Article

Urban Studies

Urban Studies
2016, Vol. 53(1) 92–111

DOI: 10.1177/0042098014561723
usj.sagepub.com
SAGE

An exploration of the importance of the strategy used to identify gentrification

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Abstract
Urban scholars have described the importance of gentrification in major cities across the USA since the 1970s. While there is consensus that gentrification shaped social and physical aspects of neighbourhoods, scholars have yet to agree on how gentrified neighbourhoods should be identified. Owing to the lack of consensus, gentrification was measured in a variety of ways, which greatly influenced the neighbourhoods studied in previous research and potentially the findings of research that assessed the importance of gentrification for other neighbourhood outcomes. The current study contributes to this debate by applying and comparing two census-based strategies for identifying gentrified neighbourhoods with a qualitative neighbourhood selection strategy derived from *The New York Times* to New York City neighbourhoods for the span of years from 1980 to 2009. Results confirm that each of the strategies identified different neighbourhoods and that qualitative strategies for identifying gentrified neighbourhoods may overlook areas that experienced similar changes to those more widely recognised as gentrified. Given these findings, additional analyses assessed which census-based neighbourhood selection strategy better represented the neighbourhoods perceived by *The New York Times*, a major media outlet that shaped discourse on gentrification in the USA, as having experienced gentrification.

Keywords
gentrification, identifying gentrified neighbourhoods, neighbourhood change, New York City, *The New York Times*

Received June 2014; accepted November 2014

Introduction

Gentrification has been studied for nearly 50 years, but scholars have yet to come to consensus on how to define the process or identify gentrified neighbourhoods (Hackworth, 2007; Lees et al., 2008). While the specific definition varied, gentrification was often understood as 'the process by which higher-income households displace lower income [households] of a neighborhood, changing the essential character and flavor of that neighborhood' (Kennedy and Leonard, 2001: 5). With this definition in mind, a variety of methods was used to identify gentrified

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neighbourhoods. An underexplored feature of previous research was that the strategy used to identify gentrified neighbourhoods potentially had important implications for whether gentrification was associated with other neighbourhood outcomes.

When identifying gentrified neighbourhoods, qualitative studies typically identified a single or a small group of neighbourhoods that gentrified. In contrast, quantitative studies typically used a threshold strategy where neighbourhoods were identified as gentrifiable if they featured a particular characteristic or characteristics at the beginning of a decade and gentrified if they experienced a change in the characteristic or characteristics at a later time. Recent research has sought to bridge the gap between qualitative and quantitative neighbourhood selection strategies by incorporating non-census based measures of gentrification, but such efforts have yet to incorporate perceptions of neighbourhood change into large-scale measurement of gentrification.

The current study seeks to bridge this gap by illustrating how neighbourhoods identified by census-based strategies described by Bostic and Martin (2003) and Freeman (2005) relate to neighbourhoods recognised as gentrified by *The New York Times* between 1980 and 2009. This particular media source was selected because analyses conducted by Brown-Saracino and Rumpf (2011: 293) found that high-profile newspapers, such as *The New York Times*, were more likely to report on gentrification than other local papers in large cities such as New York City. Results of descriptive and bivariate analyses indicate that the strategy used to identify gentrified neighbourhoods has important implications and that there is much room for improvement in bridging the gap between qualitative and quantitative strategies for identifying gentrified neighbourhoods. The discussion section explores the importance of these results for research on the association of gentrification and other neighbourhood outcomes. While the current study is a case study of New York City, the results have implications for the study of gentrification in other large American cities as well.

What makes a neighbourhood gentrified?

The title of an often-cited piece by Beauregard (1986), 'The chaos and complexity of gentrification', succinctly summarises the current state of the definition of gentrification. Most scholars acknowledge that gentrification was first identified in London during the 1960s by Glass (1964: xviii) who used the term to describe the 'invasion' of members of the middle and upper classes into traditionally working-class neighbourhoods, resulting in the displacement of incumbent residents and a change of the social character of the neighbourhood. This definition can be broken down into two interrelated components. First, gentrification raises the economic level of a neighbourhood population. Second, gentrification changes the 'social character' or culture of neighbourhoods. These components were important because they shaped the definitions of gentrification that followed.

The primary cause of the 'chaos' that followed Glass' (1964) conception has to do with methodological differences, as conceptualisations of gentrification were often determined by whether qualitative or quantitative data were used. Qualitative data tend to be much richer, which allowed for the utilisation of complex, multidimensional definitions. A prime example of this was Hamnett (1984: 284), who defined gentrification as 'simultaneously a physical, economic, social and cultural phenomenon' that involved 'the invasion by middle-class or higher-income groups of previously working-class neighborhoods or multi-occupied "twilight areas"'

and the physical renovation or rehabilitation of deteriorated housing stock. While this was one of the most comprehensive definitions of gentrification to date, it was also one of the more complex, as it required the simultaneous measurement of physical, economic, social and cultural neighbourhood changes. Finding data that allowed for the simultaneous measurement of all of these aspects has been an arduous task because of limited quantitative information on cultural changes for a large sample of neighbourhoods.

Quantitative studies, in contrast, typically relied on census data and therefore defined gentrification through demographic changes. Simple versions of this strategy focused solely on changes to the socio-economic composition of neighbourhood residents. For example, Atkinson (2000: 149) defined gentrification as the 'process of class succession and displacement in areas broadly characterized by working-class and unskilled households'. More complex quantitative conceptualisations recognised the multidimensionality of gentrification. For example, Clark (2005: 258) defined gentrification as a process that resulted in an increased proportion of higher socio-economic status residents in combination reinvestment of the built environment. Clark's (2005) definition captured more of the spirit Glass' (1964) definition as it recognised that gentrification changed the composition of neighbourhood populations and the physical appearance of neighbourhoods, both of which were important because they influenced the perception of the neighbourhood among residents and outsiders. While the definitions used in quantitative strategies were easier to operationalise, they often did not include references to changes in the 'social character' or local culture.

In summary, scholars have yet to come to a consensus concerning the definition of gentrification. Qualitative studies often defined the process in regards to changes to the economic and racial composition as well as the character of neighbourhoods, while quantitative studies emphasised demographic changes. While not the focus of the current study, this definitional debate is important to recognise as the conceptualisation of gentrification influenced the strategy used to identify gentrified neighbourhoods.

Identification of gentrified neighbourhoods

The lack of consensus concerning the conceptualisation of gentrification allowed researchers to identify gentrified neighbourhoods in a variety of ways. Qualitative studies typically identified a single neighbourhood or small group of neighbourhoods that experienced gentrification. Such research has identified New York City neighbourhoods such as Clinton Hill (Freeman, 2006), Harlem (Freeman, 2006; Maurrasse, 2006), the Lower East Side (Mele, 2000; Smith, 1996; Zukin et al., 2009), and Williamsburg (Curran, 2007) as gentrified. Outside of New York City, this strategy has identified gentrified neighbourhoods in Chicago (Boyd, 2008), Philadelphia (Anderson, 1990) and London (Hamnett and Whitelegg, 2006).

