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In American Cities, A Tale of Tree Inequity

Causes, Consequences, and Solutions

Patrick Kabanda

Abstract

Limited tree canopy affects millions of people living in American cities, especially those in people of color and lower-income neighborhoods. The lack of trees has been linked to hundreds of heat-related deaths, not to mention compromising the respiratory system, mental health, and other aspects of well-being. In addition, Americans who live in treeless neighborhoods are more likely to lose out on tree-related economic and social opportunities. Although more has yet to be done to sufficiently address these links, a growing body of research is linking this issue to not only income, but also the nation's discriminatory practices of the past. As America's inequality problem affects the distribution of natural infrastructure, urban non-whites and low income earners are more likely to bear the brunt of scanty tree coverage. It will take both public and private commitment to address this problem.

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Introduction

As a barrage of deadly record-breaking heatwaves swept much of the United States this summer, pushing the heat index into triple digits in some parts of the country,[1] the unequal distribution of trees, a natural cooler, has instigated renewed attention to the question: "Since when have trees existed only for rich Americans?" The average temperature between places with trees and those without can vary up to 10 degrees, an important factor, because in the United States heat kills more people than any other kind of extreme weather. "Trees today prevent approximately 1,200 more heat-related deaths annually in American cities," as Ian Leahy and Yaryna Serkez, whose article posed the question above, said. Moreover, regarding human development, a growing body of literature shows that elements of a natural environment like trees can improve educational performance, facilitate social connections, and boost mental and physical health.[2]

Since trees also trap air pollutants, they help the United States avoid some 670,000 acute respiratory incidences each year,[3] further relieving the burden on the nation's already shaky healthcare system.[4] "A well-maintained tree canopy may even reduce several types of crime and create economic opportunities, including careers that cannot be outsourced to plant and maintain those trees." For many lower income and people of color in urban America, however, such tree benefits have long been out of reach,[5] and this corroborates the multidimensional nature of inequality. Although trees provide many benefits, there is a tree canopy gap in American cities largely because of the nation's longstanding discriminatory practices and income inequality.

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[1] Gard and Brink 2021.

[2] Leahy and Serkez 2021.

[3] Leahy and Serkez 2021.

[4] See Kempker 2020.

[5] Leahy and Serkez 2021.

Background

The tree gap by discrimination

To a nation that seems exhausted from discussing its racial past, and would perhaps rather bury the topic in an old-growth forest, an enormous body of evidence yet again stirs another inconvenient truth: America's discriminatory practices of the past have contributed to the tree gap in urban America. In the 1930s, for one thing, the federal government, via its Home Owners' Loan Corporation (HOLC), enacted "a racially discriminatory housing policy" called 'redlining.' Ranking "the perceived risk of investing in particular neighborhoods," HOLC devised a color-coded scale of 'A' (green), 'B' (blue), 'C' (yellow), and 'D' (red). Across the country, a 'D' was given to places that were racially discriminated against.[6] And this was not just for the sake of discrimination to, say, keep out neighbors you would rather not have. "Color-coded maps dissuaded not only mortgage but also health care and infrastructure investments based on where people lived. The red lines that were drawn around neighborhoods — predominantly Black as well as Catholic, Jewish and immigrant — now often line up very closely with maps showing a lack of tree canopy today," as Leahy and Serkez observe.[7] See Figure 1, showing Buffalo, New York and Charlotte, North Carolina.

Meanwhile, wealthier and whiter neighborhoods now often line up closely with maps showing a healthy tree canopy. For they benefited from what may be called 'greenlining,' a process in which HOLC color-coded neighborhoods with predominantly American-born whites and newer houses with an 'A' or a 'B' grade. As this signified the " 'safest' areas for banks to invest," it also signified the distribution of social amenities,

