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Research Paper

The impact of urban greenways on residential concerns: Findings from the Atlanta BeltLine Trail

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ABSTRACT

Urban greenways are receiving increased attention due to the implications they have for the sustainable development of 21st century cities. Although preferences of greenway users have been heavily investigated, research on residents' perceptions of living in close proximity to these greenways pales in comparison. With this gap in mind, residents living within two socio-economically different neighborhoods adjacent to the Atlanta BeltLine Trail were surveyed about common neighborhood concerns and how the BeltLine's development alleviates or exacerbates these concerns. By simultaneously asking residents about both neighborhood concerns and the BeltLine's impact on these concerns, modified Importance-Performance (IPA) graphs were created with four quadrants depicting where the BeltLine is successful and areas where it has aggravated problems. From the 381 responses received, the top five most important neighborhood concerns were crime, property taxes, vandalism, property values, and places for outdoor recreation. The BeltLine was perceived by residents to be improving property values, places for outdoor recreation, and social spaces for gathering, while slightly increasing litter, crime, vandalism, and property taxes. This can be seen on the graphs where most of negatively connoted concerns fell in the "Concentrate here" quadrant with the positively connoted concerns falling in the "Keep up the good work" quadrant. T-test results revealed that the affluent Northside neighborhood viewed the impacts of the trail as more positive than the transitioning Southwest neighborhood. Results suggest that greenway planners should tailor greenway development projects towards individual neighborhoods as they are likely to have different concerns and expectations of urban greenways.

1. Introduction

Urban greenway trails are receiving increased attention across both the academic literature and popular press due to the many implications they have for the sustainable development of 21st century cities (Gobster and Westphal, 2004; Lindsey, 2003; Searns, 1995). Although the motivations, attitudes, and exercise patterns of urban greenway users have been heavily investigated (Evenson, Herring, & Huston, 2005; Gobster, 1995; Lindsey, Han, Wilson, & Yang, 2006; Lindsey, Han, Wilson, & Yang, 2006; Shafer, Lee, & Turner, 2000a), research on residents' perceptions of living in close proximity to these greenways pales in comparison (e.g., Asakawa, Yoshida, & Yabe, 2004; Coutts, 2009). Residents are the ultimate stakeholder of urban greenways because they are the ones who have to live with both the positive and negative impacts of these trails every day, as opposed to non-residential users who often do not live close enough to be affected by their associated positive and negative impacts (Corning et al., 2012Corning, Mowatt, & Charles Chancellor, 2012).

The paucity of research on resident attitudes towards urban greenways reveals important research gaps. Of particular interest is how common residential neighborhood concerns such as traffic, crime, and property tax, for example, are influenced by the presence of urban greenways (Lee et al., 2002Lee, Scott, & Moore, 2002). Urban greenways are developed to help alleviate these common concerns and to increase resident quality of life (Shafer & et al., 2000a); however, little research has actually contextualized this question in terms of everyday or routine concerns facing urban dwellers. Contextualizing greenways in this manner helps to situate an ostensibly benign feature of the cityscape within the larger milieu of the urban, thereby allowing for a consideration of these greenways and their benefits and costs in conjunction with the broader contentions of urban space, rather than as isolated havens removed from the city's chaos. This type of information can help city managers and urban planners better deliver the health benefits and quality of life that urban trails are designed to provide 21st

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century sustainable cities (Eyler et al., 2008; Lindsey, 2003; Salici, 2013).

With this gap in mind, this study surveys residents of two neighborhoods in close proximity to two segments of the Atlanta BeltLine Trail about common neighborhood concerns and how the trail's development either helps to alleviate these concerns or possibly exacerbates them. By simultaneously asking residents about both common neighborhood concerns and the BeltLine's impact on these concerns, we are able to create visual graphs of areas where the BeltLine is successful and areas where it has failed or even aggravated problems. These visual graphs are modified Importance-Performance Analyses (Martilla and James, 1977) that traditionally graph stakeholders' perceptions of the importance of an issue on the y-axis and their evaluations of performance on the x-axis. The simultaneous evaluation of importance and performance helps managers to identify discrepancies between what stakeholders deem an important component of a specific issue and their actual perceptions of the how well the issue is being managed (Boley et al., 2017Boley, McGehee, & Hammett, 2017).

Importance Performance Analysis (IPA) is widely used across the disciplines of business and tourism because of the strong managerial implications associated with its four simple quadrants (Boley et al., 2017 Lai & Hitchcock, 2015). By simultaneously graphing the mean importance and performance results for attributes, managers are able to see in which of the four quadrants the attribute falls: Quadrant I: "Concentrate Here," Quadrant II: "Keep Up the Good Work," Quadrant III: "Low Priority," and Quadrant IV: "Possible Overkill." Once this has been established, managers can then appropriate resources to adjust accordingly between importance and performance (Martilla and James, 1977Martilla & James, 1977).

This study takes a novel approach to "Importance Performance Analysis" (IPA) by soliciting data on resident perceptions of common neighborhood *concerns* such as traffic, crime, open space, and property values and their perceptions of the BeltLine's positive or negative *impacts* on the same list of concerns. In this modification, the y-axis of the IPA graph is changed from "Importance" to residents' "Level of Concern" for a range of common neighborhood concerns, and the x-axis is change from "Performance" to the BeltLine's positive or negative "Impact" on these neighborhood concerns (see Appendix A for a full list of concerns). This provides greenway managers with a graphical depiction of which concerns are managerially important to consider in greenway development, as well as areas where the BeltLine has a positive or negative impact within the community, and thus, where to focus efforts to fix potential problems (Fig. 1). For example, if residents are highly concerned about property values within their neighborhood and the BeltLine has a positive impact on property values, then the concern would fall in the "Keep Up the Good Work" quadrant. If residents were highly concerned, but the BeltLine had a negative impact on property values, then it would fall in the "Concentrate Here" quadrant.

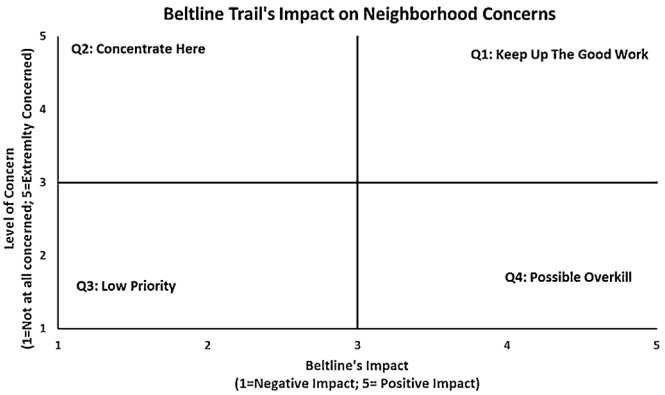

Fig. 1. Modified IPA to graph the BeltLine's Impact on Neighborhood Concerns.

