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From the Editor

*The Florida Geographer* is the official publication of the Florida Society of Geographers and is distributed free to members of the society. It is a statewide journal, with coverage of social and physical geographical topics. Most, but not all, articles are related to the state or at least feature Florida figures as an important component.

Manuscripts are solicited from all who feel they have research worthy of dissemination. Authors should not be dissuaded from submitting articles for review because of format considerations.

Authors should submit the final copy of the paper on a diskette or a compact disc; articles may also be submitted via email as long as the total memory required does not exceed 3 megabytes. Word Perfect or Word files are preferred; if not possible, please save files in rich text format (.rtf).

Authors should also submit all final tables and figures electronically either embedded within the document, in JPEG, or in gif format; tables may also be submitted in Excel or Quattro Pro format. Please note that all images will be printed in black and white. Please include the figure (table) number and title, which should be centered at the top of each figure (table) and the source, which should be left flush at the bottom. Figure (table) numbers and titles should not be in all caps.

Headings, paragraphs, and references should be consistent in their style. In-text citations should be used; footnotes will not be accepted. Endnotes should only be used sparingly.

Please send manuscripts, comments, or questions to:

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The Florida Society of Geographers was chartered in 1964 as a non-profit organization for the purpose of furthering professionalism in geography through application of geographic techniques in all areas of education, government, and business.

The Society supports these objectives by promoting acquaintance and discussion among its members and with scholars and practitioners in related fields by stimulating research and field investigation, by encouraging publication of scholarly studies, and by performing services to aid the advancement of its members and the field of geography in Florida.

Since 1996 the Florida Geographical Alliance, whose mission is to support geographical education in grades K through 12, has paid for the publication and distribution of *The Florida Geographer*. All members of the Alliance receive the journal, and articles related to geographical education are enthusiastically encouraged.

The Society holds meetings once a year, usually in February. At this meeting, papers are presented and matters of mutual concern are discussed. Meetings are held in different parts of the state always include field trips to allow participants to gain first-hand knowledge through field experience.

The Florida Geographer (ISSN 0739-0041) is published annually, normally in the fall.

Persons interested in membership in the Florida Society of Geographers should contact:

Dr. Richard Zeller
Secretary-Treasurer
Florida Society of Geographers
1344 Jackson St.
Tallahassee, FL 32303

Regular membership is $10 per calendar year; student membership is $5. Membership includes a subscription to this journal.
Note to Readers

Herewith is the latest edition of the Florida Geographer. This spring edition is the result of a rather longer transition in editorship and institution than I had originally anticipated. The next edition will come out in fall, 2004, as per the usual timing well established by our immediate past editor, Dr. Mort Winsburg at Florida State University. We all owe Mort an enormous amount of gratitude for his hands-on editorship over the years. Mort good-naturedly and quite doggedly modernized the Florida Geographer both in style and content. He was avid in his pursuit of manuscripts—a pursuit that remains urgent—and when they arrived he ensured that they were evaluated in a timely and professional manner. Thanks, Mort, for all your often-ignored efforts on behalf of the Florida Society of Geographers. I only hope that I can fulfill my duties as the new editor of the Florida Geographer with such quality and professionalism.

Following in Mort’s footsteps, my goals as editor of the journal are essentially fourfold. First, I would like to ensure that all manuscripts sent for potential publication are thoroughly peer-reviewed in an appropriately double-blind manner. To this end, I will be calling on you members of the Society from time-to-time to help me in this task. The intent is to maintain and perhaps even increase the quality of the journal whilst ensuring that authors can count the publication of their manuscripts as, indeed, peer-reviewed. I intend eventually to announce percentage rates of acceptance for the benefit of both authors and readers alike.

My second goal is to increase the number of manuscripts sent for potential publication in the Florida Geographer. Hopefully, if I meet the first goal, potential authors will come to view the journal as a good second-, or excellent third-, tier peer-reviewed outlet for their research. In addition, I intend to pester you members of the Society to no end in pursuit of your, and your
students’, research. I really would like to underscore—as Mort did so often before me—that the Florida Geographer is a good, not just appropriate, outlet for research on Florida issues. Finally, in further pursuit of this goal, I intend to entertain manuscripts concerning regional issues of the Southeast and Caribbean, as well as Florida.

The third goal to which I aspire as editor is to increase the participation of geographers in K-12 institutions. I think all readers of the journal would benefit greatly from the publication of manuscripts concerning pedagogical and other geography-related issues at this level of education, particularly because geography is given such short-shrift in pre-University institutions. If I am successful in this regard, publication of such manuscripts may even generate greater communication between University and K-12 faculty interested in geography and geographic education.

My final goal follows directly from this last point concerning communication. I hope to vary the format of the journal—if enough manuscripts are forthcoming—to include not only full-length manuscripts, but also shorter “notes” or “discussions” on geographical issues of concern to the journal’s readers. This includes book-reviews, which I hope will be a continuing section in each edition. Please, then, consider the journal as a potential outlet for your shorter pieces, or for concerns/issues you may want to discuss with your geography colleagues around the state and region. While I do not intend the journal to become a newsletter, I do think that it could become a medium for reportage and discussion of things geographic to the benefit of greater scholarly communication all around. If this call catches your interest but you are unsure of the suitability of your potential contribution please feel free to contact me directly at my postal address, phone number, FAX, and/or e-mail address and we can discuss it further.

While these goals may seem ambitious, I think that I can reach them if we all increase our level of participation in the flag-


Kevin Archer, Ph.D.
Editor, The Florida Geographer
The purpose of this study is to examine how gender, ethnicity, and immigrant status differentiate the labor market experiences of Miami City residents. The emphasis is on the foreign-born population. I focus on the labor force status, occupations, and journey to work of White, Latino and Black immigrants in order to see how gender differences in their employment patterns compare with those of non-immigrants. The findings from the study generally confirm that minority immigrant women often differ from non-immigrant women both in their social and spatial access to employment relative to men.

Most immigrants in the United States reside in cities, and Miami city is an especially appropriate choice for examining the multiple influences of immigrant status, ethnicity, and gender on labor market outcomes because the city contains large numbers of immigrants, especially recent immigrants (see for example, Winsberg, 1994). Migration into Miami city has continued unabated since 1960 creating a rapidly growing Hispanic population. By 1970, the city of Miami became 45% Hispanic, rising to 56% in 1980 and 63% in 1990. According to Hartshorn, the ethnic shift that Miami has experienced in the past 30 years is unparalleled in the annals of American history (Hartshorn, 1992, p. 287). The city of Miami also has the largest share of foreign-born population of any large American city.

Ibipo Johnston-Anumonwo is an associate professor in the Geography Department at the State University of New York at Cortland.


16. The widely read Rand McNally atlas of early maps has a discussion of the Martyr map which notes its inaccuracies of distance, scale, and configuration, and attributes the map to Andrs Morales, a pilot and cartographer in the House of Trade at Seville. See, Nebenzahl, Kenneth, Atlas of Columbus and the Great Discoveries, Rand McNally, New York, 1990:60-61. An earlier work on early cartography by R. A. Skelton, contained as an Appendix to Cecil Jane’s treatise on Columbus’s log, discussed in length ten early maps, but imparts only four lines to Martyr’s map which he speculates was “perhaps from an original by Andrs Morales.” Jane, Cecil, and L. A. Vigneras, The Journal of Christopher Columbus, Bramhall House, New York, 1960:226.


The Florida Geographer

The prevalence of sex and ethnic segregation in the U.S. labor market is well known (e.g., Amott and Matthaei, 1991). Women and ethnic minorities, especially Blacks, Hispanics and Native Americans remain segregated into different occupations, typically the low-paying jobs of the labor market. Some urban geographers have examined the ethnic division of labor among immigrants. For example, Wright and Ellis (1997) analyze changes in the sectoral division of labor in Los Angeles between 1970 and 1990, and find that both immigrant status and ethnicity are significant in the allocation of workers into specific industrial sector of the urban economy. Another study comparing the socioeconomic characteristics of immigrants and non-immigrants in major entry point cities in the U.S., including Miami, underscored the different experiences of immigrants, but the study did not examine gender differences (Clark, 1998). In order to shed light on the impact of immigrant status on gender disparities in employment conditions, this study compares gender differences among the immigrant population with the non-immigrant population. The paper is organized into three sections. The first section is a brief background and rationale of the study. The second section describes the data and presents results of the analysis. The paper concludes with a discussion of the study’s findings.

Background and Rationale

Studies of gender segmentation in the labor market are numerous, as are studies of ethnic/race segmentation. And even though a growing number of studies jointly examine the dimensions of gender and ethnic segmentation, there are as yet few studies that examine the additional dimension of immigration on the gender and ethnic division of local labor markets. Upon arrival in the United States, immigrants from all ethnic backgrounds (like native-born Americans) operate within a segmented job market. Furthermore, the labor market experiences of immigrant
women are different from those of immigrant men (Gabaccia, 1992). As female labor force participation has risen, more research has been devoted to examining gender differences in several work-related conditions, including the journey to work. There is a robust literature in urban geography on gender differences in the journey to work and a growing literature on ethnic differences in women’s work trip behavior (e.g., Hanson and Pratt, 1990, McLafferty and Preston, 1991, 1992, 1996; Johnston-Anumonwo 1995), but very scanty research on the topic for the immigrant population. Are immigrant women and men likely to have dissimilar work trip behavior as has been observed for the majority native-born population, or will ethnic minority status blur the gender difference in work trip behavior?

The groundbreaking work by Preston et al. (1998) furnishes some of the first answers to questions on the interaction of gender, ethnicity, and immigrant status on geographical accessibility to employment. Although, the literature on women’s labor market experiences links the journey to work with patterns of occupational segregation (e.g., Johnston-Anumonwo, 1998; Hanson and Pratt, 1990), there has been little attempt to combine the reality of labor market segmentation with the locational accessibility of immigrants to their workplaces. Yet, Preston et al.'s (1998) study of how access to employment is associated with immigrant status shows that previously overlooked geographical factors, especially the journey to work, should be included with the more well-known socioeconomic characteristics when studying the occupational segregation of women in American cities. In fact geographical and mobility barriers may feature more prominently for immigrant women. But the geography literature on immigrants has not sufficiently examined the gender division of labor and the journey to work literature does not include sufficient analyses of the immigrant population. This study examines gender differences in occupations and work trips among Miami’s three largest landmarks on the map were not discovered until a much later date. The Freducci map is unrelated to Ponce de León’s voyage and is an incomplete and inaccurate depiction of Florida when compared to the contemporary cartography from which it was copied.

ENDNOTES


information and mixed with other geographical data from charts of a much later date than the postulated 1514 or 1515 date. And considering this later date, the Freducci map is then revealed as not only unrelated to Ponce de León’s voyage, but is an incomplete and inaccurate depiction of Florida when compared to the later cartography from which it was copied.

Conclusions
The reports of the early discovery of Florida and the adjacent North American shores prior to Ponce de León’s 1513 voyage by either John or Sebastian Cabot, the Corte-Real brothers, or Amerigo Vespucci, are without valid historical foundation.

The mainland shorelines, shown northwest of Cuba on the Portuguese/Genoese Cantino and Caveri maps, are a depiction of Florida, the Gulf of Mexico, and the lower eastern seaboard of the USA. The theories that the Portuguese/Genoese cartographers intended these mainland shores to represent the shores of eastern Asia, or the north shore of either Cuba or the Yucatan, are not supported with viable evidence.

The most likely candidate for the early significant discovery and charting of Florida, as recorded in the Cantino and Caveri maps, is a Portuguese exploration voyage of undetermined origin conducted well before Ponce de León’s epic 1513 voyage. The date of the Portuguese voyage is uncertain, but it would have been well before publication of the Cantino map (ca. 1502) and was probably conducted in the last years of the fifteenth-century.

The Peter Martyr map is an important tool for study of the history of early Spanish exploration and charting since it accurately shows numerous significant discoveries (including the Yucatan and Florida) that only appeared in New World cartography at a later date.

The generally accepted date of 1514 or 1515 for the Conte Ottomanno Vespucci map is too early as many of the islands or ethnic groups for the total immigrant population and also for the more recent immigrants.

Data Analysis and Results
The city of Miami is selected given its primacy in U.S. immigration levels. Of all U.S. cities, Miami ranks first in the country for its percentage of foreign-born population. Although for the country as a whole, just 8% of the population was foreign born in 1990, in Miami the figure was above 40% (Isbister, 1996). The study focuses on the central city of Miami rather than the Dade County metropolitan area because of the overwhelming concentration of ethnic minority groups in the central cities of U.S. metropolitan areas. In the Miami central city, 62.3% and 27.3% of the population are Hispanic and Black respectively (U.S. Department of Commerce, 1993). In terms of recent immigrant population, Miami ranked third in 1990 among eight cities in which half the immigrants who entered the United States in the 1980s resided.

