

URBAN FINDINGS

Neighborhood Change and Gentrification Near Three Urban Trails

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Findings

This paper describes changes in indicators of gentrification in neighborhoods adjacent to recently opened multiuse trails in three US cities. We hypothesize changes are greater in abutting Census Block Groups (CBGs) than in CBGs further from the trails and use a case-control, pre-post design to report changes in gentrification status and related indicators three years after opening. We provide evidence of gentrification near each trail, but in two cases the majority of gentrifiable CBGs in treatment groups remained gentrifiable after three years. Rates and degree of gentrification associated with new trails differ depending on context.

1. Questions

Debates over the effects of multiuse trails have evolved from whether they reduce property values to whether they cause gentrification (Rigolon and Németh 2020; Rigolon et al. 2020). Proximity to trails (< 0.5 miles) generally is associated with 3-5% premiums in property values (Crompton and Nicholls 2019), but larger increases and gentrification have occurred along some trails (e.g., Bloomingdale/606 in Chicago; Rigolon et al. 2020; Gould and Lewis 2017; Immergluck and Balan 2018; Smith et al. 2016). This paper describes changes in gentrification status and related indicators in neighborhoods near three trails three years after opening. We hypothesize changes will be greater in neighborhoods abutting trails than in nearby neighborhoods in the same residential submarket.

2. Methods

We study three trails: the Metropolitan Branch Trail (MBT), a Washington DC rail-trail; Shelby Farms Greenline (SFG), Memphis, TN; and Lafitte Greenway (LF), a New Orleans, LA rail-trail. We use a case-control, pre-post design and report changes three years after opening. Treatment groups comprise trail-abutting Census Block Groups (CBGs); control groups are CBGs adjoining the treatment CBGs. We use this approach rather than other methods (e.g., Mahalanobis distance matching (Kantor 2012); propensity score matching (Caliendo and Kopeinig 2008)) to identify the control group to focus on neighborhoods within the same residential submarkets and to eliminate the

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need to control for other measurable and immeasurable factors that become relevant when broader areas are analyzed (Dube, Lester, and Reich 2010; Harris, Larson, and Ogletree 2018).

We apply two frequently-used criteria to define gentrifiability and gentrification (i.e., changes from gentrifiable to non-gentrifiable; Hammel and Wyly 1996; Freeman 2005; McKinnish, Walsh, and White 2010) (Tables [1](#) and [2](#)):

- Median household income < the citywide median;
- Median home value < the citywide median household income.

We also test differences between treatment and control groups for changes of five additional indicators of gentrification: median rent, percent owner-occupied housing, percent residents with Bachelors' degrees, percent residents in professional occupations, and percent white residents ([Table 3](#)). Data come from the Census Bureau. We conduct Hotelling's T-squared tests between the treatment and control groups on the differences of means of each indicator. The null hypothesis (i.e., difference = 0) is rejected when T-square is smaller than the critical value at the corresponding significance level. The means are weighted by frequency of observations (i.e., the count of corresponding type of housing, individuals, or households) in each CBG (Hotelling 1992; Wilks 1962; [Table 3](#)). Our discussion focuses on changes in gentrifiable CBGs (36 % of CBGs analyzed). We also present results separately for all and non-gentrifiable CBGs ([Tables 1-3](#)). A limitation of this design is that three years may be insufficient for trail-related redevelopment to occur.

Table 1. Mean values of *indicators of gentrifiability* and *neighborhood change* near the three trails.

