools, and drawing on the strengths of multiple logics of inquiry to evaluate the complex interactions, local nuances, and causal impacts of policies aimed at addressing social shortfall or preventing ecological degradation. Together, such actions can help empower a diversity of policy actors as they seek to move local communities and humanity overall towards the safe and just space defined by the Doughnut Economics framework.

Appendix 1: Social Shortfall of 27 U.S. Localities

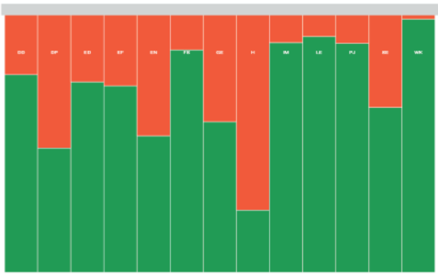
All indices are out of 1.0. A value of 1.0 indicates that the threshold has been met or exceeded. Indicators are Digital Divide (DD), Democratic Participation (DP), Education (ED), Energy Access (EN), Economic Foundation (EF), Food Security (FS), Gender Equity (GE), Housing (H), Health: Infant Mortality (IM), Health: Life Expectancy (LE), Peace and Justice (PJ), Social Equity (SE), and Access to Work (WK).



Ada ID (Boise)

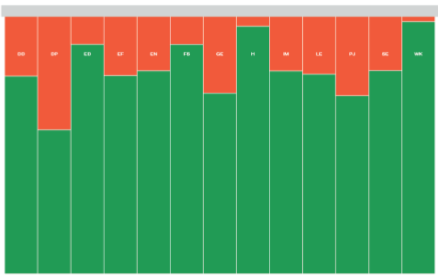


Bexar TX (San Antonio)

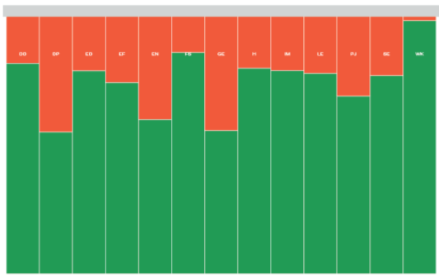


Bronx/Kings/New York/Queens/ Richmond NY (New York City)

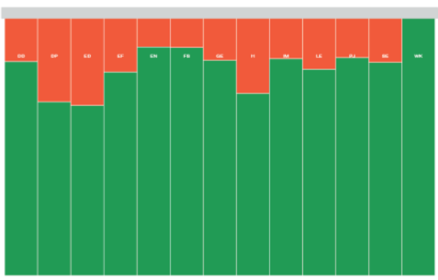
Cass ND (Fargo)



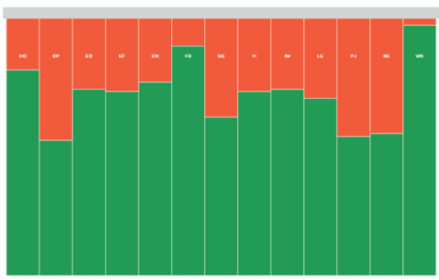
Cook IL (Chicago)



Dekalb/Fulton GA (Atlanta)

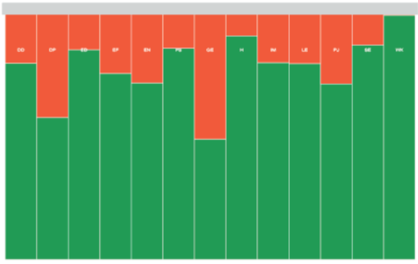


Denver CO (Denver)

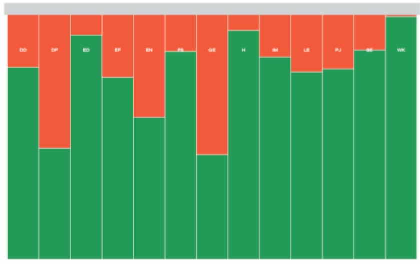


District of Columbia

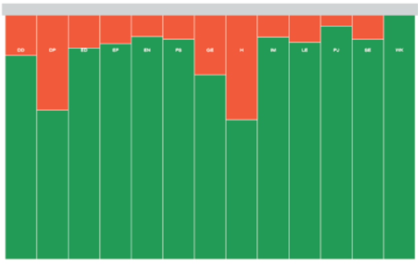
All indices are out of 1.0. A value of 1.0 indicates that the threshold has been met or exceeded. Indicators are Digital Divide (DD), Democratic Participation (DP), Education (ED), Energy Access (EN), Economic Foundation (EF), Food Security (FS), Gender Equity (GE), Housing (H), Health: Infant Mortality (IM), Health: Life Expectancy (LE), Peace and Justice (PJ), Social Equity (SE), and Access to Work (WK).



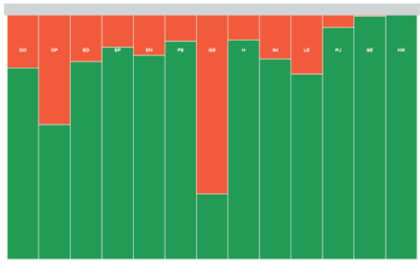
Durham NC (Durham)



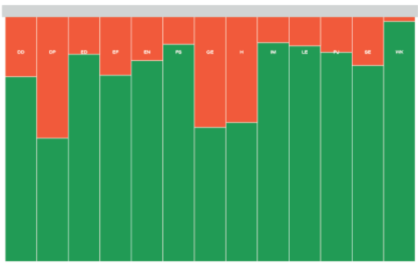
Harris TX (Houston)



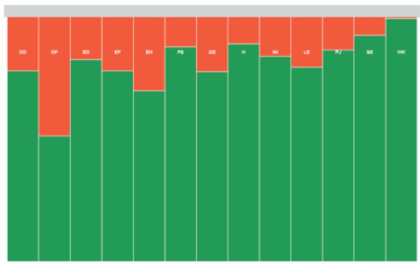
King WA (Seattle)



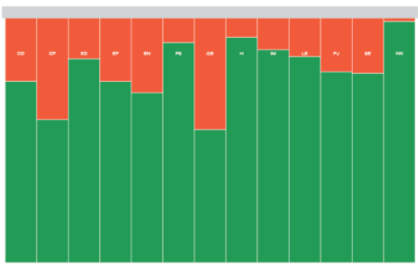
Laramie WY (Cheyenne)



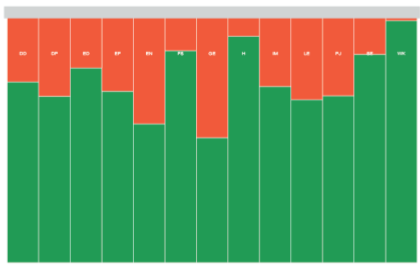
Los Angeles CA (Los Angeles)



Maricopa AZ (Phoenix)

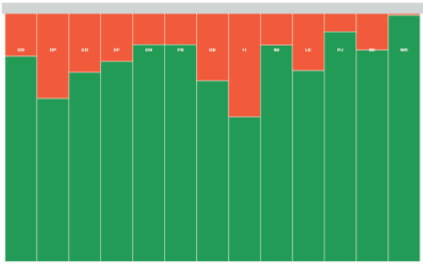


Miami-Dade FL (Miami)

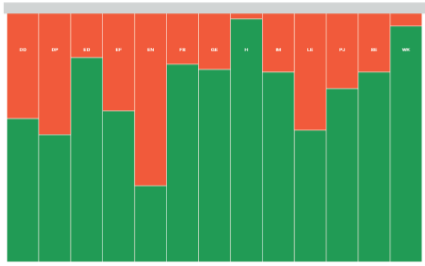


Milwaukee WI (Milwaukee)

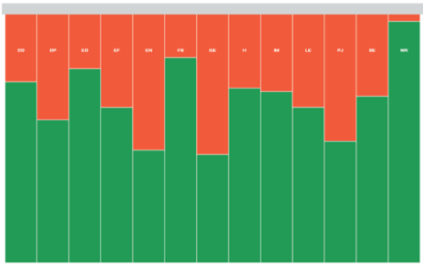
All indices are out of 1.0. A value of 1.0 indicates that the threshold has been met or exceeded. Indicators are Digital Divide (DD), Democratic Participation (DP), Education (ED), Energy Access (EN), Economic Foundation (EF), Food Security (FS), Gender Equity (GE), Housing (H), Health: Infant Mortality (IM), Health: Life Expectancy (LE), Peace and Justice (PJ), Social Equity (SE), and Access to Work (WK).



Multnomah OR (Portland)

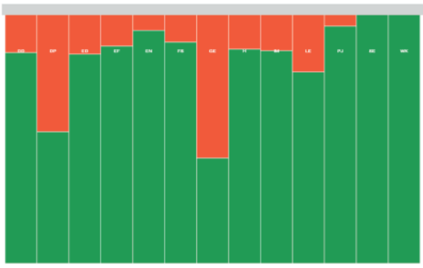


Navajo AZ

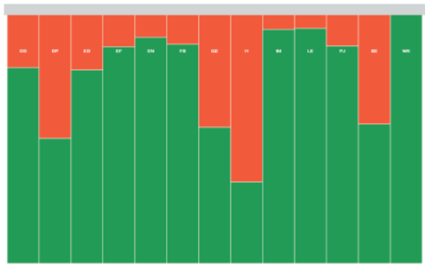


Philadelphia PA (Philadelphia)

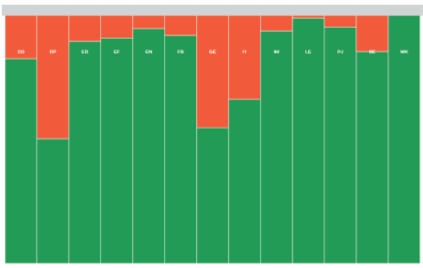
Oglala Lakota SD



Salt Lake UT (Salt Lake City)



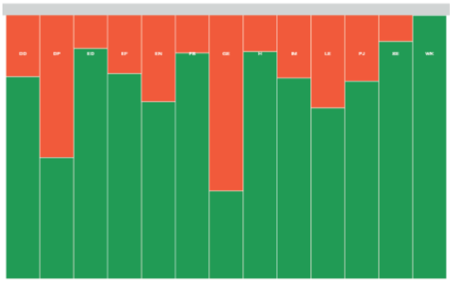
San Francisco CA (San Francisco)



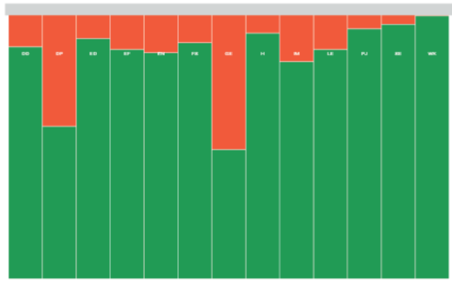
Santa Clara CA (San Jose)

Shelby TN (Memphis)

All indices are out of 1.0. A value of 1.0 indicates that the threshold has been met or exceeded. Indicators are Digital Divide (DD), Democratic Participation (DP), Education (ED), Energy Access (EN), Economic Foundation (EF), Food Security (FS), Gender Equity (GE), Housing (H), Health: Infant Mortality (IM), Health: Life Expectancy (LE), Peace and Justice (PJ), Social Equity (SE), and Access to Work (WK).



Tulsa OK (Tulsa)



Wake NC (Raleigh)

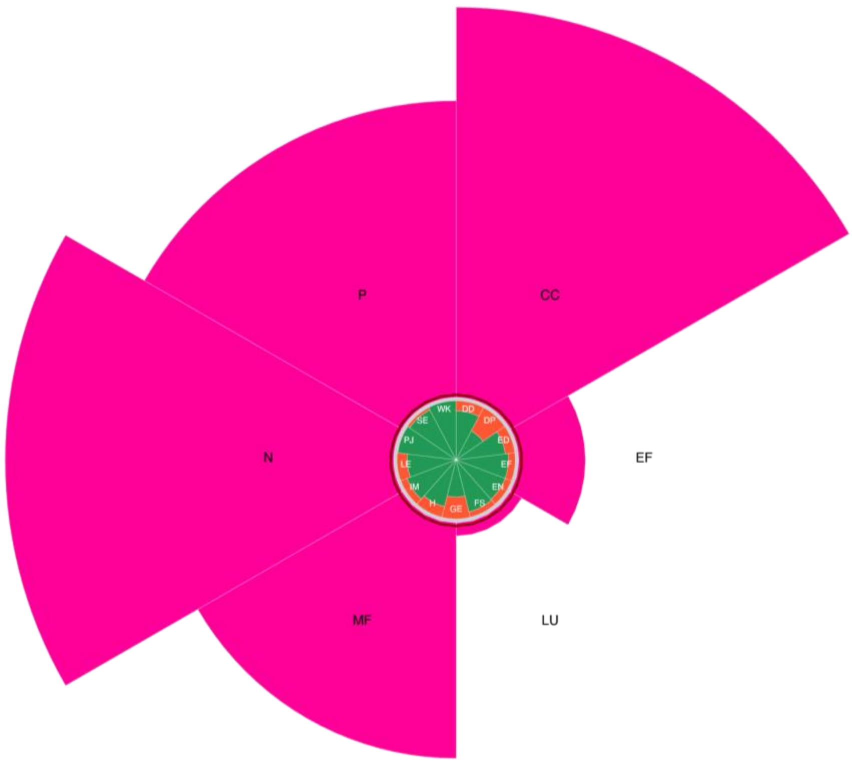
Wayne MI (Detroit)

Appendix 2: Ecological Overshoot and Social Shortfall of 27 U.S. Localities

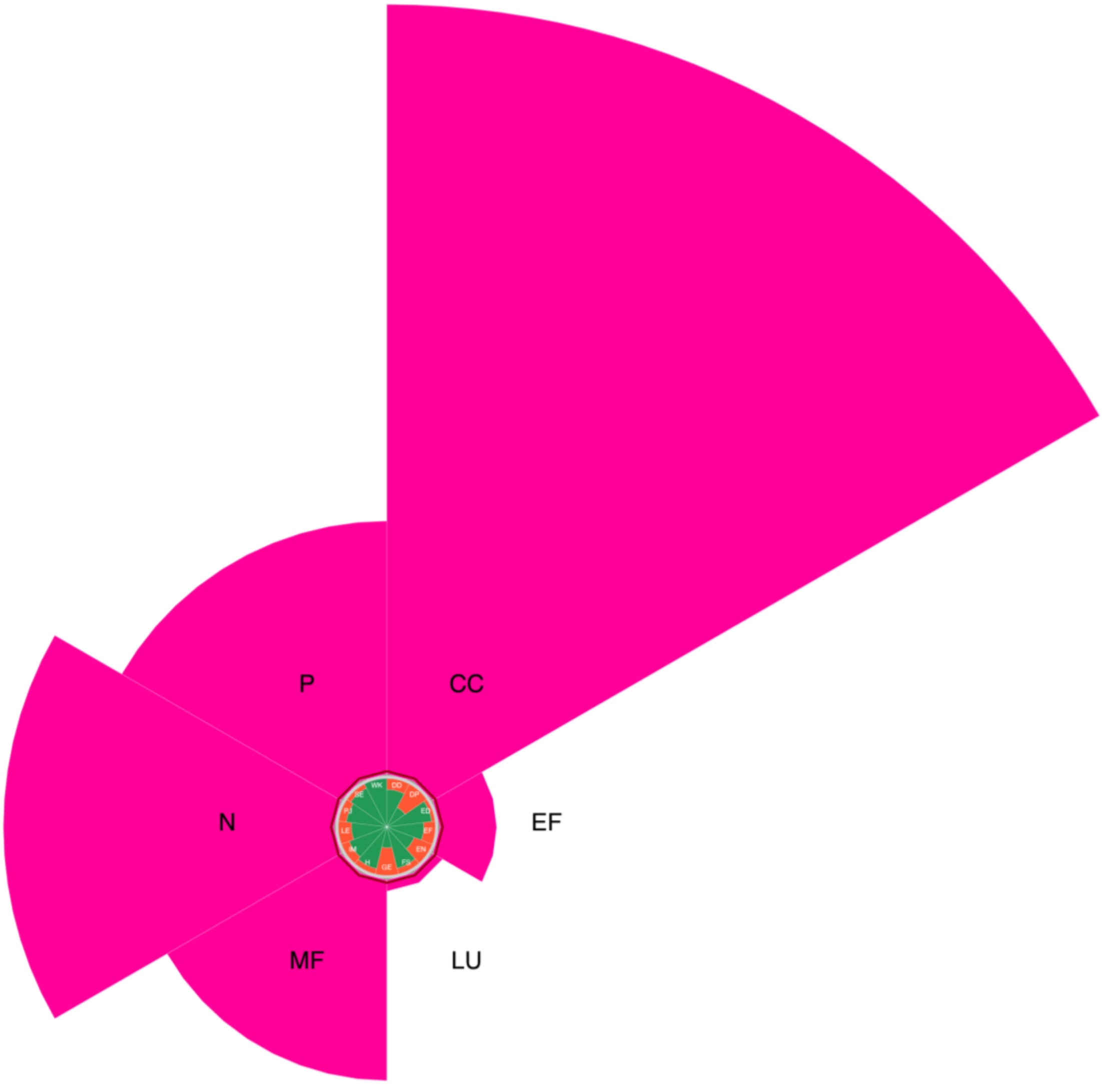
Ecological Indicators: Climate Change (CC), Phosphorous Loading (P), Nitrogen Loading (N), Land Use (LU), Ecological Footprint (EF), and Material Footprint (MF). All indices are out of 1.0. Pink area indicates index values > 1.0 and that boundary has been exceeded.

Social Indicators: Digital Divide (DD), Democratic Participation (DP), Education (ED), Energy Access (EN), Economic Foundation (EF), Food Security (FS), Gender Equity (GE), Housing (H), Health: Infant Mortality (IM), Health: Life Expectancy (LE), Peace and Justice (PJ), Social Equity (SE), and Access to Work (WK). Green area indicates progress towards social threshold. Red area indicates the level of shortfall relative to threshold (out of 1.0).

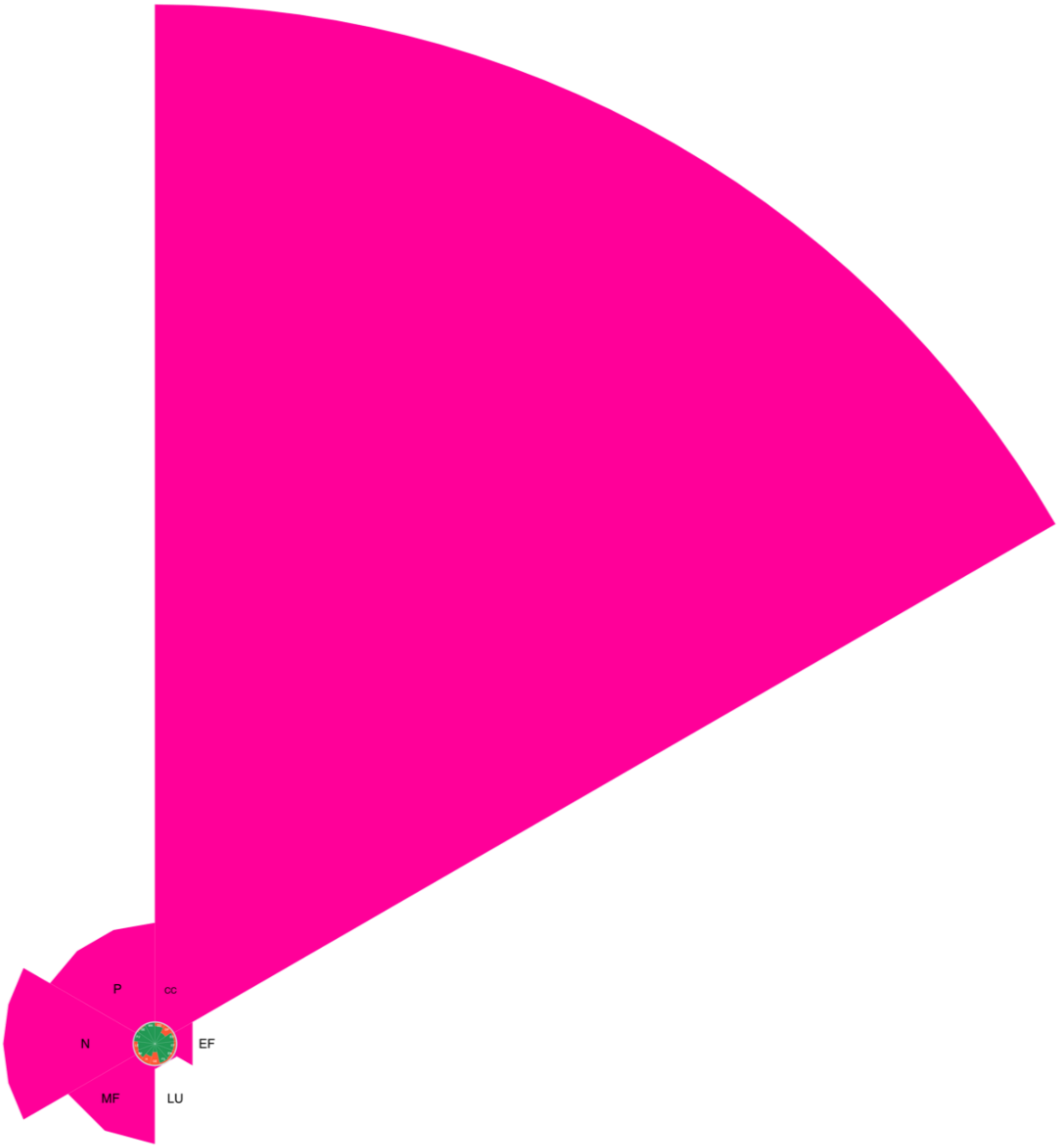
Note: Doughnut charts are not shown on a common scale, as substantial variations in the CC indicator require some charts to be downsized for fit.