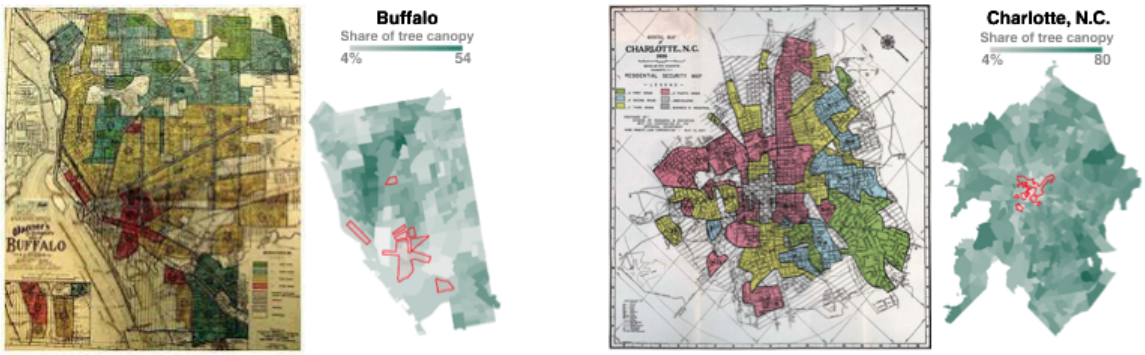

Figure 1 **Sources**: Multi color-coded maps: Buffalo, NY: Residential Security Map. 'City Survey File. Record Group 195. National Archives II, College Park, MD.' Image courtesy of Nightingale 2012 (Blatto, 2018). Charlotte, NC: Redlining Map, 1935. Image courtesy of Gaspaire / BlackPast 2012 (McClelland 2020). Share of tree canopy: American Forests; redlining boundaries: Mapping Inequality (Leahy and Serkez 2021, *The New York Times*).

[6] Locke et al. 2021.

[7] Leahy and Serkez 2021. Indeed, such "racial and geographic disparities in urban tree canopy parallel other striking patterns of racialized environmental inequity documented by environmental justice (EJ) research," as Locke et al. cite. "For more than three decades, EJ researchers have developed an enormous body of evidence highlighting the disproportionate concentration of environmental hazards and burdens in communities of color, and conversely, the privileged access to environmental amenities in predominantly white communities" (Locke et al. 2021).

including living infrastructure like the "allocation and location of trees."[8] As Locke et al. argue, the links connecting redlining to socioeconomic status and wealth creation are increasingly understood, thanks to copious research done here. But regarding shaping urban ecosystems, how housing segregation may have contributed to this is less clear.[9]

That less clarity notwithstanding, areas "with somewhat older structures," those with a "presence of foreign-born residents," and those with both the former and the latter were commonly ascribed a 'C'. Finally, as already mentioned, "areas with significant numbers of racial and ethnic minorities, foreign-born residents, families on relief, and having older housing were almost always viewed as "hazardous" and given the lowest grade, 'D.'" In recent months, many of these communities have had their share of the scorching heat, as tree covers that could provide some relief in their neighborhoods are scanty.[10]

The tree gap by income

But if there is a tree gap by race, there is also a tree gap by income. And if the color of the dollar is green, richer Americans not only enjoy more dollars in their wallets but also more trees in their neighborhoods. Consider the following cities, as provided in Figure 2.

In Baltimore, Maryland, where blacks make up some 62 percent of the city's population of around 600,000 and the medium income is about $50,000,[11] those whose median income is above $150,000 live in parts of the city with a tree canopy of over 70 percent — where trees shade that much of the surface.[12] Compare that with a measly 3 percent tree canopy where those whose median income is about $30,000 live. In Portland, Oregon, where the city has a tree landmarking program among the most extensive in the country, and where there is even a Heritage Tree program, which "celebrates and protects trees that are considered significant to the city for their 'age, size, type, historical association, or horticultural value' "[13] (as if they are UNESCO heritage sites), the story is similar. Those whose median income of less than $40,000 have a 3 percent tree canopy compared to nearly 60 percent for those whose median income is over $160,000.[14]

Elsewhere, although money does not grow on trees, the tree still narrates the income divide. In Austin, Texas, where whites make up some 72 percent of the city's population of about one million,[15] and the median income hovers around $75,000,[16] those whose median income is about $60,000 have a tree canopy of 15 percent. That is nothing compared to their richer counterparts earning a median income of $185,000: the tree

[8] Locke et al. 2021. As studies have confirmed, from urban forested areas to neighborhood parks, there is a statistically significant link between proximity to green space and property values. See Walker 2016.
[9] Locke et al. 2021.
[10] Locke et al. 2021; Leahy and Serkez 2021.
[11] Data USA. n.d. "Baltimore, MD" (data as of 2019).
[12] See "What is the Tree Canopy" (Baltimore City Recreation and Parks 2015).
[13] McNeur 2018.
[14] Leahy and Serkez 2021.
[15] World Population Review n.d.a.
[16] Data USA. n.d. "Austin, TX" (data as of 2019).