Indicators – Weighted Mean Values for Census Block Groups Except as Noted ("#" are indicators of gentrifiability)	Treat Group						Control Group					
	All		Gen		Non-Gen		All		Gen		Non-Gen	
	Metropolitan Branch Trail											
Census Block Groups (n)	28		14		14		39		13		26	
Year	2010	2013	2010	2013	2010	2013	2010	2013	2010	2013	2010	2013
Median property value #	421,102	413,333	350,346	341,750	464,909	460,102	441,094	421,446	349,217	346,680	476,250	455,532
Median household income #	57,789	68,625	39,909	50,247	74,029	83,944	63,499	71,900	39,642	53,920	74,574	80,417
Median rent	905.4	1,050.9	826.3	877.4	1,012.8	1,231.4	1,062.1	1,302.7	735.1	1,017.3	1,243.4	1,442.0
Share of owner-occupied dwellings	51.7%	48.1%	41.5%	41.9%	60.9%	53.4%	49.7%	44.2%	43.3%	43.1%	52.6%	44.7%
Share of residents with bachelor's degree (education)	38.1%	45.5%	27.3%	34.1%	47.0%	55.2%	44.9%	50.7%	28.6%	36.7%	52.0%	57.3%
Share of residents in professional occupations	47.8%	50.8%	37.5%	37.6%	56.1%	61.8%	55.7%	58.6%	40.6%	47.3%	61.4%	63.2%
Share of white residents	23.8%	26.3%	17.9%	16.2%	29.7%	36.4%	24.5%	28.1%	6.8%	13.4%	32.6%	35.3%
	Shelby Farms Greenline (West)											
Census Block Groups (n)	14		4		9		19		9		10	
Year	2010	2013	2010	2013	2010	2013	2010	2013	2010	2013	2010	2013
Median property value #	173,428	174,997	62,620	67,113	199,169	196,507	205,046	208,758	69,245	63,945	271,608	276,544
Median household income #	46,465	53,764	24,524	28,365	55,336	63,564	66,380	59,768	31,300	32,290	94,022	79,694
Median rent	598.8	568.8	410.1	437.1	747.9	690.7	560.6	622.4	528.8	589.3	631.4	683.0
Share of owner-occupied dwellings	60.7%	64.3%	39.7%	38.4%	69.2%	74.3%	69.1%	69.0%	51.6%	52.4%	82.9%	81.1%
Share of residents with bachelor's degree (education)	37.1%	41.7%	10.2%	13.2%	46.9%	52.0%	42.4%	42.7%	13.8%	14.5%	62.9%	63.0%
Share of residents in professional occupations	39.7%	45.9%	16.1%	23.5%	47.1%	54.0%	41.4%	45.1%	21.6%	27.1%	54.5%	55.3%
Share of white residents	56.1%	58.9%	25.0%	26.8%	70.8%	73.1%	72.1%	72.5%	50.7%	54.7%	88.3%	85.1%
	Lafitte Greenway											
Census Block Groups (n)	16		4		12		19		5		14	
Year	2015	2018	2015	2018	2015	2018	2015	2018	2015	2018	2015	2018
Median property value #	187,237	274,975	140,604	253,870	205,393	280,645	310,746	362,915	119,258	208,812	353,299	396,284
Median household income #	26,887	29,024	19,071	19,718	29,216	31,471	46,361	53,822	24,368	29,333	51,552	59,919
Median rent	720.9	767.0	670.9	650.1	734.3	797.5	927.5	1,026.6	648.1	653.6	995.3	1,125.6
Share of owner-occupied dwellings	26.0%	29.5%	31.7%	30.0%	24.3%	29.4%	32.1%	32.6%	30.6%	29.1%	32.5%	33.5%

Share of residents with bachelor's degree (education)	33.6%	44.5%	15.7%	21.6%	40.6%	51.3%	48.2%	51.7%	22.3%	26.9%	55.3%	58.6%
Share of residents in professional occupations	33.9%	27.4%	16.3%	11.0%	40.2%	32.0%	48.1%	35.5%	24.6%	15.8%	52.2%	39.7%
Share of white residents	31.1%	42.6%	17.6%	23.3%	36.0%	48.0%	53.7%	57.7%	20.4%	30.2%	63.5%	66.1%

Table 2. Changes in gentrification status of Census Block Groups.

Count of Census Block Groups	Total	Gentrifiable in 2010			Non-gentrifiable in 2010		
		Total	Gentrifiable in 2013	Non-gentrifiable in 2013 (Gentrification)	Total	Non-gentrifiable in 2013	Gentrifiable in 2013
Metropolitan Branch							
Treatment group	28	14	10	4	14	12	2
Control group	39	13	9	4	26	18	8
Shelby farms Greenway							
Treatment group	14	4	3	1	10	10	0
Control group	19	9	7	2	10	10	0
	Total	Gentrifiable in 2015			Non-gentrifiable in 2015		
		Total	Gentrifiable in 2018	Non-gentrifiable in 2018 (Gentrification)	Total	Non-gentrifiable in 2018	Gentrifiable in 2018
Lafitte Greenway							
Treatment group	16	4	0	4	12	12	0
Control group	19	5	1	4	14	14	0
Total	135	49	30	19	86	76	10

Table 3. Significant differences in *indicators of gentrifiability* and *neighborhood change* between treatment and control groups near the three trails.