The data examined is the U.S. 1990 census 5 percent Public Use Microdata Samples (PUMS). PUMS is appropriate because it is a detailed individual-level database with information on respondents’ socioeconomic characteristics, employment conditions, and their work-trip attributes (U.S. Department of Commerce, 1992). The PUMS data however contain no detailed information on residential or workplace location within metropolitan areas in order to protect respondents’ confidentiality. The variables included in the study are sex, race, Hispanic origin, employment status, occupation, place of birth, immigrant status, year arrived in the U.S., as well as transportation mode and the time spent for the work trip.

Only White and Black respondents (as specified in the census designations for ‘race’) who are sixteen years and older are selected. White respondents are then classified into Hispanic
Gender Differences in Employment Characteristics by Immigrant Status (percentages)

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The naming of the Florida Keys as Los Martires and the westernmost Dry Tortugas as Las Tortugas on the Freducci map (as well as on all other contemporary maps) can be traced directly to Ponce de León since he named them such in his log. The name Cambeia at the eastern end of the Keys is ascribed by Milanich in a leap of faith to be the Achecambey reported by Ponce de León. Cambeia is shown as a large elongated island in the vicinity of Key Largo. Juan Ponce had given the name of “Polo” to Key Largo on his eastbound passage through the Keys and simply lumped all the other smaller keys into the name Los Martires. Herrera reported that Juan Ponce on his hurried westbound return trip passed by an island called Achecambey (probably Matecumbe) before coming to Polo (Key Largo). Achecambey is probably one of Herrera’s several place names from later sources which he inserted into his account. Herrera’s source for the name is uncertain. The Indian name does not appear on other sixteenth-century maps nor does it appear in Fontaneda’s listing of numerous place names.

The Conte Ottomano Freducci map is generally given a date of 1514 or 1515 which is the reason for it being named as the earliest map of Florida and derived from Ponce de León’s 1513 voyage. This study indicates that both the date of the map and its source of data directly from Ponce de León’s 1513 voyage is questionable. A primary factor that mitigates against the map being derived from Ponce de León’s voyage is the fact that his extensive exploration of the southwestern coast of Florida is not shown. The Freducci map-making house in Italy was far removed from Seville which was the source of cartography related to Spanish discoveries. Accordingly, while the Freducci map could have contained some data indirectly obtained from Ponce de León’s voyage, it would have been late second or third hand.
Ponce was in the vicinity of one of the Berry Islands on the return trip, the old Taino woman he had picked up told him the island was named “Bahama.” She was probably referring to the general area rather than the particular Berry Island and Grand Bahama, as well as the entire Bahama chain, picked up the name at a later date.

The island named Cigueteo on the Fредucci map is correctly located and correctly named to be the present island of Eleuthera. Later maps such as the Turin (1523), Ribeiro (1527), Velasco (1622) (published by Herrera), as well as the Chávez rutter (1530) firmly identify the name Cigáteo (Cigueteo) as applied to Eleuthera. After sailing two days in a northwesterly direction from Guanahani (San Salvador), Ponce de León noted Eleuthera without identifying it or naming it, ostensibly because it only appeared on Spanish charts at a much later date.

The name “Beiminy” shown on the island west of the island of Abacoa can with confidence be traced to the “Beniny” (Beimeni) of the 1513 Ponce de León voyage. In September 1513 when Ponce de León decided to abandon his mission and return to San Juan (Puerto Rico) he sent Ortubia with Alaminos as pilot on a last ditch effort to locate the island of Beniny (Beimeni). Cruising in the central Bahamas, Ortubia found “a large island, cool, and with many pools and trees” and promptly declared it was Beniny. From Ortubia’s description and the area of his search, the island can be identified as Andros. Andros on early cartography is generally named Abacoa (Habacoa on the Juan de La Cosa map). The Spanish pilot Francesco Gordillo, identified Andros Island as Abacoa on several slaving voyages between the years 1514 to 1517. The Fредucci map shows Abacoa (Andros) accurately as an elongated island, oriented north-south, and located correctly on the Great Bahama Bank north of Cuba. Ortubia’s vain and unfounded assertion that Ponce de León’s Beniny was in the vicinity of Andros could be what produced the depic-
Comparisons of Gender Differences among Non-Immigrants and Immigrants

For the non-immigrant population, clear gender differences are observed across the three ethnic groups. Women are less likely than men a) to be currently working and b) to be unemployed—see Table 1 (the table does not include percentages of respondents who are not in the labor force). Characteristic patterns of occupational sex segregation are evident among the non-immigrant population. Non-immigrant women are more likely than men to be in sales/clerical occupations, but less likely to be in craft/repair or operative/industrial jobs. This pink-collar versus blue-collar occupational differentiation between women and men is customary. Interestingly, although African Americans are less likely than Whites and Latinos to have professional jobs, it is among African American professionals that a large gender difference exists. A much higher percentage of African American women than men are in professional occupations than is the case among the two other ethnic groups; but at the same time, far more African American women than African American men hold service jobs (38.4% and 22.6% in Table 1). While US-born White men are most heavily concentrated in professional jobs (43.2%),
Ponce de León on or about 21 May (1513) departed the Tortugas area in a northeasterly course to San Carlos Bay on the west coast of Florida, then in the period 15-21 June returned directly to the Tortugas. During this portion of his voyage he was never in sight of the Thousand Islands keys nor did he report them in his log. He did however report the offshore islands of Gasparilla, Captiva, and Sanibel (“some islets which were running out to sea”), and these prominent islands and the prominent San Carlos Bay (in which he anchored) and Cape Romano are not shown on the Freducci map. It should be noted that the western end of the Freducci map terminates in the northwestern end of Florida Bay before reaching Cape Romano on the southwestern coast of Florida. Juan Ponce spent twenty days on the West Coast of Florida just above Cape Romano where he had his pilot Antn de Alaminos sound and chart the large San Carlos Bay. Milanch relates the Isla de Matanca (Isle of the Slaughter) to Sanibel Island in San Carlos Bay, named Matanca by Juan Ponce for a battle fought on the island. The theory is appealing, but the location of the island as shown on the map is in the middle of Florida Bay and over 150 miles from Sanibel. The map clearly stops at the northwestern end of Florida Bay and does not include San Carlos Bay or Sanibel Island visited by Juan Ponce. The island of Ineda within the Thousand Islands cannot be related to the Ponce de León voyage either by name or location, however, the names of Guchi and Stababa shown just on-shore bear some resemblance to Indian names recorded by Fontaneda in his Memoir.26

Another prominent geographical feature that can be identified is Cape Canaveral with its off-shore reefs (or shallows) correctly located north of the St. Lucie Inlet and labeled “Punta de Arfices” (Point of Reefs). But Juan Ponce landed south of Cape Ca-

African American men are most heavily concentrated in operative/industrial labor jobs (31.4%), and the gender gap among US-born Blacks is also pronounced for operative/industrial labor jobs (31.4% of men versus 7.9% of women).

When the employment pattern of non-immigrants is compared to that of the immigrant population some significant differences arise. Most important of these is the fact that there is an increase in the gender gap for labor force participation levels. Across all three ethnic groups, the percentage of immigrant women who are working is much lower than the percentage of immigrant men (Table 1). The largest disparity is among immigrant Latinos and Latinas where 63.4% of men are working, compared to only 36.2% of the women. Unemployment levels of White and Black immigrant women are higher than for immigrant men. Except for White males, immigrant unemployment is higher than non-immigrant unemployment, with immigrant Blacks experiencing very high rates—12.1% and 15% for men and women respectively.

For those who are in the work force, there are key differences in the occupational distributions of immigrants and non-immigrants. Across all ethnic groups, the percentages of workers employed in professional/managerial jobs decline for immigrants of both sexes (when compared with non-immigrants), but there is a general increase in service occupations. In terms of gender differences, whereas the same percentage of non-immigrant Latino men and women work in service jobs (approximately 13%), foreign-born Latina women are significantly more likely than men to work in service jobs (29.1% versus 17.6%). Especially striking is the shift among the Black population with a change in immigrant status. Compared to US-born Blacks, a higher percentage of foreign-born Black men work in service occupations, while a much higher percentage of foreign-born Black women work as operators and industrial laborers. According to Table 1, the shift
is from 22% for male non-immigrant service workers to 32% for male immigrant service workers, and from 8% for female non-immigrant operators to 23% for female immigrant operators. Lastly, even though they are still less likely than men to work as operators, minority immigrant women are more likely to be operators--22% and 23% for Latina and Black female immigrants compared to 10% and 8% for the respective US-born population. Typical occupations of these immigrant women are assemblers or dressmakers and operators in the garment industry.

Lastly, gender differences are also evident among a subset of the foreign-born population--recent immigrants (i.e., those who arrived in the US after 1980). Recently arrived immigrant women have lower employment rates than recently arrived male counterparts (Table 1). The much smaller numbers of White workers represented in the sample for recent immigrants (N=51 men and 25 women) precludes conclusive commentary for recent White immigrants. One third of recent Latina immigrants and 42% of Black women are in service occupations. Foreign-born minority women in service occupations hold jobs such as hotel and house cleaners, food service workers, home health aides, and child care workers or related jobs that often support middle-class lifestyles. These findings about the comparisons of recent immigrants with all immigrants are similar to those of Clark (1998) who reports lower skill levels and incomes for immigrants in Miami compared to the native-born population, and even lower skills and poorer earnings for recent immigrants. However, the findings presented here shed additional light on the gender dimension. The final set of analyses concentrates on the journey to work of immigrant men and women--an aspect of immigrant work life that, as noted earlier, is still understudied.

**Figure 6**
Scaled detail from the Conte Ottomano Fredisce map showing the area representing Florida. Place names are typed from the Spanish script for clarity and placed in the same position as on the original map.

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This prominent inland geographical feature was discovered much later than Ponce de León’s 1513 voyage. The numerous small islands shown in Florida Bay north of the Keys (now...
ducci, another member of the map-making house. The Freducci map has been the subject of study by a considerable number of scholars, the most prominent being Giuseppe Caraci, Giovanni Uzielli, Osvaldo Baldacci, and David O. True, with lesser studies by Prowse, Ganong, Layng, and Hoffman. Morison and Scisco referred to the map in their accounts of Ponce de León’s voyage and the latest study is that by Jerald T. Milanich and Nara B. Milanich. Milanich’s theory is based on the premise that the Freducci map was made in 1514 or 1515 from the voyage of Ponce de León and therefore depicts his landfall site and geographical landmarks on his track along shore. Milanich’s theory is an incomplete work that cites and considers only a narrow selection of secondary sources friendly to his theory and does not cite or consider the many other recognized and accepted research papers written on the subject. Milanich’s attempt to correlate the names of landmarks on the map with the names and descriptions of geographical places where Ponce de León touched shore, as reported in Herrera’s summary of Juan Ponce’s log, is flawed by his lack of knowledge of geography related to sixteenth-century cartography. An example of this is Milanich’s conclusion from a study of the map that Ponce de León landed on one of the off-shore islands of southern Georgia. This conclusion is not supported with a rational argument, and Milanich fails to cite and is apparently unaware of the published research that has established Ponce de León’s landing in Florida as south of Cape Canaveral near Melbourne Beach.

A careful study of the Freducci map indicates that of the nineteen place names listed, only six can be directly related to Ponce de León’s voyage. The other thirteen place names can easily be traced to much later voyages and later cartography. And further, there are geographical features and islands depicted on the map that were not seen and charted during Juan Ponce’s 1513 voyage. Lake Okeechobee with the St Lucie River and inlet lead-
Among auto users, immigrant White and Latino workers all spend under 25 minutes for their commutes, but the average commute time of immigrant Black workers is over 25 minutes (see Figure 2). For the immigrant population, minority women in general, and Black women in particular, do not enjoy the relative convenience of short travel times that characterize the work trips of White women. Recently arrived White immigrant women in Miami spend only about 18 minutes. In addition, immigrant White women and Latina women spend a shorter time getting to work than the men, but recently arrived Black women have as long a commute as Black men. Recently arrived female and male Black auto users spend exactly the same time—29.2 minutes (Figure 2). This study’s finding for Black immigrant workers corroborates McLafferty and Preston’s (1991) study that noted the absence of a gender gap in the commuting times of Black workers. Figure 2 displays the ethnic/racial differences in travel time and highlights the case of Black female auto users in particular. Black female immigrants spend almost 5 minutes longer getting to work than Latina immigrants, and 9 minutes longer than White female immigrants. The racial disparity is even more among recent immigrants. Race remains a significant factor in the work-trip length of immigrants.

