New York Talk Exchange: Transnational Telecommunications and Migration in a Global City

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Submitted to the Department of Urban Studies and Planning
in partial fulfillment of the requirements for the degree of

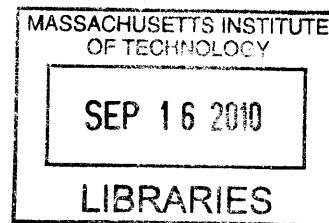Doctor of Philosophy in Urban and Regional Planning

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ABSTRACT

This dissertation investigates the role of information and communication technologies (ICTs) in transnational activities. It adds empirical detail to the notion that ICTs are critical facilitators of globalization through a multimethod approach, combining analyses of long distance telephone traffic from New York City and interviews of migrants in Upper Manhattan and central Queens. The quantitative approach examines variation of call destinations, volume, and patterns of talk between neighborhoods within a global city. This expands our understanding of New York's global counterparts in transnational processes to include the "space of flows" generated by immigrant areas of the city. Semi-structured interviews uncover how telecommunications support simultaneous social interaction between migrants and those who remain in their country of origin. While theories of the global city, the network society and transnationalism claim a link between advances in telecommunications and the processes of globalization – both in corporate functions and migration – to date we have little empirical knowledge about how telecoms mediate between the city and the world.

Findings reveal that New York's immigrant neighborhoods are as engaged in global processes as the great business centers of the city, and according to one measure, they are more so. An important reason for this is the affordability and accessibility of international communications, which allows migrants to bridge the breaks that occur as a result of the migration process. The telephone's capacity to facilitate intimate and simultaneous involvement in daily life opens up the possibility for engaging in transnational practices, such as mothering or circular migration. Because many migrants aspire to return to their country of origin, the telephone is a necessary tool for maintaining social networks and managing resources abroad to safeguard their future.

The increased reach, velocity, and intensity of telecommunications is transforming the experience of contemporary migration into something more indeterminate and fluid, producing hybrid lives that straddle here and there – both physically and virtually. As cities like New York grow entirely due to international migration, city planning is challenged to respond to an urban condition that is not neatly characterized by settlement or incorporation, but also contains elements of flux and uncertainty.

Dissertation Supervisor: Frank Levy
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ACKNOWLEDGEMENTS

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INTRODUCTION

In 1660 William Kieft, the Dutch governor of New Netherland, remarked to the French Jesuit Isaac Jogues that there were eighteen languages spoken at or near Fort Amsterdam at the tip of Manhattan Island. There still are: not necessarily the same languages, but at least as many; nor has the number ever declined in the intervening three centuries. This is an essential fact of New York: a merchant metropolis with an extraordinarily heterogeneous population.

Beyond the Melting Pot
Nathan Glazer and Daniel P. Moynihan (1963)

Global City: New York

New York has always served as a site wherein the world converges – for commerce, culture, and the hope of a better life. As Glazer and Moynihan note in the quote above, the seeds of a polyglot city were planted as early as the seventeenth century when the Dutch West India Company decreed that any and all newcomers would be permitted to settle in its new colony so as to foster more and better chances at prosperity. However, New York is not just characterized by the various nationalities of those who reside within its borders but also by the extent of its reach towards the rest of the world through the exchange of goods, culture, people and information. In that sense as well, New York has been a globally oriented city throughout its colonial, merchant, industrial and post-industrial periods, though with each stage the city has reached out to a different part of the world system (Abu-Lughod 1999). While in previous eras the city's main business and migrant counterparts were in Europe, today's New York also reflects associations with regions located in the southern and eastern hemispheres of the world. In addition, these connections abroad have accelerated and expanded over the past three decades due to technological advances in communications and travel.

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During the seventeenth and eighteenth centuries, when New York was a vibrant seaport and owing to its participation in the slave trade, the city was most connected to northern and western Europe and West Africa. As the city developed into a manufacturing center in the nineteenth and early twentieth centuries, New York's relationship with Europe strengthened bringing with it the evocative tales of steamship arrivals at Ellis Island. But since the mid-1960s, the city's global links have extended towards Latin America, the Caribbean and Asia (Jackson 1995; Castles and Miller 2003). In business, the city's strongest contemporary global counterparts remain London and Paris, adding Hong Kong, Singapore and Tokyo during the late 20th century (Friedmann 1986; Sassen 2001 (1991); Taylor et al 2007). But in terms of the flow of people, factors such as the immigration policy reforms of 1965, America's attempts to stem communism abroad, and the entry of developing countries into the global economy have established bridges for a broad base of migrants into the city.[1] Today's "newest New Yorkers" are as much an expression of the global city as the jet setting elite who pull the levers of global finance and commerce. These new New Yorkers hail from places as diverse as the Dominican Republic, China, Jamaica, Mexico, Guyana, Ecuador, Haiti, Trinidad and Tobago, India and Colombia, these constituting the city's top ten sending countries (NYC Department of City Planning 2004).

Thus a decade into the 21st century, approximately 37 percent of New York's population of over eight million is classified by the U.S. Census as foreign born, nearing the peak rate recorded in 1910 of 41 percent (NYC Department of City Planning 2009; Foner 2001b).[2] In fact, since 1970 the foreign born population has grown consistently as a share of the total city population (Figure 1.1), while the countries of birth of these migrants have shifted substantially from those in Europe to

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[1] As discussed in Chapter 2, Douglas Massey (2003) observes that migrants come from places that are incorporated into the global networks of trade, information and product and not from, "...poor, isolated places that are disconnected from world markets..." (p.11)

[2] The U.S. Census Bureau uses the term *foreign born* to refer to anyone who is not a U.S. citizen at birth. This includes naturalized U.S. citizens, lawful permanent residents (immigrants), temporary migrants (such as foreign students), humanitarian migrants (such as refugees), and people illegally present in the United States. (www.census.gov/population/www/socdemo/immigration)

those in Latin America, the Caribbean, and Asia (Figure 1.2). The distinction that makes New York unique among its other large urban counterparts both in the United States and abroad is that no single foreign born group predominates: immigrants to the city are astoundingly diverse and hail from virtually every corner of the globe. As a consequence, this diversity is inscribed into the fabric of New York's neighborhoods and reflects the extent to which the city is tied to locales abroad, particularly the developing regions of the world. A short walk through Elmhurst, Queens transports you to Indonesia on Whitney Avenue; Colombia on Bexter Avenue; India, Pakistan, Mexico and Ecuador along Roosevelt Avenue; and a cross-section of Asian locales on Broadway.

This discussion of New York's connections to the world reveals only a singular aspect of how it functions as a global city. Over the past two decades, in fact, scholars have explored the subject of New York's role within a world system of urban nodes extensively, and from a variety of perspectives (see Abu-Lhugod 1999; Fainstein, Gordon and Harloe 1992; King 2004; Logan 2000; Mollenkopf and Castells 1991; Sassen 2001 (1991); Sites 2003; Zukin 2006). These studies often approach New York with a dual frame: the city as a "capital of capitalism"(Jackson 1984) or as a receptor of immigrants. Both characterizations are accurate, though much more attention has been focused on the former rather than the latter. Nevertheless, they concur in observing that during the late 20th century and early 21st century, advances in technologies of communication and transportation have been critical enablers of corporate globalization and international migration, particularly in a setting such as New York City. Yet as critical a role that information and communications technologies (ICTs) are stated to play in the process of global city formation, this field of research is limited to a handful of researchers (Moss 1986; Graham and Marvin 1996; Moss and Townsend 2000; Graham and Marvin 2001; Sassen 2002; Sassen 2003; Taylor et al 2007). In particular, very few connections have been made between the study of migration and that of information and communications technologies (notable exceptions include work by Vertovec 2004, Vertovec 2004b, and Ros 2007).

Figure 1.1
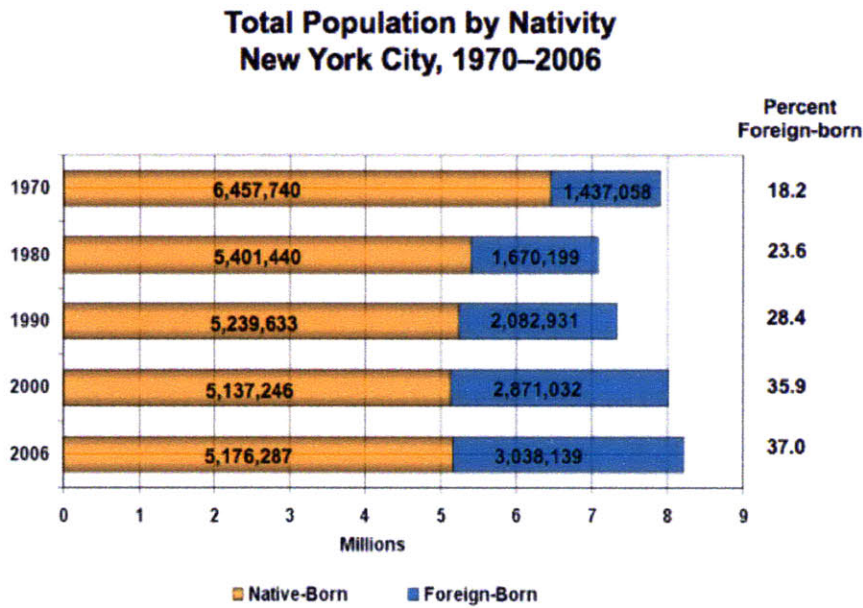
**Total Population by Nativity
New York City, 1970–2006**

	Native-Born	Foreign-Born	Percent Foreign-born
1970	6,457,740	1,437,058	18.2
1980	5,401,440	1,670,199	23.6
1990	5,239,633	2,082,931	28.4
2000	5,137,246	2,871,032	35.9
2006	5,176,287	3,038,139	37.0

Source: New York City Department of City Planning, Population Division.
(http://www.slideshare.net/WagnerCollegeNYC/090312-joseph-salvo-power-point-presentation-slides, Accessed July 16, 2010)

Figure 1.2
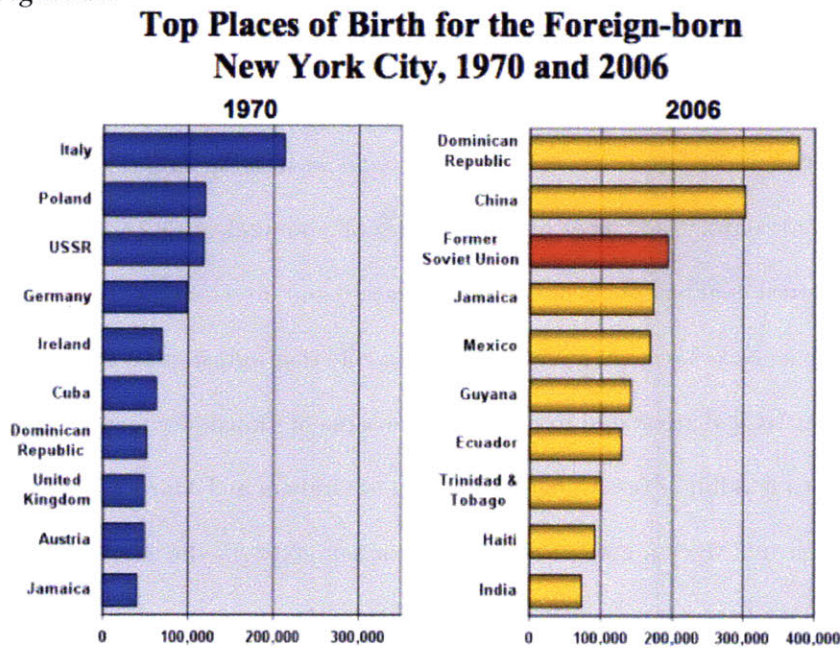
**Top Places of Birth for the Foreign-born
New York City, 1970 and 2006**

1970
Italy, Poland, USSR, Germany, Ireland, Cuba, Dominican Republic, United Kingdom, Austria, Jamaica

2006
Dominican Republic, China, Former Soviet Union, Jamaica, Mexico, Guyana, Ecuador, Trinidad & Tobago, Haiti, India

Source: New York City Department of City Planning, Population Division.
(http://www.slideshare.net/WagnerCollegeNYC/090312-joseph-salvo-power-point-presentation-slides, Accessed July 16, 2010)

In response, this study employs international telecommunications data along with informant interviews to examine the role of ICTs in 21st century international migration. While much research has focused on how ICTs have allowed industries such as finance and corporate services to operate at a global scale, and made it advantageous for these industries to cluster in cities such as New York due to infrastructural advantages (Graham and Marvin 1996; Graham and Marvin 2001), we know little about how a technology as mundane as a telephone call is influencing the life decisions and experiences of international migrants. In the language of the transnational studies literature, a lot of attention has been paid to globalization from the "top" but not so much from "below".

In crafting this research, I am motivated and intrigued by two facts: first, that between 1990 and 2000, the city's population grew, "…solely as a function of the dramatic increase in the number of its foreign born residents" (NYC Department of City Planning 2004: 5) and estimates for the period between 2000 and 2007 show that this trend may continue into 2010 and beyond (Figure 1.3) And second, that international call volumes both in the United States and elsewhere have grown substantially during this same period: in the U.S. at a rate of 10 percent per year between 1998 and 2005 (FCC 2005) and internationally at a cumulative rate of over 14 percent annually (TeleGeography 2009) (Figures 1.4 and 1.5). The research firm TeleGeography ascribes this growth to several factors: market liberalization has resulted in declining call costs, mobile phones have generated new calling opportunities (it is possible to talk anytime, anywhere), and calling cards and prepaid services have made international calling affordable to low-income immigrants (2009: 1). With regard to the last factor, TeleGeography states that, "International migration has served as an important driver of traffic growth from the U.S. to Latin America." (2009: 2). Remarkably, the world's largest calling destination in terms of volume is Mexico (TeleGeography 2009) and likely not by coincidence, the world's top emigration country is also Mexico, with 11.5 million people emigrating abroad in 2005 (World Bank 2008). In New York, calls to Mexico during September 2008 accounted for 9 percent of all international calls over the network of a major U.S.

Figure 1.3

**Estimated Components of Population Change
New York City, 2000–2007**
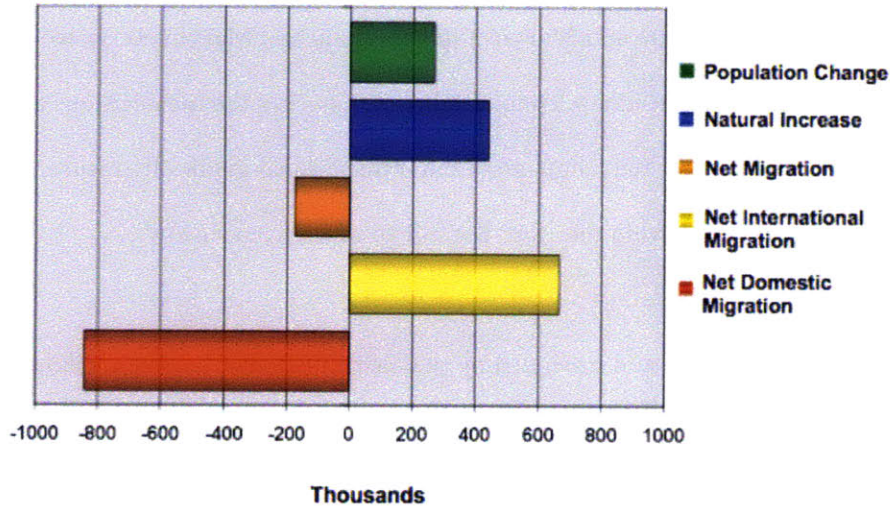
Source: New York City Department of City Planning, Population Division.
(http://www.slideshare.net/WagnerCollegeNYC/090312-joseph-salvo-power-point-presentation-slides, Accessed July 16, 2010)

telecommunications carrier for that month, ranking second overall in the top calling counterparts

for the city.[3] Likewise, Mexicans are New York's fastest growing Latino group, increasing by 9.8

percent to 289,755 people in the single year between 2006 and 2007 (Limonic 2008).

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[3] As discussed further in Chapter 3, the top four calling counterparts for New York are the Dominican Republic (11.7%), Mexico (9.1%), the United Kingdom (7.5%), and Canada (7.0%) when measuring only outbound calls.

Figure 1.4

International Call Volumes and Growth Rates, 1989-2009
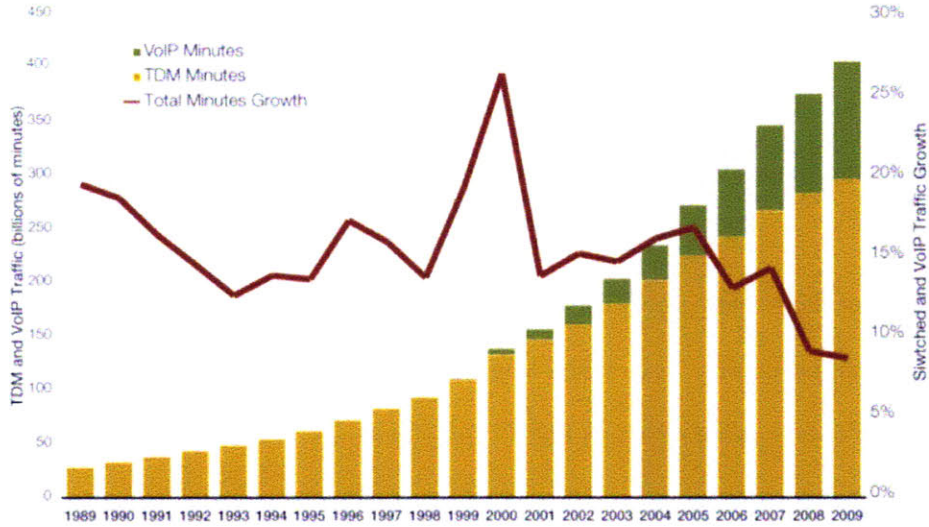
Notes: Data for 2009 are projections based on half-year results. VoIP traffic reflects international traffic transported as VoIP by carriers, and excludes PC-to-PC traffic.

Source: TeleGeography research   © 2009 PriMetrica, Inc.

Figure 1.5 Growth in US international call minutes vs decline in prices from 1990 to 2007
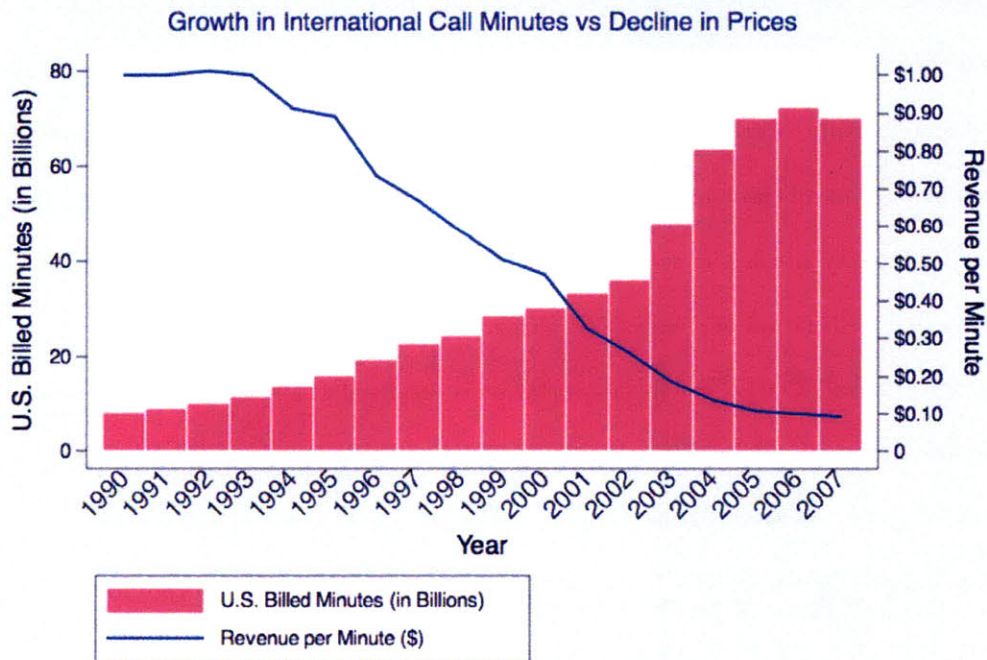
source: FCC 200 International Telecommunications Data and 2007 International Traffic Data reports

Research Questions

I believe there is a worthwhile relationship to be explored between international calling and migration, potentially as an avenue to better understanding people's motivations for migrating, and surely as a means to capturing an understudied aspect of the 21st century migrant experience. Thus, in my dissertation, I aim to answer the following questions:

First, to which areas of the world is New York most intensely connected via the global telecommunications infrastructure? And, which neighborhoods in New York City are the most 'extroverted' in terms of telecommunications links? These two questions seek to empirically expand the scope and scale of our current understanding of the city's connections abroad. In much of the literature on global cities, New York is presented as the world's preeminent urban node in the world city network, interacting with business counterparts in other centers of finance, media, and corporate services, such as London and Hong Kong. Embedded within this notion is the assumption that the circuits of information between these urban nodes carry messages related to these high-end, revenue generating activities. But globalization theory also notes that there are two components that constitute globalization: business and migration. And we know very little about the circuits of information that constitute migrant networks – both in terms of the volume of information exchange and the purpose of those exchanges. Moreover, at an urban scale, globalization studies typically consider the city as a whole as the unit of analysis and variation between neighborhoods in terms of volume and destination of connections abroad has not yet been detailed. The telecommunications data I analyze for this dissertation is localized at a neighborhood scale giving me the opportunity to observe how different parts of New York City connect to different destinations through international calling and, in particular, compare the global patterns of information exchange of business New York, which constitutes the spaces of corporate

globalization, and neighborhood New York[4], the places where new immigrants live and work (Sanjek 1998: 29).

In asking and answering these questions I employ what Doreen Massey (1994) terms a "progressive concept of place," which recognizes that places do not have single, unique identities and that linkages to the world contribute to the elements that constitute a place. Massey also advocates for a "…sense of place which is extroverted, which includes a consciousness of its links with the wider world, which integrates in a positive way the global and the local." (1994: 155) This "global sense of place" approach leads to an analysis that socially differentiates how various groups employ and experience advances in ICTs to engage global processes, extending beyond a consideration of the powerful – or as Sklair terms it, the "transnational capitalist class" – to also encompass the city's immigrant groups. Examining how international calling volumes and patterns differ between predominantly commercial neighborhoods and predominantly immigrant neighborhoods, for example, can indicate how global information circuits vary by purpose – business versus personal. Adding a consideration of neighborhood demographics, as I do in this study, incorporates the dimensions of income and gender, to name just two. Within the context of New York City, moreover, I seek to challenge the established idea that New York's "global network" is solely anchored in the great corporate headquarters of the Financial District and Midtown and cast light on an aspect of transnational life in the polyglot neighborhoods of the city's boroughs.

My second set of questions delve down from the neighborhood scale to the individual to ask why, and for which purposes, people who migrate away from their countries of origin maintain contact with those faraway places. How have advances in telecommunications over the past twenty years affected the strength of ties between receiving and sending communities? What are the strategies that immigrants use to stay connected in the 21st century? And in what ways do technological

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[4] Chapter 2 contains a more thorough discussion of what factors constitute neighborhood New York, as conceived by Sanjek (1998) in his ethnography of Elmhurst-Corona in Queens.

changes in ICTs support changes in the migrant experience, particularly within the context of a very diverse, immigrant gateway city such as New York?

While seemingly prosaic, how people use ICTs, and in the case of this study the telephone, as tools to connect with their family, friends and other associates abroad is quite complex: the decision to make an international call includes implicit calculations of cost, time, and purpose along with an individual's desire to maintain an affective or functional bond over vast distances. According to theories about the network society (Castells 1989, Castells 1996), the global city (Sassen 2001(1991)) and transnational processes (Levitt and Jaworsky 2007) this calculation has been simplified since the 1990s by the increasing accessibility and affordability of telecommunications and other information technologies. These theories all claim a link between the development of information and communications technologies and the processes of late-20th and early-21st century globalization, specifically in the realms of global corporate functions (such as financial services and corporate consulting) and international migration. The questions above explicitly lay focus on international migrants and in answering them, I employ Castells' notion of the "space of flows" as a lens through which I can examine how these social groups use telecoms to operationalize their transnational lives. Castells defines the space of flows as, "the material organization of simultaneous social interaction at a distance by networking communication, with the technological support of telecommunications... and fast transportation technologies." (Castells et al 2007: 171). How telecommunications support simultaneous social interaction between people in sending and receiving communities will be a key contribution of this study.

Indeed, Vertovec (2004) claims that, "cheap calls are the social glue of migrant transnationalism" and various studies identify affordable and accessible voice communication as the principal way that migrants activate "transnational social fields" and maintain social networks that transcend national borders (Orozco et al 2005; Waldinger 2007; Levitt and Glick Schiller 2004; Levitt and Jaworsky

2007; Levitt 2009). Levitt and Glick-Schiller's notion of simultaneity – which refers to, "living lives that incorporate daily activities, routines and institutions located both in a destination country and transnationally" (2004: 1003) – was not an option before the early 1990s, when phone cards and mobile phones made it possible to call home on a daily basis. Some researchers even go so far as to propose that affordable and accessible telecommunications may be facilitating migration (Ros et al 2007). While difficult to attribute rising migration rates exclusively to the falling costs of long distance calls, I will nevertheless aim to examine how ICTs may be mediating the ways that migrants negotiate life decisions and experiences of their home and host communities.

In sum, through these two sets of questions, I examine transnational flows of information at the neighborhood scale in order to learn why global connections vary within a city and thus understand how information and communications technologies influence the process of globalization and, in particular, the 21st century migrant experience.

A synthesis of theories about the network society, the global city and transnational migration from an urban studies perspective suggests the following hypothesis: Increased migration is one of the stated consequences of an accelerated globalization process that has been facilitated by dramatic advancements in the affordability and accessibility of telecommunications technologies – from cheaper long distance to mobile phones to prepaid calling cards to email and Skype.[5] The combination of robust information and communications networks and high demand for worldwide telecoms services in a global city such as New York make international connections cheaper and easier than in other locales, particularly for migrants with few economic resources (Graham and Marvin 2001).

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[5] In March 2009, TeleGeography reported that Skype, an Internet-based software application that allows people to make calls and connect via video and chat formats from their computers, is the "largest provider of cross-border voice communication in the world," generating 33 billion minutes of international calling in 2008. (http://www.telegeography.com/cu/article.php?article_id=27800, accessed July 8, 2010)

Migrants in New York dedicate a portion of their limited resources to staying connected with their countries of origin because it is an attainable option and because they seek to maintain ties for when they return home, as contemporary migration is not often intended as a one-way trajectory but increasingly exhibits a circulatory nature depending on an individual's life stage (Smith 2006). International calling is thus a common, sometimes daily activity that allows for simultaneous social interaction across vast distances, and as a result, New York neighborhoods that house concentrations of immigrants will exhibit high volumes of calls abroad. In the aggregate, calling destinations will coincide with the city's principal migrant sending countries. The telephone as a technological tool enables the city's immigrants to transcend time and space and thus operate their lives transnationally. Migrating for economic opportunity in the 21st century no longer implies diminishing ties to those staying behind — nowadays, intense relationships are maintained across national borders, particularly within families.

Methodology

For this study, I employ a multimethod approach to examine the role that ICTs play in mediating globalization and migration. I begin by presenting a quantitative analysis that measures and explains the variation of telecoms flows between neighborhoods. I then utilize a qualitative approach to capture how ICTs relate to the migrant experience. I have sought to achieve a coherent synthesis between a data set of aggregated long distance telephone call records provided by a major U.S. telecommunications company, neighborhood demographics drawn from the U.S. Census , and my own fieldwork involving semi-structured interviews of migrants and environmental observations in neighborhoods that exhibit high volumes of international calls relative to other areas of the city. I analyze the call data together with its corresponding neighborhood demographics and then use information from the interviews to interpret and add depth to my quantitative analysis of New York's international telephone calls.

Telecommunications Data

A large U.S. telecommunications provider compiled a dataset of aggregated call records for analysis by the MIT Senseable City Lab following a collaboration in the spring of 2008 for the *New York Talk Exchange* project, which visualized streams of Internet and telephone flows between New York and the world for the "Design and the Elastic Mind" exhibit at the Museum of Modern Art, MoMA (Figures 1.6 and 1.7). I was a member of the *New York Talk Exchange* project team and subsequently, as a Research Assistant at the MIT Senseable City Lab, I have had the opportunity to analyze the telecoms data set through this dissertation research. In this study the telecoms provider will be referred to as a large U.S. telecommunications provider, or the telecoms partner.

The quantitative data I analyze in this thesis represents two layers of information for New York: 1) aggregate logs of long distance call traffic for the month of September 2008 and, 2) demographics drawn from the U.S. Census' American Community Survey for 2007 and 2008. The two sets of data are joined and mapped within the city at the scale of the wire centers that route the network provider's long distance service for all five boroughs of New York City (Figure 1.8).

Figure 1.6

Globe Encounters

In the Information Age, the flow of Internet traffic between locations is nearly ubiquitous. Globe Encounters visualizes the volumes of Internet data flowing between New York and cities around the world over the past 24 hours. The size of the glow on a particular city location corresponds to the amount of IP traffic flowing between that place and New York City. A larger glow implies a greater IP flow.

NYTE
new york talk exchange

IP traffic | total
outgoing from new york

12:00

new york time ⌐night ⌐morning ⌐afternoon ⌐evening

Figure 1.7

Figure 1.8 provides an overview of the two types of data analyzed in this study.

Call Data
- Features call data by origin and destination between CLLI locations in New York and countries around the world.
- Aggregates the number of calls and length of calls in minutes at the wire center scale.
- Differentiates by call platform: wireline (switched or dedicated), wireless, and prepaid cards.
- Includes data for every day of September 2008 in ten-minute increments.

wire center call data for one major telecoms provider

wire center demographic data

Demographics
- Socioeconomic data from the U.S. Census' American Community Survey of 2007 and 2008
- Over 150 variables
- Aggregated to coincide with the boundaries of the New York City wire centers.

Wire Centers

A wire center is a switching station (the terms are used interchangeably) that serves a variety of functions within the telecommunications infrastructure of the city: it is where calls are processed, billed, and distributed to their destinations (Figure 1.9) (Ascher 2005: 127). In this telecoms data set, the wire centers are identified by Common Language Location Identifiers, or CLLIs, which are alphanumeric codes used to specify the geographic location of switches, detailing the state, city and location within the city of the switching station. Jon Reades of University College London, and a researcher at the MIT Senseable City Lab, aggregated the call data associated with 962 CLLIS to the geographic scale serviced by 67 wire centers in the city, which approximates the scale of New York City's community districts.[6] (Figures 1.10 and 1.11) So for example, the code NYCQNYCO indicates that the call records and demographics have been aggregated for the Corona neighborhood in Queens, where NYC stands for New York City, QNY is the borough of Queens and CO refers to

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[6] Since 1975, New York City has been divided into 59 community districts, which serve as political and administrative boundaries. They range in geographic size between 1.4 and 23 square miles containing between 35,000 and 200,000 residents. (http://www.nyc.gov/html/dcp/html/lucds/cdstart.shtml, accessed July 8, 2010)

Corona. The area serviced by a wire center depends on the density of customers so in New York, this ranges from 0.1 square miles (or 64 acres) at the tip of lower Manhattan to 19.3 square miles in Princes Bay, Staten Island. In terms of the range of residential population numbers contained by the wire centers, the minimum is 2,243 for Bowling Green in Manhattan and the maximum is 362,730 in Elmhurst, Queens. The mean population for all wire centers in the dataset is 192,040, roughly corresponding with the population for the East Village wire center which is 190,413.[7]

Because the telephone and demographic data is aggregated at a community scale, this research effort alleviates any personal privacy concerns that need to be addressed. At no point can I identify an individual's calling patterns since all data is aggregated up to the scale of the wire center. While the MIT Senseable City Lab did not have direct access to the precise geographic boundaries used to compile the data that corresponds with the wire centers, we did have information on the geographic coordinates of the wire centers themselves. To overcome the geographic constraints on the data, Jon Reades used information from the telecommunications company about the latitude and longitude for each wire center and the surface area serviced by each wire center to create a Voronoi plot as an approximation of the neighborhoods in New York that correspond to the calling and demographic data by wire center. As Reades explains, a Voronoi plot, "… divides space so that the boundaries between service areas are equidistant from all of the nearest wire centers."[8]

Provided with a geographical approximation and the latitude and longitude coordinates for each wire center, I was then able to assign a neighborhood name to each cell on the map of New York. When an area contained more than one neighborhood name, I prioritized more commonly known neighborhood names over less-well known names with guidance from Cristen China, an

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[7] I averaged these residential population statistics from the 2007 and 2008 American Community Survey.
[8] For a more detailed account of how Jon Reades (2010) mapped over 900 CLLIs within the New York City area to the 67 wire centers that aggregate the call and demographic data from the telecoms company, please refer to the methodology section of his dissertation.

undergraduate researcher (UROP) and native New Yorker at MIT, who assisted me with mapping

for this project. Figure 1.11 is the reference map that resulted from this combined effort.

Figure 1.9 Tracking the Path of a Call (Asher 2005)

Tracking the Path of a Call

1. After a call is placed, the voice data travel along a pair of copper wires to a local networked phone company box. This box contains hundreds of wire pairs.

2. The call is then routed to a "digital concentrator," where it is digitized at a sample rate of 8,000 samples per second.

3. The digitized information is then sent—usually via coaxial or fiber optic cable—to the phone company's switching station, where it will be routed to its destination.

4. If the call is a local call, the signal is simply looped back into the local system. If it is a long-distance call, the signal is forwarded to the long-distance network.

5. Long-distance calls may be transmitted by cable, microwave towers, or satellite.

Figure 1.10

Legend
- Wire Centres
- Other CLLIs

0   1.25   2.5   5 km

0   5   10   20 km

Map courtesy of Jon Reades, University College London

Figure 1.11

Call Data

The long distance telephone call data is reported in ten-minute increments for every day of September 2008 and aggregated to the 67 wire centers in the city. The data set details the total number of calls and the number of calling minutes made between a wire center in New York and another location in the United States or abroad for each ten minute increment per day. Calls are classified by type as being either wireline (also referred to as fixed or landline), wireless (also known as mobile phone), prepaid calling card, or on a dedicated line (wireline service for large commercial customers). It is difficult to ascertain the exact geographic provenance of calls attributed to wireless phones due to their mobility and the way wireless calls are recorded in the data set. The call data used in this study are drawn from aggregated billing records, and in calls to and from wireless phones the switch that records that call activity is usually the location in the city where that phone is registered. So that if mobile phones from Queens make calls in Manhattan, these calls will be recorded as outgoing from Queens. In a few situations, however, the Queens registered phones making calls in Manhattan do appear as calls from their physical location rather than its registered switching station. Since we cannot distinguish between these two scenarios, this study assumes that the wireless traffic represents calls from mobile phones registered in New York, regardless of the physical location where calls were placed. I also assume that aggregated wireless calls from registered locations are sufficiently informative of call dynamics from that geographic area of the city.

The data set also differentiates between outgoing and incoming long distance calls. Calls are labeled "outgoing" if they originate in a wire center in New York City and are destined for a location elsewhere, either domestically in the United States or internationally. "Incoming" calls originate outside of New York City and are destined for one of the city's wire centers. Both outgoing and incoming calls can also be classified by type of call, though there is less confidence on the part of the telecommunications provider in terms of the accuracy of information on the volume and type of

incoming calls. The telecoms provider explains that the incoming data on their network is dependent on their company's presence and share of international calls *from* other countries, and this varies tremendously country by country to an extent not specified by the telecoms partner.

The accuracy with which we can identify New York's corresponding international location of incoming calls beyond the country level also suffers from a lack of certainty. So while this data set does drill down to the level of international cities as the location for the origin or destination of calls to and from New York's neighborhoods, the telecoms partner only estimated this information to the best of their ability from billing records since they do not provide services or control infrastructure beyond the United States. As a result, in this study I focus my analysis on outbound, international calling from New York to countries, not cities, in the rest of the world.

The Telecoms Network

Information about the telecoms provider's share of the international telecommunications market in New York City is not publicly available information. Nevertheless, the provider's network is vast, encompassing long distance telephone, wireless and broadband services in most of the United States.[9] As stated by Gerber et al. in the *New York Talk Exchange* (31: 2008):

> The...network today carries 13.4 petabytes of IP traffic on an average business day. That's the equivalent of more than forty-seven megabytes of information for every man, woman and child in the United States. Additionally, [the] voice network carries 127 billion long-distance voice calls over the course of a year...New York City is a center for a large portion of this IP and voice traffic.

In order to estimate how much of New York's total international telecommunications flows may be represented by the data from this one telecommunications provider, I employ U.S.-level data from the Federal Communications Commission's (FCC) *2007 International Telecommunications Data* report. As of 2004, the telecoms partner accounted for just over one quarter of the total billed international

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[9] The telecoms network considered in this study does not provide local telephone service in New York City.

minutes in the United States. From this information, I assume that their share of international billed

minutes has been steady, and that in the New York market its share should be comparable to their

presence in the rest of the United States. Therefore, I estimate that the data analyzed in this study

represents about 25% of the total international call traffic for the city. This is the figure that I use to

normalize call data used for the analyses presented in Chapter 3.

Telephone Data & Urban Planning

The premise of this study – that analyzing telephone calls can tell us something about the city and

its social relationships at a global scale – is rooted in a now-forgotten practice that dates back to the

1910s, where telephone company data informed urban planning. In *Forecasting the Telephone* (1983),

the social scientist Ithiel de Sola Pool notes how technology assessments prior to 1940 had

predicted that telephone companies would eventually provide much of the information for urban

planning and that as early as 1915, "telephone companies were the principal source of systematic

demographic information on urban and neighborhood growth trends and characteristics." (p. 42 &

120). The availability of this data, Pool suggests, led to the growth of the field of urban planning

during its infancy a century ago.