Weighted Mean of Indicator Changes ("#" are indicators of gentrifiability)	All			Gentrifiable			Non-Gentrifiable		
	Treatment	Control	Difference	Treatment	Control	Difference	Treatment	Control	Difference
Metropolitan Branch Trail (2010 – 2013)									
Census Block Groups (n)	28	39		14	13		14	26	
Median property value #	-0.002	-0.027	0.025***	-0.020	0.004	-0.024***	0.009	-0.039	0.048***
Median household income #	0.214	0.177	0.036***	0.323	0.365	-0.042***	0.114	0.090	0.024***
Median rent	0.088	0.223	-0.135***	0.118	0.365	-0.247***	0.048	0.144	-0.095***
Share of owner-occupied dwellings	0.00014	-0.022	0.022***	0.069	0.117	-0.048***	-0.071	-0.090	0.019***
Share of residents with bachelor's degree (education)	0.197	0.280	-0.082***	0.272	0.366	-0.094***	0.136	0.242	-0.106***
Share of residents in professional occupations	0.083	0.126	-0.043***	0.117	0.374	-0.257***	0.056	0.032	0.024***
Share of white residents	1.163	0.637	0.526***	0.663	1.667	-1.005***	1.628	0.202	1.426***
Shelby Farms Greenline (West) (2010 – 2013)									
Census Block Groups (n)	14	19		4	9		10	10	
Median property value #	0.035	-0.031	0.066***	0.141	-0.070	0.211***	0.010	-0.011	0.021***
Median household income #	0.169	-0.027	0.196***	0.085	0.059	0.026***	0.203	-0.094	0.297***
Median rent	0.090	0.092	-0.002	0.156	0.097	0.059***	0.037	0.078	-0.041***
Share of owner-occupied dwellings	0.088	0.014	0.074***	-0.013	0.071	-0.084***	0.129	-0.030	0.159***
Share of residents with bachelor's degree (education)	0.327	0.091	0.236***	0.795	0.165	0.630***	0.191	0.037	0.154***
Share of residents in professional occupations	0.530	0.117	0.413***	1.094	0.245	0.849***	0.380	0.038	0.342***
Share of white residents	0.039	0.004	0.035***	-0.073	0.046	-0.119***	0.066	-0.028	0.094***
Lafitte Greenway (2015 – 2018)									
Census Block Groups (n)	16	19		4	5		12	14	
Median property value #	0.375	0.319	0.056***	0.877	0.910	-0.033	0.144	0.196	-0.052***
Median household income #	0.321	0.229	0.092***	0.267	0.283	-0.016**	0.334	0.217	0.117***
Median rent	0.111	0.116	-0.005	-0.007	0.083	-0.090***	0.143	0.124	0.019***
Share of owner-occupied dwellings	0.271	0.063	0.208***	-0.093	0.053	-0.147***	0.390	0.066	0.324***
Share of residents with bachelor's degree (education)	0.585	0.189	0.396***	0.535	0.216	0.319***	0.605	0.181	0.424***
Share of residents in professional occupations	-0.073	-0.236	0.163***	-0.196	-0.310	0.114***	-0.027	-0.223	0.196***
Share of white residents	2.076	0.293	1.783***	0.569	0.580	-0.012	2.629	0.208	2.421***

Notes: * p-value < 0.1, ** p-value < 0.05, *** p-value < 0.01

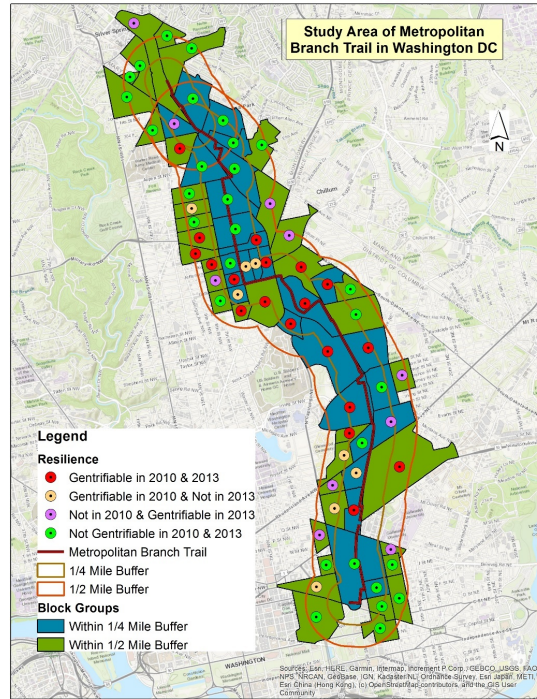


Figure 1. Metropolitan Branch Trail: Gentrifiable and Non-Gentrifiable CBGs in Study Areas.

