Abstract

This study uses the restricted IPUMS full count (100%) microdata and GIS techniques to document and investigate residential segregation of Asian-origin groups from Native-born Non-Hispanic Whites in the US metropolitans in 1940 giving particular attention to how segregation is influenced by individual characteristics such as education, income, nativity, citizenship, and ethnicity. A central goal is to describe the segregation patterns in detail and investigate the factors that shape segregation-determining residential outcomes in the era before the immigration reform of 1965 and thereby establish a conceptual and historical linkages to contemporary segregation studies. We anticipate the following findings: (1) In general, Asians were more segregated than other racial/ethnic groups in 1940. (2) Asians living in central urban area were more segregated than Asians living in the urban fringe and in the rural balance. (3) The level of segregation varies across different Asian subgroups (e.g., Chinese, Japanese, Filipino, etc.). (4) Consistent with spatial assimilation theory, higher income and education facilitate being less segregated and this effect is stronger for native-born Asians compared with immigrants.

The Residential Segregation of Detailed Asian Groups: Restricted Full Count Microdata in 1940

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Justified by concerns for the negative consequences for minority disadvantage in life chances associated with living in predominately minority neighborhoods, residential segregation has constantly been a central focus of sociology and demography. The theoretical and empirical literature dates back to the Chicago School which viewed segregation as the spatial expression of social distance and ethnic antagonism among groups (Park 1926; Park & Burgess 1925). Scholars have already examined white minority segregation in the U.S. metropolitan areas (Clark 1989; Duncan and Lieberson 1959; Farley and Frey 1994; Logan et al. 2004; Quillian 2002), in the process of suburbanization (Alba et al. 1999), and in a scope of housing policies (Trifun 2009). Some also extended segregation studies to spatial assimilation perspective revealing that racial groups have different capabilities of translating socioeconomic status into residential proximity with Non-Hispanic whites, with blacks confronting a greater difficulty

achieve residential proximity with whites than other racial minorities (Massey and Mullen, 1984; Massey and Denton 1985; South et al. 2005; Lichter et al. 2015).

In comparison to the voluminous literature on white-black segregation, the literature on Asian-white segregation patterns is relatively thin. Some studies merely focus on the general trend indicating that Asian segregation held steady and declined over decades insofar as Asian population has been growing constantly (Iceland et al. 2014; White et al. 1993). Denton and Massey (1988) found that Asian exhibit fairly low segregation level and they tend to be more successful than blacks in being able to convert their socioeconomic attainment to residential proximity to whites. Significantly, almost all of the quantitative studies of white-Asian segregation examine empirical patterns in the post 1965 era and little is known about whether or not, and if so in what manner, Asians lived apart from native-born non-Hispanic whites before the 1965 immigration reform.

Asian Americans, along with Hispanics, have been the two fastest-growing minorities over the recent decade. Asians currently comprise 6% of the U.S. population and this percentage is estimated to increase up to 14% in a half century (U.S. Census of Bureau, 2010) making the Asian population an increasingly visible and demographically important minority group. Therefore, Asian segregation patterns are of increasing interest and importance going forward. It also follows that, since contemporary segregation has its roots in a long history of Asian population presence in the United States, it is important to understand the levels and nature of white-Asian segregation before the 1965 immigration reform.

Lieberson (1980) argued that besides discrimination, the avoidance of living with compatriots with non-English language, distinctive cultural styles, and religion were contributing causes to residential segregation. Asian immigrants can be seen as unique due to being both racially and culturally distinctive in comparison with immigrant whites and native-born blacks. Early Asian immigration was response to the labor demand in late 19th century. Gold rush and railway construction in the West Coast needed a great amount of cheap labors. The major components of the Asian immigration wave are Chinese, Japanese, and Korean (Frey 2014). Asian immigration in that era was curtailed by the restrictive legislation of the Naturalization Act of 1872 and the Chinese Exclusion Act of 1882. Until 1943, the introduction of the Magnuson Act, also known as the Chinese Exclusion Repeal Act of 1943, Asian population remained roughly stable for most time. Asians were considered as "inassimilable aliens" before the 1965 reform (Klineberg & Wu 2013). Non-citizen Asians were not allowed to own and lease land. Some real estate contracts also prevent covenants from renting or selling homes to Asians (Takaki 1989). These aforementioned difficulties may convert to either discriminatory practices in the housing

market or a motivation for Asian to be pulled together by "voluntary choices".

The purpose of this study is to document and investigate Asian-white segregation in 1940. In 1940, only a relative small number of cities had significant Asian populations. Specifically, only the cities of Baltimore, Boston, Chicago, Cleveland, Denver, Detroit, Fresno, Kansas City, Los Angeles, Minneapolis, New Orleans, New York City, Philadelphia, Pittsburgh, Portland, Sacramento, St. Louis, Salt Lake City, San Antonio, San Diego, San Francisco, San Jose, Seattle, Spokane, and Tacoma had Asian populations of 300 or more.