In the mid-1950s the geographer Jean Gottman also recognized the value that could be extracted

from flows of information for studying cities. Gottman used AT&T domestic long distance call data

from New York for April 1958 (Figure 1.12) in his groundbreaking study of the northeast,

Megalopolis (1961), where he contends that, "the density of the flow of telephone calls is a fairly good

measure of the relationships binding together the economic interests of the region. Telephone calls

represent not only economic and governmental relationships but also social and family links." (p.

590). In the 1980s, Pool, Hurwitz and Inose (1984) applied this approach at an international scale in

Communication Flows: A Census of Japan and the US, an attempt to measure empirically the nascent

trends in globalization and the information society. The methodology for Pool's census of

Figure 1.12

AVERAGE NUMBER OF DAILY
TELEPHONE MESSAGES PER 100,000 PERSONS
BETWEEN

NEW YORK

AND SELECTED CITIES FOR APRIL, 1958
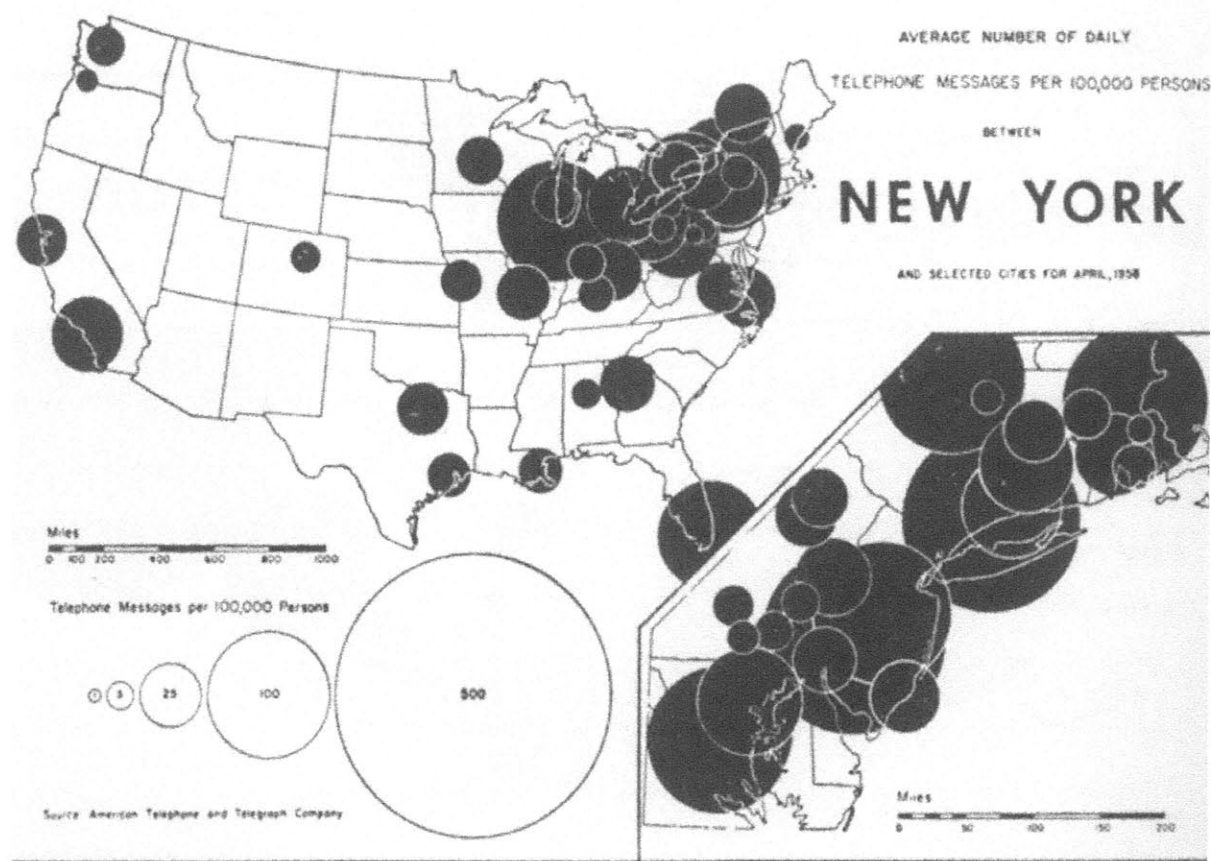
communications flows was quite unusual; it measured the volumes of different media through which

people communicate (books, radio, TV, the telephone, among others) by constructing an index based

on the number of words people consumed.

In essence, Pool and Gottman proposed that in understanding the density and directionality of

information links between places, we could also understand something about the activities rooted in

those locales. The telecoms data used in this study details long distance calls between New York's

neighborhoods and the rest of the world and therefore allows us to examine to what extent

neighborhood activities extend beyond the city's borders, and which types of neighborhoods are

more globally-oriented or 'extroverted.' (Massey 1994). More generally, another contribution of this

study is that it revisits and explores the potential of telecommunications data in informing the field

of urban planning, particularly as our capacity increases to handle large datasets through

sophisticated computation (Lazer et al 2009).

Demographics

Demographic data for the 67 wire centers in New York were drawn from the U.S. Census American

Community Survey (ACS) of 2007 and 2008 and mapped to coincide with the geography of the wire

centers in New York City. The objective of coupling call data with demographics is to help interpret

the intentions and content of long-distance calls according to a neighborhood's demographic

characteristics.

The ACS data includes approximately 150 variables, including population, income, employment,

education, language spoken, ancestry, and gender, among many others. A missing variable from this

demographics data set is the number of foreign-born people and their countries of origin by wire

center. This data was unavailable from the provider and as a result the telecoms partner built a

prediction model to estimate the percent of foreign born in each wire center for this study.[10]

A shortcoming of this study is that I am not able to specify the foreign born groups present in each

neighborhood using the wire center-scaled demographics. Nevertheless, when reviewing the top

international call destination countries from the different neighborhoods in New York, I have

consulted reports on Community District level data from the New York City Department of

Planning's Community Data Portal, which rank orders the top ten foreign-born groups in each area

of the city by population as reported in the 2000 U.S. Census. This allowed me to spot-check

whether the call data and neighborhood name for each wire center reasonably coincided with what

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[10] The ACS variables used in this study are listed in Appendix II. The foreign born estimation model is detailed in Appendix III.

is already known about the city's neighborhoods. While this method failed in certain wire centers,

such as the one that coincides with Borough Park[11], it worked relatively well for the neighborhoods

in Queens and Upper Manhattan that are the focus of this study (Table 1.1).

Table 1.1

A rank comparison of Washington Heights foreign born by country of origin (2000) and international calling counterparts by percent share of long distance minutes (September 2008)

	Country of Origin	% of total foreign born	Destination Country	International Minutes (%)
1	**Dominican Republic**	**71.0**	**Dominican Republic**	**69.5**
2	**Ecuador**	**3.8**	**Mexico**	**4.2**
3	**Cuba**	**3.2**	**Ecuador**	**4.1**
4	**Mexico**	**3.0**	**Cuba**	**2.7**
5	Russia	1.3	**El Salvador**	**1.9**
6	Colombia	1.3	Canada	1.6
7	**Germany**	**1.1**	Philippines	1.5
8	China	1.0	Nicaragua	1.4
9	Honduras	0.8	United Kingdom	1.7
10	**El Salvador**	**0.8**	**Germany**	**1.6**

Note: Highlighted countries indicate overlaps between foreign born country of origin and call destinations.
Sources: New York City Department of Planning Community District 12 Profile (December 2008) and a large U.S. telecommunications provider.

While matching country of origin data to call destinations is not feasible at the scale of the wire

center, it is possible for the five boroughs of New York. Because call data for the wire centers can be

aggregated up to the borough scale, I was able to match call destinations with data on foreign born

populations and their country of origin from the U.S. Census 2006-2008 estimates from the

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[11] Not knowing the precise boundaries or the foreign born groups presented a problem in the case of the wire center that corresponds with Borough Park in Brooklyn. Borough Park houses the city's largest concentration of Orthodox Jews and almost half of the neighborhood's residents are foreign born, at 41.7 percent of the neighborhood's total population. The calling data partially reflects this group within some of the wire center's top calling destinations: Israel, Poland and the Russian Federation. But other calling destinations include Mexico, Guatemala and Ecuador, a divergence likely due to this neighborhood being adjacent to Sunset Park, a Latino enclave. The Voronoi diagram that I used to locate the wire centers splits Sunset Park between Borough Park and Bay Ridge, which houses predominantly European and Asian immigrants. As a result, in this corner of Brooklyn there is little clarity between the foreign born groups as aggregated according to the Community District and the wire center long distance calling data.

American Community Survey. While the U.S. Census does not have country of origin data for all of the 222 countries present in the telecoms provider's call data, I was able to access data on the number of foreign born people in each borough from 69 countries. In Chapter 3 I show how calling destinations are indeed related to the provenance of foreign born groups at the scale of the city borough, with the strongest association existing in Manhattan.

Field Research

In order to help me interpret the transnational processes implied by the call patterns revealed through the call data I performed field research in the form of semi-structured interviews and environmental observation. I conducted this field research over five visits to New York City between July 2009 and July 2010, each visit lasting for one week. As Levitt and Glick-Schiller (2004) state, "ethnography is particularly suited for studying the creation and durability of transnational social fields" (p. 1013) since this method is effective in revealing transnational activity as a process – how it shifts over time and space in response to different circumstances. In the case of this study, field research opens a wider window into how telecommunications is a tool used by migrants and presents an opportunity to ground-truth findings from the data analyses.

Interviews

In the semi-structured interviews I sought to reveal in detail how people use the telephone strategically to mediate transnational activity and maintain contacts abroad. I tried to mirror the call data by asking my interview subjects about the frequency of calls in a month, length of conversation, mode of call, and cost.[12] Information that comes out of this approach allows me to try to match and synthesize the qualitative findings with the quantitative analysis: I can ask whether my calculation of call minutes per capita looks reasonable and if the weekly call pattern coincides with people's lived experience.

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[12] See Appendix IV for sample interview questions.

Since longitudinal data was not available from our telecoms partner, I asked my interview subjects

to in effect act as a time machine on my behalf. Both young and old recounted how they have stayed

connected with home in the years since they had migrated from their country of origin. This

strategy enabled me to capture in part how changes in telecommunications technologies over time

have influenced the different strategies people use to stay connected. I can also discuss how the

purpose and content of conversation has changed over time – shifting from a 'crisis and celebration'

type of exchange when calling was expensive to a 'daily life' type of exchange since calls have

become cheap.

I interviewed twenty-four migrants for this study using convenience and snowball sampling

techniques. An acquaintance introduced me to people in Corona, Queens and facilitated several early

interviews with immigrants from Colombia. In Washington Heights and Hamilton Heights, I relied

on introductions to Dominican immigrants by the head librarian at the City University of New

York's Dominican Studies Institute Archives and Library. In Elmhurst, Queens I made contact with

recent immigrants from Mexico and Ecuador by approaching people on the street and in call

centers, or *cabinas*, over the course of my observations to ask about their international calling

activity. Table 1.2 presents the profile of all twenty-four of interview subjects. I chose to focus my

interviews on immigrants from Latin America since I am bilingual in Spanish and English and thus

had the capacity to speak with subjects in whichever language they preferred.

Upon introducing myself to a prospective interview subject, I presented them with a consent form,

which was approved by MIT's Committee on the Use of Humans as Experimental Subjects on July

14, 2009.[13] I used a digital recorder to capture the interviews and later transcribed and coded the

interviews using the TAMSAnalyzer software for qualitative analysis. I conducted interviews in

both Spanish and English, as chosen by the interviewee. All interviews lasted between twenty

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[13] Refer to Appendix V for a coy of the interview consent form in English and Spanish.

Table 1.2
Profile of interview subjects, n=24

Subject characteristics		Count
Gender	Women	16
	Men	8
Age	20s	8
	30s	5
	40s	3
	50s	4
	60s	4
Country of origin	Dominican Republic	12
	Colombia	5
	Ecuador	2
	Mexico	2
	Honduras	1
	Jordan	1
	Italy	1
Documented (naturalized, resident, or visa)	Yes	21
	No	3
Years in the United States	0-5	5
	6-10	4
	11-20	5
	21-40	3
	40+	4
	Born in USA	3
Plan on staying in United States	Yes	11
	No	8
	Maybe	5

minutes and one hour. When introducing my research interest to the interviewees, I framed it as a

conversation about how they stayed connected with their family and friends at home which elicited

much advice about which were the best calling cards and calling plans. From the more practical

aspects of calling, the conversation would turn to the more affective aspects of staying connected

and in turn, stories of how they came to the U.S., why they emigrated, and how they consider their

relationship to their countries of origin over time. This revealed to me the centrality of the

telephone in people's transnational lives.

Observations

Along with the interviews, I also wanted to use field observations in order to capture how

transnational processes are inscribed into the physical fabric of New York's neighborhoods,

particularly the ones that the call data reveal to be the most 'extroverted.' I chose to focus on two

such places – upper Manhattan and central Queens - from a rank list of the most internationally

oriented neighborhoods, measured by outgoing international calls as a percentage of total long

distance calls (Table 1.3). It is from these two areas of the city that I sought out my interview

subjects as well. In Chapter 4 I discuss further criteria for choosing to carry out observations and

interviews in upper Manhattan and central Queens that go beyond the volume of international calls

they generate.

Table 1.3
Top 10 extroverted neighborhoods in New York City by outgoing international calls as a
percentage of total outgoing long distance calls, September 2008.

Rank	Neighborhood	Borough	International %
1	Elmhurst	Queens	22.1
2	Inwood	Manhattan	21.9
3	Flatbush	Brooklyn	21.2
4	Washington Heights	Manhattan	20.5
5	Richmond Hill	Queens	19.9
6	Hamilton Heights	Manhattan	17.6
7	Williamsburg	Brooklyn	17.1
8	Jamaica	Queens	16.8
9	Crown Heights	Brooklyn	14.5
10	Canarsie	Brooklyn	14.3

Source: Author's analysis of data from a major U.S. telecommunications provider.

I documented my observations through photographs, maps and written notes, focusing on the

observed evidence of how different ethnic groups inhabit and appropriate particular streets or types

of commercial activity. As I mentioned earlier in this Introduction, in Elmhurst, Queens, different

streets within blocks of each other explicitly cater to particular ethnic groups. Yet the public spaces

of this neighborhood – the parks, plazas and sidewalks – comfortably accommodate a cross section

of recreational activities. Due to the diversity of foreign-born people in Elmhurst, particular streets may function as "ethnic enclaves" but people also feel comfortable sharing those residual, public spaces of the neighborhood with each other. This is indicative of something E.B. White observed about New York back in 1949, "New York is peculiarly constructed to absorb almost anything that comes along." (p.697)

Another aspect of my field observations involved collecting information on the cost of international calls as displayed in calling card advertisements and postings of calling rates in the *cabinas*. Where rates were not posted publicly in *cabinas*, I spoke with the manager on duty to ask about which countries were the most popular destinations for calls from that locale and the per minute calling rates for the top countries. By collecting this information, I am able to compare how calling rates vary by mode of call, type of service and neighborhood – another parameter through which I can detail the affordability of international calls and how migrants use the telephone as a transnational tool.

Structure of the Study

This dissertation is organized into two parts. The first part asks: which neighborhoods of New York City are the most global, as measured by flows of information through the city's telecommunications infrastructure, specifically telephone calls. The answer to this question – that neighborhoods with high concentrations of foreign born people also exhibit a high volume of international phone calls – motivates the second part of this study: how do telecommunications in the 21st century mediate the process of migration?

Following this Introduction, Chapter 2 is titled "Globalization 'from below'" and establishes a framework for my study by surveying how literature on global and networked cities and on

migration and transnational practices consider the role of ICTs in these processes. Finding that there is a lack of empirical evidence about the worldwide connections from *within* a global city leads to the analysis presented in Chapter 3, "Between Neighborhood New York and the World" where I examine the long distance call data along with the corresponding demographics at the scale of the city as a whole, by borough, and by neighborhood. The most globally connected neighborhoods from the perspective of the city's telecommunications network are those that predominantly house the city's immigrants, therefore I employ the demographic data to offer an empirical characterization of these places.

Chapter 4 serves to delve further into the scale of the neighborhood by teasing out the patterns of talk for two of the city's most connected neighborhoods: Elmhurst, Queens and Washington Heights in Manhattan. I examine the volume of calls for those two neighborhoods by day of the month and time of day to capture the temporal shift of international calling from predominantly immigrant neighborhoods during the month of September 2008. This approach allows some speculation as to the purpose of international calls, which appear to satisfy affective and social needs since call volume tends to increase on nights and weekends, during people's free time.

In Chapter 5, "The 21st Century Migrant Experience", I report findings from interviews and observations in Upper Manhattan and central Queens. The telephone is a critical tool for transnational action and the principal mode of contact for New York's immigrants. Because of the uneven development of telecommunications infrastructures between the United States and the developing world, it is the migrants in New York who initiate and maintain contact with their family and friends abroad. As affordable as calls have become in the past fifteen years, immigrants are mindful of their resources and therefore manage very sophisticated strategies to reduce cost and maximize calling minutes. The lack of predetermined or definitive migration strategies means that staying in contact not only plays an affective role in migrants' lives – which I find to be heavily

gendered – but also a practical one: maintaining a transnational social network operates as insurance for an eventual return.

I conclude in Chapter 6 with a summary of my findings and a discussion of the implications for urban policy and planning. This study's empirical look at the "space of flows" emanating from perhaps the world's preeminent global city serves to expand our notion of the "space of places" within New York City that are intimately linked abroad through telecommunications. We find that areas in the city where migrants settle are as engaged in global processes as the great business centers of the city, and according to one measure, they are more so. An important reason for this is the affordability and accessibility of international communications, allowing migrants to maintain intimate connections with their countries of origin, thus transcending the boundaries that separate them from their families and other interests. The telephone's capacity to facilitate simultaneous involvement in daily life in turn opens up the possibility for engaging in transnational practices that challenge our assumptions about immigrant life, such as transnational mothering or circular migration. Migrants' decisions about their lives' trajectories are fluid and contingent on their capacity to survive either 'here' or 'there.' In the meantime, many aspire to return to their country of origin and therefore transfer considerable resources over there to safeguard their future by building houses, buying land, and supporting family members. What this implies for the immigrant neighborhoods of New York City is that they house a population that is "permanently temporary" where stretches between a migrant's arrival and potential departure could last as long as forty years. The practice of urban planning in the 21st century is thus challenged to respond to a condition in the city's most 'extroverted' neighborhoods that is not neatly characterized by settlement or incorporation, but also contains elements of hybrid experiences, flux and uncertainty.

CHAPTER 2
Globalization 'From Below'

Scholars who investigate the contemporary process of globalization concur that information and communications technologies (ICTs) have been critical to establishing, strengthening and maintaining global connections between people, firms, and cities. The increasing accessibility and affordability of long distance telephone calls and Internet connections facilitate an immediate and intense exchange of information across distant geographies, which in turn allows for a spatial stretching of economic and social networks (Larsen et al, 2006). This assertion is shared as much by those who focus their studies on the worldwide networks of cities and elite multinational firms at the "top" (Sassen 2001 (1991); Sklair 2001; Taylor et al. 2002, 2007), as by those who examine the sustained transboundary connections forged by international migrants from "below" (Portes et al. 1999; Levitt and Glick-Schiller 2004; Guarnizo 2003; Smith 2006).

While there is a longstanding consensus in the literature about the importance of telecommunications in maintaining relationships across space and time, we still have a constrained understanding of the density and reach of contemporary telecommunications networks at a global scale. This is partly due to a lack of available data (Smith and Timberlake 2002; Derudder 2008), but also due to a focus in the literature on analyses that measure relationships between nation-states (Lee et al 2007) or are ethnographically focused on individuals (Horst 2006). As an urban planner, my interest in this study lies in how New York relates to the world through the global telecommunications infrastructure, and furthermore, how and why those globe-spanning connections may vary between neighborhoods within a city. More specifically, I seek to reveal how these invisible global dynamics are related to urban areas that have not yet been the subject of intense study, such as immigrant neighborhoods.

In order to frame my study, this review of the literature draws from theoretical and empirical research in the fields of globalization and migration, the influence of telecommunications in transnational processes, and accounts of how these forces combine in an urban context at the turn of the 21st century. I identify three areas of inquiry that contribute to understanding the role played by global electronic linkages in migration, urban life and development. First is the study of *global urban networks*, which identifies the role of cities within international networks of production and exchange. Second is *immigration in New York*, which examines the nexus between migration and cities and the historical importance of immigration to the vitality of New York City. Third is the work on the role of *information and communications technologies (ICTs) in transboundary connections*, which reviews findings on how migrants use technology to mediate relationships between their host and home communities. My study seeks to forge a connection between these fields by presenting an empirical examination of how global exchanges are embedded at the intra-urban scale of one of the world's foremost immigrant cities. Ultimately, my aim is to understand to what extent advances in telecommunications have changed the migrant experience, and whether the intensity of relationships across geographic space and national boundaries has implications for neighborhood life in America's increasingly diverse cities.

Global urban networks

The link between global economic forces and urban processes was first proposed over two decades ago by Friedmann in his "World City Hypothesis" (1986; see also Friedmann & Wolff 1982), which stated that cities are the basing points of a new international division of labor. Several themes arose out of Friedmann's work that have persisted in the literature on cities and globalization, including a) the identification of a hierarchy of world cities; b) cities as the location for global command and control functions in key knowledge industries such as finance and business services; c) the growth of these world cities due to international migrants seeking jobs at the "core" of the global economic

system; and d) the emergence of a polarized spatial and social structure where professional elites

manage the world economic system and low-wage migrants staff the elites' demand for services.

These themes have been further elaborated by Sassen's influential research on global cities, which

identifies the strategic role of cities in coordinating a globally integrated, yet spatially dispersed

economic system of exchange and production (2001 (1991), 2002).

According to the global cities literature, the global economic system is composed of a network of

major cities that act as command points from which the leading economic sectors of finance and

business services manage their global activities. Essential to these cities functioning as control

centers are the sophisticated infrastructures for telecommunications and information technologies

that assemble in urban areas and allow transactions to occur almost instantaneously and over vast

distances. Centers with established and robust telecommunications infrastructure, such as the

central business districts (CBDs) of global cities, thus have an absolute advantage in attracting the

kinds of multinational firms that require instantaneous access to information drawn from a global

network of locales. Moreover, these high-level economic activities cluster in cities because face-to-

face interaction is also critical for complex deal making. As Sassen points out, the urban

environment functions as an information center that cannot be replicated in electronic space. She

hypothesizes that "The more globalized and digitized the operations of firms and markets become,

the more their central management and specialized servicing functions (and the requisite material

structures) become strategic and complex, thereby benefiting from agglomeration economies."

(2003: 7) Thus the city offers a built and social environment that can support the complex dealings

of market globalization.

As certain cities become the key nodes of a worldwide economic network, scholars theorize that

these globalizing cities begin to reflect the structure of the resulting international division of labor.

This is a polarized or dual structure that at the top engages what Sklair terms the "transnational

capitalist class", made up corporate, political, technical (i.e. professional) and consumerist (i.e.

merchants and media) factions who operate across state boundaries as a normal part of their

working lives. At the bottom of this system are international migrants seeking the work

opportunities generated by the corporate firms and their workers' lifestyles:

> In this way, global cities have become places where large numbers of low-paid women and immigrants get incorporated into strategic economic sectors. Some are incorporated directly as low-wage clerical and service workers, such as janitors and repairmen. For others, the process is less direct, operating instead through the consumption practices of high-income professionals, who employ maids and nannies and who patronize expensive restaurants and shops staffed by low-wage workers. (Sassen 2006: 30)

The Transnational Capitalist Class makes decisions, strikes deals and consumes high-end goods

while an immigrant underclass fills the low-wage service jobs needed to support these high-end

economic functions.

A principal consequence of the influence of globalization on cities is an hourglass urban structure

divided between rich and poor (Mollenkopf and Castells 1991; Sassen 2001 (1991); Suarez-Orozco

2004), which is spatially fragmented into exclusive enclaves containing global financial functions set

up against so-called, "Third World neighborhoods" (Marcuse and Van Kempen 2000: 23). All of the

studies referenced above take the city of New York as their object of study and a look at U.S. Census

figures appear to support their assessment. *The New York Times* reports that the gap between rich

and poor in New York City is the widest of any city in the U.S. and that income inequality in

Manhattan is particularly dramatic: in 2007, "the wealthiest 20 percent of Manhattanites made

nearly 40 times more than the poorest 20 percent – $351,333, on average, compared with $8,855."

(Roberts 2007) Over the past six years, the poverty rate in New York City has remained at a

staggering 19 percent. Analysts interviewed by *The New York Times* seem to concur that,

"competition for low-wage jobs in the city, many of them filled by immigrants, depressed their

income." (Roberts 2007)

With regards to how this socioeconomic context relates to telecommunications flows at a global

scale, an initial look at a sample of the telecom data that I analyze further in this study led Sassen to

characterize global communications linkages also under the notion of a dual city[1]:

> Global talk happens largely among those at the top of the economy
> and at its lower end. This point is one of the striking pieces of
> evidence coming out of the data analyzed here. The vast middle
> layers of our society are far less global; the middle talks mostly
> nationally and locally. (2008: 10)

By the "top of the economy", Sassen is referring to those people involved in the global industries of

finance, business services, trade, and mergers; in other terms, the people Sklair refers to as the

transnational capitalist class concentrated in Lower Manhattan's financial district and Midtown's

corporate headquarters. By "the lower end", Sassen is suggesting the international migrants who

arrive in New York from all corners of the world seeking economic opportunity and who settle in

the city's working class neighborhoods.

But the anthropologist Roger Sanjek challenges this dominant perspective that characterizes the

social order of New York as a dichotomy between the top and the bottom and decries scholars'

almost exclusive focus on the lives of "cosmopolitan" New Yorkers. In his study of urban politics in

the city's most ethnically diverse district, Corona-Elmhurst in Queens, Sanjek offers a framework

for studying what he calls "neighborhood New York"[2] in order to reveal the varied dynamics of the,

"working- and lower-middle class urban majority." (2000: 28) Likewise, despite of what one would

assume from the title of their book *Dual City*, Mollenkopf and Castells concur with this perspective

and conclude their inquiry by distinguishing between a coherent core of corporate professionals in

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1 Sassen served as an advisor to the MIT Senseable City Lab for the New York Talk Exchange (NYTE)
project. She initially analyzed a sample of the telecom data in her capacity as advisor to the project (see Rojas
et al. 2008).
2 Sanjek explains, "Neighborhood New York is where the city's working and lower-middle classes reside, and
where its new immigrants settle. It contains many languages and many local and occupational codes. It is a
city of small businesses, diverse houses of worship, well-used parks, schools that children walk to, civic and
ethnic associations, little-noted public rituals, neighborhood hangouts, local memories and traditions, old-
country and down-home survivals, foods of delicious variety, and ways of getting around formal rules,
oversized bureaucracies, and labor market rigidities." (p. 29)

Manhattan and a disorganized "plurality of peripheries" which occupies neighborhood New York

and is, "fragmented by race, ethnicity, gender, occupational and industrial location, and the spaces

they occupy." (1991: 402). Indeed, the city's working and middle classes are conspicuously absent

from the global cities literature, as the assumption is that they are white, professional and have long

since moved outside the boundaries of the city to suburban areas. Furthermore, working and

middle-class New Yorkers are assumed to be neither immigrants nor part of the international

managerial elite, and therefore we should expect them to have no ties to global processes and no

need to engage others abroad. In Chapter 3 I relate neighborhood-scale household income data with

international telecommunications flows to empirically test this hypothesis and reveal that global

processes are not exclusively the domain of high-wage professionals. Specifically in terms of

communications flows, the low-income neighborhoods of the city produce a significantly higher

volume of international calls, measured as a percent of total long distance calls from the city, as

either the middle- or the high-income neighborhoods of New York.

Another possibility is that a polarized and fragmented city is not necessarily the result of

contemporary forces of globalization, but rather an urban condition endemic to cities that have long

been at the center of an integrated global system of trade and production. John Logan argues that,

"...the key features of social inequality in New York are traceable not so much to the city's new

function in the world economy," as the global cities literature contends, but rather, "to its

continuing and expanding function as a receptor of peoples." (2000:160). In other words, it is not

contemporary New York's global economic functions that lead to its particular social order but

rather the city's increased racial and ethnic diversity as a consequence of immigration. This

perspective concurs with Abu-Lhugod's (1999) argument that New York has long been a so-called

global city – at least since its integration into the world's mercantile and industrial system over 150

years ago – a role which has always attracted waves of immigrants to the city, and only more so in

the current and accelerated globalizing era. This insight leads to the principal question I explore in

this dissertation: what role do ICTs play in the contemporary dynamics of immigration? Due to constraints in the telecommunications data available for this study, I am not able to carry out a longitudinal analysis of international phone traffic but in Chapter 5 I contrast how immigrants arriving in New York before the information age maintained contacts abroad with the means by which today's arrivals connect with family and friends in their countries of origin.

The ease and immediacy with which telecommunications infrastructures facilitate interaction across space and time is consistently cited in the literature as a critical component for today's global practices. According to Castells (1996), contemporary globalization is fundamentally different from the global economic integration of the 19th and 20th centuries because today's ICTs facilitate the formation of worldwide, *real time* networks that benefit from nearly simultaneous and instantaneous interactions. This dynamic constitutes what Castells calls the "space of flows," which, as discussed in the Introduction, refers to the, "…sequences of exchange and interaction between physically disjointed positions…" (1996: 412) The space of flows theory asserts that material and electronic exchanges are organized into different networks at a global scale, which in turn are composed of strategic nodes (such as cities) that situate people's activities in space and time. Thus, globalization is primarily a system of global *urban* interactions, where cities and new technologies are the nodes that structure world-spanning networks of information, finance, goods, ideas, crime, among other activities. Furthermore, those few "meganodes" where many networks overlap are the global cities as conceptualized by Friedmann and Sassen. New York, for example, is a major node in global networks of finance, media, art, fashion, and migration, to name just a few.

From a review of the global cities literature, it is evident that decoding the different types of activities that constitute global urban networks has been a challenge. The Globalization and World Cities (GaWC) research group led by geographer Peter J. Taylor has focused its work on understanding intercity relations, having identified a paradox in the literature on globalization and

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cities: "whereas the essence of world cities is their relations to each other, researchers have generally not focused on this aspect of their being." (Taylor et al. 2002: 97). However, this is an elusive avenue of inquiry as researchers have found it difficult to empirically sustain the claim that the world is organized into a network of functional urban nodes since available data is neither transnational nor relational – meaning that data is not available to establish functional relationships between cities (Derudder 2008). Nevertheless, an early attempt by the GaWC researchers to measure intercity linkages involved tracing the global network of business service firms in order to measure flows of information and material between cities. The outcome is an inventory and hierarchy of world cities that are connected to each other through the producer services network (New York, London, Paris, etc.). While valuable in sketching out a particular network of business relationships, this type of analysis is an approximation of just a slice of one global urban network, since their methodology constituted interviewing actors operating within a defined economic field.

Robinson (2002) critiques this approach since it leaves millions of people and hundreds of cities "off the map'". Because the GaWC group has focused on a "narrow range of formal economic processes... myriad other connections between cities are missing." (Derudder 2008: 570). With few exceptions (Sassen 2002), cities in the global south are rarely accounted for in the many published discussions of the global network of cities, and even more rare are studies that look beyond the global economic sectors of business services and finance. It is hard to say whether this lack of attention is due to intellectual blinders or lack of evidence, nevertheless, both the people and places that fall outside of core corporate networks have been largely neglected in the study of global cities.

Taylor (2004) indeed cites "the problem of evidence" in breaching the gap between the conceptual notion that cities are increasingly important due to their transnational functions and actual evidence of such trends. Smith and Timberlake (2002) attempt to push the empirical approach forward by using network analysis to understand the relations of world cities as defined by the exchanges that

link them. They map the world city system through a longitudinal study of airline-traffic routes to discern change or stability in the hierarchy of world cities. Smith and Timberlake themselves acknowledge that analyzing airline passenger exchanges is a limited way to understand links between cities (as do Witlox and Derudder 2007) and note that, "Data on communications flows among cities would be very exciting to have." (2002: 139). Graham also admits that relational connections among world cities are poorly understood and that very little is known about how, "the global wiring of the planet… interconnects with the development of intense concentrations of new communications infrastructures within global cities." (2002: 139) Derudder concurs by noting that infrastructure studies are perhaps the most promising way to overcome the knowledge gap as, "they are basically all about connections and flows." (2008: 569).

This study's analysis of telecommunications data between New York's neighborhoods and countries around the world, while not achieving the precisely desired condition of connecting cities to cities, nevertheless marks a considerable contribution to quantifying and delineating the flows of information from a global city to the rest of the world. Perhaps more consequently, this study has the capacity to at once uncover the micro-dynamics of information flows at an intra-urban scale and expand our notion of which places and activities constitute global networks. According to Smith and Timberlake, a benefit of having more accurate descriptions of the network of world cities would lead to a better understanding of how, "global processes articulate with local communities, and how community groups can resist, ameliorate, or harness globalization in efforts to create more humane places to live." (2002: 139) While admittedly vague, this statement resonates with this study since it points towards the potential of the research approach presented here in informing community action, planning and policy decisions at a local scale, as discussed in my Conclusion.

In sum, studies on globalization and the city tend to take the city as a whole as the unit of analysis. Most often, a global or world city is characterized according to its high-end economic activities, for

example by quantifying the number of corporate headquarters or the amount of foreign direct

investment it attracts. This perspective is constrained and neglects to investigate the economic,

political, social and cultural dynamic of people who operate at a global scale yet outside of the so-

called cosmopolitan corporate realm. Indeed, there is great variation in activity from neighborhood

to neighborhood *within* any given metropolitan area. As Leonie Sandercock notes in *Cosmopolis II*:

> ...The contemporary phenomena of immigration and ethnicity are constitutive of globalization and are reconfiguring the spaces of and social relations in cities in new ways. Cultures from all over the world are being de- and re-territorialized in global cities, whose neighborhoods accordingly become 'globalized localities' (Albrow, 1997: 51). The spaces created by the complex and multidimensional processes of globalization have become strategic sites for the formation of transnational identities and communities, as well as for new hybrid identities and complicated experiences and redefinitions of notions of 'home.' (2003: 92)

I argue that the study of how global processes manifest themselves in different places within cities is

important and likely to generate a broader perspective in our understanding of the global urban

network. In fact, the analysis I present in the following chapter shows that migrant-sending locales,

such as the Dominican Republic, are as connected to New York through the telecommunications

network as its already identified global counterparts in financial dealings, such as the United

Kingdom. The density of global information flows is as much a function of the scale of international

migration as it is of commerce. An analysis of international, long distance telecommunications

allows us to open a window into these issues.

Immigration in New York

Due to the length of time of immigrant settlement – over two hundred years – and the diversity of

groups in New York, the historian Kenneth T. Jackson characterizes New York as the "premier

immigrant city in North America" (1995: 581). In 1855, for example, New York was the largest city

in the western hemisphere with over 600,000 inhabitants, and over half that total hailed from

abroad. By the turn of the twentieth century, forty-one percent of the city's population was foreign

born, still the highest rate of immigrants to date. But, in the year 2000, "as if by centennial design"

(Suarez-Orozco 2004: 19), the foreign born in New York stood at thirty-six percent of over eight

million people, with the second generation of immigrants accounting for another twenty-five

percent of the city's population. As I discuss in the Introduction, international migration to New

York has offset domestic out-migration from the city in the past two decades and significantly

contributed to the city's population growth. More striking still is that, "…over 70 percent of the

city's foreign-born entered the U.S. in 1980 or later…" (NYC Department of City Planning 2004: 3),

roughly coinciding with the advent of cheaper flights and communications. Admittedly, many

economic and political factors in sending countries and in the United States have also contributed to

the increase in immigrants over the past three decades (Foner 2001).

The phases of immigrant settlement in New York have coincided over time with the four periods

identified by Massey (2003) in his work on modern patterns of international migration. Up until

1800, the mercantile period of international migration brought the Dutch and British to New

Amsterdam. The industrial period of the 19th and early 20th century saw the influx of Irish, Jewish,

Italian and German immigrants. There was limited migration from the Great Depression until the

early 1960s due to a quota system in the nation's immigration law that barred most immigrants

from coming to the United States. But since the passage of the 1965 Immigration and Nationality

Amendments, which abandoned the quota system and focused on family reunification and workforce

skills, the inflow of people to the U.S. during the so-called "post-industrial migration" period has

shifted away from Europe and is now dominated by Latin America, the Caribbean and Asia. Unlike

Los Angeles, the other significant gateway city in the United States, "New York's immigrant

population is much more diverse in racial and ethnic terms than those of other cities" (Kasinitz,

Mollenkopf and Waters 2002: 1023) since it receives immigrants from a broader base of sending

regions. Reflecting New York's global attraction to migrants, Jackson's *Encyclopedia of New York*

(1995) contains entries on every ethnic group in the world. For this study, the diversity of

immigrants in New York presents the opportunity to identify a broad variation in global links between neighborhoods through the city's telecommunications network.

TABLE 2.1: World Region of birth of foreign born by NYC Borough, 2006-2008

	New York City	Manhattan	Brooklyn	Queens	Bronx	Staten Island
Foreign born	3,048,967	462,238	946,451	1,095,965	442,817	101,496
Latin America	52.1%	43.4%	52.0%	49.1%	75.3%	24.9%
Asia	25.6%	29.4%	22.0%	33.9%	7.9%	29.6%
Africa	3.9%	4.3%	3.0%	2.1%	8.7%	7.6%
Europe	17.4%	19.3%	22.2%	14.4%	7.9%	37.2%
Oceania	0.3%	1.2%	0.2%	0.0%	0.1%	0.2%
N. America	0.7%	2.4%	0.6%	0.4%	0.2%	0.5%

Source: US Census Bureau 2006-2008 American Community Survey (ACS)

According to the American Community Survey for 2006-2008 (see Table 2.1), the boroughs with the highest concentrations of foreign-born migrants are Queens, with 36 percent of the city's total, and Brooklyn, with 31 percent of the city's total. In Queens, the number 7 subway train connecting Times Square to Flushing is colloquially known as the "International Express" since it traverses ethnic neighborhoods of Chinese, Colombian, Indian, Irish, Italian, and Turkish origin, among others. The concentrations of foreign-born residents in the Bronx and Manhattan are about even, with approximately 15 percent of the city's immigrants. Within Manhattan, immigrants are concentrated in just a few neighborhoods in Lower and Upper Manhattan such as Chinatown and Washington Heights. The latter alone is home to almost 100,000 Latinos, mostly Dominicans (New York City Department of City Planning 2004). Staten Island has a very small foreign-born population, just 3 percent of the citywide total, though an analysis by the City University of New York's Center for Latin American, Caribbean & Latino Studies reports an upward trend of Latino settlement in this borough, increasing by almost 20,000 people from the years 2000 to 2007 (Limonic 2008).