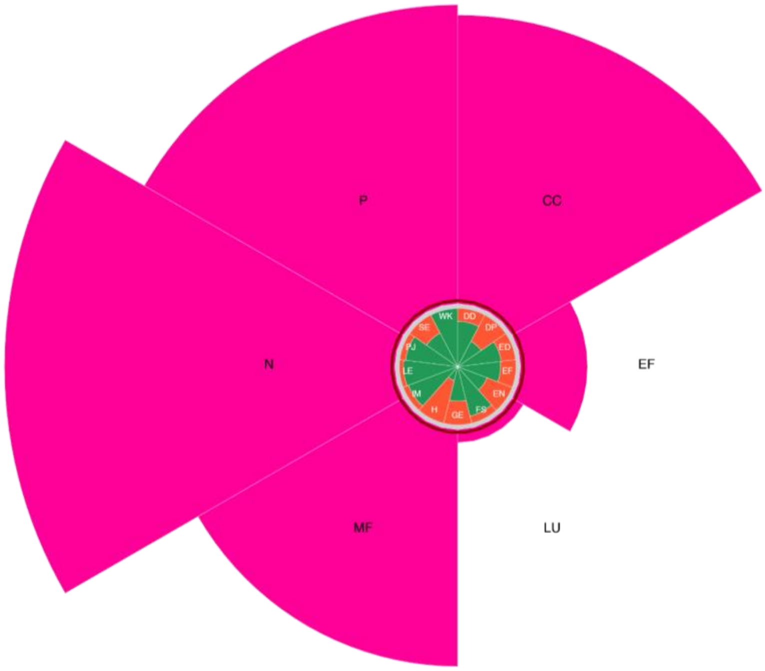
Ada ID (Boise)



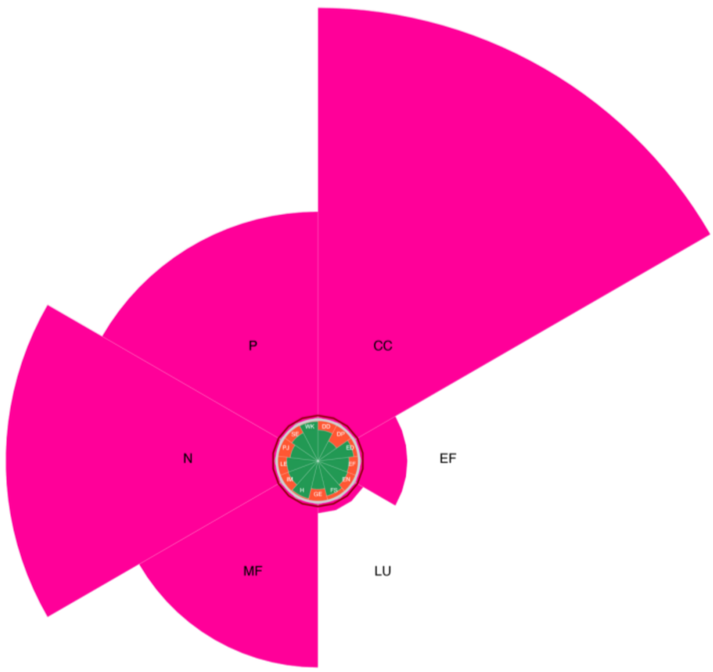
Bexar TX (San Antonio)



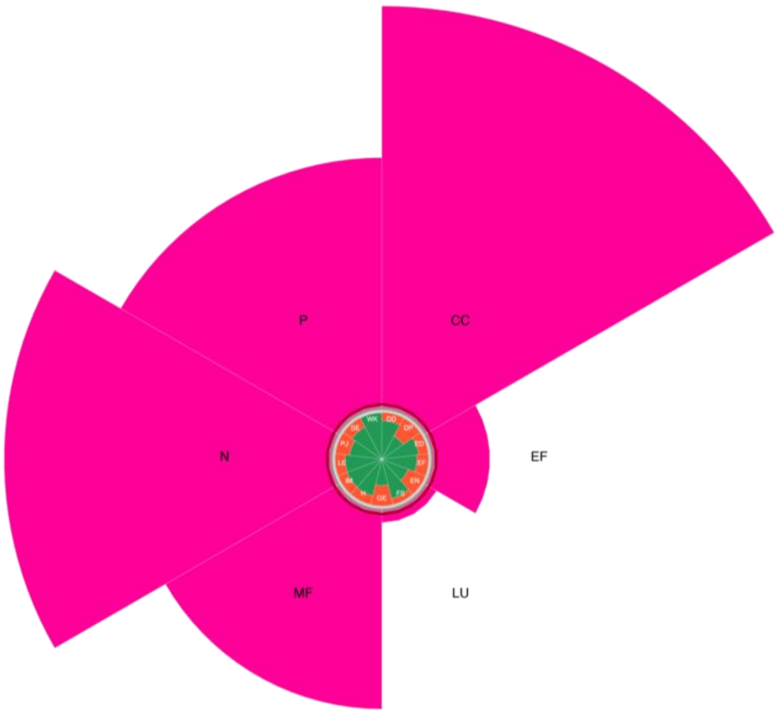
Cass ND (Fargo)



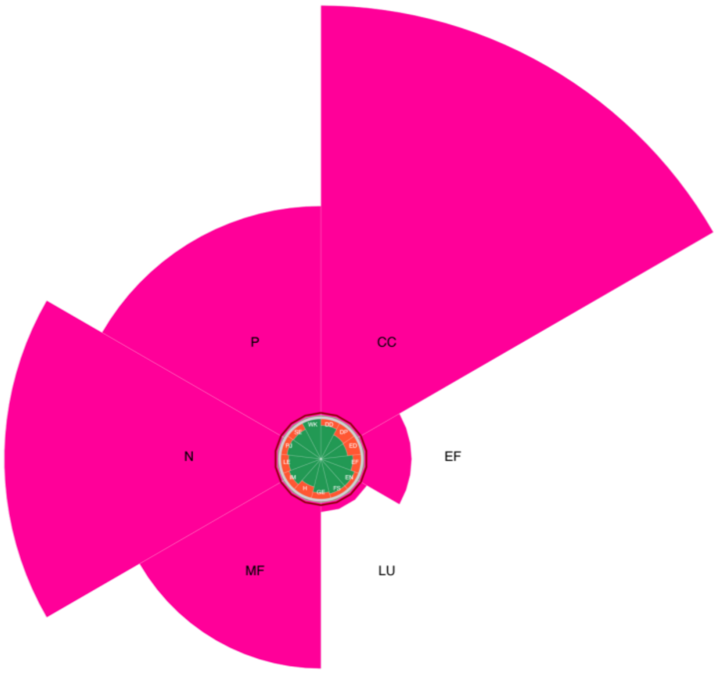
Bronx, Kings, Queens, New York, Richmond combined NY (New York City)



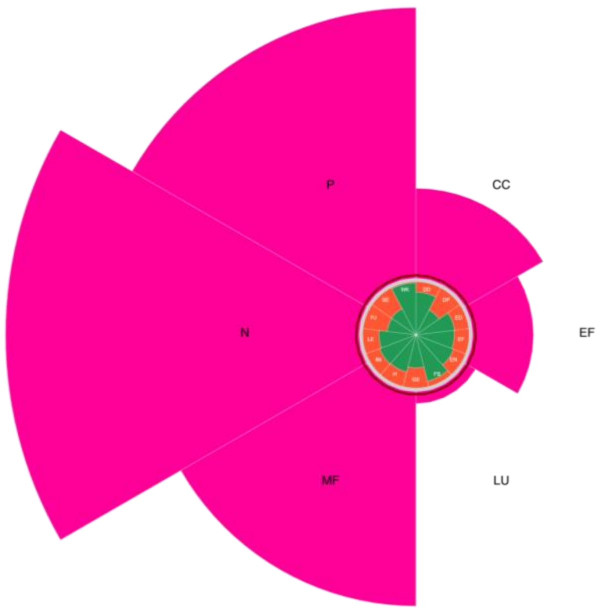
Cook IL (Chicago)



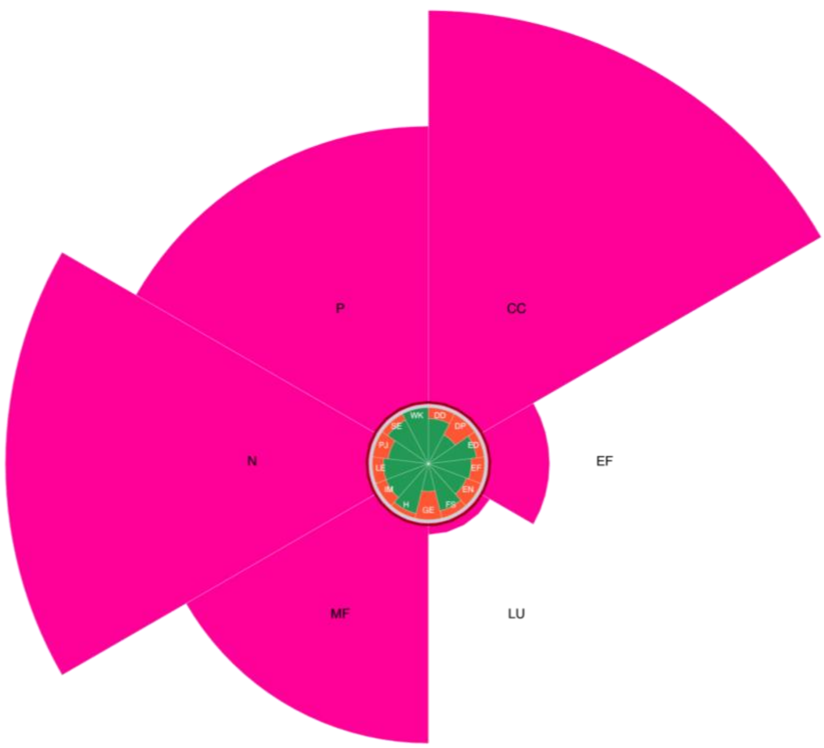
DeKalb, Fulton combined GA (Atlanta)



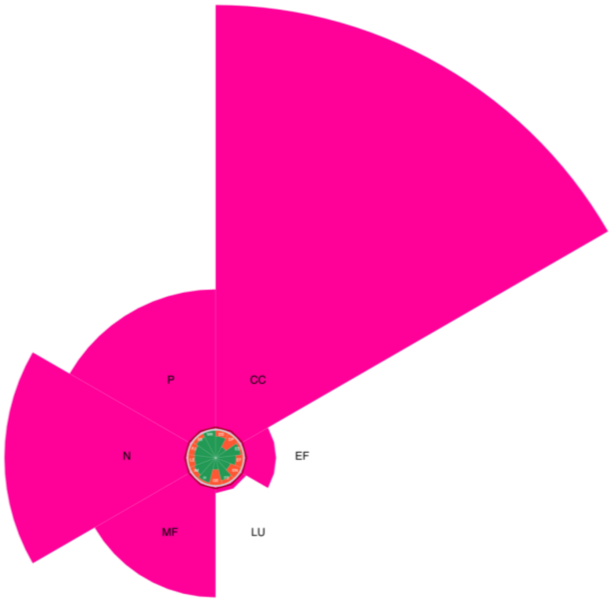
Denver CO (Denver)



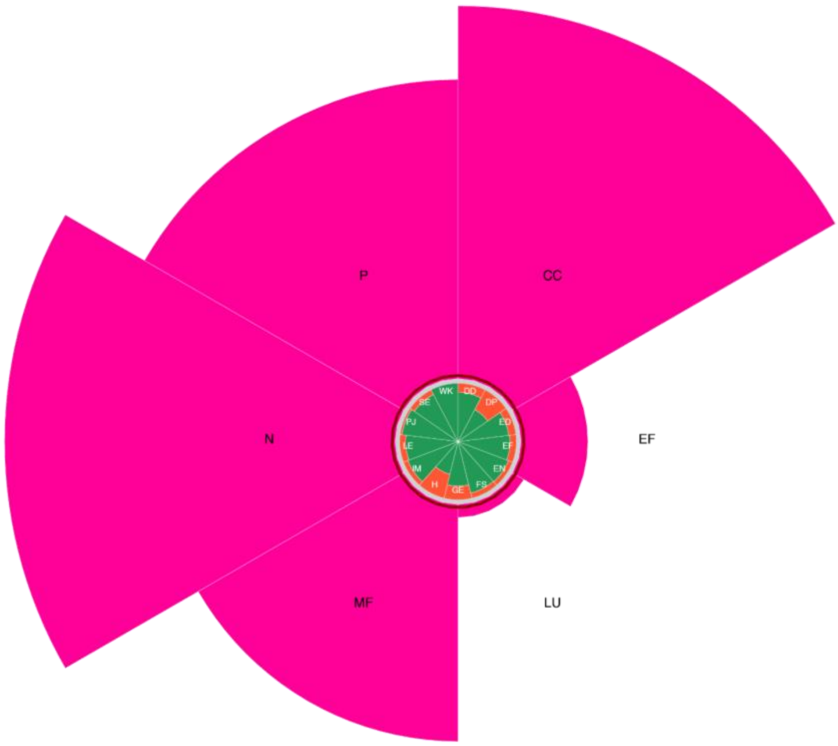
District of Columbia



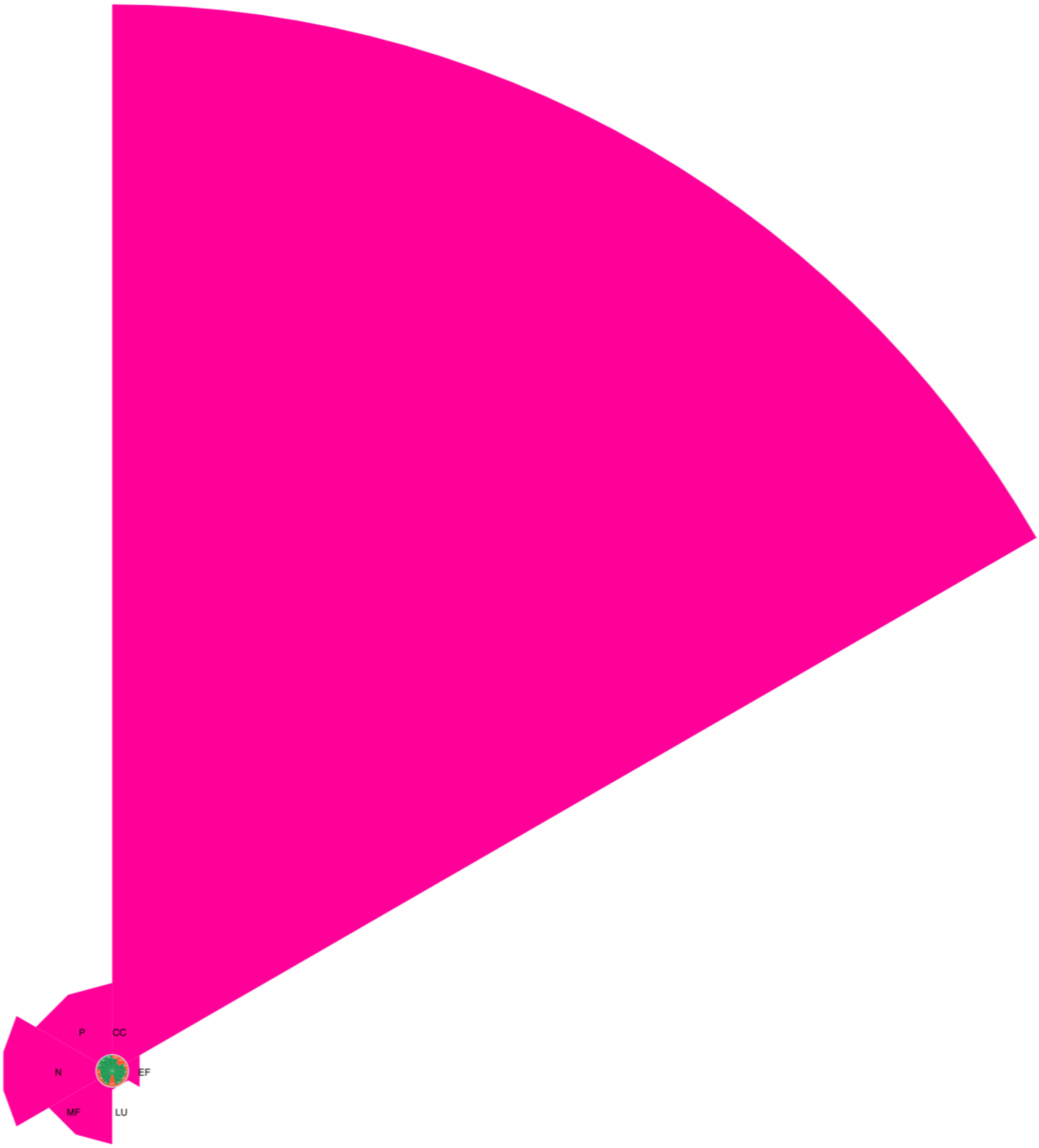
Durham NC (Durham)



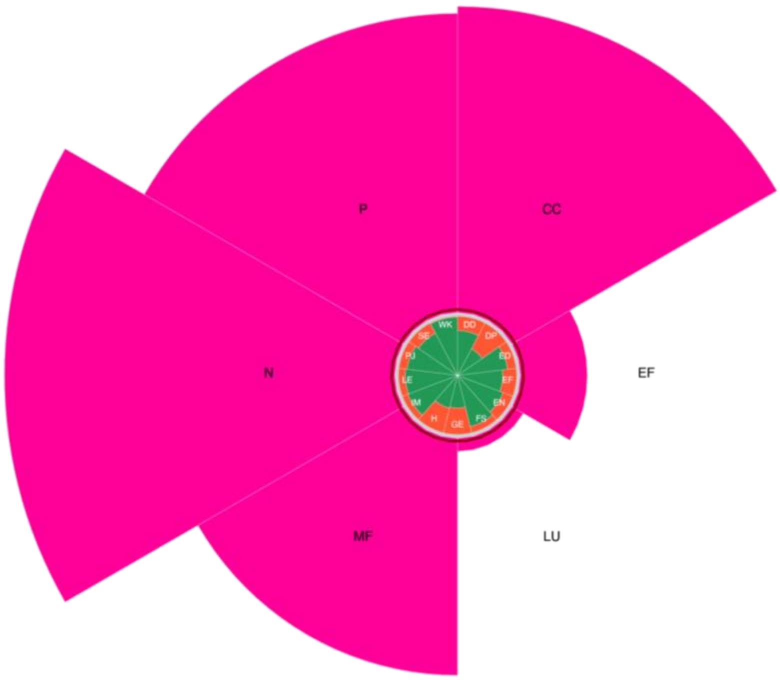
Harris TX (Houston)



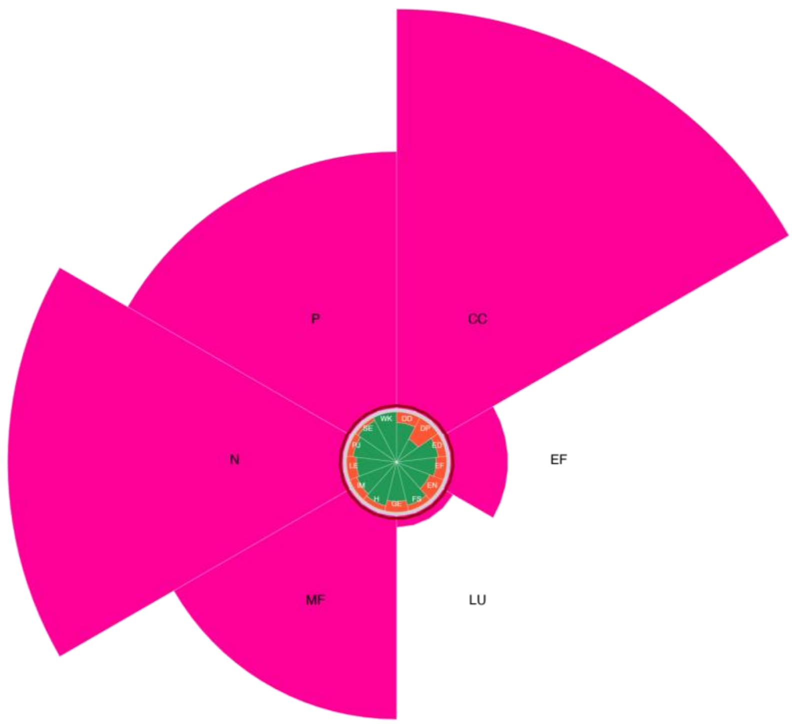
King WA (Seattle)



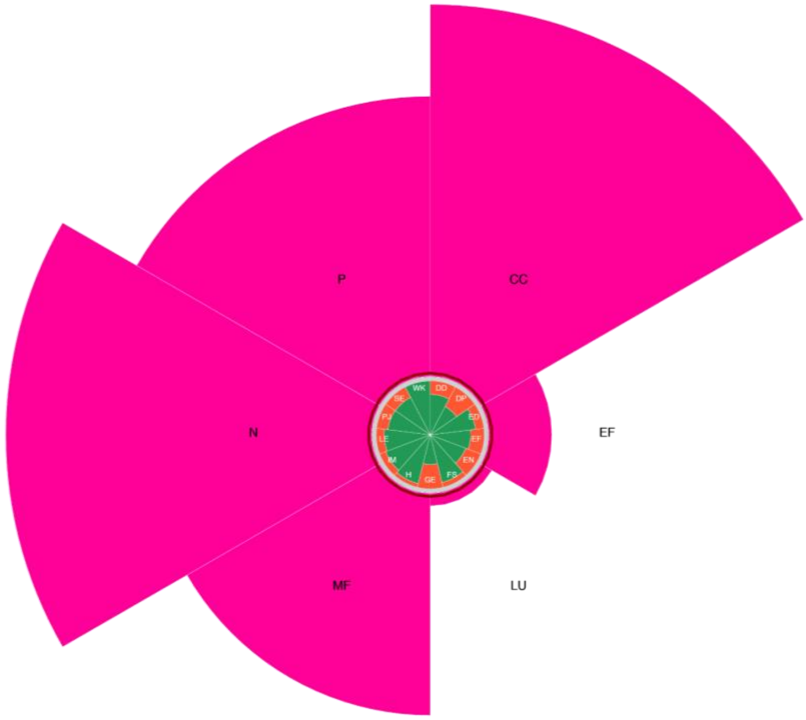
Laramie WY (Cheyenne)



