What Counts as Sustainable Development? A Case Study of Repurposing Urban Space

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Introduction

Sustainable development is a global approach to social, economic, and infrastructure growth that intends to meet the needs of current populations without compromising future growth or environmental stability (Allan et al., 2024). With a majority of the world's population living in cities, urban areas are becoming increasingly relevant in the field of sustainable development and represent a substantial opportunity for growth. For example, the most prevalent framework for sustainable development, the United Nations' Sustainable Development Goals, contains an urban focus: SDG 11, "sustainable cities and communities," calls on cities to invest in sustainable land use planning, natural heritage preservation, and public green spaces (Almulhim et al., 2024). With three pillars of environmental, economic, and social, sustainable development is a well-rounded framework to assess the intentions and impacts of urban development initiatives and the extent to which they apply to each of the three.

For decades, individual cities around the world have been engaging in development practices that incorporate a sustainability focus in the form of urban regeneration, which attempts to revitalize deteriorating urban areas through economic infrastructure development. My project focuses on cities that have repurposed unused transit infrastructure into public parks as a case study of this process. New York City famously constructed the High Line park on a railway line that had been abandoned for decades, with support from both the city government and a conservancy group that spearheaded its preservation as a public space (Green, n.d.). Many other cities have undertaken similar projects, including Chicago, Paris, Philadelphia, and Seoul, with similar reasons of increasing public green spaces alongside promoting community engagement and preserving historical structures. My research question is: What are the key intentions and outcomes of cities developing public parks on unused transit lines? In what ways does this fall

under the sustainable development framework or not, particularly with its increasing focus on cities?

To begin this case study, I will provide context with background information on the development of the High Line as well as the Bloomingdale Trail in Chicago and the Rail Park in Philadelphia, followed by a literature review to explain relevant topics in the fields of urban regeneration and sustainable development. I will then use a content analysis of planning documents and publications to assess cities' intentions in converting transit infrastructure into parks and a quantitative analysis of socioeconomic data to determine patterns of potential neighborhood change associated with park developments. These will inform a discussion on the applicability of the sustainable development framework to cities creating parks with unused infrastructure, and recommendations cities should consider in future developments.

Context

In the 1960s and following decades, New York City's transportation network began transitioning away from trains and towards cars and trucks. The West Side Elevated Line, or High Line, first constructed and used in the 1930s to transport agricultural goods in and out of the city, became increasingly obsolete during this time and completely unused by 1983. By 1999, after community members lobbied to demolish the High Line entirely, then-mayor Rudy Giuliani signed an official demolition order. However, in its decades of disuse, a collection of wild plants had grown on the High Line's empty surface, inspiring the conservancy group Friends of the High Line to form with the intention of preserving the rail line for use as a public green space. Following a successful public awareness campaign and "ideas competition" to propose a park design, Friends of the High Line was successfully able to revoke the High Line's previous

demolition order and begin constructing the park in the coming years. In 2004, then-mayor Michael Bloomberg along with the City Council proposed a special zoning area, the West Chelsea Zoning Area, for the park (The High Line, n.d.). The High Line's transition from near-demolition to developmental success illustrates the impact of community participation as well as collaboration between community members and local government.

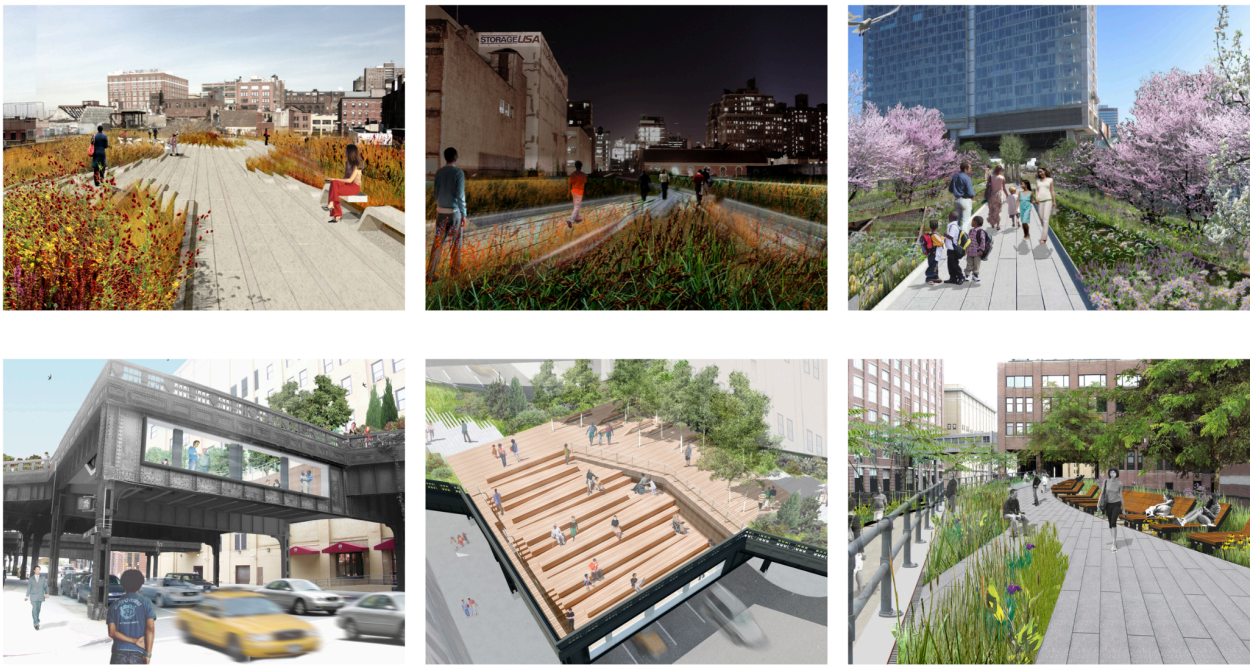


Figure 1: Concept art for the High Line submitted during the public design process (The High Line, n.d.)

In the United States, the High Line is the most well-known example of a city converting unused transit infrastructure into a public park. However, the High Line's concept took direct inspiration from the Coulée verte René-Dumont in Paris, France, which opened in 1993 after landscape architects renovated it following a cease in operation. While the Coulée verte René-Dumont was the first project of its type, it was the breakthrough success of the High Line that inspired even more cities to redevelop unused transit infrastructure into parks, including the Bloomingdale Trail section of the 606 Park in Chicago, Seoullo 7017 Skygarden in Seoul, and

the Rail Park in Philadelphia. The Bloomingdale Trail in Chicago experienced a similar series of events to the High Line in New York City, as various possible outcomes for discontinued railways existed before a neighborhood group, Friends of the Bloomingdale Trail, collaborated with the Trust for Public Land and Chicago Park District to create a long-term conservation plan in the 2000s (Chicago Park District, n.d.). Philadelphia similarly sought to develop its formerly industrial and subsequently abandoned rail tracks around 2010, citing the High Line as inspiration for a potential development project, and its Rail Park is currently in progress as a collaboration between community group Friends of the Rail Park, developer Center City District, and the city government (Center City District, n.d.).

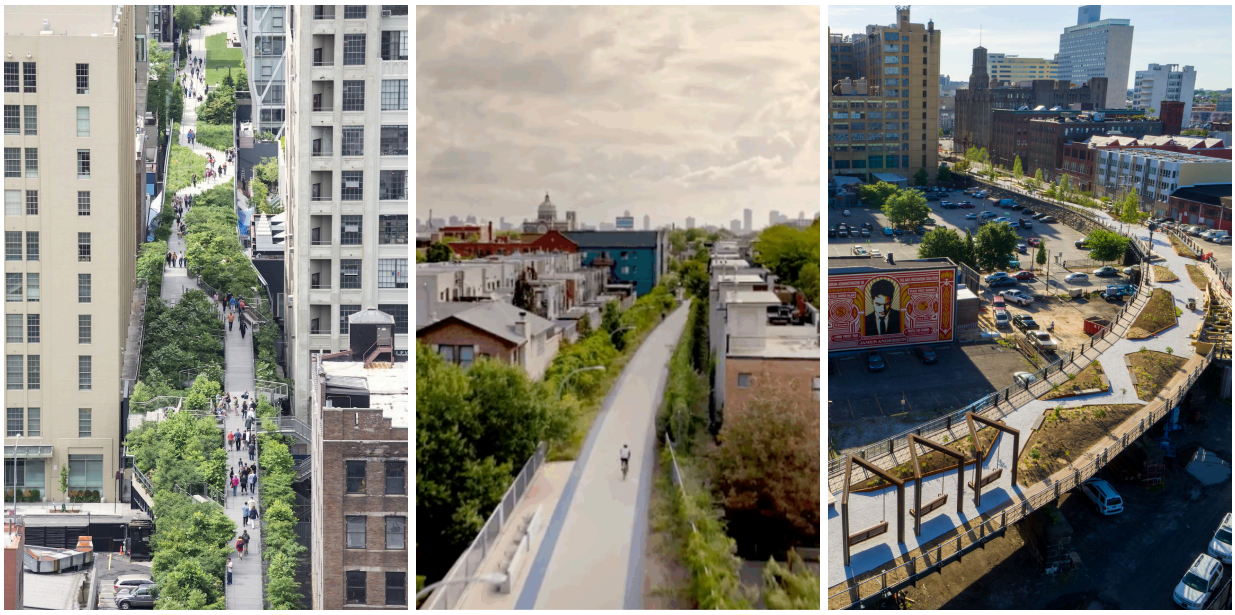


Figure 2: Images showing the completed state of the High Line, the Bloomingdale Trail, and the Rail Park from left to right (Center City District, n.d.; Helphand, 2025; The High Line, n.d.)

