



The University  
of Alabama  
at  
Birmingham

Birmingham,  
Alabama

# Do Stakeholders Differ In Their Perceptions Of Empowerment In Successful Brownfield Redevelopment? A Case Study of Three Projects In Birmingham, Alabama

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# Presentation Outline

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# Introduction

The U.S. EPA (2018) defines a brownfield (BF) as “real property, the expansion, redevelopment, or reuse, of which may be complicated by the presence or potential presence of a contaminant, pollutant or hazardous substance.”



# Introduction cont.

Brownfields (BF's) pose adverse impacts to the community, environment and human health.

While research addresses brownfield problems or redevelopment benefits, limited attention is devoted to participatory decision-making in the redevelopment process.



# Background

More than 1 million Brownfields exist in the United States. A further increase is anticipated.

Brownfields disproportionately affect low income, minority communities.

Affected citizens are often not part of the decision-making process that impacts their community.

(Bullard and Johnson, 2000; Brebbia and Mander, 2006; Paull, 2008; U.S. EPA, 2018)



# Statement of Problem

Meaningful participation in the brownfield redevelopment is defined as, “...a process where public participation educates citizens, interacts with them, and incorporate their ideas and comments to enhance the quality of project outcomes.”

(Rowe and Frewer, 2005)

## Statement of Problem (cont.)

While federal legislation promotes public participation in environmental decision-making processes, research has indicated participation in brownfield redevelopment typically occurs at lower (less than strong) levels of participation.

(Letang, 2013; Solitare, 2005).

Participation is often reduced to holding workshops and disseminating information.

(Chess and Purcell, 1999; Rowe et al., 2004).

## Statement of Problem (cont.)

Limited research exists on implementation and evaluation of stakeholder participation in brownfield redevelopment activities. This is especially the case in the southern U.S. region including Birmingham, Alabama.

Successful redevelopment projects may not indicate the ultimate satisfaction of all stakeholders with collaborative decision-making.

An evaluative technique is needed that quantifies the extent stakeholders feel empowered in the decision-making process.



# Research Questions

1.Are there significant differences in the perceptions of empowerment in the participatory process between stakeholders?

*No significant differences could imply cohesion among the stakeholders in Birmingham redevelopment projects.*

2.How satisfied were stakeholders with the project outcome?

*With a numeric scale rating we examined an additional question that assessed stakeholder satisfaction with the projects.*

# Hypotheses

- ⊙  $H_0$ : There are no significant differences in perception of empowerment among stakeholder categories in brownfield redevelopment.

$$H_0: \bar{x} = \mu$$

- ⊙  $H_1$ : There are significant differences in perception of empowerment among stakeholder categories in brownfield redevelopment.

$$H_1: \bar{x} \neq \mu$$

# Research Objectives

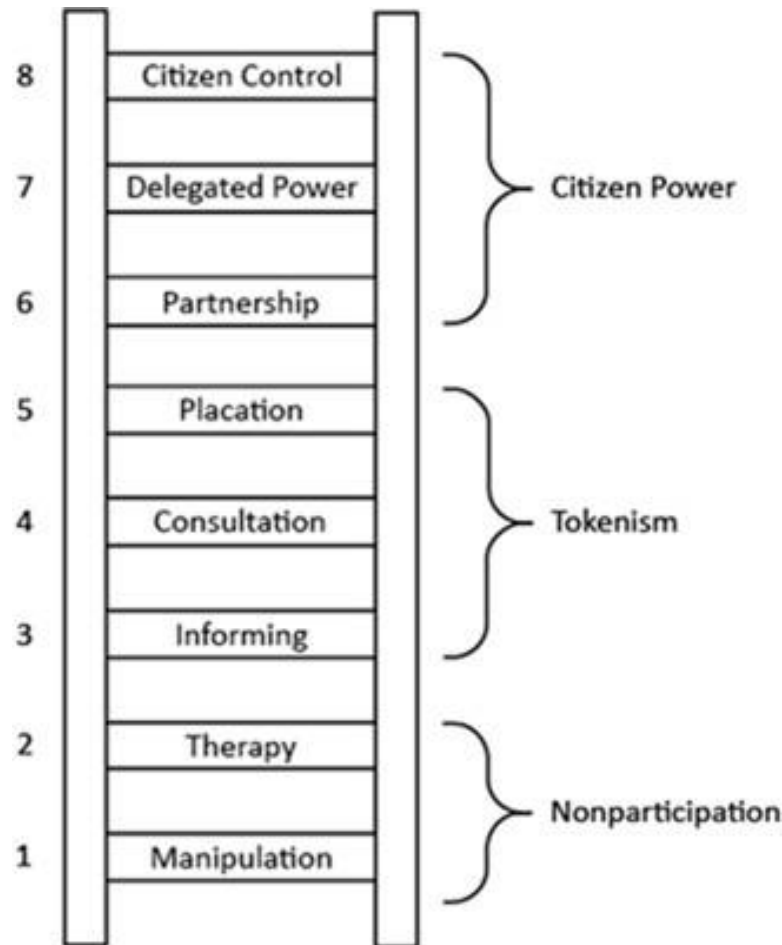
Demonstrate how to apply Arnstein's ladder in assessing stakeholder perceptions of the citizen participation process;