When identifying gentrified neighbourhoods, qualitative research frequently selected neighbourhoods that experienced cultural changes because of shifts in demographics of neighbourhood populations. Much of this research emphasised the transition from racial or ethnic neighbourhood cultures to middle-class, white culture (Anderson, 1990; Maurrasse, 2006). This cultural shift was often associated with changes in local businesses and housing. For example, Maurrasse (2006) and Zukin et al. (2009) described examples of gentrification replacing traditional 'mom and pop' stores and restaurants with chain stores and restaurants. Similarly, many former manufacturing sites in gentrified neighbourhoods were converted to loft-style condominiums and

apartments (Curran, 2007; Hamnett and Whitelegg, 2006).

Quantitative studies often used a threshold strategy where neighbourhoods were identified as gentrifiable if they featured a particular characteristic or characteristics at the beginning of a decade and gentrified if the characteristic changed in particular way. A simple version of this strategy was used by Atkinson (2000) who identified neighbourhoods that experienced gains in the proportion of workers employed in professional occupations between two time points. More complex versions of this strategy include the multivariate strategies described by Freeman (2005) and Bostic and Martin (2003), which are replicated in the current study.

Quantitative research has increasingly sought to break away from relying solely on census indicators of neighbourhood change. Hammel and Wyly (1996) and Wyly and Hammel (1998, 1999) were the forerunners in this area. The authors identified gentrified neighbourhoods through their familiarity with Minneapolis-St. Paul and consultation of published materials (previous research and newspaper articles) before conducting fieldwork to determine the quality and extent of gentrification in identified areas (Hammel and Wyly, 1996). After the success of their initial application, the authors replicated this strategy in 22 other large American cities and produced a data base of gentrified census tracts (Wyly and Hammel, 1999). While this remains the richest source of information on gentrification available, it was limited in that it only explored neighbourhood changes during the 1990s and did not include New York City, which attracted a great deal of media and scholarly attention (Brown-Saracino and Rumpf, 2011; Zukin et al., 2009).

More recently, Hwang and Sampson (2014) drew upon a combination of census indicators and systematic social observation of Chicago streets using Google Street View to identify gentrified neighbourhoods. The use of Google Street View allowed the researchers to track relatively fine-grain changes in neighbourhoods between 2007 and 2009. Similar to Hammel and Wyly's (1996) data base, this strategy suffered from a limited study period, which was important given the gradual nature of gentrification. Further, Hwang and Sampson (2014: 22) note that their strategy emphasised physical forms of reinvestment and potentially suffered from subjectivity in the identification of street-level indicators of gentrification.

The primary advantage to the strategies described by Hammel and Wyly (1996) and Wyly and Hammel (1998, 1999) and Hwang and Sampson (2014) was that they were able to confirm that the identified neighbourhoods experienced gentrification as opposed to more natural forms of improvement such as incumbent upgrading. The primary disadvantage was that these strategies were extremely labour-intensive to replicate. Less labour-intensive efforts supplemented census indicators with non-census based measures of gentrification such as coffee shops (Papachristos et al., 2011) or mortgage lending information (Kreager et al., 2011). Such variables allowed for more refined measurement of gentrification, but were limited in a few respects. For example, the location of coffee shops used by Papachristos et al. (2011) was determined by unmeasurable influences such as city planning efforts, individual tastes and residential preferences. Additionally, coffee shops were clustered in the central business district, which meant that a potentially large number of neighbourhoods were excluded. Similarly, the home mortgage measure used by Kreager et al. (2011) did not allow for the distinction of gentrification from other types of investment, such as incumbent upgrading.

To summarise, previous research used a variety of strategies to identify gentrified neighbourhoods. Relying only on qualitative

methods ensured that some gentrified neighbourhoods were overlooked, while relying only on quantitative methods identified neighbourhoods that underwent naturally occurring improvements (incumbent upgrading) as well as those that improved because of gentrification. Recent efforts to bridge this gap incorporated non-census based information sources, but a measure of the perceptions of neighbourhood change has yet to be included in large-scale measurement of gentrification. The current study contributes to research in this area by showing that the strategy used to identify gentrified neighbourhoods can lead to very different understandings of where gentrification occurred. Specifically, the current study describes how gentrified neighbourhoods identified through a simple content analysis of *The New York Times* compared with multivariate census-based strategies developed by Bostic and Martin (2003) and Freeman (2005). *The New York Times* was selected because Brown-Saracino and Rumpf (2011: 239) reported that more prolific newspapers such as *The New York Times* were more likely to discuss gentrification than other local papers in large cities such as New York City.

Current study

The current study explores the importance of the strategy used to identify gentrified neighbourhoods by comparing New York City neighbourhoods identified through replications of census-based strategies described by Bostic and Martin (2003) and Freeman (2005) with neighbourhoods identified by *The New York Times* between 1980 and 2009. In doing so, the current study explored two questions. First, does the measurement of gentrification influence which neighbourhoods were identified as gentrified? Second, how do neighbourhoods identified by quantitative strategies relate to neighbourhoods identified by qualitative research and *The New York Times*? The discussion section explores the importance of the results for research on the association of gentrification with other neighbourhood outcomes.

Analysis strategy

The current study is an exploratory analysis and as such draws upon descriptive and bivariate analyses. The first part of the analyses provides descriptive statistics on the number of gentrifiable and gentrified tracts identified by the census strategies. The second part of the analyses describes how the distribution of gentrified neighbourhoods identified by each strategy and determined which census-based neighbourhood selection strategy better matched with *The New York Times*. The final section of the analyses consists of exploratory spatial data analysis that help explain the differences between the neighbourhoods identified by *The New York Times* and the census-based strategies.

Units of analysis

The units of analysis in the current study are the 188 populated neighbourhood areas identified by the New York City Department of City Planning (NYCDCP). Each neighbourhood area conformed to Census 2000 boundaries, contained about 11 census tracts and was associated with a colloquial neighbourhood name (New York City Department of City Planning, 2011). Similar units of analysis were used by the Project on Human Development in Chicago Neighbourhoods researchers (Sampson, 2012). Neighbourhood areas were used as the units of analysis to facilitate the comparison of the results of the Bostic and Martin (2003) and Freeman (2005) strategies to *The New York Times*. A more refined unit of analysis such as census tracts would have

been preferable given that gentrification typically occurred in part of a neighbourhood as opposed to a whole neighbourhood (Boyd, 2008; Freeman, 2006), but was not possible given the limited geographic identifying information provided in most of *The New York Times* articles.

Data and measures

The New York Times

The New York Times was selected to represent perceptions of neighbourhood change in New York City because it is a nationally recognised news source with a strong emphasis on events in New York City. An additional reason for selecting *The New York Times* over other newspapers based in New York City was that Brown-Saracino and Rumpf (2011) reported that more prolific newspapers such as *The New York Times* were more likely to report on gentrification than other local papers in large cities such as New York City. Specifically, articles were collected from the LexisNexis data base published between 1 January 1980 and 31 December 2009 that contained the terms 'gentrification' and 'New York City'. The decision to use the search term 'gentrification' mirrors that of Brown-Saracino and Rumpf (2011). Articles had to discuss gentrification as currently occurring or having recently occurred in a specific neighbourhood to be considered. This strategy produced 759 documents, each of which was coded according to the year and month of publication and the neighbourhood identified. The final data set identified whether neighbourhoods gentrified during the 1980s (1980–1989), the 1990s (1990–1999) and 2000s (2000–2009).