All three United States examples follow similar trajectories: they utilized railways constructed in the early 20th century during the peak of railway development and abandoned in the years since, and their transformation resulted from collaboration between a city government

agency, a community-based conservancy organization, and a professional urban planner or architect. Notably, Seoullo 7017 in Seoul is the only one among these examples to not be constructed on a railway, rather an unused highway overpass, which did not lead to any fundamental differences in its development process but is still a relevant component of its creation (MVRD, n.d.). Because of their similar geographical locations, origin stories, development time frames, and observed outcomes, my research focuses on the three United States examples as a singular case study for applying a sustainable development framework to assess urban regeneration projects centered around structural and landscape conservation.

Literature Review

Several areas of existing scholarship are directly relevant to the topic of cities repurposing unused transit infrastructure for public parks within the broader context of urban regeneration and sustainable development. Throughout my research, I identified and utilized three main areas of existing academic scholarship: sustainable development research and its focus on city governance, architectural and design research analyzing specific development projects, and research on the broader field of green infrastructure and urban planning. I also consulted with non-academic sources, like news articles containing interviews and editorial opinions, to incorporate a greater variety of perspectives. This literature review will proceed by providing a theoretical background on cities' efforts to promote environmental sustainability through various design avenues, particularly in the context of unique urban ecological factors, as well as their position in sustainable development scholarship. It will then explain the historical events surrounding the High Line and its counterparts in other cities before identifying their positive and negative impacts present in both academic research and public opinion. The

advantages and disadvantages will lead into further research on individual cities' design and planning processes for their transit redesign projects, allowing for subsequent analysis of their goals as well as specific categories of socioeconomic and environmental impacts.

SDG 11 and City-Focused Sustainable Development

Sustainable development is a global approach to social, economic, and infrastructure growth that intends to meet the needs of current populations without compromising future growth or environmental stability (Allan et al., 2024). While "sustainability" is typically associated with the natural environment, existing scholarship widely considers it one pillar of the sustainable development framework alongside two others—economic and social—offering a well-rounded framework that also pertains to factors like financial and population stability (Enel Group, n.d.; Safdie, 2024; United Nations, 2025). The most prevalent implementation of a sustainable development framework is the 17 Sustainable Development Goals (SDGs), which the United Nations created in 2015 as an all-encompassing global agenda to achieve targets like ending poverty, protecting the environment, and securing access to essential resources for all people by 2030 (United Nations, n.d.).

Urban areas are becoming increasingly relevant opportunities for sustainable development and represent a distinctive opportunity for growth, due in part to their expanding populations and concentrated economic activity. In addition to housing a majority of the world's population, cities account for around 75% of the world's resource consumption, 65% of its energy use, and 70% of carbon emissions (Almulhim et al., 2024). Because of this, cities are seeing increases in sustainability initiatives improving their dense populations and infrastructure, which represents distinctive potential when paired with appropriate local government support.

The journal article “Beyond Growth: Developing Cities for Sustainability and Climate Adaptation” reasserts cities’ unique position in facilitating sustainable development, not only regarding city-specific challenges like population density and physical infrastructure, but also strong areas of potential like concentrated local government support and municipal finance resources (Shaw et al., 2024). This article categorizes potential sustainable development initiatives in cities into three components: climate-resilient infrastructure, which involves integrating natural landscapes including parks and wetlands into urban areas to reduce environmental burdens like heat waves; digital innovation and governance to promote community participation in municipal governance and improve environmental data collection through technologies like geographic information systems; and municipal finance, which involves strategically allocating funds towards effectively supporting sustainability initiatives (Shaw et al., 2024). Although climate-resilient infrastructure is often the most publicly visible of these three categories, this article’s findings demonstrate that interdisciplinary cooperation between sectors is necessary to support it.

The Sustainable Development Goals also contain an urban focus: SDG 11, “sustainable cities and communities,” calls on cities to invest in sustainable land use planning, natural heritage preservation, and public green spaces (Almulhim et al., 2024). Beyond SDG 11’s urban focus, the SDGs’ overall scope demonstrates how cities can play a pivotal role in taking action at the local level. This was apparent when the City of Los Angeles created its own SDGs to address its unique socioeconomic and environmental needs, such as homelessness and public transportation shortcomings, on a deeper level than the UN’s worldwide targets (Morales, 2024). The article “Localizing human rights through the Sustainable Development Goals: The case of Los Angeles” found that SDG localization offered a more direct avenue to develop goals

applicable to a city's needs and secure direct funding, because cities typically understand their local needs more closely than national or international governing agencies. However, this article also identified centering community perspectives and working within budget constraints as possible challenges to successful SDG localization (Morales, 2024). Amidst these implementational intricacies, Los Angeles' initiative to localize SDGs for its own unique needs underscores the impact of enacting sustainable development at the local level and the importance of leveraging both city government resources and community perspectives in doing so.

Relevant Environmental Issues Facing Cities

Cities are also relevant in the discussion on sustainable development because of their unique environmental systems. A prime example is the urban heat island (UHI) effect, which describes when urbanized areas experience a substantial increase in temperature because geographical elements like roads and buildings absorb and re-emit thermal energy more intensely than natural landscapes (Environmental Protection Agency, 2025). According to the EPA, heat islands increase electricity usage from utilities like air conditioning, contribute to heat-related illnesses, and increase water temperature in surrounding ecosystems through runoff. Its proposed solutions include increasing trees and vegetation, constructing green roofs, and promoting smart-growth factors like mixed-use planning and walkability to mitigate energy consumption (EPA). From an urban heat island perspective, converting unused infrastructure into green spaces is beneficial for its use of plants' potential to improve air quality, create ecosystems, and reduce temperatures.

The beneficial environmental impact of green space is a specific reason for cities to invest in creating it. The scientific article "Urban green space cooling effect in cities" examines

urban green spaces' interaction with environmental factors by surveying contemporary scholarship in remote sensing and satellite maps, which it identified as one of three research categories alongside field observations in simulation modeling (Aram et al., 2019). Based on a comparative study of parks in five cities worldwide using methods including geographic information systems, temperature and radiation measurements, and mobile sensors, this article found that current research into green space like parks widely agrees that it is central to improving environmental quality, reducing urban heat island effects, and creating a balanced livable temperature (Aram et al., 2019).

Urban Regeneration

Urban regeneration is the process of cities attempting to revitalize deteriorating urban areas through economic and infrastructure development. Individual cities around the world have been engaging in urban regeneration for decades. Many major United States cities experienced substantial economic and population growth during the industrial revolution in the late 19th century, eventually followed by widespread migration and suburbanization in the 20th century that left many elements of urban infrastructure unused and neglected (Hyra, 2012). Urban regeneration thus offers an opportunity to allocate resources towards revitalizing these unused or deteriorating parcels and infrastructure; while it often emphasizes housing and transportation development, I focus on cities that have reused transit infrastructure, specifically for creating public parks (Shafray, 2018).

Academic research often uses the term "urban regeneration" interchangeably with "urban renewal," though each has varying connotations. For example, "A review of recent studies on sustainable urban renewal" in *Habitat International* describes urban renewal as "a sound

approach to promoting land values and improving environmental quality" while "Conceptualizing the New Urban Renewal: Comparing the Past to the Present" in *Urban Affairs Review* uses it to describe "billions in public and private investments [that] impoverished black communities" in the periods 1949-1974 and 1992-2007 (Hyra, 2012; Zheng et al., 2014). Because the association of "urban renewal" is typically that of negative patterns such as gentrification, community displacement, and abuse of government power, I will primarily use "urban regeneration" to describe cities greening unused transit infrastructure. Despite this, outcomes associated with "urban renewal" are still absolutely relevant to determine the effects of urban infrastructure development. Of particular interest to my research is gentrification, broadly defined as a systematic increase in the socioeconomic standing of a neighborhood's residents, which development projects intended to increase perceived neighborhood value, and thus increase profit for landowners, are especially susceptible to (Rucks-Ahidiana, 2020).