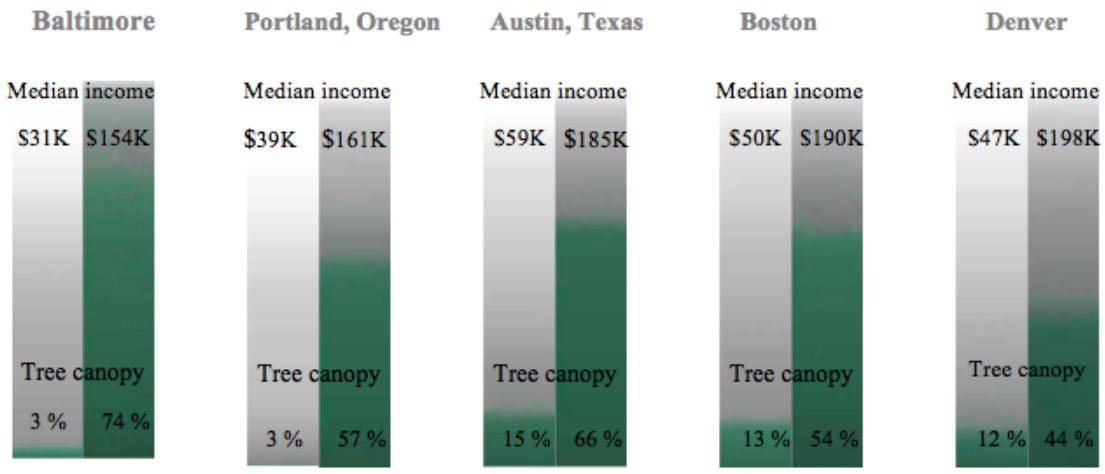

Figure 2 **Sources**: Tree canopy: EarthDefine and American Forests; median household income: American Community Survey (Leahy and Serkez 2021, *The New York Times*).

canopy for this group is 66 percent.[17] In Boston, the capital of Massachusetts, "the most liberal state in the country," and considered "equally progressive,"[18] the findings may make liberals cringe, if they escape being called hypocrites: Bostonians with a median income of $50,000 have a 13 percent tree canopy compared to 54 percent for their richer counterparts with a median income of $190,000.[19]

Meanwhile, in Denver, Colorado, those with a median income of almost $200,000 have a tree canopy of 44 percent, whereas those whose median income is $47,000 have a 12 percent tree coverage.[20] Colorado's situation is striking because it is hard to wrap one's mind around this observation: "Only about 3 percent of Sun Valley, a west Denver neighborhood where 94 percent of residents live in poverty, is covered by tree canopy. Just a few miles away, West Highland has a tree canopy cover of 18 percent, with only 12 percent of residents living in poverty."[21]

Consequences

Heat

As George Luber and Michael McGeehin write in the *American Journal of Preventive Medicine,* Extreme Heat Events, or heatwaves, are annually responsible for more American weather-related human mortality than earthquakes, floods, hurricanes,

[17] Leahy and Serkez 2021.
[18] World Population Review n.d.b.
[19] Leahy and Serkez 2021.
[20] Leahy and Serkez 2021.
[21] Fennell 2021. Indeed, wealthy areas in the most extreme cases enjoy "65 percent more tree canopy than communities where nine out of 10 people live below the poverty line" (Leahy and Serkez 2021).

lightning and tornadoes, combined.[22] According to some statistical approaches, more than 1,300 extreme heat-related deaths per year happen in the United States, a figure almost double what is usually reported when one considers the *underlying* and *contributing* factors.[23] Still, the death toll may even be higher than previously thought.

Take Washington state, where the 2021 heatwave is now in the state's history the deadliest weather-related event. The heat death toll jumped by 21 people to 112 people one Monday in July when the state's health department revised its count. Such revisions are expected, but the way heat death tolls are conducted still raises questions. Between 1997 and 2006, for instance, an estimated 5,608 deaths[24] on average annually were attributable to heat across 297 American counties, according to Weinberger et al. Contrast that with the figure from the United States Centers for Disease Control (CDC): Between 1999 and 2009, the CDC estimated that each year an average of 658 people died due to heat.[25] In any case: one can expect that, as Leahy and Serkez warn, because of climate change heat-related deaths will increase by least a whopping 70 percent in the largest American cities by 2050.[26] Whatever happens, unlike other extreme weather events, *all* heat-related illnesses and deaths are preventable.[27] — and here trees can help.