As recognised by Sampson (2012: 189), a limitation of using media sources to identify temporal changes in neighbourhoods was that such sources tend to report on 'newsworthy' events while overlooking similar events in less noteworthy areas. While Sampson did not find this was an issue for *Chicago Tribune* reporting, it remains unclear whether this was an issue for *The New York Times* reporting. A similar criticism of focusing on more noteworthy areas might be levelled against the qualitative gentrification research as such research focused on a small sample of neighbourhoods. Even with this potential limitation, *The New York Times* was the best source of information on the distribution of gentrification in New York City that could be located that covered the entire city for the period 1980 to 2009.

Census-based strategies for identifying gentrified neighbourhoods

The Bostic and Martin (2003) and Freeman (2005) strategies were selected because descriptive analyses conducted by Freeman (2009) compared neighbourhoods identified through a replication of strategies described by Freeman (2005) and Hammel and Wyly (1996), on which Bostic and Martin (2003) was based. The current study uses the Bostic and Martin (2003) strategy to address Freeman's (2009: 2094) critique that Hammel and Wyly's (1996) strategy was based upon a limited number of MSAs. In contrast to the Hammel and Wyly (1996) strategy, the Bostic and Martin (2003) strategy was developed with and applied to a national sample of census tracts. This made it an ideal choice for comparison with the Freeman (2005) strategy, which was also developed with and applied to a national sample of census tracts.

The first step of the replication process required that the Bostic and Martin (2003) and Freeman (2005) strategies each be applied to tract-level data from New York City. The Neighbourhood Change Database (NCDB) was used to collect information from the 1980, 1990 and 2000 Censuses to

ensure uniformity of tract boundaries during the study period. Tract-level census information for the 2005–2009 period was downloaded from the American Community Survey and conformed to Census 2000 boundaries (US Census Bureau, 2013). The proceeding sections describe the steps followed to replicate each of these strategies.

Replication of Bostic and Martin. Bostic and Martin (2003) utilised tract-level data for the 50 largest metropolitan areas and identified gentrified tracts in two ways. The first strategy replicated Hammel and Wyly (1996) and classified tracts that featured a median income that was less than 50% of the median income for the MSA at a particular census point as gentrifiable.[1] Gentrified tracts were those considered gentrifiable at the earlier time point and that had changed to non-gentrifiable at the later time point. Replication of this strategy with New York City census tracts identified 48 gentrified tracts during the 1980s, 110 tracts during the 1990s and 60 tracts during the 2000s.

Bostic and Martin (2003: 2431) stated that identifying gentrified tracts with a single variable was 'almost certain to fail'. Given this limitation, the authors drew upon the nine census indicators highlighted by Hammel and Wyly (1996) to develop a multivariate strategy for identifying gentrified tracts. For each decade, tracts that featured population at the start and end of each decade were ranked according to how much the proportion with college degrees, family income, home-ownership rates, proportion aged 30 to 44, proportion white non-family households, proportion managerial and administrative workers, and the proportion with some college increased and how much the percent poverty and black decreased. The average of the rankings was computed and compared with the number of tracts identified by the univariate strategy. For example, since the first strategy identified 48 tracts as switching from gentrifiable to non-gentrifiable between 1980 and 1990, the 48 tracts with the lowest average rank values were coded as gentrified. This was repeated for each decade. While both strategies described by Bostic and Martin (2003) were replicated, analyses in the current study emphasise the multivariate strategy to facilitate the comparison with the Freeman (2005) strategy.

Replication of Freeman. For the Freeman (2005) strategy, gentrifiable tracts were populated, featured a median income that was less than the median for the city and contained a proportion of housing built within the past 20 years lower than the proportion found at the median for the city.[2] Gentrified neighbourhoods featured the characteristics of gentrifiable neighbourhoods and experienced an increase in educational attainment greater than the median for the city and an increase in real housing prices during each intercensal period.

Results

Comparison of the tract-level selection strategies

Table 1 shows the number of gentrifiable and gentrified tracts identified by the Bostic and Martin (2003) and Freeman (2005) strategies. As described earlier, Bostic and Martin (2003) identified the number of tracts that featured a median income that was less than 50% of the median income for the MSA (or city in the current study) at Time 1 (1980 for example) and a median income that was greater than 50% of the median income for the MSA (or city) at Time 2 (1990 for example) as the base number of tracts for their multivariate strategy. Using this rule, 202 tracts were identified as gentrifiable in 1980, 268 tracts were considered gentrifiable in 1990 and 176 tracts were

Table 1. Number of gentrifiable and gentrified tracts by identification strategy and year

Census strategy	1980–1990	1990–2000	2000–2005/2009
Bostic and Martin			
Gentrifiable	202	268	176
Gentrified	48	110	60
Freeman			
Gentrifiable	400	582	576
Gentrified	132	240	281

Note: $N = 2135$.

gentrifiable in 2000. These counts were considerably lower than the Freeman strategy, which identified 400 tracts as gentrifiable in 1980, 582 tracts in 1990 and 576 tracts in 2000.

In addition to identifying a smaller number of gentrifiable tracts than the Freeman strategy, the results in Table 1 also indicate that the Bostic and Martin strategy identified fewer gentrified tracts. Specifically, the Freeman strategy identified 132 gentrified tracts during the 1980s, while the Bostic and Martin strategy identified 48 gentrified tracts. During the 1990s, the Freeman strategy identified 240 gentrified tracts where the Bostic and Martin strategy identified 110 gentrified tracts. Similarly, during the 2000s, the Freeman strategy identified 281 gentrified tracts where the Bostic and Martin strategy identified 60.

Comparison of the neighbourhood selection strategies

Replications of the Bostic and Martin (2003) and Freeman (2005) strategies identified gentrified tracts, but the units of analysis for the comparison of the census-based strategies with *The New York Times* are the 188 populated neighbourhood areas defined by the NYCDCP. The shift in unit of analysis from census tracts to DCP neighbourhoods was necessary because *The New York Times* frequently discussed neighbourhoods as experiencing gentrification as opposed to specific parts, or in this case specific census tracts, of a neighbourhood. This was important because previous research found gentrification typically occurred in part of a neighbourhood instead of the whole neighbourhood (Boyd, 2008; Freeman, 2006). Therefore, neighbourhood areas were classified as gentrified according to the Bostic and Martin (2003) or Freeman (2005) strategies if they contained at least one gentrified tract during a given decade.[3] It is important to note that direct comparison of the proportion of tracts identified in Table 1 and proportion of neighbourhoods identified in Table 2 should not be made because the tract-level analyses identify the number of neighbourhood parts (census tracts) that gentrified, while the neighbourhood level analyses identify the number of neighbourhoods that gentrified.

The first question addressed in this study was whether the measurement of gentrification influenced which neighbourhoods were identified as gentrified. Results in Table 2 identify the number of neighbourhoods identified as gentrified by each strategy during the 1980s, 1990s and 2000s. As expected, each strategy identified a different number of gentrified neighbourhoods. These results indicate that, with the exception of the 1980s, the strategy used by *The New York Times* was the most restrictive, while the Freeman strategy was consistently the most

Table 2. Number of neighbourhoods identified as gentrified.