One approach to urban regeneration is to combat negative environmental patterns associated with dense city areas—like the urban heat island effect—by creating open green spaces like urban parks. To specifically examine different variables surrounding urban parks, "The interaction between urban heat island and urban parks: An in-situ measurement-based review" in *Land Use Policy* analyzed 48 sources related to park ecology. This article found five distinct effects urban parks had on their surrounding geography, including the spreading of the cooling effect from parks into other areas of the city (Ogce et al., 2025). The results of this review showed that larger parks had a more significant cooling effect than smaller parks, with a 3.4-hectare park lowering temperature by 0.5°C within 391 meters of the park, a 125-hectare park by 1.6°C within 130 meters and 0.9°C within 280 meters, and a 680-hectare park by up to 2.8°C within 1 kilometer (Ogce et al., 2025). Since the urban heat island effect sees temperatures

increasing by approximately 0.56°C-3.89°C during the day and approximately 1.11°C-2.78°C at night, a large enough park could potentially offset its effects in the immediate and surrounding area (Environmental Protection Agency, 2025). This study also discusses another metric measuring environmental presence in urban areas in tree canopy cover (TCC), specifically associating the parks contributing most to temperature reduction with high tree density and canopy cover (Ogce et al., 2025). Based on these environmental factors, metrics like urban heat island and tree canopy cover offer both theoretical background on the importance of urban green space and serve as a tool to quantify its size and change over time.

Results of Transportation Infrastructure-Reuse Park Projects

Academic research and online publications have observed a variety of benefits from the redevelopment of transportation infrastructure into park spaces. Pedestrian walkability is one specific benefit. In "An Analysis on Seoullo 7017 in Terms of Spatial Configuration and Pedestrian Movement in Comparison with the High-line Project" from the journal *Architectural Research*, Seoul National University architecture researchers Junho Choi and Jaepil Choi employed a Spatial Syntax metric called Integration (3) to measure changes in pedestrian activity surrounding both the High Line and Seoullo 7017; Integration (3) attempts to quantify pedestrians' ability to move between points on a street network based on how many connections, or turns, are required, thus informing how "integrated" the street network is. Out of 14 specific points in Seoullo 7017's general area, the five points farthest from the park itself had increases in integration ranging from +0.00 to +0.03, while the four points most adjacent to the park saw increases in integration of +0.09, +0.25, +0.28, and +0.33 (Choi and Choi, 2019). These findings indicate that constructing a pedestrian walkway in this location positively impacted street

connections and walking mobility, thus improving the pedestrian experience in this area. Not only does increased walkability improve pedestrians' experience navigating cities, but it potentially reduces environmental pollution by offering residents an alternative mode of travel to personal vehicles, demonstrating a simultaneous personal and environmental benefit.

Building on pedestrian access, researchers Rigolon et al. explored recreational use and its impact on community interconnectedness surrounding Chicago's Bloomingdale Trail in *Leisure Sciences* article "Sense of Community and Recreation Participation of Latinx Residents on the Bloomingdale Trail: Greenway Use in a Gentrifying Community." Since the Bloomingdale Trail was constructed, nearby neighborhoods experienced up to 344% rent increases, with one neighborhood even experiencing a 47% decrease in Latinx populations, which were among many indicators of gentrification (Rigolon et al., 2024). Using a mixed-methods approach that integrated survey responses and interviews, data collected from Latinx residents of subsidized public housing showed that many felt an increased sense of community associated with using the trail recreationally (Rigolon et al., 2024). Specifically, public spaces that provided opportunities for recreation and were closely integrated with residential space facilitated interactions with family, friends, and neighbors. These findings reveal that public open spaces can simultaneously drive gentrification and increase residents' sense of community.

In addition to the potential impacts of regeneration processes, the central design tenets that developers use are also important. Architecture scholar D. Ben Ghida extensively studied the Coulée verte René-Dumont, which inspired the High Line, using a mixed-methods approach rooted in historical document analysis and field observation; from these, Ghida published ten distinct findings, referred to as "lessons," in the journal *Frontiers of Architectural Research*. In addition to design elements like Lesson III: Architectural composition, Ghida emphasized the

importance of community factors, including Lesson I: Investment strategy and Lesson VI: Urban value and social impact (Ghida, 2024). These principles mirror those found in the literature on urban-focused sustainable development, which stated the importance of engaging intersecting elements of infrastructure, developing strong financial support, and prioritizing impact on community members throughout the design process. This underscores the relevance of a sustainable development framework, since the first project of this type openly embodied each of the three sustainable development pillars, allowing for deeper research into subsequent attempts' approaches in each area.

While academic perspectives praise infrastructure reuse projects for their innovative approaches to integrating natural elements in urban areas, community members and media outlets have criticized them for promoting gentrification, price gouging in local neighborhoods, and unwanted development. Beyond their potential for gentrification, innovative regeneration projects can stem from a city government's interest in generating media engagement and tourism rather than genuine support for sustainability or pedestrian-oriented planning. The *Time Magazine* article "So-Called 'Green' Cities Promise a Climate-Friendly Utopia. The Reality Is a Lot Messier" explores this pattern, identifying that at least ¼ of 170 new cities created since the 1990s have described themselves as "some variation of the term 'eco-city'" (Nugent, 2023). This article adds that urban planning experts believe many eco-cities "do little to help nature beyond planting a few trees" and draws on research from McGill University geography professor Sarah Moser, who argues that "ornamental lawns and vertical gardens look like sustainability to the average investor, because we are illiterate when it comes to sustainability" (Nugent, 2023). Rather than making genuine efforts to create city areas that embody sustainability and support populations' long-term needs, the eco-city concept reveals how cities can promote themselves as

sustainable developers but not follow through with infrastructure that substantially contributes to environmental improvement, which is an outcome to be wary of when assessing infrastructure development in cities.

In addition to potential intention-based discrepancies, tangible disadvantages are seen in some of the public responses to park development. The article "Seoullo 7017: Urban Asset or Vanity Project?" conducted interviews with several local business owners and found that many were dissatisfied with neighborhood changes associated with the construction of Seoullo 7017 Skypark. These included real estate prices rising by 20 to 30 percent, travel times on a nearby major freeway increasing, and traffic congestion through road closures increasing (Jackson, 2017). In an interview, one store owner explained, "There's so much more noise, fumes and fine dust, and customers and delivery trucks can't stop on the road outside any more. Our sales have declined by at least 60 percent" (Jackson, 2017). Contrasting with the academic research like Choi and Choi's *Architectural Research* article that praised Seoullo 7017's innovative potential and aesthetic value, this article reveals dissenting opinions among residents. This perspective is relevant to consider since it more closely represents the views of community members most directly affected by the construction of parks, which have the potential to alter infrastructure and serve as tourist attractions.

Urban regeneration projects, including park developments, also face criticism from both academic and community sources for potential contributions to gentrification. The *City & Community* article "Parks for Profit: The High Line, Growth Machines, and the Uneven Development of Urban Public Spaces" conducted multiple qualitative studies, including interviews and an ethnography over a period of four months, finding that urban greening projects are likely to reinforce so-called "spatial privilege" by developing green spaces in neighborhoods

that are already more white or upper-class, thus perpetuating inequalities related to green space access (Loughran, 2014). Furthermore, this article identifies the High Line as representative of a growing trend towards "neoliberal public space" creation, which are processes that encourage privatization, disparities in park access, and regulations. This can be seen in street vendors' experiences with restrictive regulations on how often they are allowed to sell there, as well as covert surveillance mechanisms to promote "privileged consumption and passive forms of leisure" by closely monitoring visitors' behavior (Loughran, 2014). Loughran's findings show further complexity with projects such as the High Line: efforts to create community-focused public space may be successful to an extent but still elicit feelings of exclusion from visitors they are supposedly created to serve.

Key Takeaways

The previous literature related to my research topic encompasses numerous topics and types of studies. Because of cities' distinct geographies like limited natural space, they both experience specific environmental patterns and offer unique opportunities to promote sustainable development efforts. These include both city-specific sustainable development goals that cities are creating based on their own environmental needs and urban regeneration efforts, which can expand natural space while revitalizing infrastructure. The transit infrastructure-reuse park projects that my research examines are one example of this, and previous studies highlight both positive and negative impacts. While some studies showed increased walkability and pedestrian use, others identified challenges in this field based on disparate levels of access and privatized development. Furthermore, green space expansion can potentially remedy ecological downsides like urban heat island but it requires more planted area than the space a relatively small walkway

can provide. Finally, another significant observation is economic benefits for the city being linked to patterns of gentrification.

Further research into specific cities' development processes must consider the nuances of neighborhood histories and community needs to fully understand reasoning behind variations in outcomes. The perspective of sustainable development is also relevant to consider in this, because it weighs the feasibility of investing in environmental and human wellbeing for the present and future on a global scale. Analysis of each city's project should also evaluate in what ways it incorporates sustainable development, which is essential as scholarship on the topic focuses more on cities' potential to contribute to positive change.

Although the literature review identified many background factors and outcomes associated with these types of park development projects, what remains unclear is the extent to which these outcomes relate to cities' intentions in developing these parks in the first place, alongside broader impacts in their surrounding areas. Drawing on previous studies' findings, my research methods will both attempt to assess the intentions that cities use when engaging in transit infrastructure-reuse park projects and identify trends in their neighborhoods.