Other aspects of human development

In terms of human development, the natural environment, including trees, contributes to well-being in untold ways, and "actionable understanding of these links is deepening in diverse disciplines."[28] And while it is not a walk in the park to effectively tabulate the direct relationship between the lack of trees (or for that matter other forms of green space) to the troubles of life in general, research that maps the myriad benefits of human interaction with nature provides helpful clues.

First of all, there is compelling evidence that associates nature with happiness, subjective well-being and 'positive affect'.[29] Being in the company of nature, moreover, can

[22] As of latest data available. Luber and McGeehin 2008; see also Locke et al. 2021.

[23] US EPA 2016.

[24] Out of this figure, an estimated average of 3,309 deaths annually were attributable to "moderate heat," whereas 2,299 were attributable to "extreme heat" (Weinberger et al. 2020).

[25] The large difference between these estimates is certainly likely because of the different methodological approaches taken. In the CDC study, deaths were attributable to heat if the death record related to the International Classification of Diseases code for heat. By contrast, Weinberger et al. applied a regression-based method that, relating temperature estimates to mortality rates in many communities, allowed for a more compressive assessment: they estimated excess heat-attributable deaths no matter the cause of death assigned (Weinberger et al. 2020).

[26] Leahy and Serkez 2021.

[27] Luber and McGeehin 2008; Locke et al. 2021.

[28] Bratman et al. 2019. See also Daily ed. 1997; Millennium Ecosystem Assessment 2005; and Díaz et al. 2018.

[29] 'Positive affect' "refers to the extent to which an individual subjectively experiences positive moods such as joy, interest, and alertness" (Miller 2011).

enhance cohesion and engagement and also boost positive social interactions.[30] The literature on social capital and environmental justice may take different interpretation here. Nonetheless, benefits such as "a sense of meaning and purpose in life;" "improved manageability of life tasks;" and "decreases in mental distress, such as negative affect," have also been linked to experiencing nature.[31] Such benefits are certainly not linked to just city trees. One can nevertheless surmise that those with fewer trees in their neighborhoods are unlikely to enjoy the many tree benefits, which are essential to the integrity of any city neighborhood.

"Cities are centers of prosperity, employment opportunities, access to education, health and human services, and cultural advancement, all aspects of life that may promote mental health," as provides the urban economist Edward Glaeser's book *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier*.[32] "However," as Bratman et al. note, "they can also be associated with decreased access to nature, especially for individuals living within economically deprived urban areas."[33] Indeed, in their article *Trees Grow on Money: Urban Tree Canopy Cover and Environmental Justice*, Schwarz et al. have argued that while the urban tree canopy "is widely regarded as an environmental good or amenity," it is unevenly distributed, one that is scarce in "racial and ethnic minority and low income neighborhoods."[34]

There is also the issue of sleep. Individuals who get adequate or sufficient sleep have shown to have lower risk of obesity or overweight and death, better "cardiometabolic profiles and functional capacity," compared to those who do not.[35] Sleep has even been touted as the potential 'magic pill' for the surging pandemic-induced teen mental health crisis.[36] "In spite of the well-documented benefits of adequate sleep for overall health," however, "many US adults do not meet the recommended 7–8 hours of sleep at night."[37] The factors for this poor sleep performance are surely as many as the toll this takes on the nation. Nonetheless, besides sleep disorders, and apart from work shift, skimpy physical activity, depression and other factors, "socio-environmental and lifestyle factors such as living in an impoverished neighborhood" are also a factor.

But if the benefits of sleep are well-documented, the link between sleep and exposure to nature, including trees, has yet to be so. This, however, is no cause for alarm. Insofar as nature can boost mental health and calmness, among other things, there is sufficient evidence to conclude that green space can indeed induce sleep. That means that in neighborhoods deprived of trees and other greenery the quality of sleep might be

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[30] For example, see "Social Life Under Cover: Tree Canopy and Social Capital in Baltimore, Maryland" (Holtan et al. 2015).

[31] Bratman et al. 2019. See also Hartig et al. 2003, and Roe et al.'s *Green Space and Stress* (2013).

[32] Bratman et al. 2019; Glaeser 2012. But it has been argued that the economist profession has tended to avoid the race problem. See *The Economist* 2020.