In addition to the novelty of examining the BeltLine's impact on neighborhood concerns through the modified IPA, this study compares the responses to the IPA across two different communities adjacent to two different portions of the BeltLine using independent samples *t*-tests. These communities are both located along built portions of the Atlanta BeltLine, but vary in geography (e.g. north vs. southwest), as well as racial composition and per capita household income. By examining responses between communities for significant differences, we will be able to see whether concerns and impacts vary across neighborhoods. Atlanta, as most cities, is not comprised of homogenous neighborhoods (Denton and Massey, 1991; Hayes, 2006), so focusing the analysis at the neighborhood level allows us to see if these two neighborhoods perceive the costs and benefits of urban greenways in the same light or if they view the impacts of urban greenways differently. The paper continues with a literature review on urban greenways before presenting the methodology used to conduct the study.

2. Literature review

Greenways and urban trails have evolved in response to the physical, cultural, political and psychological pressures of urbanization (Fabos, 1995; Kullmann, 2013; Searns, 1995; Yokohari, Amemiya, & Amati, 2006). This evolution of greenways and their many disperse forms across the world make consensus on a precise definition of greenways hard to come by (Fabos, 2004; Gobster, 1995; Searns, 1995). Despite these definitional complexities, Charles Little, in his book, *Greenways for America*, holistically describes greenways as "linear parks, open spaces, and protected natural areas in cities, suburbs, or the countryside" (Little, 1995). The term *greenway* takes on different names in different parts of the world. For example, in many European countries greenways are known as 'green corridors' and in Portugal they are referred to as 'corridors verdes' (Fabos, 1995). For the purpose of this study, Corning et al. (2012) description of greenways is used. Corning et al. (2012) describes greenways as *multiuse trails*, which are usually closer to urban population centers, often paved, wider than sidewalks or hiking trails, and more accessible to diverse populations. This definition aligns with the Atlanta BeltLine Trail which once completed will be a 22 mile paved multi-use trail that circumnavigates the urban core of Atlanta on a set of abandoned rail road tracks (Atlanta BeltLine, 2016).

The notion of urban greenway trails has evolved to address new needs and challenges of urban development. Searns (1995) describes this evolution of urban greenways as leading to the creation of three distinct generations of the greenway evolution. The first generation consisted of axes, boulevards, and parkways that were the ancestral greenways (Little, 1995; Newton, 1971). The second generation consisted of trail-oriented recreational greenways that provided access to rivers, streams, ridgelines, railbeds, and other corridors within the urban fabric, often automobile free (Fabos, 1995; Siderelis and Moore, 1995). The third, and most recent, generation consists of multi-objective greenways that go beyond recreation and beautification to address areas such as habitat needs of wildlife, promoting urban flood damage reduction, enhancing water quality, providing a resource for outdoor education, and other urban infrastructure objectives (Kullmann, 2013, Liu, Siu, Gong, Gao, & Lu, 2016; Salici, 2013; Shafer, Scott, Baker, & Winemiller, 2013).

Greenways are now considered a strategy for the design and management of sustainable landscapes, which embraces the Bruntland Report's focus on meeting the needs of the present without compromising the ability of future generations to meet their needs (Ahern, 1995; Fabos, 2004; Lindsey et al., 2006; WCED, 1987). Shafer et al. (2000b) acknowledges the importance greenways play in resident quality of life. They attribute this rise in quality of life to the combination of greenway's recreational offerings that provide enhanced opportunities for fitness and attractive natural environments, as well as the pride that residents receive from having greenways associated with

their city. Dwyer et al. (1992) add that the presence of urban greenspace has both positive psychological and societal impacts on communities by relieving stress, increasing enjoyment of everyday life, strengthening a sense of community, enhancing economic development, and promoting environmental responsibility. Matsuoka and Kaplan (2008) recognize that urban residents worldwide express a desire for contact with nature and each other, attractive environments, places in which to recreate and play, privacy, a more active role in the design of their community, and a sense of community identity. In this sense, urban greenways help residents meet their psychological needs and provide an escape from the stresses of urban life. In addition to these more social-psychological benefits, urban greenway trails have been shown to positively impact the salability and value of nearby properties (Crompton, 2001; Corning et al., 2012). Greenways are also an importance piece of the puzzle in reducing obesity and encouraging physical activity (Evenson et al., 2005; Price and Reed, 2014; Troped, Saunders, & Pate, 2005).

Despite the many positive benefits urban greenway can have, they are often controversial due to the negative impacts associated with their development. Common residential concerns of living near urban greenway trails include privacy, trespassing, and liability, with most problems being cars parked on public property, unleashed dogs, dog waste on property, and damage to property (Corning et al., 2012). Other residential concerns include the amount of traffic greenways create and gentrification (Lindsey et al., 2006). Research has also shown that minorities and lower income households have disproportionate access to trails, which makes them more likely to face the financial pressures of rising property taxes associated with greenway projects (Lindsey et al., 2001Lindsey, Maraj, & Kuan, 2001). Finally, residents are often concerned urban greenways will compromise their safety and bring crime to their neighborhoods (Crewe, 2001; Luymes and Tamminga, 1995).

One suggested solution to combat these concerns is for trail officials to establish relationships with residents and property owners in order to better address and limit future problems (Corning et al., 2012). Understanding attitudes and perceptions of urban greenway trails is important for evaluating trail use, making management decisions, and alleviating residential concerns. Assessing residential concerns of greenway trails can provide constructive information for trail planners, managers, land developers, real estate professionals, and researchers (Corning et al., 2012; Eyler et al., 2008). With the importance of assessing resident perceptions of the costs and benefits of urban greenways in mind, the paper continues by introducing the Atlanta BeltLine and the methods used to assess resident perceptions of the costs and benefits of having an urban greenway within their neighborhood.