Methods and Findings

The literature review acknowledged both intention-based perspectives and outcome-based perspectives of transit infrastructure reuse parks. This established a foundation for examining my research question, which seeks to identify the key intentions and outcomes of cities developing public parks on unused transit lines and in what ways this process fits the sustainable development framework or not. To answer this question, I compiled official publications from each of the High Line, the Bloomingdale Trail, and the Rail Park, and analyzed them from the perspective of identifying cities' intentions when designing and publicly promoting parks. I supplemented this with a neighborhood data analysis to determine if the neighborhoods surrounding these parks experienced socioeconomic change consistent with gentrification. These methods encompassed both the intention-based perspectives and outcome-based perspectives that the literature review introduced.

Content Analysis of Planning and Promotional Documents

Explanation of Method

My research focus includes examining the intentions that motivate cities to convert unused transit infrastructure into parks, and how closely they relate to the environmental, economic, and social components of sustainable development. To assess the presence of different intentions, I analyzed data from official publications related to each park for specific thematic ideas, which can indicate intentions even if they do not explicitly state them. For each city, I identified three publications related to the park development that represented a range of perspectives, specifically, both technical planning documents and publications intended for a broader audience.

I identified six central themes in these documents, along with more specific sub-themes within them. While each document incorporated more than six ideas, I selected topics that closely matched my research question, either by connecting to one of the three components of sustainable development or representing another clear incentive cities may have. Specifically, the "natural landscape" category reflects the environmental component, the "community impact" category reflects the social component, and the "economic growth" category reflects the economic component; the last three categories of "park creation," "structural preservation," and "spatial access" represent additional considerations inherent to this type of park project. The presence of these themes indicates which components of sustainable development were most prominent in each city's publications and to what extent.

I selected the themes after completing my literature review but before closely analyzing the documents. This allowed me to develop an understanding of what ideas were most prominent in the broader discussion on these parks without being influenced by what information was most frequent in the city publications themselves. After determining the thematic categories, I used structural coding to measure the 18 sub-themes' number of appearances in each document. Structural coding is an approach to analyzing qualitative data that assigns a content-based phrase to passages following a pre-determined framework that addresses a research question (Saldaña, 2016, p. 98). This method was practical to analyze several different types of documents within the same framework, allowing for more structured comparison between them. While I chose and classified themes based on my own research question and focus, it is important to note that my application of content analysis methods is closely tailored to my own specific research; another reader may derive a different set of themes and classify document sections differently based on their own perspective, interpretation, and research focus. The themes I developed and used in my

structural coding of documents to understand the intentions behind each project, and their relation to the elements of sustainable development, are as follows:

Central Theme	Specific Sub-Theme	Example Quote
Park creation	Creation of new park space	"provide more outdoor space for our citizens"
	Design innovation/contribution to field	"inspiring people around the world to re-imagine abandoned spaces"
	Reduction of disparities in park space	"serve a neighborhood in need of parkland"
Natural landscape	Preservation of natural landscape	"inspired by the wild, self-seeded landscape that grew up naturally"
	Diversity of plant species	"select species that offer the greatest variety and sensory interest throughout the year"
	Impact of landscape on people	"create the opportunity for rich engagement with the natural world"
Structural preservation	Preservation of structural heritage	"retains the original railroad tracks from the industrial structure"
	Specific structural elements	"included in signage, park walks with experts, information kiosks, or elements of the physical design"
Community impact	Community value and heritage	"rather than destroying this valuable piece of our history"
	Impact on local families and businesses	"support anti-displacement and small business retention strategies"
	Visitor experience	"create unique experiences when transitioning from the street level"
Economic growth	Tourism	"attract visitors from around the world"
	Economic development	"a significant generator of economic activity for the entire city"
	Cross-sector partnerships	"through partnerships with community led organizations and the city"
Spatial access	Connections between city areas	"integrated into the adjacent neighborhoods and numerous existing transportation and open space networks"
	Walkability	"allow for shorter walking distances for pedestrians"
	Park access points	"locate access points and improve routes to them"
	Location/position within the city	"the park will overlook city streets and offer incredible skyline views"

Figure 3: Description of structural coding categories with examples from documents

Additionally, I used in vivo coding to record the number of appearances for five keywords: public, accessible, safe, enjoyable, and sustainable in each document. In vivo coding is another approach to analyzing qualitative data that uses codes directly taken from the passage's specific language, which in this case was individual words. Since these words represent desirable characteristics of public parks, cities may use them as "buzzwords" to generate attention, appeal to sociocultural values, or present themselves along the lines of the "eco-city" concept outlined in the literature review. These actions in and of themselves are not inherently negative, but when paired with a lack of tangible action toward sustainability or social improvement it represents an insufficient commitment. Identifying incentives for cities to present their initiatives positively ties into understanding the intentions of cities and planning agencies, both how they influence park development and how they are communicated to public audiences, ultimately informing the component of my research question regarding design intentions.

Once I compiled the number of each theme's mentions in each document, I divided them by the total number of mentions in each document to facilitate comparison of the most frequent themes between documents. I then applied a conditional formatting scheme to the results tables to highlight which themes were most common by making higher percentages' cells darker.

Findings

The High Line - New York City, NY

The documents I analyzed for the High Line in New York City were as follows: a series of seven publications related to the High Line from New York City's Parks Department website, totaling approximately 4,900 words, five publications related to the High Line from New York City's Planning Department website totaling around 400 words, and a 2,400-word retrospective

interview with Robert Hammond, who spearheaded the development of the High Line in the early 2000s. I accessed the city department's publications by using the keywords "High Line" within their respective websites and the interview from the American Society of Landscape Architects website. The Planning Department notably produced very little applicable content because many of its mentions of the High Line were within larger planning documents related to large-scale zoning topics and thus only a small portion pertained to my project. The content analysis for these documents produced the following results:

	NYC Parks Publications	NYC Planning Publications	Interview with Park Creator
Category or Word	**Number of Mentions (Percentage of Mentions, by Source)**		
Creation of new park space	5 (7.4%)	0 (0.0%)	0 (0.0%)
Design innovation/contribution to field	8 (11.8%)	0 (0.0%)	2 (10.5%)
Reduction of disparities in park space	2 (2.9%)	0 (0.0%)	0 (0.0%)
Preservation of natural landscape	3 (4.4%)	0 (0.0%)	3 (15.8%)
Diversity of plant species	2 (2.9%)	0 (0.0%)	0 (0.0%)
Impact of landscape on visitors	1 (1.5%)	0 (0.0%)	1 (5.3%)
Preservation of structural heritage	7 (10.3%)	0 (0.0%)	3 (15.8%)
Specific structural elements	3 (4.4%)	0 (0.0%)	1 (5.3%)
Community value and heritage	6 (8.8%)	0 (0.0%)	5 (26.3%)
Impact on local families and businesses	1 (1.5%)	1 (33.3%)	0 (0.0%)
Visitor experience	0 (0.0%)	0 (0.0%)	1 (5.3%)
Tourism	3 (4.4%)	0 (0.0%)	0 (0.0%)
Economic development	9 (13.2%)	2 (66.7%)	3 (15.8%)
Cross-sector partnerships	7 (10.3%)	0 (0.0%)	1 (5.3%)
Connections between city areas	6 (8.8%)	0 (0.0%)	1 (5.3%)
Walkability	1 (1.5%)	0 (0.0%)	0 (0.00%)
Park access points	2 (2.9%)	0 (0.0%)	0 (0.00%)
Location/position within the city	2 (2.9%)	0 (0.0%)	1 (5.3%)
Total	**68 (100.0%)**	**3 (100.0%)**	**19 (100.0%)**
“Public”	19 (65.5%)	5 (55.6%)	2 (100.0%)
“Accessible”	2 (6.9%)	4 (44.4%)	0 (0.0%)
“Safe”	2 (6.9%)	0 (0.0%)	0 (0.0%)
“Enjoyable”	4 (13.8%)	0 (0.0%)	0 (0.0%)
“Sustainable”	2 (6.9%)	0 (0.0%)	0 (0.0%)
Total	**29 (100.0%)**	**9 (100.0%)**	**2 (100.0%)**

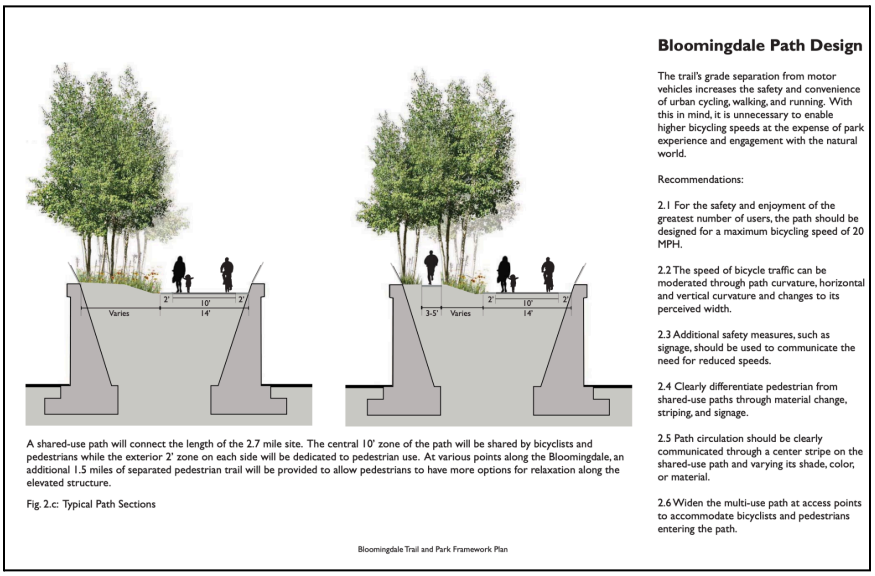
Figure 4: Distribution of structural coding terms in High Line documents