Douglas Massey's synthetic theory of international migration for the 21st century does not rely on the traditional "push" and "pull" factors but instead argues that, "immigration is a natural consequence of broader processes of social, political, and economic integration across international borders" (2003: 25). He combines aspects of development theory, world systems theory and social capital theory to argue that migrants do not emerge from poor, disconnected corners of the world but instead, the processes of market integration and growth in sending countries spurs migration. The structural organization of the global economy in essence demands migration and therefore migrants come from places that are already part of the global network of exchange. My findings in Chapter 3 support this assertion: the telecommunications links between "extroverted" neighborhoods and foreign countries revealed by the telecoms data also coincide with the foreign born groups concentrated in those immigrant neighborhoods, with Upper Manhattan showing the clearest coincidence between Dominican immigrants and the Dominican Republic as a destination of international calls.

As Sassen shows in *The Global City* (2001 (1991)), networks of global trade, information and production both create and feed a demand for labor, primarily in the service sector within the command and control centers of the global economy, thus partly accounting for the phenomenal growth in migration to cities such as New York, London and Los Angeles over the past three decades. Furthermore, Massey argues in his theory of cumulative causation that migrant networks themselves perpetuate immigration as a "friends and family" effect drives migrants to places with growing or established concentrations of immigrants. In essence, "migrants go to places to which they are already linked." (Massey 2003: 25) This process of progressive network building (Foner 2001) is further perpetuated by U.S. immigration law, which emphasizes family reunification. Of the immigrants I interviewed for this study, one-third had arrived in New York through the family reunification policy, illustrating the importance of this class of entry in contemporary migration to the United States.

The literature on migration debates whether the linked dynamics observed at the turn of the 21st century are markedly different than those that characterized the last great wave of global economic integration and migration over one hundred years ago at the turn of the 20th century (Castles and Miller 1993). At the heart of this discussion is the concept of "transnationalism", which I define and discuss in the following section of this chapter. With regards to this discussion of immigration and New York, I am interested in introducing Nancy Foner's (2001b) historical perspective where she compares how immigrants to the city have maintained relationships with their home societies during the city's two peak periods of immigration: at present and in the early 1900s. Foner explains that, "It may have been harder to maintain contacts across the ocean than it is today, but many immigrants in the last great wave maintained extensive, and intensive, transnational ties." (2001b: 49). According to Foner, the experience of Italian migrants at the turn of the 20th century fits closely with what the contemporary literature conceptualizes as being transnational. Many 19th century Italians in New York where sojourners, planning to stay for a limited amount of time before returning home, and lived the kind of dual or hybrid life that characterizes migrant's lives today: they arrived in New York believing that they would eventually return home; they left their family in Italy; they sent money through the mail or via hometown associations, or with delegates who would travel back to Italy; and they saved money in New York to eventually buy property in their home communities.

Despite the considerable friction of space and time experienced through transatlantic travel before airplanes, Foner reports that return migration rates were higher a hundred years ago than they are today. In *Between Two Nations* (1998: 96), Jones-Correa presents a table that compares rates of immigration and emigration from 1901-1990, showing that from the turn of the twentieth century up through the Great Depression, about one-third of immigrants returned to their countries of origin. In contrast, estimates for the 1960s to the 1990s were about twenty percent.

Figure 2.1 Comparison of U.S. immigration and emigration, 1901-1990 (Jones-Correa 1998)

Table 12. Comparison of U.S. immigration and emigration, 1901-1990 (in thousands)

Period	immigrants	emigrants	Net immigration	Ratio of emigrants to immigrants
1901-1910	8,795	3,008	5,787	0.34
1911-1920	5,736	2,157	3,579	0.38
1921-1930	4,107	1,685	2,422	0.41
1931-1940	528	649	-121	1.23
1941-1950	1,035	281	754	0.27
1951-1960	2,515	425	2,090	0.17
1961-1970	3,322	900	2,422	0.27
1971-1980	4,493	1,176	3,317	0.26
1981-1990	7,338	1,600	5,738	0.22
Total (1901-1990)	37,869	11,882	25,987	0.31

Sources: Figures for 1901-1980 are from Warren and Kraly, "The Elusive Exodus from the United States," Population Reference Bureau, 1985; figures for 1981-1990 are from the Census Bureau, U.S. Department of Commerce.

Most migrants initially do not intend to settle permanently in their host country; they emigrate with the intention of solving economic problems at home by working temporarily abroad (Piore 1979, Jones-Correa 1998, Massey 2003).

> From the sojourners' point of view, migration is intended as a short interval in the long trajectory of their lives. Many migrants arrive with a "target" in mind – they only plan on staying long enough to save enough money to take back home... The fruits of their efforts are not meant to be enjoyed here in their host country. "Target" migrants plan to spend as little as possible here, saving their income and sending it home, or accumulating enough to open a small business, buy land, or build a house upon their return. (Jones-Correa 1998: 94)

Decisions about when to return, however, are often in flux and contingent on economic conditions in the host and home communities. However, "as international migrants accumulate experience abroad, their motivations change...yielding a rising likelihood of settlement over time." (Massey 2003: 26). The migrant experience itself changes them as they forge social and economic ties to their host communities – having native-born children in the receiving country, accumulating pensions from work, etc. – thus yielding a condition that Grasmuck and Pessar (1991) term "permanently temporary" and that Jones-Correa (1998) calls the "myth of return."

This raises the question as to whether increased access to telecommunications has changed the migrant experience: Do migrants stay longer in their host country than they otherwise would because they can maintain intimate relationships with their home communities while being geographically distant? Does the ability to employ affordable telecoms and travel, and therefore live simultaneously in two places to an extent not previously possible, influence migration decisions?

In other words, it may be that the ease of transcending geographical distance by maintaining immediate links through ICTs influences migrants experiences with incorporation in the receiving country, whether they perceive themselves to be settlers or sojourners, and how they weigh their decisions about remaining in the host country or returning to their country of origin. Findings from field interviews indicate that those most engaged in international calling tend to express a strong desire to return to their country of origin and, through their constant engagement with long distance calls, they seek to maintain their economic, social and affective ties during their time apart from family and friends. The "myth of return" is a strong motivator in fostering ties, and even when migrants establish roots in their receiving countries, maintaining a social network and investments back home – such as property – serves as a valuable safeguard against hardship in case a return is necessary (Smith 2006).[3]

Transboundary Connections

The contemporary notions of global links and migratory networks discussed above have motivated social scientists to try to define the increasingly evident connections and activities that cross borders and seemingly transcend space and time. As Waldinger succinctly notes, scholars are

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[3] Smith (2006) offers the account of Doña Florencia who inherited a house in her native town of Ticuani in Mexico that she keeps for herself and her children even though her family lives in New York. It is a place to spend vacations but also serves as, "a refuge from the uncertain environment in the United States... She saw her house in Ticuani as a safety net: if she became unable to survive in New York, she would move back to Ticuani" (p. 197)

working to detail and explain the connections between 'here' and 'there' (2007, 2008). What has emerged over the past two decades is a literature on transnationalism that encompasses various aspects of the immigrant experience including labor, religion, politics, economics, culture, entrepreneurship, social, and family relations (Glick Schiller et al, 1992; Smith and Guarnizo, 1998; Portes et al, 1999; Levitt, 2001; Smith, 2006). Transnationalism is often defined broadly as, "the processes by which immigrants forge and sustain multi-stranded social relations that link together their societies of origin and settlement." (Basch et al, 1994: 7) But some argue, most notably Waldinger (2008), that "transnationalism as a condition of being", or people who can be effectively called "transmigrants", are not as common as researchers contend. Factors such as political barriers to movement across boundaries and eventual incorporation into the host society reduce the proportion of migrants who are actively engaged in activities 'here' and 'there'.

Nevertheless, Levitt and Glick Schiller have further refined the concept of transnationalism away from physical mobility by introducing the notion of "transnational social fields," which, "takes us beyond the direct experience of migration into domains of interaction where individuals who do not move themselves maintain social relations across borders through various forms of communication." (2004: 10). Under this conceptualization, political borders do not serve as constraints to transnational activity, and telecommunications become instrumental to activating these transnational social fields. More concretely, the simple telephone call increases access to information and connections between families and friends who stay behind when someone emigrates. Horst's (2006) ethnographic work on the changes brought to Jamaican villages with the availability of mobile phones reveals a collapse in, "the distance between Jamaicans at home and abroad due to their ability to create a sense of involvement in each other's everyday lives." (p.156). This finding exemplifies David Harvey's (1990) notion of how telecommunications produce a sense of "time-space compression" in our contemporary lives and enable the experience of "simultaneity," life lived transnationally on a day-to-day basis (Levitt 2009).

Communication as transnational practice becomes significant when considering that nowadays telephone calls have a very low barrier to entry in economic terms. A widely advertised mobile phone plan in New York City today offers unlimited international calling to many countries in Latin American for sixty dollars per month, prepaid with no service contract. Just a few years ago, sixty dollars bought you just one hour of telephone time abroad. Moreover, Orozco et al (2005) list telecommunications as one of the "5Ts" that promote economic development in migrants' home countries (the other T's are: remittances transfers, tourism, transportation, and nostalgic trade). Telecommunications companies in the United States and abroad have garnered large profits from installing infrastructure to facilitate interaction between migrants and their homelands. Not surprisingly, international long distance calling has been one of the fastest growing segments in the telephone industry, growing 12% from 2007 to 2008 for a total of 384 billion minutes worldwide (Telegeography). Guarnizo (2003) reports that a marketing study from 1998, "Latin Americans in the United States were making $2 billion (or 5% of the U.S. residential long distance market) worth of international phone calls a year to friends and family in their countries of origin (Beachy, 1998)." Figure 2.1 is a table from Orozco et al (2005), which illustrates that sending countries also benefit from this activity, both the national telecoms operators and local enterprises that trade with the United States.

Figure 2.2 Phone calls between the U.S. and Central American countries (Orozco et al. 2005)

Table 1.7: Phone calls between the United States and selected Central American countries

Country	Total minutes (2002)	US revenue (US$)	Payment to country (US$)	Household-to-household minutes (2003)
El Salvador	659,528,740	185,825,580	68,190,716	492,510,153
Guatemala	909,056,312	300,132,848	77,585,373	305,441,973
Honduras	338,475,478	108,026,709	77,177,514	169,417,799
Dominican Republic	1,005,737,128	149,761,218	41,348,782	660,806,085

Source: Same as Table 1.1 and United States Census Bureau, 2000; 2001, 2002 International Telecommunications Data, Federal Communications Commission, December 2001, and January 2003.
Note: Computation based on an average of four calls a month at 5, 8, 15, 25, and 30 minutes per call. Formula was sum of phone calls = annual minutes × percent calling × immigrant percent remitting (from 2000 US census).

Furthermore, Waldinger's 2006 survey of Latinos by the Pew Hispanic Center found that, "… the most common form of cross-border exchange is communication," with the most prevalent being telephone calls. "Three quarters of foreign-born Hispanics call someone in their native land at least occasionally, and two-thirds do so at least once a month. About 41% call at least once a week, with about 20% calling more than once a week." (2006: 3) Vertovec identifies the boom in cheap calls since the 1980s as the development that has most facilitated global linkages, particularly for international migrants. He states that, "One of the most significant (yet under-researched) modes of transnational practice affecting migrants' lives is the enhanced ability to telephone family members. Whereas in previous eras migrants had to make do with exorbitantly expensive calls or slow-paced post, they are now able to communicate with their families abroad on a regular, if not day-to-day basis." (2004: 220)

The possibility of simultaneity across distance has influenced social changes that have most notably affected family structures. Hondagneu-Sotelo and Avila (1997) describe the emergence of transnational motherhood as more women migrate to work as nurses, nannies and housekeepers, occupations with a growing demand in developed countries. As with transnational social fields, the notion of transnational motherhood does not describe, "physical circuits of migration" but rather, "circuits of affection, caring, and financial support that transcend national borders." (p.550). Because wage earning in the United States is not compatible with child-rearing, women must often separate from their children, husbands, and/or extended families for long periods of time. Motherhood is redefined in a transnational context away from "daily, face-to-face caregiving" (Hondagneu-Sotelo and Avila, 1997: 562) to conveying and maintaining affective ties through remittances, letters, photos and of course, telephone calls. Transnational motherhood is therefore a lens through which the transnational social field enabled by ICTs intersects with gendered experiences of simultaneity.

A question yet to be explored in the literature, but that is perhaps implied in the case of transnational motherhood, is whether instantaneous communication spurs migration. European researchers Adela Ros et al (2007) suggested this hypothesis in a working paper on migration and information flows. With the possibility of maintaining intense connections over distance, the emotional cost of separating with family and friends is lower as regular contact over the telecommunications network tempers long separations. The feminization of the service sector in the United States over the past twenty years has favored women in hiring, and especially migrant women in part because of a wage differential that makes it cheaper to hire them (by paying under the table) than others (Figure 2.3). This contrasts with earlier migration eras where male household members would migrate first to find work in industrial sectors and, once established, would send for their wives and families to join them in the host country through family reunification. Researchers began to identify the trend of women and mothers migrating abroad on their own in the late 1990s (Donato 1993; Boyd 1996; Hondagneu-Sotelo and Avila 1997), roughly at around the same time as the steep drop in the cost of international calls (see Figure 1.5).

While the potential relationship between transnational forms of family structures and the dramatic drop in the cost of telecommunications and travel teeters on the edge of ascribing technological determinism on cheap phone calls and plane flights, infrastructures of communications and mobility do indeed, "facilitate or constrain the extensity and intensity of global connectedness in any single domain. This is because they mediate flows and connectivity." (Held et al. 1999: 19) So, if we join Massey's theory of migration as a "friends and family" effect that concentrates migrants in particular places with findings that show migrants primarily call internationally to reach their inner circle of friends and family, does this suggest a relationship between the two activities? In other words, does the ease of connecting across space and time within a social network further reinforce the snowball effect of migration? This is a question that lies beyond the scope of this thesis but nevertheless constitutes an area of future research that I discuss further in my Conclusion.

Figure 2.3 Number of Men and Women Workers by Sector of Employment (Levy 1998)

Figure 4.5 Number of Men and Women Workers by Sector of Employment
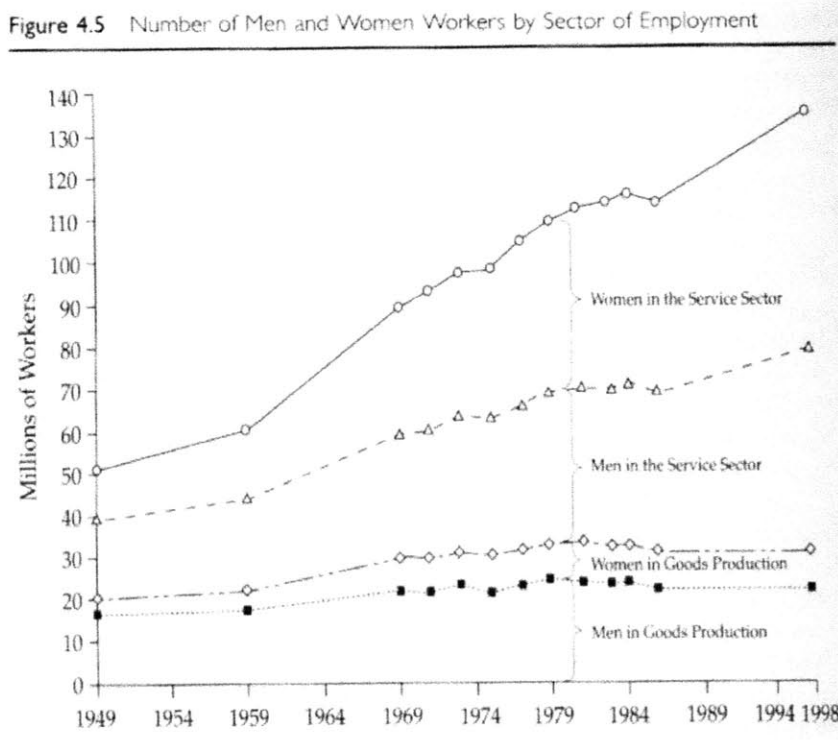
A consideration of place

Since this study examines how globalization is anchored in particular places within New York, I am interested in raising a related, outstanding question concerning the consequences on host communities of increased transnational connections by migrants. How are transnational practices inscribed in the physical environment of neighborhoods with strong linkages abroad?

Transnational Urbanism (Smith 2001) presents an approach to understanding the relationship between cross-border exchanges in an urban context. Smith argues that the networked systems of global trade, transportation and communications have transformed urban places into what he calls "translocalities". Analogous to Doreen Massey's concept of a global sense of place, translocalities maintain multi-faceted and multi-scalar links to locations elsewhere, extending beyond

neighborhood, city or national boundaries. Sassen also speaks of translocalities and defines them as, "...sites that are not geographically proximate, yet are intensely connected to each other." (1996) The call data allows us to test for the presence of translocalities, or judge neighborhoods as being more or less "extroverted", as defined by the telecommunications network and also to map those global links. While this study builds on existing ethnographic work that looks at how individual migrants use telecoms to forge transboundary connections (Horst 2006; Burrell and Anderson 2008), it also presents a perspective of interest to urban planners and policymakers by localizing and aggregating international connections at the scale of the neighborhood.

Researchers of transnational processes, such as Levitt, recognize that cross-border practices are always anchored somewhere specific and those practices have varying consequences for local communities (2001). Perhaps of greatest consequence for predominantly immigrant communities is the lack of local investment from residents who save prodigiously only to send those resources abroad. As Jones-Correa comments regarding the implications of the myth of return on immigrant communities: "problems in New York are temporary, but those in the home country are permanent." (1998: 103). This attitude has repercussions for strategies of incorporation and civic engagement in predominantly immigrant areas of the city; if residents do not consider themselves "residents" in the same way that planners may view that target population, then policies addressing their issues may be ineffective and misguided.

Translocalities are only possible because pervasive and affordable means of communications allow people to instantaneously jump scales between their local community and the rest of the world. Local practices and conditions become directly articulated with other sub-national sites through a combination of digital and physical interactions that do not have to move consciously through a hierarchy of scales: from local to regional to state to global. (Sassen 2007: 239) Yet in order to address the local specificities of such practices, Smith advocates for a transnational urbanism that

recognizes and investigates how cross-border activities come together in particular places and

assess how they are woven into the everyday fabric of communities. In Levitt and Jaworky's terms,

"place-specific contexts matter – 'spaces' become actual places when particular global flows

converge..." (2007:144).

The concept of transnational urbanism also recognizes the role of migrants and networked systems

in shaping the 21st century global city and calls for scholars to address globalization "from below"

(Smith and Guarnizo 1998). It evokes how people:

> ...maintain transnational connections by using advanced means of
> communication and travel, which because of their simultaneity,
> indirectly implicate transnational actors in an orbit of cosmopolitan
> ideas, images, technologies, and sociocultural practices that have
> historically been associated with the culture of cities. (Smith, 2001:5)

Smith's purpose, then, is to "free the notion of everyday life from its frequent association with purely

local processes or with a fixed local level of analysis," (2001: 15) and impart the study of

communities with a perspective that accounts for activities that bridge both "here" and "there." (see

also Waldinger) While my work takes up the experience of 'here,' namely New York, research over

the past decade has focused increasingly on investigating transnational conditions in both locales

(Smith 2006).

Recognizing the transnational dynamics of urban neighborhoods is something that Sandercock sees

as being fundamental to the future of urban planning practice. More specifically, she identifies

immigrant neighborhoods as strategic sites for the formation of transnational communities,

producing complex experiences that planners need to understand as cities like New York, Los

Angeles, Chicago, Vancouver and certain new suburban gateways (Singer et al. 2008) continue to

grow due to the growing influx of foreign-born residents. Adopting Massey's (1994) 'extroverted'

perspective implies that planners consciously recognize the links that a place has with the wider

world and consider how local activities integrate with global ones.

Summary

The literature reviewed here concurs that telecommunications are a critical factor in globalization

and 21st century migration. Scholars argue that people who immigrate to a global city like New

York are likely to remain tied to their community of origin, which can be explained, in part, by the

reach and affordability of complementary communications and travel technologies. Perhaps

migrants maintain close links with their places of origin because they perceive their time abroad to

be temporary. It could also be that globalizing cities only provide for part of immigrants' needs, be

they social or economic: oftentimes, political boundaries force the separation of families or

bureaucratic requirements restrict employment opportunities. With cheap and immediate

communications technologies, immigrants are still able to invest and access other resources in their

communities of origin. The resources that flow to and from sending communities are then

materially expressed in the immigrant neighborhoods of the receiving cities creating translocalities,

which currently defy any existing urban planning paradigms within which they can be understood.

By analyzing call data localized by neighborhoods in New York City and through informant

interviews, this study adds detail to the dynamics of migrants' transnational activities by

uncovering the macro level process of international telecommunications flows and linking it to

individuals' lived experiences. An overview of the call data reveals that there is great variation in

the places that New York's neighborhoods relate to over the phone by world region and country. As

the consummate immigrant city in the United States, New York serves this study as an instructive

place to examine how global exchanges are anchored in local communities. Furthermore, in 21st

century New York, as in other large American cities, immigration is an increasingly salient issue in planning for the future, much as it had been at the turn of the 20th century.

Through this review of the relevant literature, I have also identified certain gaps in our understanding of how globalization, urban social structure, and transboundary exchanges are related. Access to empirical data on the international communications network anchored in New York City can begin to address these gaps. The chapters that follow will inform the study of global cities and migrant transnationalism by:

1) Expanding "the map": Our notion of what constitutes the global network of cities is constrained by conceptual blinders that regard globalization as a process that involves wealthy cities tied to the financial and multi-national corporate domains. Global connections are much more diverse, as material resources from all over the world are inscribed in the physical environment of immigrant neighborhoods. Through the volume of telecommunications flows going in and out of the city's neighborhoods, I quantify and map the vast international reach of New York City.

2) Characterizing the types of neighborhoods in New York that are engaged in international connections through the telecommunications network. What are the shared characteristics of New York's extroverted neighborhoods in terms of socioeconomic attributes and destination of global links? Examining how and why certain places within the city are more oriented abroad can help planners better understand the complex experiences of translocalities. The city's telecommunications patterns may inform our understanding of which areas of the city appear to be more transient or settled, where to expect future migrants, and generally anticipate the types of dynamics that serve urban planners in setting policy and working with communities to improve quality of life.

3) Detailing how ICTs mediate the 21st century migrant experience. In order to illustrate the lived experience of what is implied by the telecoms data, I offer narratives of how the telephone plays a prominent role in maintaining families connected. Other issues I consider in this realm include: who are the people that constitute the social networks most involved in simultaneous interaction through telecommunications, and what is the purpose and cost of staying connected? I consider whether the intense use of ICTs in any way influences migrants' trajectories, recognizing the current reality that circuits of migration are not static and may change over the life course. It is important to consider the case where citizenship and incorporation are not the ultimate goals for today's migrants and what implications this may have for planning cities like New York whose growth in the coming decades is predicated on international migratory flows of people.

CHAPTER 3
Between Neighborhood New York and the World

Voice communications have been critical to the development of New York City as a center for ideas, information, and culture. Just as the city's ice-free natural harbor led to the rise of trade and commerce, the telephone has shaped New York City's emergence as a global hub for the flow of information in, through and out of the city.

New York: The City of the Telephone
Anthony M. Townsend and Mitchell L. Moss (2008)

In this chapter I compose a picture of the communications flows between New York and the rest of the world at three geographic scales: the city, the borough, and the neighborhood. My aim is to answer the first set of research questions: to which areas of the world is New York most intensely connected via the global telecommunications infrastructure? And, which neighborhoods in New York City are the most 'extroverted' in terms of telecommunications links?

I first present an overall picture of New York's global connections at the city scale. I then ask whether a distinction exists between areas of the city that connect to the United States' trade partners versus New York's migrant sending countries by examining the areas of the world connected to business New York versus neighborhood New York. At the borough scale I test whether there is an association between the foreign-born groups present in an area and the global destination of calls from that same geographic location. And finally, I rank the most globally connected neighborhoods according to their volume of international calls and explore whether certain neighborhood characteristics may explain why these areas are more oriented abroad than other places in the city.

3.1 A Dual Geography of International Calls

The first step in understanding which areas of the world are most strongly connected to New York is to look at the city's telecoms connections as a whole. The expectation generated by prior global city analyses discussed in Chapter 2 is that New York City's calling counterparts are going to be its business partners such as the United Kingdom (London), Japan (Tokyo) and Germany (Frankfurt). Yet in surveying the literature on global cities and migrant transnationalism, we also learn that ICTs are purported enablers of transnational practices among international migrants thereby suggesting that some migrant sending countries should appear as calling counterparts for New York as well.

Table 3.1 lists the top twenty countries that connect with New York through the telephone as measured by the share of total international call minutes originating in the city. I compare the share of call volumes with demographic data on New York's foreign born and the United States' trading partners by country.[1] According to the network of a large U.S. telecommunications provider, the top destination of calls from New York City is the Dominican Republic, also the top source of New York's foreign-born population. The United Kingdom and Canada, ranked second and third, clearly represent business counterparts, but the city's relationship to Mexico, ranked fourth, likely reflects both trade and migrant connections.

By dividing up New York's long distance calls by domestic and international destinations, we see that indeed there are some unexpected guests at the table of technologically mediated globalization: immigrant sending countries. Of the top calling counterparts for New York, I have identified nine countries that are also top sending countries of migrants to New York, including the Dominican

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[1] The analyses presented in this chapter all use outgoing call minutes as the standard base of analysis instead of the number of calls. This is the protocol by which the Federal Communications Commission and TeleGeography base their measures and analyses as well.

Table 3.1

Comparison of top twenty destinations of calls from New York City ranked as percent of total international call minutes for September 2008 with corresponding percent of U.S. total international calls (2007), NYC percent of foreign born by country of origin (2006-2008), US trade partners (2007), and Per Capita GDP (2007)

Rank	Country	World Region	Call Destination from NYC (%)	Call Destination from USA (%)	NYC Foreign Born (%)	USA Import Partner (%)	USA Export Partner (%)	Per Capita GDP (U$)	Link
1	Dominican Republic	C. America/ Caribbean	11.7	2.3	13.1	0.2	0.5	4,179	M
2	Mexico	North America	9.1	17.8	6.4	10.8	12.0	9,516	M/T
3	United Kingdom	Europe	7.5	4.0	1.2	2.9	4.4	45,510	T
4	Canada	North America	7.0	12.2	0.8	16.1	12.9	43,396	T
5	Guatemala	C. America/ Caribbean	5.5	3.2	0.8	0.2	0.4	2,548	M
6	Ecuador	South America	5.3	0.8	4.9	0.3	0.3	3,432	M
7	Jamaica	C. America/ Caribbean	3.3	1.1	6.3	0.0	0.2	4,565	M
8	India	Asia	3.0	10.8	2.7	1.3	1.6	947	M/T
9	Germany	Europe	2.5	2.0	0.8	4.9	4.4	40,308	T
10	Philippines	Asia	2.4	3.5	2.0	0.5	0.7	1,624	M
11	Italy	Europe	2.2	1.0	2.4	1.8	1.3	35,686	M/T
12	Israel	M.East/North Africa	1.9	0.8	1.0	1.1	1.2	23,654	M/T
13	France	Europe	1.9	1.2	0.6	2.2	2.5	41,463	T
14	El Salvador	C. America/ Caribbean	1.7	1.8	1.0	0.1	0.2	3,336	M
15	Haiti	C. America/ Caribbean	1.5	0.9	3.3	0.0	0.1	641	M
16	Trinidad & Tobago	C. America/ Caribbean	1.4	0.3	3.4	0.5	0.2	16,269	M
17	Japan	Asia	1.3	1.1	0.8	7.6	5.5	34,379	T
18	Guyana	South America	1.3	0.2	5.3	0.0	0.0	1,407	M
19	Brazil	South America	1.2	1.6	0.5	1.4	2.2	7,017	T
20	Australia	Oceania	1.2	1.1	0.2	0.5	1.7	43,532	T
36	China	Asia	0.5	1.6	11.1	17.2	5.7	2,545	M/T

Note: M= migrant, T= trade, M/T= migrant and trade partner.

Sources: compiled by author from data from a large U.S. telecommunications provider, U.S. Census 2006-2008 American Community Survey (ACS), Federal Communications Commission 2009, IMF Direction of Trade Statistics 2008, International Telecommunications Union Basic Indicators 2007.

Republic, Ecuador, Jamaica, India, the Philippines, El Salvador, Haiti, Trinidad and Tobago, and

Guyana. Seven countries listed in the top calling destinations from New York are notable trading

partners with the United States, including Canada, the United Kingdom, Germany, France, Japan,

Brazil and Australia. A third group emerges from this list, countries that have both a trade

relationship with the U.S. and send migrants to New York: Mexico, Italy and Israel. A look at per

capita GDP for each of these countries suggests that, with the notable exception of Mexico and

India, strong economies tend to trade goods with the U.S., while weak economies tend to export

labor to the United States.

Still, two countries included in this list pose a bit of a puzzle: Guatemala and China. Guatemala

ranks fifth in calling destinations from New York City and sixth from the U.S., yet as a migrant

sending country it ranks 27th in New York and 11th in the United States. Also, Guatemala's volume

of trade with the U.S. is very low. In my fieldwork I found that phone cards offer relatively few

minutes of talk to Guatemala: with a $2.00 card, a person can speak for 32 minutes to Guatemala as

compared to 100 minutes to the Dominican Republic and 200 minutes to Mexico City. The opposite

situation exists with China, whereby its citizens compose the second largest foreign-born group

both in New York and in the U.S., yet as a calling destination it ranks 36th in New York and 13th in

the U.S. In trade, China is the prime exporter to the U.S., accounting for 17 percent of U.S. imports,

and is the number three destination for American exports. It is also as inexpensive to call China as it

is to call Mexico City: 200 minutes for two dollars.

Guatemala has weak migration and trade links to the U.S. and it is an expensive place to call yet it

exhibits strong telecommunications links to New York and the United States. Meanwhile, China has

strong migration and trade links to the U.S. and New York, it is an inexpensive place to call from

New York, but it has weak telecoms links to the city, at least through the network of one of the

U.S.'s large telecommunications providers. For the purposes of this study, I recognize that the

absence of China from the call data is a shortcoming. As for Guatemala, its links from New York City appear representative of the U.S., and it could be that immigrants from Guatemala call home in volumes that are disproportionate to their presence in New York.

I can imagine two other possible explanations: geography and infrastructure. In a study of the global telecommunications network, Barnett (2001) reported previous findings in Barnett and Choi (1995) that language and geographical location within the network accounted for 36 percent of the variance in the network structure. As this relates to the strength of New York's links to Guatemala, approximately 24.3 percent of New York City residents speak Spanish (ACS 2006-2008), the country's time zone is just one hour behind New York, and being located in Central America, it is just 2,000 miles south of the city in terms of physical distance. In contrast, approximately 7 percent of New York City's population speaks an Asian language, the time zone difference between New York and China is twelve hours – a full half day, where daytime in New York is nighttime in China – and the straight line distance to Shanghai is over 7,000 miles.

The high call volumes associated with Guatemala and low call volumes to China may be related to the availability of telecommunications infrastructure for receiving phone calls that originate in the United States. The CIA Factbook reports that while Guatemala's teledensity for fixed lines is low, only 11 out of every 100 persons had a landline telephone in 2008, its mobile teledensity is amongst the highest in the world, exceeding 100 per 100 persons, meaning that there are more mobile phones than people in the country. Guatemala is also the landing point for the regional telecommunications infrastructure, the Americas Region Caribbean Ring System (ARCOS-1) and the SAM-1 fiber optic submarine cable system, "that together provide connectivity to South and Central America, parts of the Caribbean and the U.S." (CIA Factbook). Guatemala's high position in the rank list of connecting countries with New York could be an artifact of the geographic structure

of global telecommunications and of the country's proximity to the U.S. in geographic distance and time zone.

China's fixed line teledensity is also low, at 27 landline phones per 100 people (CIA Factbook 2007), and mobile phone penetration accounts for about half of the population at approximately 48 mobile phones per 100 people (CIA Factbook 2008). By comparison, the U.S. has 88 mobile phones per 100 people and 49 fixed lines for every 100 people (CIA Factbook). In all cases it is reasonable that there are fewer landlines than people since fixed line phones are generally associated with places – a home, office or business – whereas mobile phones are associated with individuals. While here I can only speculate as to the reasons for the discrepancy in the data for China or Guatemala, the two possible explanations above may constitute an intriguing line of future research.

Overall, what we learn from Table 3.1 is that New York's calling destinations represent a mix of commercial partners and immigrant sending countries revealing a dual geography of international telecommunications links. In terms of engaging telecommunications as a tool for transnational activity, migrants appear to be on equal footing with global corporate interests in generating considerable international call volumes out of New York City.

3.1.1. Call Volumes from New York and the United States

To see how New York's top calling destinations compare to those of the United States as a whole, Table 3.1 also includes the corresponding share of total international calls from the U.S. as reported in 2007 by all telecoms carriers to the Federal Communications Commission (2009). Overrepresented countries in the New York data analyzed here are the Dominican Republic, accounting for almost 12 percent of all outbound international calls compared to two percent in the U.S., and Ecuador, at five percent in New York and less than one percent in the U.S. The underrepresented countries as calling destinations in New York are Mexico, accounting for nine

percent of international calls from the city and double that from the U.S. at 18 percent, and India where the difference between share of calling from the United States as a whole and from New York is eight percent. China is also underrepresented in this telecommunications dataset but to a lesser extent with a one percent difference between New York and U.S. call volumes. Notwithstanding these divergences, the top five calling destinations from the United States also figure in the list of New York's top call destination countries. According to data from the Federal Communications Commission, Canada, Mexico, Guatemala, India and the Philippines make up 50 percent of the international minutes in the U.S. (2008: 6-1). These partly overlap with New York, where the countries that make up 50 percent of the international minutes are also Canada, Mexico, and Guatemala, with the addition of the Dominican Republic, the United Kingdom, Ecuador and Jamaica.

While it is difficult to say with any certainty that the New York call traffic data from one major U.S. telecommunications provider is representative of U.S.-level data from all other carriers, I believe the comparison shown in Table 3.1 reveals the influential presence of foreign-born groups in New York on the global destination of calls from the city. This is a relationship that I explore further in this chapter by assessing the relationship between the country of origin of foreign born groups and the volume and destination of calls in each city borough.

Looking at call volumes by countries is informative, but may obscure the gravitational pull of New York towards a particular region of the world. Measuring the volume of calls by world region we learn that the city is most strongly oriented towards Central America and the Caribbean[2] (Figure 3.1), reflecting the strength of migrant links to the city.[3]

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[2] The region Central America and the Caribbean does not include Mexico, which together with Canada, constitutes the North America region. For a full list of countries by world region, refer to Appendix I.
[3] This brings to mind Joel Garreau's 1980s characterization of the nine nations of North America, where he claimed that the capital of the nation known as "The Islands", his terminology for the sphere containing

Figure 3.1

International calls from New York by world region (Sept. 2008)

Region	Value
Central America/The Caribbean	30.3
Europe	23.2
North America	16.1
Asia	11.9
South America	10.4
Middle East/North Africa	4.34
Sub-Saharan Africa	2.16
Oceania	1.36
NULL	.23

outgoing international call traffic (%)

Source: Large U.S. Telecommunications Provider
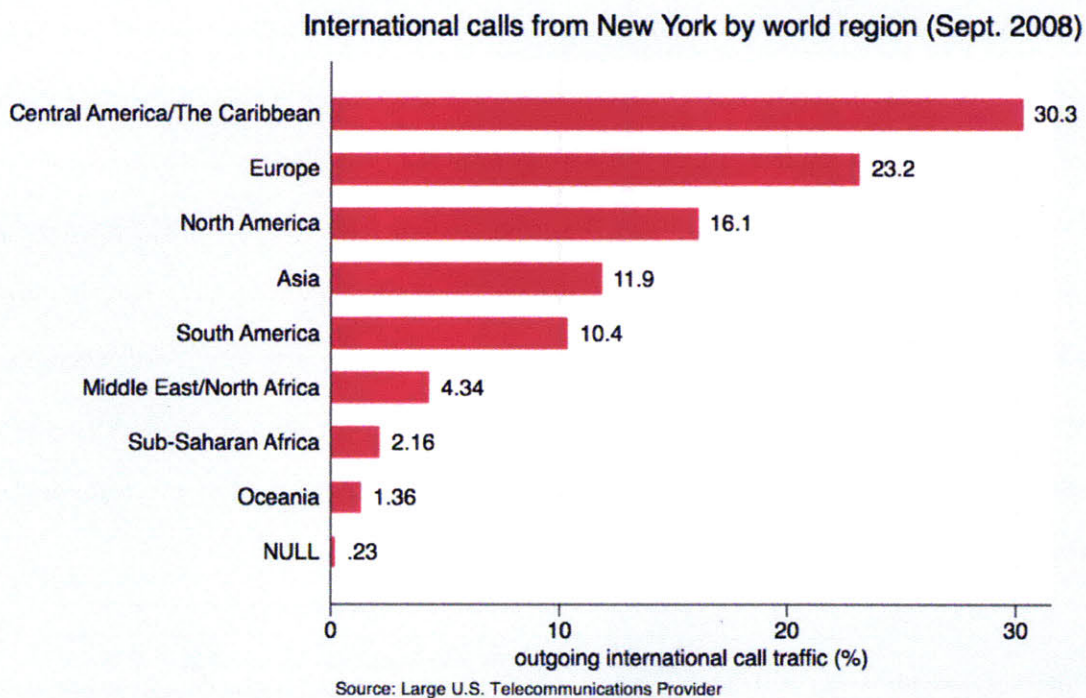
By being principally oriented to Central America and the Caribbean (representing 30 percent of total international calls), followed by Europe (23 percent) and North America (16 percent), New York diverges from the national trend in terms of its regional pull through telecoms. International calls from the United States are generally destined for North America (29 percent), Asia (20 percent) and Europe (15 percent) (FCC 2008), consistent with the country's principal trading partners (IMF 2008).