3. Methods

3.1. Atlanta BeltLine

The study is built around Atlanta, Georgia's BeltLine Trail. The Atlanta BeltLine Trail is an urban greenway redevelopment project that aims to provide a network of public parks, multi-use trails, and transit along a historical 22 mile railroad corridor that circumnavigates the urban core of the city once completed (Atlanta BeltLine, 2016) (Fig. 2). The city of Atlanta contains over 463,000 residents, a population increase of around 10% since the 2010 census, and is located within a large metropolitan area that contains over 5.6 million people (U.S. Census Bureau, 2016). Atlanta currently struggles with overburdened infrastructure, air pollution, and economic segregation (Ross et al., 2012). The BeltLine is proposed to help alleviate these problems by providing more greenspaces, places to recreate, affordable housing, and new routes to commute to work by bicycle (Atlanta BeltLine, 2016). In addition to the main 22 miles of the Atlanta BeltLine Trail, there will also be 11 miles of multi-use spur trails and 1300 acres of parks once the BeltLine is completed (Atlanta BeltLine, 2016). While the BeltLine is currently recognized as widely popular trail among users in Atlanta (Mehrotra, 2014), little is known about how the trail's popularity and use have impacted residents living in close proximity to the trail. With only 3.15 of the proposed 33 miles of trails developed and open for use, the decision was made to focus the research on the areas with pre-existing trails, so that the impacts of the trail on residential concerns could be measured rather than asking residents to think about the hypothetical impacts of future trail development.

3.2. Neighborhood and trail descriptions

The two neighborhoods and trail segments of focus are located on the Northside and Southwest side of Atlanta (Fig. 3). The Northside Trail is a 1-mile greenway spur of the BeltLine that runs along Tanyard Creek Park and connects the neighborhoods of Ardmore Park and Collier Hills (Fig. 3). The demographics of residents living within these neighborhoods vary, but for the census tracts where the sample was taken (Census Tract 90 and 91.01), residents are primarily white (74–90%) with median incomes in the $70,000-$104,000 range. The Southwest Connector Trail is a 1.15 mile greenway spur of the BeltLine that connects the Lionel Hampton Trail and Nature Preserve to Westwood Avenue on the southwest side of the city. The trail is situated in the Beecher Hills, Bollingbrook, Westwood and Westivew neighborhoods which used to be traditional middle-class African-American neighborhoods but have recently been in decline. The demographics of residents living within these neighborhoods are fairly homogenous. According to the census tracts where the sample was taken (Census Tract 60, 80, & 81.01), residents are primarily black (95%) with median incomes in the $26,000-$38,000 range.

The history of these two neighborhoods varies significantly and is important to review for context as to why they were chosen for comparison. Situated in southwest Atlanta, the Beecher Hills, Westview, and Westwood Terrace neighborhoods form part of the larger, historic "Southwest" community that has come to epitomize the black Atlanta experience. To the casual observer, these communities might appear as solidly, majority African American. However, these communities, along with many others in southwest Atlanta, transformed from mostly white up until the 1960s, to overwhelmingly African American by the 1970s. According to Kruse (2005), the "white flight" that characterized this turn, was undergirded by white supremacist convictions of blacks as undesirable, criminal elements that needed to be barred from white communities. This obdurate framing represented a monumental change, in some respects, to race relations and community composition in the city. In the early twentieth century, most in-town Atlanta neighborhoods were occupied by the working classes, regardless of race. Employment or occupation, rather than race, provided the impetus and bond holding these communities together, as workers strove to live near the industries that employed them (Lands, 2009, p. 29). But by the 1920s, housing development farther away from the city's center, including neighborhoods inspired by Frederick Law Olmstead's park-neighborhood designs, encouraged zoning restrictions that established explicitly segregated communities (Lands, 2009). By mid-century, Atlanta's housing shortages and congested black neighborhoods emboldened African Americans to seek housing outside of demarcated black zones.

In Atlanta, the black march to the suburbs took a southwesterly route, encompassing areas like Mozley Park, three miles southwest of the city, in the 1950s and later other southwest Atlanta communities including Beecher Hills, Westview, Westwood Terrace, Audobon Forest, and Cascade Heights in the 1960s and 70 s (Johnson Gaither et al., 2016). Transitions of this type did not occur in communities surrounding Ardmore Park and Collier Hills in North Atlanta where the BeltLine's Northside Trail is located.

Importantly, these long-established southwest neighborhoods now contain copious amounts of green spaces (Johnson Gaither et al., 2016), both in terms of tree densities on private lots, along streets, and in