All three sources repeatedly mention economic development as a benefit of converting the High Line into a park, being the most common theme for both the Parks and Planning departments and second-most for the interview. The interview's most common theme was the park's community value and heritage, reflected in quotes such as "the community and the city should decide what it should be" and "it's a well-loved park by New Yorkers" (Green, n.d.). Other common themes across these sources are the preservation of both the natural landscape and the infrastructure's structural heritage, alluding to the creativity of its design and frequently-discussed intrigue of creating a public park on an abandoned rail line. Similarly, the High Line's contribution to the field of city park design and overall innovative nature was another commonly mentioned theme, being among the most common in both the Parks department's publications and the interview. Among the keywords, "public" was the most prominent in all three sources; the Parks department's publications also emphasized "enjoyable" but the Planning department's publications emphasized "accessible," which likely reflects their respective intentions to advertise parks to visitors and ensure the physical design meets planning standards.

The Bloomingdale Trail - Chicago, IL

I analyzed the following documents for the Bloomingdale Trail in Chicago: a technically complex framework plan totaling around 7,700 words, a picture-heavy presentation from a public meeting about the park whose substantive content only included 19 words, and a "frequently asked questions" document published by the Chicago Department of Transportation (CDOT) containing approximately 1,900 words. I accessed these documents from the websites of either Chicago city departments or that of the 606, the park that encompasses the Bloomingdale

Trail. These sources represent a clear contrast in intended audiences: the framework plan is lengthy with a high level of detail, whereas the public meeting presentation and frequently asked questions document are both more streamlined in their content because of their intended public audience. The following figure is an example of this difference:



Bloomingdale Path Design

The trail's grade separation from motor vehicles increases the safety and convenience of urban cycling, walking, and running. With this in mind, it is unnecessary to enable higher bicycling speeds at the expense of park experience and engagement with the natural world.

Recommendations:

2.1 For the safety and enjoyment of the greatest number of users, the path should be designed for a maximum bicycling speed of 20 MPH.

2.2 The speed of bicycle traffic can be moderated through path curvature, horizontal and vertical curvature and changes to its perceived width.

2.3 Additional safety measures, such as signage, should be used to communicate the need for reduced speeds.

2.4 Clearly differentiate pedestrian from shared-use paths through material change, striping, and signage.

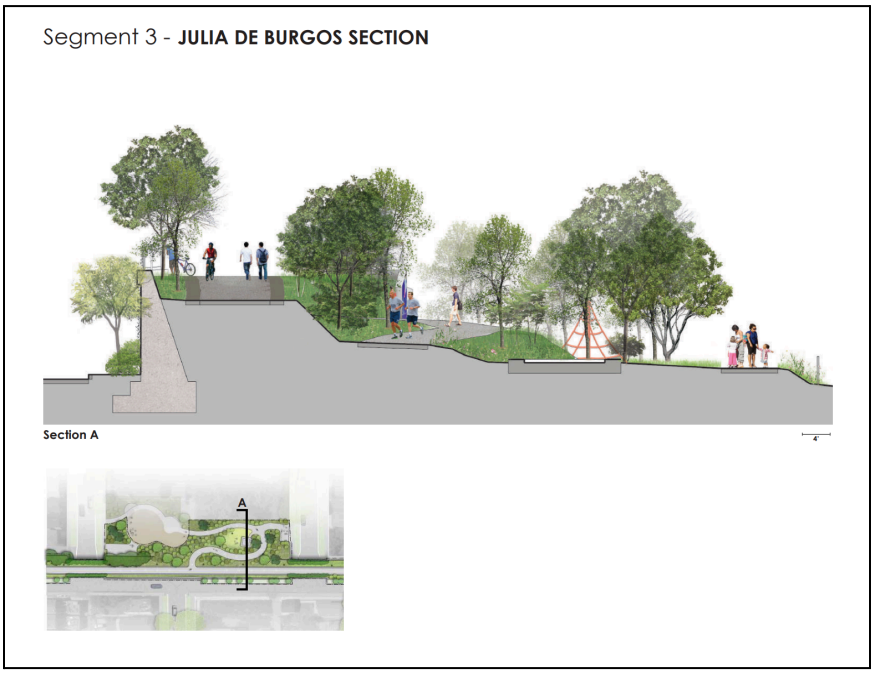
2.5 Path circulation should be clearly communicated through a center stripe on the shared-use path and varying its shade, color, or material.

2.6 Widen the multi-use path at access points to accommodate bicyclists and pedestrians entering the path.

A shared-use path will connect the length of the 2.7 mile site. The central 10' zone of the path will be shared by bicyclists and pedestrians while the exterior 2' zone on each side will be dedicated to pedestrian use. At various points along the Bloomingdale, an additional 1.5 miles of separated pedestrian trail will be provided to allow pedestrians to have more options for relaxation along the elevated structure.

Fig. 2.c: Typical Path Sections

Bloomingdale Trail and Park Framework Plan



Segment 3 - **JULIA DE BURGOS SECTION**

Section A

Figure 5: Images showing visual differences between the Bloomingdale Trail's framework plan and public presentation; while the framework plan contains more text explaining structural details, the public presentation relies more heavily on visual content that depicts various ways community members can experience the park.

	Framework Plan Document	Public Meeting Presentation	Transportation Department FAQs
Category or Word	**Number of Mentions (Percentage of Mentions, by Source)**		
Creation of new park space	7 (2.9%)	0 (0.0%)	0 (0.0%)
Design innovation/contribution to field	3 (1.3%)	0 (0.0%)	1 (2.7%)
Reduction of disparities in park space	2 (0.8%)	0 (0.0%)	0 (0.0%)
Preservation of natural landscape	10 (4.2%)	1 (33.3%)	2 (5.4%)
Diversity of plant species	14 (5.9%)	0 (0.0%)	0 (0.0%)
Impact of landscape on visitors	22 (9.2%)	0 (0.0%)	0 (0.0%)
Preservation of structural heritage	15 (6.3%)	1 (33.3%)	4 (10.8%)
Specific structural elements	40 (16.7%)	0 (0.0%)	2 (5.4%)
Community value and heritage	16 (6.7%)	0 (0.0%)	4 (10.8%)
Impact on local families and businesses	14 (5.9%)	0 (0.0%)	1 (2.7%)
Visitor experience	8 (3.4%)	0 (0.0%)	0 (0.0%)
Tourism	2 (0.8%)	0 (0.0%)	0 (0.0%)
Economic development	9 (3.8%)	0 (0.0%)	4 (10.8%)
Cross-sector partnerships	3 (1.3%)	0 (0.0%)	5 (13.5%)
Connections between city areas	24 (10.0%)	0 (0.0%)	5 (13.5%)
Walkability	17 (7.1%)	0 (0.0%)	1 (2.7%)
Park access points	21 (8.8%)	0 (0.0%)	5 (13.5%)
Location/position within the city	12 (5.0%)	1 (33.3%)	3 (8.1%)
Total	**239 (100.0%)**	**3 (100.0%)**	**37 (100.0%)**
“Public”	11 (25.6%)	1 (100.0%)	3 (30.0%)
“Accessible”	9 (20.9%)	0 (0.0%)	2 (20.0%)
“Safe”	16 (37.2%)	0 (0.0%)	3 (30.0%)
“Enjoyable”	2 (4.7%)	0 (0.0%)	0 (0.0%)
“Sustainable”	5 (11.6%)	0 (0.0%)	2 (20.0%)
Total	**43 (100.0%)**	**1 (100.00%)**	**10 (100.0%)**

Figure 6: Distribution of structural coding terms in Bloomingdale Trail documents

The framework plan's most common theme is specific structural elements of the park, as it discusses elements like benches, staircases, and lighting in more detail than a public-oriented document would, followed by the park's capacity to connect city areas and utilize natural landscapes to positively impact visitors. The public meeting presentation is notable for including almost entirely pictures, and since its intended audience is the general public this offers the opportunity to persuade community members to support the park with enticing visuals rather than detailed information about its construction. Because of this, the presentation dedicating any of its 19 words is likely to indicate a comparatively high level of importance, so its mentions of preserving both natural and structural heritage suggest them as important values for the public to know about. Its mention of vantage points for other areas of the city that the park will create reflects its position within the city as well. The frequently asked questions document also reiterates the park's potential to connect areas of the city but emphasizes the number of access points to the park and the collaboration between different organizations and city agencies that facilitated the park's development. While park access points are a more necessary detail for residents to know, its focus on cross-sector collaboration is noteworthy because it serves no overt purpose to visitors and is potentially offered to present the city of Chicago as collaboratively productive and inclusive of community organizations' perspectives. The park being "public" is a commonly mentioned topic, but both the framework plan and frequently asked questions document heavily emphasize "safe" as one of the park's values. Additionally, "sustainable" is much less present than these words, suggesting that it was not as prominent of a consideration when designing the park.