Compare the perceptions of empowerment in the participatory process between stakeholders; and

Measure satisfaction with the project outcome among three categories of stakeholders.

(Arnstein, 1969)

# Arnstein's Ladder



(Arnstein, 1969; Lithgow, 2021)

# Study Area

## Birmingham, Alabama

- Birmingham is currently the second most populous city in the state of Alabama, with an estimated 209,403 residents in Birmingham city (U.S. Census Bureau, 2020a) and 1,090,435 million inhabitants in the Birmingham-Hoover Metropolitan Statistical Area (U.S. Census Bureau, 2020b)
- However, Birmingham has also experienced a decline in population since the 1960s attributed to suburbanization (Hansen, 2011)
- The many suburbs surrounding Birmingham have been considered detrimental to development of Birmingham's downtown core (Beahm, 2019)

# Site Selection Criteria

- ② Participatory techniques occurred with stakeholders;
- ② Site redevelopment was successfully completed in the city's downtown core;
- ② The projects appealed to the public's needs;
- ② Projects generated direct and indirect new business and residents to the area, i.e., snowballing effect;



# Site Selection Criteria (cont.)

- ⦿ Each project contributed to the renaissance focus of the City's master plan, i.e., project deemed as pivotal for the revitalization of the city of Birmingham's downtown core; and
- ⦿ Researcher access to the sites and stakeholders involved in the redevelopment process. Stakeholders included three categories: residents, public officials, and developers.
- ⦿ Stakeholders are denoted as:
  - **Cit** (citizens/residents)
  - **Pub** (public officials)
  - **Dev** (developers)

# Case Study: Birmingham, Alabama

Three selected brownfield redevelopment projects are in lower income neighborhoods with a predominately black population.



**Regions Field**



**The Lyric Theatre**



**Railroad Park**

# Research Project

## *Railroad Park*

- ◉ Formerly abandoned lots, manufacturing and industrial sites
- ◉ 19 acres of community greenspace
- ◉ City drafted redevelopment idea
- ◉ Public and private partnership
- ◉ Funds from investors, state, local, and federal government
- ◉ Generated jobs, city taxes, and spurred downtown investments

(BCP, 2014; West, 2015)

# Research Project (cont.)

## *Railroad Park*

Before



After



(Bhamwiki, 2017b; [landscapeperformance.org](http://landscapeperformance.org) )

# Research Project (cont.)

## *Lyric Theatre*

- Historic landmark closed in 1970
- Part of the City's targeted BF redevelopment projects
- Awarded one of the first EPA assessment grants
- Remediated: asbestos and lead
- Funds from investors, government and nonprofits
- Community engaged crowdfunding, volunteers, and government
- Increased area property values, tax base, attracted more downtown businesses

(Huebner, 2012; Birmingham 365, 2018; Nolan, 2018; Wilborn, 2018)



# Research Projects (cont.)

*Lyric Theatre*

Before



After



Lyric Theatre (Source: <https://lyricbham.com/> )



# Research Project (cont.)

## *Regions Field*

- ◉ 1900s: coal yard, chemical storage, auto repair shop and manufacturing facilities
- ◉ Feasibility study: city/community participation
- ◉ EPA, city, developer and investor funds
- ◉ State-of-the-art stadium, generate jobs and tax revenue, premier destination, and spurred private development
- ◉ 4 blocks remediated: petroleum, organics, and Underground Storage Tanks (USTs)

(Bullock Environment, 2010; Gose, 2013; Paepcke, 2015; Mock, 2017)