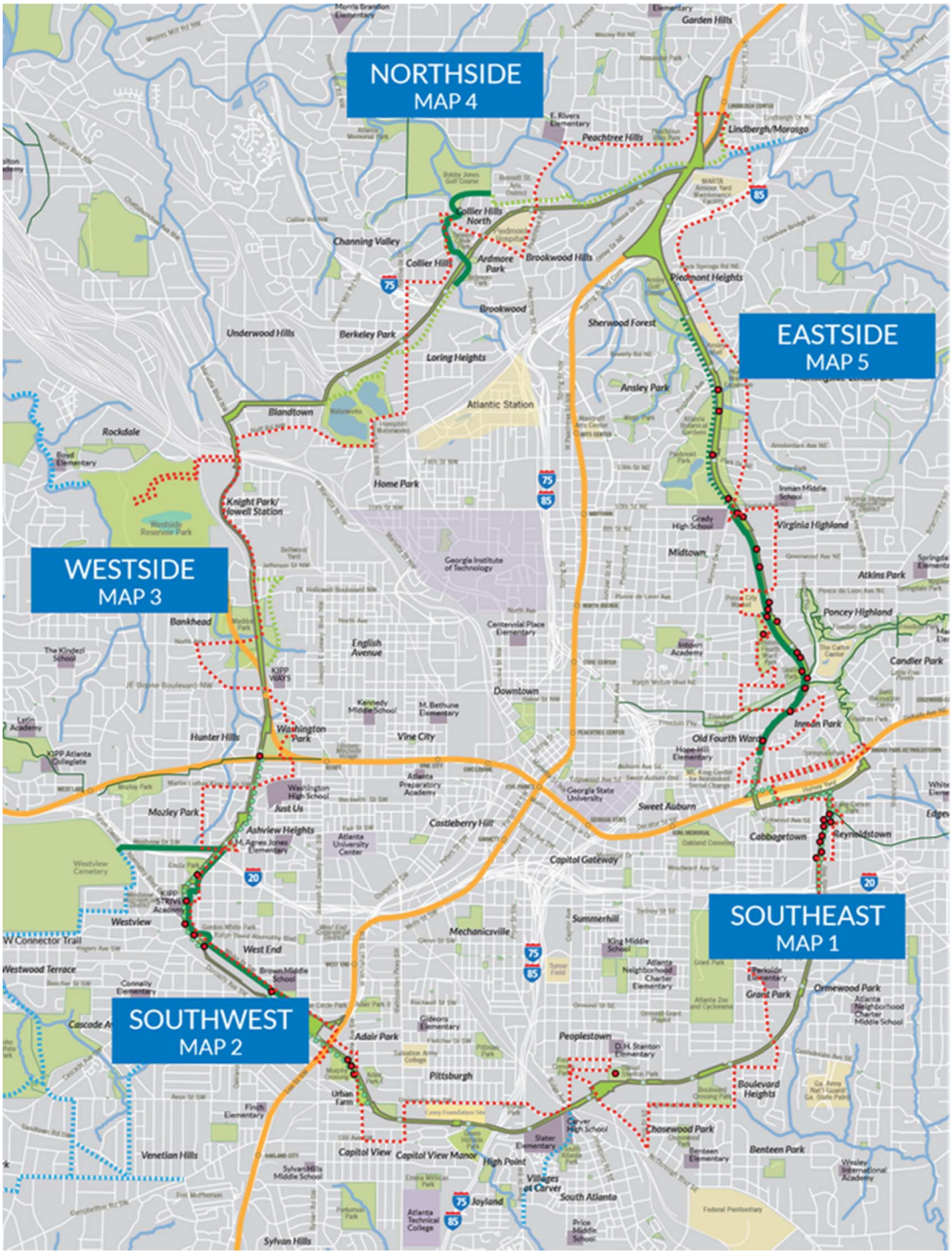

Fig. 2. Atlanta BeltLine Overview Map. Retrieved from: BeltLine.org.

public parks. For instance, preliminary analyses of data analyzed for the Urban Forest Effects (UFORE) model for the City of Atlanta indicates the highest amount of leaf area (99,619 ft^2/acre) for five sub-sections of the city is in southwest Atlanta, which translates into the highest amount of annual pollution removal for any part of the city. So, the introduction of the Atlanta BeltLine into this part of Atlanta fits nicely with an existing green space infrastructure. While the BeltLine's presence as a recreational development makes sense, the question we pose is to what extent residents in the respective study areas perceive the BeltLine as having a positive or negative impact on quality of life?

3.3. Survey methods

To better understand residents' perceptions of the costs and benefits of having an urban greenway within their neighborhood, a proportionate census-guided systematic random sampling method was implemented to ensure representativeness of residents living in close proximity to the BeltLine (Boley and McGehee, 2014; Woosnam, 2008). Proportionate census-guided systematic random sampling utilizes the US Census Bureau's census tracks and block groups to develop a stratified sampling framework for neighborhoods based upon the number of households in each census block (Woosnam, 2008). Portions of

Fig. 3. Maps of two neighborhoods surveyed.

census tract 90 and census tract 91.01 were used for the Northside neighborhood. These census tracts were further divided into 2 and 4 block groups respectively, which covered 36 neighborhood blocks. Census tract 60- block groups 1,2, and 3, census tract 80-block group 5, and census tract 81.01 were used for the Southwest neighborhood which covered 35 neighborhood blocks.

With the goal being to administer 300 surveys within each neighborhood, the target sample number was multiplied by the percentage of households living within each block of each block group to ensure that the census tract was proportionately sampled according to the number of households residing in each block. Using this sampling framework, three research groups collected on-site data over the course of four weekends in the spring of 2016 (see Appendix A for a complete list of the questions asked). Weekends were chosen as they provided the best time to intercept residents via the door-to-door sampling methodology (Woosnam, 2008). Researchers started at the corner of each block and went to every other door asking residents to participate in the study in a clockwise rotation. If a resident agreed to participate in the study, a single survey was left with the head of the household with the most recent birthday to be picked up later in the afternoon. If they participated or declined, researchers would skip the next residence and proceed to the following residence. However, if no one answered the door, researchers would proceed to the next immediate residence to survey. This repeated until the quota of surveys for each census block was met. This door-to-door methodology was embraced because it has been shown to increase response rates, increase inclusion of minority groups, and be an efficient and cost-effective method to obtain representative data of residents (Woosnam, 2008).

Across the 100 blocks surveyed, 7 blocks (7%) were not entirely sampled using the above methodology. This was due to either gated apartment complexes that prevented knocking on residents' doors or not enough residents answering the door on the first walk through the block. In these cases, the first procedure was to abandon sampling every other household and resample the block by visiting every household. If this sampling technique did not produce the number of allotted surveys for the neighborhood block, the remaining surveys were distributed within the same block group to ensure representativeness at the block group level.

During the four-week period of data collection, 1883 households were visited resulting in contact with 712 eligible residents who were 18 years of age and permeant residents. Out of the 712 eligible households, 600 residents were willing to participate with 112 declining for a participation rate of 84%. Of the 600 surveys distributed, 439 were returned for a return rate of 73%. Cleaning for incomplete or haphazardly completed surveys yielded a total of 381 usable surveys. This resulted in 64% of the contacted households successfully completing the survey and participating in the study. Response rates for the Northside neighborhood (70%) were noticeable higher than in the Southwest neighborhood (54%), but were in the general range for surveys collected using this door-to-door sampling methodology (Boley and McGehee, 2014; Woosnam, 2008).

Respondents were slightly more female (56%) than male (44%) with 65% having a four-year college education or higher and a majority of residents having average household incomes in the range of US$30,000 to US$59,999. The average age was 46 years old and the average respondent had been living in their respective neighborhood for 12.9 years. Additionally, the sample was racially representative of the census tracts sampled with the Northside sample being primarily Caucasian (77%) and the Southwest side sample being primarily African-American (86%) (Table 1).

3.4. Cross-hair placement in importance-performance analyses

By modifying the common Importance-Performance Analysis (IPA) analysis, it provides the ability to gauge resident perceptions on how concerned they are about specific residential issues while also measuring their perceptions of the how the Atlanta BeltLine has influenced these concerns. While these types of analyses are prevalent within the business and tourism literature (Boley et al., 2017; Lai and Hitchcock, 2015), their application within the Greenway literature is sparse. Resultantly, it is important to present some of the important methodological issues that must be addressed when using this type of analysis.