[33] Bratman et al. 2019; Schwarz et al. 2015.

[34] Schwarz et al. 2015. See also Nightingale's *Segregation: A Global History of Divided Cities* (2012).

[35] Grigsby-Toussaint et al. 2015

[36] Lehrer-Small, Asher. 2021.

[37] Grigsby-Toussaint et al. 2015; Perry et al. 2013.

compromised. Although more research to test this hypothesis is needed, it exposes how inequality is intricate, and challenges what should be privileged in research, especially if sleep is such a 'magic pill' that can boost people's well-being.

There is also a direct economic case to be made for how trees can curb crime,[38] and also facilitate economic opportunities. Regarding urban parks, businesses in proximity to an urban park "benefit from pedestrian traffic and flourishing businesses are an indication that the city is doing well. Large events inside a park (for example, marathons, sporting tournaments, multi-cultural festivals) attract out-of-town visitors."[39] And given the nature of how the Covid-19 pandemic has shifted the use of space, it should not be a surprise if more and more events such as the performing arts are programmed outdoors. As this can fuel economic activity, it is likely that the places with healthy public parks are more likely to benefit than those that do not.

In any event, there is perhaps no area that enjoys so much attention as education. From the champions of human development to those of the so-called 'human capital,' debates on the education gap are hard to miss. If education were some kind of pill, it would probably not be just a 'magic pill' but a 'super pill.' But inasmuch as more resources are spent building schools (sometimes with concrete after concrete), reforming the curriculum, and expanding technology, the hard drive — the human brain — needs to be working adequately. This is where nature comes in. It may seem hard to believe that planting more trees in tree-deprived neighborhoods could help tackle the education gap in America. Yet studies evince that greenery, such as trees, also plays a role.

Though walking to school along a tree-lined boulevard could not hurt, the neighborhoods where people live — their living infrastructure — is of utmost importance: Longitudinal studies and natural and controlled experiments show that experiencing nature positively affects "various aspects of cognitive function." The benefits also include curbing impulses, improving memory and attention span, boosting children's school performance, and imagination and creativity, all factors affecting education.[40] It could therefore be argued that without adequately addressing the tree gap, America may be misallocating resources and missing out on talent in places where trees and other forms of greenery could make a difference in children's learning.

Solutions – Policy Recommendations

There is no doubt that more research is needed to connect the links between green space, overall urban economic and social well-being, and inequality. The United States is a curious case. As inequality marches towards becoming the nation's trademark,[41] its economic superpower certainly does not mean that it has even figured out how to meet the most basic health and living infrastructure for every American. Trees are a classic

[38] While this may just be an association, it is "a strong one." See Conniff n.d. and Troy et al. 2012.
[39] Ellis and Schwartz 2016.
[40] Bratman et al. 2019. See also Hartig et al. 2003; Kahn and Kellert, eds. 2002; and Bryck 2017.
[41] Wu 2019.

example. Who knew that having tree cover could mean life or death? But not all is doom and gloom. Indeed, the challenges notwithstanding, "opportunities can be found everywhere."[42] There is time to correct the mistakes of the past concerning such issues as racial redlining and income inequality, which, inter alia, deprive many in urban America of the benefits of a health tree canopy. In that agenda, consider the following recommendations.

Funding: show me the money

According to a tally of Tree Equity scores, "a calculation that evaluates equitable distribution of tree cover in the United States" launched by the nation's oldest national conservation organization called American Forests, here is the thing: To achieve a balance of greenery that is equitable in every metro neighborhood with 50,000 people or more in the continental United States would require planting 522 million more trees. To get there, some "promising tools have emerged to help boost investment, including social impact bonds (which pay investors based on such outcomes as reduced prison recidivism) and voluntary carbon markets like City Forest Credits (a registry that issues tree planting and protection credits that can be purchased by companies to offset emissions)." Yet meeting such an ambitious goal cannot happen without the public sector's involvement.[43]

But to a large extent, there is a sinister idea implanted in America's psyche that government is always the problem. The government can surely be a problem — especially when it even engineers social ills such as redlining. The government can also be an instrument for collective virtue, however. And here, opportunities to begin to address tree equity in American cities are numerous. These include: "through the infrastructure legislation working through Congress, substantially increasing support for the Urban and Community Forestry program and proposals to create programs at federal agencies focused on housing, energy and transportation."[44]