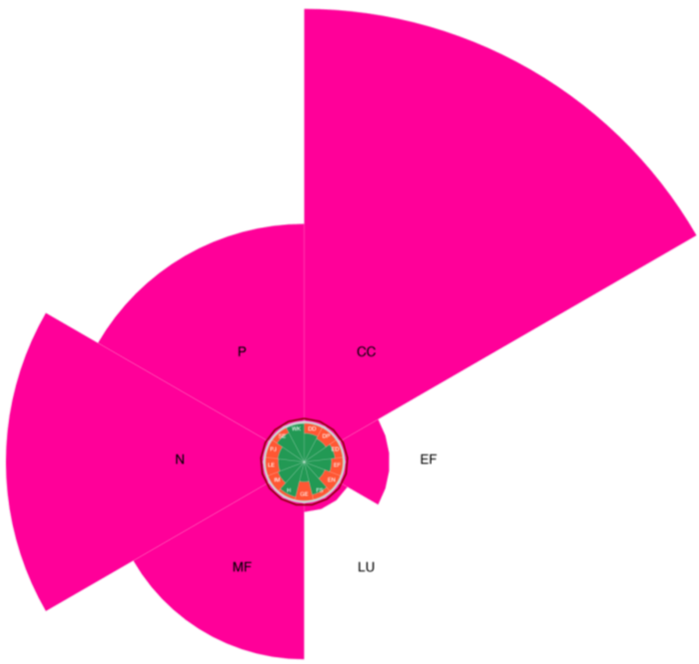
Los Angeles CA (LA)



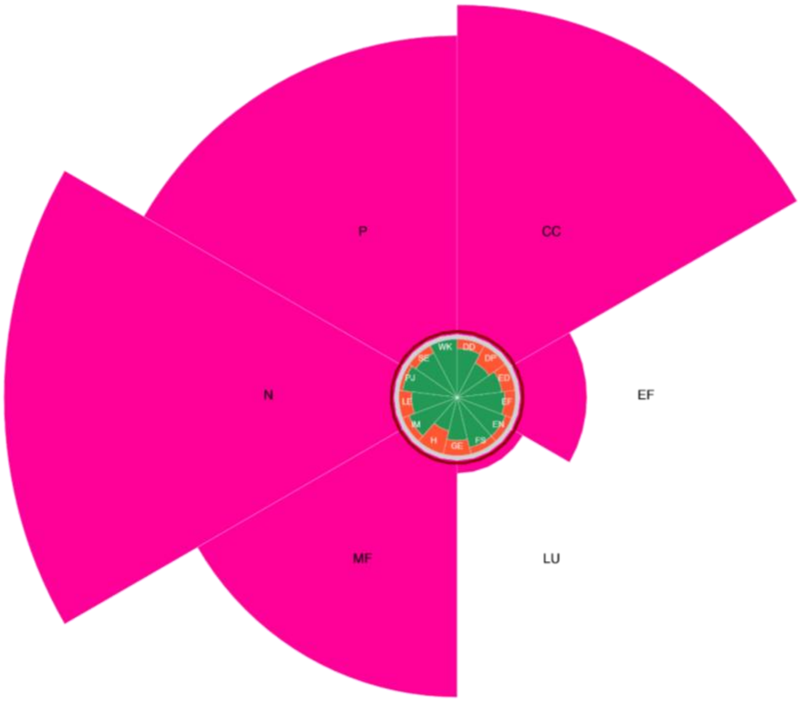
Maricopa AZ (Phoenix)



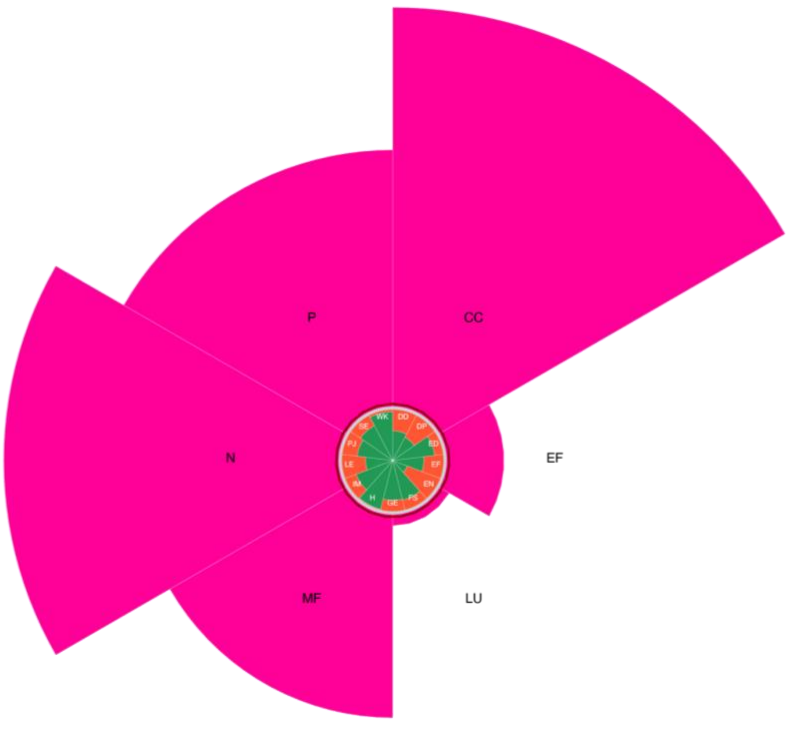
Miami-Dade FL (Miami)



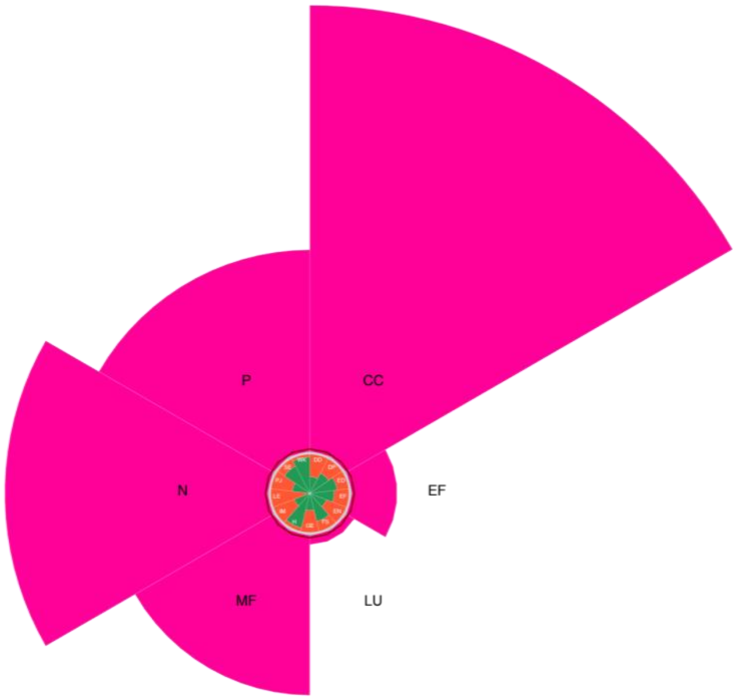
Milwaukee WI (Milwaukee)



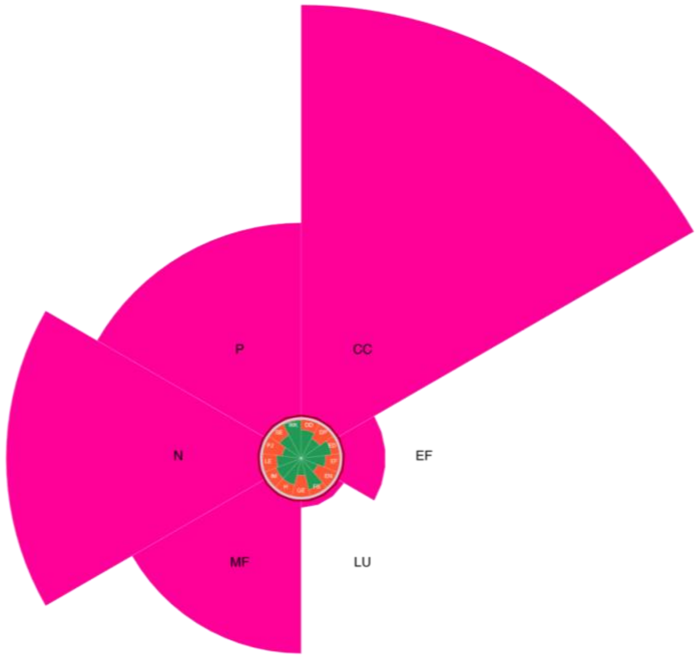
Multnomah OR (Portland)



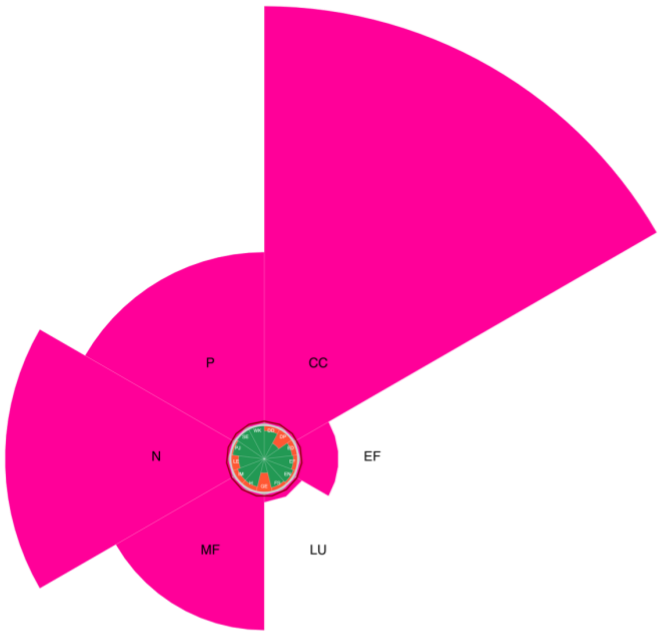
Navajo AZ (Navajo Nation)



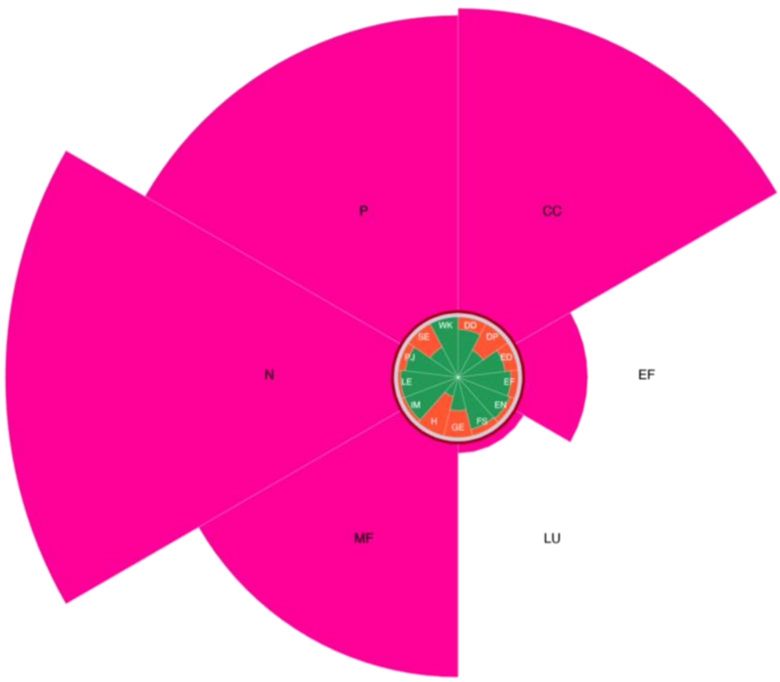
Ogalala Lakota (Pine Ridge Indian Reservation)



Philadelphia PA (Philadelphia)



Salt Lake UT (Salt Lake City)



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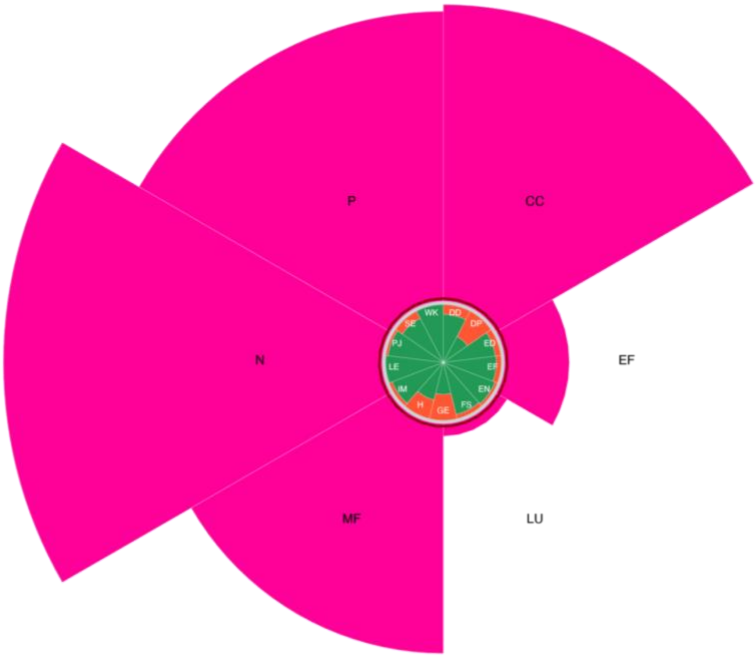

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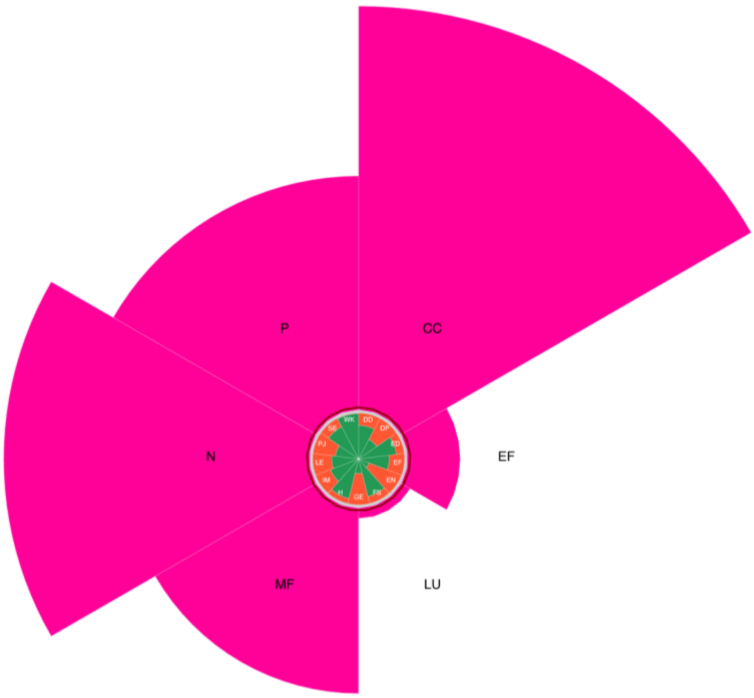

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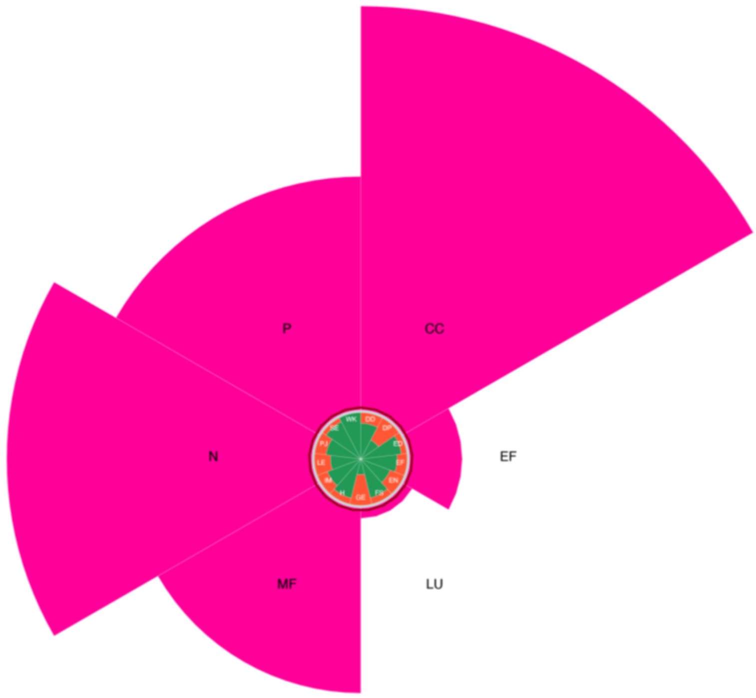

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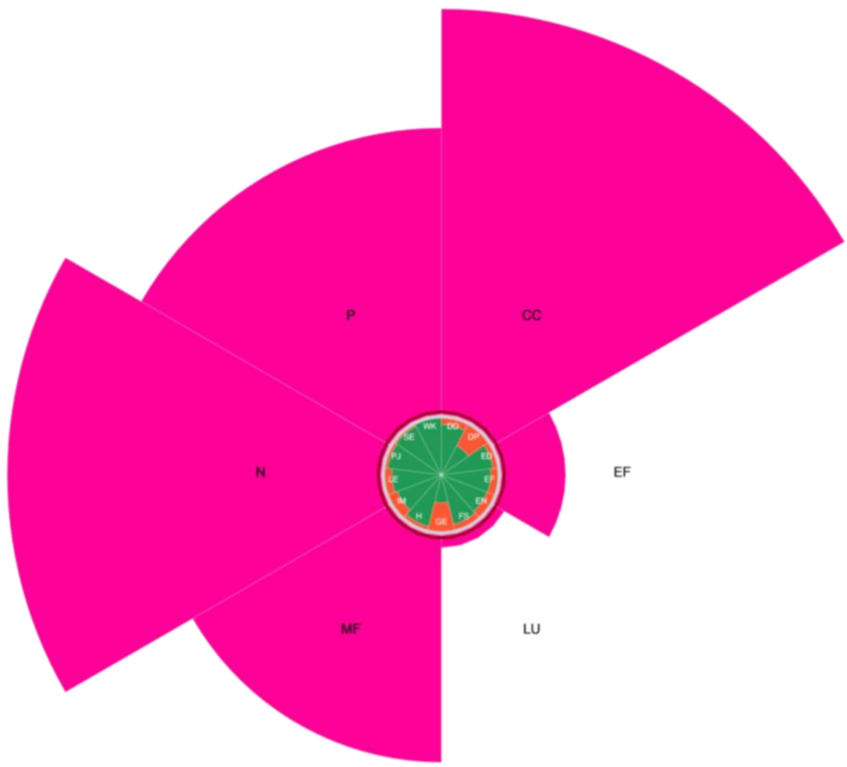

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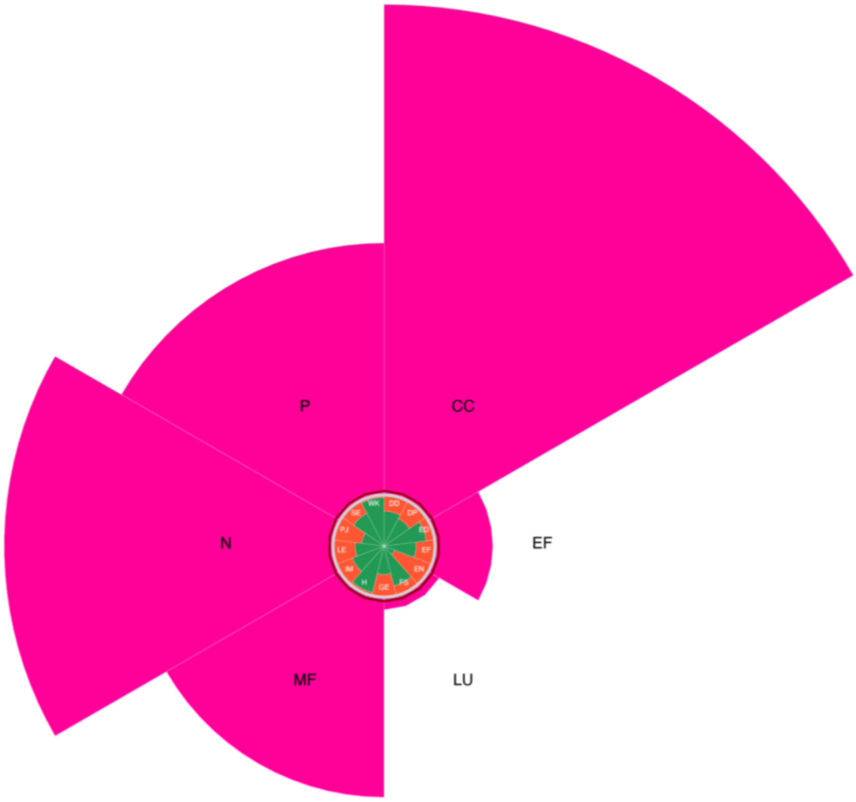

Wayne MI (Detroit)

Bibliography

Acemoglu, Daron, and James A. Robinson. 2002. "The Political Economy of the Kuznets Curve." *Review of Development Economics* 6 (2): 183–203. https://doi.org/10.1111/1467-9361.00149.