**Conclusion and Discussion**

To summarize, the non Black immigrants residing in Miami, and who use an automobile for their work trip, spend less time commuting between home and work compared to Black immigrant male and female counterparts. Different job locations vis a vis residential locations for the three ethnic groups could be responsible for this difference in the work-trip times. One possible explanation is that White, Latino, and Black immigrants live in different sub-areas of Miami City, but the PUMS data do not allow sub-area analysis. The findings point to both an automobile
only unexplored area north of Cuba in the area of South Florida and this placement probably influenced Ponce de León in seeking his goal of the wealthy land of Beniny (Beimeni) in that area. Martyr’s map represents the geographical knowledge of the New World in 1511 and before. While the map itself may have been unknown to Ponce de León, he (or his pilot, Antn de Alaminos) would have been privy to the same geographical knowledge contained on the map.

(Pointer 8) – Guanahani (San Salvador) is shown as the northernmost charted island of the Lucayan chain and lies correctly at 24 degrees latitude. The depiction of Guanahani at the extreme north end of the Lucayan chain suggests that Martyr was using Columbus’s chart as a reference for this portion of the map. After landing on Guanahani, Columbus turned south and west and all his recorded voyages were south of that point, so Guanahani would have been shown on his chart as the northernmost island of the Lucayan chain of islands. this also agrees with the map of Juan de La Cosa (Figure 1) which was derived from Columbus’s chart and shows Guanahani (Guanabana) at the north end of the Lucayans.

(Pointer 9 and 10) – These pointers illustrate the extensive Caicos Bank which contains the Caicos Islands, Grand Turk, and numerous smaller cays. In Ponce de León’s log the bank is referred to as “Banks of the Babueca” and Grand Turk (pointer 10) is referred to as “El Viejo.”

The annotated map in Figure 5 illustrates this relationship between the shorelines in Martyr’s 1511 map and the itinerary of Ponce de León’s 1513 voyage. Peter Martyr’s map together with the itinerary of Ponce de León’s voyage provides a particularly important tool for the study of Spanish exploration and charting of Florida shorelines and adjacent waters since it accurately shows numerous significant geographical discoveries that only appeared in New World cartography at a later date.

mismatch and a spatial mismatch between Black and non Black immigrants indicating that recent Black immigrants in Miami live in certain locations within the city that are more distant from their workplaces. Boswell and Cruz-Baez (1997) noted that even in 1990, the residential pattern of many Black families in Miami is a situation of spatial entrapment. A difference of 3 minutes for the one-way work trip (e.g., as is the case between immigrant Black and White men) becomes a 6-minute difference for the daily two-way trip and is the equivalent of at least 30 minutes over a 5-day workweek, which if multiplied by approximately 50 weeks in a year means 25 hours. In the extreme case, one can extrapolate the difference in excess travel time to almost 3 weeks of lost time that Black recent immigrant women spend longer than White counterparts. Spending several hours a year commuting more than non Black immigrants constitute a significant commute time burden for Black immigrants since it is time that could conceivably otherwise be spent on either an income-generating employment task or any discretionary activity.

When the findings about employment patterns are connected with the findings about the journey to work, this study shows that a high percentage of Black immigrant men and women in Miami are disproportionately concentrated in low status non professional jobs, and that Black immigrants are more likely than the two other groups to use public transportation for the work trip. Yet, even among those who do use an automobile, Black immigrants have longer commute times. The possibility arises then that, compared to non Black immigrants, many Black immigrant men and women in Miami are concentrated disproportionately in operative and service jobs, depend more on public transit to get to work, and even when they use a car, live in locations that are more distant to their jobs. This possibility of accessibility and locational barriers to employment has been examined and confirmed by Preston et al. (1998) in central locations of the New
York metropolitan area. Specifically, like this study, Preston et al. report that White immigrant women have better access to employment than minority immigrants. Similarly, Clark (1998) raises the possibility that a larger number of new immigrants in America’s entry point cities such as Miami are likely to have a more difficult time making the transition to self sufficiency.

This study of Miami, based on data that allows a detailed look at gender differences in employment among the immigrant population, reports the continuation of many previous trends related to gender and race/ethnic differences in employment. The findings show that workers in Miami, like workers across the US, participate in a highly gender and ethnically differentiated labor market. By including an analysis on commuting behavior, the study also provides additional evidence about the mobility constraints of minority immigrants. Minority immigrants expend more time than White immigrants do in order to get to work. One cannot understate the importance of transportation and location in the employment outcomes of minority immigrant women. It is especially striking that this analysis of immigrant women yields the same conclusion reached in the earliest works of McLafferty and Preston that inner city minority women who spend a lot of time for their work trips, relative to White women, experience a more insidious form of spatial entrapment. The results of this ethnic-specific comparison of immigrants and non-immigrants also lend weight to the convictions of feminist geographers that researchers need to recognize racial and ethnic differences among women as well as other demographic differences, in this case, immigrant status, in order to avoid promoting the myth of universal womanhood (Sanders, 1990; Gilbert, 1997). The study has demonstrated the interconnections and critical role of gender, race-ethnicity, and immigrant status as underlying factors in analysis of employment patterns.

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 generally thought of and pictured as one large island, when in reality it is five closely grouped islands separated by deep tidal channels. The Martyr map is thus geographically reasonably accurate in showing Andros as four closely grouped islands correctly located on the Great Bahama Bank. Andros Island is named Habacoa (Abacoa) on numerous maps dated later than the Martyr map. And an enigmatic large island named Habacoa appears on the Juan de La Cosa map located west of Guanahani (Guanabana) which would indicate that knowledge of this large island north of Cuba was known to the earliest pilots of the Indies.

(Pointer 5) – Los Cay and Guinchos Cay are shown correctly in the extreme south end of the Great Bahama Bank at about 22 and 23 degrees latitude. These two cays, on the southwestern edge of the bank and only about twenty miles off the coast of Cuba, would have been well known to slavers and other illegal adventurers who used the bank as a pathway to the northern Bahamas and possibly Florida.

(Pointer 6) – The extensive Great Bahama Bank is about the right dimension and shape and located correctly between 22 and 26 degrees latitude, but rather than running north-south, it should run north-northwest and south-southeast, and terminate just short of both Florida (Isla de Beimeni) and the eastern end of Cuba.

(Pointer 7 in Fig. 4, Pointer 5 in Fig. 5) – The large land mass named Isla de Beimeni Parte shown north of Cuba was Martyr’s depiction of an exotic land in Taino oral mythology. The Taino myth of this exotic and supposedly wealthy land was well known to the early conquistadors in the islands and would have been passed on to Martyr in their visits to Seville and the court. The Taino were probably referring to the Yucatan and the Maya, not Florida or islands to the north, and their mythology contained no mention of a fountain of youth commonly associated with Beimeni. Martyr placed the mythical land of Beimeni in the
Tilton established that the cape west of Cuba on the Martyr map was not the Yucatan, but was the Cape of Honduras by a comprehensive study relating configuration and toponym of Martyr’s map to the later maps by Reinels, Fgeducci, Ribero (Ribeiro), and Turin.

(Pointer 2) – The prominent peninsula at 20 degrees latitude is at the correct latitude and correct relative position west of the modified western end of Cuba and the right distance north of the Bay of Honduras to be the Yucatan peninsula. The 1508 Solis-Pinzón expedition traveled north along the Mexican coast after leaving the Bay of Honduras, but it is doubtful that they went north of Belize and reached the Yucatan or they would have noticed and commented on the prominent Maya buildings in the area of Tulum. This postulated peninsula could very well have come from the Solis-Pinzón voyage when, upon turning east after leaving the Mexican coast, their Indian guides would have told them that the coast continued north with a large peninsula that jutted out to the east. It is also significant that the Indian guides on the voyage had identified the area as “the Kingdom of Yucatan.” A controversial account by Pedro de Ledesma with the Solis-Pinzón voyage alleges they sailed as far north as the Yucatan peninsula, but this has been largely discredited.  

(Pointer 3) – The Tortugas keys (later officially discovered by Ponce de León in 1513) are depicted correctly as several small keys surrounded by a shallow bank and located north of the center of Cuba. This oversized circular depiction of the Tortugas is similar to that contained on later maps such as the Ribeiro (Ribeiro), Verrazano, Ramusio, Rotz, Santa Cruz and others. The latitude of 24 ½ degrees is accurate and both the latitude and longitudinal relationship with Andros Island (pointer 4) and San Salvador/Guanahani (pointer 8) are uncannily close.

(Pointer 4) – Andros Island is shown correctly on the extensive Great Bahama Bank at 24 ½ degrees latitude. Andros Island is


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latitudes on the western side of the map. When the latitudes were placed on the east and west vertical sides of the detail they did not agree and showed that the shorelines of Honduras and Mexico on the western side of the map were too far north. This is understandable as Martyr (or an unnamed cartographer under his direction), in assembling the several maps or charts from different sources, failed to align them properly. This error, which is common to other maps as well, was corrected by moving the pictured shorelines on the western side of the map detail down to a position where the latitudes were in line. This revised detail from Martyr’s map is shown in Figure 4. Relating the projected latitudes to known latitudes, and the extrapolated relative longitude to known landmarks, establishes the location and identifies the geographical landmarks indicated by the numbered pointers on the map.

(Pointer 1) – The previously discovered extensive bank, islands, and cape off the northeast coast of Honduras are shown correctly between 14 and 16 degrees latitude. Columbus first discovered the Honduras Bay islands in his fourth (1502) voyage at which point he turned south. This coast was later explored in the Solis-Pinzón voyage of 1508 which extended the discoveries further north. Martyr would have had access to the charts of both Columbus and Solis to picture the shoreline on the western or mainland portion of his map. While Martyr’s map leaves much to be desired for the perfectionist, the graphic presentation in this area is as good or better than those shown on later maps prepared by recognized professional cartographers. This cape (pointer 1) has been considered by most historians to represent the Yucatan since it is located in the correct position west of Cuba on the *uncorrected* Martyr map. However, the *corrected* realignment of the latitudes in Figure 5 clearly identifies this as the cape of Honduras. In independent research and using a different analytical approach, David W. Tilton arrived at the same conclusion.17
To test Martyr’s statement that he had accurately shown the location of new discoveries in the Indies, projected latitudes have been added to a detail of the northwestern portion of Martyr’s map (Figure 4). These latitudes were developed on the vertical edge of the chart by proven dead reckoning navigation procedures. Martyr’s map clearly shows the north shore of Española and the north shore of Puerto Rico for which the known latitudes and distance between the two can be found on a modern chart. From these three known factors it is possible to geometrically solve to obtain the fourth unknown factor. Then by geometric progression and dead reckoning extrapolation, a reasonably accurate latitude scale can be inserted on the eastern edge of the chart, which was used with confidence in identification of other unnamed landmarks. A similar exercise was used to establish the

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Figure 4
Modified scale drawing of the northwestern part of Peter Martyr’s 1511 map of the Indies. From an original in the Newberry Library, Chicago.
Introduction

The decennial redistricting process is often a bruising political battle between the two main parties to establish an edge in the political process that they hope will last for a decade. The redistricting battle changed after the Civil Rights era with the recognition that districts must be drawn to accommodate minority groups that have been traditionally excluded from government (Leib, 1998). The legal and political pressure applied by the federal government to empower minority groups treated them as essentialized groups with discrete membership and common goals. Many observers have referred to this as "strategic essentialism" - a conscious attempt to deploy racial categories (or other categories, such as gender or sexual orientation) for political gain (Spivak, 1988; Jackson and Penrose, 1993). This presumption of natural groups of common interest has rarely been valid, however, as close inspection of most ethnic or racial groups shows.

As political constructs, ethnic and racial groups are constantly contested and redefined by those who self-identify with that group. These shifting boundaries also are often heavily influenced by outside forces - as those not of the group but in power wield disproportionate ability to delimit and define groups to suit their needs, especially through seemingly objective processes like

by Andrés Morales, and of little importance to the history of discoveries in the New World. Throughout his Decades, Martyr discusses the voyages of Columbus, the Pinzóns, Solis, Hojeda, Juan de La Cosa, and others at length, and only briefly mentions Morales as making a survey and map of Española. It is an error and a misreading of history to attribute Martyr’s map to Andrés Morales as he was one of the lesser experienced and traveled pilots of the period. Some of Martyr’s information was hearsay or second-hand, but most was from first-hand contact which he was privy to, so he was in a commanding position to compile the map and have it drawn up by a court cartographer. Martyr was an admirer and confident of Columbus (a fellow Italian) so it stands to reason that he so confidently stated his map would show the “exact positions” of the islands and land because the data and detailed pilot charts would have come from Columbus and the other named experienced navigators who were on the scene.