Strategy	1980–1990	1990–2000	2000–2005/2009
Bostic and Martin	28	61	35
Freeman	69	104	97
The New York Times	44	27	32

Note: $N = 188$.

Table 3. Crosstabulations of census strategies for identifying gentrified neighbourhoods and *The New York Times*.

Decade	Strategy	Association with *The New York Times*
1980–1990	Bostic and Martin	Phi = 0.333***
	Freeman	Phi = 0.178*
1990–2000	Bostic and Martin	Phi = 0.299**
	Freeman	Phi = 0.248**
2000–2005/2009	Bostic and Martin	Phi = 0.511**
	Freeman	Phi = 0.302***

Notes: $N = 188$. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

expansive. The importance of and potential reasons for these differences are highlighted in the remainder of the discussion of the results.

The second research question, which census-based strategy better matched with *The New York Times*, was addressed by computing crosstabulations for each decade. Results of these analyses are presented in Table 3. The phi coefficients in Table 3 have a similar interpretation to Pearson correlation coefficients, but are used to assess bivariate relationships when at least one variable is categorical. Results for the 1980s show that the association of *The New York Times* with Bostic and Martin (phi = 0.333***) was higher than the association with the Freeman strategy (phi = 0.178*). Similarly, the results for the 1990s identified a stronger association with Bostic and Martin (0.299**) than the Freeman (0.248**) strategy. This pattern continued into the 2000s as results identified a phi coefficient of 0.511*** with Bostic and Martin and 0.302*** with Freeman. A likely cause of the lower association of *The New York Times* with the Freeman strategy was because the Freeman strategy identified a substantially larger number of neighbourhoods as gentrified for each decade as this increased the potential for differences to be found between *The New York Times* and Freeman strategies.

Results of exploratory spatial data analysis suggest an alternative reason for the difference in agreement between the census-based strategies and *The New York Times*. Figure 1 displays the spatial distribution of neighbourhoods identified by each strategy during the 1980s. These maps show that all three strategies identified neighbourhoods throughout the five boroughs, but the neighbourhoods identified by *The New York Times* were concentrated in Brooklyn, Manhattan and Queens. In comparison, the neighbourhoods identified by the

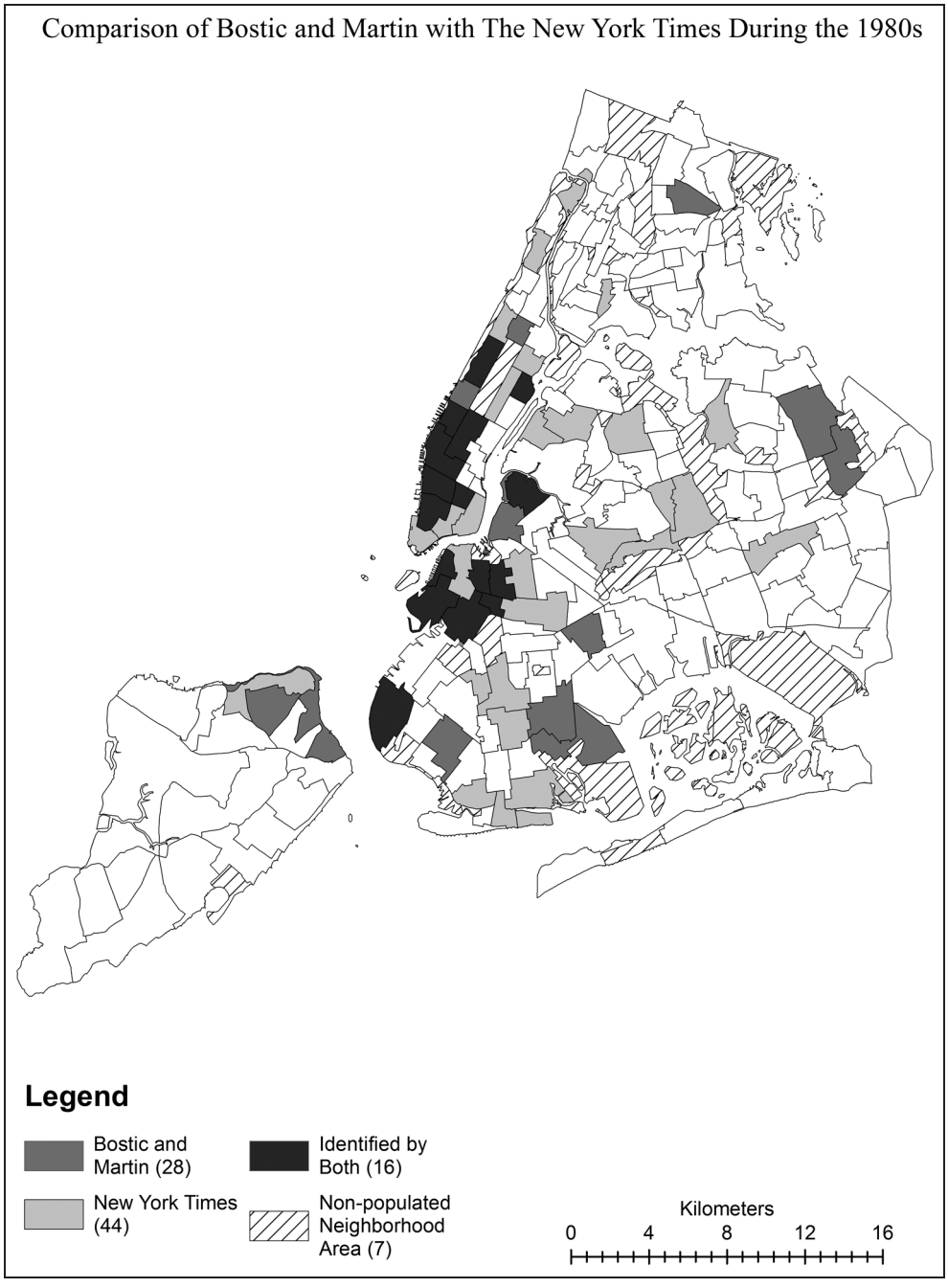

Figure 1. (a) Comparison of Bostin and Martin with *The New York Times* during the 1980s.