Acharya, Sankalpa. 2023. "CARE GROWTH IS NOT ENOUGH."

Ackerman, Frank, David Kiron, Neva R. Goodwin, Jonathan Harris, and Kevin Gallagher. 1997. *Human Well-Being and Economic Goals*. Island Press.

Acosta, Fortino. 2022. "Linking Nevada to Doughnut Economics." *Sustainability* 14 (22): 15294. https://doi.org/10.3390/su142215294.

Adams, Charles F. 1988. "Tax-Base Composition and Long-Run Growth in City Taxes." *Urban Affairs Quarterly* 24 (2): 315–26. https://doi.org/10.1177/004208168802400207.

Alio, Amina P., Alice R. Richman, Heather B. Clayton, Delores F. Jeffers, Deanna J. Wathington, and Hamisu M. Salihu. 2010. "An Ecological Approach to Understanding Black-White Disparities in Perinatal Mortality." *Maternal and Child Health Journal* 14 (4): 557–66. https://doi.org/10.1007/s10995-009-0495-9.

Allard, Claire. n.d. "GRAPHIC DESIGN AND LAYOUT."

Altheimer, Irshad, and Venita D'Angelo. 2022. "2022 Homicide Statistics for 24 U.S. Cities."

Alzain, Hassan M, and Victor R Kalimugogo. n.d. "INTERGENERATIONAL EQUITY IN SAUDI ARABIA'S SUSTAINABILITY JOURNEY."

Amorós Molina, Ángela, Daniel Helldén, Tobias Alfvén, Maria Niemi, Karin Leander, Helena Nordenstedt, Carita Rehn, Rawlance Ndejjo, Rhoda Wanyenze, and Olivia Biermann. n.d. "Integrating the United Nations Sustainable Development Goals into Higher Education Globally: A Scoping Review." *Global Health Action* 16 (1): 2190649. https://doi.org/10.1080/16549716.2023.2190649.

Ang, Desmond. 2021. "The Effects of Police Violence on Inner-City Students." *Quarterly Journal of Economics* 136 (1): 115–68.

Antunes, Micaela, Carla Teotónio, Carlota Quintal, and Rita Martins. 2023. "Energy Affordability across and within 26 European Countries: Insights into the Prevalence and Depth of Problems Using Microeconomic Data." *Energy Economics* 127 (November): 107044. https://doi.org/10.1016/j.eneco.2023.107044.

Arias, Elizabeth, and Farida B Ahmad. n.d. "Provisional Life Expectancy Estimates for 202."

Arias Valencia, María Mercedes. 2022. "Principles, Scope, and Limitations of the Methodological Triangulation." *Investigacion y Educacion En Enfermeria* 40 (2): e03. https://doi.org/10.17533/udea.iee.v40n2e03.

Arnsperger, Christian, and Julia K. Steinberger. 2023. "Doughnut." In *Handbook of the Anthropocene: Humans between Heritage and Future*, edited by Nathanaël Wallenhorst and Christoph Wulf, 651–55. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-25910-4_105.

Aronson, Daniel. 2016. "Step-By-Step Stocks and Flows: Converting From Causal Loop Diagrams." The Systems Thinker. January 17, 2016. https://thesystemsthinker.com/step-by-step-stocks-and-flows-converting-from-causal-loop-diagrams/.

Asadikia, Atie, Abbas Rajabifard, and Mohsen Kalantari. 2022. "Region-Income-Based Prioritisation of Sustainable Development Goals by Gradient Boosting Machine." *Sustainability Science* 17 (5): 1939–57. https://doi.org/10.1007/s11625-022-01120-3.

Avery, Amanda. 2021. "Food Insecurity and Malnutrition." *Kompass Nutrition & Dietetics* 1 (2): 41–43. https://doi.org/10.1159/000515968.

Baek, Seong-Uk, Sung-Shil Lim, Jihyun Kim, and Jin-Ha Yoon. 2019. “How Does Economic Inequality Affect Infanticide Rates? An Analysis of 15 Years of Death Records and Representative Economic Data.” *International Journal of Environmental Research and Public Health* 16 (19): 3679. https://doi.org/10.3390/ijerph16193679.
Bain, Paul G., and Renata Bongiorno. 2022. “Evidence from 33 Countries Challenges the Assumption of Unlimited Wants.” *Nature Sustainability* 5 (8): 669–73. https://doi.org/10.1038/s41893-022-00902-y.
Bali Swain, R., and F. Yang-Wallentin. 2020. “Achieving Sustainable Development Goals: Predicaments and Strategies.” *International Journal of Sustainable Development & World Ecology* 27 (2): 96–106. https://doi.org/10.1080/13504509.2019.1692316.
Battye, William, Viney P. Aneja, and William H. Schlesinger. 2017. “Is Nitrogen the next Carbon?” *Earth’s Future* 5 (9): 894–904. https://doi.org/10.1002/2017EF000592.
Berberian, Alique G., David J. X. Gonzalez, and Lara J. Cushing. 2022. “Racial Disparities in Climate Change-Related Health Effects in the United States.” *Current Environmental Health Reports* 9 (3): 451–64. https://doi.org/10.1007/s40572-022-00360-w.
Bergeling, Emma. 2023. *Turning the Doughnut from Vision to Reality in Wales – the Case of Bannau Brycheiniog National Park*. https://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-504562.
Berrill, Peter, T. Reed Miller, Yasushi Kondo, and Edgar G. Hertwich. 2020. “Capital in the American Carbon, Energy, and Material Footprint.” *Journal of Industrial Ecology* 24 (3): 589–600. https://doi.org/10.1111/jiec.12953.
Besley, Timothy, and Torsten Persson. 2013a. *Handbook of Public Economics*.
———. 2013b. “Taxation and Development.” In *Handbook of Public Economics*, 5:51–110. Elsevier. https://doi.org/10.1016/B978-0-444-53759-1.00002-9.
Bilan, Yuriy, Halyna Mishchuk, Natalia Samoliuk, and Halyna Yurchyk. 2020. “Impact of Income Distribution on Social and Economic Well-Being of the State.” *Sustainability* 12 (1): 429. https://doi.org/10.3390/su12010429.
Bleys, Brent. 2012. “Beyond GDP: Classifying Alternative Measures for Progress.” *Social Indicators Research* 109 (3): 355–76.
Blicharska, Malgorzata, Claudia Teutschbein, and Richard J. Smithers. 2021. “SDG Partnerships May Perpetuate the Global North–South Divide.” *Scientific Reports* 11 (1): 22092. https://doi.org/10.1038/s41598-021-01534-6.
Bossel, Hartmut. 1996. “Ecosystems and Society: Implications for Sustainable Development.” *World Futures* 47 (2–3): 143–213.
———. 2000. “Policy Assessment and Simulation of Actor Orientation for Sustainable Development.” *Ecological Economics* 35 (3): 337–55. https://doi.org/10.1016/S0921-8009(00)00218-4.
Bossel, Hartmut, and Michael Strobel. 1978. “Experiments with an ‘Intelligent’ World Model.” *Futures* 10 (3): 191–212. https://doi.org/10.1016/0016-3287(78)90102-7.
Bouwman, A. F., A. H. W. Beusen, L. Lassaletta, D. F. van Apeldoorn, H. J. M. van Grinsven, J. Zhang, and M. K. Ittersum van. 2017. “Lessons from Temporal and Spatial Patterns in Global Use of N and P Fertilizer on Cropland.” *Scientific Reports* 7 (1): 40366. https://doi.org/10.1038/srep40366.
Bowdler, Janis, and Benjamin Harris. 2022. “Racial Inequality in the United States.” Department of the Treasury. https://home.treasury.gov/news/featured-stories/racial-inequality-in-the-united-states.
Brand-Correa, Lina. 2023. “Demand-Side, Socio-Cultural and Systemic Solutions: The Contributions of Max-Neef’s Work for Climate Change and Sustainability.” In *Beyond Ecological Economics and Development*. Routledge.

Brändström Riedl, Daniel. 2023. “Ett Varmare Samhälle?: Hur Förbereder Sig Sveriges Kommuner För Ett Socialt Hållbart Samhälle Inför En Ökande Klimatmigration under Andra Halvan Av Seklet?”
Braveman, Paula, and Laura Gottlieb. 2014. “The Social Determinants of Health: It’s Time to Consider the Causes of the Causes.” *Public Health Reports* 129 (Suppl 2): 19–31.
Bregman, Rutger. 2017. *Utopia for Realists: How We Can Build the Ideal World*. Little, Brown.
Brinkman, Richard L., and June E. Brinkman. 2011. “GDP as a Measure of Progress and Human Development: A Process of Conceptual Evolution.” *Journal of Economic Issues* 45 (2): 447–56.
Bureau of Labor Statistics. n.d. “Bureau of Labor Statistics Data.” Accessed February 18, 2024. https://data.bls.gov/timeseries/LNU04023554&series_id=LNU04000000&series_id=LNU03023554&series_id=LNU03000000&years_option=all_years&periods_option=specific_periods&periods=Annual+Data.
Bureau, US Census. n.d.-a. “About Income.” Census.Gov. Accessed March 3, 2024. https://www.census.gov/topics/income-poverty/income/about.html.
———. n.d.-b. “Poverty.” Census.Gov. Accessed November 2, 2023. https://www.census.gov/topics/income-poverty/poverty.html.
———. n.d.-c. “State Population Totals: 2010-2019.” Census.Gov. Accessed February 26, 2024. https://www.census.gov/data/datasets/time-series/demo/popest/2010s-state-total.html.
———. n.d.-d. “State Population Totals and Components of Change: 2020-2023.” Census.Gov. Accessed February 26, 2024. https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html.
C40. 2023. “Doughnut Economics: Cities and Regions Guide.” 2023. https://www.c40knowledgehub.org/s/article/Doughnut-economics-Cities-and-regions-guide?language=en_US.
Calenbuhr, Vera. 2020. “Chapter 11 - Complexity Science in the Context of Policymaking.” In *Science for Policy Handbook*, edited by Vladimír Šucha and Marta Sienkiewicz, 118–27. Elsevier. https://doi.org/10.1016/B978-0-12-822596-7.00011-5.
Capmourteres, Virginia, Stephanie Shaw, Liane Miedema, and Madhur Anand. 2019. “A Complex Systems Framework for the Sustainability Doughnut.” *People and Nature* 1 (4): 497–506. https://doi.org/10.1002/pan3.10048.
Census Bureau. 2024. “Census Bureau Tables.” 2024. https://data.census.gov/table?q=Shelby%20County,%20Tennessee&g=160XX00US4748000.
———. n.d. “U.S. Census Bureau QuickFacts: Shelby County, Tennessee.” Accessed February 1, 2024. https://www.census.gov/quickfacts/fact/table/shelbycountytennessee/POP010210.
Center for American Women and Politics (CAWP). 2015. “Center for American Women and Politics (CAWP). 2024. ‘Women in State Legislatures 2015.’ New Brunswick, NJ: Center for American Women and Politics, Eagleton Institute of Politics, Rutgers University-New Brunswick. Https://Cawp.Rutgers.Edu/Facts/Levels-Office/State-Legislature/Women-State-Legislatures-2015 (Accessed February 16, 2024).”
———. 2016. “Center for American Women and Politics (CAWP). 2024. ‘Women in State Legislatures 2016.’ New Brunswick, NJ: Center for American Women and Politics, Eagleton Institute of Politics, Rutgers University-New Brunswick. Https://Cawp.Rutgers.Edu/Facts/Levels-Office/State-Legislature/Women-State-Legislatures-2016 (Accessed February 16, 2024).”

———. 2017. “Center for American Women and Politics (CAWP). 2024. ‘Women in State Legislatures 2017.’ New Brunswick, NJ: Center for American Women and Politics, Eagleton Institute of Politics, Rutgers University-New Brunswick. Https://Cawp.Rutgers.Edu/Facts/Levels-Office/State-Legislature/Women-State-Legislatures-2017 (Accessed February 16, 2024).”

———. 2018. “Center for American Women and Politics (CAWP). 2024. ‘Women in State Legislatures 2018.’ New Brunswick, NJ: Center for American Women and Politics, Eagleton Institute of Politics, Rutgers University-New Brunswick. Https://Cawp.Rutgers.Edu/Facts/Levels-Office/State-Legislature/Women-State-Legislatures-2018 (Accessed February 16, 2024).”

———. 2020. “Center for American Women and Politics (CAWP). 2024. ‘Women in State Legislatures 2020.’ New Brunswick, NJ: Center for American Women and Politics, Eagleton Institute of Politics, Rutgers University-New Brunswick. Https://Cawp.Rutgers.Edu/Facts/Levels-Office/State-Legislature/Women-State-Legislatures-2020 (Accessed February 16, 2024).”

———. 2021. “Center for American Women and Politics (CAWP). 2024. ‘Women in State Legislatures 2021.’ New Brunswick, NJ: Center for American Women and Politics, Eagleton Institute of Politics, Rutgers University-New Brunswick. Https://Cawp.Rutgers.Edu/Women-State-Legislatures-2021 (Accessed February 17, 2024).”

———. 2022. “Center for American Women and Politics (CAWP). 2024. ‘Women in State Legislatures 2022.’ New Brunswick, NJ: Center for American Women and Politics, Eagleton Institute of Politics, Rutgers University-New Brunswick. Https://Cawp.Rutgers.Edu/Women-State-Legislatures-2022 (Accessed February 17, 2024).”

———. 2023. “Center for American Women and Politics (CAWP). 2024. ‘Women in State Legislatures 2023.’ New Brunswick, NJ: Center for American Women and Politics, Eagleton Institute of Politics, Rutgers University-New Brunswick. Https://Cawp.Rutgers.Edu/Women-State-Legislatures-2023 (Accessed February 17, 2024).”

Centers for Disease Control and Prevention. 2020. “Products - Data Briefs - Number 360 - February 2020.” June 26, 2020. https://www.cdc.gov/nchs/products/databriefs/db360.htm.

Chancel, Lucas. 2022. “Global Carbon Inequality over 1990–2019.” *Nature Sustainability* 5 (11): 931–38. https://doi.org/10.1038/s41893-022-00955-z.

Chatterjee, Indranath, and Jayaraman Valadi. 2023. “Performance Evaluation of Sustainable Development Goals Employing Unsupervised Machine Learning Approach.” In *Third Congress on Intelligent Systems*, edited by Sandeep Kumar, Harish Sharma, K. Balachandran, Joong Hoon Kim, and Jagdish Chand Bansal, 407–19. Singapore: Springer Nature. https://doi.org/10.1007/978-981-19-9379-4_30.

Chen, Chien-fei, Jimmy Feng, Nikki Luke, Cheng-Pin Kuo, and Joshua S. Fu. 2022. “Localized Energy Burden, Concentrated Disadvantage, and the Feminization of Energy Poverty.” *iScience* 25 (4): 104139. https://doi.org/10.1016/j.isci.2022.104139.

Chrysopoulou, Anielski, and Weatherhead. n.d. “Failure Demand: Counting the True Costs of an Unjust and Unsustainable Economic System.” Wellbeing Economy Alliance. Accessed September 21, 2023. https://weall.org/resource/failure-demand.

Cleary, Tom. 2022. “Not All Demand Is Created Equal: Failure Demand and the Service Design Opportunity.” Medium. February 2, 2022. https://experiencestack.co/failure-demand-and-the-service-design-opportunity-66e1aa89d373.

Climate Action Leeds. n.d. "Leeds Doughnut | Towards a Safe and Thriving Leeds." Climate Action Leeds. Accessed November 2, 2023. https://www.climateactionleeds.org.uk/leedsdoughnut.
Climate Action Tracker. n.d. "USA Targets." Accessed November 29, 2023. https://climateactiontracker.org/countries/usa/targets/.
Cole, Megan. 2015. "Is South Africa Operating in a Safe and Just Space? Using the Doughnut Model to Explore Environmental Sustainability and Social Justice." https://policy-practice.oxfam.org/resources/is-south-africa-operating-in-a-safe-and-just-space-using-the-doughnut-model-to-555842/.
Cole, Wade M. 2019. "Wealth and Health Revisited: Economic Growth and Wellbeing in Developing Countries, 1970 to 2015." *Social Science Research* 77 (January): 45–67. https://doi.org/10.1016/j.ssresearch.2018.09.003.
Cong, Shuchen, Destenie Nock, Yueming Lucy Qiu, and Bo Xing. 2022. "Unveiling Hidden Energy Poverty Using the Energy Equity Gap." *Nature Communications* 13 (May): 2456. https://doi.org/10.1038/s41467-022-30146-5.
Connor, Tom. 2020. "Failure Demand vs Value Demand." *10x Curiosity* (blog). September 10, 2020. https://medium.com/10x-curiosity/failure-demand-vs-value-demand-bbcbb5811c80.
Cook, David, Brynhildur Davíðsdóttir, and Laura Malinauskaite. 2023. "The Role of Ecosystem Services in the Doughnut Economy – The Example of Whale Ecosystem Services in Disko Bay, Greenland." *Ecosystem Services* 63 (October): 101552. https://doi.org/10.1016/j.ecoser.2023.101552.
Cooper, Gregory S., and John A. Dearing. 2019. "Modelling Future Safe and Just Operating Spaces in Regional Social-Ecological Systems." *Science of The Total Environment* 651 (February): 2105–17. https://doi.org/10.1016/j.scitotenv.2018.10.118.
Corneo, Giacomo G. 2017. *Is Capitalism Obsolete? A Journey through Alternative Economic Systems*. Cambridge, Massachusetts: Harvard University Press.
Costanza, Robert, Gar Alperovitz, Herman Daly, Joshua Farley, Carol Franco, Tim Jackson, Ida Kubiszewski, Juliet Schor, and Peter Victor. 2013a. "A Redesign of 'the Economy' Recognizing Its Embeddedness in Society and Nature." In *Building a Sustainable and Desirable Economy-in-Society-in-Nature*, 29–50. ANU Press. https://www.jstor.org/stable/j.ctt5hgz53.7.
———. 2013b. "Are These Policies Consistent and Feasible?" In *Building a Sustainable and Desirable Economy-in-Society-in-Nature*, 63–72. ANU Press. https://www.jstor.org/stable/j.ctt5hgz53.9.
———. 2013c. "Example Policy Reforms." In *Building a Sustainable and Desirable Economy-in-Society-in-Nature*, 51–62. ANU Press. https://www.jstor.org/stable/j.ctt5hgz53.8.
Costanza, Robert, and Herman E. Daly. 1992. "Natural Capital and Sustainable Development." *Conservation Biology* 6 (1): 37–46.
Coyle, Diane. 2014. *GDP: A Brief but Affectionate History - Revised and Expanded Edition*. REV-Revised. Princeton University Press. https://doi.org/10.2307/j.ctvc77mfx.
Crabtree, Andrew. 2012. "A Legitimate Freedom Approach to Sustainability: Sen, Scanlon and the Inadequacy of the Human Development Index." *The International Journal of Social Quality* 2 (1): 24–40.
Crisp, Richard, David Waite, Anne Green, Ceri Hughes, Ruth Lupton, Danny MacKinnon, and Andy Pike. 2023. "'Beyond GDP' in Cities: Assessing Alternative Approaches to Urban Economic Development." *Urban Studies*, August, 00420980231187884. https://doi.org/10.1177/00420980231187884.