The importance of Martyr’s map lies in the fact that it revealed the accurate location of several prominent islands and landmarks (including the Yucatan and Florida), and other geographical features that predated their reported discoveries and appearance on the official Padrón Real. Martyr was able to do this because he was not limited to the discoveries of official crown voyages, but could picture on his map all of the discoveries including those from unofficial, unreported, and often illegal voyages of unnamed pilots. Note that Martyr made no claim that his map was a “World Map” such as the crown’s official Padrón Real. Yet much of the criticism of Martyr’s map is based on undue comparison with the much larger and more comprehensive maps developed from or for the Spanish Padrón Real or the Portuguese Padrão. And it is quite apparent that Martyr’s primary interest was in the area north of Española and Cuba as that is where most of the newly discovered and unreported geographical features on the map exist.
glance appears to be inaccurate. Although most of Cuba is
grossly distorted, the early Spanish charting did provide a rea-
sonably accurate configuration of the shoreline at the extreme
southeastern end of the island. Using this true eastern end of
Cuba as a guide, the correct geographical size and shape of Cuba
from a modern chart has been superimposed on the Caveri map in
Figure 3. This revision to the chart illustrates the relatively accu-
rate picture of the early Portuguese charting of Florida. Notice
that the Yucatan is just west of Cuba, and Florida and the Keys lie
north of Havana, in a reasonably close conformance to actual ge-
ography of the area.

Those scholars who concede that the land mass follows the ac-
tual shoreline relatively close, propose that the resemblance to the
actual shoreline is just a coincidence. However, the close confor-
man ce to the actual geographical size and shape, and the true rela-
tive position of Florida to the Gulf of Mexico, Yucatan, Cuba,
and to the other known landmarks, makes this coincidence highly
unlikely. Later Spanish exploration and charting of the area was
to confirm these early coastlines as being remarkably accurate for
the time, when the state of the art of both navigation and cartogra-
phy is taken into consideration.

Unreported Spanish Discoveries on the Peter Martyr 1511
Map.

The Peter Martyr (Pietro Martire d’Anghiera) map was con-
tained as an insert in his *Decades de Orbe Nova [Oceani Decas]*,
published in Seville in 1511.\footnote{Martyr noted that “by studying
the little parchment map, you will also find the exact positions of
these countries and the dependent islands.”\footnote{Copies of the Martyr
map insert have long been separated from their parent document
and have been reproduced extensively in studies and popular lit-
erature on early cartography. Most of the published works on
early cartography treat the Map as only an inaccurate map, made
the census (Comell and Hartmann, 1998). Indeed, the census
plays a critical role in redistricting, which is why the redistricting
process takes place every 10 years in the wake of the most recent
census. The census categories for race and ethnicity are arrived at
in a highly political process involving the government and many
special interest groups (Robbin, 2000). Therefore, an objective
process to empower minority groups through greater representa-
ion in Congress is vulnerable to the potentially conflicting inter-
ests of those both inside and outside the group. While these inter-
ests do not necessarily have to conflict, the fact that they often do
can be seen in the various lawsuits that have proliferated during
recent redistricting attempts. As a result of these conflicts, legal
and political mandates to increase the number of majority-
minority districts have become difficult to implement in a manner
satisfactory to both of the major parties, and a complex set of
guidelines has emerged to mediate the partisan wranglings. The
issue of scale is of prime importance here, as determining whether
a "community of interest" exists at the racial/ethnic level or at
some other level is critical in evaluating redistricting plans. This
is evident in South Florida, an area with many ethnic and racial
groups vying for electoral power and two political parties that
seek to use the imperative of minority-majority districts to ad-
vance their own agenda.

Theorizing Communities of Interest

The literature on redistricting in recent years has often
centered on the idea of "communities of interest" and how to
identify them (Leib, 1998; Lennertz, 2000). A "community of in-
terest" is the commonly used term for the idealized region that the
redistricting process is supposed to uncover. This region is united
by its common interest, which theoretically differs from that of its
neighbors. This theorization of a community of interest encour-
gages the idea that they are compact and contiguous localities.
During the early 1990s, however, the US Department of Justice disclosed that it would be expansive in its definition of communities of interest, and thus allow (in fact, encourage) the creation of congressional districts that followed ethnic or racial boundaries instead of more broadly based electoral regions that tended to be white-dominated. Communities of interest have since become more difficult to define as a result of the 1995 Miller decision of the Supreme Court, which stated that although race could be a factor in creating district boundaries, it could not be the primary reason for a particular delineation (Leib, 1998). The importance of traditional redistricting principles, such as compactness, contiguity, and respect for existing (non-racial) communities of interest, were affirmed by the court at the expense of majority-minority districts. A community of interest has here been defined by the court as a territorial unit or region, and not as a racial group; this foregrounding of the traditional regional concept has been criticized by many political geographers as being too limited and unfair to racial groups that have been forced into non-traditional settlement patterns by historical and contemporary forces (Leib and Webster, 1998; Webster 1997; Lennertz, 2000; Moore, 2002).

The 2000 redistricting posed a fundamental challenge to the courts, state legislatures, and the Department of Justice. Pildes and Niemi (1993) argue that the challenge was to reconcile two sometimes contradictory dictates: the use of electoral systems that do not dilute minority votes (required by the 1965 Voting Rights Act) and the utilization of contiguous communities of interest as the basis of electoral divisions (required by the Gingles rule - a rule created by the Supreme Court to determine if individual districts dilute minority voting). Courts have since operationalized the idea of communities of interest by equating common interest with compactness (Webster, 2002). Nevertheless, politics are fundamentally bound into this seemingly objective process, as it...
The first European Charting of Florida

(April, 1500) when he wrote the letter which reads: “Regarding the site of this land, Your Majesty should request a world map, which is in the possession of Pedro Vaz Bisagudo, in which Your Majesty may view the site of this land [the Americas], although this world map does not certify whether this land is inhabited or not; it is an aged world map.” The “aged world map” which was in the hands of Pedro Vaz Bisagudo at the time, could well have been the prototype for the North American shores shown on Portugal’s Padrão and reflected several years later in the Cantino/Caveri world map followed by the Waldseemüller and other northern European copies.

The reason the enigmatic land mass on the Cantino/Caveri map has produced so many theories and controversy among scholars is because interpretation of early maps is far from being an exact science. The basic problem in interpretation of these early maps involves marine geography and hydrographic topography of the shoreline in question. This in turn requires a detailed understanding of the ability and expertise of these early pilots to express in words and graphically in charts the marine geography and topography of the shores they had discovered. Here it should be remembered that while the chart or map is viewed vertically as though from high above the earth, the pilot drew the chart by viewing the shoreline horizontally at eye level of the deck (or crow’s nest) of the ship.

A common error in interpretation of this portion of the Cantino/Caveri map is to consider the entire area as a depiction of the Florida peninsula. Actually, the Florida peninsula is only the extreme southern part, and the bulk of the coastline represents the eastern seaboard from about Cape Hatteras south to Florida. The southern tip of Florida with the depiction of the numerous small islands (Keys) and the Tortugas extending well into the Gulf of Mexico, is markedly similar to the depiction of Florida and the Keys contained in later sixteenth-century cartography, after privileges some alternatives and neglects others. For example, while Tip O’Neil is famous for his quip that "all politics is local", some academics have argued that for many African-Americans, politics is predominantly racial. Issues in one African-American neighborhood may be similar to those in another African-American neighborhood several hundred (or thousand) miles away. This has been referred to by some (Kelly, 1995) as the "transcendent community". Therefore, Kelly believes that the appropriate precinct for many African-American voters may be one with a majority of African-American voters, even if they are widely dispersed.

While GIS applications have made the process of redistricting easier in many ways (Florida sold 300 copies of a stand-alone redistricting program for $20 so that the public could submit their own maps) it has not de-politicized the process at all (Eagles, et al., 2000). In fact, redistricting is often referred to as the most political process in American government, because the electoral system itself is so vulnerable to partisan change (Gelman and King, 1994). The use of GIS technology to make district maps has made the creation of thousands of alternative maps possible, but only within constraints that political actors arrive at through a contentious process. The incompatibility of "traditional" district formulae (compactness, contiguity, etc.) with the requirements of the Voting Rights Act is only illustrated by GIS applications, not solved (Cirincione, et al., 2000). A resolution can only be found in the abandonment of the traditional view of what makes a good district in favor of a less territorial definition of a community of interest. A community of interest is, after all, one formulation of collective identity – one that is being elevated to political significance within the broader electoral context. The free-floating political nature of redistricting is the subject of Moore's analysis (2002):
This effort [the creation of districts through spatial analysis], in practice, is little more than an attempt at "Othering" certain types of districts drawn to remedy certain types of known unfairness, to undermine the credibility of those districts. Instead of analyzing redistricting plans and their effects within the totality of the specific social and historical context in which they are drawn, we launch witch-hunts for something we call gerrymanders, as if they were Frankensteinian monsters to be chased up medieval towers by torch-bearing mobs of spatial analysts. This illustrates how semi-territorial identities (i.e., identities that are less rooted in place, such as race-based districts) have been sublimated to traditional territorial identities (which must be compact and contiguous). Any alternative to the compact, contiguous territorial standard is deemed a gerrymander.

**Redistricting in South Florida**

Florida's 2002 legislature, dominated by the Republican Party in both houses, and backed by a Republican governor, controlled reapportionment. With the US House of Representatives teetering on the brink of Democratic control, the Republicans in the Florida legislature made every effort to maximize their seat total in the 2002 Congressional election to assist the national party. Florida was particularly important to the national effort because the 2000 census had found that the state population had grown enough to warrant two new seats in Congress. The creation of new districts provided additional opportunities for the Republican Party to gain seats.

After the creation of the new legislative boundaries several lawsuits were filed. The most important suit concerning the congressional boundaries was filed by the three African-American members of Congress from Florida, each of whom had
scholars, who infer that the cartographers tried to picture Columbus’s conception of Cuba as part of the mainland. R. A. Skelton has been the leading supporter of this theory and it is currently championed by Donald L. McGuirk Jr. Skelton blames Columbus for “confusing” the cartographer of the Cantino map by his insistence that Cuba was part of the Asian mainland. To support this view, he cites the 1513 German edition of Ptolemy which contains one of Waldseemüller’s maps showing a peninsula, patterned after the Cantino/Caveri map which contains the word “Cuba.” This strained reasoning reveals only that the German cartographers (who copied and enhanced Portuguese maps) were the ones who were “confused,” and not the knowledgeable Portuguese/Genoese cartographers who had first hand knowledge and showed the shorelines of Florida and the adjacent areas in their correct geographical location and shape.

The theory that the land mass on the Cantino/Caveri map is a depiction of the north shore of the Yucatan was first made popular by Henry Harrisse in 1892. This unlikely theory was revived by Edzer Roukema in 1965. Roukema in a strained analysis purports to show the similarity of the two shorelines, but that geographical similarity does not exist! The arid and smooth shore of the Yucatan is devoid of the numerous inlets and rivers shown on the Cantino/Caveri map, and the prominent island of Cozumel is missing. Yet Clinton Edwards in his recent essay contained in the reprint of Nunn’s book, in speaking of Roukema’s theory, states: “To my knowledge this has not been disproved categorically.” It seems unnecessary to “disprove” something that has not been proved.

The conclusion that the charting shown on the Cantino/Caveri map was by a Portuguese pilot, who visited the area some time before 1500, is based on several valid and cogent facts. The shoreline features adhere very closely to the actual marine geography when the sixteenth-century state of the art of both naviga-

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Total Black Hispanic and Black Non-Hispanic % of Voting Age Population

The Florida Geographer
his African-American constituency in Broward County by adding thousands of white voters in nearby Pembroke Pines (Clark and Reinhold, 2002). Republicans countered the charges by arguing that it was still a safe seat for an African-American candidate be-
for the purpose of discussion of the source of these geographical features, the Portuguese Cantino and the Genoese Caveri map may be considered as one.

A careful examination of the nearly identical configuration of the Cantino and the Caveri maps, indicates they were derived from a common source. And this common source was patently the Portuguese “Official” Padrão which was produced for the crown by the cosmographers, pilots, and cartographers in the large and influential Genoese colony in Lisbon. This Genoese colony was established by King Denis (ca. 1317) to oversee and administer Portuguese naval and navigational matters for the crown. This policy, which provided Genoese control of Portuguese cartography, was carried forward through the Infante Dom Henrique (Prince Henry the Navigator) to and beyond the Columbian era. The Portuguese crown’s World Map would have contained the geographical shorelines and place names derived from the smaller portolan charts of all Portuguese voyages of the period. An example of this procedure is that the geographical shorelines and place names from the Portuguese voyages of Goncalo Coelho (1501-02) and Fernando de Noronha (1503-04) are shown on the Genoese Caveri map although the portolan charts of the voyages did not survive.

Both the Cantino World Map of Portuguese origin, and the Caveri World Map of Genoese origin (but clearly derived from Portuguese sources) show a large land mass northwest of Cuba which closely resembles the East Coast of the USA from about Cape Hatteras to the southern tip of Florida. Historians are nearly evenly divided on whether the land mass northwest of Cuba on these maps depicts Florida or some other land. As indicated earlier, most of those who endorse Florida for the land mass do so because of their acceptance of the Vespucci theory. Those who endorse the Florida depiction on the map, but cannot accept the Vespucci theory, largely voice the noncommittal comment of, 

cause it was 50% Black in its census population. This shift in wording from "African-American" to "Black" is significant as it textually embodies the re-construction of "blackness" to suit the electoral needs of elected officials. While there may not have been a conscious effort to reconstruct these racial identities for political gain, it is important to note that the definitions of race are fluid enough to be shifted without intent through the unconscious selection of the definition that suits dominant interests best.