3. Findings

Metropolitan Branch Trail

The 8-mile MBT was developed next to an active railroad through economically and racially diverse neighborhoods from the city's northern edge to the Union Station terminal ([Figure 1](#)). When the trail opened (2010), half the 28 CBGs in the treatment group and one-third of the 39 CBGs in the control group, respectively, were gentrifiable ([Tables 1-2](#)). The majority of gentrifiable CBGs in both the treatment and control groups remained so in 2013 (71% and 69%, respectively). No non-gentrifiable CBGs in the treatment groups reverted to gentrifiable status; nearly one-third in the control did. Rates of change of indicators associated with gentrification were significantly different but, contrary to hypotheses, greater increases occurred in the control group than in the treatment group ([Table 3](#)). Overall, results provide evidence of gentrification, but a minority of CBGs gentrified, and rates of increases in indicators in the non-gentrifiable CBGs were greater, suggesting trail proximity is influential but not the determining factor in gentrification.

Shelby Farms Greenline

The 10.7-mile Greenline was built in a corridor where lower- and higher-income neighborhoods reflect historic patterns of economic and racial segregation ([Figure 2](#)). All CBGs south of the trail were non-gentrifiable. North of the trail, most CBGs were gentrifiable but these were mainly in the control group. The eastern end is bounded by parks and not analyzed. When the Greenline opened (2010), four of the 14 CBGs in the treatment group and nine of the 19 CBGs in the control group, respectively, were gentrifiable

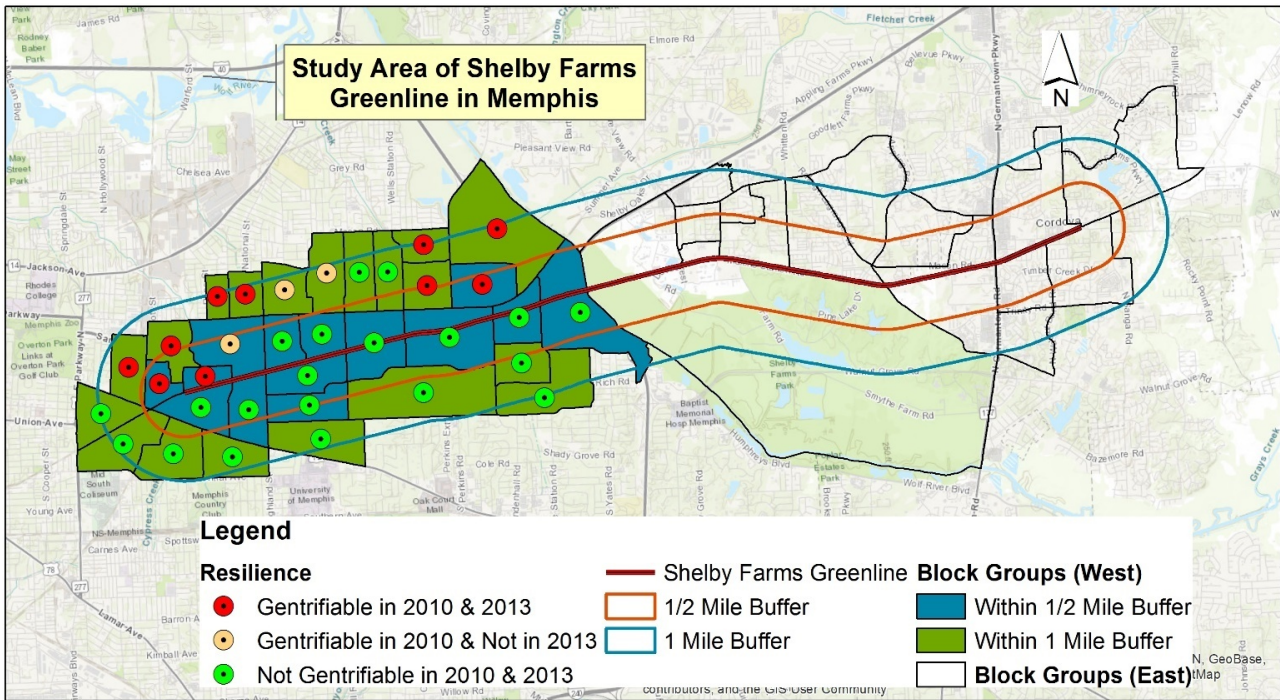


Figure 2. Shelby Farms Greenline: Gentrifiable and Non-Gentrifiable CBGs in Study Areas.