DA DE ES, ENBGCS, ELFRITNL RO, PTCAFIHR NO, and SKSLSRFO SV. 2023. “Mobilize Resist Transform.” *Resource* 15: 05.
Daly, Herman E. 1968. “On Economics as a Life Science.” *Journal of Political Economy* 76 (3): 392–406.
———. 1990. “Sustainable Development: From Concept and Theory to Operational Principles.” *Population and Development Review* 16: 25–43. https://doi.org/10.2307/2808061.
———. 1991. “Towards an Environmental Macroeconomics.” *Land Economics* 67 (2): 255–59. https://doi.org/10.2307/3146415.
———. 1993. “Steady-State Economics: A New Paradigm.” *New Literary History* 24 (4): 811–16. https://doi.org/10.2307/469394.
———. 1996. *Beyond Growth: The Economics of Sustainable Development*. Beacon Press.
———. 2005. “Economics in a Full World.” *Scientific American* 293 (3): 100–107.
———. 20. *Beyond Growth: The Economics of Sustainable Development*. Nachdr. Boston, Mass: Beacon Press.
Daniels, Thomas L. 2023. “The Progress Illusion: Reclaiming Our Future from the Fairytale of Economics.” *Sustainability and Climate Change* 16 (2): 130–32. https://doi.org/10.1089/scc.2023.0009.
Davies, Ian P., Ryan D. Haugo, James C. Robertson, and Phillip S. Levin. 2018. “The Unequal Vulnerability of Communities of Color to Wildfire.” *PLOS ONE* 13 (11): e0205825. https://doi.org/10.1371/journal.pone.0205825.
Davis, Brigette A. n.d. “Discrimination: A Social Determinant Of Health Inequities.” *Health Affairs Forefront*. Accessed December 15, 2023. https://doi.org/10.1377/forefront.20200220.518458.
De Neve, Jan-Emmanuel, and Jeffrey D. Sachs. 2020. “The SDGs and Human Well-Being: A Global Analysis of Synergies, Trade-Offs, and Regional Differences.” *Scientific Reports* 10 (1): 15113. https://doi.org/10.1038/s41598-020-71916-9.
DEAL. 2021. “Designing the Doughnut: A Story of Five Cities | DEAL.” 2021. https://doughnuteconomics.org/stories/designing-the-doughnut-a-story-of-five-cities.
Deivanayagam, Thilagawathi Abi, Sonora English, Jason Hickel, Jon Bonifacio, Renzo R Guinto, Kyle X Hill, Mita Huq, et al. 2023. “Envisioning Environmental Equity: Climate Change, Health, and Racial Justice.” *Lancet (London, England)* 402 (10395): 64–78. https://doi.org/10.1016/S0140-6736(23)00919-4.
Demals, Thierry, and Alexandra Hyard. 2014. “Is Amartya Sen’s Sustainable Freedom a Broader Vision of Sustainability?” *Ecological Economics* 102 (June): 33–38. https://doi.org/10.1016/j.ecolecon.2014.03.009.
Demaria, Federico, Ashish Kothari, Ariel Salleh, Arturo Escobar, and Alberto Acosta. 2023. “Post-Development: From the Critique of Development to a Pluriverse of Alternatives.” In , 59–69. https://doi.org/10.1007/978-3-031-22566-6_6.
Department of Agriculture. n.d. “USDA ERS - A Look at Calorie Sources in the American Diet.” Accessed April 17, 2024. https://www.ers.usda.gov/amber-waves/2016/december/a-look-at-calorie-sources-in-the-american-diet/.
Department of Economic and Social Affairs. 2024. “THE 17 GOALS | Sustainable Development.” The United Nations. 2024. https://sdgs.un.org/goals.
Department of Housing and Urban Development. n.d. “2022 AHAR: Part 1 - PIT Estimates of Homelessness in the U.S. | HUD USER.” Accessed February 26, 2024. https://www.huduser.gov/portal/datasets/ahar/2022-ahar-part-1-pit-estimates-of-homelessness-in-the-us.html.
Desilver, Drew. 2016. “What’s on Your Table? How America’s Diet Has Changed over the Decades.” *Pew Research Center* (blog). 2016. https://www.pewresearch.org/short-

reads/2016/12/13/whats-on-your-table-how-americas-diet-has-changed-over-the-decades/.
DeWeerdt, Sarah. 2018. "Is the Doughnut Economy Just Pie in the Sky?" February 6, 2018. https://www.anthropocenemagazine.org/2018/02/does-a-good-life-have-to-come-at-the-expense-of-the-planet/, https://www.anthropocenemagazine.org/2018/02/does-a-good-life-have-to-come-at-the-expense-of-the-planet/.
Diaz-Sarachaga, Jose Manuel, Daniel Jato-Espino, and Daniel Castro-Fresno. 2018a. "Is the Sustainable Development Goals (SDG) Index an Adequate Framework to Measure the Progress of the 2030 Agenda?" *Sustainable Development* 26 (6): 663–71. https://doi.org/10.1002/sd.1735.
———. 2018b. "Is the Sustainable Development Goals (SDG) Index an Adequate Framework to Measure the Progress of the 2030 Agenda?" *Sustainable Development* 26 (6): 663–71. https://doi.org/10.1002/sd.1735.
Dijkstra, Wies Anna-Beitske. 2023. "To Do or Doughnut: Defining the Limits of the Urban Safe and Just Operating Space." Master thesis, Norwegian University of Life Sciences. https://nmbu.brage.unit.no/nmbu-xmlui/handle/11250/3081680.
Diwakar, Vidya. 2023. "Inclusive, Sustainable Economic Transformation: An Analysis of Trends and Trade-Offs." *Journal of Poverty and Social Justice*, 1–33.
Dommen, Caroline. 2023. "Human Rights Economics." *Human Rights Quarterly* 45 (2): 205–38.
Donaghy, Timothy Q., Noel Healy, Charles Y. Jiang, and Colette Pichon Battle. 2023. "Fossil Fuel Racism in the United States: How Phasing out Coal, Oil, and Gas Can Protect Communities." *Energy Research & Social Science* 100 (June): 103104. https://doi.org/10.1016/j.erss.2023.103104.
Doney, Scott C. 2010. "The Growing Human Footprint on Coastal and Open-Ocean Biogeochemistry." *Science* 328 (5985): 1512–16. https://doi.org/10.1126/science.1185198.
Donner, Simon D., and Christopher J. Kucharik. 2008. "Corn-Based Ethanol Production Compromises Goal of Reducing Nitrogen Export by the Mississippi River." *Proceedings of the National Academy of Sciences of the United States of America* 105 (11): 4513–18.
Doughnut Economics Action Lab. 2023a. "Creating City Portraits | DEAL." 2023. https://doughnuteconomics.org/tools/14.
———. 2023b. "Doughnut Unrolled: Data Portrait of Place | DEAL." 2023. https://doughnuteconomics.org/tools/144.
———. n.d.-a. "Amsterdam City Doughnut." Accessed December 10, 2023. https://doughnuteconomics.org/stories/1.
———. n.d.-b. "Doughnut Data Portraits in Global South Contexts | DEAL." Accessed November 19, 2023. https://doughnuteconomics.org/stories/194.
———. n.d.-c. "Doughnut Unrolled: Introducing the Four Lenses | DEAL." Accessed November 19, 2023. https://doughnuteconomics.org/tools/142.
———. n.d.-d. "Downscaling the Doughnut: Data Portraits in Action | DEAL." Accessed November 2, 2023. https://doughnuteconomics.org/tools/92.
Drehobl, Ariel, Lauren Ross, and Roxana Ayala. n.d. "An Assessment of National and Metropolitan Energy Burden across the United States."
Drury, Matt, Janet Fuller, and John Hoeks. 2023. "Embedding Animals within a Definition of Sustainability." *Sustainability Science*, 1–14.
Durand, Cédric, Elena Hofferberth, and Matthias Schmelzer. n.d. "Planning Beyond Growth the Case for Economic Democracy within Ecological Limits." *Available at SSRN 4457481*.

Dwyer-Lindgren, Laura, Parkes Kendrick, Yekaterina O. Kelly, Dillon O. Sylte, Chris Schmidt, Brigette F. Blacker, Farah Daoud, et al. 2022a. "Life Expectancy by County, Race, and Ethnicity in the USA, 2000–19: A Systematic Analysis of Health Disparities." *The Lancet* 400 (10345): 25–38. https://doi.org/10.1016/S0140-6736(22)00876-5.

———. 2022b. "Life Expectancy by County, Race, and Ethnicity in the USA, 2000–19: A Systematic Analysis of Health Disparities." *The Lancet* 400 (10345): 25–38. https://doi.org/10.1016/S0140-6736(22)00876-5.

Edwards, Frank, Hedwig Lee, and Michael Esposito. 2019. "Risk of Being Killed by Police Use of Force in the United States by Age, Race–Ethnicity, and Sex." *Proceedings of the National Academy of Sciences* 116 (34): 16793–98. https://doi.org/10.1073/pnas.1821204116.

Eisenmenger, Nina, Melanie Pichler, Nora Krenmayr, Dominik Noll, Barbara Plank, Ekaterina Schalmann, Marie-Theres Wandl, and Simone Gingrich. 2020. "The Sustainable Development Goals Prioritize Economic Growth over Sustainable Resource Use: A Critical Reflection on the SDGs from a Socio-Ecological Perspective." *Sustainability Science* 15 (4): 1101–10. https://doi.org/10.1007/s11625-020-00813-x.

Emami Langroodi, Farrokh. 2017. "Schumpeter's Theory of Economic Development: A Study of the Creative Destruction and Entrepreneurship Effects on the Economic Growth." SSRN Scholarly Paper. Rochester, NY. https://doi.org/10.2139/ssrn.3153744.

Embedding Project. n.d. "Overview." Accessed April 17, 2024. https://embeddingproject.org/about/overview/.

Engen, Marit, Martin Fransson, Johan Quist, and Per Skålén. 2021. "Continuing the Development of the Public Service Logic: A Study of Value Co-Destruction in Public Services." *Public Management Review* 23 (6): 886–905. https://doi.org/10.1080/14719037.2020.1720354.

Engerman, Stanley L. 2009. "Apologies, Regrets, and Reparations." *European Review* 17 (3–4): 593–610. https://doi.org/10.1017/S1062798709000969.

Érfalvy, Áron, Virág Golenyák, Gábor Kutasi, and Sztella Torda. 2023. "The Economic Effects of Climate Change on Budapest." *COGNITIVE SUSTAINABILITY* 2 (1): 28–43.

Erickson, Jon D. 2022. "The Inconvenient Truth of Herman Daly: There Is No Economy without Environment." The Conversation. November 10, 2022. http://theconversation.com/the-inconvenient-truth-of-herman-daly-there-is-no-economy-without-environment-193848.

Escobar, Arturo. 1995. *Encountering Development: The Making and Unmaking of the Third World*. STU-Student edition. Princeton University Press. https://www.jstor.org/stable/j.ctt7rtgw.

———. 2017. *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*. Duke University Press. https://www.jstor.org/stable/j.ctv11smgs6.

Esmail, Nafeesa, Jana M. McPherson, Latoya Abulu, Thora Amend, Ronit Amit, Saloni Bhatia, Dominique Bikaba, et al. 2023. "What's on the Horizon for Community-Based Conservation? Emerging Threats and Opportunities." *Trends in Ecology & Evolution* 38 (7): 666–80. https://doi.org/10.1016/j.tree.2023.02.008.

Fang, Kai. 2022. "Moving Away from Sustainability." *Nature Sustainability* 5 (1): 5–6. https://doi.org/10.1038/s41893-021-00802-7.

Fang, Xuening, Jianguo Wu, and Chunyang He. 2021. "Assessing Human-Environment System Sustainability Based on Regional Safe and Just Operating Space: The Case of the Inner Mongolia Grassland." *Environmental Science & Policy* 116 (February): 276–86. https://doi.org/10.1016/j.envsci.2020.12.007.

Fanning, Andrew L., and Jason Hickel. 2023. "Compensation for Atmospheric Appropriation." *Nature Sustainability* 6 (9): 1077–86. https://doi.org/10.1038/s41893-023-01130-8.

Fanning, Andrew L., Daniel W. O'Neill, Jason Hickel, and Nicolas Roux. 2022. "The Social Shortfall and Ecological Overshoot of Nations." *Nature Sustainability* 5 (1): 26–36. https://doi.org/10.1038/s41893-021-00799-z.

Federal Reserve. n.d. "Is GDP a Good Measure of Well-Being? | FRED Blog." Accessed September 22, 2023. https://fredblog.stlouisfed.org/2017/09/is-gdp-a-good-measure-of-well-being/.

Feeding America. n.d. "Dataset That Combines Feeding America's Map the Meal Gap 2023: An Analysis of County and Congressional District Food Insecurity and County Food Cost in the United States in 2021, The State of Senior Hunger in 2021, and Hunger Among Older Adult's Age 50-59 in 2021."

Feigenbaum, James J., Christopher Muller, and Elizabeth Wrigley-Field. 2019. "Regional and Racial Inequality in Infectious Disease Mortality in U.S. Cities, 1900–1948." *Demography* 56 (4): 1371–88. https://doi.org/10.1007/s13524-019-00789-z.

Feldstein, Martin. 2017. "Underestimating the Real Growth of GDP, Personal Income, and Productivity." *Journal of Economic Perspectives* 31 (2): 145–64. https://doi.org/10.1257/jep.31.2.145.

Ferguson, James. 1985. *Discourse, Knowledge, and Structural Production in the "Development" Industry: An Anthropological Study of a Rural Development Project in Lesotho*.

Fischer, Daniel, Marlyne Sahakian, Jordan King, Jen Dyer, and Gill Seyfang. 2023. *Teaching and Learning Sustainable Consumption: A Guidebook*. Taylor & Francis.

Fleurbaey, Marc. 2009. "Beyond GDP: The Quest for a Measure of Social Welfare." *Journal of Economic Literature* 47 (4): 1029–75.

Fogel, Robert. n.d. "How Simon Kuznets Codified Modern Economic Growth." The University of Chicago Booth School of Business. Accessed September 21, 2023. https://www.chicagobooth.edu/review/how-simon-kuznets-codified-modern-economic-growth.

Fogel, Robert William, Enid M. Fogel, Mark Guglielmo, and Nathaniel Grotte. 2013. "The Use of National Income Accounting to Study Comparative Economic Growth." In *Political Arithmetic: Simon Kuznets and the Empirical Tradition in Economics*, 65–88. University of Chicago Press. https://www.nber.org/books-and-chapters/political-arithmetic-simon-kuznets-and-empirical-tradition-economics/use-national-income-accounting-study-comparative-economic-growth.

Fonseca, Renata Amorim Almeida, Marta de Azevedo Irving, Yasmin Xavier Guimarães Nasri, and Graciella Faico Ferreira. 2022. "Sustainability and Social Transformation: The Role of Ecovillages in Confluence with the Pluriverse of Community-Led Alternatives." *Climate Action* 1 (1): 1–10. https://doi.org/10.1007/s44168-022-00022-5.

Ford, Tiffany, and Annelis Goger. n.d. "The Value of Qualitative Data for Advancing Equity in Policy." Brookings. Accessed December 12, 2023. https://www.brookings.edu/articles/value-of-qualitative-data-for-advancing-equity-in-policy/.

Fransson, Martin, Johan Quist, and Per Skålén. 2015. "Why Do Public Services Fail? : A Service Logic Study of Failure Demand." In . https://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-40732.

Fullerton, John. n.d. "REGENERATIVE CAPITALISM."

Galí, Jordi. 1994. “Keeping up with the Joneses: Consumption Externalities, Portfolio Choice, and Asset Prices.” *Journal of Money, Credit and Banking* 26 (1): 1–8. https://doi.org/10.2307/2078030.

Gallardo, Roberto. n.d. “Gallardo, R. (2023). Digital Divide Index. Purdue Center for Regional Development. Retrieved from Digital Divide Index (DDI): Http://Pcrd.Purdue.Edu/Ddi.”

Galloway, J. N., F. J. Dentener, D. G. Capone, E. W. Boyer, R. W. Howarth, S. P. Seitzinger, G. P. Asner, et al. 2004. “Nitrogen Cycles: Past, Present, and Future.” *Biogeochemistry* 70 (2): 153–226. https://doi.org/10.1007/s10533-004-0370-0.

Georgescu-Roegen, Nicholas. 1971. *The Entropy Law and the Economic Process*. Harvard University Press.

———. 1975. “Energy and Economic Myths.” *Southern Economic Journal* 41 (3): 347–81. https://doi.org/10.2307/1056148.

———. 1986. “The Entropy Law and the Economic Process in Retrospect.” *Eastern Economic Journal* 12 (1): 3–25.

Global Footprint Network. 2023. “Countries.” Global Footprint Network. 2023. https://www.footprintnetwork.org/our-work/countries/.

Goldstein, Benjamin, Tony G. Reames, and Joshua P. Newell. 2022a. “Racial Inequity in Household Energy Efficiency and Carbon Emissions in the United States: An Emissions Paradox.” *Energy Research & Social Science* 84 (February): 102365. https://doi.org/10.1016/j.erss.2021.102365.

———. 2022b. “Racial Inequity in Household Energy Efficiency and Carbon Emissions in the United States: An Emissions Paradox.” *Energy Research & Social Science* 84 (February): 102365. https://doi.org/10.1016/j.erss.2021.102365.

Gordon, Robert J. 2016. *The Rise and Fall of American Growth: The U.S. Standard of Living since the Civil War*. REV-Revised. Princeton University Press. https://doi.org/10.2307/j.ctvc77bwm.

Goulart, Pedro, and Roberto Falanga. 2022. “Co-Production and Voice in Policymaking: Participatory Processes in the European Periphery.” *The European Journal of Development Research* 34 (4): 1735–44. https://doi.org/10.1057/s41287-022-00551-z.

Gould, Elise, and Hilary Weithing. 2012. “U.S. Poverty Rates Higher, Safety Net Weaker than in Peer Countries.” Economic Policy Institute. 2012. https://www.epi.org/publication/ib339-us-poverty-higher-safety-net-weaker/.

Greenland, Steven J., Muhammad Saleem, Roopali Misra, Ninh Nguyen, and Jon Mason. 2023. “Reducing SDG Complexity and Informing Environmental Management Education via an Empirical Six-Dimensional Model of Sustainable Development.” *Journal of Environmental Management* 344 (October): 118328. https://doi.org/10.1016/j.jenvman.2023.118328.

Greitemeyer, Tobias, and Christina Sagioglou. 2019. “The Experience of Deprivation: Does Relative More than Absolute Status Predict Hostility?” *The British Journal of Social Psychology* 58 (3): 515–33. https://doi.org/10.1111/bjso.12288.

Gross National Happiness USA. 2024. “Genuine Progress Indicator.” *Gross National Happiness USA* (blog). 2024. https://gnhusa.org/genuine-progress-indicator/.

Group, PIAAC Literacy Expert. 2009. “PIAAC Literacy: A Conceptual Framework.” Paris: OECD. https://doi.org/10.1787/220348414075.

Guan, Yuru, Jin Yan, Yuli Shan, Yannan Zhou, Ye Hang, Ruoqi Li, Yu Liu, et al. 2023. “Burden of the Global Energy Price Crisis on Households.” *Nature Energy* 8 (3): 304–16. https://doi.org/10.1038/s41560-023-01209-8.

Gundersen, C.A, A. Dewey, M. Kato Crumbaugh, and E. Englehard. 2016. “Map the Meal Gap 2016: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2014. Feeding America, 2016.”

———. 2017. “Map the Meal Gap 2017: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2015. Feeding America, 2017.”

———. n.d. “Map the Meal Gap 2018: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2016. Feeding America, 2018.”

Gundersen, C.A, A. Dewey, E. Englehard, M. Strayer, and L. Lapinski. 2020. “Map the Meal Gap 2020: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2018. Feeding America, 2020.”

Gundersen, C.A, A. Dewey, M. Kato, Crumbaugh, and M. Strayer. 2019. “Gundersen, C., A. Dewey, M. Kato, A. Crumbaugh & M. Strayer. Map the Meal Gap 2019: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2017. Feeding America, 2019.”

Gundersen, C.A, E. Englehard, A. Satoh, and E. Waxman. 2014. “Map the Meal Gap 2014: Food Insecurity and Child Food Insecurity Estimates at the County Level. Feeding America, 2014.”

———. 2015a. “Map the Meal Gap 2015: Food Insecurity and Child Food Insecurity Estimates at the County Level. Feeding America, 2015.”

———. 2015b. “The Meal Gap 2015: Food Insecurity and Child Food Insecurity Estimates at the County Level. Feeding America, 2015.”

Gundersen, C.A, E. Waxman, E. Englehard, and J. Brown. 2011. “Map the Meal Gap 2011: Food Insecurity Estimates at the County Level. Feeding America, 2011.”

Gundersen, C.A, E. Waxman, E. Englehard, T. Del Vecchio, and A. Satoh. 2010. “Map the Meal Gap 2012: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2010. Feeding America, 2012.”

Gurney, Kevin Robert, Jianming Liang, Geoffrey Roest, Yang Song, Kimberly Mueller, and Thomas Lauvaux. 2021. “Under-Reporting of Greenhouse Gas Emissions in U.S. Cities.” *Nature Communications* 12 (1): 553. https://doi.org/10.1038/s41467-020-20871-0.

Haberl, Helmut, K. Heinz Erb, Fridolin Krausmann, Veronika Gaube, Alberte Bondeau, Christoph Plutzar, Simone Gingrich, Wolfgang Lucht, and Marina Fischer-Kowalski. 2007. “Quantifying and Mapping the Human Appropriation of Net Primary Production in Earth’s Terrestrial Ecosystems.” *Proceedings of the National Academy of Sciences* 104 (31): 12942–47. https://doi.org/10.1073/pnas.0704243104.

Haggerty, Julia Hobson, Kathleen Epstein, Drew E. Bennett, Bill Milton, Laura Nowlin, and Brian Martin. 2023. “Wildlife, Rural Communities, and the Rangeland Livelihoods They Share: Opportunities in a Diverse Economies Approach.” In *Rangeland Wildlife Ecology and Conservation*, edited by Lance B. McNew, David K. Dahlgren, and Jeffrey L. Beck, 933–67. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-34037-6_27.

Hales, Craig M, Margaret D. Carroll, Cheryl D. Fryar, and Cynthia L. Ogden. 2020. “Prevalence of Obesity and Severe Obesity Among Adults: United States, 2017–2018.” Centers for Disease Control and Prevention, National Center for Health Statistics. https://www.cdc.gov/nchs/data/databriefs/db360-h.pdf.

Halisçelik, Ergül, and Mehmet Ali Soytas. 2019. “Sustainable Development from Millennium 2015 to Sustainable Development Goals 2030.” *Sustainable Development* 27 (4): 545–72. https://doi.org/10.1002/sd.1921.