Despite the popularity of IPA, Azzopardi and Nash (2013, p.222) recognize that the methodological technique is "surrounded by conceptual, methodological, and measurement ambiguity." This shroud of ambiguity largely stems from the subjective decision researchers have to make over where to place the cross-hairs within the Importance-Performance matrix (Boley et al., 2017; Oh, 2001). The first researchers to employ the technique, Martilla and James (1977), simply placed the cross-hairs of the x and y axis at the median value of the scales used. This technique is commonly referred to as "scale-centered" IPA because the cross-hairs are simply placed in the middle of the 5-point or 7-point Likert scale used to measure importance and performance. While Oh (2001) acknowledges that this is the most transparent way to place the cross-hairs, it also carries some limitations. For example, when the *scale-centered approach* is used, Taplin (2012, p. 29) writes that most attributes often fall in "the 'keep up the good work' quadrants as respondents tend to give high performance and importance ratings." These inflated importance and performance scores are attributed to what Oh (2001, p. 622) refers to as "ceiling effects" because researchers "tend to use a selected set of key-therefore, 'important' already in its own right-attributes to measure importance."

To avoid this problem, other researchers have suggested using a *data-centered approach* which places the cross-hairs at the mean

Table 1
Socio-economic and demographic composition of BeltLine neighborhoods.
[b]Differences tested with independent-samples *t*-test.

Sociodemographic and Socioeconomic Variables	Northside Residents (%)	Southwest Residents (%)	Test Value	p
Gender[a] (n_{NTR} = 226, n_{SCTR} = 180)			1.76	0.18
Male	47.1	40.6		
Female	52.9	59.4		
Race[a] (n_{NTR} = 225, n_{SCTR} = 176)			264.54	< 0.000
African American	9.3	86.4		
American Indian	0.4	1.7		
Asian	5.8	4.5		
Caucasian	76.5	1.7		
Hispanic	4.0	5.7		
Other	4.0	0.0		
Education level[a] (n_{NTR} = 226, n_{SCTR} = 177)			144.99	< 0.000
Less than high school	0.0	5.6		
High school or GED	2.2	18.6		
Technical, vocational or trade school	1.8	15.3		
Some college	5.7	27.1		
Bachelor's degree	54.2	21.5		
Master's degree	27.3	9.6		
Ph.D./professional degree	8.8	2.3		
Household Income[a] (n_{NTR} = 204, n_{SCTR} = 155)			113.162	< 0.000
< $30,000	7.3	34.8		
$30,000–$59,999	11.7	33.5		
$60,000–$89,999	18.5	18.7		
$90,000–$119,999	17.1	7.1		
$120,000–$149,999	11.2	2.6		
$150,000–$179,999	7.3	2.6		
$180,000–$209,999	6.8	0.0		
≥$210,000	20.0	0.6		
	Mean age in years			
Age[b] (n_{NTR} = 215, n_{SCTR} = 154)	41	52	−6.817	< 0.000

[a]Differences tested with Pearson chi-square test.
[b]Differences tested with independent-samples *t*-test.

responses of the importance and performance items measured respectively (Azzopardi and Nash, 2013). According to Taplin (2012, p. 29), this data-centered approach has "the advantage that attributes are compared relative to each other, which is appropriate if management is considering shifting limited resources between attributes." Boley et al. (2017) state that this also effectively solves the problem of 'ceiling effects' by ensuring that salient attributes are graphed according to their relative importance and performance, which ensures more dispersion of attributes across the four IPA grids and clearer managerial implications for where to allocate scarce resources.

A third option employed by some researchers has been to use an upward sloping 45 ° diagonal line to distinguish between areas where performance exceeds importance (P > I) or where performance falls below importance (P < I) (Azzopardi and Nash, 2013; Bacon, 2003). This 45° diagonal line is referred to by Bacon (2003) as an isopriority diagonal line because it provides a visual line of "where all points on it has equal priorities for improvement (I = P)" (cited in Azzopardi and Nash, 2013, p. 222). The use of an isopriority line provides researchers with the ability to employ gap analysis and tap into social exchange theory within the context of Oliver's (1980) expectancy-disconfirmation paradigm, which states that a customer's satisfaction with a product or attribute will be based upon the difference between their expectations and their performance evaluations of that product or attribute (Oliver, 1980). If performance evaluations are higher than expectations (P > E), then there is a positive disconfirmation and the customers will likely by satisfied. If there is a negative disconfirmation (E > P), then the customers will likely be dissatisfied. Incorporating the 45- degree diagonal line into IPA allows researchers to identify attributes which have positive disconfirmations (P > I) and negative disconfirmations (I > P) (Sever, 2015).

Boley et al., 2017 recognizes that the subjectivity associated with IPA cross-hair selection places a high burden on researchers to clearly articulate why certain methods were chosen over others. With the latitude researchers have with these three options, Boley et al., 2017 recommends a hybrid approach where the cross-hairs are adapted to the situation and the IPA graphs include all three options, so that other readers can interpret the findings for themselves. Based upon a review of the pros and cons of the options available (e.g. scale-centered, data-centered, and iso-priority diagonal line) and the nature of the study, the scale-centered approach to crosshair selection was taken with the data-centered approached used to further highlight problem areas or areas of success. This was decided upon because the mean scores for "level of concern" (C) and "BeltLine Impact" (I) were fairly close to the medians of the Likert scale used (3.26 and 3.33 respectively). This provided the opportunity to first look at each neighborhood concern independently using the 3.0 threshold before interpreting the concerns relative to the other neighborhood concerns. An iso-priority diagonal line at 45 ° was also overlaid on each chart. The iso-priority diagonal visually demonstrates which concerns fell above the line, indicating dissatisfaction (C > I), and which concerns fell below the line, indicating satisfaction (I > C). This more nuanced approach is believe to provide richer, more complex findings than if a single approach were utilized.

It should also be noted that the list of neighborhood concerns measured within each neighborhood along the BeltLine was composed of concerns with positive connotations (e.g., park development, business development, property value) and negative connotations (e.g., litter, vandalism, crime, property taxes). Since the survey asked residents to evaluate both their level of concern on each issue and how the BeltLine affected each issue, the concerns with positive and negative connotations were measured on the same scale (1 = decreases greatly to 5 = increases greatly). This required the concerns with negative connotations to be recoded, so that if the BeltLine were to greatly increase a concern with a negative connotation like crime, then that would be a negative impact of the BeltLine. A complete list of concerns measured and their exact wording is provided in Appendix A.

4. Results

The top five most important neighborhood concerns among residents were crime (3.68), property taxes (3.51), vandalism (3.45), property values (3.44), and places for outdoor recreation (3.34). When asked about how the BeltLine impacted these residential concerns, the results appear to be split by whether or not the neighborhood concern has a positive connotation or a negative connotation. For example, the positive neighborhood concerns of park development, places for outdoor recreations, property values, and neighborhood business development were all seen to be positively impacted by the BeltLine's development within the neighborhood. However, the concerns with negative connotations such as crime, traffic, property taxes, litter, and vandalism were seen to be exacerbated by the BeltLine's presence. Based upon these results, it appears that the BeltLine trail has a bipolar affect where it exacerbates negative concerns (e.g. crime, property tax, litter), and helps improve positive concerns (e.g. property values, park development, and business development).