**Social Construction of Race**

Since the passage of the Voting Rights Act, gerrymandering in American academia and politics has usually referred to districting that is opposed to minority racial groups (it is only in the 1990s that gerrymandering has more often referred to the support of minorities). Historically, however, the term has often referred to redistricting for simple partisan advantage (Webster, 2002, Johnston, 2000). It is through the lens of partisan advancement that the issues of race and ethnicity must be viewed in redistricting issues. The Hastings suit is a good example. Recent advances in the way the US census is conducted have led to a more nuanced approach to race. Attempts to categorize residents according to race began with the first census in 1790 and continue to this day (Duncan and Shelton, 1978). Since 1850 ethnicity has also been a component of census categorization, which serves to reinforce the racial and ethnic boundaries that the census enumerates (Robbin, 1999). Thus, race has become (in part) constructed through the actions of the government. Beginning with the 1990 census there was both a racial variable (white, African-American, Asian, etc.) and an ethnic one (Hispanic, non-Hispanic). While not perfect, this is certainly an improvement on earlier schemes. It is here that disparate definitions of race become significant - each being the product of partisan difference, as Hastings's complaint
The Republicans argued that Alcee Hastings’s district was safe because it was still 50% Black. However, they achieved this number by adding together the African-American voting age population with the Hispanic Black voting age population. Democrats disputed this definition of "Blackness" because of voting differences between the two groups. African-Americans are typically Democratic voters in Florida (Herron and Sekhon, forthcoming) while Hispanic Blacks are more ambiguous in their loyalty to the African-American "community of interest" because they might choose to vote for a Hispanic candidate over an African-American one. Imagine a black Cuban-American; his or her "communities of interest" typically vote for rival candidates. It is unwarranted to believe that Black Hispanics will necessarily be the votes that put an African-American candidate over the 50% mark. Indeed, the African-American vote is also not as monolithic as it is often portrayed, especially in South Florida, where the so-called "Black" vote can be broken down into various self-identifying groups such as Black Hispanics and West Indians (West Indians cannot be identified as a distinct group in redistricting census statistics and therefore do not even figure in the redistricting debate). When these blocs are all added together they compose only 50% of the voting age population. An additional complication is the question of who should be counted in an analysis like this? Age structure, citizenship, and voter registration are all factors that figure into what is at root a political question. Also, how cohesive is such a group? If the group only comprises 50% of voting age population, legal voters, or whatever group is selected, it must vote as a totally solid block to elect the candidate of their choice. This issue was raised in the court case with conflicting information given by expert witnesses for both the plaintiff and the defendant:
macy to Vespucci’s claim that he sailed to the area of Florida by showing him on an inset containing a reduced drawing of the shoreline which included Florida, but there is no valid evidence that Vespucci made any contribution to the geographical shorelines shown on the map.

With the voyages of Cabot, the Corte-Real brothers, and the (alleged) voyage of Vespucci eliminated from consideration, the Cantino and Caveri maps are in line to be examined for evidence of the first discovery and charting of Florida, and the adjacent shores by European explorers.

The Portuguese Discovery and Charting of Florida, the Gulf of Mexico, and the Southeastern Seaboard of the USA.

The Alberto Cantino World Map and the Nicolo Caveri World Map are the earliest extant maps (circa 1502-05) to record what appears to be the shorelines of Florida, the Gulf of Mexico, and the lower East Coast of the USA. The Cantino map (ca. 1502) reportedly smuggled out of Portugal by Alberto Cantino for the Duke of Ferrera, Ercole d’Este, was ostensibly a copy of the Portuguese Official World Map (Padrão) maintained by the crown and containing all known (including secret) geographical knowledge to that date. The Cantini map was probably made for the Portuguese crown by the Genoese cartographers in Lisbon who had close ties to their compatriots in Genoa. The map was delivered to the Duke of Ferrera, not necessarily with the approval of the crown, but the commonly used term that it was “smuggled” hardly seems appropriate.

The Caveri map was made and published by Nicolo Caveri (Caverio), a Genoese cartographer with demonstrated close ties to the Genoese colony in Lisbon which was responsible for Portuguese cartography and chart making. It was this Genoese colony in Lisbon that spawned the cartographical works on the new discoveries that was to provide the prototypes and have such a pro-

On cross-examination, an expert hired by Republicans conceded he had exaggerated the likelihood of success for a popular black candidate in Hastings' newly drawn district.

Kevin Hill, a political science professor at Florida International University, treated all non-blacks as a group when figuring performance for a popular black candidate to produce a 51.1 percent edge in Hastings' district.

American University professor Allan Lichtman, who testified earlier for challengers, treated Hispanics separately from Anglos in his calculations and brought the margin down to 46.5 percent.

Anything below 50 percent calls into question the electability of a black candidate in the district. (Wilson, 2002)

In essence, the root question of the suit is this: what is the community of interest? To what scale can race be appropriately projected? The Republican Party argues that the African-American community of interest encompasses Black Hispanics because it uses them to create a majority. The Democratic Party argues that it is inappropriate to do so. These differing racial definitions are fostered by the differing partisan needs of the parties.

Latino Homogenization?

The creation of a congressional seat for Florida's burgeoning Latin population by the Republicans is well warranted by census statistics. The population of the state grew by 23.5% between the 1990 and 2000 censuses while the proportion of the state's population that is Latino or Hispanic increased from 12.2% to 16.8%. It seems evident that with the growth of Florida being disproportionately Hispanic that another one of Florida's congressional seats should be allocated to this sizable and growing mi-
nority. Currently two of 23 seats are held by Hispanics, following redistricting three of 25 will be Hispanic (or at least chosen by Hispanic voters).

Nevertheless, the census statistics themselves need to be problematized. In this instance the 2000 census has only recently reached the same level of nuance as earlier American censuses. Starting in the 1820s Latin American residents of the United States were classified by their country of origin, i.e. Mexican or Colombian. In 1850 however, the Foreign Miner's Tax initiated the government's practice of treating all Latin Americans as a group (Robbin, 1999). During this time the US census was directly serving the purposes of racial science, and as such it had no need for information differentiating between the races (Nobles, 2002). Thus, the US government did not recognize ethnic differences between members of the Latino population. Until 1951 the most specific the census got in ascertaining ethnicity was whether a Latino was "Mexican", "Central American", or "South American" (Robbin, 2000). Thus, while the recent conversion of the census to separate racial and ethnic categories is a step toward more subtle understandings of variations within the Hispanic population it still groups them into essentially two groups: white and black (Hispanics can pick any race on the form, but only 1.6% of the US Hispanic population picked American Indian, Pacific Islander, or Asian as their race - See US census, 2001). This likely indicates a historical practice in America of treating the white/black barrier as the fundamental racial division. The origin of Hispanic people was asked on the census form but it does not appear in the data used for redistricting by the Florida legislature. Indeed, Florida's Hispanic population is diverse in its geographic origin. The 2000 census found that 31% of Florida's Hispanics were Cuban in origin, 18% were Puerto Rican, 14% were Mexican, and the remaining 37% were from the myriad origins not specifically mentioned by the census questionnaire. This distribu-

ers. The cartographer joined these two widely separated and known lands with a conjectured shoreline of Asia, which interestingly enough conforms to the general south-westerly trend of Canada and the East Coast of the USA. It is this coincidental configuration that has spurred unfounded speculation that the Cabot, Corte-Real, Vespucci, or other voyages are reflected in this portion of the La Cosa map, but there is no substantive proof for these theories. It should be noted that while the Spanish discoveries in the south and the English and Portuguese discoveries in the extreme north are liberally supplied with geographical place names, such as would be used by a pilot, the speculative coastline between the two is devoid of place names.

One of the most widely accepted claims to the first discovery of Florida is that by Amerigo Vespucci. Amerigo Vespucci inferred he discovered the mainland as far north as the Gulf of Mexico, Florida, and the Chesapeake Bay in a 1497 patently fictitious voyage for which there is no archival record. Vespucci sailed on the voyage of Alonso de Hojeda to the Carribean (1499) and on Goncalo Coelho's voyages to Brazil (1501, 1503) as a gentleman volunteer (i.e. a paid passenger). It was the experience at sea in these three voyages that enabled Vespucci to conjure up his earlier fictitious 1497 voyage. Vespucci's published accounts of these voyages, in which he pictured himself as the captain and navigator, received wide distribution throughout Europe which readily earned him an undeserved reputation as one of the leading navigators in Europe.

In addition to help from his friends in the Spanish court, Vespucci's reputation was given a major boost by Martin Waldseemüller with publication of his 1507 World Map. None of Waldseemüller's work was original, as Asia and the Mediterranean were borrowed from Ptolemy, and the New World shores closely followed the Portuguese/Genoese Cantino and Caveri (Caverio) maps. Waldseemüller's map briefly gave a false legiti-
Hojeda (Ojeda) where he was killed in a skirmish with the Indians in 1509.

The shorelines and islands that extend from Cuba and the Bahamas south on the La Cosa map correlate to the voyages of Columbus, Hojeda and Juan de La Cosa, and the northern shorelines can be related to the voyages of Cabot and the Corte-Real broth-

Figure 1
Redrawn detail from Juan de La Cosa’s map of the New World showing Spanish, English, and Portuguese discoveries. Original is in the Museo Naval, Madrid.

1990 Hispanic % of Voting Age Population by Census Tract

1990 Hispanic VAP %
- 0 - 20%
- 20% - 40%
- 40% - 60%
- 60% - 80%
- 80% - 100%

The Florida Geographer
Claims of Voyages of Discovery that Preceded the Reported Voyage of Juan Ponce de León in 1513.

The 1497 voyage of John Cabot is reported to have reached as far south as Florida and the Gulf of Mexico but there is no sound or documented proof to support this theory. Peter Martyr and Richard Hakluyt in the sixteenth-century were the first to report the Cabot discovery theory and David O. True with Martyr and Hakluyt as a source is the latest to support this untenable theory.¹ The theory concerning John Cabot’s voyage is based solely on the unfounded and spurious braggadocio of his son Sebastian, and the fact that Juan de La Cosa’s Map of the New World (circa 1500) shows the British flag posted in five locations on what could be interpreted (or misinterpreted) as the east coast of Canada and the United States (Figure 1).

One cannot leave the Cabot voyages without a discussion of the contemporary Portuguese voyages of the Corte-Real brothers because claims of their alleged discovery of the eastern shores of Canada and the USA continue to surface. Gaspar Corte-Real and his brother Miguel Corte-Real, accompanied by other Portuguese ships and pilots, made a total of four voyages (1500-1504) to the area of Newfoundland during which the two brothers were lost at sea.² There is no valid historical foundation for the theory that the Corte-Real brothers reached the eastern seaboard and Florida.

The Cabot 1497 voyage and perhaps the voyages of the Corte-Real brothers are reflected in the Juan de La Cosa map which some historians see as the first depiction of the East Coast of the USA (Figure 1). The illuminated La Cosa map on ox hide, now in the Museo Naval, Madrid, is believed to be a later updated copy of the original map made in Cadiz in 1500. The La Cosa map is attributed to the well known Basque pilot by that name who accompanied Columbus on his first and second voyages, followed by three expeditions along the coast of South America with
The question of when Florida and the adjacent North American shores were first discovered and charted by European explorers has plagued historians from the sixteenth-century to date. Currently, Juan Ponce de León is generally accorded this honor in his 1513 discovery voyage, although there are claims that earlier illegal and unreported European adventurers may have sighted or touched the shores of Florida prior to 1513.

Documented evidence has indeed shown that well before Ponce de León’s 1513 discovery voyage, the unreported islands north of Española and Cuba, the shores of the Yucatan, the Gulf of Mexico, Florida and the lower East Coast of the USA, were explored and charted by both Portuguese and Spanish pilots and explorers. This early discovery of Florida and the adjacent shores is reflected in both historical accounts and early sixteenth-century cartography. But this documented evidence is unclear and has sparked controversy over who was the first recorded explorer to discover Florida. This study examines the several controversial accounts and theories of this first significant discovery and charting to eliminate those with no merit and provides a documented answer by a dialectical analysis of early documents and the related cartography.