The Rail Park - Philadelphia, PA

The documents I analyzed for the Rail Park in Philadelphia are as follows: an "Our Vision" page on the Rail Park's website with over 800 words, a development overview and values statement from the Center City District Foundation that contributed to the park, also totaling approximately 800 words, and an image-heavy site plan including around 600 words. Since this park's construction is still in progress, the availability of documents related to design plans is higher than that of city documents assessing its impact, though these documents also represent a range of technical and public-facing perspectives. The content analysis for these documents produced the following results:

	Park Organization Website	Park Foundation Website and Values	Site Plan
Category or Word	**Number of Mentions (Percentage of Mentions, by Source)**		
Creation of new park space	1 (1.7%)	1 (3.3%)	0 (0.0%)
Design innovation/contribution to field	3 (5.1%)	1 (3.3%)	0 (0.0%)
Reduction of disparities in park space	0 (0.0%)	0 (0.0%)	0 (0.0%)
Preservation of natural landscape	2 (3.4%)	1 (3.3%)	3 (11.5%)
Diversity of plant species	1 (1.7%)	0 (0.0%)	3 (11.5%)
Impact of landscape on visitors	3 (5.1%)	0 (0.0%)	0 (0.0%)
Preservation of structural heritage	6 (10.2%)	3 (10.0%)	3 (11.5%)
Specific structural elements	3 (5.1%)	1 (3.3%)	7 (26.9%)
Community value and heritage	8 (13.6%)	4 (13.3%)	4 (15.4%)
Impact on local families and businesses	6 (10.2%)	4 (13.3%)	2 (7.7%)
Visitor experience	0 (0.0%)	0 (0.0%)	0 (0.0%)
Tourism	4 (6.8%)	0 (0.0%)	0 (0.0%)
Economic development	3 (5.1%)	6 (20.0%)	0 (0.0%)
Cross-sector partnerships	4 (6.8%)	5 (16.7%)	0 (0.0%)
Connections between city areas	8 (13.6%)	3 (10.0%)	0 (0.0%)
Walkability	0 (0.0%)	0 (0.0%)	2 (7.7%)
Park access points	1 (1.7%)	1 (3.3%)	0 (0.0%)
Location/position within the city	2 (3.4%)	0 (0.0%)	2 (7.7%)
Total	**59 (100.0%)**	**30 (100.0%)**	**26 (100.0%)**
“Public”	2 (40.0%)	1 (16.7%)	0 (N/A)
“Accessible”	2 (40.0%)	3 (50.0%)	0 (N/A)
“Safe”	1 (20.0%)	2 (33.3%)	0 (N/A)
“Enjoyable”	0 (0.0%)	0 (0.0%)	0 (N/A)
“Sustainable”	0 (0.0%)	0 (0.0%)	0 (N/A)
Total	**5 (100.0%)**	**6 (100.0%)**	**0 (100.0%)**

Figure 7: Distribution of structural coding terms in Rail Park documents

The source types show variation in several categories: the site plan describes specific structural elements much more frequently than the other two sources; the official website's most frequently appearing themes of connections between city areas and importance within the community are more common than in the other two sources. While the foundation values website commonly discusses economic development, a pertinent difference is the context in which authors mention it: compared to stressing the potential for the park to attract visitors or increase the neighborhood's value, this website tended to frame it using descriptors like "funding park maintenance, programming, and equitable development strategies for affordable housing" and "work together to secure other public funding mechanisms" (Center City Philadelphia, 2024). This offers insight into the intentions behind the framing of certain benefits, where in this instance the park's economic capacity is a potential tool to build community connections and resources. The frequency of words like "public" and "accessible" is distributed similarly to those of the other cities' parks, but notably the site plan does not mention any of them at all, instead relying on more objective descriptions of the park's physical design rather than the impact it is intended to have. None of these documents mentioned "sustainable" at all, implying it to be much less relevant to the park's design than the values of "public" and "accessible," which is also recurring among each city's documents.

Comparison Between Cities

Creating a comparative chart that integrates each city's results is useful because it provides data on how each city detailed its respective park. For each city, I used the cumulative number of mentions across all documents to identify similarities and differences between thematic frequency associated with their park projects, seen in the following chart:

	The High Line (New York City)	The Bloomingdale Trail (Chicago)	The Rail Park (Philadelphia)
Category or Word	**Cumulative Number of Mentions (Percentage, by City)**		
Creation of new park space	5 (5.6%)	7 (2.5%)	2 (1.8%)
Design innovation/contribution to field	10 (11.1%)	4 (1.4%)	4 (3.6%)
Reduction of disparities in park space	2 (2.2%)	2 (0.7%)	0 (0.0%)
Preservation of natural landscape	6 (6.7%)	13 (4.7%)	6 (5.4%)
Diversity of plant species	2 (2.2%)	14 (5.0%)	4 (3.6%)
Impact of landscape on visitors	2 (2.2%)	22 (7.9%)	3 (2.7%)
Preservation of structural heritage	10 (11.1%)	20 (7.2%)	12 (10.8%)
Specific structural elements	4 (4.4%)	42 (15.1%)	11 (9.9%)
Community value and heritage	11 (12.2%)	20 (7.2%)	16 (14.4%)
Impact on local families and businesses	2 (2.2%)	15 (5.4%)	12 (10.8%)
Visitor experience	1 (1.1%)	8 (2.9%)	0 (0.0%)
Tourism	3 (3.3%)	2 (0.7%)	4 (3.6%)
Economic development	14 (15.6%)	13 (4.7%)	9 (8.1%)
Cross-sector partnerships	8 (8.9%)	8 (2.9%)	9 (8.1%)
Connections between city areas	7 (7.8%)	29 (10.4%)	11 (9.9%)
Walkability	1 (1.1%)	18 (6.5%)	2 (1.8%)
Park access points	2 (2.2%)	26 (9.3%)	2 (1.8%)
Location/position within the city	3 (3.3%)	16 (5.7%)	4 (3.6%)
Total	**90 (100.0%)**	**279 (100.0%)**	**111 (100.0%)**
“Public”	25 (64.1%)	12 (27.3%)	3 (27.3%)
“Accessible”	6 (15.4%)	7 (15.9%)	5 (45.5%)
“Safe”	2 (5.1%)	18 (40.9%)	3 (27.3%)
“Enjoyable”	4 (10.3%)	2 (4.6%)	0 (0.0%)
“Sustainable”	2 (5.1%)	5 (11.4%)	0 (0.0%)
Total	**39 (100.0%)**	**44 (100.0%)**	**11 (100.0%)**

Figure 8: Comparison of structural coding terms across city documents

Very few of the percentages for mentions vary significantly between cities, though some larger differences are noticeable. For example, the High Line was presented as an innovative project and landmark contribution to the city's landscape more frequently (11.11%) than the other two cities (1.43% and 3.60%), and creation of new park space (5.56%) was also more prominent (2.51% and 1.80%). These differences likely reflect its precedence over the other two, as the idea of converting an unused rail line into a public park was more novel during its creation. While it is logical that Chicago's documents would prominently discuss structural elements of the park given their focus on site planning, they also featured walkability and park access points (6.45% and 9.32%, respectively) more prominently than either of the other cities (ranging from 1.11% to 2.22%). This implies a greater interest in encouraging pedestrian accessibility and reinforcing park usability among neighborhood residents, in contrast with community value and heritage as well as tourism which were both the least prominent in Chicago (7.17% compared to 12.22% and 14.41% for community value and heritage, 0.72% compared to 3.33% and 3.60% for tourism). Meanwhile, the categories that were comparatively highest in Philadelphia were community value and heritage (14.41% compared to 12.22% and 7.17%), impact on local families and businesses (10.81% compared to 2.22% and 5.38%), and the keyword "accessible" (45.45% compared to 15.38% and 15.91%). The documents promoting the Rail Park in Philadelphia consistently presented it as a community-oriented project to drive social wellbeing cohesion, and these values being more prominent closely reflects that. Across the three cities, several categories appeared at similar frequencies: preservation of natural landscape (ranging from 4.66% to 6.67%), diversity of plant species (ranging from 2.22% to 5.02%), preservation of structural heritage (ranging from and 7.17% to 11.11%), connections between city areas (ranging from 7.78% to 10.39%), and location within the city (3.33% to

5.73%). All of these values being consistent between cities suggests that a shared theme between each park is reflecting the parks' history as unused infrastructure where landscapes developed organically, now being repurposed into an amenity that serves the infrastructure of the broader city. Because my research uses these three projects collectively as a case study, the comparative findings of the most consistently held intentions between cities indicate that this particular form of urban regeneration balances historical preservation with wider improvement to the city. However, each city's documents show a conspicuous lack of promoting sustainability as an outcome, as seen through the low frequency of the word "sustainability," and discussions of the natural environment typically focus on plant type or structure rather than underscoring the benefits of environmentally-focused urban infrastructure identified in the literature review. The prioritization of other goals over sustainability outcomes represents an area that may fall short of the sustainable development framework, as it values environmental wellbeing as closely as economic and social improvement.