Hall, Charles A. S., and John W. Day. 2009. "Revisiting the Limits to Growth After Peak Oil: In the 1970s a Rising World Population and the Finite Resources Available to Support It Were Hot Topics. Interest Faded—but It's Time to Take Another Look." *American Scientist* 97 (3): 230–37.
Hall, Robert W. "Doc." 2016. "The End of Economic Expansion Requires Compression Thinking." The Systems Thinker. January 17, 2016. https://thesystemsthinker.com/the-end-of-economic-expansion-requires-compression-thinking/.
Halvorsen, Lene Mari Hamre. 2023. "Alternative Economic Models and Their Impact on the SDGs." Master thesis, NTNU. https://ntnuopen.ntnu.no/ntnu-xmlui/handle/11250/3082226.
Hanbury Lemos, Mariana Morena. 2022. "Decoloniality and the Global Social Lens of the Doughnut Economy." AUTONOMOUS UNIVERSITY OF BARCELONA. https://drive.google.com/file/d/1ewSjzTdR1HpwL456fCFP5a1wmTkGR8y5/view?usp=embed_facebook.
Haq, Mahbub ul. 1976. *The Poverty Curtain: Choices for the Third World*. Columbia University Press.
———. 1999. *Reflections on Human Development*. Oxford University Press.
Hartmann, Dieter. n.d. "DEMAND MANAGEMENT IN HEALTH CARE:"
Harvey, Anna, and Taylor Mattia. 2022. "Reducing Racial Disparities in Crime Victimization: Evidence from Employment Discrimination Litigation." *Journal of Urban Economics*, May, 103459. https://doi.org/10.1016/j.jue.2022.103459.
He, Chunyang, Zhifeng Liu, Jianguo Wu, Xinhao Pan, Zihang Fang, Jingwei Li, and Brett A. Bryan. 2021. "Future Global Urban Water Scarcity and Potential Solutions." *Nature Communications* 12 (1): 4667. https://doi.org/10.1038/s41467-021-25026-3.
Herre, Bastian, Pablo Arriagada, and Max Roser. 2024. "The Human Development Index and Related Indices: What They Are and What We Can Learn from Them." *Our World in Data*, February. https://ourworldindata.org/human-development-index.
Hickel, Jason. 2017. *The Divide: Global Inequality from Conquest to Free Markets*. First American edition. New York: W.W. Norton & Company.
———. 2018. *The Divide: Global Inequality from Conquest to Free Markets*. National Geographic Books.
———. 2019. "The Contradiction of the Sustainable Development Goals: Growth versus Ecology on a Finite Planet." *Sustainable Development* 27 (5): 873–84. https://doi.org/10.1002/sd.1947.
———. 2020. "Quantifying National Responsibility for Climate Breakdown: An Equality-Based Attribution Approach for Carbon Dioxide Emissions in Excess of the Planetary Boundary." *The Lancet Planetary Health* 4 (9): e399–404. https://doi.org/10.1016/S2542-5196(20)30196-0.
———. 2022. *Less Is More: How Degrowth Will Save the World*. UK USA Canada Ireland Australia India New Zealand South Africa: Penguin Books.
Hill, Latoya, and Samantha Artiga. 2023. "What Is Driving Widening Racial Disparities in Life Expectancy?" *KFF* (blog). May 23, 2023. https://www.kff.org/racial-equity-and-health-policy/issue-brief/what-is-driving-widening-racial-disparities-in-life-expectancy/.
Holling, CS, William C Clark, and RE Munn. 1986. "Sustainable Development of the Biosphere." *W. Clark, & R. Munn (Eds.)*.
Hood, Rick, Allie Goldacre, Robert Grant, and Ray Jones. 2016. "Exploring Demand and Provision in English Child Protection Services." *The British Journal of Social Work* 46 (4): 923–41. https://doi.org/10.1093/bjsw/bcw044.
House, The White. 2021. "FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing

U.S. Leadership on Clean Energy Technologies." The White House. April 22, 2021. https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/.

Hu, Ming. 2023. "A Look at Residential Building Stock in the United States - Mapping Life Cycle Embodied Carbon Emissions and Other Environmental Impact." *Sustainable Cities and Society* 89 (February): 104333. https://doi.org/10.1016/j.scs.2022.104333.

Hub, IISD's SDG Knowledge. n.d. "Guest Article: Translating the SDGs to High-Income Countries: Integration at Last? | SDG Knowledge Hub | IISD." Accessed April 6, 2024. http://sdg.iisd.org/commentary/guest-articles/translating-the-sdgs-to-high-income-countries-integration-at-last/.

Humphreys, Stephen. 2023. "How to Define Unjust Planetary Change." *Nature* 619 (7968): 35–36. https://doi.org/10.1038/d41586-023-01743-1.

Hussein, Ashatu. 2009. "The Use of Triangulation in Social Sciences Research." *Journal of Comparative Social Work* 4 (April): 106–17. https://doi.org/10.31265/jcsw.v4i1.48.

Innocenti, UNICEF Office of Research-. n.d. "The Why and How of Measuring Sustainable Development Goals for Children in High Income Countries." UNICEF-IRC. Accessed April 10, 2024. https://www.unicef-irc.org/article/1623-the-why-and-how-of-measuring-sustainable-development-goals-for-children-in-high-income.html.

Institute for Health Metrics and Evaluation (IHME). 2022. "United States Mortality Rates and Life Expectancy by County, Race, and Ethnicity 2000-2019." Institute for Health Metrics and Evaluation (IHME). https://doi.org/10.6069/B15B-0S14.

Islam, Sardar M. N., and Matthew Clarke. 2002. "The Relationship between Economic Development and Social Welfare: A New Adjusted GDP Measure of Welfare." *Social Indicators Research* 57 (2): 201–28.

Jackson, Tim. 2016. *Prosperity without Growth: Foundations for the Economy of Tomorrow*. Taylor & Francis.

———. 2021. *Post Growth: Life after Capitalism*. John Wiley & Sons.

Jackson, Tim, and Peter A. Victor. 2020. "The Transition to a Sustainable Prosperity-A Stock-Flow-Consistent Ecological Macroeconomic Model for Canada." *Ecological Economics* 177 (November): 106787. https://doi.org/10.1016/j.ecolecon.2020.106787.

Jennison-Phillips, Anna. n.d. "Service Quality in Policing: A Failure Demand Perspective."

Jones, Andrew. 2016. "An Economy Designed to Sustain the Environment." The Systems Thinker. January 11, 2016. https://thesystemsthinker.com/an-economy-designed-to-sustain-the-environment/.

Joyce, Robert. n.d. "Chapter 7: Measuring Economic Inequality." In . Accessed March 3, 2024. http://measuringtheeconomy.uk/book/text/07.html.

juliechao. 2021. "Getting to Net Zero – and Even Net Negative – Is Surprisingly Feasible, and Affordable." Berkeley Lab News Center. January 27, 2021. https://newscenter.lbl.gov/2021/01/27/getting-to-net-zero-and-even-net-negative-is-surprisingly-feasible-and-affordable/.

Kaika, Maria, Angelos Varvarousis, Federico Demaria, and Hug March. 2023. "Urbanizing Degrowth: Five Steps towards a Radical Spatial Degrowth Agenda for Planning in the Face of Climate Emergency." *Urban Studies* 60 (7): 1191–1211. https://doi.org/10.1177/00420980231162234.

Kaiser Family Foundation. 2024. "How History Has Shaped Racial and Ethnic Health Disparities: A Timeline of Policies and Events." *KFF* (blog). 2024. https://www.kff.org/how-history-has-shaped-racial-and-ethnic-health-disparities-a-timeline-of-policies-and-events/.

Kallis, Giorgos. 2019. *Limits: Why Malthus Was Wrong and Why Environmentalists Should Care*. Stanford: Stanford University Press.
Kamande, Anthony. 2023. "What Is the Palma Ratio? And How Can It Turbo-Charge Efforts to Cut Inequality?" Views & Voices. July 26, 2023. https://views-voices.oxfam.org.uk/2023/07/what-is-palma-ratio-inequality/.
Karabell, Zachary. 2014. *The Leading Indicators: A Short History of the Numbers That Rule Our World*. First Simon&Schuster hardcover edition. New York: Simon & Schuster.
Kaul, Shivani, Bengi Akbulut, Federico Demaria, and Julien-François Gerber. 2022. "Alternatives to Sustainable Development: What Can We Learn from the Pluriverse in Practice?" *Sustainability Science* 17 (July). https://doi.org/10.1007/s11625-022-01210-2.
Kekkonen, Aleksandra, and Ilona Beliatskaya. 2023. "Tackling the Sustainability Crisis through Digital Collective Intelligence: The Principles of Doughnut Economics in Smart Cities." In *Proceedings of the 24th Annual International Conference on Digital Government Research*, 261–69. DGO '23. New York, NY, USA: Association for Computing Machinery. https://doi.org/10.1145/3598469.3598498.
Kenner, Dario. n.d. "No. 2015/2, November 2015 Theme: Consumption & Change."
Khmara, Yaryna, and Jakub Kronenberg. 2023. "On the Road to Urban Degrowth Economics? Learning from the Experience of C40 Cities, Doughnut Cities, Transition Towns, and Shrinking Cities." *Cities* 136 (May): 104259. https://doi.org/10.1016/j.cities.2023.104259.
Kim, Rakhyun E. 2023. "Augment the SDG Indicator Framework." *Environmental Science & Policy* 142 (April): 62–67. https://doi.org/10.1016/j.envsci.2023.02.004.
Klein, Brennan, C. Brandon Ogbunugafor, Benjamin J. Schafer, Zarana Bhadricha, Preeti Kori, Jim Sheldon, Nitish Kaza, et al. 2023. "COVID-19 Amplified Racial Disparities in the US Criminal Legal System." *Nature* 617 (7960): 344–50. https://doi.org/10.1038/s41586-023-05980-2.
Koch, Max. 2022. "Social Policy Without Growth: Moving Towards Sustainable Welfare States." *Social Policy and Society* 21 (3): 447–59. https://doi.org/10.1017/S1474746421000361.
Kongshøj, Kristian. 2023. "Social Policy in a Future of Degrowth? Challenges for Decommodification, Commoning and Public Support." *Humanities and Social Sciences Communications* 10 (1): 1–11. https://doi.org/10.1057/s41599-023-02255-z.
Kothari, Ashish, Ariel Salleh, Arturo Escobar, Federico Demaria, and Alberto Acosta. 2019. *Pluriverse: A Post-Development Dictionary*. Tulika Books and Authorsupfront.
Kotzé, Louis J., Rakhyun E. Kim, Peter Burdon, Louise du Toit, Lisa-Maria Glass, Prakash Kashwan, Diana Liverman, et al. 2022. "Planetary Integrity." In *The Political Impact of the Sustainable Development Goals: Transforming Governance Through Global Goals?*, edited by Carole-Anne Sénit, Frank Biermann, and Thomas Hickmann, 140–71. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781009082945.007.
Krauss, Judith E., Andrea Jiménez Cisneros, and Marina Requena-i-Mora. 2022. "Mapping Sustainable Development Goals 8, 9, 12, 13 and 15 through a Decolonial Lens: Falling Short of 'Transforming Our World.'" *Sustainability Science* 17 (5): 1855–72. https://doi.org/10.1007/s11625-022-01112-3.
Kreinin, Halliki, and Ernest Aigner. 2022. "From 'Decent Work and Economic Growth' to 'Sustainable Work and Economic Degrowth': A New Framework for SDG 8." *Empirica* 49 (2): 281–311. https://doi.org/10.1007/s10663-021-09526-5.
Kubiszewski, Ida, Robert Costanza, Carol Franco, Philip Lawn, John Talberth, and Tim & Aylmer Jackson. n.d. "Beyond GDP: Measuring and Achieving Global Genuine

Progress." *African Journal of Food, Agriculture, Nutrition and Development* 13 (5): 1–12.
Kunst, Jonas R, and Milan Obaidi. 2020. "Understanding Violent Extremism in the 21st Century: The (Re)Emerging Role of Relative Deprivation." *Current Opinion in Psychology*, Social Change (Rallies, Riots and Revolutions), 35 (October): 55–59. https://doi.org/10.1016/j.copsyc.2020.03.010.
Kuznets, Simon. 1934. "National Income, 1929-1932." Senate Document No. 124. Washington DC: 73d Congress, 2d Session,. https://fraser.stlouisfed.org/title/national-income-1929-1932-971.
———. 1955. "Economic Growth and Income Inequality." *The American Economic Review* 45 (1): 1–28.
Lakner, Christoph, Daniel Gerszon Mahler, Mario Negre, and Espen Beer Prydz. 2022. "How Much Does Reducing Inequality Matter for Global Poverty?" *The Journal of Economic Inequality* 20 (3): 559–85. https://doi.org/10.1007/s10888-021-09510-w.
Lapuente, Victor, and Steven Van de Walle. 2020. "The Effects of New Public Management on the Quality of Public Services." *Governance* 33 (3): 461–75. https://doi.org/10.1111/gove.12502.
Laufs, Julian, Kate Bowers, Daniel Birks, and Shane D. Johnson. 2021. "Understanding the Concept of 'Demand' in Policing: A Scoping Review and Resulting Implications for Demand Management." *Policing and Society* 31 (8): 895–918. https://doi.org/10.1080/10439463.2020.1791862.
Lazard, Olivia. n.d. "Can Cities Use the Doughnut Model to Hack Liberal Democracy?" Carnegie Europe. Accessed September 22, 2023. https://carnegieeurope.eu/2022/02/15/can-cities-use-doughnut-model-to-hack-liberal-democracy-pub-86368.
Le Quéré, Corinne, Michael R. Raupach, Josep G. Canadell, Gregg Marland, Laurent Bopp, Philippe Ciais, Thomas J. Conway, et al. 2009. "Trends in the Sources and Sinks of Carbon Dioxide." *Nature Geoscience* 2 (12): 831–36. https://doi.org/10.1038/ngeo689.
Leal, Patrícia Hipólito, and António Cardoso Marques. 2022. "The Evolution of the Environmental Kuznets Curve Hypothesis Assessment: A Literature Review under a Critical Analysis Perspective." *Heliyon* 8 (11): e11521. https://doi.org/10.1016/j.heliyon.2022.e11521.
Lee, Joyce H., Miranda Duster, Timothy Roberts, and Orrin Devinsky. 2022. "United States Dietary Trends Since 1800: Lack of Association Between Saturated Fatty Acid Consumption and Non-Communicable Diseases." *Frontiers in Nutrition* 8 (January): 748847. https://doi.org/10.3389/fnut.2021.748847.
Leeson, Peter T. 2007. "An- *Arrgh* -chy: The Law and Economics of Pirate Organization." *Journal of Political Economy* 115 (6): 1049–94. https://doi.org/10.1086/526403.
Leibold, Irina. n.d. "Doughnut Economics as a Strategic Compass: How municipal strategists can use Doughnut Economics for impact-oriented transformation." Accessed September 22, 2023. https://www.pd-g.de/en/pd-impulse/doughnut-economics-as-a-strategic-compass.
Leighley, Jan, and Arnold Vedlitz. n.d. "Race, Ethnicity, and Political Participation: Competing Models and Contrasting Explanations | :" *The Journal of Politics* Vol 61, No 4. Accessed December 11, 2023. https://www.journals.uchicago.edu/doi/10.2307/2647555.
Lélé, Sharachchandra M. 1991. "Sustainable Development: A Critical Review." *World Development* 19 (6): 607–21. https://doi.org/10.1016/0305-750X(91)90197-P.

Lenk, Clara, Rosalie Arendt, Vanessa Bach, and Matthias Finkbeiner. 2021. "Territorial-Based vs. Consumption-Based Carbon Footprint of an Urban District—A Case Study of Berlin-Wedding." *Sustainability* 13 (13): 7262. https://doi.org/10.3390/su13137262.

Lenzen, Manfred, Arne Geschke, James West, Jacob Fry, Arunima Malik, Stefan Giljum, Llorenç Milà i Canals, et al. 2022. "Implementing the Material Footprint to Measure Progress towards Sustainable Development Goals 8 and 12." *Nature Sustainability* 5 (2): 157–66. https://doi.org/10.1038/s41893-021-00811-6.

Leonhardt, Heidi, Juschten Maria, and Clive Spash. 2017. "To Grow or Not to Grow? That Is the Question: Lessons for Social Ecological Transformation from Small-Medium Enterprises." Discussion Paper DP-69-2017. University of Natural Resources and Life Sciences, Vienna, Department of Economics and Social Sciences, Institute for Sustainable Economic Development. https://econpapers.repec.org/paper/zbwinwedp/dp692017.htm.

Lim, Michelle M. L., Peter Søgaard Jørgensen, and Carina A Wyborn. 2018. "Reframing the Sustainable Development Goals to Achieve Sustainable Development in the Anthropocene—a Systems Approach." *Ecology and Society* 23 (3). https://www.jstor.org/stable/26799145.

Lin, Ann Chih. 1998. "Bridging Positivist and Interpretivist Approaches to Qualitative Methods." *Policy Studies Journal* 26 (1): 162–81.

Linde, Leandi van der, and Siebert Benade. 2023. "Circular Human Sphere–The Conceptual Development of Embedding a Social Pillar in the Circular Economy Framework."

Livingston, Julie. 2019. *Self-Devouring Growth: A Planetary Parable as Told from Southern Africa*. Critical Global Health: Evidence, Efficacy, Ethnography. Durham, NC: Duke University Press.

Lu, Yonglong, Nebojsa Nakicenovic, Martin Visbeck, and Anne-Sophie Stevance. 2015. "Policy: Five Priorities for the UN Sustainable Development Goals." *Nature* 520 (7548): 432–33. https://doi.org/10.1038/520432a.

Luukkanen, Jyrki, Jarmo Vehmas, and Jari Kaivo-oja. 2021. "Quantification of Doughnut Economy with the Sustainability Window Method: Analysis of Development in Thailand." *Sustainability* 13 (2): 847. https://doi.org/10.3390/su13020847.

Mac Lean, Michèle. 2023. "The Groningen Doughnut A Study on How the Doughnut Model Can Be Used as an Approach for Climate Adaptation and Co-Creation in Groningen." Master. https://frw.studenttheses.ub.rug.nl/4189/.

Manager. 2018. "The Weight of Cities," January. https://www.resourcepanel.org/reports/weight-cities.

Mathew, Rammya. 2022. "Rammya Mathew: Long and Uncertain Waiting Times Are Leading to Poorer Health Outcomes." *BMJ* 379 (November): o2574. https://doi.org/10.1136/bmj.o2574.

Mayer, Neil S, and Langley C Keyes. n.d. "City Government's Role in the Community Development System."

Maynard, Brandy R., Christopher P. Salas-Wright, and Michael G. Vaughn. 2015. "High School Dropouts in Emerging Adulthood: Substance Use, Mental Health Problems, and Crime." *Community Mental Health Journal* 51 (3): 289–99. https://doi.org/10.1007/s10597-014-9760-5.

Mazzucato, Mariana. 2019. *The Value of Everything*. https://www.penguin.co.uk/books/280466/the-value-of-everything-by-mazzucato-mariana/9780141980768.

McGillivray, Mark, and Howard White. 1993. "Measuring Development? The UNDP's Human Development Index." *Journal of International Development* 5 (2): 183–92. https://doi.org/10.1002/jid.3380050210.

Meade, Birgit, and Stacey Rosen. 2013. "Despite Improvements in International Food Security, Nutritional Adequacy of Diets Falls Short of Targets in Many Countries." *Amber Waves - USDA, Economic Research Service*. https://www.ers.usda.gov/amber-waves/2013/november/despite-improvements-in-international-food-security-nutritional-adequacy-of-diets-falls-short-of-targets-in-many-countries/.

Meadows, Donella H. 2009. *Thinking in Systems: A Primer*. London: Earthscan.

Meadows, Donella H., Dennis L. Meadows, and Jørgen Randers. 1992. *Beyond the Limits: Global Collapse Or a Sustainable Future*. Earthscan Publications.

Meadows, Donella H., and Diana Wright. 2008. *Thinking in Systems: A Primer*. White River Junction, Vt: Chelsea Green Pub.

Meadows, Donella, Jorgen Randers, and Dennis Meadows. 2004. *Limits to Growth: The 30-Year Update*. Chelsea Green Publishing.

Meier, Gerald M., and James E. Rauch. 2005. *Leading Issues in Economic Development*. Oxford University Press.

Mekonnen, Mesfin M., and Arjen Y. Hoekstra. 2020. "Blue Water Footprint Linked to National Consumption and International Trade Is Unsustainable." *Nature Food* 1 (12): 792–800. https://doi.org/10.1038/s43016-020-00198-1.

Mensah, George A. 2019. "Black-White Disparities: More Than Just Race." *Journal of the American Heart Association* 8 (22): e014272. https://doi.org/10.1161/JAHA.119.014272.

Miladinov, Goran. 2020. "Socioeconomic Development and Life Expectancy Relationship: Evidence from the EU Accession Candidate Countries." *Genus* 76 (1): 2. https://doi.org/10.1186/s41118-019-0071-0.

Miles, Ian. 2012. "Dynamic Foresight Evaluation." *Foresight* 14 (February): 69–81. https://doi.org/10.1108/14636681211210378.

Mills, Ryan. 2023. "1 in 7 Families Live in Energy Poverty. States Can Ease That Burden." RMI. December 18, 2023. https://rmi.org/1-in-7-families-live-in-energy-poverty-states-can-ease-that-burden/.

Minna, Kaljonen, Johanna Jacobi, Kaisa Korhonen-Kurki, Jani P. Lukkarinen, Anna Ott, Juha Peltomaa, Flurina Schneider, Theresa Tribaldos, and Julie G. Zaehringer. 2024. "Reflexive Use of Methods: A Framework for Navigating Different Types of Knowledge and Power in Transformative Research." *Sustainability Science* 19 (2): 507–21. https://doi.org/10.1007/s11625-023-01431-z.

Monbiot, George. 2017. "Finally, a Breakthrough Alternative to Growth Economics – the Doughnut." *The Guardian*, April 12, 2017, sec. Opinion. https://www.theguardian.com/commentisfree/2017/apr/12/doughnut-growth-economics-book-economic-model.

Moore, Claire M. 2022. "Objection or Obstacle: Applying Amartya Sen's Capability Approach to the Conscientious Refusal of Emergency Contraception." *International Journal of Feminist Approaches to Bioethics* 15 (2): 40–50. https://doi.org/10.3138/ijfab.15.2.03.

Morris, Gareth, and Paul Walley. 2022. "Implementing Failure Demand Reduction as Part of a Demand Management Strategy." *Public Money & Management* 42 (1): 22–31. https://doi.org/10.1080/09540962.2021.1978163.