To better understand how perceptions of these 14 neighborhood concerns differed across the two neighborhoods of interest, independent samples *t*-tests were used. These *t*-tests provided the ability to see if residents' level of concern varied by neighborhood and if their perceptions of the BeltLine's impact varied by neighborhood (Table 2). Of the 14 neighborhood concerns included in the *t*-tests, there were significant differences found on 11 out of 14 concerns. The neighborhood concerns that were not significantly different between the two neighborhoods were "B) The Amount of natural areas/open space," "H) Property Taxes" and "M) Time of commute to work".

When looking at how the BeltLine impacts each neighborhood

Table 2
T-test of level of concern and BeltLine's impact by neighborhood.

Neighborhood Concerns	Northside (n = 204–221)		Southwest Side (n = 115–160)		Concern *t*-test		Impact *t*-test	
	C[a]	I[b]	C[a]	I[b]	*t*	*p*	*t*	*p*
A) Traffic[c]	3.38	2.61	2.86	2.73	3.64	0.001	−1.21	0.229
B) The amount of natural areas/open space	3.09	4.09	2.92	3.46	1.13	0.259	5.63	0.000
C) Crime/Safety[c]	3.35	2.73	3.99	2.45	−4.66	0.001	3.06	0.002
D) Neighborhood business development	2.69	3.51	3.61	3.65	−6.88	0.001	−1.48	0.140
E) Litter[c]	3.25	2.42	3.71	2.47	−3.27	0.001	−0.56	0.574
F) The entertainment options (e.g. shopping, restaurants)	2.75	3.49	3.40	3.59	−4.56	0.001	−1.10	0.274
G) Property values	3.40	4.06	3.75	3.89	−2.34	0.020	1.81	0.071
H) Property taxes[c]	3.54	2.29	3.69	2.18	−1.07	0.286	1.24	0.215
I) Places for outdoor recreation	3.19	4.35	3.57	3.73	−2.60	0.010	6.03	0.000
J) Park development	3.21	4.22	3.57	3.75	−2.49	0.013	4.64	0.000
K) Vandalism[c]	3.24	2.68	3.94	2.44	−5.07	0.001	2.50	0.013
L) Local government tax revenue	2.90	3.54	3.56	3.74	−4.58	0.001	−2.29	0.023
M) Time of commute to work[c]	3.09	2.84	3.02	2.71	0.43	0.667	1.52	0.129
N) Social spaces for the neighborhood to gather	2.79	3.99	3.35	3.62	−3.83	0.001	3.76	0.000

[a]Concern questions asked as "How concerned are you with … in your neighborhood?" on a scale with 1 = Not At All Concerned and 5 = Extremely Concerned.
[b]Impact questions asked as "How does the BeltLine Trail affect …?" on a scale with 1 = Decrease Greatly and 5 = Increases Greatly.
[c]Negative neighborhood concerns were recoded so that if the BeltLine decreased the negative concern, then it would be represented as a positive outcome.

concern, significant differences were found for 7 out of 14 "BeltLine Impacts." Residents within the two neighborhoods perceived the BeltLine to similarly impact "A) Traffic," "D) Neighborhood Business Development," "E) Litter," "F) Entertainment Options," "H) Property Taxes, and "M) Time to commute to work." The areas of difference were on the concerns of "B) The amount of natural areas/open space," "C) Crime," "G) Property Values," "I) Places for outdoor recreation," "J) Park development." "K) Vandalism," "L) Local government tax revenue," and "N) Social spaces for the neighborhood to gather." The BeltLine's positive impacts were generally more perceived by the Northside neighborhood than the Southwest neighborhood. The Southwest neighborhood only responded more favorable to the amount of local government tax revenue associated with their portion of the BeltLine.

4.1. Modified IPA graphs

With the independent samples *t*-tests primarily focusing on statistically significant differences, it is of interest to see if these statistically significant differences manifest themselves into different quadrant placements within the modified IPA. Therefore, each of the 14 neighborhood concerns were graphed using the "BeltLine's Impact" as the x-axis and the "Level of Concern" as the y-axis (Figs. 4 and 5). This provides the ability to visually see how the concerns fell across the four quadrants of Quadrant I: "Keep Up the Good Work," Quadrant II: "Concentrate Here," Quadrant III: "Low Priority," and Quadrant IV: "Possible Overkill." While the individual *t*-tests revealed significant differences in concern and the BeltLine's impacts across many neighborhood concerns (~11/14 concerns), there were less differences in quadrant placement between the two neighborhoods (Table 3). For example, both neighborhoods agreed that crime, litter, property taxes, vandalism were places to "concentrate," and that the BeltLine was doing a good job of increasing property values, park develop and places for outdoor recreation.

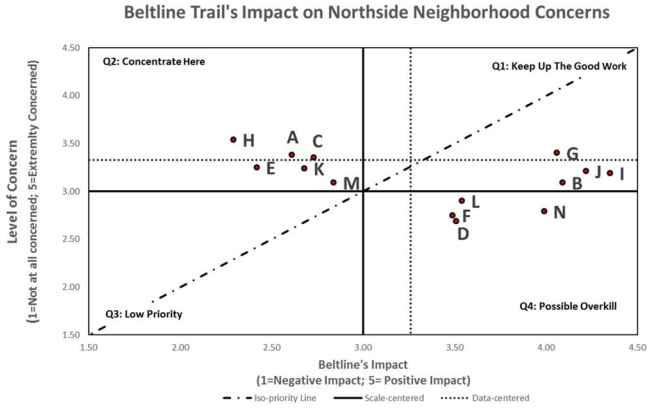

Fig. 4. Graph of neighborhood concerns and the BeltLine's positive or negative impact within the Northside Neighborhood.