# Research Project (cont.)



*Regions Field*

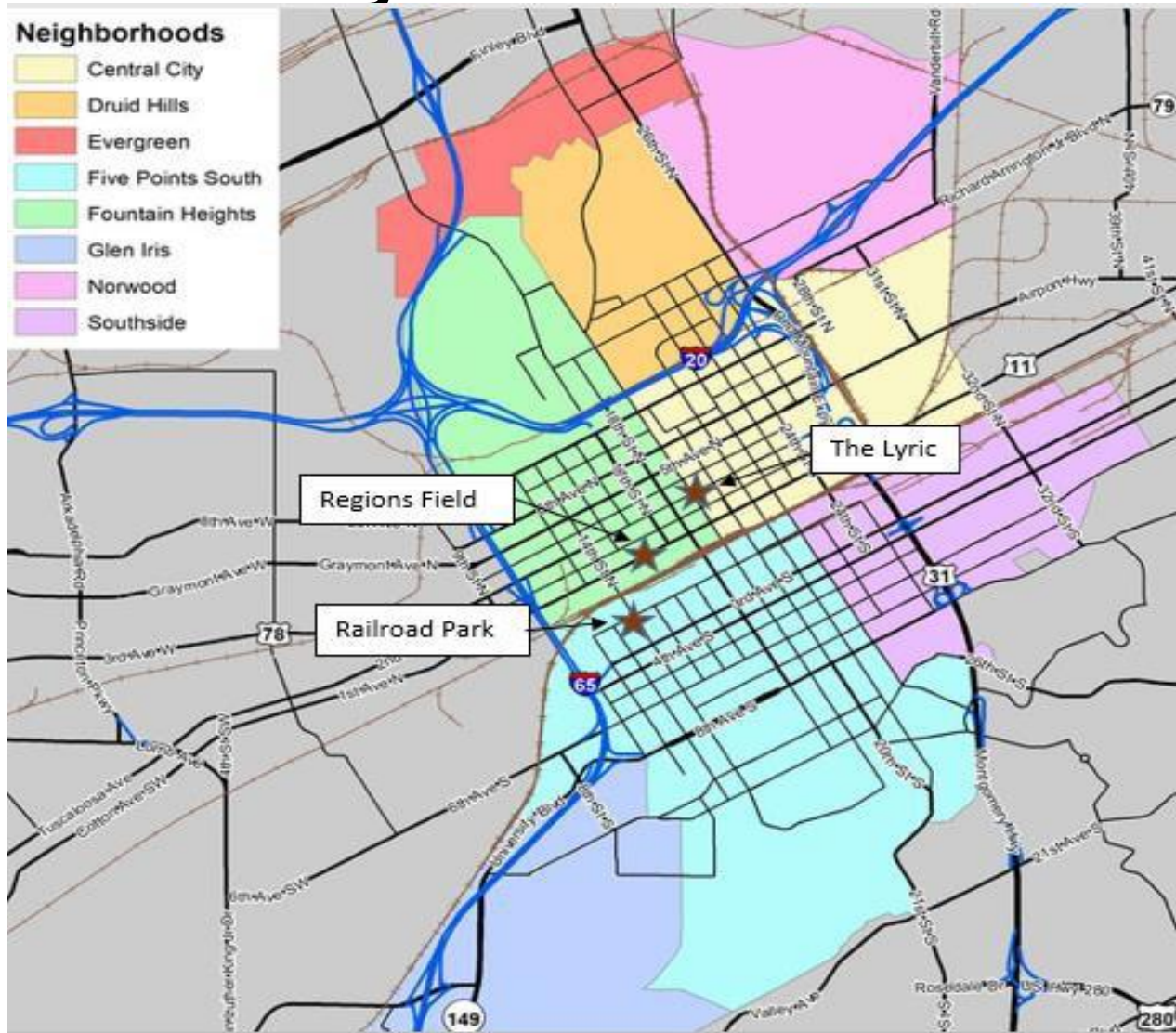
Before

After



(Bhamwiki, 2017c; Barons Marketing Department(2020)

# Project Site Locations



# Study Area Demographics

	Tract 27	Tract 45	Combined	%
<b>Race/Ethnicity</b>				
<b>Black</b>	<b>2664</b>	<b>2046</b>	<b>4710</b>	<b>52%</b>
<b>White</b>	<b>1239</b>	<b>2504</b>	<b>3743</b>	<b>42%</b>
<b>Hispanic or Latino</b>	<b>71</b>	<b>196</b>	<b>267</b>	<b>3%</b>
<b>Other</b>	<b>18</b>	<b>257</b>	<b>275</b>	<b>3%</b>
<b>Total</b>	<b>3992</b>	<b>5003</b>	<b>8995</b>	