Mueller, Bernardo. 2020. "Why Public Policies Fail: Policymaking under Complexity." *EconomiA* 21 (2): 311–23. https://doi.org/10.1016/j.econ.2019.11.002.

Muijnck, Sam de, and Joris Tieleman. n.d. "Economy Studies - A Guide to Rethinking Economics Education." Accessed December 10, 2023. https://www.economystudies.com/book/introduction/.

Mulrenan, Claire, Isobel Braithwaite, Anna Brook, Rachel Crossley, Emily Loud, and Angelique Mavrodaris. 2023. "Comment: A Sustainable and Equitable Response to the Cost-of-Living Crisis Is Urgently Needed." *Public Health in Practice* 5.

Murchú, Niall Ó. 2019. "Education and Agency Freedom in Du Bois and Sen." *Journal of Human Development and Capabilities*, July. https://www.tandfonline.com/doi/full/10.1080/19452829.2019.1635093.

Murphy, David J., and Charles A. S. Hall. 2011. "Energy Return on Investment, Peak Oil, and the End of Economic Growth." *Annals of the New York Academy of Sciences* 1219 (1): 52–72. https://doi.org/10.1111/j.1749-6632.2010.05940.x.

Murphy, Mary P. 2023. "From Unsustainable Environmental Outcomes to a Post-Growth World." In *Creating an Ecosocial Welfare Future*, 29–42. Policy Press. https://bristoluniversitypressdigital.com/display/book/9781447363583/ch002.xml.

Nardi, Mariacristina De, Liqian Ren, and Chao Wei. n.d. "Income Inequality and Redistribution in Five Countries." *Economic Perspectives*.

National Academies of Sciences, Engineering, Health and Medicine Division, Board on Population Health and Public Health Practice, Committee on Community-Based Solutions to Promote Health Equity in the United States, Alina Baciu, Yamrot Negussie, Amy Geller, and James N. Weinstein. 2017. "The State of Health Disparities in the United States." In *Communities in Action: Pathways to Health Equity*. National Academies Press (US). https://www.ncbi.nlm.nih.gov/books/NBK425844/.

National Alliance to End Homelessness. 2024. "State of Homelessness: 2023 Edition." National Alliance to End Homelessness. 2024. https://endhomelessness.org/homelessness-in-america/homelessness-statistics/state-of-homelessness/.

News, G. C. 2010. "NI14 Indicator to Be Scrapped Says IDeA." *The Guardian*, April 15, 2010, sec. Guardian Government Computing. https://www.theguardian.com/government-computing-network/2010/apr/16/ni14-scrapped-16mar10.

Nordhaus, William D. 1997. "Traditional Productivity Estimates Are Asleep at the (Technological) Switch." *The Economic Journal* 107 (444): 1548–59. https://doi.org/10.1111/j.1468-0297.1997.tb00065.x.

Norström, Albert, Astrid Dannenberg, Geoff McCarney, Manjana Milkoreit, Florian Diekert, Gustav Engström, Ram Fishman, et al. 2014. "Three Necessary Conditions for Establishing Effective Sustainable Development Goals in the Anthropocene." *Ecology and Society* 19 (3). https://doi.org/10.5751/ES-06602-190308.

Nugent, Ciara. 2021. "Amsterdam Is Embracing a New Economic Theory to Help Save the Environment. Could It Replace Capitalism?" *Time*, 2021. https://time.com/5930093/amsterdam-doughnut-economics/.

Nussbaum, Martha C. 2000. *Women and Human Development: The Capabilities Approach*. The Seeley Lectures. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511841286.

Nyasimi, Mary, and Linda Peake. 2015. *Review of Targets for The Sustainable Development Goals: The Science Perspective*.

OECD. 2009a. *OECD Regions at a Glance 2009*. Paris: Organisation for Economic Co-operation and Development. https://www.oecd-ilibrary.org/urban-rural-and-regional-development/oecd-regions-at-a-glance-2009_reg_glance-2009-en.

———. 2009b. "Voter Turnout in National Elections." Paris: OECD. https://doi.org/10.1787/reg_glance-2009-35-en.

———. 2018. *For Good Measure: Advancing Research on Well-Being Metrics Beyond GDP*. Edited by Joseph E. Stiglitz, Jean-Paul Fitoussi, and Martine Durand. OECD. https://doi.org/10.1787/9789264307278-en.
———. 2019. "Trends in Life Expectancy in EU and Other OECD Countries: Why Are Improvements Slowing?" OECD Health Working Papers 108. Vol. 108. OECD Health Working Papers. https://doi.org/10.1787/223159ab-en.
———. 2021. *How Was Life? Volume II: New Perspectives on Well-Being and Global Inequality since 1820*. Paris: Organisation for Economic Co-operation and Development. https://www.oecd-ilibrary.org/social-issues-migration-health/how-was-life-volume-ii_3d96efc5-en.
———. 2023a. "Governing Cities - OECD." 2023. https://www.oecd.org/gov/cities.htm.
———. 2023b. *OECD Skills Outlook 2023: Skills for a Resilient Green and Digital Transition*. OECD Skills Outlook. OECD. https://doi.org/10.1787/27452f29-en.
———. 2023c. *Health at a Glance 2023: OECD Indicators*. Health at a Glance. OECD. https://doi.org/10.1787/7a7afb35-en.
———. n.d. "Making Cities Work for All: Data and Actions for Inclusive Growth | En | OECD." Accessed September 22, 2023. https://www.oecd.org/gov/making-cities-work-for-all-9789264263260-en.htm.
O'Neill, Daniel W., Andrew L. Fanning, William F. Lamb, and Julia K. Steinberger. 2018a. "A Good Life for All within Planetary Boundaries." *Nature Sustainability* 1 (2): 88–95. https://doi.org/10.1038/s41893-018-0021-4.
———. 2018b. "A Good Life for All within Planetary Boundaries." *Nature Sustainability* 1 (2): 88–95. https://doi.org/10.1038/s41893-018-0021-4.
O'Neill, Saffron, and Sophie Nicholson-Cole. 2009. "'Fear Won't Do It': Promoting Positive Engagement With Climate Change Through Visual and Iconic Representations." *Science Communication* 30 (3): 355–79. https://doi.org/10.1177/1075547008329201.
Opportunity Insights. 2018. "Racial Disparities." *Opportunity Insights* (blog). 2018. https://opportunityinsights.org/race/.
Ortega, Miquel, Marta Coll, and Francisco Ramírez. 2024. "Can a 'Doughnut' Economic Framework Be Useful to Monitor the Blue Economy Success? A Fisheries Example." *Ecology and Society* 29 (1). https://doi.org/10.5751/ES-14743-290122.
Osborne, Caroline, Claudia Baldwin, and Dana Thomsen. 2016. "Contributions of Social Capital to Best Practice Urban Planning Outcomes." *Urban Policy and Research* 34 (3): 212–24. https://doi.org/10.1080/08111146.2015.1062361.
Osborne, Stephen. 2020. *Public Service Logic: Creating Value for Public Service Users, Citizens, and Society Through Public Service Delivery*. https://doi.org/10.4324/9781003009153.
Osborne, Stephen P. 2018. "From Public Service-Dominant Logic to Public Service Logic: Are Public Service Organizations Capable of Co-Production and Value Co-Creation?" *Public Management Review* 20 (2): 225–31. https://doi.org/10.1080/14719037.2017.1350461.
Our World in Data. 2022. "Daily Supply of Calories per Person." Our World in Data. 2022. https://ourworldindata.org/grapher/daily-per-capita-caloric-supply.
Oxfam. n.d. "The UK Doughnut: A Framework for Environmental Sustainability and Social Justice." Oxfam Policy & Practice. Accessed April 7, 2024. https://policy-practice.oxfam.org/resources/the-uk-doughnut-a-framework-for-environmental-sustainability-and-social-justice-344550/.
Pal, Leslie A. 2019. "Standard Setting and International Peer Review: The OECD as a Transnational Policy Actor." In *The Oxford Handbook of Global Policy and*

Transnational Administration, edited by Diane Stone and Kim Moloney, 0. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780198758648.013.14.
Palmer, Margaret, Emily Bernhardt, Elizabeth Chornesky, Scott Collins, Andrew Dobson, Clifford Duke, Barry Gold, et al. 2004. “Ecology for a Crowded Planet.” *Science* 304 (5675): 1251–52. https://doi.org/10.1126/science.1095780.
Paulsson, Alexander, Max Koch, and Martin Fritz. 2024. “Diminishing Returns of Growth? Economic Performance, Needs Satisfaction and Ecological Impacts of OECD Welfare States.” *Critical Social Policy*, January, 02610183231218971. https://doi.org/10.1177/02610183231218971.
Philipsen, Dirk. 2015. *The Little Big Number: How GDP Came to Rule the World and What to Do about It*. Princeton University Press.
———. 2017. *The Little Big Number: How GDP Came to Rule the World and What to Do about It*. Princeton: Princeton University Press.
Phillips, Nolan E., Brian L. Levy, Robert J. Sampson, Mario L. Small, and Ryan Q. Wang. 2021. “The Social Integration of American Cities: Network Measures of Connectedness Based on Everyday Mobility Across Neighborhoods.” *Sociological Methods & Research* 50 (3): 1110–49. https://doi.org/10.1177/0049124119852386.
Pickett, Steward T. A., J. Morgan Grove, Christopher G. Boone, and Geoffrey L. Buckley. 2023. “Resilience of Racialized Segregation Is an Ecological Factor: Baltimore Case Study.” *Buildings and Cities* 4 (1): 783–800. https://doi.org/10.5334/bc.317.
Piketty, Thomas, and Arthur Goldhammer. 2017. *Capital in the Twenty-First Century*. Cambridge, UNITED STATES: Harvard University Press. http://ebookcentral.proquest.com/lib/duke/detail.action?docID=3301398.
Poisot, Timothée, Anne Bruneau, Andrew Gonzalez, Dominique Gravel, and Pedro Peres-Neto. 2019. “Ecological Data Should Not Be So Hard to Find and Reuse.” *Trends in Ecology & Evolution* 34 (6): 494–96. https://doi.org/10.1016/j.tree.2019.04.005.
Polacko, Matthew. 2021. “Causes and Consequences of Income Inequality – An Overview.” *Statistics, Politics and Policy* 12 (2): 341–57. https://doi.org/10.1515/spp-2021-0017.
Pradhan, Prajal, Luís Costa, Diego Rybski, Wolfgang Lucht, and Jürgen P. Kropp. 2017a. “A Systematic Study of Sustainable Development Goal (SDG) Interactions.” *Earth's Future* 5 (11): 1169–79. https://doi.org/10.1002/2017EF000632.
———. 2017b. “A Systematic Study of Sustainable Development Goal (SDG) Interactions.” *Earth's Future* 5 (11): 1169–79. https://doi.org/10.1002/2017EF000632.
Qin, Yue, Nathaniel D. Mueller, Stefan Siebert, Robert B. Jackson, Amir AghaKouchak, Julie B. Zimmerman, Dan Tong, Chaopeng Hong, and Steven J. Davis. 2019. “Flexibility and Intensity of Global Water Use.” *Nature Sustainability* 2 (6): 515–23. https://doi.org/10.1038/s41893-019-0294-2.
Quijano, Anibal, and Michael Ennis. 2000. “Coloniality of Power, Eurocentrism, and Latin America.” *Nepantla: Views from South* 1 (3): 533–80.
Rahnema, Majid, and Victoria Bawtree. 1997. *The Post-Development Reader*. Zed Books.
Rakshit, Shameek, Matthew McGough, and Krutika Amin. 2024. “How Does U.S. Life Expectancy Compare to Other Countries?” *Peterson-KFF Health System Tracker* (blog). 2024. https://www.healthsystemtracker.org/chart-collection/u-s-life-expectancy-compare-countries/.
Randers, Jørgen. 2012. *2052: A Global Forecast for the Next Forty Years*. Chelsea Green Publishing.
Raworth, Kate. 2012. “A Safe and Just Space for Humanity - Can We Live within the Doughnut?” In . https://doi.org/10.1163/2210-7975_HRD-9824-0069.
———. 2017a. *Doughnut Economics: Seven Ways to Think like a 21st Century Economist*. White River Junction, Vermont: Chelsea Green Publishing.

———. 2017b. “A Doughnut for the Anthropocene: Humanity’s Compass in the 21st Century.” *The Lancet Planetary Health* 1 (2): e48–49. https://doi.org/10.1016/S2542-5196(17)30028-1.
———. n.d. “Doughnut Economics Afterword.Pdf.” In *Dropbox*. Accessed September 21, 2023. https://www.dropbox.com/s/ddf90oaywxmetjz/Doughnut%20Economics%20Afterword.pdf?dl=0.
Reed, Mark, Evan D. G. Fraser, Stephen Morse, and Andrew J. Dougill. 2005a. “Integrating Methods for Developing Sustainability Indicators to Facilitate Learning and Action.” *Ecology and Society* 10 (1). https://www.jstor.org/stable/26267769.
———. 2005b. “Integrating Methods for Developing Sustainability Indicators to Facilitate Learning and Action.” *Ecology and Society* 10 (1). https://www.jstor.org/stable/26267769.
Rees, William E. 2016. “Denying Herman Daly: Why Conventional Economists Will Not Embrace the Daly Vision.” In *Beyond Uneconomic Growth*, 133–62. Edward Elgar Publishing. https://www.elgaronline.com/display/edcoll/9781783472482/9781783472482.00015.xml.
Rees, William E., and Mathis Wackernagel. 2013. “The Shoe Fits, but the Footprint Is Larger than Earth.” *PLOS Biology* 11 (11): e1001701. https://doi.org/10.1371/journal.pbio.1001701.
Ribeiro, Paula, and Vinicius Picanco Rodrigues. 2023. “The Emergence of the Doughnut Economics in Policy: A Narrative Review.” SSRN Scholarly Paper. Rochester, NY. https://doi.org/10.2139/ssrn.4438386.
Ricardo. 2023. “2021 Digital Divide Index (DDI).” ArcGIS StoryMaps. February 1, 2023. https://storymaps.arcgis.com/stories/8ad45c48ba5c43d8ad36240ff0ea0dc7.
Rice, Jennifer L., Joshua Long, and Anthony Levenda. 2022. “Against Climate Apartheid: Confronting the Persistent Legacies of Expendability for Climate Justice.” *Environment and Planning E: Nature and Space* 5 (2): 625–45. https://doi.org/10.1177/2514848621999286.
Richardson, Katherine, Will Steffen, Wolfgang Lucht, Jørgen Bendtsen, Sarah E. Cornell, Jonathan F. Donges, Markus Drüke, et al. 2023. “Earth beyond Six of Nine Planetary Boundaries.” *Science Advances* 9 (37): eadh2458. https://doi.org/10.1126/sciadv.adh2458.
Richters, Oliver, and Andreas Siemoneit. 2019. “Growth Imperatives: Substantiating a Contested Concept.” *Structural Change and Economic Dynamics* 51 (C): 126–37.
Ritchie, Hannah, and Max Roser. 2024a. “Many Countries Have Decoupled Economic Growth from CO2 Emissions, Even If We Take Offshored Production into Account.” *Our World in Data*, February. https://ourworldindata.org/co2-gdp-decoupling.
———. 2024b. “What Is Undernourishment and How Is It Measured?” *Our World in Data*, March. https://ourworldindata.org/undernourishment-definition.
———. 2024c. “Daily Calorie Supply: Data Sources and Definitions.” *Our World in Data*, March. https://ourworldindata.org/calorie-supply-sources.
Rockström, Johan, Joyeeta Gupta, Timothy M. Lenton, Dahe Qin, Steven J. Lade, Jesse F. Abrams, Lisa Jacobson, et al. 2021. “Identifying a Safe and Just Corridor for People and the Planet.” *Earth’s Future* 9 (4): e2020EF001866. https://doi.org/10.1029/2020EF001866.
Rockström, Johan, Joyeeta Gupta, Dahe Qin, Steven J. Lade, Jesse F. Abrams, Lauren S. Andersen, David I. Armstrong McKay, et al. 2023. “Safe and Just Earth System Boundaries.” *Nature* 619 (7968): 102–11. https://doi.org/10.1038/s41586-023-06083-8.

Rockström, Johan, Will Steffen, Kevin Noone, Åsa Persson, F. Stuart III Chapin, Eric Lambin, Timothy Lenton, et al. 2009. “Planetary Boundaries: Exploring the Safe Operating Space for Humanity.” *Ecology and Society* 14 (2). https://doi.org/10.5751/ES-03180-140232.

Rogers, Ben, Nuno F. da Cruz, Francesco Ripa, and Imogen Hamilton-Jones. 2023. “Prosperity Beyond Growth: An Emerging Agenda for European Cities.” *Journal of City Climate Policy and Economy*, May, e20230001. https://doi.org/10.3138/jccpe-2023-0001.

Rosenzweig, Cynthia, William Solecki, Stephen A. Hammer, and Shagun Mehrotra. 2010. “Cities Lead the Way in Climate–Change Action.” *Nature* 467 (7318): 909–11. https://doi.org/10.1038/467909a.

Roser, Max. 2024a. “Breaking out of the Malthusian Trap: How Pandemics Allow Us to Understand Why Our Ancestors Were Stuck in Poverty.” *Our World in Data*, March. https://ourworldindata.org/breaking-the-malthusian-trap.

———. 2024b. “What Is Economic Growth? And Why Is It so Important?” *Our World in Data*, March. https://ourworldindata.org/what-is-economic-growth.

Rousselot, Sami. 2021. “What Is a Ton of CO2, and How Much CO2 Do We Emit?” *Tapio* (blog). August 12, 2021. https://www.tapio.eco/blog/what-represents-one-ton-co2-emissions/.

Roy, Ajishnu, Aman Basu, and Xuhui Dong. 2021. “Achieving Socioeconomic Development Fuelled by Globalization: An Analysis of 146 Countries.” *Sustainability* 13 (9): 4913. https://doi.org/10.3390/su13094913.

Rubin, Kayleigh, Molly Freed, and Ashna Aggarwhal. 2023. “1 in 7 Families Live in Energy Poverty. States Can Ease That Burden.” RMI. 2023. https://rmi.org/1-in-7-families-live-in-energy-poverty-states-can-ease-that-burden/.

Rud, Iryna, Chris van Klaveren, Wim Groot, and Henriëtte Maassen van den Brink. 2018. “What Drives the Relationship Between Early Criminal Involvement and School Dropout?” *Journal of Quantitative Criminology* 34 (1): 139–66. https://doi.org/10.1007/s10940-016-9326-5.

Ruijne, R. E., M. Zarchev, J. van Weeghel, J. Henrichs, C. Garofalo, S. Bogaerts, C. L. Mulder, and A. M. Kamperman. 2022. “Experiencing Discrimination Mediates the Relationship between Victimization and Social Withdrawal in Patients Suffering from a Severe Mental Illness: A Cross-Sectional Study.” *Journal of Psychiatric Research* 148 (April): 14–20. https://doi.org/10.1016/j.jpsychires.2022.01.018.

Ryberg, Morten W., Martin Marchman Andersen, Mikołaj Owsianiak, and Michael Z. Hauschild. 2020. “Downscaling the Planetary Boundaries in Absolute Environmental Sustainability Assessments – A Review.” *Journal of Cleaner Production* 276 (December): 123287. https://doi.org/10.1016/j.jclepro.2020.123287.

Sachs, Wolfgang. 1992. *The Development Dictionary: A Guide to Knowledge as Power*. Zed Books Ltd.

Saunders, Harry. 2014. “Does Capitalism Require Endless Growth?” *The Breakthrough Journal* 6 (Summer 2016). https://thebreakthrough.org/journal/issue-6/does-capitalism-require-endless-growth.

Sayers, Michael. 2015. “The Welsh Doughnut: A Framework for Environmental Sustainability and Social Justice.” Oxfam. https://oxfamilibrary.openrepository.com/bitstream/handle/10546/346207/rr-welsh-doughnut-sustainability-social-justice-090315-summ-en.pdf?sequence=1&isAllowed=y.

Sayers, Michael, and Katherine Trebeck. 2015a. “The Scottish Doughnut: A Framework for Environmental Sustainability and Social Justice.” Oxfam. https://ciaotest.cc.columbia.edu/wps/oxfam/0031934/f_0031934_25930.pdf.

———. 2015b. "The UK Doughnut: A Framework for Environmental Sustainability and Social Justice." Oxfam. https://policy-practice.oxfam.org/resources/the-uk-doughnut-a-framework-for-environmental-sustainability-and-social-justice-344550/.

Schimpf, Cordelia, and Curtis Cude. 2020. "A Systematic Literature Review on Water Insecurity from an Oregon Public Health Perspective." *International Journal of Environmental Research and Public Health* 17 (3): 1122. https://doi.org/10.3390/ijerph17031122.

Schleicher, Judith, Marije Schaafsma, and Bhaskar Vira. 2018. "Will the Sustainable Development Goals Address the Links between Poverty and the Natural Environment?" *Current Opinion in Environmental Sustainability*, Sustainability Science, 34 (October): 43–47. https://doi.org/10.1016/j.cosust.2018.09.004.

Schumacher, Ernst Friedrich. 1993. *Small Is Beautiful: A Study of Economics as If People Mattered*. Vintage.

Schutter, Olivier De, Kate Pickett, and Richard Wilkinson. n.d. "Chapter 5 Equality as an Ingredient for a Post-Growth World."

Seddon, John. 1992. *I Want You to Cheat!: The Unreasonable Guide to Service and Quality in Organisation*. Buckingham: Vanguard Press.