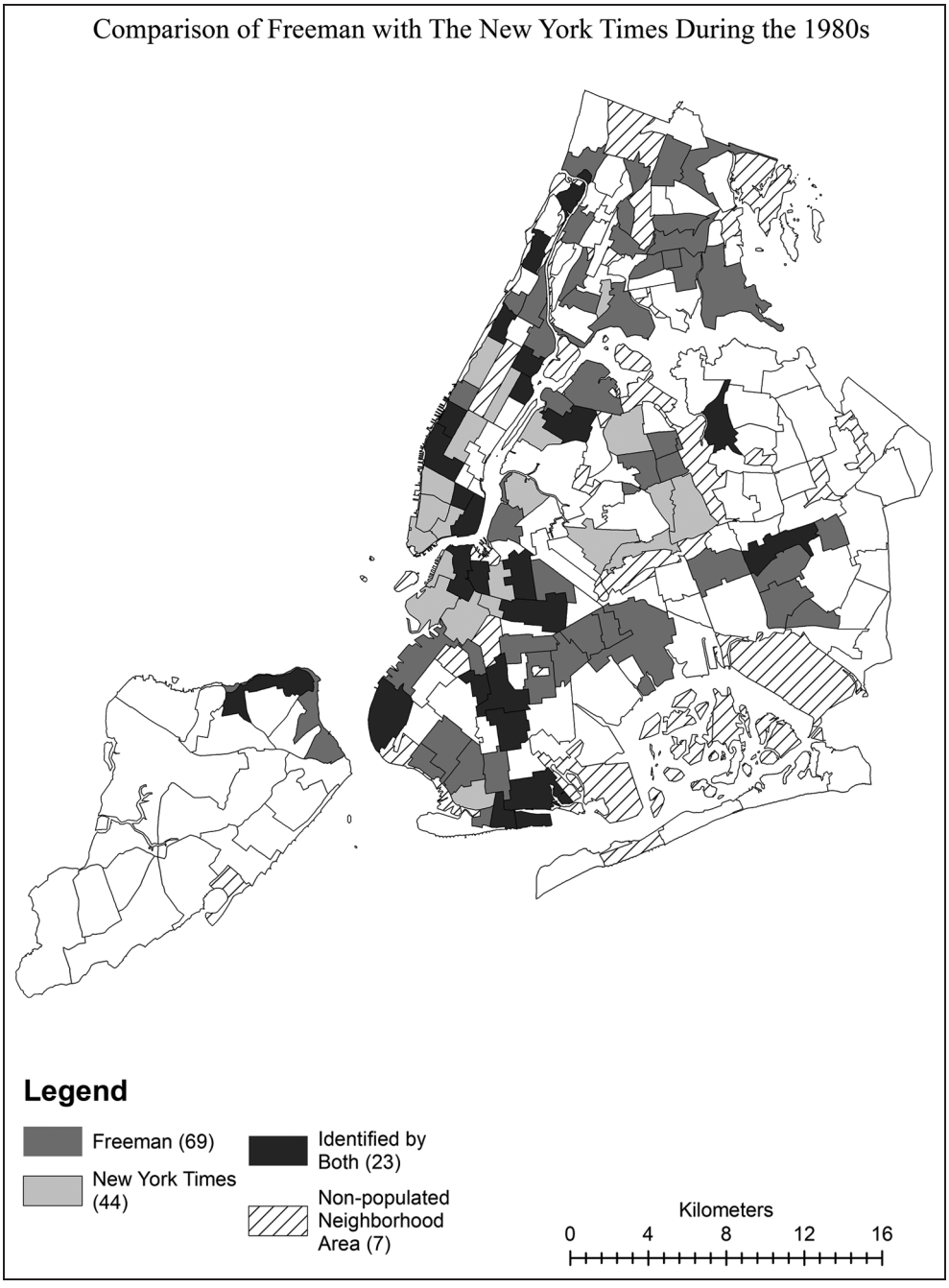

Figure 1. (b) Comparison of Freeman with *The New York Times* during the 1980s.

census-based strategies were more dispersed among the five boroughs, which helps to explain the relatively low associations with *The New York Times*. Further, these results suggest that an important reason for the stronger association between the Bostic and Martin and *The New York Times* strategies was a greater proportion of agreements in Manhattan and Brooklyn. The greater dispersion of neighbourhoods identified by the census-based strategies suggests that Sampson's (2012) critique that media sources may emphasise changes in particular areas applied to *The New York Times*. Whether this was intentional or not was unable to be determined.

The results for the 1990s (Figure 2) present a similar pattern as those for the 1980s. Specifically, these maps show that *The New York Times* was more likely to identify neighbourhoods in Brooklyn and Manhattan. *The New York Times* also identified a few neighbourhoods in The Bronx and Queens, but did not identify any neighbourhoods in Staten Island. In comparison, the neighbourhoods identified by the census-based strategies were dispersed throughout the city. Also similar to the 1980s, the maps for the 1990s suggest that the greater proportion of agreed upon neighbourhoods in Brooklyn and Manhattan by the Bostic and Martin strategy was a contributor to the stronger association with *The New York Times*.

The maps in Figure 3 show that, similar to the previous decades, the neighbourhoods identified by *The New York Times* during the 2000s were concentrated in Brooklyn and Manhattan. Further, these results indicate that even though the Freeman strategy agreed with *The New York Times* about a larger number of neighbourhoods, the association of *The New York Times* with the Bostic and Martin strategy was stronger because of the greater proportion of agreements in Brooklyn, particularly the northwestern section, and Manhattan.

Overall, the results indicate that the strategy used to identify gentrified neighbourhoods can have important consequences as the qualitative and quantitative strategies for identifying gentrification produced substantially different sets of neighbourhoods. Further, results showed that the Bostic and Martin strategy better matched with *The New York Times* than the Freeman strategy. The stronger associations with the Bostic and Martin strategy was likely the result of its more restrictive nature and a greater proportion of neighbourhoods identified in Brooklyn and Manhattan. Finally, it is interesting to note that the associations of the census-based strategies with *The New York Times* increased over time. While there the association of the Bostic and Martin strategy with *The New York Times* declined slightly during the 1990s, a comparison of the coefficients for the 1980s and 1990s with the 2000s shows a dramatic increase in the convergence of each strategy. In comparison, the increased association with the Freeman strategy increased steadily over time. Overall, however, these findings suggest that the strategy used by *The New York Times* staff became more expansive.

Discussion and conclusion

The current study contributed to research on the identification of gentrified neighbourhoods by comparing two census-based strategies with a qualitative strategy derived from *The New York Times*. Three findings stand out in the results. First, the number and geographic distribution of gentrified neighbourhoods identified by each strategy varied greatly. Second, the results suggest that media sources may overlook changes in less popular neighbourhoods that underwent similar transformations to those identified as gentrified by census-based strategies for identifying gentrified neighbourhoods. Third, while the more restrictive strategy described