Sources: U.S. Census Bureau 2010; U.S. Boundary.com 2020



# Study Area Demographics (cont.)

	% Below Poverty Level	Median Household Income
Tract 27	29%	\$20,862
Tract 45	31%	\$15,109

Sources: U.S. Census Bureau 2010; U.S. Boundary.com 2020

# Research Model

## Converting Arnstein's Ladder to Likert Scale Rating

Level	Arnstein's Ladder (1969)	Research Model Likert Scale
5	8- Citizen control	5- Public initiate task
4	6- Partnership 7- Delegation	4- Public decision- making involvement
3	4- Consultation 5- Placation	3- Public provides feedback
2	3- Information	2- Public receives information
1	2- Therapy 1- Manipulation	1- No public involvement

(Arnstein, 1969; Contreras, 2019)



# Research Methodology

Questionnaire developed to include descriptive, open-ended, closed-ended, and Likert-scaled questions.

Semi-Structured Stakeholder Interviews:

- Citizens (CIT)
- Public Officials (PUB)
- Developers (DEV)

Neighborhood listservs were utilized to solicit input from residents.

Attended neighborhood meetings and contacted stakeholders: 8/1/2019-2/4/2020.

# Research Methodology (cont.)

Two-tailed t-tests and Wilcoxon tests were conducted to determine the significance of differences in perceived empowerment in participatory processes at a significance of  $\alpha = 0.05$

The purpose of the t-test is to determine whether there is statistical evidence that the mean difference between paired observations is significantly different from zero.

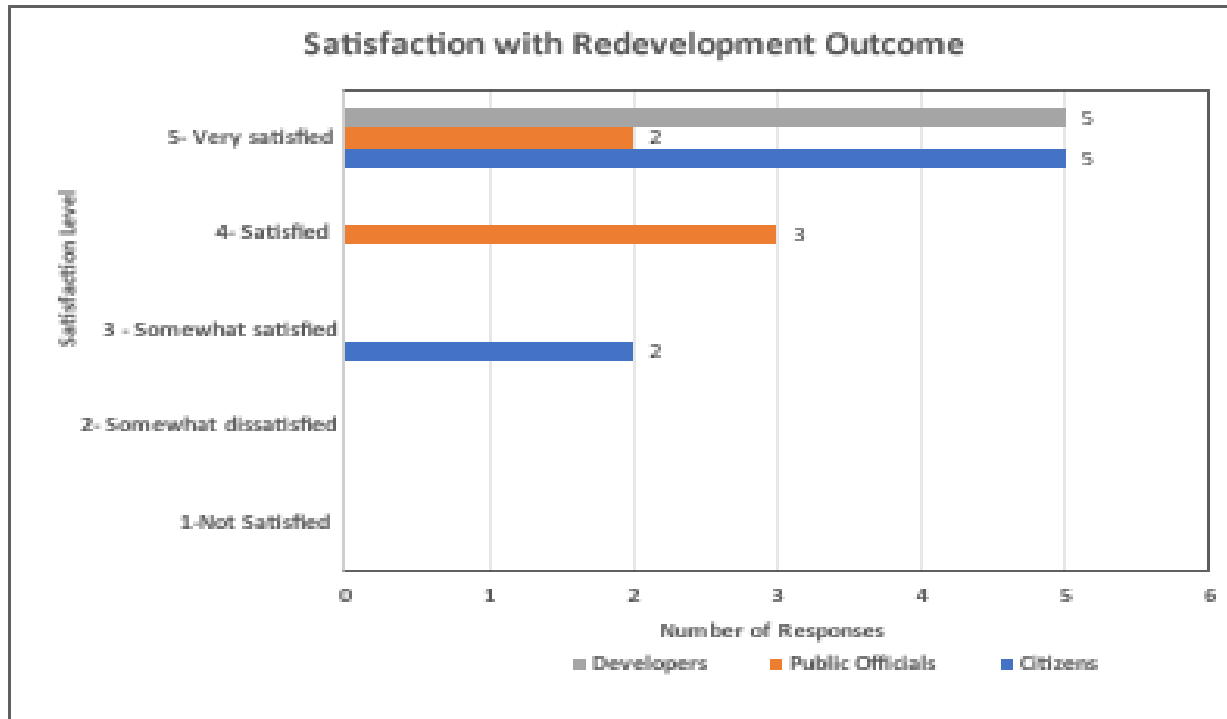
The Wilcoxon Signed-Rank test (a non-parametric version of the sample t-test) was used to validate results (Leedy and Ormrod, 2016).