Nonetheless, to the extent that tree planting can involve a level of landscape design, tree knowledge, environmental action, and much more, agencies such as the National Endowment for the Arts, the National Park Service, and the Environmental Protection Agency should also be involved. In addition, organizations like the National Geographic Society, the Natural Resources Defense Council, arborist associations, environmental justice movements, could all join hands to foster tree equity. Now, many nonprofits support public parks. But if all funding is not created equal, even through and public-private-partnerships, it should not be a surprise that parks in richer zip codes see more money than those in poorer ones.[45]

Consider the City of New York. About a decade ago, as the architect and design critic Alexandra Lange writes, the topic of park equity was a relative newcomer to the roster of

[42] Leahy and Serkez 2021.
[43] Leahy and Serkez 2021; American Forests 2021.
[44] Leahy and Serkez 2021
[45] Closson 2021; Chapman et al. 2021; Walls 2014.

issues that the city's leaders must have a position on. The issue gained attention in 2013 after the State Senator Daniel L. Squadron introduced legislation in the state senate "that would take twenty percent from the budgets of the 'well-financed conservancies' and redistribute it to poorer parks, matching these 'contributing parks' to 'member parks.' " No sooner did the ink on the proposal dry, however, than it dismayed some who submitted that wealthier parks needed the money. Besides, so the thinking, or perhaps the sophistry, went, the proposal would discourage super donors like the hedge-fund manager John A. Paulson, who in 2012, pledged $100 million to the conservancy that manages Central Park, just around the corner from his house.[46]

Central Park is huge. But if Paulson can get $100 million for it alone, should it not raise concern that 35 low-income neighborhood parks were in 2014 slated to share an allocation of $130 million? Even if these parks, including the Bronx's Ranaqua Park in Mott Haven, Brooklyn's Saratoga Ballfields in Brownsville, and Manhattan's Luther Gulick Park on the Lower East Side, received additional money for maintenance, the funding gap is grotesque. And if many people cannot even find these parks on the map,[47] how many would care to know their tree status? Though the issue of tree equity is seemingly opaque, it is too vital to ignore.

So another way to help fund the 522 million tree planting movement could be to institute a Tree Canopy Tax (TCT). Here a modest TCT could be imposed on homes that cost more than, say, a million dollars in rich zip codes. Still another way might be to add a tree tax on high-end furniture like the "Estelle Bar Stool," which costs more than $1000, and the "Handmade Parametric Outdoor Solid Teak Sofa," which costs almost $50,000.[48] Also, a Tree Tax Credit (TTC) scheme could be considered. Here the Internal Revenue Service (IRS) would give TTCs to low-income neighborhoods lacking healthy tree canopies, given that planting and caring for trees can be expensive. The TTC would be different from measures like Hawaii's 'Exceptional Tree' Deduction, which allows individuals to "deduct up to $3,000 per exceptional tree for qualified expenditures [they] made during the taxable year to maintain the tree on [their] private property."[49] It will also differ from other similar arrangements where the IRS has allowed for a 10 percent tax credit on reforestation costs that individuals could directly deduct from their federal income taxes.[50]

That said, in a nation where talks about raising taxes can seem to many like arguing for unleashing tree monsters, could a lesson be borrowed from Colombia? During his tenure as mayor of Bogotá two decades ago, Antanas Mockus instituted a 10 percent voluntary tax. As it turns out, more than 60,000 people paid the extra voluntary tax.[51] Who knows whether such a move could equally work in the United States, but the fund could be

[46] Lange 2014; Squadron 2013.

[47] Foderaro 2014. See also "Why Privately-Financed Public Parks Are a Bad Idea" (Salmon 2013), and Walls 2014.

[48] Stephanie Cohen n.d.; 1stDibs n.d.

[49] Dubay 2006.

[50] Farm and Dairy 2003; El Kouarti 2021.