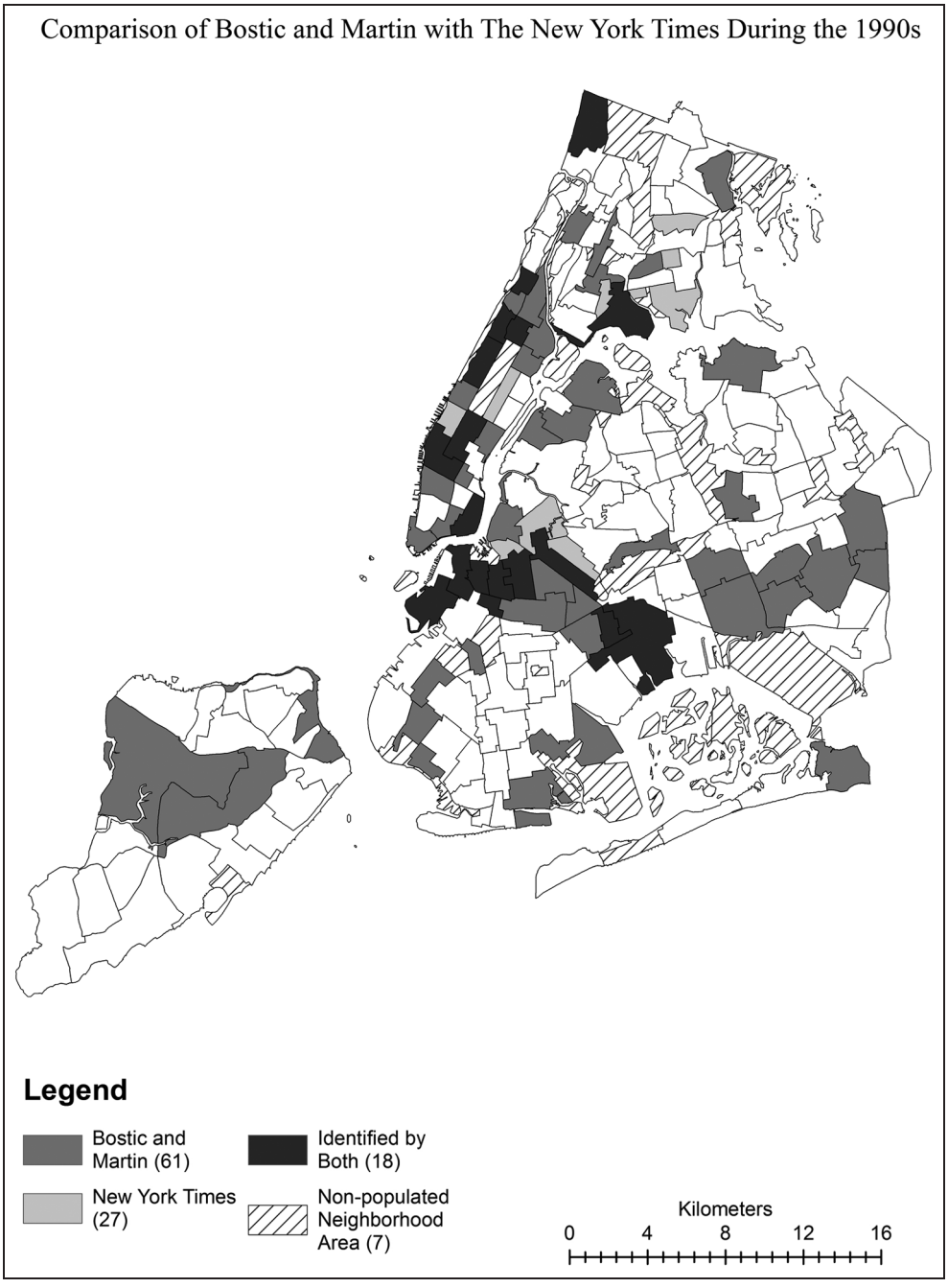

Figure 2. (a) Comparison of Bostic and Martin with *The New York Times* during the 1990s.

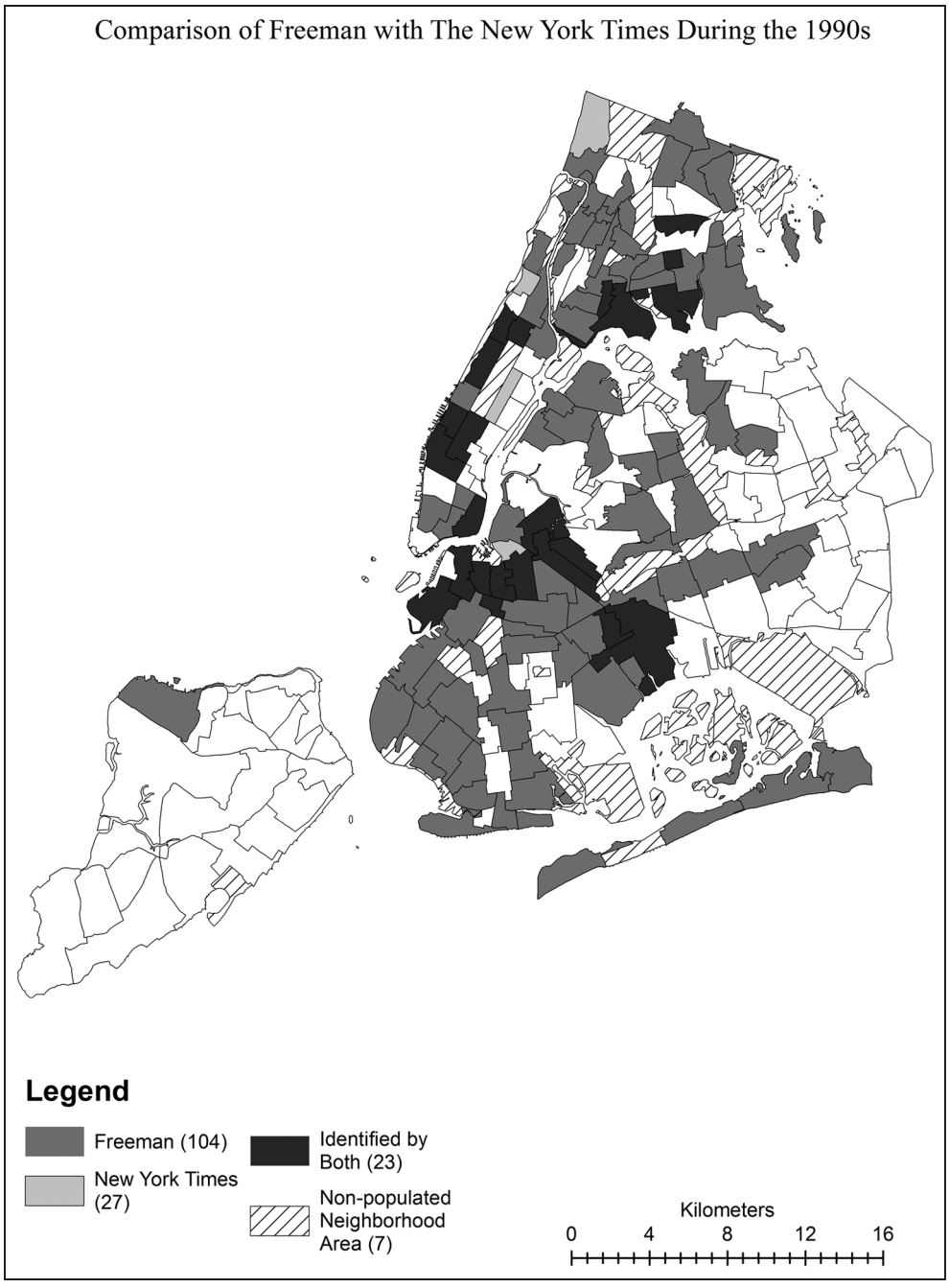

Figure 2. (b) Comparison of Freeman with *The New York Times* during the 1990s.