Central America and the Caribbean, was Miami. If we use telephone calls as a gauge, it may be that thirty years later, the capital of The Islands has shifted 1,200 miles north to New York City.

As a starting point, this examination of the international call data at the scale of the city opens a window into the considerable influence of foreign-born populations on the global connections of New York. This leads to the question of whether a distinction in calling volume and calling destinations exists between the city's predominantly commercial neighborhoods, where the work of global finance and corporate services takes place, and New York's residential neighborhoods, where most of the city's immigrants settle.

3.1.2. Corporate New York vs. Neighborhood New York

Using the demographic variables available for the 67 wire centers in New York, it is possible to distinguish the city's neighborhoods as being predominantly oriented towards business or residential activities. A ratio of employees to residents for each wire center allows for a characterization of those areas with a ratio higher than one to be deemed predominantly business-oriented areas of the city. This method identifies 11 neighborhoods in New York as being commercial neighborhoods, all located in Manhattan, and 54 neighborhoods as being predominantly residential. The analysis that follows omits two wire centers for lack of either demographic data (the wire center associated with JFK airport) or call data (corresponding to a wire center in lower Manhattan). In order to account for the slice of call traffic that the telecommunications data I analyze represents, I normalized the number of long distance call minutes by wire center according to the combined employee and residential population within each wire center and the estimated market share of the telecommunications network. Also, to suppress any potentially sensitive data related to the volume of telecoms flows from each neighborhood, I have indexed the call volumes to the wire center average for per capita call minutes, taking all wire centers into account.

Table 3.2 Rank of top extroverted areas of New York by normalized call volume and type of wire center/neighborhood: predominantly business or residential.

Commercial Areas of New York				Residential Areas of New York			
Neighborhood	Borough	International Minutes	Domestic Minutes	Neighborhood	Borough	International Minutes	Domestic Minutes
Tribeca/Chinatown	Manhattan	36.25	39.09	Flushing	Queens	1.18	0.83
Chelsea	Manhattan	5.53	4.95	Washington Heights	Manhattan	0.62	0.19
Financial District	Manhattan	2.24	2.67	Inwood	Manhattan	0.57	0.16
Murray Hill	Manhattan	1.46	2.99	Elmhurst	Queens	0.57	0.16
Times Square	Manhattan	0.93	0.63	Corona	Queens	0.53	0.40
Midtown West	Manhattan	0.72	1.40	Flatbush	Brooklyn	0.50	0.15
Midtown East	Manhattan	0.49	0.55	Williamsburg	Brooklyn	0.50	0.19
Battery Park City	Manhattan	0.38	0.50	Richmond Hill	Queens	0.49	0.16
Kips Bay	Manhattan	0.32	0.41	Astoria	Queens	0.47	0.28
Bowling Green	Manhattan	0.28	0.33	Jamaica	Queens	0.47	0.18
Clinton	Manhattan	0.20	0.41	Hamilton Heights	Manhattan	0.40	0.15

Note: International call minutes are normalized by population and estimated market share of the U.S. telecommunications provider and indexed by the mean per capita volume of calls for all wire centers.
Source: Author's analysis of data from a large U.S. telecommunications provider

Table 3.2 illustrates this comparison of business neighborhoods to residential neighborhoods in terms of their long distance call volumes. Examining the relative volumes of international calls between these two types of neighborhoods reveals that the top two business areas generate many more calling minutes per capita than the rest of the identified business neighborhoods and all of the residential parts of the city. In particular, it should be noted that the disproportionately high call volume for the wire center associated with Tribeca/Chinatown in Manhattan is a function of New York's citywide telecommunications infrastructure. This wire center contains within it at least two major long distance switching stations that route much of the city's long distance traffic for the telecoms provider involved in this study: 33 Thomas Street and 32 Avenue of the Americas (Asher 2005). These exchange buildings collect and route long distance traffic for areas beyond their immediate vicinity and thus represent a case where we see many more calls aggregated than can be

explained by the demographics that correspond to that wire center's geographic boundaries. This is

a drawback to the wire center approach employed in this study. Therefore, analyses that follow

discard the Tribeca/Chinatown wire center as an extreme outlier that is not representative of

conditions in its respective neighborhood context.

In order to determine whether there is a significant difference in call volumes between commercial

and residential neighborhoods, I employ a two sample t-test with the remaining 64 wire centers.[4]

As illustrated in Table 3.2, with few exceptions, the per capita call volume is higher among

predominantly commercial neighborhoods compared with residential neighborhoods for domestic

and international long distance calling. Indeed, differences in call volumes between business and

residential neighborhoods are significant at a $p<0.0001$ level per the t-test evaluation.

Next, the question arises as to whether the countries of the world that are linked to these two types

of neighborhoods via the global telecoms infrastructure somehow differ. Table 3.3 shows that

among the top twenty calling destinations of business-oriented and residential neighborhoods, there

is an overlap for about half of the countries between the two types of neighborhoods.[5] Highlighted

country names in Table 3.3 represent the cases where call destination countries are different

between the two columns.

_____

[4] Recall that omitted wire centers at this point include a Manhattan wire center with no associated telecoms data, the wire center that corresponds to JFK Airport due to its lack of associated demographic data, and the Tribeca/Chinatown wire center, which is unrepresentative of its urban context as it routes calls for the city as a whole.
[5] This table includes 62 of the 67 wire centers. Excluded from the tabulation are the predominantly business-oriented wire centers that correspond to Tribeca/Chinatown, Chelsea and Times Square since the call destinations from these areas of the city appear to represent citywide international phone traffic as opposed to reflecting destinations from the immediate urban area.

Table 3.3 Top 20 calling destinations from commercial and residential wire centers/neighborhoods by percent of total international call minutes.

COMMERCIAL NEIGHBORHOOD			RESIDENTIAL NEIGHBORHOOD		
Rank	Country	Share of Total Minutes (%)	Rank	Country	Share of total Minutes (%)
1	United Kingdom	22.3	1	Dominican Republic	13.0
2	Canada	12.8	2	Mexico	8.7
3	Germany	6.7	3	Ecuador	7.1
4	Mexico	4.0	4	Jamaica	4.4
5	India	3.3	5	Guatemala	4.4
6	France	3.2	6	Philippines	4.3
7	Hong Kong	2.9	7	Canada	3.6
8	Brazil	2.7	8	United Kingdom	3.6
9	Japan	2.4	9	India	2.7
10	Taiwan	2.3	10	Trinidad and Tobago	2.6
11	Italy	2.3	11	Israel	2.6
12	Israel	2.0	12	Italy	2.4
13	Australia	1.8	13	Guyana	2.3
14	Dominican Republic	1.8	14	Haiti	2.2
15	Switzerland	1.6	15	El Salvador	2.2
16	Ireland	1.1	16	Germany	2.0
17	Ecuador	1.1	17	Panama	1.9
18	Philippines	1.0	18	Poland	1.5
19	Guatemala	1.0	19	Colombia	1.2
20	China	1.0	20	Greece	1.2
	Total	100.0		Total	100.0

Note: Highlighted countries indicate differences within the top twenty calling destinations from commercial and residential areas of New York City.
Source: Author's analysis of data from a large U.S. telecommunications provider for September 2008.

A few of the countries that appear on both lists for commercial and residential neighborhoods are ones I classified earlier in Table 3.1 as being both trade and migrant partners with New York: Mexico, India, Italy and Israel. Otherwise, call destinations at the top of the rank list for commercial neighborhoods tend to be trade partners, while migrant partners are at the top of the list for residential neighborhoods. The differences between the two columns are informative in this respect: countries that are among the U.S.'s main commercial partners, particularly in Asia like China and Japan, appear as call destinations only in business neighborhoods and important migrant sending countries like Guyana and Jamaica appear as destinations only in the residential column.

Still, some migrant sending countries appear in the column of countries connecting with business areas of the city and some trade partners are present in the column for residential neighborhoods. But the position within the rank for say, Germany in the residential neighborhoods column, or the Dominican Republic in the commercial neighborhood column, is towards the bottom half of the list. Perhaps this indicates that the telecommunications flows from New York to these places in the world are strong enough to originate in all parts of the city, yet not so strong as to overcome the even more resilient connections to say, migrant countries from neighborhood New York and trade partners from corporate New York.

Thus, a comparison of telecommunications flows between the business and residential areas of the city begins to give us some sense of the possible content of communications flows from the two classifications of neighborhoods. In examining call volumes from these two types of neighborhoods, we can conclude that commercially oriented areas of the city generate significantly higher volumes of per capita international phone calls than residential areas of New York, which is consistent with theories of the global city. Also, connections to places like Guyana and Colombia are likely to reflect immigrant connections while calls to France and Hong Kong are probably made in support of business functions. There is nevertheless some ambiguity as to the intentions behind the volume of calls to places like the Dominican Republic, Guatemala and the United Kingdom. These are clearly either migrant or trade partners but appear as connections from both types of neighborhoods.

3.1.3. Immigration and International Calling

In this section, I explore further the influence of foreign-born groups on international calling by seeing if the concentrations of particular foreign-born groups in the five boroughs match up with the volumes of call traffic destined for different countries. Since we have found that neighborhoods with high rates of foreign-born residents (or second generation immigrants) are among the most extroverted, is it also true that the city's call destinations somehow relate to the countries of origin

Figure 3.2

Foreign born groups for the five boroughs of New York by place of birth, 2006

	Number	Percent
Bronx Population	1,369,859	100.0
Foreign-born	434,251	31.7
Foreign-born	434,251	100.0
Dominican Republic	139,429	32.1
Jamaica	48,383	11.1
Mexico	38,249	8.8
Ecuador	17,805	4.1
Guyana	15,683	3.6
Ghana	12,634	2.9
Honduras	11,924	2.7
Italy	9,118	2.1
Bangladesh	7,517	1.7
Trinidad & Tobago	5,642	1.3

	Number	Percent
Brooklyn Population	2,520,835	100.0
Foreign-born	942,921	37.4
Foreign-born	942,921	100.0
China	98,125	10.4
Jamaica	67,695	7.2
Haiti	60,273	6.4
Trinidad & Tobago	54,806	5.8
Dominican Republic	53,420	5.7
Ukraine	51,796	5.5
Mexico	50,202	5.3
Guyana	46,913	5.0
Russia	43,356	4.6
Poland	26,818	2.8

	Number	Percent
Manhattan Population	1,613,257	100.0
Foreign-born	457,360	28.4
Foreign-born	457,360	100.0
Dominican Republic	109,118	23.9
China	65,242	14.3
Mexico	20,927	4.6
United Kingdom	14,282	3.1
Ecuador	13,225	2.9
Japan	11,667	2.6
Korea	10,656	2.3
India	9,436	2.1
Germany	8,309	1.8
France	7,959	1.7

	Number	Percent
Queens Population	2,263,858	100.0
Foreign-born	1,093,622	48.3
Foreign-born	1,093,622	100.0
China	120,658	11.0
Guyana	77,814	7.1
Ecuador	77,032	7.0
Colombia	58,231	5.3
Dominican Republic	54,521	5.0
India	54,089	4.9
Mexico	48,315	4.4
Korea	47,927	4.4
Jamaica	47,661	4.4
Philippines	34,390	3.1

	Number	Percent
Staten Is. Population	478,501	100.0
Foreign-born	100,020	20.9
Foreign-born	100,020	100.0
Mexico	9,275	9.3
Italy	7,410	7.4
China	7,367	7.4
Ukraine	5,551	5.5
Russia	4,717	4.7
Poland	4,218	4.2
India	4,217	4.2
Philippines	3,812	3.8
Yugoslavia	3,507	3.5
Korea	3,166	3.2

Source: 2006 ACS centered on 2005-07 Full Sample

Source: NYC Department of City Planning, Population Division, (Salvo and Lobo 2009)

Table 3.4

Borough International Calls by Destination Country for each NYC borough, September 2008

Destination of calls BRONX	Percent	Destination of calls BROOKLYN	Percent
Dominican Republic	18.1	**Mexico**	11.4
Jamaica	16.5	**Trinidad and Tobago**	6.2
Mexico	8.1	**Jamaica**	5.7
Antigua and Barbuda	3.5	Guatemala	5.4
United Kingdom	3.2	**Dominican Republic**	5.3
Guatemala	2.8	**Haiti**	5.0
Ecuador	2.5	Israel	4.4
Italy	2.5	United Kingdom	4.1
Trinidad and Tobago	2.4	Panama	4.0
Canada	2.4	Ecuador	3.9

Destination of calls MANHATTAN	Percent	Destination of calls QUEENS	Percent	Destination of calls STATEN ISLAND	Percent
Dominican Republic	12.8	**Ecuador**	12.3	**Mexico**	13.9
Mexico	9.0	**Mexico**	8.3	Dominican Republic	7.7
United Kingdom	8.9	**Dominican Republic**	7.8	**Italy**	7.5
Canada	8.1	**Philippines**	7.4	**Philippines**	6.1
Guatemala	5.6	Guatemala	5.9	Ecuador	5.3
Ecuador	4.4	**India**	4.7	Canada	4.5
India	3.0	**Guyana**	3.6	Guatemala	3.2
Germany	2.9	Canada	3.5	Germany	3.1
Jamaica	2.7	El Salvador	3.2	United Kingdom	2.8
France	2.3	United Kingdom	2.5	**India**	2.6

Source: Author's analysis of data from a large U.S. telecommunications provider

of foreign born groups that reside in the different areas of New York City? While I cannot do this analysis with confidence at the neighborhood scale, as discussed in the Methodology section, I can attempt to answer this question at a higher scale of spatial aggregation: the borough. Figure 3.2 lists the most recent counts of foreign-born groups by borough as compiled by the New York City Department of City Planning from 2006 American Community Survey data (Salvo and Lobo 2009).

As a comparison, Table 3.4 lists the top ten calling destinations for each of the boroughs, where the highlighted countries identify an overlap with the place of birth for the top foreign-born group in each borough. Not all 223 countries represented in the call data are included in the regression analysis reported in Table 3.4 because the 2006-2008 American Community Survey does not list country of origin data for as many countries as New York's neighborhoods connect to over the telephone. Nevertheless, up to 69 countries are included in the data for both call minutes and foreign born population in each borough, including the top calling destinations and sending countries for the boroughs that appear in Figure 3.2 and Table 3.4 above. The regression model in Table 3.5 log transforms the two variables to normalize the distributions and linearize their relationship. In order to interpret the results, I calculated the exponent of the log values.

The R^2 is highest in Manhattan, where the foreign-born population model accounts for 67% of the variability in international call volume. This means that for a 10 percent increase in Manhattan's foreign born population from a given country, on average we can expect 10 percent more minutes of talk to that country from Manhattan per month. This interpretation is also consistent for Brooklyn and Queens where we should expect 10 percent more talk to a given destination for every 10 percent increase in the foreign born population from that destination (Figure 3.3). In the Bronx and Staten Island, 10 percent more foreign-born people will generate 8 percent more minutes in international calling to a corresponding migrant group's country of origin per month.

Figure 3.3
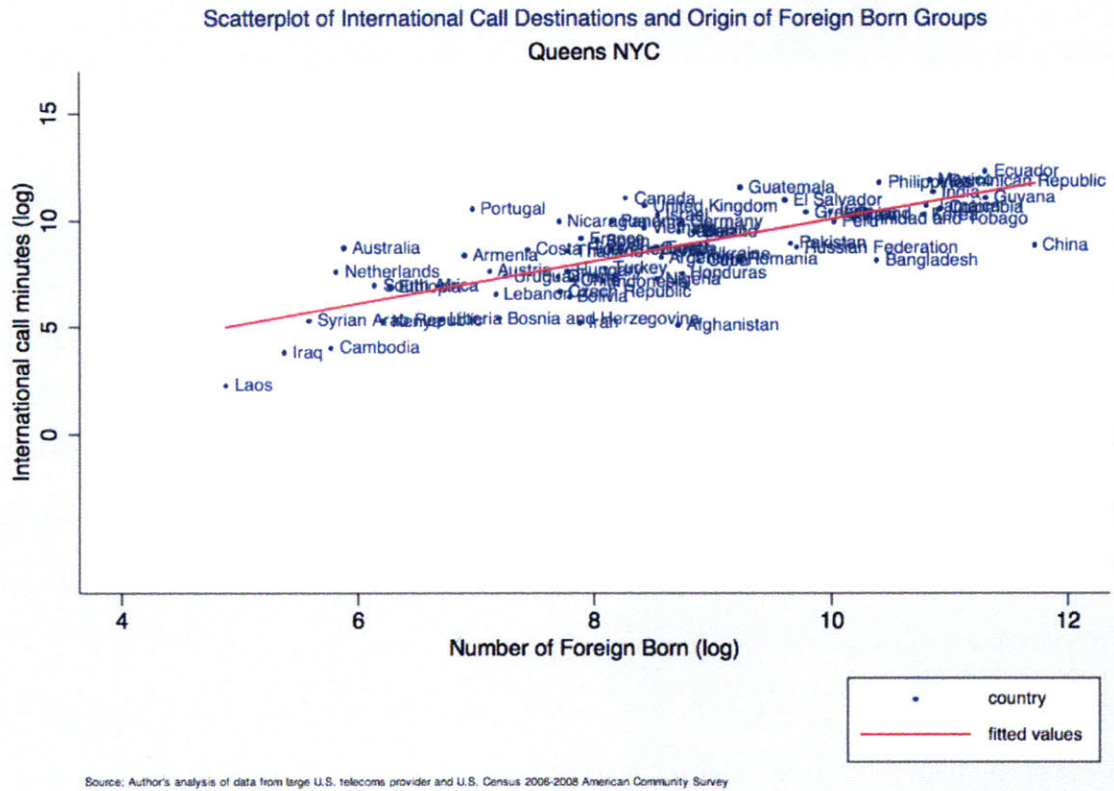
Table 3.5 OLS Regression Coefficients for Destination of International Call Minutes (September 2008) on Foreign Born Population by Country of Origin for each of New York City's Boroughs

Borough	Bronx	Brooklyn	Manhattan	Queens	Staten Island
Coeff.	0.831*	0.964*	1.026*	0.984*	0.840*
	(0.093)	(0.099)	(0.090)	(0.107)	(0.157)
Constant	1.106	0.134	2.675	0.230	0.802
R-squared	0.55	0.59	0.67	0.56	0.32
N	67	68	69	69	62

Note: Numbers in parentheses are standard errors.
*p < 0.001.
Source: Author's analysis of data from a large U.S. telecommunications provider and from the U.S. Census 2006-2008 American Community Survey.

While these results imply an almost one to one association between the presence of foreign born groups and the volume of calls to their countries of origin at the borough scale, because it is not possible to control for income in this analysis, these results may be less precise than desirable.

Nevertheless, the finding that foreign-born groups and calling destinations by country statistically coincide supports the premise of this study that communications flows can inform us about urban dynamics as they relate to ICTs and globalization at a sub-city scale. This analysis also suggests the potential value for urban planning in being able to establish a relationship between migrants' countries of origin and their calling destinations. Imagine a return to the century-old planning practice of employing telephone data as an indicator of demographic changes and growth patterns in the city. In an age when the function and management of urban areas is increasingly digitized – GPS enabled transit systems already communicate the whereabouts of a public bus in real time – and where powerful computation can easily analyze these resulting datasets, the information cycle between city function and city manager could become almost instantaneous. So it is conceivable that in the near future, the Population Division of New York City's Department of City Planning may be able to use real time data about the origin and destination of international phone calls to generate estimation algorithms that predict migrant flows into and out of the city at a neighborhood scale.

Given the importance of migration to the city's vitality, such an approach could both expedite the city's enumeration efforts without relying entirely on the U.S. Census' efforts, which notoriously undercounts foreign born people, particularly those that are undocumented migrants, and provide information at a scale of spatial aggregation below that of the Community District level.

3.2. Extroverted Neighborhoods

This section scales further down into the neighborhoods of the city to address the second question of my analysis: which New York neighborhoods are the most global? As mentioned in Chapters 1 and 2 of this dissertation, here I employ geographer Doreen Massey's (1994) notion of an extroverted sense of place, borrowing her terminology to determine which neighborhoods in New York are the most 'extroverted', or oriented abroad through the medium of international telephone calls. I present two approaches to determining the degree of extroversion for the wire centers, or neighborhoods, in the telecoms data set: by ratio of total call minutes and by per capita call minutes.

The first approach involves separating the long distance call minutes by domestic and international destinations as shares of the total long distance volume. We can then compare the New York City neighborhood rates of international calls to the U.S.-wide share of international calling minutes, which serves as a threshold figure to determine whether to designate a particular neighborhood as extroverted. Using data for 2008 from the FCC and the International Telecommunications Union, I calculated that 12 percent of all long distance calls made in the United States were destined for international points in that year. According to this threshold, 14 out of the 64 wire centers analyzed record a higher percentage than the U.S. average in outgoing international calls (Figure 3.4 and Table 3.6).

The extroverted neighborhoods are all primarily residential areas of the city and constitute what the sociologist Roger Sanjek calls Neighborhood New York as introduced in Chapter 2. This is not the glossy cosmopolitanism suggested by the images generated at the nexus of globalization and ICTs. Rather, it is notable that not one of the commercially-oriented areas of the city – not the Financial District or even Midtown – can be considered an extroverted area of the city according to this approach. The bar graph for Figure 3.4 shows business-oriented neighborhoods as lighter blue

bars. It is clear that, with the exception of Times Square, which comes in at position 25, most of the business neighborhoods are at the bottom of the list, ranking from 49th to 62nd out of a possible 64 areas. While relegated to the bottom of the pack in this particular measure of 'extroversion,' some of the business oriented wire centers, including Chelsea and the Financial District, nevertheless generate the most international call minutes in absolute and relative terms (see Table 3.2).

Table 3.6

Rank of New York City wire centers/neighborhoods by international call minutes as percent of all long distance call minutes, September 2008.

Rank	Neighborhood	Borough	International Minutes%	Domestic Minutes %	Foreign Born %	Foreign Language %
1	Elmhurst	Queens	22.1	77.9	61	71
2	Inwood	Manhattan	21.9	78.1	35	70
3	Flatbush	Brooklyn	21.2	78.8	54	34
4	Washington Heights	Manhattan	20.5	79.5	36	71
5	Richmond Hill	Queens	19.9	80.1	43	49
6	Hamilton Heights	Manhattan	17.6	82.4	26	38
7	Williamsburg	Brooklyn	17.1	82.9	50	65
8	Jamaica	Queens	16.8	83.2	43	42
9	Crown Heights	Brooklyn	14.5	85.5	35	21
10	Canarsie	Brooklyn	14.3	85.7	40	28
11	Laconia/Wakefield	Bronx	14.0	86.0	38	34
12	Borough Park	Brooklyn	13.9	86.1	62	66
13	Bensonhurst	Brooklyn	13.8	86.2	50	60
14	South Ozone Park	Queens	13.6	86.4	29	29

Source: Author's analysis of data from large U.S. telecommunications provider and 2007-2008 American Community Survey (ACS)

Figure 3.4

International Call Volume by NYC Neighborhood
as Percent of Total Long Distance Minutes
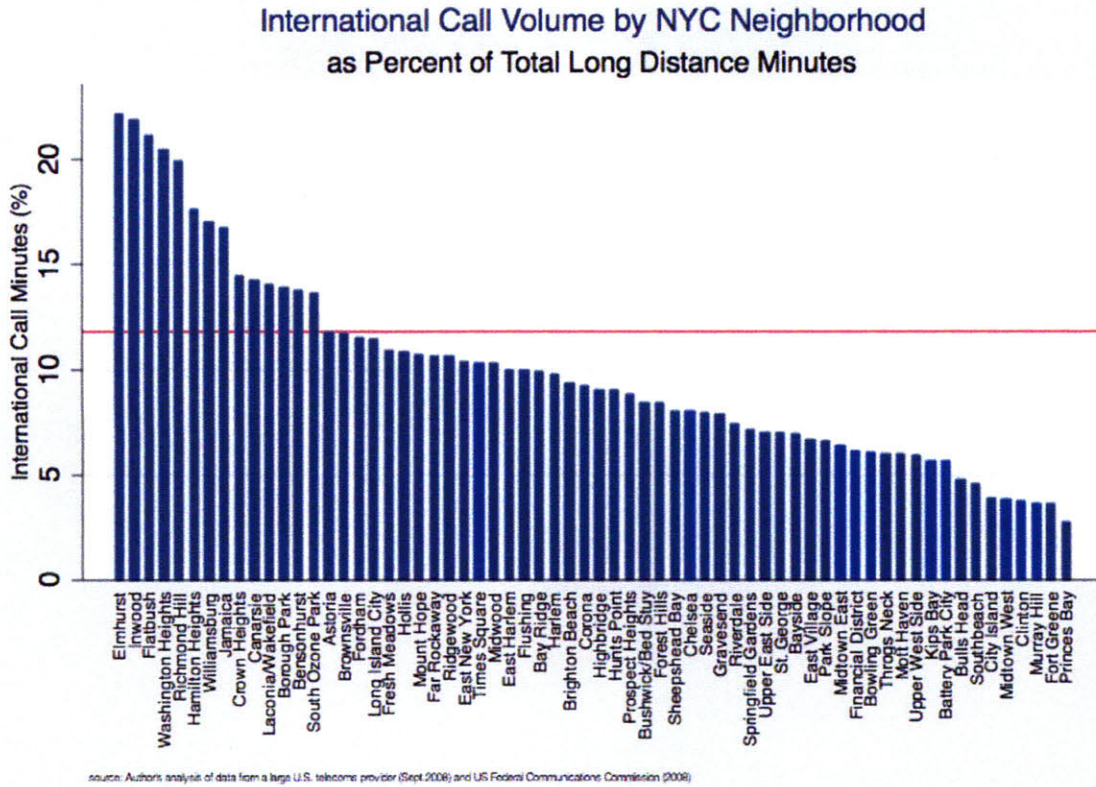
Note: the threshold figure for determining whether a wire center/neighborhood is extroverted is the U.S. rate of international long distance calls, indicated at 12 percent by the pink line. Dark blue bars represent residential wire centers and lighter blue bar are predominantly business-oriented areas (or wire centers) of the city.

Figure 3.5

NYC Extroverted Neighborhoods
by International Minutes as Percent of all Long Distance

0.03 - 0.07
0.08 - 0.09
0.10 - 0.12
0.13 - 0.22

note: values represent percent of all long distance
call minutes that are destined internationally.
only outbound calls are included.
call data from September 2008.

Laconia/Wakefield
Inwood
Washington Heights
Hamilton Heights
The Bronx
Manhattan
Elmhurst
Queens
Williamsburg
Richmond Hill
Jamaica
Brooklyn
Crown Heights
South Ozone Park
Flatbush
Borough Park
Bensonhurst
Canarsie
Staten Island

0 0.71.42.12.83.5 Miles

Sources: U.S. Census 2007-2008 American Community Survey
U.S. telecommunications provider

 Given the expectations generated by globalization theorists that corporate New York is the engine

of the city's global processes, it is surprising to see that the predominantly business neighborhoods

of the city are not in the top rank of extroverted neighborhoods. That said, it is also surprising that

taking together all the areas of New York, less than a quarter of the long distance calls made from

even the most 'extroverted' neighborhoods are destined internationally. Even the most global of

cities is still tied more strongly to areas within its nation-state than to the rest of the world.

At first glance, the fourteen neighborhoods listed as 'extroverted' in Table 3.6 all appear to be

recognized immigrant neighborhoods as determined by the NYC Department of City Planning's

Newest New Yorkers (2004) report based on the 2000 U.S. Census. Indeed, the percent of foreign-

born people in all but one of the neighborhoods – Hamilton Heights – is above the city mean of 34

percent. According to the foreign born model generated for the wire centers by researchers at our

U.S. telecommunications partner, more than half of the population is estimated to be foreign born in

four of the listed neighborhoods: Elmhurst (61%), Flatbush (54%), Borough Park (62%) and

Bensonhurst (50%).[6] And in the neighborhoods with proportions of foreign born residents near the

citywide mean, such as Inwood and Washington Heights, the percent of residents who speak a

language other than English is approximately 70 percent, indicating the presence of second

generation immigrants that may also maintain links to their family's country of origin.

Correlations between call minutes per capita and the proportion of the population in each wire

center that is foreign born and/or speaks a foreign language show that 36 percent of the variation in

international calls is explained by foreign born rates and 16 percent of the variation is explained by

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6 For more detail on the statistical model used to determine the rate of foreign born residents in each wire
center, refer to Appendix III.

the rate of foreign language speakers.[7] The foreign born and foreign language variables are highly collinear as they share approximately 55% of their variability with each other, which is to be expected as the foreign born model relies heavily on rates of language spoken at home, particularly non-English and Spanish, as discussed in the methodology section of Chapter 1 and Appendix III. Nevertheless, it appears that foreign born has a stronger relationship to international calling than speaking a foreign language. This could be attributed to the many English-language migrants in New York City that hail from Caribbean countries like Trinidad and Tobago, Jamaica and Guyana. All in all, these uncontrolled correlations indicate that the foreign born and foreign language variables are worth considering as potentially instructive in predicting volumes of international calls for the various neighborhoods in New York as discussed in section *3.2.1. Neighborhood Characteristics as Explanatory Variables* on page 97.

The second approach to characterizing an area as extroverted is to rank the wire centers by international call minutes per capita instead of international minutes as the share of total long distance (Table 3.7). Again, the figures listed in the table have been indexed to the mean of per capita minutes for international and domestic calls, respectively, using call data for 64 of the wire centers. This approach to identifying the extroverted areas of the city essentially compares neighborhoods to each other. Unlike the first approach, there is no appropriate national benchmark for determining whether an area of the city is 'extroverted' or not because of differences in data collection. Thus, those wire centers listed with per capita international calling indexes above one essentially have call volumes that are above the citywide mean. In this scenario, we find that 16 neighborhoods have more per capita minutes than the average neighborhood in New York. The results here differ from the first approach, particularly in that we see higher income neighborhoods and business neighborhoods move up the rank list, including the Upper East Side and the Financial

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[7] I normalized international call minutes by each wire center's combined residential and employee population, the estimated market share for the large U.S. telecoms provider, and a log transformation to linearize the variable.

District. Some of the top contenders from the previous list are still present, including the neighborhoods of Inwood, Washington Heights and Elmhurst.

Of the top-ranked extroverted areas of New York as determined by normalized per capita minutes of international calls, six neighborhoods are predominantly commercial and ten are predominantly residential. Among the residential areas, all are known as immigrant enclaves: Flushing is the "second Chinatown"; Washington Heights and Inwood are heavily Dominican; Elmhurst-Corona has a diversity of foreign born migrants from Latin America, the Caribbean and Asia; Flatbush and Jamaica have significant Anglophone Caribbean populations; Richmond Hill has the largest concentration of Sikhs in New York along with migrants from Guyana and Trinidad; and Astoria is a long-time Greek enclave with a growing Latin American population. On the whole, commercial neighborhoods tend to have above average calling minutes for both international and domestic destinations, whereas the extroverted residential areas of the city tend to have below average domestic call minutes per capita.

These results coincide with global cities theory in that the business neighborhoods are generating the greatest volume of calls both domestically and internationally. Yet we see that immigrant neighborhoods are also involved in initiating high volumes of global talk, apparently to the detriment of their domestic long distance calling. While these findings support previous research, they also help to fill out a missing piece of the global cities narrative: telecoms flows from immigrant areas of the city also play a notable role in the global processes of New York City. This last point is illustrated in Figure 3.6 above where we see that geographically speaking, neighborhood New York – mostly in Queens and upper Manhattan -- is as involved as corporate New York – concentrated in Midtown and Lower Manhattan – in engaging the world through telecommunications.

Figure 3.6
Map of top international calling neighborhoods in New York City.

NYC Extroverted Neighborhoods
by International Call Minutes

0.00 - 0.19
0.19 - 0.21
0.21 - 0.41
0.41 - 2.97
2.97 - 36.24

note: all values indexed to the mean number of
international call minutes for all wire centers.
call data from September 2008.

Inwood

Washington Heights   The Bronx

Manhattan

Midtown West
Midtown East
Times Square   Astoria   Flushing
Murray Hill
Chelsea   Elmhurst   Corona   Queens

Tribeca/Chinatown
Financial District   Williamsburg   Jamaica
Richmond Hill

Flatbush

Brooklyn

Staten Island

0 1 2 3 4 5 Miles
N

Sources: U.S. Census 2007-2008 American Community Survey
U.S. telecommunications provider

Figure 3.7
Map of top domestic long distance calling neighborhoods in New York City.

Domestic Neighborhoods
by Domestic Long Distance Call Minutes

- 0.00 - 0.18
- 0.18 - 0.19
- 0.19 - 0.37
- 0.37 - 2.91
- 2.91 - 39.09

note: all values indexed to the mean number of
international call minutes for all wire centers.
call data from September 2008.

The Bronx

Manhattan

Upper West Side
Upper East Side
Midtown West
Midtown East
Clinton Times Square
Chelsea Kips Bay
Battery Park City
Financial District

Flushing
Corona

Queens

Brooklyn

Staten Island

0 1 2 3 4 5 Miles

N

Sources: U.S. Census 2007-2008 American Community Survey
U.S. telecommunications provider

Table 3.7

Rank of New York City wire centers/neighborhoods by international call minutes per capita indexed to the wire center average.

	Neighborhood	Borough	Minutes per capita International	Domestic	Population % Business/Residential
1	Chelsea	Manhattan	12.30	12.22	71/29
2	Financial District	Manhattan	4.97	6.58	94/06
3	Murray Hill	Manhattan	3.26	7.40	87/13
4	Flushing	Queens	2.64	2.05	26/74
5	Times Square	Manhattan	2.07	1.55	99/01
6	Midtown West	Manhattan	1.61	3.47	78/22
7	Washington Heights	Manhattan	1.37	0.46	27/73
8	Inwood	Manhattan	1.27	0.39	16/84
9	Elmhurst	Queens	1.26	0.38	18/82
10	Corona	Queens	1.18	1.00	20/80
11	Flatbush	Brooklyn	1.12	0.36	13/87
12	Williamsburg	Brooklyn	1.12	0.47	28/72
13	Richmond Hill	Queens	1.10	0.38	18/82
14	Midtown East	Manhattan	1.08	1.36	84/16
15	Astoria	Queens	1.05	0.68	23/77
16	Jamaica	Queens	1.05	0.45	30/70
17	Hamilton Heights	Manhattan	0.90	0.36	15/85
18	Battery Park City	Manhattan	0.86	1.23	73/27
19	Upper East Side	Manhattan	0.84	0.96	48/52
20	Canarsie	Brooklyn	0.74	0.39	16/84

Note: The per capita minutes use population data that combines residential and employee numbers and is normalized by estimated market share for the major U.S. telecommunications provider. Wire centers excluded from this analysis because of missing data correspond to JFK Airport and the eastern side of Lower Manhattan. The Tribeca/Chinatown wire center is also excluded since it contains two major citywide switching stations, rendering it unrepresentative of its surrounding urban context. Indexes for domestic and international calling per capita were determined using the means for international and domestic minutes for the remaining 64 wire centers.

Source: Author's analysis of data from large U.S. telecommunications provider for September 2008 and 2007-2008 American Community Survey.

The greatest call volumes destined for within the United States tend to be generated by business and residential areas concentrated in mid and lower Manhattan (Figure 3.7). As supported by Table 3.7, the maps of international and domestic calling are almost inverse images of each other. The only areas of neighborhood New York that appear in the domestic calling map are Flushing and Corona, also overlapping with the international calls map. Perhaps the presence of Flushing and Corona in the domestic calls map is influenced by their median household income, which puts these neighborhoods in the moderate income category for the city at $47,714 and $41,128, respectively. As discussed in Chapter 2, Sassen had hypothesized that middle income areas of the city would speak mostly domestically. I test the relationship between income and destination of calls in the following section of this chapter.

For the remainder of this Chapter I will employ the first approach to identifying 'extroverted' neighborhoods because in using proportions of international versus domestic calls, it does not rely on population figures to speculate about the possible purposes behind call volumes. Nevertheless, the per capita approach is valuable in situating the greatest absolute volume of international calls, which are generated predominantly by corporate New York, but with a significant participation by neighborhood New York. In order to see whether an association exists between the proportion of international calls by wire center and certain demographic characteristics for each neighborhood, in the following section I test for statistical predictors of international calling by employing regression analysis.

3.2.1 Neighborhood Characteristics as Explanatory Variables

Given the discussion on Chapter 2 and results from the previous section as to which factors may influence the likelihood of global links, three variables are hypothesized in the literature as relevant to explaining why the neighborhoods listed in Tables 3.6 and 3.7 may be more extroverted in terms

of international telecoms links than we would otherwise expect: the rate of foreign born people

living in that area, the rate of people in that area who speak a language other than English, and the

median household income for that neighborhood. If international calls are the "social glue" of

migrant transnationalism, then high rates of foreign-born residents and foreign language speakers

should serve as strong predictors for a neighborhood's extroverted calling activity.

With regard to the variable on income, I am interested in adding empirical detail to Sassen's initial

"dual city of global talk" talk hypothesis referenced in Chapter 2 by seeing whether a

neighborhood's median household income is a useful indicator of international long distance calling

as a transnational practice. If Sassen's hypothesis holds, we should expect to see New York City

neighborhoods with a high (>$71K) and low (<$38K) median household income[8] exhibiting similar

international long distance call volumes, and middle income neighborhoods exhibiting lower

international long distance call volumes and higher domestic call volumes as shown in Figure 3.7.