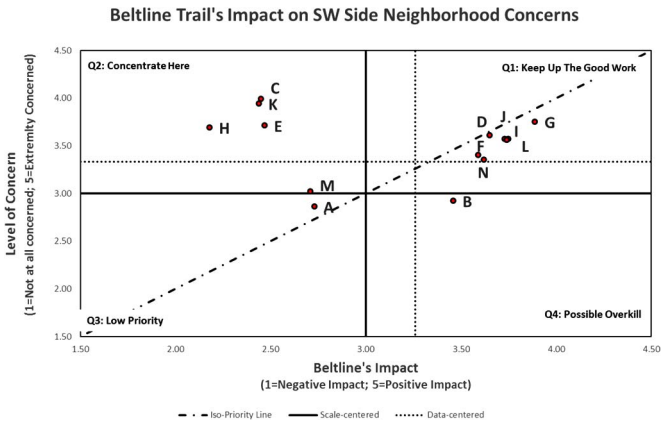

Fig. 5. Graph of neighborhood concerns and the BeltLine's positive or negative impact within the Southwest Neighborhood.

Concerns about traffic was more of an issue for the Northside neighborhoods, falling into Quadrant II: "Concentrate Here", while it was less of an issue for the Southwest Side, falling instead into Quadrant III: "Low Priority". Similarly, the Northside neighborhood also differed from the Southwest side in that its residents' concern for the amount of natural space fell into Quadrant I: "Keep Up the Good Work", while the Southwest's concern for the amount of natural space fell into Quadrant VI: "Possible Overkill". The Northside neighborhood also agreed further on their concern for local government tax revenue falling into Quadrant VI: "Possible Overkill", as opposed the Southwest neighborhood's concerns for local government tax revenue, falling into Quadrant I: "Keep Up the Good Work".

5. Discussion and conclusions

This study sought to expand the urban greenway literature and provide an additional perspective by turning the literature's attention away from the heavily studied users of greenways (Gobster, 1995;

Table 3
Quadrant placement for neighborhood concerns.

Neighborhood Concern	Scale-Centered Quadrant Placement	
	Northside	Southwest Side
A) Traffic[a]	Q2: Concentrate Here	Q3: Low Priority
B) The amount of natural areas/open space	Q1: Keep up the good work	Q4: Possible Overkill
C) Crime[a,b]	Q2: Concentrate Here	Q2: Concentrate Here
D) Neighborhood business development	Q4: Possible Overkill	Q1: Keep up the good work
E) Litter[a]	Q2: Concentrate Here	Q2: Concentrate Here
F) The entertainment options (e.g. shopping, restaurants)	Q4: Possible Overkill	Q1: Keep up the good work
G) Property values	Q1: Keep up the good work	Q1: Keep up the good work
H) Property taxes[a]	Q2: Concentrate Here	Q2: Concentrate Here
I) Places for outdoor recreation	Q1: Keep up the good work	Q1: Keep up the good work
J) Park development	Q1: Keep up the good work	Q1: Keep up the good work
K) Vandalism[a]	Q2: Concentrate Here	Q2: Concentrate Here
L) Local government tax revenue	Q4: Possible Overkill	Q1: Keep up the good work
M) Time of commute to work[a]	Q2: Concentrate Here	Q2: Concentrate Here
N) Social spaces for the neighborhood to gather	Q4: Possible Overkill	Q1: Keep up the good work

[a] Neighborhood concerns with negative connotations were recoded so that BeltLine's impact accurately represented if this was a positive or negative outcome.
[b] Worded as Crime/Safety on Eastside pilot test.

Gobster and Westphal, 2004; Shafer et al., 2000a) towards the residents living in close proximity to the urban greenways. This decision was deemed important because residents within adjacent neighborhoods to greenways are those who predominantly face the positive and negative impacts of these trails daily (Corning et al., 2012). They are also the ones who politicians, city officials, and academics tout as the beneficiaries of these urban greenways (Corning et al., 2012; Eyler et al., 2008), but little is known about how urban greenways impact their quality of life.

The results from the modified IPA reveal an interesting pattern across the two neighborhoods. The Atlanta BeltLine appears to worsen negatively connoted residential concerns, such as traffic and crime while at the same time improving positive concerns, such as property values, places to recreate, and neighborhood business development. This bipolar mixture of positive and negative impacts provides credence to Corning et al. (2012) call to include resident perspectives within greenway research because while these recreational developments are widely popular due to the enhanced amenities that they provide, residents recognize that they come with a cost. This type of bipolar impact on residential concerns makes managerial decisions for improving greenways difficult because managers need to be careful that solutions aimed at alleviating concerns in the "concentrate here" quadrant does not jeopardize other concerns that fall into the "keep up the good work quadrant." Furthermore, the significant differences in concerns and perceptions of the BeltLine's impacts across the two neighborhoods pose a challenge to city planners and park managers who are designing and managing urban greenways that cross multiple neighborhoods with complex histories (Denton and Massey, 1991; Hayes, 2006). For example, the Atlanta BeltLine when finished will be 22 miles in circumference and cross 45 neighborhoods. These heterogeneous perceptions of the costs and benefits of urban greenways indicate a need for increased community involvement at the local level to ensure neighborhood concerns are elicited and considered prior to trail development (Eyler et al., 2008). This will empower residents, help gain their trust, and provide a channel of open communication for when future problems arise (Cole, 2006). The challenges are precisely why Evenson et al. (2005) call for more inclusion of park and recreation professionals in developments like greenways.

Despite these differences, there are some important similarities between the neighborhoods. Both the Northside neighborhood and Southwest neighborhood agreed that crime, litter, vandalism, and property taxes were major concerns that the Atlanta BeltLine needs to address. These results align with the work of Crewe (2001), Lindsey et al. (2006), and Luymes and Tamminga (1995) who have also found residents to be concerned about the gentrification and crime associated with urban greenways. More research needs to be conducted across different cities and greenways to see if these are universal resident reactions to the presence of urban greenways or if they are site specific. It is likely that cultural differences and difference in the social, physical, and political geography of the city will heavily influence how urban trails positively and negatively impact residents. It appears that this is happening within these two different Atlanta neighborhoods. Even though residents within these two neighborhood perceive the trail as a net positive (+Impact > Concerns), it appears that they are approaching the trail with different benefits and concerns in mind. It seems that the affluent Northside neighborhood sees the trail more as a recreational development that adds to the aesthetics of the neighborhood. This can be seen by the responses indicating that business development, entertainment options and generation of tax revenue fall in the "Possible Overkill" category, and the amount of natural space, places for outdoor recreation, and park development all fall in the "Keep Up the Good Work" category. Conversely, it looks like the Southwest neighborhood is latching onto their portion of the trail as an economic development opportunity with the potential to boost business development, entertainment options, and social spaces for the community to gather. This provides credence for managers realizing that urban greenways are not developed within a vacuum or on a 'tabula rasa.' Each neighborhood will have its own historical legacy and present socio-economic challenges that managers need to take into consideration when trying to design trails to meet the cities sustainable development goals (Denton and Massey, 1991; Hayes, 2006).