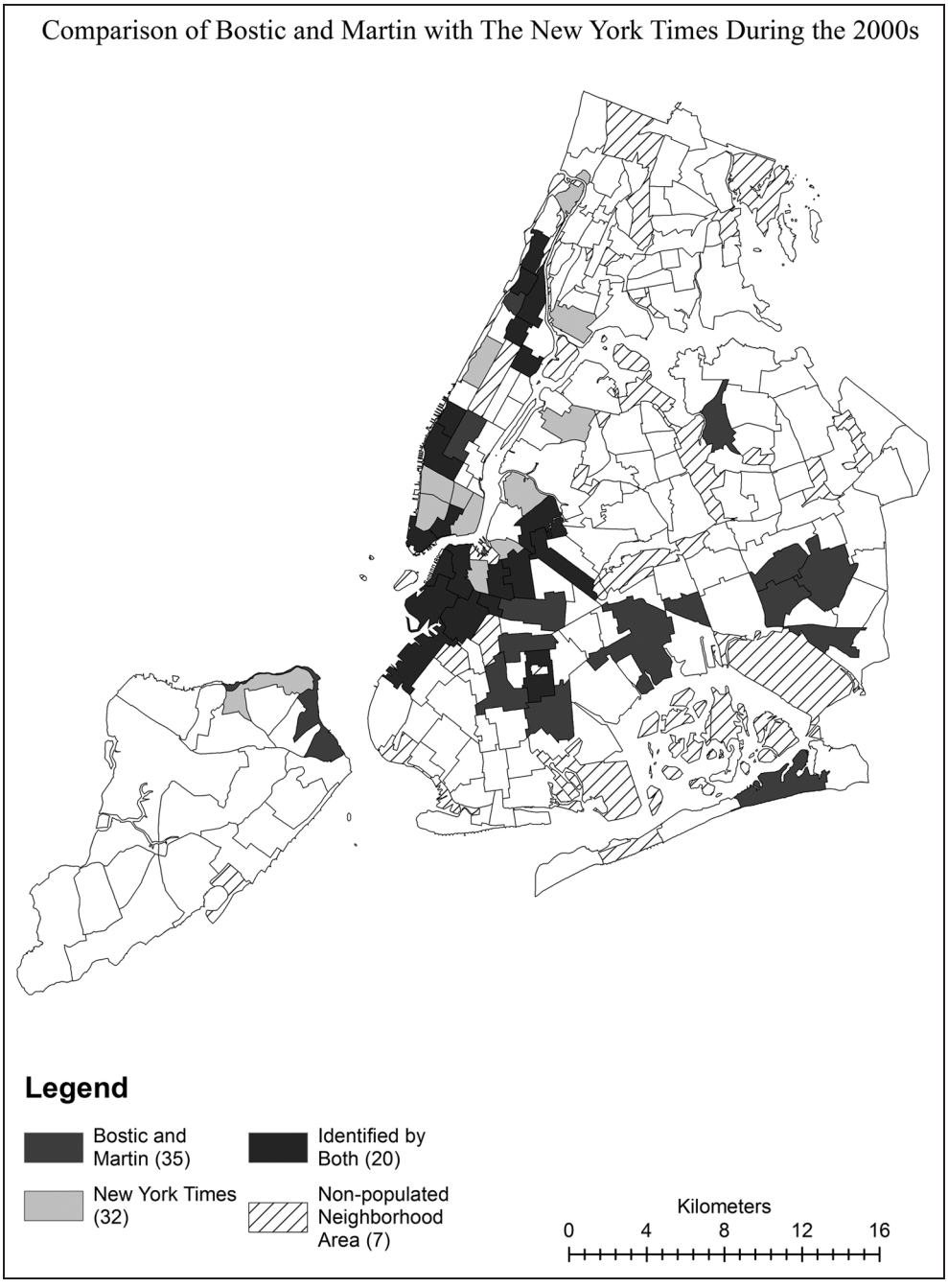

Figure 3. (a) Comparison of Bostic and Martin with *The New York Times* during the 2000s.

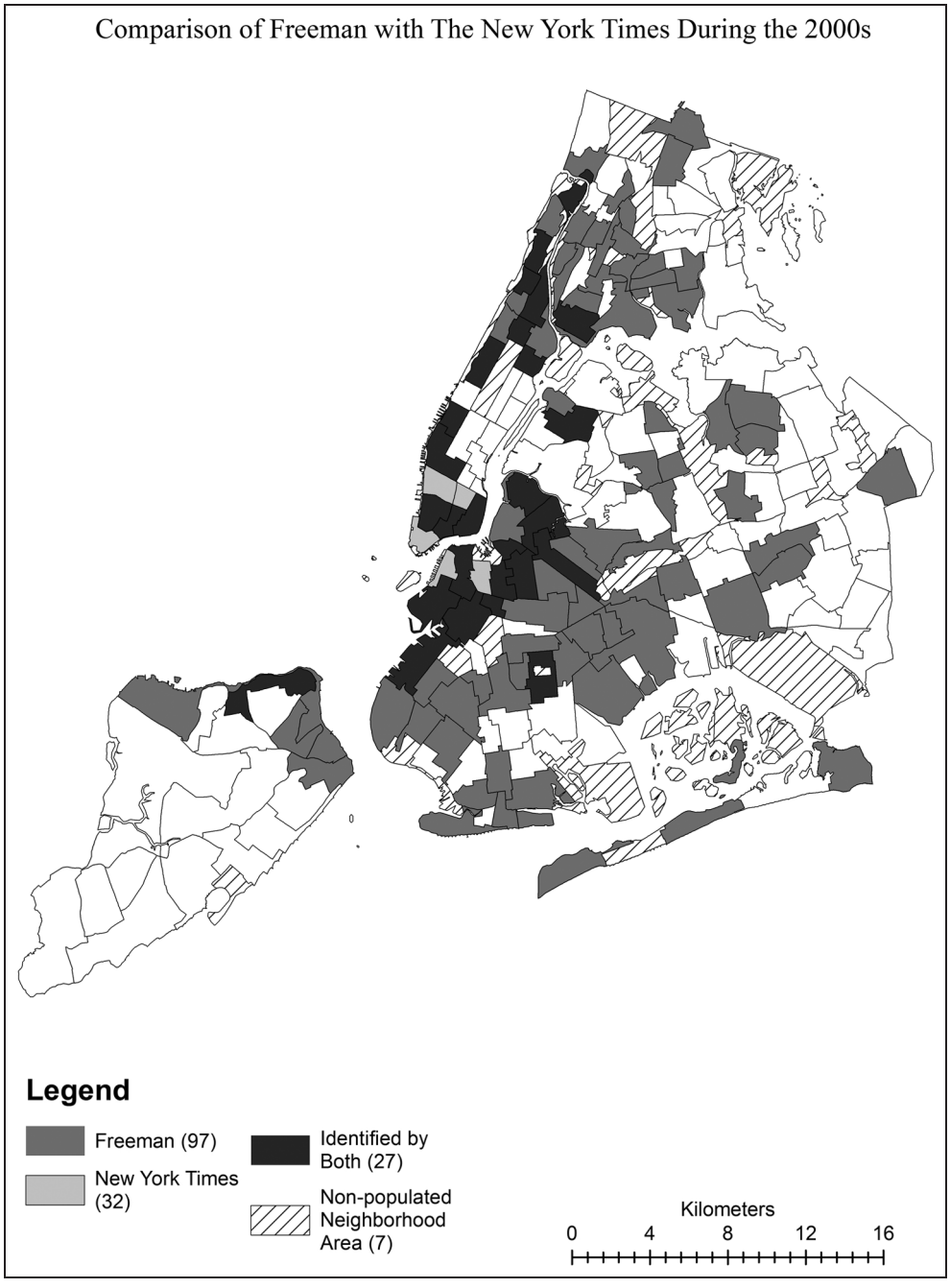

Figure 3. (b) Comparison of Freeman with *The New York Times* during the 2000s.

by Bostic and Martin (2003) better matched with *The New York Times*, there was still a great deal of room for improvement as the associations of both census-based strategies with *The New York Times* were moderate at best.