Douglas T. Peck is an independent researcher.
erated such growth. Democrats, however, argued against the new district because it consisted of mostly Cuban-Americans, who as group are unique in that they vote primarily Republican. Florida already had two Hispanic Representatives from South Florida in Ileana Ros-Lehtinen and Lincoln Diaz-Balart, both of whom are Republican Cuban-Americans. Democrats claimed that the creation of a third seat in western Miami-Dade County was instrumental in a plan to elect State Representative Mario Diaz-Balart (Lincoln's brother) to Congress (Clark and Reinhold, 2002). In addition, Democrats argued that the growth in the Puerto Rican population, which far exceeded that of the Cuban community, is located primarily in Central Florida. Their claim was hampered by the argument, based on traditional redistricting principles, that the Puerto Ricans remain dispersed among several districts with strong white majorities. The issue for the Democrats here is not the usual complaint against gerrymandering (that the districts produced are "bizarre" or contrived). It is a complaint about the scale at which race and ethnicity is being applied to communities of interest. While there is debate about how much representation for minorities is appropriate (i.e., perhaps it would be more appropriate to redistrict so that minorities are necessary parts of any winning coalition in multiple districts rather than a majority in one), it is not unseemly that Hispanics should have three congressmen from Florida, given their proportion of the population (12% of the congressional representation for 16.8% of the population). However, that Cuban-Americans should have three seats would seem to be overrepresentation (12% of the congressional representation for 5.2% of the total population). 4

**Scaling of Race and Ethnicity**

Redistricting represents a process in which political geographers can explore the scaling of race. Delaney (2002) wrote that "Race and space intersect and condition each other, not only hori-


zontally but 'vertically' as well. Like race itself, scale may be an important device for inscribing or effacing difference: that is the politics of scale may be an important component of the geopolitics of race and racism more generally (p. 7)." While the scaling
of race has been extensively addressed regarding political movements in general (Smith, 1993; Silvern, 1999) and the scaling of politics has seen inquiry as well (Delaney and Leitner, 1996; Miller, 1997), little has been written regarding the scaling of race within the electoral system (a notable exception being Leib and Webster, 1998). The selecting of an appropriate scale at which to define race and ethnicity is critical in achieving electoral justice in the redistricting process. For an example, we need look only as far as South Florida, where the communities of interest have been defined as the essentialized identities of "Black" and "Hispanic" by the legislature. Is it electorally just that the three "Hispanic" gerrymandered seats in South Florida be held by Cuban-Americans who vote differently than two-thirds of their "community of interest"? Is it electorally just that Alcee Hastings should have his primary ethnic group (African-Americans) be only a plurality within his majority "Black" district? In both cases the nominal "community of interest" was prescribed by the Republican legislature (using white-centric racial categories) while more authentic communities of interest were ignored (in the Hastings case) or manipulated (in the Diaz-Balart case) for partisan political gain.

The cases in South Florida show how under-theorized this area is. The Legislature has simultaneously thrown the net of ethnic scale wide by including Hispanic Blacks and West Indians in Alcee Hastings's African-American district to have it equal exactly 50% "Black", as well as narrowed the scale of what "Hispanic" is by creating a district solely for Cuban-Americans and dubbing it a Hispanic seat in an effort to make it seem as if non-Cuban Hispanics have representation. A sense of scale is critical to fairly approaching communities of interest because otherwise scale will be subjected to partisan electoral pressures, as in this case. The court case sought by the Democratic representatives was thrown out by a panel of three federal judges (James, Derr, Mark. Some Kind of Paradise. Gainesville, FL.: Univ. Press of Florida, 1998, p. 80.


REFERENCES


ENDNOTES

1. Figure 1 shows the new congressional districts with the total Black voting age population. Hastings's district is the larger of the two predominantly black districts in southeast Florida.

2. Figure 2 shows the total Black voting age population by census tract for south Florida.

3. Figures 3-5 document the growth of a significant Hispanic population in central Florida, where much of Florida's population growth was centered between 1990-2000.

4. Figure 6 shows the percentage of registered voters per district that are Hispanic Republicans. While not synonymous with Cuban-Americans, the map of Hispanic Republicans illustrates the partisan nature of the Hispanic districts.
REFERENCES


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Portionate influence on the resulting culture and landscape. Largely concentrated in coastal locations, they helped determine the future of the most populous and best known part of Florida. Loyalists initiated many new or revived forms of economic activity such as large trading enterprises, plantation agriculture, cattle ranching, importation of slaves, commercial fishing, and wrecking. Florida would have been a different place without them.

The Caribbean flavor and links of peninsular Florida with the Bahamas and West Indies were certainly enhanced by their presence. Long before tourists, winter visitors, and retirees transformed Florida, the Loyalist influenced populations had given the peninsula a culture and a destiny different from the American South. Peninsular Florida’s emphasis on a water-centered lifestyle owes much to their contributions and was, in fact, anticipated by the primacy of the sea in their culture.

Cumulatively, Loyalist influenced populations form an impressive part of Florida’s total. Separated by space and time, their impact is far from uniform, but the aggregate population numbers are significant. Their importance, however, transcends mere numbers and rests, instead, on a landscape which mirrors Loyalist values and choices. A glance at the map suggests this result appears almost inevitable.

The evidence in support of the hypothesis is simply overwhelming. Cattle barons, legislators (Viele, 1993), judges (Curry, 1994), governors (Tebeau, 1988), historians, plantation owners, the descendants of slaves, pioneers of South Florida’s rocky soil (Mohl, 1987 and Derr, 1998), and many others created the Florida we see around us. They, and the Minorcans, were the first who came and stayed, and their imprint established a Florida landscape unique from all others.
fellow Bahamians. Both Cuba and the Bahamas were so near to the peninsula and the transportation facilities so good that it would have been surprising if these two peoples had failed to colonize the state (Figure 3). Prior to the enactment of American immigration controls, movement from the Bahamas to Florida proved cheap and easy, facilitating the “pull” of a stronger economy.

Bahamian immigrants and the remnant of Loyalists, who remained on the Florida peninsula, proved significant in shaping the character of Florida. They were the original English-speakers in almost every location where they settled, so they had a disprop-

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Figure 3

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Loyalist numerical impact was not limited to this remnant, because others arrived as the peninsula was settled. The white Volusia planters comprised a small group, but the slaves they brought with them were more numerous and helped perpetuate the Loyalist legacy. Riley cites Thomas Brown’s estimate that three thousand Bahamians deserted the islands for southern Georgia during the second Spanish period and many of them drifted farther south when conditions beckoned (Riley, 1989). Judge Curry’s family migrated to a small pre-Civil War Loyalist settlement in Manatee County (Curry, 1994). Mohl believes eight thousand Bahamians lived in Key West by 1892, and that 4,815 Black West Indians, almost all from the Bahamas, lived in Miami by 1920 (Mohl, 1987). Riviera Beach, according to Foster, had a population of eight hundred by 1939, most of them Bahamians (Foster, 1991). Migration to the Florida peninsula from the islands became significant in the 1830’s, and between 1900 and 1920, ten thousand to twelve thousand Bahamians, one-fifth the population of the islands, migrated. The progeny of all these population movements almost certainly equals or exceeds the present population of the Bahamas.

**Conclusion**

Florida proved attractive to Bahamian migrants for the same reason that Cuban refugees from Castro made the state their favorite destination. It was accessible, close, and filled with their
crops from rocky soil proved especially valuable in South Florida. They dominated the local Black communities and helped perpetuate Loyalist values and traditions, such as a traditional celebration of Guy Fawkes Day in Coconut Grove (Mohl, 1987).

A small pre-Civil War settlement served as a Loyalist enclave in Manatee County. Interestingly, at least some of these migrants, came from the small and marginal Loyalist community of the Mosquito Coast. The unique culture of the county partially bears their mark (Curry, 1994).

Rivera Beach, with its access to the open sea, attracted a group of working class Bahamian fishermen in the early years of this century. They were suspected of being racially mixed and relegated to a lower social position than the Bahamian migrants to the Keys. Respect for law, a high incidence of marriage within their group, a fervent Pentecostal faith, and deep pride in their British heritage were prominent characteristics (Foster, 1991).

Florida’s Loyalist experience presaged other movements to Florida. Loyalists began as political refugees, who usually reached Florida by migration. The Cuban refugees from Fidel Castro serve as a modern parallel. Who has the temerity to question their impact on Florida or the fact they represent a different cross-section of the Cuban people than their revolutionary compatriots? Both Cubans and Loyalist refugees frequently came from a richer, better educated background than their revolutionary compatriots. They have also forged separate subgroups based on class, race, and location in Florida, New Jersey, and elsewhere. Cuban Miami has a complete range of social classes and is a full partner in Florida government. Conversely, New Jersey Cubans form a niche community on the fringes of New York City which clearly lacks the complexity and clout of Miami.

Progeny of the original Loyalist remnant, no more than four hundred and fifty, who elected to remain on the peninsula, would today number but 16,500 to 30,000, if they married only


WHO LIVES NEAR DRYCLEANERS?
A GEOGRAPHIC ANALYSIS OF ENVIRONMENTAL INEQUITY IN HILLSBOROUGH COUNTY, FLORIDA

ATHANASIA FITOS AND JAYAJIT CHAKRABORTY

Introduction
The notion of equity in the distribution of environmental risk and hazards has emerged as a pressing social and scientific issue over the last decade. Growing concerns regarding the disproportionate exposure of minorities and economically disadvantaged groups to technological hazards have led to the rise of the environmental justice movement (Cole and Foster, 2001), formulation of public policy at the federal (Clinton, 1994) and state (Hart, 1995) level, and a flurry of empirical studies seeking to provide evidence of inequities in the distribution of hazards and risk. In order to determine if the principles of environmental justice have been violated, numerous case studies have analyzed the geographic association between the location of hazardous pollution sources and the racial or economic status of the surrounding population, at the national, regional, and local scale (see reviews by Cutter, 1995; Liu, 2000; Bowen, 2002).

The proliferating literature on environmental justice analysis has examined the distribution of various undesirable land uses such as hazardous waste disposal facilities (e.g., Anderton et al., 1994), municipal landfills (e.g., U.S. General Accounting Office, 1995), Superfund sites on the National Priority List (e.g., Hird, 1994), coke production plants and oil refineries (e.g., Gra-

Augustine or on large holdings in the countryside, where they exercised an important commercial role in Spanish Florida. Accommodations in matters such as religion were sometimes made by them and they were usually treated with deference by the colonial authorities. They continued to exercise important leadership roles in American Florida. Both the small farmers and the Loyalist elite received additions to their number by return migrations from the Bahamas, Georgia and elsewhere (Johnson, 1989). Zephaniah Kingsley, the well known slave trader and smuggler of the St. Johns, represents an important example of an addition to the colonial elite of a return migrant (Bennett, 1989). The tide of migration varied with local and international conditions.

A small group of planters and a much larger group of their slaves returned to the sugar plantation area of Volusia, beginning in the 1790’s (Boyd, 1951). Perhaps, this group preserved the strongest sense of their British identity. Their enclave maintained an almost Caribbean atmosphere and close ties with the British Empire. They certainly created the most important center of commercial agriculture in Spanish Florida and the American territory which followed (Strickland, 1963).

Large numbers of poorer white Bahamians deserted the Bahamas for Key West, starting in the 1830’s. They were church-going and followed such traditional vocations as wrecking and turtling (White and Smiley, 1963; Vielle, 1996). When Key Largo was settled, mahogany cutting and boat building, customary Bahamian trades, served as initial economic activities. Later they grew Bahamian style commercial crops like pineapples, tomatoes, melons, and key limes (Windhorn and Langley, 1974). Their contribution to the development of an entire Florida region remains clearly evident.

Black Bahamians migrated in large numbers to Key West and Miami. Their labor helped build the infrastructure of the Florida Keys and the lower East Coast. An ability to produce
proved more decisive in the end than old hatreds, and real cultural differences were less important than the bonds of a common language.

The most numerous group of Loyalists remaining in East Florida, the small farmers, faced many challenges. Ties with the nearby American community remained stronger than those maintained by other Loyalist populations. Further, that population of Loyalists contained a higher percentage of persons born in America, than Bahamian Loyalists did. One of the reasons they initially chose to remain in East Florida was the existence of greater ties to their former homes (Parker, 1990). In any event, their relatively speedy incorporation into the larger American culture seems to have been more complete and to have occurred earlier. This small group of typical Southern backlands people, who remained on both sides of the Florida/Georgia border, had few slaves. When opportunity presented, they spread through the whole of peninsular Florida (Parker, 1990). Central Florida’s most famous cattle barron, Jacob Summerlin, owner of fifteen thousand head of cattle shortly after the Civil War, helped shape a Florida way-of-life and signals the importance of descendants of these backlands pioneers in shaping modern Florida (Brown, 1997 and Brown, 1991).

Many of the prominent descendants of the Loyalist remnant of East Florida remained conscious of their heritage for well over a century. Francis Philip Fleming, Florida’s governor 1889-1893, and his family, descendants of British East Florida’s richest and most powerful remaining settler, Francis Philip Fatio, long resided at the same location on the St. Johns (Willis, 1985). Julien C. Yonge, patron and inspiration of the well-known Florida historian, Rembert W. Patrick, is equally worth mentioning (Patrick, 1954). Their activities as shapers of opinion and values contributed to the development of the whole Florida community.