I performed a series of regressions to control for the relationship between the foreign born, foreign

language and income variables on international calling rates for 60 of the neighborhoods in the

dataset.[9] A scatterplot matrix (Figure 3.8) indicates that the relationship between the share of

international calling and the rate of foreign born and foreign language speakers by wire centers is

linear and positive, whereas there is a nonlinear relationship between international calls and median

household income. It appears that the rate of international calls decreases among the higher income

wire centers in the city.

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[8] To divide income into low, middle and high for New York City, I use the median household income for New York as drawn from the wire center data provided by the large U.S. telecoms provider, which is $47,900. I determine low to be at or below 80 percent of the median (<$38,320), middle to be 80 to 150 percent of the median ($38,320 to $71,850), and high to be at 150 percent of the median and above (>$71,850). I borrowed this method from Booza et al. 2006.

[9] As with previous analyses, excluded in the regression analyses of this section are the wire centers that correspond to Tribeca/Chinatown since it is not representative of its geographic vicinity, JFK airport since it does not have corresponding demographic information, and an unnamed wire center in Manhattan that does not have corresponding call data. Other outliers with international calls above two standard deviations from the mean were also removed for this analysis.

Figure 3.8 Scatterplot matrix of International Call Minutes on Foreign Born (%), Foreign Language (%) and Median Household Income
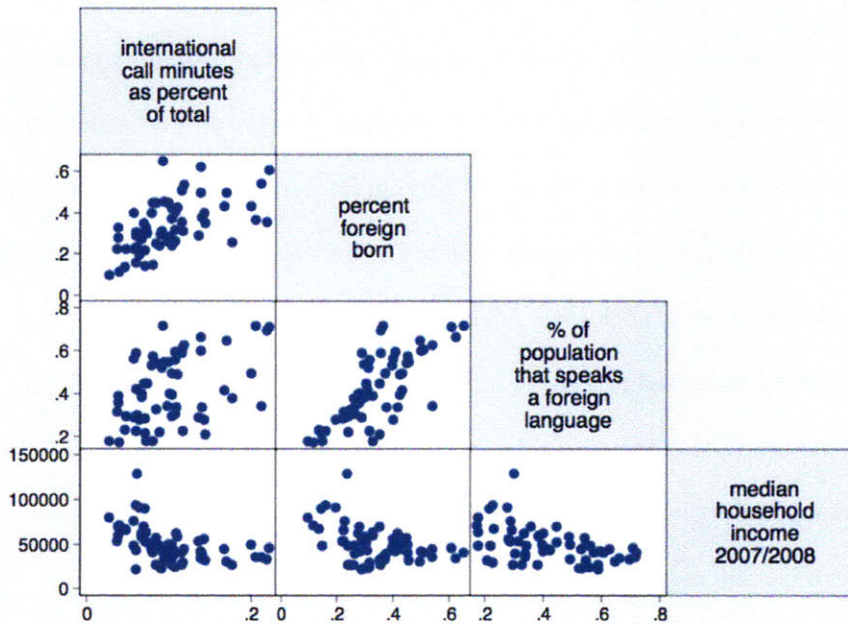
Table 3.8 OLS Regression Coefficients for Regressions of International Call Minutes as Percent of Total Long Distance Calls on Dummy Variables for Low and High Median Household Income, Percent of Foreign Born, Percent Foreign Language Speakers, and number of Households for Neighborhoods in NYC

Explanatory Variable	Model 1	Model 2	Model 3	Model 4
Low Median HH Income	0.04**	0.04**	0.04**	0.04***
(below $38,320)	(0.02)	(0.02)	(0.01)	(0.01)
High Median HH Income	-0.04*	-0.00	-0.00	-0.00
(above $71,850)	(0.02)	(0.02)	(0.02)	(0.02)
Foreign Born Population (%)		0.20***	0.23***	0.22***
		(0.04)	(0.06)	(0.06)
Foreign Language Speakers (%)			-0.04	-0.04
			(0.05)	(0.05)
Number of Households				2.59^{-07}
				(2.11^{-07})
Constant	0.09**	0.02	0.03	0.02
	(0.01)	(0.02)	(0.02)	(0.02)
R-squared	0.22	0.44	0.44	0.46
N	60	60	60	60

Note: Numbers in parentheses are standard errors.
*p<0.05, **p<0.01, ***p<0.001.
Source: Author's analysis of data from a large U.S. telecommunications provider, September 2008 and 2007-2008 American Community Survey (ACS)

A regression of international calls as a percent of all long distance calls by median household income as a categorical variable indicates an inverse relationship between income and percent of international calls. Table 3.8 reports coefficients for regressions that employ dummy variables to compare across income categories – low (below $38.320), medium ($38320-$71,850) and high (above $71,850) – while holding constant variables for percent foreign born, percent foreign language speakers and the number of households per neighborhood. The omitted variable represents the middle income neighborhoods in New York City. All models indicate that low income neighborhoods will generate a predicted percent of international calls that is 4 percent higher than middle income neighborhoods. Low income neighborhoods differ significantly from middle income neighborhoods in this respect. Consistent with the inverse relationship between income and international calling, high income neighborhoods are predicted to make 4 percent fewer international calls than middle income areas of New York. This is only significant in Model 1 where no control variables are included in the regression. As with low-incomes, the percent of foreign born people in an area is a significant predictor of international calls as percent share of total long distance minutes.

This regression analysis shows that the rate of international calling minutes is influenced in divergent ways by the rate of foreign born people in a neighborhood and an area's median household income. While the former finding is expected given the stated importance of ICTs in immigrant life – a finding that is supported by my interviews and fieldwork which I discuss in Chapter 5 – it is nevertheless surprising to find the inverse association between income and international calling. This means that the people living in neighborhoods with the fewest economic resources are the ones most engaged in transnational practices through telecommunications. While this can be attributed in part to the dramatic fall in prices for international calls, I believe this result is also a testament to how vital global communications links are to the immigrant communities that make up the list of

extroverted neighborhoods, almost all of which have median household incomes that fall below the city's median figure of $47,900. Put in Sassen's terms, it turns out that global talk does not happen at the top of the economy as much as it happens at the lower end. In fact, we can even expect the middle layers to be more engaged in global talk than the highest income neighborhoods of the city, including its commercial areas.

3.3 Summary

The aim of this Chapter was to answer the first set of research questions posited by this thesis: to which areas of the world is New York most intensely linked via the telecommunications network? And, which neighborhoods in the city are the most 'extroverted'? Through a series of analyses of the call data together with coinciding demographic information, I presented my findings at three scales: citywide, the borough, and the neighborhood.

The first section compared New York's communications flows with national level data on international communication and trade and with the city's immigrant groups to show that New York's connections abroad are influenced as much by its global migrant partners as it is by its global trade partners. In fact, the region of the world most intensely connected to New York is Central America and the Caribbean, driven by the vast amount of call traffic to the Dominican Republic and Jamaica; two of New York's top immigrant sending countries. The second highest volume of calls from New York is directed towards Europe, reinforcing the already well-known relationship within the global cities literature of New York's commercial partners in the United Kingdom, Germany and France.

Furthering the distinction between connections to countries that send people to New York and countries that engage in commerce with the city, I found a significant difference between residential

and commercial neighborhoods when considering the volume of international calls by wire centers. A close examination of the top global destinations by commercial and residential neighborhoods, suggested that the content of communications flows may be determined by knowing the type of neighborhood and its calling counterparts, but only to a point, since the countries that receive the highest volumes of telecoms flows from New York – the Dominican Republic and the United Kingdom – are present as destinations in both types of neighborhoods. Nevertheless, we can conclude that business oriented neighborhoods generate much more international call traffic than residential neighborhoods, consistent with the literature on global cities.

At the borough scale, I tested the implicit assumption that foreign born groups in the city should coincide with the global destinations of calls. This assumption held, particularly in Manhattan where 67 percent of the variability in international call volume to countries around the world can be explained by the presence of a corresponding foreign born group at the scale of the borough. This finding implies that as the presence of foreign born groups grow in New York City, as they are predicted to do so in the coming decades, then their transnational connections through telecommunications will deepen.

The second part of this chapter set out to identify the 'extroverted' neighborhoods in the city by calculating the share of all long distance calls that were destined internationally and per capita international minutes. By these metrics, New York has between 14 and 16 extroverted neighborhoods, with Washington Heights and Elmhurst consistently among the top ranked extroverted neighborhoods. Nearly all of the extroverted neighborhoods have foreign-born populations above the citywide mean of approximately 34 percent.[10] While the volume of

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[10] This figure is from a foreign born estimation model that matches up with the wire center demographic data generated by the large U.S. telecoms provider. The citywide figure of 37% foreign born residents cited in the Introduction comes from the New York City Department of City Planning's Population Division (Salvo and Lobo 2009)

international calls is greatest from commercial neighborhoods, their share of international calls is far below that of the extroverted immigrant areas of the city.

Finally, I sought to characterize the extroverted neighborhoods by employing three variables: rate of foreign born, rate of foreign language speakers, and median household income. The strongest predictors of international calling were, first, the neighborhood rate of foreign born residents, with a positive association to international minutes, and second, the median household income, with a negative association to international calling. The influence of income on international calls was an unexpected result, implying that lower and middle income neighborhoods in New York will tend to generate more international call minutes than higher income areas of the city.

CHAPTER 4
Patterns of Talk

In order to paint a picture of how international calls from neighborhood New York are distributed over the course of a month, this Chapter disaggregates the call data at the neighborhood scale to examine patterns of talk for September 2008 in two of the most extroverted areas of the city: Elmhurst, Queens and Washington Heights in Manhattan. Elmhurst and Washington Heights are among the neighborhoods I identified in Chapter 3 as being 'extroverted' according to my two approaches: by international minutes as percent of total long distance calls and by per capita international call minutes. Thus, these two neighborhoods are fairly robust in exhibiting relationships with places abroad through the city's long distance telecommunications network.

I present the daily pattern of calling from these two locations to tease out neighborhood-scale variation between domestic and international calls, the mode of calling employed, calling destinations by regions of the world and by countries, and temporal shifts by day and hour. This analysis will frame the discussion in Chapter 5 where I present findings from the field interviews and environmental observations I performed in these two neighborhoods.

I chose to focus on Washington Heights and Elmhurst principally because they are 'extroverted' neighborhoods, but also in order to vary my analysis according to two key demographic factors, median household income and rate of foreign born (Table 4.1). According to the income classification discussed in Chapter 3, Washington Heights is a low-income neighborhood in New York while Elmhurst is a moderate income neighborhood. While both areas have a comparable rate of foreign language speakers, the foreign born populations diverge, with the rate for Washington Heights being half of that for Elmhurst.

Table 4.1 Key call and demographic data for Elmhurst and Washington Heights

Neighborhood	Borough	International Minutes (% total long distance)	Per Capita International Minutes (indexed to city average)	Residential Population	Median HH Income	Foreign Born (%)	Foreign Language (%)
Elmhurst	Queens	22.1	1.26	441,891	$45,897	60.8	70.9
Washington Heights	Manhattan	20.5	1.37	193,411	$35,769	36.4	71.4

Source: Large U.S. telecommunications provider and 2007-2008 American Community Survey

I am also interested in assessing how international calling varies between a very homogenous immigrant neighborhood and a very diverse immigrant neighborhood. Washington Heights is New York's largest Dominican enclave (together with Inwood in Upper Manhattan, also an extroverted neighborhood), while Elmhurst is the city's most diverse area housing immigrants from three world regions: Latin America, Asia, and the Caribbean (NYC Department of City Planning 2004). These groups also represent the provenance of the immigrants that have been arriving in New York over the past three decades (Foner 2001), making Elmhurst a microcosm of the migration trends for rest of the city.

The daily and hourly call data analyzed for Washington Heights and Elmhurst is normalized by the total population of each neighborhood and by my estimate of the large U.S. telecommunications provider's market share. It is also indexed according to the wire center average for call minutes destined internationally and domestically, but only taking into account the neighborhoods I have categorized as being predominantly residential (Table 4.2).

Table 4.2 Per capita international calls for residential wire centers/neighborhoods in New York City indexed to the mean.

	Neighborhood	Borough	International Min (Indexed to mean)	Domestic Min (Indexed to Mean)	Total Long Distance Min (Indexed to Mean)
1	Flushing	Queens	3.94	4.05	4.04
2	Washington Heights	Manhattan	2.06	0.91	1.03
3	Inwood	Manhattan	1.91	0.78	0.89
4	Elmhurst	Queens	1.89	0.76	0.88
5	Corona	Queens	1.76	1.97	1.95
6	Flatbush	Brooklyn	1.67	0.71	0.81
7	Williamsburg	Brooklyn	1.67	0.93	1.00
8	Richmond Hill	Queens	1.65	0.76	0.85
9	Astoria	Queens	1.57	1.34	1.37
10	Jamaica	Queens	1.57	0.89	0.96
11	Hamilton Heights	Manhattan	1.35	0.72	0.78
12	Upper East Side	Manhattan	1.25	1.90	1.83
13	Canarsie	Brooklyn	1.11	0.76	0.80
14	Crown Heights	Brooklyn	1.11	0.75	0.79
15	South Ozone Park	Queens	1.11	0.80	0.83
16	Long Island City	Queens	1.08	0.95	0.96
17	Upper West Side	Manhattan	1.07	1.92	1.83
18	Laconia/Wakefield	Bronx	1.04	0.72	0.76
19	Forest Hills	Queens	1.03	1.28	1.25
20	Fresh Meadows	Queens	1.03	0.96	0.96
21	Harlem	Manhattan	1.02	1.08	1.07
22	Hollis	Queens	1.02	0.96	0.96
23	Bensonhurst	Brooklyn	0.99	0.71	0.74
24	Borough Park	Brooklyn	0.98	0.69	0.72
25	Midwood	Brooklyn	0.98	0.97	0.97
26	East Harlem	Manhattan	0.91	0.93	0.93
27	Bay Ridge	Brooklyn	0.91	0.94	0.94
28	Far Rockaway	Queens	0.90	0.86	0.86
29	East Village	Manhattan	0.83	1.33	1.28
30	Brownsville	Brooklyn	0.76	0.65	0.66
31	Ridgewood	Queens	0.75	0.71	0.72
32	Riverdale	Bronx	0.73	1.04	1.01
33	Prospect Heights	Brooklyn	0.72	0.84	0.83
34	Bayside	Queens	0.70	1.08	1.04
35	St. George	Staten Island	0.70	1.06	1.02
36	Seaside	Queens	0.70	0.92	0.90
37	East New York	Brooklyn	0.69	0.68	0.68
38	Springfield Gardens	Queens	0.68	1.01	0.98
39	Gravesend	Brooklyn	0.65	0.87	0.85
40	Brighton Beach	Brooklyn	0.63	0.69	0.68
41	Sheepshead Bay	Brooklyn	0.62	0.82	0.80
42	Highbridge	Bronx	0.61	0.70	0.69
43	Fordham	Bronx	0.60	0.52	0.53
44	Mount Hope	Bronx	0.58	0.55	0.56
45	Bulls Head	Staten Island	0.54	1.21	1.14
46	Southbeach	Staten Island	0.52	1.23	1.16
47	Throgs Neck	Bronx	0.52	0.93	0.88
48	Park Slope	Brooklyn	0.50	0.81	0.78
49	Hunts Point	Bronx	0.47	0.54	0.54
50	Fort Greene	Brooklyn	0.47	1.42	1.32
51	Bushwick/Bed Stuy	Brooklyn	0.43	0.53	0.52
52	City Island	Bronx	0.36	1.02	0.95
53	Mott Haven	Bronx	0.34	0.61	0.58
54	Princes Bay	Staten Island	0.32	1.26	1.16

Source: Author's analysis for data from a major U.S. telecommunications provider.

If we divide the number of call minutes by the number of calls, we find that the average length of a domestic phone call for Elmhurst and Washington Heights is on par with that of New York as a whole – including both commercial and residential areas. Where Elmhurst and Washington Heights diverge with the rest of New York is on the average length of an international call. Calls with destinations abroad made from these two extroverted neighborhoods tend to last twice as long as calls from New York as a whole. This distinction holds when we consider the average number of per capita calling minutes. In a month's time, only about one-tenth of the per capita long distance minutes are destined internationally for the average New York residential neighborhood. But in a neighborhood like Elmhurst or Washington Heights, approximately one-fifth of the per capita long distance calling minutes are destined internationally, essentially double the New York average per capita volume for international calling minutes. So while these two neighborhoods may generate about the same number of per capita minutes in domestic calling as the average New York neighborhood, in international calls, they generate twice as much volume per person, and speak for twice as long, than the city as a whole.

4.1. Domestic vs International

A comparison of the daily volume of long distance calls by domestic and international destinations for Elmhurst, Washington Heights and the Financial District (Figure 4.1) illustrates a striking cadence of call patterns by day of the week. For the two immigrant neighborhoods – Elmhurst and Washington Heights – the volume of domestic calling, indicated by the blue line, is very high during Mondays and Tuesdays and decreases slightly as the week progresses. Domestic calling then dips dramatically on Saturdays and falls even further on Sundays. Yet the rhythm of international calls, shown by the red line, reveals an inverse effect where calling peaks on Saturdays and Sundays. In contrast, both domestic and international call patterns from the Financial District in Manhattan exhibit a strong weekly cycle where calls increase during the weekdays and dip on weekends, when

employees are not in the office.[1] This striking difference in calling patterns between weekdays and

weekends suggests that international calls from immigrant neighborhoods principally serve to

maintain links to family and serve affective purposes.

The line graph for Washington Heights is illustrative in this respect as there is a dramatic spike in

calling on the first Sunday of the month. A search of news reports for September 7, 2008 revealed

that on that same day, the Caribbean region was bracing itself for the impending arrival of

Hurricane Ike. As the Caribbean is by far the main destination for calls from Washington Heights

(Figure 4.3), it is plausible that the Hurricane precipitated the burst in calls from concerned family

and friends living in Washington Heights. Figure 4.1 shows clearly how international calls

remained low in the week following the Hurricane and began to rise again about a week and half

later, perhaps once failed telecoms infrastructure had been restored after the Hurricane. What I call

"crises and celebrations" is a common rationale for initiating international calls, a notion I explore

further in Chapter 5 when discussing findings from the interviews I performed in New York.

It is worth noting that a side-by-side look at the two graphs in Figure 4.1 also illustrates the inverse

income effect on international calling where Washington Heights, a low income neighborhood, has

a slightly higher volume of international calls than Elmhurst, a middle income neighborhood.

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[1] The sole break in this strong weekly pattern for the Financial District occurs on Sunday September 14, 2008 when a spike in calls indicates the beginning of the financial crisis of 2008, also evident in Figure 4.6 in this chapter.

Figure 4.1 Comparison between domestic and international long distance calls by day, Sept. 2008
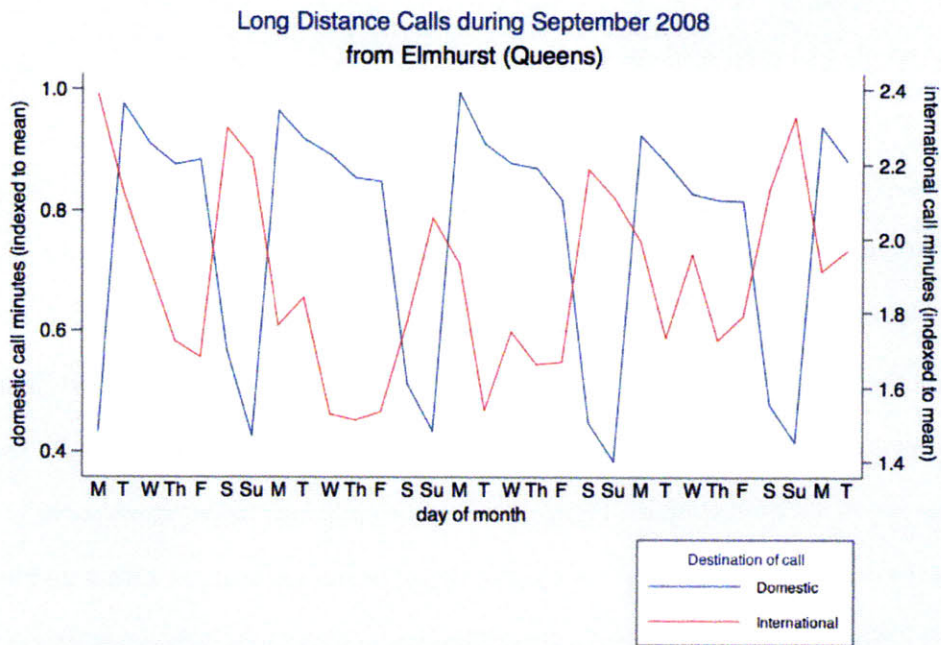
Source: author's analysis using data from large U.S. telecommunications provider
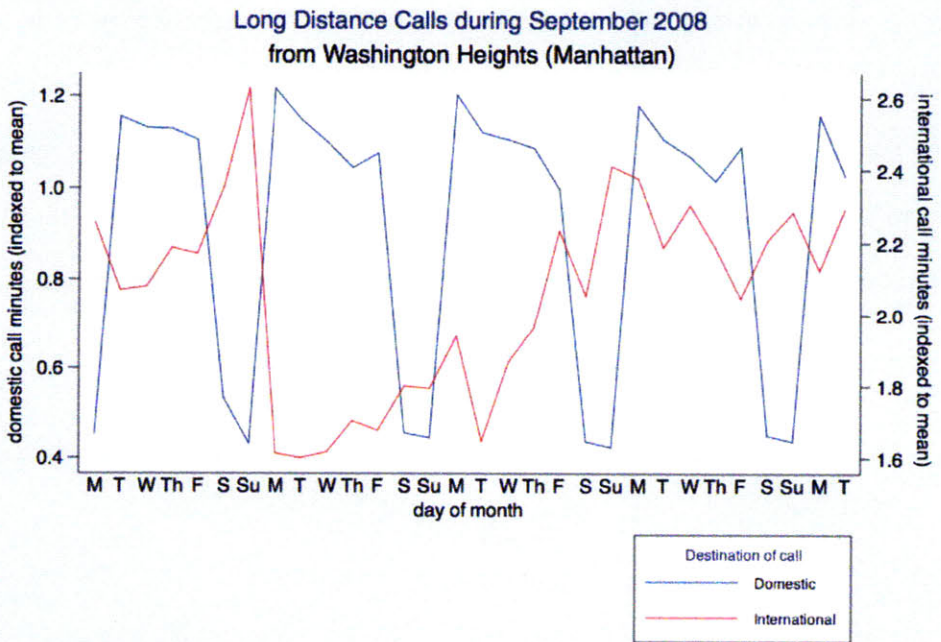
Source: author's analysis using data from large U.S. telecommunications provider

Figure 4.1 Comparison between domestic and international long distance calls by day, Sept. 2008

4.2. Call types

Focusing solely on international calling from this point forward, Figure 4.2 breaks down all the outgoing international calls from Elmhurst and Washington Heights by calling platform, or type. Recall that the call data analyzed in this study can be examined according to the platform, or mode, on which calls are being made: wireline (fixed, or landlines), wireless (mobile, or cell phones), voice over IP (Internet), prepai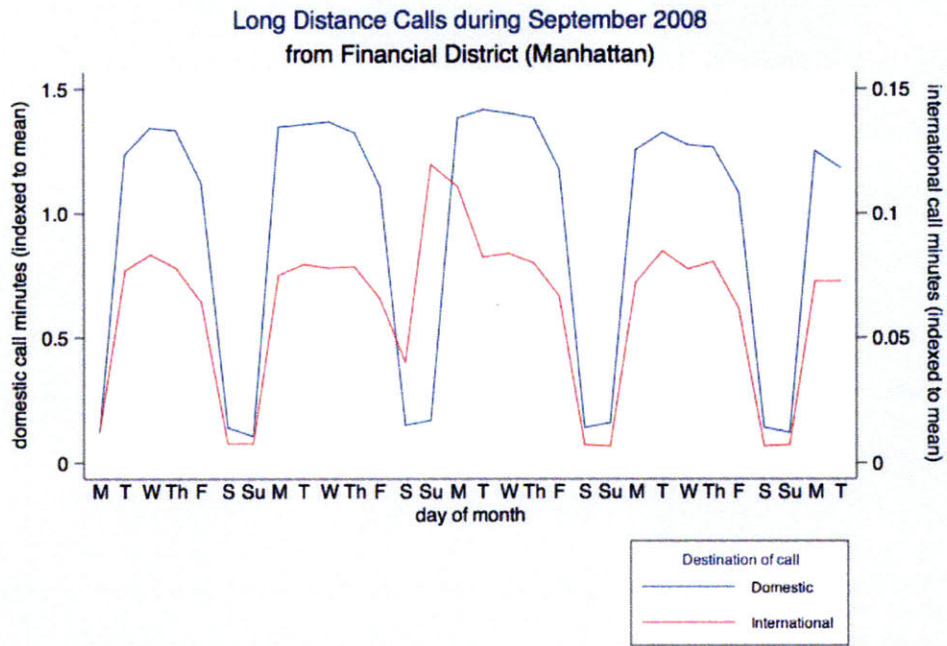d calling cards and dedicated (also fixed lines serving large businesses). Nearly all of the international calls over the telecoms network from these two neighborhoods are made over landline telephones. This also appears to be the trend in the other residential wire centers of New York, with about 98 to 99 percent of outbound international calls going through the wireline infrastructure.

However, if we examine the mode of outgoing international calls for New York as a whole (Figure 4.2), we see that almost half of those calls are wireless. Nearly all of these wireless calls are attributed to a single wire center of the city: Tribeca/Chinatown. As discussed in Chapter 3, this is the wire center that is not representative of its surrounding area and was therefore not included in most previous analyses. If I remove this wire center and aggregate calls for the city by calling type, the share of wireless calls for New York falls to just 9 percent, with 90 percent of outgoing international calls as wireline. But in this case we are interested in comparing Washington Heights and Elmhurst to New York as a whole, so it is therefore relevant to include the Tribeca/Chinatown wire center as a comparison to the two selected neighborhoods since, after all, the Tribeca/Chinatown wire center is routing wireless calls for all of New York City.

In considering these figures, it is important to remember that they only represent traffic on the network of one large U.S. telecommunications carrier and that the data is from 2008. That said, prepaid calling cards as a mode of international calling may in fact appear as wireline calls in this

dataset since the telecoms partner wholesales international call traffic to prepaid card service providers.

Many of the people I spoke with during my field interviews use calling cards to call internationally. A walk through Elmhurst and Washington Heights suggests that prepaid calling cards are a popular tool for staying connected abroad since advertisements for a seemingly endless variety of calling cards are posted on many storefront windows and the cards are sold in convenience stores, phone shops, *bodegas,* and by street vendors. The people I interviewed who use the prepaid calling cards mentioned often that these cards are most effective when used from a landline telephone, perhaps accounting for the sheer dominance of wireline calls from Washington Heights and Elmhurst. When using a calling card, calling rates are, in effect, lower when calls are made from a landline phone and consequently the minutes available for a call are greater. So for example, an advertisement for the Black brand of calling card notes that with a $2.00 card a customer can call Colombia and speak for 80 minutes if calling from a landline phone but only for 32 minutes if calling from a mobile phone. In Chapter 5 I provide a comparison of calling rates between calling cards and *cabinas,* or call centers, to further illustrate this point.

Figure 4.2 Share of outgoing international calls by call type

Intenational Calls during September 2008 by Type
from Elmhurst (Queens)
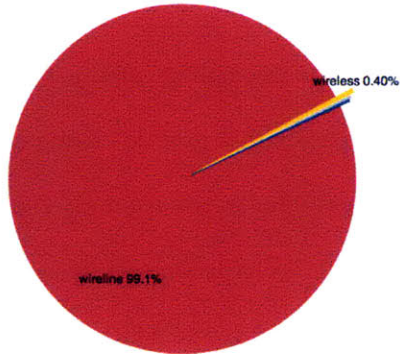
wireless 0.40%

wireline 99.1%

Source: Author's analysis of data from large U.S. telecommunications provider

Intenational Calls during September 2008 by Type
from Washington Heights (Manhattan)
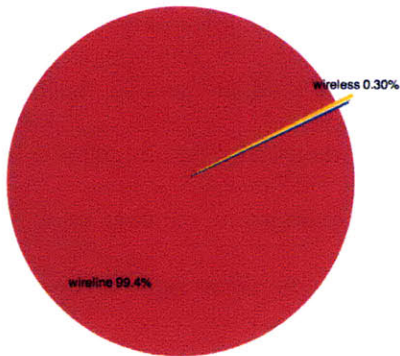
wireless 0.30%

wireline 99.4%

Source: Author's analysis of data from large U.S. telecommunications provider

International Calls by Type
from New York City in September 2008

VOIP 0.6%

wireless 45.4%

wireline 53.9%
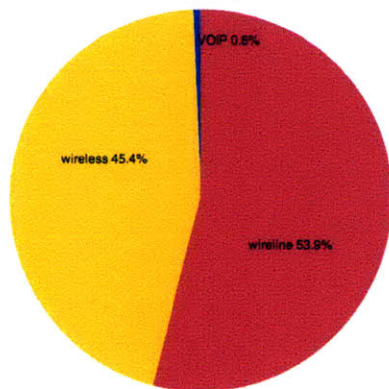
Source: Author's analysis of data from a large U.S. telecommunications provider

4.3. Calling Counterparts: Regions and Countries

The geographic destination of calls from Elmhurst and Washington Heights by region of the world and top countries appear in Figures 4.3 and 4.4. The bar charts of calling destination by world region illustrate the stark difference between Washington Heights, a homogenous ethnic enclave, and Elmhurst, a diverse immigrant neighborhood. In Washington Heights, nearly 80 percent of all international calls go to Central America and the Caribbean, whereas in Elmhurst, the share of international calls is distributed between Latin America and the Caribbean (57%), Asia (18%) and North America (15%), which principally reflects calls to Mexico. As in the previous set of graphs, wireline calling predominates.

The line graphs in Figure 4.4 detail calling patterns by country for the days of the week in September 2008, displaying only the call destinations where per capita minutes are above the neighborhood mean. In Elmhurst, these countries are Ecuador, the Dominican Republic, Mexico, the Philippines, India, Colombia and Guatemala. This list is consistent with the top world regions linked to Elmhurst as shown in Figure 4.3. For Washington Heights, the destination countries with volumes above the neighborhood mean are all in Central America and the Caribbean: the Dominican Republic, Cuba, El Salvador and Nicaragua, in descending order. Of these, the Dominican Republic is by far the top destination.

Weekend calling peaks appear to be quite consistent for all of the top countries. This is particularly evident in the Elmhurst graph where weekend peaks appear for Ecuador, the Dominican Republic, the Philippines, and India. Indeed, Sunday the 28th is the day with the highest volume of calls from Elmhurst for all of September. Mexico appears to be an anomaly among the countries connected to Elmhurst since it has as high a volume of calling early in the week as it does on Sundays. Mexico's pattern is likely a reflection of its dual association with New York City as both a migrant sending country and a trade partner.

Figure 4.3 Percent of outgoing international calls by world region
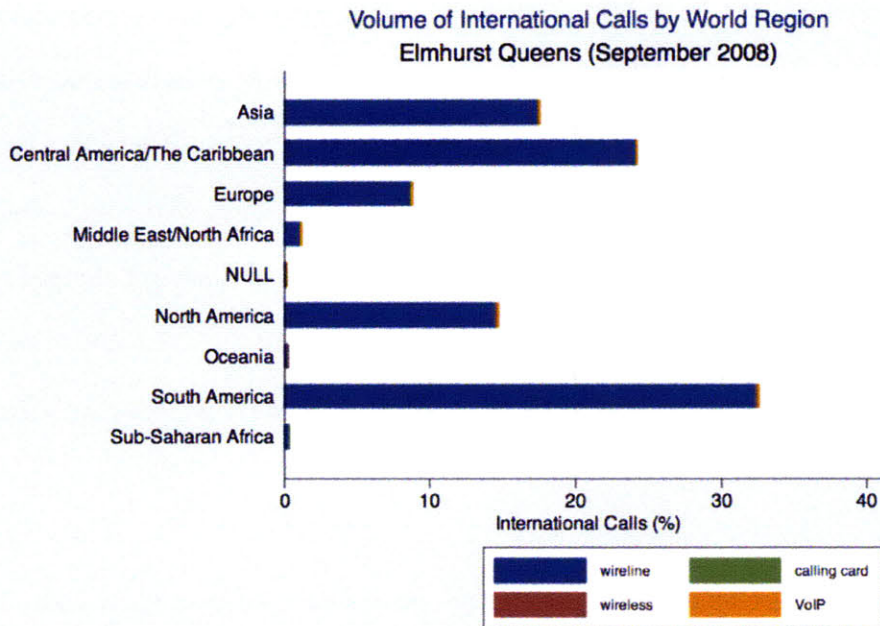
Volume of International Calls by World Region
Elmhurst Queens (September 2008)

Source: Author's analysis of data from large U.S. telecommunications provider

Volume of International Calls by World Region
Washington Heights Manhattan (September 2008)
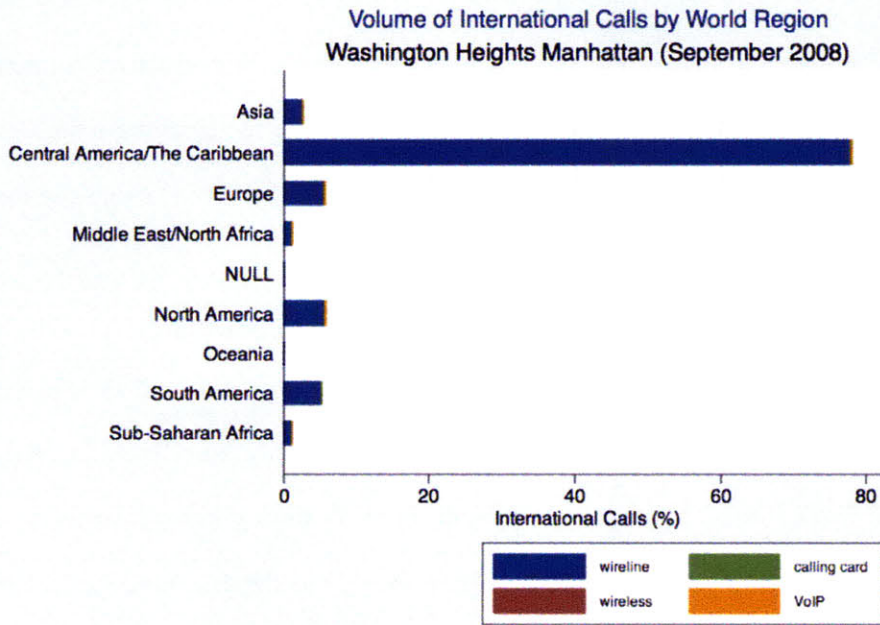
Source: Author's analysis of data from large U.S. telecommunications provider

Figure 4.4 Outgoing calls to top country destinations by day of the week in September 2008
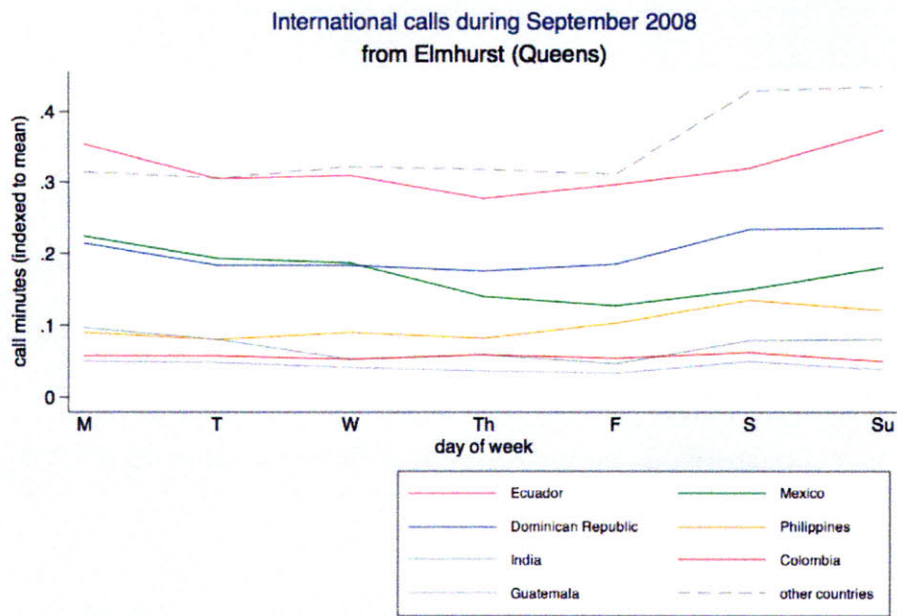
International calls during September 2008
from Elmhurst (Queens)

Source: Author's analysis of data from large U.S. telecommunications provider

International calls during September 2008
from Washington Heights (Manhattan)
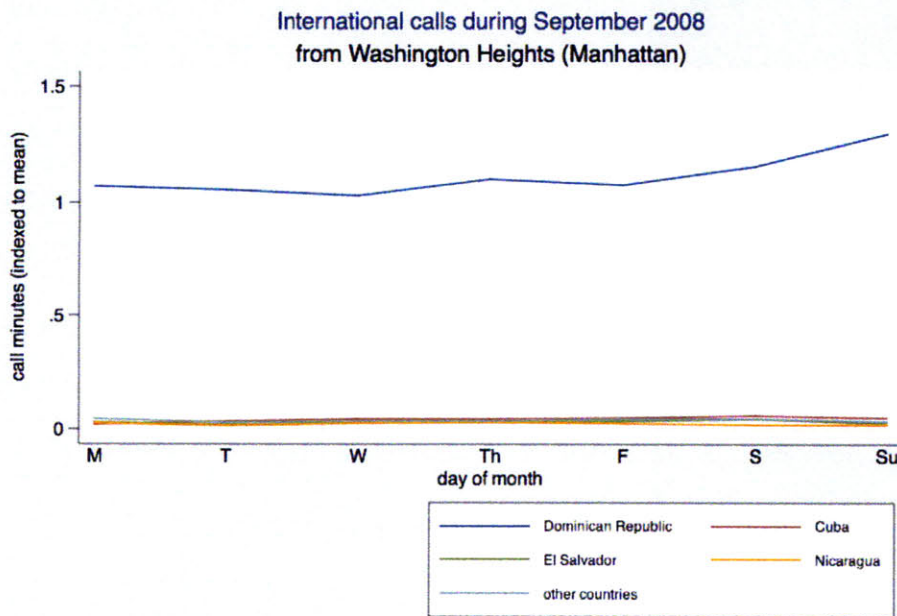
Source: Author's analysis of data from large U.S. telecommunications provider

4.4 Temporal Shifts

To see when people are making international calls from the two selected extroverted neighborhoods, I split calls during the month of September by daytime and evening, where the former encompasses the hours between 6am and 5pm and the latter corresponds to the hours between 6pm and 5am (Figure 4.5). I chose these thresholds because they appear to be the inflection points where call volumes begin to increase or decrease (Figure 4.7). The charts that compare calling by day and night from Elmhurst and Washington Heights during every day of the week in September 2008 show greater volumes at night overall. However, on weekends, daytime calling predominates over evening calls. This supports earlier findings that international calls from predominantly immigrant neighborhoods tend to be generated during non-work hours and days, thus reflecting the social nature of the exchanges.