[51] Caballero 2004. These taxes were for the city's budget.

called the '522 Tree Freedom Tax.' In this way, it may also relieve the IRS, which already lacks adequate resources to collect taxes effectively.[52] Whatever approach is taken, according to American Forests, planting 522 million trees from coast to coast would make sound economic and climate sense: It would "sustain 3.8 million jobs and annually absorb 9.3 million tons of carbon — the equivalent of taking 92 million cars off the roads. As the trees mature, they would mitigate 56,613 tons of particle pollution annually"[53] — a bonus for climate justice, because, despite the present devastation, through trees, immediate and lasting impact against climate change can still be made.[54]

Education

In making immediate and lasting impact, universities could also be more involved in an integrated fashion. Departments of economics, arts, urban studies, law, environmental sciences, forestry, public policy, and others can work together to come up with comprehensive ways to improve tree equity. Such a move could also be seen as an opportunity for departments to foster cross-disciplinary research — precisely because the challenges themselves tend to be cross-disciplinary.

And in the spirit of working together, more academic institutions could partner with cities. For instance, in Detroit where, in some areas targeted for inclusive growth, the city is working to encourage seeing trees as part of essential infrastructure. Partnering with such a city could provide tons of practical knowledge, as nearly half of Detroit's "census block groups have a Tree Equity Score below 80 out of the 100 necessary to achieve an equitable balance of greenery."[55] Organizations like Trees New York, which has planted over 1000 trees in the Bronx, could also be ideal academic partners. To care for the newly planted trees, Trees New York has partnered with not only Bronx residents and community organizations, but also schools.[56]

At any rate, there is also a need to offer more tree knowledge in K–12. For as urbanization increases, the tree benefits notwithstanding, tree knowledge and soil science in schools is almost nil. Yet as young people need "more green, less screen,"[57] the need to know about the nature and function of trees has never been more important. As the author knows from personal experience in his native Uganda, even planting a simple tree in a simple compound is not always that simple. Indeed, "ensuring the right tree is planted in the right place is no easy feat. It requires expertise in selecting the most resilient and beneficial species."[58] And while not all young people will become tree experts, having working knowledge on how to plant and care for a tree can go a long way.

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[52] See "Former IRS Chiefs On How To Fix The Tax Gap" (Chang and Chakrabarti 2021).
[53] American Forests 2021.
[54] Lowman 2021.
[55] Leahy and Serkez 2021.
[56] Trees New York. 2018.
[57] Children & Nature Network. n.d. See also Dinardo 2021.
[58] Leahy and Serkez 2021. See also Leland 2021.

But in the knowledge agenda there is also a need to promote universal heat know-how. While heat claims hundreds of lives, and that tree covers can help prevent this problem, public policy and public awareness of this are piecemeal. "Part of the problem" as Luber and McGeehin point out, "lies in the fact that heatwaves are silent killers — natural disasters that do not leave a trail of destruction in their wake. Like other natural disasters they are sporadic phenomena, but unlike hurricanes, which leave lasting reminders of the devastation, memories of the heatwave disappear once cooler weather arrives."[59]

Also, much depends on where you live. While a 90˚F day might not be dangerous in Phoenix, it might well be in Seattle. For differing degrees of adaptation, as Kate Weinberger explains, might mean that people in Phoenix, for instance, are more accustomed to using air conditioning to mitigate Phoenix's frequent heat than in Seattle where it is normally cooler. But if geography is a factor, so is demography: pregnant women, children, senior citizens and outdoor workers are more prone to punishing heat.[60] All this knowledge ought to be second nature to the public side by side with tree equity.

Conclusion

In 2013, Senator Squadron penned an article on urban park funding which asked, "Can a tree grow in the Bronx?"[61] Almost a decade later, a similar question has emerged: "Since when have trees existed only for rich Americans?" The latter came at a moment when punishing heat was blanketing the United States, where heat kills more people than any other natural disaster. If trees can save hundreds of heat-related deaths, tree inequity along income and color divides in urban America raises questions. Trees moreover provide many other benefits: They trap air pollutants, reduce crime and create economic opportunities, improve childhood-well-being and youth learning, facilitate social capital, boost physical and mental health, and much more. The lack of such benefits highlights the multidimensional nature of inequality.[62] And for many lower income and people of color in urban America, such tree benefits have been minimal mainly because of the nation's age-old discrimination practices and income inequality. These problems can be overcome, and yes, "A tree can grow in the Bronx." But doing this will not be a walk in the park. It will take political will and public and private financing — commitments needed long before a tree seedling sees the soil.[63]

[59] Luber and McGeehin 2008.
[60] Samuels 2020; see Weinberger et al. 2020 for details; Goodell n.d.; Olmos Hubler. 2021.
[61] Squadron 2013.
[62] See Sen 2004.
[63] Leahy and Serkez 2021.

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