These prominent and powerful individuals remained in St.
not examined the location pattern of drycleaners with respect to the socio-demographic characteristics of potentially impacted neighborhoods. Accordingly, the objective of this article is to analyze the geographic distribution of drycleaning facilities and their environmental justice consequences at the metropolitan level, based on a case study conducted in Hillsborough County, Florida. Our specific goals are:

- to identify the general demographic and socioeconomic characteristics of neighborhoods that contain drycleaning facilities;
- to examine the environmental inequity hypothesis, by determining if drycleaners are located in areas containing a disproportionately high number of minorities and low-income individuals, compared to the rest of the county.

Our analyses are based on information from the U.S. Census of Population and Housing (2000). The methodology includes a combination of conventional statistical measures and geographic information systems (GIS)-based techniques that are consistent with methods used in prior empirical studies of environmental justice. We also provide a comparative assessment of the analytical approaches commonly used to examine the environmental injustice hypothesis.

The Study Area

Hillsborough County, Florida, represents the study area for our metropolitan-scale analysis of drycleaner locations. This county occupies approximately 1,074 square miles on Florida’s west central coast, with a population of 998,948 (U.S. Census of Population and Housing, 2000). The county seat and the largest city is Tampa, which accounts for more than 30 percent of the county population. Several factors and characteristics make Hillsborough County an appropriate study area for this research. Almost one-quarter of the county population is non-White and 18

Northeast Florida includes the areas first populated by Loyalist and Bahamian refugees, but the Bahamian presence is more notable today in such South Florida communities as Riviera Beach, Miami, and the Florida Keys (Figure 1). Colonial America was a coastal and maritime land and Loyalist culture reflected that condition (Cusick, 1991). As noted, the sojourn of many Loyalists in the Bahamas magnified that orientation. Today much that seems uniquely Floridian is actually that tradition written large.

Loyalists faced hard choices and difficult times in Canada, Florida, and the Bahamas (Wynn, 1987). Survival forced them to employ otherwise questionable methods (Riley, 1989). Bahamian wrecking and smuggling should be seen in that light. Incongruous as these two activities may be to their lifestyle, Bahamian immigrants earned their reputation for religiosity, respect for law, and preference for structured society (White and Smiley, 1959). The presence of these elements in the society of English-speaking Canada is hardly fortuitous (McGreevy, 1988).

All the North American Loyalist populations served, ironically, as cat’s-paws for the United States. Because they spoke English and retained common cultural links with their former countrymen, American statesmen sought to use them to influence events in America’s favor (Smith, 1983). Even though they frequently resented republican America and gradually shaped a distinct culture, individual Loyalists returned to the old country in a steady flow and adapted to the new American way (Calhoon, 1973). When the border of the United States advanced to include a whole Loyalist population, as at Natchez, Mississippi, they quickly became part of the general population (Pratt, 1957). It is hardly surprising that for a long time Americans regarded Loyalist populations as an excuse to annex the lands they held and, in fact, they always served as potential advance guards of American civilization (Norton, 1972). Cultural distance, or the lack of it,
olution, most of it was lightly populated Indian country (Figure 1). Only the portion of Northeast Florida largely east of the northward flowing St. Johns River, and extending north from the New Smyrna plantation region, formed the settled portion of the colony. There and just across the border in Georgia an important Loyalist remnant remained, soon to be joined by the first return migrants (Figure 2). Later, after American annexation (1821), descendants of Bahamian Loyalists and their slaves began a series of movements to the Florida Keys and points on the southern coasts of East Florida (Anderson, 1996).
chemicals in this region (e.g., Stretesky and Lynch, 1999; Chakraborty, 2001; Griffith, 2001). More empirical research, however, is necessary to document the geography and environmental justice consequences of less apparent pollution sources (e.g., drycleaners) that are not perceived to be as hazardous as other environmental disamenities and facilities.

Data and Methodology
The names and addresses of all drycleaning facilities in Hillsborough County were obtained from Florida Department of Environmental Protection (DEP)'s drycleaning program database (2003). For the GIS-based analysis, U.S. Census TIGER/Line files (2001 version) were used to create a digital representation of street centerlines and relevant census boundaries in the county. Using the address-matching functionality of GIS software, the location of each facility was geocoded to the street network of the county, based on street address information.

Following the “spatial coincidence” approach (Sheppard et al., 1999; p. 20) used in prior environmental justice studies, our basic methodology consisted of comparing the characteristics of the population in neighborhoods that contain drycleaning facilities with characteristics of the population in other neighborhoods that do not contain such facilities. It should be noted, however, that considerable debate exists over the geographic definition of ‘neighborhood’ boundaries for environmental justice analysis (McMaster et al., 1997; Williams, 1999). Several scholars argue that the census tract represents the most appropriate analytical unit for this work (e.g., Anderton et al., 1994), while others recommend a finer level of spatial resolution (census block group) for analyzing a single metropolitan area or county (e.g., Sheppard et al., 1999). Recent research suggests than an empirical study based on one particular areal unit cannot produce a reliable indication of environmental inequity, because the analytical results

Variations of Time and Place
East Florida at the close of the Revolution included all of peninsular Florida and what became, after American annexation, the plantation world of Middle Florida. At the time of the Revo-
that the Loyalist and Bahamian impact was of importance to the development of peninsular Florida and that Loyalists and Bahamians influenced Florida more than any other state. The Loyalist and Bahamian contribution has long rested in relative obscurity. The king’s supporters were political refugees and displaced persons before the terms were invented. Shared experiences gradually gave them many common attitudes and traditions (Calhoon, 1973). Cultural links with the Patriot party in the United States were severed and ties with British culture strengthened. They became a distinct people in their primary refuges of Canada, the Bahamas, and Florida.

Loyalist groups formed peninsular Florida’s English speaking population during the second Spanish administration (1784-1821) (Wright, 1975). They preserved the legacy of British East Florida (1763-84) which, although of short duration, laid the foundations of modern Florida’s agriculture, commerce, racial attitudes, and ethos. Loyalists founded a trading empire, established a cattle industry, imported slaves, and created a coastal enclave of sugar plantations.

The Bahamas were also integral to the Florida Loyalist tradition because they were one of the primary refuges of the peninsula’s Loyalists (Craton, 1986). Even more importantly, the Bahamas became the source of almost all of the return migrations of Loyalists, their slaves, and their descendants. Bahamians had been forced to adapt to their island environment and Bahamian conditions influenced both their attitudes and events in Florida. They became a more maritime people, who viewed Florida’s coasts as mere extensions of their own watery world (Saunders, 1983). The effort to coax vegetables, fruits, and crops from the rocky soil of the Bahamas shaped them for a similar struggle with South Florida’s rocklands (Sealey, 1985). Florida and the Bahamas are so linked by these ties that it is impossible to completely understand one without reference to the other.

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Figure 1. Drycleaner locations and census tracts by percentage of the population non-White, Hillsborough County, FL.

are affected by the nature of data aggregation (Sui, 1999). Instead of selecting a single geographic unit, we used both census tracts and block groups in this study to estimate the socio-demographic characteristics of the areas in which drycleaners have located. Population and housing information for these enumeration units in Hillsborough County were extracted from the 2000 U.S. Census Summary File 3 (STF 3).

It is important, however, to consider the limitations associated with the use of census units to represent the spatial extent
and shape of the neighborhood around a drycleaner. This approach fails to account for potential boundary or edge effects (Basu and Chakraborty, 1997). These effects deal with the possibility that a drycleaning facility could be located so close to the edge of a census unit that its immediate neighborhood includes portions of other surrounding units. A resident in a census tract containing a drycleaner, for example, may live farther away from the facility than another person in an adjacent tract that does not contain any drycleaners. In addition, the pollution generated by a

Figure 2. Drycleaner locations and census tracts by percentage of the population below the poverty level, Hillsborough County, FL.

ponderance of the human element in this study and its somewhat subjective conclusions.

Background

Florida is the fourth most populous state in the United States. It possesses a unique culture, character, and history. Seemingly endless, sun-washed beaches have lured millions of visitors and residents to a landscape starkly different from any other part of the United States. Dramatic and continuous population growth change and mask the peninsula’s original character. Understanding that unique combination of people and place becomes ever more difficult. However, the state’s solitary character and commanding position within the nation render the effort to understand the real cornerstone of modern Florida well worth the effort.

Loyalists and Bahamians are that cornerstone. During the American Revolution, many individuals and groups came, in one degree or another, to be identified with the cause of Great Britain. Peninsular Florida, or East Florida as it was then called, remained behind British lines for the whole of the war and almost the entire population of the region could properly be identified as Loyalist. Many other Loyalists fled from the South during the war years and joined the king’s friends in East Florida (Wright, 1975). After the war, the second largest group of Florida based Loyalists sought refuge in the nearby Bahamas (the largest group returned to the United States) (Troxler, 1981). Many Loyalist influenced Bahamians later returned to Florida in a series of distinct migrations (Anderson, 1996). These varied groups of Loyalists and Loyalist influenced populations changed peninsular Florida and this study attempts to weigh their impact.

Here the Loyalist and Bahamian economic, political, and cultural contribution to peninsular Florida is placed in perspective, especially to the vital coastal areas. Data supports the claim
Fernand Braudel and his colleagues of France’s famous Annales school are pertinent to the methodology and texture of this work. Annales scholars employed a cross-disciplinary approach and statistical tools to define time and place (Burke, 1990). Geography was but an element which was subsumed into a broader, more scientifically based, history (Braudel, 1976). Modern historical and geographic thought have been profoundly influenced by this approach and the author is indebted to them for their inspiration.

Regionalism has evolved over time. My introduction to the field, many years ago, was the widely used treatment of Latin America by Preston James (James, 1959). That study, typical of an era in geography when comprehensive studies of large regions were common, provided a logically and systematically organized view of a region’s physical and human geography. James’ model has been muted by changing tastes in geography and has little to offer for this effort.

Jean Gottman’s geographies brought to regionalism the same methodology and set of assumptions employed by Fernand Braudel (Gottmann, 1962). Historical developments and statistical analysis were used, as in the work of Braudel and his Annales colleagues, to provide a more multi-faceted and individually shaped regional explanation. Physical geography assumed a less commanding role and impressionistic treatments became more common (Gottmann, 1964).

Symbolic of the growing presence of other disciplines in the field of regional studies is the preeminence of the historian David Hackett Fischer. His study of the transfer of British regional folk traditions to discrete parts of North America defines and explains regional differences in the eastern United States. Physical geography is largely absent from his concerns and his regions are rooted in human variation. Boundaries are subtle, but real (Fischer, 1989). Fischer’s example helps explain the pre-

drycleaner is unlikely to be restricted to the boundary of the census unit hosting the facility.

To address some of these limitations, an alternative circular representation of the potentially impacted neighborhood is also provided. In this application, proximate populations are defined as those residing within a predefined distance from the drycleaning facility and the spatial buffering capabilities of GIS software are used to construct a circle centered at each facility. Several environmental justice studies have used such GIS-based circular buffers around different pollution sources to identify areas and population at risk (e.g., Newmann et al., 1998; Perlin et al., 1999; Sheppard et al., 1999; Chakraborty, 2001). Because considerable uncertainty exists regarding the selection of the buffer radius, we use three distances to construct circular buffers around each drycleaner location: one-quarter (0.25) mile, one-half (0.5) mile, and one mile. We assume that neighborhood boundaries and the pollution generated by a facility are unlike to extend beyond a mile from the drycleaner location. These distances are also consistent with the radii of circular buffer zones used in previous environmental justice studies conducted in other metropolitan areas (e.g., Glickman, 1994; Sheppard et al., 1999).

Results

Drycleaning facilities can be found in approximately 31 percent of the 249 census tracts and 12 percent of the 795 block groups in Hillsborough County. Figures 1 and 2 depict the geographic distribution of these facilities with respect to the non-White population and individuals below the poverty level, respectively, at the census tract level. These maps indicate drycleaners are located primarily in the urbanized areas; in the city of Tampa, in the suburban north-central region of the county, and in Plant City in the east. Few facilities are within census tracts that are predominantly non-White or contain a high percentage of impov-
erished residents. The maps indicate that a majority of drycleaners are located near the boundaries of their host tracts, and several facilities are located at the edge, between tracts that have very different racial and economic characteristics.