To emphasize this dynamic and as a point of comparison, I generated charts for two business-oriented neighborhoods: the Financial District and Midtown West (Figure 4.6). Here the pattern of international calls by day of the week and time of day very much reflects functions related to work and global commerce. Volumes of call minutes are concentrated during the week and in the daytime in both areas of the city. The sole exception is in the Financial District (top of Figure 4.6) chart where the Saturday and Sunday in the middle of the month exhibit a volume of calls that is on par with a weekday. The dates of that coincide with this weekend are September 13th and 14th, which mark the beginning of the September 2008 financial meltdown when Lehman Brothers filed for bankruptcy (also evident Figure 4.1).[2] The New York Times calls it "the weekend that changed Wall Street," and just as we had seen earlier with Hurricane Ike and Washington Heights, the crisis is made evident through the aggregated call records from this part of the city.

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[2] The New York Times offers a clear and informative timeline of the September 2008 Financial Crisis http://www.nytimes.com/interactive/2008/09/27/business/economy/20080927_WEEKS_TIMELINE.htm l (accessed August 27, 2010)

Figure 4.7 overlays the temporal pattern for these four areas of the city – Elmhurst and

Washington Heights (solid lines) and the Financial District and Midtown West (dashed lines) – to

compare aggregated international call volumes for the month of September 2008 by hour of the day.

As in earlier analyses, the figures are indexed to the mean value for international call minutes by

wire center. Both types of neighborhoods exhibit clear hourly patterns of international calls. The

predominantly business-oriented neighborhoods generate their highest call volumes during the day,

with peaks between 9am and 12noon. In contrast, the predominantly immigrant neighborhoods of

Elmhurst and Washington Heights reach their peak calling hours very late into the evening,

consistently between 11pm and 2am. Given that Central and South America are the main calling

destinations from these neighborhoods, it is curious that so many calls are made during the

midnight hours. There is no time zone change between New York City and the Dominican

Republic, Ecuador and Colombia, while Mexico and Guatemala are just one hour behind. In the case

of Elmhurst, calls to the Philippines and India do make sense if they are made very late into the

night since those destinations are twelve and nine hours ahead of New York City, respectively.

Figure 4.5

International Call Minutes by Day and Time
Elmhurst (Queens)

Source: large U.S. telecommunications provider
Note: figures indexed to mean call minutes for Elmhurst

International Call Minutes by Day and Time
Washington Heights (Manhattan)

Source: large U.S. telecommunications provider
Note: figures indexed to mean call minutes for Washington Heights

Figure 4.6

International Call Minutes by Day and Time
Financial District (Manhattan)

Legend:
- Daytime: 6am-5pm
- Evening: 6pm-5am

Source: large U.S. telecommunications provider
Note: figures indexed to mean call minutes for the Financial District

International Call Minutes by Day and Time
Midtown West (Manhattan)

Legend:
- Daytime: 6am-5pm
- Evening: 6pm-5am

Source: large U.S. telecommunications provider
Note: figures indexed to mean call minutes for Midtown West

Figure 4.7

Call Minutes by Hour from Extroverted Neighborhoods
Residential vs Commercial

Source: large U.S. telecommunications provider.

Note: figures from September 2008. Indexed to mean call minutes.

4.5 Summary

This chapter examined the call data by the days in the month of September and by hour of the day to discern any neighborhood-specific patterns in long distance calling. I chose to focus on two of the extroverted neighborhoods: Elmhurst and Washington Heights. While domestic calls in both neighborhoods exhibited a strong and steady pattern of high call volumes during the week, with dramatic dropoffs on the weekends, international calls had peaks on the weekends, with Sundays generally having the highest volume of calls. International calls from these two immigrant neighborhoods were also concentrated during the evening hours of the day, in contrast to predominantly business neighborhoods that exhibited a clustering of calls during the weekdays. The increase in weekend and evening calls from Elmhurst and Washington Heights likely reflects that international calls serve an affective purpose for foreign born groups.

Other findings drawn from examining patterns of talk in these two extroverted neighborhoods are that the principal mode of calling internationally is still by fixed line telephones, in all probability through the use of prepaid phone cards. The countries and regions with which each neighborhood connected reflects the homogeneity of the immigrant population in Washington Heights, where an overwhelming share of calls were bound to the Dominican Repu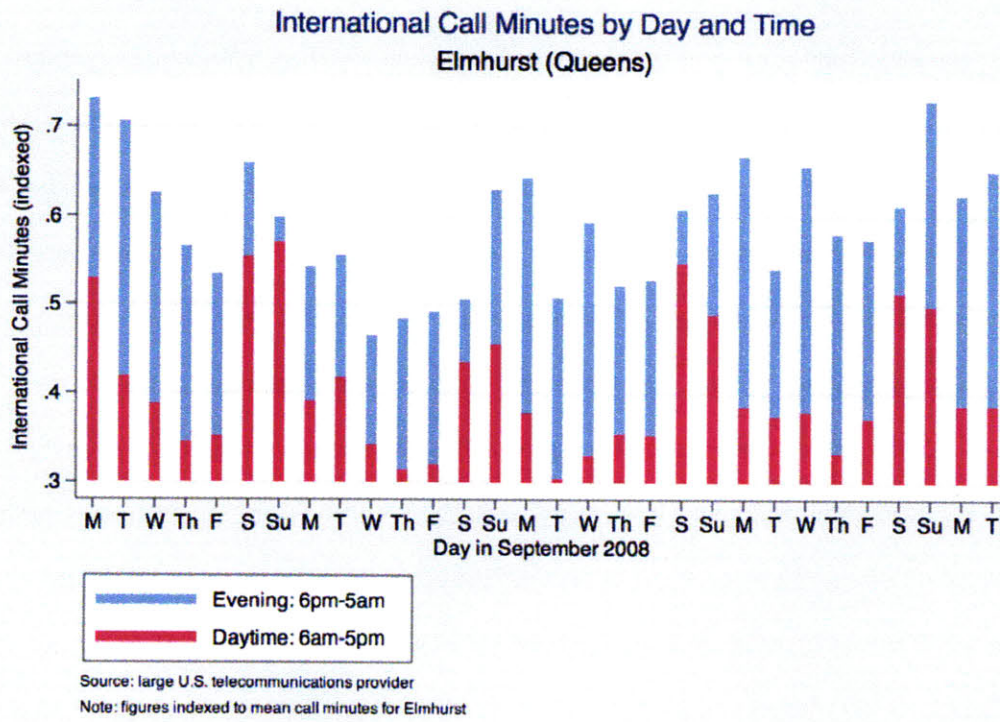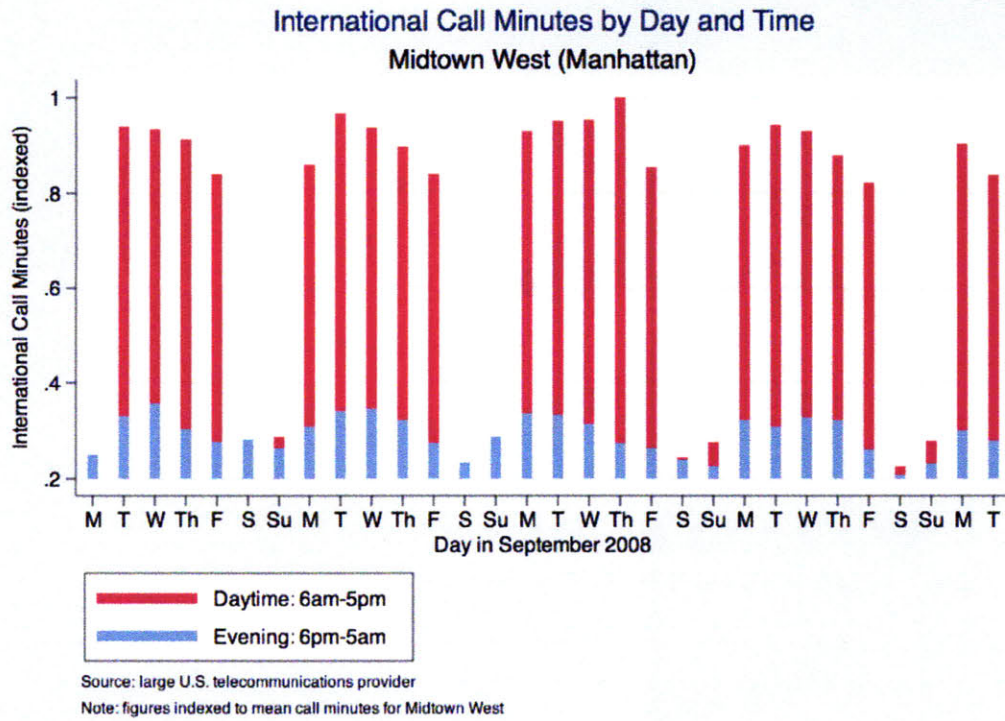blic. Likewise, the diversity of people in Elmhurst was also apparent, where links to no one region or country predominate.

Dramatic peaks in calling – such as before Hurricane Ike and during the Financial Crisis – reveal the emotional nature of telephone calls (Sutherland 2008), where, as I discuss in the next chapter, "crises and celebrations" are often motivators for this transnational activity.

CHAPTER 5
The 21st Century Migrant Experience

The collision and the intermingling of these millions of foreign-born people representing so many races and creeds makes New York a permanent exhibit of the phenomenon of one world.

Here is New York
E.B. White (1949)

A basic cell phone with an unlimited international call and text (SMS) plan in 2010 costs sixty

dollars per month and prepaid calling cards offer up to 200 minutes of talk for just $2 to places such

as Mexico City and Santo Domingo. Over the past twenty years, the cost of an international phone

call from the United States to countries abroad has plummeted due to advances in communications

technologies and infrastructure upgrades. The FCC reports that in 2006, on average, "carriers billed

10 cents per minute for international calls… a decline of 93% since 1980 and 80% since 2000."

(2008: 6-1). As Vertovec (2004, 2004b) has argued, the prime beneficiaries of the advent of cheap

calls have been the transnational migrants who must separate from their family and friends to seek

better economic opportunity, but yearn to return home, or at the very least, maintain close ties to

kith and kin.

The aim of this chapter is to illustrate how migrants to New York use the telephone to mediate

distant connections with their countries of origin. I delve down from the urban scale, as addressed in

Chapter 3 and 4 through the analyses of telephone data, to focus on the experience of individuals

and ask why, and for which purposes, people who migrate away from their countries of origin

maintain contact with those faraway places. I argue that the telephone is an important tool for

facilitating transnational links for migrants – particularly among women – and detail the strategies

that they employ to stay connected to family, friends and business associates abroad. My findings

support the notion that technological changes in Information and Communications Technologies

(ICTs) have not only made international calls more affordable but also much easier to carry out than

ever before. Due to the immediacy and intimacy the telephone provides, it has become a powerful

facilitator of "simultaneity," (Levitt and Glick-Schiller 2004) where people are immersed in each

other's daily lives across vast distances and therefore form a "transnational social field" (Levitt

2001). For the most prolific callers, simultaneity makes it possible to manage investments, social ties

and even families from afar, indicating that perhaps the connected migrant, as conceived by

Diminescu (2008), is indeed emblematic of the 21st century migrant experience.

In the previous chapter we found that, first, the global destination of calls from New York are more

diverse than expected and include not just trade partners but also some of the city's more significant

migrant sending countries. Second, that the rate of foreign born in a neighborhood is a strong

predictor of the volume of international calls generated from that area of the city. Third, that

migrants' countries of origin coincide well with the destination countries of international calls at the

scale of the borough, adding another dimension to the strong association between foreign born

groups and international call volumes. And fourth, international calls in immigrant neighborhoods

follow a marked pattern of high volumes on the weekends and during the evenings, likely reflecting

the purpose of calls as being social in nature. Thus, having established that some of the city's most

globally engaged, or "extroverted," (Massey 1994) neighborhoods also have high concentrations of

immigrants, the fieldwork captured in this chapter offers a more ethnographically-focused view of

neighborhood New York through observations of street life and the built environment, and

interviews with people on how they engage in global talk.

I conducted 24 semi-structured interviews along with field observations in the city's two most

active nodes of international talk: the Elmhurst-Corona section of Queens and the Washington

Heights and Inwood neighborhoods of Upper Manhattan (Figure 5.1). As I mentioned in Chapter 3, I selected these two areas of the city for my fieldwork because of certain important similarities and contrasts, which I elaborate upon below.

1. Both areas of the city are ranked within the top ten most extroverted neighborhoods of the city whether by international call minutes as percent of total long distance minutes, international minutes per capita for all neighborhoods in New York, or international minutes per capita for only residential neighborhoods in the city. Their relative stability in the various rankings by international call volume gave me confidence that these were some of the most extroverted neighborhoods in the city and worthwhile places for further inquiry. (see Chapter 3).

2. These two areas of the city also fit my capabilities for conducting interviews and observations as part of my fieldwork. Being a native Spanish speaker gives me the ability to approach and speak with Latin American people for interviews and to understand signs and symbols in the built environments of these communities. Since my interviews focused exclusively on Spanish speaking groups, the findings here do not represent the calling behaviors of migrant groups from places such as the English-speaking Caribbean or Asia.

3. Their percentage of foreign-born residents and foreign language speakers are both above the citywide mean. However, while the neighborhoods' foreign language rates are comparable at around 70 percent, their foreign born rates diverge, with upper Manhattan's at approximately 36 percent of the population and Elmhurst-Corona's at 61 and 65 percent, respectively (Figure 5.2). The variation of foreign born rates between neighborhoods implies that in upper Manhattan I am more likely to encounter people who had migrated in the 1970s or second generation immigrants, whereas in Elmhurst-Corona I am more likely to encounter more recent immigrants.

4. Each area represents a different type of immigrant neighborhood: a single immigrant group predominates in upper Manhattan – Dominicans – in contrast to Elmhurst-Corona, which is home to a diversity of immigrant groups with sizable populations from Latin America, Asia and the Caribbean. As Sanjek notes in *The Future of Us All* (1998), the diversity of migrant groups concentrated in Elmhurst-Corona is truly a microcosm of the migration trends influencing New York City as a whole, as projected by the New York City Department of Planning (2009).

5. Also demographically, Washington Heights and Inwood are low-income neighborhoods while Elmhurst and Corona are middle income neighborhoods, as measured by median household income figures from the 2007-2008 American Community Survey and under my definition of income groups provided in Chapter 3 for the income analysis discussed on page 100. (Figure 5.3).

Figure 5.1

NYC Extroverted Neighborhoods
by International Minutes as Percent of all Long Distance

  0.03 - 0.07
  0.08 - 0.09
  0.10 - 0.12
  0.13 - 0.22

note: values represent percent of all long distance
call minutes that are destined internationally.
only outbound calls are included.
call data from September 2008.

Inwood
Laconia/Wakefield
Washington Heights
Hamilton Heights
The Bronx
Manhattan
Elmhurst
Queens
Williamsburg
Richmond Hill
Jamaica
Brooklyn
Crown Heights
South Ozone Park
Flatbush
Borough Park
Bensonhurst
Canarsie
Staten Island

0 0.71.42.12.83.5 Miles

N

Sources: U.S. Census 2007-2008 American Community Survey
U.S. telecommunications provider

Figure 5.2

Foreign Language Speakers
- 17% - 28%
- 29% - 39%
- 40% - 50%
- 51% - 61%
- 62% - 72%

Foreign-Born Population Estimate
- 9% - 21%
- 22% - 32%
- 33% - 43%
- 44% - 54%
- 55% - 65%
- Null

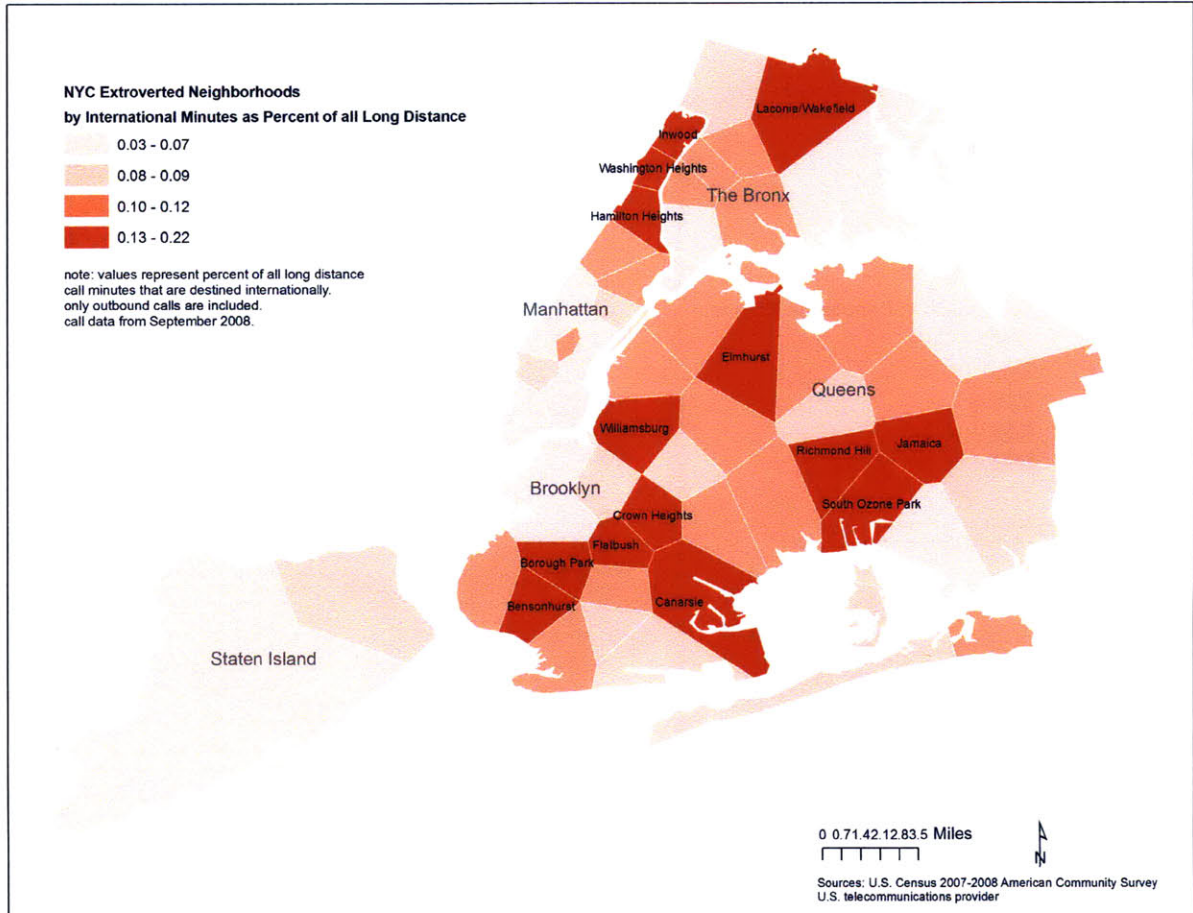Source: US Census
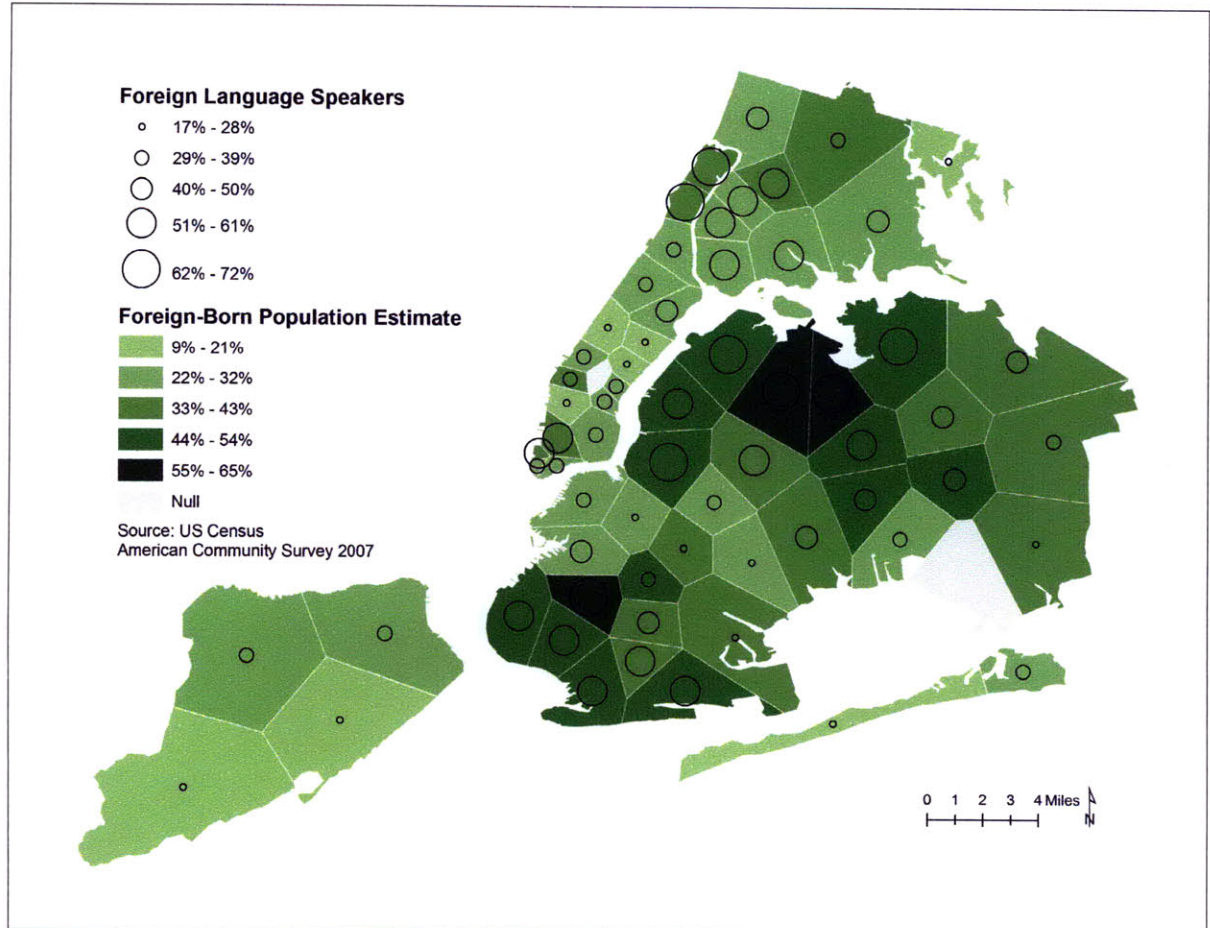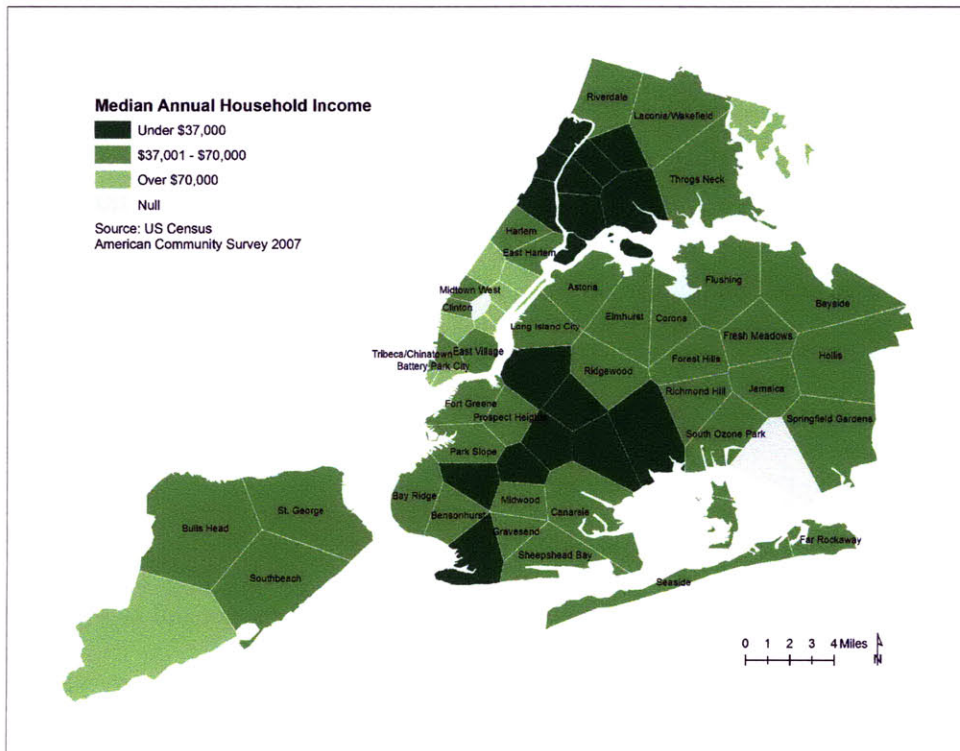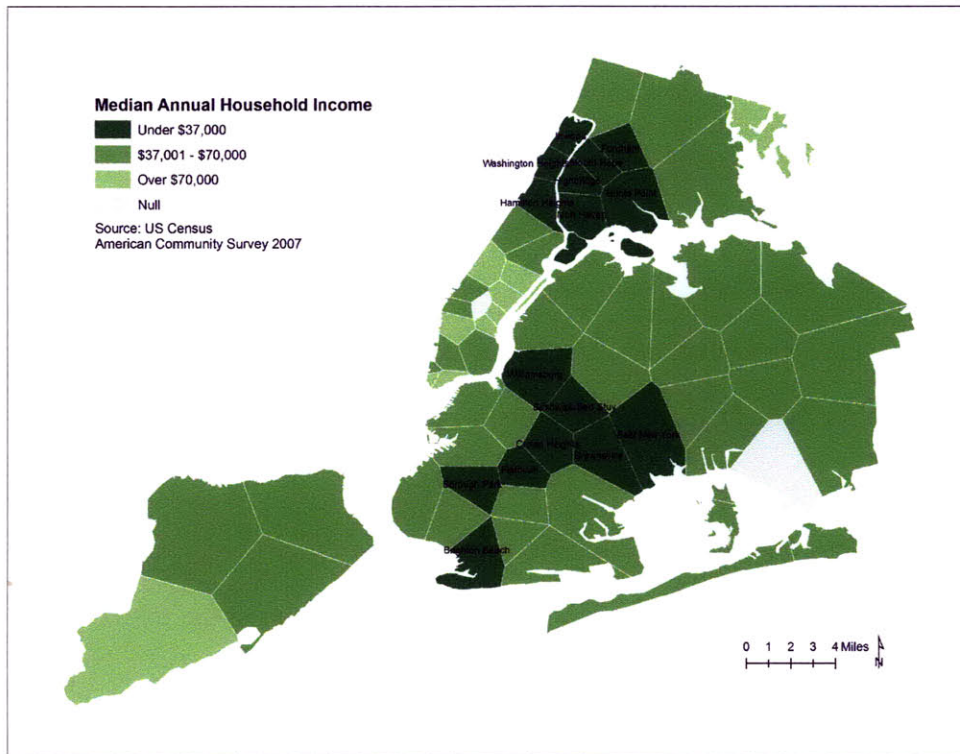American Community Survey 2007

0 1 2 3 4 Miles

Figure 5.3

4.1 Neighborhood Profiles

These neighborhood profiles are based on my own observations and background information from secondary sources such as Kenneth T. Jackson's *Encyclopedia of New York* (1995). While these neighborhoods share certain demographic characteristics and are comparable in terms of the volume of international calls they generate, as physical places, they could not be more different. To provide context for the rest of the chapter and explain, at least in part, why upper Manhattan and central Queens generate some of the highest volumes of international calls in the city, I first provide some background information for these two areas of neighborhood New York.

4.1.1. Washington Heights and Inwood

The arrival in Washington Heights and Inwood is via the A or the C trains at the 168th Street and the Dyckman Street stations, nearly at the northernmost end of the subway line (Figure 5.4). There is a bricked solidity to upper Manhattan that infers a continuation of the building stock of the nearby Upper West Side, but its lushly forested parks, subdued energy, and the sense of being very much in "the heights" of the island of Manhattan sets it apart from the streets and avenues downtown. The air feels cooler and the land beneath appears more solid than elsewhere in the city, likely due to the outcrops of Manhattan Schist and Inwood Marble that reveal themselves between the hulking multistory apartment buildings that line the upper reaches of Broadway. The wide streets carry few cars and the broad sidewalks leave plenty of room for strolling; people move with ease and appear to go about their business in a relaxed manner, particularly in comparison to the frenetic pace felt elsewhere in the city (Figure 5.4).

Washington Heights and Inwood constitute the northernmost tip of Manhattan and beginning in the mid-1960s they became the principal areas of settlement for the Dominican migrants who were escaping the political and economic turmoil that had been accumulating for decades under the authoritarian regime of General Rafael Trujillo. As Jesse Hoffnung-Garskof argues in *A Tale of Two*

Cities (2008), the doors to the United States opened as the American government tried to sway political opinion and influence the transition to democracy by expediting visas to the U.S. after Trujillo's assassination in 1961. Thus, the bridge to New York was established. A few years later, the flow of Dominican people to New York was further reinforced by the 1965 Immigration and Nationality Act which provided an unlimited number of visas for purposes of family reunification, even as it restricted the number immigrants from Latin America.

When Dominicans arrived in Washington Heights and Inwood, Puerto Ricans had already begun to settle there from nearby Harlem, seeing it as a "space of upward mobility" (Hoffnung-Garskof 2008: 100), and upper Broadway had a handful of Dominican and Cuban residents from an earlier wave of migration in the 1930s. Thus, a link already existed to the Spanish-speaking Caribbean from this area of New York. Later, according to Jackson (1995), "No neighborhood in New York City attracted more immigrants in the 1980s than Washington Heights... and more than three-quarters were Dominican. By 1990 the Dominican community in Washington Heights and Inwood was the largest in the United States." (p.1242). Today Upper Manhattan remains a strong Dominican enclave, even as this group's presence shifts to the south Bronx. Still, the heart of Dominican New York can be found in Inwood at the intersection of Dyckman Street and Nagel Avenue, where a popular restaurant and nightclub is named the "809" – the telephone country code for the Dominican Republic.

Demographically, Table 5.1 shows that Washington Heights and Inwood are low-income neighborhoods, with per capita incomes at around $16,000 per year, and median household incomes in between $32,000 and $35,000. Washington Heights has about twice as many residents as Inwood, and a substantial employee population owing to the presence of the renowned New York-Presbyterian Hospital on 168th Street and Broadway. In fact, 56 percent of employees in Washington heights work in the health care industry (ACS 2007).

Figure 5.4

Table 5.1
Select demographics for the wire centers that correspond to Washington Heights, Inwood, Elmhurst and Corona.

Neighborhood	Washington Heights	Inwood	Elmhurst	Corona
Borough	Manhattan	Manhattan	Queens	Queens
Residents	141,568	72,946	362,730	73,719
Employees	51,843	13,811	79,161	18,302
Total Population	193,411	86,757	441,891	92,021
Households	45,137	26,336	114,790	23,093
Median Household Income	$35,769	$32,544	$45,897	$41,128
Per Capita Income	$16,289	$15,641	$18,501	$16,552
Ratio of Renters to Owners	14.36	15.19	2.06	3.03
Ratio of Females to Males	1.08	1.14	0.97	1.03
Foreign Language (%)	71.4%	69.6%	70.9%	71.8%
Foreign Born (%)	36.4%	35.4%	60.8%	65.3%

Source: 2007-2008 American Community Survey (ACS).

In Washington Heights and Inwood, renter occupied units outnumber owner occupied units by almost fifteen to one, and household size in both areas is about three people. In Inwood, the ratio of females to males is slightly higher than the citywide mean of 1.08.

4.1.2. Background: Elmhurst and Corona

In contrast to Upper Manhattan, Elmhurst-Corona has a bustling, loud and slightly chaotic atmosphere, which is perpetually punctuated by the rattling elevated line that carries the number 7 Subway train over the neighborhoods' main commercial street, Roosevelt Avenue. In every sense, Elmhurst-Corona is, as E.B. White says in the quote at the beginning of this chapter, "a permanent exhibit of the phenomenon of one world." Block by block, a visitor inhabits a different corner of the world: India and Pakistan between 37th Avenue and Roosevelt along 74th and 73rd Streets; a little corner of Ecuador by 102nd Street; Colombia on 82nd Street; Mexican food trucks and bodegas all along Roosevelt Avenue; and a trip through Southeast Asia and China along Broadway. Signs of

transnationality are affixed to almost every available surface with eye catching advertisements for

shipping services, clothes from abroad (i.e. "jeans Colombianos"), travel agencies, and most of all, the

offer of mobile phones and prepaid calling cards. Just off the commercial streets are residential

blocks that at one time may have comfortably housed one family in each building, but a glance at

today's rooftops reveals clusters of DirectTV satellite dishes that betray the interior subdivision and

densification of the area (Figure 5.5). The atmosphere in Elmhurst-Corona is paradigmatic of what

one would image an immigrant neighborhood in New York City to be, and emblematic of the notion

of globalized localities introduced in Chapter 2.

Elmhurst and Corona are located adjacent to each other in north central Queens, just south of

LaGuardia Airport and west of Flushing Meadows-Corona Park. The area was established in 1652

as Newtown and began as an agrarian community connected to Manhattan by Newtown Creek.

From the time of the horse-cart to the mid-19th century, it served as a suburb for Manhattan's

business elite, and as Jackson writes, "After the Second World War Elmhurst evolved from an

almost exclusively white, middle-class suburban community with a large Jewish and Italian

population to the most ethnically diverse neighborhood in the city." (1995: 373). By the 1980s,

immigrants in Elmhurst represented 112 countries, among them China, Colombia, Korea, India, the

Philippines, the Dominican Republic, Ecuador, Pakistan, Peru and Guyana.

Thirty years later, this trend is still strong and has intensified, with this part of Queens as the

fastest growing area in the city due to the massive influx of foreign-born immigrants. According to

the American Community Survey data compiled by the major U.S. telecoms carrier associated with

this study, the wire center that corresponds to Elmhurst has a residential population numbering

362,730, which rises to 441,891 when you add people who work in the neighborhood. In Corona

residents number 73,719 and employees are 18,302. Of the residents in each neighborhood,

approximately 71 percent speak a foreign language at home. The foreign born in Elmhurst make up

61 percent of the population and in Corona 65 percent are foreign born. Overall, Elmhurst has

114,789 households with a median household income of $45,896 per year (approximately equivalent

to the citywide mean of $46,596). The high rates of foreign born and foreign language speakers

combined with a median household income that puts this area of the city squarely within the

category of middle-income neighborhood somehow challenges accepted notions of immigrant

neighborhoods as struggling and isolated.

As mentioned earlier, Elmhurst and Corona are the emblematic immigrant neighborhoods of New

York, and served as the inspiration for Sanjek's notion of a "Neighborhood New York" as described

in Chapter 2. Elmhurst-Corona was initially an attractive place for new immigrants to settle because

at the time of the 1965 immigration reforms, when migrants from Asia, Latin America and the

Caribbean began to arrive in New York, there was available and affordable housing in the area as

white flight left spacious homes – which could be subdivided – vacant. Also, the neighborhood

already had an initial settlement of Chinese and Colombians, who had arrived in Elmhurst-Corona

in the 1950s and 1960s. According Sanjek, the Taiwan Chinese lived in Elmhurst because of its

strategic location: the IND subway provided direct access to Chinatown's commerce and

employment (1998: 62). Because the 1965 immigration reforms held provisions for skilled workers,

many medical professionals from abroad migrated to New York and found work at the Elmhurst

Hospital, located in the heart of the neighborhood. During one of my visits to New York, I stayed in

a large, block-long apartment building across the street from Elmhurst Hospital and learned that

many of the building's residents are from the Philippines and work in the hospital as nurses. The

health care industry constitutes 12 percent of the employment in Elmhurst, second only to the

restaurant industry, which accounts for 23 percent of the employees in the neighborhood.

Figure 5.5

The purpose of these neighborhood profiles is to establish the context within which I carried out my interviews and observations in the extroverted nodes of neighborhood New York. The sections that follow discuss the themes that emerged from my fieldwork, beginning with the telephone as a critical tool in facilitating transnational practices, then a discussion of how gender appears to be an important determinant in who is most connected and for which purposes, and concluding with the unique capacity of an artifact as mundane as the telephone to help people maintain and manage "the lines of continuity in [their] lives and in the relationships they have with their environments at home, in the host country or in between." (Diminescu 2008: 568).