(Tables 1-2). Approximately three-fourths of the gentrifiable CBGs in both the treatment and control groups remained gentrifiable in 2013. Consistent with hypotheses, the rates of change of most indicators associated with gentrification were higher for CBGs in the treatment group than in the control group (Table 3). These results provide evidence of gentrification, but the majority of gentrifiable CBGs in both the treatment and control groups did not gentrify. However, rates of increases in indicators in the treatment group were higher, suggesting proximate neighborhoods changed faster.

Lafitte Greenway

The 2.6-mile LG was developed along a canal right-of-way northwest-southeast towards the CBD through neighborhoods that mostly were non-gentrifiable (Figure 3). In 2015, only four of the 16 CBGs in the treatment group and five in the control group, respectively, were gentrifiable (Tables 1-2). By 2018, eight of these nine CBGs were non-gentrifiable; a single CBG in the control group remained gentrifiable. Contrary to hypotheses, the rates of change of most indicators associated with gentrification were higher for CBGs in the control group than in the treatment group (Table 3). These results provide substantial evidence of gentrification, but rates of increases in indicators were higher in the control groups, suggesting adjacent neighborhoods changed more slowly.

Summary

Analyses provide evidence of gentrification in each case, but the majority of gentrifiable CBGs in treatment and control groups adjacent to the MBT and SFG remained gentrifiable. In contrast, only one of nine gentrifiable CBGs

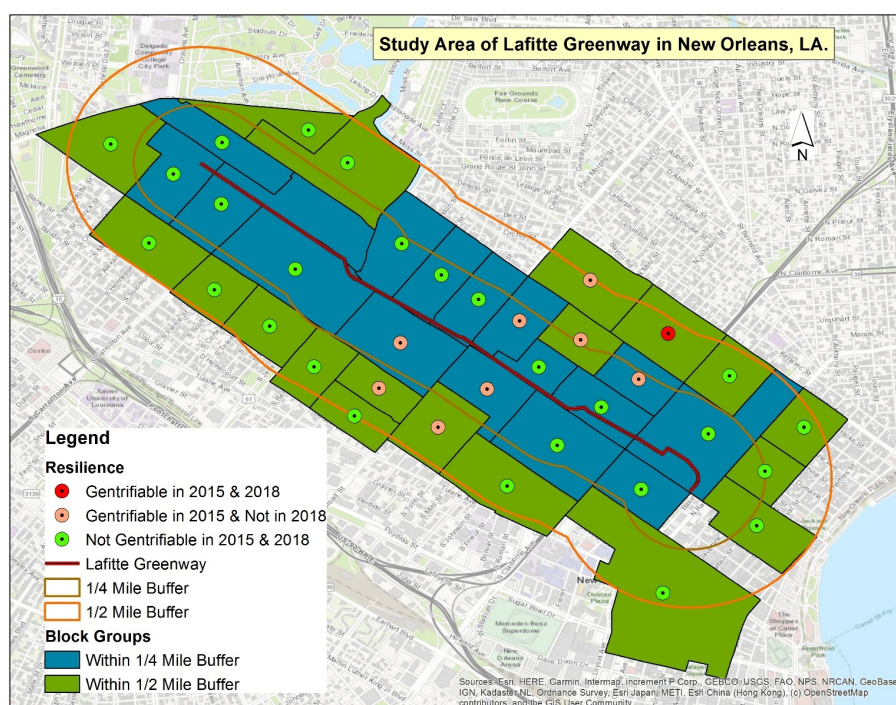


Figure 3. Lafitte Greenway: Gentrifiable and Non-Gentrifiable CBGs in Study Areas.

along the Lafitte Greenway remained gentrifiable. Changes in indicators associated with gentrification mostly were positive for gentrifiable CBGs. They were greater in the treatment group along the SFG, but smaller near the MBT and LG, indicating adjacency to trails was associated with slower growth in these cases. These findings corroborate prior research: trails are heterogeneous; their effects are context-dependent and may be highly localized. Gentrification is not universal, at least after three years. Trail-related redevelopment may continue longer; additional analyses would be useful to assess longer-term effects.

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