Comparison Between Source Types

Dividing the structural content analysis' results by source type also yielded notable results indicating cities' intentions in supporting these types of park projects. For this comparison, I grouped the sources into two categories: planning-focused sources, which included design plans themselves as well as documents found on city websites, whereas the public-oriented category included sources like news articles and presentations.

	Planning-Focused	Public-Oriented
Category or Word	**Cumulative Number of Mentions (Percentage, by Source Type)**	
Creation of new park space	7 (2.61%)	7 (3.24%)
Design innovation/contribution to field	3 (1.12%)	15 (6.94%)
Reduction of disparities in park space	2 (0.75%)	2 (0.93%)
Preservation of natural landscape	13 (4.85%)	12 (5.56%)
Diversity of plant species	17 (6.34%)	3 (1.39%)
Impact of landscape on visitors	22 (8.21%)	5 (2.31%)
Preservation of structural heritage	18 (6.72%)	24 (11.11%)
Specific structural elements	47 (17.54%)	10 (4.63%)
Community value and heritage	20 (7.46%)	27 (12.50%)
Impact on local families and businesses	17 (6.34%)	12 (5.56%)
Visitor experience	8 (2.99%)	1 (4.63%)
Tourism	2 (0.75%)	7 (3.24%)
Economic development	11 (4.10%)	25 (11.57%)
Cross-sector partnerships	3 (1.12%)	22 (10.19%)
Connections between city areas	24 (8.96%)	23 (10.65%)
Walkability	19 (7.09%)	2 (0.93%)
Park access points	21 (7.83%)	9 (4.17%)
Location/position within the city	14 (5.22%)	9 (4.17%)
Total	**268 (100.00%)**	**216 (100.00%)**
“Public”	16 (30.77%)	27 (51.92%)
“Accessible”	13 (25.00%)	9 (17.31%)
“Safe”	16 (30.77%)	8 (15.38%)
“Enjoyable”	2 (3.85%)	4 (7.69%)
“Sustainable”	5 (9.62%)	4 (7.69%)
Total	**52 (100.00%)**	**52 (100.00%)**

Figure 9: Comparison of structural coding terms across categories of documents

Quantitative Analysis of Neighborhood Change

Urban regeneration creates the risk of gentrification in neighborhoods where cities enact development practices, as seen in findings such as Loughran (2014) and Rigolon et al. (2024)'s research. Gentrification directly ties into both the social and economic pillars of sustainable development by serving as an obstacle to equality on both fronts, making any instances of gentrification associated with the parks my study includes relevant to positioning them within a sustainable development framework. Gentrification falls under the broader category of neighborhood change, offering an opportunity to assess it from an outcome-based perspective of park development (Schnake-Mahl et al., 2020).

Explanation of Method

To identify potential patterns, I created a dataset for each of the three parks based on PolicyMap data for its immediate neighborhood, specifically the values for block groups within a 2-block radius of the park (PolicyMap, 2020). Many metrics can measure gentrification, but research articles like Rucks-Ahidiana's 2021 "Racial composition and trajectories of gentrification in the United States" typically include home value, racial demographics, and education levels. To reflect this, I assembled data on median home values, percentage of non-Hispanic white populations, and percentage of residents with a bachelor-level college degree or higher, comparing the average of block groups within 2 blocks of the park with the rates of the entire city. After gathering PolicyMap data on block groups immediately surrounding the parks and finding, I divided the average for each metric by the city average for the same time period to determine the extent to which neighborhood change in that one particular neighborhood outpaced the city overall. If the value for neighborhood rate divided by city rate increases from year to

year, it shows that that neighborhood's metric is increasing more rapidly than the city's, which would align with gentrification as a possible explanation but not necessarily confirm it. PolicyMap includes data on these metrics from four time periods: 2000, 2009-2013, 2014-2018, and 2019-2023, though it did not include racial demographic data from 2000, so I was only able to examine racial demographic data from the time periods. Although the parks were constructed in different years, their conceptualization, design, and construction processes all fall within this window, so the PolicyMap data offers insight into the background conditions of each neighborhood at the time.

Findings

Once I collected the data from PolicyMap and determined the relationship between each neighborhood's data with its respective city data, I compiled them into one table for each city. The results for each neighborhood and corresponding city appear in the following tables:

The High Line - New York City, NY

	2000	2009-2013	2014-2018	2019-2023
Median home value (neighborhood)	$429,500.17	$906,413.13	$1,231,837.63	$1,483,250.38
Median home value (city)	$221,200.00	$492,800.00	$570,500.00	$751,700.00
Neighborhood / City	**1.9417**	**1.8393**	**2.1592**	**1.9732**
% non-Hispanic White (neighborhood)		62.70%	61.51%	52.56%
% non-Hispanic White (city)		33.07%	32.14%	31.30%
Neighborhood / City		**1.8960**	**1.9138**	**1.6792**
% college degree or higher (neighborhood)	51.32%	68.23%	67.32%	71.39%
% college degree or higher (city)	27.42%	34.49%	37.43%	41.03%
Neighborhood / City	**1.8716**	**1.9783**	**1.7986**	**1.7399**

Figure 10: Results of High Line neighborhood data analysis

The Bloomingdale Trail - Chicago, IL

	2000	2009-2013	2014-2018	2019-2023
Median home value (neighborhood)	$210,409.52	$376,512.00	$427,412.00	$622,020.00
Median home value (city)	$144,300.00	$233,200.00	$246,500.00	$315,200.00
Neighborhood / City	**1.4581**	**1.6145**	**1.7339**	**1.9734**
% non-Hispanic White (neighborhood)		42.49%	49.56%	55.01%
% non-Hispanic White (city)		32.17%	32.82%	32.21%
Neighborhood / City		**1.3208**	**1.5101**	**1.7079**
% college degree or higher (neighborhood)	24.99%	47.22%	57.88%	67.22%
% college degree or higher (city)	25.49%	34.20%	38.39%	43.32%
Neighborhood / City	**0.9804**	**1.3807**	**1.5077**	**1.5517**

Figure 11: Results of Bloomingdale Trail neighborhood data analysis

The Rail Park - Philadelphia, PA

	2000	2009-2013	2014-2018	2019-2023
Median home value (neighborhood)	$111,256.25	$283,040.00	$330,144.44	$510,400.00
Median home value (city)	$61,000.00	$142,500.00	$156,800.00	$232,400.00
Neighborhood / City	**1.8239**	**1.9862**	**2.1055**	**2.1962**
% non-Hispanic White (neighborhood)		47.21%	48.59%	55.45%
% non-Hispanic White (city)		36.59%	34.64%	33.58%
Neighborhood / City		**1.2902**	**1.4027**	**1.6513**
% college degree or higher (neighborhood)	28.14%	46.24%	56.29%	68.76%
% college degree or higher (city)	17.87%	23.86%	28.58%	34.64%
Neighborhood / City	**1.5747**	**1.9380**	**1.9696**	**1.9850**

Figure 12: Results of Rail Park neighborhood data analysis

Comparison Between Cities

In both Chicago and Philadelphia, the value for neighborhood rate divided by city rate increases consistently every time period for every metric, indicating that home value, percentage of non-Hispanic white population, and percentage of college-educated residents in the neighborhood surrounding the park increased more rapidly than it did in the respective city overall during the time frame that the park was developed. However, New York City's data does not show as clear of a trend, with nonlinear progression in all three areas, though its results always being above 1 indicates that these three indicators were always higher in the High Line's immediate neighborhood than the larger city.

The trends present in these metrics does not clearly prove or disprove the presence of gentrification caused by park development. While increases in home value, non-Hispanic white

populations, and college education are all indicators associated with gentrification, other alternative explanations exist: for example, city developers may have turned to neighborhoods already seeing increases in these metrics as more desirable to invest in innovative infrastructure. This explanation is consistent with Loughran's 2014 findings, which suggested that cities may see neighborhoods trending toward more white and upper-class demographics as prime locations to develop innovative and exciting park concepts. The fact that the Rail Park was constructed in 2010 but its neighborhood already experienced socioeconomic change since 2000 also supports this explanation, as it means all three parks would not have been able to spur the same trends in neighborhood change at the same time.

Even though these findings do not definitively show neighborhood change as a measurable impact of park development, identifying demographic and economic trends is still a relevant consideration for examining the social contexts surrounding parks. In the context of sustainable development, these findings suggest that its goals may not have been met in each instance: even though each park emphasized community development and increased quality of life for residents, their development indicated some level of association with neighborhood change patterns that are negative for existing residents.