4.2 Importance of the Telephone

When an 18-year old Andry first arrived in New York from Santo Domingo on January 15, 2008, his uncle picked him up at Kennedy Airport and drove him straight to a bodega in Queens where they purchased a MetroCard and a prepaid calling card. Armed with the two most essential tools for a newly arrived migrant – access to the city's sprawling Subway system and a virtual link back home -- Andry was prepared to confront the great city of New York. In the two years since his arrival, Andry has been studying at a community college on a scholarship from the Dominican government, has married a New York born, Puerto Rican-Dominican classmate, and stays in contact with his mother and sisters in Santo Domingo by phone on the weekends. Most of the time his mother calls him, though he initiates calls for special occasions such as birthdays. Conversations with his mother last approximately 15 minutes, but will stretch longer if his sisters are also home since, "they always have a lot to talk to me about."[1] After his student visa expires upon graduation, he plans to become a U.S. citizen but is not committed to either staying in the U.S. or returning to the Dominican Republic. He envisions settling in New York if he can bring his mother and sisters to

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[1] Translated from Spanish by author (June 7, 2010)

the U.S. through family reunification, or alternately, considers going back to Santo Domingo with his wife, even though her entire family is in New York City.

There are three themes exemplified in the anecdote about Andry that I found to be recurrent across many of the interviews I conducted in the field. First, whether in New York City for only two years or as many as forty years, many migrants maintaining active links home through the telephone as part of a routine and necessary practice. Calls are affordable and the means to stay in touch are accessible, including the ubiquitous availability of $2 calling cards or mobile phones that allow you to be moving within the city but still connected overseas. Second, these links are oftentimes maintained and perpetuated by female family members. Mothers, sisters, daughters and aunts are the predominant calling counterparts in all of the phone exchanges I analyzed from my interview subjects in New York. And third, decisions about migration – such as determining whether or not to stay in the U.S. or return home – are often uncertain and in flux, apparently contingent on factors such as life stage, migrant status, or perceived quality of life in New York and in their countries of origin.

4.2.1 It has Always Been About the Telephone

The affective and practical importance of the telephone, and with it the ability to make long distances calls, cannot be overstated when we consider the role it plays in the lives of certain immigrants to New York. Even before the price of a long distance call began to fall in the early 1990s, people called home at any cost. Isabel, who arrived in 1987 from the Dominican Republic, and today sells *pastelitos* and ice cream outside an elementary school in Washington Heights, recalls calling from her house phone:

> You had to do it anyway you could, because you missed home so much.
> But you had to pay a very expensive bill. Now I use a phone card and with
> two dollars I can make two calls, twice a week.[2]

Dolores, a grandmother and home health worker, also recounts how when she first arrived in

Washington Heights in 1966 at the age of 20, she would make phone calls to her mother and sister

in Santo Domingo, but these were rare because the bills were so high. Dolores vividly described

holding the phone to her ear while keeping an eye on the kitchen clock to keep track of how much

time was going by. There was tension with her husband over the price of the phone calls, and when

she stopped working in a factory after having children, she could no longer call her family in the

Dominican Republic because they could not afford the high cost of the long distance connection.

Some forty year later, Dolores marvels at how with a $2 calling card she can talk to her sister for

over an hour for less than the cost of a subway ride, currently at $2.25.

The need to connect across distance was so great back then that as telecommunications and

payment systems became digitized during the 1980s, some of the first computer hackers focused

their skills on cracking the long distance access codes used by the telephone companies for routing

international calls. A series of reports by the New York Times starting in 1985 and ending in the

summer of 1991 detail the Secret Service's crackdown on people running "telephone houses" and on

"street-corner entrepreneurs," who sold access to long distance calls from home phones and

payphones. On November 22, 1985, an article by David Bird titled "Secret Service Stops Scheme of

Illegal Calls" described the situation:

> The agency's first move was the arrest of five Dominicans, who were
> accused of operating centers – typically apartment living rooms in upper
> Manhattan – where people could make the illegal long-distance telephone
> calls, usually for reduced rates.

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[2] Translated from Spanish by author.

> Richard Ward, the special agent in charge of the service's New York office, said those arrested were responsible for more than $1 million in fraudulent calls. He said the calls were made with stolen credit-card numbers and so-called "blue boxes," electronic devices that emit tones allowing a call to bypass normal billing operations. Mr. Ward said the operators of the illegal phone centers, known in the trade as "call-sell" businesses, charged a flat rate for calls, many of which were placed to the Dominican Republic, Colombia and other parts of Latin America.

One of my Dominican informants spoke to me of how he remembered the telephone houses in Inwood: people would enter the living room of an apartment, which would be lined with chairs to serve as a waiting room, and for a flat fee, they could enter a separate room to make phone calls abroad, which could last for as long as the caller liked. These telephone houses could operate as many as ten lines simultaneously (Sims 1988). Patrons knew this was illegal and that the Secret Service was in pursuit, but the monetary cost was low enough, and the emotional reward high enough, to be worth the risk.

By 1987, it seems the Secret Service had begun to push the practice out of apartments and into the streets where hustlers could more readily ditch and dodge the authorities. Robert McFadden reported an article titled "Phone Codes: Newest Scam on the Street," describing the scene in the Port Authority Bus Terminal in sensational terms, likening telephone fraud to the drug trade:

> ... hustlers charge $2 for calls anywhere in the country and $4 for calls almost anywhere in the world. The hustlers do the dialing, using billing codes stolen from long-distance telephone companies by computer hackers and distributed through loose networks of middlemen in much the same way that drugs are trafficked. The best customers are immigrants... like patrons of a drug pusher, they wait for the hustlers, furtively buy calls and speak for hours to faraway relatives, friends and business associates. (May 12, 1987)

A woman standing in line to use an illicit number at a public phone on the corner of 160th Street and Amsterdam Avenue in Washington Heights is quoted by Sims as saying "This is the only way I can afford to speak to my family in Puerto Rico." (June 20, 1988).

As I learned from the older people I interviewed, particularly the ones from the Dominican

Republic, beginning in the mid-1970s, the telephone became the only reliable way to maintain

contact with people back home since the mail system on the island was known as untrustworthy –

either because letters would not arrive or they could be intercepted by the regime in political power.

Margarita, a prominent cultural ambassador in the Dominican-American community who arrived in

New York in 1966, offered this account during our interview:

> I stopped sending letters around 1976 or 1977, using more often the
> telephone. Letters began to get lost, I don't know why, but the
> correspondence was getting lost very often, there were many thefts over
> there, at least in the Dominican Republic. That's where the need came for
> the community to have something more effective.[3]

If an important message or parcel had to be sent to the island – often containing financial

remittances – people would ask trusted friends or acquaintances who were traveling to carry and

deliver the correspondence on their behalf.

Thus, in the decades since Latin American immigrants began to arrive in New York, the telephone

has played a pivotal role in maintaining links across distances. The telephone's importance in the

emotional and practical lives of migrants has been so profound, that it motivated people to spend

more than they could afford on calling and generated a multi-million dollar fraudulent industry

during the 1980s. As Marta emphasized during my interview with her in Corona, "The telephone is

a necessity, not a luxury."[4] She relies on her cell phone, used in conjunction with prepaid calling

cards, to stay in touch on a weekly basis with her three daughters and five grandchildren who live in

a remote town in Oaxaca, Mexico. She has not seen her daughters in ten years, nor met any of her

grandchildren because she is unable to travel due to her undocumented status. The telephone is

Marta's only means of overcoming her inability to be physical present to raise and nurture her

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[3] Translated from Spanish by the author.
[4] Translated from Spanish by the author.

family. Other informants also spoke of their constraint on traveling home, but not because of their documentation status but rather because of the financial crisis. Previous to 2008, they had been accustomed to traveling at least once per year, but with a weakened economy, they had not been able to afford visiting family and friends in the country of origin. In these two cases, the telephone acts as a substitute for travel.

4.2.2. Caller, Mode and Cost

Through the interviews I conducted in Upper Manhattan and central Queens, I have identified four types of international callers among the Latin American migrants with whom I spoke:

1. **Constant Callers**. They make at least one call per day, but are more likely to engage in multiple calls over the course of a day to family members in their country of origin. Constant Callers constitute five of the 24 interview subjects. Four are women, and three of them are in their early 20s and attend City College. All four women subscribe to the unlimited international calling plan, and all five make phone calls from a cell phone in the U.S. to a landline abroad (in the Dominican Republic and Colombia). The sole male works as an airline mechanic and calls his mother every morning from his cell phone with a calling cards. Years since migrating to the United States range from as few as two years to as many as sixteen years.

2. **Weekend Callers**. They make phone calls on the weekends, either on Friday evenings, Saturdays or Sundays to catch up on the week's events. They generally use $2 calling cards from their home phone to maximize their minutes, from their cell phone if they do not have a fixed line, or call from a *cabina* when they stop into the call center to send their remittances or other parcels to relatives at home. Nine out of the 24 interview subjects are Weekend Callers, all but one are women. They tend to be older, in their 40s, 50s and 60s, and have lived a good part of their lives in New York, averaging 23 years in the United

States. Four of them expressed a desire to move back to their country of origin. The women all work during the week in a variety of occupations – two street vendors, two students, a home health aide, a social worker, a call center manager, and one professional – allowing them time only on the weekends to connect with family and friends abroad. The male weekend caller is a car service driver and uses his cell phone with calling cards to speak with his mother every weekend.

3. **Episodic Callers**. They tend to employ international long distance services for punctuated events that can generally be classified as "crises and celebrations." They call to commemorate birthdays and holidays or to stay contact in case of an emergency, health issue or natural disaster, as in the case of Hurricane Ike battering the Caribbean on September 7, 2008, which resulted in a sharp spike in telephone traffic out of Washington Heights. Oftentimes the caller will use a $2 prepaid card, though some informants called directly from their cell phones for a low monthly fee that offers them a reduced rate on international calling. Episodic Callers are six of the 24 interview subjects, half are male and half are female. Three males and one female – all in their 20s and 30s – expressed uncertainty about whether or not they would return to their country of origin. The two other women knew they would be staying in New York but still had extended family abroad.

4. **Non-Callers**. These are migrants who have nobody in their country of origin to call because every member of their immediate family in the United States, or they have severed other social ties abroad as they have no intention of return migrating. They are settlers and have no need to maintain a social network in their community of emigration. Four of the 24 interview subjects can be considered Non-Callers: three men and one woman.

As noted above, the two types of prolific callers – constant and weekly - employ different strategies to maximize their convenience and cost involving a combination of cell phones, fixed lines and $2 calling cards. Those who seldom call may prioritize convenience and sometimes may not bother with a calling card and will dial directly from their cell phones. Below I detail the three principal options that my interview subjects use to make international calls: calling cards, *cabinas* and the MetroPCS unlimited calling plan.

Calling cards appeared on the market in 1993, just as the cost of international calls began to decline with improvements and upgrades in the international telecoms infrastructure. In spite of hidden fees and the risk of scams, prepaid cards made international calling convenient and affordable for people. The FCC (2005) reports that consumers spend $2-$3 billion a year on prepaid calling cards and that, "a significant portion of residential calls to foreign countries are made using these cards," (FCC 2005: 4), since even the most expensive cards offer rates that are far below the cost of a direct call. Elmhurst is dotted with tiny shops selling an infinite array of calling cards tailored to specific regions of the world, countries and even cities, most prominently Mexico City and Santo Domingo (Figure 5.6).

Another option for calling abroad are the *cabinas,* or call centers, that are scattered throughout upper Manhattan and in central Queens (and certainly elsewhere in neighborhood New York). Along with providing rows of telephone booths for long distance calls, *cabinas* also transfer financial remittances, ship parcels, process bill payments, sell money orders and even offer flower delivery services. It is common for those sending remittances from a *cabina* to then move into a phone booth to call the recipient of the funds to let them know that the money is on its way. Margarita, one of my informants in Washington Heights explained how the *cabinas* operate:

> Let's say you send a remittance. The person at the money transfer center will give you the opportunity to call: 'We'll give you five minutes so you can call your family, tell them you sent the money.' But then it's just five minutes. Calls often last longer so when you are done, the manager at the *cabina* will say, 'we gave you five minutes for free but you spoke for half and hour so you owe this amount.' The idea is that you send the money but you also call.[5]

The amount of money that Latin American migrants send to their families in support for day-to-day life but also as a strategy to achieve their objectives of home and business-ownership back home is vast, almost $4 billion from New York state alone in 2008 (Inter American Development Bank (IDB)). The IDB reports that 53 percent of migrants in New York send remittances regularly, just above the U.S.-wide average of 50 percent. Electronic money transfers facilitate this practice and have contributed to the growth of remittances as the cost of this transaction has declined over time due to increased competition among service providers. For example, the amount of remittances to the Dominican Republic, which represent 10 percent of that country's GDP, have more than doubled in the period between 1998 and 2008, from $1.3 billion to $3.2 billion, according to that country's Central Bank. A recent news report explains that:

> The remittance delivery system in the Dominican Republic is very advanced. The money, in pesos or dollars, is delivered right to the home, all across the country. Many of the companies are not even charging now for transmission, making their money on the foreign exchange rate. (Eames Roebling and Silveira 2009)

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[5] Translated from Spanish by the author.

Figure 5.6

Table 5.2 Cost comparison of an international call by type of calling and as proportion of the median per capita income in upper Manhattan and central Queens.

Type of caller	Cost/Month	Minutes	Cost of international calls as share of median per capita monthly income*
constant callers (n=5)	≤ $60	unlimited	4%
weekend callers (n=9)	$8 - $20	1 hour - 33 hours**	0.05% - 1.5%
episodic callers (n=6)	≤ $10	15 minutes	≤ 0.07%
non-callers (n=4)	0	0	0

* mean per capita income for Washington Heights, Inwood, Elmhurst and Corona is $16,745 (U.S. Census, 2007 American Community Survey)
** calculations based on minutes from purchase of four prepaid calling cards in a month (one card/week). Range of cost considers the purchase of four $2 cards to call Honduras (at 16 minutes per $2 card yields 64 minutes for the month) to four $5 cards to call Mexico City (at 500 minutes for a $5 card yields 33 hours for the month).
Source: Author's interviews (n=24) and data gathered on calling services offered in the four neighborhoods of interest in upper Manhattan and central Queens.

When we consider that monthly per capita incomes in upper Manhattan and central Queens average to just over $1,500, it is remarkable to see that along with remitting money home and paying living expenses such as rent and food, at least half of my respondents will also spend anywhere from 0.5 percent to 4 percent of their monthly income on international calls (Table 5.2). This reinforces the finding that the telephone is as much a necessity as it ever was.

Table 5.3 compares the range in prices for a seven-minute call from a *cabina* in Inwood and Elmhurst-Corona, and with two popular prepaid calling cards in New York. The second column in the table indicates whether the price is for a call to a fixed line phone abroad or a mobile phone abroad. With the exception of calls to Colombia and to fixed lines in Guatemala, a caller to select countries in Latin America is best off using the Black calling card to call home. *Cabinas* are almost always the more expensive way to connect, sometimes with a dollar or more difference in price for a seven minute call, particularly when connecting with mobile phones abroad.

Table 5.3. Cost comparison in U.S. dollars for a 7 minute call from a fixed line and a cell phone through two modes: *cabinas* in upper Manhattan and Elmhurst-Corona, two popular calling cards, and FCC figures for lowest cost calling card (with data from 2005).

Call destination	Call a fixed line/cell phone	CABINAS			CALLING CARDS		
		Dyckman & Nagel, Inwood	93rd & Roosevelt, Elmhurst (IPVoice)	Corona Plaza, Corona	Orbitel	Black	FCC Lowest Cost (2005)
Dominican Republic	Fixed	0.63	0.84	1.19	0.27	**0.02**	0.42
	Cell	1.40	1.33	1.19	0.88	**0.61**	
Ecuador	Fixed	1.40	1.33	2.03	0.88	**0.63**	
	Cell	2.80	1.75	2.03	1.56	**1.27**	
Colombia	Fixed		0.84	1.19	**0.06**	0.18	0.42
	Cell		1.33	1.19	**0.23**	0.44	
Cuba	Fixed		6.93	**6.65**			
	Cell			**6.65**			
Guatemala	Fixed	1.47		2.10	**0.70**	0.88	0.70
	Cell	1.82		2.10	1.00	**0.46**	
Honduras	Fixed	3.08	2.73	2.73	1.40	**0.87**	
	Cell	2.80		2.73	**1.17**		
Mexico	Fixed	**0.35**	1.19	1.19	0.58	**0.35**	0.49
	Cell	2.94	2.45	1.89	0.78	**0.67**	
Mexico City	Fixed				0.13	**0.07**	
	Cell				**0.22**	0.56	

Source: author's field notes from 2009 and 2010. Final column from FCC (2005). Lowest rates per country are highlighted in bold.

In speaking with managers of the *cabinas*, I learned that the price per minute differences I recorded between establishments can be attributed, in part, to the type of system they use to operate their telecoms connections. The call center at 93rd and Roosevelt in Elmhurst uses a service called IPVoice, employing the Internet to route phone calls. According to call center managers at places that purchase their international minutes from telecoms providers,[6] the quality of IPVoice is vastly inferior to the wireline services they provide – calls get dropped, the sound is not as clear – and they believe customers choose to pay a higher rate for better quality service. Nevertheless, the sample comparison provided in Table 5.3 shows that the call center in Elmhurst that uses IPVoice only

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[6] Purchasing minutes from the large telecoms providers is the traditional way of operating a call center. This may help explain the high rates of landline calling in the telecoms provider dataset employed in this study.

provides lower prices when calling to Ecuador. Certainly this is a competitive advantage in a neighborhood where the top calling destination is Ecuador, but in terms of other global destinations, callers can essentially choose the most convenient location to visit without considerable difference in price. Among the people I interviewed, those who chose to use *cabinas* over calling cards cited their preference for paying only for the minutes they used, the reliability in the connection, and the transparency in knowing the price per minute, meaning that no minutes would "disappear" or that they would be charged hidden connection fees as is sometimes the case with prepaid calling cards.

The service with a growing popularity is the unlimited international calling plan offered by MetroPCS for a flat fee of $60 per month. Long gone are the days of the telephone houses and street-corner phone entrepreneurs, today people wait in line at the MetroPCS store to purchase their own individual cell phone and to sign up for unlimited international calling. This service requires no contract, credit card, or identification from its customers. They simply purchase a mobile phone up front and pay for service on a monthly basis, either in cash at the MetroPCS store or online. As with the use of *cabinas* and prepaid calling cards to call internationally, this service is accessible to those who do not have immigration documents, bank accounts or credit cards.

At a shiny-new MetroPCS store on Roosevelt Avenue earlier this summer, I waited patiently with approximately thirty other potential customers for this service while seven employees behind sales counters called up our electronic numbers as if we were at a crowded Department of Motor Vehicles. Among the constant callers, four of the five employ this MetroPCS service. In effect, it lowers any barriers to international calling since the caller can dial the international number directly from their cell phone and has no concern for access codes or keeping track of minutes used during their call. It is also a service available to those migrants with irregular immigration status. My sense from the interviews I conducted with MetroPCS users is that this service is

revolutionizing how migrants stay connected and experience their lives abroad. The direct, unlimited international call undoubtedly facilitates intense simultaneity, a discussion I explore further at the end of this chapter.

4.2.3. Patterns of Talk II

The two graphs that detail the volume of calls by day of the month included in Chapter 4 (Figures 4.1 and 4.5) illustrated that domestic and international long distance calls exhibit an inverse pattern, where international call volumes increase on weekends and domestic calls are at their peak during the weekdays. The manager at the La Nacional call center in Elmhurst corroborated this finding: the weekends are the busiest days for the *cabinas* there, while Tuesdays and Wednesdays are the slowest days. My interviews also supported this finding with subjects noting that weekends were the days where they called most and spoke the longest because they had the time to do so but also because they were more likely to find their calling counterparts at home. Calling to the fixed lines of home phones is an important strategy for both Constant Callers and Weekend Callers since the MetroPCS unlimited international plan only allows outgoing calls to fixed telephone lines. Also with prepaid calling cards, rates are substantially lower when connecting to wireline phones.

Dolores, the Dominican woman who migrated in the late 1960s said that for Dominicans especially, "Sundays are about three things: church, family and rest."[7] Generally speaking, people in Latin America do not work on Sundays and most commercial establishments are closed on that day. Calling family at home on a Sunday gives the caller the opportunity to speak with the maximum number of family members at one time. After church, people come together at home for a long lunch and calling on Sundays ensures that New Yorkers will connect with family in their country of origin, and that both calling counterparts will have enough time to share news and gossip over the phone. For example, Vivian, who lives with her father in Corona, calls her mother and sisters, who

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[7] Translated from Spanish by the author.

live in Santo Domingo, every week on Sundays between 2pm and 6pm after church. This squares

with Figure 4.5 where the weekends generally exhibit more daytime calling than during the

weekdays.

Coordinating times is particularly important when wireline calling is involved and when the

purpose of the call relates to transnational parenting, as evidenced by Vivian's situation and Jessy's

experience. Jessy is a Honduran immigrant who grew up in Tegucigalpa with her grandmother and

aunt while her parents worked in New York. During the eleven years while her family was

separated, between 1988 and 1999, her parents would call Jessy and her three younger siblings

every weekend from *cabinas*. The calls would last between thirty minutes and one and a half hours

because the parents would spend at least twenty minutes with each child on the phone. Growing up

without her parents nearby, the reliability of this weekend call gave her a sense of security and

connection. While she and her siblings could not initiate calls to her parents, they reciprocated their

parents' affection by sending monthly packages to New York containing letters, photographs and

homemade crafts and cards on special occasions.

Of all the frequent callers I spoke with, only Marjie never calls on Sundays. She is a 21-year old

student who lives with her mother in the Bronx while her father circulates back and forth between

New York and the Dominican Republic. Marjie and her mother call her father weekly, but mostly

on Friday evenings because on Sundays,

> ...guys over there bet money on the birds that fight [cock fights]. So on
> Sundays my father does that, so he's busy, and my cousin goes too. Those
> are days they don't pick up, they're not available. So Sundays we never
> call.

This account illustrates a possible reason why, as I discuss in a subsequent section, international

calling related to family matters appears to be an activity initiated and managed by women. Perhaps

women not only "worry more" and are more talkative, as Marjie suspects, but also may tend to be

more physically present at home, at least in the case of calling counterparts who live in Latin

American countries, since generally the New York women I spoke with worked or studied and had

to find time to maintain ties at home during in-between hours – like morning commutes or lunch

breaks – or on weekends. Dolores, for example, does not call every day because she is so busy

working as a home health aide. She has to make the time to call because with a $2 prepaid calling

card her calls can last anywhere from thirty minutes to over an hour.

The length of time the people I interviewed spend on an international call varied widely but at a

minimum calls last around 15 minutes. The call center manager in Elmhurst observed that people

there speak anywhere from 15 minutes to a full hour or as much as three hours. The male subjects I

spoke with tended to speak for shorter periods of time, 12 or 15 minutes per call, while female

subjects reported speaking in at least in 20 minute increments, but oftentimes longer in order to use

up all the minutes offered in a prepaid calling card. Margarita, the Dominican cultural doyenne,

gave an account of her experience with calls to her elderly aunts in Santo Domingo:

> Oh my Lord. They want to tell you their life and all its miracles in that
> one hour. And sometimes, one is speaking and they'll say, "you don't
> understaaaand... ooooh and thennnn..." I have to say, "auntie, please
> speak more quickly because my minutes are disappearing." And I will
> quickly get to the point of what I want to say. And then they'll start to
> speak slowly again, "ooooh, and you know how your cousin left... and
> what do I knoooooow," and the telephone lady voice says, you have... oh, I
> don't know how many more minutes left. So I say, "aunt, I have to call you
> back." So when I call that aunt, I don't buy a $2 card, I buy a $5 card
> because she speaks slower than honey dripping from a beehive.[8]

Many accounts conveyed the notion above that women have a lot to say on the phone. Marjie, the

young student living with her mother in the Bronx described how her mother speaks for, "a full half

and hour and sometimes when she's not done expressing herself, she'll get another card and she can

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[8] Translated from Spanish by the author.

go on, she usually has a lot to say." The following section describes my findings around gender in more detail.

4.3 Gendered Connections

As I conducted interviews about international calling with migrants to New York, I began to notice that many of the people my interview subjects call in their countries of origin are women: mothers, daughter, aunts, sisters and cousins. Among the men I spoke with, only Javier, an airline mechanic in Corona, is a Constant Caller, connecting with his mother on a daily basis. He also speaks to his father and siblings, but at most about once per week. According to him, he gets all of the family gossip and information through his mother so, according to him, he really does not need to speak to anybody else. Of the seven other men I interviewed, one is a Weekly Caller who also exclusively calls his mother, and three are Episodic Callers who call people like sisters and aunts on special occasions like birthdays. Nelson[9], an Episodic Caller, explains whom he calls most in the Dominican Republic and for which purposes:

> My godmother, who I love very much, she lives in Dominican Republic. So she's my father's sister and then her husband who is my godfather, he also lives there. They live in Vista Linda, Santiago. So I call her, whether it's Dominican Mother's Day, sometimes for Christmas... sporadically, occasionally, not on a monthly basis but at least, I would say, five times a year. I call her, for example, on special occasions.

Finally, there are three Non-Callers among the male subjects I interviewed and the reason they gave for not engaging in internationals calls is that their immediate families are all in New York. As it happens, none of them intend to return to their country of origin, supporting Levitt's (2009) and

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[9] Nelson is 29 years old. He arrived in New York as a baby and grew up in Sunset Park, Brooklyn. He says his parents will soon move back to the Dominican Republic to retire, just as many of his aunts and uncles have already done. In the future, Nelson would ideally like to live half the year in New York and the other half in the Dominican Republic. He identifies strongly with being Dominican and in fact, he maintains a website about Dominican culture and news for Dominicans called Esendom (which translates to Dominican Essence).

Smith's (2006) notion that calling is a way to maintain social networks as a safety net for an eventual return.

The women I interviewed tend to call other women, either because they are more gregarious, they are easier to reach at home, or because the affective bonds between them are stronger. When I asked Isabel, the street vendor in Washington Heights, about whom she calls in the Dominican Republic she responded, "More than anything, my sisters – the females – and my father and my mother. The males, they are almost never home. I always call the females."[10] Likewise, Yuberkys, a young Dominican woman whose family is in Santo Domingo and Puerto Rico, explains that when she calls her sister, "with her I speak a long time, one hour, almost two." With her brother in Puerto Rico, "I call every once in a while, twice per month, less often... with my brother I don't have that relationship, and neither with my father."[11]

Recognizing this dynamic, the anthropologist Sarah Mahler (2001) has argued for a gender-sensitive perspective in examining how people accomplish the practical task of communicating transnationally, particularly when it comes to maintaining family bonds. Marketers of calling cards are keen on the connection between international calling and gender, as evidenced by the many advertisements that feature a woman or mother on the phone (Figure 5.7). Indeed, the majority of calls among my interview subjects involve connecting with family members and some of the most intense calling happens between mothers and daughters. Pamela, whose parents have retired to the Dominican Republic, leaving her in New York to study at City College, detailed to me how the at-a-distance relationship works with her mother:

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[10] Translated from Spanish by the author.
[11] Translated from Spanish by the author.

> She's constantly calling me here, at work, everybody is witness of that. Sometimes I have to step out and I'm like 'you know mom, I'm at work.' She always wants to know what I'm up to. So she will call my cell phone a lot and she will call and tell me to return the call because over there it's by minutes, and since I have a plan that's unlimited calling long distance, she sort of 'beeps' me.
>
> So she calls and she's like 'call me back,' because over there it runs by minutes, even the landlines have like a plan with a specific amount of minutes. So I do that, I call her back. And that usually happens four or five times a day.
>
> Now at night, that's another story, she won't call my cell phone anymore. After about 10:30-11pm, she says she's going to call the house phone to make sure that I'm there. She says if she calls my cell phone I could just be anywhere... 'I'm going to call the house, pick up the phone so I can know that you're there.'

Pamela's mother is asserting her role as mother from afar by employing the telephone as a means to collapse and transcend the physical distance between herself and her daughter. Because Pamela's mother also visits New York on a regular basis to manage the house she owns in South Ozone Park, Queens, there are periods where she has to take care of her younger son, who lives in the Dominican Republic, from New York. As Pamela describes it,

> The mothering thing for her, [from] abroad, is like on a constant basis because when she's here [in New York], she has to call to make sure my little brother is doing fine in Santo Domingo. And when she's over there, she has to call to make sure that I'm fine in New York. She's done that throughout our lives, because when I was young she used to do the same thing when I was in Miami. So it's always been very important to keep in touch through the phone with us.

The telephone has conditioned Pamela's relationship with her mother for so long that during our interview Pamela began to realize how the intimacy she achieves through the telephone with her mother has in fact allowed them to have a very close relationship despite of the distances that have physically separated them for most of their lives:

> I feel like sometimes, me and her come closer when we are apart because I'll talk about things with her that I won't when she's around. I take it for granted. When she's away, it's like even when I'm going through a stressful moment in school or something... everything just comes together... I'll call and she'll be like 'Oh, what's going on?' and then she'll

notice right away, 'What happened? There's something you want to tell me.' She notices these things more when she's apart, I guess. She has to be more aware of what I'm feeling while she's away because she's so far.

In a sense, the telephone is an ideal instrument for realizing the condition of transnational motherhood (Hondagneu-Sotelo and Avila 1997; Levitt 2001) because as Marshall McLuhan observed in *Understanding Media* (1964), "the phone is a participant form that demands a partner, with all the intensity of electric polarity." (p.268). The telephone is an immersive experience where the human voice bonds the sender and the receiver of a message together in real time. McLuhan maintained that engaging with another person through the telephone cannot be achieved while multi-tasking – it cannot be a background activity like the radio – because the telephone is "intimate and personal" (1964: 269) and as such, "it demands participation of our senses and faculties" (1964: 267).

In order for women that are separated from their children to fulfill their role as mother, which demands maintaining circuits of affection, attention, and involvement in the details of a child's life, a certain level of simultaneity is indispensible. With a service like unlimited international calls from a mobile phone, for example, where the connection is almost instantaneous and the caller does not need to be mindful of cost or minutes running out, simultaneity is achieved through multiple calls every day to check in on how the day is going, troubleshooting any problems, and conveying a connection through voice and sentiment, even while on the go in the city. Yanil, a young student, is emblematic of this condition. With unlimited international calling from her cell phone, she makes about five calls per day to her mother and sisters, who all live in the same house in Santo Domingo in the Dominican Republic. She first calls at 7am on her way to school, before her mother and sisters have left their house (recall that unlimited international calling only connects to landline phones.) Yanil will also call at around midday when everybody is home for lunch and again at around 3pm after her sisters have returned from their classes. When Yanil is on her way home from classes, at

around 6pm, she takes the elevated train home, even though it is a longer route, just so she can spend the commute talking with her family in the Dominican Republic. She then makes one final call to her mother before going to sleep for the night

In fact, there may be a biological basis to the effect of a mother's voice in soothing a child's anxiety. Biological anthropologists (Seltzer et al. 2010) have found that when children are stressed, specifically daughters, the sound of a mother's voice over the telephone is as soothing as being comforted in person. The researchers found a biological basis for this effect where oxytocin is released by the body as a response to the long-distance bonding over the telephone, and that this effect was long lasting, reducing anxiety in children beyond a given stressful moment. Leslie Setlzer, the lead author of the study says, "…It's clear from these results that a mother's voice can have same effect as a hug, even if they're not standing there." (ScienceDaily 2010)

Figure 5.7

4.4 Simultaneity and the Myth of Return

Another common reason the Constant and Weekly Callers maintain close ties with family in their country of origin involves managing social relationships and business affairs from afar such as residential properties, agricultural land, and other types of investments. I heard a common story: people migrate to New York in their early 20s to work and save enough money to support family back home *and* to buy land and build their own house in their country of origin. This house is built slowly, piece by piece, as funds are saved and available for investment back home. Eventually, this house is completed and the intention is for the owners to move there upon retirement. But retirement is often deferred for various reasons. Children are still in school and the parents want to be there to make sure the children complete their education in the United States. Children begin to settle in the United States and grandchildren enter the picture, creating roots. Oftentimes, migrants fear that their savings are not enough – because funds get depleted for emergencies in the U.S. and abroad, for example – and therefore they are compelled to continue working. For whatever reason a return is forestalled, the theme in terms of how the most connected interviewees considered New York was consistent: New York is about work and their stay in the city is temporary. They are sojourners to New York, even if the time frame that they consider to be temporary can stretch as long as twenty or forty years. In the meantime, they may travel back and forth at least once per year, depending on their documentation status and economic situation. The role of the international telephone call in this process is fundamental; as Levitt suggests, "migrants need to maintain ties, so that they have social contacts and support should they need to return home." (2009: 5)

Substantial effort is dedicated to preparing for an eventual return. Marjie describes how her mother – who arrived in 1984, worked at a factory and then as a nanny, and saved enough money from these low-wage jobs to purchase two houses in the Dominican Republic – handles these faraway investments from her (rented) house in the Bronx:

> She has all her things there, all of her properties are over there. She doesn't have anything here, so she usually calls very often to make sure that the houses are OK. When she wants to change the renters, or if there's a problem with the person, or the person did something to the house, like broke something... she has to call very often. She manages from here – she has my cousin looking out for the houses that are rented. It's constantly [that] she has to call to make sure everything is OK.

When I asked Marjie if her mother still worked in New York, she answered, "No, not anymore. She's just home all the time, managing life in the DR, managing everything there." She manages 'everything' over the phone with $2 prepaid calling cards (about four cards per week) from her landline phone at home. So why does Marjie's mother remain in New York after having achieved her aim of being established more firmly, economically speaking, in her country of origin? Marjie herself is not sure why her mother has not returned:

> M: She already has her two houses, but you know, she's always saying how she wants to go back. I don't know what she's waiting for, but she still hasn't gone back. My father was actually the only man who actually accomplished his dream 'cause he saved up enough money and he usually comes back and forth and enjoys the country over there. My mom, unfortunately doesn't.

> FR: What keeps her here?

> M: I have no idea, I don't know, I feel like so many Dominicans do that, they say they're going to save up, try to advance themselves, do something for themselves in New York and then go back when they're well off. But they haven't.

> My mom's excuse is that she has kids here and that my brother still hasn't finished college, but I mean, my brother could stay with me or my sister, she could go and have fun but she doesn't go, she's stuck in New York, I don't know why. She has everything she was going for: she took care of her mother, she has money in the bank over there, she has her two houses, she could go and have fun, but she doesn't want to go.

This belief among migrants that they will eventually return to their home country, even if that day does not ever materialize, is what the transnationalism literature has termed the "myth of return" (Jones-Correa 1998). Oftentimes, instead of a full relocation to their country of origin, New York's foreign born, particularly from the Dominican Republic, will become revolving migrants where they

circulate between the U.S. and their home country. Marjie's father exemplifies this latter dynamic as a perpetually revolving migrant: he spends part of the year in the Cibao region of the Dominican Republic tending after land he inherited form his parents and living in one of his wife's houses. He travels back and forth between New York and Cibao, but often without a set plan, deciding that he is going to travel just days before doing so and purchasing one-way tickets, leaving his second leg of the trip open and in flux.

I found that many decisions regarding migration reflected uncertainty and lack of planning. While the people who called most generally also tended to express a desire to return to their country, they were always uncertain as to when that return would be. The common refrain was, "we always say we are going to leave, but we never do."[12] Isabel, the 50-year old street vendor in Washington Heights who migrated to New York in 1987, expressed her experience with the "myth of return" in these terms:

> I was always conscious of going back. Only recently, around five years ago, that I no longer want to leave. But before, I used to pray to God that the day arrived that I could return. Now, I don't care to leave. My heart is here, I don't know why, I don't care... well, I care about my country, but only to visit. I want to stay here now, it looks like I have grown to love this land.[13]

Isabel attributes her change in plans to the realization that her daughter "thinks she from here, she feels American," and that things are easier in New York than in the Dominican Republic. "You work hard, but you can buy things. There, you work hard, but you can't buy things."[14]

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[12] Expressed by Xiomara, a Dominican immigrant who arrived in New York as a teenager with her siblings. Translated from Spanish by the author.
[13] Translated from Spanish by the author.
[14] Translated from Spanish by the author.

Long distance calling acts like one of many a placeholders that allow for the maintenance of intense social ties in the interim prior to return. Connections by phone also instrument other transnational investments that serve to plant the seeds over 'there' for a resettlement, such as the construction of a house, purchasing of land, or managing of tenants. Whether the eventual return comes to pass is almost inconsequential: calling activity exists regardless since decisions about migration are so fluid. Even Isabel, who now knows she will stay in New York, continues to call her mother and sisters in Santo Domingo. Just as she now believes she will not return, this decision may also change with time.

What appears to motivate the dream of returning is the perceived, or perhaps idealized, quality of life in a home country. In the interviews, subjects often juxtaposed the predictable, hectic lifestyle in New York with the relaxed, family-oriented atmosphere of home. "Who doesn't want to live in their land?"[15] remarked Diana, a 41-year old Ecuadorian woman who plans to move back to Guayaquil when she turns 50 years old. At that age, she says, she will still have enough life ahead of her to be able to enjoy it. But even then, she admits, "time is treacherous"[16] because it slips away from you before you realize it and that is how many economic migrants, or sojourners, become immigrants, or settlers. Nevertheless, because of the ability to maintain ties over time and distance with affordable telecommunications and travel technologies, that pattern of settlement is unlike previous migrant experiences: it is more loose, with decisions made according to life stage or availability of financial resources. As a result, today's migrants live an established transnational life: they maintain transnational families, properties and other affairs because the possibility always exists of achieving the dream of returning home someday. In between, they can circulate back and forth, spending time 'here' and 'there,' but only if they are permanent residents or naturalized citizens of the United States.

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[15] Translated from Spanish by the author.
[16] Translated from Spanish by the author.

Carlos, a young man who arrived in New York with his family from the Dominican Republic in

2000 has decided to stay in the U.S. even though his parents plan on returning to Santo Domingo.

When I asked how he felt about the outlook of his immediate family being situated in two places, he

said of his parents:

> I think I would just go visit them. I will feel really happy for them if they
> do move over there because I think they feel more connected to the
> Dominican Republic than New York. I think it's their dream to go back. I
> would love for them to go. However the house is not finished, it needs a
> roof.