Freeman's (2009) descriptive comparison of tracts identified through replication of strategies described by Freeman (2005) and Hammel and Wyly (1996) highlighted substantial differences in the number of gentrified tracts identified, but did not test whether these differences resulted in significantly different outcomes because the Hammel and Wyly strategy was developed with data from a limited number of MSAs. The current study addressed this critique by comparing neighbourhoods identified through replication of strategies described by Freeman (2005) and Bostic and Martin (2003), both of which were developed with and applied to national samples of census tracts. Descriptive results show that not only was the sheer number of neighbourhoods identified by each strategy different, but also that the geographic distribution of sampled neighbourhoods varied. These are simple findings, but have potentially important implications for research that assesses the influence of gentrification on other neighbourhood outcomes such as residential displacement and crime.

Much of the gentrification research has discussed the potential for gentrification-related displacement, but only a few studies empirically assessed this issue and findings differed. For example, Atkinson (2000) identified gentrified neighbourhoods as those that featured an increase in the proportion of neighbourhood residents employed in professional occupations and found that neighbourhoods that experienced an increase in this population also experienced displacement. In contrast, Freeman and Braconi (2004: 43) identified gentrified neighbourhoods based upon their familiarity with recent trends in New York City and found that disadvantaged households were less likely to be displaced in gentrified neighbourhoods than in non-gentrified neighbourhoods. There is support in the literature for each of these strategies, but for the purposes of the current discussion it is important to note that results of an analysis that selected a sample based upon changes in a single demographic found gentrification was positively associated with residential displacement, while results of a study that selected neighbourhoods based upon personal knowledge found a negative association. Each of these strategies was somewhat limited as the Atkinson (2000) strategy relied upon a single variable, which Bostic and Martin (2003: 2431) suggested was 'almost certain to fail' as a means of identifying gentrified neighbourhoods, while the Freeman and Braconi (2004) strategy potentially overlooked areas that experienced changes to those they identified as gentrified. It remains unclear whether Atkinson (2000) or Freeman and Braconi (2004) assessed other gentrification measurements or whether alternative measurements might have produced different findings about the extent of residential displacement. Such information is important as the findings of these studies and others that assessed this relationship were used to inform policies that influenced the availability of affordable housing in American cites (Newman and Wyly, 2006).

Assessments of the association of gentrification with crime also produced mixed results. Early assessments failed to control for omitted variable bias and identified gentrified neighbourhoods solely through changes in census indicators, but recent research overcame both limitations by using sophisticated statistical techniques and incorporating non-census measures. Papachristos et al. (2011) included a cultural measure of gentrification, coffee shops, and reported a negative association of

gentrification with violent crime. In contrast, Kreager et al. (2011) included a property-based measured of gentrification, the number of home mortgages distributed, and reported a negative association of gentrification with property crime rates, but no association with violent crime. Comparisons of these studies was facilitated by the use of statistical techniques that controlled for unmeasured variable bias, but remain tentative given differences in the cities studied by each. A speedy resolution to this debate is important given that local governments have increasingly looked to gentrification as a means of reducing the prevalence of neighbourhood social problems such as crime.

In addition to having implications for the neighbourhood selection process in research on the influence of gentrification on other neighbourhood outcomes, the results also suggest Sampson's (2012) critique that media sources may under identify the extent of temporal neighbourhood change processes such as gentrification because of a focus on 'newsworthy' neighbourhoods applied to *The New York Times*. This was highlighted in maps that showed *The New York Times* was more likely to identify gentrified neighbourhoods in Brooklyn and Manhattan, particularly during the 1990s and 2000s, while overlooking a large number of neighbourhoods in other boroughs that underwent similar transformations. Sampson (2012) did not find this was an issue for *Chicago Tribune* reporting, but future research should explore whether this was an issue for *The New York Times*. This is especially important given Brown-Saracino and Rumpf's (2011: 239) finding gentrification was disproportionately discussed in major newspapers such as *The New York Times, Chicago Tribune* and *Los Angeles Times* than local newspapers.

The critique of focusing on a small sample of popular neighbourhoods also applies to qualitative research of gentrification in New York City as much of this literature emphasised changes in the Brooklyn neighbourhoods of Park Slope (Carpenter and Lees, 1995; Freeman and Braconi, 2004) and Williamsburg (Curran, 2007; Zukin et al., 2009) and the Manhattan neighbourhoods of Harlem (Freeman, 2006; Zukin et al., 2009) and the Lower East Side (Mele, 2000; Smith, 1996). Valuable insights were gained from these studies, but expanding the scope of gentrification research to other neighbourhoods such as those identified by the census-based strategies that were not also identified by *The New York Times* in the current study may illuminate underexplored facets of the gentrification process. Quantitative case studies of understudied neighbourhoods would help to address this issue by identifying specific changes that occurred. A better solution, however, would require qualitative data collection by researchers and journalists, as such information would provide more detailed information on how the gentrification process occurred and was perceived by neighbourhood residents.

To bridge the gap between qualitative and quantitative strategies for identifying gentrified neighbourhoods, the current study assessed which of two census-based strategies better matched with neighbourhoods identified by *The New York Times*. While these results indicate that the more restrictive measurement strategy described by Bostic and Martin (2003) was a better match, there remained a substantial amount of disagreement. This was not entirely surprising as gentrification scholars have yet to come to a consensus about the definition of gentrification, let alone where it occurred.

Exploratory data analyses suggest that the primary source of disagreement was related to *The New York Times* staff's emphasis on changes in Brooklyn and Manhattan as the geographic distribution of neighbourhoods identified by both census-based strategies were more dispersed. It is possible, however, that *The New York Times*

used other terms to describe changes in improving neighbourhoods such as urban renewal, urban revitalisation or urban regeneration, which were often treated as synonyms for gentrification (Kennedy and Leonard, 2001: 5).

Future research could continue to bridge the gap between qualitative and quantitative measurement strategies by expanding the scope of the content analysis discussed in the current study to include other search terms such as urban renewal, urban revitalisation or urban regeneration. The incorporation of these terms may identify additional neighbourhoods and in turn increase the consensus among *The New York Times* and the census-based strategies. Further, it remains unclear whether the findings of the current study are generalisable to other cities. To address this, content analyses of media sources for other large cities such as those included in the Hammel and Wyly (1996) and Wyly and Hammel (1998, 1999) data base might be conducted to determine how well the identified neighbourhoods relate to sources that shaped the perception of gentrification in those cities.

Acknowledgements

Thank you to Samantha Friedman, Steven Messner, Glenn Deane, Joe Gibbons, Sarah Becker, Heather Rackin, and Sam Stroope for their insightful feedback on early drafts.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Notes

1. The median income for the city was used instead of the MSA because of the focus on New York City.
2. Freeman used metropolitan statistical areas, so this language was changed to match the focus on a single city.
3. Variables were also created that reflected the percent of neighbourhoods that gentrified according to each census strategy and the number of times a neighbourhood was mentioned by *The New York Times* for a given decade. The results of analyses that used these variables produced substantively similar results to those presented in the current study. These results are available upon request.

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