Recommendations

The sustainable development framework proposes environmental, economic, and social as three dimensions that facilitate well-rounded development outcomes. Based on my literature review and findings, I formed one recommendation for each category regarding how cities can more closely incorporate each pillar of sustainable development when repurposing unused infrastructure for public parks. Each recommendation calls on cities to approach the development

process more intentionally and with consideration for environmental, economic, and social factors.

For the social component, cities should emphasize collaboration with community members and conservancy groups to conceptualize and create park space. All three parks that I centrally researched—the High Line, the Bloomingdale Trail, and the Rail Park—resulted from effective collaboration between groups. Not only did a conservancy group, Friends of the High Line, spearhead the High Line's transformation, but facilitated a design competition where individuals could propose recommendations for their ideal version of the park. In the other two cities, the community-driven conservancy groups Friends of the Bloomingdale Trail and Friends of the Rail Park also lobbied for the park's creation as a public space. Incorporating public perspectives into park development and design has contributed to each park becoming well-integrated into the community, as seen in both academic research articles and media publications. Consistent with the social pillar of sustainable development, this approach encourages neighborhood residents to take an active role in shaping their community and public spaces accessible to them.

For the environmental component, cities and developers should prioritize green space as a central component of parks. While promotional materials frequently emphasized natural landscapes as an advantage to creating parks on unused infrastructure, typically ranging from 11% to 17% of all thematic mentions in each city, the inherently limited space of railway tracks presents a substantial challenge to creating an impactful amount of urban green space. Based on Ogce et al.'s (2025) findings that a 3.4 hectare park could decrease air temperature by 0.5°C within 391 meters—and the size of the High Line, Bloomingdale Trail, and Rail Park all being smaller than that—none contains enough green space to leave a substantial positive impact on

the surrounding air temperature, subsequently presenting limited potential to offset effects like urban heat island. Additionally, the word “sustainability” appeared less frequently in every park’s documents than other positive park attributes, limiting discussions on long-term environmental benefits within the park planning process. Future parks created with this model must be larger in area and/or contain a larger amount of green space to sufficiently increase the sustainability capacity of the park, and cities should expand discussions on natural landscape elements to encompass a deeper understanding of parks’ environmental effects.

For the economic component, cities should remain cognizant of potential correlations between park construction and neighborhood change patterns to minimize negative impacts of economic growth opportunities on local communities and avoid outcomes like perceived privatization. In all three neighborhoods surrounding the parks I researched, median home values and percentage of college-educated residents increased consistently from 2000 to the period of 2019-2023. Additionally, these values increased proportionally to city rates as well, indicating that citywide demographic trends alone were not responsible for indicators of gentrification seen in the observed neighborhoods. Percentages of non-Hispanic white residents also increased consistently; the one exception is the High Line’s neighborhood in New York City, whose percentage of non-Hispanic white residents actually decreased over this time period, but at a slower rate than the city overall. Whether or not the parks themselves or even broader urban development contributed to neighborhood change, these results show that they were associated in some way with park development processes. This demonstrates a potential risk for park creation that future developers should remain aware of, especially since these results were still seen in projects whose planning and promotional materials consistently mentioned values like community impact and accessibility.

Conclusion

Through this research, I sought to examine the intentions behind and effects of converting unused transit infrastructure into public parks as a case study of urban regeneration in cities within the framework of sustainable development and its environmental, economic, and social pillars. My case study integrated three parks constructed similarly to one another: the High Line in New York City, the Bloomingdale Trail in Chicago, and the Rail Park in Philadelphia, which I determined to share common characteristics in the type of infrastructure with which they were constructed, the cross-sector collaborations necessary to support them, and physical design appealing to local residents. To identify commonly represented intentions among cities and planning agencies, I completed a content analysis using both structural coding and in vivo coding to quantify the number of times eighteen central themes and five keywords across a variety of planning documents and media publications. I supplemented this research with a quantitative analysis of neighborhood change in the neighborhoods surrounding each park, attempting to measure indicators associated with gentrification and how they changed over time as parks were conceptualized and constructed, which tied into the impact-focused component of my research question. Additionally, I conducted this research through a sustainable development framework, using social, environmental, and economic components to examine how these similar projects applied to each.

Both research methods identified relevant insights into the expressed intentions and observed impacts behind converting transit infrastructure into public parks. The content analysis of planning documents and publications related to parks revealed altruistic intentions to create public space, increase natural landscapes in dense urban areas, and facilitate community cohesion, but they also demonstrated motivations like increasing economic growth for the city

and attracting tourism. While I initially speculated that intentions like economic improvement and tourism primarily drove cities' investment in park development with community improvement aspects mainly being a marketing tactic, the content analysis' results did not support this. Instead, they showed that these themes appeared at consistent frequencies across internal documents focused on planning details and promotional publications, suggesting that intentions directly shaping these projects were similar to those offered as benefits to the public. A significant limitation of this distinction is the extent to which "public" and "non-public" sources differ; while I was able to distinguish between sources that more closely matched each type, the "non-public" sources like framework plans were still accessible online and thus still authorized for public viewership. It is possible that the cities and design agencies I studied utilized additional documents—without making them publicly available—that would have reflected underlying intentions to promote commercial growth much more rapidly than any community benefits, free from any pressure to maintain their public image, which would have led to different findings than what I ultimately identified. However, the range of sources I was able to analyze still offered sufficient opportunity to draw comparisons between source types, making their results applicable to my specific research focus.

The results of the quantitative analysis of neighborhood change also offered insight relevant to my research question. The data on the socioeconomic factors of median household income, percentage of non-Hispanic white residents, and percentage of college-educated residents widely showed that the neighborhoods surrounding the parks I studied became more affluent, white, and educated over a similar time frame to when the parks were constructed. This aligned with my prediction for this method's findings but was not able to prove the presence of gentrification based on limitations inherent in quantitative research. While this method was able

to identify patterns in observed outcomes, it is not applicable to determine what caused the outcome. Gentrification resulting from the park's construction is one possible explanation, but it is also plausible that the respective cities chose to construct parks in neighborhoods that were already experiencing socioeconomic change or the parks were only one component of a larger urban regeneration process that influenced neighborhood change. Even in instances consistent with gentrification such as the Bloomingdale Trail in Chicago, residents interviewed felt that the park was still an improvement to their community and sense of cohesion, meaning that parks can still create positive change even if they are susceptible to gentrification (Rigolon et al., 2024). Regardless of why the observed outcomes happened, they still have tangible impact on the neighborhood's community and use a socioeconomic perspective to challenge the idea that converting infrastructure into green space is universally positive.

The sustainable development component of my research question sought to examine how and why the process of repurposing transit infrastructure for parks meets specific elements of sustainable development. Based on existing frameworks in prior research, I identified environmental, economic, and social as three pillars and used each as a distinct perspective. Environmentally, cities converting transit infrastructure into public parks is beneficial. Although the amount of green space created is constrained by the limited structural area and thus unlikely to significantly counteract broad patterns like urban heat island, increasing the amount of vegetation in dense urban areas by any margin is still an improvement over not implementing it at all. Furthermore, the documents in my qualitative analysis often cited the impact of natural landscapes on visitors as a benefit to parks. This means that offering an accessible area of green space integrated into city infrastructure is an intentional choice that can demonstrate the potential of environmentally-focused city design to community members, potentially increasing awareness

of the environment among city residents. The influence of these parks on the other two elements of sustainable development is less clear. Economically, creating an innovative park whose concept and design is exciting in and of itself has the potential to generate revenue and tourism for the city, evidenced not only by documents that described this outcome but also the spread of design concepts across cities that saw a potential growth area for their own community. While cities and developers would ideally want to expand green space for the public benefits it can create, being motivated by economic potential is not necessarily ill-natured, seen in Philadelphia's documents that saw the Rail Park's commercial growth as an opportunity to fund community-serving resources alongside the park. Lastly, the social component provides another lens to assess park development. Although the quantitative analysis revealed that neighborhoods with converted parks experienced a decrease in socioeconomic diversity over time, it is unclear whether this is a result of the park itself or not. Past academic literature typically concluded that community members felt that parks enhanced their community's sense of connection and openness, showing that parks are likely to increase a neighborhood's overall social qualities.

Though these findings suggest that cities repurposing unused transit infrastructure for public parks meets the objectives of sustainable development, undertaking this process in a way that does so intentionally is necessary. To promote this, I offered a series of recommendations for how cities can ensure that their concepts and designs effectively implement values that sufficiently increase the environmental, social, and economic impacts of parks. Cities and developers must emphasize cross-sector collaboration with conservancy groups and community members to ensure that they take prospective park users' perspectives into account, prioritize green space in the park's physical design comparable to the frequency of its discussion in promotional materials, and consciously account for potential neighborhood change impacts to

ensure that parks do not adversely impact residents by exacerbating socioeconomic inequality. While these recommendations are not exhaustive, they offer a starting point for cities interested in completing similar urban regeneration projects and how they can promote future development that incorporates environmental, economic, and social wellbeing.

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