For New York's 21st century migrants, at least the ones from Latin America, it seems that the

intention is to achieve "the American Dream" in their *own* America, and not in the United States.

4.5 Summary

This chapter detailed findings on transnational telecommunications from field observations in two

of New York's most 'extroverted' areas – Upper Manhattan and central Queens – along with a

series of interviews with foreign-born migrants to the city. Evidence of the global "space of flows" is

embedded throughout the neighborhoods of Washington Heights and Inwood in Manhattan and

Elmhurst and Corona in Queens. The cultures of the city's migrants are found in storefronts,

restaurants, signage, and in the residents' dress and language. While Upper Manhattan is

undoubtedly the city's, if not the country's, premier Dominican enclave, central Queens reflects the

varied provenance of its residents from world regions such as Latin America and Asia. This physical

evidence from the built environment is supported by the virtual flows of information that travel

through a global grid of telecommunications fiber. The interviews I conducted reveal that the

affective bonds of faraway families constitute a great deal of the space of flows emanating from New

York's migrant neighborhoods.

In speaking with people about how they stay connected with their family and friends abroad, I found that the patterns of talk as described by my interview subjects coincides well with the data analysis presented in Chapter 4. International calling is highest on weekends and while the most prolific callers may stay on the line for hours at a time, most calls tend to be between fifteen to thirty minute long. What the telecommunications data cannot reveal, however, is that international calling is a highly gendered activity, involving women on at least one end of the line, particularly among my Dominican informants. The practice of transnational telecommunications serves the purpose of managing families and interests abroad and through the affordability and accessibility of international calling services, many migrants are deeply involved in the daily lives of their home communities, achieving 'simultaneous' interaction across space and time. Finally I argue that the utility of simultaneity is centered in part on the "myth of return," the idea that migration to New York is temporary and that saving and working in the city are focused towards establishing a life 'there' instead of 'here.' But life and time in New York run their course and people sometimes develop roots in the city and may put off returning for a variety of reasons. Even still, the international telephone call remains a necessity since it serves to foster and maintain social ties that may need to be activated in case a return home comes to pass.

CHAPTER 6
Conclusion

...being in a foreign country was as sad as living in a drab, anonymous hotel; without memories, without familiar trees, without a childhood, without ghostly presences: because one's fatherland was childhood and hence it was perhaps more appropriate to call it one's motherland, something that shelters, and warms when one feels lonely and cold.[1]

Sobre Héroes y Tumbas
Ernesto Sábato (1981 (1961): 223)

This study set out to add empirical detail to the notion that information and communications technologies (ICTs) have played a fundamental role in the dual processes of global city formation and migration. How New York connects to the rest of the world was the initial motivating question behind the *New York Talk Exchange* project, which visualized telephone and Internet flows between one of the world's foremost global cities and countries around the world (Rojas et al 2008). Using the *World Within New York* visualization (Figure 1.7 in Chapter 1) as a departure point, I have sought here to examine how global links vary within the city by scaling my examination of New York's space of flows from the city down to its neighborhoods to see how different parts of the city connect to different parts of the world. I have also sought to understand how individuals employ the telephone to mediate transnational activity.

While it is evident from previous research that advances in ICTs over the past twenty years have facilitated the processes of globalization for corporate functions, particularly in a command and control center such as New York, the question of how the other leg of globalization – immigration – has fared due to the increased affordability and accessibility of ICTs remains to be explored more deeply. Through this work, I have attempted to open a window into the nexus between migration

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[1] Translated from Spanish by Helen R. Lane (1981)

and telecommunications by showing that migration is indeed an influential force in shaping New

York's global space of flows, and that ICTs such as the telephone are fundamental tools in forging

the transnational processes that today help define the 21st century migrant experience.

When I first began formulating this research project, I anticipated that New York's links to the

world would be dominated by those global trade partners that house the other global cities of the

world: London, Hong Kong, Paris. But I also imagined that the city's migrant sending countries

would appear in the ranking of New York's telecoms connections. What truly surprised me

however, was how prominent those migrant sending countries are in the list of the city's main

calling counterparts. According to the volume of communications within the network of our

telecoms partner, the Dominican Republic was the city's top calling destination for September 2008,

accounting for almost 12 percent of all outgoing international calls from New York City. Mexico,

Ecuador and Jamaica also placed within the top ten destinations in terms of the volume of outgoing

calls from the city during that same month.

As I spatially disaggregated the data further, I found that, as a corollary, the city's immigrant

neighborhoods were generating the greatest proportion of international calls as a percent of all long

distance call traffic (measured in minutes), even when corporate New York produced greater

absolute volumes of global telecoms traffic. That said, even those most 'extroverted' areas of the city

did not direct more than one-quarter of the total long distance call traffic beyond the national

borders of the United States. Telephone links in even the most global of cities are nevertheless tied

more strongly to its domestic homeland. Still, the single telecoms network examined in this study

includes only long distance telephone calls for switched and dedicated landlines, cell phones, VoIP,

and prepaid calling cards. It does not account for other telephone-enabled communication means

such as text messages (SMS) or activity over the Internet such as Skype or instant messaging/chat.

If all of these platforms were to be considered, perhaps the proportion of telecoms flows destined

abroad versus domestically would shift in favor of global links, thus supporting ideas of the global city as being somehow sovereign from its nation-state in its globalizing impetus. But this is not something we can ascertain through the data available for this study.

Finding that some predominantly immigrant areas of New York are a considerable force in generating communications flows at a global scale, and that there is an association between the concentration of foreign born groups and the worldwide calling destinations from the different areas of New York City, indicates that as foreign born groups continue to account for all of the city's population growth, transnational communications through telecoms will deepen.

Neighborhood observations in upper Manhattan and central Queens evidenced that transnational flows of information are inscribed in the physical environment of the city through land uses that support the space of flows, such as the *cabinas*, and the many products that allow migrants to instrument links to their home communities like mobile phones and prepaid calling cards. Informant interviews of long time immigrants revealed that even before telecommunications became affordable in the early 1990s, long distance calls played a fundamental role in maintaining affective bonds with family and friends left behind. Because of the high cost, however, migrants were judicious in how they used their resources, particularly constraining the amount of time they spoke. Due to the necessity of maintaining contacts with home, some migrants also became complicit in telephone fraud that allowed unlimited access to the international telecoms network. It may not be coincidental that illegal "telephone houses" disappeared in the early 1990s, at around the same time that calls dropped in price and prepaid calling cards entered the market. International connections may have become cheap enough to not be worth the risk of fraudulent calls. In the present day, the affective bonds with distant family and friends appear to be strengthened for new and old migrants alike as the affordability of calls – either through a $2 phone card or a $60 unlimited calling plan – facilitate simultaneous interactions and deep involvement in day-to-day life across borders.

Telemediated simultaneity through affordable international calls, in concert with other technological advances such as electronic money transfers, have contributed to restructuring some of the most fundamental aspects of social life in migrant communities: the family and the home. Unlike New York's past experience with immigration where full families arrived at Ellis Island, many of today's migrants arrive alone, leaving family behind in their countries of origin. Over the past two decades, an increasing number of these migrants have been women seeking to fill labor opportunities in the growing service sector, including health care and domestic work. When these women leave children behind, it is incumbent upon them as mothers to not only provide financial support through remittances but also emotional support from a distance. In my interviews I found that the telephone was a vital tool for women in maintaining and even asserting their role as mothers from afar. Trips home are scarce: working is neither compatible with childrearing nor traveling for extended periods of time. So communications links are fundamental to transcending the physical disjuncture of contemporary migration for mothers and the families they leave behind.

The phone calls also as a means to manage how remittances are spent back home. Perhaps the most illustrative cases are the ones where migrants manage the construction of their home in their country of origin from New York. Of my informants, Dominicans appeared much more engaged in this transnational activity than the other Latin American migrants I spoke with, though some Colombians I interviewed also discussed how international calling has facilitated building a home abroad. A point person in the country of origin, usually a sibling or cousin, often acts as a proxy property manager while the remitter in New York makes decisions about how the construction should proceed as funds become available for materials and labor costs. Because home construction in the country of origin can take place while the homeowner is still abroad, sometimes the home is completed before the migrant determines it is time to return home, as in the case of Marjie's mother discussed in Chapter 5. In those situations, New Yorkers become landlords to temporary tenants

abroad and must manage recurrent crises from afar through the simultaneity afforded by the telephone.

Considering the implications for New York neighborhoods in at least these two instances – where simultaneity through telecoms facilitates transnational motherhood and homeownership – is a point where I believe the practice of urban planning can participate in the debate on the future of immigration in the U.S. and other migrant receiving areas of the world such as Europe.

Questions for Urban Planning

Perhaps the connection to how an analysis of intangible and invisible flows of information at a global scale can inform the practice of urban planning at the city and neighborhood scales may appear tenuous. But I contend that conceptualizing the hybrid, transnational experiences of migrant groups in the 21st century – which are largely facilitated by ICTs – is fundamental to understanding urban areas in the United States moving forward. Foremost in this respect is the fact that New York City has reversed its decades long population decline and instead has experienced growth in the past thirty years solely as a function of foreign immigration. The city is projected to continue growing due to international migration into the coming decades.

Dowell Myers (1999) suggests that for over a century immigration as been a "fundamental force" in the American city and ascribes the eras of urban prosperity at the turn of the 20th century and more recently since the 1990s directly to growth in international migration and immigrant's consequent role in neighborhood revitalization.

> Nowhere is this more important than in New York, a city subject to substantial outmigration and that would have sustained a population decline of 5 percent or more in just a decade but for the arrival of new immigrants from many lands. Neighborhoods across that city have been infused with new commercial vitality. The spectre of abandonment and the depression of the South Bronx has been erased from that city. (Myers 1999)

It is all the more surprising, then, that there is such a lack of attention to this aspect of contemporary American urban life within the fields of urban studies and planning.

While debates about incorporation tend to dominate discussions about immigrants and cities, there is little acknowledgement in the field of planning that the migration strategies of many foreign born people are not fixed and that as many as a third of migrants to the U.S. express a desire to return to their country of origin (IDB 2009). When incorporation is not an option or a desire for certain migrants – in the case of transnational mothers who will not or cannot access family reunification policies, or people with large investments abroad like property that they intend to eventually inhabit – then how should cities consider and address these "temporary" residents? (The use of the word temporary is also relative because when referring to international migration, temporary can encompass time frames as long as several decades.)

What are the consequences on a neighborhood if its resident population desires neither citizenship nor homeownership but is instead entirely focused on earning, saving, remitting and eventually returning? My impression from visits and interviews in Elmhurst-Corona is that sojourners will tend to reside in overcrowded conditions with, say in an extreme situation, ten people to a room taking shifts for sleeping in order to maximize savings and minimize the impact of rent. Indeed Elmhurst-Corona suffers from one of the highest rates of severely overcrowded housing in New York at 7.4 percent in 2007 (Furman Center for Real Estate and Urban Policy 2008). There is plenty of physical evidence of this condition throughout the neighborhood: multiple satellite dishes

populate rooftops of single family houses and subtly placed, hand-written signs posted on telephone booths or doorways advertise rooms for rent. Certainly, the untethered qualities of migrant life in the 21ˢᵗ century call for us to envision a planning paradigm that considers transitory settlements, and circulatory migration strategies in formulating urban policies that can complement other strategies for immigrant incorporation.

The impact of foreign remittances on local communities in host societies should also be of considerable interest to urban planners in the United States. Remittances constitute financial resources that about half of all foreign born residents in New York routinely divert away from their neighborhoods and send abroad to invest in their communities of origin. Reflecting on my finding that there is a negative relationship between median household income and share of international calls – lower income neighborhoods generate a higher proportion of international calls – could it be that since those low income neighborhoods in New York City also tend to be some of the more 'extroverted' neighborhoods, the association between low household incomes and international calls may be also somehow related to the diversion of earnings and savings towards investments abroad? If this dynamic were to exist, how does that influence our understanding of economic resources and development in predominantly immigrant neighborhoods? A review of research on remittances turned up many studies on the impact of remittances on communities of origin, yet none that I could find that examine the consequences of remittances on host communities such as the immigrant neighborhoods of American cities.

These are just two sets of questions that planners should consider in light of the considerable influence of immigration on the well-being of U.S. cities. However, this transnational, hybrid lifestyle may be characteristic of a minority of immigrants – anywhere from 9 percent (Waldinger 2007) to that third of all migrants who state their desire to return migrate. As referenced above, Waldinger (2007, 2008) found that among Latin American migrants, about one in ten have a strong

attachment to their country of origin as measured by engaging in remittances, weekly phone calls, and travel to their native country within a two-year period. Still, about 60 percent of Latin American immigrants engage in one or two of these activities for a moderate attachment to their native country. Of the people I interviewed, about a quarter could be classified as having a strong attachment abroad (the constant callers) while more than half have moderate attachments to their source countries (the weekend and episodic callers). About a tenth of my immigrant informants had no contacts abroad whatsoever. So while supporting immigrant incorporation is an important and necessary policy for cities — because if immigration policy is determined at the federal level, incorporation operates strictly at the local scale — a complementary strategy should address the needs of those foreign born residents that have a more fluid notion of their residency in the city. For urban planners, this involves rethinking policies for civic engagement, economic development, and physical planning, among others.

Future Research

The questions addressed in this study — about how New York and its neighborhoods connect to the world and the role of ICTs in immigrant life — have revealed certain themes at the nexus of telecommunications, migration and the city that should be explored in future research. The main question that could serve to anchor a robust research agenda moving forward is whether an increased use of ICTs spurs migration. How are the higher-than-ever volumes of global communications flows and growing mobility of migrants related? This study has shown that there is an association between calling destinations and foreign born groups in New York's boroughs, and this finding serves as a valuable point of departure. However, further investigation on this subject must untangle the various dynamics embedded within the possible influence of ICTs on flows of people. Below I discuss three themes that struck me over the course of my analysis in this dissertation as potentially important elements in mediating the relationship between ICTs and

migration now and into the future: the global telecoms network infrastructure, the Internet, and gender and family.

Previous research has argued that the structure of the global telecommunications network influences the interaction between nations because it shapes how flows of information are initiated, received and reciprocated (Lee et al 2007, Barnett 2001). If we also consider Massey's (2003) notion that migration occurs between nations that already have established political, economic or cultural ties, then it is possible that the actual structure of the global telecoms network may play a role in mediating migrant flows. We observed hints of this in seeing that the Dominican Republic is both the top migrant sending country to New York City and the city's top calling destination. Also, the high volume of call traffic to Guatemala from New York may be related to that country's innovations and flexibility in how it allocates its telecoms spectrum, which has opened up the market to many providers, lowered mobile interconnection prices, and increased its teledensity (telephones per capita) to the highest in Central America (International Telecommunications Union 2007: 69).

An in-depth examination of how global telecoms networks overlap with global migrant flows would require layering relational data on telecoms traffic flows with comparable data on migration while controlling for other factors such as teledensity and telecoms' costs. A longitudinal approach could help to isolate the effect of introducing technological advances such as prepaid calling cards or the rise of voice over IP (VoIP) to the network. Another approach could test the emigration rates of two demographically similar countries, which differ in terms of their teledensity, cost of communication, or centrality within the global telecoms network. And yet a third methodology could compare emigration rates between cities within the same sending country but with differences in telecoms accessibility from city to city. So in the case of Mexico, for example, it is very affordable to call Mexico City from New York but about five times more expensive to call elsewhere in the country if

you use a pre-paid calling card. This condition illustrates Castells' (1996) prognostication from over

a decade ago that the network society selectively connects and disconnects places and people

according to their value for profit-making within the global economy. The question is therefore,

what are the consequences of differential access to telecoms on migration trends?

A related consideration is how increased adoption of Internet based communications will alter the

experience of simultaneity and global mobility for migrants. With services such as unlimited

international calling from mobile phones and the availability of other low- or no-cost Internet based

services for communications and financial transactions, there is an increasing dissolution in our

perception of physical borders between nation-states. Yuberkys, a Dominican student noted that

when she is calling her family through her unlimited international calling plan, by dialing directly

and with the frequency, speed and intensity with which she interacts, sometimes she feels that she is

not abroad, not in New York. Also, many of the services offered by *cabinas* can already be done

online for a much lower cost: sending money, paying bills, making phone calls, purchasing calling

cards. According to Diana, the Ecuadorean calling center manager in Elmhurst, the savvier

migrants employ these methods of transnational activity, saving money and transaction costs in

doing so. The use of Internet-based transnational services is likely to increase as migrant sending

countries proceed to further develop their counterpart ICT infrastructures. Though Diana also

contends that *cabinas* will likely continue to exist since the most vulnerable migrants – those who

have just arrived or who are undocumented – cannot utilize these online services, as they require

having a credit card, a bank account or even more fundamentally, access to a networked computer.

The second generation of migrants is already adopting Internet-based services for connecting with

their native countries. In my interviews I found that they send text messages, use social networking

sites, and instant message with people of their same generation abroad – usually siblings and

cousins. These are not activities they use to contact their grandparents, parents or aunts and uncles,

however, since my younger informants all concurred that those elder counterparts do not know how to use computers. As these second generation migrants come of age, they are not likely to maintain cross-border relationships that are as intense as those of their parents, but they will nevertheless maintain ties with extended families. It is likely that these links will be operationalized via the Internet rather than the telephone. This may also be true of newer generations of migrants. As Vertovec contends, "Technological changes (especially the building and extension of infrastructures in developing countries) will make it ever easier and cheaper to communicate and exchange resources, including remittances, across borders and at long-distance." (Vertovec 2004: 55) Indeed, the modes of communication used from host countries are entirely dependent on the technological infrastructure of a migrant's country of origin. If a migrant's communications counterpart does not have a telephone, or a computer, or even a bank account, then the flow of resources from here to there will lack a destination. But as places that are currently outside of the network begin to integrate to the global space of flows, which other transnational processes and transformations will be supported by the increased breadth of simultaneity?

One particularly poignant transformation of social life that has been facilitated by improved global telecommunications infrastructures is that of the family. "For a single family to be stretched across vast distances and between nation-states, yet still somehow functioning for collective gain, is now a commonality" (Vertovec 2004b: 13). As it relates to telecommunications, of particular interest is the participation of women, as I found that they tend to be the most actively engaged in international calling as they manage households abroad and strive to fulfill their roles as mothers, wives, daughters, aunts, and nieces within a dispersed family structure. Researchers have observed that female migrants are increasingly leaving families behind as the structure of labor demand shifts from manufacturing to services, particularly in health care and domestic work (Hondagneu-Sotelo and Avila 1997; Mahler 2001; Mahler and Pessar 2006; Uy-Tioco 2007).

The accessibility of telecommunications may also play a role in women's propensity to migrate since it presents the option and opportunity to maintain intense links with their children and other kin while they are abroad. The speed and intensity of telecoms technology allows them to maintain and assert their role within the family as never before. This is especially crucial in the cases where a mother cannot travel home because she is undocumented, a condition that is true for two mothers and two daughters in the interviews I performed in New York. The women had lived for over a decade each without seeing their children or mothers (the daughters had stayed in their native country while their parents had migrated to New York, meanwhile the mothers had migrated to New York and left their children home). This takes an emotional toll on mothers, children, spouses and other caregivers left behind. One transnational mother without documentation in New York expressed a sincere hope for immigration reform in the United States. Asked whether she sought amnesty so she could become a citizen, send for her daughters under family reunification, and incorporate more fully to the U.S. she answered that she only seeks citizenship so she can circulate between New York and Oaxaca, Mexico where her daughters live. She had no interest in bringing her family to the United States – partially because of the expense it incurs but also because she does not consider New York her home. It is only a place where she can work enough to support her family. This illustrates the fundamental necessity of a gender-sensitive perspective in investigating the influence, impact and role in migration of transnational communications (Mahler 2001; Parreñas 2005; Sinke 2006).

Much as in this dissertation, the above research agenda would benefit from a multimethod approach that combines quantitative analysis of telecommunications flows layered with demographic, labor and other socioeconomic data and in-depth ethnographies of immigrants to document and explain the link between migration and ICTs.

As I have found over the course of my research for this study, behind the traces captured in a city's global telecommunications flows there are countless human stories that project shadows of broader international social, economic and political forces. Telecommunications are fundamental tools for immigrants to transcend and bridge the breaks that occur as a result of the migration process. At the dawn of the 21st century, the increased reach, velocity, and intensity of telecommunications networks is transforming the experience of migration into something much more indeterminate and fluid, producing hybrid lives that straddle here and there – whether physically or virtually. Immigration policies in migrant receiving countries such as the United States must recognize that most migrants will tend to maintain the social networks they leave behind and will need to circulate back and forth between 'here' and 'there.' It is my hope that this condition of the 'connected migrant' is acknowledged and addressed at the federal and local levels in immigration policies that are more open to the flexible notions of citizenship, work, family, and incorporation that have emerged in this hybrid, network society.

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APPENDIX I
World Regions and Countries

WORLD REGION	COUNTRY
Asia	Bangladesh
	Bhutan
	Cambodia
	China
	Hong Kong
	India
	Indonesia
	Japan
	Korea, Republic of
	Kyrguzstan
	Lao, People's Democratic Republic
	Macao
	Malaysia
	Maldives
	Mongolia
	Myanmar
	Nepal
	Philippines
	Singapore
	Sri Lanka
	Taiwan, Province of China
	Tajikistan
	Thailand
	Turkmenistan
	Uzbekistan
	Vietnam

WORLD REGION	COUNTRY
Central America/ The Caribbean	Anguilla
	Antigua and Barbuda
	Aruba
	Bahamas
	Belize
	Bermuda
	Cayman Islands
	Costa Rica
	Cuba
	Dominica
	Dominican Republic
	El Salvador
	Grenada
	Guadeloupe
	Guatemala
	Haiti
	Honduras
	Jamaica
	Martinique
	Montserrat
	Netherlands Antilles
	Nicaragua
	Panama
	Saint Kitts and Nevis
	Saint Lucia
	Saint Vincent and the Grenadines
	Trinidad and Tobago
	Turks and Caicos Islands
	Virgin Islands, British

WORLD REGION	COUNTRY
Europe	Albania
	Andorra
	Austria
	Belarus
	Belgium
	Bosnia and Herzegovina
	Bulgaria
	Croatia
	Cyprus
	Czech Republic
	Denmark
	Estonia
	Faroe Islands
	Finland
	France
	Georgia
	Germany
	Gibraltar
	Greece
	Greenland
	Hungary
	Iceland
	Ireland
	Italy
	Latvia
	Liechtenstein
	Lithuania
	Luxembourg
	Macedonia
	Malta
	Moldova, Republic of
	Netherlands
	Norway
	Poland
	Portugal
	Republic of Serbia
	Romania
	Russian Federation
	Saint Helena
	San Marino
	Slovakia
	Slovenia
	Spain
	Sweden
	Switzerland
	Ukraine
	United Kingdom

WORLD REGION	COUNTRY
Middle East/ North Africa	Afghanistan
	Algeria
	Azerbaijan
	Bahrain
	Brunei Darussalam
	Egypt
	Iran, Islamic Republic of
	Iraq
	Israel
	Jordan
	Kuwait
	Lebanon
	Libyan Arab Jamahiriya
	Morocco
	Oman
	Pakistan
	Palestinian Territory
	Qatar
	Saudi Arabia
	Somalia
	Syrian Arab Republic
	Tunisia
	Turkey
	United Arab Emirates
	Yemen
North America	Canada
	Mexico

WORLD REGION	COUNTRY
Oceania	American Samoa
	Australia
	Cook Islands
	Diego Garcia
	East Timor
	Fiji
	French Polynesia
	Guam
	Kiribati
	Marshall Islands
	Micronesia
	Nauru
	New Caledonia
	New Zealand
	Niue
	Norfolk Island
	Norther Mariana Islands
	Palau
	Papua New Guinea
	Reunion
	Samoa
	Solomon Islands
	Tokelau
	Tuvalu
	Vanuatu
	Wallis and Futuna
South America	Argentina
	Ascension Island
	Bolivia
	Brazil
	Chile
	Colombia
	Ecuador
	Falkland Islands (Malvinas)
	French Guiana
	Guyana
	Paraguay
	Peru
	Suriname
	Uruguay
	Venezuela

WORLD REGION	COUNTRY
Sub-Saharan Africa	Angola
	Benin
	Botswana
	Burkina Faso
	Burundi
	Cameroon
	Cape Verde
	Central African Republic
	Chad
	Comoros
	Congo
	Congo, the Democratic Republic of
	Cote D'Ivoire
	Djibouti
	Equatorial Guinea
	Eritrea
	Ethiopia
	Gabon
	Gambia
	Ghana
	Guinea
	Guinea-Bissau
	Kenya
	Lesotho
	Liberia
	Madagascar
	Malawi
	Mali
	Mauritania
	Mauritius
	Mozambique
	Namibia
	Niger
	Nigeria
	Rwanda
	Sao Tome and Principe
	Senegal
	Seychelles
	Sierra Leone
	South Africa
	Sudan
	Swaziland
	Tanzania, United Republic of
	Togo
	Uganda
	Zambia
	Zimbabwe

APPENDIX II
Demographic Variables from 2007-2008 American Community Survey

POPULATION
Population (2007/2008)
Estimated total number of employees (all industries)
Total employees

GENDER
Population, Male (2007)
Population, Female (2007)

HOUSEHOLD
Households (2007/2008
Median Household Income (2007/2008)
Average Household Income (2007/2008)
Per Capita Household Income (2007/2008)

HOUSING
Housing Units
Housing Units, owner occupied (2007)
Housing Units, renter occupied (2007)

RACE
Households, White (2007)
Households, Black or African American (2007)
Households, American Indian/Alaska Native (2007)
Households, Asian (2007)
Households, Native Hawaiian/Pacific Islander (2007)
Households, Some other race (2007)
Households, two or more races (2007)
Households, Hispanic/Latino (2007)

ANCESTRY
Population, Arab (2007)
Population, Czech (2007)
Population, Danish (2007)

ANCESTRY (con't)
Population, Dutch (2007)
Population, English (2007)
Population, French (except Basque) (2007)
Population, French Canadian (2007)
Population, German (2007)
Population, Greek (2007)
Population, Hungarian (2007)
Population, Irish (2007)
Population, Italian (2007)
Population, Lithuanian (2007)
Population, Norwegian (2007)
Population, Polish (2007)
Population, Portuguese (2007)
Population, Russian (2007)
Population, Scottish (2007)
Population, Scotch-Irish (2007)
Population, Slovak (2007)
Population, Subsaharan African (2007)
Population, Swedish (2007)
Population, Swiss (2007)
Population, Ukrainian (2007)
Population, United States or American (2007)
Population, Welsh (2007)
Population, West Indian (except Hispanic groups) (2007)
Population, Other ancestries (2007)
Population, Ancestry unclassified (2007)

LANGUAGE
Population, Speak only English at home (2007)
Population, Speak Asian/Pacific Islander language at home (2007)
Population, Speak Indo-European language at home (2007)
Population, Speak Spanish at home (2007)
Population, Speak other language at home (2007)

APPENDIX III
Foreign Born Prediction Model

Model estimating the percent of foreign-born population in a wire center

Objective: Estimate the percent of foreign born using MIT wire center level data. The percent of foreign born is not available directly.

Model was developed using U.S. county-level data from the U.S. Census Bureau. Model testing relied on both this country data and additional New York school district data from the Census Bureau.

We tested a diverse set of wire center variables in the dataset, including ancestry, race, ethnicity, spoken language, age, income, household size, and education variables. These were hypothesized to predict foreign born incidence. Several second degree terms were included in the test set of predictors, based on exploratory data analysis. These are also important to protect against generating unreasonably high estimates for a wire center with predictor variables beyond the range of our training data. Note that some predictors are themselves modeled variables based on census estimates from different geographic entities, prepared by the telecoms provider's GIS group.

Although a few interactions were considered, the data is not large or rich enough to support these. For example, the predictive relationship between African American incidence and foreign born may depend on the co-occurring Asian population incidence; county level data does not provide enough variation to estimate such an interaction effect if it exists.
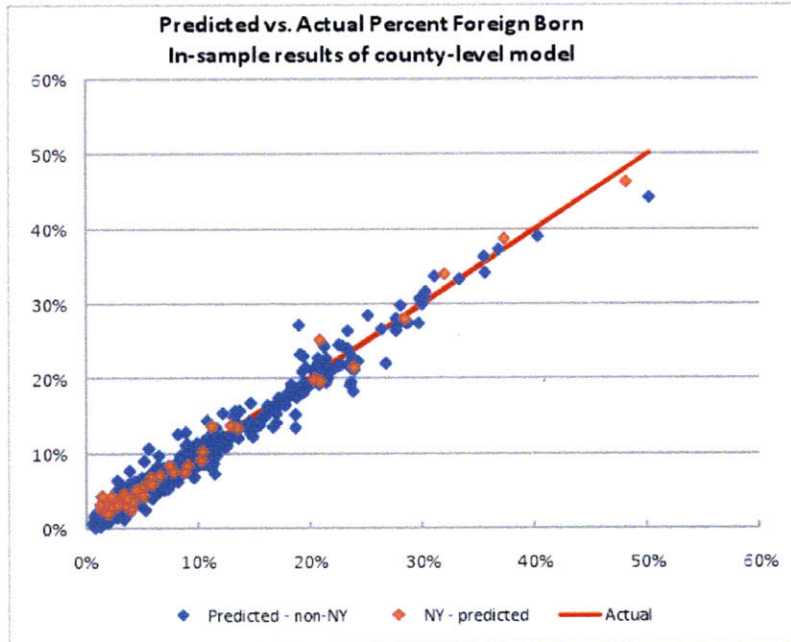
Also based on the exploratory plots, we eliminated data from 5 states from the training set: Hawaii, Alaska, District of Columbia, Alaska, Texas, and New Mexico. Ethnicity in Hawaii and Alaska is quite different from the mainland. D.C. has a very unusual residential population. And finally, we found that the predictive relationships in border counties of Texas and New Mexico were not representative of the rest of the Unite States. We checked to make sure that predictions for New York counties improved with each exclusion.

The final model includes variables found to be consistently predictive across random samples of the training set. We verified that the coefficient signs and magnitudes were consistent with bivariate plots and plausible relationships.

Finally, a limited set of foreign born estimates was available from the census at a school district level, though without all of the model predictors. We cross-checked these values with our predictions for geographically similar wire centers, and found the two estimates to be comfortingly close.

Following shows the predicted vs. actual foreign born incidence for all counties; these are in-sample predictions. Residuals for out of sample predictions (50/50) averaged 6% higher (absolute difference) and 4% higher (percent difference). NY counties are highlighted.

Predicted vs. Actual Percent Foreign Born
In-sample results of county-level model

[Scatter plot showing predicted vs actual percent foreign born, with x-axis and y-axis ranging from 0% to 60%. Legend: Predicted - non-NY (blue diamonds), NY - predicted (orange diamonds), Actual (red line)]

Final Model
Adjusted R-square = .98
16 variables – listed below in descending order of Type II SS

> Language other than English spoken at home[1]
> Asian race[1, 2]
> Spanish spoken at home[1]
> West Indies ancestry[3]
> German ancestry
> Other ancestry
> Other race
> African American race
> Italian ancestry
> Canadian ancestry
> American ancestry
> French ancestry
> Indo-European language (not Spanish) spoken at home

[1]Includes a linear and quadratic term
[2]Race variables are the percent of the population that race alone.
[3]Ancestry variables are the percent of the population with this as the first ancestry reported.

APPENDIX IV
Sample Questions from Interviews

When did you arrive in the United States?

When you moved to the United States, did you come to New York? Which neighborhood?

Did you know people in New York already?

Did you come to New York with anybody else?

Does your family live in New York or in your country?

How did you enter the United States?

How old are you now?

When you first arrived, how did you stay in touch with your family?

When did you begin to call your family more often?

How often do you call them now?

Who do you call?

What do you talk about?

How long do your conversations last?

Are you conscious of how long you are speaking on the phone?

How many prepaid calling cards do you purchase in a month?

Or, how much does it cost (per month)?

Do you call abroad from your cell phone or your home phone (landline)?

Do you call your family at home or on their cell phones?

What time(s)?

What days of the week?

Do you travel back to your country of origin?

How often do you travel back there?

When do you travel?

How long do you stay in your country of origin?

Will you go back to your country of origin?

Why would you like to go back?

When do you envision going back?

PERMISO PARA ENTREVISTA
PROYECTO DE INVESTIGACION: *NEW YORK TALK EXCHANGE*

Usted ha sido elegido para participar en una investigación académica por Francisca Rojas del Departamento de Estudios Urbanos de la universidad Massachusetts Institute of Technology (MIT). El objetivo de mi investigación es entender cómo los inmigrantes en Nueva York se mantienen conectados con sus países de origen. Los resultados de este estudio serán incluidos en la tesis de doctorado de Francisca Rojas. Usted ha sido seleccionado como un participante en este estudio porque un amigo o un conocido lo recomendó o porque me he acercado a usted directamente para pedir una entrevista. Por favor lea la información en este documento y haga preguntas acerca cualquier cosa que usted no entienda, antes de decidir independientemente si usted desea participar en mi estudio.

- Esta entrevista es voluntaria. Usted tiene el derecho de no contestar mis preguntas y de parar la entrevista en cualquier momento o por cualquiera razón. La entrevista debería durar entre 10 minutos a 1 hora, dependiendo de cuánto tiempo usted quisiera dedicar a nuestra conversación.
- Usted no será pagado por esta entrevista.
- A menos que usted me dé permiso para utilizar su nombre en cualquier publicación que pueda resultar de esta investigación, la información que usted me dice será confidencial.
- Yo quisiera grabar esta entrevista en un registrador digital de modo que pueda utilizarlo como referencia mientras que proceda con mi estudio. No grabaré esta entrevista sin su permiso. Si usted concede el permiso para que esta conversación sea grabada en un registrador digital, usted tiene el derecha de revocar el permiso de la grabación y/o terminar la entrevista en cualquier momento.
- Yo quisiera tomar fotografías y un vídeo corto durante o después de nuestra entrevista. No tomaré las fotografías o el vídeo sin su permiso. Si usted concede el permiso para las fotografías o un vídeo, usted tiene el derecho de revocar el permiso y/o de terminar la entrevista en cualquier momento.

Este proyecto será terminado en 2010. Todas las grabaciones, fotografías y vídeos serán almacenados en un computador seguro protegido con contraseña. Las grabaciones serán destruidas antes del fin de 2012. Las fotografías y vídeo serán almacenadas con seguridad por Francisca Rojas.

Por favor marque lo que corresponda:
[ ] Doy permiso para que esta entrevista sea grabada en un registrador audio digital.
[ ] Doy permiso para que esta entrevista sea grabada en video y con fotografías.
[ ] Doy permiso para que la información en este documento sea incluida en publicaciones resultando de este estudio.
[ ] mi nombre   [ ] mi titulo   [ ] citas directas de nuestra entrevista

Entiendo los procedimientos descritos en este documento. Mis preguntas han sido contestadas a mi satisfacción, y acuerdo participar en este estudio. Me han dado una copia de este documento.

Nombre del entrevistado/a _____

Firma de entrevistado/a _____   Fecha _____

Firma de la investigadora _____   Fecha _____

Favor de contactar a Francisca Rojas por email fmr@mit.edu o telefono xxx.xxx.xxxx con preguntas sobre este estudio.

Si usted siente que ha sido tratado de manera injusta, o tiene preguntas con respecto a sus derechos como entrevistado en esta investigación, usted contactar al director del Committee on the Use of Humans as Experimental Subjects, M.I.T., Room E25-143b, 77 Massachusetts Ave, Cambridge, MA 02139, fono 1-617-253-6787.

APPENDIX V
Interview Consent Form

CONSENT TO PARTICIPATE IN INTERVIEW
RESEARCH PROJECT: *NEW YORK TALK EXCHANGE*

You have been asked to participate in a research study conducted by Francisca M. Rojas from the Department of Urban Studies and Planning at the Massachusetts Institute of Technology (MIT). The purpose of the study is to understand how immigrants and foreign-born people in New York stay connected to their country of origin. The results of this study will be included in Francisca Rojas' PhD dissertation. You were selected as a possible participant in this study because a friend or acquaintance recommended you, because I have approached you directly to request an interview, or because of your particular knowledge or experience of immigrant neighborhoods. You should read the information below and ask questions about anything you do not understand, before deciding whether or not to participate.

- This interview is voluntary. You have the right not to answer any question, and to stop the interview at any time or for any reason. I expect that the interview will take about 10 minutes to 1 hour, depending on how much time you'd like to devote to our conversation.
- You will not be compensated for this interview.
- Unless you give me permission to use your name, title, and / or quote you in any publications that may result from this research, the information you tell me will be confidential.
- I would like to record this interview on a digital audio recorder so that I can use it for reference while proceeding with my study. I will not record this interview without your permission. If you do grant permission for this conversation to be recorded on a digital recorder, you have the right to revoke recording permission and/or end the interview at any time.
- I would like to take photographs and a short digital video during or after our interview. I will not take photographs or video without your permission. If you do grant permission for photographs or a video, you have the right to revoke permission and/or end the interview at any time.

This project will be completed by 2010. All interview recordings, photographs and videos will be stored in a secure, password protected computer. The audio recordings will be destroyed by the end of 2012. The video and photographs will be securely stored by Francisca M Rojas.

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

(*Please check all that apply*)
[ ] I give permission for this interview to be recorded on a digital audio recorder.
[ ] I give permission for this interview to be recorded on a digital video recorder and digital camera.
[ ] I give permission for the following information to be included in publications resulting from this study:
[ ] my name   [ ] my title   [ ] direct quotes from this interview

Name of Subject   _____

Signature of Subject _____ Date _____

Signature of Investigator _____Date _____

Please contact Francisca Rojas at fmr@mit.edu or xxx.xxx.xxxx with any questions or concerns.

If you feel you have been treated unfairly, or you have questions regarding your rights as a research subject, you may contact the Chairman of the Committee on the Use of Humans as Experimental Subjects, M.I.T., Room E25-143b, 77 Massachusetts Ave, Cambridge, MA 02139, phone 1-617-253-6787.