More specifically, this study will describe the Asian-white segregation patterns and examine the factors in determining individual residential attainment in 1940. It will also illustrate the segregation patterns by making 1940 enumeration district maps. The following questions motivate our analysis include:

1. What are segregation patterns of Asians and native-born non-Hispanic whites? And, even more specifically, how do these patterns vary across different Asian subgroups?

2. Do patterns of Asian-white segregation vary across the urban core, the urban fringe, and the rural regions surrounding Sacramento? (This can be answered by segregation indices and GIS maps.)

3. How do individual level factors such as age, education, income, nativity, citizenship, etc. influence Asian-white differences in residential outcomes that ultimately determine segregation?

Methods and Data

The data is drawn from the restricted 1940 IPUMS 100% count data which is released by University of Minnesota. The detailed microdata provide many advantages over aggregate tabulations available in contemporary public census files. Two are of particular importance for our study. 1. Most segregation studies prior to 1940 were based on the aggregate tabulations for tract or ward level. The restricted micro data can reach the level of enumeration districts which are roughly comparable to census block groups in having total populations in the range of 600 to 3000. This lower level of geography is useful for obtaining more accurate segregation patterns (Fox and Fossett 2013). 2. This study will draw on new formulations of popular segregation indices (Index of Dissimilarity and Separation Index) in which index scores are obtained as a difference of group means on individual residential outcomes (Fossett 2017). This approach clarifies the linkages between individual-level residential outcomes and aggregate-

level segregation indices and additionally makes it possible to examine the role of both race and also non-racial individual level characteristics on aggregate segregation indices. A detailed microdata with accurate and integral individual information serves this approach well.

We will consider segregation as measured by two indices of uneven distribution: the Index of Dissimilarity (D) and the Separation Index (S). D registers the differential distribution of two racial groups – whites and Asians in this case – across parity and non-parity neighborhoods where proportion white in parity neighborhoods equals or exceeds the level observed for the city as a whole. S registers the quantitative magnitude of how groups differ in contact with whites and so provides a clear signal on whether whites and Asians live together in neighborhoods with similar racial composition or live apart from each other in separate neighborhoods where their own group is a majority (Fossett 2017). The difference of means formulations of the indices are calculated according to the following formulas which yield identical index scores as obtained by other better known formulas:

$$S = (1/W) \sum w_i \cdot y_i - (1/A) \sum a_i \cdot y_i \text{ , where } y_i = p_i$$

$$D = (1/W) \sum w_i \cdot y_i - (1/A) \sum a_i \cdot y_i \text{ , where } y_i = 1 \text{ if } pi \geq P \text{ and } yi = 0 \text{ if } p_i < P$$

where $p_i = w_i/(w_i+a_i)$ where "w_i" and "a_i" are the counts for Whites and Asians, respectively, in area "i" and $P = W/(W+A)$ where "W" and "A" are the city-wide totals for Whites and Asians, respectively. (Fossett 2017).

Linking segregation to the residential outcomes of individual white and Asian individuals makes it possible to investigate the determinants of segregation using is individual-level residential attainment analysis. In this approach we estimate individual-level regressions predicting residential outcomes for whites and Asians based on social and economic characteristics. The dependent variables and the non-racial individual-level independent variables to be included in the models are listed in Figure 1. Regressions will be estimated separately for whites and Asians. Then regression standardization and decomposition techniques will be used to establish how the observed level of white-Asian segregation can be attributed to the effect of group membership (i.e., race) net of non-racial characteristics, and to group differences in non-racial characteristics that shape residential outcomes that determine segregation.

Figure 1

Dependent Variable	Measurements
Individual Residential Outcome (y)	for S: $y_i = p_i$ for D: $y_i = 1$ if $p_i \geq P$ and $y_i = 0$ if $p_i < P$
Independent Variables	**Measurements**
Income	logarithm of household income
Place of Birth	Dummy variable each group
Urban or rural	"1" for living in urban area "0" for otherwise
Household type	"1" for owned "0" for rent
Household value	Logarithm of household value
Education	Years of education
Citizenship	"1" for citizen "0" for otherwise
Generations	"1" for first generation "0" for otherwise
Marriage	Married; single; etc.
Moving	"1" move within 5 years "0" otherwise
Age	Numeric variables

This study will also use GIS techniques to make historically accurate enumeration district maps of some selected cities (e.g. Sacramento, CA) in order to illustrate whether or not Asian groups live apart from whites. With the availability of historical ED maps, we can make the ED boundaries on a base map. Once attached with the 1940 summary of the composition of population, we can present the racial composition in each ED, illustrating the segregation patterns.