Spatial Coincidence Analysis
The first phase of the quantitative analysis focused on estimating and comparing selected characteristics of census enumeration units that contain drycleaners to the characteristics of corresponding units that do not host such facilities. The statistical significance of the observed disparities were analyzed using a t-test for a difference of means. Table 1 summarizes the group means and t-test results for the variables examined in our study, based on both census tract and block group level data from the 2000 U.S. Census. Our results suggest that the racial, ethnic, and economic characteristics of neighborhoods containing drycleaners are similar to those in neighborhoods without such facilities. No statistically significant differences were observed between the average proportion of non-White residents, persons of Hispanic origin, or individuals below the poverty line in census units with and without drycleaners. The average proportion of the younger and elderly population in tracts and block groups containing drycleaners

<table>
<thead>
<tr>
<th>Variables</th>
<th>Census Tract Means</th>
<th>Block Group Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population density</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-White (%)</td>
<td>26.2</td>
<td>24.9</td>
</tr>
<tr>
<td>Hispanic origin (%)</td>
<td>13.2</td>
<td>13.4</td>
</tr>
<tr>
<td>Below poverty level (%)</td>
<td>18.9</td>
<td>16.5</td>
</tr>
<tr>
<td>Age 65 years (%)</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Age 18 years or younger (%)</td>
<td>24.5</td>
<td>23.7</td>
</tr>
<tr>
<td>Owner-occupied housing units (%)</td>
<td>56.7</td>
<td>64</td>
</tr>
<tr>
<td>Median income ($)</td>
<td>30,703</td>
<td>30,971</td>
</tr>
<tr>
<td>Median rent ($)</td>
<td>641</td>
<td>662</td>
</tr>
<tr>
<td>Cases (N)</td>
<td>77</td>
<td>172</td>
</tr>
</tbody>
</table>

* p<.05; **p<.01.


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Circular Buffer Analysis

Census tract or block group boundaries, however, may not be appropriate for representing potentially impacted neighborhoods if polluting facilities tend to locate near the edges of these units. Figures 1 and 2 indicate, for example, that few drycleaners in our study area are located at the center of the census tract hosting the facility. A more detailed examination reveals that: (a) almost 80 percent of drycleaning facilities in the county are located on or near the boundary of their host census tract; and (b) more than 90 percent of the facilities are very close to the boundary of their host block group. These results clearly demonstrate the need to address edge effect problems by using circular areas to define proximate areas and populations around the drycleaners.

The next phase of our analysis, therefore, focused on using the analytical capabilities of GIS software to construct circular buffers of radii 0.25 mile, 0.5 mile, and 1 mile at each of the 110 drycleaning facilities in the county. Census block groups that were also not significantly different from their average proportion in corresponding units without drycleaners. Similar results were observed for median housing values and median rent. The only variables indicating a statistically significant difference included population density (number of people per square mile) at the tract level, and the percentage of renter-occupied or owner-occupied housing units at the tract and block group levels. These variables are probably capturing the same effect since more people per square mile can be expected in areas with more rental units and multi-family housing. Drycleaners in Hillsborough County, in general, appear to have located in densely populated neighborhoods that contain rental housing and relatively fewer owner-occupied homes. There was no evidence to indicate that these facilities are concentrated in areas with a disproportionately high share of minority or low-income (below poverty level) residents.
fall inside or intersect with the circles were then identified and data from these block groups were used to estimate the socio-demographic composition of the population within each set of circular buffers. Following the widely used ‘buffer containment’ methodology (Chakraborty and Armstrong, 1997), a fraction of the total population count was used for block groups that were intersected or partially contained by a buffer, based on the proportion of the block group area enclosed within the circle. For each buffer radius (0.25, 0.5, and 1.0 mile), the study area was then divided into two regions: (a) the area within the circles and their overlapping portions; and (b) the rest of the county (area outside the outer edges of the circles). The socio-demographic characteristics of the population in these two regions were estimated and compared. We were unable to use median housing value and median rent in this comparison, because the values of these variables cannot be computed for a large region by summing or aggregating block group level data. The results of our analyses, for each buffer radius, are summarized in Table 2. A z-test for a difference of proportions was used to analyze the observed differences in the percentages inside and outside the three sets of buffer regions in Hillsborough County.

<table>
<thead>
<tr>
<th>Variables</th>
<th>0.25 mile radius</th>
<th>0.5 mile radius</th>
<th>1.0 mile radius</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inside circles</td>
<td>Outside circles</td>
<td>Diff.</td>
</tr>
<tr>
<td>Population density</td>
<td>3.576</td>
<td>3.448</td>
<td>-0.13</td>
</tr>
<tr>
<td>Non-White (%)</td>
<td>28.7</td>
<td>28.6</td>
<td>-0.1</td>
</tr>
<tr>
<td>Hispanic origin (%)</td>
<td>21.4</td>
<td>21.1</td>
<td>-0.3</td>
</tr>
<tr>
<td>Below poverty level (%)</td>
<td>11.2</td>
<td>11.7</td>
<td>0.5</td>
</tr>
<tr>
<td>Age over 65 years (%)</td>
<td>24.2</td>
<td>25.4</td>
<td>1.2</td>
</tr>
<tr>
<td>Owner-occupied housing units (%)</td>
<td>47.7</td>
<td>50.4</td>
<td>2.7</td>
</tr>
<tr>
<td>Renter-occupied housing units (%)</td>
<td>52.3</td>
<td>49.6</td>
<td>-2.7</td>
</tr>
<tr>
<td>Land area enclosed (sq. miles)</td>
<td>19</td>
<td>67</td>
<td>48</td>
</tr>
</tbody>
</table>

* p<.05; ** p<.01.

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Table 2 indicates that the characteristics of the population residing near drycleaning facilities are significantly different from those living further away, when a circular buffer is used to define the potentially impacted neighborhood around a facility. Although the circular regions do not cover a large proportion of the land area, they enclose a significantly high share of the county population. The number of people per square mile inside this proximate region is approximately five times larger than the ratio outside this region, for all three radii. The proportion of renter-occupied housing units is also significantly higher in the region enclosed by the circular buffers. These results are consistent with our previous findings (Table 1) which suggested that drycleaners in Hillsborough County, on average, are located in densely populated areas characterized by rental housing and fewer owner-occupied homes. The age-related variables do not show any substantial disparity, although the proportion of the younger population (18 or younger) is smaller inside the proximate region. The analyses of racial, ethnic, and economic characteristics (Table 2), however, reveal several key differences compared to our previous findings summarized in Table 1. Regardless of the buffer radius, the proportion of non-White, Hispanic, and low-income individuals are significantly higher inside the circular region surrounding drycleaners, compared to their corresponding proportion in the region outside. These variables did not indicate statistically significant differences when the host census tract or block group was used to represent the boundaries of the neighborhood around a drycleaner.

Our buffer analysis also provides interesting insights regarding the effect of buffer size on the differences in racial, ethnic, and economic characteristics of the population inside and outside the buffer regions. Table 2 shows that the percentage difference (in bold type) between the proximate and non-proximate regions for three variables (percent non-White, percent Hispanic,
and the percent below the poverty line) tends to increase gradually as the size or radius of the buffer zone increases. When the proximate region around drycleaners is represented by circular buffers of one-quarter mile radius, the non-White proportion inside this region is 4.1 percent higher than non-White proportion outside this region. This regional difference in non-White percentage is 5 percent when the buffer radius is one-half mile, but increases to 10 percent when the buffer region is defined by circles of one-mile radius. The corresponding difference (inside vs. outside) for the below-poverty population is 1.5 percent for the quarter-mile radius, 1.9 percent for the half-mile radius, but almost 4 percent when the one-mile radius is used to represent the close-proximity region. Similar trends can be observed for the percent differences in Hispanic population. For all the key variables, the greatest difference between proximate and non-proximate regions is obtained for the largest buffer radius (one mile) used in our analyses. This finding suggests that the highest concentration of non-Whites, Hispanics, or individuals below poverty can be found outside the region enclosed by the one-half mile buffer but inside the region defined by the one-mile buffer. In other words, minorities and low-income residents in Hillsborough County are more likely to reside between one-half and one mile from drycleaning facilities, and less likely to live within one-half mile of these facilities.

Discussion
This paper contributes to the empirical research literature on environmental justice by examining the spatial distribution of a less conspicuous pollution source that is recognized as a technological and health hazard. A key goal of the case study was to determine if drycleaning facilities are disproportionately located in minority or economically disadvantaged neighborhoods, on the basis of statistical and spatial analysis techniques used in previous...
have been violated, it is also important to examine if those who live near drycleaning facilities and are exposed to the negative externalities are the ones who benefit from these facilities in terms of services provided and jobs generated. Such analyses require detailed information on the consumers and employees of drycleaning services, their socio-demographic characteristics, and the location of their residences. While the unavailability of facility-specific data was a major impediment in our study, a more focused, local-level investigation should be undertaken to understand the processes that influence the geography of drycleaners and to provide a more comprehensive view of the disproportionate risk burden imposed by these facilities.

REFERENCES


environmental justice studies. Our analyses of Hillsborough County indicate that while drycleaners are generally located in densely populated neighborhoods characterized by rental housing, the proportion of non-White, Hispanic, and low-income residents is significantly higher in areas surrounding these facilities. These groups, however, are mostly concentrated in areas that are not very close to the drycleaners, typically between one-half and one mile from the facilities. This suggests that drycleaning facilities in Hillsborough County are less likely to locate inside minority and impoverished neighborhoods but more likely to be found near them, possibly to remain accessible to consumers residing outside their immediate vicinity.

From a methodological perspective, we demonstrate that the results of environmental justice analysis are sensitive to the method used to delineate potentially impacted neighborhoods. Our results indicated the absence of racial and income inequities when census tracts and block groups are used to represent neighborhood boundaries. The conventional (spatial coincidence) approach of comparing census units with and without polluting facilities used in several prior studies is inappropriate for our study, because most drycleaners are located on streets that represent boundaries of census tracts and block groups. When facilities are located near the edge of their host unit, circular buffers centered at facility locations represent a more accurate way of defining proximate areas and populations. Although the method used to compute population characteristics inside the buffer assumes that population is uniformly distributed within each census unit representing the data source, the potential for estimation errors is minimized when the source unit is as small as a block group (Sheppard et al., 1999; Chakraborty, 2001).

Our case study also reveals an interesting relationship between socio-demographic differences and radius of circle used to represented proximate areas. The larger the radius or size of the
buffer zone, the greater the disparity between minority and below-poverty proportions inside and outside the buffer zone. These results are inconsistent with the findings of previous environmental justice studies (e.g., Glickman, 1994; Chakraborty and Armstrong, 1997) which reported that the percentage of non-White persons and low-income residents are higher when a smaller radius is used to construct circular buffers. The other studies, however, focused on the distribution of industrial manufacturing facilities emitting toxic chemicals. The location pattern of smaller industries such as drycleaners and associated spatial inequities are substantially different, as demonstrated by the empirical results of our study. Drycleaners are perceived to be desirable facilities by potential consumers of drycleaning services, and consequently, a larger number of drycleaners in Hillsborough County have located near neighborhoods that contain a high proportion of White/high-income residents, in areas that are accessible to their customers.

It is important, however, to consider certain assumptions and limitations of our analyses. The case study focused on identifying the pattern of drycleaner locations and not the process that caused the observed racial and income inequities. The results do not establish if areas surrounding drycleaning facilities were predominantly minority or low-income at the time the location decisions were made, or whether subsequent events led to the inequitable pattern observed at present. Pre-existing economic conditions such as low rents and the availability of low-wage labor could have made economically disadvantaged neighborhoods more attractive to businesses like drycleaners. Alternatively, the dynamics of the housing market could have caused the out-migration of White/high-income residents and the in-migration of non-White/low-income individuals into host neighborhoods over time, after the drycleaners located (Been, 1994). Although the establishment dates of the drycleaning facilities are not available in the Florida DEP database, a longitudinal analysis based on local historical data is required to determine if the observed inequities were caused by discriminatory siting and planning processes, housing market dynamics, or a combination of these factors (Liu, 2000; Pulido, 2000).

A second limitation of the case study was that all drycleaning facilities were assumed to pose equal risk; no distinctions were made based on the quantity, toxicity, or exposure potential of substances released or handled at each drycleaner. This information is required to determine specific environmental and health risks, the precise boundaries of the area potentially exposed to such risks, and the disproportionate burden imposed on minorities and low-income populations. Facility-specific chemical data for conducting a detailed risk analysis of drycleaners, however, is not provided in the Florida DEP database. Other factors that can be used to determine the magnitude of risk posed by these facilities include age and effectiveness of equipment, the amount of safety devices, and mitigation measures in place at each individual site (Florida DEP, 2003). The only information available for relative risk assessment is a priority listing of drycleaning facilities compiled by the Florida clean-up program (Florida DEP, 2003) that contains rankings for each site in the state. Although this ranking scheme was not used in our case study, we found that 101 of the 110 drycleaners in Hillsborough County appear in the listing of 1,182 sites statewide given priority of rehabilitation. None of them have been issued ‘site rehabilitation completion orders’ that are given after cleanup is completed, and eight unranked drycleaners have been assigned to a state contractor for cleanup. In future research, we plan to incorporate these measures and other related information to assess the magnitude of risk associated with each drycleaner and the geographic distribution of potential exposure in the study area.

In order to determine if principles of environmental justice