5.1. Limitations and future research

As with all research, this study on resident perceptions of the cost and benefits of the Atlanta BeltLine has limitations. To begin with, the modification of the traditional Importance Performance Analysis (IPA) to focus on common residential concerns and the BeltLine's positive or negative impacts on these concerns was unprecedented. Others, such as Joppe et al. (2001), have slightly modified IPA to focus on importance and satisfaction (ISA) within a tourism destination, but our study is the first to completely change the axes' titles to "concerns" and "impacts." This modification provided a novel application of the IPA methodology for the landscape and urban planning literature, but also required careful thought since the negatively worded concerns such as "traffic" and "litter" had to be recoded since an increase in "traffic" or "litter"

would be a negative impact of the BeltLine. As with similar quantitative methodologies and IPA as a whole, the graphs only show where the concerns fall. The modified IPA does not explain why residents perceive the impacts this way or how they would like the problems fixed. In-depth qualitative research is suggested for that.

Another limitation of the study was that the participation rate in the Northside neighborhood was significantly greater (e.g., 70%) than the participation rate in the Southwest neighborhood (e.g., 54%). This partly stemmed from a few residents of the Southwest neighborhood appearing unaware of the BeltLine's Southwest Connector Trail even though they lived within close proximity to it. As a result, the surveyors had to skip their houses and move two doors down to continue administering surveys. In contrast to the Southwest neighborhood, more residents living in the Northside neighborhood knew of the Northside BeltLine Trail and were more apt to participate in the study. The four surveyors were also Caucasian, which could have influenced the response rates between the two neighborhoods. Survey teams reflective of the race and age of the community being surveyed may improve response rates in the future.

Administering the surveys on the weekends could be another potential limitation to the study. Since the surveys were only given out on weekends over a three-month period, there is a chance that residents who work weekend shifts were underrepresented. Future studies may want to consider the costs and benefits of spreading data collection across the entire week and over a longer period of time in order to get a better representative sample of the population. In addition, the study only focused on two areas with finished trail segments. The Atlanta BeltLine Trail will eventually have 33 miles of trails within the heart of the city. Future research should look at different parts of the city such as the Eastside, Westside and Northside to see if the newly developed trail segments within their neighborhoods have the same positive and negative impacts.

Future research should also consider modeling residential support for the Atlanta BeltLine. The present study only focused on the level of concern on common neighborhood issues and how the BeltLine trail has positively or negatively impacts these concerns. While the study is able to speak to how residents perceived these impacts, it is unknown how these positive or negative impacts influence resident support for the BeltLine. Social exchange theory (Ap, 1992; Blau, 1964) and Oliver's (1980) expectancy disconfirmation theory would suggest that the more positive the perceptions of the trail, the more supportive residents will be, but this has yet to be tested. Relating these perceptions of the positive and negative impacts of greenways to greenway support would also provide more clarification on whether or not the bipolar affect found within this study actually results in resident opposition to greenways. Perhaps the pros of greenway development outweigh the cons and cause residents to generally support the presence of greenways within their neighborhood.

In conclusion, this study is an initial attempt to push the urban greenway literature towards considering resident attitudes in addition to users. The notion that users and residents are one in the same has been taken for granted and yet to be substantiated. The research from these two neighborhoods indicated urban greenways carry with them a host of positive and negative impacts for residential neighborhoods located adjacent to the trail. Yes, there are the benefits of increased greenspaces, parks, economic development and places to recreate, but according to these residents, there is a cost and it comes in the form of more perceived crime, litter, traffic, and property taxes. If city officials want to use urban greenways as a sustainable development strategy (Salici, 2013; Lindsey, 2003), it is suggested that they first look at common residential concerns and how the proposed greenway will help alleviate these concerns or where the trail could potential exacerbate them. By incorporating these concerns into the design and implementation phases, it will help maximize the positive benefits and minimize the negative impacts of urban greenways, and thus enable them to be the sustainable catalyst for urban renewal that they have been intended to be.

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Appendix A. BeltLine survey used within each neighborhood

BeltLine survey used within each neighborhood

The following questions pertain to *potential* concerns within your neighborhood and how the BeltLine Trail affects each. First, circle your level of concern on each issue (1–5). Second, circle how the BeltLine's Northside/Southwest side trail has affected it.

Neighborhood Concerns	How concerned are you with ..... in your neighborhood? *1 = Not At All Concerned* *2 = Slightly Concerned* *3 = Somewhat Concerned* *4 = Moderately Concerned* *5 = Extremely Concerned* ***Concern Rating (1–5)***	How does the BeltLine Trail affect .....? *1 = Decreases Greatly* *2 = Decreases Slightly* *3 = No affect* *4 = Increases Slightly* *5 = Increases Greatly* ***BeltLine's Affect Rating (1–5)***
Traffic	1 − 2 − 3 − 4 − 5	1 − 2 − 3 − 4 − 5
The amount of natural areas/open space	1 − 2 − 3 − 4 − 5	1 − 2 − 3 − 4 − 5
Crime	1 − 2 − 3 − 4 − 5	1 − 2 − 3 − 4 − 5
Neighborhood business development	1 − 2 − 3 − 4 − 5	1 − 2 − 3 − 4 − 5
Litter	1 − 2 − 3 − 4 − 5	1 − 2 − 3 − 4 − 5
The entertainment options (e.g. shopping, restaurants)	1 − 2 − 3 − 4 − 5	1 − 2 − 3 − 4 − 5
Property values	1 − 2 − 3 − 4 − 5	1 − 2 − 3 − 4 − 5
Property taxes	1 − 2 − 3 − 4 − 5	1 − 2 − 3 − 4 − 5
Places for outdoor recreation	1 − 2 − 3 − 4 − 5	1 − 2 − 3 − 4 − 5

Park development	1 – 2 – 3 – 4 – 5	1 – 2 – 3 – 4 – 5
Vandalism	1 – 2 – 3 – 4 – 5	1 – 2 – 3 – 4 – 5
Local government tax revenue	1 – 2 – 3 – 4 – 5	1 – 2 – 3 – 4 – 5
Time of commute to work	1 – 2 – 3 – 4 – 5	1 – 2 – 3 – 4 – 5
Social spaces for the neighborhood to gather	1 – 2 – 3 – 4 – 5	1 – 2 – 3 – 4 – 5
Other:	1 – 2 – 3 – 4 – 5	1 – 2 – 3 – 4 – 5

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