———. 2008. *Systems Thinking in the Public Sector: The Failure of the Reform Regime... and a Manifesto for a Better Way*. Axminster, UNITED KINGDOM: Triarchy Press. http://ebookcentral.proquest.com/lib/duke/detail.action?docID=3411410.

Seddon, John, Brendan O'Donovan, and Keivan Zokaei. 2011. "Rethinking Lean Service." In *Service Design and Delivery*, edited by Mairi Macintyre, Glenn Parry, and Jannis Angelis, 41–60. Service Science: Research and Innovations in the Service Economy. Boston, MA: Springer US. https://doi.org/10.1007/978-1-4419-8321-3_4.

Seddon, Professor John, and Brendan O'Donovan. 2010. "Why Aren't We All Working for Learning Organisations?" 17 (2).

Sen, A. 1993. "The Economics of Life and Death." *Scientific American* 268 (5): 40–47. https://doi.org/10.1038/scientificamerican0593-40.

Sen, Amartya. 1999a. *Development as Freedom*. Oxford University Press.

———. 1999b. "Economics and Health." *The Lancet* 354 (December): SIV20. https://doi.org/10.1016/S0140-6736(99)90363-X.

———. 2015. UNU-WIDER : Blog : Joseph Stiglitz and Amartya Sen on the Sustainable Development Goals. http://www.wider.unu.edu/publication/joseph-stiglitz-and-amartya-sen-sustainable-development-goals.

———. n.d.-a. "4 Economic Policy and Equity: An Overview." In *Economic Policy and Equity*. International Monetary Fund. Accessed April 6, 2024. https://www.elibrary.imf.org/display/book/9781557757883/ch004.xml.

———. n.d.-b. "SUSTAINABLE DEVELOPMENT AND OUR RESPONSIBILITIES."

Shadish, William R. 1993. "Critical Multiplism: A Research Strategy and Its Attendant Tactics." *New Directions for Program Evaluation* 1993 (60): 13–57. https://doi.org/10.1002/ev.1660.

Shay, Laine P., and Beth M. Rauhaus. n.d. "Closing the Gap: An Analysis of Women's Representation in State Legislatures and the Gender Pay Gap." *Legislative Studies Quarterly* n/a (n/a). Accessed November 2, 2023. https://doi.org/10.1111/lsq.12417.

Shen, Zhenglai, Chien-fei Chen, Hongyu Zhou, Nina Fefferman, and Som Shrestha. 2023a. "Community Vulnerability Is the Key Determinant of Diverse Energy Burdens in the United States." *Energy Research & Social Science* 97 (March): 102949. https://doi.org/10.1016/j.erss.2023.102949.

———. 2023b. “Community Vulnerability Is the Key Determinant of Diverse Energy Burdens in the United States.” *Energy Research & Social Science* 97 (March): 102949. https://doi.org/10.1016/j.erss.2023.102949.

Shifler Bowers, Kara, Erica Francis, and Jennifer L. Kraschnewski. 2018. “The Dual Burden of Malnutrition in the United States and the Role of Non-Profit Organizations.” *Preventive Medicine Reports* 12 (October): 294–97. https://doi.org/10.1016/j.pmedr.2018.10.002.

Sitthiyot, Thitithep, and Kanyarat Holasut. 2020. “A Simple Method for Measuring Inequality.” *Palgrave Communications* 6 (1): 1–9. https://doi.org/10.1057/s41599-020-0484-6.

Solanki, Anisha. 2021. “‘Leeds Is Not an Island’: Decolonising Climate Action in Activism and Municipal Governance in Leeds, United Kingdom.” University of Leeds. https://drive.google.com/file/d/1jGGSFYwnOVOXZ99VbX_4KUwC18p4YwJo/view?usp=embed_facebook.

Solow, Robert M. 1956. “A Contribution to the Theory of Economic Growth.” *The Quarterly Journal of Economics* 70 (1): 65. https://doi.org/10.2307/1884513.

Sønderskov, Mette, and Rolf Rønning. 2021. “Public Service Logic: An Appropriate Recipe for Improving Serviceness in the Public Sector?” *Administrative Sciences* 11 (3): 64. https://doi.org/10.3390/admsci11030064.

Soss, Joe. 2018. “On Casing a Study versus Studying a Case.” *Qualitative & Multi-Method Research* 16 (1): 21–27. https://doi.org/10.5281/zenodo.2562167.

———. 2021. “On Casing a Study versus Studying a Case.” In *Rethinking Comparison: Innovative Methods for Qualitative Political Inquiry*, edited by Erica S. Simmons and Nicholas Rush Smith, 84–106. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108966009.005.

Sovacool, Benjamin K., Peter Newell, Sanya Carley, and Jessica Fanzo. 2022. “Equity, Technological Innovation and Sustainable Behaviour in a Low-Carbon Future.” *Nature Human Behaviour* 6 (3): 326–37. https://doi.org/10.1038/s41562-021-01257-8.

Spangenberg, Joachim H. 2014. “Institutional Change for Strong Sustainable Consumption: Sustainable Consumption and the Degrowth Economy.” *Sustainability: Science, Practice and Policy* 10 (1): 62–77. https://doi.org/10.1080/15487733.2014.11908125.

Spash, Clive L. 2023. “Herman Daly: Some Personal Reflections.” *Environmental Values* 32 (2): 126–30. https://doi.org/10.3197/096327123X16702350862773.

Spash, Clive L., Philippe Méral, and Olivier Petit. 2023. “A Journey into the Foundations and Transformative Implications of Social Ecological Economics: An Interview with Clive Spash.” *Développement Durable et Territoires. Économie, Géographie, Politique, Droit, Sociologie*, no. Vol.14, n°1 (June). https://doi.org/10.4000/developpementdurable.22652.

Spierings, Niels, and Floris Vermeulen. 2023. “Minding the Political Engagement Gap: How Discrimination and Religion Impact Dutch Voters with an Immigrant Background.” *Acta Politica*, February. https://doi.org/10.1057/s41269-023-00286-7.

Stanton, Elizabeth A. n.d. “The Human Development Index: A History.”

Starr, Jared, Craig Nicolson, Michael Ash, Ezra M. Markowitz, and Daniel Moran. 2023. “Income-Based U.S. Household Carbon Footprints (1990–2019) Offer New Insights on Emissions Inequality and Climate Finance.” *PLOS Climate* 2 (8): e0000190. https://doi.org/10.1371/journal.pclm.0000190.

“Statement by Kate Gilmore United Nations Deputy High Commissioner for Human Rights at the Panel Discussion on Climate Change and Right to Health - The Global Climate Crisis Is a Racial Justice Crisis.” 2022. https://www.ohchr.org/en/press-releases/2022/11/global-climate-crisis-racial-justice-crisis-un-expert.

Steffen, Will, Katherine Richardson, Johan Rockström, Sarah E. Cornell, Ingo Fetzer, Elena M. Bennett, Reinette Biggs, et al. 2015. "Planetary Boundaries: Guiding Human Development on a Changing Planet." *Science* 347 (6223): 1259855. https://doi.org/10.1126/science.1259855.

Steinmetz, Carl. 2024. "Dutch Colonization and Slavery of Asia: From Apology to Reparation." *Advances in Social Sciences Research Journal* 11 (February): 316–44. https://doi.org/10.14738/assrj.112.16495.

Sterner, Thomas, Edward B. Barbier, Ian Bateman, Inge van den Bijgaart, Anne-Sophie Crépin, Ottmar Edenhofer, Carolyn Fischer, et al. 2019. "Policy Design for the Anthropocene." *Nature Sustainability* 2 (1): 14–21. https://doi.org/10.1038/s41893-018-0194-x.

Stewart, Emily. 2022. "What GDP Does and Doesn't Tell Us." Vox. July 28, 2022. https://www.vox.com/the-goods/2022/7/28/23280969/gdp-report-recession-economy-climate-change-happiness.

Stiglitz, Joseph E. 2015. UNU-WIDER : Blog : Joseph Stiglitz and Amartya Sen on the Sustainable Development Goals. http://www.wider.unu.edu/publication/joseph-stiglitz-and-amartya-sen-sustainable-development-goals.

Stiglitz, Joseph, Amartya Sen, and Jean Fitoussi. 2009. "Report of the Commission on the Measurement of Economic Performance and Social Progress (CMEPSP)," January.

Stockholm Resilience Centre. 2016. "The SDGs Wedding Cake." 2016. https://www.stockholmresilience.org/research/research-news/2016-06-14-the-sdgs-wedding-cake.html.

Stolpe, Frida, Vega Hörberg, and Maria Helena Sepp. 2023. *Strategic Alignment of Multinational Corporations with the Doughnut Economy - Advancing Sustainability and Navigating Stakeholder Challenges : A Case Study of Husqvarna Group*. https://urn.kb.se/resolve?urn=urn:nbn:se:hj:diva-60724.

Stopper, Markus, Anja Kossik, and Bernd Gastermann. 2016. "Development of a Sustainability Model for Manufacturing SMEs Based on the Innovative Doughnut Economics Framework." *Hong Kong*.

Strandberg, Thomas. 2023. "Hållbar Utveckling Inom Socialt Arbete Och Socialtjänsten." Örebro University.

Strathford, Beth, and Dan O'Neil. 2020. "The UK's Path to a Doughnut-Shaped Recovery." Leeds, UK: University of Leeds. https://goodlife.leeds.ac.uk/wp-content/uploads/sites/20/2020/11/doughnut-shaped-recovery-report.pdf.

Sullivan, Dylan, and Jason Hickel. 2023. "Capitalism and Extreme Poverty: A Global Analysis of Real Wages, Human Height, and Mortality since the Long 16th Century." *World Development* 161 (January): 106026. https://doi.org/10.1016/j.worlddev.2022.106026.

Tan, Nairong, Xiaolei Wang, Hao Wang, Zhuoqun Gao, Xiaoying Chang, and Tao Ma. 2022. "Downscaling of Planetary Boundaries and Sustainability Management: A Nexus Analysis of Water, Land and Major Functions at the National-Provincial Level." *Sustainable Horizons* 3 (September): 100028. https://doi.org/10.1016/j.horiz.2022.100028.

Tansi, Vito. 1999. "Finance and Development." Finance and Development | F&D. 1999. https://www.imf.org/external/pubs/ft/fandd/1999/06/tanzi.htm.

Teicher, Jordan. n.d. "Doughnut Economics Has a Hole at Its Core." Accessed December 11, 2023. https://jacobin.com/2021/09/doughnut-economics-raworth-amsterdam-capitalism-socialism.

Tessum, Christopher W., Joshua S. Apte, Andrew L. Goodkind, Nicholas Z. Muller, Kimberley A. Mullins, David A. Paolella, Stephen Polasky, et al. 2019. "Inequity in

Consumption of Goods and Services Adds to Racial–Ethnic Disparities in Air Pollution Exposure.” *Proceedings of the National Academy of Sciences* 116 (13): 6001–6. https://doi.org/10.1073/pnas.1818859116.

Thiry, Géraldine, Tristan Dissaux, Fanny Dethier, and Philippe Roman. 2023. “Bruxelles à l’heure Du Donut.” *Revue Projet*, no. 2: 14–19.

Thriving Cities Initiative. 2020. “TCI and Doughnut Economics SummaryPhiladelphia.” 2020. https://futurecityphilly.org/EF/2021/TCI%20and%20Doughnut%20Economics%20Summary.pdf.

Timmermans, Stefan, and Iddo Tavory. 2012. “Theory Construction in Qualitative Research: From Grounded Theory to Abductive Analysis.” *Sociological Theory* 30 (3): 167–86. https://doi.org/10.1177/0735275112457914.

Trebeck, Katherine, and Jeremy Williams. 2019. *The Economics of Arrival : Ideas for a Grown-up Economy*. Bristol, UK : Policy Press, 2019. https://find.library.duke.edu/catalog/UNCb9573764.

Turner, Graham. 2008. “A Comparison of The Limits to Growth with 30 Years of Reality.” https://publications.csiro.au/publications/publication/PIcsiro:EP111264.

Turner, Rachel A, and Jane Wills. 2022. “Downscaling Doughnut Economics for Sustainability Governance.” *Current Opinion in Environmental Sustainability* 56 (June): 101180. https://doi.org/10.1016/j.cosust.2022.101180.

Ueda, Kenichi. n.d. “Life Expectancy and Income Convergence in the World: A Dynamic General Equilibrium Analysis.” IMF. Accessed April 6, 2024. https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Life-Expectancy-and-Income-Convergence-in-the-World-A-Dynamic-General-Equilibrium-Analysis-22061.

UF Election Lab. 2014. “» 2014 General Election Turnout Rates UF Election Lab.” 2014. https://election.lab.ufl.edu/2014-general-election-turnout-rates/.

———. 2016. “» 2016 General Election Turnout Rates UF Election Lab.” 2016. https://election.lab.ufl.edu/voter-turnout/2016-general-election-turnout-rates/.

———. 2018. “» 2018 General Election Turnout Rates UF Election Lab.” 2018. https://election.lab.ufl.edu/voter-turnout/2018-general-election-turnout-rates/.

———. 2020. “» 2020 General Election Turnout Rates UF Election Lab.” 2020. https://election.lab.ufl.edu/voter-turnout/2020-general-election-turnout-rates/.

UNFCCC. n.d. “Urban Climate Action Is Crucial to Bend the Emissions Curve.” UNFCCC. Accessed December 11, 2023. https://unfccc.int/news/urban-climate-action-is-crucial-to-bend-the-emissions-curve.

Ura, Karma, Sonam Kinga, and Centre for Bhutan Studies, eds. 2004. *The Spider and the Piglet: Proceedings of the First International Seminar on Bhutan Studies*. Thimphu: Centre for Bhutan Studies.

U.S. Bureau of Labor Statistics. n.d. “LAUS Home :” Accessed March 31, 2024. https://www.bls.gov/lau/.

U.S. Department of Agriculture. 2023. “USDA ERS - Definitions of Food Security.” 2023. https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/definitions-of-food-security/.

U.S. Department of State. 2021. “The United States of America Nationally Determined Contribution Reducing Greenhouse Gases in the United States: A 2030 Emissions Target.” UNFCCC. https://unfccc.int/sites/default/files/NDC/2022-06/United%20States%20NDC%20April%2021%202021%20Final.pdf.

U.S. Energy Information Administration. n.d. “State Energy Data System (SEDS).” State Energy Data System (SEDS). Accessed February 10, 2024. https://www.eia.gov/state/seds/.

USGCRP. 2018. “Fourth National Climate Assessment.” U.S. Global Change Research Program, Washington, DC. https://nca2018.globalchange.gov.

UW Madison Population Health Institute. n.d.-a. “2024 Measures | County Health Rankings & Roadmaps.” Accessed March 31, 2024. https://www.countyhealthrankings.org/health-data/county-health-rankings-measures.

———. n.d.-b. “Income Inequality | County Health Rankings & Roadmaps.” Accessed March 3, 2024. https://www.countyhealthrankings.org/explore-health-rankings/county-health-rankings-model/health-factors/social-economic-factors/income/income-inequality.

———. n.d.-c. “Length of Life | County Health Rankings & Roadmaps.” Accessed February 26, 2024. https://www.countyhealthrankings.org/explore-health-rankings/county-health-rankings-model/health-outcomes/length-of-life.

Valentín-Sívico, Javier, Casey Canfield, Sarah A. Low, and Christel Gollnick. 2023. “Evaluating the Impact of Broadband Access and Internet Use in a Small Underserved Rural Community.” *Telecommunications Policy* 47 (4): 102499. https://doi.org/10.1016/j.telpol.2023.102499.

Van de Walle, Steven. 2016. “When Public Services Fail: A Research Agenda on Public Service Failure.” *Journal of Service Management* 27 (September). https://doi.org/10.1108/JOSM-04-2016-0092.

Victor, Peter A. 2023a. *Escape from Overshoot: Economics for a Planet in Peril*. New Society Publishers.

———. 2023b. *Escape from Overshoot: Economics for a Planet in Peril*. New Society Publishers.

Vince, Gaia. 2012. “Living in the Doughnut.” *Nature Climate Change* 2 (4): 225–26. https://doi.org/10.1038/nclimate1457.

Vogel, Jefim, and Jason Hickel. 2023. “Is Green Growth Happening? An Empirical Analysis of Achieved versus Paris-Compliant CO2–GDP Decoupling in High-Income Countries.” *The Lancet Planetary Health* 7 (9): e759–69. https://doi.org/10.1016/S2542-5196(23)00174-2.

Wahlund, Madeleine, and Teis Hansen. 2022. “Exploring Alternative Economic Pathways: A Comparison of Foundational Economy and Doughnut Economics.” *Sustainability: Science, Practice and Policy* 18 (1): 171–86. https://doi.org/10.1080/15487733.2022.2030280.

Walley, Paul, Pauline Found, and Sharon Williams. 2019. “Failure Demand: A Concept Evaluation in UK Primary Care.” *International Journal of Health Care Quality Assurance* 32 (1): 21–33. https://doi.org/10.1108/IJHCQA-08-2017-0159.

Walley, Paul, and Anna Jennison-Phillips. n.d. “Demand Management in the Public Sector: Developments and Issues.”

Warnecke, Tonia. 2023a. “Operationalizing the Doughnut Economy: An Institutional Perspective.” *Journal of Economic Issues* 57 (2): 643–53. https://doi.org/10.1080/00213624.2023.2202570.

———. 2023b. “Operationalizing the Doughnut Economy: An Institutional Perspective.” *Journal of Economic Issues* 57 (2): 643–53. https://doi.org/10.1080/00213624.2023.2202570.

Wedy, Gabriel. 2017. “Sustainable Development and the Idea of Justice According to Amartya Sen.” SSRN Scholarly Paper. Rochester, NY. https://doi.org/10.2139/ssrn.3784674.

Wiedmann, Thomas, Manfred Lenzen, Lorenz T. Keyßer, and Julia K. Steinberger. 2020. “Scientists’ Warning on Affluence.” *Nature Communications* 11 (1): 3107. https://doi.org/10.1038/s41467-020-16941-y.

Wiedmann, Thomas O., Heinz Schandl, Manfred Lenzen, Daniel Moran, Sangwon Suh, James West, and Keiichiro Kanemoto. 2015. "The Material Footprint of Nations." *Proceedings of the National Academy of Sciences* 112 (20): 6271–76. https://doi.org/10.1073/pnas.1220362110.

Wiggins, Chris, and Matthew Jones. 2023. *How Data Happened: A History from the Age of Reason to the Age of Algorithms*. W. W. Norton & Company.

Wilkinson, Richard G., and Kate E. Pickett. 2006. "Income Inequality and Population Health: A Review and Explanation of the Evidence." *Social Science & Medicine (1982)* 62 (7): 1768–84. https://doi.org/10.1016/j.socscimed.2005.08.036.

Williams, Jeremy. 2018. "Book Review: A Finer Future." *The Earthbound Report* (blog). November 13, 2018. https://earthbound.report/2018/11/13/book-review-a-finer-future/.

———. 2019. "The Futility of Uneconomic Growth." *The Earthbound Report* (blog). June 26, 2019. https://earthbound.report/2019/06/26/the-futility-of-uneconomic-growth/.

———. 2021. "Investigating Failure Demand." *The Earthbound Report* (blog). December 7, 2021. https://earthbound.report/2021/12/07/investigating-failure-demand/.

Wilson, Lindsay. 2022. "Carbon Targets for Your Footprint." *Shrink That Footprint* (blog). June 28, 2022. https://shrinkthatfootprint.com/carbon-targets-for-your-footprint/.

Winters, Chris. 2021. "Three Cities Switching To Life-Affirming Economies." *YES! Magazine* (blog). 2021. https://www.yesmagazine.org/issue/ecological-civilization/2021/02/16/cities-life-affirming-economies.

Wisman, Jon D. 2011. "Inequality, Social Respectability, Political Power, and Environmental Devastation." *Journal of Economic Issues* 45 (4): 877–900. https://doi.org/10.2753/JEI0021-3624450407.

World Bank. 2020. *Poverty and Shared Prosperity 2020: Reversals of Fortune*. The World Bank. https://doi.org/10.1596/978-1-4648-1602-4.

———. 2022. "Poverty and Inequality Platform." 2022. https://pip.worldbank.org/home.

———. 2023a. "Macro Poverty Outlook." Text/HTML. World Bank. 2023. https://www.worldbank.org/en/publication/macro-poverty-outlook.

———. 2023b. "Understanding Poverty." Text/HTML. World Bank. 2023. https://www.worldbank.org/en/understanding-poverty.

———. 2023c. "World Bank Open Data." World Bank Open Data. 2023. https://data.worldbank.org.

Wu, Ran, Tao Ma, and Enno Schröder. 2022. "The Contribution of Trade to Production-Based Carbon Dioxide Emissions." *Structural Change and Economic Dynamics* 60 (March): 391–406. https://doi.org/10.1016/j.strueco.2021.12.005.

Xu, Wei, Michal Engelman, and Jason Fletcher. 2021. "From Convergence to Divergence: Lifespan Variation in US States, 1959–2017." *SSM - Population Health* 16 (December): 100987. https://doi.org/10.1016/j.ssmph.2021.100987.

Xu, Zhenci, Sophia N. Chau, Xiuzhi Chen, Jian Zhang, Yingjie Li, Thomas Dietz, Jinyan Wang, et al. 2020. "Assessing Progress towards Sustainable Development over Space and Time." *Nature* 577 (7788): 74–78. https://doi.org/10.1038/s41586-019-1846-3.

Ziai, Aram. 2017. "Post-Development 25 Years after The Development Dictionary." *Third World Quarterly* 38 (12): 2547–58. https://doi.org/10.1080/01436597.2017.1383853.

Zotesso, Jaqueline Pirão. 2023. "EM DIREÇÃO À ECONOMIA DONUT?" *Revista de Comunicação Dialógica*, no. 9: 38–55.