Expected Findings

Given that Asian's distinctive language, cultural, and religious background, they are expected to be more segregated than native-born black or native-born Hispanics. According to the spatial assimilation theory, however, native-born Asian will be less segregated than foreign-born counterparts.

We will also report segregation levels across different country origins.

Asian living in urban area may be more segregated than the ones in urban fringe.

People with higher income tend to be less segregated than lower income.

Reference:

Alba, R.D., Logan, J.R., Stults, B.J., Marzan, G., Zhang, W.Q., 1999. "*Immigrant Group in the Suburbs: a Reexamination of Suburbanization and Spatial Assimilation."* American Sociological Review 64: 446-460.

Becker, Henry J., James McPartland and Gail Thomas. 1978. *"The Measurement of Segregation: The Dissimilarity Index and Coleman's Segregation Index Compared."* Pages 349-353 in the Proceedings of the Social Statistics Section of the American Statistical Association. Washington, D.C.: American Statistical Association.

Clark, William A.V. 1989. "Residential segregation in American cities: Common ground and differences in interpretation." *Population Research and Policy Review 8:193-197.*

Duncan, Otis Dudley and Stanley Lieberson. 1959. *"Ethnic Segregation and Assimilation."* American Journal of Sociology 64:364- 74.

Farley, Reynolds and William Frey. 1994. "Changes in the Segregation of Whites from Blacks during the 1980s: Small Steps towards a More Integrated Society." *American Sociological Review 59:23-45.*

Fossett, Mark. 2017. *New Methods for Measuring and Investigating Residential Segregation.* Springer Series on Demographic Methods and Population Analysis.

Fox, Amber R. and Mark Fossett. 2013. "*Assessing the Impact of Spatial Scale in Segregation Analysis'* presented at the 93rd Annual Meetings of the Southwestern Sociological Association, New Orleans, LA, March 29.

Frey, W. 2015. Diversity Explosion: How New Racial Demographics are Remaking America. *Brookings Institution Press.*

Iceland, John, Daniel Weinberg, and Lauren Hughes. 2014. "The Residential Segregation of Detailed Hispanic and Asian Groups in the United States: 1980-2010." *Demographic Research 31:593-624.*

Klineberg, Stephen L. and Jie Wu. 2013. Diversity and Transformation among Asians in Houston: Findings from the Kinder Institute's Houston Area Asian Survey (1995, 2002, 2011). *Houston, Texas: Kinder Institute for Urban Research.*

Lieberson, Stanley. 1980. *A piece ofthe pie: Blacks and White Immigrants Since 1880.* Berkeley: University of California Press.

Lichter DT, Parisi D, Taquino M, Grice SM. "Residential Segregation in New Hispanic Destinations: Cities, Suburbs, and Rural Communities Compared." *Social Science Research. 2010; 39:215-230.*

Logan, John R., Brian J. Stults, and Reynolds Farley. 2004. *"Segregation of Minorities in the Metropolis: Two Decades of Change"* Demography 41:1-22

Massey, Douglas S. and Nancy A. Denton. 1987. *"Trends in the Residential Segregation of Blacks, Hispanics, and Asians: 1970- 1980."*American Sociological Review. 52: 802-825

Massey, Douglas S. and Nancy A. Denton. 1988. *"The Dimensions of Residential Segregation."*

Social Forces 67:281-315

Massey, Douglas S. and Nancy A. Denton. 1987. *"Trends in the Residential Segregation of Blacks, Hispanics, and Asians: 1970- 1980.* "American Sociological Review. 52: 802-825

Park, Robert E. and Ernest W. Burgess. 1925. *The City.* Chicago IL: The University of Chicago Press.

Park, Robert R. 1926. *The Urban Community as a Spatial Pattern and a Moral Order.* Chicago IL: University of Chicago Press.

Quillian, Lincoln. 2002. "Why Is Black- White Residential Segregation So Persistent? Evidence on Three Theories from Migration Data." *Social Science Research 31: 197-229.*

South, Scott J., Kyle Crowder and jermy Pais. 2008. "Inter-Neighborhood Migration and Spatial Assimilation in a Multi-Ethnic World: Comparing Latinos, Blacks and Anglos." *Social Forces 87:415-443*

Takaki, R. 1989. Strangers from a different shore: A history of Asian Americans. *Boston: Little Brown.*

Trifun, Natasha M. 2009. *"Residential Segregation after the Fair Housing Act."* American Bar Association 36: 14-19.

White, Michael J., Ann E. Biddlecom, and Shenyang Guo, 1993, "Immigration, Naturalization, and Residential Assimilation among Asian Americans in 1980*." *Social Forces 72: 93-117.*