# Research Results

## Data: Stakeholder Respondent

Survey/Interview Respondent	# Received Surveys/Interviews
Citizens, Residents, Community Advocates	11
U.S. EPA, City of Birmingham, Mayors Office	5
Developers, Owners, Executive Officer	5

# Research Results (cont.)



Findings indicate a general feeling of satisfaction with redevelopment outcome among the three stakeholders. Both developers and citizens reported mostly “Very Satisfied” (*the highest level of satisfaction*).

Public officials were dispersed between “Very Satisfied” and “Satisfied.” However, some citizen stakeholders felt they were “Somewhat Dissatisfied,” which shows potential open issues.

# Hypotheses

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$$H_1: \bar{x} \neq \mu$$

# Research Results (cont.)

## T-test

Stakeholders' rating their participatory involvement

Comparative Analysis:			
Parameter:	Cit-Pub	Cit-Dev	Pub-Dev
$x_1 - x_2$	0.5818	0.5818	0
Pooled Variance	0.2736	0.4182	0.4690
t-value	2.1263	1.3913	0
Degrees of Freedom	7	5	7
Estimated p - value	0.0379*	0.1170	~1.0
*Significant at $\alpha = 0.05$			

Excel two-tailed t-test shows perceptions of participatory process empowerment were significantly different, at  $\alpha = 0.05$  among Citizens and Public Officials ( $p=0.0379$ ).



# Research Results (cont.)

## T-test

The significant differences in empowerment between citizen and public official stakeholders could indicate disparity in how meaningful participation was perceived by each group.

There were no significant differences among other stakeholder groups.

# Research Results (cont.)

## Wilcoxon Signed Rank

	Wilcoxon Test - Comparative Analysis:		
Parameter:	Cit-Pub	Cit-Dev	Pub-Dev
Significance	0.046*	0.102	1.000
*Significant at $\alpha = 0.05$			

Similar to the t-test, perceptions among citizen and public official stakeholders were significantly different at ( $p=0.046$ ). There were no significant differences among other stakeholder groups.

# Conclusions

There were significant differences in perceptions of empowerment between citizen and public official stakeholders.

This calls into question whether there was consensus on meaningful participation in project decision-making among citizens and public officials. Community participation may have been limited.

# Conclusions (cont.)

While Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides for public information and feedback, it is limited on activities which occupy the highest rungs of Arnstein's ladder. This would include a citizen jury and consensus conference.

Under the National Environmental Policy Act (NEPA), citizen involvement is also limited to information and consultation (U.S. EPA 2020).

# Conclusions (cont.)

T-test and Wilcoxon analyses provide composite statistics. These methods indicate differences *but do not provide information on how and why the stakeholders differ.*

A further evaluation of stakeholder assessment in a descriptive statistical analysis is needed to take a more detailed look at stakeholder responses.

Finally, stakeholder power may not be evenly distributed in terms of economic and political power. The census tracts of these projects are comprised mainly of minority and very low-income households.

# Future Research

Additional research is recommended that takes a closer look at how and why citizens differed from public officials in their perspectives of empowerment.

This would likely involve a detailed analysis of the survey using descriptive analysis and qualitative analysis of open-ended questions. This will be the approach of a subsequent study.



# Research Significance

## *Why important?*

Brownfields will increase and public participation in the redevelopment decision-making process promotes equitable, fair, and positive redevelopment outcomes. Redeveloping BF's not only alleviate environmental burdens but also minimize economic and societal problems.

## *What's the point?*

Need effective integration and evaluation of BF participatory elements, understanding these processes is paramount for meaningful participation which is linked to positive BF redevelopment outcomes.

## Research Significance (cont.)

*Developing best practices for BF redevelopment collaboration could ultimately aid in policy development and successful redevelopment outcome*

# Research Limitations

- Research was limited to three local brownfields
- Survey may contain stakeholder bias
- Other participatory models were not considered; typically, they are extensions of Arnstein's Ladder (1969)
- Applicability and generalization of results may be limited to cities with characteristics similar to Birmingham, Alabama

**THANK  
YOU!**

**UAB**

